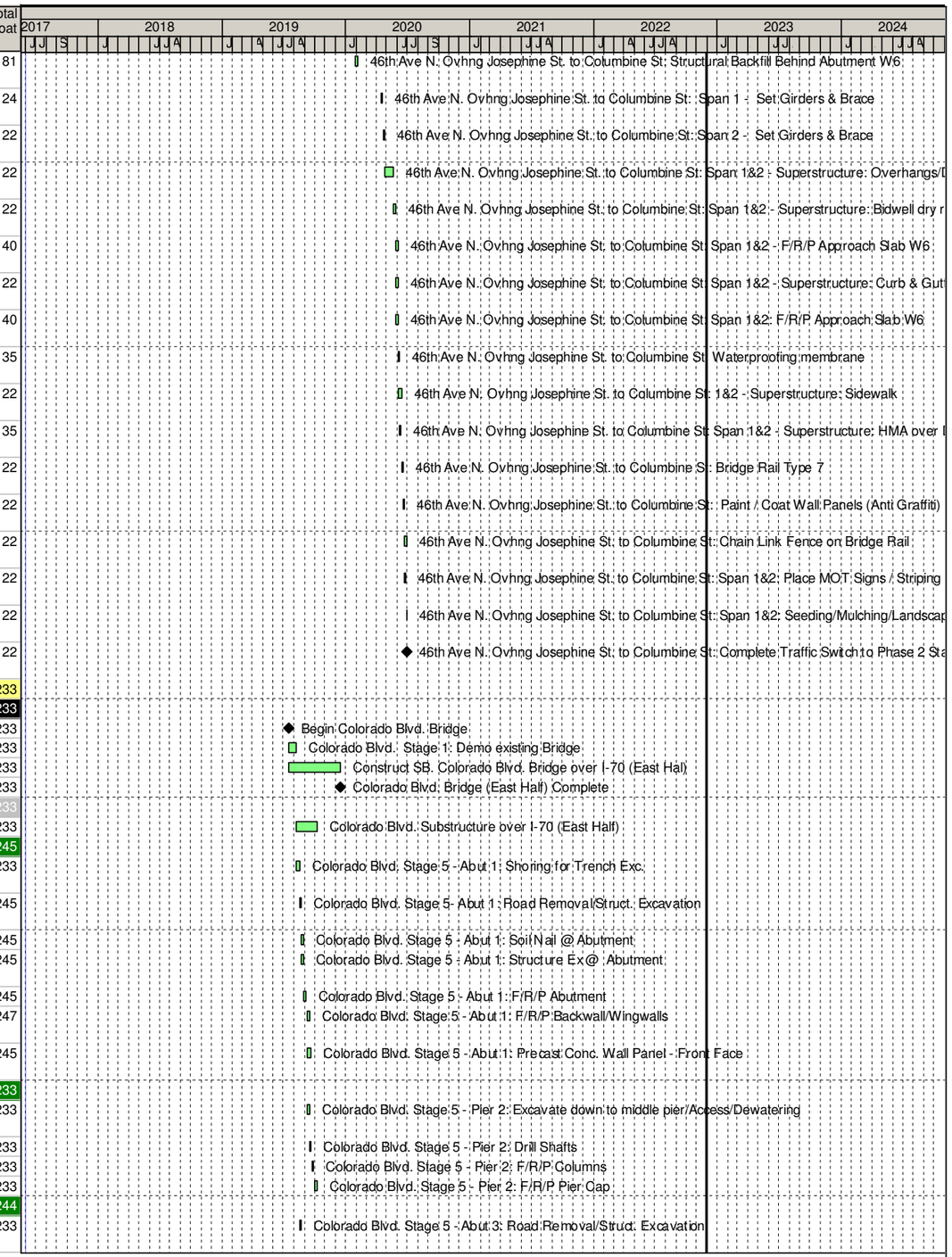
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
Straddle Bent W4		72	72	21-Nov-19	07-Apr-20	128
CBS1184460	46th Ave N. Ovhng Josephine St. to Columbine St: Road Demo & Removals @ W4	3	3	21-Nov-19	25-Nov-19	152
CBS1184455	Construct 46th Ave N. Ovhng Josephine St. to Columbine St: Straddle Beam W4	72	72	21-Nov-19	07-Apr-20	128
CBS1184440	46th Ave N. Ovhng Josephine St. to Columbine St: Temp Shoring @ W4	3	3	26-Nov-19	02-Dec-19	152
CBS1184300	46th Ave N. Ovhng Josephine St. to Columbine St: Drill Shaft @ N. Trench Wall W4	4	4	03-Dec-19	10-Dec-19	161
CBS1184310	46th Ave N. Ovhng Josephine St. to Columbine St: F/R/P Abutment W4	8	8	12-Dec-19	26-Dec-19	161
CBS1184320	46th Ave N. Ovhng Josephine St. to Columbine St: F/R/P Backwall W4	6	6	30-Dec-19	08-Jan-20	161
CBS1184280	46th Ave N. Ovhng Josephine St. to Columbine St: Drill Shaft at Median Column W4	4	4	24-Feb-20	28-Feb-20	122
CBS1184500	46th Ave N. Ovhng Josephine St. to Columbine St: F/R/P Median Column W4	8	8	02-Mar-20	13-Mar-20	128
CBS1184290	46th Ave N. Ovhng Josephine St. to Columbine St: F/R/P Straddle Beam W4	15	15	16-Mar-20	07-Apr-20	128
Straddle Bent W5		73	73	26-Nov-19	14-Apr-20	124
CBS1184590	46th Ave N. Ovhng Josephine St. to Columbine St: Road Demo & Removals @ W5	3	3	26-Nov-19	02-Dec-19	152
CBS1184585	Construct 46th Ave N. Ovhng Josephine St. to Columbine St: Straddle Beam W5	73	73	26-Nov-19	14-Apr-20	124
CBS1184580	46th Ave N. Ovhng Josephine St. to Columbine St: Temp Shoring @ W5	3	3	03-Dec-19	06-Dec-19	152
CBS1184550	46th Ave N. Ovhng Josephine St. to Columbine St: Drill Shaft @ N. Trench Wall W5	4	4	10-Dec-19	16-Dec-19	158
CBS1184560	46th Ave N. Ovhng Josephine St. to Columbine St: F/R/P Abutment W5	8	8	17-Dec-19	02-Jan-20	158
CBS1184570	46th Ave N. Ovhng Josephine St. to Columbine St: F/R/P Backwall W5	6	6	03-Jan-20	14-Jan-20	158
CBS1184530	46th Ave N. Ovhng Josephine St. to Columbine St: Drill Shaft at Median Column W5	4	4	02-Mar-20	06-Mar-20	122
CBS1184600	46th Ave N. Ovhng Josephine St. to Columbine St: F/R/P Median Column W5	8	8	09-Mar-20	20-Mar-20	124
CBS1184540	46th Ave N. Ovhng Josephine St. to Columbine St: F/R/P Straddle Beam W5	15	15	23-Mar-20	14-Apr-20	124
Straddle Bent W6		74	74	03-Dec-19	21-Apr-20	122
CBS1184670	46th Ave N. Ovhng Josephine St. to Columbine St: Road Demo & Removals @ W6	3	3	03-Dec-19	06-Dec-19	152
CBS1184665	Construct 46th Ave N. Ovhng Josephine St. to Columbine St: Straddle Beam W6	74	74	03-Dec-19	21-Apr-20	122
CBS1184660	46th Ave N. Ovhng Josephine St. to Columbine St: Temp Shoring for Straddle Beam W6	8	8	10-Dec-19	20-Dec-19	152
CBS1184630	46th Ave N. Ovhng Josephine St. to Columbine St: Drill Shaft @ N. Trench Wall W6	4	4	26-Dec-19	02-Jan-20	152
CBS1184640	46th Ave N. Ovhng Josephine St. to Columbine St: F/R/P Abutment W6	8	8	03-Jan-20	17-Jan-20	152
CBS1184650	46th Ave N. Ovhng Josephine St. to Columbine St: F/R/P Backwall W6	6	6	20-Jan-20	30-Jan-20	152
CBS1184610	46th Ave N. Ovhng Josephine St. to Columbine St: Drill Shaft at Median Column W6	4	4	09-Mar-20	13-Mar-20	122
CBS1184680	46th Ave N. Ovhng Josephine St. to Columbine St: F/R/P Median Column W6	8	8	16-Mar-20	27-Mar-20	122
CBS1184620	46th Ave N. Ovhng Josephine St. to Columbine St: F/R/P Straddle Beam W6	15	15	30-Mar-20	21-Apr-20	122
Superstructure Spans 1 & 2		100	100	10-Jan-20	30-Jun-20	122
CBS1184330	46th Ave N. Ovhng Josephine St. to Columbine St: Structural Backfill Behind Abutment W4	3	3	10-Jan-20	14-Jan-20	192
CBS1184325	Construct 46th Ave N. Ovhng Josephine St. to Columbine St: Superstructure	100	100	10-Jan-20	30-Jun-20	122
CBS1184710	46th Ave N. Ovhng Josephine St. to Columbine St: Structural Backfill Behind Abutment W5	3	3	16-Jan-20	20-Jan-20	189

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
CBS1184720	46th Ave N. Ovhng Josephine St. to Columbine St: Structural Backfill Behind Abutment W6	3	3	31-Jan-20	05-Feb-20	181
CBS1184350	46th Ave N. Ovhng Josephine St. to Columbine St: Span 1 - Set Girders & Brace	2	2	15-Apr-20	16-Apr-20	124
CBS1184450	46th Ave N. Ovhng Josephine St. to Columbine St: Span 2 - Set Girders & Brace	2	2	23-Apr-20	24-Apr-20	122
CBS1184360	46th Ave N. Ovhng Josephine St. to Columbine St: Span 1&2 - Superstructure: Overhangs/Decking/Rebar	15	15	27-Apr-20	19-May-20	122
CBS1184390	46th Ave N. Ovhng Josephine St. to Columbine St: Span 1&2 - Superstructure: Bidwell dry run & Place Deck	4	4	21-May-20	27-May-20	122
CBS1184340	46th Ave N. Ovhng Josephine St. to Columbine St: Span 1&2 - F/R/P Approach Slab W6	5	5	28-May-20	03-Jun-20	140
CBS1184400	46th Ave N. Ovhng Josephine St. to Columbine St: Span 1&2 - Superstructure: Curb & Gutter	6	6	28-May-20	04-Jun-20	122
CBS1184730	46th Ave N. Ovhng Josephine St. to Columbine St: Span 1&2: F/R/P Approach Slab W6	5	5	28-May-20	03-Jun-20	140
CBS1184410	46th Ave N. Ovhng Josephine St. to Columbine St: Waterproofing membrane	2	2	05-Jun-20	08-Jun-20	135
CBS1184740	46th Ave N. Ovhng Josephine St. to Columbine St: 1&2 - Superstructure: Sidewalk	6	6	05-Jun-20	15-Jun-20	122
CBS1184420	46th Ave N. Ovhng Josephine St. to Columbine St: Span 1&2 - Superstructure: HMA over Deck	2	2	09-Jun-20	11-Jun-20	135
CBS1184370	46th Ave N. Ovhng Josephine St. to Columbine St: Bridge Rail Type 7	3	3	16-Jun-20	18-Jun-20	122
NSPN.11150	46th Ave N. Ovhng Josephine St. to Columbine St: Paint / Coat Wall Panels (Anti Graffiti)	3	3	19-Jun-20	23-Jun-20	122
CBS1184430	46th Ave N. Ovhng Josephine St. to Columbine St: Chain Link Fence on Bridge Rail	5	5	24-Jun-20	30-Jun-20	122
RDW.14120	46th Ave N. Ovhng Josephine St. to Columbine St: Span 1&2: Place MOT Signs / Striping	3	3	24-Jun-20	26-Jun-20	122
RDW.14130	46th Ave N. Ovhng Josephine St. to Columbine St: Span 1&2: Seeding/Mulching/Landscaping	2	2	29-Jun-20	30-Jun-20	122
CBS1184380	46th Ave N. Ovhng Josephine St. to Columbine St: Complete Traffic Switch to Phase 2 Stage 1 Alignment	0	0		30-Jun-20	122
Segment 3 - Fillmore St. to Dahlia St. - (Sta 2042+00 to Sta 2085+00)		89	89	18-Jul-19	16-Dec-19	233
Colorado Blvd. Bridge - (East Half)		89	89	18-Jul-19	16-Dec-19	233
CBS1182400	Begin Colorado Blvd. Bridge	0	0	18-Jul-19		233
CBS1175890	Colorado Blvd. Stage 1: Demo existing Bridge	15	15	18-Jul-19	08-Aug-19	233
CBS11700LOES2	Construct SB. Colorado Blvd. Bridge over I-70 (East Hal)	89	89	18-Jul-19	16-Dec-19	233
CBS1182410	Colorado Blvd. Bridge (East Half) Complete	0	0		16-Dec-19	233
Substructure		38	38	09-Aug-19	08-Oct-19	233
COBLV.NB.WBS.SUB	Colorado Blvd. Substructure over I-70 (East Half)	38	38	09-Aug-19	08-Oct-19	233
Abutment 3		26	26	09-Aug-19	19-Sep-19	245
CBS1175490	Colorado Blvd. Stage 5 - Abut 1: Shoring for Trench Exc.	6	6	09-Aug-19	19-Aug-19	233
CBS1175790	Colorado Blvd. Stage 5- Abut 1 : Road Removal/Struct. Excavation	3	3	20-Aug-19	22-Aug-19	245
CBS1172390	Colorado Blvd. Stage 5 - Abut 1: Soil Nail @ Abutment	5	5	23-Aug-19	29-Aug-19	245
CBS1172490	Colorado Blvd. Stage 5 - Abut 1: Structure Ex@ Abutment	5	5	23-Aug-19	29-Aug-19	245
CBS1172590	Colorado Blvd. Stage 5 - Abut 1: F/R/P Abutment	5	5	30-Aug-19	06-Sep-19	245
CBS1172790	Colorado Blvd. Stage 5 - Abut 1: F/R/P Backwall/Wingwalls	5	5	09-Sep-19	16-Sep-19	247
CBS1174690	Colorado Blvd. Stage 5 - Abut 1: Precast Conc. Wall Panel - Front Face	7	7	09-Sep-19	19-Sep-19	245
Pier 2		18	18	10-Sep-19	08-Oct-19	233
CBS117H1240	Colorado Blvd. Stage 5 - Pier 2: Excavate down to middle pier/Access/Dewatering	4	4	10-Sep-19	16-Sep-19	233
CBS1171890	Colorado Blvd. Stage 5 - Pier 2: Drill Shafts	3	3	17-Sep-19	20-Sep-19	233
CBS1171990	Colorado Blvd. Stage 5 - Pier 2: F/R/P Columns	4	4	23-Sep-19	27-Sep-19	233
CBS1172190	Colorado Blvd. Stage 5 - Pier 2: F/R/P Pier Cap	7	7	30-Sep-19	08-Oct-19	233
Abutment 1		21	21	20-Aug-19	20-Sep-19	244
CBS1174790	Colorado Blvd. Stage 5 - Abut 3: Road Removal/Struct. Excavation	3	3	20-Aug-19	22-Aug-19	233

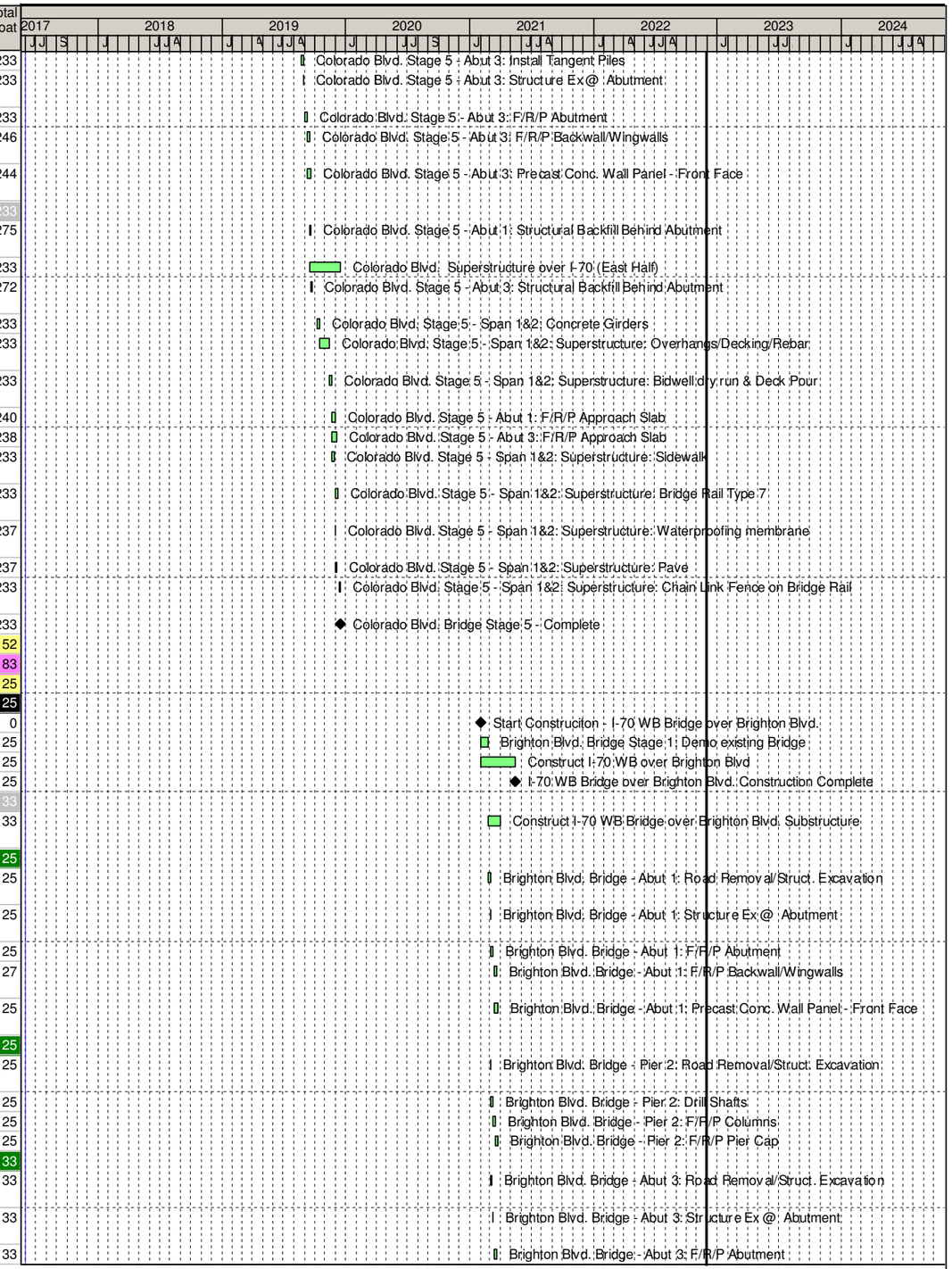


Remaining Level of Effort
Remaining Work
Actual Level of Effort
Critical Remaining Work
Actual Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
CBS1173290	Colorado Blvd. Stage 5 - Abut 3: Install Tangent Piles	5	5	23-Aug-19	29-Aug-19	233
CBS1173390	Colorado Blvd. Stage 5 - Abut 3: Structure Ex@ Abutment	1	1	30-Aug-19	30-Aug-19	233
CBS1173490	Colorado Blvd. Stage 5 - Abut 3: F/R/P Abutment	5	5	03-Sep-19	09-Sep-19	233
CBS1173690	Colorado Blvd. Stage 5 - Abut 3: F/R/P Backwall/Wingwalls	5	5	10-Sep-19	17-Sep-19	246
CBS1174590	Colorado Blvd. Stage 5 - Abut 3: Precast Conc. Wall Panel - Front Face	7	7	10-Sep-19	20-Sep-19	244
Superstructure - Spans 1 & 2		50	50	17-Sep-19	16-Dec-19	233
CBS1172990	Colorado Blvd. Stage 5 - Abut 1: Structural Backfill Behind Abutment	3	3	17-Sep-19	20-Sep-19	275
COBLV.NB.WBS.SUP	Colorado Blvd. Superstructure over I-70 (East Half)	50	50	17-Sep-19	16-Dec-19	233
CBS1173890	Colorado Blvd. Stage 5 - Abut 3: Structural Backfill Behind Abutment	3	3	19-Sep-19	23-Sep-19	272
CBS1175590	Colorado Blvd. Stage 5 - Span 1&2: Concrete Girders	4	4	09-Oct-19	15-Oct-19	233
CBS1174290	Colorado Blvd. Stage 5 - Span 1&2: Superstructure: Overhangs/Decking/Rebar	15	15	17-Oct-19	12-Nov-19	233
CBS1174890	Colorado Blvd. Stage 5 - Span 1&2: Superstructure: Bidwell dry run & Deck Pour	5	5	14-Nov-19	21-Nov-19	233
CBS1173090	Colorado Blvd. Stage 5 - Abut 1: F/R/P Approach Slab	5	5	22-Nov-19	02-Dec-19	240
CBS1173990	Colorado Blvd. Stage 5 - Abut 3: F/R/P Approach Slab	7	7	22-Nov-19	04-Dec-19	238
CBS1174990	Colorado Blvd. Stage 5 - Span 1&2: Superstructure: Sidewalk	4	4	22-Nov-19	27-Nov-19	233
CBS1174390	Colorado Blvd. Stage 5 - Span 1&2: Superstructure: Bridge Rail Type 7	5	5	02-Dec-19	10-Dec-19	233
CBS1175090	Colorado Blvd. Stage 5 - Span 1&2: Superstructure: Waterproofing membrane	2	2	02-Dec-19	03-Dec-19	237
CBS1175190	Colorado Blvd. Stage 5 - Span 1&2: Superstructure: Pave	2	2	04-Dec-19	06-Dec-19	237
CBS1175390	Colorado Blvd. Stage 5 - Span 1&2: Superstructure: Chain Link Fence on Bridge Rail	3	3	12-Dec-19	16-Dec-19	233
CBS1174490	Colorado Blvd. Bridge Stage 5 - Complete	0	0		16-Dec-19	233
Phase 2		193	193	03-Feb-21	27-Dec-21	52
Stage 1		99	99	03-Feb-21	19-Jul-21	83
Segment 1 - Brighton Blvd to York St. - (Sta 2000+00 to Sta 2025+50)		57	57	03-Feb-21	13-May-21	125
Construct - I-70 WB Bridge Over Brighton Blvd. Street (Complete WB Half)		57	57	03-Feb-21	13-May-21	125
BBLVD.MI.BGN.0000	Start Construciton - I-70 WB Bridge over Brighton Blvd.	0	0	03-Feb-21		0
CBS1184765	Brighton Blvd. Bridge Stage 1: Demo existing Bridge	10	10	03-Feb-21	22-Feb-21	125
BBLVD.WB.WBS.0000	Construct I-70 WB over Brighton Blvd	57	57	03-Feb-21	13-May-21	125
BBLVD.MI.CMP.0000	I-70 WB Bridge over Brighton Blvd. Construction Complete	0	0		13-May-21	125
Substructure		22	22	24-Feb-21	02-Apr-21	133
BBLVD.WBS.SUB.0001	Construct I-70 WB Bridge over Brighton Blvd. Substructure	22	22	24-Feb-21	02-Apr-21	133
West Abutment		17	17	24-Feb-21	25-Mar-21	125
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Abut 1: Road Removal/Struct. Excavation	3	3	24-Feb-21	02-Mar-21	125
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Abut 1: Structure Ex@ Abutment	2	2	03-Mar-21	04-Mar-21	125
BBLVD.WB.PH1.S5	Brighton Blvd. Bridge - Abut 1: F/R/P Abutment	5	5	05-Mar-21	12-Mar-21	125
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Abut 1: F/R/P Backwall/Wingwalls	5	5	15-Mar-21	22-Mar-21	127
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Abut 1: Precast Conc. Wall Panel - Front Face	7	7	15-Mar-21	25-Mar-21	125
Pier 2		14	14	03-Mar-21	25-Mar-21	125
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Pier 2: Road Removal/Struct. Excavation	2	2	03-Mar-21	04-Mar-21	125
BBLVD.WB.PH1.S5	Brighton Blvd. Bridge - Pier 2: Drill Shafts	3	3	05-Mar-21	09-Mar-21	125
BBLVD.WB.PH1.S5	Brighton Blvd. Bridge - Pier 2: F/R/P Columns	4	4	10-Mar-21	16-Mar-21	125
BBLVD.WB.PH1.S5	Brighton Blvd. Bridge - Pier 2: F/R/P Pier Cap	5	5	18-Mar-21	25-Mar-21	125
East Abutment		17	17	05-Mar-21	02-Apr-21	133
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Abut 3: Road Removal/Struct. Excavation	2	2	05-Mar-21	08-Mar-21	133
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Abut 3: Structure Ex@ Abutment	3	3	09-Mar-21	12-Mar-21	133
BBLVD.WB.PH1.S5	Brighton Blvd. Bridge - Abut 3: F/R/P Abutment	5	5	15-Mar-21	22-Mar-21	133



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Abut 3: F/R/P Backwall/Wingwalls	5	5	24-Mar-21	31-Mar-21	135
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Abut 3: Precast Conc. Wall Panel - Front Face	7	7	24-Mar-21	02-Apr-21	133
Superstructure		32	32	24-Mar-21	13-May-21	125
BBLVD.WB.PH1.S5.220	Brighton Blvd. Bridge - Abut 1: Structural Backfill Behind Abutment	3	3	24-Mar-21	29-Mar-21	150
BBLVD.WBS.SUP.0001	Construct I-70 WB Bridge over Brighton Blvd. Superstructure	32	32	24-Mar-21	13-May-21	125
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge Span 1 - Set Girders & Brace	2	2	29-Mar-21	30-Mar-21	125
BBLVD.WB.PH1.S5.228	Brighton Blvd. Bridge Span 1&2 - Superstructure: Overhangs/Decking/Rebar	15	15	31-Mar-21	22-Apr-21	125
BBLVD.WB.PH1.S5.225	Brighton Blvd. Bridge - Abut 3: Structural Backfill Behind Abutment	3	3	01-Apr-21	05-Apr-21	145
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge Span 1 - Set Girders & Brace	2	2	05-Apr-21	06-Apr-21	133
BBLVD.WB.PH1.S5.234	Brighton Blvd. Bridge Span 1&2 - Superstructure: Bidwell dry run & Deck Pour	5	5	23-Apr-21	30-Apr-21	125
BBLVD.WB.PH1.S5.221	Brighton Blvd. Bridge - Abut 1: F/R/P North Approach Slab	4	4	03-May-21	07-May-21	129
BBLVD.WB.PH1.S5.226	Brighton Blvd. Bridge - Abut 3: F/R/P South Approach Slab	4	4	03-May-21	07-May-21	129
BBLVD.WB.PH1.S5.229	Brighton Blvd. Bridge Span 1&2 - Superstructure: Bridge Rail Type 7	5	5	03-May-21	10-May-21	125
BBLVD.WB.PH1.S5.235	Brighton Blvd. Bridge Span 1&2 - Superstructure: Waterproofing membrane	2	2	03-May-21	04-May-21	131
BBLVD.WB.PH1.S5.236	Brighton Blvd. Bridge Span 1&2 - Superstructure: Chain Link Fence on Bridge Rail	3	3	11-May-21	13-May-21	125
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Superstructure: Bridge Complete	0	0		13-May-21	125
Segment 2 - E. of York St. to Fillmore St - (Sta 2025+50 to Sta 2042+00)		75	75	22-Mar-21	19-Jul-21	31
York St. (Complete East Span)		75	75	22-Mar-21	19-Jul-21	31
East Half		75	75	22-Mar-21	19-Jul-21	31
CBS1182800	Begin York Street Bridge over I-70 (East Half)	0	0	22-Mar-21		31
A4730	Construct York Street Bridge over I-70 (East Half)	75	75	22-Mar-21	19-Jul-21	31
CBS1182810	York Street Bridge over I-70 (East Half) Complete	0	0		16-Jul-21	31
TRN.920	Switch Traffic to New East Half of York	1	1	19-Jul-21	19-Jul-21	31
Substructure		37	37	22-Mar-21	20-May-21	55
Abutment 3		29	29	22-Mar-21	07-May-21	63
CBS1182730	York St. Bridge - Abut 1: Road Removal/Struct. Excavation	3	3	22-Mar-21	25-Mar-21	31
A4750	York St. Bridge - Abut 1:Temp Shoring - @ North Wall Sta 2027+00 to Sta 2026+00	4	4	29-Mar-21	01-Apr-21	33
CBS1182680	York St. Bridge - Abut 1: Structure Ex @ Abutment (1st 10')	2	2	02-Apr-21	05-Apr-21	33
TRN.SCNT.545	Drill Secant Piles North Wall - York St Bridge - 2025+50 to 2026+00	8	8	06-Apr-21	16-Apr-21	33
CBS1182690	York St. Bridge - Abut 1: F/R/P Abutment	5	5	19-Apr-21	27-Apr-21	39
TRN.EX.3740	Excavate/Tiebacks to Subgrade - York St Bridge - 2027+00 to 2026+00	3	3	19-Apr-21	22-Apr-21	33
CBS1182700	York St. Bridge - Abut 1: F/R/P Backwall/Wingwalls	5	5	28-Apr-21	04-May-21	65
CBS1182720	York St. Bridge - Abut 1: Precast Conc. Wall Panel - Front Face	7	7	28-Apr-21	07-May-21	39
Pier 2		15	15	28-Apr-21	20-May-21	31
CBS1182670	York St. Bridge - Pier 2: Excavate for Pier Construction	1	1	28-Apr-21	28-Apr-21	31
CBS1182530	York St. Bridge - Pier 2: Drill Shafts	3	3	29-Apr-21	03-May-21	31
CBS1182540	York St. Bridge - Pier 2: F/R/P Columns	4	4	04-May-21	10-May-21	31
CBS1182550	York St. Bridge - Pier 2: F/R/P Pier Cap	7	7	11-May-21	20-May-21	31
Abutment 1		28	28	29-Mar-21	11-May-21	37
CBS1182640	York St. Bridge - Abut 3: Road Removal/Struct. Excavation	3	3	29-Mar-21	31-Mar-21	31
A4740	York St. Bridge - Abut 3:Temp Shoring - @ South Wall Sta 2027+00 to Sta 2026+00	4	4	01-Apr-21	06-Apr-21	31
CBS1182560	York St. Bridge - Abut 3: Structure Ex @ Abutment (1st 10')	1	1	08-Apr-21	08-Apr-21	31

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
TRN.SCNT.555	Drill Secant Piles South Wall - York St Bridge -2025+50 to 2026+00	8	8	09-Apr-21	20-Apr-21	31
CBS1182570	York St. Bridge - Abut 3: F/R/P Abutment	5	5	22-Apr-21	29-Apr-21	37
TRN.EX.3750	Excavate/Tiebacks to Subgrade - York St Bridge - 2027+00 to 2026+00	3	3	22-Apr-21	27-Apr-21	31
CBS1182580	York St. Bridge - Abut 3: F/R/P Backwall/Wingwalls	5	5	30-Apr-21	07-May-21	39
CBS1182630	York St. Bridge - Abut 3: Precast Conc. Wall Panel - Front Face	7	7	30-Apr-21	11-May-21	37
Superstructure - Spans 1 & 2		**37**	**37**	**21-May-21**	**16-Jul-21**	**31**
CBS1182660	York St. Bridge Spans 1 & 2 - Set Girders & Brace	4	4	21-May-21	26-May-21	31
CBS1182610	York St. Bridge Spans 1 & 2 - Superstructure: Overhangs/Decking/Rebar	15	15	27-May-21	17-Jun-21	31
CBS1182650	York St. Bridge Spans 1 & 2 - Superstructure: Bidwell dry run & Deck Pour	5	5	18-Jun-21	25-Jun-21	31
CBS1182590	York St. Bridge - Abut 3: Structural Backfill Behind Abutment	3	3	28-Jun-21	30-Jun-21	31
CBS1182710	York St. Bridge - Abut 1: Structural Backfill Behind Abutment	3	3	28-Jun-21	30-Jun-21	31
CBS1182760	York St. Bridge Spans 1 & 2 - Superstructure: Sidewalk	4	4	28-Jun-21	01-Jul-21	32
CBS1182600	York St. Bridge - Abut 3: F/R/P Approach Slab	10	10	01-Jul-21	16-Jul-21	31
CBS1182740	York St. Bridge - Abut 1: F/R/P Approach Slab	10	10	01-Jul-21	16-Jul-21	31
CBS1182750	York St. Bridge Spans 1 & 2 - Superstructure: Bridge Rail Type 7	5	5	02-Jul-21	09-Jul-21	32
CBS1182770	York St. Bridge Spans 1 & 2 - Superstructure: Waterproofing membrane	2	2	02-Jul-21	06-Jul-21	36
CBS1182780	York St. Bridge Spans 1 & 2 - Superstructure: Pave	2	2	07-Jul-21	08-Jul-21	35
CBS1182790	York St. Bridge Spans 1 & 2 - Superstructure: Chain Link Fence on Bridge Rail	3	3	12-Jul-21	15-Jul-21	32
CBS1182620	York St. Bridge Spans 1 & 2 - Superstructure: East Half Complete	0	0		16-Jul-21	31
Segment 3 - Fillmore St. to Dahlia St. - (Sta 2042+00 to Sta 2085+00)		**90**	**90**	**03-Feb-21**	**02-Jul-21**	**40**
Monroe St. Bridge over I-70 (Finish 1/2 S. Span)		**41**	**41**	**03-Feb-21**	**16-Apr-21**	**89**
MNR.PH2.WBS.0	Finish Monroe Street over I-70	41	41	03-Feb-21	16-Apr-21	89
MNR.MI.BGN.0001	Begin Monroe St. Bridge (Remaining Portion)	0	0	03-Feb-21		89
MNR.MI.CMP.0001	Monroe St. Bridge Complete	0	0		16-Apr-21	89
Substructure		**16**	**16**	**03-Feb-21**	**05-Mar-21**	**89**
Abutment 3		**16**	**16**	**03-Feb-21**	**05-Mar-21**	**89**
CBS1176520	Monroe St. Bridge - Abut 1: Road Removal/Struct. Excavation	3	3	03-Feb-21	05-Feb-21	89
CBS1176190	Monroe St. Bridge - Abut 1: Structure Ex@ Abutment	1	1	08-Feb-21	08-Feb-21	89
CBS1176200	Monroe St. Bridge - Abut 1: F/R/P Abutment	5	5	09-Feb-21	19-Feb-21	89
CBS1176220	Monroe St. Bridge - Abut 1: F/R/P Backwall/Wingwalls	5	5	22-Feb-21	03-Mar-21	91
CBS1176410	Monroe St. Bridge - Abut 1: Precast Conc. Wall Panel - Front Face	7	7	22-Feb-21	05-Mar-21	89
Superstructure		**27**	**27**	**04-Mar-21**	**16-Apr-21**	**89**
CBS1176240	Monroe St. Bridge - Abut 1: Structural Backfill Behind Abutment	3	3	04-Mar-21	08-Mar-21	108
CBS1176360	Monroe St. Bridge Span 1 - Set Girders & Brace	2	2	08-Mar-21	09-Mar-21	89
CBS1176370	Monroe St. Bridge Span 1 - Superstructure: Overhangs/Decking/Rebar	10	10	10-Mar-21	29-Mar-21	89
CBS1176430	Monroe St. Bridge Span 1 - Superstructure: Bidwell dry run & Deck Pour	3	3	30-Mar-21	01-Apr-21	89
CBS1176250	Monroe St. Bridge - Abut 1: F/R/P Approach Slab	5	5	02-Apr-21	09-Apr-21	94
CBS1176440	Monroe St. Bridge Span 1 - Superstructure: Sidewalk	4	4	02-Apr-21	08-Apr-21	89
CBS1176380	Monroe St. Bridge Span 1 - Superstructure: Bridge Rail Type 7	3	3	09-Apr-21	13-Apr-21	89
CBS1176450	Monroe St. Bridge Span 1 - Superstructure: Waterproofing membrane	2	2	09-Apr-21	12-Apr-21	91
CBS1176460	Monroe St. Bridge Span 1 - Superstructure: Pave	2	2	13-Apr-21	14-Apr-21	91
CBS1176480	Monroe St. Bridge Span 1 - Superstructure: Chain Link Fence on Bridge Rail	3	3	14-Apr-21	16-Apr-21	89
CBS1176390	Monroe St. Bridge - Superstructure: Bridge Complete	0	0		16-Apr-21	89
Cook St. Bridge over I-70 (Finish 1/2 S. Span)		**41**	**41**	**03-May-21**	**02-Jul-21**	**40**

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
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Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
COOK.MI.BGN.0000	Begin Cook St. Bridge (Remaining Portion)	0	0	03-May-21		40
COOK.PH2.WBS.0001	Finish Cook Street over I-70 - Phase 2	41	41	03-May-21	02-Jul-21	40
COOK.MI.CMP.0000	Cook St. Bridge Complete	0	0		02-Jul-21	40
Substructure		16	16	03-May-21	26-May-21	40
Abutment 3		16	16	03-May-21	26-May-21	40
CBS1182370	Cook St. Bridge - Abut 3: Road Removal/Struct. Excavation	3	3	03-May-21	06-May-21	40
CBS1182210	Cook St. Bridge - Abut 3: Structure Ex @ Abutment	1	1	07-May-21	07-May-21	40
CBS1182220	Cook St. Bridge - Abut 3: F/R/P Abutment	5	5	10-May-21	14-May-21	40
CBS1182230	Cook St. Bridge - Abut 3: F/R/P Backwall/Wingwalls	5	5	17-May-21	24-May-21	42
CBS1182300	Cook St. Bridge - Abut 3: Precast Conc. Wall Panel - Front Face	7	7	17-May-21	26-May-21	40
Superstructure		27	27	25-May-21	02-Jul-21	40
CBS1182240	Cook St. Bridge - Abut 3: Structural Backfill Behind Abutment	3	3	25-May-21	27-May-21	59
CBS1182260	Cook St. Bridge Span 2 - Set Girders & Brace	2	2	27-May-21	28-May-21	40
CBS1182270	Cook St. Bridge Span 2 - Superstructure: Overhangs/Decking/Rebar	10	10	01-Jun-21	14-Jun-21	40
CBS1182310	Cook St. Bridge Span 2 - Superstructure: Bidwell dry run & Deck Pour	3	3	15-Jun-21	17-Jun-21	40
CBS1182250	Cook St. Bridge - Abut 3: F/R/P Approach Slab	5	5	18-Jun-21	25-Jun-21	45
CBS1182320	Cook St. Bridge Span 2 - Superstructure: Sidewalk	4	4	18-Jun-21	24-Jun-21	40
CBS1182280	Cook St. Bridge Span 2 - Superstructure: Bridge Rail Type 7	3	3	25-Jun-21	29-Jun-21	40
CBS1182330	Cook St. Bridge Span 2 - Superstructure: Waterproofing membrane	2	2	25-Jun-21	28-Jun-21	42
CBS1182340	Cook St. Bridge Span 2 - Superstructure: Pave	2	2	29-Jun-21	30-Jun-21	42
CBS1182350	Cook St. Bridge Span 2 - Superstructure: Chain Link Fence on Bridge Rail	3	3	30-Jun-21	02-Jul-21	40
CBS1182290	Cook St. Bridge - Superstructure: Bridge Complete	0	0		02-Jul-21	40
Stage 3		63	63	02-Sep-21	27-Dec-21	52
Segment 1 - Brighton Blvd to York St. - (Sta 2000+00 to Sta 2025+50)		63	63	02-Sep-21	27-Dec-21	52
Construct - I-70 EB Bridge Over Brighton Blvd. (Complete)		63	63	02-Sep-21	27-Dec-21	52
BBLVD.10	Start Construciton - I-70 EB Bridge over Brighton Blvd.	0	0	02-Sep-21		52
CBS1184775	Brighton Blvd. Bridge Stage 1: Demo existing EB Bridge	10	10	02-Sep-21	17-Sep-21	52
BBLVD.WBS.0001	Construct I-70 EB over Brighton Blvd	63	63	02-Sep-21	27-Dec-21	52
BLVD.10019	I-70 EB Bridge over Brighton Blvd. Construction Complete	0	0		27-Dec-21	52
Substructure		23	23	20-Sep-21	27-Oct-21	62
BBLVD.WBS.SUB.10	Construct I-70 EB Bridge over Brighton Blvd. Substructure	23	23	20-Sep-21	27-Oct-21	62
West Abutment		20	20	20-Sep-21	22-Oct-21	52
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Abut 1: Road Removal/Struct. Excavation	3	3	20-Sep-21	23-Sep-21	52
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Abut 1: Structure Ex @ Abutment	2	2	24-Sep-21	28-Sep-21	52
BBLVD.WB.PH1.S5	Brighton Blvd. Bridge - Abut 1: Drive Piles	3	3	29-Sep-21	01-Oct-21	52
BBLVD.WB.PH1.S5	Brighton Blvd. Bridge - Abut 1: F/R/P Abutment	5	5	04-Oct-21	11-Oct-21	52
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Abut 1: F/R/P Backwall/Wingwalls	5	5	12-Oct-21	20-Oct-21	54
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Abut 1: Precast Conc. Wall Panel - Front Face	7	7	12-Oct-21	22-Oct-21	52
Pier 2		14	14	24-Sep-21	18-Oct-21	55
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Pier 2: Road Removal/Struct. Excavation	2	2	24-Sep-21	28-Sep-21	55
BBLVD.WB.PH1.S5	Brighton Blvd. Bridge - Pier 2: Drill Shafts	3	3	29-Sep-21	01-Oct-21	55
BBLVD.WB.PH1.S5	Brighton Blvd. Bridge - Pier 2: F/R/P Columns	4	4	04-Oct-21	08-Oct-21	55
BBLVD.WB.PH1.S5	Brighton Blvd. Bridge - Pier 2: F/R/P Pier Cap	5	5	11-Oct-21	18-Oct-21	55
East Abutment		20	20	24-Sep-21	27-Oct-21	62
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Abut 3: Road Removal/Struct. Excavation	2	2	24-Sep-21	28-Sep-21	62
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Abut 3: Structure Ex @ Abutment	3	3	29-Sep-21	01-Oct-21	62
BBLVD.WB.PH1.S5	Brighton Blvd. Bridge - Abut 3: Drive Piles	3	3	04-Oct-21	06-Oct-21	62

Remaining Level of Effort
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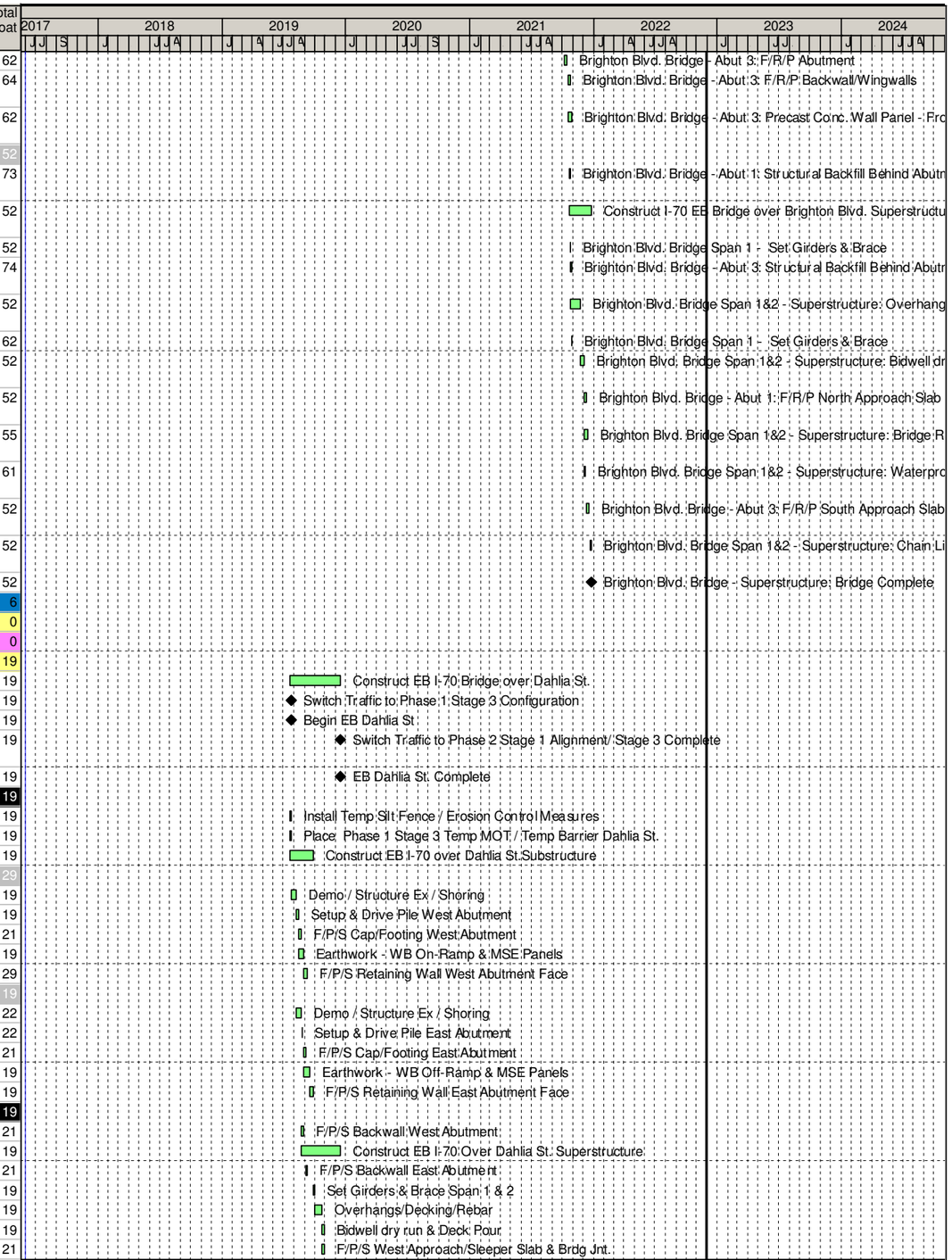
Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
BBLVD.WB.PH1.S5	Brighton Blvd. Bridge - Abut 3: F/R/P Abutment	5	5	08-Oct-21	15-Oct-21	62
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Abut 3: F/R/P Backwall/Wingwalls	5	5	18-Oct-21	25-Oct-21	64
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Abut 3: Precast Conc. Wall Panel - Front Face	7	7	18-Oct-21	27-Oct-21	62
Superstructure		35	35	21-Oct-21	27-Dec-21	52
BBLVD.WB.PH1.S5.246	Brighton Blvd. Bridge - Abut 1: Structural Backfill Behind Abutment	3	3	21-Oct-21	25-Oct-21	73
BBLVD.WBS.SUP.10	Construct I-70 EB Bridge over Brighton Blvd. Superstructure	35	35	21-Oct-21	27-Dec-21	52
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge Span 1 - Set Girders & Brace	2	2	25-Oct-21	26-Oct-21	52
BBLVD.WB.PH1.S5.251	Brighton Blvd. Bridge - Abut 3: Structural Backfill Behind Abutment	3	3	26-Oct-21	28-Oct-21	74
BBLVD.WB.PH1.S5.254	Brighton Blvd. Bridge Span 1&2 - Superstructure: Overhangs/Decking/Rebar	15	15	27-Oct-21	22-Nov-21	52
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge Span 1 - Set Girders & Brace	2	2	28-Oct-21	29-Oct-21	62
BBLVD.WB.PH1.S5.260	Brighton Blvd. Bridge Span 1&2 - Superstructure: Bidwell dry run & Deck Pour	5	5	23-Nov-21	02-Dec-21	52
BBLVD.WB.PH1.S5.247	Brighton Blvd. Bridge - Abut 1: F/R/P North Approach Slab	4	4	03-Dec-21	10-Dec-21	52
BBLVD.WB.PH1.S5.255	Brighton Blvd. Bridge Span 1&2 - Superstructure: Bridge Rail Type 7	5	5	03-Dec-21	13-Dec-21	55
BBLVD.WB.PH1.S5.261	Brighton Blvd. Bridge Span 1&2 - Superstructure: Waterproofing membrane	2	2	03-Dec-21	07-Dec-21	61
BBLVD.WB.PH1.S5.252	Brighton Blvd. Bridge - Abut 3: F/R/P South Approach Slab	4	4	13-Dec-21	20-Dec-21	52
BBLVD.WB.PH1.S5.262	Brighton Blvd. Bridge Span 1&2 - Superstructure: Chain Link Fence on Bridge Rail	3	3	22-Dec-21	27-Dec-21	52
BBLVD.WB.PH1.S5.2	Brighton Blvd. Bridge - Superstructure: Bridge Complete	0	0		27-Dec-21	52
Area 2 - Dahlia St to Sand Creek Bridge - Sta 2085+00 to 2192+37.89 (2.01 miles)		313	313	22-Jul-19	15-Jan-21	6
Phase 1		106	106	22-Jul-19	24-Jan-20	0
Stage 3		106	106	22-Jul-19	24-Jan-20	0
Construct - I-70 EB Bridge Over Dahlia Street (South Half)-1		87	87	22-Jul-19	16-Dec-19	19
DAH.0000	Construct EB I-70 Bridge over Dahlia St.	87	87	22-Jul-19	16-Dec-19	19
DAH.1940	Switch Traffic to Phase 1 Stage 3 Configuration	0	0		25-Jul-19	19
STG3.20	Begin EB Dahlia St	0	0	26-Jul-19		19
DAH.1935	Switch Traffic to Phase 2 Stage 1 Alignment/ Stage 3 Complete	0	0		16-Dec-19	19
MI.PH1.STG3.10089	EB Dahlia St. Complete	0	0		16-Dec-19	19
Substructure		43	43	22-Jul-19	26-Sep-19	19
DAH.1795	Install Temp Silt Fence / Erosion Control Measures	3	3	22-Jul-19	25-Jul-19	19
DAH.1800	Place Phase 1 Stage 3 Temp MOT / Temp Barrier Dahlia St.	3	3	22-Jul-19	25-Jul-19	19
DAH.0001	Construct EB I-70 over Dahlia St.Substructure	43	43	22-Jul-19	26-Sep-19	19
West Abutment		30	30	26-Jul-19	09-Sep-19	29
DAH.1805	Demo / Structure Ex / Shoring	10	10	26-Jul-19	08-Aug-19	19
DAH.1810	Setup & Drive Pile West Abutment	4	4	09-Aug-19	15-Aug-19	19
DAH.1820	F/P/S Cap/Footing West Abutment	4	4	16-Aug-19	21-Aug-19	21
DAH.1825	Earthwork - WB On-Ramp & MSE Panels	10	10	16-Aug-19	29-Aug-19	19
DAH.2018	F/P/S Retaining Wall West Abutment Face	6	6	30-Aug-19	09-Sep-19	29
East Abutment		30	30	09-Aug-19	26-Sep-19	19
DAH.1845	Demo / Structure Ex / Shoring	10	10	09-Aug-19	23-Aug-19	22
DAH.1855	Setup & Drive Pile East Abutment	2	2	26-Aug-19	27-Aug-19	22
DAH.1860	F/P/S Cap/Footing East Abutment	4	4	29-Aug-19	04-Sep-19	21
DAH.1865	Earthwork - WB Off-Ramp & MSE Panels	10	10	30-Aug-19	16-Sep-19	19
DAH.2016	F/P/S Retaining Wall East Abutment Face	6	6	17-Sep-19	26-Sep-19	19
Superstructure		66	66	22-Aug-19	16-Dec-19	19
DAH.1830	F/P/S Backwall West Abutment	5	5	22-Aug-19	28-Aug-19	21
DAH.0002	Construct EB I-70 Over Dahlia St. Superstructure	66	66	22-Aug-19	16-Dec-19	19
DAH.1870	F/P/S Backwall East Abutment	5	5	05-Sep-19	11-Sep-19	21
DAH.1840	Set Girders & Brace Span 1 & 2	2	2	27-Sep-19	30-Sep-19	19
DAH.1875	Overhangs/Decking/Rebar	15	15	01-Oct-19	24-Oct-19	19
DAH.1885	Bidwell dry run & Deck Pour	5	5	25-Oct-19	31-Oct-19	19
DAH.1900	F/P/S West Approach/Sleeper Slab & Brdg Jnt.	5	5	25-Oct-19	31-Oct-19	21



Remaining Level of Effort
Actual Level of Effort
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Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
DAH.1905	F/P/S East Approach/Sleeper Slab & Brdg Jnt.	5	5	01-Nov-19	12-Nov-19	21
DAH.2005	F/P/S Sidewalk	4	4	01-Nov-19	08-Nov-19	19
DAH.1890	Waterproof Deck	3	3	12-Nov-19	15-Nov-19	19
DAH.1880	F/P/S Type 7 Bridge Rail	4	4	18-Nov-19	22-Nov-19	19
DAH.1895	Pave Deck & Approaches	3	3	25-Nov-19	27-Nov-19	19
DAH.1910	Signing & Striping	2	2	02-Dec-19	03-Dec-19	23
DAH.1925	Sand Blast & Paint Bridge/MSE Walls	4	4	02-Dec-19	06-Dec-19	19
DAH.1915	Seeding & Mulching as Necessary	2	2	10-Dec-19	12-Dec-19	19
DAH.1930	Remove MOT Phase 1 Stage 3 Devices / Shitf Temp Barrier	2	2	13-Dec-19	16-Dec-19	19
MI.PH1.STG2.10039	EB I-70 Over Dahlia St. Complete	0	0		16-Dec-19	19
Construct - I-70 WB Bridge Over Holly Street (North Half)-1		72	72	22-Jul-19	15-Nov-19	34
HLY.12.00	Construct WB I-70 Over Holly St. - CD's	72	72	22-Jul-19	15-Nov-19	34
HLY.12.40	Switch Traffic to Phase 1 Stage 3 Configuration	0	0		25-Jul-19	0
STG3.30	Begin WB Holly St	0	0	26-Jul-19		34
HLY.12.35	Switch Traffic to Phase 2 Stage 1 Alignment/ Stage 3 Complete	0	0		15-Nov-19	34
MI.PH1.STG3.10099	WB Holly St. Complete	0	0		15-Nov-19	34
Substructure		37	37	22-Jul-19	16-Sep-19	34
HLY.12.18	Place Phase 1 Stage 3 Temp MOT / Temp Barrier	3	3	22-Jul-19	25-Jul-19	0
HLY.2150	Install Temp Silt Fence / Erosion Control Measures	3	3	22-Jul-19	25-Jul-19	0
HLY.SUB.12.00	Construct Substructure WB I-70 Over Holly St. - CD's	37	37	22-Jul-19	16-Sep-19	34
West Abutment		25	25	26-Jul-19	30-Aug-19	43
HLY.SUB.12.05	Demo / Structure Ex / Shoring / Shoring	4	4	26-Jul-19	31-Jul-19	34
HLY.SUB.12.10	Setup & Drive Pile West Abutment	4	4	01-Aug-19	06-Aug-19	34
HLY.SUB.12.20	F/P/S Cap/Footing West Abutment	6	6	07-Aug-19	15-Aug-19	34
HLY.SUB.12.25	Earthwork - WB On-Ramp & MSE Panels	4	4	08-Aug-19	13-Aug-19	44
HLY.SUB.12.30	F/P/S Backwall West Abutment	5	5	16-Aug-19	22-Aug-19	34
HLY.SUB.12.18	F/P/S Retaining Wall West Abutment Face	6	6	23-Aug-19	30-Aug-19	43
East Abutment		30	30	01-Aug-19	16-Sep-19	34
HLY.SUB.12.45	Demo / Structure Ex / Shoring	2	2	01-Aug-19	02-Aug-19	45
HLY.SUB.12.55	Setup & Drive Pile East Abutment	2	2	05-Aug-19	06-Aug-19	45
HLY.SUB.12.65	Earthwork - WB Off-Ramp & MSE Panels	10	10	07-Aug-19	21-Aug-19	44
HLY.SUB.12.60	F/P/S Cap/Footing East Abutment	4	4	23-Aug-19	28-Aug-19	34
HLY.SUB.12.70	F/P/S Backwall East Abutment	5	5	29-Aug-19	05-Sep-19	34
HLY.SUB.12.16	F/P/S Retaining Wall East Abutment Face	6	6	06-Sep-19	16-Sep-19	34
Superstructure		35	35	17-Sep-19	15-Nov-19	34
HLY.SUP.12.40	Set Girders & Brace Span 1 & 2	2	2	17-Sep-19	19-Sep-19	34
HLY.SUP.12.00	Construct Superstructure WB I-70 Over Holly St.	35	35	17-Sep-19	15-Nov-19	34
HLY.SUP.12.75	F/P/S Bridge Deck & Overhang	8	8	20-Sep-19	02-Oct-19	34
HLY.SUP.12.85	F/P/S West Approach/Sleeper Slab & Brdg Jnt.	5	5	03-Oct-19	09-Oct-19	34
HLY.SUP.12.90	Waterproof Deck	3	3	03-Oct-19	07-Oct-19	41
HLY.SUP.12.05	F/P/S East Approach/Sleeper Slab & Brdg Jnt.	5	5	11-Oct-19	18-Oct-19	34
HLY.SUP.12.80	F/P/S Type 7 Bridge Rail	4	4	21-Oct-19	25-Oct-19	34
HLY.SUP.12.95	Pave Deck & Approaches	3	3	28-Oct-19	30-Oct-19	34
HLY.SUP.12.10	Signing & Striping	2	2	31-Oct-19	01-Nov-19	38
HLY.SUP.12.25	Sand Blast & Paint Bridge/MSE Walls	4	4	31-Oct-19	06-Nov-19	34
HLY.SUP.12.15	Seeding & Mulching as Necessary	2	2	08-Nov-19	12-Nov-19	34
HLY.SUP.12.30	Remove MOT Phase 1 Devices / Temp Barrier	2	2	14-Nov-19	15-Nov-19	34
MI.PH1.STG2.10029	WB I-70 Over Holly St. Complete	0	0		15-Nov-19	34
Construct - I-70 EB & WB Bridges Over Monaco Street (Outside)-1		106	106	22-Jul-19	24-Jan-20	0
MON.SUB	Construct Monaco Pkwy.	106	106	22-Jul-19	24-Jan-20	0
MON.1940	Switch Traffic to Phase 1 Configuration	0	0		25-Jul-19	0
STG3.40	Begin Monoco St	0	0	26-Jul-19		0
MI.PH1.STG3.10109	EB & WB I-70 over Monoco St. Complete (outside only)	0	0		24-Jan-20	0
MON.1935	Switch Traffic to Phase 1 Stage 3 Alignment/ Stage 3 Complete	0	0		24-Jan-20	0
Substructure		58	58	22-Jul-19	21-Oct-19	0
MON.1800	Place Phase 1 Temp MOT / Temp Barrier	3	3	22-Jul-19	25-Jul-19	0
MON.1920	Silt Fence/Erosion Control Devices	3	3	22-Jul-19	25-Jul-19	0
MON.SUP2	Construct Substructure I-70 WB Bridge over Monaco Pkwy.	58	58	22-Jul-19	21-Oct-19	0

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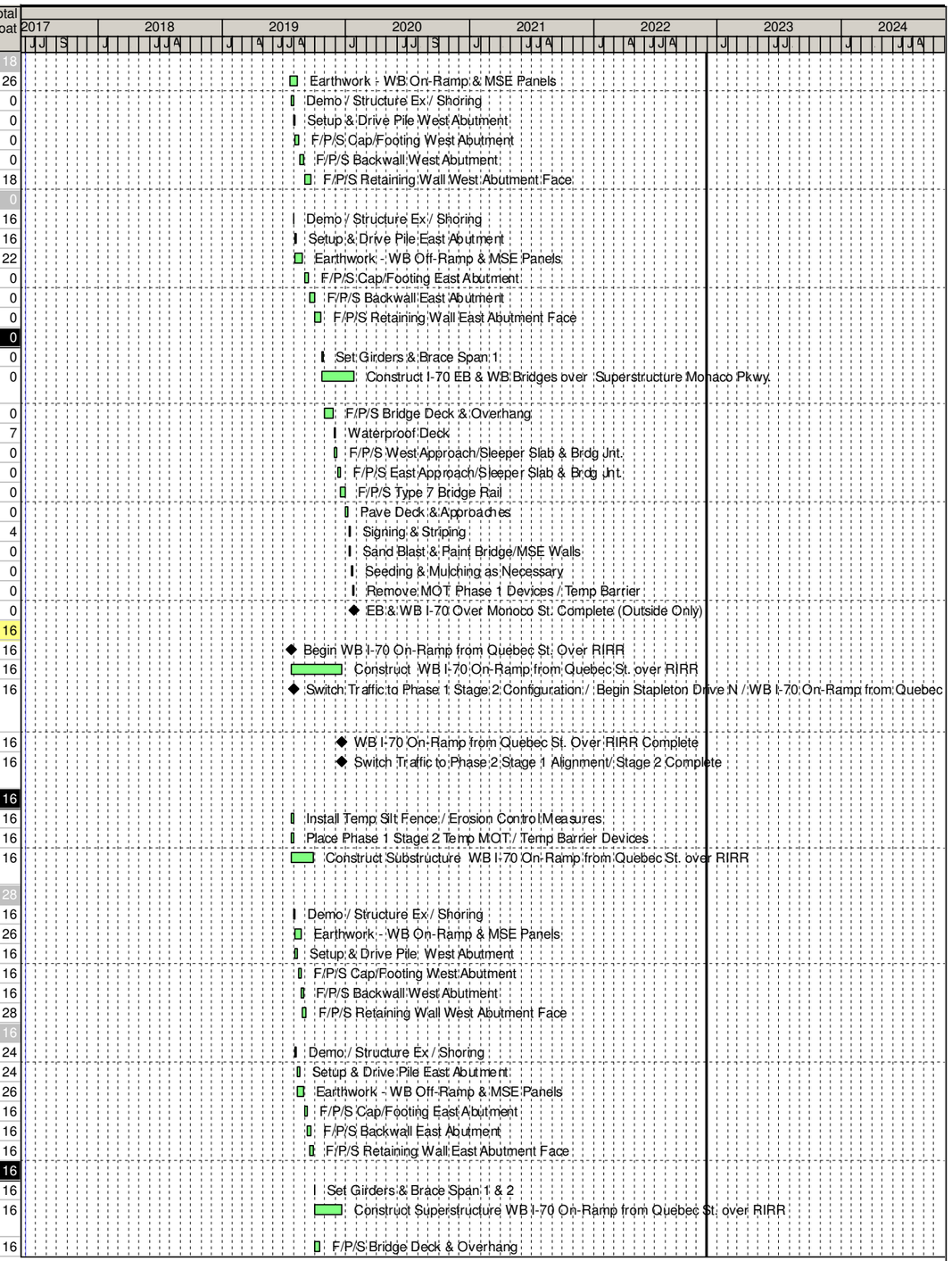
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
West Abutment		40	40	22-Jul-19	20-Sep-19	18
MON.1825	Earthwork - WB On-Ramp & MSE Panels	15	15	22-Jul-19	12-Aug-19	26
MON.1805	Demo / Structure Ex / Shoring	3	3	26-Jul-19	30-Jul-19	0
MON.1810	Setup & Drive Pile West Abutment	4	4	31-Jul-19	05-Aug-19	0
MON.1820	F/P/S Cap/Footing West Abutment	8	8	06-Aug-19	16-Aug-19	0
MON.1830	F/P/S Backwall West Abutment	10	10	19-Aug-19	30-Aug-19	0
MON.2018	F/P/S Retaining Wall West Abutment Face	12	12	03-Sep-19	20-Sep-19	18
East Abutment		52	52	31-Jul-19	21-Oct-19	0
MON.1845	Demo / Structure Ex / Shoring	3	3	31-Jul-19	02-Aug-19	16
MON.1855	Setup & Drive Pile East Abutment	3	3	05-Aug-19	07-Aug-19	16
MON.1865	Earthwork - WB Off-Ramp & MSE Panels	15	15	05-Aug-19	26-Aug-19	22
MON.1860	F/P/S Cap/Footing East Abutment	8	8	03-Sep-19	13-Sep-19	0
MON.1870	F/P/S Backwall East Abutment	10	10	16-Sep-19	01-Oct-19	0
MON.2016	F/P/S Retaining Wall East Abutment Face	12	12	02-Oct-19	21-Oct-19	0
Superstructure		48	48	23-Oct-19	24-Jan-20	0
MON.1840	Set Girders & Brace Span 1	4	4	23-Oct-19	28-Oct-19	0
MON.0000	Construct I-70 EB & WB Bridges over Superstructure Monaco Pkwy.	48	48	23-Oct-19	24-Jan-20	0
MON.1875	F/P/S Bridge Deck & Overhang	16	16	29-Oct-19	26-Nov-19	0
MON.1890	Waterproof Deck	3	3	27-Nov-19	03-Dec-19	7
MON.1900	F/P/S West Approach/Sleeper Slab & Brdg Jnt.	5	5	27-Nov-19	06-Dec-19	0
MON.1905	F/P/S East Approach/Sleeper Slab & Brdg Jnt.	5	5	10-Dec-19	17-Dec-19	0
MON.1880	F/P/S Type 7 Bridge Rail	6	6	18-Dec-19	31-Dec-19	0
MON.1895	Pave Deck & Approaches	4	4	02-Jan-20	08-Jan-20	0
MON.1910	Signing & Striping	2	2	10-Jan-20	13-Jan-20	4
MON.1925	Sand Blast & Paint Bridge/MSE Walls	4	4	10-Jan-20	16-Jan-20	0
MON.1915	Seeding & Mulching as Necessary	2	2	17-Jan-20	20-Jan-20	0
MON.1930	Remove MOT Phase 1 Devices / Temp Barrier	2	2	22-Jan-20	24-Jan-20	0
MI.PH1.STG2.10069	EB & WB I-70 Over Monoco St. Complete (Outside Only)	0	0		24-Jan-20	0
Construct - WB I-70 / Stapleton Drive N. over RIRR-1		87	87	26-Jul-19	19-Dec-19	16
STG3.100	Begin WB I-70 On-Ramp from Quebec St. Over RIRR	0	0	26-Jul-19		16
RIRR.SUB2	Construct WB I-70 On-Ramp from Quebec St. over RIRR	87	87	26-Jul-19	19-Dec-19	16
RIRR.3370	Switch Traffic to Phase 1 Stage 2 Configuration / Begin Stapleton Drive N / WB I-70 On-Ramp from Quebec St. over RIRR	0	0	31-Jul-19		16
MI.PH1.STG3.10169	WB I-70 On-Ramp from Quebec St. Over RIRR Complete	0	0		19-Dec-19	16
RIRR.2066	Switch Traffic to Phase 2 Stage 1 Alignment/ Stage 2 Complete	0	0		19-Dec-19	16
Substructure		41	41	26-Jul-19	27-Sep-19	16
RIRR.2015	Install Temp Silt Fence / Erosion Control Measures	3	3	26-Jul-19	30-Jul-19	16
RIRR.2020	Place Phase 1 Stage 2 Temp MOT / Temp Barrier Devices	3	3	26-Jul-19	30-Jul-19	16
QUE3SUP6	Construct Substructure WB I-70 On-Ramp from Quebec St. over RIRR	41	41	26-Jul-19	27-Sep-19	16
West Abutment		26	26	31-Jul-19	06-Sep-19	28
QUE.2022	Demo / Structure Ex / Shoring	4	4	31-Jul-19	05-Aug-19	16
QUE.2028	Earthwork - WB On-Ramp & MSE Panels	12	12	05-Aug-19	21-Aug-19	26
QUE.2024	Setup & Drive Pile West Abutment	6	6	06-Aug-19	13-Aug-19	16
QUE.2026	F/P/S Cap/Footing West Abutment	6	6	15-Aug-19	22-Aug-19	16
QUE.2030	F/P/S Backwall West Abutment	6	6	23-Aug-19	30-Aug-19	16
QUE.2080	F/P/S Retaining Wall West Abutment Face	8	8	27-Aug-19	06-Sep-19	28
East Abutment		34	34	06-Aug-19	27-Sep-19	16
QUE.2034	Demo / Structure Ex / Shoring	4	4	06-Aug-19	09-Aug-19	24
QUE.2036	Setup & Drive Pile East Abutment	6	6	12-Aug-19	20-Aug-19	24
QUE.2040	Earthwork - WB Off-Ramp & MSE Panels	12	12	12-Aug-19	28-Aug-19	26
QUE.2038	F/P/S Cap/Footing East Abutment	6	6	03-Sep-19	10-Sep-19	16
QUE.2042	F/P/S Backwall East Abutment	6	6	11-Sep-19	20-Sep-19	16
QUE.2078	F/P/S Retaining Wall East Abutment Face	8	8	16-Sep-19	27-Sep-19	16
Superstructure		46	46	30-Sep-19	19-Dec-19	16
QUE.2032	Set Girders & Brace Span 1 & 2	2	2	30-Sep-19	01-Oct-19	16
QUE.SUP4	Construct Superstructure WB I-70 On-Ramp from Quebec St. over RIRR	46	46	30-Sep-19	19-Dec-19	16
QUE.2044	F/P/S Bridge Deck & Overhang	10	10	02-Oct-19	17-Oct-19	16



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
QUE.2048	Waterproof Deck	4	4	18-Oct-19	24-Oct-19	28
QUE.2052	F/P/S West Approach/Sleeper Slab & Brdg Jnt.	8	8	18-Oct-19	30-Oct-19	16
QUE.2054	F/P/S East Approach/Sleeper Slab & Brdg Jnt.	8	8	31-Oct-19	15-Nov-19	16
QUE.2046	F/P/S Type 7 Bridge Rail	4	4	18-Nov-19	22-Nov-19	16
QUE.2050	Pave Deck & Approaches	4	4	25-Nov-19	02-Dec-19	16
QUE.2056	Signing & Striping	2	2	03-Dec-19	04-Dec-19	22
QUE.2062	Sand Blast & Paint Bridge	6	6	03-Dec-19	13-Dec-19	16
QUE.2058	Seeding & Mulching as Necessary	3	3	13-Dec-19	17-Dec-19	16
QUE.2064	Remove Phase 2 MOT Devices / Temp Barrier	2	2	18-Dec-19	19-Dec-19	16
MI.PH1.STG2.10019	WB I-70 On-Ramp from Quebec St. over RIRR Complete	0	0		19-Dec-19	16
Phase 2		96	96	28-Jan-20	07-Jul-20	14
Stage 1		96	96	28-Jan-20	07-Jul-20	14
Construct - I-70 WB Bridge Over Dahlia Street (Complete North Portion)		96	96	28-Jan-20	07-Jul-20	14
DAH.2060	Install Temp Silt Fence / Erosion Control Measures	5	5	28-Jan-20	03-Feb-20	14
DAH.00002	Construct WB I-70 Bridge over Dahlia St.	96	96	28-Jan-20	07-Jul-20	14
DAH.2020	Place Phase 2 Stage 1 Temp MOT / Barrier Devices	3	3	30-Jan-20	03-Feb-20	14
DAH.2150	Switch Traffic to Phase 2 Stage 1 Configuration	0	0		03-Feb-20	14
STG3.80	Begin WB Dahlia St	0	0	05-Feb-20		14
DAH.2066	Switch Traffic to Phase 3 Stage 1 Alignment / Stage 1 Complete	0	0		07-Jul-20	14
MI.PH1.STG3.10149	WB Dahlia St. Complete	0	0		07-Jul-20	14
Substructure		44	44	05-Feb-20	23-Apr-20	14
DAH.00012	Construct WB I-70 Bridge Substructure over Dahlia St.	44	44	05-Feb-20	23-Apr-20	14
West Abutment		32	32	05-Feb-20	02-Apr-20	26
DAH.2022	Demo / Structure Ex / Shoring	10	10	05-Feb-20	25-Feb-20	14
DAH.2028	Earthwork - WB On-Ramp & MSE Panels	12	12	25-Feb-20	16-Mar-20	22
DAH.2024	Setup & Drive Pile West Abutment	6	6	27-Feb-20	06-Mar-20	14
DAH.2026	F/P/S Cap/Footing West Abutment	6	6	09-Mar-20	17-Mar-20	14
DAH.2080	F/P/S Retaining Wall West Abutment Face	10	10	19-Mar-20	02-Apr-20	26
East Abutment		34	34	27-Feb-20	23-Apr-20	14
DAH.2034	Demo / Structure Ex / Shoring	10	10	27-Feb-20	13-Mar-20	16
DAH.2036	Setup & Drive Pile East Abutment	6	6	16-Mar-20	25-Mar-20	16
DAH.2040	Earthwork - WB Off-Ramp & MSE Panels	12	12	16-Mar-20	02-Apr-20	16
DAH.2038	F/P/S Cap/Footing East Abutment	6	6	30-Mar-20	06-Apr-20	14
DAH.2078	F/P/S Retaining Wall East Abutment Face	10	10	07-Apr-20	23-Apr-20	14
Superstructure		69	69	19-Mar-20	07-Jul-20	14
DAH.2030	F/P/S Backwall West Abutment	6	6	19-Mar-20	27-Mar-20	14
DAH.00022	Construct WB I-70 Bridge Superstructure over Dahlia St.	69	69	19-Mar-20	07-Jul-20	14
DAH.2042	F/P/S Backwall East Abutment	6	6	07-Apr-20	15-Apr-20	14
DAH.2032	Set Girders & Brace Span 1 & 2	2	2	24-Apr-20	27-Apr-20	14
DAH.2044	Overhangs/Decking/Rebar	15	15	28-Apr-20	21-May-20	14
DAH.2048	Waterproof Deck	4	4	22-May-20	28-May-20	26
DAH.2052	F/P/S West Approach/Sleeper Slab & Brdg Jnt.	8	8	22-May-20	03-Jun-20	14
DAH.2170	Bidwell dry run & Deck Pour	5	5	22-May-20	29-May-20	17
DAH.2180	F/P/S Sidewalk	4	4	01-Jun-20	04-Jun-20	17
DAH.2054	F/P/S East Approach/Sleeper Slab & Brdg Jnt.	8	8	04-Jun-20	16-Jun-20	14
DAH.2046	F/P/S Type 7 Bridge Rail	4	4	05-Jun-20	11-Jun-20	17
DAH.2050	Pave Deck & Approaches	4	4	17-Jun-20	22-Jun-20	14
DAH.2056	Signing & Striping	2	2	23-Jun-20	24-Jun-20	20
DAH.2062	Sand Blast & Paint Bridge/MSE Walls	6	6	23-Jun-20	30-Jun-20	14
DAH.2058	Seeding & Mulching as Necessary	3	3	30-Jun-20	02-Jul-20	14
DAH.2064	Remove Stage 4 MOT Devices / Temp Barrier	2	2	06-Jul-20	07-Jul-20	14
MI.PH1.STG4.9999	WB I-70 Over Dahlia St. Complete	0	0		07-Jul-20	14
Construct - I-70 EB Bridge Over Holly Street (South Half)		70	70	28-Jan-20	28-May-20	40
HLY.21.22	Install Temp Silt Fence / Erosion Control Measures	5	5	28-Jan-20	03-Feb-20	40
HLY.21.00	Construct I-70 EB Bridge over Holly St.	70	70	28-Jan-20	28-May-20	40
HLY.21.82	Place Phase 1 Stage 4 Temp MOT / Barrier Devices	3	3	30-Jan-20	03-Feb-20	40
HLY.21.70	Switch Traffic to Phase 1 Stage 4 Configuration	0	0		03-Feb-20	40
STG3.90	Begin EB Holly St	0	0	05-Feb-20		40
HLY.21.28	Switch Traffic to Final Alignment Stage 4 Complete	0	0		28-May-20	40
HLY.21.92	Holly Street Intersection Open	0	0		28-May-20	40

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

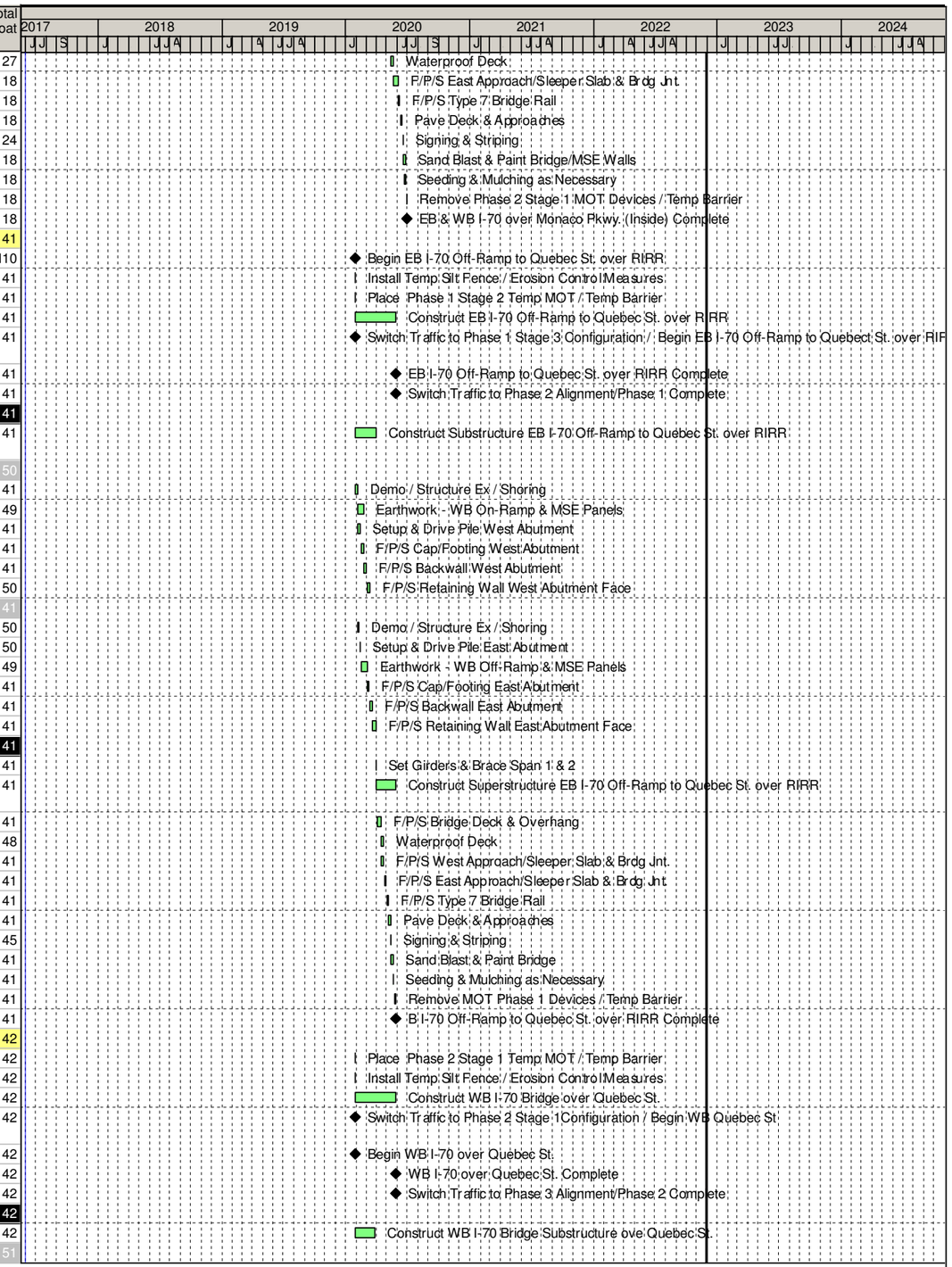
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
MI.PH1.STG3.10159	EB Holly St. Complete	0	0		28-May-20	40
Substructure		28	28	05-Feb-20	27-Mar-20	40
HLY.SUB.31.00	Construct I-70 EB Bridge Substructure over Holly St.	28	28	05-Feb-20	27-Mar-20	40
West Abutment		19	19	05-Feb-20	11-Mar-20	49
HLY.SUB.21.84	Demo / Structure Ex / Shoring	3	3	05-Feb-20	10-Feb-20	40
HLY.SUB.21.90	Earthwork - WB On-Ramp & MSE Panels	10	10	10-Feb-20	28-Feb-20	45
HLY.SUB.21.86	Setup & Drive Pile West Abutment	4	4	11-Feb-20	19-Feb-20	40
HLY.SUB.21.88	F/P/S Cap/Footing West Abutment	4	4	20-Feb-20	27-Feb-20	40
HLY.SUB.21.92	F/P/S Backwall West Abutment	5	5	28-Feb-20	06-Mar-20	40
HLY.SUB.21.40	F/P/S Retaining Wall West Abutment Face	6	6	03-Mar-20	11-Mar-20	49
East Abutment		25	25	11-Feb-20	27-Mar-20	40
HLY.SUB.21.96	Demo / Structure Ex / Shoring	3	3	11-Feb-20	17-Feb-20	48
HLY.SUB.21.98	Setup & Drive Pile East Abutment	2	2	19-Feb-20	20-Feb-20	48
HLY.SUB.21.02	Earthwork - WB Off-Ramp & MSE Panels	10	10	20-Feb-20	09-Mar-20	45
HLY.SUB.21.06	F/P/S Cap/Footing East Abutment	4	4	09-Mar-20	13-Mar-20	40
HLY.SUB.21.14	F/P/S Backwall East Abutment	5	5	16-Mar-20	23-Mar-20	40
HLY.SUB.21.38	F/P/S Retaining Wall East Abutment Face	6	6	19-Mar-20	27-Mar-20	40
Superstructure		37	37	30-Mar-20	28-May-20	40
HLY.SUP.21.04	Set Girders & Brace Span 1 & 2	2	2	30-Mar-20	31-Mar-20	40
HLY.SUP.21.00	Construct I-70 EB Bridge Superstructure over Holly St.	37	37	30-Mar-20	28-May-20	40
HLY.SUP.21.06	F/P/S Bridge Deck & Overhang	8	8	01-Apr-20	13-Apr-20	40
HLY.SUP.21.10	Waterproof Deck	3	3	14-Apr-20	16-Apr-20	47
HLY.SUP.21.14	F/P/S West Approach/Sleeper Slab & Brdg Jnt.	5	5	14-Apr-20	21-Apr-20	40
HLY.SUP.21.16	F/P/S East Approach/Sleeper Slab & Brdg Jnt.	5	5	23-Apr-20	29-Apr-20	40
HLY.SUP.21.08	F/P/S Type 7 Bridge Rail	6	6	30-Apr-20	08-May-20	40
HLY.SUP.21.12	Pave Deck & Approaches	3	3	11-May-20	13-May-20	40
HLY.SUP.21.18	Final Signing & Striping	2	2	14-May-20	18-May-20	44
HLY.SUP.21.24	Sand Blast & Paint Bridge/MSE Walls	4	4	14-May-20	21-May-20	40
HLY.SUP.21.20	Final Seeding & Mulching	2	2	22-May-20	26-May-20	40
HLY.SUP.21.26	Remove MOT Devices	2	2	27-May-20	28-May-20	40
MI.PH1.STG4.HLY.0000	EB I-70 Over Holly St. Complete	0	0		28-May-20	40
Construct - I-70 EB & WB Bridge Over Monaco Street (Inside)		92	92	28-Jan-20	30-Jun-20	18
STG3.110	Begin EB & WB I-70 over Monaco Pkwy.	0	0	28-Jan-20		18
MON.2160	Install Temp Silt Fence / Erosion Control Measures	5	5	28-Jan-20	03-Feb-20	18
MON.20.0	Construct EB & WB I-70 over Monaco Pkwy. (Inside)	92	92	28-Jan-20	30-Jun-20	18
MON.2165	Place Phase 2 Stage 1 Temp MOT / Barrier Devices	3	3	05-Feb-20	10-Feb-20	18
MON.2175	Switch Traffic to Phase 2 Stage 1 Configuration	0	0		10-Feb-20	18
MI.PH1.STG3.10179	EB & WB I-70 over Monaco Pkwy. (Inside) Complete	0	0		30-Jun-20	18
MON.2170	Switch Traffic to Phase 3 Stage 1 Alignment/ Stage 1 Complete	0	0		30-Jun-20	18
Substructure		38	38	11-Feb-20	16-Apr-20	18
MON3SUP16	Construct EB & WB I-70 Substructure over Monaco Pkwy.	38	38	11-Feb-20	16-Apr-20	18
West Abutment		26	26	11-Feb-20	30-Mar-20	30
MON.2190	Demo / Structure Ex / Shoring	4	4	11-Feb-20	19-Feb-20	18
MON.2220	Earthwork - WB On-Ramp & MSE Panels	12	12	19-Feb-20	10-Mar-20	28
MON.2200	Setup & Drive Pile West Abutment	6	6	20-Feb-20	02-Mar-20	18
MON.2210	F/P/S Cap/Footing West Abutment	6	6	03-Mar-20	11-Mar-20	18
MON.2230	F/P/S Backwall West Abutment	6	6	13-Mar-20	23-Mar-20	18
MON.2180	F/P/S Retaining Wall West Abutment Face	8	8	17-Mar-20	30-Mar-20	30
East Abutment		34	34	20-Feb-20	16-Apr-20	18
MON.2240	Demo / Structure Ex / Shoring	4	4	20-Feb-20	27-Feb-20	26
MON.2250	Setup & Drive Pile East Abutment	6	6	28-Feb-20	09-Mar-20	26
MON.2270	Earthwork - WB Off-Ramp & MSE Panels	12	12	28-Feb-20	19-Mar-20	28
MON.2260	F/P/S Cap/Footing East Abutment	6	6	25-Mar-20	01-Apr-20	18
MON.2280	F/P/S Backwall East Abutment	6	6	02-Apr-20	10-Apr-20	18
MON.2290	F/P/S Retaining Wall East Abutment Face	8	8	06-Apr-20	16-Apr-20	18
Superstructure		46	46	20-Apr-20	30-Jun-20	18
MON.2300	Set Girders & Brace Span 1 & 2	2	2	20-Apr-20	21-Apr-20	18
MON.10.0	Construct EB & WB I-70 Superstructure over Monaco Pkwy.	46	46	20-Apr-20	30-Jun-20	18
MON.2310	F/P/S Bridge Deck & Overhang	10	10	23-Apr-20	07-May-20	18
MON.2350	F/P/S West Approach/Sleeper Slab & Brdg Jnt.	8	8	08-May-20	21-May-20	18

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
MON.2330	Waterproof Deck	4	4	13-May-20	19-May-20	27
MON.2360	F/P/S East Approach/Sleeper Slab & Brdg Jnt.	8	8	22-May-20	03-Jun-20	18
MON.2320	F/P/S Type 7 Bridge Rail	4	4	04-Jun-20	09-Jun-20	18
MON.2340	Pave Deck & Approaches	4	4	11-Jun-20	16-Jun-20	18
MON.2370	Signing & Striping	2	2	17-Jun-20	18-Jun-20	24
MON.2390	Sand Blast & Paint Bridge/MSE Walls	6	6	17-Jun-20	24-Jun-20	18
MON.2380	Seeding & Mulching as Necessary	3	3	24-Jun-20	26-Jun-20	18
MON.2400	Remove Phase 2 Stage 1 MOT Devices / Temp Barrier	2	2	29-Jun-20	30-Jun-20	18
MI.PH1.STG4.MON.0000	EB & WB I-70 over Monaco Pkwy. (Inside) Complete	0	0		30-Jun-20	18
Construct - EB I-70 Off-Ramp to Quebec St over RIRR		69	69	28-Jan-20	27-May-20	41
STG3.50	Begin EB I-70 Off-Ramp to Quebec St. over RIRR	0	0	28-Jan-20		110
RIRR.2940	Install Temp Silt Fence / Erosion Control Measures	3	3	28-Jan-20	30-Jan-20	41
RIRR.2945	Place Phase 1 Stage 2 Temp MOT / Temp Barrier	3	3	28-Jan-20	30-Jan-20	41
RIRR.0000	Construct EB I-70 Off-Ramp to Quebec St. over RIRR	69	69	28-Jan-20	27-May-20	41
RIRR.2960	Switch Traffic to Phase 1 Stage 3 Configuration / Begin EB I-70 Off-Ramp to Quebec St. over RIRR	0	0	31-Jan-20		41
MI.PH1.STG3.10119	EB I-70 Off-Ramp to Quebec St. over RIRR Complete	0	0		27-May-20	41
RIRR.2950	Switch Traffic to Phase 2 Alignment/Phase 1 Complete	0	0		27-May-20	41
Substructure		31	31	31-Jan-20	30-Mar-20	41
RIRR.SUP50	Construct Substructure EB I-70 Off-Ramp to Quebec St. over RIRR	31	31	31-Jan-20	30-Mar-20	41
West Abutment		22	22	31-Jan-20	13-Mar-20	50
RIRR.3080	Demo / Structure Ex / Shoring	3	3	31-Jan-20	05-Feb-20	41
RIRR.3110	Earthwork - WB On-Ramp & MSE Panels	10	10	05-Feb-20	25-Feb-20	49
RIRR.3090	Setup & Drive Pile West Abutment	4	4	07-Feb-20	13-Feb-20	41
RIRR.3100	F/P/S Cap/Footing West Abutment	4	4	17-Feb-20	24-Feb-20	41
RIRR.3120	F/P/S Backwall West Abutment	5	5	25-Feb-20	03-Mar-20	41
RIRR.3130	F/P/S Retaining Wall West Abutment Face	6	6	05-Mar-20	13-Mar-20	50
East Abutment		28	28	07-Feb-20	30-Mar-20	41
RIRR.3180	Demo / Structure Ex / Shoring	2	2	07-Feb-20	10-Feb-20	50
RIRR.3190	Setup & Drive Pile East Abutment	2	2	11-Feb-20	13-Feb-20	50
RIRR.3210	Earthwork - WB Off-Ramp & MSE Panels	10	10	17-Feb-20	05-Mar-20	49
RIRR.3200	F/P/S Cap/Footing East Abutment	4	4	05-Mar-20	10-Mar-20	41
RIRR.3220	F/P/S Backwall East Abutment	5	5	11-Mar-20	19-Mar-20	41
RIRR.3230	F/P/S Retaining Wall East Abutment Face	6	6	20-Mar-20	30-Mar-20	41
Superstructure		35	35	31-Mar-20	27-May-20	41
RIRR.2970	Set Girders & Brace Span 1 & 2	2	2	31-Mar-20	01-Apr-20	41
RIRR.SUP.0000	Construct Superstructure EB I-70 Off-Ramp to Quebec St. over RIRR	35	35	31-Mar-20	27-May-20	41
RIRR.2980	F/P/S Bridge Deck & Overhang	8	8	02-Apr-20	14-Apr-20	41
RIRR.3000	Waterproof Deck	3	3	15-Apr-20	20-Apr-20	48
RIRR.3020	F/P/S West Approach/Sleeper Slab & Brdg Jnt.	5	5	15-Apr-20	23-Apr-20	41
RIRR.3030	F/P/S East Approach/Sleeper Slab & Brdg Jnt.	5	5	24-Apr-20	30-Apr-20	41
RIRR.2990	F/P/S Type 7 Bridge Rail	4	4	01-May-20	07-May-20	41
RIRR.3010	Pave Deck & Approaches	3	3	08-May-20	12-May-20	41
RIRR.3040	Signing & Striping	2	2	13-May-20	14-May-20	45
RIRR.3060	Sand Blast & Paint Bridge	4	4	13-May-20	19-May-20	41
RIRR.3050	Seeding & Mulching as Necessary	2	2	21-May-20	22-May-20	41
RIRR.3070	Remove MOT Phase 1 Devices / Temp Barrier	2	2	26-May-20	27-May-20	41
MI.PH1.STG2.10009	B I-70 Off-Ramp to Quebec St. over RIRR Complete	0	0		27-May-20	41
Construct - I-70 WB Bridge Over Quebec Street (Outside)		68	68	28-Jan-20	26-May-20	42
QUE.1800	Place Phase 2 Stage 1 Temp MOT / Temp Barrier	3	3	28-Jan-20	30-Jan-20	42
QUE.1920	Install Temp Silt Fence / Erosion Control Measures	3	3	28-Jan-20	30-Jan-20	42
QUE.1795	Construct WB I-70 Bridge over Quebec St.	68	68	28-Jan-20	26-May-20	42
QUE.1940	Switch Traffic to Phase 2 Stage 1Configuration / Begin WB Quebec St	0	0		30-Jan-20	42
STG3.60	Begin WB I-70 over Quebec St.	0	0	31-Jan-20		42
MI.PH1.STG3.10129	WB I-70 over Quebec St. Complete	0	0		26-May-20	42
QUE.1935	Switch Traffic to Phase 3 Alignment/Phase 2 Complete	0	0		26-May-20	42
Substructure		30	30	31-Jan-20	27-Mar-20	42
QUE.SUP2	Construct WB I-70 Bridge Substructure ove Quebec St.	30	30	31-Jan-20	27-Mar-20	42
West Abutment		21	21	31-Jan-20	11-Mar-20	51



Remaining Level of Effort
Actual Level of Effort
Actual Work
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Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
QUE.1805	Demo / Structure Ex / Shoring	2	2	31-Jan-20	03-Feb-20	42
QUE.1825	Earthwork - WB On-Ramp & MSE Panels	10	10	03-Feb-20	24-Feb-20	50
QUE.1810	Setup & Drive Pile West Abutment	4	4	05-Feb-20	11-Feb-20	42
QUE.1820	F/P/S Cap/Footing West Abutment	4	4	13-Feb-20	20-Feb-20	42
QUE.1830	F/P/S Backwall West Abutment	5	5	24-Feb-20	02-Mar-20	42
QUE.2018	F/P/S Retaining Wall West Abutment Face	6	6	03-Mar-20	11-Mar-20	51
Pier 2		24	24	05-Feb-20	20-Mar-20	46
QUE.2002	Demo / Structure Ex / Shoring	1	1	05-Feb-20	05-Feb-20	48
QUE.2006	Setup & Drill Caissons Center Pier 2	4	4	13-Feb-20	20-Feb-20	45
QUE.2008	F/P/S Pier Columns	6	6	24-Feb-20	03-Mar-20	46
QUE.2012	F/P/S Pier Cap	10	10	05-Mar-20	20-Mar-20	46
East Abutment		27	27	07-Feb-20	27-Mar-20	42
QUE.1845	Demo / Structure Ex / Shoring	2	2	07-Feb-20	10-Feb-20	50
QUE.1865	Earthwork - WB Off-Ramp & MSE Panels	10	10	13-Feb-20	03-Mar-20	50
QUE.1855	Setup & Drive Pile East Abutment	2	2	24-Feb-20	25-Feb-20	45
QUE.1860	F/P/S Cap/Footing East Abutment	4	4	03-Mar-20	09-Mar-20	42
QUE.1870	F/P/S Backwall East Abutment	5	5	10-Mar-20	17-Mar-20	42
QUE.2016	F/P/S Retaining Wall East Abutment Face	6	6	19-Mar-20	27-Mar-20	42
Superstructure		35	35	30-Mar-20	26-May-20	42
QUE.1840	Set Girders & Brace Span 1 & 2	2	2	30-Mar-20	31-Mar-20	42
QUE.SUP	Construct WB I-70 Bridge Superstructure over Quebec St.	35	35	30-Mar-20	26-May-20	42
QUE.1875	F/P/S Bridge Deck & Overhang	8	8	01-Apr-20	13-Apr-20	42
QUE.1890	Waterproof Deck	3	3	14-Apr-20	16-Apr-20	49
QUE.1900	F/P/S West Approach/Sleeper Slab & Brdg Jnt.	5	5	14-Apr-20	21-Apr-20	42
QUE.1905	F/P/S East Approach/Sleeper Slab & Brdg Jnt.	5	5	23-Apr-20	29-Apr-20	42
QUE.1880	F/P/S Type 7 Bridge Rail	4	4	30-Apr-20	05-May-20	42
QUE.1895	Pave Deck & Approaches	3	3	07-May-20	11-May-20	42
QUE.1910	Signing & Striping	2	2	12-May-20	13-May-20	46
QUE.1925	Sand Blast & Paint Bridge	4	4	12-May-20	18-May-20	42
QUE.1915	Seeding & Mulching as Necessary	2	2	19-May-20	21-May-20	42
QUE.1930	Remove MOT Phase 2 Stage 1 Devices / Temp Barrier	2	2	22-May-20	26-May-20	42
Construct - I-70 EB Bridge Over Quebec Street (Outside)		68	68	28-Jan-20	26-May-20	42
QUE.2150	Place Phase 1 Stage 4 Temp MOT / Temp Barrier	3	3	28-Jan-20	30-Jan-20	42
QUE.2160	Install Temp Silt Fence / Erosion Control Measures	3	3	28-Jan-20	30-Jan-20	42
QUE.2165	Construct I-70 EB Bridge over Quebec St.	68	68	28-Jan-20	26-May-20	42
QUE.2135	Switch Traffic to Phase 1 Stage 4 Configuration / Begin EB Quebec St	0	0	31-Jan-20		42
STG3.70	Begin EB I-70 over Quebec St.	0	0	31-Jan-20		42
MI.PH1.STG3.10139	EB I-70 over Quebec St. Complete	0	0		26-May-20	42
QUE.2170	Switch Traffic to Phase 1 Alignment/Phase 1 Complete	0	0		26-May-20	42
Substructure		30	30	31-Jan-20	27-Mar-20	42
QUE.SUP30	Construct I-70 EB Bridge Substructure over Quebec St.	30	30	31-Jan-20	27-Mar-20	42
West Abutment		21	21	31-Jan-20	11-Mar-20	51
QUE.2310	Demo / Structure Ex / Shoring	2	2	31-Jan-20	03-Feb-20	42
QUE.2340	Earthwork - WB On-Ramp & MSE Panels	10	10	03-Feb-20	24-Feb-20	50
QUE.2320	Setup & Drive Pile West Abutment	4	4	05-Feb-20	11-Feb-20	42
QUE.2330	F/P/S Cap/Footing West Abutment	4	4	13-Feb-20	20-Feb-20	42
QUE.2350	F/P/S Backwall West Abutment	5	5	24-Feb-20	02-Mar-20	42
QUE.2360	F/P/S Retaining Wall West Abutment Face	6	6	03-Mar-20	11-Mar-20	51
Pier 2		24	24	05-Feb-20	20-Mar-20	46
QUE.2370	Demo / Structure Ex / Shoring	1	1	05-Feb-20	05-Feb-20	48
QUE.2380	Setup & Drill Caissons Center Pier 2	4	4	13-Feb-20	20-Feb-20	45
QUE.2390	F/P/S Pier Columns	6	6	24-Feb-20	03-Mar-20	46
QUE.2400	F/P/S Pier Cap	10	10	05-Mar-20	20-Mar-20	46
East Abutment		27	27	07-Feb-20	27-Mar-20	42
QUE.2410	Demo / Structure Ex / Shoring	2	2	07-Feb-20	10-Feb-20	50
QUE.2440	Earthwork - WB Off-Ramp & MSE Panels	10	10	13-Feb-20	03-Mar-20	50
QUE.2420	Setup & Drive Pile East Abutment	2	2	24-Feb-20	25-Feb-20	45
QUE.2430	F/P/S Cap/Footing East Abutment	4	4	03-Mar-20	09-Mar-20	42
QUE.2450	F/P/S Backwall East Abutment	5	5	10-Mar-20	17-Mar-20	42
QUE.2460	F/P/S Retaining Wall East Abutment Face	6	6	19-Mar-20	27-Mar-20	42

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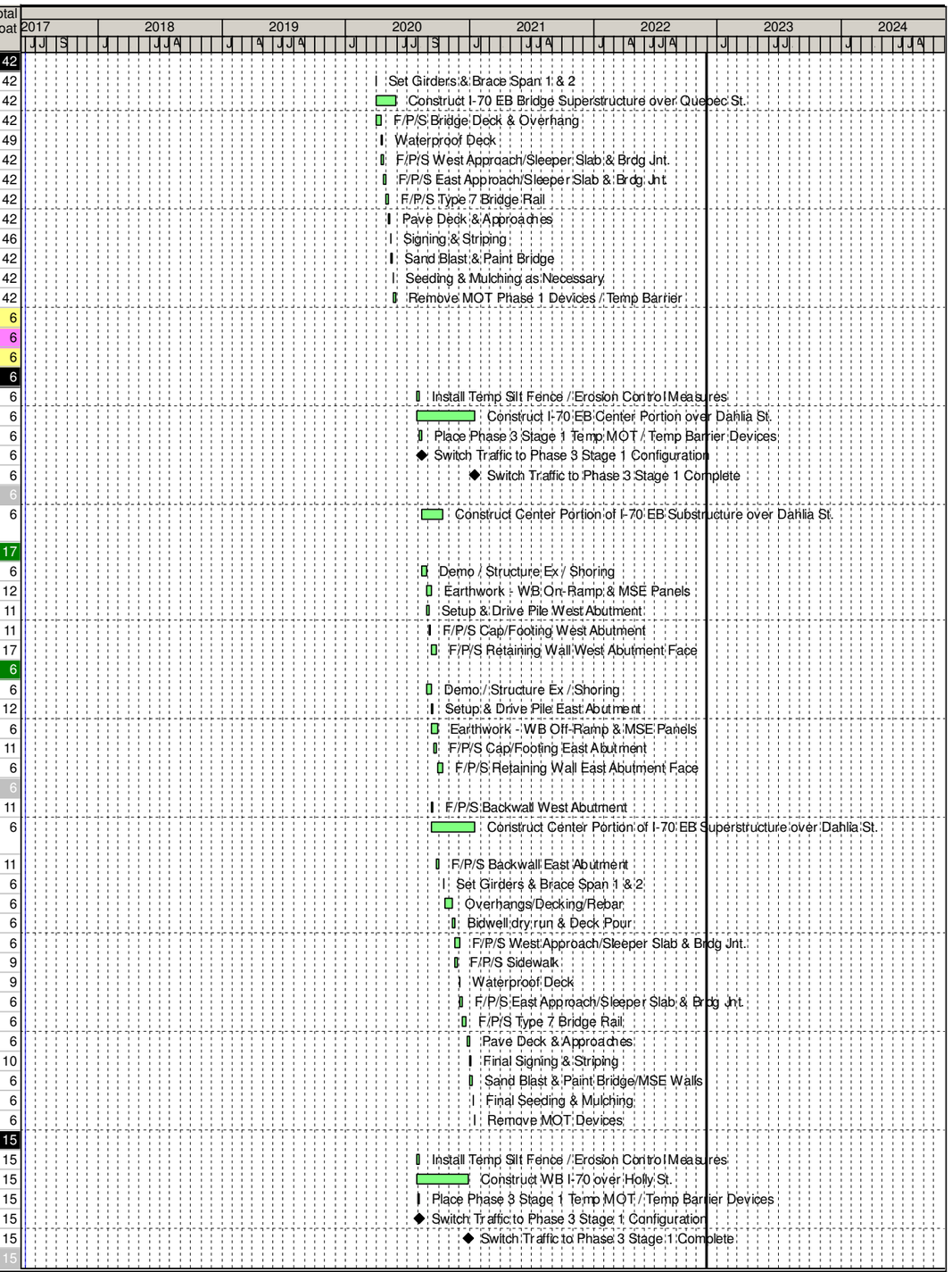
Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
Superstructure		35	35	30-Mar-20	26-May-20	42
QUE.2200	Set Girders & Brace Span 1 & 2	2	2	30-Mar-20	31-Mar-20	42
QUE.SUP20	Construct I-70 EB Bridge Superstructure over Quebec St.	35	35	30-Mar-20	26-May-20	42
QUE.2210	F/P/S Bridge Deck & Overhang	8	8	01-Apr-20	13-Apr-20	42
QUE.2230	Waterproof Deck	3	3	14-Apr-20	16-Apr-20	49
QUE.2250	F/P/S West Approach/Sleeper Slab & Brdg Jnt.	5	5	14-Apr-20	21-Apr-20	42
QUE.2260	F/P/S East Approach/Sleeper Slab & Brdg Jnt.	5	5	23-Apr-20	29-Apr-20	42
QUE.2220	F/P/S Type 7 Bridge Rail	4	4	30-Apr-20	05-May-20	42
QUE.2240	Pave Deck & Approaches	3	3	07-May-20	11-May-20	42
QUE.2270	Signing & Striping	2	2	12-May-20	13-May-20	46
QUE.2290	Sand Blast & Paint Bridge	4	4	12-May-20	18-May-20	42
QUE.2280	Seeding & Mulching as Necessary	2	2	19-May-20	21-May-20	42
QUE.2300	Remove MOT Phase 1 Devices / Temp Barrier	2	2	22-May-20	26-May-20	42
Phase 3		97	97	30-Jul-20	15-Jan-21	6
Stage 1		97	97	30-Jul-20	15-Jan-21	6
Westbound		97	97	30-Jul-20	15-Jan-21	6
Construct - I-70 EB Center Bridge Over Dahlia Street		97	97	30-Jul-20	15-Jan-21	6
DAH.2122	Install Temp Silt Fence / Erosion Control Measures	5	5	30-Jul-20	05-Aug-20	6
DAH.0003	Construct I-70 EB Center Portion over Dahlia St.	97	97	30-Jul-20	15-Jan-21	6
DAH.2082	Place Phase 3 Stage 1 Temp MOT / Temp Barrier Devices	3	3	06-Aug-20	10-Aug-20	6
DAH.2160	Switch Traffic to Phase 3 Stage 1 Configuration	0	0		10-Aug-20	6
DAH.2128	Switch Traffic to Phase 3 Stage 1 Complete	0	0		15-Jan-21	6
Substructure		40	40	11-Aug-20	13-Oct-20	6
DAH.00013	Construct Center Portion of I-70 EB Substructure over Dahlia St.	40	40	11-Aug-20	13-Oct-20	6
West Abutment		29	29	11-Aug-20	25-Sep-20	17
DAH.2084	Demo / Structure Ex / Shoring	10	10	11-Aug-20	26-Aug-20	6
DAH.2090	Earthwork - WB On-Ramp & MSE Panels	10	10	26-Aug-20	09-Sep-20	12
DAH.2086	Setup & Drive Pile West Abutment	4	4	27-Aug-20	01-Sep-20	11
DAH.2088	F/P/S Cap/Footing West Abutment	4	4	02-Sep-20	08-Sep-20	11
DAH.2140	F/P/S Retaining Wall West Abutment Face	10	10	10-Sep-20	25-Sep-20	17
East Abutment		30	30	27-Aug-20	13-Oct-20	6
DAH.2096	Demo / Structure Ex / Shoring	10	10	27-Aug-20	10-Sep-20	6
DAH.2098	Setup & Drive Pile East Abutment	2	2	11-Sep-20	14-Sep-20	12
DAH.2102	Earthwork - WB Off-Ramp & MSE Panels	10	10	11-Sep-20	28-Sep-20	6
DAH.2100	F/P/S Cap/Footing East Abutment	4	4	17-Sep-20	23-Sep-20	11
DAH.2138	F/P/S Retaining Wall East Abutment Face	10	10	29-Sep-20	13-Oct-20	6
Superstructure		71	71	09-Sep-20	15-Jan-21	6
DAH.2092	F/P/S Backwall West Abutment	5	5	09-Sep-20	15-Sep-20	11
DAH.00023	Construct Center Portion of I-70 EB Superstructure over Dahlia St.	71	71	09-Sep-20	15-Jan-21	6
DAH.2104	F/P/S Backwall East Abutment	5	5	24-Sep-20	30-Sep-20	11
DAH.2094	Set Girders & Brace Span 1 & 2	2	2	15-Oct-20	16-Oct-20	6
DAH.2106	Overhangs/Decking/Rebar	15	15	19-Oct-20	09-Nov-20	6
DAH.2190	Bidwell dry run & Deck Pour	5	5	10-Nov-20	17-Nov-20	6
DAH.2114	F/P/S West Approach/Sleeper Slab & Brdg Jnt.	5	5	19-Nov-20	01-Dec-20	6
DAH.2200	F/P/S Sidewalk	4	4	19-Nov-20	25-Nov-20	9
DAH.2110	Waterproof Deck	3	3	01-Dec-20	03-Dec-20	9
DAH.2116	F/P/S East Approach/Sleeper Slab & Brdg Jnt.	5	5	02-Dec-20	09-Dec-20	6
DAH.2108	F/P/S Type 7 Bridge Rail	6	6	11-Dec-20	22-Dec-20	6
DAH.2112	Pave Deck & Approaches	3	3	23-Dec-20	30-Dec-20	6
DAH.2118	Final Signing & Striping	2	2	31-Dec-20	04-Jan-21	10
DAH.2124	Sand Blast & Paint Bridge/MSE Walls	4	4	31-Dec-20	08-Jan-21	6
DAH.2120	Final Seeding & Mulching	2	2	11-Jan-21	12-Jan-21	6
DAH.2126	Remove MOT Devices	2	2	14-Jan-21	15-Jan-21	6
Construct - I-70 WB Center Bridge Over Holly Street		88	88	30-Jul-20	29-Dec-20	15
HLY.SUB.13.60	Install Temp Silt Fence / Erosion Control Measures	5	5	30-Jul-20	05-Aug-20	15
HLY.13.00	Construct WB I-70 over Holly St.	88	88	30-Jul-20	29-Dec-20	15
HLY.SUB.13.20	Place Phase 3 Stage 1 Temp MOT / Temp Barrier Devices	3	3	03-Aug-20	05-Aug-20	15
HLY.21.102	Switch Traffic to Phase 3 Stage 1 Configuration	0	0		05-Aug-20	15
HLY.13.66	Switch Traffic to Phase 3 Stage 1 Complete	0	0		29-Dec-20	15
Substructure		37	37	06-Aug-20	02-Oct-20	15



Remaining Level of Effort
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Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
HLY.SUB.13.02	Construc EB I-70 Bridge Substructure over Holly St.	37	37	06-Aug-20	02-Oct-20	15
West Abutment		25	25	06-Aug-20	14-Sep-20	27
HLY.SUB.13.22	Demo / Structure Ex / Shoring	3	3	06-Aug-20	10-Aug-20	15
HLY.SUB.13.28	Earthwork - WB On-Ramp & MSE Panels	12	12	10-Aug-20	27-Aug-20	25
HLY.SUB.13.24	Setup & Drive Pile West Abutment	6	6	11-Aug-20	19-Aug-20	15
HLY.SUB.13.26	F/P/S Cap/Footing West Abutment	6	6	20-Aug-20	28-Aug-20	15
HLY.SUB.13.30	F/P/S Backwall West Abutment	6	6	31-Aug-20	08-Sep-20	15
HLY.SUB.13.80	F/P/S Retaining Wall West Abutment Face	8	8	02-Sep-20	14-Sep-20	27
East Abutment		34	34	11-Aug-20	02-Oct-20	15
HLY.SUB.13.34	Demo / Structure Ex / Shoring	3	3	11-Aug-20	14-Aug-20	24
HLY.SUB.13.36	Setup & Drive Pile East Abutment	6	6	17-Aug-20	25-Aug-20	24
HLY.SUB.13.40	Earthwork - WB Off-Ramp & MSE Panels	12	12	18-Aug-20	03-Sep-20	25
HLY.SUB.13.37	F/P/S Cap/Footing East Abutment	6	6	09-Sep-20	17-Sep-20	15
HLY.SUB.13.42	F/P/S Backwall East Abutment	6	6	18-Sep-20	28-Sep-20	15
HLY.SUB.13.78	F/P/S Retaining Wall East Abutment Face	8	8	23-Sep-20	02-Oct-20	15
Superstructure		46	46	05-Oct-20	29-Dec-20	15
HLY.SUP.13.32	Set Girders & Brace Span 1 & 2	2	2	05-Oct-20	06-Oct-20	15
HLY.SUP.13.00	Construc EB I-70 Bridge Superstructure over Holly St.	46	46	05-Oct-20	29-Dec-20	15
HLY.SUP.13.44	F/P/S Bridge Deck & Overhang	10	10	07-Oct-20	23-Oct-20	15
HLY.SUP.13.48	Waterproof Deck	4	4	26-Oct-20	29-Oct-20	27
HLY.SUP.13.52	F/P/S West Approach/Sleeper Slab & Brdg Jnt.	8	8	26-Oct-20	04-Nov-20	15
HLY.SUP.13.54	F/P/S East Approach/Sleeper Slab & Brdg Jnt.	8	8	05-Nov-20	17-Nov-20	15
HLY.SUP.13.46	F/P/S Type 7 Bridge Rail	4	4	19-Nov-20	25-Nov-20	15
HLY.SUP.13.50	Pave Deck & Approaches	4	4	01-Dec-20	04-Dec-20	15
HLY.SUP.13.56	Signing & Striping	2	2	08-Dec-20	09-Dec-20	21
HLY.SUP.13.62	Sand Blast & Paint Bridge/MSE Walls	6	6	08-Dec-20	18-Dec-20	15
HLY.SUP.13.58	Seeding & Mulching as Necessary	3	3	18-Dec-20	22-Dec-20	15
HLY.SUP.13.64	Remove Phase 2 MOT Devices / Temp Barrier	2	2	23-Dec-20	29-Dec-20	15
Construct - I-70 EB & WB Bridge Over Quebec Street (Center Section)		73	73	30-Jul-20	23-Nov-20	30
QUE.2122	Install Temp Silt Fence / Erosion Control Measures	5	5	30-Jul-20	05-Aug-20	30
QUE.SUB4	Construct EB & WB I-70 over Quebec St.	73	73	30-Jul-20	23-Nov-20	30
QUE.2082	Place Phase 3 Temp MOT / Temp Barrier Devices	3	3	06-Aug-20	10-Aug-20	30
QUE.2128	Switch Traffic to Final Alignment/Phase 1 Stage 1 Complete	0	0		23-Nov-20	30
Substructure		36	36	30-Jul-20	24-Sep-20	30
QUE.SUP10	Construct EB & WB I-70 Substructure over Quebec St.	36	36	30-Jul-20	24-Sep-20	30
West Abutment		27	27	30-Jul-20	09-Sep-20	39
QUE.2090	Earthwork - WB & EB MSE Panels	20	20	30-Jul-20	28-Aug-20	35
QUE.2084	Demo / Structure Ex / Shoring	3	3	11-Aug-20	14-Aug-20	30
QUE.2086	Setup & Drive Pile West Abutment	4	4	17-Aug-20	20-Aug-20	30
QUE.2088	F/P/S Cap/Footing West Abutment	4	4	21-Aug-20	27-Aug-20	30
QUE.2092	F/P/S Backwall West Abutment	5	5	28-Aug-20	03-Sep-20	30
QUE.2140	F/P/S Retaining Wall West Abutment Face	6	6	01-Sep-20	09-Sep-20	39
Pier 2		20	20	17-Aug-20	15-Sep-20	35
QUE.2130	Demo / Structure Ex / Shoring	2	2	17-Aug-20	18-Aug-20	34
QUE.2132	Setup & Drill Caissons Center Pier 2	4	4	21-Aug-20	27-Aug-20	33
QUE.2134	F/P/S Pier Columns	6	6	26-Aug-20	02-Sep-20	35
QUE.2136	F/P/S Pier Cap	10	10	01-Sep-20	15-Sep-20	35
East Abutment		23	23	19-Aug-20	24-Sep-20	30
QUE.2096	Demo / Structure Ex / Shoring	3	3	19-Aug-20	21-Aug-20	34
QUE.2102	Earthwork - WB Off-Ramp & MSE Panels	10	10	25-Aug-20	08-Sep-20	34
QUE.2098	Setup & Drive Pile East Abutment	2	2	28-Aug-20	31-Aug-20	33
QUE.2100	F/P/S Cap/Footing East Abutment	4	4	04-Sep-20	10-Sep-20	30
QUE.2104	F/P/S Backwall East Abutment	5	5	11-Sep-20	18-Sep-20	30
QUE.2138	F/P/S Retaining Wall East Abutment Face	6	6	15-Sep-20	24-Sep-20	30
Superstructure		37	37	25-Sep-20	23-Nov-20	30
QUE.2094	Set Girders & Brace Span 1 & 2	2	2	25-Sep-20	28-Sep-20	30
QUE.0000	Construct EB & WB I-70 Superstructure over Quebec St.	37	37	25-Sep-20	23-Nov-20	30
QUE.2106	F/P/S Bridge Deck & Overhang	8	8	29-Sep-20	09-Oct-20	30
QUE.2110	Waterproof Deck	3	3	12-Oct-20	15-Oct-20	37
QUE.2114	F/P/S West Approach/Sleeper Slab & Brdg Jnt.	5	5	12-Oct-20	19-Oct-20	30

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Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
QUE.2116	F/P/S East Approach/Sleeper Slab & Brdg Jnt.	5	5	21-Oct-20	27-Oct-20	30
QUE.2108	F/P/S Type 7 Bridge Rail	6	6	28-Oct-20	04-Nov-20	30
QUE.2112	Pave Deck & Approaches	3	3	05-Nov-20	09-Nov-20	30
QUE.2118	Final Signing & Striping	2	2	10-Nov-20	11-Nov-20	34
QUE.2124	Sand Blast & Paint Bridge	4	4	10-Nov-20	16-Nov-20	30
QUE.2120	Final Seeding & Mulching	2	2	17-Nov-20	19-Nov-20	30
QUE.2126	Remove MOT Devices	2	2	20-Nov-20	23-Nov-20	30
Construct - I-70 EB & WB Bridge Over RIRR (Center Section)		**92**	**92**	**30-Jul-20**	**06-Jan-21**	**11**
MON.2670	Install Temp Silt Fence / Erosion Control Measures	5	5	30-Jul-20	05-Aug-20	11
MON.20.10	Construct EB & WB I-70 over RIRR (Center Section)	92	92	30-Jul-20	06-Jan-21	11
MON.2920	Place Phase 2 Stage 1 Temp MOT / Barrier Devices	3	3	06-Aug-20	10-Aug-20	11
MON.2930	Switch Traffic to Phase 2 Stage 1 Configuration	0	0		10-Aug-20	11
MON.2680	Switch Traffic to Phase 2 Stage 2 Alignment/ Stage 1 Complete	0	0		06-Jan-21	11
Substructure		**38**	**38**	**11-Aug-20**	**09-Oct-20**	**11**
MON3SUP26	Construct EB & WB I-70 Substructure over RIRR (Center Section)	38	38	11-Aug-20	09-Oct-20	11
West Abutment		**26**	**26**	**11-Aug-20**	**21-Sep-20**	**23**
MON.2700	Demo / Structure Ex / Shoring	4	4	11-Aug-20	17-Aug-20	11
MON.2730	Earthwork - WB & EB MSE Panels	15	15	11-Aug-20	02-Sep-20	21
MON.2710	Setup & Drive Pile West Abutment	6	6	18-Aug-20	26-Aug-20	11
MON.2720	F/P/S Cap/Footing West Abutment	6	6	27-Aug-20	03-Sep-20	11
MON.2740	F/P/S Backwall West Abutment	6	6	04-Sep-20	14-Sep-20	11
MON.2690	F/P/S Retaining Wall West Abutment Face	8	8	09-Sep-20	21-Sep-20	23
East Abutment		**34**	**34**	**18-Aug-20**	**09-Oct-20**	**11**
MON.2750	Demo / Structure Ex / Shoring	4	4	18-Aug-20	21-Aug-20	19
MON.2760	Setup & Drive Pile East Abutment	6	6	25-Aug-20	01-Sep-20	19
MON.2780	Earthwork - WB Off-Ramp & MSE Panels	12	12	25-Aug-20	10-Sep-20	21
MON.2770	F/P/S Cap/Footing East Abutment	6	6	15-Sep-20	24-Sep-20	11
MON.2790	F/P/S Backwall East Abutment	6	6	25-Sep-20	02-Oct-20	11
MON.2800	F/P/S Retaining Wall East Abutment Face	8	8	29-Sep-20	09-Oct-20	11
Superstructure		**46**	**46**	**12-Oct-20**	**06-Jan-21**	**11**
MON.2810	Set Girders & Brace Span 1 & 2	2	2	12-Oct-20	13-Oct-20	11
MON.10.10	Construct EB & WB I-70 Superstructure over RIRR (Center Section)	46	46	12-Oct-20	06-Jan-21	11
MON.2820	F/P/S Bridge Deck & Overhang	10	10	15-Oct-20	29-Oct-20	11
MON.2840	Waterproof Deck	4	4	30-Oct-20	04-Nov-20	23
MON.2860	F/P/S West Approach/Sleeper Slab & Brdg Jnt.	8	8	30-Oct-20	10-Nov-20	11
MON.2870	F/P/S East Approach/Sleeper Slab & Brdg Jnt.	8	8	11-Nov-20	25-Nov-20	11
MON.2830	F/P/S Type 7 Bridge Rail	4	4	01-Dec-20	04-Dec-20	11
MON.2850	Pave Deck & Approaches	4	4	08-Dec-20	15-Dec-20	11
MON.2880	Signing & Striping	2	2	17-Dec-20	18-Dec-20	17
MON.2900	Sand Blast & Paint Bridge/MSE Walls	6	6	17-Dec-20	29-Dec-20	11
MON.2890	Seeding & Mulching as Necessary	3	3	29-Dec-20	31-Dec-20	11
MON.2910	Remove Phase 1 Stage 4 MOT Devices / Temp Barrier	2	2	04-Jan-21	06-Jan-21	11
MI.PH1.STG4.MON.0	EB I-70 Over Monaco Pkwy. Complete	0	0		06-Jan-21	11
Area 3 - Sand Creek Bridge to West of Havana St. - (Sta 2196+00 to Sta 2270+89.00)		**94**	**94**	**07-Dec-18**	**11-Jun-19**	**12**
Phase 1		**94**	**94**	**07-Dec-18**	**11-Jun-19**	**12**
Area 3 - EB I-270 Bridge Over I-70		**94**	**94**	**07-Dec-18**	**11-Jun-19**	**12**
EB I-270 over I-70		**94**	**94**	**07-Dec-18**	**11-Jun-19**	**12**
Substructure		**80**	**80**	**07-Dec-18**	**16-May-19**	**26**
CBS1104280	EB I270 - Shift Traffic I-70 EB to Outside Lanes	0	0	07-Dec-18		13
Abutment 1		**67**	**67**	**07-Dec-18**	**26-Apr-19**	**39**
CBS1104310	EB I270 - Abut 1: Temp Shoring	5	5	07-Dec-18	14-Dec-18	13
CBS1104270	EB I270 - Abut 1: Excavate for Drilled Shafts	5	5	17-Dec-18	26-Dec-18	13
CBS1104010	EB I270 - Abut 1: Install (6) Drilled Shafts	5	5	27-Dec-18	11-Jan-19	13
CBS1104290	EB I270 - Abut 1: Install MSE Walls	5	5	15-Jan-19	24-Jan-19	28
CBS1104020	EB I270 - Abut 1: Structure Ex @ Abutment	5	5	28-Jan-19	06-Feb-19	28
CBS1104030	EB I270 - Abut 1: F/R/P Abutment	5	5	08-Feb-19	18-Feb-19	28
CBS1104040	EB I270 - Abut 1: Cure Abutment	7	7	19-Feb-19	25-Feb-19	50
CBS1104050	EB I270 - Abut 1: F/R/P Wingwalls/Backwall	5	5	26-Feb-19	05-Mar-19	29
CBS1104060	EB I270 - Abut 1: Cure Wingwalls/Backwall	7	7	06-Mar-19	12-Mar-19	51

Remaining Level of Effort
Actual Level of Effort
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Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
CBS1104070	EB I270 - Abut 1: Structural Backfill Behind Abutment	5	5	14-Mar-19	21-Mar-19	50
CBS1104080	EB I270 - Abut 1: F/R/P Approach Slab	5	5	15-Apr-19	19-Apr-19	37
CBS1104090	EB I270 - Abut 1: Cure Approach Slab	7	7	20-Apr-19	26-Apr-19	63
Pier 2		27	27	27-Dec-18	05-Mar-19	34
CTRENCH1200	EB I270 - Excavate For Drilled Shaft	5	5	27-Dec-18	11-Jan-19	13
CBS1103960	EB I270 - Pier 2: Drill Shaft	5	5	15-Jan-19	24-Jan-19	13
CBS1103970	EB I270 - Pier 2: F/R/P Columns	5	5	28-Jan-19	06-Feb-19	33
CBS1103980	EB I270 - Pier 2: Cure Columns	7	7	07-Feb-19	13-Feb-19	62
CBS1103990	EB I270 - Pier 2: F/R/P Pier Cap	5	5	14-Feb-19	26-Feb-19	33
CBS1104000	EB I270 - Pier 2: Cure Pier Cap	7	7	27-Feb-19	05-Mar-19	58
Pier 3		26	26	15-Jan-19	12-Mar-19	34
CTRENCH1210	EB I270 - Excavate For Drilled Shaft	5	5	15-Jan-19	24-Jan-19	13
CBS1104450	EB I270 - Pier 3: Drill Shaft	5	5	28-Jan-19	06-Feb-19	13
CBS1104460	EB I270 - Pier 3: F/R/P Columns	5	5	08-Feb-19	18-Feb-19	33
CBS1104470	EB I270 - Pier 3: Cure Columns	7	7	19-Feb-19	25-Feb-19	59
CBS1104480	EB I270 - Pier 3: F/R/P Pier Cap	5	5	26-Feb-19	05-Mar-19	34
CBS1104490	EB I270 - Pier 3: Cure Pier Cap	7	7	06-Mar-19	12-Mar-19	58
Pier 4		27	27	28-Jan-19	22-Mar-19	28
CTRENCH1220	EB I270 - Excavate For Drilled Shaft	5	5	28-Jan-19	06-Feb-19	13
CBS1104500	EB I270 - Pier 4: Drill Shaft	5	5	08-Feb-19	18-Feb-19	13
CBS1104510	EB I270 - Pier 4: F/R/P Columns	5	5	20-Feb-19	28-Feb-19	28
CBS1104520	EB I270 - Pier 4: Cure Columns	7	7	01-Mar-19	07-Mar-19	49
CBS1104530	EB I270 - Pier 4: F/R/P Pier Cap	5	5	08-Mar-19	15-Mar-19	28
CBS1104540	EB I270 - Pier 4: Cure Pier Cap	7	7	16-Mar-19	22-Mar-19	48
Abutment 5		75	75	17-Dec-18	16-May-19	26
CBS1104440	EB I270 - Abut 5: Temp Shoring	5	5	17-Dec-18	26-Dec-18	28
CBS1104420	EB I270 - Abut 5: Excavate for Drilled Shafts	5	5	27-Dec-18	11-Jan-19	28
CBS1104320	EB I270 - Abut 5: Install (6) Drilled Shafts	5	5	20-Feb-19	28-Feb-19	13
CBS1104430	EB I270 - Abut 5: Install MSE Walls	5	5	01-Mar-19	11-Mar-19	13
CBS1104330	EB I270 - Abut 5: Structure Ex @ Abutment	5	5	12-Mar-19	20-Mar-19	13
CBS1104340	EB I270 - Abut 5: F/R/P Abutment	5	5	21-Mar-19	28-Mar-19	13
CBS1104350	EB I270 - Abut 5: Cure Abutment	7	7	29-Mar-19	04-Apr-19	21
CBS1104360	EB I270 - Abut 5: F/R/P Wingwall	5	5	05-Apr-19	15-Apr-19	11
CBS1104370	EB I270 - Abut 5: Cure Wingwall	7	7	16-Apr-19	22-Apr-19	17
CBS1104380	EB I270 - Abut 5: Structural Backfill Behind Abutment	5	5	23-Apr-19	01-May-19	26
CBS1104390	EB I270 - Abut 5: F/R/P Approach Slab	5	5	02-May-19	09-May-19	26
CBS1104400	EB I270 - Abut 5: Cure Approach Slab	7	7	10-May-19	16-May-19	43
Superstructure		53	53	14-Mar-19	11-Jun-19	12
Span 1		29	29	14-Mar-19	01-May-19	36
CBS1104100	EB I270 - Span 1 - Set Girders & Brace	4	4	14-Mar-19	20-Mar-19	30
CBS1104110	EB I270 - Span 1 - Superstructure: Overhangs/Decking/Rebar	8	8	21-Mar-19	02-Apr-19	34
CBS1104150	EB I270 - Span 1 - Superstructure: Bidwell dry run & Deck Pour	3	3	03-Apr-19	05-Apr-19	34
CBS1104180	EB I270 - Span 1 - Superstructure: Deck Cure	7	7	06-Apr-19	12-Apr-19	61
CBS1104120	EB I270 - Span 1 - Superstructure: Bridge Rail Type 7	6	6	15-Apr-19	22-Apr-19	36
CBS1104190	EB I270 - Span 1 - Superstructure: Chain Link Fence on Bridge Rail	5	5	23-Apr-19	01-May-19	36
Span 2		31	31	21-Mar-19	10-May-19	30
CBS1104240	EB I270 - Span 2 - Set Girders & Brace	4	4	21-Mar-19	27-Mar-19	30
CBS1104210	EB I270 - Span 2 - Superstructure: Overhangs/Decking/Rebar	8	8	28-Mar-19	08-Apr-19	30
CBS1104230	EB I270 - Span 2 - Superstructure: Bidwell dry run & Deck Pour	3	3	09-Apr-19	15-Apr-19	30
CBS1104250	EB I270 - Span 2 - Superstructure: Deck Cure	7	7	16-Apr-19	22-Apr-19	51
CBS1104220	EB I270 - Span 2 - Superstructure: Bridge Rail Type 7	6	6	23-Apr-19	02-May-19	30
CBS1104260	EB I270 - Span 2 - Superstructure: Chain Link Fence on Bridge Rail	5	5	03-May-19	10-May-19	30
Span 3		30	30	26-Mar-19	13-May-19	29
CBS1104600	EB I270 - Span 3 - Set Girders & Brace	4	4	26-Mar-19	29-Mar-19	28
CBS1104570	EB I270 - Span 3 - Superstructure: Overhangs/Decking/Rebar	8	8	01-Apr-19	11-Apr-19	28

Remaining Level of Effort
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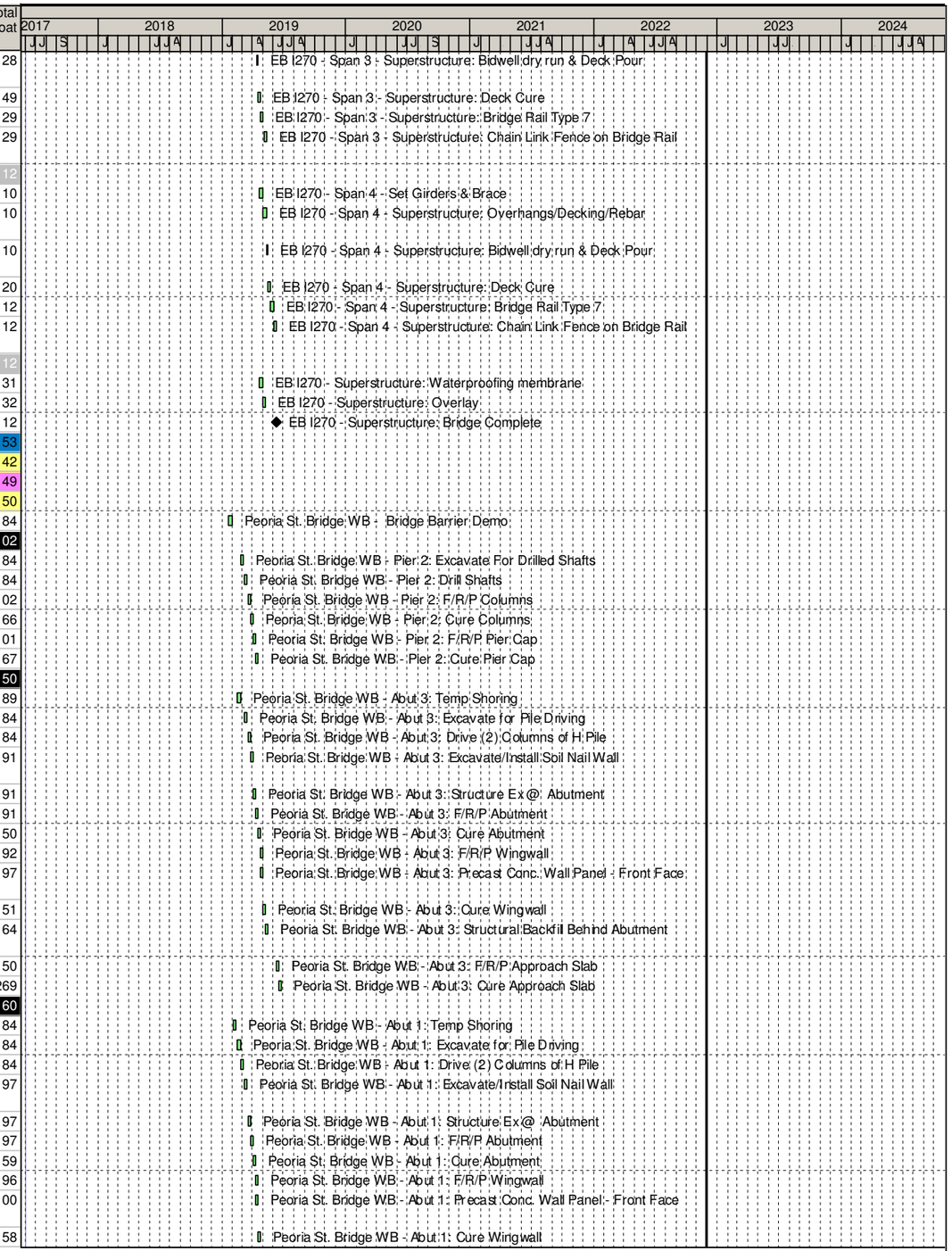
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
CBS1104590	EB I270 - Span 3 - Superstructure: Bidwell dry run & Deck Pour	3	3	15-Apr-19	17-Apr-19	28
CBS1104610	EB I270 - Span 3 - Superstructure: Deck Cure	7	7	18-Apr-19	24-Apr-19	49
CBS1104580	EB I270 - Span 3 - Superstructure: Bridge Rail Type 7	6	6	26-Apr-19	03-May-19	29
CBS1104620	EB I270 - Span 3 - Superstructure: Chain Link Fence on Bridge Rail	5	5	06-May-19	13-May-19	29
Span 4		29	29	23-Apr-19	11-Jun-19	12
CBS1104670	EB I270 - Span 4 - Set Girders & Brace	4	4	23-Apr-19	30-Apr-19	10
CBS1104640	EB I270 - Span 4 - Superstructure: Overhangs/Decking/Rebar	8	8	01-May-19	13-May-19	10
CBS1104660	EB I270 - Span 4 - Superstructure: Bidwell dry run & Deck Pour	3	3	14-May-19	16-May-19	10
CBS1104680	EB I270 - Span 4 - Superstructure: Deck Cure	7	7	17-May-19	23-May-19	20
CBS1104650	EB I270 - Span 4 - Superstructure: Bridge Rail Type 7	6	6	24-May-19	03-Jun-19	12
CBS1104690	EB I270 - Span 4 - Superstructure: Chain Link Fence on Bridge Rail	5	5	04-Jun-19	11-Jun-19	12
Deck Finishes		29	29	23-Apr-19	11-Jun-19	12
CBS1104160	EB I270 - Superstructure: Waterproofing membrane	5	5	23-Apr-19	01-May-19	31
CBS1104170	EB I270 - Superstructure: Overlay	5	5	03-May-19	09-May-19	32
CBS1104130	EB I270 - Superstructure: Bridge Complete	0	0		11-Jun-19	12
Area 5 - East of Peoria St. to Chambers Road - (Sta 2307+00 to Sta 2448+43.00)		259	259	21-Jan-19	29-Apr-20	53
Phase 1		93	93	21-Jan-19	09-Jul-19	142
I-70 WB Bridge Widening over Peoria Street-1		86	86	21-Jan-19	26-Jun-19	149
Substructure		85	85	21-Jan-19	25-Jun-19	150
CBS1178670	Peoria St. Bridge WB - Bridge Barrier Demo	5	5	21-Jan-19	30-Jan-19	84
Pier 2		28	28	27-Feb-19	16-Apr-19	102
CTRENCH1230	Peoria St. Bridge WB - Pier 2: Excavate For Drilled Shafts	5	5	27-Feb-19	06-Mar-19	84
CBS1178330	Peoria St. Bridge WB - Pier 2: Drill Shafts	5	5	08-Mar-19	15-Mar-19	84
CBS1178340	Peoria St. Bridge WB - Pier 2: F/R/P Columns	5	5	18-Mar-19	26-Mar-19	102
CBS1178350	Peoria St. Bridge WB - Pier 2: Cure Columns	7	7	27-Mar-19	02-Apr-19	166
CBS1178360	Peoria St. Bridge WB - Pier 2: F/R/P Pier Cap	5	5	03-Apr-19	09-Apr-19	101
CBS1178370	Peoria St. Bridge WB - Pier 2: Cure Pier Cap	7	7	10-Apr-19	16-Apr-19	167
Abutment 3		75	75	14-Feb-19	25-Jun-19	150
CBS1178810	Peoria St. Bridge WB - Abut 3: Temp Shoring	5	5	14-Feb-19	26-Feb-19	89
CBS1178790	Peoria St. Bridge WB - Abut 3: Excavate for Pile Driving	5	5	08-Mar-19	15-Mar-19	84
CBS1178690	Peoria St. Bridge WB - Abut 3: Drive (2) Columns of H Pile	5	5	18-Mar-19	26-Mar-19	84
CBS1178800	Peoria St. Bridge WB - Abut 3: Excavate/Install Soil Nail Wall	5	5	27-Mar-19	02-Apr-19	91
CBS1178700	Peoria St. Bridge WB - Abut 3: Structure Ex@ Abutment	5	5	03-Apr-19	09-Apr-19	91
CBS1178710	Peoria St. Bridge WB - Abut 3: F/R/P Abutment	5	5	11-Apr-19	18-Apr-19	91
CBS1178720	Peoria St. Bridge WB - Abut 3: Cure Abutment	7	7	19-Apr-19	25-Apr-19	150
CBS1178730	Peoria St. Bridge WB - Abut 3: F/R/P Wingwall	5	5	26-Apr-19	02-May-19	92
CBS1178780	Peoria St. Bridge WB - Abut 3: Precast Conc. Wall Panel - Front Face	5	5	26-Apr-19	02-May-19	97
CBS1178740	Peoria St. Bridge WB - Abut 3: Cure Wingwall	7	7	03-May-19	09-May-19	151
CBS1178750	Peoria St. Bridge WB - Abut 3: Structural Backfill Behind Abutment	5	5	10-May-19	16-May-19	164
CBS1178760	Peoria St. Bridge WB - Abut 3: F/R/P Approach Slab	5	5	12-Jun-19	18-Jun-19	150
CBS1178770	Peoria St. Bridge WB - Abut 3: Cure Approach Slab	7	7	19-Jun-19	25-Jun-19	269
Abutment 1		70	70	05-Feb-19	10-Jun-19	160
CBS1178680	Peoria St. Bridge WB - Abut 1: Temp Shoring	5	5	05-Feb-19	12-Feb-19	84
CBS1178640	Peoria St. Bridge WB - Abut 1: Excavate for Pile Driving	5	5	14-Feb-19	26-Feb-19	84
CBS1178380	Peoria St. Bridge WB - Abut 1: Drive (2) Columns of H Pile	5	5	27-Feb-19	06-Mar-19	84
CBS1178660	Peoria St. Bridge WB - Abut 1: Excavate/Install Soil Nail Wall	5	5	08-Mar-19	15-Mar-19	97
CBS1178390	Peoria St. Bridge WB - Abut 1: Structure Ex@ Abutment	5	5	18-Mar-19	26-Mar-19	97
CBS1178400	Peoria St. Bridge WB - Abut 1: F/R/P Abutment	5	5	27-Mar-19	02-Apr-19	97
CBS1178410	Peoria St. Bridge WB - Abut 1: Cure Abutment	7	7	03-Apr-19	09-Apr-19	159
CBS1178420	Peoria St. Bridge WB - Abut 1: F/R/P Wingwall	5	5	11-Apr-19	18-Apr-19	96
CBS1178510	Peoria St. Bridge WB - Abut 1: Precast Conc. Wall Panel - Front Face	5	5	11-Apr-19	18-Apr-19	100
CBS1178430	Peoria St. Bridge WB - Abut 1: Cure Wingwall	7	7	19-Apr-19	25-Apr-19	158

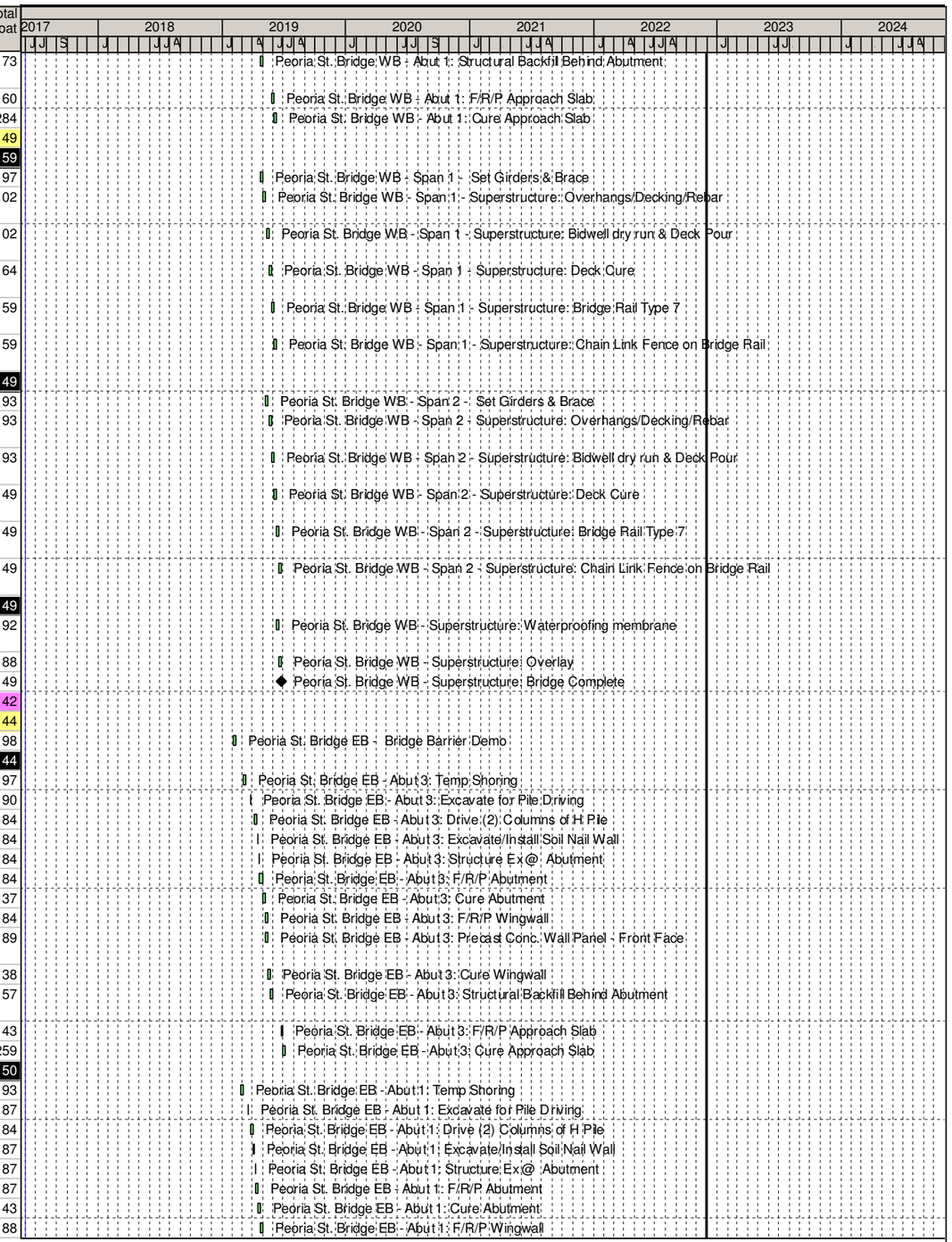


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
CBS1178440	Peoria St. Bridge WB - Abut 1: Structural Backfill Behind Abutment	5	5	26-Apr-19	02-May-19	173
CBS1178450	Peoria St. Bridge WB - Abut 1: F/R/P Approach Slab	5	5	28-May-19	03-Jun-19	160
CBS1178460	Peoria St. Bridge WB - Abut 1: Cure Approach Slab	7	7	04-Jun-19	10-Jun-19	284
Superstructure		38	38	26-Apr-19	26-Jun-19	149
Span 1		28	28	26-Apr-19	11-Jun-19	159
CBS1178470	Peoria St. Bridge WB - Span 1 - Set Girders & Brace	5	5	26-Apr-19	02-May-19	97
CBS1178480	Peoria St. Bridge WB - Span 1 - Superstructure: Overhangs/Decking/Rebar	5	5	03-May-19	10-May-19	102
CBS1178520	Peoria St. Bridge WB - Span 1 - Superstructure: Bidwell dry run & Deck Pour	5	5	13-May-19	20-May-19	102
CBS1178550	Peoria St. Bridge WB - Span 1 - Superstructure: Deck Cure	7	7	21-May-19	27-May-19	164
CBS1178490	Peoria St. Bridge WB - Span 1 - Superstructure: Bridge Rail Type 7	5	5	28-May-19	03-Jun-19	159
CBS1178560	Peoria St. Bridge WB - Span 1 - Superstructure: Chain Link Fence on Bridge Rail	5	5	04-Jun-19	11-Jun-19	159
Span 2		29	29	10-May-19	26-Jun-19	149
CBS1178610	Peoria St. Bridge WB - Span 2 - Set Girders & Brace	5	5	10-May-19	16-May-19	93
CBS1178580	Peoria St. Bridge WB - Span 2 - Superstructure: Overhangs/Decking/Rebar	5	5	20-May-19	28-May-19	93
CBS1178600	Peoria St. Bridge WB - Span 2 - Superstructure: Bidwell dry run & Deck Pour	5	5	29-May-19	04-Jun-19	93
CBS1178620	Peoria St. Bridge WB - Span 2 - Superstructure: Deck Cure	7	7	05-Jun-19	11-Jun-19	149
CBS1178590	Peoria St. Bridge WB - Span 2 - Superstructure: Bridge Rail Type 7	5	5	12-Jun-19	18-Jun-19	149
CBS1178630	Peoria St. Bridge WB - Span 2 - Superstructure: Chain Link Fence on Bridge Rail	5	5	20-Jun-19	26-Jun-19	149
Deck Finishes		10	10	12-Jun-19	26-Jun-19	149
CBS1178530	Peoria St. Bridge WB - Superstructure: Waterproofing membrane	5	5	12-Jun-19	18-Jun-19	92
CBS1178540	Peoria St. Bridge WB - Superstructure: Overlay	5	5	19-Jun-19	25-Jun-19	88
CBS1178500	Peoria St. Bridge WB - Superstructure: Bridge Complete	0	0		26-Jun-19	149
I-70 EB Bridge Widening over Peoria Street-1		88	88	05-Feb-19	09-Jul-19	142
Substructure		86	86	05-Feb-19	05-Jul-19	144
CBS1179160	Peoria St. Bridge EB - Bridge Barrier Demo	5	5	05-Feb-19	12-Feb-19	98
Abutment 3		72	72	06-Mar-19	05-Jul-19	144
CBS1179300	Peoria St. Bridge EB - Abut 3: Temp Shoring	4	4	06-Mar-19	12-Mar-19	97
CBS1179280	Peoria St. Bridge EB - Abut 3: Excavate for Pile Driving	2	2	27-Mar-19	28-Mar-19	90
CBS1179180	Peoria St. Bridge EB - Abut 3: Drive (2) Columns of H Pile	4	4	08-Apr-19	15-Apr-19	84
CBS1179290	Peoria St. Bridge EB - Abut 3: Excavate/Install Soil Nail Wall	4	4	16-Apr-19	19-Apr-19	84
CBS1179190	Peoria St. Bridge EB - Abut 3: Structure Ex@ Abutment	1	1	22-Apr-19	22-Apr-19	84
CBS1179200	Peoria St. Bridge EB - Abut 3: F/R/P Abutment	5	5	23-Apr-19	01-May-19	84
CBS1179210	Peoria St. Bridge EB - Abut 3: Cure Abutment	7	7	02-May-19	08-May-19	137
CBS1179220	Peoria St. Bridge EB - Abut 3: F/R/P Wingwall	5	5	09-May-19	15-May-19	84
CBS1179270	Peoria St. Bridge EB - Abut 3: Precast Conc. Wall Panel - Front Face	5	5	09-May-19	15-May-19	89
CBS1179230	Peoria St. Bridge EB - Abut 3: Cure Wingwall	7	7	16-May-19	22-May-19	138
CBS1179240	Peoria St. Bridge EB - Abut 3: Structural Backfill Behind Abutment	5	5	23-May-19	30-May-19	157
CBS1179250	Peoria St. Bridge EB - Abut 3: F/R/P Approach Slab	5	5	24-Jun-19	28-Jun-19	143
CBS1179260	Peoria St. Bridge EB - Abut 3: Cure Approach Slab	7	7	29-Jun-19	05-Jul-19	259
Abutment 1		70	70	27-Feb-19	25-Jun-19	150
CBS1179170	Peoria St. Bridge EB - Abut 1: Temp Shoring	4	4	27-Feb-19	05-Mar-19	93
CBS1179130	Peoria St. Bridge EB - Abut 1: Excavate for Pile Driving	2	2	18-Mar-19	20-Mar-19	87
CBS1178870	Peoria St. Bridge EB - Abut 1: Drive (2) Columns of H Pile	4	4	27-Mar-19	01-Apr-19	84
CBS1179150	Peoria St. Bridge EB - Abut 1: Excavate/Install Soil Nail Wall	5	5	02-Apr-19	08-Apr-19	87
CBS1178880	Peoria St. Bridge EB - Abut 1: Structure Ex@ Abutment	1	1	09-Apr-19	09-Apr-19	87
CBS1178890	Peoria St. Bridge EB - Abut 1: F/R/P Abutment	5	5	11-Apr-19	18-Apr-19	87
CBS1178900	Peoria St. Bridge EB - Abut 1: Cure Abutment	7	7	19-Apr-19	25-Apr-19	143
CBS1178910	Peoria St. Bridge EB - Abut 1: F/R/P Wingwall	5	5	26-Apr-19	02-May-19	88

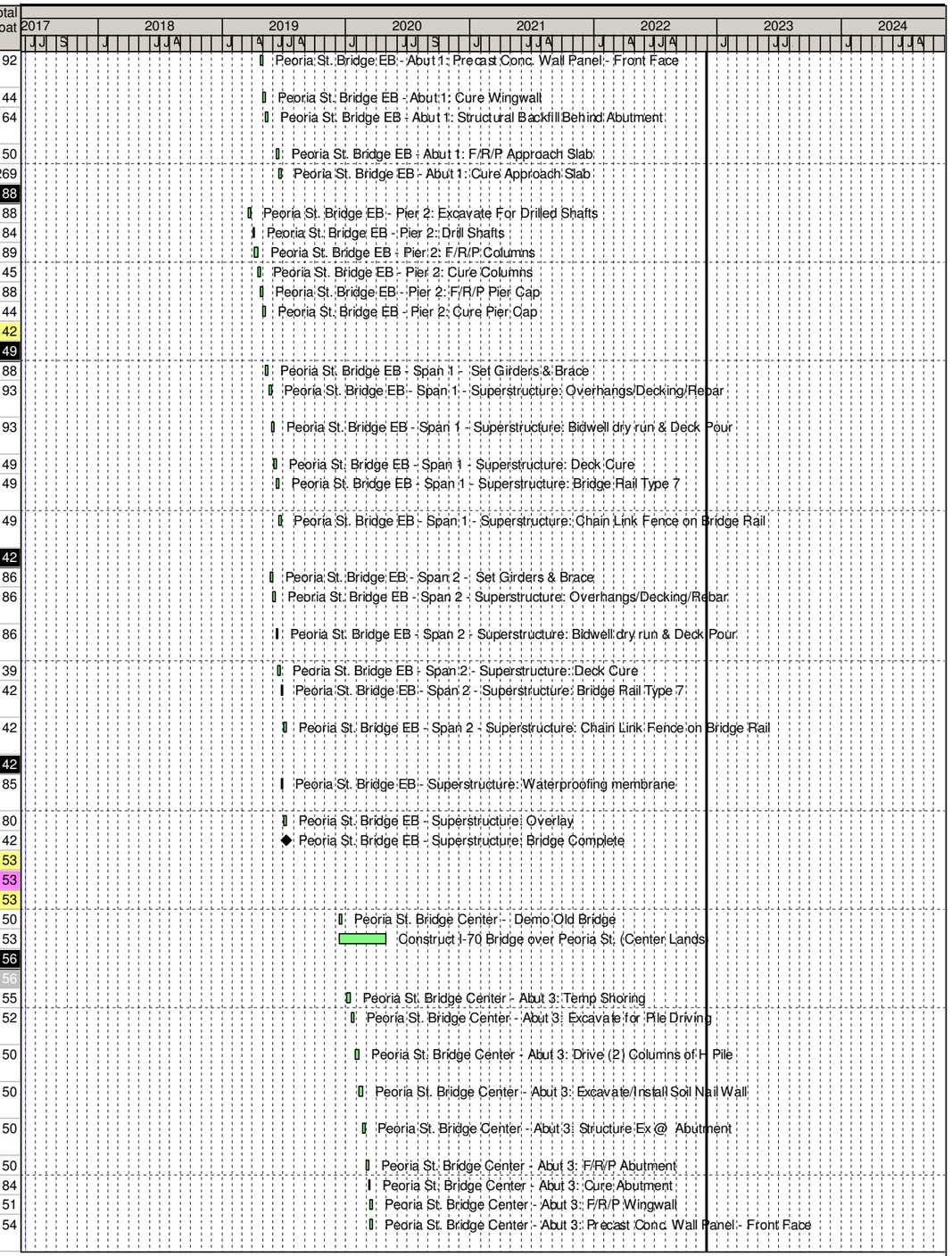


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
CBS1179000	Peoria St. Bridge EB - Abut 1: Precast Conc. Wall Panel - Front Face	5	5	26-Apr-19	02-May-19	92
CBS1178920	Peoria St. Bridge EB - Abut 1: Cure Wingwall	7	7	03-May-19	09-May-19	144
CBS1178930	Peoria St. Bridge EB - Abut 1: Structural Backfill Behind Abutment	5	5	10-May-19	16-May-19	164
CBS1178940	Peoria St. Bridge EB - Abut 1: F/R/P Approach Slab	5	5	12-Jun-19	18-Jun-19	150
CBS1178950	Peoria St. Bridge EB - Abut 1: Cure Approach Slab	7	7	19-Jun-19	25-Jun-19	269
Pier 2		30	30	21-Mar-19	09-May-19	88
CTRENCH1240	Peoria St. Bridge EB - Pier 2: Excavate For Drilled Shafts	3	3	21-Mar-19	26-Mar-19	88
CBS1178820	Peoria St. Bridge EB - Pier 2: Drill Shafts	4	4	02-Apr-19	05-Apr-19	84
CBS1178830	Peoria St. Bridge EB - Pier 2: F/R/P Columns	5	5	08-Apr-19	16-Apr-19	89
CBS1178840	Peoria St. Bridge EB - Pier 2: Cure Columns	7	7	17-Apr-19	23-Apr-19	145
CBS1178850	Peoria St. Bridge EB - Pier 2: F/R/P Pier Cap	5	5	26-Apr-19	02-May-19	88
CBS1178860	Peoria St. Bridge EB - Pier 2: Cure Pier Cap	7	7	03-May-19	09-May-19	144
Superstructure		36	36	10-May-19	09-Jul-19	142
Span 1		29	29	10-May-19	26-Jun-19	149
CBS1178960	Peoria St. Bridge EB - Span 1 - Set Girders & Brace	5	5	10-May-19	16-May-19	88
CBS1178970	Peoria St. Bridge EB - Span 1 - Superstructure: Overhangs/Decking/Rebar	5	5	20-May-19	28-May-19	93
CBS1179010	Peoria St. Bridge EB - Span 1 - Superstructure: Bidwell dry run & Deck Pour	5	5	29-May-19	04-Jun-19	93
CBS1179040	Peoria St. Bridge EB - Span 1 - Superstructure: Deck Cure	7	7	05-Jun-19	11-Jun-19	149
CBS1178980	Peoria St. Bridge EB - Span 1 - Superstructure: Bridge Rail Type 7	5	5	12-Jun-19	18-Jun-19	149
CBS1179050	Peoria St. Bridge EB - Span 1 - Superstructure: Chain Link Fence on Bridge Rail	5	5	20-Jun-19	26-Jun-19	149
Span 2		29	29	23-May-19	09-Jul-19	142
CBS1179100	Peoria St. Bridge EB - Span 2 - Set Girders & Brace	5	5	23-May-19	30-May-19	86
CBS1179070	Peoria St. Bridge EB - Span 2 - Superstructure: Overhangs/Decking/Rebar	5	5	31-May-19	07-Jun-19	86
CBS1179090	Peoria St. Bridge EB - Span 2 - Superstructure: Bidwell dry run & Deck Pour	5	5	10-Jun-19	14-Jun-19	86
CBS1179110	Peoria St. Bridge EB - Span 2 - Superstructure: Deck Cure	7	7	15-Jun-19	21-Jun-19	139
CBS1179080	Peoria St. Bridge EB - Span 2 - Superstructure: Bridge Rail Type 7	5	5	24-Jun-19	28-Jun-19	142
CBS1179120	Peoria St. Bridge EB - Span 2 - Superstructure: Chain Link Fence on Bridge Rail	5	5	01-Jul-19	09-Jul-19	142
Deck Finishes		10	10	24-Jun-19	09-Jul-19	142
CBS1179020	Peoria St. Bridge EB - Superstructure: Waterproofing membrane	5	5	24-Jun-19	28-Jun-19	85
CBS1179030	Peoria St. Bridge EB - Superstructure: Overlay	5	5	01-Jul-19	08-Jul-19	80
CBS1178990	Peoria St. Bridge EB - Superstructure: Bridge Complete	0	0		09-Jul-19	142
Phase 2		74	74	13-Dec-19	29-Apr-20	53
Stage 1		74	74	13-Dec-19	29-Apr-20	53
I-70 Center Lane Bridge over Peoria Street		74	74	13-Dec-19	29-Apr-20	53
CBS1179650	Peoria St. Bridge Center - Demo Old Bridge	5	5	13-Dec-19	19-Dec-19	50
DAH.2475	Construct I-70 Bridge over Peoria St. (Center Lands)	74	74	13-Dec-19	29-Apr-20	53
Substructure		66	66	20-Dec-19	24-Apr-20	56
Abutment 3		61	61	03-Jan-20	24-Apr-20	56
CBS1179790	Peoria St. Bridge Center - Abut 3: Temp Shoring	5	5	03-Jan-20	13-Jan-20	55
CBS1179770	Peoria St. Bridge Center - Abut 3: Excavate for Pile Driving	3	3	20-Jan-20	24-Jan-20	52
CBS1179670	Peoria St. Bridge Center - Abut 3: Drive (2) Columns of H Pile	5	5	30-Jan-20	07-Feb-20	50
CBS1179780	Peoria St. Bridge Center - Abut 3: Excavate/Install Soil Nail Wall	5	5	10-Feb-20	19-Feb-20	50
CBS1179680	Peoria St. Bridge Center - Abut 3: Structure Ex @ Abutment	5	5	20-Feb-20	28-Feb-20	50
CBS1179690	Peoria St. Bridge Center - Abut 3: F/R/P Abutment	5	5	02-Mar-20	09-Mar-20	50
CBS1179700	Peoria St. Bridge Center - Abut 3: Cure Abutment	3	3	10-Mar-20	12-Mar-20	84
CBS1179710	Peoria St. Bridge Center - Abut 3: F/R/P Wingwall	5	5	13-Mar-20	20-Mar-20	51
CBS1179760	Peoria St. Bridge Center - Abut 3: Precast Conc. Wall Panel - Front Face	5	5	13-Mar-20	20-Mar-20	54

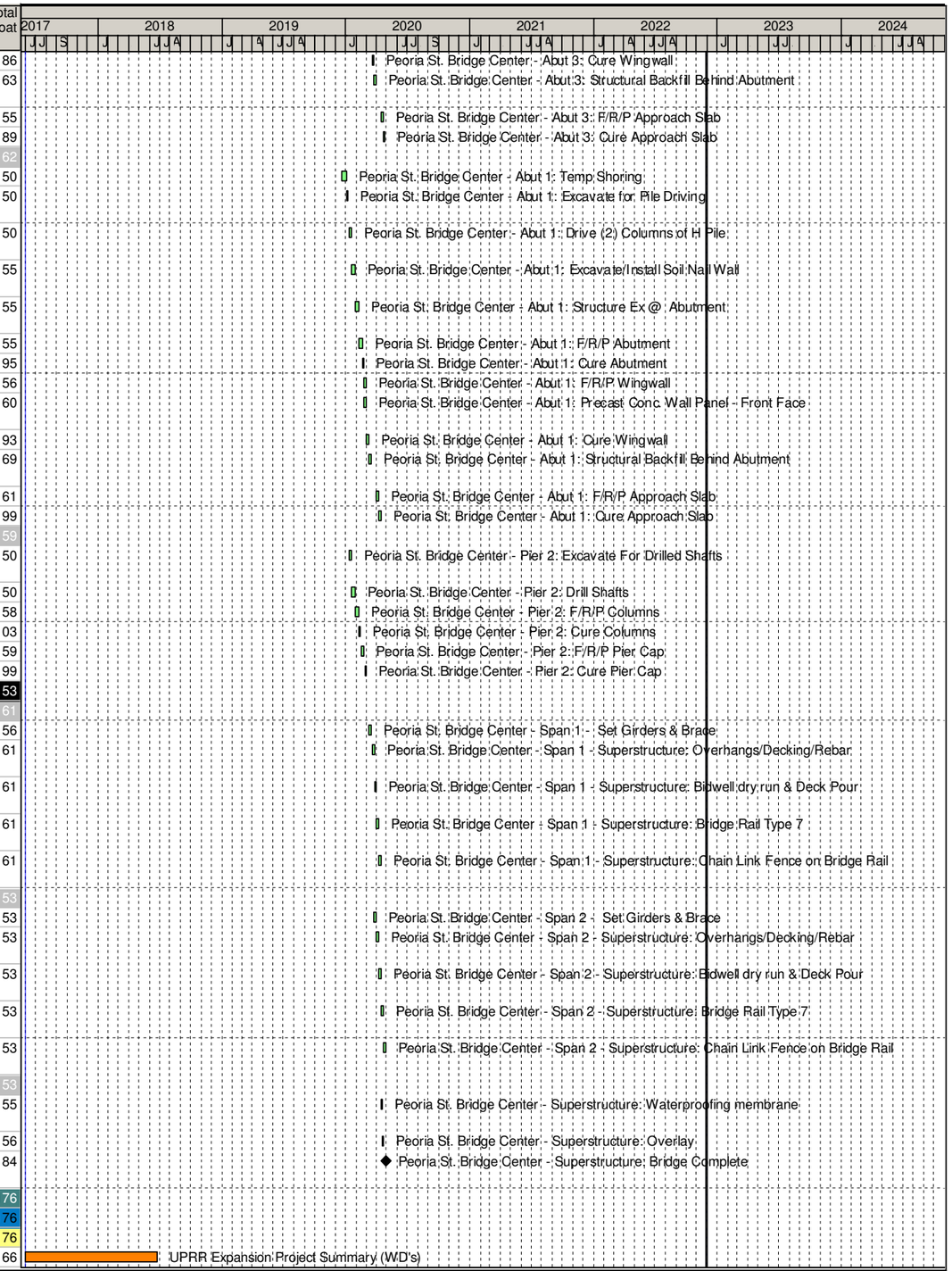


Remaining Level of Effort
Remaining Work
Actual Level of Effort
Critical Remaining Work
Actual Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
CBS1179720	Peoria St. Bridge Center - Abut 3: Cure Wingwall	3	3	21-Mar-20	23-Mar-20	86
CBS1179730	Peoria St. Bridge Center - Abut 3: Structural Backfill Behind Abutment	5	5	25-Mar-20	31-Mar-20	63
CBS1179740	Peoria St. Bridge Center - Abut 3: F/R/P Approach Slab	5	5	14-Apr-20	21-Apr-20	55
CBS1179750	Peoria St. Bridge Center - Abut 3: Cure Approach Slab	3	3	22-Apr-20	24-Apr-20	89
Abutment 1		60	60	20-Dec-19	14-Apr-20	62
CBS1179660	Peoria St. Bridge Center - Abut 1: Temp Shoring	5	5	20-Dec-19	02-Jan-20	50
CBS1179620	Peoria St. Bridge Center - Abut 1: Excavate for Pile Driving	3	3	03-Jan-20	08-Jan-20	50
CBS1179360	Peoria St. Bridge Center - Abut 1: Drive (2) Columns of H Pile	5	5	10-Jan-20	17-Jan-20	50
CBS1179640	Peoria St. Bridge Center - Abut 1: Excavate/Install Soil Nail Wall	5	5	20-Jan-20	29-Jan-20	55
CBS1179370	Peoria St. Bridge Center - Abut 1: Structure Ex @ Abutment	5	5	30-Jan-20	07-Feb-20	55
CBS1179380	Peoria St. Bridge Center - Abut 1: F/R/P Abutment	5	5	10-Feb-20	19-Feb-20	55
CBS1179390	Peoria St. Bridge Center - Abut 1: Cure Abutment	3	3	20-Feb-20	22-Feb-20	95
CBS1179400	Peoria St. Bridge Center - Abut 1: F/R/P Wingwall	5	5	24-Feb-20	02-Mar-20	56
CBS1179490	Peoria St. Bridge Center - Abut 1: Precast Conc. Wall Panel - Front Face	5	5	24-Feb-20	02-Mar-20	60
CBS1179410	Peoria St. Bridge Center - Abut 1: Cure Wingwall	7	7	03-Mar-20	09-Mar-20	93
CBS1179420	Peoria St. Bridge Center - Abut 1: Structural Backfill Behind Abutment	5	5	10-Mar-20	17-Mar-20	69
CBS1179430	Peoria St. Bridge Center - Abut 1: F/R/P Approach Slab	5	5	01-Apr-20	07-Apr-20	61
CBS1179440	Peoria St. Bridge Center - Abut 1: Cure Approach Slab	7	7	08-Apr-20	14-Apr-20	99
Pier 2		27	27	10-Jan-20	03-Mar-20	59
CTRENCH1250	Peoria St. Bridge Center - Pier 2: Excavate For Drilled Shafts	5	5	10-Jan-20	17-Jan-20	50
CBS1179310	Peoria St. Bridge Center - Pier 2: Drill Shafts	5	5	20-Jan-20	29-Jan-20	50
CBS1179320	Peoria St. Bridge Center - Pier 2: F/R/P Columns	5	5	30-Jan-20	07-Feb-20	58
CBS1179330	Peoria St. Bridge Center - Pier 2: Cure Columns	7	7	08-Feb-20	14-Feb-20	103
CBS1179340	Peoria St. Bridge Center - Pier 2: F/R/P Pier Cap	5	5	17-Feb-20	25-Feb-20	59
CBS1179350	Peoria St. Bridge Center - Pier 2: Cure Pier Cap	7	7	26-Feb-20	03-Mar-20	99
Superstructure		31	31	10-Mar-20	29-Apr-20	53
Span 1		23	23	10-Mar-20	15-Apr-20	61
CBS1179450	Peoria St. Bridge Center - Span 1 - Set Girders & Brace	5	5	10-Mar-20	17-Mar-20	56
CBS1179460	Peoria St. Bridge Center - Span 1 - Superstructure: Overhangs/Decking/Rebar	5	5	19-Mar-20	26-Mar-20	61
CBS1179500	Peoria St. Bridge Center - Span 1 - Superstructure: Bidwell dry run & Deck Pour	3	3	27-Mar-20	31-Mar-20	61
CBS1179470	Peoria St. Bridge Center - Span 1 - Superstructure: Bridge Rail Type 7	5	5	01-Apr-20	07-Apr-20	61
CBS1179540	Peoria St. Bridge Center - Span 1 - Superstructure: Chain Link Fence on Bridge Rail	5	5	09-Apr-20	15-Apr-20	61
Span 2		23	23	25-Mar-20	29-Apr-20	53
CBS1179590	Peoria St. Bridge Center - Span 2 - Set Girders & Brace	5	5	25-Mar-20	31-Mar-20	53
CBS1179560	Peoria St. Bridge Center - Span 2 - Superstructure: Overhangs/Decking/Rebar	5	5	01-Apr-20	07-Apr-20	53
CBS1179580	Peoria St. Bridge Center - Span 2 - Superstructure: Bidwell dry run & Deck Pour	3	3	09-Apr-20	13-Apr-20	53
CBS1179570	Peoria St. Bridge Center - Span 2 - Superstructure: Bridge Rail Type 7	5	5	14-Apr-20	21-Apr-20	53
CBS1179610	Peoria St. Bridge Center - Span 2 - Superstructure: Chain Link Fence on Bridge Rail	5	5	23-Apr-20	29-Apr-20	53
Deck Finishes		10	10	14-Apr-20	29-Apr-20	53
CBS1179510	Peoria St. Bridge Center - Superstructure: Waterproofing membrane	3	3	14-Apr-20	16-Apr-20	55
CBS1179520	Peoria St. Bridge Center - Superstructure: Overlay	4	4	17-Apr-20	22-Apr-20	56
CBS1179480	Peoria St. Bridge Center - Superstructure: Bridge Complete	0	0		29-Apr-20	84
Railroads		834	834	02-Jun-17	22-Jun-21	176
Area 1 - Brighton Blvd to Dahlia St.- Sta 2000+00 to 2085+00 (1.61 miles)		834	834	02-Jun-17	22-Jun-21	176
Union Pacific Railroad Replacement (UPRR) - MP 2.53 to MP 3.26		834	834	02-Jun-17	22-Jun-21	176
UPRR.EXPANSION	UPRR Expansion Project Summary (WD's)	214	214	02-Jun-17	22-Jun-18	166



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
WBS.A1.PH1.ST1.40	UPRR Costruction Summary (WD's)	834	834	02-Jun-17	22-Jun-21	176
NSPN.3890	Install Silt Fence & Erosion Contorl Devices @ North Wall - UPRR to York St. - Sta 2020+00 to 2022+50	2	2	19-Sep-18	20-Sep-18	1
NSPN.3900	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - UPRR to York St. - Sta 2020+00 to 2022+50	5	5	21-Sep-18	26-Sep-18	1
UPRR.TRN.SCNT.405	Drill & Test Secant Piles North Wall - UPRR to York St. - Sta 2020+00 to 2022+50 (Wall RW1.16)	21	21	27-Sep-18	24-Oct-18	1
UPRR Phase 1		183	183	22-Jun-18	24-May-19	109
Phase 1a		120	120	22-Jun-18	28-Jan-19	172
UPRR.PH1a.1951	Phase 1 - New ML1 Track, Siding 427 & YL 428	120	120	22-Jun-18	28-Jan-19	172
Mainline Track 1		120	120	22-Jun-18	28-Jan-19	109
UPRR.PH1a.1985	Shutdown Mainline 1 Track	0	0		22-Jun-18	166
UPRR.PH1a.1995	Rem Exist ML1 Track MP 2.97 to MP3.23	6	6	25-Jun-18	02-Jul-18	166
UPRR.PH1a.2065	Excavate/Embank to Subgrade	9	9	03-Jul-18	17-Jul-18	166
UPRR.PH1a.2530	Shift Track & Construct Crossing Panels by UPRR Work Force by UPRR Work Force	15	15	03-Jul-18	26-Jul-18	205
UPRR.PH1a.2105	Place 6" Sub-Ballast	6	6	19-Jul-18	26-Jul-18	166
UPRR.PH1a.2130	Place Initial Ballast by UPRR Work Force	5	5	30-Aug-18	07-Sep-18	144
UPRR.PH1a.2175	Pull/Distribute Rail by UPRR Work Force by UPRR Work Force	6	6	05-Nov-18	15-Nov-18	109
UPRR.PH1a.2185	Lay Ties by UPRR Work Force	5	5	12-Nov-18	19-Nov-18	109
UPRR.PH1a.2215	Lay & Clip Rail by UPRR Work Force	9	9	20-Nov-18	07-Dec-18	109
UPRR.PH1a.2265	Place Final Ballast by UPRR Work Force	5	5	10-Dec-18	17-Dec-18	109
UPRR.PH1a.2290	Tamp & Align Rail by UPRR Work Force	8	8	19-Dec-18	08-Jan-19	109
UPRR.PH1a.2365	De-Stress Rail by UPRR Work Force	4	4	11-Jan-19	18-Jan-19	109
UPRR.PH1a.2395	Dress Ballast by UPRR Work Force	3	3	21-Jan-19	28-Jan-19	109
UPRR.PH1a.2445	Open Mainline 1 Track to Traffic	0	0		28-Jan-19	109
Siding 427		96	96	22-Jun-18	29-Nov-18	133
UPRR.PH1a.2000	Shutdown Siding 427	0	0		22-Jun-18	207
UPRR.PH1a.2075	Rem Exist Siding 427 Track by UPRR Work Force	3	3	03-Jul-18	09-Jul-18	201
UPRR.PH1a.2115	Excavate/Embank to Subgrade	2	2	19-Jul-18	20-Jul-18	195
UPRR.PH1a.2145	Place 6" Sub-Ballast	2	2	27-Jul-18	30-Jul-18	191
UPRR.PH1a.2155	Place Initial Ballast by UPRR Work Force	2	2	31-Jul-18	01-Aug-18	191
UPRR.PH1a.2225	Pull/Distribute Rail by UPRR Work Force	2	2	05-Nov-18	07-Nov-18	133
UPRR.PH1a.2235	Lay Ties by UPRR Work Force	2	2	05-Nov-18	07-Nov-18	133
UPRR.PH1a.2275	Lay & Clip Rail by UPRR Work Force by UPRR Work Force	3	3	09-Nov-18	13-Nov-18	133
UPRR.PH1a.2305	Place Final Ballast by UPRR Work Force	2	2	15-Nov-18	16-Nov-18	133
UPRR.PH1a.2335	Tamp & Align Rail by UPRR Work Force	3	3	19-Nov-18	21-Nov-18	133
UPRR.PH1a.2405	De-Stress Rail by UPRR Work Force	1	1	27-Nov-18	27-Nov-18	133
UPRR.PH1a.2435	Dress Ballast by UPRR Work Force	2	2	28-Nov-18	29-Nov-18	133
UPRR.PH1a.2450	Open Siding 427 Complete	0	0		29-Nov-18	133
Yard Line 428		96	96	22-Jun-18	29-Nov-18	196
UPRR.PH1a.2025	Shutdown Siding Track 428	0	0		22-Jun-18	271
UPRR.PH1a.2085	Rem Exist Siding Track 428 ML1 to 13' Clear Point	2	2	10-Jul-18	11-Jul-18	262
UPRR.PH1a.2120	Excavate/Embank to Subgrade	2	2	23-Jul-18	24-Jul-18	256
UPRR.PH1a.2165	Place 6" Sub-Ballast	2	2	31-Jul-18	01-Aug-18	252
UPRR.PH1a.2195	Place Initial Ballast by UPRR Work Force	2	2	02-Aug-18	03-Aug-18	252
UPRR.PH1a.2245	Pull/Distribute Rail by UPRR Work Force	2	2	05-Nov-18	07-Nov-18	196
UPRR.PH1a.2255	Lay Ties by UPRR Work Force	2	2	05-Nov-18	07-Nov-18	196
UPRR.PH1a.2315	Lay & Clip Rail by UPRR Work Force	3	3	09-Nov-18	13-Nov-18	196
UPRR.PH1a.2345	Place Final Ballast by UPRR Work Force	2	2	15-Nov-18	16-Nov-18	196
UPRR.PH1a.2375	Tamp & Align Rail by UPRR Work Force	3	3	19-Nov-18	21-Nov-18	196
UPRR.PH1a.2425	De-Stress Rail by UPRR Work Force	1	1	27-Nov-18	27-Nov-18	196
UPRR.PH1a.2460	Dress Ballast by UPRR Work Force	2	2	28-Nov-18	29-Nov-18	196
UPRR.PH1a.2520	Phase 1 A Complete - Track 428 to 13' Clear Point	0	0		29-Nov-18	196
Phase 1b		63	63	28-Jan-19	24-May-19	109
UPRR.PH1b.2470	Phase 1b - Construct New Yard Line 428, Siding 427 & No. 9 TO	63	63	28-Jan-19	24-May-19	109
ML1, Yard 039 & Yard Lead 112		63	63	28-Jan-19	24-May-19	109
UPRR.PH1b.2480	Begin Phase 1B - ML1, Yard 039 & Yard Lead 112	0	0		28-Jan-19	109
UPRR.PH1b.2490	Rem Exist ML 1, Yard 428, Existing Turnouts & Yard 039 as Necessary by UPRR Work Force	6	6	29-Jan-19	11-Feb-19	109

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
UPRR.PH1b.2530	Excavate/Embank to Subgrade	9	9	12-Feb-19	01-Mar-19	109
UPRR.PH1b.2540	Place 6" Sub-Ballast	6	6	05-Mar-19	14-Mar-19	109
UPRR.PH1b.2550	Place Initial Ballast by UPRR Work Force	5	5	15-Mar-19	22-Mar-19	109
UPRR.PH1b.2585	Pull/Distribute Rail by UPRR Work Force	6	6	26-Mar-19	02-Apr-19	109
UPRR.PH1b.2590	Lay Ties by UPRR Work Force	5	5	29-Mar-19	04-Apr-19	109
UPRR.PH1b.2640	Lay & Clip Rail by UPRR Work Force	9	9	05-Apr-19	19-Apr-19	109
UPRR.PH1b.2670	Place Final Ballast by UPRR Work Force	5	5	22-Apr-19	30-Apr-19	109
UPRR.PH1b.2680	Tamp & Align Rail by UPRR Work Force	8	8	01-May-19	13-May-19	109
UPRR.PH1b.2700	De-Stress Rail by UPRR Work Force	4	4	14-May-19	20-May-19	109
UPRR.PH1b.2715	Dress Ballast by UPRR Work Force	3	3	21-May-19	24-May-19	109
UPRR.PH1b.2730	Open ML1, Yard 039 & ML2 to Traffic	0	0		24-May-19	109
Phase 1c		54	54	28-Jan-19	09-May-19	118
UPRR.PH1c.2740	Phase 1c - New East Belt Line to Yard Lead 112 & No. 11 TO	54	54	28-Jan-19	09-May-19	118
Yard Lead 112		54	54	28-Jan-19	09-May-19	118
UPRR.PH1c.2750	Begin Phase 1c - New East Belt Line to Yard Lead 112 & No. 11 TO	0	0		28-Jan-19	118
UPRR.PH1c.2760	Rem Exist Siding Track YL 112 MP 2.99 to MP 3.23 & Sidings as Necessary	6	6	29-Jan-19	11-Feb-19	118
UPRR.PH1c.2790	Excavate/Embank to Subgrade	8	8	12-Feb-19	28-Feb-19	118
UPRR.PH1c.2810	Place 6" Sub-Ballast	6	6	01-Mar-19	12-Mar-19	118
UPRR.PH1c.5820	Construct Crossing Panels by UPRR Work Forces	10	10	01-Mar-19	20-Mar-19	143
UPRR.PH1c.2820	Place Initial Ballast by UPRR Work Force	4	4	14-Mar-19	20-Mar-19	118
UPRR.PH1c.2840	Pull/Distribute Rail by UPRR Work Force	5	5	21-Mar-19	28-Mar-19	118
UPRR.PH1c.2850	Lay Ties by UPRR Work Force	5	5	27-Mar-19	02-Apr-19	118
UPRR.PH1c.2870	Lay & Clip Rail by UPRR Work Force	5	5	03-Apr-19	09-Apr-19	118
UPRR.PH1c.2880	Place Final Ballast by UPRR Work Force	4	4	11-Apr-19	17-Apr-19	118
UPRR.PH1c.2900	Tamp & Align Rail by UPRR Work Force	4	4	18-Apr-19	23-Apr-19	118
UPRR.PH1c.2960	De-Stress Rail by UPRR Work Force	2	2	26-Apr-19	29-Apr-19	118
UPRR.PH1c.2970	Dress Ballast by UPRR Work Force	2	2	30-Apr-19	01-May-19	118
UPRR.PH1c.5810	Signal Revisions & Testing - Phase 1a, 1b & 1c	5	5	02-May-19	09-May-19	118
UPRR.PH1c.2980	Open East Belt Line & Yard Lead 112 to Traffic	0	0		09-May-19	118
UPRR Phase 2		262	262	06-Feb-18	24-May-19	109
TRN.890	ATC 22 Sewer- Portion under UPRR	10	10	06-Feb-18	26-Feb-18	119
TRN.900	Temp Offsite Outfall Drainage	15	15	27-Feb-18	26-Mar-18	119
UPRR.PH2a.1965	Setup/Install 46th Ave. Detour - Brighton to York St.	5	5	06-Mar-18	16-Mar-18	73
UPRR.PH2a.2045	Demo 46th Ave Rdwy Elements as Necessary - UPRR to York St.	6	6	10-Mar-18	16-Mar-18	150
UPRR.PH2a.2035	Shutdown 46th Ave - Brighton to York Street	0	0		16-Mar-18	120
Phase 2b		83	83	07-Dec-18	24-May-19	109
UPRR.PH2b.2610	Phase 2b - Construct ML Shoofly Cut-Ins & No. 11 Turnout	83	83	07-Dec-18	24-May-19	109
Mainline Tracks 1 & 2 Shoofly Cut-Ins		83	83	07-Dec-18	24-May-19	109
UPRR.PH2b.2620	Shutdown Mainline 1 & 2 Tracks	0	0		07-Dec-18	1
UPRR.PH2b.2630	Rem Exist ML1 & 2 Track MP 2.97 to MP3.23	5	5	10-Dec-18	17-Dec-18	1
UPRR.PH2b.2660	Rem Remaining Inactive ML1& 2 Track as Shown MP 2.66 to MP 3.01	5	5	10-Dec-18	17-Dec-18	1
UPRR.PH2b.2650	Excavate/Embank to Subgrade	6	6	13-Dec-18	21-Dec-18	147
UPRR.PH2b.2690	Place 6" Sub-Ballast	4	4	26-Dec-18	03-Jan-19	147
UPRR.PH2b.2720	Place Initial Ballast by UPRR Work Force	3	3	08-Jan-19	15-Jan-19	147
UPRR.PH2b.2770	Pull/Distribute Rail by UPRR Work Force	5	5	17-Jan-19	28-Jan-19	147
UPRR.PH2b.2780	Lay Ties by UPRR Work Force	4	4	24-Jan-19	30-Jan-19	147
UPRR.PH2b.2800	Lay & Clip Rail by UPRR Work Force	6	6	05-Feb-19	14-Feb-19	147
UPRR.PH2b.2830	Place Final Ballast by UPRR Work Force	4	4	18-Feb-19	26-Feb-19	147
UPRR.PH2b.2865	Tamp & Align Rail by UPRR Work Force	5	5	27-Feb-19	06-Mar-19	147
UPRR.PH2b.2890	De-Stress Rail by UPRR Work Force	3	3	08-Mar-19	12-Mar-19	147
UPRR.PH2b.2910	Dress Ballast by UPRR Work Force	2	2	14-Mar-19	15-Mar-19	147
UPRR.PH2b.6370	Signal Revisions & Testing	3	3	18-Mar-19	21-Mar-19	147
UPRR.PH2b.2920	Open Mainline Shoofly to Traffic	0	0		24-May-19	109
Phase 2a - Build ML 1 & 2 Shoofly (East Side)		49	49	14-Sep-18	07-Dec-18	1
UPRR.PH2a.1955	Phase 2a - Construct Mainline 1 & 2 Shoofly (EAST) MP 2.75 to 2.91 (902 TF)	49	49	14-Sep-18	07-Dec-18	1
Mainline Track 1 & 2 Shoofly		49	49	14-Sep-18	07-Dec-18	1

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

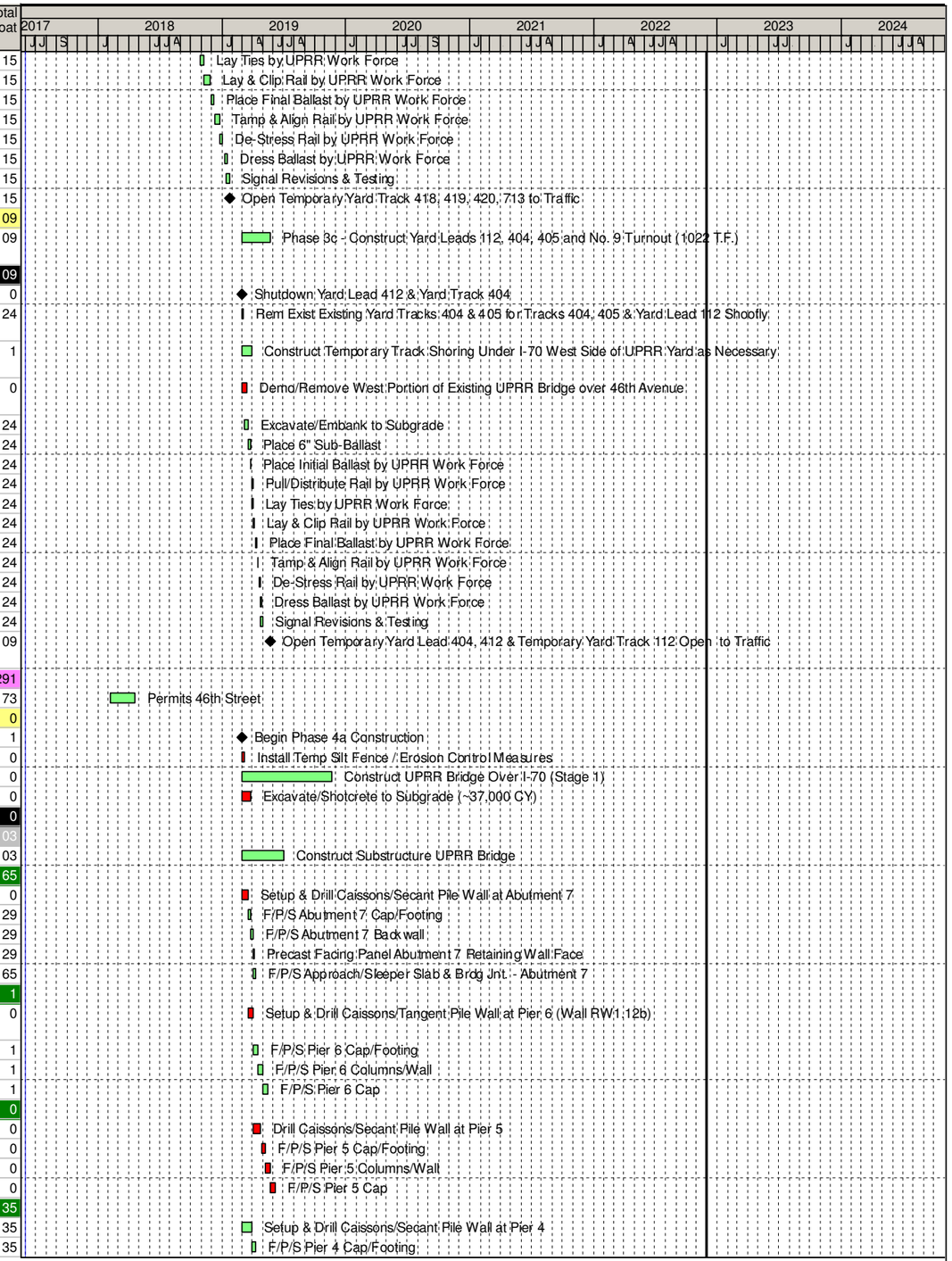
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
UPRR.PH2a.2095	Construct Shoofly Shoring Under I-70 East Side of UPRR Yard as Necessary	18	18	14-Sep-18	05-Oct-18	12
UPRR.PH2a.2205	Embank ML 1 & 2 Shoofly to Subgrade (East Shoofly)	15	15	04-Oct-18	24-Oct-18	1
UPRR.PH2a.2285	Place 6" Sub-Ballast	4	4	25-Oct-18	30-Oct-18	1
UPRR.PH2a.2325	Place 8" Initial Ballast	3	3	31-Oct-18	02-Nov-18	1
UPRR.PH2a.2355	Pull/Distribute Rail by UPRR Work Force	4	4	05-Nov-18	12-Nov-18	1
UPRR.PH2a.2385	Lay Ties by UPRR Work Force	3	3	07-Nov-18	12-Nov-18	1
UPRR.PH2a.2415	Lay & Clip Rail by UPRR Work Force	6	6	12-Nov-18	20-Nov-18	1
UPRR.PH2a.2500	Place Final Ballast by UPRR Work Force	3	3	20-Nov-18	27-Nov-18	1
UPRR.PH2a.2510	Tamp & Align Rail by UPRR Work Force	5	5	21-Nov-18	30-Nov-18	1
UPRR.PH2a.2560	De-Stress Rail by UPRR Work Force	2	2	04-Dec-18	05-Dec-18	1
UPRR.PH2a.2570	Dress Ballast by UPRR Work Force	3	3	04-Dec-18	07-Dec-18	1
UPRR.PH2a.2600	Mainline 1 & 2 Shoofly Constructed to within 13' Clear Point Complete	0	0		07-Dec-18	1
UPRR Phase 3		184	184	21-Jun-18	24-May-19	109
Phase 3a - Build YL 112, 418, 419, 713 & Pepsi Lead 731 Shoofly (West Side)		135	135	21-Jun-18	28-Feb-19	0
UPRR.PH3a.2930	Phase 3a - Construct Yard Lead 418, 419, 713 & Pepsi Lead 731 Shoofly (West) to 13' Clear Points (1469 TF)	135	135	21-Jun-18	28-Feb-19	0
New Yard Lead 418, 419 & Pepsi Lead 731 Shooflys		48	48	21-Jun-18	05-Sep-18	15
UPRR.PH3a.2940	Begin Phase 3a Construction	0	0		21-Jun-18	14
UPRR.PH3a.2950	Demo 46th Ave Rdwy Elements & Adjacent Properties as Necessary - UPRR to Brighton Ramp	10	10	22-Jun-18	03-Jul-18	18
CRW1TW1000	Wall RW1-TW: West Cutoff Wall	15	15	02-Jul-18	20-Jul-18	21
UPRR.PH3a.2990	Drive/Construct Shoofly Shoring Under I-70 West Side of UPRR Yard as Necessary	18	18	02-Jul-18	24-Jul-18	18
UPRR.PH3a.3000	Embank YL 418 Shoofly to Subgrade	15	15	09-Jul-18	30-Jul-18	15
UPRR.PH3a.3010	Place 6" Sub-Ballast	4	4	31-Jul-18	03-Aug-18	15
UPRR.PH3a.3020	Place 8" Initial Ballast	3	3	03-Aug-18	08-Aug-18	15
UPRR.PH3a.3030	Pull/Distribute Rail by UPRR Work Force	4	4	09-Aug-18	14-Aug-18	15
UPRR.PH3a.3040	Lay Ties by UPRR Work Force	3	3	10-Aug-18	14-Aug-18	15
UPRR.PH3a.3050	Lay & Clip Rail by UPRR Work Force	6	6	14-Aug-18	22-Aug-18	15
UPRR.PH3a.3060	Place Final Ballast by UPRR Work Force	4	4	21-Aug-18	24-Aug-18	15
UPRR.PH3a.3070	Tamp & Align Rail by UPRR Work Force	6	6	22-Aug-18	29-Aug-18	15
UPRR.PH3a.3080	De-Stress Rail by UPRR Work Force	3	3	30-Aug-18	04-Sep-18	15
UPRR.PH3a.3090	Dress Ballast by UPRR Work Force	3	3	31-Aug-18	05-Sep-18	15
UPRR.PH3a.3100	New Yard Leads 418, 419, 713 & Pepsi Lead 731 Shooflys to 13' Clear Points Complete (1469 TF)	0	0		05-Sep-18	15
New Yard Lead 112 Shoofly's		29	29	17-Dec-18	28-Feb-19	0
UPRR.PH3a.3110	Begin Phase 3a Construction	0	0		17-Dec-18	1
UPRR.PH3a.3125	Excavate/Embank to Subgrade	6	6	19-Dec-18	27-Dec-18	1
UPRR.PH3a.3130	Place 6" Sub-Ballast	4	4	02-Jan-19	11-Jan-19	0
UPRR.PH3a.3140	Place 8" Initial Ballast	3	3	11-Jan-19	17-Jan-19	0
UPRR.PH3a.3150	Pull/Distribute Rail by UPRR Work Force	4	4	18-Jan-19	28-Jan-19	0
UPRR.PH3a.3160	Lay Ties by UPRR Work Force	3	3	21-Jan-19	28-Jan-19	0
UPRR.PH3a.3170	Lay & Clip Rail by UPRR Work Force	6	6	28-Jan-19	08-Feb-19	0
UPRR.PH3a.3180	Place Final Ballast by UPRR Work Force	4	4	06-Feb-19	12-Feb-19	0
UPRR.PH3a.3190	Tamp & Align Rail by UPRR Work Force	6	6	08-Feb-19	20-Feb-19	0
UPRR.PH3a.3200	De-Stress Rail by UPRR Work Force	3	3	22-Feb-19	27-Feb-19	0
UPRR.PH3a.3210	Dress Ballast by UPRR Work Force	3	3	26-Feb-19	28-Feb-19	0
UPRR.PH3a.3220	New Yard Lead 112 Shoofly to 13' Clear Points Complete (1469 TF)	0	0		28-Feb-19	0
Phase 3b		72	72	05-Sep-18	24-Jan-19	15
UPRR.PH3b.3110	Phase 3b - Construct Yard Track 418, 419, 420, 713 & Pepsi Lead Cut-Ins & No. 9 Turnout	72	72	05-Sep-18	24-Jan-19	15
Yard Lead 418, 419 & Pepsi Lead 731 Shooflys Cut-Ins		72	72	05-Sep-18	24-Jan-19	15
UPRR.PH3b.3120	Shutdown Yard Lead 418, 419, 420, 713, Pepsi Lead 731 & Connecting Yard Ladder Tracks	0	0		05-Sep-18	15
UPRR.PH3b.3130	Rem Existing Track as Necessary for Temporary Yard & Pepsi Lead Cut-ins	7	7	07-Sep-18	19-Sep-18	15
UPRR.PH3b.3145	Excavate/Embank to Subgrade	10	10	20-Sep-18	03-Oct-18	15
UPRR.PH3b.3155	Place 6" Sub-Ballast	6	6	04-Oct-18	12-Oct-18	15
UPRR.PH3b.3165	Place Initial Ballast by UPRR Work Force	5	5	15-Oct-18	22-Oct-18	15
UPRR.PH3b.3175	Pull/Distribute Rail by UPRR Work Force	8	8	24-Oct-18	02-Nov-18	15

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
UPRR.PH3b.3185	Lay Ties by UPRR Work Force	6	6	30-Oct-18	07-Nov-18	15
UPRR.PH3b.3195	Lay & Clip Rail by UPRR Work Force	10	10	09-Nov-18	28-Nov-18	15
UPRR.PH3b.3205	Place Final Ballast by UPRR Work Force	5	5	29-Nov-18	07-Dec-18	15
UPRR.PH3b.3215	Tamp & Align Rail by UPRR Work Force	9	9	10-Dec-18	26-Dec-18	15
UPRR.PH3b.3225	De-Stress Rail by UPRR Work Force	3	3	27-Dec-18	03-Jan-19	15
UPRR.PH3b.3235	Dress Ballast by UPRR Work Force	4	4	08-Jan-19	17-Jan-19	15
UPRR.PH3b.5800	Signal Revisions & Testing	5	5	15-Jan-19	24-Jan-19	15
UPRR.PH3b.3245	Open Temporary Yard Track 418, 419, 420, 713 to Traffic	0	0		24-Jan-19	15
Phase 3c		49	49	28-Feb-19	24-May-19	109
UPRR.PH3c.3265	Phase 3c - Construct Yard Leads 112, 404, 405 and No. 9 Turnout (1022 T.F.)	49	49	28-Feb-19	24-May-19	109
Yard Leads 112, 404, 405 a Shoofly Cut-Ins		49	49	28-Feb-19	24-May-19	109
UPRR.PH3c.3275	Shutdown Yard Lead 412 & Yard Track 404	0	0		28-Feb-19	0
UPRR.PH3c.3280	Rem Exist Existing Yard Tracks 404 & 405 for Tracks 404, 405 & Yard Lead 112 Shoofly	3	3	01-Mar-19	06-Mar-19	124
UPRR.PH3c.3400	Construct Temporary Track Shoring Under I-70 West Side of UPRR Yard as Necessary	20	20	01-Mar-19	29-Mar-19	1
UPRR.PH3c.3410	Demo/Remove West Portion of Existing UPRR Bridge over 46th Avenue	10	10	01-Mar-19	15-Mar-19	0
UPRR.PH3c.3295	Excavate/Embank to Subgrade	7	7	08-Mar-19	20-Mar-19	124
UPRR.PH3c.3305	Place 6" Sub-Ballast	3	3	21-Mar-19	26-Mar-19	124
UPRR.PH3c.3315	Place Initial Ballast by UPRR Work Force	2	2	27-Mar-19	28-Mar-19	124
UPRR.PH3c.3325	Pull/Distribute Rail by UPRR Work Force	3	3	29-Mar-19	02-Apr-19	124
UPRR.PH3c.3335	Lay Ties by UPRR Work Force	2	2	01-Apr-19	02-Apr-19	124
UPRR.PH3c.3340	Lay & Clip Rail by UPRR Work Force	4	4	03-Apr-19	08-Apr-19	124
UPRR.PH3c.3350	Place Final Ballast by UPRR Work Force	3	3	09-Apr-19	15-Apr-19	124
UPRR.PH3c.3360	Tamp & Align Rail by UPRR Work Force	4	4	16-Apr-19	19-Apr-19	124
UPRR.PH3c.3370	De-Stress Rail by UPRR Work Force	2	2	22-Apr-19	23-Apr-19	124
UPRR.PH3c.3380	Dress Ballast by UPRR Work Force	2	2	26-Apr-19	29-Apr-19	124
UPRR.PH3c.5820	Signal Revisions & Testing	3	3	26-Apr-19	30-Apr-19	124
UPRR.PH3c.3390	Open Temporary Yard Lead 404, 412 & Temporary Yard Track 112 Open to Traffic	0	0		24-May-19	109
UPRR Phase 4		543	543	06-Feb-18	15-Sep-20	291
UPRR.PH4a.1415	Permits 46th Street	40	40	06-Feb-18	20-Apr-18	173
Phase 4a - Construct West Side of New UPRR Bridge		158	158	01-Mar-19	21-Nov-19	0
UPRR.PH4a.3420	Begin Phase 4a Construction	0	0	01-Mar-19		1
UPRR.PH4a.3430	Install Temp Silt Fence / Erosion Control Measures	5	5	01-Mar-19	08-Mar-19	0
UPRR.PH4a.1085	Construct UPRR Bridge Over I-70 (Stage 1)	158	158	01-Mar-19	21-Nov-19	0
UPRR.PH4a.3440	Excavate/Shotcrete to Subgrade (~37,000 CY)	18	18	02-Mar-19	28-Mar-19	0
UPRR Bridge over I-70 (West Portion Only) - Stage 1		157	157	02-Mar-19	21-Nov-19	0
Substructure		91	91	02-Mar-19	03-Jul-19	103
UPRR.PH4a.3450	Construct Substructure UPRR Bridge	91	91	02-Mar-19	03-Jul-19	103
Abutment 7		29	29	02-Mar-19	11-Apr-19	165
UPRR.PH4a.3470	Setup & Drill Caissons/Secant Pile Wall at Abutment 7	12	12	02-Mar-19	20-Mar-19	0
UPRR.PH4a.3480	F/P/S Abutment 7 Cap/Footing	4	4	21-Mar-19	26-Mar-19	29
UPRR.PH4a.3510	F/P/S Abutment 7 Backwall	5	5	27-Mar-19	01-Apr-19	29
UPRR.PH4a.3520	Precast Facing Panel Abutment 7 Retaining Wall Face	6	6	02-Apr-19	08-Apr-19	29
UPRR.PH4a.3910	F/P/S Approach/Sleeper Slab & Brdg Jnt. - Abutment 7	8	8	02-Apr-19	11-Apr-19	165
Pier 6		43	43	21-Mar-19	16-May-19	1
UPRR.PH4a.3500	Setup & Drill Caissons/Tangent Pile Wall at Pier 6 (Wall RW1.12b)	11	11	21-Mar-19	03-Apr-19	0
UPRR.PH4a.3530	F/P/S Pier 6 Cap/Footing	10	10	04-Apr-19	17-Apr-19	1
UPRR.PH4a.3560	F/P/S Pier 6 Columns/Wall	10	10	18-Apr-19	01-May-19	1
UPRR.PH4a.3600	F/P/S Pier 6 Cap	12	12	02-May-19	16-May-19	1
Pier 5		48	48	04-Apr-19	08-Jun-19	0
UPRR.PH4a.3550	Drill Caissons/Secant Pile Wall at Pier 5	16	16	04-Apr-19	26-Apr-19	0
UPRR.PH4a.3570	F/P/S Pier 5 Cap/Footing	10	10	27-Apr-19	09-May-19	0
UPRR.PH4a.3610	F/P/S Pier 5 Columns/Wall	10	10	10-May-19	23-May-19	0
UPRR.PH4a.3670	F/P/S Pier 5 Cap	12	12	24-May-19	08-Jun-19	0
Pier 4		51	51	02-Mar-19	11-May-19	35
UPRR.PH4a.3660	Setup & Drill Caissons/Secant Pile Wall at Pier 4	19	19	02-Mar-19	29-Mar-19	35
UPRR.PH4a.3700	F/P/S Pier 4 Cap/Footing	10	10	30-Mar-19	11-Apr-19	35



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
UPRR.PH4a.3780	F/P/S Pier 4 Columns/Wall	10	10	13-Apr-19	26-Apr-19	35
UPRR.PH4a.3830	F/P/S Pier 4 Cap	12	12	27-Apr-19	11-May-19	35
Pier 3		51	51	30-Mar-19	07-Jun-19	55
UPRR.PH4a.3640	Setup & Drill Caissons/Secant Pile Wall at Pier 3	19	19	30-Mar-19	23-Apr-19	51
UPRR.PH4a.3690	F/P/S Pier 3 Cap/Footing	10	10	26-Apr-19	07-May-19	55
UPRR.PH4a.3770	F/P/S Pier 3 Columns/Wall	10	10	09-May-19	21-May-19	55
UPRR.PH4a.3820	F/P/S Pier 3 Cap	12	12	23-May-19	07-Jun-19	55
Pier 2		48	48	26-Apr-19	27-Jun-19	54
UPRR.PH4a.3590	Setup & Drill Caissons/Tangent Pile Wall at Pier 2	16	16	26-Apr-19	15-May-19	51
UPRR.PH4a.3620	F/P/S Pier 2 Cap/Footing	10	10	16-May-19	30-May-19	54
UPRR.PH4a.3680	F/P/S Pier 2 Columns/Wall	10	10	31-May-19	12-Jun-19	54
UPRR.PH4a.3760	F/P/S Pier 2 Cap	12	12	13-Jun-19	27-Jun-19	54
Abutment 1		37	37	16-May-19	03-Jul-19	103
UPRR.PH4a.3740	Setup & Drill Caissons/Secant Pile Wall Abutment 1	20	20	16-May-19	12-Jun-19	51
UPRR.PH4a.3750	F/P/S Cap/Footing Abutment 1	4	4	13-Jun-19	17-Jun-19	51
UPRR.PH4a.3790	F/P/S Backwall Abutment 1	5	5	18-Jun-19	24-Jun-19	51
UPRR.PH4a.3810	Precast Facing Panel Retaining Wall Abutment 1 Face	6	6	25-Jun-19	01-Jul-19	51
UPRR.PH4a.3900	F/P/S Approach/Sleeper Slab & Brdg Jnt. - Abutment 1	8	8	25-Jun-19	03-Jul-19	103
Superstructure		112	112	18-May-19	09-Oct-19	29
UPRR.PH4a.3730	Set Girders, Stl. Plate Dia. & 1" Mtl Decking Span 6	15	15	18-May-19	07-Jun-19	1
UPRR.PH4a.3720	Construct Superstructure UPRR Bridge	112	112	18-May-19	09-Oct-19	29
UPRR.PH4a.3800	Set Girders, Stl. Plate Dia. & 1" Mtl Decking Span 5	15	15	10-Jun-19	27-Jun-19	0
UPRR.PH4a.3840	Set Girders, Stl. Plate Dia. & 1" Mtl Decking Span 4 (14 Ea)	39	39	28-Jun-19	16-Aug-19	0
UPRR.PH4a.3870	Set Girders, Stl. Plate Dia. & 1" Mtl Decking Span 1	11	11	02-Jul-19	16-Jul-19	51
UPRR.PH4a.3860	Set Girders, Stl. Plate Dia. & 1" Mtl Decking Span 2	9	9	17-Jul-19	27-Jul-19	51
UPRR.PH4a.3850	Set Girders, Stl. Plate Dia. & 1" Mtl Decking Span 3 (14 Ea)	35	35	17-Aug-19	01-Oct-19	0
UPRR.PH4a.3920	Set W36x256 Edge Beam	4	4	27-Sep-19	01-Oct-19	0
UPRR.PH4a.3890	Waterproof Bridge Deck	5	5	02-Oct-19	07-Oct-19	0
UPRR.PH4a.3970	Temp Seeding & Mulching as Necessary	2	2	08-Oct-19	09-Oct-19	29
Yard Leads 112 & 418 Final Configuration		25	25	08-Oct-19	21-Nov-19	0
UPRR.PH4a.3940	Place 1' Initial Ballast	3	3	08-Oct-19	11-Oct-19	0
UPRR.PH4a.3930	Construct Yard Lead 112, 404, 418, Pepsi Lead 731 Cut-ins & Turnouts to 13' Clear Points (982 TF)	25	25	08-Oct-19	21-Nov-19	0
UPRR.PH4a.3960	Pull/Distribute Rail by UPRR Work Force	6	6	14-Oct-19	23-Oct-19	0
UPRR.PH4a.3980	Lay Ties by UPRR Work Force	4	4	21-Oct-19	25-Oct-19	0
UPRR.PH4a.3990	Lay & Clip Rail by UPRR Work Force	7	7	24-Oct-19	01-Nov-19	0
UPRR.PH4a.4000	Place Final Ballast by UPRR Work Force	5	5	30-Oct-19	06-Nov-19	0
UPRR.PH4a.4010	Tamp & Align Rail by UPRR Work Force	6	6	01-Nov-19	14-Nov-19	0
UPRR.PH4a.4020	De-Stress Rail by UPRR Work Force	3	3	15-Nov-19	20-Nov-19	0
UPRR.PH4a.4030	Dress Ballast by UPRR Work Force	2	2	20-Nov-19	21-Nov-19	0
UPRR.PH4a.4040	New Yard Leads 112 and 418 to 13' Clear Points Complete (982 TF)	0	0		21-Nov-19	0
Phase 4b & 4c		61	61	21-Nov-19	23-Mar-20	0
UPRR.PH4b&c.4050	Phase 4b & 4c - Construct Yard Leads 112, 404, 405, and No. 9 Turnout (1022 T.F.)	61	61	21-Nov-19	23-Mar-20	0
Yard Lead 412 & Yard Tracks 404, 405 & 412		61	61	21-Nov-19	23-Mar-20	0
UPRR.PH4b&c.4060	Shutdown Yard Lead 112 & Yard Track 404, 405, & 412	0	0		21-Nov-19	0
UPRR.PH4b&c.4070	Rem Exist Existing Track as Necessary for Temporary Cut-ins for Tracks 112, 404, 412 & Yard Lead 112 Shoofly	7	7	22-Nov-19	04-Dec-19	0
UPRR.PH4b&c.4080	Excavate/Embank to Subgrade	8	8	02-Dec-19	13-Dec-19	1
UPRR.PH4b&c.4090	Place 6" Sub-Ballast	5	5	16-Dec-19	20-Dec-19	0
UPRR.PH4b&c.4100	Place Initial Ballast by UPRR Work Force	4	4	26-Dec-19	02-Jan-20	0
UPRR.PH4b&c.4110	Pull/Distribute Rail by UPRR Work Force	6	6	03-Jan-20	14-Jan-20	0
UPRR.PH4b&c.4120	Lay Ties by UPRR Work Force	4	4	13-Jan-20	17-Jan-20	0
UPRR.PH4b&c.4130	Lay & Clip Rail by UPRR Work Force	8	8	20-Jan-20	03-Feb-20	0
UPRR.PH4b&c.4140	Place Final Ballast by UPRR Work Force	4	4	05-Feb-20	11-Feb-20	0
UPRR.PH4b&c.4150	Tamp & Align Rail by UPRR Work Force	6	6	13-Feb-20	25-Feb-20	0
UPRR.PH4b&c.4160	De-Stress Rail by UPRR Work Force	3	3	27-Feb-20	02-Mar-20	0
UPRR.PH4b&c.4170	Dress Ballast by UPRR Work Force	2	2	03-Mar-20	05-Mar-20	0
UPRR.PH4b&c.5860	Signal Revisions & Testing (Phase 4A, 4B & 4C)	5	5	03-Mar-20	10-Mar-20	0
UPRR.PH4b&c.4180	Open Temporary Yard Lead 404, 405, 412 & Temporary Yard Track 112 Open to Traffic	0	0		10-Mar-20	0

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

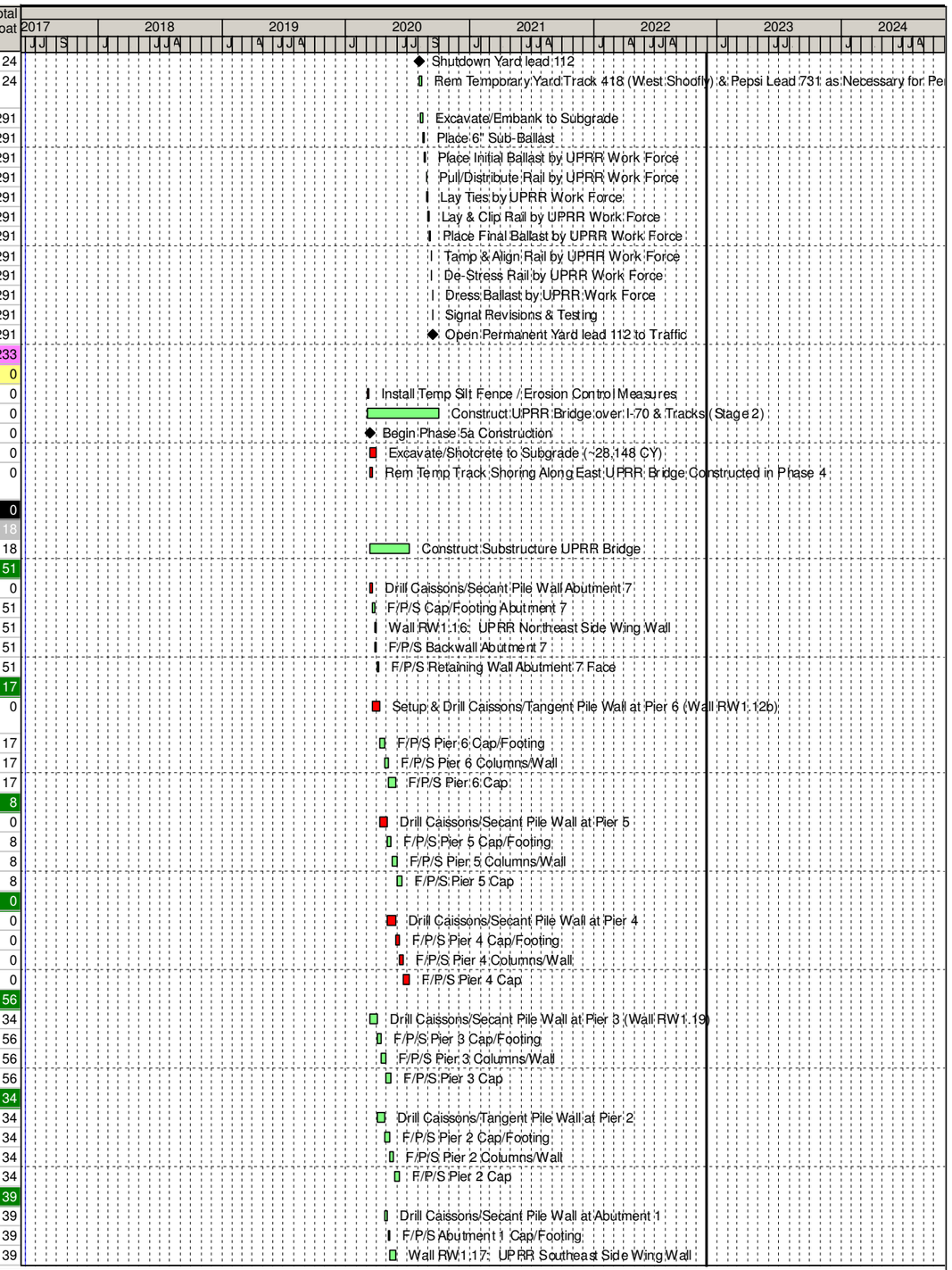
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
UPRR.PH4b&c.4315	Demo/Remove East Portion of Existing UPRR Bridge over 46th Avenue	9	9	11-Mar-20	23-Mar-20	0
Phase 4d		20	20	10-Mar-20	13-Apr-20	24
UPRR.PH4d.1045	Phase 4d - Construct Yard Leads 418 & 419 & including No. 9 TO	20	20	10-Mar-20	13-Apr-20	24
Yard Lead 418 & 419		20	20	10-Mar-20	13-Apr-20	24
UPRR.PH4d.4190	Shutdown Yard Leads 418 & 419	0	0		10-Mar-20	24
UPRR.PH4d.4200	Rem Temporary Yard Track 418 & 419 as Necessary for Permanent Track	1	1	11-Mar-20	11-Mar-20	24
UPRR.PH4d.4210	Excavate/Embank to Subgrade	2	2	13-Mar-20	16-Mar-20	24
UPRR.PH4d.4220	Place 6" Sub-Ballast	2	2	17-Mar-20	19-Mar-20	24
UPRR.PH4d.4230	Place Initial Ballast by UPRR Work Force	2	2	19-Mar-20	20-Mar-20	24
UPRR.PH4d.4240	Pull/Distribute Rail by UPRR Work Force	2	2	23-Mar-20	25-Mar-20	24
UPRR.PH4d.4250	Lay Ties by UPRR Work Force	2	2	26-Mar-20	27-Mar-20	24
UPRR.PH4d.4260	Lay & Clip Rail by UPRR Work Force	3	3	30-Mar-20	01-Apr-20	24
UPRR.PH4d.4270	Place Final Ballast by UPRR Work Force	2	2	02-Apr-20	03-Apr-20	24
UPRR.PH4d.4280	Tamp & Align Rail by UPRR Work Force	2	2	06-Apr-20	07-Apr-20	24
UPRR.PH4d.4290	De-Stress Rail by UPRR Work Force	1	1	09-Apr-20	09-Apr-20	24
UPRR.PH4d.4300	Dress Ballast by UPRR Work Force	1	1	10-Apr-20	10-Apr-20	24
UPRR.PH4d.5830	Signal Revisions & Testing	2	2	10-Apr-20	13-Apr-20	24
UPRR.PH4d.4310	Open Permanent Yard Leads 418 & 419 to Traffic	0	0		13-Apr-20	24
Phase 4e		45	45	13-Apr-20	24-Jun-20	24
UPRR.PH4e.6000	Phase 4e - Construct Yard Leads 419 & 420 & including No. 9 TO	45	45	13-Apr-20	24-Jun-20	24
Yard Lead 419 & 420		45	45	13-Apr-20	24-Jun-20	24
UPRR.PH4e.5870	Shutdown Yard Leads 419 & 420	0	0		13-Apr-20	24
UPRR.PH4e.5880	Rem Temporary Yard Track 419 and 420 as Necessary for Permanent Track	7	7	14-Apr-20	24-Apr-20	24
UPRR.PH4e.5890	Excavate/Embank to Subgrade	6	6	27-Apr-20	04-May-20	24
UPRR.PH4e.5900	Place 6" Sub-Ballast	5	5	05-May-20	12-May-20	24
UPRR.PH4e.5910	Place Initial Ballast by UPRR Work Force	4	4	11-May-20	14-May-20	24
UPRR.PH4e.5920	Pull/Distribute Rail by UPRR Work Force	5	5	18-May-20	26-May-20	24
UPRR.PH4e.5930	Lay Ties by UPRR Work Force	5	5	19-May-20	27-May-20	24
UPRR.PH4e.5940	Lay & Clip Rail by UPRR Work Force	6	6	28-May-20	04-Jun-20	24
UPRR.PH4e.5950	Place Final Ballast by UPRR Work Force	4	4	05-Jun-20	11-Jun-20	24
UPRR.PH4e.5960	Tamp & Align Rail by UPRR Work Force	4	4	12-Jun-20	17-Jun-20	24
UPRR.PH4e.5970	De-Stress Rail by UPRR Work Force	2	2	18-Jun-20	19-Jun-20	24
UPRR.PH4e.5980	Dress Ballast by UPRR Work Force	2	2	22-Jun-20	23-Jun-20	24
UPRR.PH4e.6020	Signal Revisions & Testing	3	3	22-Jun-20	24-Jun-20	24
UPRR.PH4e.5990	Open Permanent Yard Leads 419 & 420 to Traffic	0	0		24-Jun-20	24
Phase 4f		25	25	24-Jun-20	03-Aug-20	24
UPRR.PH4f.6160	Phase 4f - Construct Yard Lead 713 & Pepsi Lead 731 including No. 9 TO	25	25	24-Jun-20	03-Aug-20	24
Yard Lead 713 & Pepsi Lead 731		25	25	24-Jun-20	03-Aug-20	24
UPRR.PH4f.6030	Shutdown Yard lead 713 & Pepsi Lead 731	0	0		24-Jun-20	24
UPRR.PH4f.6040	Rem Temporary Yard Track 713 & Pepsi Lead 731 as Necessary for Permanent Track	3	3	25-Jun-20	29-Jun-20	24
UPRR.PH4f.6050	Excavate/Embank to Subgrade	4	4	30-Jun-20	06-Jul-20	24
UPRR.PH4f.6060	Place 6" Sub-Ballast	3	3	07-Jul-20	09-Jul-20	24
UPRR.PH4f.6070	Place Initial Ballast by UPRR Work Force	2	2	09-Jul-20	10-Jul-20	24
UPRR.PH4f.6080	Pull/Distribute Rail by UPRR Work Force	3	3	13-Jul-20	16-Jul-20	24
UPRR.PH4f.6090	Lay Ties by UPRR Work Force	2	2	16-Jul-20	17-Jul-20	24
UPRR.PH4f.6100	Lay & Clip Rail by UPRR Work Force	3	3	20-Jul-20	22-Jul-20	24
UPRR.PH4f.6110	Place Final Ballast by UPRR Work Force	2	2	23-Jul-20	24-Jul-20	24
UPRR.PH4f.6120	Tamp & Align Rail by UPRR Work Force	2	2	27-Jul-20	28-Jul-20	24
UPRR.PH4f.6130	De-Stress Rail by UPRR Work Force	1	1	30-Jul-20	30-Jul-20	24
UPRR.PH4f.6140	Dress Ballast by UPRR Work Force	1	1	31-Jul-20	31-Jul-20	24
UPRR.PH4f.6170	Signal Revisions & Testing	2	2	31-Jul-20	03-Aug-20	24
UPRR.PH4f.6150	Open Permanent Yard lead 713 & Pepsi Lead 731 to Traffic	0	0		03-Aug-20	24
Phase 4g		28	28	03-Aug-20	15-Sep-20	291
UPRR.PH4g.6310	Phase 4g - Construct Yard Lead 112	28	28	03-Aug-20	15-Sep-20	291
Yard Lead 112, 713 & Pepsi Lead 731		28	28	03-Aug-20	15-Sep-20	291

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
UPRR.PH4g.6180	Shutdown Yard lead 112	0	0		03-Aug-20	24
UPRR.PH4g.6190	Rem Temporary Yard Track 418 (West Shoofly) & Pepsi Lead 731 as Necessary for Permanent Track	6	6	04-Aug-20	11-Aug-20	24
UPRR.PH4g.6200	Excavate/Embank to Subgrade	5	5	07-Aug-20	14-Aug-20	291
UPRR.PH4g.6210	Place 6" Sub-Ballast	3	3	17-Aug-20	19-Aug-20	291
UPRR.PH4g.6220	Place Initial Ballast by UPRR Work Force	2	2	20-Aug-20	21-Aug-20	291
UPRR.PH4g.6230	Pull/Distribute Rail by UPRR Work Force	3	3	25-Aug-20	27-Aug-20	291
UPRR.PH4g.6240	Lay Ties by UPRR Work Force	2	2	28-Aug-20	31-Aug-20	291
UPRR.PH4g.6250	Lay & Clip Rail by UPRR Work Force	3	3	01-Sep-20	03-Sep-20	291
UPRR.PH4g.6260	Place Final Ballast by UPRR Work Force	2	2	04-Sep-20	08-Sep-20	291
UPRR.PH4g.6270	Tamp & Align Rail by UPRR Work Force	2	2	09-Sep-20	10-Sep-20	291
UPRR.PH4g.6280	De-Stress Rail by UPRR Work Force	1	1	11-Sep-20	11-Sep-20	291
UPRR.PH4g.6290	Dress Ballast by UPRR Work Force	1	1	14-Sep-20	14-Sep-20	291
UPRR.PH4g.6320	Signal Revisions & Testing	2	2	14-Sep-20	15-Sep-20	291
UPRR.PH4g.6300	Open Permanent Yard lead 112 to Traffic	0	0		15-Sep-20	291
UPRR Phase 5		219	219	07-Mar-20	24-Mar-21	233
Phase 5a - Construct East Side of New UPRR Bridge		131	131	07-Mar-20	02-Oct-20	0
UPRR.PH5a.4330	Install Temp Silt Fence / Erosion Control Measures	3	3	07-Mar-20	10-Mar-20	0
UPRR.PH5a.1125	Construct UPRR Bridge over I-70 & Tracks (Stage 2)	131	131	07-Mar-20	02-Oct-20	0
UPRR.PH5a.4320	Begin Phase 5a Construction	0	0	11-Mar-20		0
UPRR.PH5a.4340	Excavate/Shotcrete to Subgrade (~28,148 CY)	14	14	11-Mar-20	30-Mar-20	0
UPRR.PH5a.4350	Rem Temp Track Shoring Along East UPRR Bridge Constructed in Phase 4	8	8	11-Mar-20	21-Mar-20	0
UPRR Bridge over I-70 (East Portion Only) - Stage 2		104	104	11-Mar-20	25-Aug-20	0
Substructure		87	87	11-Mar-20	06-Jul-20	18
UPRR.PH5a.4370	Construct Substructure UPRR Bridge	87	87	11-Mar-20	06-Jul-20	18
Abutment 7		21	21	11-Mar-20	07-Apr-20	51
UPRR.PH5a.4650	Drill Caissons/Secant Pile Wall Abutment 7	7	7	11-Mar-20	20-Mar-20	0
UPRR.PH5a.4660	F/P/S Cap/Footing Abutment 7	4	4	21-Mar-20	26-Mar-20	51
CRW1161000	Wall RW1.16: UPRR Northeast Side Wing Wall	5	5	27-Mar-20	01-Apr-20	51
UPRR.PH5a.4700	F/P/S Backwall Abutment 7	5	5	27-Mar-20	01-Apr-20	51
UPRR.PH5a.4720	F/P/S Retaining Wall Abutment 7 Face	5	5	02-Apr-20	07-Apr-20	51
Pier 6		48	48	21-Mar-20	26-May-20	17
UPRR.PH5a.4570	Setup & Drill Caissons/Tangent Pile Wall at Pier 6 (Wall RW1.12b)	16	16	21-Mar-20	10-Apr-20	0
UPRR.PH5a.4610	F/P/S Pier 6 Cap/Footing	10	10	11-Apr-20	24-Apr-20	17
UPRR.PH5a.4690	F/P/S Pier 6 Columns/Wall	10	10	25-Apr-20	07-May-20	17
UPRR.PH5a.4740	F/P/S Pier 6 Cap	12	12	08-May-20	26-May-20	17
Pier 5		48	48	11-Apr-20	15-Jun-20	8
UPRR.PH5a.4550	Drill Caissons/Secant Pile Wall at Pier 5	16	16	11-Apr-20	01-May-20	0
UPRR.PH5a.4600	F/P/S Pier 5 Cap/Footing	10	10	02-May-20	14-May-20	8
UPRR.PH5a.4680	F/P/S Pier 5 Columns/Wall	10	10	16-May-20	30-May-20	8
UPRR.PH5a.4730	F/P/S Pier 5 Cap	12	12	01-Jun-20	15-Jun-20	8
Pier 4		48	48	02-May-20	06-Jul-20	0
UPRR.PH5a.4500	Drill Caissons/Secant Pile Wall at Pier 4	16	16	02-May-20	26-May-20	0
UPRR.PH5a.4530	F/P/S Pier 4 Cap/Footing	10	10	27-May-20	06-Jun-20	0
UPRR.PH5a.4590	F/P/S Pier 4 Columns/Wall	10	10	08-Jun-20	19-Jun-20	0
UPRR.PH5a.4670	F/P/S Pier 4 Cap	12	12	20-Jun-20	06-Jul-20	0
Pier 3		49	49	11-Mar-20	14-May-20	56
UPRR.PH5a.4460	Drill Caissons/Secant Pile Wall at Pier 3 (Wall RW1.19)	17	17	11-Mar-20	02-Apr-20	34
UPRR.PH5a.4480	F/P/S Pier 3 Cap/Footing	10	10	03-Apr-20	15-Apr-20	56
UPRR.PH5a.4520	F/P/S Pier 3 Columns/Wall	10	10	16-Apr-20	29-Apr-20	56
UPRR.PH5a.4580	F/P/S Pier 3 Cap	12	12	30-Apr-20	14-May-20	56
Pier 2		49	49	03-Apr-20	08-Jun-20	34
UPRR.PH5a.4410	Drill Caissons/Tangent Pile Wall at Pier 2	17	17	03-Apr-20	25-Apr-20	34
UPRR.PH5a.4440	F/P/S Pier 2 Cap/Footing	10	10	27-Apr-20	08-May-20	34
UPRR.PH5a.4470	F/P/S Pier 2 Columns/Wall	10	10	09-May-20	22-May-20	34
UPRR.PH5a.4510	F/P/S Pier 2 Cap	12	12	26-May-20	08-Jun-20	34
Abutment 1		27	27	27-Apr-20	02-Jun-20	39
UPRR.PH5a.4380	Drill Caissons/Secant Pile Wall at Abutment 1	7	7	27-Apr-20	04-May-20	39
UPRR.PH5a.4390	F/P/S Abutment 1 Cap/Footing	4	4	05-May-20	09-May-20	39
CRW1171000	Wall RW1.17: UPRR Southeast Side Wing Wall	10	10	11-May-20	26-May-20	39

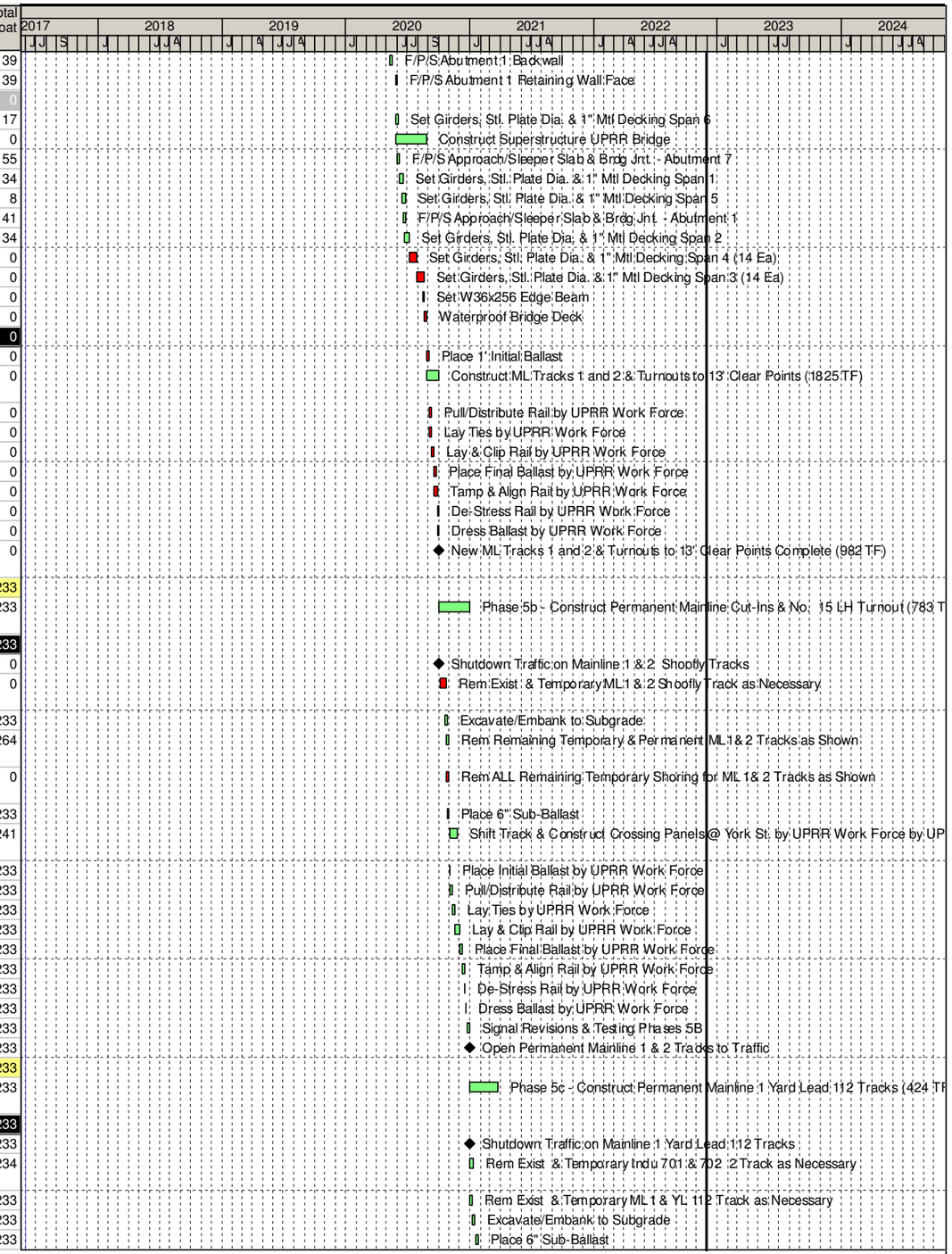


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
◆ Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
UPRR.PH5a.4420	F/P/S Abutment 1 Backwall	5	5	11-May-20	16-May-20	39
UPRR.PH5a.4430	F/P/S Abutment 1 Retaining Wall Face	6	6	27-May-20	02-Jun-20	39
Superstructure		59	59	27-May-20	25-Aug-20	0
UPRR.PH5a.4780	Set Girders, Stl. Plate Dia. & 1" Mtl Decking Span 6	7	7	27-May-20	03-Jun-20	17
UPRR.PH5a.4625	Construct Superstructure UPRR Bridge	59	59	27-May-20	25-Aug-20	0
UPRR.PH5a.4820	F/P/S Approach/Sleeper Slab & Brdg Jnt. - Abutment 7	8	8	01-Jun-20	09-Jun-20	55
UPRR.PH5a.4630	Set Girders, Stl. Plate Dia. & 1" Mtl Decking Span 1	10	10	09-Jun-20	20-Jun-20	34
UPRR.PH5a.4770	Set Girders, Stl. Plate Dia. & 1" Mtl Decking Span 5	8	8	16-Jun-20	24-Jun-20	8
UPRR.PH5a.4810	F/P/S Approach/Sleeper Slab & Brdg Jnt. - Abutment 1	8	8	18-Jun-20	26-Jun-20	41
UPRR.PH5a.4710	Set Girders, Stl. Plate Dia. & 1" Mtl Decking Span 2	12	12	22-Jun-20	07-Jul-20	34
UPRR.PH5a.4760	Set Girders, Stl. Plate Dia. & 1" Mtl Decking Span 4 (14 Ea)	18	18	07-Jul-20	28-Jul-20	0
UPRR.PH5a.4750	Set Girders, Stl. Plate Dia. & 1" Mtl Decking Span 3 (14 Ea)	17	17	30-Jul-20	19-Aug-20	0
UPRR.PH5a.4830	Set W36x256 Edge Beam	4	4	15-Aug-20	19-Aug-20	0
UPRR.PH5a.4800	Waterproof Bridge Deck	4	4	20-Aug-20	25-Aug-20	0
Permanent Mainline 1 & 2 Tracks		25	25	26-Aug-20	02-Oct-20	0
UPRR.PH5a.4850	Place 1' Initial Ballast	5	5	26-Aug-20	01-Sep-20	0
UPRR.PH5a.4840	Construct ML Tracks 1 and 2 & Turnouts to 13' Clear Points (1825 TF)	25	25	26-Aug-20	02-Oct-20	0
UPRR.PH5a.4880	Pull/Distribute Rail by UPRR Work Force	5	5	02-Sep-20	09-Sep-20	0
UPRR.PH5a.4890	Lay Ties by UPRR Work Force	4	4	04-Sep-20	10-Sep-20	0
UPRR.PH5a.4900	Lay & Clip Rail by UPRR Work Force	7	7	09-Sep-20	18-Sep-20	0
UPRR.PH5a.4910	Place Final Ballast by UPRR Work Force	4	4	17-Sep-20	23-Sep-20	0
UPRR.PH5a.4920	Tamp & Align Rail by UPRR Work Force	7	7	17-Sep-20	28-Sep-20	0
UPRR.PH5a.4930	De-Stress Rail by UPRR Work Force	3	3	29-Sep-20	01-Oct-20	0
UPRR.PH5a.4940	Dress Ballast by UPRR Work Force	4	4	29-Sep-20	02-Oct-20	0
UPRR.PH5a.4950	New ML Tracks 1 and 2 & Turnouts to 13' Clear Points Complete (982 TF)	0	0		02-Oct-20	0
Phase 5b		47	47	02-Oct-20	30-Dec-20	233
UPRR.PH5b.4960	Phase 5b - Construct Permanent Mainline Cut-Ins & No. 15 LH Turnout (783 TF)	47	47	02-Oct-20	30-Dec-20	233
Permanent Mainline 1 & 2 Tracks		47	47	02-Oct-20	30-Dec-20	233
UPRR.PH5b.4970	Shutdown Traffic on Mainline 1 & 2 Shoofly Tracks	0	0		02-Oct-20	0
UPRR.PH5b.4980	Rem Exist & Temporary ML1 & 2 Shoofly Track as Necessary	11	11	05-Oct-20	22-Oct-20	0
UPRR.PH5b.4990	Excavate/Embank to Subgrade	5	5	19-Oct-20	26-Oct-20	233
UPRR.PH5b.5100	Rem Remaining Temporary & Permanent ML1& 2 Tracks as Shown	5	5	23-Oct-20	29-Oct-20	264
UPRR.PH5b.5130	Rem ALL Remaining Temporary Shoring for ML 1& 2 Tracks as Shown	5	5	23-Oct-20	29-Oct-20	0
UPRR.PH5b.5000	Place 6" Sub-Ballast	4	4	27-Oct-20	30-Oct-20	233
UPRR.PH5b.2540	Shift Track & Construct Crossing Panels @ York St. by UPRR Work Force by UPRR Work Force	15	15	02-Nov-20	25-Nov-20	241
UPRR.PH5b.5010	Place Initial Ballast by UPRR Work Force	3	3	02-Nov-20	04-Nov-20	233
UPRR.PH5b.5020	Pull/Distribute Rail by UPRR Work Force	5	5	05-Nov-20	11-Nov-20	233
UPRR.PH5b.5030	Lay Ties by UPRR Work Force	4	4	10-Nov-20	16-Nov-20	233
UPRR.PH5b.5040	Lay & Clip Rail by UPRR Work Force	6	6	17-Nov-20	01-Dec-20	233
UPRR.PH5b.5050	Place Final Ballast by UPRR Work Force	4	4	02-Dec-20	08-Dec-20	233
UPRR.PH5b.5060	Tamp & Align Rail by UPRR Work Force	3	3	09-Dec-20	15-Dec-20	233
UPRR.PH5b.5070	De-Stress Rail by UPRR Work Force	2	2	17-Dec-20	18-Dec-20	233
UPRR.PH5b.5080	Dress Ballast by UPRR Work Force	2	2	21-Dec-20	22-Dec-20	233
UPRR.PH5b.6330	Signal Revisions & Testing Phases 5B	3	3	23-Dec-20	30-Dec-20	233
UPRR.PH5b.5090	Open Permanent Mainline 1 & 2 Tracks to Traffic	0	0		30-Dec-20	233
Phase 5c		41	41	30-Dec-20	24-Mar-21	233
UPRR.PH5c.1065	Phase 5c - Construct Permanent Mainline 1 Yard Lead 112 Tracks (424 TF)	41	41	30-Dec-20	24-Mar-21	233
Permanent Mainline 1 & 2 Tracks		41	41	30-Dec-20	24-Mar-21	233
UPRR.PH5c.5110	Shutdown Traffic on Mainline 1 Yard Lead 112 Tracks	0	0		30-Dec-20	233
UPRR.PH5c.1075	Rem Exist & Temporary Indu 701 & 702 2 Track as Necessary	6	6	31-Dec-20	12-Jan-21	234
UPRR.PH5c.5120	Rem Exist & Temporary ML1 & YL 112 Track as Necessary	3	3	31-Dec-20	06-Jan-21	233
UPRR.PH5c.5140	Excavate/Embank to Subgrade	5	5	08-Jan-21	15-Jan-21	233
UPRR.PH5c.5150	Place 6" Sub-Ballast	5	5	20-Jan-21	26-Jan-21	233

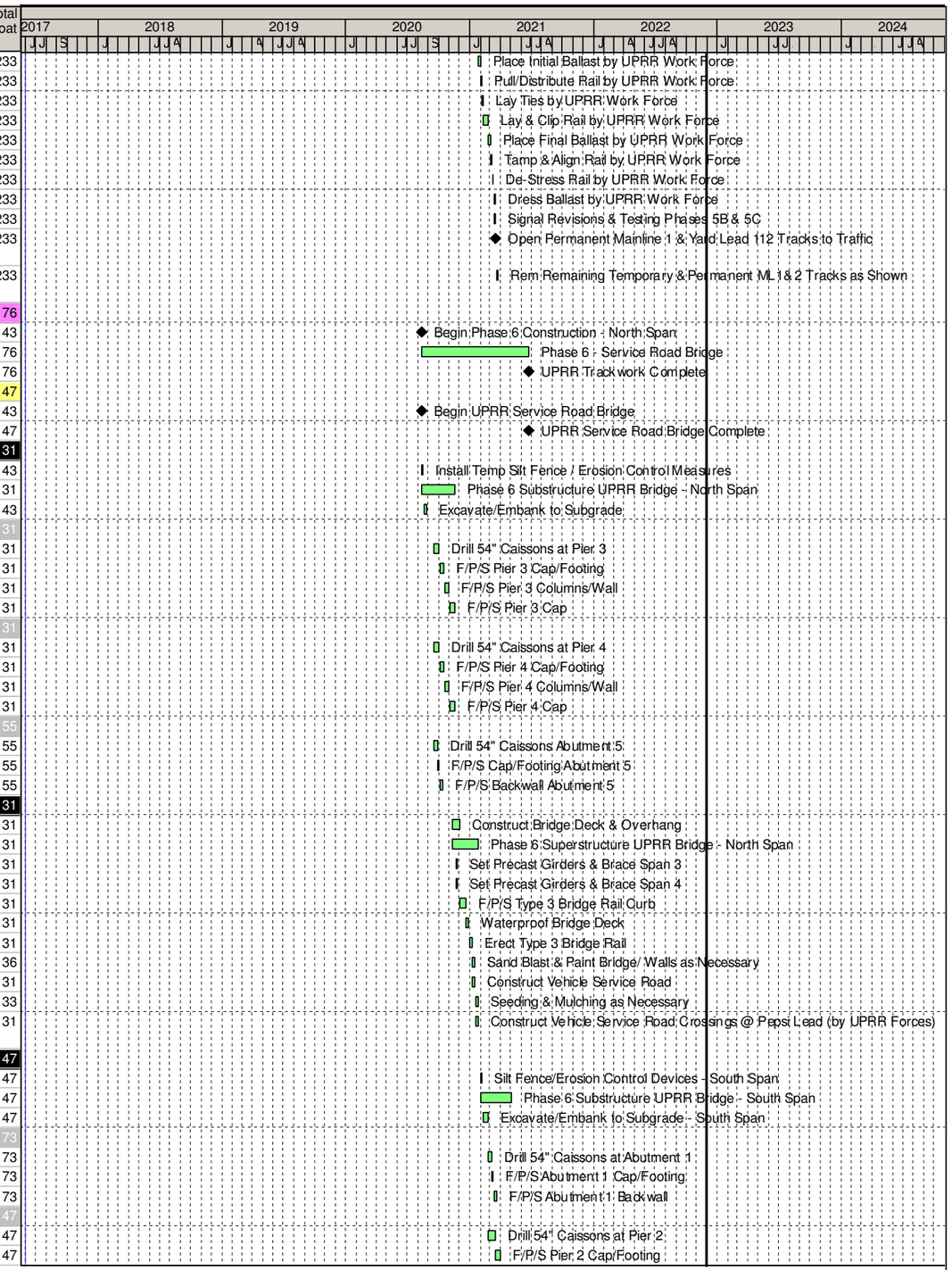


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
UPRR.PH5c.5160	Place Initial Ballast by UPRR Work Force	2	2	27-Jan-21	02-Feb-21	233
UPRR.PH5c.5170	Pull/Distribute Rail by UPRR Work Force	3	3	03-Feb-21	05-Feb-21	233
UPRR.PH5c.5180	Lay Ties by UPRR Work Force	3	3	05-Feb-21	09-Feb-21	233
UPRR.PH5c.5190	Lay & Clip Rail by UPRR Work Force	5	5	10-Feb-21	22-Feb-21	233
UPRR.PH5c.5200	Place Final Ballast by UPRR Work Force	3	3	24-Feb-21	02-Mar-21	233
UPRR.PH5c.5210	Tamp & Align Rail by UPRR Work Force	4	4	03-Mar-21	08-Mar-21	233
UPRR.PH5c.5220	De-Stress Rail by UPRR Work Force	3	3	09-Mar-21	12-Mar-21	233
UPRR.PH5c.5230	Dress Ballast by UPRR Work Force	3	3	15-Mar-21	18-Mar-21	233
UPRR.PH5c.5850	Signal Revisions & Testing Phases 5B & 5C	4	4	15-Mar-21	19-Mar-21	233
UPRR.PH5c.5240	Open Permanent Mainline 1 & Yard Lead 112 Tracks to Traffic	0	0		19-Mar-21	233
UPRR.PH5c.5250	Rem Remaining Temporary & Permanent ML1& 2 Tracks as Shown	2	2	22-Mar-21	24-Mar-21	233
UPRR Phase 6		178	178	13-Aug-20	22-Jun-21	176
UPRR.PH6.5260	Begin Phase 6 Construction - North Span	0	0	13-Aug-20		143
UPRR.PH6.1145	Phase 6 - Service Road Bridge	178	178	13-Aug-20	22-Jun-21	176
UPRR.PH6.6350	UPRR Trackwork Complete	0	0		22-Jun-21	176
UPRR Service Road Bridge over I-70		178	178	13-Aug-20	22-Jun-21	47
UPRR.PH6.6490	Begin UPRR Service Road Bridge	0	0		13-Aug-20	143
UPRR.PH6.6500	UPRR Service Road Bridge Complete	0	0		22-Jun-21	47
Substructure - North Span		62	62	13-Aug-20	19-Nov-20	131
UPRR.PH6.5270	Install Temp Silt Fence / Erosion Control Measures	3	3	13-Aug-20	17-Aug-20	143
UPRR.PH6.5265	Phase 6 Substructure UPRR Bridge - North Span	62	62	13-Aug-20	19-Nov-20	131
UPRR.PH6.5280	Excavate/Embank to Subgrade	8	8	18-Aug-20	28-Aug-20	143
Pier 3		39	39	18-Sep-20	19-Nov-20	131
UPRR.PH6.5380	Drill 54" Caissons at Pier 3	10	10	18-Sep-20	02-Oct-20	131
UPRR.PH6.5400	F/P/S Pier 3 Cap/Footing	8	8	05-Oct-20	16-Oct-20	131
UPRR.PH6.5440	F/P/S Pier 3 Columns/Wall	9	9	19-Oct-20	30-Oct-20	131
UPRR.PH6.5490	F/P/S Pier 3 Cap	12	12	02-Nov-20	19-Nov-20	131
Pier 4		39	39	18-Sep-20	19-Nov-20	131
UPRR.PH6.5420	Drill 54" Caissons at Pier 4	10	10	18-Sep-20	02-Oct-20	131
UPRR.PH6.5450	F/P/S Pier 4 Cap/Footing	8	8	05-Oct-20	16-Oct-20	131
UPRR.PH6.5510	F/P/S Pier 4 Columns/Wall	9	9	19-Oct-20	30-Oct-20	131
UPRR.PH6.5550	F/P/S Pier 4 Cap	12	12	02-Nov-20	19-Nov-20	131
Abutment 5		15	15	18-Sep-20	12-Oct-20	155
UPRR.PH6.5470	Drill 54" Caissons Abutment 5	6	6	18-Sep-20	28-Sep-20	155
UPRR.PH6.5480	F/P/S Cap/Footing Abutment 5	4	4	29-Sep-20	02-Oct-20	155
UPRR.PH6.5500	F/P/S Backwall Abutment 5	5	5	05-Oct-20	12-Oct-20	155
Superstructure - North Span		38	38	10-Nov-20	27-Jan-21	131
UPRR.PH6.5580	Construct Bridge Deck & Overhang	12	12	10-Nov-20	03-Dec-20	131
UPRR.PH6.5520	Phase 6 Superstructure UPRR Bridge - North Span	38	38	10-Nov-20	27-Jan-21	131
UPRR.PH6.5570	Set Precast Girders & Brace Span 3	3	3	20-Nov-20	25-Nov-20	131
UPRR.PH6.5590	Set Precast Girders & Brace Span 4	3	3	20-Nov-20	25-Nov-20	131
UPRR.PH6.5610	F/P/S Type 3 Bridge Rail Curb	8	8	04-Dec-20	21-Dec-20	131
UPRR.PH6.5600	Waterproof Bridge Deck	3	3	22-Dec-20	29-Dec-20	131
UPRR.PH6.5620	Erect Type 3 Bridge Rail	4	4	30-Dec-20	06-Jan-21	131
UPRR.PH6.5630	Sand Blast & Paint Bridge/ Walls as Necessary	4	4	08-Jan-21	14-Jan-21	136
UPRR.PH6.6340	Construct Vehicle Service Road	5	5	08-Jan-21	15-Jan-21	131
UPRR.PH6.5640	Seeding & Mulching as Necessary	4	4	20-Jan-21	25-Jan-21	133
UPRR.PH6.6360	Construct Vehicle Service Road Crossings @ Pepsi Lead (by UPRR Forces)	6	6	20-Jan-21	27-Jan-21	131
Substructure - South Span		51	51	03-Feb-21	04-May-21	47
UPRR.PH6.6470	Silt Fence/Erosion Control Devices - South Span	3	3	03-Feb-21	05-Feb-21	47
UPRR.PH6.6370	Phase 6 Substructure UPRR Bridge - South Span	51	51	03-Feb-21	04-May-21	47
UPRR.PH6.6480	Excavate/Embank to Subgrade - South Span	8	8	08-Feb-21	24-Feb-21	47
Abutment 1		14	14	25-Feb-21	22-Mar-21	73
UPRR.PH6.5310	Drill 54" Caissons at Abutment 1	5	5	25-Feb-21	05-Mar-21	73
UPRR.PH6.5320	F/P/S Abutment 1 Cap/Footing	4	4	08-Mar-21	12-Mar-21	73
UPRR.PH6.5350	F/P/S Abutment 1 Backwall	5	5	15-Mar-21	22-Mar-21	73
Pier 2		40	40	25-Feb-21	04-May-21	47
UPRR.PH6.5340	Drill 54" Caissons at Pier 2	11	11	25-Feb-21	16-Mar-21	47
UPRR.PH6.5360	F/P/S Pier 2 Cap/Footing	8	8	18-Mar-21	31-Mar-21	47



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
UPRR.PH6.5390	F/P/S Pier 2 Columns/Wall	9	9	01-Apr-21	14-Apr-21	47
UPRR.PH6.5430	F/P/S Pier 2 Cap	12	12	15-Apr-21	04-May-21	47
Superstructure - South Span		38	38	27-Apr-21	22-Jun-21	47
UPRR.PH6.6390	Construct Bridge Deck & Overhang	12	12	27-Apr-21	13-May-21	47
UPRR.PH6.6380	Phase 6 Superstructure UPRR Bridge - South Span	38	38	27-Apr-21	22-Jun-21	47
UPRR.PH6.5530	Set Precast Girders & Brace Span 1	3	3	06-May-21	10-May-21	47
UPRR.PH6.5560	Set Precast Girders & Brace Span 2	3	3	06-May-21	10-May-21	47
UPRR.PH6.6400	F/P/S Type 3 Bridge Rail Curb	8	8	14-May-21	26-May-21	47
UPRR.PH6.6410	Waterproof Bridge Deck	3	3	27-May-21	01-Jun-21	47
UPRR.PH6.6420	Erect Type 3 Bridge Rail	4	4	02-Jun-21	07-Jun-21	47
UPRR.PH6.6430	Sand Blast & Paint Bridge/ Walls as Necessary	4	4	08-Jun-21	11-Jun-21	52
UPRR.PH6.6440	Construct Vehicle Service Road	5	5	08-Jun-21	14-Jun-21	47
UPRR.PH6.6450	Seeding & Mulching as Necessary	4	4	15-Jun-21	18-Jun-21	49
UPRR.PH6.6460	Construct Vehicle Service Road Crossings @ YL 418 (by UPRR Forces)	6	6	15-Jun-21	22-Jun-21	47
Right-of-Way		491	491	03-Nov-17	24-Apr-20	149
Area 1 - Brighton Blvd to Dahlia St.- Sta 2000+00 to 2085+00 (1.61 miles)		491	491	03-Nov-17	24-Apr-20	149
Right of Way - Segment 1 Sta 2000+00 to 2025+00		238	238	03-Nov-17	28-Jan-19	402
ROW Acquisition		238	238	03-Nov-17	28-Jan-19	402
CDOT Acquire Properties (by 8/31/2018)		181	181	03-Nov-17	02-Oct-18	119
ROW.ACQ.1140	CDOT Acquire - Segment 1 Properties (by 8/31/2018)	210	210	03-Nov-17	31-Aug-18	2
ROW.1800.AP-008	Jack E. Ruddy - AP-008 by 8/31/2018	0	0		31-Aug-18	2
ROW.1810.AP-014	Marie Refugia Garcia - AP-014 by 8/31/2018	0	0		31-Aug-18	2
ROW.1820.AP-033	Cameron Gray - AP-033 by 8/31/2018	0	0		31-Aug-18	2
ROW.1830.AP-034	Anthony Toth - AP-034 by 8/31/2018	0	0		31-Aug-18	2
ROW.PMT.1140	ROW DEMO Permit & Plan - Segment 1 Properties (by 8/31/2018)	10	10	04-Sep-18	17-Sep-18	2
ROW.DM.1800.AP-008	Jack E. Ruddy - AP-008 - DEMO & Prepare Property	10	10	19-Sep-18	02-Oct-18	119
ROW.DM.1810.AP-014	Marie Refugia Garcia - AP-014 - DEMO & Prepare Property	10	10	19-Sep-18	02-Oct-18	119
ROW.DM.1820.AP-033	Cameron Gray - AP-033 - DEMO & Prepare Property	10	10	19-Sep-18	02-Oct-18	1
ROW.DM.1830.AP-034	Anthony Toth - AP-034 - DEMO & Prepare Property	10	10	19-Sep-18	02-Oct-18	1
CDOT Acquire Properties (by NTP2)		57	57	03-Nov-17	12-Mar-18	258
ROW.ACQ.1100	CDOT Acquire - Segment 1 Properties (by NTP2)	62	62	03-Nov-17	02-Feb-18	107
ROW.1005.AP-005	Ringsby Terminal Inc. - AP-005 and AP-005A Acquired by NTP2	0	0		02-Feb-18	107
ROW.1010.AP-006	4623 High Street Trust - AP-006 CDOT Acquired by NTP2	0	0		02-Feb-18	107
ROW.1020.AP-009	Adamsclock LLC - AP-009 CDOT Acquired by NTP2	0	0		02-Feb-18	107
ROW.1030.AP-011	Gene Levy - AP-011 CDOT Acquired by NTP2	0	0		02-Feb-18	107
ROW.1040.AP-015	Flamingo Vista LLC - AP-015 CDOT Acquired by NTP2	0	0		02-Feb-18	107
ROW.1050.AP-017	Tedrow Investments LLC - AP-017 CDOT Acquired by NTP2	0	0		02-Feb-18	107
ROW.1060.AP-018	Vibha Sharma - AP-018 CDOT Acquired by NTP2	0	0		02-Feb-18	107
ROW.1070.AP-019	Hipolito Diaz-Luevano - AP-019 CDOT Acquired by NTP2	0	0		02-Feb-18	107
ROW.1080.AP-020	Larry and Malinda Kowalis - AP-020 CDOT Acquired by NTP2	0	0		02-Feb-18	107
ROW.1090.AP-021	Dadourian West LLC - AP-021 CDOT Acquired by NTP2	0	0		02-Feb-18	107
ROW.1100.AP-022	First Securities Corp. - AP-022 CDOT Acquired by NTP2	0	0		02-Feb-18	107
ROW.1110.AP-023	Ventura and Maria Reyes - AP-023 CDOT Acquired by NTP2	0	0		02-Feb-18	107
ROW.1120.AP-027	Gene and Pamela Williamson - AP-027 CDOT Acquired by NTP2	0	0		02-Feb-18	107
ROW.1130.AP-028	Estolfo Rodelas and Octavio Rodelas-Medina - AP-028 by NTP2	0	0		02-Feb-18	107
ROW.1140.AP-029	Eric Ely - AP-029 CDOT Acquired by NTP2	0	0		02-Feb-18	107
ROW.1150.AP-030	Earl Brown - AP-030 CDOT Acquired by NTP2	0	0		02-Feb-18	107
ROW.1160.AP-031	Victoria & William Burke - AP-031 CDOT Aquired by NTP2	0	0		02-Feb-18	107
ROW.1170.AP-032	Saul Miguel and Victoria Villarreal - AP-032 CDOT Acquired by NTP2	0	0		02-Feb-18	107
ROW.1520.AP-169 and AP-TE-169 (for RR wo	N.K. Sharma - AP-169 and AP-TE-169A (for RR work) CDOT Acquired by NTP2	0	0		02-Feb-18	107
ROW.2410.AP-TE-170	Paul and Maria Cristina Arrieta - AP-TE-170 by NTP2	0	0		02-Feb-18	107
ROW.PMT.1100	ROW DEMO Permit & Plan - Segment 1 Properties (by NTP2)	10	10	05-Feb-18	16-Feb-18	107
ROW.DM.1005.AP-005	Ringsby Terminal Inc. - AP-005 and AP-005A - DEMO & Prepare Property	5	5	19-Feb-18	26-Feb-18	92

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

CENTRAL 70

TASK filter: All Activities

Front Range Mobility Group

Central 70

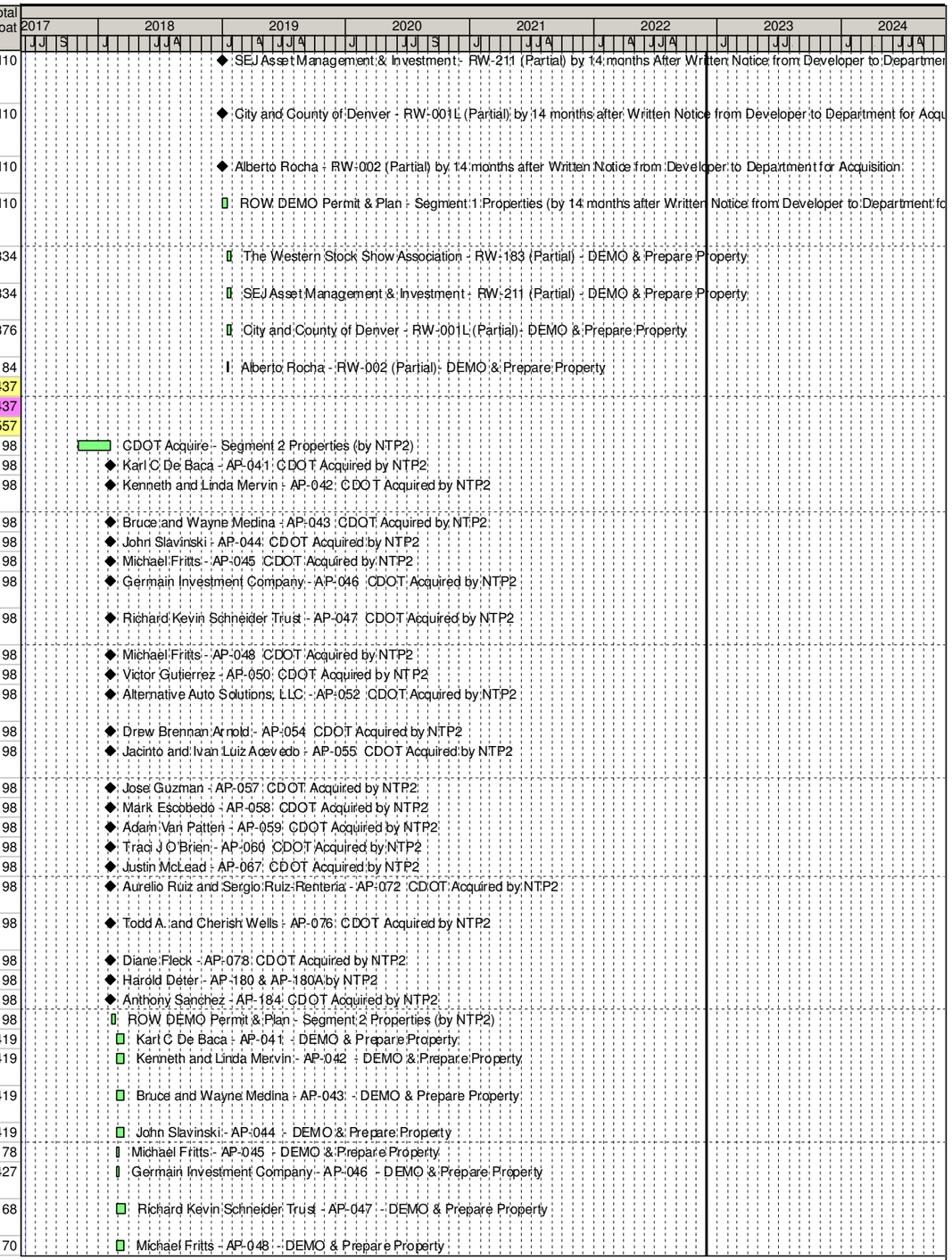
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
ROW.DM.1010.AP-006	4623 High Street Trust - AP-006 - DEMO & Prepare Property	13	13	19-Feb-18	12-Mar-18	243
ROW.DM.1020.AP-009	Adamsclock LLC - AP-009 - DEMO & Prepare Property	13	13	19-Feb-18	12-Mar-18	243
ROW.DM.1030.AP-011	Gene Levy - AP-011 - DEMO & Prepare Property	5	5	19-Feb-18	26-Feb-18	251
ROW.DM.1040.AP-015	Flamingo Vista LLC - AP-015 - DEMO & Prepare Property	13	13	19-Feb-18	12-Mar-18	243
ROW.DM.1050.AP-017	Tedrow Investments LLC - AP-017 - DEMO & Prepare Property	13	13	19-Feb-18	12-Mar-18	243
ROW.DM.1060.AP-018	Vibha Sharma - AP-018 - DEMO & Prepare Property	13	13	19-Feb-18	12-Mar-18	243
ROW.DM.1070.AP-019	Hipolito Diaz-Luevano - AP-019 - DEMO & Prepare Property	13	13	19-Feb-18	12-Mar-18	243
ROW.DM.1080.AP-020	Larry and Malinda Kowalis - AP-020 - DEMO & Prepare Property	13	13	19-Feb-18	12-Mar-18	243
ROW.DM.1090.AP-021	Dadourian West LLC - AP-021 - DEMO & Prepare Property	13	13	19-Feb-18	12-Mar-18	243
ROW.DM.1100.AP-022	First Securities Corp. - AP-022 - DEMO & Prepare Property	10	10	19-Feb-18	06-Mar-18	261
ROW.DM.1110.AP-023	Ventura and Maria Reyes - AP-023 - DEMO & Prepare Property	10	10	19-Feb-18	06-Mar-18	261
ROW.DM.1120.AP-027	Gene and Pamela Williamson - AP-027 - DEMO & Prepare Property	10	10	19-Feb-18	06-Mar-18	261
ROW.DM.1130.AP-028	Estolfo Rodelas and Octavio Rodelas-Medina - AP-028 - DEMO & Prepare Property	10	10	19-Feb-18	06-Mar-18	261
ROW.DM.1140.AP-029	Eric Ely - AP-029 - DEMO & Prepare Property	10	10	19-Feb-18	06-Mar-18	261
ROW.DM.1150.AP-030	Earl Brown - AP-030 - DEMO & Prepare Property	5	5	19-Feb-18	26-Feb-18	123
ROW.DM.1160.AP-031	Victoria & William Burke - AP-031 - DEMO & Prepare Property	10	10	19-Feb-18	06-Mar-18	118
ROW.DM.1170.AP-032	Saul Miguel and Victoria Villarreal - AP-032 - DEMO & Prepare Property	10	10	19-Feb-18	06-Mar-18	118
ROW.DM.1520.AP-169 and AP-TE-169 (for RR	N.K. Sharma - AP-169 and AP-TE-169A (for RR work) - DEMO & Prepare Property	5	5	19-Feb-18	26-Feb-18	90
ROW.DM.2410.APTE-170	Paul and Maria Cristina Arrieta - AP-TE-170 - DEMO & Prepare Property	5	5	19-Feb-18	26-Feb-18	90
CDOT Acquire Properties (by 2/28/2018)		63	63	03-Nov-17	23-Mar-18	577
ROW.ACQ.1110	CDOT Acquire - Segment 1 Properties (by 2/28/2018)	80	80	03-Nov-17	28-Feb-18	137
ROW.1540.AP-182	The Western Stock Show Association - AP-182 by 2/28/2018	0	0		28-Feb-18	137
ROW.1550.AP-182A	The Western Stock Show Association - AP-182A by 2/28/2018	0	0		28-Feb-18	137
ROW.1610.PE-025 and TE-025	Nestle Purina Petcare Company - AP-PE-025 (Partial) and AP-TE-025 by 2/28/2018	0	0		28-Feb-18	137
ROW.1620.PE-026	UPRR - PE-026 (Partial) by 2/28/2018	0	0		28-Feb-18	137
ROW.1640.PE-026B	UPRR - PE-026B by 2/28/2018	0	0		28-Feb-18	137
ROW.1650.AP-PE-026I	UPRR - AP-PE-026I (Partial) by 2/28/2018	0	0		28-Feb-18	137
ROW.2370.AP-CL	UPRR - AP-Construction License (formerly TE-26) by 2/28/2018	0	0		28-Feb-18	137
ROW.2380.AP-CL-A	UPRR - AP-Construction License (formerly TE-26A) by 2/28/2018	0	0		28-Feb-18	137
ROW.PMT.1110	ROW DEMO Permit & Plan - Segment 1 Properties (by 2/28/2018)	10	10	01-Mar-18	14-Mar-18	137
ROW.DM.1540.AP-182	The Western Stock Show Association - AP-182 - DEMO & Prepare Property	5	5	16-Mar-18	23-Mar-18	577
ROW.DM.1550.AP-182A	The Western Stock Show Association - AP-182A - DEMO & Prepare Property	5	5	16-Mar-18	23-Mar-18	577
ROW.DM.1610.PE-025 and TE-025	Nestle Purina Petcare Company - AP-PE-025 (Partial) and AP-TE-025 - DEMO & Prepare Property	1	1	16-Mar-18	16-Mar-18	119
ROW.DM.1620.PE-026	UPRR - PE-026 (Partial)- DEMO & Prepare Property	1	1	16-Mar-18	16-Mar-18	119
ROW.DM.1640.PE-026B	UPRR - PE-026B - DEMO & Prepare Property	1	1	16-Mar-18	16-Mar-18	119
ROW.DM.1650.APPE026I	UPRR - AP-PE-026I (Partial) - DEMO & Prepare Property	1	1	16-Mar-18	16-Mar-18	555
ROW.DM.2370.AP-CL	UPRR - AP-Construction License (formerly TE-26) - DEMO & Prepare Property	1	1	16-Mar-18	16-Mar-18	119
ROW.DM.2380.AP-CLA	UPRR - AP-Construction License (formerly TE-26A) - DEMO & Prepare Property	1	1	16-Mar-18	16-Mar-18	119
CDOT Acquire Properties (by 14 months after Written Notice from Developer to CDOT)		237	237	06-Nov-17	28-Jan-19	376
ROW.ACQ.1160	CDOT Acquire - Segment 1 Properties (by 14 months after Written Notice from Developer to Department for Acquisition)	292	292	06-Nov-17	02-Jan-19	110
ROW.1560.RW-183	The Western Stock Show Association - RW-183 (Partial) by 14 months After Written Notice from Developer to Department for	0	0		02-Jan-19	110

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
ROW.1570.RW-211	SEJ Asset Management & Investment - RW-211 (Partial) by 14 months After Written Notice from Developer to Department for	0	0		02-Jan-19	110
ROW.1780.RW-001L	City and County of Denver - RW-001L (Partial) by 14 months after Written Notice from Developer to Department for Acquisi	0	0		02-Jan-19	110
ROW.1790.RW-002	Alberto Rocha - RW-002 (Partial) by 14 months after Written Notice from Developer to Department for Acquisition	0	0		02-Jan-19	110
ROW.PMT.1160	ROW DEMO Permit & Plan - Segment 1 Properties (by 14 months after Written Notice from Developer to Department for Acquis	10	10	03-Jan-19	16-Jan-19	110
ROW.DM.1560.RW-183	The Western Stock Show Association - RW-183 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	334
ROW.DM.1570.RW-211	SEJ Asset Management & Investment - RW-211 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	334
ROW.DM.1780.RW-001L	City and County of Denver - RW-001L (Partial)- DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	376
ROW.DM.1790.RW-002	Alberto Rocha - RW-002 (Partial)- DEMO & Prepare Property	3	3	17-Jan-19	21-Jan-19	84
Right of Way - Segment 2 Sta 2025+00 to Sta 2044+00		182	182	03-Nov-17	03-Oct-18	437
ROW Acquisition		182	182	03-Nov-17	03-Oct-18	437
CDOT Acquire Properties (by NTP2)		62	62	03-Nov-17	22-Mar-18	557
ROW.ACQ.1200	CDOT Acquire - Segment 2 Properties (by NTP2)	65	65	03-Nov-17	07-Feb-18	198
ROW.1180.AP-041	Karl C De Baca - AP-041 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1190.AP-042	Kenneth and Linda Mervin - AP-042 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1200.AP-043	Bruce and Wayne Medina - AP-043 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1210.AP-044	John Slavinski - AP-044 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1220.AP-045	Michael Fritts - AP-045 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1230.AP-046	Germain Investment Company - AP-046 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1240.AP-047	Richard Kevin Schneider Trust - AP-047 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1250.AP-048	Michael Fritts - AP-048 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1260.AP-050	Victor Gutierrez - AP-050 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1270.AP-052	Alternative Auto Solutions, LLC - AP-052 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1280.AP-054	Drew Brennan Arnold - AP-054 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1290.AP-055	Jacinto and Ivan Luiz Acevedo - AP-055 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1300.AP-057	Jose Guzman - AP-057 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1310.AP-058	Mark Escobedo - AP-058 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1320.AP-059	Adam Van Patten - AP-059 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1330.AP-060	Traci J O'Brien - AP-060 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1350.AP-067	Justin McLead - AP-067 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1360.AP-072	Aurelio Ruiz and Sergio Ruiz-Renteria - AP-072 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1370.AP-076	Todd A. and Cherish Wells - AP-076 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1380.AP-078	Diane Fleck - AP-078 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.1530.AP-180 & AP-18	Harold Deter - AP-180 & AP-180A by NTP2	0	0		07-Feb-18	198
ROW.1570.AP-184	Anthony Sanchez - AP-184 CDOT Acquired by NTP2	0	0		07-Feb-18	198
ROW.PMT.1200	ROW DEMO Permit & Plan - Segment 2 Properties (by NTP2)	10	10	08-Feb-18	21-Feb-18	198
ROW.DM.1180.AP-041	Karl C De Baca - AP-041 - DEMO & Prepare Property	13	13	23-Feb-18	19-Mar-18	419
ROW.DM.1190.AP-042	Kenneth and Linda Mervin - AP-042 - DEMO & Prepare Property	13	13	23-Feb-18	19-Mar-18	419
ROW.DM.1200.AP-043	Bruce and Wayne Medina - AP-043 - DEMO & Prepare Property	13	13	23-Feb-18	19-Mar-18	419
ROW.DM.1210.AP-044	John Slavinski - AP-044 - DEMO & Prepare Property	13	13	23-Feb-18	19-Mar-18	419
ROW.DM.1220.AP-045	Michael Fritts - AP-045 - DEMO & Prepare Property	5	5	23-Feb-18	02-Mar-18	178
ROW.DM.1230.AP-046	Germain Investment Company - AP-046 - DEMO & Prepare Property	5	5	23-Feb-18	02-Mar-18	427
ROW.DM.1240.AP-047	Richard Kevin Schneider Trust - AP-047 - DEMO & Prepare Property	15	15	23-Feb-18	22-Mar-18	168
ROW.DM.1250.AP-048	Michael Fritts - AP-048 - DEMO & Prepare Property	13	13	23-Feb-18	19-Mar-18	170



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

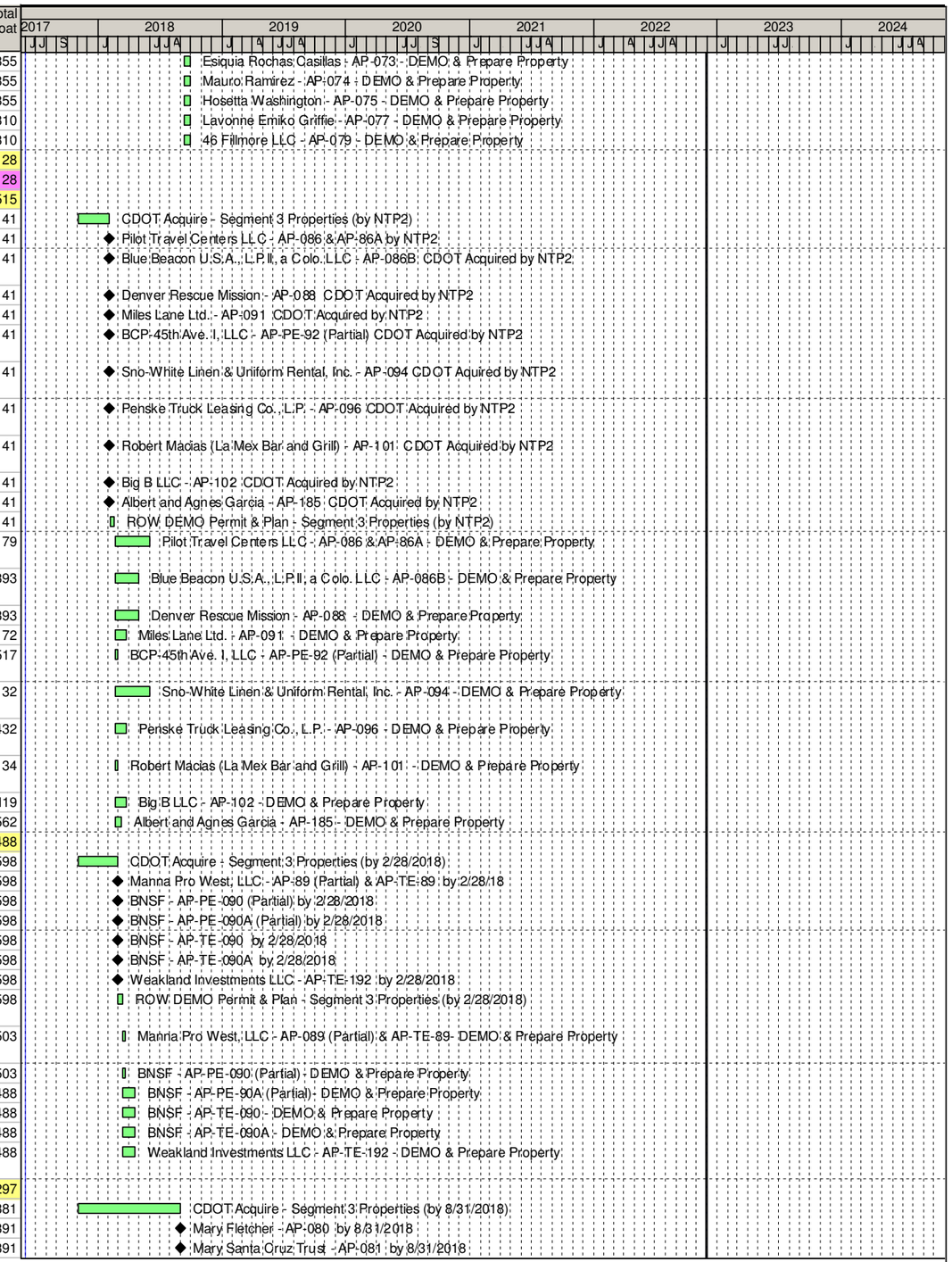
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
ROW.DM.1260.AP-050	Victor Gutierrez - AP-050 - DEMO & Prepare Property	13	13	23-Feb-18	19-Mar-18	467
ROW.DM.1270.AP-052	Alternative Auto Solutions, LLC - AP-052 - DEMO & Prepare Property	15	15	23-Feb-18	22-Mar-18	467
ROW.DM.1280.AP-054	Drew Brennan Arnold - AP-054 - DEMO & Prepare Property	13	13	23-Feb-18	19-Mar-18	374
ROW.DM.1290.AP-055	Jacinto and Ivan Luiz Acevedo - AP-055 - DEMO & Prepare Property	5	5	23-Feb-18	02-Mar-18	479
ROW.DM.1300.AP-057	Jose Guzman - AP-057 - DEMO & Prepare Property	13	13	23-Feb-18	19-Mar-18	374
ROW.DM.1310.AP-058	Mark Escobedo - AP-058 - DEMO & Prepare Property	13	13	23-Feb-18	19-Mar-18	374
ROW.DM.1320.AP-059	Adam Van Patten - AP-059 - DEMO & Prepare Property	13	13	23-Feb-18	19-Mar-18	374
ROW.DM.1330.AP-060	Traci J O'Brien - AP-060 - DEMO & Prepare Property	13	13	23-Feb-18	19-Mar-18	471
ROW.DM.1350.AP-067	Justin McLead - AP-067 - DEMO & Prepare Property	5	5	23-Feb-18	02-Mar-18	567
ROW.DM.1360.AP-072	Aurelio Ruiz - AP-072 - DEMO & Prepare Property	13	13	23-Feb-18	19-Mar-18	559
ROW.DM.1370.AP-076	Todd A. and Cherish Wells - AP-076 - DEMO & Prepare Property	13	13	23-Feb-18	19-Mar-18	430
ROW.DM.1380.AP-078	Diane Fleck - AP-078 - DEMO & Prepare Property	13	13	23-Feb-18	19-Mar-18	443
ROW.DM.1530.AP-180 & A	Harold Deter - AP-180 & AP-180A - DEMO & Prepare Property	5	5	23-Feb-18	02-Mar-18	186
ROW.DM.1570.AP-184	Anthony Sanchez - AP-184 - DEMO & Prepare Property	5	5	23-Feb-18	02-Mar-18	567
CDOT Acquire Properties (by 6/28/2018)		146	146	03-Nov-17	07-Aug-18	92
ROW.ACQ.1220	CDOT Acquire - Segment 2 Properties (by 6/28/2018)	165	165	03-Nov-17	28-Jun-18	109
ROW.1880.AP-066	JJH Inc. (Colonial Manor Motel) - AP-066 by 6/28/2018	0	0		28-Jun-18	109
ROW.1890.RW-066A & RW-66B	JJH Inc. (Vacant Lots @ Colonial Motel) - AP-066A & AP-66B by 6/28/2018	0	0		28-Jun-18	109
ROW.PMT.1220	ROW DEMO Permit & Plan - Segment 2 Properties (by 6/28/2018)	10	10	29-Jun-18	13-Jul-18	109
ROW.DM.1880.AP-066	JJH Inc. (Colonial Manor Motel) - AP-066 - DEMO & Prepare Property	15	15	16-Jul-18	07-Aug-18	92
ROW.DM.1890.RW-066A & RW-66B	JJH Inc. (Vacant Lots @ Colonial Motel) - AP-066A & AP-66B - DEMO & Prepare Property	15	15	16-Jul-18	07-Aug-18	92
CDOT Acquire Properties (by 7/31/2018)		156	156	03-Nov-17	22-Aug-18	253
ROW.ACQ.1230	CDOT Acquire - Segment 2 Properties (by 7/31/2018)	187	187	03-Nov-17	31-Jul-18	316
ROW.1340.AP-063	Denver Public School District No. 1 (Swansea School) - AP-063 (Partial) CDOT Acquired by 7/31/2018	0	0		31-Jul-18	316
ROW.PMT.1230	ROW DEMO Permit & Plan - Segment 2 Properties (by 7/31/2018)	10	10	01-Aug-18	14-Aug-18	316
ROW.DM.1340.AP-063	Denver Public School District No. 1 (Swansea School) - AP-063 (Partial) - DEMO & Prepare Property	5	5	16-Aug-18	22-Aug-18	253
CDOT Acquire Properties (by 8/31/2018)		182	182	03-Nov-17	03-Oct-18	353
ROW.ACQ.1240	CDOT Acquire - Segment 2 Properties (by 8/31/2018)	210	210	03-Nov-17	31-Aug-18	77
ROW.PMT.1240	ROW DEMO Permit & Plan - Segment 2 Properties (by 8/31/2018)	30	30	30-Jul-18	10-Sep-18	77
ROW.1850.AP-049	Vincent and Judy Sanchez - AP-049 by 8/31/2018	0	0		31-Aug-18	77
ROW.1860.AP-049A	Vincent and Judy Sanchez - AP-049A by 8/31/2018	0	0		31-Aug-18	77
ROW.1870.AP-053	Jeff Portales - AP-053 by 8/31/2018	0	0		31-Aug-18	77
ROW.1900.AP-068	Irene Luchetta and Dorothy Ann Magana - AP-068 by 8/31/2018	0	0		31-Aug-18	77
ROW.1910.AP-069	Charles Dady, Jr. - AP-069 by 8/31/2018	0	0		31-Aug-18	77
ROW.1920.AP-070	Oscar Ortiz and Leonila Rivera Carrera - AP-070 by 8/31/2018	0	0		31-Aug-18	77
ROW.1930.AP-073	Esiquia Rochas Casillas - AP-073 by 8/31/2018	0	0		31-Aug-18	77
ROW.1940.AP-074	Mauro Ramirez - AP-074 by 8/31/2018	0	0		31-Aug-18	77
ROW.1950.AP-075	Hosetta Washington - AP-075 by 8/31/2018	0	0		31-Aug-18	77
ROW.1960.AP-077	Lavonne Emiko Griffie - AP-077 by 8/31/2018	0	0		31-Aug-18	77
ROW.1970.AP-079	46 Fillmore LLC - AP-079 by 8/31/2018	0	0		31-Aug-18	77
ROW.DM.1850.AP-049	Vincent and Judy Sanchez - AP-049 - DEMO & Prepare Property	15	15	11-Sep-18	03-Oct-18	347
ROW.DM.1860.AP-049A	Vincent and Judy Sanchez - AP-049A - DEMO & Prepare Property	15	15	11-Sep-18	03-Oct-18	347
ROW.DM.1870.AP-053	Jeff Portales - AP-053 - DEMO & Prepare Property	13	13	11-Sep-18	01-Oct-18	254
ROW.DM.1900.AP-068	Irene Luchetta and Dorothy Ann Magana - AP-068 - DEMO & Prepare Property	10	10	11-Sep-18	26-Sep-18	61
ROW.DM.1910.AP-069	Charles Dady, Jr. - AP-069 - DEMO & Prepare Property	10	10	11-Sep-18	26-Sep-18	61
ROW.DM.1920.AP-070	Oscar Ortiz and Leonila Rivera Carrera - AP-070 - DEMO & Prepare Property	10	10	11-Sep-18	26-Sep-18	61

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
ROW.DM.1930.AP-073	Esiquia Rochas Casillas - AP-073 - DEMO & Prepare Property	13	13	11-Sep-18	01-Oct-18	355
ROW.DM.1940.AP-074	Mauro Ramirez - AP-074 - DEMO & Prepare Property	13	13	11-Sep-18	01-Oct-18	355
ROW.DM.1950.AP-075	Hosetta Washington - AP-075 - DEMO & Prepare Property	13	13	11-Sep-18	01-Oct-18	355
ROW.DM.1960.AP-077	Lavonne Emiko Griffie - AP-077 - DEMO & Prepare Property	13	13	11-Sep-18	01-Oct-18	310
ROW.DM.1970.AP-079	46 Fillmore LLC - AP-079 - DEMO & Prepare Property	13	13	11-Sep-18	01-Oct-18	310
Right of Way - Segment 3 Sta 2139+00 to 2164+00		491	491	03-Nov-17	24-Apr-20	128
ROW Acquisition		491	491	03-Nov-17	24-Apr-20	128
CDOT Acquire Properties (by NTP2)		104	104	03-Nov-17	01-Jun-18	515
ROW.ACQ.1300	CDOT Acquire - Segment 3 Properties (by NTP2)	62	62	03-Nov-17	02-Feb-18	41
ROW.1390.AP-086 & AP-86	Pilot Travel Centers LLC - AP-086 & AP-86A by NTP2	0	0		02-Feb-18	41
ROW.1400.AP-086B	Blue Beacon U.S.A., L.P.II, a Colo. LLC - AP-086B CDOT Acquired by NTP2	0	0		02-Feb-18	41
ROW.1410.AP-088	Denver Rescue Mission - AP-088 CDOT Acquired by NTP2	0	0		02-Feb-18	41
ROW.1430.AP-091	Miles Lane Ltd. - AP-091 CDOT Acquired by NTP2	0	0		02-Feb-18	41
ROW.1440.AP-PE-92	BCP-45th Ave. I, LLC - AP-PE-92 (Partial) CDOT Acquired by NTP2	0	0		02-Feb-18	41
ROW.1460.AP-094	Sno-White Linen & Uniform Rental, Inc. - AP-094 CDOT Aquired by NTP2	0	0		02-Feb-18	41
ROW.1470.AP-096	Penske Truck Leasing Co., L.P. - AP-096 CDOT Acquired by NTP2	0	0		02-Feb-18	41
ROW.1480.AP-101	Robert Macias (La Mex Bar and Grill) - AP-101 CDOT Acquired by NTP2	0	0		02-Feb-18	41
ROW.1490.AP-102	Big B LLC - AP-102 CDOT Acquired by NTP2	0	0		02-Feb-18	41
ROW.1580.AP-185	Albert and Agnes Garcia - AP-185 CDOT Acquired by NTP2	0	0		02-Feb-18	41
ROW.PMT.1300	ROW DEMO Permit & Plan - Segment 3 Properties (by NTP2)	10	10	05-Feb-18	16-Feb-18	41
ROW.DM.1390.AP-086 & AP-86A	Pilot Travel Centers LLC - AP-086 & AP-86A - DEMO & Prepare Property	60	60	19-Feb-18	01-Jun-18	79
ROW.DM.1400.AP-086B	Blue Beacon U.S.A., L.P.II, a Colo. LLC - AP-086B - DEMO & Prepare Property	40	40	19-Feb-18	30-Apr-18	393
ROW.DM.1410.AP-088	Denver Rescue Mission - AP-088 - DEMO & Prepare Property	40	40	19-Feb-18	30-Apr-18	393
ROW.DM.1430.AP-091	Miles Lane Ltd. - AP-091 - DEMO & Prepare Property	20	20	19-Feb-18	26-Mar-18	72
ROW.DM.1440.AP-PE-92	BCP-45th Ave. I, LLC - AP-PE-92 (Partial) - DEMO & Prepare Property	5	5	19-Feb-18	26-Feb-18	517
ROW.DM.1460.AP-094	Sno-White Linen & Uniform Rental, Inc. - AP-094 - DEMO & Prepare Property	60	60	19-Feb-18	01-Jun-18	32
ROW.DM.1470.AP-096	Penske Truck Leasing Co., L.P. - AP-096 - DEMO & Prepare Property	20	20	19-Feb-18	26-Mar-18	432
ROW.DM.1480.AP-101	Robert Macias (La Mex Bar and Grill) - AP-101 - DEMO & Prepare Property	5	5	19-Feb-18	26-Feb-18	134
ROW.DM.1490.AP-102	Big B LLC - AP-102 - DEMO & Prepare Property	20	20	19-Feb-18	26-Mar-18	119
ROW.DM.1580.AP-185	Albert and Agnes Garcia - AP-185 - DEMO & Prepare Property	13	13	19-Feb-18	12-Mar-18	562
CDOT Acquire Properties (by 2/28/2018)		78	78	03-Nov-17	19-Apr-18	488
ROW.ACQ.1310	CDOT Acquire - Segment 3 Properties (by 2/28/2018)	80	80	03-Nov-17	28-Feb-18	598
ROW.1420.AP-089 (Partial)	Manna Pro West, LLC - AP-89 (Partial) & AP-TE-89 by 2/28/18	0	0		28-Feb-18	598
ROW.1710.AP-PE-090	BNSF - AP-PE-090 (Partial) by 2/28/2018	0	0		28-Feb-18	598
ROW.1770.AP-PE-090A	BNSF - AP-PE-090A (Partial) by 2/28/2018	0	0		28-Feb-18	598
ROW.2390.AP-TE-090	BNSF - AP-TE-090 by 2/28/2018	0	0		28-Feb-18	598
ROW.2400.AP-TE-090A	BNSF - AP-TE-090A by 2/28/2018	0	0		28-Feb-18	598
ROW.2420.AP-TE-192	Weakland Investments LLC - AP-TE-192 by 2/28/2018	0	0		28-Feb-18	598
ROW.PMT.1310	ROW DEMO Permit & Plan - Segment 3 Properties (by 2/28/2018)	10	10	01-Mar-18	14-Mar-18	598
ROW.DM.1420.AP-089 (Partial) & AP-PE-89	Manna Pro West, LLC - AP-089 (Partial) & AP-TE-89- DEMO & Prepare Property	5	5	16-Mar-18	23-Mar-18	503
ROW.DM.1710.APPE-090	BNSF - AP-PE-090 (Partial) - DEMO & Prepare Property	5	5	16-Mar-18	23-Mar-18	503
ROW.DM.1770.APPE-90A	BNSF - AP-PE-90A (Partial)- DEMO & Prepare Property	20	20	16-Mar-18	19-Apr-18	488
ROW.DM.2390.APTE-090	BNSF - AP-TE-090 - DEMO & Prepare Property	20	20	16-Mar-18	19-Apr-18	488
ROW.DM.2400.APTE-90A	BNSF - AP-TE-090A - DEMO & Prepare Property	20	20	16-Mar-18	19-Apr-18	488
ROW.DM.2420.APTE-192	Weakland Investments LLC - AP-TE-192 - DEMO & Prepare Property	20	20	16-Mar-18	19-Apr-18	488
CDOT Acquire Properties (by 8/31/2018)		193	193	03-Nov-17	22-Oct-18	297
ROW.ACQ.1340	CDOT Acquire - Segment 3 Properties (by 8/31/2018)	210	210	03-Nov-17	31-Aug-18	381
ROW.1980.AP-080	Mary Fletcher - AP-080 by 8/31/2018	0	0		31-Aug-18	391
ROW.1990.AP-081	Mary Santa Cruz Trust - AP-081 by 8/31/2018	0	0		31-Aug-18	391



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

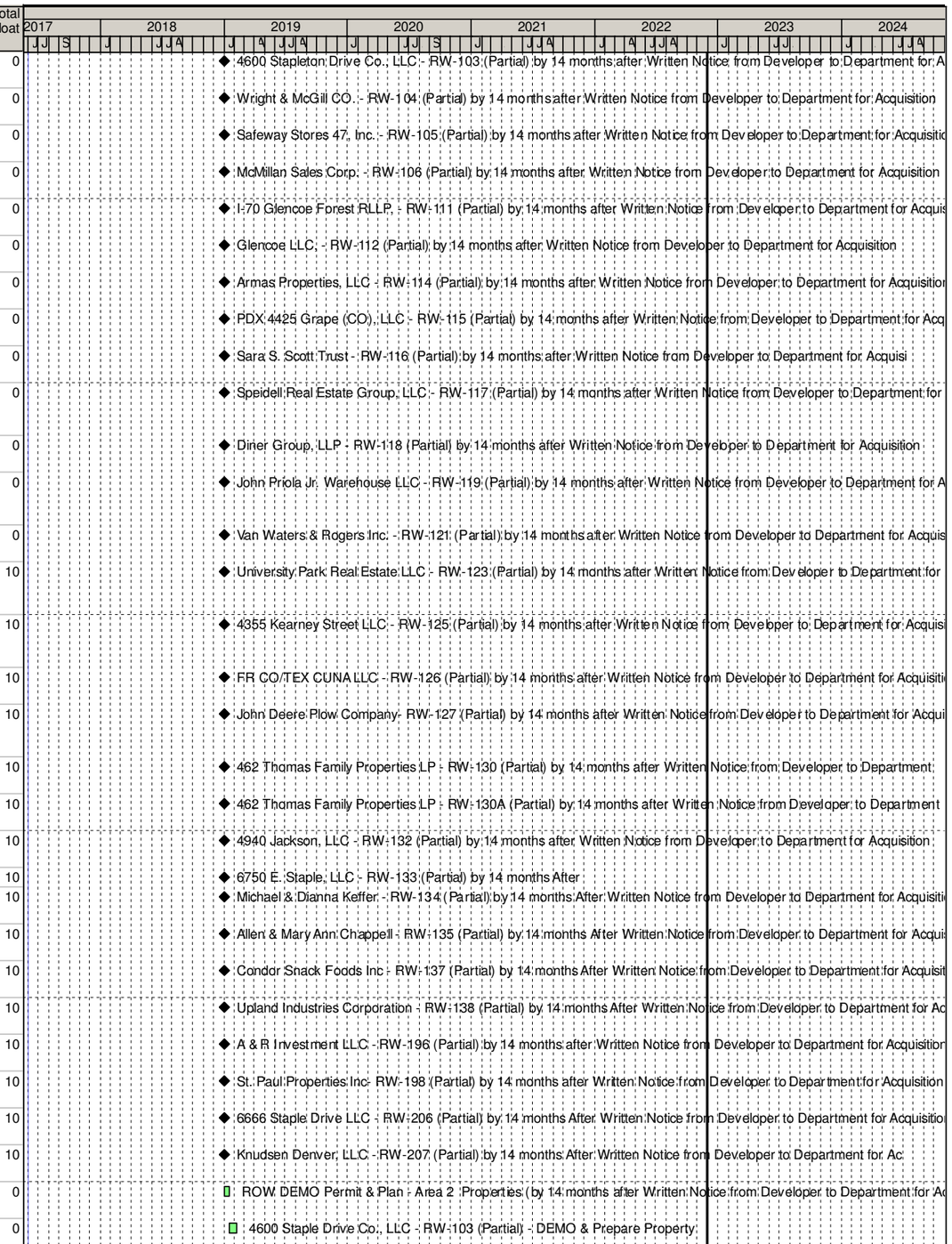
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
ROW.1995.AP-083	Mayra Manuela and Juan Carlos Lodoza - AP-083 by 8/31/2018	0	0		31-Aug-18	381
ROW.PMT.1340	ROW DEMO Permit & Plan - Segment 3 Properties (by 8/31/2018)	10	10	18-Sep-18	01-Oct-18	381
ROW.DM.1980.AP-080	Mary Fletcher - AP-080 - DEMO & Prepare Property	13	13	02-Oct-18	22-Oct-18	297
ROW.DM.1990.AP-081	Mary Santa Cruz Trust - AP-081 - DEMO & Prepare Property	13	13	02-Oct-18	22-Oct-18	297
ROW.DM.1995.AP-083	Mayra Manuela and Juan Carlos Lodoza - AP-083 - DEMO & Prepare Property	13	13	02-Oct-18	22-Oct-18	297
CDOT Acquire Properties (by 14 months after Written Notice from Developer to CDOT)		236	236	06-Nov-17	24-Jan-19	382
ROW.ACQ.1360	CDOT Acquire - Segment 3 Properties (by 14 months after Written Notice from Developer to Department for Acquisition)	290	290	06-Nov-17	28-Dec-18	199
ROW.2000.RW-082	Randall T. Lopez - RW-082 (Partial) by 14 months after Written Notice from Developer to Department for Acquisition	0	0		28-Dec-18	199
ROW.2020.RW-084	Crystal F. Silerio Castanon and Manuel Barrios - RW-084 (Partial) by 14 months after Written Notice from Developer to De	0	0		28-Dec-18	199
ROW.2030.RW-085	4500 Steele Street LLC - RW-085 (Partial) by 14 months after Written Notice from Developer to Department for Acquisition	0	0		28-Dec-18	199
ROW.2040.RW-087	Perschbacher Investments LLC - RW-087 (Partial) by 14 months after Written Notice from Developer to Department for Acqui	0	0		28-Dec-18	199
ROW.PMT.1360	ROW DEMO Permit & Plan - Segment 3 Properties (by 14 months after Written Notice from Developer to Department for Acquis	10	10	31-Dec-18	14-Jan-19	199
ROW.DM.2000.RW-082	Randall T. Lopez - RW-082 (Partial) - DEMO & Prepare Property	5	5	15-Jan-19	24-Jan-19	382
ROW.DM.2020.RW-084	Crystal F. Silerio Castanon and Manuel Barrios - RW-084 (Partial) - DEMO & Prepare Property	5	5	15-Jan-19	24-Jan-19	253
ROW.DM.2030.RW-085	4500 Steele Street LLC - RW-085 (Partial) - DEMO & Prepare Property	5	5	15-Jan-19	24-Jan-19	162
ROW.DM.2040.RW-087	Perschbacher Investments LLC - RW-087 (Partial) - DEMO & Prepare Property	5	5	15-Jan-19	24-Jan-19	162
CDOT Acquire Properties (by 1/31/2020)		491	491	03-Nov-17	24-Apr-20	1
ROW.ACQ.1350	CDOT Acquire - Segment 3 Properties (by 1/31/2020)	568	568	03-Nov-17	31-Jan-20	2
ROW.1450.AP-093 & AP-93A	Stanley J. Anderson Trust - AP-093 & AP-93A CDOT Aquired by 1/31/20	0	0		31-Jan-20	2
ROW.PMT.1350	ROW DEMO Permit & Plan - Segment 3 Properties (by 1/31/2020)	10	10	03-Feb-20	14-Feb-20	2
ROW.DM.1450.AP-093 & AP-93A	Stanley J. Anderson Trust - AP-093 & AP-93A - DEMO & Prepare Property	40	40	17-Feb-20	24-Apr-20	1
Area 2 - Dahlia St to Sand Creek Bridge - Sta 2085+00 to 2192+37.89 (2.01 miles)		243	243	03-Nov-17	08-Feb-19	18
ROW Acquisition		243	243	03-Nov-17	08-Feb-19	18
ROW.0000	CDOT Right of Way Acquisition - Area 2 Only	243	243	03-Nov-17	08-Feb-19	18
CDOT Acquire Properties (by NTP2)		87	87	03-Nov-17	03-May-18	174
ROW.ACQ.2000	CDOT Acquire - Area 2 Properties (by NTP2)	65	65	03-Nov-17	07-Feb-18	199
ROW.1500.AP-109	First Union Group and SD-WH Ltd. LLP - AP-109 by NTP2	0	0		07-Feb-18	199
ROW.1510.AP-122	5601, LLC - AP-122 by NTP2	0	0		07-Feb-18	199
ROW.PMT.2000	ROW DEMO Permit & Plan - Area 2 Properties (by NTP2)	10	10	08-Feb-18	21-Feb-18	199
ROW.DM.1500.AP-109	First Union Group and SD-WH Ltd. LLP - AP-109 - DEMO & Prepare Property	40	40	23-Feb-18	03-May-18	169
ROW.DM.1510.AP-122	5601, LLC - AP-122 - DEMO & Prepare Property	40	40	23-Feb-18	03-May-18	174
CDOT Acquire Properties (by 2/28/2018)		98	98	03-Nov-17	22-May-18	153
ROW.ACQ.2010	CDOT Acquire - Area 2 Properties (by 2/28/2018)	80	80	03-Nov-17	28-Feb-18	178
ROW.2270.AP-136	DRIRR - AP-136 (Partial) by 2/28/2018	0	0		28-Feb-18	178
ROW.2280.AP-PE-136A	DRIRR - AP-PE-136A (Partial) by 2/28/2018	0	0		28-Feb-18	178
ROW.2290.AP-136B	DRIRR - AP-136B (Partial) by 2/28/2018	0	0		28-Feb-18	178
ROW.PMT.2010	ROW DEMO Permit & Plan - Area 2 Properties (by 2/28/2018)	10	10	01-Mar-18	14-Mar-18	178
ROW.DM.2270.AP-136	DRIRR - AP-136 (Partial) - DEMO & Prepare Property	5	5	16-Mar-18	23-Mar-18	188
ROW.DM.2280.AP-136A	DRIRR - AP-PE-136A (Partial) - DEMO & Prepare Property	40	40	16-Mar-18	22-May-18	153
ROW.DM.2290.AP-136B	DRIRR - AP-136B (Partial) - DEMO & Prepare Property	10	10	16-Mar-18	02-Apr-18	183
CDOT Acquire Properties (by 14 months after Written Notice from Developer to CDOT)		242	242	06-Nov-17	08-Feb-19	18
ROW.ACQ.2060	CDOT Acquire - Area 2 Properties (by 14 months after Written Notice from Developer to Department for Acquisition)	292	292	06-Nov-17	02-Jan-19	0

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
ROW.2050.RW-103	4600 Stapleton Drive Co., LLC - RW-103 (Partial) by 14 months after Written Notice from Developer to Department for Acqu	0	0		02-Jan-19	0
ROW.2060.RW-104	Wright & McGill CO. - RW-104 (Partial) by 14 months after Written Notice from Developer to Department for Acquisition	0	0		02-Jan-19	0
ROW.2070.RW-105	Safeway Stores 47, Inc. - RW-105 (Partial) by 14 months after Written Notice from Developer to Department for Acquisitio	0	0		02-Jan-19	0
ROW.2080.RW-106	McMillan Sales Corp. - RW-106 (Partial) by 14 months after Written Notice from Developer to Department for Acquisition	0	0		02-Jan-19	0
ROW.2090.RW-111	I-70 Glencoe Forest RLLP, - RW-111 (Partial) by 14 months after Written Notice from Developer to Department for Acquisit	0	0		02-Jan-19	0
ROW.2100.RW-112	Glencoe LLC, - RW-112 (Partial) by 14 months after Written Notice from Developer to Department for Acquisition	0	0		02-Jan-19	0
ROW.2110.RW-114	Armas Properties, LLC - RW-114 (Partial) by 14 months after Written Notice from Developer to Department for Acquisition	0	0		02-Jan-19	0
ROW.2120.RW-115	PDX 4425 Grape (CO), LLC - RW-115 (Partial) by 14 months after Written Notice from Developer to Department for Acquisiti	0	0		02-Jan-19	0
ROW.2130.RW-116	Sara S. Scott Trust - RW-116 (Partial) by 14 months after Written Notice from Developer to Department for Acquisi	0	0		02-Jan-19	0
ROW.2140.RW-117	Speidell Real Estate Group, LLC - RW-117 (Partial) by 14 months after Written Notice from Developer to Department for Ac	0	0		02-Jan-19	0
ROW.2150.RW-118	Diner Group, LLP - RW-118 (Partial) by 14 months after Written Notice from Developer to Department for Acquisition	0	0		02-Jan-19	0
ROW.2160.RW-119	John Priola Jr. Warehouse LLC - RW-119 (Partial) by 14 months after Written Notice from Developer to Department for Acqu	0	0		02-Jan-19	0
ROW.2170.RW-121	Van Waters & Rogers Inc. - RW-121 (Partial) by 14 months after Written Notice from Developer to Department for Acquisiti	0	0		02-Jan-19	0
ROW.2180.RW-123	University Park Real Estate LLC - RW-123 (Partial) by 14 months after Written Notice from Developer to Department for Ac	0	0		02-Jan-19	10
ROW.2190.RW-125	4355 Kearney Street LLC - RW-125 (Partial) by 14 months after Written Notice from Developer to Department for Acquisitio	0	0		02-Jan-19	10
ROW.2200.RW-126	FR CO/TEX CUNA LLC - RW-126 (Partial) by 14 months after Written Notice from Developer to Department for Acquisition	0	0		02-Jan-19	10
ROW.2210.RW-127	John Deere Plow Company- RW-127 (Partial) by 14 months after Written Notice from Developer to Department for Acquisition	0	0		02-Jan-19	10
ROW.2220.RW-130	462 Thomas Family Properties LP - RW-130 (Partial) by 14 months after Written Notice from Developer to Department	0	0		02-Jan-19	10
ROW.2225.RW-130A	462 Thomas Family Properties LP - RW-130A (Partial) by 14 months after Written Notice from Developer to Department	0	0		02-Jan-19	10
ROW.2230.RW-132	4940 Jackson, LLC - RW-132 (Partial) by 14 months after Written Notice from Developer to Department for Acquisition	0	0		02-Jan-19	10
ROW.2240.RW-133	6750 E. Staple, LLC - RW-133 (Partial) by 14 months After	0	0		02-Jan-19	10
ROW.2250.RW-134	Michael & Dianna Keffer - RW-134 (Partial) by 14 months After Written Notice from Developer to Department for Acquisitio	0	0		02-Jan-19	10
ROW.2260.RW-135	Allen & Mary Ann Chappell - RW-135 (Partial) by 14 months After Written Notice from Developer to Department for Acquisit	0	0		02-Jan-19	10
ROW.2300.RW-137	Condor Snack Foods Inc - RW-137 (Partial) by 14 months After Written Notice from Developer to Department for Acquisition	0	0		02-Jan-19	10
ROW.2310.RW-138	Upland Industries Corporation - RW-138 (Partial) by 14 months After Written Notice from Developer to Department for Acqu	0	0		02-Jan-19	10
ROW.2320.RW-196	A & R Investment LLC - RW-196 (Partial) by 14 months after Written Notice from Developer to Department for Acquisition	0	0		02-Jan-19	10
ROW.2330.RW-198	St. Paul Properties Inc- RW-198 (Partial) by 14 months after Written Notice from Developer to Department for Acquisition	0	0		02-Jan-19	10
ROW.2350.RW-206	6666 Staple Drive LLC - RW-206 (Partial) by 14 months After Written Notice from Developer to Department for Acquisition	0	0		02-Jan-19	10
ROW.2360.RW-207	Knudsen Denver, LLC - RW-207 (Partial) by 14 months After Written Notice from Developer to Department for Ac	0	0		02-Jan-19	10
ROW.PMT.2060	ROW DEMO Permit & Plan - Area 2 Properties (by 14 months after Written Notice from Developer to Department for Acquisit	10	10	03-Jan-19	16-Jan-19	0
ROW.DM.2050.RW-103	4600 Staple Drive Co., LLC - RW-103 (Partial) - DEMO & Prepare Property	10	10	17-Jan-19	08-Feb-19	0



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
ROW.DM.2060.RW-104	Wright & McGill CO. - RW-104 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	19
ROW.DM.2070.RW-105	Safeway Stores 47, Inc. - RW-105 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	3
ROW.DM.2080.RW-106	McMillan Sales Corp. - RW-106 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	18
ROW.DM.2090.RW-111	I-70 Glencoe Forest RLLP, - RW-111 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	3
ROW.DM.2100.RW-112	Glencoe LLC, - RW-112 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	18
ROW.DM.2110.RW-114	Armas Properties, LLC - RW-114 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	18
ROW.DM.2120.RW-115	PDX 4425 Grape (CO), LLC - RW-115 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	3
ROW.DM.2130.RW-116	Sara S. Scott Trust - RW-116 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	18
ROW.DM.2140.RW-117	Speidell Real Estate Group, LLC - RW-117 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	3
ROW.DM.2150.RW-118	Diner Group, LLP - RW-118 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	3
ROW.DM.2160.RW-119	John Priola Jr. Warehouse LLC - RW-119 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	18
ROW.DM.2170.RW-121	Van Waters & Rogers Inc. - RW-121 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	5
ROW.DM.2180.RW-123	University Park Real Estate LLC - RW-123 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	23
ROW.DM.2190.RW-125	4355 Kearney Street LLC - RW-125 (Partial) - DEMO & Prepare Property	10	10	17-Jan-19	08-Feb-19	0
ROW.DM.2200.RW-126	FR CO/TEX CUNA LLC - RW-126 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	23
ROW.DM.2210.RW-127	John Deere Plow Company- RW-127 (Partial) - DEMO & Prepare Property	10	10	17-Jan-19	08-Feb-19	18
ROW.DM.2220.RW-130	462 Thomas Family Properties LP - RW-130 (Partial) - DEMO & Prepare Property	10	10	17-Jan-19	08-Feb-19	18
ROW.DM.2225.RW-130A	462 Thomas Family Properties LP - RW-130A (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	13
ROW.DM.2230.RW-132	4940 Jackson, LLC - RW-132 (Partial) - DEMO & Prepare Property	10	10	17-Jan-19	08-Feb-19	8
ROW.DM.2240.RW-133	6750 E. Staple, LLC. - RW-133 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	5
ROW.DM.2250.RW-134	Michael & Dianna Keffer - RW-134 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	5
ROW.DM.2260.RW-135	Allen & Mary Ann Chappell - RW-135 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	5
ROW.DM.2300.RW-137	Condor Snack Foods Inc - RW-137 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	5
ROW.DM.2310.RW-138	Upland Industries Corporation - RW-138 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	5
ROW.DM.2320.RW-196	A & R Investment LLC - RW-196 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	5
ROW.DM.2330.RW-198	St. Paul Properties Inc- RW-198 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	5
ROW.DM.2350.RW-206	6666 Staple Drive LLC - RW-206 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	5
ROW.DM.2360.RW-207	Knudsen Denver, LLC - RW-207 (Partial) - DEMO & Prepare Property	5	5	17-Jan-19	28-Jan-19	5
Fire & Life Safety		183	183	26-Dec-19	29-Oct-20	46
Area 1 - Brighton Blvd to Dahlia St.- Sta 2000+00 to 2085+00 (1.61 miles)		183	183	26-Dec-19	29-Oct-20	46
Phase 1		183	183	26-Dec-19	29-Oct-20	46
Stage 5		183	183	26-Dec-19	29-Oct-20	46
Segment 2 - E. of York St. to Fillmore St - (Sta 2025+50 to Sta 2042+00)		183	183	26-Dec-19	29-Oct-20	46
Plenum & Ventilation Plant Room		183	183	26-Dec-19	29-Oct-20	46
CBS1184865	Begin Plenum/Plant Room	0	0	26-Dec-19		58
CBS1184785	Construct Plenum (~1020 LF)	183	183	26-Dec-19	29-Oct-20	46
CBS1185605	Plenum & Plant Room Complete	0	0		29-Oct-20	46
1st 120' Cast-in-Place		21	21	26-Dec-19	05-Feb-20	178
CBS1184795	Plenum: Demo & Removals (as needed)	2	2	26-Dec-19	30-Dec-19	58

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

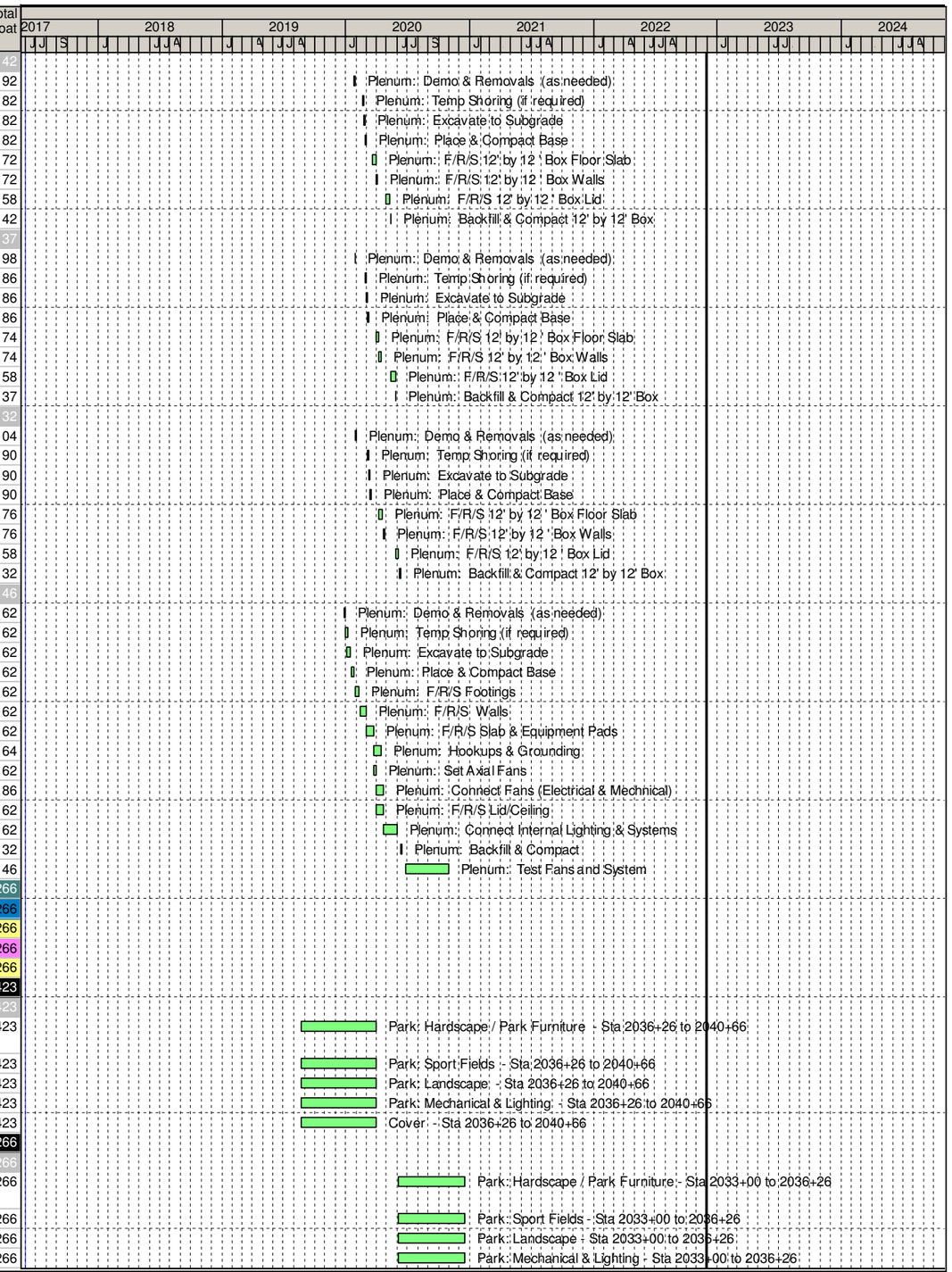
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
CBS1184805	Plenum: Temp Shoring (if required)	2	2	31-Dec-19	02-Jan-20	58
CBS1184815	Plenum: Excavate to Subgrade	2	2	31-Dec-19	02-Jan-20	58
CBS1184825	Plenum: Place & Compact Base	1	1	03-Jan-20	03-Jan-20	58
CBS1184835	Plenum: F/R/S 12' by 12 ' Box Floor Slab	4	4	07-Jan-20	13-Jan-20	58
CBS1184845	Plenum: F/R/S 12' by 12 ' Box Walls	5	5	14-Jan-20	22-Jan-20	58
CBS1184855	Plenum: F/R/S 12' by 12 ' Box Lid	5	5	24-Jan-20	31-Jan-20	58
CBS1184875	Plenum: Backfill & Compact 12' by 12' Box	2	2	03-Feb-20	05-Feb-20	178
2nd 100' Cast-in-Place		28	28	31-Dec-19	25-Feb-20	172
CBS1184935	Plenum: Demo & Removals (as needed)	2	2	31-Dec-19	02-Jan-20	60
CBS1184925	Plenum: Temp Shoring (if required)	2	2	03-Jan-20	07-Jan-20	60
CBS1184895	Plenum: Excavate to Subgrade	2	2	08-Jan-20	10-Jan-20	60
CBS1184905	Plenum: Place & Compact Base	1	1	13-Jan-20	13-Jan-20	60
CBS1184915	Plenum: F/R/S 12' by 12 ' Box Floor Slab	4	4	14-Jan-20	20-Jan-20	60
CBS1184885	Plenum: F/R/S 12' by 12 ' Box Walls	4	4	24-Jan-20	30-Jan-20	59
CBS1184945	Plenum: F/R/S 12' by 12 ' Box Lid	8	8	03-Feb-20	19-Feb-20	58
CBS1184955	Plenum: Backfill & Compact 12' by 12' Box	3	3	20-Feb-20	25-Feb-20	172
3rd 100' Cast-in-Place		34	34	03-Jan-20	10-Mar-20	167
CBS1185015	Plenum: Demo & Removals (as needed)	2	2	03-Jan-20	07-Jan-20	62
CBS1185005	Plenum: Temp Shoring (if required)	4	4	08-Jan-20	14-Jan-20	62
CBS1184975	Plenum: Excavate to Subgrade	3	3	13-Jan-20	16-Jan-20	62
CBS1184985	Plenum: Place & Compact Base	2	2	17-Jan-20	20-Jan-20	62
CBS1184995	Plenum: F/R/S 12' by 12 ' Box Floor Slab	6	6	22-Jan-20	31-Jan-20	62
CBS1184965	Plenum: F/R/S 12' by 12 ' Box Walls	4	4	03-Feb-20	10-Feb-20	62
CBS1185025	Plenum: F/R/S 12' by 12 ' Box Lid	8	8	20-Feb-20	05-Mar-20	58
CBS1185035	Plenum: Backfill & Compact 12' by 12' Box	3	3	06-Mar-20	10-Mar-20	167
4th 100' Cast-in-Place		40	40	08-Jan-20	25-Mar-20	162
CBS1185095	Plenum: Demo & Removals (as needed)	2	2	08-Jan-20	10-Jan-20	68
CBS1185085	Plenum: Temp Shoring (if required)	4	4	16-Jan-20	22-Jan-20	66
CBS1185055	Plenum: Excavate to Subgrade	3	3	20-Jan-20	24-Jan-20	66
CBS1185065	Plenum: Place & Compact Base	2	2	28-Jan-20	29-Jan-20	66
CBS1185075	Plenum: F/R/S 12' by 12 ' Box Floor Slab	6	6	03-Feb-20	13-Feb-20	64
CBS1185045	Plenum: F/R/S 12' by 12 ' Box Walls	4	4	17-Feb-20	24-Feb-20	64
CBS1185105	Plenum: F/R/S 12' by 12 ' Box Lid	8	8	06-Mar-20	19-Mar-20	58
CBS1185115	Plenum: Backfill & Compact 12' by 12' Box	3	3	20-Mar-20	25-Mar-20	162
5th 100' Cast-in-Place		46	46	13-Jan-20	06-Apr-20	157
CBS1185175	Plenum: Demo & Removals (as needed)	2	2	13-Jan-20	14-Jan-20	74
CBS1185165	Plenum: Temp Shoring (if required)	4	4	24-Jan-20	30-Jan-20	70
CBS1185135	Plenum: Excavate to Subgrade	3	3	29-Jan-20	31-Jan-20	70
CBS1185145	Plenum: Place & Compact Base	2	2	03-Feb-20	05-Feb-20	70
CBS1185155	Plenum: F/R/S 12' by 12 ' Box Floor Slab	6	6	17-Feb-20	27-Feb-20	66
CBS1185125	Plenum: F/R/S 12' by 12 ' Box Walls	4	4	28-Feb-20	05-Mar-20	66
CBS1185185	Plenum: F/R/S 12' by 12 ' Box Lid	8	8	20-Mar-20	01-Apr-20	58
CBS1185195	Plenum: Backfill & Compact 12' by 12' Box	3	3	02-Apr-20	06-Apr-20	157
6th 100' Cast-in-Place		52	52	16-Jan-20	20-Apr-20	152
CBS1185335	Plenum: Demo & Removals (as needed)	2	2	16-Jan-20	17-Jan-20	80
CBS1185325	Plenum: Temp Shoring (if required)	4	4	31-Jan-20	07-Feb-20	74
CBS1185295	Plenum: Excavate to Subgrade	3	3	05-Feb-20	10-Feb-20	74
CBS1185305	Plenum: Place & Compact Base	2	2	11-Feb-20	13-Feb-20	74
CBS1185315	Plenum: F/R/S 12' by 12 ' Box Floor Slab	6	6	28-Feb-20	09-Mar-20	68
CBS1185285	Plenum: F/R/S 12' by 12 ' Box Walls	4	4	10-Mar-20	16-Mar-20	68
CBS1185345	Plenum: F/R/S 12' by 12 ' Box Lid	8	8	02-Apr-20	14-Apr-20	58
CBS1185355	Plenum: Backfill & Compact 12' by 12' Box	3	3	15-Apr-20	20-Apr-20	152
7th 100' Cast-in-Place		58	58	20-Jan-20	01-May-20	147
CBS1185255	Plenum: Demo & Removals (as needed)	2	2	20-Jan-20	22-Jan-20	86
CBS1185245	Plenum: Temp Shoring (if required)	4	4	10-Feb-20	17-Feb-20	78
CBS1185215	Plenum: Excavate to Subgrade	3	3	13-Feb-20	19-Feb-20	78
CBS1185225	Plenum: Place & Compact Base	2	2	20-Feb-20	24-Feb-20	78
CBS1185235	Plenum: F/R/S 12' by 12 ' Box Floor Slab	6	6	10-Mar-20	19-Mar-20	70
CBS1185205	Plenum: F/R/S 12' by 12 ' Box Walls	4	4	20-Mar-20	26-Mar-20	70
CBS1185265	Plenum: F/R/S 12' by 12 ' Box Lid	8	8	15-Apr-20	28-Apr-20	58
CBS1185275	Plenum: Backfill & Compact 12' by 12' Box	3	3	29-Apr-20	01-May-20	147

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
8th 100' Cast-in-Place		64	64	24-Jan-20	14-May-20	142
CBS1185415	Plenum: Demo & Removals (as needed)	2	2	24-Jan-20	28-Jan-20	92
CBS1185405	Plenum: Temp Shoring (if required)	4	4	19-Feb-20	25-Feb-20	82
CBS1185375	Plenum: Excavate to Subgrade	3	3	24-Feb-20	27-Feb-20	82
CBS1185385	Plenum: Place & Compact Base	2	2	28-Feb-20	02-Mar-20	82
CBS1185395	Plenum: F/R/S 12' by 12 ' Box Floor Slab	6	6	20-Mar-20	30-Mar-20	72
CBS1185365	Plenum: F/R/S 12' by 12 ' Box Walls	4	4	31-Mar-20	03-Apr-20	72
CBS1185425	Plenum: F/R/S 12' by 12 ' Box Lid	8	8	29-Apr-20	11-May-20	58
CBS1185435	Plenum: Backfill & Compact 12' by 12' Box	3	3	12-May-20	14-May-20	142
9th 100' Cast-in-Place		70	70	29-Jan-20	29-May-20	137
CBS1185495	Plenum: Demo & Removals (as needed)	2	2	29-Jan-20	30-Jan-20	98
CBS1185485	Plenum: Temp Shoring (if required)	4	4	27-Feb-20	03-Mar-20	86
CBS1185455	Plenum: Excavate to Subgrade	3	3	02-Mar-20	05-Mar-20	86
CBS1185465	Plenum: Place & Compact Base	2	2	06-Mar-20	09-Mar-20	86
CBS1185475	Plenum: F/R/S 12' by 12 ' Box Floor Slab	6	6	31-Mar-20	07-Apr-20	74
CBS1185445	Plenum: F/R/S 12' by 12 ' Box Walls	4	4	09-Apr-20	14-Apr-20	74
CBS1185505	Plenum: F/R/S 12' by 12 ' Box Lid	8	8	12-May-20	26-May-20	58
CBS1185515	Plenum: Backfill & Compact 12' by 12' Box	3	3	27-May-20	29-May-20	137
Last 100' Cast-in-Place		76	76	31-Jan-20	11-Jun-20	132
CBS1185575	Plenum: Demo & Removals (as needed)	2	2	31-Jan-20	03-Feb-20	104
CBS1185565	Plenum: Temp Shoring (if required)	4	4	05-Mar-20	10-Mar-20	90
CBS1185535	Plenum: Excavate to Subgrade	3	3	09-Mar-20	11-Mar-20	90
CBS1185545	Plenum: Place & Compact Base	2	2	13-Mar-20	16-Mar-20	90
CBS1185555	Plenum: F/R/S 12' by 12 ' Box Floor Slab	6	6	09-Apr-20	16-Apr-20	76
CBS1185525	Plenum: F/R/S 12' by 12 ' Box Walls	4	4	20-Apr-20	24-Apr-20	76
CBS1185585	Plenum: F/R/S 12' by 12 ' Box Lid	8	8	27-May-20	05-Jun-20	58
CBS1185595	Plenum: Backfill & Compact 12' by 12' Box	3	3	08-Jun-20	11-Jun-20	132
Plant / Ventilation Room		183	183	26-Dec-19	29-Oct-20	46
CBS1186045	Plenum: Demo & Removals (as needed)	2	2	26-Dec-19	30-Dec-19	62
CBS1186035	Plenum: Temp Shoring (if required)	4	4	31-Dec-19	07-Jan-20	62
CBS1186005	Plenum: Excavate to Subgrade	7	7	03-Jan-20	16-Jan-20	62
CBS1186015	Plenum: Place & Compact Base	4	4	17-Jan-20	24-Jan-20	62
CBS1186025	Plenum: F/R/S Footings	8	8	28-Jan-20	10-Feb-20	62
CBS1185995	Plenum: F/R/S Walls	10	10	11-Feb-20	02-Mar-20	62
CBS1186055	Plenum: F/R/S Slab & Equipment Pads	12	12	03-Mar-20	23-Mar-20	62
A9260	Plenum: Hookups & Grounding	15	15	25-Mar-20	15-Apr-20	64
CBS1186075	Plenum: Set Axial Fans	5	5	25-Mar-20	31-Mar-20	62
CBS1186085	Plenum: Connect Fans (Electrical & Mechnical)	15	15	30-Mar-20	21-Apr-20	86
CBS1186095	Plenum: F/R/S Lid/Ceiling	12	12	01-Apr-20	20-Apr-20	62
CBS1186105	Plenum: Connect Internal Lighting & Systems	25	25	21-Apr-20	01-Jun-20	62
CBS1186065	Plenum: Backfill & Compact	3	3	12-Jun-20	16-Jun-20	132
CBS1186115	Plenum: Test Fans and System	80	80	25-Jun-20	29-Oct-20	46
Deck Covr Park Plans		277	277	23-Aug-19	17-Dec-20	266
Area 1 - Brighton Blvd to Dahlia St.- Sta 2000+00 to 2085+00 (1.61 miles)		277	277	23-Aug-19	17-Dec-20	266
Phase 1		277	277	23-Aug-19	17-Dec-20	266
Stage 5		277	277	23-Aug-19	17-Dec-20	266
Segment 2 - E. of York St. to Fillmore St - (Sta 2025+50 to Sta 2042+00)		277	277	23-Aug-19	17-Dec-20	266
Station 2036+26 to Station 2040+66 (Cover Section) - 11b		120	120	23-Aug-19	01-Apr-20	423
Cover/Deck		120	120	23-Aug-19	01-Apr-20	423
PARK.1000	Park: Hardscape / Park Furniture - Sta 2036+26 to 2040+66	120	120	23-Aug-19	01-Apr-20	423
PARK.1100	Park: Sport Fields - Sta 2036+26 to 2040+66	120	120	23-Aug-19	01-Apr-20	423
PARK.1200	Park: Landscape - Sta 2036+26 to 2040+66	120	120	23-Aug-19	01-Apr-20	423
PARK.1300	Park: Mechanical & Lighting - Sta 2036+26 to 2040+66	120	120	23-Aug-19	01-Apr-20	423
CVR.A1810	Cover - Sta 2036+26 to 2040+66	120	120	23-Aug-19	01-Apr-20	423
Station 2033+00 to Station 2036+26 (Cover Section) - 11a		120	120	03-Jun-20	17-Dec-20	266
Cover/Deck		120	120	03-Jun-20	17-Dec-20	266
PARK.1310	Park: Hardscape / Park Furniture - Sta 2033+00 to 2036+26	120	120	03-Jun-20	17-Dec-20	266
PARK.1320	Park: Sport Fields - Sta 2033+00 to 2036+26	120	120	03-Jun-20	17-Dec-20	266
PARK.1330	Park: Landscape - Sta 2033+00 to 2036+26	120	120	03-Jun-20	17-Dec-20	266
PARK.1340	Park: Mechanical & Lighting - Sta 2033+00 to 2036+26	120	120	03-Jun-20	17-Dec-20	266



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
CVR.A6560	Cover - Sta 2033+00 to 2036+26	120	120	03-Jun-20	17-Dec-20	266
Maintenance of Traffic		719	719	30-Mar-18	01-Sep-21	0
Area 1 - Brighton Blvd to Dahlia St.- Sta 2000+00 to 2085+00 (1.61 miles)		719	719	30-Mar-18	01-Sep-21	0
Phase 1		589	589	30-Mar-18	02-Feb-21	2
Stage 1		215	215	30-Mar-18	19-Apr-19	376
Segment 1 - Brighton Blvd to York St. - (Sta 2000+00 to Sta 2025+50)		43	43	29-Jan-19	19-Apr-19	376
Construct NB Brighton Blvd. Detour		43	43	29-Jan-19	19-Apr-19	376
RDW.9230	Begin Construction - NB Brighton Blvd Detour	0	0	29-Jan-19		376
RDW.9510	Install Temp Silt Fence / Erosion Control Measures	3	3	29-Jan-19	05-Feb-19	376
RDW.9520	Set Temp MOT Barrier & Devices	4	4	29-Jan-19	06-Feb-19	376
BRG.PH1.STG1.0000	Construct NB. Brighton Blvd. Detour	43	43	29-Jan-19	19-Apr-19	376
RDW.9100	Saw-cut / Demo Existing as Needed	5	5	08-Feb-19	18-Feb-19	376
RDW.9110	Detour Earthwork & Temp Drainage Measures	15	15	14-Feb-19	15-Mar-19	376
RDW.18120	Phased Box Culvert under Brighton Blvd. (Btwn Brighton East & West Ponds) - 1st Segment	18	18	20-Feb-19	26-Mar-19	382
RDW.9120	Prep Subgrade for Temp Paving	8	8	22-Mar-19	03-Apr-19	376
RDW.9130	Place Temp Paving	3	3	04-Apr-19	08-Apr-19	376
RDW.9150	Install Guardrail / Temp Barrier	3	3	09-Apr-19	15-Apr-19	376
RDW.9160	Place Temp MOT Signs / Striping	2	2	16-Apr-19	17-Apr-19	376
RDW.9240	NB Brighton Blvd Detour Complete Switch Traffic To Stage 2 Alignment	0	0		18-Apr-19	376
RDW.9170	Temp Seeding/Mulching/BMP's	2	2	18-Apr-19	19-Apr-19	376
Segment 3 - Fillmore St. to Dahlia St. - (Sta 2042+00 to Sta 2085+00)		48	48	30-Mar-18	15-Jun-18	285
Construct Steele St./Vasquez Blvd. Detour		48	48	30-Mar-18	15-Jun-18	285
RDW.9960	Begin Construction - Steele St. / Vasquez Blvd. Detour	0	0	30-Mar-18		233
RDW.9980	Set Temp MOT Barrier & Devices	4	4	30-Mar-18	04-Apr-18	233
RDW.9990	Install Temp Silt Fence / Erosion Control Measures	3	3	30-Mar-18	03-Apr-18	233
BRG.PH1.STG1.10	Construct Steele St. / Vasquez Blvd. Detour & WB I-70 On-Ramp	48	48	30-Mar-18	15-Jun-18	285
RDW.9890	Saw-cut / Demo Existing as Needed	5	5	05-Apr-18	13-Apr-18	233
RDW.9900	Detour Earthwork & Temp Drainage Measures	20	20	11-Apr-18	14-May-18	233
RDW.9910	Prep Subgrade for Temp Paving	10	10	16-May-18	31-May-18	285
RDW.9920	Place Temp Paving	5	5	01-Jun-18	07-Jun-18	285
RDW.9930	Install Guardrail / Temp Barrier	4	4	08-Jun-18	13-Jun-18	285
RDW.9940	Place Temp Striping / MOT Signs	2	2	12-Jun-18	13-Jun-18	285
RDW.9880	Punch List	2	2	14-Jun-18	15-Jun-18	285
RDW.9950	Temp Seeding/Mulching/BMP's	2	2	14-Jun-18	15-Jun-18	285
RDW.9970	NB Brighton Blvd Detour Complete Traffic Switch To Stage 2 Alignment	0	0		15-Jun-18	285
Construct WB I-70 Detour On-Ramp from Steele St./Vasquez Blvd.		36	36	16-Apr-18	12-Jun-18	233
RDW.10030	Detour Earthwork & Temp Drainage Measures	18	18	16-Apr-18	14-May-18	233
BRG.PH1.STG1.20	WB I-70 Off-Ramp to Steele St. / Vasquez Blvd. Detour	36	36	16-Apr-18	12-Jun-18	233
RDW.10040	Prep Subgrade & Place Agg. Base Course	8	8	16-May-18	29-May-18	233
RDW.10050	Place Temp Paving	4	4	31-May-18	05-Jun-18	233
RDW.10060	Install Guardrail / Temp Barrier	3	3	06-Jun-18	08-Jun-18	233
RDW.10070	Place Temp MOT Signs / Striping	2	2	07-Jun-18	08-Jun-18	233
RDW.10100	WB I-70 On-Ramp from Steele St. / Vasquez Blvd. Detour Complete Traffic Switch To Stage 2 Alignment	0	0		11-Jun-18	233
RDW.10080	Temp Seeding/Mulching/BMP's	2	2	11-Jun-18	12-Jun-18	233
Stage 2		42	42	28-Aug-18	02-Nov-18	276
Segment 2 - E. of York St. to Fillmore St - (Sta 2025+50 to Sta 2042+00)		42	42	28-Aug-18	02-Nov-18	276
Construct York St. Detour		42	42	28-Aug-18	02-Nov-18	276
RDW.9830	Begin Construction - York St. Detour	0	0	28-Aug-18		71
RDW.9850	Set Temp MOT Barrier & Devices	4	4	28-Aug-18	31-Aug-18	71
RDW.9860	Install Temp Silt Fence / Erosion Control Measures	3	3	28-Aug-18	30-Aug-18	71
BRG.PH1.STG1.0	Construct York St. Detour (Roadway)	42	42	28-Aug-18	02-Nov-18	276
CBS1184755	Close WB I-70 On-Ramp from York Street.	0	0	01-Sep-18		98
RDW.9760	Saw-cut / Demo Existing as Needed	5	5	04-Sep-18	11-Sep-18	71
RDW.9770	Detour Earthwork & Temp Drainage Measures	15	15	10-Sep-18	02-Oct-18	276
EXISTVIA320	Demo Existing Viaduct WB I-70 On Ramp from York St. to over UPRR Sta 2016+50	13	13	13-Sep-18	02-Oct-18	71
RDW.9780	Prep Subgrade for Temp Paving	10	10	03-Oct-18	18-Oct-18	276

Remaining Level of Effort
Actual Level of Effort
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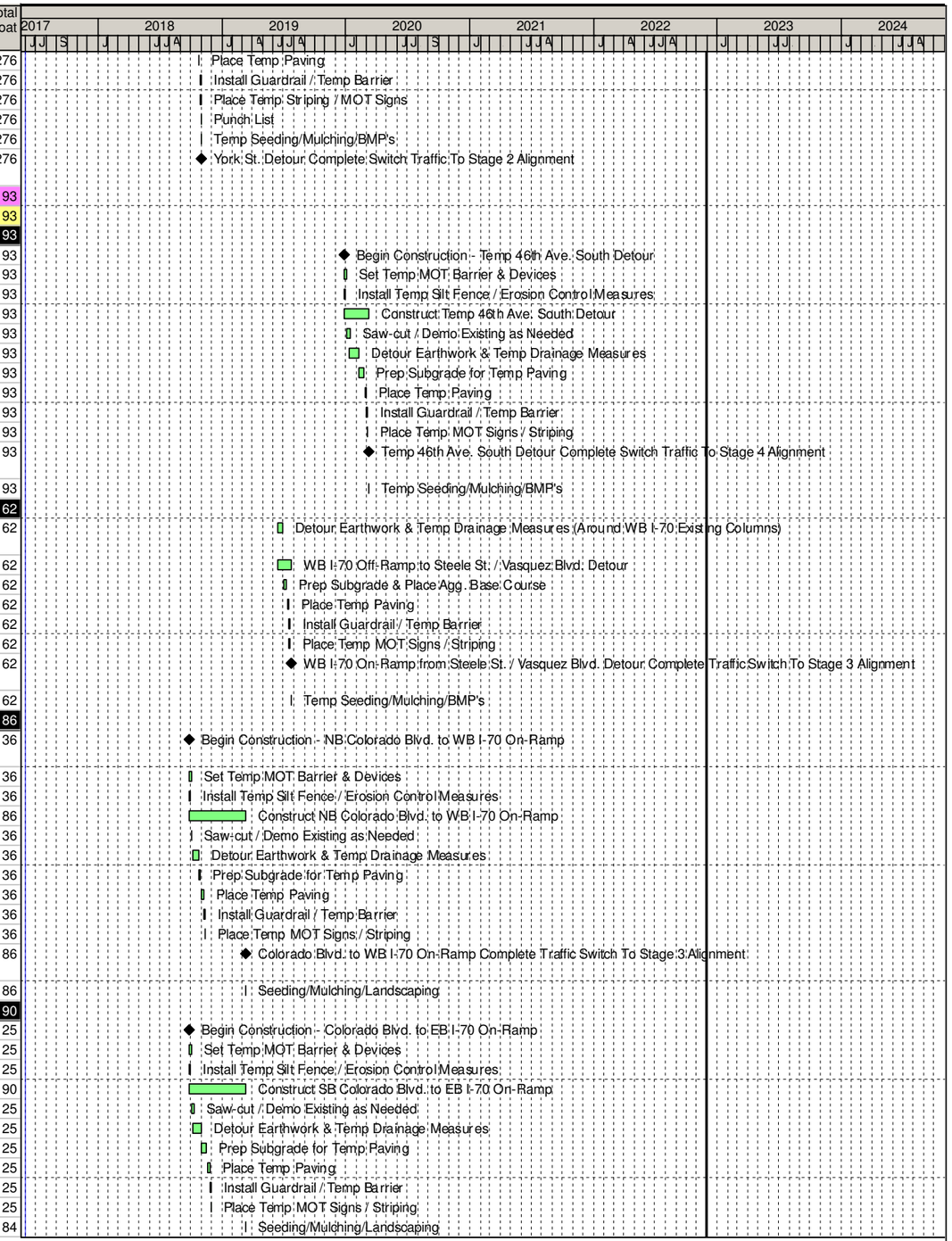
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
RDW.9790	Place Temp Paving	3	3	24-Oct-18	26-Oct-18	276
RDW.9800	Install Guardrail / Temp Barrier	3	3	29-Oct-18	31-Oct-18	276
RDW.9810	Place Temp Striping / MOT Signs	2	2	30-Oct-18	31-Oct-18	276
RDW.9750	Punch List	2	2	01-Nov-18	02-Nov-18	276
RDW.9820	Temp Seeding/Mulching/BMP's	2	2	01-Nov-18	02-Nov-18	276
RDW.9840	York St. Detour Complete Switch Traffic To Stage 2 Alignment	0	0		02-Nov-18	276
Stage 3		287	287	27-Sep-18	10-Mar-20	193
Segment 3 - Fillmore St. to Dahlia St. - (Sta 2042+00 to Sta 2085+00)		287	287	27-Sep-18	10-Mar-20	193
Construct Temp 46th Ave S. Detour - Clayton St. to Milwaukee St.		38	38	26-Dec-19	10-Mar-20	193
RDW.18080	Begin Construction - Temp 46th Ave. South Detour	0	0	26-Dec-19		193
RDW.18100	Set Temp MOT Barrier & Devices	4	4	26-Dec-19	02-Jan-20	193
RDW.18110	Install Temp Silt Fence / Erosion Control Measures	3	3	26-Dec-19	31-Dec-19	193
BRG.PH1.STG1.140	Construct Temp 46th Ave. South Detour	38	38	26-Dec-19	10-Mar-20	193
RDW.18010	Saw-cut / Demo Existing as Needed	5	5	03-Jan-20	13-Jan-20	193
RDW.18020	Detour Earthwork & Temp Drainage Measures	15	15	10-Jan-20	07-Feb-20	193
RDW.18030	Prep Subgrade for Temp Paving	8	8	10-Feb-20	25-Feb-20	193
RDW.18040	Place Temp Paving	3	3	27-Feb-20	02-Mar-20	193
RDW.18050	Install Guardrail / Temp Barrier	3	3	03-Mar-20	06-Mar-20	193
RDW.18060	Place Temp MOT Signs / Striping	2	2	05-Mar-20	06-Mar-20	193
RDW.18090	Temp 46th Ave. South Detour Complete Switch Traffic To Stage 4 Alignment	0	0		09-Mar-20	193
RDW.18070	Temp Seeding/Mulching/BMP's	2	2	09-Mar-20	10-Mar-20	193
Modify WB I-70 Detour On-Ramp from Steele St./Vasquez Blvd.		25	25	14-Jun-19	25-Jul-19	162
RDW.16570	Detour Earthwork & Temp Drainage Measures (Around WB I-70 Existing Columns)	10	10	14-Jun-19	28-Jun-19	162
BRG.PH1.STG1.130	WB I-70 Off-Ramp to Steele St. / Vasquez Blvd. Detour	25	25	14-Jun-19	25-Jul-19	162
RDW.16580	Prep Subgrade & Place Agg. Base Course	5	5	01-Jul-19	09-Jul-19	162
RDW.16590	Place Temp Paving	3	3	15-Jul-19	17-Jul-19	162
RDW.16600	Install Guardrail / Temp Barrier	3	3	18-Jul-19	22-Jul-19	162
RDW.16610	Place Temp MOT Signs / Striping	2	2	19-Jul-19	22-Jul-19	162
RDW.16630	WB I-70 On-Ramp from Steele St. / Vasquez Blvd. Detour Complete Traffic Switch To Stage 3 Alignment	0	0		23-Jul-19	162
RDW.16620	Temp Seeding/Mulching/BMP's	2	2	23-Jul-19	25-Jul-19	162
Construct NB Colorado Blvd. to WB I-70 Temp On-Ramp		81	81	27-Sep-18	12-Mar-19	86
RDW.16150	Begin Construction - NB Colorado Blvd. to WB I-70 On-Ramp	0	0	27-Sep-18		136
RDW.16170	Set Temp MOT Barrier & Devices	4	4	27-Sep-18	02-Oct-18	136
RDW.16180	Install Temp Silt Fence / Erosion Control Measures	3	3	27-Sep-18	01-Oct-18	136
BRG.PH1.STG1.110	Construct NB Colorado Blvd. to WB I-70 On-Ramp	81	81	27-Sep-18	12-Mar-19	86
RDW.16080	Saw-cut / Demo Existing as Needed	3	3	03-Oct-18	05-Oct-18	136
RDW.16090	Detour Earthwork & Temp Drainage Measures	10	10	08-Oct-18	24-Oct-18	136
RDW.16100	Prep Subgrade for Temp Paving	4	4	25-Oct-18	30-Oct-18	136
RDW.16110	Place Temp Paving	3	3	02-Nov-18	07-Nov-18	136
RDW.16120	Install Guardrail / Temp Barrier	3	3	09-Nov-18	13-Nov-18	136
RDW.16130	Place Temp MOT Signs / Striping	2	2	12-Nov-18	13-Nov-18	136
RDW.16160	Colorado Blvd. to WB I-70 On-Ramp Complete Traffic Switch To Stage 3 Alignment	0	0		11-Mar-19	86
RDW.16140	Seeding/Mulching/Landscaping	2	2	11-Mar-19	12-Mar-19	86
Construct SB Colorado Blvd. to EB I-70 Temp On-Ramp		81	81	27-Sep-18	14-Mar-19	90
RDW.16040	Begin Construction - Colorado Blvd. to EB I-70 On-Ramp	0	0	27-Sep-18		125
RDW.16060	Set Temp MOT Barrier & Devices	4	4	27-Sep-18	02-Oct-18	125
RDW.16070	Install Temp Silt Fence / Erosion Control Measures	3	3	27-Sep-18	01-Oct-18	125
BRG.PH1.STG1.100	Construct SB Colorado Blvd. to EB I-70 On-Ramp	81	81	27-Sep-18	14-Mar-19	90
RDW.15970	Saw-cut / Demo Existing as Needed	5	5	03-Oct-18	09-Oct-18	125
RDW.15980	Detour Earthwork & Temp Drainage Measures	15	15	08-Oct-18	31-Oct-18	125
RDW.15990	Prep Subgrade for Temp Paving	8	8	01-Nov-18	15-Nov-18	125
RDW.16000	Place Temp Paving	3	3	20-Nov-18	27-Nov-18	125
RDW.16010	Install Guardrail / Temp Barrier	3	3	28-Nov-18	30-Nov-18	125
RDW.16020	Place Temp MOT Signs / Striping	2	2	29-Nov-18	30-Nov-18	125
RDW.16030	Seeding/Mulching/Landscaping	2	2	11-Mar-19	12-Mar-19	84



Remaining Level of Effort
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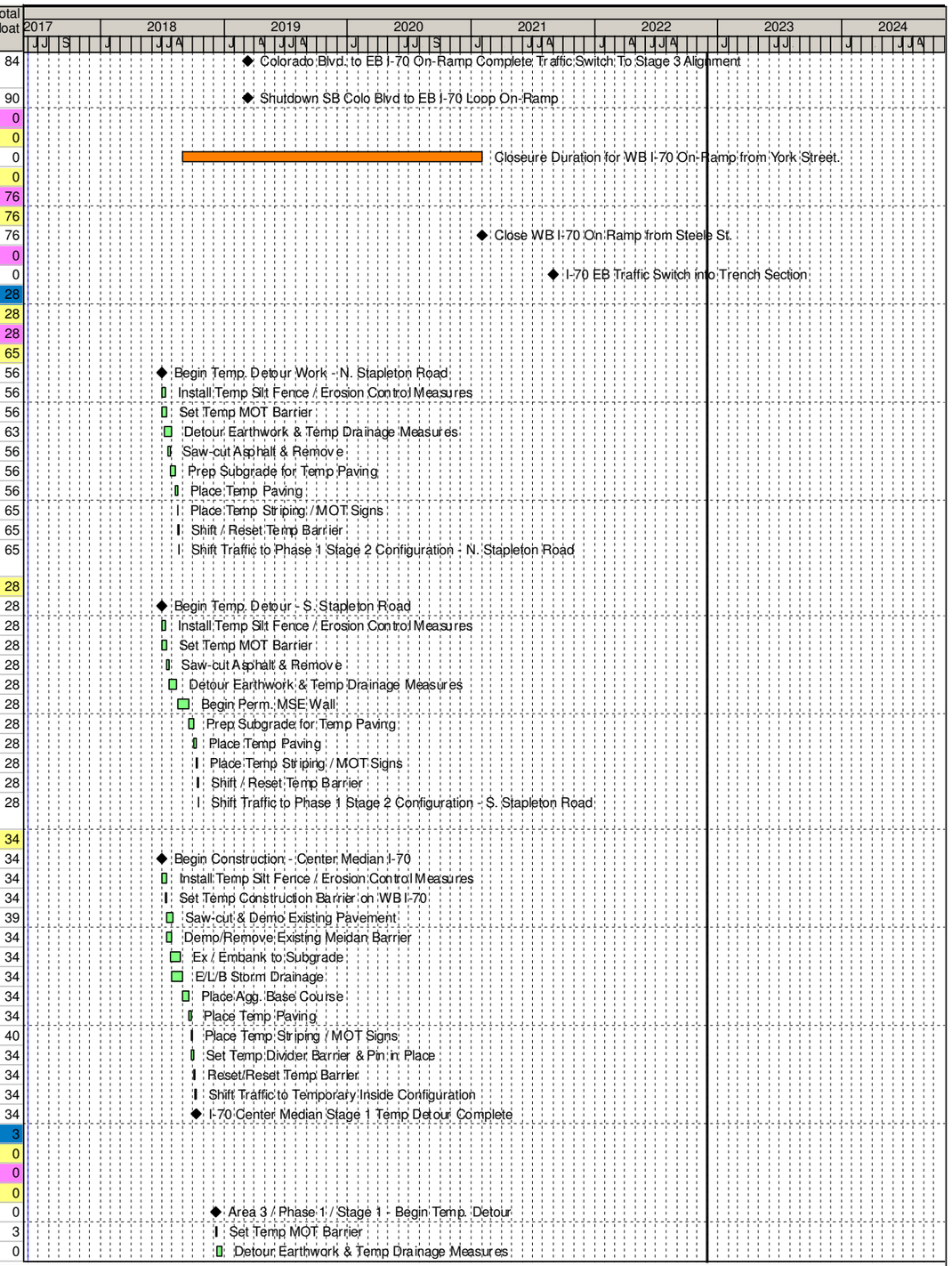
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
RDW.16050	Colorado Blvd. to EB I-70 On-Ramp Complete Traffic Switch To Stage 3 Alignment	0	0		12-Mar-19	84
CBS1178320	Shutdown SB Colo Blvd to EB I-70 Loop On-Ramp	0	0	14-Mar-19		90
Stage 5		617	617	01-Sep-18	02-Feb-21	0
Segment 2 - E. of York St. to Fillmore St - (Sta 2025+50 to Sta 2042+00)		617	617	01-Sep-18	02-Feb-21	0
RDW.19520	Closeure Duration for WB I-70 On-Ramp from York Street.	617	617	01-Sep-18	02-Feb-21	0
Phase 2		130	130	03-Feb-21	01-Sep-21	0
Stage 1		0	0	03-Feb-21	03-Feb-21	76
Segment 3 - Fillmore St. to Dahlia St. - (Sta 2042+00 to Sta 2085+00)		0	0	03-Feb-21	03-Feb-21	76
EXISTVIA370	Close WB I-70 On Ramp from Steele St.	0	0	03-Feb-21		76
Stage 2		0	0	01-Sep-21	01-Sep-21	0
CA1RW1130	I-70 EB Traffic Switch into Trench Section	0	0		01-Sep-21	0
Area 2 - Dahlia St to Sand Creek Bridge - Sta 2085+00 to 2192+37.89 (2.01 miles)		69	69	02-Jul-18	19-Oct-18	28
Phase 1		69	69	02-Jul-18	19-Oct-18	28
Stage 1		69	69	02-Jul-18	19-Oct-18	28
Temp MOT work on N. Stapleton Road		32	32	02-Jul-18	21-Aug-18	65
RDW.3032	Begin Temp. Detour Work - N. Stapleton Road	0	0	02-Jul-18		56
RDW.3034	Install Temp Silt Fence / Erosion Control Measures	8	8	02-Jul-18	13-Jul-18	56
RDW.3152	Set Temp MOT Barrier	10	10	02-Jul-18	17-Jul-18	56
RDW.3154	Detour Earthwork & Temp Drainage Measures	15	15	09-Jul-18	30-Jul-18	63
RDW.3036	Saw-cut Asphalt & Remove	5	5	19-Jul-18	25-Jul-18	56
RDW.3920	Prep Subgrade for Temp Paving	10	10	26-Jul-18	09-Aug-18	56
RDW.3038	Place Temp Paving	5	5	10-Aug-18	17-Aug-18	56
RDW.3040	Place Temp Striping / MOT Signs	2	2	16-Aug-18	17-Aug-18	65
RDW.3238	Shift / Reset Temp Barrier	2	2	17-Aug-18	20-Aug-18	65
RDW.3172	Shift Traffic to Phase 1 Stage 2 Configuration - N. Stapleton Road	1	1	21-Aug-18	21-Aug-18	65
Temp MOT work on S. Stapleton Road		69	69	02-Jul-18	19-Oct-18	28
RDW.3080	Begin Temp. Detour - S. Stapleton Road	0	0	02-Jul-18		28
RDW.3082	Install Temp Silt Fence / Erosion Control Measures	8	8	02-Jul-18	13-Jul-18	28
RDW.3168	Set Temp MOT Barrier	10	10	02-Jul-18	17-Jul-18	28
RDW.3084	Saw-cut Asphalt & Remove	5	5	16-Jul-18	23-Jul-18	28
RDW.3170	Detour Earthwork & Temp Drainage Measures	15	15	24-Jul-18	14-Aug-18	28
RDW.19340	Begin Perm. MSE Wall	20	20	16-Aug-18	17-Sep-18	28
RDW.3930	Prep Subgrade for Temp Paving	10	10	19-Sep-18	02-Oct-18	28
RDW.3086	Place Temp Paving	5	5	03-Oct-18	09-Oct-18	28
RDW.3088	Place Temp Striping / MOT Signs	3	3	10-Oct-18	15-Oct-18	28
RDW.3174	Shift / Reset Temp Barrier	2	2	16-Oct-18	18-Oct-18	28
RDW.3176	Shift Traffic to Phase 1 Stage 2 Configuration - S. Stapleton Road	1	1	19-Oct-18	19-Oct-18	28
Temp MOT work in I-70 Center Median		63	63	02-Jul-18	09-Oct-18	34
RDW.3122	Begin Construction - Center Median I-70	0	0	02-Jul-18		34
RDW.3124	Install Temp Silt Fence / Erosion Control Measures	10	10	02-Jul-18	17-Jul-18	34
RDW.3192	Set Temp Construction Barrier on WB I-70	4	4	11-Jul-18	16-Jul-18	34
RDW.3126	Saw-cut & Demo Existing Pavement	12	12	17-Jul-18	02-Aug-18	39
RDW.8410	Demo/Remove Existing Meidan Barrier	10	10	17-Jul-18	31-Jul-18	34
RDW.3194	Ex / Embank to Subgrade	20	20	25-Jul-18	23-Aug-18	34
RDW.4000	E/L/B Storm Drainage	20	20	01-Aug-18	30-Aug-18	34
RDW.4010	Place Agg. Base Course	10	10	31-Aug-18	19-Sep-18	34
RDW.3128	Place Temp Paving	6	6	20-Sep-18	27-Sep-18	34
RDW.3130	Place Temp Striping / MOT Signs	4	4	25-Sep-18	28-Sep-18	40
RDW.8420	Set Temp Divider Barrier & Pin in Place	5	5	28-Sep-18	04-Oct-18	34
RDW.3240	Reset/Reset Temp Barrier	2	2	05-Oct-18	08-Oct-18	34
RDW.3236	Shift Traffic to Temporary Inside Configuration	1	1	09-Oct-18	09-Oct-18	34
RDW.3132	I-70 Center Median Stage 1 Temp Detour Complete	0	0		09-Oct-18	34
Area 3 - Sand Creek Bridge to West of Havana St. - (Sta 2196+00 to Sta 2270+89.00)		219	219	07-Dec-18	14-Jan-20	3
Phase 1		215	215	07-Dec-18	07-Jan-20	0
Stage 1		17	17	07-Dec-18	17-Jan-19	0
Westbound I-70 Outside		17	17	07-Dec-18	17-Jan-19	0
RDW.4470	Area 3 / Phase 1 / Stage 1 - Begin Temp. Detour	0	0	07-Dec-18		0
RDW.4430	Set Temp MOT Barrier	3	3	07-Dec-18	11-Dec-18	3
RDW.4440	Detour Earthwork & Temp Drainage Measures	8	8	13-Dec-18	27-Dec-18	0



Remaining Level of Effort
Actual Level of Effort
Actual Work
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Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
RDW.4510	Place Temp Striping / MOT Signs	1	1	11-Jan-19	11-Jan-19	0
RDW.4460	Shift / Reset Temp Barrier	2	2	15-Jan-19	17-Jan-19	0
RDW.4450	Shift Traffic to Phase 1 Stage 2 Configuration	0	0		17-Jan-19	0
Eastbound I-70 Outside		16	16	07-Dec-18	15-Jan-19	1
RDW.11050	Area 3 / Phase 1 / Stage 1 - Begin Temp. Detour	0	0	07-Dec-18		1
RDW.11040	Set Temp MOT Barrier	3	3	07-Dec-18	11-Dec-18	4
RDW.11070	Detour Earthwork & Temp Drainage Measures	8	8	13-Dec-18	27-Dec-18	1
RDW.11110	Place Temp Striping / MOT Signs	1	1	08-Jan-19	08-Jan-19	1
RDW.11120	Shift / Reset Temp Barrier	2	2	11-Jan-19	15-Jan-19	1
RDW.11130	Shift Traffic to Phase 1 Stage 2 Configuration	0	0		15-Jan-19	1
Stage 2		34	34	06-May-19	28-Jun-19	0
Westbound I-70 Outside		18	18	06-May-19	04-Jun-19	16
RDW.4700	Place Temp Striping / MOT Signs	3	3	06-May-19	09-May-19	31
RDW.11150	Shift / Reset Temp Barrier	2	2	31-May-19	03-Jun-19	16
RDW.11140	Shift Traffic to Phase 1 Stage 3 Configuration	1	1	04-Jun-19	04-Jun-19	16
Eastbound I-70 Outside		18	18	03-Jun-19	28-Jun-19	0
RDW.4810	Place Temp Striping / MOT Signs	3	3	03-Jun-19	06-Jun-19	15
RDW.5090	Shift / Reset Temp Barrier	2	2	26-Jun-19	27-Jun-19	0
RDW.5100	Shift Traffic to Phase 1 Stage 3 Configuration	1	1	28-Jun-19	28-Jun-19	0
Stage 3		15	15	06-Dec-19	07-Jan-20	0
Westbound I-70 Outside		1	1	06-Dec-19	06-Dec-19	14
RDW.11290	Shift Traffic to Phase 2 Stage 1 Configuration	1	1	06-Dec-19	06-Dec-19	14
Eastbound I-70 Outside		1	1	07-Jan-20	07-Jan-20	0
RDW.11300	Shift Traffic to Phase 2 Stage 1 Configuration	1	1	07-Jan-20	07-Jan-20	0
Phase 2		4	4	08-Jan-20	14-Jan-20	3
Stage 1		4	4	08-Jan-20	14-Jan-20	3
Westbound I-70 Inside		3	3	08-Jan-20	13-Jan-20	0
RDW.11310	Set Temp MOT Barrier	3	3	08-Jan-20	13-Jan-20	0
Eastbound I-70 Inside		4	4	08-Jan-20	14-Jan-20	3
RDW.11330	Set Temp MOT Barrier	4	4	08-Jan-20	14-Jan-20	3
Area 4 - West of Havana St. to East of Havana St. - (Sta 2272+00 to Sta 2307+00)		126	126	07-Dec-18	01-Aug-19	136
Phase 1		123	123	07-Dec-18	29-Jul-19	136
Stage 1		23	23	07-Dec-18	30-Jan-19	136
Westbound I-70 Outside		23	23	07-Dec-18	30-Jan-19	136
RDW.11400	Area 4 / Phase 1 / Stage 1 - Begin Temp. Detour	0	0	07-Dec-18*		136
RDW.11390	Set Temp MOT Barrier	5	5	07-Dec-18	14-Dec-18	138
RDW.11420	Detour Earthwork & Temp Drainage Measures	10	10	17-Dec-18	11-Jan-19	136
RDW.11460	Place Temp Striping / MOT Signs	1	1	28-Jan-19	28-Jan-19	136
RDW.11470	Shift / Reset Temp Barrier	2	2	29-Jan-19	30-Jan-19	136
RDW.11480	Shift Traffic to Phase 1 Stage 2 Configuration	0	0		30-Jan-19	136
Eastbound I-70 Outside		23	23	07-Dec-18	30-Jan-19	136
RDW.11500	Area 3 / Phase 1 / Stage 1 - Begin Temp. Detour	0	0	07-Dec-18		136
RDW.11490	Set Temp MOT Barrier	5	5	07-Dec-18	14-Dec-18	138
RDW.11520	Detour Earthwork & Temp Drainage Measures	10	10	17-Dec-18	11-Jan-19	136
RDW.11560	Place Temp Striping / MOT Signs	1	1	28-Jan-19	28-Jan-19	136
RDW.11570	Shift / Reset Temp Barrier	2	2	29-Jan-19	30-Jan-19	136
RDW.11580	Shift Traffic to Phase 1 Stage 2 Configuration	0	0		30-Jan-19	136
Stage 2		8	8	19-Apr-19	02-May-19	136
Westbound I-70 Outside		8	8	19-Apr-19	02-May-19	136
RDW.11670	Place Temp Striping / MOT Signs	3	3	19-Apr-19	23-Apr-19	141
RDW.11690	Shift / Reset Temp Barrier	2	2	30-Apr-19	01-May-19	136
RDW.11700	Shift Traffic to Phase 1 Stage 3 Configuration	1	1	02-May-19	02-May-19	136
Eastbound I-70 Outside		8	8	19-Apr-19	02-May-19	136
RDW.11800	Place Temp Striping / MOT Signs	3	3	19-Apr-19	23-Apr-19	141
RDW.11820	Shift / Reset Temp Barrier	2	2	30-Apr-19	01-May-19	136
RDW.11830	Shift Traffic to Phase 1 Stage 3 Configuration	1	1	02-May-19	02-May-19	136
Stage 3		1	1	29-Jul-19	29-Jul-19	136
Westbound I-70 Outside		1	1	29-Jul-19	29-Jul-19	136
RDW.11960	Shift Traffic to Phase 2 Stage 1 Configuration	1	1	29-Jul-19	29-Jul-19	136
Eastbound I-70 Outside		1	1	29-Jul-19	29-Jul-19	136
RDW.12090	Shift Traffic to Phase 2 Stage 1 Configuration	1	1	29-Jul-19	29-Jul-19	136

Remaining Level of Effort
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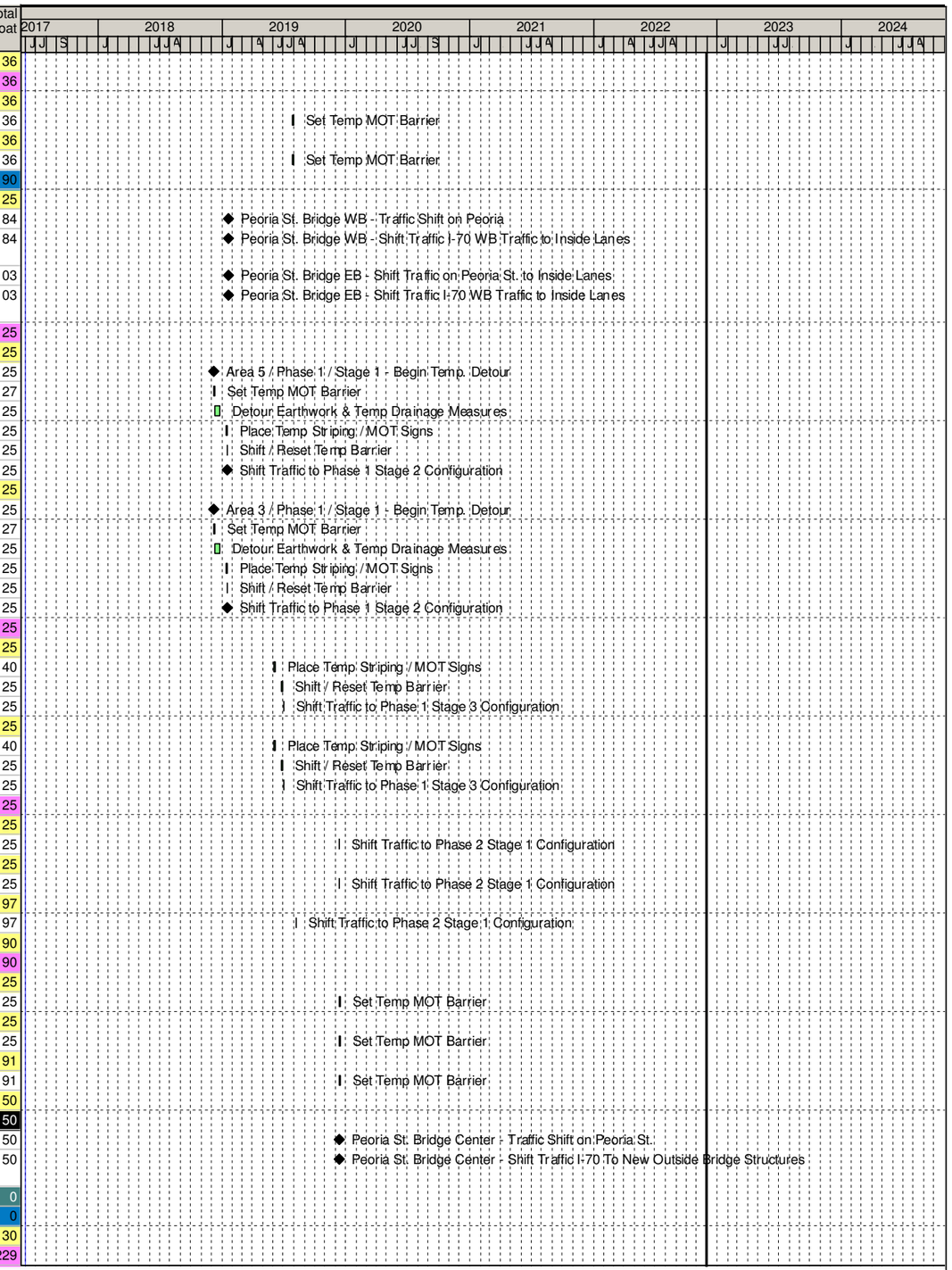
Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
Phase 2		3	3	30-Jul-19	01-Aug-19	136
Stage 1		3	3	30-Jul-19	01-Aug-19	136
Westbound I-70 Inside		3	3	30-Jul-19	01-Aug-19	136
RDW.12120	Set Temp MOT Barrier	3	3	30-Jul-19	01-Aug-19	136
Eastbound I-70 Inside		3	3	30-Jul-19	01-Aug-19	136
RDW.12250	Set Temp MOT Barrier	3	3	30-Jul-19	01-Aug-19	136
Area 5 - East of Peoria St. to Chambers Road - (Sta 2307+00 to Sta 2448+43.00)		206	206	07-Dec-18	17-Dec-19	90
Phase 1		203	203	07-Dec-18	12-Dec-19	25
CBS1178570	Peoria St. Bridge WB - Traffic Shift on Peoria	0	0	21-Jan-19		84
CBS1178650	Peoria St. Bridge WB - Shift Traffic I-70 WB Traffic to Inside Lanes	0	0	21-Jan-19		84
CBS1179060	Peoria St. Bridge EB - Shift Traffic on Peoria St. to Inside Lanes	0	0	21-Jan-19		103
CBS1179140	Peoria St. Bridge EB - Shift Traffic I-70 WB Traffic to Inside Lanes	0	0	21-Jan-19		103
Stage 1		18	18	07-Dec-18	18-Jan-19	25
Westbound I-70 Outside		18	18	07-Dec-18	18-Jan-19	25
RDW.12520	Area 5 / Phase 1 / Stage 1 - Begin Temp. Detour	0	0	07-Dec-18		25
RDW.12510	Set Temp MOT Barrier	3	3	07-Dec-18	11-Dec-18	27
RDW.12540	Detour Earthwork & Temp Drainage Measures	8	8	11-Dec-18	26-Dec-18	25
RDW.12580	Place Temp Striping / MOT Signs	1	1	15-Jan-19	15-Jan-19	25
RDW.12590	Shift / Reset Temp Barrier	2	2	17-Jan-19	18-Jan-19	25
RDW.12600	Shift Traffic to Phase 1 Stage 2 Configuration	0	0		18-Jan-19	25
Eastbound I-70 Outside		18	18	07-Dec-18	18-Jan-19	25
RDW.12620	Area 3 / Phase 1 / Stage 1 - Begin Temp. Detour	0	0	07-Dec-18		25
RDW.12610	Set Temp MOT Barrier	3	3	07-Dec-18	11-Dec-18	27
RDW.12640	Detour Earthwork & Temp Drainage Measures	8	8	11-Dec-18	26-Dec-18	25
RDW.12680	Place Temp Striping / MOT Signs	1	1	15-Jan-19	15-Jan-19	25
RDW.12690	Shift / Reset Temp Barrier	2	2	17-Jan-19	18-Jan-19	25
RDW.12700	Shift Traffic to Phase 1 Stage 2 Configuration	0	0		18-Jan-19	25
Stage 2		18	18	04-Jun-19	01-Jul-19	25
Westbound I-70 Outside		18	18	04-Jun-19	01-Jul-19	25
RDW.12930	Place Temp Striping / MOT Signs	3	3	04-Jun-19	07-Jun-19	40
RDW.12950	Shift / Reset Temp Barrier	2	2	27-Jun-19	28-Jun-19	25
RDW.12960	Shift Traffic to Phase 1 Stage 3 Configuration	1	1	01-Jul-19	01-Jul-19	25
Eastbound I-70 Outside		18	18	04-Jun-19	01-Jul-19	25
RDW.13060	Place Temp Striping / MOT Signs	3	3	04-Jun-19	07-Jun-19	40
RDW.13080	Shift / Reset Temp Barrier	2	2	27-Jun-19	28-Jun-19	25
RDW.13090	Shift Traffic to Phase 1 Stage 3 Configuration	1	1	01-Jul-19	01-Jul-19	25
Stage 3		73	73	08-Aug-19	12-Dec-19	25
Westbound I-70 Outside		1	1	12-Dec-19	12-Dec-19	25
RDW.13220	Shift Traffic to Phase 2 Stage 1 Configuration	1	1	12-Dec-19	12-Dec-19	25
Eastbound I-70 Outside		1	1	12-Dec-19	12-Dec-19	25
RDW.13350	Shift Traffic to Phase 2 Stage 1 Configuration	1	1	12-Dec-19	12-Dec-19	25
I-225 Southbound Widening		1	1	08-Aug-19	08-Aug-19	97
RDW.13770	Shift Traffic to Phase 2 Stage 1 Configuration	1	1	08-Aug-19	08-Aug-19	97
Phase 2		3	3	13-Dec-19	17-Dec-19	90
Stage 1		3	3	13-Dec-19	17-Dec-19	90
Westbound I-70 Inside		3	3	13-Dec-19	17-Dec-19	25
RDW.13380	Set Temp MOT Barrier	3	3	13-Dec-19	17-Dec-19	25
Eastbound I-70 Inside		3	3	13-Dec-19	17-Dec-19	25
RDW.13510	Set Temp MOT Barrier	3	3	13-Dec-19	17-Dec-19	25
Peoria Street Widening		2	2	13-Dec-19	16-Dec-19	91
RDW.13890	Set Temp MOT Barrier	2	2	13-Dec-19	16-Dec-19	91
I-70 Center Lane Bridge over Peoria Street		0	0	13-Dec-19	13-Dec-19	50
Substructure		0	0	13-Dec-19	13-Dec-19	50
CBS1179550	Peoria St. Bridge Center - Traffic Shift on Peoria St.	0	0	13-Dec-19		50
CBS1179630	Peoria St. Bridge Center - Shift Traffic I-70 To New Outside Bridge Structures	0	0	13-Dec-19		50
Roadway		846	846	07-Mar-18	07-Apr-22	0
Area 1 - Brighton Blvd to Dahlia St.- Sta 2000+00 to 2085+00 (1.61 miles)		846	846	07-Mar-18	07-Apr-22	0
Phase 1		601	601	07-Mar-18	02-Feb-21	130
Stage 1		154	154	04-Jun-18	12-Mar-19	229

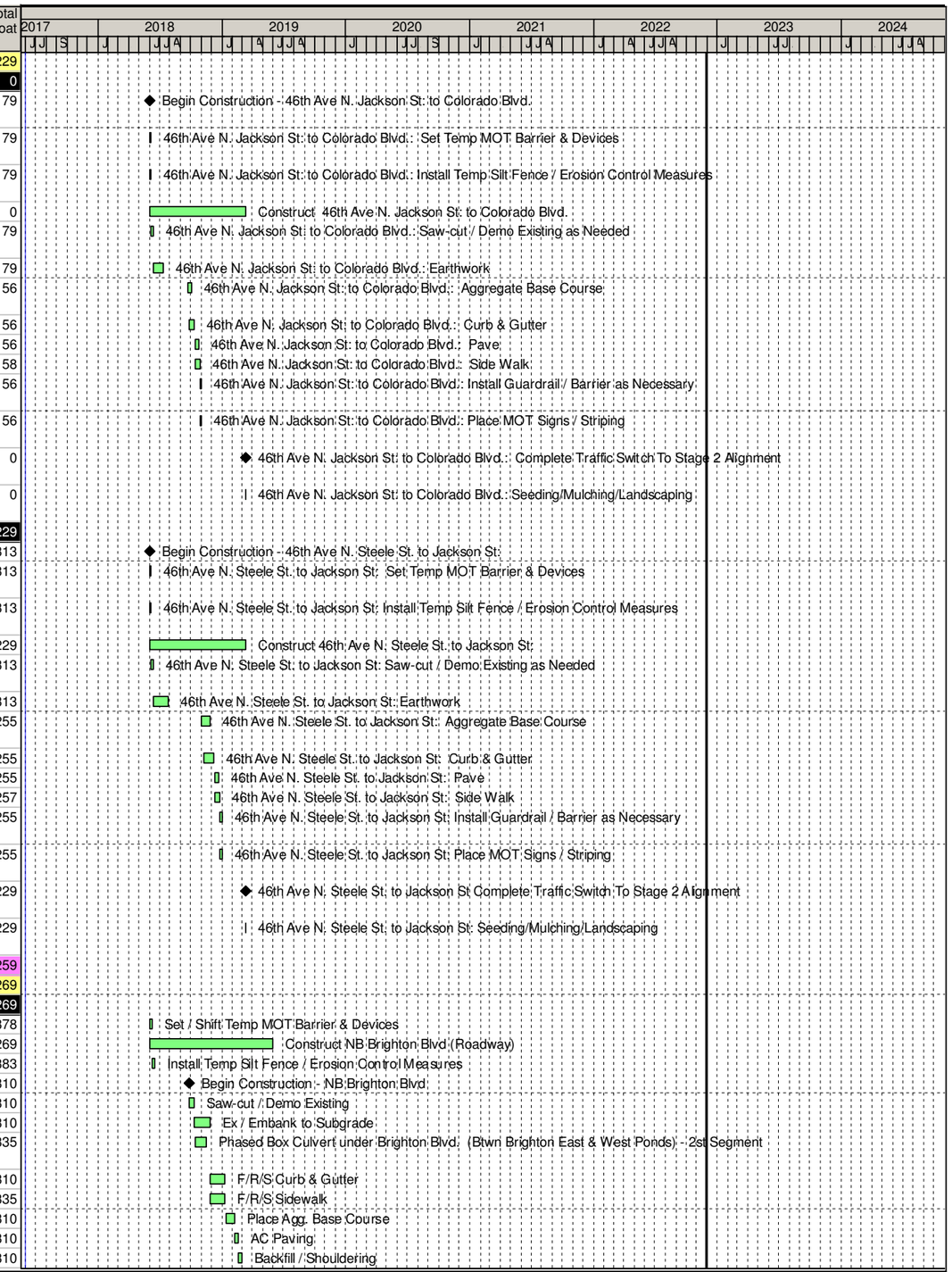


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
Segment 3 - Fillmore St. to Dahlia St. - (Sta 2042+00 to Sta 2085+00)		154	154	04-Jun-18	12-Mar-19	229
46th North - Jackson St. to Colorado Blvd.		154	154	04-Jun-18	12-Mar-19	0
RDW.10400	Begin Construction - 46th Ave N. Jackson St: to Colorado Blvd.	0	0	04-Jun-18		79
RDW.10410	46th Ave N. Jackson St: to Colorado Blvd.: Set Temp MOT Barrier & Devices	3	3	04-Jun-18	06-Jun-18	79
RDW.10420	46th Ave N. Jackson St: to Colorado Blvd.: Install Temp Silt Fence / Erosion Control Measures	4	4	04-Jun-18	07-Jun-18	79
46th.PH1.STG1.40	Construct 46th Ave N. Jackson St: to Colorado Blvd.	154	154	04-Jun-18	12-Mar-19	0
RDW.10430	46th Ave N. Jackson St: to Colorado Blvd.: Saw-cut / Demo Existing as Needed	3	3	07-Jun-18	11-Jun-18	79
RDW.10440	46th Ave N. Jackson St: to Colorado Blvd.: Earthwork	20	20	12-Jun-18	12-Jul-18	79
RDW.10460	46th Ave N. Jackson St: to Colorado Blvd.: Aggregate Base Course	10	10	21-Sep-18	04-Oct-18	56
RDW.10470	46th Ave N. Jackson St: to Colorado Blvd.: Curb & Gutter	10	10	28-Sep-18	12-Oct-18	56
RDW.10480	46th Ave N. Jackson St: to Colorado Blvd.: Pave	8	8	15-Oct-18	26-Oct-18	56
RDW.10490	46th Ave N. Jackson St: to Colorado Blvd.: Side Walk	10	10	15-Oct-18	30-Oct-18	58
RDW.10500	46th Ave N. Jackson St: to Colorado Blvd.: Install Guardrail / Barrier as Necessary	4	4	29-Oct-18	01-Nov-18	56
RDW.10510	46th Ave N. Jackson St: to Colorado Blvd.: Place MOT Signs / Striping	3	3	30-Oct-18	01-Nov-18	56
RDW.10550	46th Ave N. Jackson St: to Colorado Blvd.: Complete Traffic Switch To Stage 2 Alignment	0	0		11-Mar-19	0
RDW.10530	46th Ave N. Jackson St: to Colorado Blvd.: Seeding/Mulching/Landscaping	2	2	11-Mar-19	12-Mar-19	0
46th North - Steele/ Vasquez to Jackson St.		154	154	04-Jun-18	12-Mar-19	229
RDW.10110	Begin Construction - 46th Ave N. Steele St. to Jackson St:	0	0	04-Jun-18		313
RDW.10120	46th Ave N. Steele St. to Jackson St: Set Temp MOT Barrier & Devices	3	3	04-Jun-18	06-Jun-18	313
RDW.10130	46th Ave N. Steele St. to Jackson St: Install Temp Silt Fence / Erosion Control Measures	4	4	04-Jun-18	07-Jun-18	313
BRG.PH1.STG1.30	Construct 46th Ave N. Steele St. to Jackson St:	154	154	04-Jun-18	12-Mar-19	229
RDW.10140	46th Ave N. Steele St. to Jackson St: Saw-cut / Demo Existing as Needed	3	3	07-Jun-18	11-Jun-18	313
RDW.10150	46th Ave N. Steele St. to Jackson St: Earthwork	30	30	12-Jun-18	27-Jul-18	313
RDW.10160	46th Ave N. Steele St. to Jackson St: Aggregate Base Course	15	15	31-Oct-18	28-Nov-18	255
RDW.10380	46th Ave N. Steele St. to Jackson St: Curb & Gutter	15	15	09-Nov-18	07-Dec-18	255
RDW.10170	46th Ave N. Steele St. to Jackson St: Pave	8	8	10-Dec-18	21-Dec-18	255
RDW.10390	46th Ave N. Steele St. to Jackson St: Side Walk	10	10	10-Dec-18	27-Dec-18	257
RDW.10180	46th Ave N. Steele St. to Jackson St: Install Guardrail / Barrier as Necessary	4	4	26-Dec-18	03-Jan-19	255
RDW.10190	46th Ave N. Steele St. to Jackson St: Place MOT Signs / Striping	3	3	27-Dec-18	03-Jan-19	255
RDW.10230	46th Ave N. Steele St. to Jackson St Complete Traffic Switch To Stage 2 Alignment	0	0		11-Mar-19	229
RDW.10210	46th Ave N. Steele St. to Jackson St: Seeding/Mulching/Landscaping	2	2	11-Mar-19	12-Mar-19	229
Stage 2		209	209	04-Jun-18	13-Jun-19	259
Segment 1 - Brighton Blvd to York St. - (Sta 2000+00 to Sta 2025+50)		199	199	04-Jun-18	29-May-19	269
NB Brighton Blvd. Reconstruction		199	199	04-Jun-18	29-May-19	269
RDW.9540	Set / Shift Temp MOT Barrier & Devices	5	5	04-Jun-18	08-Jun-18	378
BBLVD.PH1.STG2.10	Construct NB Brighton Blvd (Roadway)	199	199	04-Jun-18	29-May-19	269
RDW.9530	Install Temp Silt Fence / Erosion Control Measures	5	5	11-Jun-18	15-Jun-18	383
RDW.9440	Begin Construction - NB Brighton Blvd	0	0	27-Sep-18		310
RDW.9310	Saw-cut / Demo Existing	10	10	27-Sep-18	10-Oct-18	310
RDW.9320	Ex / Embank to Subgrade	25	25	12-Oct-18	27-Nov-18	310
RDW.18130	Phased Box Culvert under Brighton Blvd. (Btwn Brighton East & West Ponds) - 2st Segment	18	18	16-Oct-18	15-Nov-18	335
RDW.9550	F/R/S Curb & Gutter	20	20	28-Nov-18	11-Jan-19	310
RDW.9560	F/R/S Sidewalk	20	20	28-Nov-18	11-Jan-19	335
RDW.9330	Place Agg. Base Course	10	10	15-Jan-19	06-Feb-19	310
RDW.9340	AC Paving	5	5	08-Feb-19	18-Feb-19	310
RDW.9350	Backfill / Shouldering	5	5	20-Feb-19	28-Feb-19	310



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
RDW.9360	Install Guardrail / Barrier as Required	5	5	27-Feb-19	06-Mar-19	312
RDW.9370	Place Permanent Signs / Striping	5	5	13-May-19	20-May-19	269
RDW.9380	Landscaping / Seeding as Required	5	5	21-May-19	29-May-19	269
RDW.9450	NB Brighton Blvd Phase 1 Stage 2 Reconstruction Complete	0	0		29-May-19	269
Segment 3 - Fillmore St. to Dahlia St. - (Sta 2042+00 to Sta 2085+00)		**76**	**76**	**28-Jan-19**	**13-Jun-19**	**162**
Steele/Vasquez St. (Roadway Only)		**76**	**76**	**28-Jan-19**	**13-Jun-19**	**162**
RDW.10880	Begin Construction -Steele St. / Vasquez Blvd.	0	0	28-Jan-19		162
RDW.10890	Steele St. / Vasquez Blvd.: Set Temp MOT Barrier & Devices	5	5	28-Jan-19	06-Feb-19	162
RDW.10900	Steele St. / Vasquez Blvd.: Install Temp Silt Fence / Erosion Control Measures	7	7	28-Jan-19	11-Feb-19	162
BRG.PH1.STG1.70	Construct Steele St. / Vasquez Blvd. (Roadway)	76	76	28-Jan-19	13-Jun-19	162
RDW.10910	Steele St. / Vasquez Blvd.: Saw-cut / Demo Existing as Needed	5	5	08-Feb-19	18-Feb-19	162
RDW.10920	Steele St. / Vasquez Blvd.: Earthwork	30	30	14-Feb-19	09-Apr-19	162
RDW.10940	Steele St. / Vasquez Blvd.: Aggregate Base Course	20	20	03-Apr-19	06-May-19	162
RDW.10950	Steele St. / Vasquez Blvd.: Curb & Gutter	15	15	11-Apr-19	06-May-19	162
RDW.10960	Steele St. / Vasquez Blvd.: Pave	10	10	07-May-19	23-May-19	162
RDW.10970	Steele St. / Vasquez Blvd.: Side Walk	15	15	07-May-19	31-May-19	167
RDW.10980	Steele St. / Vasquez Blvd.: Install Guardrail / Barrier as Necessary	10	10	24-May-19	10-Jun-19	162
RDW.10990	Steele St. / Vasquez Blvd.: Place MOT Signs / Striping	4	4	04-Jun-19	10-Jun-19	162
RDW.11000	Steele St. / Vasquez Blvd.: Punch List	3	3	11-Jun-19	13-Jun-19	162
RDW.11010	Steele St. / Vasquez Blvd.: Seeding/Mulching/Landscaping	3	3	11-Jun-19	13-Jun-19	162
CCO10720	Steele St. / Vasquez Blvd.: : Phase 1 Stage 2 Complete	0	0		13-Jun-19	162
RDW.11030	Steele St. / Vasquez Blvd.: Complete Traffic Switch To Phase 1 Stage 3 Alignment	0	0		13-Jun-19	162
Stage 3		**317**	**317**	**11-Sep-18**	**13-Apr-20**	**172**
Segment 1 - Brighton Blvd to York St. - (Sta 2000+00 to Sta 2025+50)		**86**	**86**	**28-May-19**	**09-Oct-19**	**269**
SB Brighton Blvd. Reconstruction		**86**	**86**	**28-May-19**	**09-Oct-19**	**269**
RDW.9700	Set / Shift Temp MOT Barrier & Devices	2	2	28-May-19	29-May-19	269
DAH.PH1.STG2.20	Construct SB Brighton Blvd.	86	86	28-May-19	09-Oct-19	269
RDW.9585	Begin Construction - SB Brighton Blvd	0	0	30-May-19		269
RDW.9590	Saw-cut / Demo Existing	5	5	30-May-19	06-Jun-19	269
RDW.9710	Install Temp Silt Fence / Erosion Control Measures	2	2	30-May-19	31-May-19	272
RDW.9600	Ex / Embank to Subgrade	20	20	07-Jun-19	09-Jul-19	269
RDW.18140	Phased Box Culvert under Brighton Blvd. (Btwn Brighton East & West Ponds) - Last Segment	18	18	11-Jul-19	06-Aug-19	269
RDW.9730	F/R/S Sidewalk	10	10	11-Jul-19	25-Jul-19	314
RDW.18150	Ex/Embank Brighton Blvd. West Pond	15	15	23-Jul-19	13-Aug-19	304
RDW.9610	Place Agg. Base Course	10	10	07-Aug-19	21-Aug-19	269
RDW.9720	F/R/S Curb & Gutter	10	10	22-Aug-19	05-Sep-19	269
RDW.9620	AC Paving	5	5	06-Sep-19	13-Sep-19	269
RDW.9630	Backfill / Shouldering	5	5	16-Sep-19	23-Sep-19	269
RDW.9640	Install Guardrail / Barrier as Required	5	5	25-Sep-19	01-Oct-19	269
RDW.9650	Place Permanent Signs / Striping	3	3	01-Oct-19	03-Oct-19	269
RDW.9580	Punch List	3	3	04-Oct-19	08-Oct-19	269
RDW.9660	Landscaping / Seeding as Required	4	4	04-Oct-19	09-Oct-19	269
RDW.9690	SB Brighton Blvd. Phase 1 Stage 3 Reconstruction Complete	0	0		08-Oct-19	269
Segment 2 - E. of York St. to Fillmore St - (Sta 2025+50 to Sta 2042+00)		**295**	**295**	**11-Sep-18**	**06-Mar-20**	**193**
Station 2026+00 to Station 2029+00		**198**	**198**	**11-Sep-18**	**04-Sep-19**	**290**
NSPN.4785	Install Silt Fence & Erosion Contorl Devices @ North Wall - York St.to Josehpine St. - Sta 2026+00 to 2029+00	4	4	11-Sep-18	17-Sep-18	347
NSPN.4775	Construct North Span - Sta 2026+00 to 2029+00	198	198	11-Sep-18	04-Sep-19	290
NSPN.4790	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - York St.to Josehpine St. - Sta 2026+00 to 2029+00	4	4	14-Sep-18	20-Sep-18	347
NSPN.EX.3770	Excavate first 10' to top of North Secant Wall - York St.to Josephine St. - Sta 2026+00 to 2029+00	10	10	26-Sep-18	09-Oct-18	347

Remaining Level of Effort
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Actual Work
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Milestone

Front Range Mobility Group

Central 70

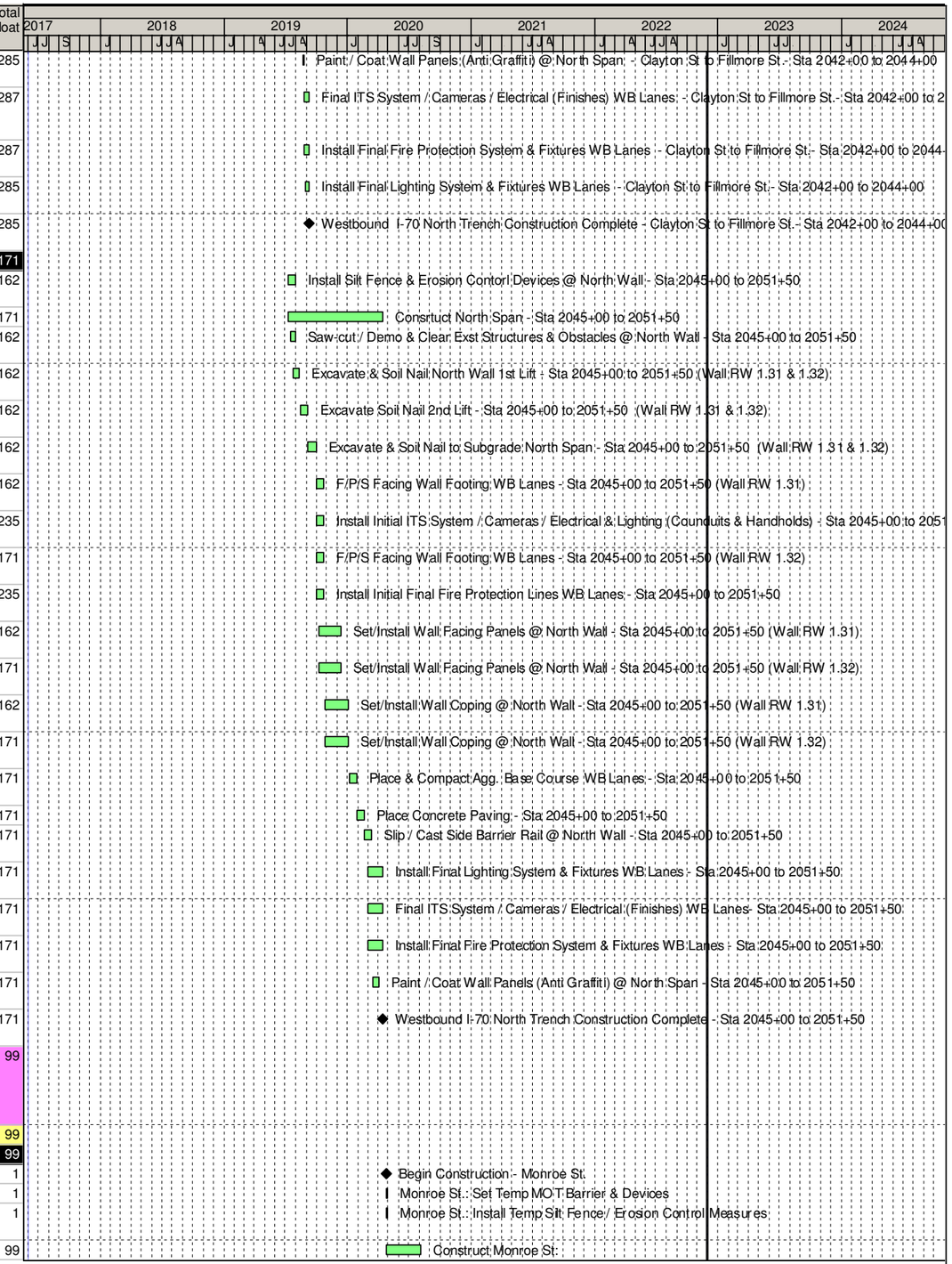
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.11140	Drill & Test Secant Piles North Wall - York St to Columbine St. - Sta 2026+00 to 2029+00 (Wall RW 1.22)	17	17	10-Oct-18	07-Nov-18	347
NSPN.EX.3780	Excavate/Tiebacks 2nd 10' Lift North Wall - York St.to Josephine St. - Sta 2026+00 to 2029+00	6	6	09-Nov-18	19-Nov-18	347
UPRR.TRN.EX.3600	Excavate/Tiebacks to Subgrade North Span (WB Lanes) - York St.to Josephine St. - Sta 2026+00 to 2029+00	4	4	20-Jun-19	25-Jun-19	240
NSPN.4810	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds)- York St.to Josehpine St. - Sta 202	4	4	26-Jun-19	01-Jul-19	323
NSPN.4890	F/P/S Facing Wall Footing WB Lanes - York St.to Josephine St. - Sta 2026+00 to 2029+00 (Wall RW1.22 York to Josephine)	4	4	26-Jun-19	01-Jul-19	253
NSPN.4950	Install Initial Final Fire Protection Lines WB Lanes - York St.to Josephine St. - Sta 2027+00 to 2029+00	4	4	26-Jun-19	01-Jul-19	323
NSPN.4840	Set/Install Wall Facing Panels @ North Wall - York St.to Josephine St. - Sta 2026+00 to 2029+00 (Wall Rw1.22 York to Jo	11	11	02-Jul-19	19-Jul-19	253
NSPN.4930	Set/Install Wall Coping @ North Wall - York St.to Josephine St. - Sta 2026+00 to 2029+00	11	11	12-Jul-19	29-Jul-19	253
NSPN.4820	Place & Compact Agg. Base Course WB Lanes - York St.to Josehpine St. - Sta 2026+00 to 2029+00	4	4	30-Jul-19	02-Aug-19	290
NSPN.4830	Place Concrete Paving - York St.to Josephine St. - Sta 2026+00 to 2029+00	3	3	05-Aug-19	07-Aug-19	290
NSPN.4850	Slip / Cast Side Barrier Rail @ North Wall - York St.to Josephine St. - Sta 2026+00 to 2029+00	4	4	08-Aug-19	13-Aug-19	290
NSPN.4910	Paint / Coat Wall Panels (Anti Graffiti) @ North Span - York St.to Josephine St. - Sta 2026+00 to 2029+00	4	4	15-Aug-19	20-Aug-19	290
NSPN.4860	Final ITS System / Cameras / Electrical (Finishes) WB Lanes- York St.to Josephine St. - Sta 2026+00 to 2029+00	8	8	21-Aug-19	30-Aug-19	292
NSPN.4940	Install Final Fire Protection System & Fixtures WB Lanes - York St.to Josehpine St. - Sta 2026+00 to 2029+00	8	8	21-Aug-19	30-Aug-19	292
NSPN.4900	Install Final Lighting System & Fixtures WB Lanes - York St.to Josehpine St. - Sta 2026+00 to 2029+00	8	8	23-Aug-19	04-Sep-19	290
NSPN.4920	Westbound I-70 North Trench Construction Complete - York St.to Josephine St. - Sta 2026+00 to 2029+00	0	0		04-Sep-19	290
Josephine St.		20	20	29-Jan-20	06-Mar-20	15
TRN.500	Place Utilities into Josephine	20	20	29-Jan-20	06-Mar-20	15
Segment 3 - Fillmore St. to Dahlia St. - (Sta 2042+00 to Sta 2085+00)		308	308	26-Sep-18	13-Apr-20	171
Station 2042+00 to Station 2044+50-1		194	194	26-Sep-18	11-Sep-19	285
NSPN.4955	Install Silt Fence & Erosion Contorl Devices @ North Wall - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	4	4	26-Sep-18	01-Oct-18	355
NSPN.4935	Construct North Span - Sta 2042+00 to 2044+00	194	194	26-Sep-18	11-Sep-19	285
NSPN.4960	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	4	4	02-Oct-18	05-Oct-18	355
NSPN.EX.3790	Excavate & Soil Nail North Wall 1st Lift - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	10	10	04-Oct-18	19-Oct-18	358
NSPN.EX.3800	Excavate & Soil Nail North Wall 2nd Lift - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	6	6	22-Oct-18	30-Oct-18	358
UPRR.TRN.EX.3610	Excavate & Soil Nail to Subgrade North Span (WB Lanes) - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	4	4	20-Jun-19	25-Jun-19	240
NSPN.4990	Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) - Clayton St to Fillmore St - Sta 2042+00 t	4	4	26-Jun-19	01-Jul-19	323
NSPN.5000	F/P/S Facing Wall Footing WB Lanes - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00 (Wall RW1.26)	4	4	26-Jun-19	01-Jul-19	248
NSPN.5010	Install Initial Final Fire Protection Lines WB Lanes - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	4	4	26-Jun-19	01-Jul-19	323
NSPN.5020	Set/Install Wall Facing Panels @ North Wall - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00 (Wall RW1.26)	11	11	02-Jul-19	19-Jul-19	248
NSPN.5030	Set/Install Wall Coping @ North Wall - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00 (Wall RW1.26)	11	11	19-Jul-19	05-Aug-19	248
NSPN.5040	Place & Compact Agg. Base Course WB Lanes - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	4	4	06-Aug-19	09-Aug-19	285
NSPN.5050	Place Concrete Paving - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	3	3	12-Aug-19	15-Aug-19	285
NSPN.5060	Slip / Cast Side Barrier Rail @ North Wall - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	4	4	16-Aug-19	21-Aug-19	285

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.5070	Paint / Coat Wall Panels (Anti Graffiti) @ North Span - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	4	4	22-Aug-19	27-Aug-19	285
NSPN.5090	Final ITS System / Cameras / Electrical (Finishes) WB Lanes - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	8	8	28-Aug-19	09-Sep-19	287
NSPN.5100	Install Final Fire Protection System & Fixtures WB Lanes - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	8	8	28-Aug-19	09-Sep-19	287
NSPN.5080	Install Final Lighting System & Fixtures WB Lanes - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	8	8	30-Aug-19	11-Sep-19	285
NSPN.5120	Westbound I-70 North Trench Construction Complete - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	0	0		11-Sep-19	285
Station 2045+00 to Station 2051+50-1		**156**	**156**	**11-Jul-19**	**13-Apr-20**	**171**
NSPN.5125	Install Silt Fence & Erosion Contorl Devices @ North Wall - Sta 2045+00 to 2051+50	13	13	11-Jul-19	30-Jul-19	162
NSPN.5115	Consrtuct North Span - Sta 2045+00 to 2051+50	156	156	11-Jul-19	13-Apr-20	171
NSPN.5130	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - Sta 2045+00 to 2051+50	13	13	16-Jul-19	02-Aug-19	162
NSPN.EX.3810	Excavate & Soil Nail North Wall 1st Lift - Sta 2045+00 to 2051+50 (Wall RW 1.31 & 1.32)	15	15	23-Jul-19	13-Aug-19	162
NSPN.EX.3820	Excavate Soil Nail 2nd Lift - Sta 2045+00 to 2051+50 (Wall RW 1.31 & 1.32)	15	15	15-Aug-19	05-Sep-19	162
UPRR.TRN.EX.3620	Excavate & Soil Nail to Subgrade North Span - Sta 2045+00 to 2051+50 (Wall RW 1.31 & 1.32)	15	15	06-Sep-19	01-Oct-19	162
NSPN.11615	F/P/S Facing Wall Footing WB Lanes - Sta 2045+00 to 2051+50 (Wall RW 1.31)	13	13	02-Oct-19	23-Oct-19	162
NSPN.5160	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) - Sta 2045+00 to 2051+50	13	13	02-Oct-19	23-Oct-19	235
NSPN.5170	F/P/S Facing Wall Footing WB Lanes - Sta 2045+00 to 2051+50 (Wall RW 1.32)	13	13	02-Oct-19	23-Oct-19	171
NSPN.5180	Install Initial Final Fire Protection Lines WB Lanes - Sta 2045+00 to 2051+50	13	13	02-Oct-19	23-Oct-19	235
NSPN.11625	Set/Install Wall Facing Panels @ North Wall - Sta 2045+00 to 2051+50 (Wall RW 1.31)	35	35	09-Oct-19	13-Dec-19	162
NSPN.5190	Set/Install Wall Facing Panels @ North Wall - Sta 2045+00 to 2051+50 (Wall RW 1.32)	35	35	09-Oct-19	13-Dec-19	171
NSPN.11635	Set/Install Wall Coping @ North Wall - Sta 2045+00 to 2051+50 (Wall RW 1.31)	35	35	28-Oct-19	03-Jan-20	162
NSPN.5200	Set/Install Wall Coping @ North Wall - Sta 2045+00 to 2051+50 (Wall RW 1.32)	35	35	28-Oct-19	03-Jan-20	171
NSPN.5210	Place & Compact Agg. Base Course WB Lanes - Sta 2045+00 to 2051+50	13	13	07-Jan-20	30-Jan-20	171
NSPN.5220	Place Concrete Paving - Sta 2045+00 to 2051+50	9	9	31-Jan-20	19-Feb-20	171
NSPN.5230	Slip / Cast Side Barrier Rail @ North Wall - Sta 2045+00 to 2051+50	13	13	20-Feb-20	13-Mar-20	171
NSPN.5250	Install Final Lighting System & Fixtures WB Lanes - Sta 2045+00 to 2051+50	26	26	02-Mar-20	13-Apr-20	171
NSPN.5260	Final ITS System / Cameras / Electrical (Finishes) WB Lanes- Sta 2045+00 to 2051+50	26	26	02-Mar-20	13-Apr-20	171
NSPN.5270	Install Final Fire Protection System & Fixtures WB Lanes - Sta 2045+00 to 2051+50	26	26	02-Mar-20	13-Apr-20	171
NSPN.5240	Paint / Coat Wall Panels (Anti Graffiti) @ North Span - Sta 2045+00 to 2051+50	13	13	16-Mar-20	03-Apr-20	171
NSPN.5290	Westbound I-70 North Trench Construction Complete - Sta 2045+00 to 2051+50	0	0		13-Apr-20	171
Stage 4		**300**	**300**	**11-Mar-19**	**05-Aug-20**	**99**
Segment 3 - Fillmore St. to Dahlia St. - (Sta 2042+00 to Sta 2085+00)		**300**	**300**	**11-Mar-19**	**05-Aug-20**	**99**
Monroe Street		**65**	**65**	**27-Apr-20**	**05-Aug-20**	**99**
RDW.12780	Begin Construction - Monroe St.	0	0	27-Apr-20		1
RDW.12800	Monroe St.: Set Temp MOT Barrier & Devices	3	3	27-Apr-20	29-Apr-20	1
RDW.12810	Monroe St.: Install Temp Silt Fence / Erosion Control Measures	4	4	27-Apr-20	30-Apr-20	1
MNR.PH1.WBS.0000	Construct Monroe St:	65	65	27-Apr-20	05-Aug-20	99

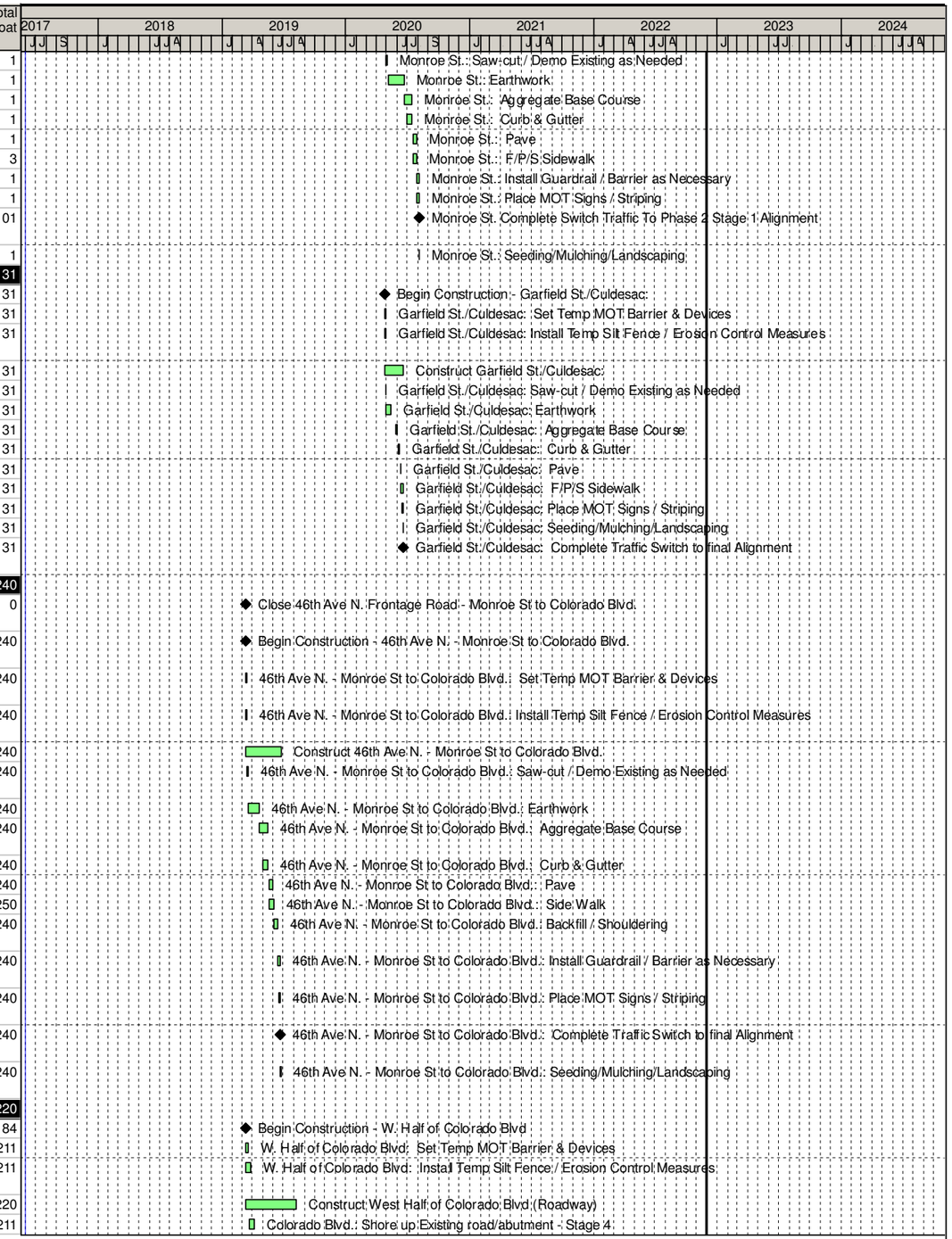


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
RDW.12710	Monroe St.: Saw-cut / Demo Existing as Needed	3	3	30-Apr-20	04-May-20	1
RDW.12720	Monroe St.: Earthwork	30	30	05-May-20	22-Jun-20	1
RDW.12730	Monroe St.: Aggregate Base Course	15	15	23-Jun-20	14-Jul-20	1
RDW.12830	Monroe St.: Curb & Gutter	10	10	30-Jun-20	14-Jul-20	1
RDW.12740	Monroe St.: Pave	8	8	16-Jul-20	27-Jul-20	1
RDW.12840	Monroe St.: F/P/S Sidewalk	10	10	16-Jul-20	30-Jul-20	3
RDW.12750	Monroe St.: Install Guardrail / Barrier as Necessary	4	4	28-Jul-20	03-Aug-20	1
RDW.12760	Monroe St.: Place MOT Signs / Striping	3	3	30-Jul-20	03-Aug-20	1
RDW.12790	Monroe St. Complete Switch Traffic To Phase 2 Stage 1 Alignment	0	0		04-Aug-20	101
RDW.12770	Monroe St.: Seeding/Mulching/Landscaping	2	2	04-Aug-20	05-Aug-20	1
Garfield St. / Cul-de-sac		**35**	**35**	**27-Apr-20**	**19-Jun-20**	**31**
RDW.14420	Begin Construction - Garfield St./Culdesac:	0	0	27-Apr-20		31
RDW.14430	Garfield St./Culdesac: Set Temp MOT Barrier & Devices	1	1	27-Apr-20	27-Apr-20	31
RDW.14440	Garfield St./Culdesac: Install Temp Silt Fence / Erosion Control Measures	2	2	27-Apr-20	28-Apr-20	31
46th.PH1.STG1.70	Construct Garfield St./Culdesac:	35	35	27-Apr-20	19-Jun-20	31
RDW.14450	Garfield St./Culdesac: Saw-cut / Demo Existing as Needed	2	2	28-Apr-20	29-Apr-20	31
RDW.14460	Garfield St./Culdesac: Earthwork	10	10	30-Apr-20	14-May-20	31
RDW.14480	Garfield St./Culdesac: Aggregate Base Course	5	5	27-May-20	02-Jun-20	31
RDW.14490	Garfield St./Culdesac: Curb & Gutter	5	5	03-Jun-20	09-Jun-20	31
RDW.14500	Garfield St./Culdesac: Pave	2	2	11-Jun-20	12-Jun-20	31
RDW.14510	Garfield St./Culdesac: F/P/S Sidewalk	5	5	11-Jun-20	17-Jun-20	31
RDW.14530	Garfield St./Culdesac: Place MOT Signs / Striping	3	3	15-Jun-20	17-Jun-20	31
RDW.14540	Garfield St./Culdesac: Seeding/Mulching/Landscaping	2	2	18-Jun-20	19-Jun-20	31
RDW.14550	Garfield St./Culdesac: Complete Traffic Switch to final Alignment	0	0		19-Jun-20	31
46th Avenue North Reconstruction - Monroe St. to Colorado Blvd.		**63**	**63**	**11-Mar-19**	**24-Jun-19**	**240**
RDW.16260	Close 46th Ave N. Frontage Road - Monroe St to Colorado Blvd.	0	0	11-Mar-19		0
RDW.16265	Begin Construction - 46th Ave N. - Monroe St to Colorado Blvd.	0	0	11-Mar-19		240
RDW.16290	46th Ave N. - Monroe St to Colorado Blvd.: Set Temp MOT Barrier & Devices	3	3	11-Mar-19	14-Mar-19	240
RDW.16300	46th Ave N. - Monroe St to Colorado Blvd.: Install Temp Silt Fence / Erosion Control Measures	4	4	11-Mar-19	15-Mar-19	240
RDW.16255	Construct 46th Ave N. - Monroe St to Colorado Blvd.	63	63	11-Mar-19	24-Jun-19	240
RDW.16190	46th Ave N. - Monroe St to Colorado Blvd.: Saw-cut / Demo Existing as Needed	3	3	15-Mar-19	20-Mar-19	240
RDW.16200	46th Ave N. - Monroe St to Colorado Blvd.: Earthwork	20	20	21-Mar-19	22-Apr-19	240
RDW.16210	46th Ave N. - Monroe St to Colorado Blvd.: Aggregate Base Course	15	15	23-Apr-19	16-May-19	240
RDW.16320	46th Ave N. - Monroe St to Colorado Blvd.: Curb & Gutter	10	10	02-May-19	16-May-19	240
RDW.16220	46th Ave N. - Monroe St to Colorado Blvd.: Pave	8	8	20-May-19	31-May-19	240
RDW.16330	46th Ave N. - Monroe St to Colorado Blvd.: Side Walk	10	10	20-May-19	04-Jun-19	250
RDW.16470	46th Ave N. - Monroe St to Colorado Blvd.: Backfill / Shouldering	8	8	03-Jun-19	13-Jun-19	240
RDW.16230	46th Ave N. - Monroe St to Colorado Blvd.: Install Guardrail / Barrier as Necessary	4	4	14-Jun-19	20-Jun-19	240
RDW.16240	46th Ave N. - Monroe St to Colorado Blvd.: Place MOT Signs / Striping	3	3	17-Jun-19	20-Jun-19	240
RDW.16270	46th Ave N. - Monroe St to Colorado Blvd.: Complete Traffic Switch to final Alignment	0	0		21-Jun-19	240
RDW.16250	46th Ave N. - Monroe St to Colorado Blvd.: Seeding/Mulching/Landscaping	2	2	21-Jun-19	24-Jun-19	240
Colorado Blvd (West Half) - Station 2077+50 to Station 2078+50		**88**	**88**	**14-Mar-19**	**06-Aug-19**	**220**
CCO10095	Begin Construction - W. Half of Colorado Blvd	0	0	14-Mar-19		84
RDW.10730	W. Half of Colorado Blvd: Set Temp MOT Barrier & Devices	5	5	14-Mar-19	21-Mar-19	211
RDW.10740	W. Half of Colorado Blvd: Install Temp Silt Fence / Erosion Control Measures	7	7	14-Mar-19	26-Mar-19	211
BRG.PH1.STG1.60	Construct West Half of Colorado Blvd (Roadway)	88	88	14-Mar-19	06-Aug-19	220
CCO10100	Colorado Blvd.: Shore up Existing road/abutment - Stage 4	10	10	22-Mar-19	05-Apr-19	211



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

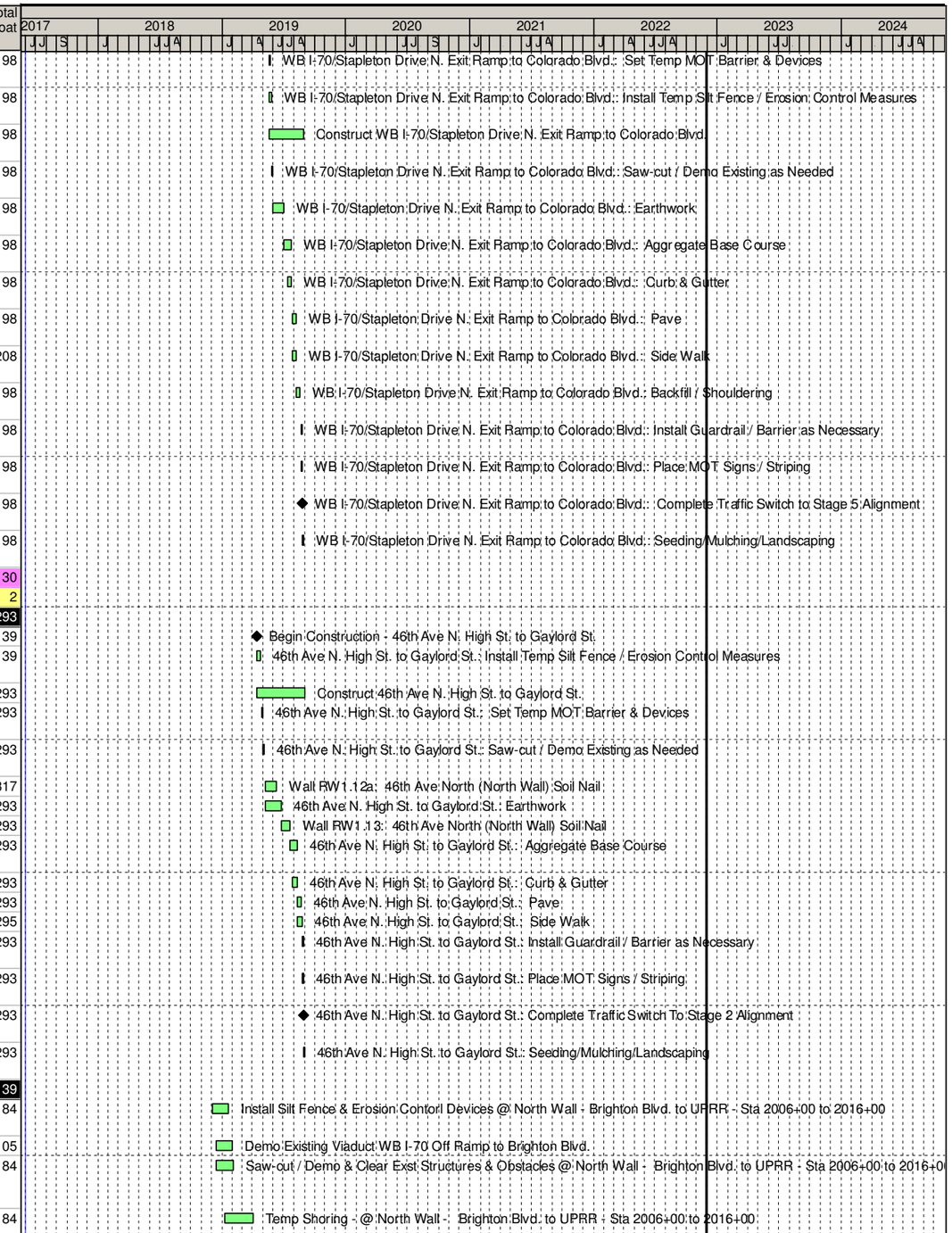
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
RDW.10750	W. Half of Colorado Blvd: Saw-cut / Demo Existing as Needed	5	5	22-Mar-19	29-Mar-19	218
RDW.10760	W. Half of Colorado Blvd: Earthwork	30	30	08-Apr-19	29-May-19	211
CRW1411000	Wall RW1.41: Colorado (SW Quadrant)	15	15	03-May-19	29-May-19	211
CRW1471000	Wall RW1.47: Colorado (NW Quadrant)	15	15	03-May-19	29-May-19	211
RDW.10780	W. Half of Colorado Blvd: Aggregate Base Course	15	15	30-May-19	21-Jun-19	211
RDW.10790	W. Half of Colorado Blvd: Curb & Gutter	15	15	07-Jun-19	28-Jun-19	211
RDW.10800	W. Half of Colorado Blvd: Pave	10	10	01-Jul-19	17-Jul-19	211
RDW.10810	W. Half of Colorado Blvd: Side Walk	15	15	01-Jul-19	25-Jul-19	216
CCO10200	Colorado Blvd.: Phase 1 Stage 4 Complete	0	0		16-Jul-19	225
CCO10700	Colorado Blvd.: Traffic Switch to new Bridge (West Half)	1	1	17-Jul-19	17-Jul-19	229
RDW.10820	W. Half of Colorado Blvd: Install Guardrail / Barrier as Necessary	10	10	18-Jul-19	01-Aug-19	211
RDW.10830	W. Half of Colorado Blvd: Place MOT Signs / Striping	4	4	29-Jul-19	01-Aug-19	211
RDW.10840	W. Half of Colorado Blvd: Punch List	3	3	02-Aug-19	06-Aug-19	211
RDW.10850	W. Half of Colorado Blvd: Seeding/Mulching/Landscaping	3	3	02-Aug-19	06-Aug-19	211
RDW.10870	W. Half of Colorado Blvd: Complete Traffic Switch To Phase 1 Stage 4 Alignment	0	0		06-Aug-19	211
Drainage Ponds		27	27	22-Apr-19	06-Jun-19	258
CRW108a1040	Wall RW1.: Colorado Blvd NE Drainage Pond - Soil Nail	27	27	22-Apr-19	06-Jun-19	258
CRW108a1050	Wall RW1.: Colorado Blvd NE Drainage Pond - Final Grading & Slopes	15	15	22-Apr-19	15-May-19	258
Station 2080+00 to Station 2085+00		166	166	10-Jun-19	30-Mar-20	180
NSPN.8460	Install Silt Fence & Erosion Contorl Devices @ North Wall - Sta 2080+00 to 2085+00	10	10	10-Jun-19	24-Jun-19	180
NSPN.11220	Construct North Span - Sta 2080+00 to 2085+00	166	166	10-Jun-19	30-Mar-20	180
NSPN.8470	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - Sta 2080+00 to 2085+00	10	10	13-Jun-19	27-Jun-19	180
NSPN.8560	Temp Shoring - @ North Wall - Sta 2080+00 to 2085+00	20	20	21-Jun-19	23-Jul-19	180
NSPN.EX.4190	Excavate & Soil Nail 1st Lift North Wall - Sta 2080+00 to 2085+00	24	24	11-Jul-19	15-Aug-19	180
NSPN.EX.4200	Excavate & Soil Nail 2nd Lift North Wall - Sta 2080+00 to 2085+00	14	14	16-Aug-19	05-Sep-19	180
UPRR.TRN.EX.3810	Excavate & Soil Nail to Subgrade North Span (WB Lanes) - Sta 2080+00 to 2085+00	10	10	06-Sep-19	23-Sep-19	180
NSPN.8490	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) WB Lanes - Sta 2080+00 to 2085+00	10	10	25-Sep-19	08-Oct-19	249
NSPN.8570	F/P/S Facing Wall Footing WB Lanes - Sta 2080+00 to 2085+00 (Wall RW 1.52)	10	10	25-Sep-19	08-Oct-19	180
NSPN.8520	Set/Install Wall Facing Panels @ North Wall Sta 2080+00 to 2085+00 (Wall RW 1.52)	27	27	02-Oct-19	18-Nov-19	180
NSPN.8610	Set/Install Wall Coping @ North Wall - Sta 2080+00 to 2085+00 (Wall RW 1.52)	27	27	18-Oct-19	06-Dec-19	180
NSPN.8500	Place & Compact Agg. Base Course WB Lanes - Sta 2080+00 to 2085+00	10	10	10-Dec-19	30-Dec-19	180
NSPN.8510	Place Concrete Paving WB Lanes - Sta 2080+00 to 2085+00	7	7	31-Dec-19	13-Jan-20	180
NSPN.8530	Slip / Cast Side Barrier Rail @ North Wall - Sta 2080+00 to 2085+00	10	10	14-Jan-20	31-Jan-20	180
NSPN.8580	Install Final Lighting System & Fixtures WB Lanes - Sta 2080+00 to 2085+00	20	20	03-Feb-20	11-Mar-20	190
NSPN.8590	Paint / Coat Wall Panels (Anti Graffiti) @ North Span - Sta 2080+00 to 2085+00	10	10	03-Feb-20	24-Feb-20	180
A4890	Place Permanent Signs / Striping @ North Span - Sta 2080+00 to 2085+00	7	7	20-Feb-20	03-Mar-20	195
NSPN.8540	Final ITS System / Cameras / Electrical (Finishes) WB Lanes - Sta 2080+00 to 2085+00	20	20	25-Feb-20	30-Mar-20	180
NSPN.8600	Westbound I-70 North Trench Construction Complete - Sta 2080+00 to 2085+00	0	0		30-Mar-20	180
WB I-70/Stapleton Drive North Exit Ramp to Colorado Blvd.		63	63	21-May-19	28-Aug-19	198
RDW.16720	Begin Construction - WB I-70/Stapleton Drive N. Exit Ramp to Colorado Blvd.	0	0	21-May-19		198
RDW.16810	Close NB Colorado Blvd. Loop Ramp to WB I-70	0	0	21-May-19		198

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
RDW.16750	WB I-70/Stapleton Drive N. Exit Ramp to Colorado Blvd.: Set Temp MOT Barrier & Devices	3	3	21-May-19	24-May-19	198
RDW.16760	WB I-70/Stapleton Drive N. Exit Ramp to Colorado Blvd.: Install Temp Silt Fence / Erosion Control Measures	4	4	21-May-19	28-May-19	198
RDW.16740	Construct WB I-70/Stapleton Drive N. Exit Ramp to Colorado Blvd.	63	63	21-May-19	28-Aug-19	198
RDW.16650	WB I-70/Stapleton Drive N. Exit Ramp to Colorado Blvd.: Saw-cut / Demo Existing as Needed	3	3	28-May-19	30-May-19	198
RDW.16660	WB I-70/Stapleton Drive N. Exit Ramp to Colorado Blvd.: Earthwork	20	20	31-May-19	01-Jul-19	198
RDW.16670	WB I-70/Stapleton Drive N. Exit Ramp to Colorado Blvd.: Aggregate Base Course	15	15	02-Jul-19	26-Jul-19	198
RDW.16780	WB I-70/Stapleton Drive N. Exit Ramp to Colorado Blvd.: Curb & Gutter	10	10	12-Jul-19	26-Jul-19	198
RDW.16680	WB I-70/Stapleton Drive N. Exit Ramp to Colorado Blvd.: Pave	8	8	29-Jul-19	07-Aug-19	198
RDW.16790	WB I-70/Stapleton Drive N. Exit Ramp to Colorado Blvd.: Side Walk	10	10	29-Jul-19	09-Aug-19	208
RDW.16800	WB I-70/Stapleton Drive N. Exit Ramp to Colorado Blvd.: Backfill / Shouldering	8	8	08-Aug-19	20-Aug-19	198
RDW.16690	WB I-70/Stapleton Drive N. Exit Ramp to Colorado Blvd.: Install Guardrail / Barrier as Necessary	4	4	21-Aug-19	26-Aug-19	198
RDW.16700	WB I-70/Stapleton Drive N. Exit Ramp to Colorado Blvd.: Place MOT Signs / Striping	3	3	22-Aug-19	26-Aug-19	198
RDW.16730	WB I-70/Stapleton Drive N. Exit Ramp to Colorado Blvd.: Complete Traffic Switch to Stage 5 Alignment	0	0		27-Aug-19	198
RDW.16710	WB I-70/Stapleton Drive N. Exit Ramp to Colorado Blvd.: Seeding/Mulching/Landscaping	2	2	27-Aug-19	28-Aug-19	198
Stage 5		601	601	07-Mar-18	02-Feb-21	130
Segment 1 - Brighton Blvd to York St. - (Sta 2000+00 to Sta 2025+50)		601	601	07-Mar-18	02-Feb-21	2
46th Avenue North - High St. to Gaylord St.		88	88	15-Apr-19	03-Sep-19	293
RDW.14570	Begin Construction - 46th Ave N. High St. to Gaylord St.	0	0	15-Apr-19		39
RDW.14590	46th Ave N. High St. to Gaylord St.: Install Temp Silt Fence / Erosion Control Measures	8	8	15-Apr-19	26-Apr-19	39
BRG.PH1.STG1.80	Construct 46th Ave N. High St. to Gaylord St.	88	88	15-Apr-19	03-Sep-19	293
RDW.14580	46th Ave N. High St. to Gaylord St.: Set Temp MOT Barrier & Devices	4	4	29-Apr-19	02-May-19	293
RDW.14600	46th Ave N. High St. to Gaylord St.: Saw-cut / Demo Existing as Needed	3	3	03-May-19	07-May-19	293
CRW112a1000	Wall RW1.12a: 46th Ave North (North Wall) Soil Nail	20	20	09-May-19	11-Jun-19	317
RDW.14610	46th Ave N. High St. to Gaylord St.: Earthwork	30	30	09-May-19	26-Jun-19	293
CRW112b1000	Wall RW1.13: 46th Ave North (North Wall) Soil Nail	14	14	27-Jun-19	19-Jul-19	293
RDW.14630	46th Ave N. High St. to Gaylord St.: Aggregate Base Course	15	15	22-Jul-19	12-Aug-19	293
RDW.14640	46th Ave N. High St. to Gaylord St.: Curb & Gutter	10	10	30-Jul-19	12-Aug-19	293
RDW.14650	46th Ave N. High St. to Gaylord St.: Pave	8	8	13-Aug-19	23-Aug-19	293
RDW.14660	46th Ave N. High St. to Gaylord St.: Side Walk	10	10	13-Aug-19	27-Aug-19	295
RDW.14670	46th Ave N. High St. to Gaylord St.: Install Guardrail / Barrier as Necessary	4	4	26-Aug-19	29-Aug-19	293
RDW.14680	46th Ave N. High St. to Gaylord St.: Place MOT Signs / Striping	3	3	27-Aug-19	29-Aug-19	293
RDW.14700	46th Ave N. High St. to Gaylord St.: Complete Traffic Switch To Stage 2 Alignment	0	0		30-Aug-19	293
RDW.14690	46th Ave N. High St. to Gaylord St.: Seeding/Mulching/Landscaping	2	2	30-Aug-19	03-Sep-19	293
Station 2006+00 to Station 2016+00		400	400	05-Dec-18	09-Nov-20	39
A4020	Install Silt Fence & Erosion Contorl Devices @ North Wall - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	20	20	05-Dec-18	21-Jan-19	84
EXISTVIA290	Demo Existing Viaduct WB I-70 Off Ramp to Brighton Blvd.	19	19	14-Dec-18	30-Jan-19	105
NSPN.5650	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	20	20	14-Dec-18	05-Feb-19	84
NSPN.5740	Temp Shoring - @ North Wall - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	40	40	11-Jan-19	03-Apr-19	84



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.EX.3870	Excavate first 10' to top of North Secant Wall - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	47	47	29-Apr-19	15-Jul-19	39
UPRR.TRN.SCNT.545	Drill & Test Secant Piles North Wall - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	84	84	23-May-19	03-Oct-19	39
NSPN.EX.3880	Excavate/Tiebacks 2nd 10' Lift North Lift - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	27	27	16-Sep-19	29-Oct-19	39
UPRR.TRN.EX.3650	Excavate/Tiebacks to Subgrade North Span (WB Lanes) - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	20	20	30-Oct-19	06-Dec-19	39
NSPN.5670	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) WB Lanes Brighton Blvd. to UPRR - S	20	20	10-Dec-19	17-Jan-20	177
NSPN.5750	F/P/S Facing Wall Footing WB Lanes - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	20	20	10-Dec-19	17-Jan-20	39
NSPN.5810	Install Initial Final Fire Protection Lines WB Lanes Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	20	20	10-Dec-19	17-Jan-20	177
NSPN.5700	Set/Install Wall Facing Panels @ North Wall Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	54	54	20-Jan-20	27-Apr-20	39
NSPN.5790	Set/Install Wall Coping @ North Wall Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	54	54	10-Feb-20	12-May-20	39
NSPN.5680	Place & Compact Agg. Base Course WB Lanes Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	20	20	13-May-20	15-Jun-20	39
NSPN.5690	Place Concrete Paving WB Lanes Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	14	14	16-Jun-20	06-Jul-20	39
NSPN.5710	Slip / Cast Side Barrier Rail @ North Wall Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	20	20	07-Jul-20	05-Aug-20	39
NSPN.5760	Install Final Lighting System & Fixtures WB Lanes Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	40	40	22-Jul-20	23-Sep-20	69
NSPN.5770	Paint / Coat Wall Panels (Anti Graffiti) @ North Span Sta 2033+00 to 2040+50	20	20	06-Aug-20	04-Sep-20	39
NSPN.5720	Final ITS System / Cameras / Electrical (Finishes) WB Lanes Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	40	40	08-Sep-20	09-Nov-20	39
NSPN.5800	Install Final Fire Protection System & Fixtures WB Lanes- Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	40	40	08-Sep-20	09-Nov-20	39
NSPN.5780	Westbound I-70 North Trench Construction Complete - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	0	0		09-Nov-20	39
Station 2018+00 to Station 2020+00		576	576	07-Mar-18	08-Dec-20	25
NSPN.6160	Install Silt Fence & Erosion Contorl Devices @ North Wall - UPRR to York St. - Sta 2018+00 to 2020+00	4	4	07-Mar-18	13-Mar-18	478
NSPN.6170	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - UPRR to York St. - Sta 2018+00 to 2020+00	4	4	13-Mar-18	21-Mar-18	478
NSPN.6260	Temp Shoring - @ North Wall - UPRR to York St. - Sta 2018+00 to 2020+00	8	8	02-Apr-18	13-Apr-18	478
NSPN.EX.3930	Excavate first 10' to top of North Secant Wall - UPRR to York St. - Sta 2018+00 to 2020+00	10	10	25-Apr-18	08-May-18	478
UPRR.TRN.SCNT.575	Drill & Test Secant Piles North Wall - UPRR to York St. - Sta 2018+00 to 2020+00	17	17	03-Aug-20	27-Aug-20	25
NSPN.EX.3940	Excavate/Tiebacks 2nd 10' Lift North Lift - UPRR to York St. - Sta 2018+00 to 2020+00	6	6	28-Aug-20	04-Sep-20	25
UPRR.TRN.EX.3680	Excavate/Tiebacks to Subgrade North Span (WB Lanes) - UPRR to York St. - Sta 2018+00 to 2020+00	4	4	08-Sep-20	11-Sep-20	25
NSPN.6190	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) WB Lanes - Sta 2018+00 to 2020+00	4	4	14-Sep-20	18-Sep-20	63
NSPN.6270	F/P/S Facing Wall Footing WB Lanes - UPRR to York St. - Sta 2018+00 to 2020+00	4	4	14-Sep-20	18-Sep-20	25
NSPN.6330	Install Initial Final Fire Protection Lines WB Lanes UPRR to York St. - Sta 2018+00 to 2020+00	11	11	14-Sep-20	30-Sep-20	56
NSPN.6220	Set/Install Wall Facing Panels @ North Wall - Sta 2018+00 to 2020+00	11	11	21-Sep-20	06-Oct-20	25
NSPN.6310	Set/Install Wall Coping @ North Wall - Sta 2018+00 to 2020+00	11	11	06-Oct-20	23-Oct-20	25
NSPN.6200	Place & Compact Agg. Base Course WB Lanes - Sta 2018+00 to 2020+00	4	4	26-Oct-20	29-Oct-20	25
NSPN.6210	Place Concrete Paving WB Lanes - Sta 2018+00 to 2020+00	3	3	30-Oct-20	03-Nov-20	25

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

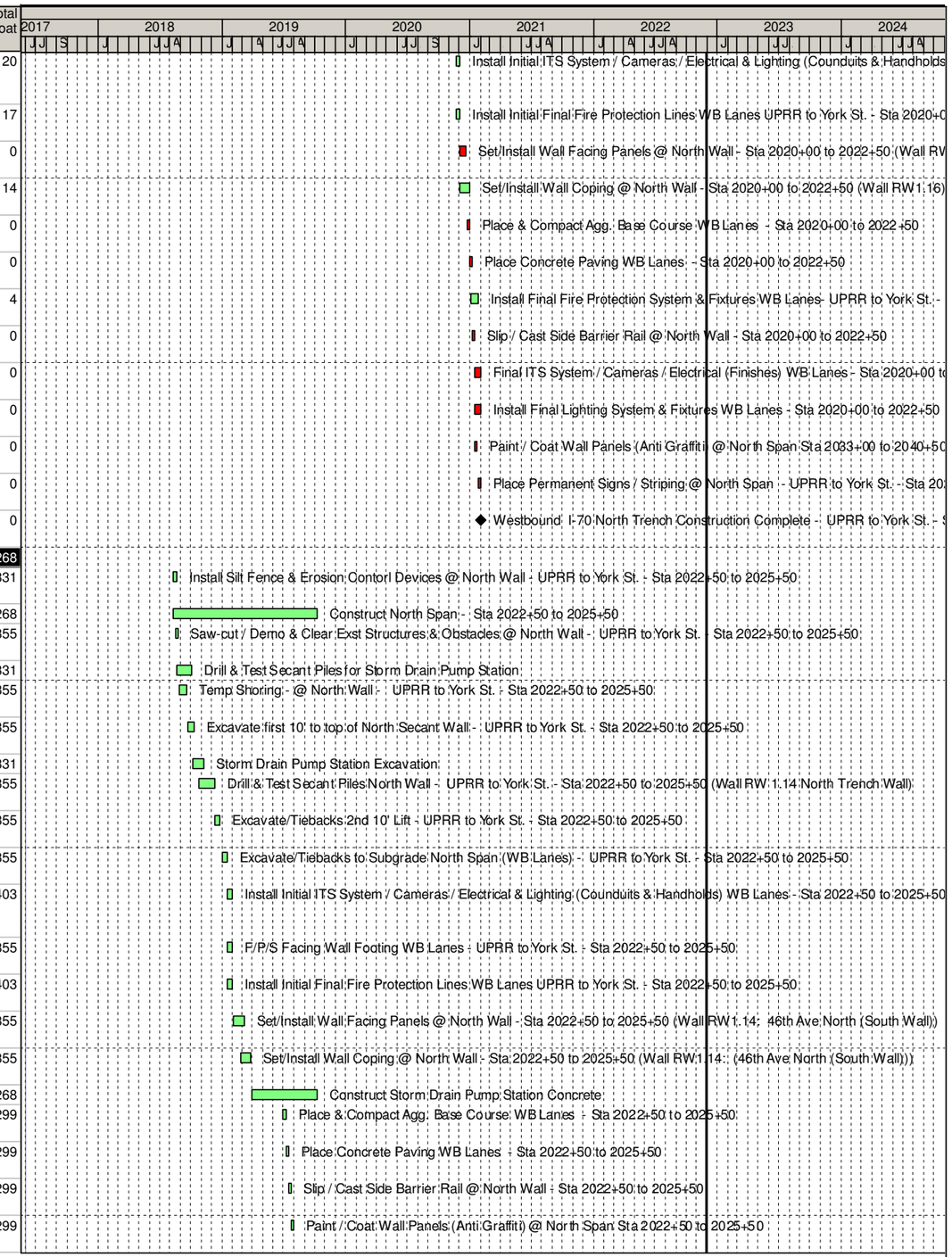
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.6230	Slip / Cast Side Barrier Rail @ North Wall - Sta 2018+00 to 2020+00	4	4	04-Nov-20	09-Nov-20	25
NSPN.6290	Paint / Coat Wall Panels (Anti Graffiti) @ North Span Sta 2033+00 to 2040+50	4	4	10-Nov-20	16-Nov-20	25
NSPN.6240	Final ITS System / Cameras / Electrical (Finishes) WB Lanes - Sta 2018+00 to 2020+00	8	8	17-Nov-20	03-Dec-20	27
NSPN.6320	Install Final Fire Protection System & Fixtures WB Lanes- UPRR to York St. - Sta 2018+00 to 2020+00	8	8	17-Nov-20	03-Dec-20	27
NSPN.6280	Install Final Lighting System & Fixtures WB Lanes - Sta 2018+00 to 2020+00	8	8	20-Nov-20	08-Dec-20	25
NSPN.6300	Westbound I-70 North Trench Construction Complete - UPRR to York St. - Sta 2018+00 to 2020+00	0	0		08-Dec-20	25
Station 2016+00 to Station 2018+00		**291**	**291**	**07-Mar-18**	**05-Aug-19**	**310**
A4910	Install Silt Fence & Erosion Contorl Devices @ North Wall - Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	4	4	07-Mar-18	13-Mar-18	498
NSPN.8820	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	4	4	16-Mar-18	22-Mar-18	498
NSPN.8910	Temp Shoring - @ North Wall - Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	8	8	23-Mar-18	04-Apr-18	498
NSPN.EX.4230	Excavate first 10' to top of North Secant Wall - Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	10	10	05-Apr-18	23-Apr-18	498
UPRR.TRN.SCNT.725	Drill & Test Secant Piles North Wall - Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	17	17	25-Apr-18	21-May-18	498
NSPN.EX.4240	Excavate/Tiebacks 2nd 10' Lift North Lift - Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	6	6	22-May-18	31-May-18	498
UPRR.TRN.EX.3830	Excavate/Tiebacks to Subgrade North Span (WB Lanes) - Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	4	4	01-Jun-18	06-Jun-18	498
NSPN.8920	F/P/S Facing Wall Footing WB Lanes - Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	4	4	07-Jun-18	12-Jun-18	498
NSPN.8980	Install Initial Final Fire Protection Lines WB Lanes Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	4	4	07-Jun-18	12-Jun-18	536
NSPN.8870	Set/Install Wall Facing Panels @ North Wall Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	11	11	13-Jun-18	28-Jun-18	498
NSPN.8960	Set/Install Wall Coping @ North Wall Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	11	11	28-Jun-18	16-Jul-18	498
NSPN.8840	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) WB Lanes Brighton Blvd. to UPRR - S	4	4	24-Sep-18	27-Sep-18	469
NSPN.8850	Place & Compact Agg. Base Course WB Lanes Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	4	4	26-Jun-19	01-Jul-19	310
NSPN.8860	Place Concrete Paving WB Lanes Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	3	3	02-Jul-19	08-Jul-19	310
NSPN.8880	Slip / Cast Side Barrier Rail @ North Wall Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	4	4	09-Jul-19	15-Jul-19	310
NSPN.8940	Paint / Coat Wall Panels (Anti Graffiti) @ North Span Sta 2033+00 to 2040+50	4	4	16-Jul-19	19-Jul-19	310
NSPN.8890	Final ITS System / Cameras / Electrical (Finishes) WB Lanes Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	8	8	22-Jul-19	01-Aug-19	312
NSPN.8970	Install Final Fire Protection System & Fixtures WB Lanes- Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	8	8	22-Jul-19	01-Aug-19	312
NSPN.8930	Install Final Lighting System & Fixtures WB Lanes Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	8	8	25-Jul-19	05-Aug-19	310
NSPN.8950	Westbound I-70 North Trench Construction Complete - Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	0	0		05-Aug-19	310
Station 2020+00 to Station 2022+50		**46**	**46**	**30-Oct-20**	**02-Feb-21**	**0**
NSPN.EX.3670	Excavate first 10' to top of North Secant Wall - UPRR to York St. - Sta 2020+00 to 2022+50	5	5	30-Oct-20	04-Nov-20	0
NSPN.11425	Construct North Span - Sta 2020+50 to 2022+50	46	46	30-Oct-20	02-Feb-21	0
NSPN.EX.3740	Excavate/Tiebacks 2nd 10' Lift North Lift - UPRR to York St. - Sta 2020+00 to 2022+50	7	7	05-Nov-20	13-Nov-20	0
UPRR.TRN.EX.3530	Excavate/Tiebacks to Subgrade North Span (WB Lanes) - UPRR to York St. - Sta 2020+00 to 2022+50	5	5	14-Nov-20	20-Nov-20	0
NSPN.3940	F/P/S Facing Wall Footing WB Lanes - UPRR to York St. - Sta 2020+00 to 2022+50 (Wall RW1.16)	5	5	21-Nov-20	01-Dec-20	0

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.3930	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) WB Lanes - Sta 2020+00 to 2022+50	5	5	23-Nov-20	03-Dec-20	20
NSPN.4590	Install Initial Final Fire Protection Lines WB Lanes UPRR to York St. - Sta 2020+00 to 2022+50	5	5	23-Nov-20	03-Dec-20	17
NSPN.3980	Set/Install Wall Facing Panels @ North Wall - Sta 2020+00 to 2022+50 (Wall RW1.16)	14	14	02-Dec-20	22-Dec-20	0
NSPN.4570	Set/Install Wall Coping @ North Wall - Sta 2020+00 to 2022+50 (Wall RW1.16)	14	14	03-Dec-20	31-Dec-20	14
NSPN.3950	Place & Compact Agg. Base Course WB Lanes - Sta 2020+00 to 2022+50	5	5	23-Dec-20	31-Dec-20	0
NSPN.3960	Place Concrete Paving WB Lanes - Sta 2020+00 to 2022+50	4	4	02-Jan-21	08-Jan-21	0
NSPN.4580	Install Final Fire Protection System & Fixtures WB Lanes- UPRR to York St. - Sta 2020+00 to 2022+50	10	10	04-Jan-21	25-Jan-21	4
NSPN.3990	Slip / Cast Side Barrier Rail @ North Wall - Sta 2020+00 to 2022+50	5	5	09-Jan-21	15-Jan-21	0
NSPN.4000	Final ITS System / Cameras / Electrical (Finishes) WB Lanes - Sta 2020+00 to 2022+50	10	10	16-Jan-21	02-Feb-21	0
NSPN.4540	Install Final Lighting System & Fixtures WB Lanes - Sta 2020+00 to 2022+50	10	10	16-Jan-21	02-Feb-21	0
NSPN.4550	Paint / Coat Wall Panels (Anti Graffiti) @ North Span Sta 2033+00 to 2040+50	5	5	16-Jan-21	23-Jan-21	0
A4790	Place Permanent Signs / Striping @ North Span - UPRR to York St. - Sta 2020+00 to 2022+50	4	4	26-Jan-21	02-Feb-21	0
NSPN.4560	Westbound I-70 North Trench Construction Complete - UPRR to York St. - Sta 2020+00 to 2022+50	0	0		02-Feb-21	0
Station 2022+50 to Station 2025+50		239	239	10-Aug-18	09-Oct-19	268
NSPN.9340	Install Silt Fence & Erosion Contorl Devices @ North Wall - UPRR to York St. - Sta 2022+50 to 2025+50	6	6	10-Aug-18	20-Aug-18	331
NSPN.11415	Construct North Span - Sta 2022+50 to 2025+50	239	239	10-Aug-18	09-Oct-19	268
NSPN.9350	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - UPRR to York St. - Sta 2022+50 to 2025+50	6	6	16-Aug-18	23-Aug-18	355
UPRR.TRN.SCNT.815	Drill & Test Secant Piles for Storm Drain Pump Station	30	30	21-Aug-18	05-Oct-18	331
NSPN.9440	Temp Shoring - @ North Wall - UPRR to York St. - Sta 2022+50 to 2025+50	12	12	30-Aug-18	20-Sep-18	355
NSPN.EX.4290	Excavate first 10' to top of North Secant Wall - UPRR to York St. - Sta 2022+50 to 2025+50	14	14	24-Sep-18	12-Oct-18	355
TRN.270	Storm Drain Pump Station Excavation	20	20	08-Oct-18	09-Nov-18	331
UPRR.TRN.SCNT.755	Drill & Test Secant Piles North Wall - UPRR to York St. - Sta 2022+50 to 2025+50 (Wall RW 1.14 North Trench Wal)	26	26	25-Oct-18	11-Dec-18	355
NSPN.EX.4300	Excavate/Tiebacks 2nd 10' Lift - UPRR to York St. - Sta 2022+50 to 2025+50	8	8	13-Dec-18	27-Dec-18	355
UPRR.TRN.EX.3860	Excavate/Tiebacks to Subgrade North Span (WB Lanes) - UPRR to York St. - Sta 2022+50 to 2025+50	6	6	02-Jan-19	17-Jan-19	355
NSPN.9370	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) WB Lanes - Sta 2022+50 to 2025+50	6	6	18-Jan-19	30-Jan-19	403
NSPN.9450	F/P/S Facing Wall Footing WB Lanes - UPRR to York St. - Sta 2022+50 to 2025+50	6	6	18-Jan-19	30-Jan-19	355
NSPN.9510	Install Initial Final Fire Protection Lines WB Lanes UPRR to York St. - Sta 2022+50 to 2025+50	6	6	18-Jan-19	30-Jan-19	403
NSPN.9400	Set/Install Wall Facing Panels @ North Wall - Sta 2022+50 to 2025+50 (Wall RW1.14: 46th Ave North (South Wall))	16	16	05-Feb-19	08-Mar-19	355
NSPN.9490	Set/Install Wall Coping @ North Wall - Sta 2022+50 to 2025+50 (Wall RW1.14: (46th Ave North (South Wall)))	16	16	27-Feb-19	27-Mar-19	355
TRN.280	Construct Storm Drain Pump Station Concrete	120	120	29-Mar-19	09-Oct-19	268
NSPN.9380	Place & Compact Agg. Base Course WB Lanes - Sta 2022+50 to 2025+50	6	6	28-Jun-19	09-Jul-19	299
NSPN.9390	Place Concrete Paving WB Lanes - Sta 2022+50 to 2025+50	4	4	11-Jul-19	16-Jul-19	299
NSPN.9410	Slip / Cast Side Barrier Rail @ North Wall - Sta 2022+50 to 2025+50	6	6	17-Jul-19	25-Jul-19	299
NSPN.9470	Paint / Coat Wall Panels (Anti Graffiti) @ North Span Sta 2022+50 to 2025+50	6	6	26-Jul-19	02-Aug-19	299



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

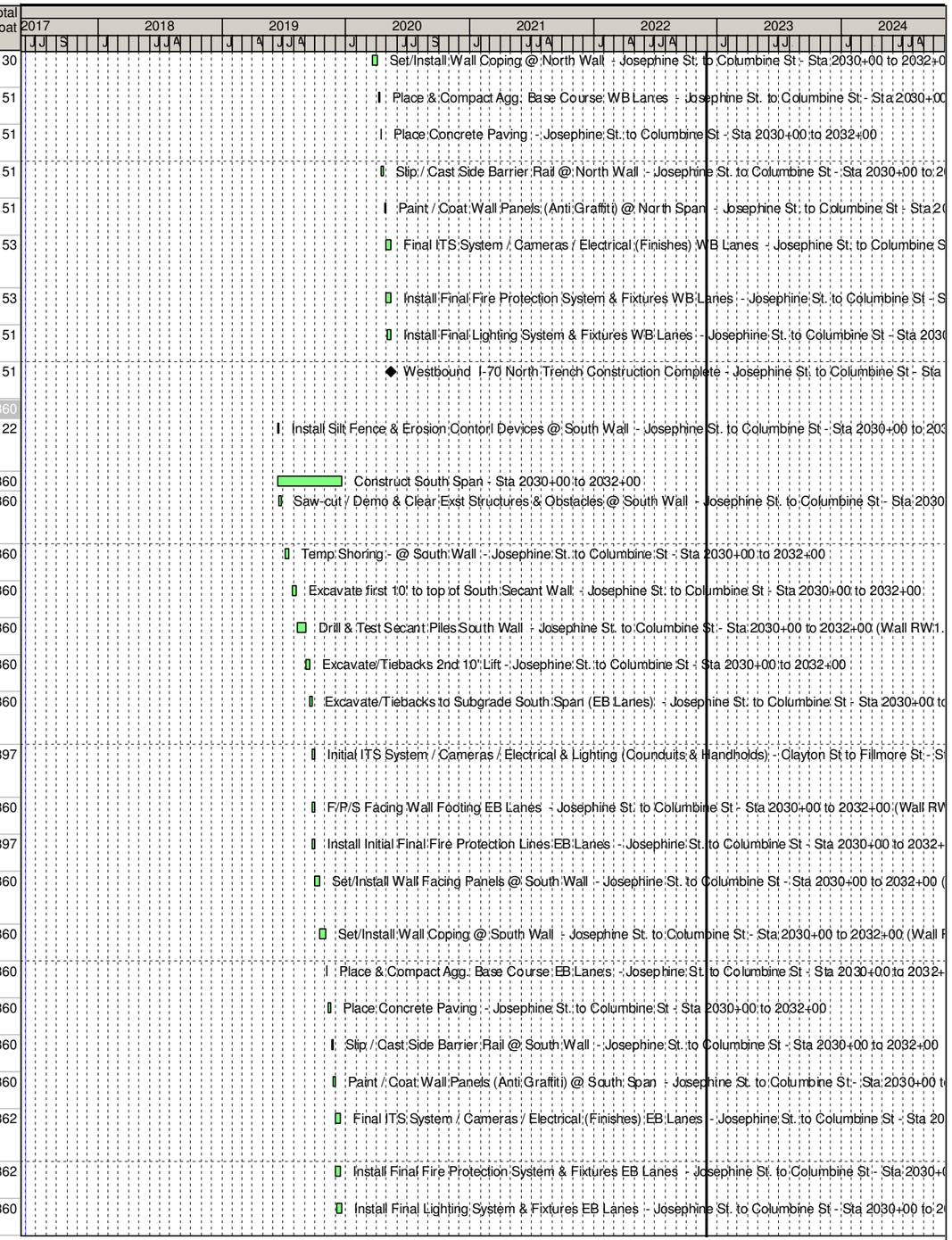
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.9460	Install Final Lighting System & Fixtures WB Lanes - Sta 2022+50 to 2025+50	12	12	01-Aug-19	19-Aug-19	301
NSPN.9420	Final ITS System / Cameras / Electrical (Finishes) WB Lanes - Sta 2022+50 to 2025+50	12	12	05-Aug-19	21-Aug-19	299
NSPN.9500	Install Final Fire Protection System & Fixtures WB Lanes- UPRR to York St. - Sta 2022+50 to 2025+50	12	12	05-Aug-19	21-Aug-19	299
A4930	Place Permanent Signs / Striping @ North Span - UPRR to York St. - Sta 2022+50 to 2025+50	4	4	06-Aug-19	09-Aug-19	306
NSPN.9480	Westbound I-70 North Trench Construction Complete - UPRR to York St. - Sta 2022+50 to 2025+50	0	0		09-Oct-19	268
Segment 2 - E. of York St. to Fillmore St - (Sta 2025+50 to Sta 2042+00)		496	496	08-Aug-18	04-Jan-21	143
46th Avenue North - York St. to Gaylord St.		82	82	13-Aug-20	04-Jan-21	13
RDW.15900	Begin Construction - 46th Ave N. York St. to Gaylord St.	0	0	13-Aug-20		24
RDW.15920	46th Ave N. York St. to Gaylord St.: Set Temp MOT Barrier & Devices	4	4	13-Aug-20	18-Aug-20	24
RDW.15930	46th Ave N. York St. to Gaylord St.: Install Temp Silt Fence / Erosion Control Measures	5	5	13-Aug-20	19-Aug-20	26
BRG.PH1.STG1.90	Construct 46th Ave N. York St. to Gaylord St.	82	82	13-Aug-20	04-Jan-21	13
RDW.15830	46th Ave N. York St. to Gaylord St.: Saw-cut / Demo Existing as Needed	3	3	19-Aug-20	21-Aug-20	24
RDW.15840	46th Ave N. York St. to Gaylord St.: Earthwork	30	30	08-Sep-20	26-Oct-20	15
CRW112a1010	Wall RW1.12b: 46th Ave North (North Wall) Secant Pile (Finish Wall after East UPRR Shoofly removed)	20	20	05-Oct-20	04-Nov-20	13
CRW112b1020	Wall RW1.13: 46th Ave North (North Wall) Soil Nail	15	15	09-Oct-20	02-Nov-20	15
RDW.15850	46th Ave N. York St. to Gaylord St.: Aggregate Base Course	10	10	05-Nov-20	20-Nov-20	13
RDW.15950	46th Ave N. York St. to Gaylord St.: Curb & Gutter	10	10	13-Nov-20	03-Dec-20	13
RDW.15860	46th Ave N. York St. to Gaylord St.: Pave	8	8	04-Dec-20	21-Dec-20	13
RDW.15960	46th Ave N. York St. to Gaylord St.: Side Walk	10	10	04-Dec-20	23-Dec-20	15
RDW.15870	46th Ave N. York St. to Gaylord St.: Install Guardrail / Barrier as Necessary	4	4	22-Dec-20	30-Dec-20	13
RDW.15880	46th Ave N. York St. to Gaylord St.: Place MOT Signs / Striping	3	3	23-Dec-20	30-Dec-20	13
RDW.15890	46th Ave N. York St. to Gaylord St.: Seeding/Mulching/Landscaping	2	2	31-Dec-20	04-Jan-21	13
RDW.15910	46th Ave N. York St. to Gaylord St.: Complete Traffic Switch To Phase 2 Stage 1 Alignment	0	0		04-Jan-21	13
Station 2030+00 to Station 2032+00		192	192	13-Jun-19	14-May-20	281
North Span		95	95	21-Nov-19	14-May-20	151
NSPN.5295	Install Silt Fence & Erosion Contorl Devices @ North Wall - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	4	4	21-Nov-19	26-Nov-19	122
NSPN.5285	Construct North Span - Sta 2030+00 to 2032+00	95	95	21-Nov-19	14-May-20	151
NSPN.5300	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - Josephine St. to Columbine St - Sta 2030+00 to 2032+0	4	4	27-Nov-19	04-Dec-19	122
NSPN.EX.3830	Excavate first 10' to top of North Secant Wall - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	10	10	06-Dec-19	26-Dec-19	122
UPRR.TRN.SCNT.525	Drill & Test Secant Piles North Wall - Josephine St. to Columbine St - Sta 2030+00 to 2032+00 (Wall RW1.24)	17	17	30-Dec-19	30-Jan-20	122
NSPN.EX.3840	Excavate/Tiebacks 2nd 10' Lift North Lift - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	6	6	31-Jan-20	11-Feb-20	122
UPRR.TRN.EX.3630	Excavate/Tiebacks to Subgrade North Span (WB Lanes) - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	4	4	13-Feb-20	20-Feb-20	122
NSPN.5330	Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) - Clayton St to Fillmore St - Sta 2042+00 t	4	4	24-Feb-20	28-Feb-20	189
NSPN.5340	F/P/S Facing Wall Footing WB Lanes - Josephine St. to Columbine St - Sta 2030+00 to 2032+00 (Wall RW1.24)	4	4	24-Feb-20	28-Feb-20	130
NSPN.5350	Install Initial Final Fire Protection Lines WB Lanes - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	4	4	24-Feb-20	28-Feb-20	189
NSPN.5360	Set/Install Wall Facing Panels @ North Wall - Josephine St. to Columbine St - Sta 2030+00 to 2032+00 (Wall RW1.24)	11	11	02-Mar-20	19-Mar-20	130

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.5370	Set/Install Wall Coping @ North Wall - Josephine St. to Columbine St - Sta 2030+00 to 2032+00 (Wall RW1.24)	11	11	19-Mar-20	03-Apr-20	130
NSPN.5380	Place & Compact Agg. Base Course WB Lanes - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	4	4	06-Apr-20	10-Apr-20	151
NSPN.5390	Place Concrete Paving - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	3	3	13-Apr-20	15-Apr-20	151
NSPN.5400	Slip / Cast Side Barrier Rail @ North Wall - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	4	4	16-Apr-20	23-Apr-20	151
NSPN.5410	Paint / Coat Wall Panels (Anti Graffiti) @ North Span - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	4	4	24-Apr-20	29-Apr-20	151
NSPN.5430	Final ITS System / Cameras / Electrical (Finishes) WB Lanes - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	8	8	30-Apr-20	12-May-20	153
NSPN.5440	Install Final Fire Protection System & Fixtures WB Lanes - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	8	8	30-Apr-20	12-May-20	153
NSPN.5420	Install Final Lighting System & Fixtures WB Lanes - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	8	8	04-May-20	14-May-20	151
NSPN.5460	Westbound I-70 North Trench Construction Complete - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	0	0		14-May-20	151
South Span		113	113	13-Jun-19	19-Dec-19	360
A4680	Install Silt Fence & Erosion Contorl Devices @ South Wall - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	4	4	13-Jun-19	18-Jun-19	122
A4675	Construct South Span - Sta 2030+00 to 2032+00	113	113	13-Jun-19	19-Dec-19	360
NSPN.5470	Saw-cut / Demo & Clear Exst Structures & Obstacles @ South Wall - Josephine St. to Columbine St - Sta 2030+00 to 2032+0	4	4	20-Jun-19	25-Jun-19	360
NSPN.5560	Temp Shoring - @ South Wall - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	8	8	08-Jul-19	18-Jul-19	360
NSPN.EX.3850	Excavate first 10' to top of South Secant Wall - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	10	10	29-Jul-19	09-Aug-19	360
UPRR.TRN.SCNT.535	Drill & Test Secant Piles South Wall - Josephine St. to Columbine St - Sta 2030+00 to 2032+00 (Wall RW1.23)	17	17	12-Aug-19	05-Sep-19	360
NSPN.EX.3860	Excavate/Tiebacks 2nd 10' Lift - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	6	6	06-Sep-19	16-Sep-19	360
UPRR.TRN.EX.3640	Excavate/Tiebacks to Subgrade South Span (EB Lanes) - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	4	4	17-Sep-19	23-Sep-19	360
NSPN.5490	Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) - Clayton St to Fillmore St - Sta 2042+00 t	4	4	25-Sep-19	30-Sep-19	397
NSPN.5570	F/P/S Facing Wall Footing EB Lanes - Josephine St. to Columbine St - Sta 2030+00 to 2032+00 (Wall RW1.23)	4	4	25-Sep-19	30-Sep-19	360
NSPN.5630	Install Initial Final Fire Protection Lines EB Lanes - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	4	4	25-Sep-19	30-Sep-19	397
NSPN.5520	Set/Install Wall Facing Panels @ South Wall - Josephine St. to Columbine St - Sta 2030+00 to 2032+00 (Wall RW1.23)	11	11	01-Oct-19	17-Oct-19	360
NSPN.5610	Set/Install Wall Coping @ South Wall - Josephine St. to Columbine St - Sta 2030+00 to 2032+00 (Wall RW1.23)	11	11	17-Oct-19	01-Nov-19	360
NSPN.5500	Place & Compact Agg. Base Course EB Lanes - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	3	3	05-Nov-19	08-Nov-19	360
NSPN.5510	Place Concrete Paving - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	4	4	12-Nov-19	18-Nov-19	360
NSPN.5530	Slip / Cast Side Barrier Rail @ South Wall - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	4	4	20-Nov-19	25-Nov-19	360
NSPN.5590	Paint / Coat Wall Panels (Anti Graffiti) @ South Span - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	3	3	26-Nov-19	02-Dec-19	360
NSPN.5540	Final ITS System / Cameras / Electrical (Finishes) EB Lanes - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	8	8	03-Dec-19	17-Dec-19	362
NSPN.5620	Install Final Fire Protection System & Fixtures EB Lanes - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	8	8	03-Dec-19	17-Dec-19	362
NSPN.5580	Install Final Lighting System & Fixtures EB Lanes - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	8	8	06-Dec-19	19-Dec-19	360



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.5600	Eastbound I-70 South Trench Construction Complete - Josephine St. to Columbine St - Sta 2030+00 to 2032+00	0	0		19-Dec-19	360
Station 2036+26 to Station 2040+66 (Cover Section) - 11b		260	260	08-Aug-18	14-Nov-19	379
North Span		234	234	20-Sep-18	14-Nov-19	249
NSPN.11175	Install Silt Fence & Erosion Contorl Devices @ North Wall - Clayton St. to Columbine St. - Sta 2036+26 to 2040+66	10	10	20-Sep-18	03-Oct-18	61
NSPN.11170	Construct North Span - Sta 2036+26 to 2040+66	234	234	20-Sep-18	14-Nov-19	249
A2800	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - Clayton St. to Columbine St. - Sta 2036+26 to 2040+66	10	10	24-Sep-18	05-Oct-18	61
TRN.EX.2820	Excavate first 10' to top of North Secant Wall - Clayton St. to Columbine St. - Sta 2036+26 to 2040+66	20	20	01-Oct-18	31-Oct-18	61
CRW1TW1010	Drill & Test Secant Piles - Wall RW1-TE: East Cutoff Wall (COVER)	15	15	16-Oct-18	09-Nov-18	76
TRN.SCNT.345	Drill & Test Secant Piles North Wall - Clayton St. to Columbine St. - Sta 2036+26 to 2040+66 (COVER)	36	36	16-Oct-18	20-Dec-18	61
TRN.EX.3470	Excavate/Tiebacks 2nd 10' Lift - Clayton St. to Columbine St. - Sta 2036+26 to 2040+66	11	11	11-Dec-18	03-Jan-19	61
A2990	Drill / Place & Test Caisons @ Center Pier Caisons - Sta 2036+26 to 2040+66	17	17	20-Dec-18	05-Feb-19	61
A3000	F/R/P Center Pier Footing - Sta 2036+26 to 2040+66	20	20	03-Jan-19	22-Feb-19	61
TRN.EX.3720	Excavate/Tiebacks to Subgrade - Clayton St. to Columbine St. - Sta 2036+26 to 2040+66	15	15	08-Jan-19	12-Feb-19	326
A3010	F/R/P Center Pier Column - Sta 2036+26 to 2040+66	20	20	30-Jan-19	14-Mar-19	61
A2850	Install Initial ITS System / Cameras / Electrical (Conduits & Handholds) - Sta 2036+26 to 2040+66	10	10	14-Feb-19	06-Mar-19	354
A2875	F/P/S Facing Wall Footing @ North Secant Wall - Sta 2036+26 to 2040+66	10	10	14-Feb-19	06-Mar-19	326
A3020	F/R/P Center Pier Cap - Sta 2036+26 to 2040+66	20	20	26-Feb-19	01-Apr-19	61
A2001	Cover North Span (West Bound) Sta 2036+26 to 2040+66	103	103	06-Mar-19	22-Aug-19	46
A3030	Set Girders - North Span @ North Span - Sta 2036+26 to 2040+66	35	35	06-Mar-19	03-May-19	61
A2880	Set/Install Wall Facing Panels @ North Span - Sta 2036+26 to 2040+66	23	23	08-Mar-19	16-Apr-19	326
A4600	Set/Install Wall Coping @ North Span - Sta 2036+26 to 2040+66	23	23	18-Mar-19	23-Apr-19	326
A3040	Place/Set Bottom Precast Panels @ North Span - Sta 2036+26 to 2040+66	37	37	04-Apr-19	06-Jun-19	64
A3050	Rough-in Lighting System @ North Span - Sta 2036+26 to 2040+66	35	35	02-May-19	27-Jun-19	60
A3060	Rough-in Ventilation System @ North Span - Sta 2036+26 to 2040+66	35	35	02-May-19	27-Jun-19	60
A3070	Rough-in Fire Protection System @ North Span - Sta 2036+26 to 2040+66	35	35	02-May-19	27-Jun-19	60
A3080	Place/Set Top Precast Panels @ North Secant Wall - Sta 2036+26 to 2040+66	37	37	31-May-19	30-Jul-19	46
A3090	Form/Rebar Tunnel Cover North Span - Sta 2036+26 to 2040+66	43	43	10-Jun-19	15-Aug-19	46
A2860	Place & Compact Agg. Base Course WB Lanes @ North Span - Sta 2036+26 to 2040+66	10	10	08-Jul-19	22-Jul-19	283
A2870	Place Concrete Paving WB Lanes @ North Span - Sta 2036+26 to 2040+66	6	6	23-Jul-19	31-Jul-19	283
A2910	Slip / Cast Side Barrier Rail (as needed) @ North Span - Sta 2036+26 to 2040+66	10	10	01-Aug-19	15-Aug-19	283
A3100	Place Tunnel Cover (100' Deck Pour) North Span - Sta 2036+26 to 2040+66	11	11	07-Aug-19	22-Aug-19	46
A2930	Paint / Coat Wall Panels (Anti Graffiti) @ North Span Sta 2036+26 to 2040+66	10	10	16-Aug-19	29-Aug-19	283
A2680	Ceiling - Install Signage @ North Span - Sta 2036+26 to 2040+66	11	11	23-Aug-19	09-Sep-19	255
A2900	Final ITS System / Cameras / Electrical (Finishes) @ North Span - Sta 2036+26 to 2040+66	17	17	23-Aug-19	19-Sep-19	281
A3120	Install Final Ventilation System & Fixtures @ North Span - Sta 2036+26 to 2040+66	17	17	23-Aug-19	19-Sep-19	249

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
A3130	Install Final Fire Protection System & Fixtures - Sta 2036+26 to 2040+66	17	17	23-Aug-19	19-Sep-19	201
A2920	Place Permanent Signs / Striping @ North Span - Sta 2036+26 to 2040+66	6	6	06-Sep-19	16-Sep-19	283
A2480	Ceiling - Install False Ceiling North Span - Sta 2036+26 to 2040+66	17	17	17-Sep-19	14-Oct-19	249
A3110	Install Final Lighting System & Fixtures North Span - Sta 2036+26 to 2040+66	17	17	15-Oct-19	14-Nov-19	249
A2950	Westbound I-70 North Trench Construction Complete - Sta 2036+26 to 2040+66	0	0		14-Nov-19	249
South Span		238	238	08-Aug-18	04-Oct-19	401
NSPN.11185	Install Silt Fence & Erosion Contorl Devices South Span South Span - Sta 2036+26 to 2040+66	10	10	08-Aug-18	22-Aug-18	114
NSPN.11155	Construct South Span - Sta 2036+26 to 2040+66	238	238	08-Aug-18	04-Oct-19	401
A3480	Saw-cut / Demo & Clear Existing Structures & Obstacles South Span - Sta 2036+26 to 2040+66	10	10	10-Aug-18	24-Aug-18	114
A2970	Temp Shoring - @ South Wall - Clayton St. to Columbine St. South Span - Sta 2036+26 to 2040+66	17	17	20-Aug-18	14-Sep-18	114
TRN.EX.3560	Excavate first 10' to top of Secant Wall - EB Trench @ South Wall - Clayton St. to Columbine St. - Sta 2033+00 to 2036+2	20	20	22-Aug-18	24-Sep-18	114
TRN.SCNT.425	Drill Secant Piles South Wall - Clayton St. to Columbine St. South Span - Sta 2036+26 to 2040+66 (COVER)	36	36	07-Sep-18	02-Nov-18	114
TRN.EX.3580	Excavate/Tiebacks 2nd 10' Lift - Clayton St. to Columbine South Span - Sta 2036+26 to 2040+66	11	11	26-Oct-18	13-Nov-18	480
TRN.EX.3730	Excavate/Tiebacks to Subgrade - Clayton St. to Columbine St. - Sta 2036+26 to 2040+66	15	15	15-Nov-18	13-Dec-18	480
A3300	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) - Sta 2036+26 to 2040+66	10	10	14-Dec-18	08-Jan-19	508
A3460	F/P/S Facing Wall Footing South Span - Sta 2036+26 to 2040+66	10	10	14-Dec-18	08-Jan-19	480
A3330	Set/Install Wall Facing Panels @ South Span - Sta 2036+26 to 2040+66	23	23	11-Jan-19	05-Mar-19	480
A4610	Set/Install Wall Coping @ South Span - Sta 2036+26 to 2040+66	23	23	24-Jan-19	14-Mar-19	480
A3155	Cover South Span (East Bound) - Sta 2036+26 to 2040+66	103	103	06-Mar-19	22-Aug-19	46
A3325	Set Girders - South Span @ South Span - Sta 2036+26 to 2040+66	35	35	06-Mar-19	03-May-19	61
A3310	Place & Compact Agg. Base Course South Span - Sta 2036+26 to 2040+66	10	10	15-Mar-19	01-Apr-19	480
TRN.210	Splice/Post Tension Girders Both Spans - Sta 2036+26 to 2040+66	57	57	26-Mar-19	26-Jun-19	61
A3320	Place Concrete Paving EB Lanes @ South Span - Sta 2036+26 to 2040+66	6	6	02-Apr-19	09-Apr-19	480
A3170	Place/Set Bottom Precast Panels @ South Span - Sta 2036+26 to 2040+66	37	37	04-Apr-19	06-Jun-19	64
A3340	Slip / Cast Side Barrier Rail (as needed) @ South Span - Sta 2036+26 to 2040+66	10	10	11-Apr-19	29-Apr-19	480
A3380	Paint / Coat Wall Panels (Anti Graffiti) @ South Span - Sta 2036+26 to 2040+66	10	10	30-Apr-19	14-May-19	480
A3180	Rough-in Lighting System @ South Span - Sta 2036+26 to 2040+66	35	35	02-May-19	27-Jun-19	60
A3190	Rough-in Ventilation System @ South Span - Sta 2036+26 to 2040+66	35	35	02-May-19	27-Jun-19	60
A3200	Rough-in Fire Protection System @ South Span - Sta 2036+26 to 2040+66	35	35	02-May-19	27-Jun-19	60
A3370	Place Permanent Signs / Striping @ South Span - Sta 2036+26 to 2040+66	6	6	23-May-19	31-May-19	480
A3210	Place/Set Top Precast Panels @ South Span - Sta 2036+26 to 2040+66	37	37	31-May-19	30-Jul-19	46
A3220	Form/Rebar Tunnel Cover South Span - Sta 2036+26 to 2040+66	43	43	10-Jun-19	15-Aug-19	46
A3230	Place Tunnel Cover (100' Deck Pour) South Span - Sta 2036+26 to 2040+66	11	11	07-Aug-19	22-Aug-19	46

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
A3150	Ceiling - Install Signage @ South Span - Sta 2036+26 to 2040+66	11	11	23-Aug-19	09-Sep-19	407
A3240	Install Final Lighting System & Fixtures @ South Span - Sta 2036+26 to 2040+66	17	17	23-Aug-19	19-Sep-19	411
A3250	Install Final Ventilation System & Fixtures @ South Span - Sta 2036+26 to 2040+66	17	17	23-Aug-19	19-Sep-19	401
A3260	Install Final Fire Protection System & Fixtures @ South Span - Sta 2036+26 to 2040+66	17	17	23-Aug-19	19-Sep-19	411
A3350	Final ITS System / Cameras / Electrical (Finishes) @ South Span - Sta 2036+26 to 2040+66	17	17	23-Aug-19	19-Sep-19	411
A3140	Ceiling - Install False Ceiling @ South Span - Sta 2036+26 to 2040+66	17	17	09-Sep-19	04-Oct-19	401
A3400	Eastbound I-70 South Trench Construction Complete @ South Span - Sta 2036+26 to 2040+66	0	0		04-Oct-19	401
Station 2033+00 to Station 2036+26 (Cover Section) - 11a		**187**	**187**	**23-Aug-19**	**17-Jul-20**	**241**
North Span		**187**	**187**	**23-Aug-19**	**17-Jul-20**	**236**
NSPN.11665	Install Silt Fence & Erosion Contorl Devices @ North Wall - Clayton St. to Columbine St. - Sta 2033+00 to 2036+26	6	6	23-Aug-19	30-Aug-19	46
NSPN.11645	Construct North Span - Sta 2033+00 to 2036+26 (Cover Only)	187	187	23-Aug-19	17-Jul-20	236
A8560	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - Clayton St. to Columbine St. - Sta 2033+00 to 2036+26	6	6	27-Aug-19	04-Sep-19	46
TRN.EX.3760	Excavate first 10' to top of North Secant Wall - Clayton St. to Columbine St. - Sta 2033+00 to 2036+26	15	15	30-Aug-19	25-Sep-19	46
TRN.SCNT.565	Drill & Test Secant Piles North Wall - Clayton St. to Columbine St. - Sta 2033+00 to 2036+26	30	30	17-Sep-19	05-Nov-19	46
TRN.EX.3770	Excavate/Tiebacks 2nd 10' Lift - Clayton St. to Columbine St. - Sta 2033+00 to 2036+26	10	10	29-Oct-19	15-Nov-19	46
A8690	Drill / Place & Test Caisons @ Center Pier Caisons - Sta 2033+00 to 2036+26 (COVER)	15	15	18-Nov-19	16-Dec-19	46
TRN.EX.3800	Excavate/Tiebacks to Subgrade - Clayton St. to Columbine St. - Sta 2033+00 to 2036+26	6	6	18-Nov-19	26-Nov-19	181
A8580	Install Initial ITS System / Cameras / Electrical (Conduits & Handholds) - Sta 2033+00 to 2036+26	6	6	27-Nov-19	10-Dec-19	203
A9080	F/P/S Facing Wall Footing @ North Secant Wall - Sta 2033+00 to 2036+26	6	6	27-Nov-19	10-Dec-19	181
A8700	F/R/P Center Pier Footing - Sta 2033+00 to 2036+26	15	15	06-Dec-19	07-Jan-20	46
A8610	Set/Install Wall Facing Panels @ North Span - Sta 2033+00 to 2036+26	17	17	12-Dec-19	14-Jan-20	181
A9110	Set/Install Wall Coping @ North Span - Sta 2033+00 to 2036+26	17	17	19-Dec-19	24-Jan-20	181
A8710	F/R/P Center Pier Column - Sta 2033+00 to 2036+26	15	15	30-Dec-19	28-Jan-20	46
A8720	F/R/P Center Pier Cap - Sta 2033+00 to 2036+26	15	15	17-Jan-20	17-Feb-20	46
A8590	Place & Compact Agg. Base Course WB Lanes @ North Span - Sta 2033+00 to 2036+26	6	6	28-Jan-20	05-Feb-20	181
A8530	Cover North Span (West Bound) - Sta 2033+00 to 2036+26	72	72	29-Jan-20	02-Jun-20	266
A8730	Set Girders - North Span @ North Span - Sta 2033+00 to 2036+26	30	30	29-Jan-20	25-Mar-20	46
A8600	Place Concrete Paving WB Lanes @ North Span - Sta 2033+00 to 2036+26	5	5	07-Feb-20	17-Feb-20	181
A8740	Place/Set Bottom Precast Panels @ North Span - Sta 2033+00 to 2036+26	30	30	07-Feb-20	01-Apr-20	56
A8630	Slip / Cast Side Barrier Rail (as needed) @ North Span - Sta 2033+00 to 2036+26	6	6	19-Feb-20	28-Feb-20	181
A8650	Paint / Coat Wall Panels (Anti Graffiti) @ North Span Sta 2033+00 to 2036+26	6	6	02-Mar-20	10-Mar-20	181
A8750	Rough-in Lighting System @ North Span - Sta 2033+00 to 2036+26	26	26	06-Mar-20	16-Apr-20	56
A8760	Rough-in Ventilation System @ North Span - Sta 2033+00 to 2036+26	26	26	06-Mar-20	16-Apr-20	56
A8770	Rough-in Fire Protection System @ North Span - Sta 2033+00 to 2036+26	26	26	06-Mar-20	16-Apr-20	56

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

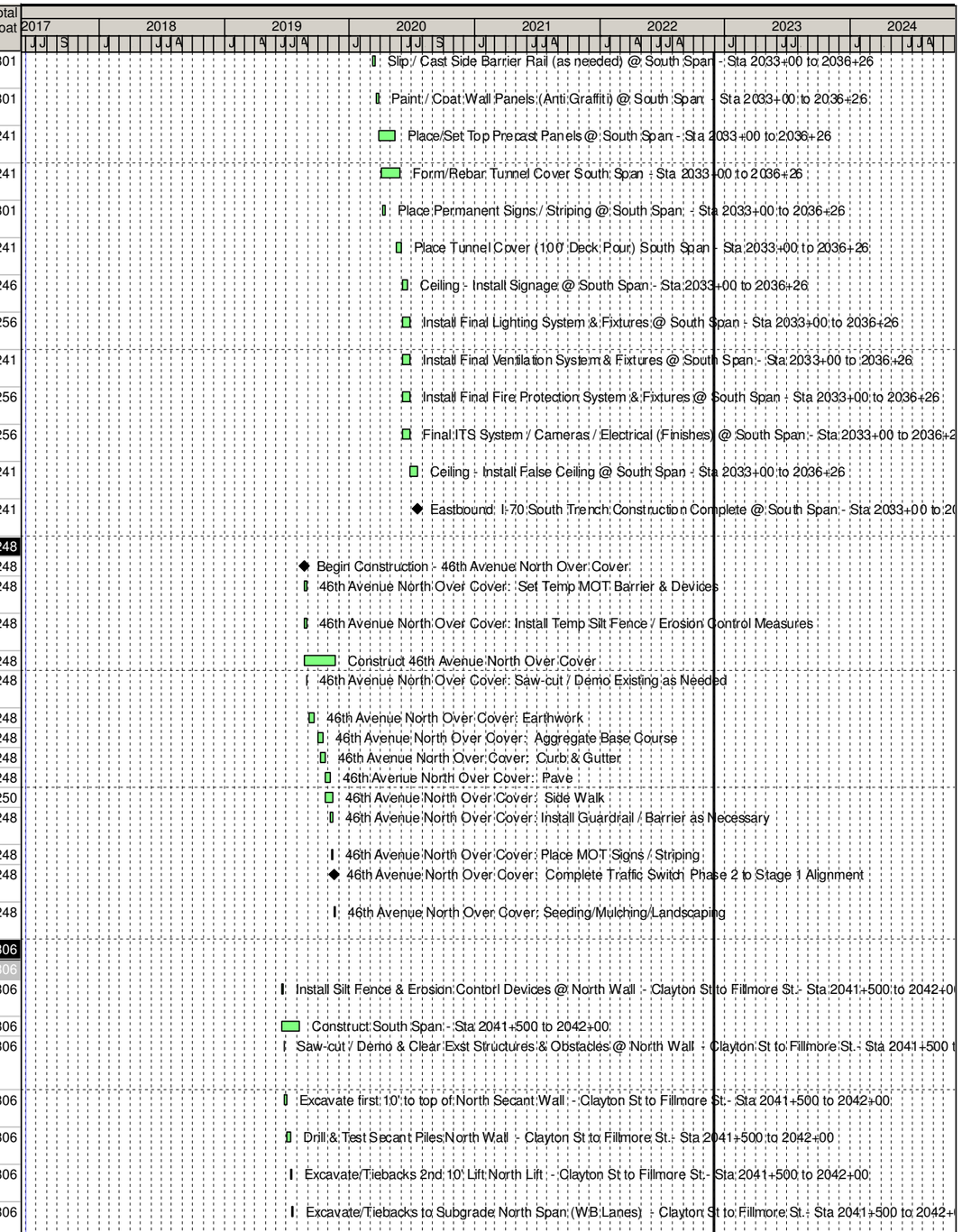
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
A8640	Place Permanent Signs / Striping @ North Span - Sta 2033+00 to 2036+26	4	4	23-Mar-20	27-Mar-20	181
A8780	Place/Set Top Precast Panels @ North Secant Wall - Sta 2033+00 to 2036+26	30	30	26-Mar-20	12-May-20	46
A8790	Form/Rebar Tunnel Cover North Span - Sta 2033+00 to 2036+26	32	32	02-Apr-20	26-May-20	46
A8800	Place Tunnel Cover (100' Deck Pour) North Span - Sta 2033+00 to 2036+26	10	10	18-May-20	02-Jun-20	46
A8550	Ceiling - Install Signage @ North Span - Sta 2033+00 to 2036+26	10	10	03-Jun-20	17-Jun-20	116
A8620	Final ITS System / Cameras / Electrical (Finishes) @ North Span - Sta 2033+00 to 2036+26	15	15	03-Jun-20	24-Jun-20	126
A8810	Install Final Lighting System & Fixtures North Span - Sta 2033+00 to 2036+26	15	15	03-Jun-20	24-Jun-20	126
A8820	Install Final Ventilation System & Fixtures @ North Span - Sta 2033+00 to 2036+26	15	15	03-Jun-20	24-Jun-20	111
A8830	Install Final Fire Protection System & Fixtures - Sta 2033+00 to 2036+26	15	15	03-Jun-20	24-Jun-20	46
A8540	Ceiling - Install False Ceiling North Span - Sta 2033+00 to 2036+26	15	15	25-Jun-20	17-Jul-20	111
A8660	Westbound I-70 North Trench Construction Complete - Sta 2033+00 to 2036+26	0	0		17-Jul-20	111
South Span		187	187	23-Aug-19	17-Jul-20	241
NSPN.11685	Install Silt Fence & Erosion Contorl Devices South Span South Span - Sta 2033+00 to 2036+26	6	6	23-Aug-19	30-Aug-19	81
NSPN.11655	Construct South Span - Sta 2033+00 to 2036+26 (Cover Only)	187	187	23-Aug-19	17-Jul-20	241
A9100	Saw-cut / Demo & Clear Existing Structures & Obstacles South Span - Sta 2033+00 to 2036+26	6	6	27-Aug-19	04-Sep-19	81
A8680	Temp Shoring - @ South Wall - Clayton St. to Columbine St. South Span - Sta 2033+00 to 2036+26	15	15	30-Aug-19	25-Sep-19	81
TRN.EX.3780	Excavate first 10' to top of Secant Wall - EB Trench @ South Wall - Clayton St. to Columbine St. -Sta 2033+00 to 2036+26	15	15	09-Sep-19	02-Oct-19	81
TRN.SCNT.575	Drill Secant Piles South Wall - Clayton St. to Columbine St. South Span - Sta 2033+00 to 2036+26 (COVER)	30	30	26-Sep-19	15-Nov-19	81
TRN.EX.3790	Excavate/Tiebacks 2nd 10' Lift - Clayton St. to Columbine South Span - Sta 2033+00 to 2036+26	10	10	06-Nov-19	25-Nov-19	301
TRN.EX.3810	Excavate/Tiebacks to Subgrade - Clayton St. to Columbine St. - Sta 2033+00 to 2036+26	6	6	26-Nov-19	06-Dec-19	301
A8990	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) - Sta 2033+00 to 2036+26	6	6	10-Dec-19	18-Dec-19	328
A9090	F/P/S Facing Wall Footing South Span - Sta 2033+00 to 2036+26	6	6	10-Dec-19	18-Dec-19	301
A9020	Set/Install Wall Facing Panels @ South Span - Sta 2033+00 to 2036+26	17	17	19-Dec-19	24-Jan-20	301
A9120	Set/Install Wall Coping @ South Span - Sta 2033+00 to 2036+26	17	17	13-Jan-20	13-Feb-20	301
A8970	Cover South Span (East Bound) - Sta 2033+00 to 2036+26	72	72	29-Jan-20	02-Jun-20	266
A8860	Set Girders - South Span @ South Span - Sta 2033+00 to 2036+26	30	30	29-Jan-20	25-Mar-20	46
A8870	Place/Set Bottom Precast Panels @ South Span - Sta 2033+00 to 2036+26	30	30	07-Feb-20	01-Apr-20	251
A9000	Place & Compact Agg. Base Course South Span - Sta 2033+00 to 2036+26	6	6	17-Feb-20	27-Feb-20	301
TRN.950	Splice/Post Tension Girders South Span - Sta 2033+00 to 2036+26	45	45	19-Feb-20	04-May-20	46
A9010	Place Concrete Paving EB Lanes @ South Span - Sta 2033+00 to 2036+26	5	5	28-Feb-20	06-Mar-20	301
A8880	Rough-in Lighting System @ South Span - Sta 2033+00 to 2036+26	26	26	06-Mar-20	16-Apr-20	251
A8890	Rough-in Ventilation System @ South Span - Sta 2033+00 to 2036+26	26	26	06-Mar-20	16-Apr-20	251
A8900	Rough-in Fire Protection System @ South Span - Sta 2033+00 to 2036+26	26	26	06-Mar-20	16-Apr-20	251

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
A9030	Slip / Cast Side Barrier Rail (as needed) @ South Span - Sta 2033+00 to 2036+26	6	6	09-Mar-20	17-Mar-20	301
A9060	Paint / Coat Wall Panels (Anti Graffiti) @ South Span - Sta 2033+00 to 2036+26	6	6	19-Mar-20	27-Mar-20	301
A8910	Place/Set Top Precast Panels @ South Span - Sta 2033+00 to 2036+26	30	30	26-Mar-20	12-May-20	241
A8920	Form/Rebar Tunnel Cover South Span - Sta 2033+00 to 2036+26	32	32	02-Apr-20	26-May-20	241
A9050	Place Permanent Signs / Striping @ South Span - Sta 2033+00 to 2036+26	5	5	06-Apr-20	13-Apr-20	301
A8930	Place Tunnel Cover (100' Deck Pour) South Span - Sta 2033+00 to 2036+26	10	10	18-May-20	02-Jun-20	241
A8850	Ceiling - Install Signage @ South Span - Sta 2033+00 to 2036+26	10	10	03-Jun-20	17-Jun-20	246
A8940	Install Final Lighting System & Fixtures @ South Span - Sta 2033+00 to 2036+26	15	15	03-Jun-20	24-Jun-20	256
A8950	Install Final Ventilation System & Fixtures @ South Span - Sta 2033+00 to 2036+26	15	15	03-Jun-20	24-Jun-20	241
A8960	Install Final Fire Protection System & Fixtures @ South Span - Sta 2033+00 to 2036+26	15	15	03-Jun-20	24-Jun-20	256
A9040	Final ITS System / Cameras / Electrical (Finishes) @ South Span - Sta 2033+00 to 2036+26	15	15	03-Jun-20	24-Jun-20	256
A8840	Ceiling - Install False Ceiling @ South Span - Sta 2033+00 to 2036+26	15	15	25-Jun-20	17-Jul-20	241
A9070	Eastbound I-70 South Trench Construction Complete @ South Span - Sta 2033+00 to 2036+26	0	0		17-Jul-20	241
46th North - Over Cover - Station 2033+00 to Station 2040+50		**52**	**52**	**23-Aug-19**	**20-Nov-19**	**248**
RDW.14210	Begin Construction - 46th Avenue North Over Cover	0	0	23-Aug-19		248
RDW.14230	46th Avenue North Over Cover: Set Temp MOT Barrier & Devices	5	5	23-Aug-19	29-Aug-19	248
RDW.14240	46th Avenue North Over Cover: Install Temp Silt Fence / Erosion Control Measures	5	5	23-Aug-19	29-Aug-19	248
46th.PH1.STG1.50	Construct 46th Avenue North Over Cover	52	52	23-Aug-19	20-Nov-19	248
RDW.14140	46th Avenue North Over Cover: Saw-cut / Demo Existing as Needed	1	1	30-Aug-19	30-Aug-19	248
RDW.14150	46th Avenue North Over Cover: Earthwork	10	10	05-Sep-19	20-Sep-19	248
RDW.14160	46th Avenue North Over Cover: Aggregate Base Course	10	10	01-Oct-19	15-Oct-19	248
RDW.14260	46th Avenue North Over Cover: Curb & Gutter	10	10	08-Oct-19	24-Oct-19	248
RDW.14170	46th Avenue North Over Cover: Pave	8	8	25-Oct-19	06-Nov-19	248
RDW.14270	46th Avenue North Over Cover: Side Walk	10	10	25-Oct-19	12-Nov-19	250
RDW.14180	46th Avenue North Over Cover: Install Guardrail / Barrier as Necessary	4	4	08-Nov-19	15-Nov-19	248
RDW.14190	46th Avenue North Over Cover: Place MOT Signs / Striping	3	3	12-Nov-19	15-Nov-19	248
RDW.14220	46th Avenue North Over Cover: Complete Traffic Switch Phase 2 to Stage 1 Alignment	0	0		18-Nov-19	248
RDW.14200	46th Avenue North Over Cover: Seeding/Mulching/Landscaping	2	2	18-Nov-19	20-Nov-19	248
Station 2041+50 to Station 2042+00+		**33**	**33**	**20-Jun-19**	**09-Aug-19**	**306**
North Span		**33**	**33**	**20-Jun-19**	**09-Aug-19**	**306**
A4690	Install Silt Fence & Erosion Contorl Devices @ North Wall - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	2	2	20-Jun-19	21-Jun-19	306
NSPN.11190	Construct South Span - Sta 2041+500 to 2042+00	33	33	20-Jun-19	09-Aug-19	306
NSPN.5820	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	3	3	24-Jun-19	26-Jun-19	306
NSPN.EX.3890	Excavate first 10' to top of North Secant Wall - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	4	4	27-Jun-19	02-Jul-19	306
UPRR.TRN.SCNT.555	Drill & Test Secant Piles North Wall - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	5	5	03-Jul-19	12-Jul-19	306
NSPN.EX.3900	Excavate/Tiebacks 2nd 10' Lift North Lift - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	3	3	15-Jul-19	17-Jul-19	306
UPRR.TRN.EX.3660	Excavate/Tiebacks to Subgrade North Span (WB Lanes) - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	3	3	18-Jul-19	22-Jul-19	306



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.5840	Initial ITS System/Cameras/Electrical & Lighting (Counduits & Handholds) - Clayton St to Fillmore St - Sta 2041+50 to 20	2	2	23-Jul-19	25-Jul-19	315
NSPN.5920	F/P/S Facing Wall Footing WB Lanes - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	2	2	23-Jul-19	25-Jul-19	306
NSPN.5980	Install Initial Final Fire Protection Lines WB Lanes - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	2	2	23-Jul-19	25-Jul-19	315
NSPN.5870	Set/Install Wall Facing Panels @ North Wall - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	3	3	26-Jul-19	30-Jul-19	306
NSPN.5960	Set/Install Wall Coping @ North Wall - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	3	3	30-Jul-19	01-Aug-19	306
NSPN.5850	Place & Compact Agg. Base Course WB Lanes - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	1	1	02-Aug-19	02-Aug-19	306
NSPN.5860	Place Concrete Paving - Clayton St to Fillmore St.- Sta 2041+50 to 2042+00	1	1	05-Aug-19	05-Aug-19	306
NSPN.5880	Slip / Cast Side Barrier Rail @ North Wall - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	1	1	06-Aug-19	06-Aug-19	306
NSPN.5940	Paint / Coat Wall Panels (Anti Graffiti) @ North Span - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	1	1	07-Aug-19	07-Aug-19	306
NSPN.5890	Final ITS System / Cameras / Electrical (Finishes) WB Lanes - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	2	2	08-Aug-19	09-Aug-19	306
NSPN.5930	Install Final Lighting System & Fixtures WB Lanes - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	2	2	08-Aug-19	09-Aug-19	306
NSPN.5970	Install Final Fire Protection System & Fixtures WB Lanes - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	2	2	08-Aug-19	09-Aug-19	306
NSPN.5950	Westbound I-70 North Trench Construction Complete - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	0	0		09-Aug-19	306
Segment 3 - Fillmore St. to Dahlia St. - (Sta 2042+00 to Sta 2085+00)		488	488	18-May-18	17-Sep-20	202
WB I-70 On-Ramp from Steele St/Vasquez Blvd.		26	26	23-Jul-19	29-Aug-19	243
NSPN.11445	Shut Down Existing WB I-70 On-Ramp from Steele/Vasquez Blvd.	0	0	23-Jul-19		243
NSPN.11448	Demo Existing Viaduct WB I-70 On Ramp from Steele St.	16	16	23-Jul-19	15-Aug-19	243
NSPN.11555	Construct WBI-70 On-Ramp from Steele St/Vasqueze	26	26	23-Jul-19	29-Aug-19	243
UPRR.TRN.EX.3930	Excavate Remaining Existing Ramp to Subgrade North Span (WB Lanes) - Sta 2045+00 to 2051+50	13	13	05-Aug-19	22-Aug-19	243
NSPN.11565	Existing WB I-70 On-Ramp Demo & Excavation Complete - Sta 2045+00 to 2051+50	0	0		29-Aug-19	243
Station 2045+00 to Station 2051+50		242	242	31-Jul-19	17-Sep-20	202
NSPN.11235	Install Silt Fence & Erosion Contorl Devices @ South Wall - Sta 2045+00 to 2051+50	13	13	31-Jul-19	19-Aug-19	202
NSPN.11225	Construct South Span - Sta 2045+00 to 2051+50	242	242	31-Jul-19	17-Sep-20	202
NSPN.9700	Saw-cut / Demo & Clear Exst Structures & Obstacles - Sta 2045+00 to 2051+50	13	13	07-Aug-19	26-Aug-19	202
NSPN.9790	Temp Shoring - South Span - Sta 2045+00 to 2051+50	26	26	22-Aug-19	02-Oct-19	202
NSPN.EX.4330	Excavate first 10' to top of Secant Wall @ South Span - Sta 2045+00 to 2051+50	31	31	06-Sep-19	28-Oct-19	202
UPRR.TRN.SCNT.775	Drill & Test Secant Piles South Wall South Span - Sta 2045+00 to 2051+50 (Wall RW 1.30)	55	55	02-Oct-19	14-Jan-20	202
NSPN.EX.4340	Excavate/Tiebacks 2nd 10' Lift South Span - Sta 2045+00 to 2051+50	18	18	31-Dec-19	03-Feb-20	202
UPRR.TRN.EX.3880	Excavate/Tiebacks to Subgrade South Span (EB Lanes) - Sta 2045+00 to 2051+50	13	13	05-Feb-20	02-Mar-20	202
NSPN.9720	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) South Span - Sta 2045+00 to 2051+50	13	13	03-Mar-20	25-Mar-20	287
NSPN.9800	F/P/S Facing Wall Footing EB Lanes South Span - Sta 2045+00 to 2051+50 (Wall RW 1.30)	13	13	03-Mar-20	25-Mar-20	202
NSPN.9860	Install Initial Final Fire Protection Lines EB Lanes South Span - Sta 2045+00 to 2051+50	13	13	03-Mar-20	25-Mar-20	287
NSPN.9750	Set/Install Wall Facing Panels South Span - Sta 2045+00 to 2051+50 (Wall RW 1.30)	35	35	11-Mar-20	07-May-20	202
NSPN.9840	Set/Install Wall Coping South Span - Sta 2045+00 to 2051+50 (Wall RW 1.30)	35	35	30-Mar-20	26-May-20	202

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.9730	Place & Compact Agg. Base Course WB Lanes - York St.to Josehpine St. - Sta 2045+00 to 2051+50	13	13	27-May-20	15-Jun-20	202
NSPN.9740	Place Concrete Paving - York St.to Josephine St. - Sta 2045+00 to 2051+50	9	9	16-Jun-20	26-Jun-20	202
NSPN.9760	Slip / Cast Side Barrier Rail South Span - Sta 2045+00 to 2051+50	13	13	29-Jun-20	17-Jul-20	202
NSPN.9810	Install Final Lighting System & Fixtures EB Lanes South Span - Sta 2045+00 to 2051+50	26	26	14-Jul-20	21-Aug-20	218
NSPN.9820	Paint / Coat Wall Panels (Anti Graffiti) @ South Span - Sta 2045+00 to 2051+50	13	13	20-Jul-20	06-Aug-20	202
NSPN.9770	Final ITS System / Cameras / Electrical (Finishes) EB Lanes - South Span - Sta 2045+00 to 2051+50	26	26	07-Aug-20	17-Sep-20	202
NSPN.9850	Install Final Fire Protection System & Fixtures EB Lanes South Span - Sta 2045+00 to 2051+50	26	26	07-Aug-20	17-Sep-20	202
NSPN.9830	Eastbound I-70 South Trench Construction Complete - South Span - Sta 2045+00 to 2051+50	0	0		17-Sep-20	202
Station 2051+50 to Station 2054+00		**46**	**46**	**01-Jul-19**	**10-Sep-19**	**286**
NSPN.5985	Install Silt Fence & Erosion Contorl Devices @ North Wall - Steele St.- Sta 2051+50 to 2054+00	2	2	01-Jul-19	02-Jul-19	286
NSPN.11200	Construct North Span - Sta 2051+50 to 2054+00	46	46	01-Jul-19	10-Sep-19	286
NSPN.5990	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - Steele St.- Sta 2051+50 to 2054+00	2	2	03-Jul-19	08-Jul-19	286
NSPN.6080	Temp Shoring - @ North Wall - Steele St.- Sta 2051+50 to 2054+00	4	4	09-Jul-19	15-Jul-19	286
NSPN.EX.3910	Excavate first Lift of North Soil Nail Wall - Steele St.- Sta 2051+50 to 2054+00 (Wall RW 1.31)	5	5	16-Jul-19	22-Jul-19	286
NSPN.EX.3920	Excavate/Tiebacks 2nd 10' Lift North Lift - Steele St.- Sta 2051+50 to 2054+00	3	3	23-Jul-19	26-Jul-19	286
UPRR.TRN.EX.3670	Excavate/Tiebacks to Subgrade North Span (WB Lanes) - Steele St.- Sta 2051+50 to 2054+00	2	2	29-Jul-19	30-Jul-19	286
NSPN.6010	Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) - Sta 2051+50 to 2054+00	2	2	31-Jul-19	01-Aug-19	308
NSPN.6090	F/P/S Facing Wall Footing WB Lanes - Steele St.- Sta 2051+50 to 2054+00 (Wall RW 1.31)	2	2	31-Jul-19	01-Aug-19	286
NSPN.6150	Install Initial Final Fire Protection Lines WB Lanes - Steele St.- Sta 2051+50 to 2054+00	6	6	31-Jul-19	07-Aug-19	304
NSPN.6040	Set/Install Wall Facing Panels @ North Wall - Steele St.- Sta 2051+50 to 2054+00 (Wall RW 1.31)	6	6	02-Aug-19	09-Aug-19	286
NSPN.6130	Set/Install Wall Coping @ North Wall - Steele St.- Sta 2051+50 to 2054+00 (Wall RW 1.31)	2	2	12-Aug-19	13-Aug-19	286
NSPN.6020	Place & Compact Agg. Base Course WB Lanes - Steele St.- Sta 2051+50 to 2054+00	2	2	15-Aug-19	16-Aug-19	286
NSPN.6030	Place Concrete Paving - Steele St.- Sta 2051+50 to 2054+00	2	2	19-Aug-19	20-Aug-19	286
NSPN.6050	Slip / Cast Side Barrier Rail @ North Wall - Steele St.- Sta 2051+50 to 2054+00	2	2	21-Aug-19	22-Aug-19	286
NSPN.6110	Paint / Coat Wall Panels (Anti Graffiti) @ North Span - Steele St.- Sta 2051+50 to 2054+00	2	2	23-Aug-19	26-Aug-19	286
NSPN.6060	Final ITS System / Cameras / Electrical (Finishes) WB Lanes - Steele St.- Sta 2051+50 to 2054+00	4	4	27-Aug-19	30-Aug-19	292
NSPN.6140	Install Final Fire Protection System & Fixtures WB Lanes - Steele St.- Sta 2051+50 to 2054+00	4	4	27-Aug-19	30-Aug-19	292
NSPN.6100	Install Final Lighting System & Fixtures WB Lanes - Steele St.- Sta 2051+50 to 2054+00	4	4	05-Sep-19	10-Sep-19	286
NSPN.6120	Westbound I-70 North Trench Construction Complete - Steele St.- Sta 2051+50 to 2054+00	0	0		10-Sep-19	286
Station 2054+00 to Station 2060+00		**189**	**189**	**27-Nov-18**	**31-Oct-19**	**255**
NSPN.7020	Install Silt Fence & Erosion Contorl Devices @ North Wall - Cook St. to BNSF - Sta 2054+00 to 2060+00	10	10	27-Nov-18	13-Dec-18	255
NSPN.7015	Construct South Span - Sta 2054+00 to 2060+00	189	189	27-Nov-18	31-Oct-19	255
NSPN.7030	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - Cook St. to BNSF - Sta 2054+00 to 2060+00	10	10	30-Nov-18	19-Dec-18	255
NSPN.7120	Temp Shoring - @ North Wall - Cook St. to BNSF - Sta 2054+00 to 2060+00	20	20	11-Dec-18	29-Jan-19	255

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

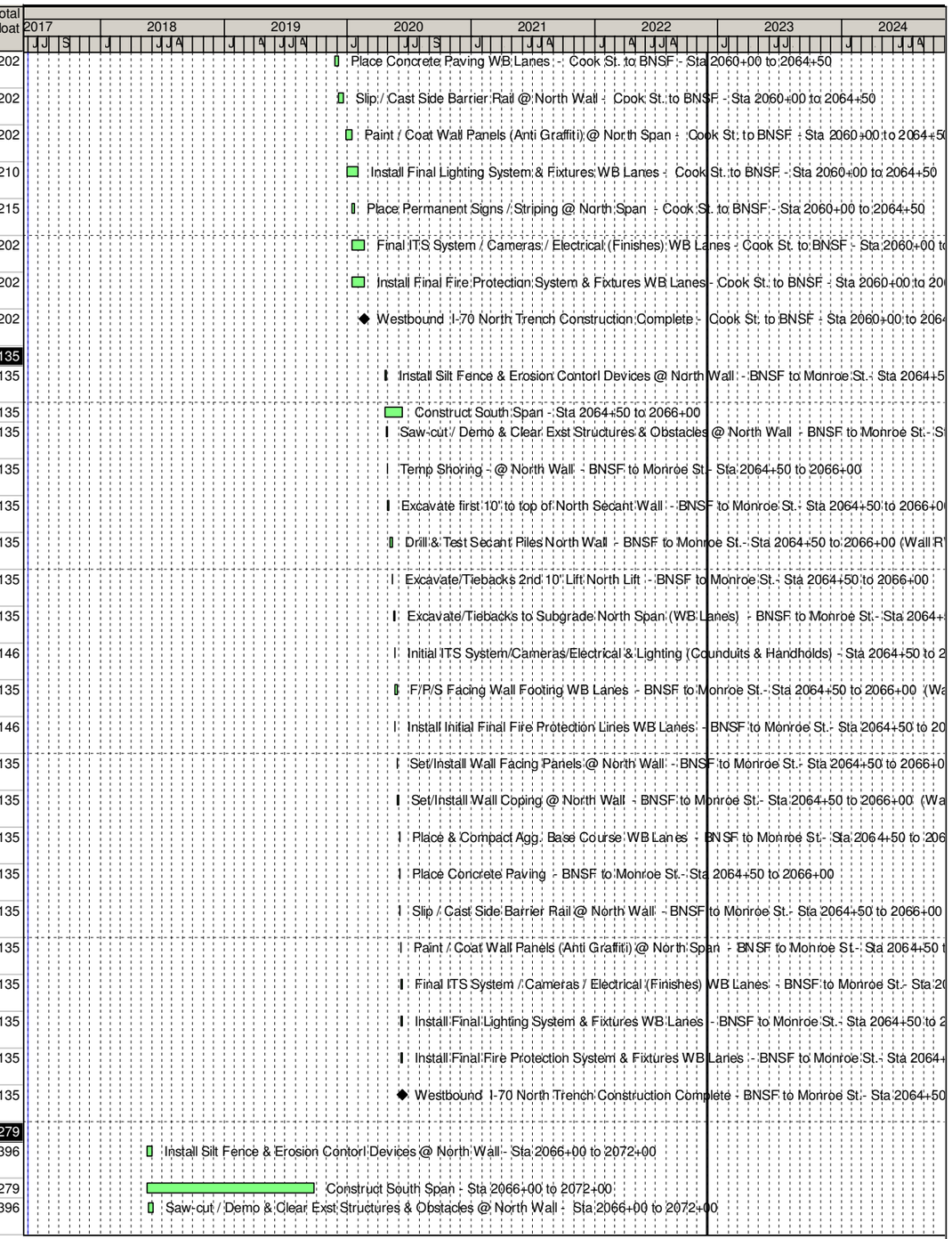
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.EX.4030	Excavate first 10' to top of North Spread Tangent Wall - Cook St. to BNSF - Sta 2054+00 to 2060+00 (RW1.36)	24	24	21-Dec-18	22-Feb-19	255
UPRR.TRN.SCNT.625	Drill & Test Secant Piles North Wall - Cook St. to BNSF - Sta 2054+00 to 2060+00 (Wall RW 1.36)	42	42	21-Jan-19	15-Apr-19	255
NSPN.EX.4040	Excavate/Tiebacks 2nd 10' Lift North Lift - Cook St. to BNSF - Sta 2054+00 to 2060+00	14	14	16-Apr-19	07-May-19	255
UPRR.TRN.EX.3730	Excavate/Tiebacks to Subgrade North Span (WB Lanes) - Cook St. to BNSF - Sta 2054+00 to 2060+00	10	10	09-May-19	24-May-19	255
NSPN.7050	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) WB Lanes - Sta 2054+00 to 2060+00	10	10	28-May-19	11-Jun-19	324
NSPN.7130	F/P/S Facing Wall Footing WB Lanes - Cook St. to BNSF - Sta 2054+00 to 2060+00 (Wall RW 1.36)	10	10	28-May-19	11-Jun-19	255
NSPN.7190	Install Initial Final Fire Protection Lines WB Lanes Cook St. to BNSF - Sta 2054+00 to 2060+00	10	10	28-May-19	11-Jun-19	324
NSPN.7080	Set/Install Wall Facing Panels @ North Wall Cook St. to BNSF - Sta 2054+00 to 2060+00 (Wall RW 1.36)	27	27	04-Jun-19	17-Jul-19	255
NSPN.7170	Set/Install Wall Coping @ North Wall Cook St. to BNSF - Sta 2054+00 to 2060+00 (Wall RW 1.36)	27	27	20-Jun-19	01-Aug-19	255
NSPN.7060	Place & Compact Agg. Base Course WB Lanes - Cook St. to BNSF - Sta 2054+00 to 2060+00	10	10	02-Aug-19	16-Aug-19	255
NSPN.7070	Place Concrete Paving WB Lanes - Cook St. to BNSF - Sta 2054+00 to 2060+00	7	7	19-Aug-19	27-Aug-19	255
NSPN.7090	Slip / Cast Side Barrier Rail @ North Wall Cook St. to BNSF - Sta 2054+00 to 2060+00	10	10	28-Aug-19	11-Sep-19	255
NSPN.7140	Install Final Lighting System & Fixtures WB Lanes Cook St. to BNSF - Sta 2054+00 to 2060+00	20	20	13-Sep-19	15-Oct-19	265
NSPN.7150	Paint / Coat Wall Panels (Anti Graffiti) @ North Span Sta 2033+00 to 2040+50	10	10	13-Sep-19	30-Sep-19	255
A4810	Place Permanent Signs / Striping @ North Span - Cook St. to BNSF - Sta 2054+00 to 2060+00	7	7	27-Sep-19	07-Oct-19	270
NSPN.7100	Final ITS System / Cameras / Electrical (Finishes) WB Lanes Cook St. to BNSF - Sta 2054+00 to 2060+00	20	20	01-Oct-19	31-Oct-19	255
NSPN.7180	Install Final Fire Protection System & Fixtures WB Lanes- Cook St. to BNSF - Sta 2054+00 to 2060+00	20	20	01-Oct-19	31-Oct-19	255
NSPN.7160	Westbound I-70 North Trench Construction Complete - Cook St. to BNSF - Sta 2054+00 to 2060+00	0	0		31-Oct-19	255
Station 2060+00 to Station 2064+50		**178**	**178**	**11-Apr-19**	**19-Feb-20**	**202**
NSPN.7380	Install Silt Fence & Erosion Contorl Devices @ North Wall - Cook St. to BNSF - Sta 2060+00 to 2064+50	10	10	11-Apr-19	29-Apr-19	202
NSPN.7375	Construct South Span - Sta 2060+00 to 2064+50	178	178	11-Apr-19	19-Feb-20	202
NSPN.7390	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - Cook St. to BNSF - Sta 2060+00 to 2064+50	9	9	17-Apr-19	01-May-19	202
NSPN.7480	Temp Shoring - @ North Wall - Cook St. to BNSF - Sta 2060+00 to 2064+50	18	18	03-May-19	03-Jun-19	202
NSPN.EX.4070	Excavate first 10' to top of North Secant Wall - Cook St. to BNSF - Sta 2060+00 to 2064+50	21	21	15-May-19	18-Jun-19	202
UPRR.TRN.SCNT.645	Drill & Test Secant Piles North Wall - Cook St. to BNSF - Sta 2060+00 to 2064+50 (Wall RW1.38)	38	38	24-May-19	25-Jul-19	202
NSPN.EX.4080	Excavate/Tiebacks 2nd 10' Lift North Lift - Cook St. to BNSF - Sta 2060+00 to 2064+50	12	12	26-Jul-19	12-Aug-19	202
UPRR.TRN.EX.3750	Excavate/Tiebacks to Subgrade North Span (WB Lanes) - Cook St. to BNSF - Sta 2060+00 to 2064+50	9	9	13-Aug-19	26-Aug-19	202
NSPN.7410	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) WB Lanes - Sta 2060+00 to 2064+50	9	9	27-Aug-19	09-Sep-19	269
NSPN.7490	F/P/S Facing Wall Footing WB Lanes - Cook St. to BNSF - Sta 2060+00 to 2064+50 (Wall RW1.38)	9	9	27-Aug-19	09-Sep-19	202
NSPN.7550	Install Initial Final Fire Protection Lines WB Lanes - Cook St. to BNSF - Sta 2060+00 to 2064+50	9	9	27-Aug-19	09-Sep-19	269
NSPN.7440	Set/Install Wall Facing Panels @ North Wall Cook St. to BNSF - Sta 2060+00 to 2064+50 (Wall RW1.38)	24	24	10-Sep-19	18-Oct-19	202
NSPN.7530	Set/Install Wall Coping @ North Wall - Cook St. to BNSF - Sta 2060+00 to 2064+50 (Wall RW1.38)	24	24	27-Sep-19	05-Nov-19	202
NSPN.7420	Place & Compact Agg. Base Course WB Lanes - Cook St. to BNSF - Sta 2060+00 to 2064+50	9	9	06-Nov-19	22-Nov-19	202

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.7430	Place Concrete Paving WB Lanes - Cook St. to BNSF - Sta 2060+00 to 2064+50	6	6	25-Nov-19	04-Dec-19	202
NSPN.7450	Slip / Cast Side Barrier Rail @ North Wall - Cook St. to BNSF - Sta 2060+00 to 2064+50	9	9	06-Dec-19	20-Dec-19	202
NSPN.7510	Paint / Coat Wall Panels (Anti Graffiti) @ North Span - Cook St. to BNSF - Sta 2060+00 to 2064+50	9	9	26-Dec-19	13-Jan-20	202
NSPN.7500	Install Final Lighting System & Fixtures WB Lanes - Cook St. to BNSF - Sta 2060+00 to 2064+50	18	18	30-Dec-19	31-Jan-20	210
A4830	Place Permanent Signs / Striping @ North Span - Cook St. to BNSF - Sta 2060+00 to 2064+50	6	6	13-Jan-20	22-Jan-20	215
NSPN.7460	Final ITS System / Cameras / Electrical (Finishes) WB Lanes - Cook St. to BNSF - Sta 2060+00 to 2064+50	18	18	14-Jan-20	19-Feb-20	202
NSPN.7540	Install Final Fire Protection System & Fixtures WB Lanes - Cook St. to BNSF - Sta 2060+00 to 2064+50	18	18	14-Jan-20	19-Feb-20	202
NSPN.7520	Westbound I-70 North Trench Construction Complete - Cook St. to BNSF - Sta 2060+00 to 2064+50	0	0		19-Feb-20	202
Station 2064+50 to Station 2066+00		**31**	**31**	**23-Apr-20**	**11-Jun-20**	**135**
NSPN.11215	Install Silt Fence & Erosion Contorl Devices @ North Wall - BNSF to Monroe St.- Sta 2064+50 to 2066+00	2	2	23-Apr-20	24-Apr-20	135
NSPN.11210	Construct South Span - Sta 2064+50 to 2066+00	31	31	23-Apr-20	11-Jun-20	135
NSPN.10040	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - BNSF to Monroe St.- Sta 2064+50 to 2066+00	1	1	27-Apr-20	27-Apr-20	135
NSPN.10130	Temp Shoring - @ North Wall - BNSF to Monroe St.- Sta 2064+50 to 2066+00	2	2	28-Apr-20	29-Apr-20	135
NSPN.EX.4370	Excavate first 10' to top of North Secant Wall - BNSF to Monroe St.- Sta 2064+50 to 2066+00	3	3	30-Apr-20	04-May-20	135
UPRR.TRN.SCNT.795	Drill & Test Secant Piles North Wall - BNSF to Monroe St.- Sta 2064+50 to 2066+00 (Wall RW1.40)	5	5	05-May-20	12-May-20	135
NSPN.EX.4380	Excavate/Tiebacks 2nd 10' Lift North Lift - BNSF to Monroe St.- Sta 2064+50 to 2066+00	2	2	13-May-20	14-May-20	135
UPRR.TRN.EX.3900	Excavate/Tiebacks to Subgrade North Span (WB Lanes) - BNSF to Monroe St.- Sta 2064+50 to 2066+00	2	2	18-May-20	19-May-20	135
NSPN.10060	Initial ITS System/Cameras/Electrical & Lighting (Counduits & Handholds) - Sta 2064+50 to 2066+00	1	1	21-May-20	21-May-20	146
NSPN.10140	F/P/S Facing Wall Footing WB Lanes - BNSF to Monroe St.- Sta 2064+50 to 2066+00 (Wall RW1.40)	3	3	21-May-20	26-May-20	135
NSPN.10200	Install Initial Final Fire Protection Lines WB Lanes - BNSF to Monroe St.- Sta 2064+50 to 2066+00	1	1	21-May-20	21-May-20	146
NSPN.10090	Set/Install Wall Facing Panels @ North Wall - BNSF to Monroe St.- Sta 2064+50 to 2066+00 (Wall RW1.40)	3	3	27-May-20	29-May-20	135
NSPN.10180	Set/Install Wall Coping @ North Wall - BNSF to Monroe St.- Sta 2064+50 to 2066+00 (Wall RW1.40)	3	3	29-May-20	02-Jun-20	135
NSPN.10070	Place & Compact Agg. Base Course WB Lanes - BNSF to Monroe St.- Sta 2064+50 to 2066+00	1	1	03-Jun-20	03-Jun-20	135
NSPN.10080	Place Concrete Paving - BNSF to Monroe St.- Sta 2064+50 to 2066+00	1	1	04-Jun-20	04-Jun-20	135
NSPN.10100	Slip / Cast Side Barrier Rail @ North Wall - BNSF to Monroe St.- Sta 2064+50 to 2066+00	1	1	05-Jun-20	05-Jun-20	135
NSPN.10160	Paint / Coat Wall Panels (Anti Graffiti) @ North Span - BNSF to Monroe St.- Sta 2064+50 to 2066+00	1	1	08-Jun-20	08-Jun-20	135
NSPN.10110	Final ITS System / Cameras / Electrical (Finishes) WB Lanes - BNSF to Monroe St.- Sta 2064+50 to 2066+00	2	2	09-Jun-20	11-Jun-20	135
NSPN.10150	Install Final Lighting System & Fixtures WB Lanes - BNSF to Monroe St.- Sta 2064+50 to 2066+00	2	2	09-Jun-20	11-Jun-20	135
NSPN.10190	Install Final Fire Protection System & Fixtures WB Lanes - BNSF to Monroe St.- Sta 2064+50 to 2066+00	2	2	09-Jun-20	11-Jun-20	135
NSPN.10170	Westbound I-70 North Trench Construction Complete - BNSF to Monroe St.- Sta 2064+50 to 2066+00	0	0		11-Jun-20	135
Station 2066+00 to Station 2072+00		**281**	**281**	**18-May-18**	**23-Sep-19**	**279**
NSPN.7920	Install Silt Fence & Erosion Contorl Devices @ North Wall - Sta 2066+00 to 2072+00	9	9	18-May-18	01-Jun-18	396
NSPN.7915	Construct South Span - Sta 2066+00 to 2072+00	281	281	18-May-18	23-Sep-19	279
NSPN.7930	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - Sta 2066+00 to 2072+00	9	9	24-May-18	06-Jun-18	396



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

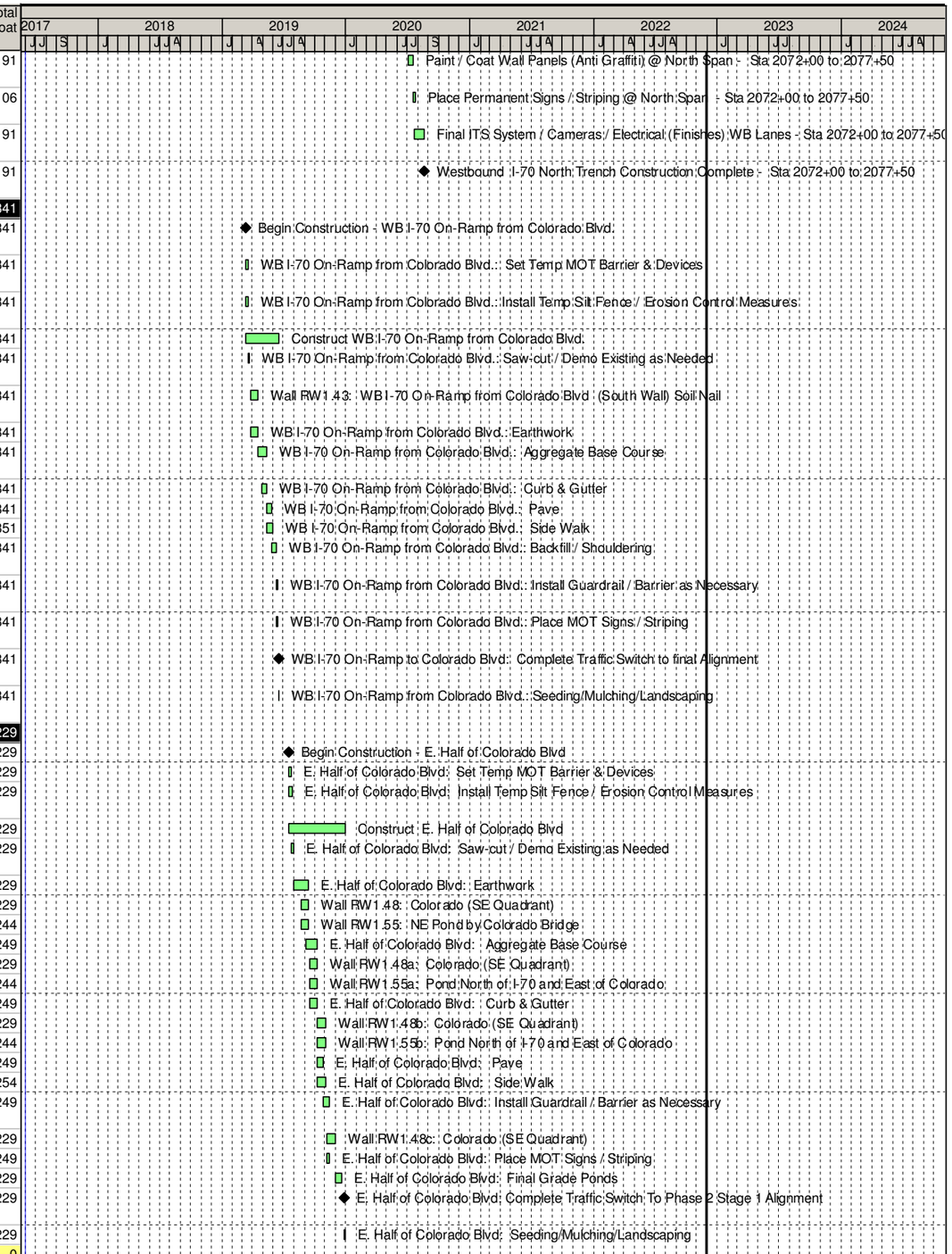
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.EX.4130	Excavate first 10' to top of North Secant Wall - Sta 2066+00 to 2072+00	21	21	27-Nov-18	11-Jan-19	288
UPRR.TRN.SCNT.675	Drill & Test Secant Piles North Wall - Sta 2066+00 to 2072+00 (Wall RW 1.46)	38	38	14-Dec-18	14-Mar-19	288
NSPN.EX.4140	Excavate/Tiebacks 2nd 10' Lift North Lift - Sta 2066+00 to 2072+00	12	12	01-Mar-19	22-Mar-19	288
UPRR.TRN.EX.3780	Excavate/Tiebacks to Subgrade North Span (WB Lanes) - Sta 2066+00 to 2072+00	9	9	26-Mar-19	05-Apr-19	288
NSPN.7950	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) WB Lanes - Sta 2066+00 to 2072+00	9	9	08-Apr-19	22-Apr-19	355
NSPN.8030	F/P/S Facing Wall Footing WB Lanes - Sta 2066+00 to 2072+00 (Wall RW 1.46)	9	9	08-Apr-19	22-Apr-19	288
NSPN.8090	Install Initial Final Fire Protection Lines WB Lanes - Sta 2066+00 to 2072+00	9	9	08-Apr-19	22-Apr-19	355
NSPN.7980	Set/Install Wall Facing Panels @ North Wall Sta 2066+00 to 2072+00 (Wall RW 1.46)	24	24	23-Apr-19	03-Jun-19	288
NSPN.8070	Set/Install Wall Coping @ North Wall - Sta 2066+00 to 2072+00 (Wall RW 1.46)	24	24	10-May-19	18-Jun-19	288
NSPN.7960	Place & Compact Agg. Base Course WB Lanes - Sta 2066+00 to 2072+00	9	9	03-Jul-19	18-Jul-19	279
NSPN.7970	Place Concrete Paving WB Lanes - Sta 2066+00 to 2072+00	6	6	19-Jul-19	29-Jul-19	279
NSPN.7990	Slip / Cast Side Barrier Rail @ North Wall - Sta 2066+00 to 2072+00	9	9	30-Jul-19	09-Aug-19	279
NSPN.8050	Paint / Coat Wall Panels (Anti Graffiti) @ North Span - Sta 2066+00 to 2072+00	9	9	12-Aug-19	23-Aug-19	279
NSPN.8040	Install Final Lighting System & Fixtures WB Lanes - Sta 2066+00 to 2072+00	18	18	13-Aug-19	09-Sep-19	287
A4860	Place Permanent Signs / Striping @ North Span - Sta 2066+00 to 2072+00	6	6	23-Aug-19	30-Aug-19	292
NSPN.8000	Final ITS System / Cameras / Electrical (Finishes) WB Lanes - Sta 2066+00 to 2072+00	18	18	26-Aug-19	23-Sep-19	279
NSPN.8080	Install Final Fire Protection System & Fixtures WB Lanes - Sta 2066+00 to 2072+00	18	18	26-Aug-19	23-Sep-19	279
NSPN.8060	Westbound I-70 North Trench Construction Complete - Sta 2066+00 to 2072+00	0	0		23-Sep-19	279
Station 2072+00 to Station 2077+50		162	162	06-Nov-19	18-Aug-20	91
NSPN.8100	Install Silt Fence & Erosion Contorl Devices @ North Wall - Sta 2072+00 to 2077+50	10	10	06-Nov-19	25-Nov-19	93
NSPN.8095	Construct North Span - Sta 2072+00 to 2077+50	162	162	06-Nov-19	18-Aug-20	91
NSPN.8110	Saw-cut / Demo & Clear Exst Structures & Obstacles @ North Wall - Sta 2072+00 to 2077+50	10	10	14-Nov-19	02-Dec-19	93
NSPN.EX.4150	Excavate & Soil Nail 1st Lift North Wall - Sta 2072+00 to 2077+50	24	24	26-Nov-19	14-Jan-20	91
NSPN.EX.4160	Excavate & Soil Nail 2nd Lift North Wall - Sta 2072+00 to 2077+50	14	14	16-Jan-20	11-Feb-20	91
UPRR.TRN.EX.3790	Excavate & Soil Nail to Subgrade North Span (WB Lanes) - Sta 2072+00 to 2077+50	10	10	13-Feb-20	03-Mar-20	91
NSPN.8130	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) WB Lanes - Sta 2072+00 to 2077+50	10	10	05-Mar-20	20-Mar-20	165
NSPN.8210	F/P/S Facing Wall Footing WB Lanes - Sta 2072+00 to 2077+50 (Wall RW 1.45)	10	10	05-Mar-20	20-Mar-20	91
NSPN.8160	Set/Install Wall Facing Panels @ North Wall Sta 2072+00 to 2077+50 (Wall RW 1.45)	27	27	23-Mar-20	04-May-20	91
NSPN.8250	Set/Install Wall Coping @ North Wall - Sta 2072+00 to 2077+50 (Wall RW 1.45)	27	27	07-Apr-20	21-May-20	91
NSPN.8140	Place & Compact Agg. Base Course WB Lanes - Sta 2072+00 to 2077+50	10	10	22-May-20	05-Jun-20	91
NSPN.8150	Place Concrete Paving WB Lanes - Sta 2072+00 to 2077+50	7	7	08-Jun-20	17-Jun-20	91
NSPN.8170	Barrier/Guardrail WB Lanes - Sta 2072+00 to 2077+50	10	10	18-Jun-20	01-Jul-20	91
NSPN.8220	Install Final Lighting System & Fixtures WB Lanes - Sta 2072+00 to 2077+50	20	20	02-Jul-20	03-Aug-20	101

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.8230	Paint / Coat Wall Panels (Anti Graffiti) @ North Span - Sta 2072+00 to 2077+50	10	10	02-Jul-20	17-Jul-20	91
A4870	Place Permanent Signs / Striping @ North Span - Sta 2072+00 to 2077+50	7	7	16-Jul-20	24-Jul-20	106
NSPN.8180	Final ITS System / Cameras / Electrical (Finishes) WB Lanes - Sta 2072+00 to 2077+50	20	20	20-Jul-20	18-Aug-20	91
NSPN.8240	Westbound I-70 North Trench Construction Complete - Sta 2072+00 to 2077+50	0	0		18-Aug-20	91
Complete WB I-70 On-ramp From Colorado Blvd.		**58**	**58**	**14-Mar-19**	**18-Jun-19**	**341**
RDW.19240	Begin Construction - WB I-70 On-Ramp from Colorado Blvd.	0	0	14-Mar-19		341
RDW.19270	WB I-70 On-Ramp from Colorado Blvd.: Set Temp MOT Barrier & Devices	3	3	14-Mar-19	18-Mar-19	341
RDW.19280	WB I-70 On-Ramp from Colorado Blvd.: Install Temp Silt Fence / Erosion Control Measures	4	4	14-Mar-19	20-Mar-19	341
RDW.19235	Construct WB I-70 On-Ramp from Colorado Blvd.	58	58	14-Mar-19	18-Jun-19	341
RDW.19170	WB I-70 On-Ramp from Colorado Blvd.: Saw-cut / Demo Existing as Needed	3	3	20-Mar-19	22-Mar-19	341
CRW1551150	Wall RW1.43: WB I-70 On-Ramp from Colorado Blvd (South Wall) Soil Nail	15	15	26-Mar-19	17-Apr-19	341
RDW.19180	WB I-70 On-Ramp from Colorado Blvd.: Earthwork	15	15	26-Mar-19	17-Apr-19	341
RDW.19190	WB I-70 On-Ramp from Colorado Blvd.: Aggregate Base Course	15	15	18-Apr-19	13-May-19	341
RDW.19300	WB I-70 On-Ramp from Colorado Blvd.: Curb & Gutter	10	10	29-Apr-19	13-May-19	341
RDW.19200	WB I-70 On-Ramp from Colorado Blvd.: Pave	8	8	14-May-19	28-May-19	341
RDW.19310	WB I-70 On-Ramp from Colorado Blvd.: Side Walk	10	10	14-May-19	30-May-19	351
RDW.19320	WB I-70 On-Ramp from Colorado Blvd.: Backfill / Shouldering	8	8	29-May-19	10-Jun-19	341
RDW.19210	WB I-70 On-Ramp from Colorado Blvd.: Install Guardrail / Barrier as Necessary	4	4	11-Jun-19	14-Jun-19	341
RDW.19220	WB I-70 On-Ramp from Colorado Blvd.: Place MOT Signs / Striping	3	3	12-Jun-19	14-Jun-19	341
RDW.19250	WB I-70 On-Ramp to Colorado Blvd: Complete Traffic Switch to final Alignment	0	0		17-Jun-19	341
RDW.19230	WB I-70 On-Ramp from Colorado Blvd.: Seeding/Mulching/Landscaping	2	2	17-Jun-19	18-Jun-19	341
Colorado Blvd (East Half) - Station 2078+50 to Station 2080+00		**96**	**96**	**18-Jul-19**	**31-Dec-19**	**229**
RDW.10650	Begin Construction - E. Half of Colorado Blvd	0	0	18-Jul-19		229
RDW.10670	E. Half of Colorado Blvd: Set Temp MOT Barrier & Devices	5	5	18-Jul-19	25-Jul-19	229
RDW.10680	E. Half of Colorado Blvd: Install Temp Silt Fence / Erosion Control Measures	7	7	18-Jul-19	29-Jul-19	229
BRG.PH1.STG1.50	Construct E. Half of Colorado Blvd	96	96	18-Jul-19	31-Dec-19	229
RDW.10580	E. Half of Colorado Blvd: Saw-cut / Demo Existing as Needed	5	5	26-Jul-19	01-Aug-19	229
RDW.10590	E. Half of Colorado Blvd: Earthwork	30	30	31-Jul-19	13-Sep-19	229
CRW1481000	Wall RW1.48: Colorado (SE Quadrant)	15	15	22-Aug-19	13-Sep-19	229
CRW1551000	Wall RW1.55: NE Pond by Colorado Bridge	15	15	22-Aug-19	13-Sep-19	244
RDW.10600	E. Half of Colorado Blvd: Aggregate Base Course	20	20	06-Sep-19	08-Oct-19	249
CRW148a1000	Wall RW1.48a: Colorado (SE Quadrant)	15	15	16-Sep-19	08-Oct-19	229
CRW155a1000	Wall RW1.55a: Pond North of I-70 and East of Colorado	15	15	16-Sep-19	08-Oct-19	244
RDW.10700	E. Half of Colorado Blvd: Curb & Gutter	15	15	16-Sep-19	08-Oct-19	249
CRW148b1000	Wall RW1.48b: Colorado (SE Quadrant)	15	15	09-Oct-19	01-Nov-19	229
CRW155b1000	Wall RW1.55b: Pond North of I-70 and East of Colorado	15	15	09-Oct-19	01-Nov-19	244
RDW.10610	E. Half of Colorado Blvd: Pave	10	10	09-Oct-19	25-Oct-19	249
RDW.10710	E. Half of Colorado Blvd: Side Walk	15	15	09-Oct-19	01-Nov-19	254
RDW.10620	E. Half of Colorado Blvd: Install Guardrail / Barrier as Necessary	10	10	28-Oct-19	14-Nov-19	249
CRW148c1000	Wall RW1.48c: Colorado (SE Quadrant)	15	15	05-Nov-19	03-Dec-19	229
RDW.10630	E. Half of Colorado Blvd: Place MOT Signs / Striping	4	4	06-Nov-19	14-Nov-19	249
RDW.19330	E. Half of Colorado Blvd: Final Grade Ponds	10	10	04-Dec-19	20-Dec-19	229
RDW.10660	E. Half of Colorado Blvd: Complete Traffic Switch To Phase 2 Stage 1 Alignment	0	0		26-Dec-19	229
RDW.10640	E. Half of Colorado Blvd: Seeding/Mulching/Landscaping	3	3	26-Dec-19	31-Dec-19	229
Phase 2		**264**	**264**	**22-Dec-20**	**07-Apr-22**	**0**



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

CENTRAL 70

TASK filter: All Activities

Front Range Mobility Group

Central 70

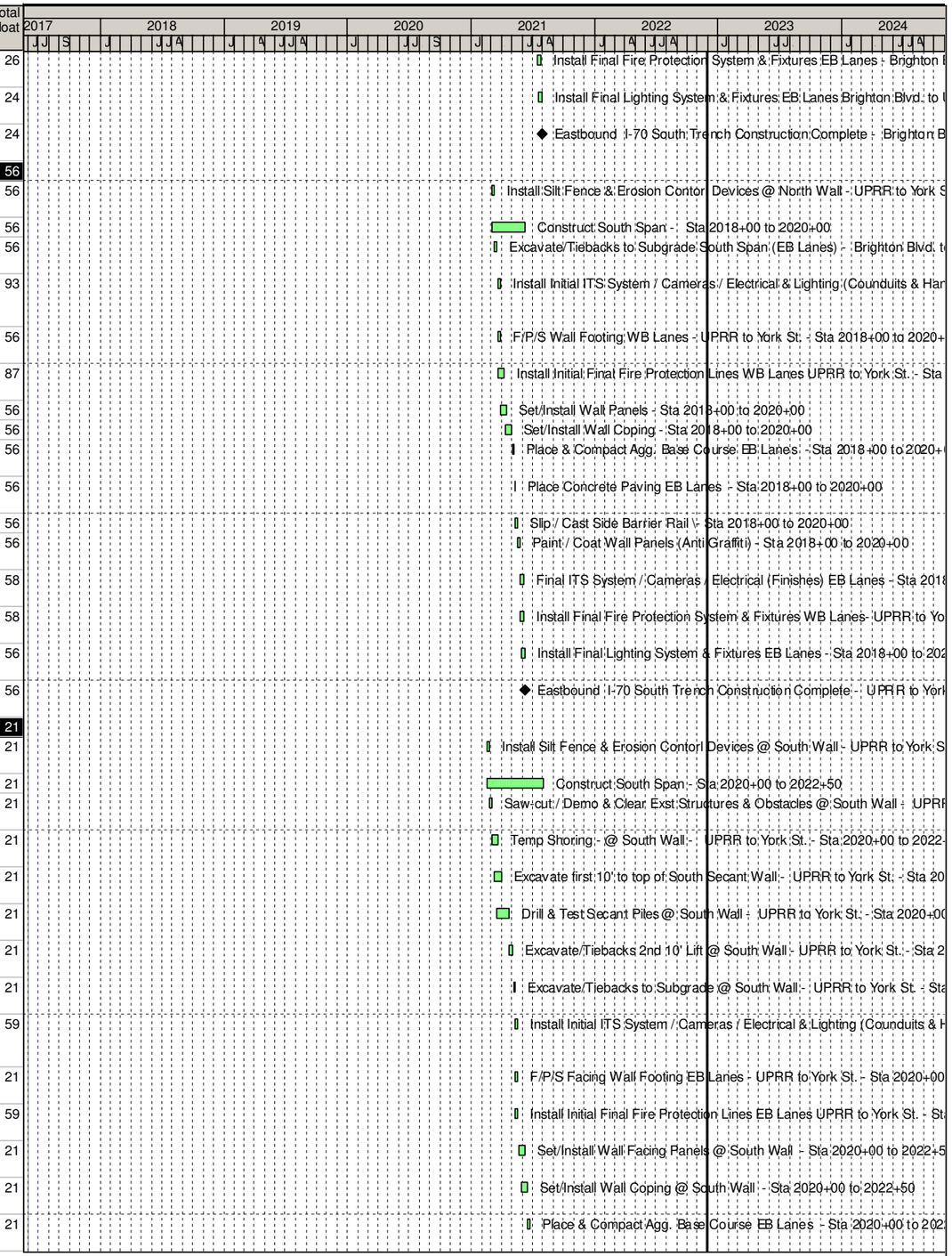
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
Stage 1		149	149	22-Dec-20	01-Sep-21	0
Segment 1 - Brighton Blvd to York St. - (Sta 2000+00 to Sta 2025+50)		120	120	08-Feb-21	23-Aug-21	7
Station 2006+00 to Station 2016+00		118	118	08-Feb-21	19-Aug-21	9
A4710	Install Silt Fence & Erosion Contorl Devices @ South Wall - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	10	10	08-Feb-21	02-Mar-21	9
NSPN.11355	Construct South Span - Sta 2006+00 to 2016+00	118	118	08-Feb-21	19-Aug-21	9
NSPN.6340	Saw-cut / Demo & Clear Exst Structures & Obstacles - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	10	10	03-Mar-21	18-Mar-21	9
NSPN.EX.3950	Embank to Subgrade - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	30	30	08-Mar-21	27-Apr-21	9
NSPN.6360	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) EB Lanes Brighton Blvd. to UPRR - S	15	15	12-Apr-21	04-May-21	49
NSPN.6370	Place & Compact Agg. Base Course EB Lanes Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	15	15	06-May-21	27-May-21	9
NSPN.6380	Place Concrete Paving EB Lanes Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	10	10	21-May-21	04-Jun-21	9
NSPN.6400	Barrier/Guardrail - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	10	10	07-Jun-21	18-Jun-21	9
NSPN.6460	Paint / Coat Wall Panels (Anti Graffiti) - Sta 2006+00 to 2016+00	10	10	21-Jun-21	06-Jul-21	9
NSPN.6410	Final ITS System / Cameras / Electrical (Finishes) EB Lanes Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	30	30	07-Jul-21	19-Aug-21	9
NSPN.6450	Install Final Lighting System & Fixtures EB Lanes Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	20	20	07-Jul-21	04-Aug-21	19
NSPN.6470	Eastbound I-70 South Trench Construction Complete - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	0	0		19-Aug-21	9
Station 2016+00 to Station 2018+00		91	91	05-Mar-21	28-Jul-21	24
A4920	Install Silt Fence & Erosion Contorl Devices @ South Wall - Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	4	4	05-Mar-21	10-Mar-21	24
NSPN.11365	Construct South Span - Sta 2016+00 to 2018+00	91	91	05-Mar-21	28-Jul-21	24
NSPN.8990	Saw-cut / Demo & Clear Exst Structures & Obstacles @ South Wall - Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	4	4	09-Mar-21	15-Mar-21	24
NSPN.9080	Temp Shoring - @ South Wall - Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	8	8	16-Mar-21	30-Mar-21	24
NSPN.EX.4250	Excavate first 10' to top of South Secant Wall - Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	10	10	31-Mar-21	14-Apr-21	24
UPRR.TRN.SCNT.735	Drill & Test Secant Piles South Wall - Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	17	17	08-Apr-21	04-May-21	24
NSPN.EX.4260	Excavate/Tiebacks 2nd 10' Lift South Wall Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	6	6	06-May-21	13-May-21	24
UPRR.TRN.EX.3840	Excavate/Tiebacks to Subgrade South Span (EB Lanes) - Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	4	4	14-May-21	20-May-21	24
NSPN.9010	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) EB Lanes Sta 2006+00 to 2016+00	4	4	21-May-21	26-May-21	57
NSPN.9090	F/P/S Facing Wall Footing EB Lanes - Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	4	4	21-May-21	26-May-21	24
NSPN.9150	Install Initial Final Fire Protection Lines EB Lanes Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	4	4	21-May-21	26-May-21	57
NSPN.9040	Set/Install Wall Facing Panels @ South Wall Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	11	11	27-May-21	11-Jun-21	24
NSPN.9130	Set/Install Wall Coping @ South Wall Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	11	11	04-Jun-21	18-Jun-21	24
NSPN.9020	Place & Compact Agg. Base Course EB Lanes Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	4	4	21-Jun-21	25-Jun-21	24
NSPN.9030	Place Concrete Paving EB Lanes Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	3	3	28-Jun-21	30-Jun-21	24
NSPN.9050	Slip / Cast Side Barrier Rail @ South Wall Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	4	4	01-Jul-21	07-Jul-21	24
NSPN.9110	Paint / Coat Wall Panels (Anti Graffiti) @ South Span Sta 2006+00 to 2016+00	4	4	08-Jul-21	13-Jul-21	24
NSPN.9060	Final ITS System / Cameras / Electrical (Finishes) EB Lanes Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	8	8	15-Jul-21	26-Jul-21	26

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.9140	Install Final Fire Protection System & Fixtures EB Lanes - Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	8	8	15-Jul-21	26-Jul-21	26
NSPN.9100	Install Final Lighting System & Fixtures EB Lanes Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	8	8	19-Jul-21	28-Jul-21	24
NSPN.9120	Eastbound I-70 South Trench Construction Complete - Brighton Blvd. to UPRR - Sta 2016+00 to 2018+00	0	0		28-Jul-21	24
Station 2018+00 to Station 2020+00		**59**	**59**	**05-Mar-21**	**09-Jun-21**	**56**
NSPN.9160	Install Silt Fence & Erosion Contorl Devices @ North Wall - UPRR to York St. - Sta 2018+00 to 2020+00	4	4	05-Mar-21	10-Mar-21	56
NSPN.11375	Construct South Span - Sta 2018+00 to 2020+00	59	59	05-Mar-21	09-Jun-21	56
UPRR.TRN.EX.3920	Excavate/Tiebacks to Subgrade South Span (EB Lanes) - Brighton Blvd. to UPRR - Sta 2018+00 to 2020+00	5	5	12-Mar-21	19-Mar-21	56
NSPN.9190	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) WB Lanes - Sta 2018+00 to 2020+00	5	5	22-Mar-21	30-Mar-21	93
NSPN.9270	F/P/S Wall Footing WB Lanes - UPRR to York St. - Sta 2018+00 to 2020+00	4	4	22-Mar-21	29-Mar-21	56
NSPN.9330	Install Initial Final Fire Protection Lines WB Lanes UPRR to York St. - Sta 2018+00 to 2020+00	11	11	22-Mar-21	08-Apr-21	87
NSPN.9220	Set/Install Wall Panels - Sta 2018+00 to 2020+00	11	11	30-Mar-21	14-Apr-21	56
NSPN.9310	Set/Install Wall Coping - Sta 2018+00 to 2020+00	11	11	14-Apr-21	30-Apr-21	56
NSPN.9200	Place & Compact Agg. Base Course EB Lanes - Sta 2018+00 to 2020+00	4	4	03-May-21	07-May-21	56
NSPN.9210	Place Concrete Paving EB Lanes - Sta 2018+00 to 2020+00	3	3	10-May-21	12-May-21	56
NSPN.9230	Slip / Cast Side Barrier Rail \- Sta 2018+00 to 2020+00	4	4	13-May-21	18-May-21	56
NSPN.9290	Paint / Coat Wall Panels (Anti Graffiti) - Sta 2018+00 to 2020+00	4	4	20-May-21	25-May-21	56
NSPN.9240	Final ITS System / Cameras / Electrical (Finishes) EB Lanes - Sta 2018+00 to 2020+00	8	8	26-May-21	07-Jun-21	58
NSPN.9320	Install Final Fire Protection System & Fixtures WB Lanes- UPRR to York St. - Sta 2018+00 to 2020+00	8	8	26-May-21	07-Jun-21	58
NSPN.9280	Install Final Lighting System & Fixtures EB Lanes - Sta 2018+00 to 2020+00	8	8	28-May-21	09-Jun-21	56
NSPN.9300	Eastbound I-70 South Trench Construction Complete - UPRR to York St. - Sta 2018+00 to 2020+00	0	0		09-Jun-21	56
Station 2020+00 to Station 2022+50		**102**	**102**	**16-Feb-21**	**02-Aug-21**	**21**
NSPN.4600	Install Silt Fence & Erosion Contorl Devices @ South Wall - UPRR to York St. - Sta 2020+00 to 2022+50	5	5	16-Feb-21	25-Feb-21	21
NSPN.11385	Construct South Span - Sta 2020+00 to 2022+50	102	102	16-Feb-21	02-Aug-21	21
NSPN.4610	Saw-cut / Demo & Clear Exst Structures & Obstacles @ South Wall - UPRR to York St. - Sta 2020+00 to 2022+50	5	5	24-Feb-21	04-Mar-21	21
NSPN.4700	Temp Shoring - @ South Wall - UPRR to York St. - Sta 2020+00 to 2022+50	10	10	05-Mar-21	22-Mar-21	21
NSPN.EX.3750	Excavate first 10' to top of South Secant Wall - UPRR to York St. - Sta 2020+00 to 2022+50	12	12	10-Mar-21	31-Mar-21	21
UPRR.TRN.SCNT.485	Drill & Test Secant Piles @ South Wall - UPRR to York St. - Sta 2020+00 to 2022+50 (Wall RW1.19)	21	21	19-Mar-21	22-Apr-21	21
NSPN.EX.3760	Excavate/Tiebacks 2nd 10' Lift @ South Wall - UPRR to York St. - Sta 2020+00 to 2022+50	7	7	23-Apr-21	04-May-21	21
UPRR.TRN.EX.3590	Excavate/Tiebacks to Subgrade @ South Wall - UPRR to York St. - Sta 2020+00 to 2022+50	5	5	06-May-21	12-May-21	21
NSPN.4630	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) EB Lanes - Sta 2020+00 to 2022+50	5	5	13-May-21	20-May-21	59
NSPN.4710	F/P/S Facing Wall Footing EB Lanes - UPRR to York St. - Sta 2020+00 to 2022+50	5	5	13-May-21	20-May-21	21
NSPN.4770	Install Initial Final Fire Protection Lines EB Lanes UPRR to York St. - Sta 2020+00 to 2022+50	5	5	13-May-21	20-May-21	59
NSPN.4660	Set/Install Wall Facing Panels @ South Wall - Sta 2020+00 to 2022+50	14	14	21-May-21	10-Jun-21	21
NSPN.4750	Set/Install Wall Coping @ South Wall - Sta 2020+00 to 2022+50	14	14	28-May-21	17-Jun-21	21
NSPN.4640	Place & Compact Agg. Base Course EB Lanes - Sta 2020+00 to 2022+50	5	5	18-Jun-21	25-Jun-21	21

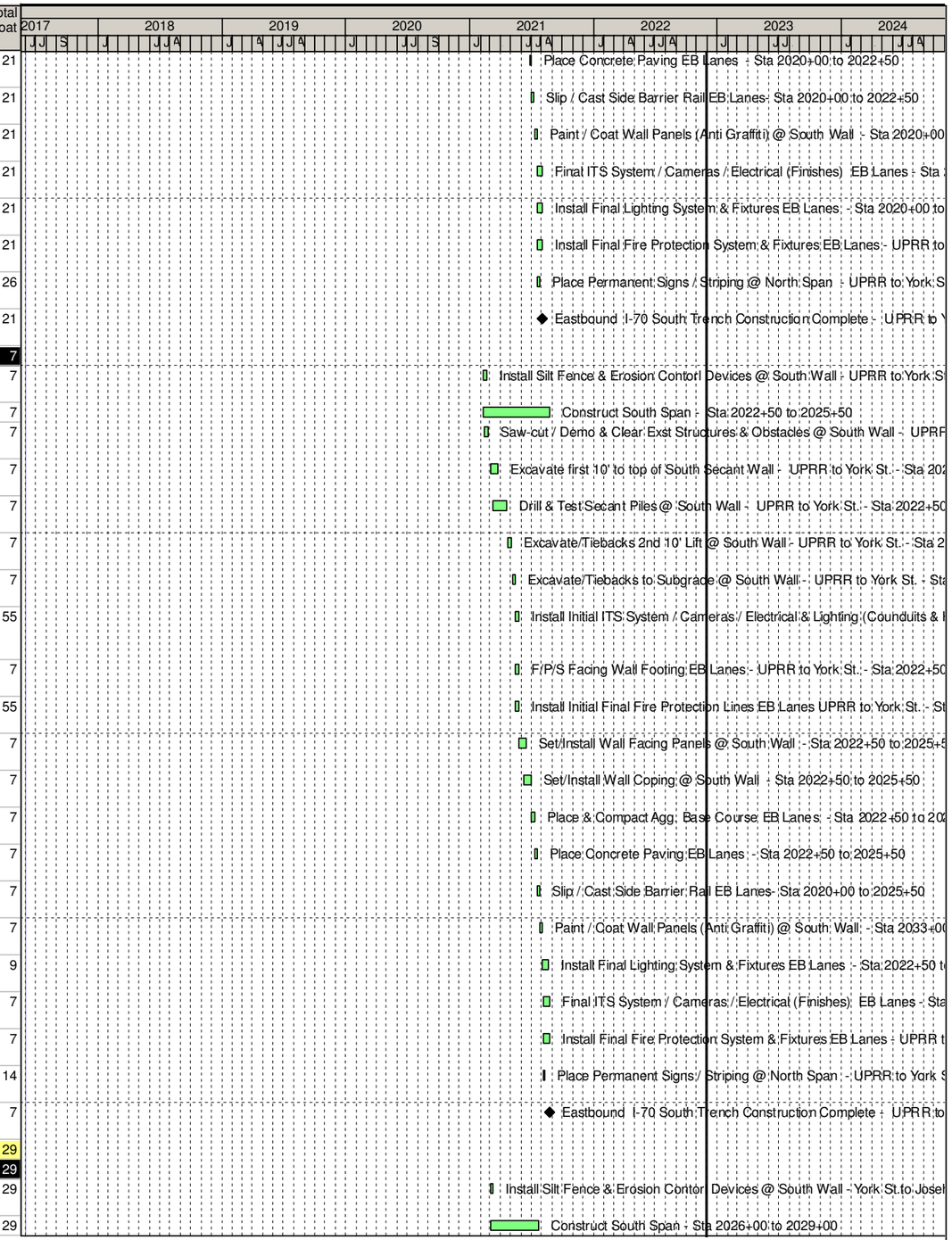


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.4650	Place Concrete Paving EB Lanes - Sta 2020+00 to 2022+50	4	4	28-Jun-21	01-Jul-21	21
NSPN.4670	Slip / Cast Side Barrier Rail EB Lanes- Sta 2020+00 to 2022+50	5	5	02-Jul-21	09-Jul-21	21
NSPN.4730	Paint / Coat Wall Panels (Anti Graffiti) @ South Wall - Sta 2020+00 to 2022+50	5	5	12-Jul-21	19-Jul-21	21
NSPN.4680	Final ITS System / Cameras / Electrical (Finishes) EB Lanes - Sta 2020+00 to 2022+50	10	10	20-Jul-21	02-Aug-21	21
NSPN.4720	Install Final Lighting System & Fixtures EB Lanes - Sta 2020+00 to 2022+50	10	10	20-Jul-21	02-Aug-21	21
NSPN.4760	Install Final Fire Protection System & Fixtures EB Lanes - UPRR to York St. - Sta 2020+00 to 2022+50	10	10	20-Jul-21	02-Aug-21	21
A4800	Place Permanent Signs / Striping @ North Span - UPRR to York St. - Sta 2020+00 to 2022+50	4	4	21-Jul-21	26-Jul-21	26
NSPN.4740	Eastbound I-70 South Trench Construction Complete - UPRR to York St. - Sta 2020+00 to 2022+50	0	0		02-Aug-21	21
Station 2022+50 to Station 2025+50		**120**	**120**	**08-Feb-21**	**23-Aug-21**	**7**
NSPN.9520	Install Silt Fence & Erosion Contorl Devices @ South Wall - UPRR to York St. - Sta 2022+50 to 2025+50	6	6	08-Feb-21	19-Feb-21	7
NSPN.11395	Construct South Span - Sta 2022+50 to 2025+50	120	120	08-Feb-21	23-Aug-21	7
NSPN.9530	Saw-cut / Demo & Clear Exst Structures & Obstacles @ South Wall - UPRR to York St. - Sta 2022+50 to 2025+50	6	6	12-Feb-21	25-Feb-21	7
NSPN.EX.4310	Excavate first 10' to top of South Secant Wall - UPRR to York St. - Sta 2022+50 to 2025+50	14	14	02-Mar-21	24-Mar-21	7
UPRR.TRN.SCNT.765	Drill & Test Secant Piles @ South Wall - UPRR to York St. - Sta 2022+50 to 2025+50 (Wall RW1.19)	26	26	09-Mar-21	20-Apr-21	7
NSPN.EX.4320	Excavate/Tiebacks 2nd 10' Lift @ South Wall - UPRR to York St. - Sta 2022+50 to 2025+50	8	8	22-Apr-21	04-May-21	7
UPRR.TRN.EX.3870	Excavate/Tiebacks to Subgrade @ South Wall - UPRR to York St. - Sta 2022+50 to 2025+50	6	6	06-May-21	13-May-21	7
NSPN.9550	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) EB Lanes - Sta 2022+50 to 2025+50	6	6	14-May-21	24-May-21	55
NSPN.9630	F/P/S Facing Wall Footing EB Lanes - UPRR to York St. - Sta 2022+50 to 2025+50	6	6	14-May-21	24-May-21	7
NSPN.9690	Install Initial Final Fire Protection Lines EB Lanes UPRR to York St. - Sta 2022+50 to 2025+50	6	6	14-May-21	24-May-21	55
NSPN.9580	Set/Install Wall Facing Panels @ South Wall - Sta 2022+50 to 2025+50	16	16	25-May-21	16-Jun-21	7
NSPN.9670	Set/Install Wall Coping @ South Wall - Sta 2022+50 to 2025+50	16	16	09-Jun-21	01-Jul-21	7
NSPN.9560	Place & Compact Agg. Base Course EB Lanes - Sta 2022+50 to 2025+50	6	6	02-Jul-21	12-Jul-21	7
NSPN.9570	Place Concrete Paving EB Lanes - Sta 2022+50 to 2025+50	4	4	13-Jul-21	19-Jul-21	7
NSPN.9590	Slip / Cast Side Barrier Rail EB Lanes- Sta 2020+00 to 2025+50	6	6	20-Jul-21	27-Jul-21	7
NSPN.9650	Paint / Coat Wall Panels (Anti Graffiti) @ South Wall - Sta 2033+00 to 2040+50	6	6	28-Jul-21	04-Aug-21	7
NSPN.9640	Install Final Lighting System & Fixtures EB Lanes - Sta 2022+50 to 2025+50	12	12	03-Aug-21	19-Aug-21	9
NSPN.9600	Final ITS System / Cameras / Electrical (Finishes) EB Lanes - Sta 2022+50 to 2025+50	12	12	05-Aug-21	23-Aug-21	7
NSPN.9680	Install Final Fire Protection System & Fixtures EB Lanes - UPRR to York St. - Sta 2022+50 to 2025+50	12	12	05-Aug-21	23-Aug-21	7
A4940	Place Permanent Signs / Striping @ North Span - UPRR to York St. - Sta 2022+50 to 2025+50	4	4	06-Aug-21	11-Aug-21	14
NSPN.9660	Eastbound I-70 South Trench Construction Complete - UPRR to York St. - Sta 2022+50 to 2025+50	0	0		23-Aug-21	7
Segment 2 - E. of York St. to Fillmore St - (Sta 2025+50 to Sta 2042+00)		**86**	**86**	**05-Mar-21**	**21-Jul-21**	**29**
Station 2026+00 to Station 2029+00		**86**	**86**	**05-Mar-21**	**21-Jul-21**	**29**
NSPN.6505	Install Silt Fence & Erosion Contorl Devices @ South Wall - York St.to Josehpine St. - Sta 2027+00 to 2029+00	4	4	05-Mar-21	10-Mar-21	29
NSPN.6495	Construct South Span - Sta 2026+00 to 2029+00	86	86	05-Mar-21	21-Jul-21	29



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.6510	Saw-cut / Demo & Clear Exst Structures & Obstacles @ South Wall - York St.to Josehpine St. - Sta 2027+00 to 2029+00	4	4	09-Mar-21	15-Mar-21	29
NSPN.6600	Temp Shoring - @ South Wall - York St.to Josehpine St. - Sta 2027+00 to 2029+00	8	8	12-Mar-21	25-Mar-21	29
NSPN.EX.3970	Excavate first 10' to top of South Secant Wall - York St.to Josehpine St. - Sta 2027+00 to 2029+00	10	10	22-Mar-21	06-Apr-21	29
UPRR.TRN.SCNT.595	Drill & Test Secant Piles South Wall - York St.to Josehpine St. - Sta 2027+00 to 2029+00 (Wall RW1.20 York St SE Quadran	17	17	31-Mar-21	27-Apr-21	29
NSPN.EX.3980	Excavate/Tiebacks 2nd 10' Lift South Lift - York St.to Josehpine St. - Sta 2027+00 to 2029+00	6	6	28-Apr-21	06-May-21	29
UPRR.TRN.EX.3700	Excavate/Tiebacks to Subgrade South Span (EB Lanes) - York St.to Josehpine St. - Sta 2027+00 to 2029+00	4	4	07-May-21	12-May-21	29
NSPN.6530	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds)- York St.to Josehpine St. - Sta 202	4	4	13-May-21	18-May-21	62
NSPN.6610	F/P/S Facing Wall Footing EB Lanes - York St.to Josehpine St. - Sta 2027+00 to 2029+00 (Wall RW1.20 York St SE Quadran	4	4	13-May-21	18-May-21	29
NSPN.6670	Install Initial Final Fire Protection Lines EB Lanes - York St.to Josehpine St. - Sta 2027+00 to 2029+00	11	11	13-May-21	28-May-21	55
NSPN.6560	Set/Install Wall Facing Panels @ South Wall - York St.to Josehpine St. - Sta 2027+00 to 2029+00 (Wall Rw1.20 York St SE	11	11	20-May-21	04-Jun-21	29
NSPN.6650	Set/Install Wall Coping @ South Wall - York St.to Josehpine St. - Sta 2027+00 to 2029+00	11	11	27-May-21	11-Jun-21	29
NSPN.6540	Place & Compact Agg. Base Course EB Lanes - York St.to Josehpine St. - Sta 2027+00 to 2029+00	4	4	14-Jun-21	17-Jun-21	29
NSPN.6550	Place Concrete Paving - York St.to Josehpine St. - Sta 2027+00 to 2029+00	3	3	18-Jun-21	22-Jun-21	29
NSPN.6570	Slip / Cast Side Barrier Rail @ South Wall - York St.to Josehpine St. - Sta 2027+00 to 2029+00	4	4	24-Jun-21	29-Jun-21	29
NSPN.6630	Paint / Coat Wall Panels (Anti Graffiti) @ South Span - York St.to Josehpine St. - Sta 2027+00 to 2029+00	4	4	30-Jun-21	06-Jul-21	29
NSPN.6580	Final ITS System / Cameras / Electrical (Finishes) EB Lanes- York St.to Josehpine St. - Sta 2027+00 to 2029+00	8	8	07-Jul-21	19-Jul-21	31
NSPN.6660	Install Final Fire Protection System & Fixtures EB Lanes - York St.to Josehpine St. - Sta 2027+00 to 2029+00	8	8	07-Jul-21	19-Jul-21	31
NSPN.6620	Install Final Lighting System & Fixtures EB Lanes - York St.to Josehpine St. - Sta 2027+00 to 2029+00	8	8	09-Jul-21	21-Jul-21	29
NSPN.6640	Eastbound I-70 South Trench Construction Complete - UPRR to York St. - York St.to Josehpine St. - Sta 2027+00 to 2029+	0	0		21-Jul-21	29
Station 2041+50 to Station 2042+00		64	64	09-Apr-21	19-Jul-21	31
South Span		64	64	09-Apr-21	19-Jul-21	31
A4770	Install Silt Fence & Erosion Contorl Devices @ South Wall - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	1	1	09-Apr-21	09-Apr-21	31
A4765	Construct South Span - Sta 2041+500 to 2042+00	64	64	09-Apr-21	19-Jul-21	31
NSPN.6680	Saw-cut / Demo & Clear Exst Structures & Obstacles @ South Wall - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	1	1	12-Apr-21	12-Apr-21	31
NSPN.6770	Temp Shoring - @ South Wall - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	2	2	13-Apr-21	14-Apr-21	31
NSPN.EX.3990	Excavate first 10' to top of South Secant Wall - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	3	3	06-May-21	10-May-21	31
UPRR.TRN.SCNT.605	Drill & Test Secant Piles South Wall - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	5	5	07-Jun-21	11-Jun-21	31
NSPN.EX.4000	Excavate/Tiebacks 2nd 10' Lift South Lift - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	2	2	14-Jun-21	15-Jun-21	31
UPRR.TRN.EX.3710	Excavate/Tiebacks to Subgrade South Span (EB Lanes) - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	1	1	16-Jun-21	16-Jun-21	31
NSPN.6700	Initial ITS System/Cameras/Electrical & Lighting (Counduits & Handholds) - Clayton St to Fillmore St - Sta 2042+00 to 20	1	1	17-Jun-21	17-Jun-21	48
NSPN.6780	F/P/S Facing Wall Footing WB Lanes - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	1	1	17-Jun-21	17-Jun-21	31

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

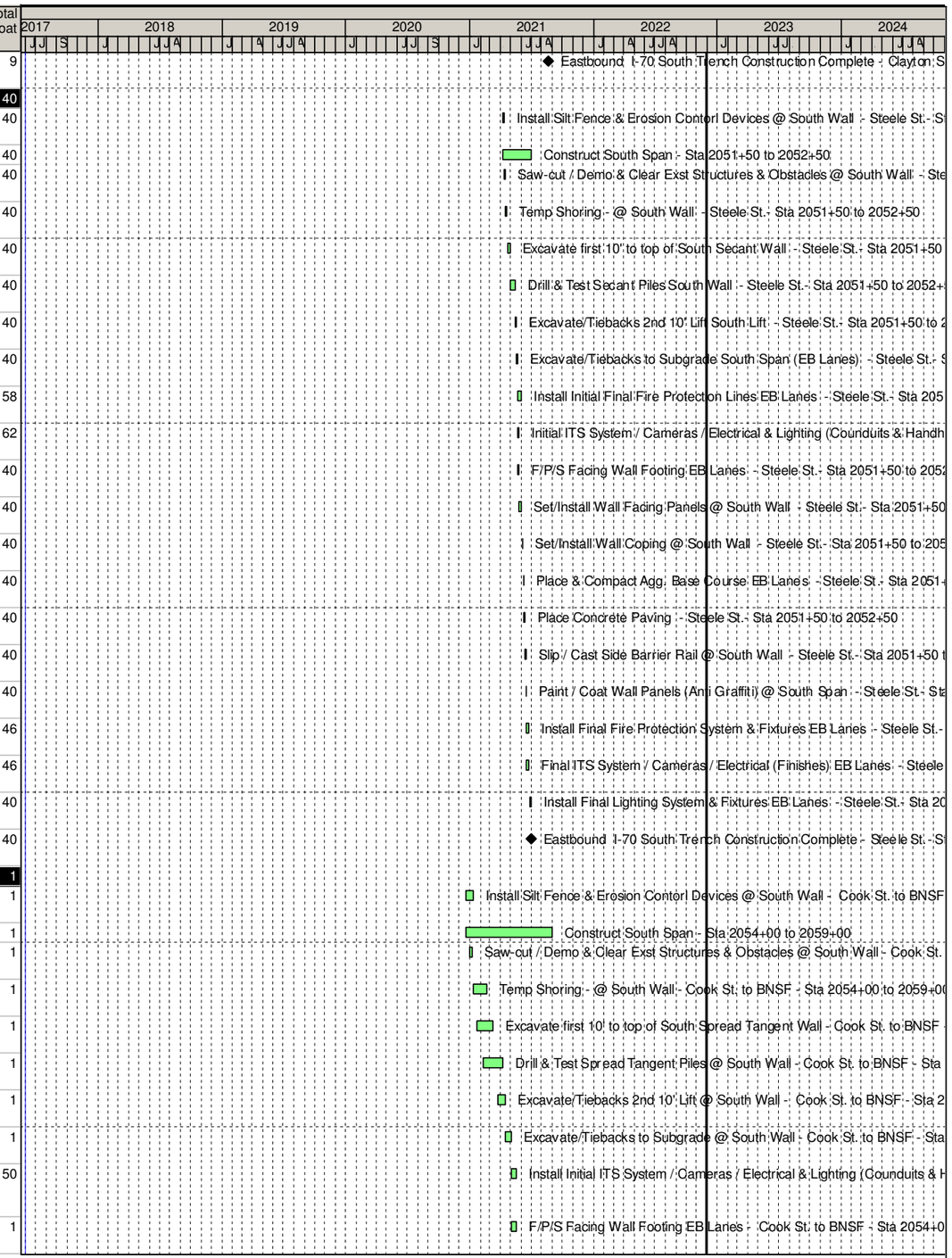
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.6840	Install Initial Final Fire Protection Lines WB Lanes - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	1	1	17-Jun-21	17-Jun-21	48
NSPN.6730	Set/Install Wall Facing Panels @ South Wall - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	3	3	18-Jun-21	22-Jun-21	31
NSPN.6820	Set/Install Wall Coping @ South Wall - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	3	3	06-Jul-21	08-Jul-21	31
NSPN.6710	Place & Compact Agg. Base Course EB Lanes - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	1	1	09-Jul-21	09-Jul-21	31
NSPN.6720	Place Concrete Paving - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	1	1	12-Jul-21	12-Jul-21	31
NSPN.6740	Slip / Cast Side Barrier Rail @ South Wall - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	1	1	13-Jul-21	13-Jul-21	31
NSPN.6800	Paint / Coat Wall Panels (Anti Graffiti) @ South Span - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	1	1	15-Jul-21	15-Jul-21	31
NSPN.6750	Final ITS System / Cameras / Electrical (Finishes) EB Lanes - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	2	2	16-Jul-21	19-Jul-21	31
NSPN.6790	Install Final Lighting System & Fixtures EB Lanes - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	2	2	16-Jul-21	19-Jul-21	31
NSPN.6830	Install Final Fire Protection System & Fixtures EB Lanes - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	2	2	16-Jul-21	19-Jul-21	31
NSPN.6810	Eastbound I-70 South Trench Construction Complete - Clayton St to Fillmore St.- Sta 2041+500 to 2042+00	0	0		19-Jul-21	31
Segment 3 - Fillmore St. to Dahlia St. - (Sta 2042+00 to Sta 2085+00)		149	149	22-Dec-20	01-Sep-21	0
Station 2042+00 to Station 2044+00		101	101	15-Mar-21	19-Aug-21	9
NSPN.11505	Install Silt Fence & Erosion Contorl Devices @ South Wall - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	4	4	15-Mar-21	19-Mar-21	9
NSPN.11405	Construct South Span - Sta 2042+00 to 2044+00	101	101	15-Mar-21	19-Aug-21	9
NSPN.6850	Saw-cut / Demo & Clear Exst Structures & Obstacles @ South Wall - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	4	4	22-Mar-21	29-Mar-21	9
NSPN.6940	Temp Shoring - @ South Wall - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	8	8	25-Mar-21	06-Apr-21	9
NSPN.EX.4010	Excavate first 10' to top of South Secant Wall - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	10	10	15-Apr-21	30-Apr-21	9
UPRR.TRN.SCNT.615	Drill & Test Secant Piles South Wall - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00 (Wall RW1.25)	17	17	23-Apr-21	20-May-21	9
NSPN.EX.4020	Excavate/Tiebacks 2nd 10' Lift South Lift - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	6	6	21-May-21	28-May-21	9
UPRR.TRN.EX.3720	Excavate/Tiebacks to Subgrade South Span (EB Lanes) - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	4	4	01-Jun-21	04-Jun-21	9
NSPN.6870	Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) - Clayton St to Fillmore St - Sta 2042+00 t	4	4	07-Jun-21	10-Jun-21	47
NSPN.6950	F/P/S Facing Wall Footing EB Lanes - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00 (Wall RW1.25)	4	4	07-Jun-21	10-Jun-21	9
NSPN.7010	Install Initial Final Fire Protection Lines EB Lanes - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	4	4	07-Jun-21	10-Jun-21	47
NSPN.6900	Set/Install Wall Facing Panels @ South Wall - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00 (Wall RW1.25)	11	11	11-Jun-21	28-Jun-21	9
NSPN.6990	Set/Install Wall Coping @ South Wall - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00 (Wall RW1.25)	11	11	28-Jun-21	13-Jul-21	9
NSPN.6880	Place & Compact Agg. Base Course EB Lanes - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	4	4	15-Jul-21	20-Jul-21	9
NSPN.6890	Place Concrete Paving - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	3	3	21-Jul-21	23-Jul-21	9
NSPN.6910	Slip / Cast Side Barrier Rail @ South Wall - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	4	4	26-Jul-21	29-Jul-21	9
NSPN.6970	Paint / Coat Wall Panels (Anti Graffiti) @ South Span - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	4	4	30-Jul-21	04-Aug-21	9
NSPN.6920	Final ITS System / Cameras / Electrical (Finishes) EB Lanes - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	8	8	05-Aug-21	16-Aug-21	11
NSPN.7000	Install Final Fire Protection System & Fixtures EB Lanes - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	8	8	05-Aug-21	16-Aug-21	11
NSPN.6960	Install Final Lighting System & Fixtures EB Lanes - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	8	8	09-Aug-21	19-Aug-21	9

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.6980	Eastbound I-70 South Trench Construction Complete - Clayton St to Fillmore St.- Sta 2042+00 to 2044+00	0	0		19-Aug-21	9
Station 2051+50 to Station 2052+50		**55**	**55**	**09-Apr-21**	**02-Jul-21**	**40**
A4960	Install Silt Fence & Erosion Contorl Devices @ South Wall - Steele St.- Sta 2051+50 to 2052+50	2	2	09-Apr-21	12-Apr-21	40
NSPN.11250	Construct South Span - Sta 2051+50 to 2052+50	55	55	09-Apr-21	02-Jul-21	40
NSPN.9870	Saw-cut / Demo & Clear Exst Structures & Obstacles @ South Wall - Steele St.- Sta 2051+50 to 2052+50	2	2	13-Apr-21	14-Apr-21	40
NSPN.9960	Temp Shoring - @ South Wall - Steele St.- Sta 2051+50 to 2052+50	4	4	15-Apr-21	20-Apr-21	40
NSPN.EX.4350	Excavate first 10' to top of South Secant Wall - Steele St.- Sta 2051+50 to 2052+50	5	5	22-Apr-21	29-Apr-21	40
UPRR.TRN.SCNT.785	Drill & Test Secant Piles South Wall - Steele St.- Sta 2051+50 to 2052+50	9	9	30-Apr-21	13-May-21	40
NSPN.EX.4360	Excavate/Tiebacks 2nd 10' Lift South Lift - Steele St.- Sta 2051+50 to 2052+50	3	3	14-May-21	18-May-21	40
UPRR.TRN.EX.3890	Excavate/Tiebacks to Subgrade South Span (EB Lanes) - Steele St.- Sta 2051+50 to 2052+50	2	2	20-May-21	21-May-21	40
NSPN.10030	Install Initial Final Fire Protection Lines EB Lanes - Steele St.- Sta 2051+50 to 2052+50	6	6	24-May-21	01-Jun-21	58
NSPN.9890	Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) - Steele St - Sta 2051+50 to 2052+50	2	2	24-May-21	25-May-21	62
NSPN.9970	F/P/S Facing Wall Footing EB Lanes - Steele St.- Sta 2051+50 to 2052+50	2	2	24-May-21	25-May-21	40
NSPN.9920	Set/Install Wall Facing Panels @ South Wall - Steele St.- Sta 2051+50 to 2052+50	6	6	26-May-21	03-Jun-21	40
NSPN.10010	Set/Install Wall Coping @ South Wall - Steele St.- Sta 2051+50 to 2052+50	2	2	04-Jun-21	07-Jun-21	40
NSPN.9900	Place & Compact Agg. Base Course EB Lanes - Steele St.- Sta 2051+50 to 2052+50	2	2	08-Jun-21	09-Jun-21	40
NSPN.9910	Place Concrete Paving - Steele St.- Sta 2051+50 to 2052+50	2	2	10-Jun-21	11-Jun-21	40
NSPN.9930	Slip / Cast Side Barrier Rail @ South Wall - Steele St.- Sta 2051+50 to 2052+50	2	2	14-Jun-21	15-Jun-21	40
NSPN.9990	Paint / Coat Wall Panels (Anti Graffiti) @ South Span - Steele St.- Sta 2051+50 to 2052+50	2	2	16-Jun-21	17-Jun-21	40
NSPN.10020	Install Final Fire Protection System & Fixtures EB Lanes - Steele St.- Sta 2051+50 to 2052+50	4	4	18-Jun-21	24-Jun-21	46
NSPN.9940	Final ITS System / Cameras / Electrical (Finishes) EB Lanes - Steele St.- Sta 2051+50 to 2052+50	4	4	18-Jun-21	24-Jun-21	46
NSPN.9980	Install Final Lighting System & Fixtures EB Lanes - Steele St.- Sta 2051+50 to 2052+50	4	4	29-Jun-21	02-Jul-21	40
NSPN.10000	Eastbound I-70 South Trench Construction Complete - Steele St.- Sta 2051+50 to 2052+50	0	0		02-Jul-21	40
Station 2054+00 to Station 2059+00		**148**	**148**	**22-Dec-20**	**31-Aug-21**	**1**
NSPN.7200	Install Silt Fence & Erosion Contorl Devices @ South Wall - Cook St. to BNSF - Sta 2054+00 to 2059+00	10	10	22-Dec-20	12-Jan-21	1
NSPN.11260	Construct South Span - Sta 2054+00 to 2059+00	148	148	22-Dec-20	31-Aug-21	1
NSPN.7210	Saw-cut / Demo & Clear Exst Structures & Obstacles @ South Wall - Cook St. to BNSF - Sta 2054+00 to 2059+00	5	5	30-Dec-20	08-Jan-21	1
NSPN.7300	Temp Shoring - @ South Wall - Cook St. to BNSF - Sta 2054+00 to 2059+00	20	20	11-Jan-21	19-Feb-21	1
NSPN.EX.4050	Excavate first 10' to top of South Spread Tangent Wall - Cook St. to BNSF - Sta 2054+00 to 2059+00	24	24	22-Jan-21	10-Mar-21	1
UPRR.TRN.SCNT.635	Drill & Test Spread Tangent Piles @ South Wall - Cook St. to BNSF - Sta 2054+00 to 2059+00 (Wall RW 1.35)	30	30	10-Feb-21	08-Apr-21	1
NSPN.EX.4060	Excavate/Tiebacks 2nd 10' Lift @ South Wall - Cook St. to BNSF - Sta 2054+00 to 2059+00	14	14	25-Mar-21	15-Apr-21	1
UPRR.TRN.EX.3740	Excavate/Tiebacks to Subgrade @ South Wall - Cook St. to BNSF - Sta 2054+00 to 2059+00	10	10	16-Apr-21	03-May-21	1
NSPN.7230	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) EB Lanes Cook St. to BNSF - Sta 20	10	10	04-May-21	18-May-21	50
NSPN.7310	F/P/S Facing Wall Footing EB Lanes - Cook St. to BNSF - Sta 2054+00 to 2059+00 (Wall RW 1.35)	10	10	04-May-21	18-May-21	1

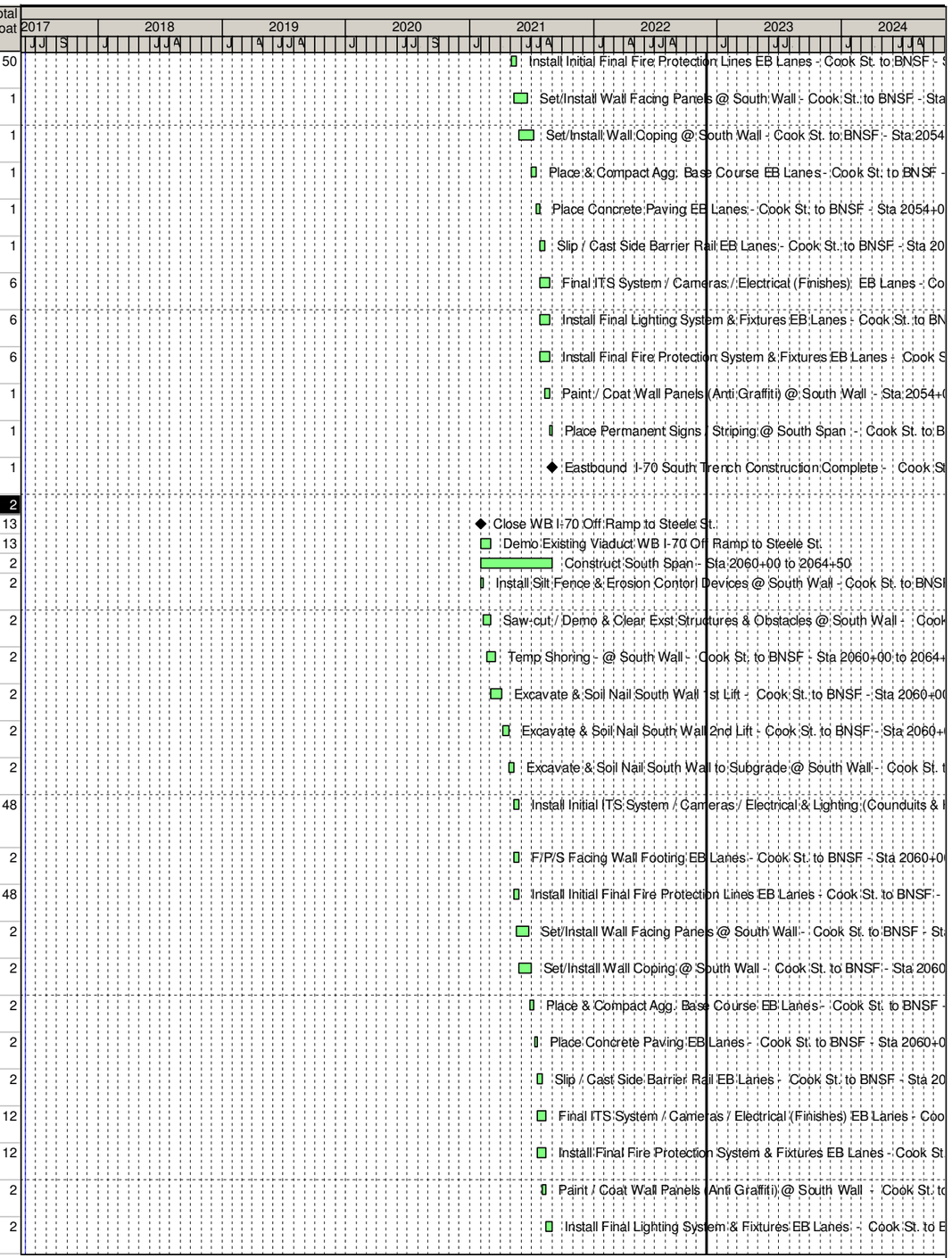


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.7370	Install Initial Final Fire Protection Lines EB Lanes - Cook St. to BNSF - Sta 2054+00 to 2059+00	10	10	04-May-21	18-May-21	50
NSPN.7260	Set/Install Wall Facing Panels @ South Wall - Cook St. to BNSF - Sta 2054+00 to 2059+00 (Wall RW 1.35)	27	27	12-May-21	21-Jun-21	1
NSPN.7350	Set/Install Wall Coping @ South Wall - Cook St. to BNSF - Sta 2054+00 to 2059+00 (Wall RW 1.35)	27	27	27-May-21	07-Jul-21	1
NSPN.7240	Place & Compact Agg. Base Course EB Lanes - Cook St. to BNSF - Sta 2054+00 to 2060+00	10	10	30-Jun-21	15-Jul-21	1
NSPN.7250	Place Concrete Paving EB Lanes - Cook St. to BNSF - Sta 2054+00 to 2060+00	7	7	16-Jul-21	26-Jul-21	1
NSPN.7270	Slip / Cast Side Barrier Rail EB Lanes - Cook St. to BNSF - Sta 2054+00 to 2060+00	10	10	27-Jul-21	09-Aug-21	1
NSPN.7280	Final ITS System / Cameras / Electrical (Finishes) EB Lanes - Cook St. to BNSF - Sta 2054+00 to 2060+00	20	20	27-Jul-21	24-Aug-21	6
NSPN.7320	Install Final Lighting System & Fixtures EB Lanes - Cook St. to BNSF - Sta 2054+00 to 2060+00	20	20	27-Jul-21	24-Aug-21	6
NSPN.7360	Install Final Fire Protection System & Fixtures EB Lanes - Cook St. to BNSF - Sta 2054+00 to 2060+00	20	20	27-Jul-21	24-Aug-21	6
NSPN.7330	Paint / Coat Wall Panels (Anti Graffiti) @ South Wall - Sta 2054+00 to 2060+00	10	10	10-Aug-21	24-Aug-21	1
A4820	Place Permanent Signs / Striping @ South Span - Cook St. to BNSF - Sta 2054+00 to 2060+00	7	7	23-Aug-21	31-Aug-21	1
NSPN.7340	Eastbound I-70 South Trench Construction Complete - Cook St. to BNSF - Sta 2054+00 to 2060+00	0	0		31-Aug-21	1
Station 2060+00 to Station 2064+50		128	128	03-Feb-21	30-Aug-21	2
EXISTVIA355	Close WB I-70 Off Ramp to Steele St.	0	0	03-Feb-21		13
EXISTVIA360	Demo Existing Viaduct WB I-70 Off Ramp to Steele St.	13	13	03-Feb-21	02-Mar-21	13
NSPN.11270	Construct South Span - Sta 2060+00 to 2064+50	128	128	03-Feb-21	30-Aug-21	2
NSPN.7560	Install Silt Fence & Erosion Contorl Devices @ South Wall - Cook St. to BNSF - Sta 2060+00 to 2064+50	5	5	04-Feb-21	10-Feb-21	2
NSPN.7570	Saw-cut / Demo & Clear Exst Structures & Obstacles @ South Wall - Cook St. to BNSF - Sta 2060+00 to 2064+50	9	9	09-Feb-21	02-Mar-21	2
NSPN.7660	Temp Shoring - @ South Wall - Cook St. to BNSF - Sta 2060+00 to 2064+50	15	15	22-Feb-21	19-Mar-21	2
NSPN.EX.4090	Excavate & Soil Nail South Wall 1st Lift - Cook St. to BNSF - Sta 2060+00 to 2064+50 (Wall RW1.37)	21	21	03-Mar-21	06-Apr-21	2
NSPN.EX.4100	Excavate & Soil Nail South Wall 2nd Lift - Cook St. to BNSF - Sta 2060+00 to 2064+50	12	12	08-Apr-21	27-Apr-21	2
UPRR.TRN.EX.3760	Excavate & Soil Nail South Wall to Subgrade @ South Wall - Cook St. to BNSF - Sta 2060+00 to 2064+50	9	9	28-Apr-21	11-May-21	2
NSPN.7590	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) EB Lanes - Cook St. to BNSF - Sta 2	9	9	12-May-21	25-May-21	48
NSPN.7670	F/P/S Facing Wall Footing EB Lanes - Cook St. to BNSF - Sta 2060+00 to 2064+50 (Wall RW1.37)	9	9	12-May-21	25-May-21	2
NSPN.7730	Install Initial Final Fire Protection Lines EB Lanes - Cook St. to BNSF - Sta 2060+00 to 2064+50	9	9	12-May-21	25-May-21	48
NSPN.7620	Set/Install Wall Facing Panels @ South Wall - Cook St. to BNSF - Sta 2060+00 to 2064+50 (Wall RW1.37)	24	24	20-May-21	24-Jun-21	2
NSPN.7710	Set/Install Wall Coping @ South Wall - Cook St. to BNSF - Sta 2060+00 to 2064+50 (Wall RW1.37)	24	24	27-May-21	01-Jul-21	2
NSPN.7600	Place & Compact Agg. Base Course EB Lanes - Cook St. to BNSF - Sta 2060+00 to 2064+50	9	9	28-Jun-21	09-Jul-21	2
NSPN.7610	Place Concrete Paving EB Lanes - Cook St. to BNSF - Sta 2060+00 to 2064+50	6	6	12-Jul-21	20-Jul-21	2
NSPN.7630	Slip / Cast Side Barrier Rail EB Lanes - Cook St. to BNSF - Sta 2060+00 to 2064+50	9	9	21-Jul-21	02-Aug-21	2
NSPN.7640	Final ITS System / Cameras / Electrical (Finishes) EB Lanes - Cook St. to BNSF - Sta 2060+00 to 2064+50	18	18	21-Jul-21	13-Aug-21	12
NSPN.7720	Install Final Fire Protection System & Fixtures EB Lanes - Cook St. to BNSF - Sta 2060+00 to 2064+50	18	18	21-Jul-21	13-Aug-21	12
NSPN.7690	Paint / Coat Wall Panels (Anti Graffiti) @ South Wall - Cook St. to BNSF - Sta 2060+00 to 2064+50	9	9	03-Aug-21	13-Aug-21	2
NSPN.7680	Install Final Lighting System & Fixtures EB Lanes - Cook St. to BNSF - Sta 2060+00 to 2064+50	12	12	12-Aug-21	30-Aug-21	2



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
A4840	Place Permanent Signs / Striping @ South Span - Cook St. to BNSF - Sta 2060+00 to 2064+50	6	6	13-Aug-21	23-Aug-21	7
NSPN.7700	Eastbound I-70 South Trench Construction Complete - Cook St. to BNSF - Sta 2060+00 to 2064+50	0	0		30-Aug-21	2
Station 2064+50 to Station 2066+00		**29**	**29**	**25-Feb-21**	**15-Apr-21**	**90**
A4980	Install Silt Fence & Erosion Contorl Devices @ South Wall - BNSF to Monroe St.- Sta 2064+500 to 2066+00	1	1	25-Feb-21	25-Feb-21	90
NSPN.11280	Construct South Span - Sta 2064+50 to 2066+00	29	29	25-Feb-21	15-Apr-21	90
NSPN.10210	Saw-cut / Demo & Clear Exst Structures & Obstacles @ South Wall - BNSF to Monroe St.- Sta 2064+500 to 2066+00	1	1	02-Mar-21	02-Mar-21	90
NSPN.10300	Temp Shoring - @ South Wall - BNSF to Monroe St.- Sta 2064+500 to 2066+00	2	2	03-Mar-21	04-Mar-21	90
NSPN.EX.4390	Excavate first 10' to top of South Secant Wall - BNSF to Monroe St.- Sta 2064+500 to 2066+00	3	3	05-Mar-21	09-Mar-21	90
UPRR.TRN.SCNT.805	Drill & Test Secant Piles South Wall - BNSF to Monroe St.- Sta 2064+500 to 2066+00 (Wall RW1.39)	5	5	10-Mar-21	18-Mar-21	90
NSPN.EX.4400	Excavate/Tiebacks 2nd 10' Lift South Lift - BNSF to Monroe St.- Sta 2064+500 to 2066+00	2	2	19-Mar-21	22-Mar-21	90
UPRR.TRN.EX.3910	Excavate/Tiebacks to Subgrade South Span (EB Lanes) - BNSF to Monroe St.- Sta 2064+500 to 2066+00	1	1	24-Mar-21	24-Mar-21	90
NSPN.10230	Initial ITS System/Cameras/Electrical & Lighting (Counduits & Handholds) - Clayton St to Fillmore St - Sta 2042+00 to 20	1	1	25-Mar-21	25-Mar-21	101
NSPN.10310	F/P/S Facing Wall Footing WB Lanes - BNSF to Monroe St.- Sta 2064+500 to 2066+00 (Wall RW1.39)	3	3	25-Mar-21	30-Mar-21	90
NSPN.10370	Install Initial Final Fire Protection Lines EB Lanes - BNSF to Monroe St.- Sta 2064+500 to 2066+00	1	1	25-Mar-21	25-Mar-21	101
NSPN.10260	Set/Install Wall Facing Panels @ South Wall - BNSF to Monroe St.- Sta 2064+500 to 2066+00 (Wall RW1.39)	3	3	31-Mar-21	02-Apr-21	90
NSPN.10350	Set/Install Wall Coping @ South Wall - BNSF to Monroe St.- Sta 2064+500 to 2066+00 (Wall RW1.39)	3	3	02-Apr-21	06-Apr-21	90
NSPN.10240	Place & Compact Agg. Base Course EB Lanes - BNSF to Monroe St.- Sta 2064+500 to 2066+00	1	1	08-Apr-21	08-Apr-21	90
NSPN.10250	Place Concrete Paving - BNSF to Monroe St.- Sta 2064+500 to 2066+00	1	1	09-Apr-21	09-Apr-21	90
NSPN.10270	Slip / Cast Side Barrier Rail @ South Wall - BNSF to Monroe St.- Sta 2064+500 to 2066+00	1	1	12-Apr-21	12-Apr-21	90
NSPN.10330	Paint / Coat Wall Panels (Anti Graffiti) @ South Span - BNSF to Monroe St.- Sta 2064+500 to 2066+00	1	1	13-Apr-21	13-Apr-21	90
NSPN.10280	Final ITS System / Cameras / Electrical (Finishes) EB Lanes - BNSF to Monroe St.- Sta 2064+500 to 2066+00	2	2	14-Apr-21	15-Apr-21	90
NSPN.10320	Install Final Lighting System & Fixtures EB Lanes - BNSF to Monroe St.- Sta 2064+500 to 2066+00	2	2	14-Apr-21	15-Apr-21	90
NSPN.10360	Install Final Fire Protection System & Fixtures EB Lanes - BNSF to Monroe St.- Sta 2064+500 to 2066+00	2	2	14-Apr-21	15-Apr-21	90
NSPN.10340	Eastbound I-70 South Trench Construction Complete - BNSF to Monroe St.- Sta 2064+500 to 2066+00	0	0		15-Apr-21	90
Station 2066+00 to Station 2072+00		**122**	**122**	**19-Feb-21**	**01-Sep-21**	**0**
NSPN.7740	Install Silt Fence & Erosion Contorl Devices @ South Wall - Sta 2065+00 to 2072+00	9	9	19-Feb-21	08-Mar-21	0
NSPN.11290	South Span - Sta 2065+00 to 2072+00	122	122	19-Feb-21	01-Sep-21	0
NSPN.7750	Saw-cut / Demo & Clear Exst Structures & Obstacles @ South Wall - Sta 2065+00 to 2072+00	9	9	25-Feb-21	12-Mar-21	0
NSPN.EX.4110	Excavate first 10' to top of South Soil Nail Wall - Sta 2065+00 to 2072+00	10	10	08-Mar-21	24-Mar-21	0
NSPN.EX.4120	Excavate/Soil Nail 2nd 10' Lift @ South Wall - Sta 2065+00 to 2072+00	7	7	25-Mar-21	05-Apr-21	0
UPRR.TRN.EX.3770	Excavate/Soil Nail to Subgrade @ South Wall - Sta 2065+00 to 2072+00	7	7	06-Apr-21	15-Apr-21	0
NSPN.7770	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) EB Lanes - Sta 2065+00 to 2072+00	9	9	16-Apr-21	30-Apr-21	63
NSPN.7850	F/P/S Facing Wall Footing EB Lanes - Sta 2065+00 to 2072+00	12	12	16-Apr-21	06-May-21	0

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.7910	Install Initial Final Fire Protection Lines EB Lanes - Sta 2065+00 to 2072+00	9	9	16-Apr-21	30-Apr-21	63
NSPN.7800	Set/Install Wall Facing Panels @ South Wall - Sta 2065+00 to 2072+00	24	24	27-Apr-21	02-Jun-21	0
NSPN.7890	Set/Install Wall Coping @ South Wall - Sta 2065+00 to 2072+00	24	24	12-May-21	16-Jun-21	0
NSPN.7780	Place & Compact Agg. Base Course EB Lanes - Sta 2065+00 to 2072+00	9	9	17-Jun-21	30-Jun-21	0
NSPN.7790	Place Concrete Paving EB Lanes - Sta 2065+00 to 2072+00	6	6	01-Jul-21	09-Jul-21	0
NSPN.7810	Slip / Cast Side Barrier Rail EB Lanes - Sta 2065+00 to 2072+00	9	9	12-Jul-21	23-Jul-21	0
NSPN.7870	Paint / Coat Wall Panels (Anti Graffiti) @ South Wall - Sta 2065+00 to 2072+00	9	9	26-Jul-21	05-Aug-21	0
NSPN.7860	Install Final Lighting System & Fixtures EB Lanes - Sta 2065+00 to 2072+00	18	18	27-Jul-21	20-Aug-21	8
A4850	Place Permanent Signs / Striping @ South Span - Sta 2065+00 to 2072+00	6	6	05-Aug-21	12-Aug-21	13
NSPN.7820	Final ITS System / Cameras / Electrical (Finishes) EB Lanes - Sta 2065+00 to 2072+00	18	18	06-Aug-21	01-Sep-21	0
NSPN.7900	Install Final Fire Protection System & Fixtures EB Lanes - Sta 2065+00 to 2072+00	18	18	06-Aug-21	01-Sep-21	0
NSPN.7880	Eastbound I-70 South Trench Construction Complete - Sta 2065+00 to 2072+00	0	0		01-Sep-21	0
Station 2072+00 to Station 2077+50		**76**	**76**	**21-Jan-21**	**03-Jun-21**	**60**
NSPN.11305	Install Silt Fence & Erosion Contorl Devices - Sta 2072+00 to 2077+50	10	10	21-Jan-21	08-Feb-21	60
NSPN.11300	Construct South Span - Sta 2072+00 to 2077+50	76	76	21-Jan-21	03-Jun-21	60
NSPN.10830	Saw-cut / Demo & Clear Exst Structures & Obstacles - Sta 2072+00 to 2077+50	10	10	22-Jan-21	09-Feb-21	60
NSPN.EX.4440	Excavate to Subgrade - Sta 2072+00 to 2077+50	25	25	03-Feb-21	22-Mar-21	60
NSPN.10850	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) EB Lanes - Sta 2072+00 to 2077+50	15	15	05-Mar-21	31-Mar-21	80
NSPN.10860	Place & Compact Agg. Base Course EB Lanes - Sta 2072+00 to 2077+50	15	15	24-Mar-21	15-Apr-21	60
NSPN.10870	Place Concrete Paving EB Lanes - Sta 2072+00 to 2077+50	10	10	09-Apr-21	23-Apr-21	60
NSPN.10880	Barrier/Guardrail - Sta 2072+00 to 2077+50	10	10	27-Apr-21	11-May-21	60
NSPN.10890	Install Final Lighting System & Fixtures EB Lanes - Sta 2072+00 to 2077+50	20	20	27-Apr-21	26-May-21	65
NSPN.10910	Final ITS System / Cameras / Electrical (Finishes) EB Lanes - Sta 2072+00 to 2077+50	20	20	27-Apr-21	26-May-21	65
NSPN.10900	Paint / Coat Wall Panels (Anti Graffiti) - Sta 2072+00 to 2077+50	10	10	12-May-21	26-May-21	60
A8520	Place Permanent Signs / Striping @ North Span - Sta 2072+00 to 2077+50	7	7	25-May-21	03-Jun-21	60
NSPN.10930	Eastbound I-70 Construction Complete - Sta 2072+00 to 2077+50	0	0		03-Jun-21	60
Station 2080+00 to Station 2088+00		**70**	**70**	**12-Jan-21**	**18-May-21**	**70**
NSPN.8640	Install Silt Fence & Erosion Contorl Devices - Sta 2080+00 to 2088+00	10	10	12-Jan-21	02-Feb-21	70
NSPN.11310	Construct South Span - Sta 2080+00 to 2088+00	70	70	12-Jan-21	18-May-21	70
NSPN.8650	Saw-cut / Demo & Clear Exst Structures & Obstacles - Sta 2080+00 to 2088+00	10	10	20-Jan-21	05-Feb-21	70
UPRR.TRN.EX.3820	Excavate to Subgrade - Sta 2080+00 to 2088+00	15	15	27-Jan-21	02-Mar-21	70
NSPN.8670	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) EB Lanes - Sta 2080+00 to 2088+00	10	10	03-Mar-21	18-Mar-21	87
NSPN.8720	Final ITS System / Cameras / Electrical (Finishes) EB Lanes - Sta 2080+00 to 2088+00	20	20	19-Mar-21	20-Apr-21	87
NSPN.8760	Install Final Lighting System & Fixtures EB Lanes - Sta 2080+00 to 2088+00	20	20	19-Mar-21	20-Apr-21	87
NSPN.8680	Place & Compact Agg. Base Course EB Lanes - Sta 2080+00 to 2088+00	10	10	30-Mar-21	13-Apr-21	70

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

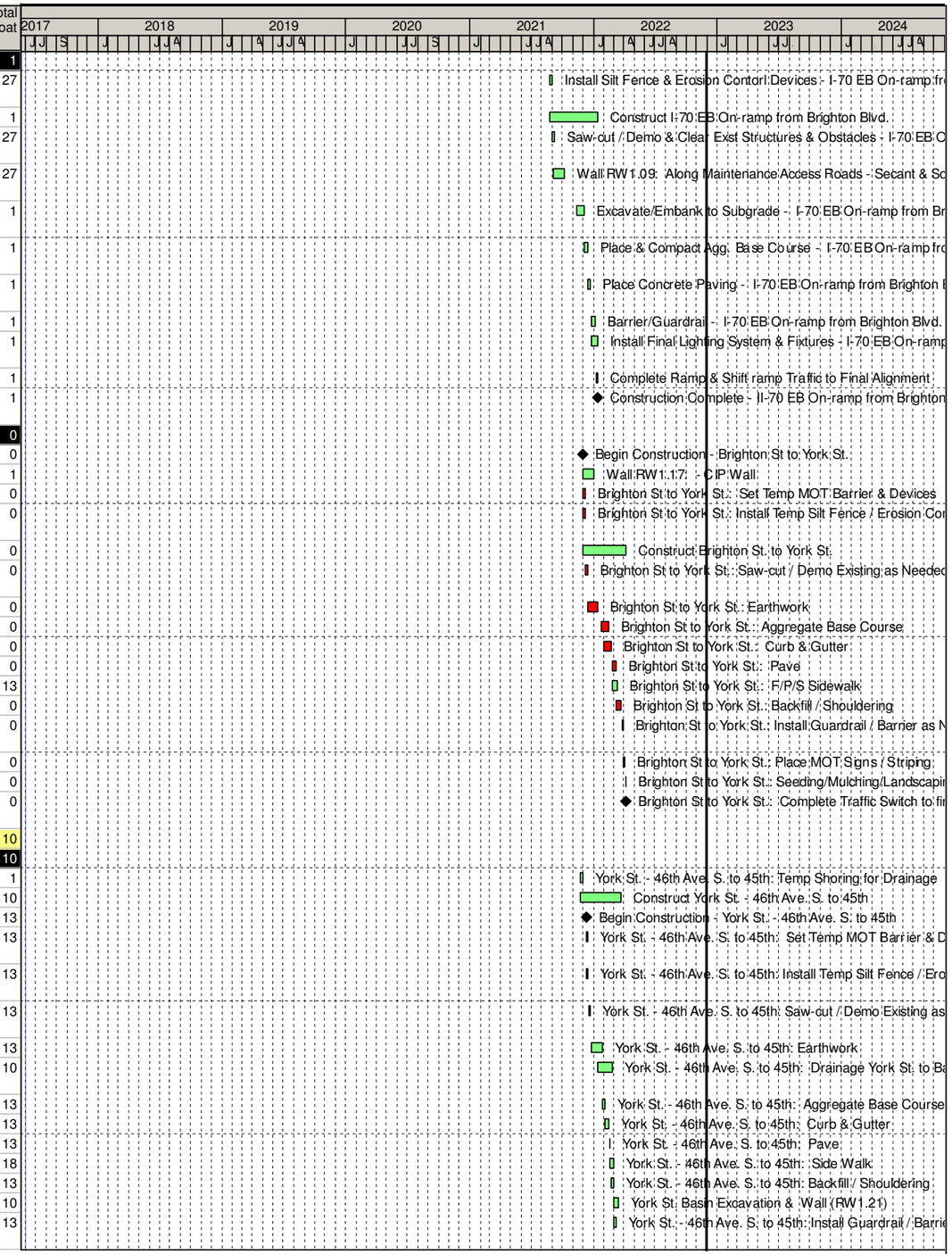
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.8690	Place Concrete Paving EB Lanes - Sta 2080+00 to 2088+00	7	7	14-Apr-21	23-Apr-21	70
NSPN.8710	Slip / Cast Barrier Rail EB Lanes - Sta 2080+00 to 2088+00	10	10	27-Apr-21	11-May-21	70
A4900	Place Permanent Signs / Striping - Sta 2080+00 to 2088+00	7	7	10-May-21	18-May-21	70
NSPN.8780	Eastbound I-70 Construction Complete - Sta 2080+00 to 2088+00	0	0		18-May-21	70
Stage 2		44	44	02-Sep-21	15-Nov-21	0
Segment 3 - Fillmore St. to Dahlia St. - (Sta 2042+00 to Sta 2085+00)		44	44	02-Sep-21	15-Nov-21	0
Begin EB I-70 Off-ramp to Colorado Blvd.		44	44	02-Sep-21	15-Nov-21	0
RDW.18630	Begin Construction - EB I-70 Off-Ramp to Colorado Blvd.	0	0	02-Sep-21		0
RDW.18660	EB I-70 Off-Ramp to Colorado Blvd.: Set Temp MOT Barrier & Devices	3	3	02-Sep-21	07-Sep-21	0
RDW.18670	EB I-70 Off-Ramp to Colorado Blvd.: Install Temp Silt Fence / Erosion Control Measures	4	4	02-Sep-21	08-Sep-21	0
RDW.18625	Construct EB I-70 Off-Ramp to Colorado Blvd.	44	44	02-Sep-21	15-Nov-21	0
CRW1551100	Wall RW1.43: EB I-70 Off-Ramp to Colorado Blvd (South Wall) Soil Nail	10	10	08-Sep-21	23-Sep-21	0
RDW.18560	EB I-70 Off-Ramp to Colorado Blvd.: Saw-cut / Demo Existing as Needed	3	3	08-Sep-21	10-Sep-21	0
RDW.18570	EB I-70 Off-Ramp to Colorado Blvd.: Earthwork	10	10	08-Sep-21	23-Sep-21	0
RDW.18580	EB I-70 Off-Ramp to Colorado Blvd.: Aggregate Base Course	10	10	24-Sep-21	11-Oct-21	0
RDW.18690	EB I-70 Off-Ramp to Colorado Blvd.: Curb & Gutter	10	10	04-Oct-21	20-Oct-21	0
RDW.18590	EB I-70 Off-Ramp to Colorado Blvd.: Pave	5	5	21-Oct-21	27-Oct-21	0
RDW.18700	EB I-70 Off-Ramp to Colorado Blvd.: Side Walk	10	10	21-Oct-21	03-Nov-21	4
RDW.18710	EB I-70 Off-Ramp to Colorado Blvd.: Backfill / Shouldering	5	5	28-Oct-21	03-Nov-21	0
RDW.18600	EB I-70 Off-Ramp to Colorado Blvd.: Install Guardrail / Barrier as Necessary	4	4	04-Nov-21	10-Nov-21	0
RDW.18610	EB I-70 Off-Ramp to Colorado Blvd.: Place MOT Signs / Striping	3	3	05-Nov-21	10-Nov-21	0
RDW.18640	EB I-70 Off-Ramp to Colorado Blvd: Complete Traffic Switch to final Alignment	0	0		12-Nov-21	0
RDW.18620	EB I-70 Off-Ramp to Colorado Blvd.: Seeding/Mulching/Landscaping	2	2	12-Nov-21	15-Nov-21	0
Stage 3		185	185	20-May-21	07-Apr-22	0
Segment 1 - Brighton Blvd to York St. - (Sta 2000+00 to Sta 2025+50)		120	120	26-Aug-21	07-Apr-22	0
Station 2006+00 to Station 2016+00		60	60	12-Nov-21	15-Mar-22	13
NSPN.10520	Saw-cut / Demo & Clear Exst Structures & Obstacles - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	2	2	12-Nov-21	15-Nov-21	21
NSPN.11345	Install Silt Fence & Erosion Contorl Devices @ South Wall - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	10	10	12-Nov-21	02-Dec-21	13
NSPN.11340	South Span - Sta 2006+00 to 2016+00	60	60	12-Nov-21	15-Mar-22	13
NSPN.EX.4410	Ex/Embank to Subgrade - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	20	20	03-Dec-21	12-Jan-22	13
NSPN.EX.4460	MSE Wall (RW(1.07) - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	20	20	03-Dec-21	12-Jan-22	23
NSPN.10540	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) EB Lanes Brighton Blvd. to UPRR - S	15	15	27-Dec-21	26-Jan-22	13
NSPN.10550	Place & Compact Agg. Base Course EB Lanes Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	5	5	27-Jan-22	03-Feb-22	18
NSPN.10560	Place Concrete Paving EB Lanes Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	10	10	27-Jan-22	15-Feb-22	18
NSPN.10580	Install Final Lighting System & Fixtures EB Lanes Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	20	20	27-Jan-22	07-Mar-22	18
NSPN.10600	Final ITS System / Cameras / Electrical (Finishes) EB Lanes Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	20	20	27-Jan-22	07-Mar-22	13
NSPN.10570	Barrier/Guardrail - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	10	10	04-Feb-22	28-Feb-22	18
NSPN.11705	Paint / Coat Wall Panels (Anti Graffiti) - Sta 2079+00 to 2088+00	10	10	01-Mar-22	15-Mar-22	13
NSPN.10510	Eastbound I-70 South Trench Construction Complete - Brighton Blvd. to UPRR - Sta 2006+00 to 2016+00	0	0		15-Mar-22	13

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
Construct - I-70 EB On-ramp from Brighton Blvd.		**77**	**77**	**26-Aug-21**	**12-Jan-22**	**1**
NSPN.10625	Install Silt Fence & Erosion Contorl Devices - I-70 EB On-ramp from Brighton Blvd.	5	5	26-Aug-21	01-Sep-21	27
NSPN.10615	Construct I-70 EB On-ramp from Brighton Blvd.	77	77	26-Aug-21	12-Jan-22	1
NSPN.10630	Saw-cut / Demo & Clear Exst Structures & Obstacles - I-70 EB On-ramp from Brighton Blvd.	5	5	31-Aug-21	07-Sep-21	27
CRW1091000	Wall RW1.09: Along Maintenance Access Roads - Secant & Soil Nail Wall	20	20	03-Sep-21	06-Oct-21	27
NSPN.EX.4420	Excavate/Embank to Subgrade - I-70 EB On-ramp from Brighton Blvd.	10	10	12-Nov-21	02-Dec-21	1
NSPN.10660	Place & Compact Agg. Base Course - I-70 EB On-ramp from Brighton Blvd.	5	5	03-Dec-21	13-Dec-21	1
NSPN.10670	Place Concrete Paving - I-70 EB On-ramp from Brighton Blvd.	5	5	14-Dec-21	23-Dec-21	1
NSPN.10680	Barrier/Guardrail - I-70 EB On-ramp from Brighton Blvd.	8	8	27-Dec-21	07-Jan-22	1
NSPN.10710	Install Final Lighting System & Fixtures - I-70 EB On-ramp from Brighton Blvd.	10	10	27-Dec-21	12-Jan-22	1
NSPN.11695	Complete Ramp & Shift ramp Traffic to Final Alignment	2	2	11-Jan-22	12-Jan-22	1
NSPN.10620	Construction Complete - II-70 EB On-ramp from Brighton Blvd.	0	0		12-Jan-22	1
46th Avenue South Reconstruction - Brighton St. to York St.		**64**	**64**	**02-Dec-21**	**07-Apr-22**	**0**
RDW.17790	Begin Construction - Brighton St to York St.	0	0	02-Dec-21		0
CRW1551070	Wall RW1.17: - CIP Wall	15	15	02-Dec-21	31-Dec-21	1
RDW.17810	Brighton St to York St.: Set Temp MOT Barrier & Devices	3	3	02-Dec-21	07-Dec-21	0
RDW.17820	Brighton St to York St.: Install Temp Silt Fence / Erosion Control Measures	4	4	02-Dec-21	08-Dec-21	0
46th.PH1.STG1.160	Construct Brighton St. to York St.	64	64	02-Dec-21	07-Apr-22	0
RDW.17720	Brighton St to York St.: Saw-cut / Demo Existing as Needed	3	3	08-Dec-21	13-Dec-21	0
RDW.17730	Brighton St to York St.: Earthwork	15	15	14-Dec-21	12-Jan-22	0
RDW.17740	Brighton St to York St.: Aggregate Base Course	12	12	24-Jan-22	15-Feb-22	0
RDW.17840	Brighton St to York St.: Curb & Gutter	10	10	02-Feb-22	23-Feb-22	0
RDW.17750	Brighton St to York St.: Pave	8	8	25-Feb-22	08-Mar-22	0
RDW.17850	Brighton St to York St.: F/P/S Sidewalk	10	10	25-Feb-22	11-Mar-22	13
RDW.17990	Brighton St to York St.: Backfill / Shouldering	8	8	09-Mar-22	23-Mar-22	0
RDW.17760	Brighton St to York St.: Install Guardrail / Barrier as Necessary	4	4	25-Mar-22	30-Mar-22	0
RDW.17770	Brighton St to York St.: Place MOT Signs / Striping	3	3	31-Mar-22	04-Apr-22	0
RDW.17780	Brighton St to York St.: Seeding/Mulching/Landscaping	2	2	05-Apr-22	07-Apr-22	0
RDW.17800	Brighton St to York St.: Complete Traffic Switch to final Alignment	0	0		07-Apr-22	0
Segment 2 - E. of York St. to Fillmore St - (Sta 2025+50 to Sta 2042+00)		**75**	**75**	**25-Oct-21**	**21-Mar-22**	**10**
York St. - 46th Avenue South to 45th		**59**	**59**	**22-Nov-21**	**21-Mar-22**	**10**
RDW.18000	York St. - 46th Ave. S. to 45th: Temp Shoring for Drainage	5	5	22-Nov-21	01-Dec-21	1
46th.PH1.STG1.150	Construct York St. - 46th Ave. S. to 45th	59	59	22-Nov-21	21-Mar-22	10
RDW.15680	Begin Construction - York St. - 46th Ave. S. to 45th	0	0	13-Dec-21		13
RDW.15690	York St. - 46th Ave. S. to 45th: Set Temp MOT Barrier & Devices	3	3	13-Dec-21	16-Dec-21	13
RDW.15700	York St. - 46th Ave. S. to 45th: Install Temp Silt Fence / Erosion Control Measures	1	1	13-Dec-21	13-Dec-21	13
RDW.15710	York St. - 46th Ave. S. to 45th: Saw-cut / Demo Existing as Needed	3	3	20-Dec-21	23-Dec-21	13
RDW.15720	York St. - 46th Ave. S. to 45th: Earthwork	15	15	27-Dec-21	26-Jan-22	13
CBS1186165	York St. - 46th Ave. S. to 45th: Drainage York St. to Basin (RW 1.21)	20	20	12-Jan-22	25-Feb-22	10
RDW.15740	York St. - 46th Ave. S. to 45th: Aggregate Base Course	5	5	27-Jan-22	03-Feb-22	13
RDW.15750	York St. - 46th Ave. S. to 45th: Curb & Gutter	5	5	04-Feb-22	15-Feb-22	13
RDW.15760	York St. - 46th Ave. S. to 45th: Pave	2	2	17-Feb-22	18-Feb-22	13
RDW.15770	York St. - 46th Ave. S. to 45th: Side Walk	5	5	17-Feb-22	28-Feb-22	18
RDW.15780	York St. - 46th Ave. S. to 45th: Backfill / Shouldering	4	4	23-Feb-22	01-Mar-22	13
CBS1186185	York St. Basin Excavation & Wall (RW1.21)	12	12	28-Feb-22	17-Mar-22	10
RDW.15790	York St. - 46th Ave. S. to 45th: Install Guardrail / Barrier as Necessary	4	4	02-Mar-22	07-Mar-22	13



Remaining Level of Effort
Remaining Work
Actual Level of Effort
Critical Remaining Work
Actual Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
RDW.15800	York St. - 46th Ave. S. to 45th: Place MOT Signs / Striping	3	3	08-Mar-22	11-Mar-22	13
RDW.15810	York St. - 46th Ave. S. to 45th: Seeding/Mulching/Landscaping	2	2	18-Mar-22	21-Mar-22	10
RDW.15820	York St. - 46th Ave. S. to 45th Complete Traffic Switch to final Alignment	0	0		21-Mar-22	10
46th Avenue South Reconstruction - York St. to Fillmore St.		63	63	25-Oct-21	01-Mar-22	22
RDW.14780	Begin Construction - York St. to Fillmore St.	0	0	25-Oct-21		22
RDW.14800	York St. to Fillmore St.: Set Temp MOT Barrier & Devices	3	3	25-Oct-21	27-Oct-21	22
RDW.14810	York St. to Fillmore St.: Install Temp Silt Fence / Erosion Control Measures	4	4	25-Oct-21	28-Oct-21	22
46th.PH1.STG1.80	Construct York St. to Fillmore St.	63	63	25-Oct-21	01-Mar-22	22
RDW.14710	York St. to Fillmore St.: Saw-cut / Demo Existing as Needed	3	3	28-Oct-21	01-Nov-21	22
RDW.14720	York St. to Fillmore St.: Earthwork	20	20	02-Nov-21	10-Dec-21	22
RDW.14730	York St. to Fillmore St.: Aggregate Base Course	10	10	13-Dec-21	31-Dec-21	22
RDW.14830	York St. to Fillmore St.: Curb & Gutter	10	10	23-Dec-21	11-Jan-22	22
RDW.14740	York St. to Fillmore St.: Pave	8	8	12-Jan-22	31-Jan-22	22
RDW.14840	York St. to Fillmore St.: Side Walk	10	10	12-Jan-22	02-Feb-22	32
RDW.14980	York St. to Fillmore St.: Backfill / Shouldering	8	8	26-Jan-22	09-Feb-22	22
RDW.14750	York St. to Fillmore St.: Install Guardrail / Barrier as Necessary	4	4	11-Feb-22	17-Feb-22	22
RDW.14760	York St. to Fillmore St.: Place MOT Signs / Striping	3	3	18-Feb-22	25-Feb-22	22
RDW.14770	York St. to Fillmore St.: Seeding/Mulching/Landscaping	2	2	28-Feb-22	01-Mar-22	22
RDW.14790	York St. to Fillmore St.: Complete Traffic Switch to final Alignment	0	0		01-Mar-22	22
Columbine St.		35	35	09-Nov-21	21-Jan-22	40
RDW.14910	Begin Construction - Columbine St.:	0	0	09-Nov-21		40
RDW.14930	Columbine St.: Set Temp MOT Barrier & Devices	1	1	09-Nov-21	09-Nov-21	40
RDW.14940	Columbine St.: Install Temp Silt Fence / Erosion Control Measures	2	2	09-Nov-21	10-Nov-21	40
46th.PH1.STG1.90	Construct Columbine St. (South of 46th)	35	35	09-Nov-21	21-Jan-22	40
RDW.14850	Columbine St.: Saw-cut / Demo Existing as Needed	2	2	10-Nov-21	12-Nov-21	40
RDW.14860	Columbine St.: Earthwork	10	10	15-Nov-21	03-Dec-21	40
RDW.14870	Columbine St.: Aggregate Base Course	5	5	16-Dec-21	27-Dec-21	40
RDW.14960	Columbine St.: Curb & Gutter	5	5	28-Dec-21	05-Jan-22	40
RDW.14880	Columbine St.: Pave	2	2	06-Jan-22	07-Jan-22	40
RDW.14970	Columbine St.: F/P/S Sidewalk	5	5	06-Jan-22	17-Jan-22	40
RDW.14890	Columbine St.: Place MOT Signs / Striping	3	3	11-Jan-22	17-Jan-22	40
RDW.14900	Columbine St.: Seeding/Mulching/Landscaping	2	2	20-Jan-22	21-Jan-22	40
RDW.14920	Columbine St.: Complete Traffic Switch to final Alignment	0	0		21-Jan-22	40
Clayton St.		35	35	09-Nov-21	21-Jan-22	40
RDW.15050	Begin Construction - Clayton St.:	0	0	09-Nov-21		40
RDW.15070	Clayton St.: Set Temp MOT Barrier & Devices	1	1	09-Nov-21	09-Nov-21	40
RDW.15080	Clayton St.: Install Temp Silt Fence / Erosion Control Measures	2	2	09-Nov-21	10-Nov-21	40
46th.PH1.STG1.100	Construct Clayton St. (South of 46th)	35	35	09-Nov-21	21-Jan-22	40
RDW.14990	Clayton St.: Saw-cut / Demo Existing as Needed	2	2	10-Nov-21	12-Nov-21	40
RDW.15000	Clayton St.: Earthwork	10	10	15-Nov-21	03-Dec-21	40
RDW.15010	Clayton St.: Aggregate Base Course	5	5	16-Dec-21	27-Dec-21	40
RDW.15100	Clayton St.: Curb & Gutter	5	5	28-Dec-21	05-Jan-22	40
RDW.15020	Clayton St.: Pave	2	2	06-Jan-22	07-Jan-22	40
RDW.15110	Clayton St.: F/P/S Sidewalk	5	5	06-Jan-22	17-Jan-22	40
RDW.15030	Clayton St.: Place MOT Signs / Striping	3	3	11-Jan-22	17-Jan-22	40
RDW.15040	Clayton St.: Seeding/Mulching/Landscaping	2	2	20-Jan-22	21-Jan-22	40
RDW.15060	Clayton St.: Complete Traffic Switch to final Alignment	0	0		21-Jan-22	40
Segment 3 - Fillmore St. to Dahlia St. - (Sta 2042+00 to Sta 2085+00)		184	184	20-May-21	05-Apr-22	1
Station 2072+00 to Station 2077+50		93	93	04-Jun-21	27-Oct-21	82
NSPN.11325	Install Silt Fence & Erosion Contorl Devices Sta 2072+00 to 2077+50	5	5	04-Jun-21	10-Jun-21	60
NSPN.11320	Construct South Span - 2072+00 to 2077+50	93	93	04-Jun-21	27-Oct-21	82
NSPN.10730	Saw-cut / Demo & Clear Exst Structures & Obstacles - Sta 2072+00 to 2077+50	5	5	08-Jun-21	14-Jun-21	82

Remaining Level of Effort
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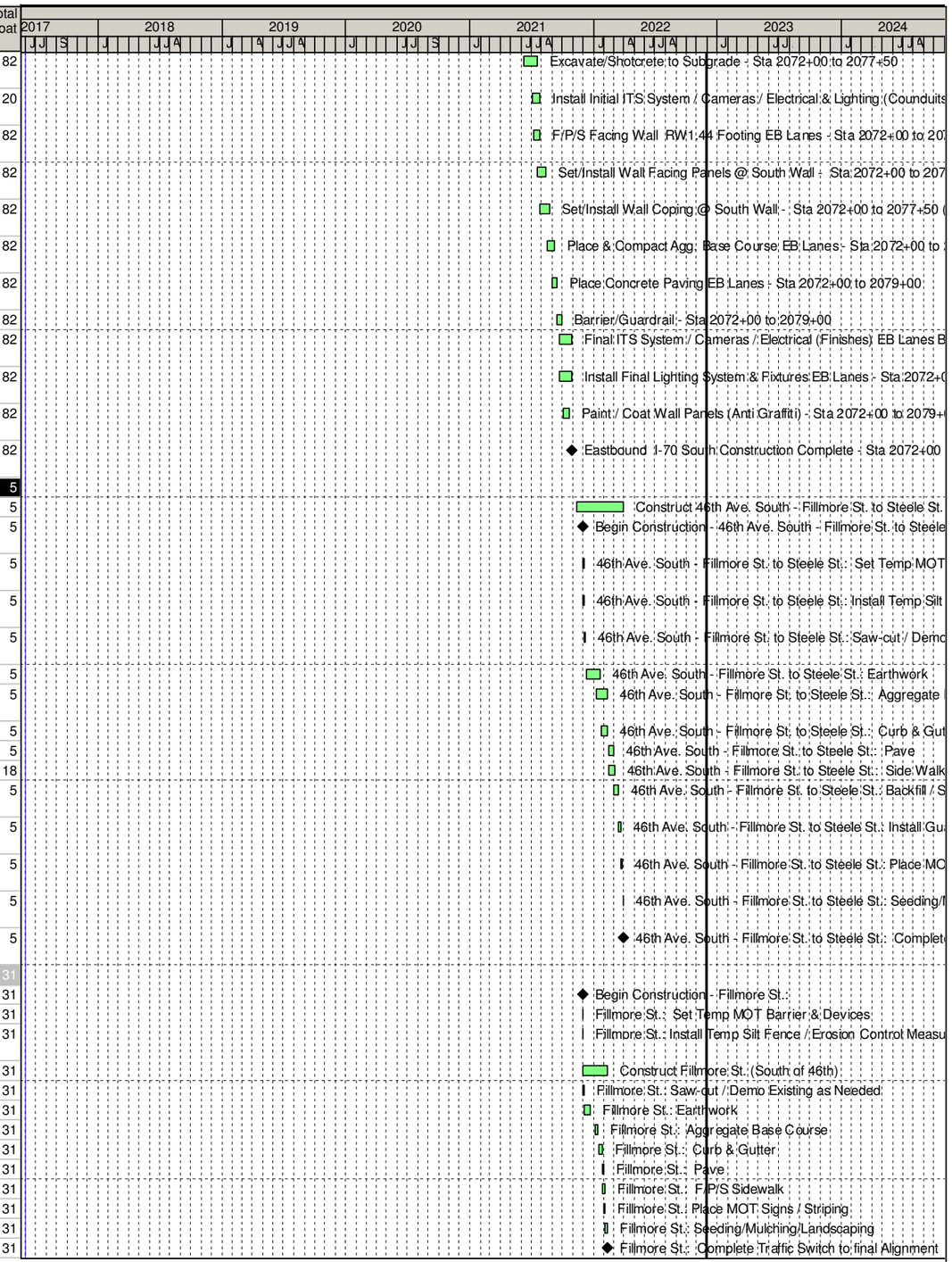
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.EX.4430	Excavate/Shotcrete to Subgrade - Sta 2072+00 to 2077+50	25	25	11-Jun-21	20-Jul-21	82
NSPN.10750	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) - Sta 2072+00 to 2077+50	15	15	06-Jul-21	27-Jul-21	120
NSPN.10940	F/P/S Facing Wall RW1.44 Footing EB Lanes - Sta 2072+00 to 2077+50	12	12	09-Jul-21	27-Jul-21	82
NSPN.10950	Set/Install Wall Facing Panels @ South Wall - Sta 2072+00 to 2077+50 (Wall RW1.44)	20	20	19-Jul-21	13-Aug-21	82
NSPN.10960	Set/Install Wall Coping @ South Wall - Sta 2072+00 to 2077+50 (Wall RW1.44)	20	20	26-Jul-21	23-Aug-21	82
NSPN.10760	Place & Compact Agg. Base Course EB Lanes - Sta 2072+00 to 2079+00	15	15	16-Aug-21	07-Sep-21	82
NSPN.10770	Place Concrete Paving EB Lanes - Sta 2072+00 to 2079+00	10	10	31-Aug-21	14-Sep-21	82
NSPN.10780	Barrier/Guardrail - Sta 2072+00 to 2079+00	10	10	16-Sep-21	01-Oct-21	82
NSPN.10790	Final ITS System / Cameras / Electrical (Finishes) EB Lanes Brighton - Sta 2072+00 to 2079+00	20	20	24-Sep-21	27-Oct-21	82
NSPN.10810	Install Final Lighting System & Fixtures EB Lanes - Sta 2072+00 to 2079+00	20	20	24-Sep-21	27-Oct-21	82
NSPN.10820	Paint / Coat Wall Panels (Anti Graffiti) - Sta 2072+00 to 2079+00	10	10	04-Oct-21	20-Oct-21	82
NSPN.10720	Eastbound I-70 South Construction Complete - Sta 2072+00 to 2079+00	0	0		27-Oct-21	82
46th Avenue South Reconstruction - Fillmore St. to Steele St.		**68**	**68**	**12-Nov-21**	**30-Mar-22**	**5**
46th.PH1.STG1.140	Construct 46th Ave. South - Fillmore St. to Steele St.	68	68	12-Nov-21	30-Mar-22	5
RDW.15530	Begin Construction - 46th Ave. South - Fillmore St. to Steele St.	0	0	30-Nov-21		5
RDW.15540	46th Ave. South - Fillmore St. to Steele St.: Set Temp MOT Barrier & Devices	3	3	30-Nov-21	02-Dec-21	5
RDW.15550	46th Ave. South - Fillmore St. to Steele St.: Install Temp Silt Fence / Erosion Control Measures	4	4	30-Nov-21	03-Dec-21	5
RDW.15560	46th Ave. South - Fillmore St. to Steele St.: Saw-cut / Demo Existing as Needed	3	3	03-Dec-21	08-Dec-21	5
RDW.15570	46th Ave. South - Fillmore St. to Steele St.: Earthwork	20	20	10-Dec-21	21-Jan-22	5
RDW.15590	46th Ave. South - Fillmore St. to Steele St.: Aggregate Base Course	15	15	11-Jan-22	11-Feb-22	5
RDW.15600	46th Ave. South - Fillmore St. to Steele St.: Curb & Gutter	10	10	24-Jan-22	11-Feb-22	5
RDW.15610	46th Ave. South - Fillmore St. to Steele St.: Pave	8	8	14-Feb-22	01-Mar-22	5
RDW.15620	46th Ave. South - Fillmore St. to Steele St.: Side Walk	10	10	14-Feb-22	03-Mar-22	18
RDW.15630	46th Ave. South - Fillmore St. to Steele St.: Backfill / Shouldering	8	8	02-Mar-22	14-Mar-22	5
RDW.15640	46th Ave. South - Fillmore St. to Steele St.: Install Guardrail / Barrier as Necessary	4	4	15-Mar-22	21-Mar-22	5
RDW.15650	46th Ave. South - Fillmore St. to Steele St.: Place MOT Signs / Striping	3	3	23-Mar-22	28-Mar-22	5
RDW.15660	46th Ave. South - Fillmore St. to Steele St.: Seeding/Mulching/Landscaping	2	2	29-Mar-22	30-Mar-22	5
RDW.15670	46th Ave. South - Fillmore St. to Steele St.: Complete Traffic Switch to final Alignment	0	0		30-Mar-22	5
Fillmore St.		**35**	**35**	**30-Nov-21**	**09-Feb-22**	**31**
RDW.15180	Begin Construction - Fillmore St.:	0	0	30-Nov-21		31
RDW.15200	Fillmore St.: Set Temp MOT Barrier & Devices	1	1	30-Nov-21	30-Nov-21	31
RDW.15210	Fillmore St.: Install Temp Silt Fence / Erosion Control Measures	2	2	30-Nov-21	01-Dec-21	31
46th.PH1.STG1.110	Construct Fillmore St. (South of 46th)	35	35	30-Nov-21	09-Feb-22	31
RDW.15120	Fillmore St.: Saw-cut / Demo Existing as Needed	2	2	01-Dec-21	02-Dec-21	31
RDW.15130	Fillmore St.: Earthwork	10	10	03-Dec-21	23-Dec-21	31
RDW.15140	Fillmore St.: Aggregate Base Course	5	5	05-Jan-22	12-Jan-22	31
RDW.15230	Fillmore St.: Curb & Gutter	5	5	17-Jan-22	26-Jan-22	31
RDW.15150	Fillmore St.: Pave	2	2	27-Jan-22	31-Jan-22	31
RDW.15240	Fillmore St.: F/P/S Sidewalk	5	5	27-Jan-22	03-Feb-22	31
RDW.15160	Fillmore St.: Place MOT Signs / Striping	3	3	01-Feb-22	03-Feb-22	31
RDW.15170	Fillmore St.: Seeding/Mulching/Landscaping	2	2	04-Feb-22	09-Feb-22	31
RDW.15190	Fillmore St.: Complete Traffic Switch to final Alignment	0	0		09-Feb-22	31

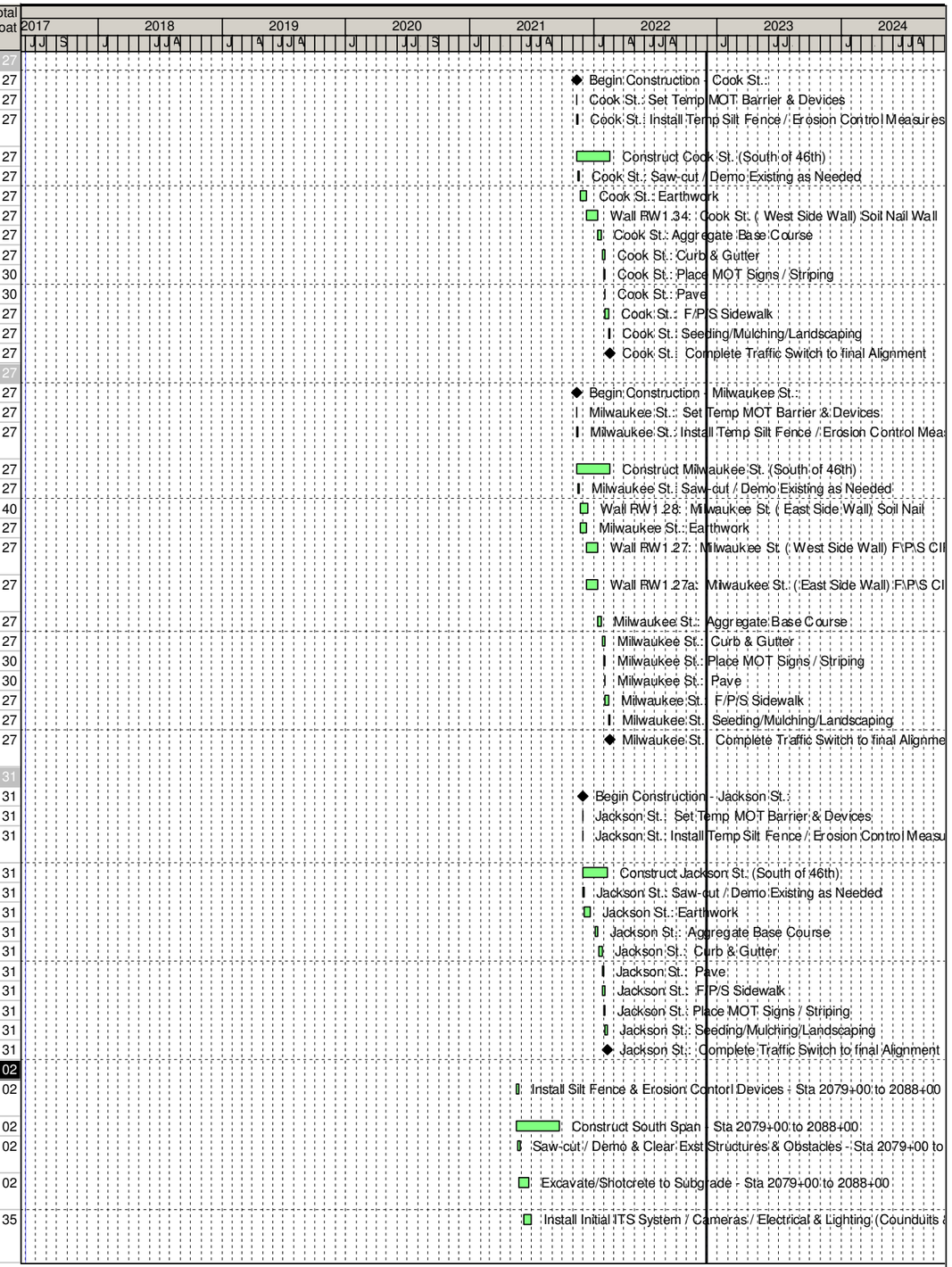


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
Cook St.		46	46	12-Nov-21	17-Feb-22	27
RDW.19450	Begin Construction - Cook St.:	0	0	12-Nov-21		27
RDW.19470	Cook St.: Set Temp MOT Barrier & Devices	1	1	12-Nov-21	12-Nov-21	27
RDW.19480	Cook St.: Install Temp Silt Fence / Erosion Control Measures	2	2	12-Nov-21	15-Nov-21	27
46th.PH1.STG1.180	Construct Cook St. (South of 46th)	46	46	12-Nov-21	17-Feb-22	27
RDW.19390	Cook St.: Saw-cut / Demo Existing as Needed	2	2	15-Nov-21	18-Nov-21	27
RDW.19400	Cook St.: Earthwork	10	10	22-Nov-21	10-Dec-21	27
CRW1551190	Wall RW1.34: Cook St. (West Side Wall) Soil Nail Wall	15	15	13-Dec-21	11-Jan-22	27
RDW.19410	Cook St.: Aggregate Base Course	5	5	12-Jan-22	24-Jan-22	27
RDW.19500	Cook St.: Curb & Gutter	5	5	26-Jan-22	02-Feb-22	27
RDW.19430	Cook St.: Place MOT Signs / Striping	3	3	02-Feb-22	04-Feb-22	30
RDW.19420	Cook St.: Pave	2	2	03-Feb-22	04-Feb-22	30
RDW.19510	Cook St.: F/P/S Sidewalk	5	5	03-Feb-22	14-Feb-22	27
RDW.19440	Cook St.: Seeding/Mulching/Landscaping	2	2	15-Feb-22	17-Feb-22	27
RDW.19460	Cook St.: Complete Traffic Switch to final Alignment	0	0		17-Feb-22	27
Milwaukee St.		46	46	12-Nov-21	17-Feb-22	27
RDW.18940	Begin Construction - Milwaukee St.:	0	0	12-Nov-21		27
RDW.18960	Milwaukee St.: Set Temp MOT Barrier & Devices	1	1	12-Nov-21	12-Nov-21	27
RDW.18970	Milwaukee St.: Install Temp Silt Fence / Erosion Control Measures	2	2	12-Nov-21	15-Nov-21	27
46th.PH1.STG1.170	Construct Milwaukee St. (South of 46th)	46	46	12-Nov-21	17-Feb-22	27
RDW.18880	Milwaukee St.: Saw-cut / Demo Existing as Needed	2	2	15-Nov-21	18-Nov-21	27
CRW1551130	Wall RW1.28: Milwaukee St. (East Side Wall) Soil Nail	12	12	22-Nov-21	14-Dec-21	40
RDW.18890	Milwaukee St.: Earthwork	10	10	22-Nov-21	10-Dec-21	27
CRW1551160	Wall RW1.27: Milwaukee St. (West Side Wall) F\P\S CIP Wall	15	15	13-Dec-21	11-Jan-22	27
CRW1551170	Wall RW1.27a: Milwaukee St. (East Side Wall) F\P\S CIP Wall	15	15	13-Dec-21	11-Jan-22	27
RDW.18900	Milwaukee St.: Aggregate Base Course	5	5	12-Jan-22	24-Jan-22	27
RDW.18990	Milwaukee St.: Curb & Gutter	5	5	26-Jan-22	02-Feb-22	27
RDW.18920	Milwaukee St.: Place MOT Signs / Striping	3	3	02-Feb-22	04-Feb-22	30
RDW.18910	Milwaukee St.: Pave	2	2	03-Feb-22	04-Feb-22	30
RDW.19000	Milwaukee St.: F/P/S Sidewalk	5	5	03-Feb-22	14-Feb-22	27
RDW.18930	Milwaukee St.: Seeding/Mulching/Landscaping	2	2	15-Feb-22	17-Feb-22	27
RDW.18950	Milwaukee St.: Complete Traffic Switch to final Alignment	0	0		17-Feb-22	27
Jackson St.		35	35	30-Nov-21	09-Feb-22	31
RDW.15310	Begin Construction - Jackson St.:	0	0	30-Nov-21		31
RDW.15330	Jackson St.: Set Temp MOT Barrier & Devices	1	1	30-Nov-21	30-Nov-21	31
RDW.15340	Jackson St.: Install Temp Silt Fence / Erosion Control Measures	2	2	30-Nov-21	01-Dec-21	31
46th.PH1.STG1.120	Construct Jackson St. (South of 46th)	35	35	30-Nov-21	09-Feb-22	31
RDW.15250	Jackson St.: Saw-cut / Demo Existing as Needed	2	2	01-Dec-21	02-Dec-21	31
RDW.15260	Jackson St.: Earthwork	10	10	03-Dec-21	23-Dec-21	31
RDW.15270	Jackson St.: Aggregate Base Course	5	5	05-Jan-22	12-Jan-22	31
RDW.15360	Jackson St.: Curb & Gutter	5	5	17-Jan-22	26-Jan-22	31
RDW.15280	Jackson St.: Pave	2	2	27-Jan-22	31-Jan-22	31
RDW.15370	Jackson St.: F/P/S Sidewalk	5	5	27-Jan-22	03-Feb-22	31
RDW.15290	Jackson St.: Place MOT Signs / Striping	3	3	01-Feb-22	03-Feb-22	31
RDW.15300	Jackson St.: Seeding/Mulching/Landscaping	2	2	04-Feb-22	09-Feb-22	31
RDW.15320	Jackson St.: Complete Traffic Switch to final Alignment	0	0		09-Feb-22	31
Station 2077+50 to Station 2088+00		83	83	20-May-21	23-Sep-21	102
NSPN.11335	Install Silt Fence & Erosion Contorl Devices - Sta 2079+00 to 2088+00	5	5	20-May-21	26-May-21	102
NSPN.11330	Construct South Span - Sta 2079+00 to 2088+00	83	83	20-May-21	23-Sep-21	102
NSPN.10980	Saw-cut / Demo & Clear Exst Structures & Obstacles - Sta 2079+00 to 2088+00	5	5	24-May-21	28-May-21	102
NSPN.EX.4450	Excavate/Shotcrete to Subgrade - Sta 2079+00 to 2088+00	20	20	27-May-21	25-Jun-21	102
NSPN.11000	Install Initial ITS System / Cameras / Electrical & Lighting (Counduits & Handholds) EB Lanes Sta 2079+00 to 2088+00	15	15	11-Jun-21	02-Jul-21	135

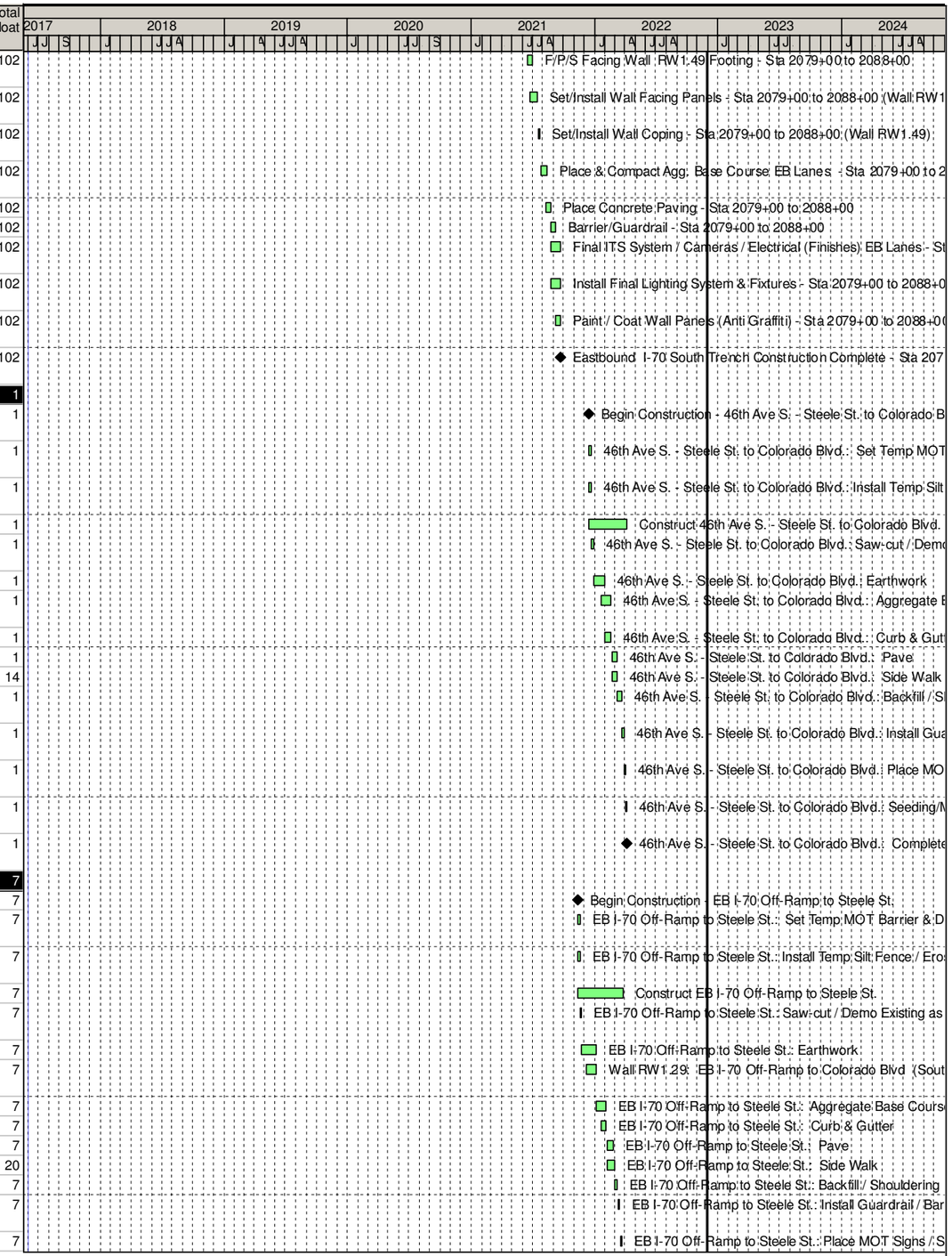


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
◆ Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
NSPN.11090	F/P/S Facing Wall RW1.49 Footing - Sta 2079+00 to 2088+00	12	12	16-Jun-21	02-Jul-21	102
NSPN.11080	Set/Install Wall Facing Panels - Sta 2079+00 to 2088+00 (Wall RW1.49)	15	15	24-Jun-21	16-Jul-21	102
NSPN.11100	Set/Install Wall Coping - Sta 2079+00 to 2088+00 (Wall RW1.49)	5	5	19-Jul-21	23-Jul-21	102
NSPN.11010	Place & Compact Agg. Base Course EB Lanes - Sta 2079+00 to 2088+00	15	15	26-Jul-21	13-Aug-21	102
NSPN.11020	Place Concrete Paving - Sta 2079+00 to 2088+00	10	10	09-Aug-21	23-Aug-21	102
NSPN.11030	Barrier/Guardrail - Sta 2079+00 to 2088+00	10	10	24-Aug-21	07-Sep-21	102
NSPN.11040	Final ITS System / Cameras / Electrical (Finishes) EB Lanes - Sta 2079+00 to 2088+00	20	20	24-Aug-21	23-Sep-21	102
NSPN.11060	Install Final Lighting System & Fixtures - Sta 2079+00 to 2088+00	20	20	24-Aug-21	23-Sep-21	102
NSPN.11070	Paint / Coat Wall Panels (Anti Graffiti) - Sta 2079+00 to 2088+00	10	10	08-Sep-21	23-Sep-21	102
NSPN.10970	Eastbound I-70 South Trench Construction Complete - Sta 2079+00 to 2088+00	0	0		23-Sep-21	102
46th Avenue South Reconstruction - Steele St. to Monroe St.		**56**	**56**	**16-Dec-21**	**05-Apr-22**	**1**
RDW.15380	Begin Construction - 46th Ave S. - Steele St. to Colorado Blvd.	0	0	16-Dec-21		1
RDW.15390	46th Ave S. - Steele St. to Colorado Blvd.: Set Temp MOT Barrier & Devices	3	3	16-Dec-21	22-Dec-21	1
RDW.15400	46th Ave S. - Steele St. to Colorado Blvd.: Install Temp Silt Fence / Erosion Control Measures	4	4	16-Dec-21	23-Dec-21	1
46th.PH1.STG1.130	Construct 46th Ave S. - Steele St. to Colorado Blvd.	56	56	16-Dec-21	05-Apr-22	1
RDW.15410	46th Ave S. - Steele St. to Colorado Blvd.: Saw-cut / Demo Existing as Needed	3	3	23-Dec-21	28-Dec-21	1
RDW.15420	46th Ave S. - Steele St. to Colorado Blvd.: Earthwork	15	15	30-Dec-21	31-Jan-22	1
RDW.15440	46th Ave S. - Steele St. to Colorado Blvd.: Aggregate Base Course	15	15	21-Jan-22	18-Feb-22	1
RDW.15450	46th Ave S. - Steele St. to Colorado Blvd.: Curb & Gutter	10	10	01-Feb-22	18-Feb-22	1
RDW.15460	46th Ave S. - Steele St. to Colorado Blvd.: Pave	8	8	23-Feb-22	07-Mar-22	1
RDW.15470	46th Ave S. - Steele St. to Colorado Blvd.: Side Walk	10	10	23-Feb-22	09-Mar-22	14
RDW.15480	46th Ave S. - Steele St. to Colorado Blvd.: Backfill / Shouldering	8	8	08-Mar-22	21-Mar-22	1
RDW.15490	46th Ave S. - Steele St. to Colorado Blvd.: Install Guardrail / Barrier as Necessary	4	4	23-Mar-22	29-Mar-22	1
RDW.15500	46th Ave S. - Steele St. to Colorado Blvd.: Place MOT Signs / Striping	3	3	30-Mar-22	01-Apr-22	1
RDW.15510	46th Ave S. - Steele St. to Colorado Blvd.: Seeding/Mulching/Landscaping	2	2	04-Apr-22	05-Apr-22	1
RDW.15520	46th Ave S. - Steele St. to Colorado Blvd.: Complete Traffic Switch to final Alignment	0	0		05-Apr-22	1
Complete EB I-70 Off-ramp to Steele St.		**66**	**66**	**12-Nov-21**	**28-Mar-22**	**7**
RDW.18790	Begin Construction - EB I-70 Off-Ramp to Steele St.	0	0	12-Nov-21		7
RDW.18820	EB I-70 Off-Ramp to Steele St.: Set Temp MOT Barrier & Devices	3	3	12-Nov-21	18-Nov-21	7
RDW.18830	EB I-70 Off-Ramp to Steele St.: Install Temp Silt Fence / Erosion Control Measures	4	4	12-Nov-21	19-Nov-21	7
RDW.18785	Construct EB I-70 Off-Ramp to Steele St.	66	66	12-Nov-21	28-Mar-22	7
RDW.18720	EB I-70 Off-Ramp to Steele St.: Saw-cut / Demo Existing as Needed	3	3	19-Nov-21	23-Nov-21	7
RDW.18730	EB I-70 Off-Ramp to Steele St.: Earthwork	20	20	24-Nov-21	05-Jan-22	7
CRW1551110	Wall RW1.29: EB I-70 Off-Ramp to Colorado Blvd (South Wall) Soil Nail	15	15	07-Dec-21	05-Jan-22	7
RDW.18740	EB I-70 Off-Ramp to Steele St.: Aggregate Base Course	15	15	06-Jan-22	04-Feb-22	7
RDW.18850	EB I-70 Off-Ramp to Steele St.: Curb & Gutter	10	10	20-Jan-22	04-Feb-22	7
RDW.18750	EB I-70 Off-Ramp to Steele St.: Pave	8	8	09-Feb-22	25-Feb-22	7
RDW.18860	EB I-70 Off-Ramp to Steele St.: Side Walk	10	10	09-Feb-22	01-Mar-22	20
RDW.18870	EB I-70 Off-Ramp to Steele St.: Backfill / Shouldering	8	8	28-Feb-22	09-Mar-22	7
RDW.18760	EB I-70 Off-Ramp to Steele St.: Install Guardrail / Barrier as Necessary	4	4	11-Mar-22	17-Mar-22	7
RDW.18770	EB I-70 Off-Ramp to Steele St.: Place MOT Signs / Striping	3	3	18-Mar-22	23-Mar-22	7

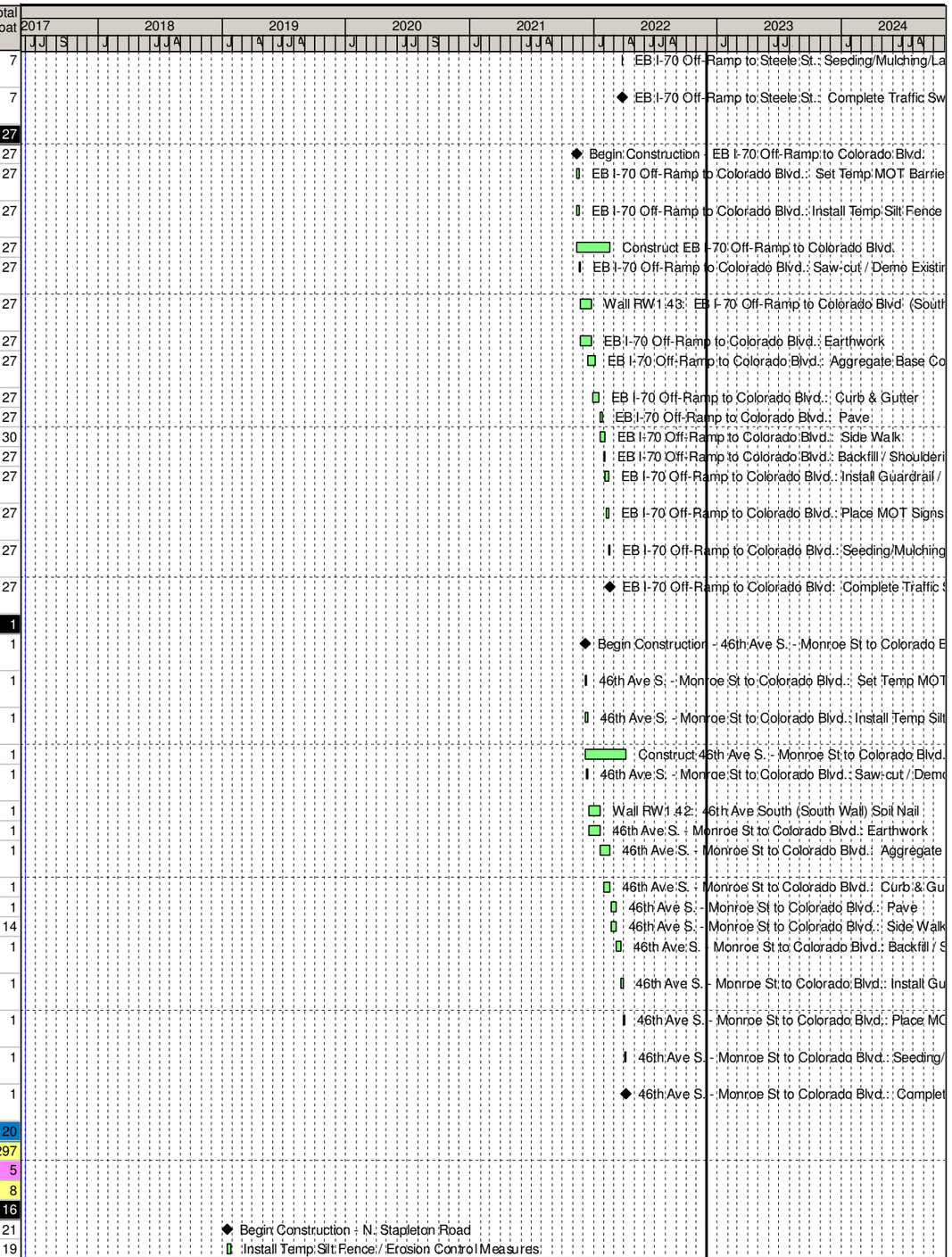


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
RDW.18780	EB I-70 Off-Ramp to Steele St.: Seeding/Mulching/Landscaping	2	2	25-Mar-22	28-Mar-22	7
RDW.18800	EB I-70 Off-Ramp to Steele St.: Complete Traffic Switch to final Alignment	0	0		28-Mar-22	7
Complete EB I-70 Off-ramp to Colorado Blvd.		**46**	**46**	**12-Nov-21**	**17-Feb-22**	**27**
RDW.19080	Begin Construction - EB I-70 Off-Ramp to Colorado Blvd.	0	0	12-Nov-21		27
RDW.19110	EB I-70 Off-Ramp to Colorado Blvd.: Set Temp MOT Barrier & Devices	3	3	12-Nov-21	18-Nov-21	27
RDW.19120	EB I-70 Off-Ramp to Colorado Blvd.: Install Temp Silt Fence / Erosion Control Measures	4	4	12-Nov-21	19-Nov-21	27
RDW.19100	Construct EB I-70 Off-Ramp to Colorado Blvd.	46	46	12-Nov-21	17-Feb-22	27
RDW.19010	EB I-70 Off-Ramp to Colorado Blvd.: Saw-cut / Demo Existing as Needed	3	3	19-Nov-21	23-Nov-21	27
CRW1551120	Wall RW1.43: EB I-70 Off-Ramp to Colorado Blvd (South Wall) Soil Nail	15	15	24-Nov-21	27-Dec-21	27
RDW.19020	EB I-70 Off-Ramp to Colorado Blvd.: Earthwork	15	15	24-Nov-21	27-Dec-21	27
RDW.19030	EB I-70 Off-Ramp to Colorado Blvd.: Aggregate Base Course	10	10	16-Dec-21	05-Jan-22	27
RDW.19140	EB I-70 Off-Ramp to Colorado Blvd.: Curb & Gutter	10	10	28-Dec-21	17-Jan-22	27
RDW.19040	EB I-70 Off-Ramp to Colorado Blvd.: Pave	5	5	20-Jan-22	27-Jan-22	27
RDW.19150	EB I-70 Off-Ramp to Colorado Blvd.: Side Walk	10	10	20-Jan-22	04-Feb-22	30
RDW.19160	EB I-70 Off-Ramp to Colorado Blvd.: Backfill / Shouldering	4	4	31-Jan-22	03-Feb-22	27
RDW.19050	EB I-70 Off-Ramp to Colorado Blvd.: Install Guardrail / Barrier as Necessary	4	4	04-Feb-22	14-Feb-22	27
RDW.19060	EB I-70 Off-Ramp to Colorado Blvd.: Place MOT Signs / Striping	3	3	09-Feb-22	14-Feb-22	27
RDW.19070	EB I-70 Off-Ramp to Colorado Blvd.: Seeding/Mulching/Landscaping	2	2	15-Feb-22	17-Feb-22	27
RDW.19090	EB I-70 Off-Ramp to Colorado Blvd: Complete Traffic Switch to final Alignment	0	0		17-Feb-22	27
46th Avenue South Reconstruction - Monroe St. to Colorado Blvd.		**61**	**61**	**07-Dec-21**	**05-Apr-22**	**1**
RDW.14280	Begin Construction - 46th Ave S. - Monroe St to Colorado Blvd.	0	0	07-Dec-21		1
RDW.14290	46th Ave S. - Monroe St to Colorado Blvd.: Set Temp MOT Barrier & Devices	3	3	07-Dec-21	10-Dec-21	1
RDW.14300	46th Ave S. - Monroe St to Colorado Blvd.: Install Temp Silt Fence / Erosion Control Measures	4	4	07-Dec-21	13-Dec-21	1
RDW.14275	Construct 46th Ave S. - Monroe St to Colorado Blvd.	61	61	07-Dec-21	05-Apr-22	1
RDW.14310	46th Ave S. - Monroe St to Colorado Blvd.: Saw-cut / Demo Existing as Needed	3	3	13-Dec-21	16-Dec-21	1
CRW1421000	Wall RW1.42: 46th Ave South (South Wall) Soil Nail	15	15	20-Dec-21	20-Jan-22	1
RDW.14320	46th Ave S. - Monroe St to Colorado Blvd.: Earthwork	15	15	20-Dec-21	20-Jan-22	1
RDW.14340	46th Ave S. - Monroe St to Colorado Blvd.: Aggregate Base Course	15	15	21-Jan-22	18-Feb-22	1
RDW.14350	46th Ave S. - Monroe St to Colorado Blvd.: Curb & Gutter	10	10	01-Feb-22	18-Feb-22	1
RDW.14360	46th Ave S. - Monroe St to Colorado Blvd.: Pave	8	8	23-Feb-22	07-Mar-22	1
RDW.14370	46th Ave S. - Monroe St to Colorado Blvd.: Side Walk	10	10	23-Feb-22	09-Mar-22	14
RDW.14560	46th Ave S. - Monroe St to Colorado Blvd.: Backfill / Shouldering	8	8	08-Mar-22	21-Mar-22	1
RDW.14380	46th Ave S. - Monroe St to Colorado Blvd.: Install Guardrail / Barrier as Necessary	4	4	23-Mar-22	29-Mar-22	1
RDW.14390	46th Ave S. - Monroe St to Colorado Blvd.: Place MOT Signs / Striping	3	3	30-Mar-22	01-Apr-22	1
RDW.14400	46th Ave S. - Monroe St to Colorado Blvd.: Seeding/Mulching/Landscaping	2	2	04-Apr-22	05-Apr-22	1
RDW.14410	46th Ave S. - Monroe St to Colorado Blvd.: Complete Traffic Switch to final Alignment	0	0		05-Apr-22	1
Area 2 - Dahlia St to Sand Creek Bridge - Sta 2085+00 to 2192+37.89 (2.01 miles)		**538**	**538**	**22-Oct-18**	**10-Jun-21**	**120**
Phase 1		**269**	**269**	**22-Oct-18**	**05-Mar-20**	**297**
Stage 2		**143**	**143**	**22-Oct-18**	**19-Jul-19**	**5**
Stapleton Drive North		**94**	**94**	**17-Jan-19**	**08-Jul-19**	**8**
N. Stapleton Road (Sta 2085+00 to Sta 2104+00)		**86**	**86**	**17-Jan-19**	**24-Jun-19**	**16**
RDW.17440	Begin Construction - N. Stapleton Road	0	0	17-Jan-19		21
RDW.17700	Install Temp Silt Fence / Erosion Control Measures	5	5	17-Jan-19	28-Jan-19	19



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
RDW.17450	Saw-cut / Demo Existing	5	5	21-Jan-19	30-Jan-19	19
RDW.17460	Ex / Embank to Subgrade	20	20	29-Jan-19	12-Mar-19	19
CRW1551060	Wall RW1.53: North of Stapleton Dr N	15	15	18-Feb-19	18-Mar-19	16
RDW.17420	E/L/B Storm Drainage	15	15	22-Feb-19	21-Mar-19	24
RDW.17430	Construct / Maintain Temp Access - Driveways & Entrances	20	20	11-Mar-19	11-Apr-19	47
RDW.17470	Place Agg. Base Course	15	15	20-Mar-19	11-Apr-19	16
RDW.17650	F/P/S Curb & Gutter	15	15	15-Apr-19	07-May-19	16
RDW.17480	Paving	10	10	09-May-19	24-May-19	16
RDW.17490	Backfill / Fine Grade	6	6	28-May-19	04-Jun-19	16
RDW.17500	F/P/S Sidewalk	8	8	04-Jun-19	14-Jun-19	16
RDW.17510	Place Temp Striping / MOT Signs	4	4	17-Jun-19	21-Jun-19	17
RDW.17530	Landscaping / Seeding as Required	5	5	17-Jun-19	24-Jun-19	16
RDW.17520	N. Stapleton Road Complete	0	0		24-Jun-19	16
N. Stapleton Road (Sta 2104+00 to Sta 2131+00)		84	84	17-Jan-19	20-Jun-19	18
RDW.3039	Begin Construction - N. Stapleton Road	0	0	17-Jan-19		18
RDW.3041	Install Temp Silt Fence / Erosion Control Measures	5	5	17-Jan-19	28-Jan-19	18
RDW.3042	Saw-cut / Demo Existing	5	5	24-Jan-19	05-Feb-19	18
RDW.3044	Ex / Embank to Subgrade	20	20	30-Jan-19	14-Mar-19	18
RDW.3156	E/L/B Storm Drainage	15	15	26-Feb-19	22-Mar-19	23
RDW.3158	Construct / Maintain Temp Access - Driveways & Entrances	20	20	06-Mar-19	08-Apr-19	49
RDW.3046	Place Agg. Base Course	15	15	15-Mar-19	08-Apr-19	18
RDW.3940	F/P/S Curb & Gutter	15	15	09-Apr-19	03-May-19	18
RDW.3048	Paving	10	10	06-May-19	21-May-19	18
RDW.3050	Backfill / Fine Grade	6	6	23-May-19	31-May-19	18
RDW.3052	F/P/S Sidewalk	8	8	31-May-19	12-Jun-19	18
RDW.3054	Place Signs / Striping	3	3	13-Jun-19	17-Jun-19	20
RDW.3076	Landscaping / Seeding as Required	5	5	13-Jun-19	20-Jun-19	18
RDW.3056	N. Stapleton Road Complete	0	0		20-Jun-19	18
N. Stapleton Road (Sta 2131+00 to Sta 2157+50)		79	79	29-Jan-19	20-Jun-19	18
RDW.16840	Begin Construction - N. Stapleton Road	0	0	29-Jan-19		18
RDW.17100	Install Temp Silt Fence / Erosion Control Measures	5	5	29-Jan-19	08-Feb-19	18
RDW.16850	Saw-cut / Demo Existing	5	5	06-Feb-19	14-Feb-19	18
RDW.16860	Ex / Embank to Subgrade	20	20	12-Feb-19	22-Mar-19	18
RDW.16820	E/L/B Storm Drainage	15	15	06-Mar-19	01-Apr-19	18
RDW.16830	Construct / Maintain Temp Access - Driveways & Entrances	20	20	06-Mar-19	08-Apr-19	49
RDW.16870	Place Agg. Base Course	15	15	15-Mar-19	08-Apr-19	18
RDW.17050	F/P/S Curb & Gutter	15	15	09-Apr-19	03-May-19	18
RDW.16880	Paving	10	10	06-May-19	21-May-19	18
RDW.16890	Backfill / Fine Grade	6	6	23-May-19	31-May-19	18
RDW.16900	F/P/S Sidewalk	8	8	31-May-19	12-Jun-19	18
RDW.16910	Place Signs / Striping	4	4	13-Jun-19	18-Jun-19	19
RDW.16930	Landscaping / Seeding as Required	5	5	13-Jun-19	20-Jun-19	18
RDW.16920	N. Stapleton Road Complete	0	0		20-Jun-19	18
N. Stapleton Road (Sta 2157+50 to Sta 2184+00)		84	84	11-Feb-19	08-Jul-19	8
RDW.17140	Begin Construction - N. Stapleton Road	0	0	11-Feb-19		8
RDW.17400	Install Temp Silt Fence / Erosion Control Measures	5	5	11-Feb-19	20-Feb-19	8
RDW.17150	Saw-cut / Demo Existing	5	5	18-Feb-19	27-Feb-19	8
RDW.17160	Ex / Embank to Subgrade	20	20	26-Feb-19	01-Apr-19	8
RDW.17120	E/L/B Storm Drainage	15	15	15-Mar-19	08-Apr-19	13
RDW.17130	Construct / Maintain Temp Access - Driveways & Entrances	20	20	26-Mar-19	26-Apr-19	39
RDW.17170	Place Agg. Base Course	15	15	02-Apr-19	26-Apr-19	8
RDW.17350	F/P/S Curb & Gutter	15	15	29-Apr-19	21-May-19	8
RDW.17180	Paving	10	10	23-May-19	07-Jun-19	8
RDW.17190	Backfill / Fine Grade	6	6	10-Jun-19	17-Jun-19	8
RDW.17200	F/P/S Sidewalk	8	8	17-Jun-19	27-Jun-19	8
RDW.17210	Place Signs / Striping	3	3	28-Jun-19	02-Jul-19	10
RDW.17230	Landscaping / Seeding as Required	5	5	28-Jun-19	08-Jul-19	8
RDW.17220	N. Stapleton Road Complete	0	0		08-Jul-19	8
Stapleton Drive South		97	97	29-Jan-19	19-Jul-19	0
S. Stapleton Road (Sta 2085+00 to Sta 2104+00)		92	92	11-Feb-19	19-Jul-19	0
RDW.17540	Begin Construction - S. Stapleton Road	0	0	11-Feb-19		0

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
RDW.17710	Install Temp Silt Fence / Erosion Control Measures	4	4	11-Feb-19	18-Feb-19	0
RDW.17570	Saw-cut / Demo Existing	4	4	18-Feb-19	26-Feb-19	0
RDW.17580	Ex / Embank to Subgrade	20	20	18-Feb-19	27-Mar-19	0
CRW150a1030	Wall RW1.50a: South of Stapleton Dr S	15	15	28-Feb-19	27-Mar-19	0
CRW1551050	Wall RW1.50: South of Stapleton Dr S	15	15	28-Feb-19	27-Mar-19	0
RDW.17550	E/L/B Storm Drainage	15	15	11-Mar-19	03-Apr-19	5
RDW.17560	Construct / Maintain Temp Access - Driveways & Entrances	20	20	20-Mar-19	19-Apr-19	40
RDW.17590	Place Agg. Base Course	15	15	28-Mar-19	19-Apr-19	0
RDW.17660	F/P/S Curb & Gutter	15	15	22-Apr-19	15-May-19	0
RDW.17600	Paving	15	15	16-May-19	11-Jun-19	0
RDW.17610	Backfill / Fine Grade	10	10	12-Jun-19	26-Jun-19	0
RDW.17670	F/P/S Sidewalk	8	8	27-Jun-19	11-Jul-19	0
RDW.17620	Place Temp Striping / MOT Signs	3	3	12-Jul-19	16-Jul-19	3
RDW.17640	Landscaping / Seeding as Required	5	5	12-Jul-19	18-Jul-19	0
RDW.17680	Shift / Reset Temp Barrier	2	2	17-Jul-19	18-Jul-19	0
RDW.17690	Shift Traffic to Phase 1 Stage 2 Configuration	1	1	19-Jul-19	19-Jul-19	0
RDW.17630	S. Stapleton Road Complete	0	0		19-Jul-19	0
S. Stapleton Road (Sta 2104+00 to Sta 2131+00)		**94**	**94**	**29-Jan-19**	**16-Jul-19**	**3**
RDW.3089	Begin Construction - S. Stapleton Road	0	0	29-Jan-19		3
RDW.3091	Install Temp Silt Fence / Erosion Control Measures	4	4	29-Jan-19	06-Feb-19	3
RDW.3090	Saw-cut / Demo Existing	4	4	06-Feb-19	12-Feb-19	3
RDW.3092	Ex / Embank to Subgrade	20	20	11-Feb-19	21-Mar-19	3
RDW.3180	E/L/B Storm Drainage	15	15	05-Mar-19	29-Mar-19	8
RDW.3182	Construct / Maintain Temp Access - Driveways & Entrances	20	20	14-Mar-19	16-Apr-19	43
RDW.3094	Place Agg. Base Course	15	15	22-Mar-19	16-Apr-19	3
RDW.3950	F/P/S Curb & Gutter	15	15	17-Apr-19	10-May-19	3
RDW.3096	Paving	15	15	13-May-19	06-Jun-19	3
RDW.3098	Backfill / Fine Grade	10	10	07-Jun-19	21-Jun-19	3
RDW.3960	F/P/S Sidewalk	8	8	24-Jun-19	03-Jul-19	3
RDW.3102	Place Temp Striping / MOT Signs	3	3	08-Jul-19	11-Jul-19	6
RDW.3106	Landscaping / Seeding as Required	5	5	08-Jul-19	15-Jul-19	3
RDW.3980	Shift / Reset Temp Barrier	2	2	12-Jul-19	15-Jul-19	3
RDW.3990	Shift Traffic to Phase 1 Stage 2 Configuration	1	1	16-Jul-19	16-Jul-19	3
RDW.3104	S. Stapleton Road Complete	0	0		16-Jul-19	3
S. Stapleton Road (Sta 2131+00 to Sta 2157+50)		**92**	**92**	**11-Feb-19**	**19-Jul-19**	**0**
RDW.16940	Begin Construction - S. Stapleton Road	0	0	11-Feb-19		0
RDW.17110	Install Temp Silt Fence / Erosion Control Measures	4	4	11-Feb-19	18-Feb-19	0
RDW.16970	Saw-cut / Demo Existing	4	4	18-Feb-19	26-Feb-19	0
RDW.16980	Ex / Embank to Subgrade	20	20	18-Feb-19	27-Mar-19	0
RDW.16950	E/L/B Storm Drainage	15	15	11-Mar-19	03-Apr-19	5
RDW.16960	Construct / Maintain Temp Access - Driveways & Entrances	20	20	20-Mar-19	19-Apr-19	40
RDW.16990	Place Agg. Base Course	15	15	28-Mar-19	19-Apr-19	0
RDW.17060	F/P/S Curb & Gutter	15	15	22-Apr-19	15-May-19	0
RDW.17000	Paving	15	15	16-May-19	11-Jun-19	0
RDW.17010	Backfill / Fine Grade	10	10	12-Jun-19	26-Jun-19	0
RDW.17070	F/P/S Sidewalk	8	8	27-Jun-19	11-Jul-19	0
RDW.17020	Place Temp Striping / MOT Signs	3	3	12-Jul-19	16-Jul-19	3
RDW.17040	Landscaping / Seeding as Required	5	5	12-Jul-19	18-Jul-19	0
RDW.17080	Shift / Reset Temp Barrier	2	2	17-Jul-19	18-Jul-19	0
RDW.17090	Shift Traffic to Phase 1 Stage 2 Configuration	1	1	19-Jul-19	19-Jul-19	0
RDW.17030	S. Stapleton Road Complete	0	0		19-Jul-19	0
S. Stapleton Road (Sta 2157+50 to Sta 2184+00)		**92**	**92**	**29-Jan-19**	**12-Jul-19**	**5**
RDW.17240	Begin Construction - S. Stapleton Road	0	0	29-Jan-19		5
RDW.17410	Install Temp Silt Fence / Erosion Control Measures	4	4	29-Jan-19	06-Feb-19	5
RDW.17270	Saw-cut / Demo Existing	4	4	06-Feb-19	12-Feb-19	5
RDW.17280	Ex / Embank to Subgrade	20	20	06-Feb-19	18-Mar-19	5
CRW1551240	Wall RW2.10 EB Stapleton Frontage Rd. (South & East of Holly St)	15	15	28-Feb-19	27-Mar-19	5
RDW.17250	E/L/B Storm Drainage	15	15	28-Feb-19	27-Mar-19	10
RDW.17260	Construct / Maintain Temp Access - Driveways & Entrances	20	20	11-Mar-19	11-Apr-19	45
RDW.17290	Place Agg. Base Course	15	15	20-Mar-19	11-Apr-19	5

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
RDW.17360	F/P/S Curb & Gutter	15	15	15-Apr-19	07-May-19	5
RDW.17300	Paving	15	15	09-May-19	03-Jun-19	5
RDW.17310	Backfill / Fine Grade	10	10	04-Jun-19	18-Jun-19	5
RDW.17370	F/P/S Sidewalk	8	8	20-Jun-19	01-Jul-19	5
RDW.17320	Place Temp Striping / MOT Signs	3	3	02-Jul-19	08-Jul-19	8
RDW.17340	Landscaping / Seeding as Required	5	5	02-Jul-19	11-Jul-19	5
RDW.17380	Shift / Reset Temp Barrier	2	2	09-Jul-19	11-Jul-19	5
RDW.17390	Shift Traffic to Phase 1 Stage 2 Configuration	1	1	12-Jul-19	12-Jul-19	5
RDW.17330	S. Stapleton Road Complete	0	0		12-Jul-19	5
Dahlia St. Reconstruction		116	116	22-Oct-18	06-Jun-19	27
RDW.2450	Begin Construction - Dahlia St.	0	0	22-Oct-18		28
RDW.2470	Saw-cut / Demo Existing	10	10	22-Oct-18	05-Nov-18	28
DAH.1755	WBS Summary Bar - Phase 1 Stage 2 Dahlia Street	116	116	22-Oct-18	06-Jun-19	27
RDW.2475	Ex / Embank Subgrade	34	34	07-Nov-18	21-Jan-19	28
RDW.2783	E/L/B Storm Drainage	34	34	19-Nov-18	08-Feb-19	35
RDW.3006	Construct MSE Wall - Dahlia NW	30	30	19-Nov-18	28-Jan-19	28
RDW.3008	Construct MSE Wall - Dahlia SW	30	30	19-Nov-18	28-Jan-19	28
RDW.3012	Construct MSE Wall Moment Slab/ Coping - Dahlia NW	20	20	17-Jan-19	01-Mar-19	44
RDW.3014	Construct MSE Wall Moment Slab/ Coping - Dahlia SW	20	20	17-Jan-19	01-Mar-19	44
RDW.2485	Place Agg. Base Course	16	16	29-Jan-19	05-Mar-19	28
RDW.2785	Construct / Maintain Temp Access - Driveways & Entrances	13	13	06-Feb-19	05-Mar-19	61
RDW.19350	F/P/S Curb & Gutter	15	15	06-Mar-19	01-Apr-19	28
RDW.2490	Paving	13	13	02-Apr-19	22-Apr-19	28
RDW.2495	Backfill / Shouldering	5	5	23-Apr-19	01-May-19	28
RDW.2500	Install Guardrail / Barrier	10	10	02-May-19	16-May-19	28
RDW.2505	Place Permanent Signs / Striping	5	5	13-May-19	20-May-19	27
RDW.2595	Landscaping / Seeding as Required	10	10	13-May-19	29-May-19	27
RDW.2240	Complete Punch List Items - Dahlia St. Reconstruction	5	5	30-May-19	06-Jun-19	27
RDW.2242	Dahlia St. Reconstruction Complete	0	0		06-Jun-19	27
Holly St. Reconstruction		111	111	22-Oct-18	29-May-19	37
RDW.8430	Begin Construction - Holly St.	0	0	22-Oct-18		38
RDW.8440	Saw-cut / Demo Existing	10	10	22-Oct-18	05-Nov-18	38
HLY.PH1.STG2.0000	WBS Summary Bar - Phase 1 Stage 2 Holly Street	111	111	22-Oct-18	29-May-19	37
RDW.8450	Ex / Embank Subgrade	34	34	07-Nov-18	21-Jan-19	38
RDW.8460	E/L/B Storm Drainage	34	34	19-Nov-18	08-Feb-19	45
RDW.8470	Construct MSE Wall - Holly NW	30	30	19-Nov-18	28-Jan-19	38
RDW.8480	Construct MSE Wall - Holly SW	30	30	19-Nov-18	28-Jan-19	38
RDW.8490	Construct MSE Wall Moment Slab/ Coping - Holly NW	20	20	17-Jan-19	01-Mar-19	54
RDW.8500	Construct MSE Wall Moment Slab/ Coping - Holly SW	20	20	17-Jan-19	01-Mar-19	54
RDW.8510	Place Agg. Base Course	16	16	29-Jan-19	05-Mar-19	38
RDW.8530	Construct / Maintain Temp Access - Driveways & Entrances	13	13	06-Feb-19	05-Mar-19	71
RDW.19360	F/P/S Curb & Gutter	15	15	06-Mar-19	01-Apr-19	38
RDW.8520	Paving	13	13	02-Apr-19	22-Apr-19	38
RDW.8560	Backfill / Shouldering	5	5	23-Apr-19	01-May-19	38
RDW.8580	Install Guardrail / Barrier	10	10	02-May-19	16-May-19	38
RDW.8590	Place Permanent Signs / Striping	5	5	13-May-19	20-May-19	37
RDW.8610	Landscaping / Seeding as Required	10	10	13-May-19	29-May-19	37
RDW.8620	Complete Punch List Items - Holly St. Reconstruction	5	5	13-May-19	20-May-19	37
RDW.8630	Holly St. Reconstruction Complete	0	0		20-May-19	37
Monaco St. Reconstruction		116	116	22-Oct-18	06-Jun-19	27
RDW.8640	Begin Construction - Monaco Pkwy.	0	0	22-Oct-18		28
RDW.8650	Saw-cut / Demo Existing	10	10	22-Oct-18	05-Nov-18	28
MNC.PH1.STG2.0000	WBS Summary Bar - Phase 1 Stage 2 Monaco Pkwy.	116	116	22-Oct-18	06-Jun-19	27
RDW.8660	Ex / Embank Subgrade	34	34	07-Nov-18	21-Jan-19	28
RDW.8670	E/L/B Storm Drainage	34	34	19-Nov-18	08-Feb-19	35
RDW.8680	Construct MSE Wall - Monaco Pkwy. NW	30	30	19-Nov-18	28-Jan-19	28
RDW.8690	Construct MSE Wall - Monaco Pkwy. SW	30	30	19-Nov-18	28-Jan-19	28
RDW.8700	Construct MSE Wall Moment Slab/ Coping - Monaco Pkwy. NW	20	20	17-Jan-19	01-Mar-19	44
RDW.8710	Construct MSE Wall Moment Slab/ Coping - Monaco Pkwy. SW	20	20	17-Jan-19	01-Mar-19	44
RDW.8720	Place Agg. Base Course	16	16	29-Jan-19	05-Mar-19	28

Remaining Level of Effort
Actual Level of Effort
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Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
RDW.8740	Construct / Maintain Temp Access - Driveways & Entrances	13	13	06-Feb-19	05-Mar-19	61
RDW.19370	F/P/S Curb & Gutter	15	15	06-Mar-19	01-Apr-19	28
RDW.8730	Paving	13	13	02-Apr-19	22-Apr-19	28
RDW.8770	Backfill / Shouldering	5	5	23-Apr-19	01-May-19	28
RDW.8790	Install Guardrail / Barrier	10	10	02-May-19	16-May-19	28
RDW.8800	Place Permanent Signs / Striping	5	5	13-May-19	20-May-19	27
RDW.8820	Landscaping / Seeding as Required	10	10	13-May-19	29-May-19	27
RDW.8830	Complete Punch List Items - Monaco Pkwy. Reconstruction	5	5	30-May-19	06-Jun-19	27
RDW.8840	Monaco Pkwy. Reconstruction Complete	0	0		06-Jun-19	27
Quebec St. Reconstruction		116	116	22-Oct-18	06-Jun-19	27
RDW.8850	Begin Construction - Quebec St.	0	0	22-Oct-18		28
RDW.8860	Saw-cut / Demo Existing	10	10	22-Oct-18	05-Nov-18	28
QBC.PH1.STG2.0000	WBS Summary Bar - Phase 1 Stage 2 Quebec Street	116	116	22-Oct-18	06-Jun-19	27
RDW.8870	Ex / Embank Subgrade	34	34	07-Nov-18	21-Jan-19	28
RDW.8880	E/L/B Storm Drainage	34	34	19-Nov-18	08-Feb-19	35
RDW.8890	Construct MSE Wall - Quebec St. NW	30	30	19-Nov-18	28-Jan-19	28
RDW.8900	Construct MSE Wall - Quebec St. SW	30	30	19-Nov-18	28-Jan-19	28
RDW.8910	Construct MSE Wall Moment Slab/ Coping - Quebec St. NW	20	20	17-Jan-19	01-Mar-19	44
RDW.8920	Construct MSE Wall Moment Slab/ Coping - Quebec St. SW	20	20	17-Jan-19	01-Mar-19	44
RDW.8930	Place Agg. Base Course	16	16	29-Jan-19	05-Mar-19	28
RDW.8950	Construct / Maintain Temp Access - Driveways & Entrances	13	13	06-Feb-19	05-Mar-19	61
RDW.19380	F/P/S Curb & Gutter	15	15	06-Mar-19	01-Apr-19	28
RDW.8940	Paving	13	13	02-Apr-19	22-Apr-19	28
RDW.8980	Backfill / Shouldering	5	5	23-Apr-19	01-May-19	28
RDW.9000	Install Guardrail / Barrier	10	10	02-May-19	16-May-19	28
RDW.9010	Place Permanent Signs / Striping	5	5	13-May-19	20-May-19	27
RDW.9030	Landscaping / Seeding as Required	10	10	13-May-19	29-May-19	27
RDW.9040	Complete Punch List Items - Quebec St. Reconstruction	5	5	30-May-19	06-Jun-19	27
RDW.9050	Quebec St. Reconstruction Complete	0	0		06-Jun-19	27
Stage 3		126	126	22-Jul-19	05-Mar-20	297
Westbound I-70 Outside Widening (2105+00 to 2170+00)		95	95	22-Jul-19	02-Jan-20	11
RDW.8295	Shift/Reset Temp Construction Barrier on WB I-70 as needed	10	10	22-Jul-19	05-Aug-19	11
RDW.8300	Saw-cut / Demo Existing	10	10	30-Jul-19	12-Aug-19	11
RDW.8310	Ex / Embank Subgrade	40	40	06-Aug-19	07-Oct-19	11
CRW1541000	Wall RW1.54: WB I-70 from Dahlia	30	30	21-Aug-19	07-Oct-19	16
RDW.4020	Construct MSE Wall RW 2.04	20	20	05-Sep-19	07-Oct-19	11
RDW.8330	Place Agg. Base Course	20	20	23-Sep-19	24-Oct-19	11
RDW.8340	Place Concrete Paving	20	20	01-Oct-19	31-Oct-19	11
RDW.8380	Backfill / Shouldering	20	20	17-Oct-19	21-Nov-19	11
RDW.8350	Install Guardrail / Barrier	20	20	01-Nov-19	12-Dec-19	11
RDW.8370	Landscaping / Seeding as Required	15	15	22-Nov-19	19-Dec-19	11
RDW.8360	Place Permanent Signs / Striping	10	10	03-Dec-19	19-Dec-19	16
RDW.8390	Complete Punch List Items - Eastbound I-70 Lanes	10	10	13-Dec-19	02-Jan-20	11
RDW.8400	Westbound I-70 Outside Widening Complete	0	0		02-Jan-20	11
Eastbound I-70 Outside Widening (2085+00 to 2168+00)		126	126	22-Jul-19	05-Mar-20	297
RDW.4035	Shif/Reset Temp Construction Barrier on EB I-70 as needed	10	10	22-Jul-19	05-Aug-19	5
RDW.4040	Saw-cut / Demo Existing	15	15	30-Jul-19	20-Aug-19	5
RDW.4050	Ex / Embank Subgrade	40	40	06-Aug-19	07-Oct-19	5
CRW1511000	Wall RW1.51: EB Onramp from Colorado	30	30	21-Aug-19	07-Oct-19	11
CRW201100	Wall RW2.01: EB I-70 to Holly Off-Ramp	30	30	21-Aug-19	07-Oct-19	11
RDW.4070	Place Agg. Base Course	20	20	23-Sep-19	24-Oct-19	11
RDW.4080	Place Concrete Paving	20	20	01-Oct-19	31-Oct-19	11
RDW.4120	Backfill / Shouldering	20	20	17-Oct-19	21-Nov-19	11
RDW.4090	Install Guardrail / Barrier	20	20	01-Nov-19	12-Dec-19	11
RDW.4110	Landscaping / Seeding as Required	15	15	22-Nov-19	19-Dec-19	11
RDW.4100	Place Permanent Signs / Striping	10	10	03-Dec-19	19-Dec-19	16
RDW.4130	Complete Punch List Items - Eastbound I-70 Lanes	10	10	26-Dec-19	14-Jan-20	5
RDW.4140	Eastbound I-70 Outside Widening Complete	0	0		14-Jan-20	5
Sta 2090+00 to 2110+00 East Bound		76	76	08-Oct-19	05-Mar-20	297
A5510	Toll Gantry Sta 2090+00 to 2130+00 EB - Drill Gantry Caisson - Outside	5	5	08-Oct-19	15-Oct-19	5

Remaining Level of Effort
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Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
A5520	Toll Gantry Sta 2090+00 to 2110+00 EB - F/R/P Foundation Concrete - Outside	5	5	17-Oct-19	24-Oct-19	5
A5530	Toll Gantry Sta 2090+00 to 2110+00 EB - Install Gantry Post - Outside	5	5	25-Oct-19	31-Oct-19	5
A5540	Toll Gantry Sta 2090+00 to 2110+00 EB - Drill Gantry Caisson - Inside	5	5	01-Nov-19	12-Nov-19	5
A5550	Toll Gantry Sta 2090+00 to 2110+00 EB - F/R/P Foundation Concrete - Inside	5	5	14-Nov-19	21-Nov-19	5
A5560	Toll Gantry Sta 2090+00 to 2110+00 EB - Install Gantry Post - Inside	5	5	22-Nov-19	02-Dec-19	5
A5570	Toll Gantry Sta 2090+00 to 2110+00 EB - Gantry Connection (Night Closure)	1	1	03-Dec-19	03-Dec-19	5
A5580	Toll Gantry Sta 2090+00 to 2110+00 EB - Electrical Tie-In	5	5	04-Dec-19	13-Dec-19	5
A5590	Toll Gantry Sta 2090+00 to 2110+00 EB - Signing	5	5	16-Dec-19	20-Dec-19	5
A5600	Toll Gantry Sta 2090+00 to 2110+00 EB - ETC System Integration Installation/Inspection	5	5	16-Jan-20	24-Jan-20	297
A5610	Toll Gantry Sta 2090+00 to 2110+00 EB - I-70 Toll Point Lane Test	20	20	28-Jan-20	05-Mar-20	297
WB I-70 Off-Ramp to Quebec St.		**76**	**76**	**22-Jul-19**	**22-Nov-19**	**30**
CCO10765	Begin Construction - WB I-70 Off-Ramp to Quebec St	0	0	22-Jul-19		30
RDW.18510	WB I-70 Off-Ramp to Quebec St.: Set Temp MOT Barrier & Devices	5	5	22-Jul-19	29-Jul-19	30
RDW.18520	WB I-70 Off-Ramp to Quebec St.: Install Temp Silt Fence / Erosion Control Measures	7	7	22-Jul-19	31-Jul-19	30
BRG.PH1.STG1.170	Construct WB I-70 Off-Ramp to Quebec St.	76	76	22-Jul-19	22-Nov-19	30
CCO10770	WB I-70 Off-Ramp to Quebec St: Shore up Existing road/abutment- (If Required)	5	5	30-Jul-19	05-Aug-19	30
RDW.18430	WB I-70 Off-Ramp to Quebec St.: Saw-cut / Demo Existing as Needed	5	5	30-Jul-19	05-Aug-19	32
RDW.18440	WB I-70 Off-Ramp to Quebec St.: Earthwork	20	20	06-Aug-19	04-Sep-19	30
RDW.18450	WB I-70 Off-Ramp to Quebec St.: Aggregate Base Course	10	10	13-Sep-19	30-Sep-19	30
RDW.18540	WB I-70 Off-Ramp to Quebec St.: Curb & Gutter	15	15	23-Sep-19	15-Oct-19	30
RDW.18460	WB I-70 Off-Ramp to Quebec St.: Pave	7	7	17-Oct-19	28-Oct-19	30
RDW.18550	WB I-70 Off-Ramp to Quebec St.: Side Walk	15	15	17-Oct-19	12-Nov-19	32
RDW.18470	WB I-70 Off-Ramp to Quebec St.: Install Guardrail / Barrier as Necessary	10	10	29-Oct-19	15-Nov-19	30
RDW.18480	WB I-70 Off-Ramp to Quebec St.: Place MOT Signs / Striping	4	4	08-Nov-19	15-Nov-19	30
RDW.18420	WB I-70 Off-Ramp to Quebec St.: Punch List	3	3	18-Nov-19	21-Nov-19	30
RDW.18490	WB I-70 Off-Ramp to Quebec St.: Seeding/Mulching/BMP's	3	3	18-Nov-19	21-Nov-19	30
CCO10780	WB I-70 Off-Ramp to Quebec St.: Phase 1 Stage 3 Complete	0	0		21-Nov-19	30
CCO10790	WB I-70 Off-Ramp to Quebec St.: Traffic Switch to new Alignment	1	1	22-Nov-19	22-Nov-19	30
Phase 2		**112**	**112**	**28-Jan-20**	**31-Jul-20**	**297**
Stage 1		**112**	**112**	**28-Jan-20**	**31-Jul-20**	**297**
Westbound I-70 (2085+00 to 2114+00)		**105**	**105**	**28-Jan-20**	**21-Jul-20**	**5**
RDW.9060	Shif/Reset Temp Construction Barrier on WB I-70 as needed	10	10	28-Jan-20	13-Feb-20	5
RDW.2120	Saw-cut / Demo Existing	10	10	05-Feb-20	25-Feb-20	5
RDW.2125	Ex / Embank Subgrade	40	40	17-Feb-20	24-Apr-20	5
RDW.2127	E/L/B Storm Drainage	40	40	17-Feb-20	24-Apr-20	10
CRW1551230	Wall RW2.08 WB ML I-70 to Holly (North & East of Holly St)	15	15	01-Apr-20	24-Apr-20	10
CRW1551250	Wall RW2.10 WB ML I-70 (North & West of Monoco St)	15	15	01-Apr-20	24-Apr-20	15
RDW.2135	Place Agg. Base Course	15	15	27-Apr-20	19-May-20	5
RDW.2140	Place Concrete Paving	15	15	12-May-20	04-Jun-20	5
RDW.2142	Construct / Maintain Temp Access - Driveways & Entrances	20	20	12-May-20	12-Jun-20	10
RDW.2144	Permanent Access Construction - Grading & Drainage	15	15	26-May-20	16-Jun-20	12
RDW.2145	Backfill / Shouldering	10	10	05-Jun-20	19-Jun-20	5
RDW.2146	Permanent Access Construction - Agg. Base Course	15	15	05-Jun-20	26-Jun-20	12
RDW.2150	Install Guardrail / Barrier	15	15	15-Jun-20	06-Jul-20	5
RDW.2148	Permanent Access Construction - AC Paving	15	15	18-Jun-20	09-Jul-20	12
RDW.2245	Landscaping / Seeding as Required	10	10	29-Jun-20	13-Jul-20	5
RDW.2155	Place Signs / Striping	5	5	07-Jul-20	13-Jul-20	10
RDW.3030	Complete Punch List Items - Westbound Lanes	5	5	14-Jul-20	21-Jul-20	5
RDW.2170	Westbound I-70 Outside Widening Complete	0	0		21-Jul-20	5

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
Eastbound I-70 (2117+00 to 2136+00)		112	112	28-Jan-20	31-Jul-20	297
RDW.9070	Shif/Reset Temp Construction Barrier on EB I-70 as needed	10	10	28-Jan-20	13-Feb-20	0
RDW.2295	Saw-cut / Demo Existing	10	10	05-Feb-20	25-Feb-20	0
RDW.2300	Ex / Embank Subgrade	40	40	27-Feb-20	01-May-20	0
RDW.2743	E/L/B Storm Drainage	40	40	27-Feb-20	01-May-20	5
CRW1551200	Wall RW2.02 EB ML I-70 to Holly (West Side of Holly St)	15	15	16-Apr-20	11-May-20	0
CRW1551210	Wall RW2.06 I-70 EB On-Ramp from Holly St. (East of Holly St)	15	15	16-Apr-20	11-May-20	0
RDW.2310	Place Agg. Base Course	15	15	04-May-20	28-May-20	0
RDW.2315	Place Concrete Paving	15	15	21-May-20	12-Jun-20	0
RDW.2745	Construct / Maintain Temp Access - Driveways & Entrances	20	20	21-May-20	19-Jun-20	5
RDW.2747	Permanent Access Construction - Grading & Drainage	15	15	02-Jun-20	23-Jun-20	7
RDW.2320	Backfill / Shouldering	10	10	15-Jun-20	26-Jun-20	0
RDW.2749	Permanent Access Construction - Agg. Base Course	15	15	15-Jun-20	06-Jul-20	7
RDW.2325	Install Guardrail / Barrier	15	15	22-Jun-20	13-Jul-20	0
RDW.2751	Permanent Access Construction - AC Paving	15	15	25-Jun-20	17-Jul-20	7
RDW.2420	Landscaping / Seeding as Required	10	10	07-Jul-20	21-Jul-20	0
RDW.2330	Place Signs / Striping	5	5	14-Jul-20	21-Jul-20	5
RDW.3028	Complete Punch List Items - Eastbound Lanes	5	5	22-Jul-20	28-Jul-20	0
RDW.2345	Eastbound I-70 Outside Widening Complete	0	0		28-Jul-20	0
Sta 2166+00 to 2196+00 East Bound		46	46	22-May-20	31-Jul-20	297
A8300	Toll Gantry Sta 2166+00 to 2196+00 EB - Drill Gantry Caisson - Outside	5	5	22-May-20	29-May-20	297
A8310	Toll Gantry Sta 2166+00 to 2196+00 EB - F/R/P Foundation Concrete - Outside	5	5	01-Jun-20	05-Jun-20	297
A8320	Toll Gantry Sta 2166+00 to 2196+00 EB - Install Gantry Post - Outside	5	5	08-Jun-20	15-Jun-20	297
A8330	Toll Gantry Sta 2166+00 to 2196+00 EB - Drill Gantry Caisson - Inside	5	5	16-Jun-20	22-Jun-20	297
A8340	Toll Gantry Sta 2166+00 to 2196+00 EB - F/R/P Foundation Concrete - Inside	5	5	23-Jun-20	29-Jun-20	297
A8350	Toll Gantry Sta 2166+00 to 2196+00 EB - Install Gantry Post - Inside	5	5	30-Jun-20	07-Jul-20	297
A8360	Toll Gantry Sta 2166+00 to 2196+00 EB - Gantry Connection (Night Closure)	1	1	08-Jul-20	08-Jul-20	297
A8370	Toll Gantry Sta 2166+00 to 2196+00 EB - Electrical Tie-In	5	5	09-Jul-20	16-Jul-20	297
A8380	Toll Gantry Sta 2166+00 to 2196+00 EB - Signing	5	5	17-Jul-20	23-Jul-20	302
A8390	Toll Gantry Sta 2166+00 to 2196+00 EB - ETC System Integration Installation/Inspection	5	5	17-Jul-20	23-Jul-20	297
A8400	Toll Gantry Sta 2166+00 to 2196+00 EB - I-70 Toll Point Lane Test	5	5	24-Jul-20	31-Jul-20	297
Phase 3		179	179	30-Jul-20	10-Jun-21	120
Stage 1		103	103	30-Jul-20	27-Jan-21	2
Westbound		100	100	30-Jul-20	22-Jan-21	3
RDW.3134	Saw-cut / Demo Existing	10	10	30-Jul-20	13-Aug-20	3
RDW.3136	Ex / Embank Subgrade	20	20	06-Aug-20	04-Sep-20	3
RDW.3204	E/L/B Storm Drainage	20	20	06-Aug-20	04-Sep-20	18
RDW.3138	Place Agg. Base Course	20	20	08-Sep-20	07-Oct-20	3
RDW.3140	Place Concrete Paving	25	25	15-Sep-20	26-Oct-20	3
RDW.3142	Backfill / Shouldering	20	20	27-Oct-20	01-Dec-20	3
RDW.3144	Install Guardrail / Barrier	20	20	10-Nov-20	21-Dec-20	3
RDW.3146	Place Permanent Signs / Striping	20	20	19-Nov-20	31-Dec-20	3
RDW.3150	Landscaping / Seeding as Required	20	20	19-Nov-20	31-Dec-20	8
RDW.3246	Complete Punch List Items - Westbound I-70 Lanes	10	10	04-Jan-21	22-Jan-21	3
RDW.3148	Westbound I-70 COMPLETE	0	0		22-Jan-21	3
Construct Quebec St. (Outside lanes)		43	43	30-Jul-20	05-Oct-20	62
RDW.18230	Begin Construction - Construct Quebec St. (Outside)	0	0	30-Jul-20		62
RDW.18250	Set Temp MOT Barrier & Devices	4	4	30-Jul-20	04-Aug-20	62
RDW.18260	Install Temp Silt Fence / Erosion Control Measures	3	3	30-Jul-20	03-Aug-20	62
BRG.PH1.STG1.150	Construct Quebec St. (Outside)	43	43	30-Jul-20	05-Oct-20	62
RDW.18160	Saw-cut / Demo Existing as Needed	5	5	05-Aug-20	11-Aug-20	62
RDW.18170	Detour Earthwork & Temp Drainage Measures	15	15	10-Aug-20	01-Sep-20	62
RDW.18180	Prep Subgrade	8	8	08-Sep-20	18-Sep-20	62

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
RDW.18190	Paving	3	3	21-Sep-20	24-Sep-20	62
RDW.18200	Install Guardrail / Temp Barrier	3	3	25-Sep-20	29-Sep-20	62
RDW.18210	Place Temp MOT Signs / Striping	2	2	30-Sep-20	01-Oct-20	62
RDW.18240	Construct Quebec St. (Outside) Complete Switch Traffic To Stage 2 Alignment	0	0		02-Oct-20	62
RDW.18220	Temp Seeding/Mulching/BMP's	2	2	02-Oct-20	05-Oct-20	62
Eastbound I-70		100	100	30-Jul-20	22-Jan-21	3
RDW.2185	Saw-cut / Demo Existing	10	10	30-Jul-20	13-Aug-20	3
RDW.2190	Ex / Embank Subgrade	40	40	14-Aug-20	16-Oct-20	3
RDW.2773	E/L/B Storm Drainage	40	40	14-Aug-20	16-Oct-20	3
RDW.2200	Place Agg. Base Course	30	30	15-Sep-20	02-Nov-20	3
RDW.2205	Place Concrete Paving	30	30	01-Oct-20	17-Nov-20	3
RDW.2210	Backfill / Shouldering	20	20	03-Nov-20	09-Dec-20	3
RDW.2215	Install Guardrail / Barrier	20	20	19-Nov-20	31-Dec-20	3
RDW.2220	Place Permanent Signs / Striping	20	20	02-Dec-20	12-Jan-21	8
RDW.2250	Landscaping / Seeding as Required	20	20	02-Dec-20	12-Jan-21	3
RDW.3024	Complete Punch List Items - Eastbound Lanes	10	10	04-Jan-21	22-Jan-21	3
RDW.2235	Eastbound I-70 COMPLETE	0	0		22-Jan-21	3
Eastbound		103	103	30-Jul-20	27-Jan-21	0
RDW.3060	Saw-cut / Demo Existing	10	10	30-Jul-20	13-Aug-20	0
RDW.3062	Ex / Embank Subgrade	20	20	14-Aug-20	14-Sep-20	0
RDW.3214	E/L/B Storm Drainage	20	20	14-Aug-20	14-Sep-20	5
RDW.3064	Place Agg. Base Course	15	15	08-Sep-20	30-Sep-20	0
RDW.3066	Place Concrete Paving	23	23	01-Oct-20	05-Nov-20	0
RDW.3068	Backfill / Shouldering	20	20	06-Nov-20	17-Dec-20	0
RDW.3070	Install Guardrail / Barrier	20	20	25-Nov-20	08-Jan-21	0
RDW.3072	Place Permanent Signs / Striping	20	20	08-Dec-20	20-Jan-21	5
RDW.3078	Landscaping / Seeding as Required	20	20	08-Dec-20	20-Jan-21	0
RDW.3244	Complete Punch List Items - Eastbound I-70 Lanes	10	10	11-Jan-21	27-Jan-21	0
RDW.3074	Eastbound I-70 COMPLETE	0	0		27-Jan-21	0
Westbound I-70		100	100	30-Jul-20	22-Jan-21	3
RDW.2670	Saw-cut / Demo Existing	10	10	30-Jul-20	13-Aug-20	3
RDW.2675	Ex / Embank Subgrade	40	40	14-Aug-20	16-Oct-20	3
RDW.2763	E/L/B Storm Drainage	40	40	14-Aug-20	16-Oct-20	3
RDW.2680	Place Agg. Base Course	30	30	15-Sep-20	02-Nov-20	3
RDW.2685	Place Concrete Paving	30	30	01-Oct-20	17-Nov-20	3
RDW.2690	Backfill / Shouldering	20	20	03-Nov-20	09-Dec-20	3
RDW.2695	Install Guardrail / Barrier	20	20	19-Nov-20	31-Dec-20	3
RDW.2700	Place Permanent Signs / Striping	20	20	02-Dec-20	12-Jan-21	8
RDW.2705	Landscaping / Seeding as Required	20	20	02-Dec-20	12-Jan-21	3
RDW.3026	Complete Punch List Items - Westbound Lanes	10	10	04-Jan-21	22-Jan-21	3
RDW.2720	Westbound COMPLETE	0	0		22-Jan-21	3
Stage 2		76	76	02-Feb-21	10-Jun-21	120
Construct Quebec St. (Inside lanes)		76	76	02-Feb-21	10-Jun-21	120
CCO10725	Begin Construction - Inside Quebec St.	0	0	02-Feb-21		120
RDW.18370	Quebec St.: Set Temp MOT Barrier & Devices	5	5	02-Feb-21	08-Feb-21	120
RDW.18380	Quebec St.: Install Temp Silt Fence / Erosion Control Measures	7	7	02-Feb-21	10-Feb-21	120
BRG.PH1.STG1.160	Construct Inside Quebec St. (Roadway)	76	76	02-Feb-21	10-Jun-21	120
RDW.18290	Quebec St.: Saw-cut / Demo Existing as Needed	5	5	09-Feb-21	19-Feb-21	120
RDW.18300	Quebec St.: Earthwork	25	25	16-Feb-21	02-Apr-21	120
RDW.18390	Quebec St.: Drainage	30	30	16-Feb-21	12-Apr-21	120
RDW.18310	Quebec St.: Aggregate Base Course	15	15	05-Apr-21	28-Apr-21	120
RDW.18400	Quebec St.: Curb & Gutter	15	15	13-Apr-21	06-May-21	120
RDW.18320	Quebec St.: Pave	10	10	07-May-21	21-May-21	120
RDW.18410	Quebec St.: Side Walk	15	15	07-May-21	28-May-21	125
RDW.18330	Quebec St.: Install Guardrail / Barrier as Necessary	10	10	24-May-21	07-Jun-21	120
RDW.18340	Quebec St.: Place MOT Signs / Striping	4	4	02-Jun-21	07-Jun-21	120
RDW.18350	Quebec St.: Seeding/Mulching/BMP's	3	3	08-Jun-21	10-Jun-21	120
CCO10740	Quebec St.: Phase 2 Stage 3 Complete	0	0		10-Jun-21	120
RDW.18360	Quebec St.: Complete Traffic Switch to Final Alignment	0	0		10-Jun-21	120
Area 3 - Sand Creek Bridge to West of Havana St. - (Sta 2196+00 to Sta 2270+89.00)		330	330	07-Dec-18	22-Jul-20	0

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
Phase 1		215	215	07-Dec-18	07-Jan-20	0
Stage 1		14	14	07-Dec-18	08-Jan-19	1
Westbound I-70 Outside		14	14	07-Dec-18	08-Jan-19	0
RDW.4480	Install Temp Silt Fence / Erosion Control Measures	3	3	07-Dec-18	11-Dec-18	0
RDW.4490	Saw-cut Asphalt & Remove	2	2	13-Dec-18	14-Dec-18	3
RDW.5040	Prep Subgrade for Temp Paving	3	3	17-Dec-18	20-Dec-18	3
RDW.4500	Place Temp Paving	3	3	02-Jan-19	08-Jan-19	0
Eastbound I-70 Outside		14	14	07-Dec-18	08-Jan-19	1
RDW.11060	Install Temp Silt Fence / Erosion Control Measures	3	3	07-Dec-18	11-Dec-18	1
RDW.11080	Saw-cut Asphalt & Remove	2	2	13-Dec-18	14-Dec-18	4
RDW.11090	Prep Subgrade for Temp Paving	3	3	17-Dec-18	20-Dec-18	4
RDW.11100	Place Temp Paving	3	3	02-Jan-19	08-Jan-19	1
Stage 2		89	89	18-Jan-19	28-Jun-19	0
Westbound I-70 Outside		73	73	18-Jan-19	04-Jun-19	16
RDW.4630	Begin Construction - WB I-70 Outside	0	0	18-Jan-19		16
RDW.4640	Saw-cut / Demo Existing	2	2	18-Jan-19	21-Jan-19	16
RDW.4650	Ex / Embank to Subgrade -	19	19	18-Jan-19	01-Mar-19	16
RDW.4660	Place Agg. Base Course	15	15	05-Mar-19	29-Mar-19	16
RDW.4670	Pave	15	15	01-Apr-19	23-Apr-19	16
RDW.4680	Backfill / Shouldering	6	6	26-Apr-19	03-May-19	16
RDW.4720	Landscaping / Seeding as Required	15	15	06-May-19	30-May-19	16
RDW.4710	WB I-70 Outside Stage 2 Complete	0	0		04-Jun-19	16
Eastbound I-70 Outside		89	89	18-Jan-19	28-Jun-19	0
RDW.4730	Begin Construction - EB I-70 Outside	0	0	18-Jan-19		0
RDW.4760	Saw-cut / Demo Existing	2	2	18-Jan-19	21-Jan-19	0
RDW.4770	Ex / Embank to Subgrade -	33	33	24-Jan-19	01-Apr-19	0
RDW.4780	Place Agg. Base Course	15	15	02-Apr-19	26-Apr-19	0
RDW.4790	Pave	15	15	29-Apr-19	21-May-19	0
RDW.4800	Backfill / Shouldering	6	6	23-May-19	31-May-19	0
RDW.4830	Landscaping / Seeding as Required	15	15	03-Jun-19	25-Jun-19	0
RDW.4820	EB I-70 Outside Stage 2 Complete	0	0		28-Jun-19	0
Retaining Walls		36	36	05-Mar-19	03-May-19	34
RDW.11370	Construct MSE Wall RW 3.03	21	21	05-Mar-19	08-Apr-19	34
RDW.11360	Construct MSE Wall RW 3.02	14	14	08-Mar-19	01-Apr-19	34
RDW.11350	Construct MSE Wall RW 3.01	10	10	09-Apr-19	26-Apr-19	34
RDW.11380	Construct MSE Wall RW 3.04	8	8	22-Apr-19	03-May-19	34
Stage 3		109	109	01-Jul-19	07-Jan-20	0
Westbound I-70 Outside		95	95	01-Jul-19	06-Dec-19	14
RDW.11270	Begin Construction - WB I-70 Outside	0	0	01-Jul-19		14
RDW.11160	Saw-cut / Demo Existing	2	2	01-Jul-19	02-Jul-19	14
RDW.11180	Ex / Embank Subgrade	19	19	03-Jul-19	02-Aug-19	14
RDW.11190	Place Agg. Base Course	15	15	05-Aug-19	26-Aug-19	14
RDW.11200	Pave	23	23	27-Aug-19	02-Oct-19	14
RDW.11250	Backfill / Shouldering	20	20	03-Oct-19	05-Nov-19	14
RDW.11210	Install Guardrail / Barrier	20	20	11-Oct-19	15-Nov-19	14
RDW.11220	Place Permanent Signs / Striping	20	20	21-Oct-19	25-Nov-19	20
RDW.11230	Landscaping / Seeding as Required	20	20	21-Oct-19	25-Nov-19	14
RDW.11240	Complete Punch List Items - Eastbound I-70 Lanes	10	10	18-Nov-19	04-Dec-19	14
RDW.11260	Area 3 / Phase 1 / Stage 3 - Westbound I-70 Complete	0	0		06-Dec-19	14
Eastbound I-70 Outside		109	109	01-Jul-19	07-Jan-20	0
RDW.11280	Begin Construction - EB I-70 Outside	0	0	01-Jul-19		0
RDW.5170	Saw-cut / Demo Existing	2	2	01-Jul-19	02-Jul-19	0
RDW.5180	Ex / Embank Subgrade	33	33	03-Jul-19	23-Aug-19	0
RDW.5190	Place Agg. Base Course	15	15	26-Aug-19	17-Sep-19	0
RDW.5200	Pave	23	23	19-Sep-19	25-Oct-19	0
RDW.5210	Backfill / Shouldering	20	20	28-Oct-19	03-Dec-19	0
RDW.5220	Install Guardrail / Barrier	20	20	05-Nov-19	13-Dec-19	0
RDW.5230	Place Permanent Signs / Striping	20	20	15-Nov-19	20-Dec-19	6
RDW.5250	Landscaping / Seeding as Required	20	20	15-Nov-19	20-Dec-19	0
RDW.5150	Complete Punch List Items - Eastbound I-70 Lanes	10	10	16-Dec-19	03-Jan-20	0
RDW.5240	Area 3 / Phase 1 / Stage 3 - Eastbound I-70 Complete	0	0		07-Jan-20	0

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

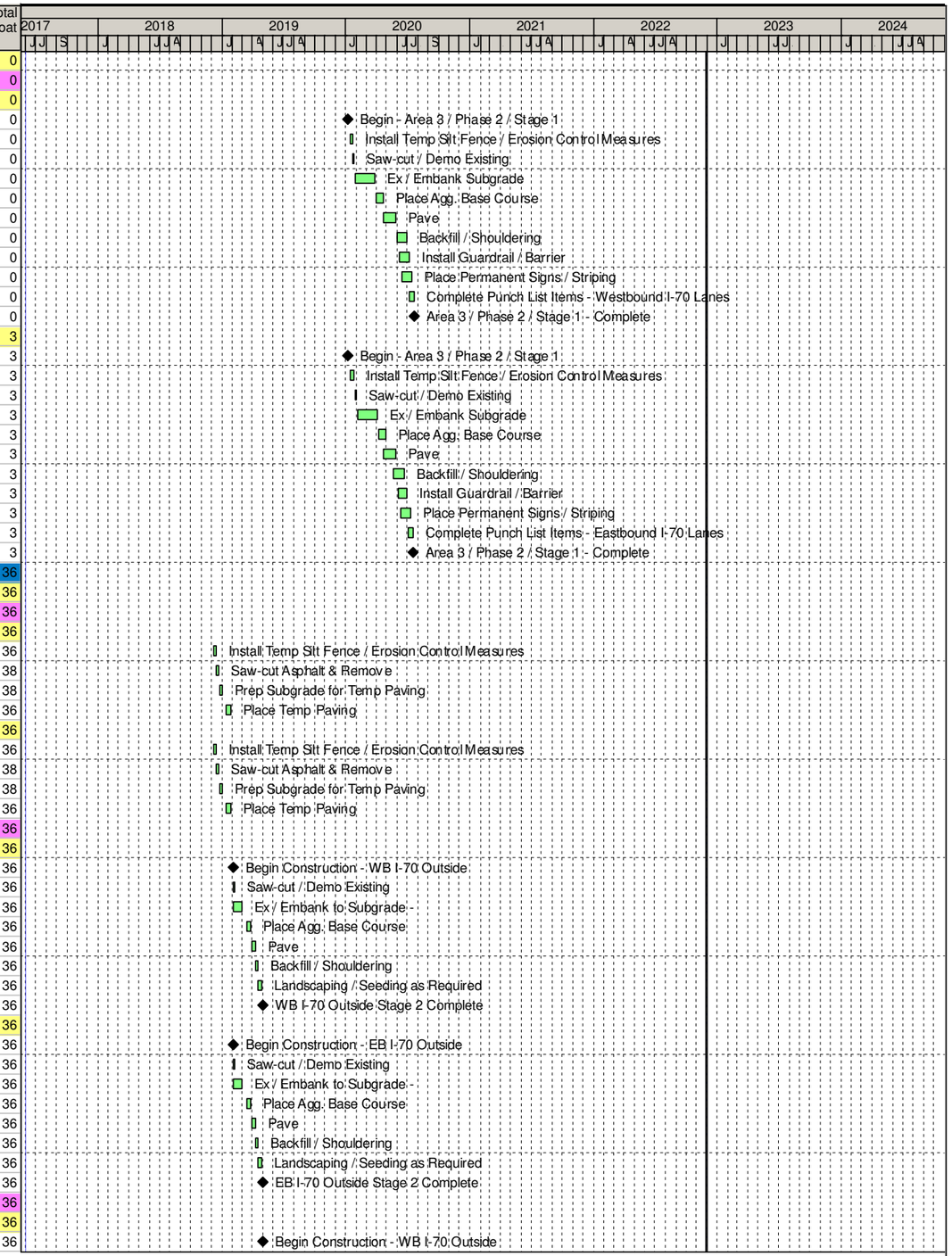
CENTRAL 70

TASK filter: All Activities

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
Phase 2		115	115	08-Jan-20	22-Jul-20	0
Stage 1		115	115	08-Jan-20	22-Jul-20	0
Westbound I-70 Inside		115	115	08-Jan-20	22-Jul-20	0
RDW.5570	Begin - Area 3 / Phase 2 / Stage 1	0	0	08-Jan-20		0
RDW.11320	Install Temp Silt Fence / Erosion Control Measures	4	4	14-Jan-20	20-Jan-20	0
RDW.5480	Saw-cut / Demo Existing	2	2	22-Jan-20	24-Jan-20	0
RDW.5490	Ex / Embank Subgrade	33	33	28-Jan-20	27-Mar-20	0
RDW.5500	Place Agg. Base Course	15	15	30-Mar-20	21-Apr-20	0
RDW.5510	Pave	23	23	23-Apr-20	29-May-20	0
RDW.5520	Backfill / Shouldering	20	20	01-Jun-20	29-Jun-20	0
RDW.5530	Install Guardrail / Barrier	20	20	08-Jun-20	07-Jul-20	0
RDW.5540	Place Permanent Signs / Striping	20	20	16-Jun-20	14-Jul-20	0
RDW.5590	Complete Punch List Items - Westbound I-70 Lanes	10	10	08-Jul-20	22-Jul-20	0
RDW.5550	Area 3 / Phase 2 / Stage 1 - Complete	0	0		22-Jul-20	0
Eastbound I-70 Inside		112	112	08-Jan-20	17-Jul-20	3
RDW.5380	Begin - Area 3 / Phase 2 / Stage 1	0	0	08-Jan-20		3
RDW.11340	Install Temp Silt Fence / Erosion Control Measures	5	5	16-Jan-20	24-Jan-20	3
RDW.5390	Saw-cut / Demo Existing	5	5	28-Jan-20	03-Feb-20	3
RDW.5400	Ex / Embank Subgrade	33	33	05-Feb-20	03-Apr-20	3
RDW.5410	Place Agg. Base Course	15	15	06-Apr-20	29-Apr-20	3
RDW.5420	Pave	23	23	23-Apr-20	29-May-20	3
RDW.5430	Backfill / Shouldering	20	20	22-May-20	22-Jun-20	3
RDW.5440	Install Guardrail / Barrier	20	20	03-Jun-20	01-Jul-20	3
RDW.5450	Place Permanent Signs / Striping	20	20	11-Jun-20	09-Jul-20	3
RDW.5370	Complete Punch List Items - Eastbound I-70 Lanes	10	10	02-Jul-20	17-Jul-20	3
RDW.5460	Area 3 / Phase 2 / Stage 1 - Complete	0	0		17-Jul-20	3
Area 4 - West of Havana St. to East of Havana St. - (Sta 2272+00 to Sta 2307+00)		194	194	07-Dec-18	22-Nov-19	136
Phase 1		123	123	07-Dec-18	29-Jul-19	136
Stage 1		21	21	07-Dec-18	28-Jan-19	136
Westbound I-70 Outside		21	21	07-Dec-18	28-Jan-19	136
RDW.11410	Install Temp Silt Fence / Erosion Control Measures	5	5	07-Dec-18	14-Dec-18	136
RDW.11430	Saw-cut Asphalt & Remove	4	4	17-Dec-18	21-Dec-18	138
RDW.11440	Prep Subgrade for Temp Paving	4	4	26-Dec-18	03-Jan-19	138
RDW.11450	Place Temp Paving	6	6	15-Jan-19	28-Jan-19	136
Eastbound I-70 Outside		21	21	07-Dec-18	28-Jan-19	136
RDW.11510	Install Temp Silt Fence / Erosion Control Measures	5	5	07-Dec-18	14-Dec-18	136
RDW.11530	Saw-cut Asphalt & Remove	4	4	17-Dec-18	21-Dec-18	138
RDW.11540	Prep Subgrade for Temp Paving	4	4	26-Dec-18	03-Jan-19	138
RDW.11550	Place Temp Paving	6	6	15-Jan-19	28-Jan-19	136
Stage 2		48	48	05-Feb-19	02-May-19	136
Westbound I-70 Outside		48	48	05-Feb-19	02-May-19	136
RDW.11590	Begin Construction - WB I-70 Outside	0	0	05-Feb-19		136
RDW.11600	Saw-cut / Demo Existing	2	2	05-Feb-19	06-Feb-19	136
RDW.11610	Ex / Embank to Subgrade -	12	12	05-Feb-19	28-Feb-19	136
RDW.11630	Place Agg. Base Course	8	8	15-Mar-19	28-Mar-19	136
RDW.11650	Pave	8	8	29-Mar-19	09-Apr-19	136
RDW.11660	Backfill / Shouldering	5	5	11-Apr-19	18-Apr-19	136
RDW.11680	Landscaping / Seeding as Required	5	5	19-Apr-19	29-Apr-19	136
RDW.11710	WB I-70 Outside Stage 2 Complete	0	0		02-May-19	136
Eastbound I-70 Outside		48	48	05-Feb-19	02-May-19	136
RDW.11720	Begin Construction - EB I-70 Outside	0	0	05-Feb-19		136
RDW.11730	Saw-cut / Demo Existing	2	2	05-Feb-19	06-Feb-19	136
RDW.11740	Ex / Embank to Subgrade -	12	12	05-Feb-19	28-Feb-19	136
RDW.11760	Place Agg. Base Course	8	8	15-Mar-19	28-Mar-19	136
RDW.11780	Pave	8	8	29-Mar-19	09-Apr-19	136
RDW.11790	Backfill / Shouldering	5	5	11-Apr-19	18-Apr-19	136
RDW.11810	Landscaping / Seeding as Required	5	5	19-Apr-19	29-Apr-19	136
RDW.11840	EB I-70 Outside Stage 2 Complete	0	0		02-May-19	136
Stage 3		52	52	03-May-19	29-Jul-19	136
Westbound I-70 Outside		52	52	03-May-19	29-Jul-19	136
RDW.11860	Begin Construction - WB I-70 Outside	0	0	03-May-19		136



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

CENTRAL 70

TASK filter: All Activities

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
RDW.11850	Saw-cut / Demo Existing	2	2	03-May-19	06-May-19	136
RDW.11880	Ex / Embank Subgrade	12	12	07-May-19	28-May-19	136
RDW.11890	Place Agg. Base Course	8	8	29-May-19	10-Jun-19	136
RDW.11900	Pave	8	8	11-Jun-19	21-Jun-19	136
RDW.11910	Backfill / Shouldering	6	6	24-Jun-19	01-Jul-19	136
RDW.11920	Install Guardrail / Barrier	10	10	25-Jun-19	11-Jul-19	136
RDW.11930	Place Permanent Signs / Striping	10	10	02-Jul-19	18-Jul-19	142
RDW.11940	Landscaping / Seeding as Required	5	5	12-Jul-19	18-Jul-19	136
RDW.11950	Complete Punch List Items - Eastbound I-70 Lanes	6	6	18-Jul-19	26-Jul-19	136
RDW.11970	Area 4 / Phase 1 / Stage 3 - Westbound I-70 Complete	0	0		29-Jul-19	136
Eastbound I-70 Outside		52	52	03-May-19	29-Jul-19	136
RDW.11990	Begin Construction - EB I-70 Outside	0	0	03-May-19		136
RDW.11980	Saw-cut / Demo Existing	2	2	03-May-19	06-May-19	136
RDW.12010	Ex / Embank Subgrade	12	12	07-May-19	28-May-19	136
RDW.12020	Place Agg. Base Course	8	8	29-May-19	10-Jun-19	136
RDW.12030	Pave	8	8	11-Jun-19	21-Jun-19	136
RDW.12040	Backfill / Shouldering	6	6	24-Jun-19	01-Jul-19	136
RDW.12050	Install Guardrail / Barrier	10	10	25-Jun-19	11-Jul-19	136
RDW.12060	Place Permanent Signs / Striping	10	10	02-Jul-19	18-Jul-19	142
RDW.12070	Landscaping / Seeding as Required	5	5	12-Jul-19	18-Jul-19	136
RDW.12080	Complete Punch List Items - Eastbound I-70 Lanes	6	6	18-Jul-19	26-Jul-19	136
RDW.12100	Area 4 / Phase 1 / Stage 3 - Eastbound I-70 Complete	0	0		29-Jul-19	136
Phase 2		71	71	30-Jul-19	22-Nov-19	136
Stage 1		71	71	30-Jul-19	22-Nov-19	136
Westbound I-70 Inside		71	71	30-Jul-19	22-Nov-19	136
RDW.12110	Begin - Area 4 / Phase 2 / Stage 1	0	0	30-Jul-19		136
RDW.12130	Install Temp Silt Fence / Erosion Control Measures	4	4	02-Aug-19	07-Aug-19	136
RDW.12140	Saw-cut / Demo Existing	2	2	08-Aug-19	09-Aug-19	136
RDW.12150	Ex / Embank Subgrade	15	15	12-Aug-19	03-Sep-19	136
RDW.12170	Place Agg. Base Course	10	10	04-Sep-19	19-Sep-19	136
RDW.12180	Pave	12	12	20-Sep-19	08-Oct-19	136
RDW.12190	Backfill / Shouldering	10	10	09-Oct-19	25-Oct-19	136
RDW.12200	Install Guardrail / Barrier	10	10	18-Oct-19	01-Nov-19	136
RDW.12210	Place Permanent Signs / Striping	10	10	28-Oct-19	14-Nov-19	136
RDW.12220	Complete Punch List Items - Westbound I-70 Lanes	5	5	15-Nov-19	22-Nov-19	136
RDW.12230	Area 4 / Phase 2 / Stage 1 - Complete	0	0		22-Nov-19	136
Eastbound I-70 Inside		71	71	30-Jul-19	22-Nov-19	136
RDW.12240	Begin - Area 4 / Phase 2 / Stage 1	0	0	30-Jul-19		136
RDW.12260	Install Temp Silt Fence / Erosion Control Measures	4	4	02-Aug-19	07-Aug-19	136
RDW.12270	Saw-cut / Demo Existing	2	2	08-Aug-19	09-Aug-19	136
RDW.12290	Ex / Embank Subgrade	15	15	12-Aug-19	03-Sep-19	136
RDW.12300	Place Agg. Base Course	10	10	04-Sep-19	19-Sep-19	136
RDW.12310	Pave	12	12	20-Sep-19	08-Oct-19	136
RDW.12320	Backfill / Shouldering	10	10	09-Oct-19	25-Oct-19	136
RDW.12330	Install Guardrail / Barrier	10	10	18-Oct-19	01-Nov-19	136
RDW.12340	Place Permanent Signs / Striping	10	10	28-Oct-19	14-Nov-19	136
RDW.12350	Complete Punch List Items - Eastbound I-70 Lanes	5	5	15-Nov-19	22-Nov-19	136
RDW.12360	Area 4 / Phase 2 / Stage 1 - Complete	0	0		22-Nov-19	136
Area 5 - East of Peoria St. to Chambers Road - (Sta 2307+00 to Sta 2448+43.00)		305	305	07-Dec-18	15-Jun-20	25
Phase 1		203	203	07-Dec-18	12-Dec-19	25
Stage 1		16	16	07-Dec-18	15-Jan-19	25
Westbound I-70 Outside		16	16	07-Dec-18	15-Jan-19	25
RDW.12530	Install Temp Silt Fence / Erosion Control Measures	4	4	07-Dec-18	13-Dec-18	25
RDW.12550	Saw-cut Asphalt & Remove	2	2	13-Dec-18	14-Dec-18	27
RDW.12560	Prep Subgrade for Temp Paving	3	3	17-Dec-18	20-Dec-18	27
RDW.12570	Place Temp Paving	6	6	27-Dec-18	15-Jan-19	25
Eastbound I-70 Outside		16	16	07-Dec-18	15-Jan-19	25
RDW.12630	Install Temp Silt Fence / Erosion Control Measures	4	4	07-Dec-18	13-Dec-18	25
RDW.12650	Saw-cut Asphalt & Remove	2	2	13-Dec-18	14-Dec-18	27
RDW.12660	Prep Subgrade for Temp Paving	3	3	17-Dec-18	20-Dec-18	27
RDW.12670	Place Temp Paving	6	6	27-Dec-18	15-Jan-19	25

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
Stage 2		89	89	21-Jan-19	01-Jul-19	25
Westbound I-70 Outside		89	89	21-Jan-19	01-Jul-19	25
RDW.12850	Begin Construction - WB I-70 Outside	0	0	21-Jan-19		25
RDW.12860	Saw-cut / Demo Existing	2	2	21-Jan-19	24-Jan-19	25
RDW.12870	Ex / Embank to Subgrade -	20	20	21-Jan-19	06-Mar-19	25
RDW.12890	Place Agg. Base Course	15	15	08-Mar-19	02-Apr-19	25
RDW.12900	F/P/S Curb & Gutter	15	15	03-Apr-19	29-Apr-19	25
RDW.12910	Pave	15	15	30-Apr-19	23-May-19	25
RDW.12920	Backfill / Shouldering	6	6	24-May-19	03-Jun-19	25
RDW.12940	Landscaping / Seeding as Required	15	15	04-Jun-19	26-Jun-19	25
RDW.12970	WB I-70 Outside Stage 2 Complete	0	0		01-Jul-19	25
Eastbound I-70 Outside		89	89	21-Jan-19	01-Jul-19	25
RDW.12980	Begin Construction - EB I-70 Outside	0	0	21-Jan-19		25
RDW.12990	Saw-cut / Demo Existing	2	2	21-Jan-19	24-Jan-19	25
RDW.13000	Ex / Embank to Subgrade -	20	20	21-Jan-19	06-Mar-19	25
RDW.13020	Place Agg. Base Course	15	15	08-Mar-19	02-Apr-19	25
RDW.13030	F/P/S Curb & Gutter	15	15	03-Apr-19	29-Apr-19	25
RDW.13040	Pave	15	15	30-Apr-19	23-May-19	25
RDW.13050	Backfill / Shouldering	6	6	24-May-19	03-Jun-19	25
RDW.13070	Landscaping / Seeding as Required	15	15	04-Jun-19	26-Jun-19	25
RDW.13100	EB I-70 Outside Stage 2 Complete	0	0		01-Jul-19	25
Retaining Walls		20	20	05-Feb-19	15-Mar-19	89
RDW.13640	Construct Soil Nail Wall RW 5.01	15	15	05-Feb-19	06-Mar-19	89
RDW.13630	Construct Soil Nail Wall RW 5.02	15	15	14-Feb-19	15-Mar-19	89
Stage 3		96	96	02-Jul-19	12-Dec-19	25
Westbound I-70 Outside		96	96	02-Jul-19	12-Dec-19	25
RDW.13120	Begin Construction - WB I-70 Outside	0	0	02-Jul-19		25
RDW.13110	Saw-cut / Demo Existing	2	2	02-Jul-19	03-Jul-19	25
RDW.13140	Ex / Embank Subgrade	20	20	08-Jul-19	06-Aug-19	25
RDW.13150	Place Agg. Base Course	15	15	07-Aug-19	28-Aug-19	25
RDW.13160	Pave	23	23	29-Aug-19	04-Oct-19	25
RDW.13170	Backfill / Shouldering	20	20	07-Oct-19	08-Nov-19	25
RDW.13180	Install Guardrail / Barrier	20	20	15-Oct-19	20-Nov-19	25
RDW.13190	Place Permanent Signs / Striping	20	20	24-Oct-19	27-Nov-19	31
RDW.13200	Landscaping / Seeding as Required	20	20	24-Oct-19	27-Nov-19	25
RDW.13210	Complete Punch List Items - Eastbound I-70 Lanes	10	10	21-Nov-19	10-Dec-19	25
RDW.13230	Area 5 / Phase 1 / Stage 3 - Westbound I-70 Complete	0	0		12-Dec-19	25
Eastbound I-70 Outside		96	96	02-Jul-19	12-Dec-19	25
RDW.13250	Begin Construction - EB I-70 Outside	0	0	02-Jul-19		25
RDW.13240	Saw-cut / Demo Existing	2	2	02-Jul-19	03-Jul-19	25
RDW.13270	Ex / Embank Subgrade	20	20	08-Jul-19	06-Aug-19	25
RDW.13280	Place Agg. Base Course	15	15	07-Aug-19	28-Aug-19	25
RDW.13290	Pave	23	23	29-Aug-19	04-Oct-19	25
RDW.13300	Backfill / Shouldering	20	20	07-Oct-19	08-Nov-19	25
RDW.13310	Install Guardrail / Barrier	20	20	15-Oct-19	20-Nov-19	25
RDW.13320	Place Permanent Signs / Striping	20	20	24-Oct-19	27-Nov-19	31
RDW.13330	Landscaping / Seeding as Required	20	20	24-Oct-19	27-Nov-19	25
RDW.13340	Complete Punch List Items - Eastbound I-70 Lanes	10	10	21-Nov-19	10-Dec-19	25
RDW.13360	Area 5 / Phase 1 / Stage 3 - Eastbound I-70 Complete	0	0		12-Dec-19	25
I-225 Southbound Widening		24	24	02-Jul-19	08-Aug-19	97
RDW.13760	Begin Construction - SB I-225 Outside	0	0	02-Jul-19		97
RDW.13680	Ex / Embank Subgrade	3	3	02-Jul-19	08-Jul-19	97
RDW.13690	Place Agg. Base Course	3	3	09-Jul-19	12-Jul-19	97
RDW.13700	Pave	3	3	15-Jul-19	17-Jul-19	97
RDW.13710	Backfill / Shouldering	3	3	18-Jul-19	22-Jul-19	97
RDW.13720	Install Guardrail / Barrier	3	3	23-Jul-19	26-Jul-19	97
RDW.13730	Place Permanent Signs / Striping	5	5	23-Jul-19	30-Jul-19	100
RDW.13750	Landscaping / Seeding as Required	5	5	29-Jul-19	02-Aug-19	97
RDW.13660	Complete Punch List Items - Eastbound I-70 Lanes	3	3	05-Aug-19	07-Aug-19	97
RDW.13740	Area 5 / Phase 1 / Stage 3 - Southbound I-225 Complete	0	0		08-Aug-19	97
Phase 2		102	102	13-Dec-19	15-Jun-20	25

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
Stage 1		102	102	13-Dec-19	15-Jun-20	25
Westbound I-70 Inside		102	102	13-Dec-19	15-Jun-20	25
RDW.13370	Begin - Area 5 / Phase 2 / Stage 1 WB I-70 Inside	0	0	13-Dec-19		25
RDW.13390	Install Temp Silt Fence / Erosion Control Measures	4	4	18-Dec-19	26-Dec-19	25
RDW.13400	Saw-cut / Demo Existing	2	2	30-Dec-19	31-Dec-19	25
RDW.13410	Ex / Embank Subgrade	20	20	02-Jan-20	10-Feb-20	25
RDW.13430	Place Agg. Base Course	15	15	11-Feb-20	10-Mar-20	25
RDW.13440	Pave	23	23	11-Mar-20	16-Apr-20	25
RDW.13450	Backfill / Shouldering	20	20	20-Apr-20	21-May-20	25
RDW.13460	Install Guardrail / Barrier	20	20	28-Apr-20	29-May-20	25
RDW.13470	Place Permanent Signs / Striping	20	20	05-May-20	05-Jun-20	25
RDW.13480	Complete Punch List Items - Westbound I-70 Lanes	10	10	01-Jun-20	15-Jun-20	25
RDW.13490	Area 5 / Phase 2 / Stage 1 - Complete	0	0		15-Jun-20	25
Eastbound I-70 Inside		102	102	13-Dec-19	15-Jun-20	25
RDW.13500	Begin - Area 5 / Phase 2 / Stage 1 - EB I-70 Inside	0	0	13-Dec-19		25
RDW.13520	Install Temp Silt Fence / Erosion Control Measures	4	4	18-Dec-19	26-Dec-19	25
RDW.13530	Saw-cut / Demo Existing	2	2	30-Dec-19	31-Dec-19	25
RDW.13550	Ex / Embank Subgrade	20	20	02-Jan-20	10-Feb-20	25
RDW.13560	Place Agg. Base Course	15	15	11-Feb-20	10-Mar-20	25
RDW.13570	Pave	23	23	11-Mar-20	16-Apr-20	25
RDW.13580	Backfill / Shouldering	20	20	20-Apr-20	21-May-20	25
RDW.13590	Install Guardrail / Barrier	20	20	28-Apr-20	29-May-20	25
RDW.13600	Place Permanent Signs / Striping	20	20	05-May-20	05-Jun-20	25
RDW.13610	Complete Punch List Items - Eastbound I-70 Lanes	10	10	01-Jun-20	15-Jun-20	25
RDW.13620	Area 5 / Phase 2 / Stage 1 - Complete	0	0		15-Jun-20	25
Peoria Street Widening		36	36	13-Dec-19	25-Feb-20	91
RDW.13800	Begin - Area 5 / Phase 2 / Stage 1 - Peroria St.	0	0	13-Dec-19		91
RDW.13900	Install Temp Silt Fence / Erosion Control Measures	2	2	17-Dec-19	18-Dec-19	91
RDW.13810	Saw-cut / Demo Existing	4	4	19-Dec-19	30-Dec-19	91
RDW.13820	Ex / Embank Subgrade	8	8	31-Dec-19	14-Jan-20	91
RDW.13830	Place Agg. Base Course	4	4	16-Jan-20	22-Jan-20	91
RDW.13840	Pave	6	6	24-Jan-20	03-Feb-20	91
RDW.13850	Backfill / Shouldering	3	3	05-Feb-20	10-Feb-20	91
RDW.13860	Install Guardrail / Barrier	4	4	11-Feb-20	19-Feb-20	91
RDW.13870	Place Permanent Signs / Striping	2	2	11-Feb-20	13-Feb-20	93
RDW.13790	Complete Punch List Items - Eastbound I-70 Lanes	3	3	20-Feb-20	25-Feb-20	91
RDW.13880	Area 5 / Phase 2 / Stage 1 - Complete	0	0		25-Feb-20	91
ITS		500	500	13-May-19	14-Sep-21	121
Area 1 - Brighton Blvd to Dahlia St.- Sta 2000+00 to 2085+00 (1.61 miles)		138	138	03-Feb-21	14-Sep-21	57
A7390	Begin Area 1 ITS	0	0	03-Feb-21		57
A7400	Area 1 ITS Summary	138	138	03-Feb-21	14-Sep-21	57
A7410	Complete Area 1 ITS	0	0		14-Sep-21	57
Sta 2000+00 to 2025+50 East Bound		46	46	03-Feb-21	27-Apr-21	149
A5030	Toll Gantry Sta 2000+00 to 2025+50 EB - Drill Gantry Caisson - Outside	5	5	03-Feb-21	09-Feb-21	57
A5040	Toll Gantry Sta 2000+00 to 2025+50 EB - F/R/P Foundation Concrete - Outside	5	5	10-Feb-21	22-Feb-21	57
A5060	Toll Gantry Sta 2000+00 to 2025+50 EB - Install Gantry Post - Outside	5	5	24-Feb-21	04-Mar-21	57
A5070	Toll Gantry Sta 2000+00 to 2025+50 EB - Drill Gantry Caisson - Inside	5	5	05-Mar-21	12-Mar-21	57
A5080	Toll Gantry Sta 2000+00 to 2025+50 EB - F/R/P Foundation Concrete - Inside	5	5	15-Mar-21	22-Mar-21	57
A5100	Toll Gantry Sta 2000+00 to 2025+50 EB - Install Gantry Post - Inside	5	5	24-Mar-21	31-Mar-21	57
A5110	Toll Gantry Sta 2000+00 to 2025+50 EB - Gantry Connection (Night Closure)	1	1	01-Apr-21	01-Apr-21	57
A5120	Toll Gantry Sta 2000+00 to 2025+50 EB - Electrical Tie-In	5	5	02-Apr-21	09-Apr-21	57
A5130	Toll Gantry Sta 2000+00 to 2025+50 EB - Signing	5	5	12-Apr-21	16-Apr-21	154
A5140	Toll Gantry Sta 2000+00 to 2025+50 EB - ETC System Integration Installation/Inspection	5	5	12-Apr-21	16-Apr-21	57
A5150	Toll Gantry Sta 2000+00 to 2025+50 EB - I-70 Toll Point Lane Test	5	5	19-Apr-21	27-Apr-21	57

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

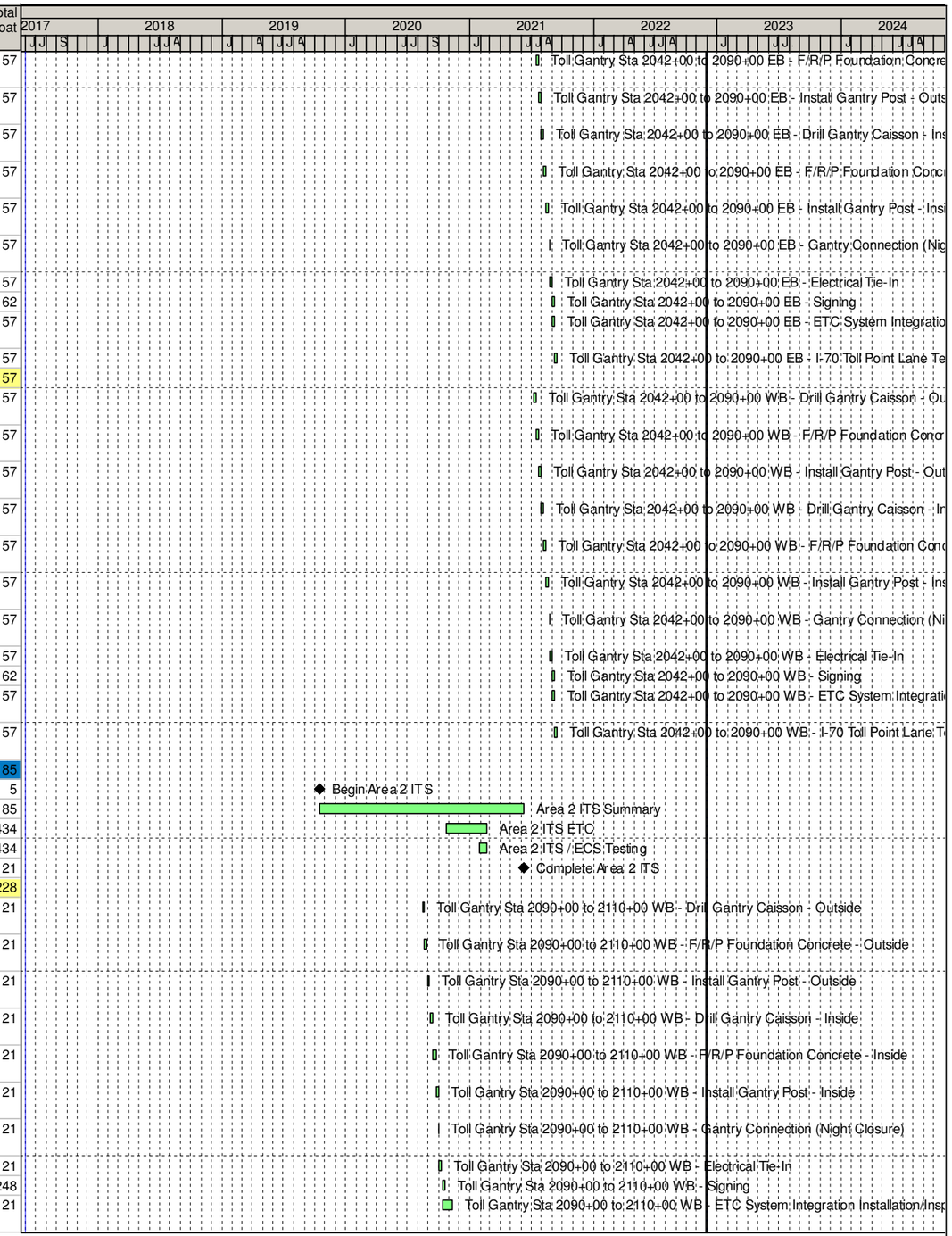
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
Sta 2000+00 to 2025+50 West Bound		46	46	03-Feb-21	27-Apr-21	149
A5160	Toll Gantry Sta 2000+00 to 2025+50 WB - Drill Gantry Caisson - Outside	5	5	03-Feb-21	09-Feb-21	57
A5170	Toll Gantry Sta 2000+00 to 2025+50 WB - F/R/P Foundation Concrete - Outside	5	5	10-Feb-21	22-Feb-21	57
A5190	Toll Gantry Sta 2000+00 to 2025+50 WB - Install Gantry Post - Outside	5	5	24-Feb-21	04-Mar-21	57
A5200	Toll Gantry Sta 2000+00 to 2025+50 WB - Drill Gantry Caisson - Inside	5	5	05-Mar-21	12-Mar-21	57
A5210	Toll Gantry Sta 2000+00 to 2025+50 WB - F/R/P Foundation Concrete - Inside	5	5	15-Mar-21	22-Mar-21	57
A5230	Toll Gantry Sta 2000+00 to 2025+50 WB - Install Gantry Post - Inside	5	5	24-Mar-21	31-Mar-21	57
A5240	Toll Gantry Sta 0000+00 to 2025+50 WB - Gantry Connection (Night Closure)	1	1	01-Apr-21	01-Apr-21	57
A5250	Toll Gantry Sta 2000+00 to 2025+50 WB - Electrical Tie-In	5	5	02-Apr-21	09-Apr-21	57
A5260	Toll Gantry Sta 2000+00 to 2025+50 WB - Signing	5	5	12-Apr-21	16-Apr-21	154
A5270	Toll Gantry Sta 2000+00 to 2025+50 WB - ETC System Integration Installation/Inspection	5	5	12-Apr-21	16-Apr-21	57
A5280	Toll Gantry Sta 2000+00 to 2025+50 WB - I-70 Toll Point Lane Test	5	5	19-Apr-21	27-Apr-21	57
Sta 2025+50 to 2042+00 East Bound		46	46	28-Apr-21	07-Jul-21	103
A5290	Toll Gantry Sta 2025+50 to 2042+00 EB - Drill Gantry Caisson - Outside	5	5	28-Apr-21	04-May-21	57
A5300	Toll Gantry Sta 2025+50 to 2042+00 EB - F/R/P Foundation Concrete - Outside	5	5	06-May-21	12-May-21	57
A5310	Toll Gantry Sta 2025+50 to 2042+00 EB - Install Gantry Post - Outside	5	5	13-May-21	20-May-21	57
A5320	Toll Gantry Sta 2025+50 to 2042+00 EB - Drill Gantry Caisson - Inside	5	5	21-May-21	27-May-21	57
A5330	Toll Gantry Sta 2025+50 to 2042+00 EB - F/R/P Foundation Concrete - Inside	5	5	28-May-21	04-Jun-21	57
A5340	Toll Gantry Sta 2025+50 to 2042+00 EB - Install Gantry Post - Inside	5	5	07-Jun-21	11-Jun-21	57
A5350	Toll Gantry Sta 2025+50 to 2042+00 EB - Gantry Connection (Night Closure)	1	1	14-Jun-21	14-Jun-21	57
A5360	Toll Gantry Sta 2025+50 to 2042+00 EB - Electrical Tie-In	5	5	15-Jun-21	21-Jun-21	57
A5370	Toll Gantry Sta 2025+50 to 2042+00 EB - Signing	5	5	22-Jun-21	29-Jun-21	108
A5380	Toll Gantry Sta 2025+50 to 2042+00 EB - ETC System Integration Installation/Inspection	5	5	22-Jun-21	29-Jun-21	57
A5390	Toll Gantry Sta 2025+50 to 2042+00 EB - I-70 Toll Point Lane Test	5	5	30-Jun-21	07-Jul-21	57
Sta 2025+50 to 2042+00 West Bound		46	46	28-Apr-21	07-Jul-21	103
A5400	Toll Gantry Sta 2025+50 to 2042+00 WB - Drill Gantry Caisson - Outside	5	5	28-Apr-21	04-May-21	57
A5410	Toll Gantry Sta 2025+50 to 2042+00 WB - F/R/P Foundation Concrete - Outside	5	5	06-May-21	12-May-21	57
A5420	Toll Gantry Sta 2025+50 to 2042+00 WB - Install Gantry Post - Outside	5	5	13-May-21	20-May-21	57
A5430	Toll Gantry Sta 2025+50 to 2042+00 WB - Drill Gantry Caisson - Inside	5	5	21-May-21	27-May-21	57
A5440	Toll Gantry Sta 2025+50 to 2042+00 WB - F/R/P Foundation Concrete - Inside	5	5	28-May-21	04-Jun-21	57
A5450	Toll Gantry Sta 2025+50 to 2042+00 WB - Install Gantry Post - Inside	5	5	07-Jun-21	11-Jun-21	57
A5460	Toll Gantry Sta 2025+50 to 2042+00 WB - Gantry Connection (Night Closure)	1	1	14-Jun-21	14-Jun-21	57
A5470	Toll Gantry Sta 2025+50 to 2042+00 WB - Electrical Tie-In	5	5	15-Jun-21	21-Jun-21	57
A5480	Toll Gantry Sta 2025+50 to 2042+00 WB - Signing	5	5	22-Jun-21	29-Jun-21	108
A5490	Toll Gantry Sta 2025+50 to 2042+00 WB - ETC System Integration Installation/Inspection	5	5	22-Jun-21	29-Jun-21	57
A5500	Toll Gantry Sta 2025+50 to 2042+00 WB - I-70 Toll Point Lane Test	5	5	30-Jun-21	07-Jul-21	57
Sta 2042+00 to 2090+00 East Bound		46	46	08-Jul-21	14-Sep-21	57
A7420	Toll Gantry Sta 2042+00 to 2090+00 EB - Drill Gantry Caisson - Outside	5	5	08-Jul-21	15-Jul-21	57

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
A7430	Toll Gantry Sta 2042+00 to 2090+00 EB - F/R/P Foundation Concrete - Outside	5	5	16-Jul-21	22-Jul-21	57
A7440	Toll Gantry Sta 2042+00 to 2090+00 EB - Install Gantry Post - Outside	5	5	23-Jul-21	29-Jul-21	57
A7450	Toll Gantry Sta 2042+00 to 2090+00 EB - Drill Gantry Caisson - Inside	5	5	30-Jul-21	05-Aug-21	57
A7460	Toll Gantry Sta 2042+00 to 2090+00 EB - F/R/P Foundation Concrete - Inside	5	5	06-Aug-21	12-Aug-21	57
A7470	Toll Gantry Sta 2042+00 to 2090+00 EB - Install Gantry Post - Inside	5	5	13-Aug-21	20-Aug-21	57
A7480	Toll Gantry Sta 2042+00 to 2090+00 EB - Gantry Connection (Night Closure)	1	1	23-Aug-21	23-Aug-21	57
A7490	Toll Gantry Sta 2042+00 to 2090+00 EB - Electrical Tie-In	5	5	24-Aug-21	30-Aug-21	57
A7500	Toll Gantry Sta 2042+00 to 2090+00 EB - Signing	5	5	31-Aug-21	07-Sep-21	62
A7510	Toll Gantry Sta 2042+00 to 2090+00 EB - ETC System Integration Installation/Inspection	5	5	31-Aug-21	07-Sep-21	57
A7520	Toll Gantry Sta 2042+00 to 2090+00 EB - I-70 Toll Point Lane Test	5	5	08-Sep-21	14-Sep-21	57
Sta 2042+00 to 2090+00 West Bound		46	46	08-Jul-21	14-Sep-21	57
A7530	Toll Gantry Sta 2042+00 to 2090+00 WB - Drill Gantry Caisson - Outside	5	5	08-Jul-21	15-Jul-21	57
A7540	Toll Gantry Sta 2042+00 to 2090+00 WB - F/R/P Foundation Concrete - Outside	5	5	16-Jul-21	22-Jul-21	57
A7550	Toll Gantry Sta 2042+00 to 2090+00 WB - Install Gantry Post - Outside	5	5	23-Jul-21	29-Jul-21	57
A7560	Toll Gantry Sta 2042+00 to 2090+00 WB - Drill Gantry Caisson - Inside	5	5	30-Jul-21	05-Aug-21	57
A7570	Toll Gantry Sta 2042+00 to 2090+00 WB - F/R/P Foundation Concrete - Inside	5	5	06-Aug-21	12-Aug-21	57
A7580	Toll Gantry Sta 2042+00 to 2090+00 WB - Install Gantry Post - Inside	5	5	13-Aug-21	20-Aug-21	57
A7590	Toll Gantry Sta 2042+00 to 2090+00 WB - Gantry Connection (Night Closure)	1	1	23-Aug-21	23-Aug-21	57
A7600	Toll Gantry Sta 2042+00 to 2090+00 WB - Electrical Tie-In	5	5	24-Aug-21	30-Aug-21	57
A7610	Toll Gantry Sta 2042+00 to 2090+00 WB - Signing	5	5	31-Aug-21	07-Sep-21	62
A7620	Toll Gantry Sta 2042+00 to 2090+00 WB - ETC System Integration Installation/Inspection	5	5	31-Aug-21	07-Sep-21	57
A7630	Toll Gantry Sta 2042+00 to 2090+00 WB - I-70 Toll Point Lane Test	5	5	08-Sep-21	14-Sep-21	57
Area 2 - Dahlia St to Sand Creek Bridge - Sta 2085+00 to 2192+37.89 (2.01 miles)		339	339	17-Oct-19	09-Jun-21	185
A7360	Begin Area 2 ITS	0	0	17-Oct-19		5
A7370	Area 2 ITS Summary	339	339	17-Oct-19	09-Jun-21	185
A2130	Area 2 ITS ETC	120	120	23-Oct-20	19-Feb-21	434
SUM.BAR.A2.70	Area 2 ITS / ECS Testing	20	20	31-Jan-21	19-Feb-21	434
A7380	Complete Area 2 ITS	0	0		09-Jun-21	121
Sta 2090+00 to 2110+00 West Bound		61	61	14-Aug-20	19-Nov-20	228
A5620	Toll Gantry Sta 2090+00 to 2110+00 WB - Drill Gantry Caisson - Outside	5	5	14-Aug-20	20-Aug-20	121
A5630	Toll Gantry Sta 2090+00 to 2110+00 WB - F/R/P Foundation Concrete - Outside	5	5	21-Aug-20	28-Aug-20	121
A5640	Toll Gantry Sta 2090+00 to 2110+00 WB - Install Gantry Post - Outside	5	5	31-Aug-20	04-Sep-20	121
A5650	Toll Gantry Sta 2090+00 to 2110+00 WB - Drill Gantry Caisson - Inside	5	5	08-Sep-20	14-Sep-20	121
A5660	Toll Gantry Sta 2090+00 to 2110+00 WB - F/R/P Foundation Concrete - Inside	5	5	15-Sep-20	23-Sep-20	121
A5670	Toll Gantry Sta 2090+00 to 2110+00 WB - Install Gantry Post - Inside	5	5	24-Sep-20	30-Sep-20	121
A5680	Toll Gantry Sta 2090+00 to 2110+00 WB - Gantry Connection (Night Closure)	1	1	01-Oct-20	01-Oct-20	121
A5690	Toll Gantry Sta 2090+00 to 2110+00 WB - Electrical Tie-In	5	5	02-Oct-20	09-Oct-20	121
A5700	Toll Gantry Sta 2090+00 to 2110+00 WB - Signing	5	5	12-Oct-20	19-Oct-20	248
A5710	Toll Gantry Sta 2090+00 to 2110+00 WB - ETC System Integration Installation/Inspection	20	20	12-Oct-20	10-Nov-20	121



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
A5720	Toll Gantry Sta 2090+00 to 2110+00 WB - I-70 Toll Point Lane Test	5	5	11-Nov-20	19-Nov-20	121
Sta 2166+00 to 2196+00 West Bound		61	61	03-Mar-21	09-Jun-21	121
A8410	Toll Gantry Sta 2166+00 to 2196+00 WB - Drill Gantry Caisson - Outside	5	5	03-Mar-21	09-Mar-21	121
A8420	Toll Gantry Sta 2166+00 to 2196+00 WB - F/R/P Foundation Concrete - Outside	5	5	10-Mar-21	18-Mar-21	121
A8430	Toll Gantry Sta 2166+00 to 2196+00 WB - Install Gantry Post - Outside	5	5	19-Mar-21	29-Mar-21	121
A8440	Toll Gantry Sta 2166+00 to 2196+00 WB - Drill Gantry Caisson - Inside	5	5	30-Mar-21	05-Apr-21	121
A8450	Toll Gantry Sta 2166+00 to 2196+00 WB - F/R/P Foundation Concrete - Inside	5	5	06-Apr-21	13-Apr-21	121
A8460	Toll Gantry Sta 2166+00 to 2196+00 WB - Install Gantry Post - Inside	5	5	14-Apr-21	20-Apr-21	121
A8470	Toll Gantry Sta 2166+00 to 2196+00 WB - Gantry Connection (Night Closure)	1	1	22-Apr-21	22-Apr-21	121
A8480	Toll Gantry Sta 2166+00 to 2196+00 WB - Electrical Tie-In	5	5	23-Apr-21	30-Apr-21	121
A8490	Toll Gantry Sta 2166+00 to 2196+00 WB - Signing	5	5	03-May-21	10-May-21	141
A8500	Toll Gantry Sta 2166+00 to 2196+00 WB - ETC System Integration Installation/Inspection	20	20	03-May-21	02-Jun-21	121
A8510	Toll Gantry Sta 2166+00 to 2196+00 WB - I-70 Toll Point Lane Test	5	5	03-Jun-21	09-Jun-21	121
Sta 2130+00 to 2157+00 East Bound		46	46	06-Mar-20	21-May-20	343
A5730	Toll Gantry Sta 2110+00 to 2138+00 EB - Drill Gantry Caisson - Outside	5	5	06-Mar-20	13-Mar-20	297
A5740	Toll Gantry Sta 2110+00 to 2138+00 EB - F/R/P Foundation Concrete - Outside	5	5	16-Mar-20	23-Mar-20	297
A5750	Toll Gantry Sta 2110+00 to 2138+00 EB - Install Gantry Post - Outside	5	5	25-Mar-20	31-Mar-20	297
A5760	Toll Gantry Sta 2110+00 to 2138+00 EB - Drill Gantry Caisson - Inside	5	5	01-Apr-20	07-Apr-20	297
A5770	Toll Gantry Sta 2110+00 to 2138+00 EB - F/R/P Foundation Concrete - Inside	5	5	09-Apr-20	15-Apr-20	297
A5780	Toll Gantry Sta 2110+00 to 2138+00 EB - Install Gantry Post - Inside	5	5	16-Apr-20	24-Apr-20	297
A5790	Toll Gantry Sta 2110+00 to 2138+00 EB - Gantry Connection (Night Closure)	1	1	27-Apr-20	27-Apr-20	297
A5800	Toll Gantry Sta 2110+00 to 2138+00 EB - Electrical Tie-In	5	5	28-Apr-20	04-May-20	297
A5810	Toll Gantry Sta 2110+00 to 2138+00 EB - Signing	5	5	05-May-20	12-May-20	348
A5820	Toll Gantry Sta 2110+00 to 2138+00 EB - ETC System Integration Installation/Inspection	5	5	05-May-20	12-May-20	297
A5830	Toll Gantry Sta 2110+00 to 2138+00 EB - I-70 Toll Point Lane Test	5	5	13-May-20	21-May-20	297
Sta 2130+00 to 2157+00 West Bound		46	46	20-Nov-20	02-Mar-21	182
A5840	Toll Gantry Sta 2110+00 to 2138+00 WB - Drill Gantry Caisson - Outside	5	5	20-Nov-20	02-Dec-20	121
A5850	Toll Gantry Sta 2110+00 to 2138+00 WB - F/R/P Foundation Concrete - Outside	5	5	03-Dec-20	11-Dec-20	121
A5860	Toll Gantry Sta 2110+00 to 2138+00 WB - Install Gantry Post - Outside	5	5	15-Dec-20	22-Dec-20	121
A5870	Toll Gantry Sta 2110+00 to 2138+00 WB - Drill Gantry Caisson - Inside	5	5	23-Dec-20	04-Jan-21	121
A5880	Toll Gantry Sta 2110+00 to 2138+00 WB - F/R/P Foundation Concrete - Inside	5	5	06-Jan-21	14-Jan-21	121
A5890	Toll Gantry Sta 2110+00 to 2138+00 WB - Install Gantry Post - Inside	5	5	15-Jan-21	25-Jan-21	121
A5900	Toll Gantry Sta 2110+00 to 2138+00 WB - Gantry Connection (Night Closure)	1	1	26-Jan-21	26-Jan-21	121
A5910	Toll Gantry Sta 2110+00 to 2138+00 WB - Electrical Tie-In	5	5	27-Jan-21	05-Feb-21	121
A5920	Toll Gantry Sta 2110+00 to 2138+00 WB - Signing	5	5	08-Feb-21	16-Feb-21	187
A5930	Toll Gantry Sta 2110+00 to 2138+00 WB - ETC System Integration Installation/Inspection	5	5	08-Feb-21	16-Feb-21	121
A5940	Toll Gantry Sta 2110+00 to 2138+00 WB - I-70 Toll Point Lane Test	5	5	19-Feb-21	02-Mar-21	121
Area 3 - Sand Creek Bridge to West of Havana St. - (Sta 2196+00 to Sta 2270+89.00)		127	127	01-Jul-19	11-Feb-20	400

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

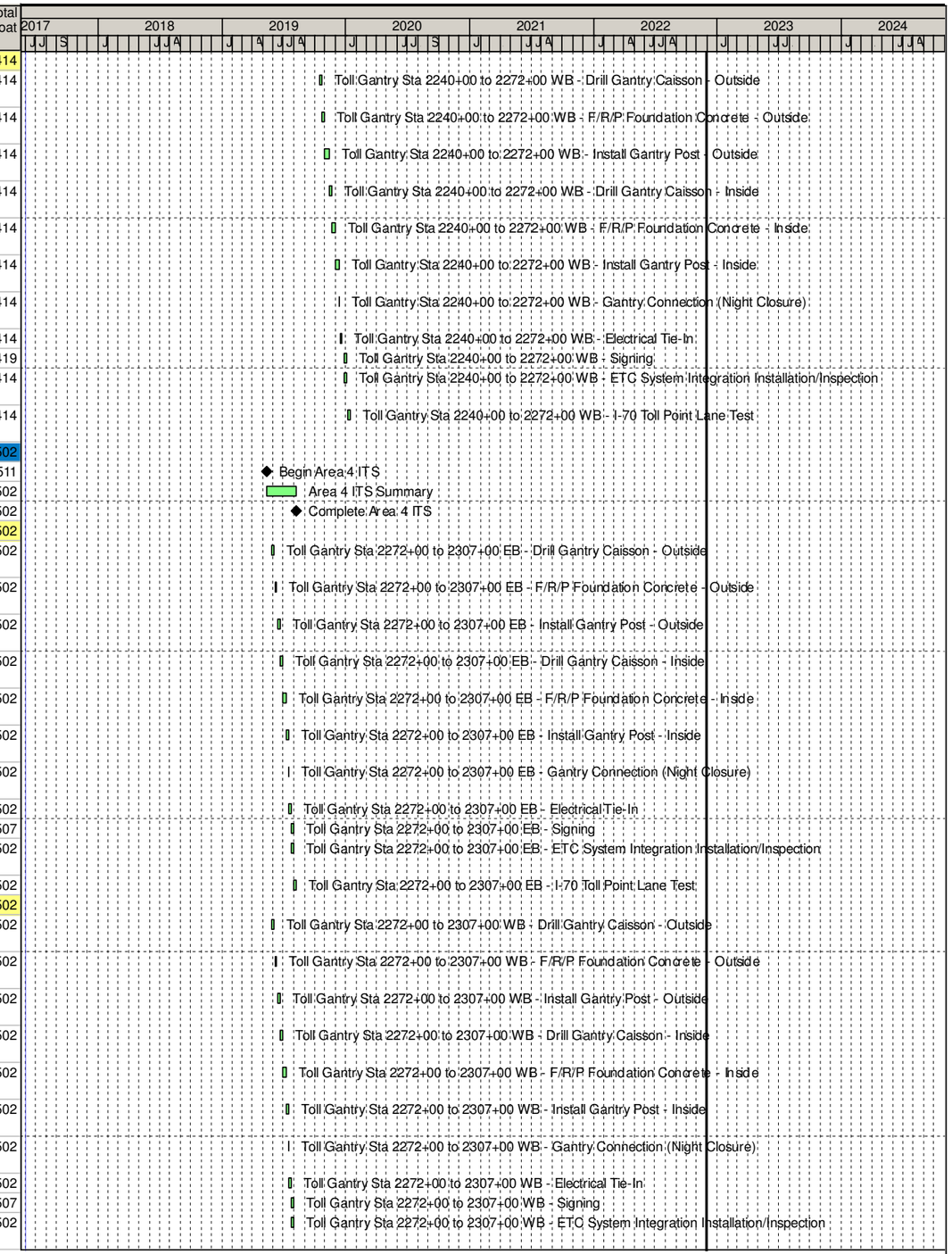
Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
A7330	Begin Area 3 ITS	0	0	01-Jul-19		435
A7340	Area 3 ITS Summary	127	127	01-Jul-19	11-Feb-20	400
A7350	Complete Area 3 ITS	0	0		11-Feb-20	400
Sta 2196+00 to 2240+00 East Bound		46	46	26-Aug-19	08-Nov-19	446
A5950	Toll Gantry Sta 2196+00 to 2240+00 EB - Drill Gantry Caisson - Outside	5	5	26-Aug-19	30-Aug-19	400
A5960	Toll Gantry Sta 2196+00 to 2240+00 EB - F/R/P Foundation Concrete - Outside	5	5	03-Sep-19	09-Sep-19	400
A5970	Toll Gantry Sta 2196+00 to 2240+00 EB - Install Gantry Post - Outside	5	5	10-Sep-19	17-Sep-19	400
A5980	Toll Gantry Sta 2196+00 to 2240+00 EB - Drill Gantry Caisson - Inside	5	5	19-Sep-19	26-Sep-19	400
A5990	Toll Gantry Sta 2196+00 to 2240+00 EB - F/R/P Foundation Concrete - Inside	5	5	27-Sep-19	03-Oct-19	400
A6000	Toll Gantry Sta 2196+00 to 2240+00 EB - Install Gantry Post - Inside	5	5	04-Oct-19	11-Oct-19	400
A6010	Toll Gantry Sta 2196+00 to 2240+00 EB - Gantry Connection (Night Closure)	1	1	14-Oct-19	14-Oct-19	400
A6020	Toll Gantry Sta 2196+00 to 2240+00 EB - Electrical Tie-In	5	5	15-Oct-19	23-Oct-19	400
A6030	Toll Gantry Sta 2196+00 to 2240+00 EB - Signing	5	5	24-Oct-19	30-Oct-19	451
A6040	Toll Gantry Sta 2196+00 to 2240+00 EB - ETC System Integration Installation/Inspection	5	5	24-Oct-19	30-Oct-19	400
A6050	Toll Gantry Sta 2196+00 to 2240+00 EB - I-70 Toll Point Lane Test	5	5	31-Oct-19	08-Nov-19	400
Sta 2196+00 to 2240+00 West Bound		46	46	05-Aug-19	15-Oct-19	460
A6060	Toll Gantry Sta 2196+00 to 2240+00 WB - Drill Gantry Caisson - Outside	5	5	05-Aug-19	09-Aug-19	414
A6070	Toll Gantry Sta 2196+00 to 2240+00 WB - F/R/P Foundation Concrete - Outside	5	5	12-Aug-19	19-Aug-19	414
A6080	Toll Gantry Sta 2196+00 to 2240+00 WB - Install Gantry Post - Outside	5	5	20-Aug-19	26-Aug-19	414
A6090	Toll Gantry Sta 2196+00 to 2240+00 WB - Drill Gantry Caisson - Inside	5	5	27-Aug-19	03-Sep-19	414
A6100	Toll Gantry Sta 2196+00 to 2240+00 WB - F/R/P Foundation Concrete - Inside	5	5	04-Sep-19	10-Sep-19	414
A6110	Toll Gantry Sta 2196+00 to 2240+00 WB - Install Gantry Post - Inside	5	5	11-Sep-19	19-Sep-19	414
A6120	Toll Gantry Sta 2196+00 to 2240+00 WB - Gantry Connection (Night Closure)	1	1	20-Sep-19	20-Sep-19	414
A6130	Toll Gantry Sta 2196+00 to 2240+00 WB - Electrical Tie-In	5	5	23-Sep-19	30-Sep-19	414
A6140	Toll Gantry Sta 2196+00 to 2240+00 WB - Signing	5	5	01-Oct-19	07-Oct-19	465
A6150	Toll Gantry Sta 2196+00 to 2240+00 WB - ETC System Integration Installation/Inspection	5	5	01-Oct-19	07-Oct-19	414
A6160	Toll Gantry Sta 2196+00 to 2240+00 WB - I-70 Toll Point Lane Test	5	5	08-Oct-19	15-Oct-19	414
Sta 2240+00 to 2272+00 East Bound		46	46	12-Nov-19	11-Feb-20	400
A6170	Toll Gantry Sta 2240+00 to 2272+00 EB - Drill Gantry Caisson - Outside	5	5	12-Nov-19	20-Nov-19	400
A6180	Toll Gantry Sta 2240+00 to 2272+00 EB - F/R/P Foundation Concrete - Outside	5	5	21-Nov-19	27-Nov-19	400
A6190	Toll Gantry Sta 2240+00 to 2272+00 EB - Install Gantry Post - Outside	5	5	02-Dec-19	10-Dec-19	400
A6200	Toll Gantry Sta 2240+00 to 2272+00 EB - Drill Gantry Caisson - Inside	5	5	12-Dec-19	18-Dec-19	400
A6210	Toll Gantry Sta 2240+00 to 2272+00 EB - F/R/P Foundation Concrete - Inside	5	5	19-Dec-19	31-Dec-19	400
A6220	Toll Gantry Sta 2240+00 to 2272+00 EB - Install Gantry Post - Inside	5	5	02-Jan-20	10-Jan-20	400
A6230	Toll Gantry Sta 2240+00 to 2272+00 EB - Gantry Connection (Night Closure)	1	1	13-Jan-20	13-Jan-20	400
A6240	Toll Gantry Sta 2240+00 to 2272+00 EB - Electrical Tie-In	5	5	14-Jan-20	22-Jan-20	400
A6250	Toll Gantry Sta 2240+00 to 2272+00 EB - Signing	5	5	24-Jan-20	31-Jan-20	405
A6260	Toll Gantry Sta 2240+00 to 2272+00 EB - ETC System Integration Installation/Inspection	5	5	24-Jan-20	31-Jan-20	400
A6270	Toll Gantry Sta 2240+00 to 2272+00 EB - I-70 Toll Point Lane Test	5	5	03-Feb-20	11-Feb-20	400

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
Sta 2240+00 to 2272+00 West Bound		46	46	17-Oct-19	14-Jan-20	414
A6280	Toll Gantry Sta 2240+00 to 2272+00 WB - Drill Gantry Caisson - Outside	5	5	17-Oct-19	24-Oct-19	414
A6290	Toll Gantry Sta 2240+00 to 2272+00 WB - F/R/P Foundation Concrete - Outside	5	5	25-Oct-19	31-Oct-19	414
A6300	Toll Gantry Sta 2240+00 to 2272+00 WB - Install Gantry Post - Outside	5	5	01-Nov-19	12-Nov-19	414
A6310	Toll Gantry Sta 2240+00 to 2272+00 WB - Drill Gantry Caisson - Inside	5	5	14-Nov-19	21-Nov-19	414
A6320	Toll Gantry Sta 2240+00 to 2272+00 WB - F/R/P Foundation Concrete - Inside	5	5	22-Nov-19	02-Dec-19	414
A6330	Toll Gantry Sta 2240+00 to 2272+00 WB - Install Gantry Post - Inside	5	5	03-Dec-19	12-Dec-19	414
A6340	Toll Gantry Sta 2240+00 to 2272+00 WB - Gantry Connection (Night Closure)	1	1	13-Dec-19	13-Dec-19	414
A6350	Toll Gantry Sta 2240+00 to 2272+00 WB - Electrical Tie-In	5	5	16-Dec-19	20-Dec-19	414
A6360	Toll Gantry Sta 2240+00 to 2272+00 WB - Signing	5	5	26-Dec-19	03-Jan-20	419
A6370	Toll Gantry Sta 2240+00 to 2272+00 WB - ETC System Integration Installation/Inspection	5	5	26-Dec-19	03-Jan-20	414
A6380	Toll Gantry Sta 2240+00 to 2272+00 WB - I-70 Toll Point Lane Test	5	5	07-Jan-20	14-Jan-20	414
Area 4 - West of Havana St. to East of Havana St. - (Sta 2272+00 to Sta 2307+00)		55	55	13-May-19	08-Aug-19	502
A7300	Begin Area 4 ITS	0	0	13-May-19		511
A7310	Area 4 ITS Summary	55	55	13-May-19	08-Aug-19	502
A7320	Complete Area 4 ITS	0	0		08-Aug-19	502
Sta 2272+00 to 2307+00 East Bound		46	46	29-May-19	08-Aug-19	502
A6390	Toll Gantry Sta 2272+00 to 2307+00 EB - Drill Gantry Caisson - Outside	5	5	29-May-19	04-Jun-19	502
A6400	Toll Gantry Sta 2272+00 to 2307+00 EB - F/R/P Foundation Concrete - Outside	5	5	06-Jun-19	12-Jun-19	502
A6410	Toll Gantry Sta 2272+00 to 2307+00 EB - Install Gantry Post - Outside	5	5	13-Jun-19	20-Jun-19	502
A6420	Toll Gantry Sta 2272+00 to 2307+00 EB - Drill Gantry Caisson - Inside	5	5	21-Jun-19	27-Jun-19	502
A6430	Toll Gantry Sta 2272+00 to 2307+00 EB - F/R/P Foundation Concrete - Inside	5	5	28-Jun-19	08-Jul-19	502
A6440	Toll Gantry Sta 2272+00 to 2307+00 EB - Install Gantry Post - Inside	5	5	09-Jul-19	16-Jul-19	502
A6450	Toll Gantry Sta 2272+00 to 2307+00 EB - Gantry Connection (Night Closure)	1	1	17-Jul-19	17-Jul-19	502
A6460	Toll Gantry Sta 2272+00 to 2307+00 EB - Electrical Tie-In	5	5	18-Jul-19	25-Jul-19	502
A6470	Toll Gantry Sta 2272+00 to 2307+00 EB - Signing	5	5	26-Jul-19	01-Aug-19	507
A6480	Toll Gantry Sta 2272+00 to 2307+00 EB - ETC System Integration Installation/Inspection	5	5	26-Jul-19	01-Aug-19	502
A6490	Toll Gantry Sta 2272+00 to 2307+00 EB - I-70 Toll Point Lane Test	5	5	02-Aug-19	08-Aug-19	502
Sta 2272+00 to 2307+00 West Bound		46	46	29-May-19	08-Aug-19	502
A6500	Toll Gantry Sta 2272+00 to 2307+00 WB - Drill Gantry Caisson - Outside	5	5	29-May-19	04-Jun-19	502
A6510	Toll Gantry Sta 2272+00 to 2307+00 WB - F/R/P Foundation Concrete - Outside	5	5	06-Jun-19	12-Jun-19	502
A6520	Toll Gantry Sta 2272+00 to 2307+00 WB - Install Gantry Post - Outside	5	5	13-Jun-19	20-Jun-19	502
A6530	Toll Gantry Sta 2272+00 to 2307+00 WB - Drill Gantry Caisson - Inside	5	5	21-Jun-19	27-Jun-19	502
A6540	Toll Gantry Sta 2272+00 to 2307+00 WB - F/R/P Foundation Concrete - Inside	5	5	28-Jun-19	08-Jul-19	502
A6550	Toll Gantry Sta 2272+00 to 2307+00 WB - Install Gantry Post - Inside	5	5	09-Jul-19	16-Jul-19	502
A6560	Toll Gantry Sta 2272+00 to 2307+00 WB - Gantry Connection (Night Closure)	1	1	17-Jul-19	17-Jul-19	502
A6570	Toll Gantry Sta 2272+00 to 2307+00 WB - Electrical Tie-In	5	5	18-Jul-19	25-Jul-19	502
A6580	Toll Gantry Sta 2272+00 to 2307+00 WB - Signing	5	5	26-Jul-19	01-Aug-19	507
A6590	Toll Gantry Sta 2272+00 to 2307+00 WB - ETC System Integration Installation/Inspection	5	5	26-Jul-19	01-Aug-19	502

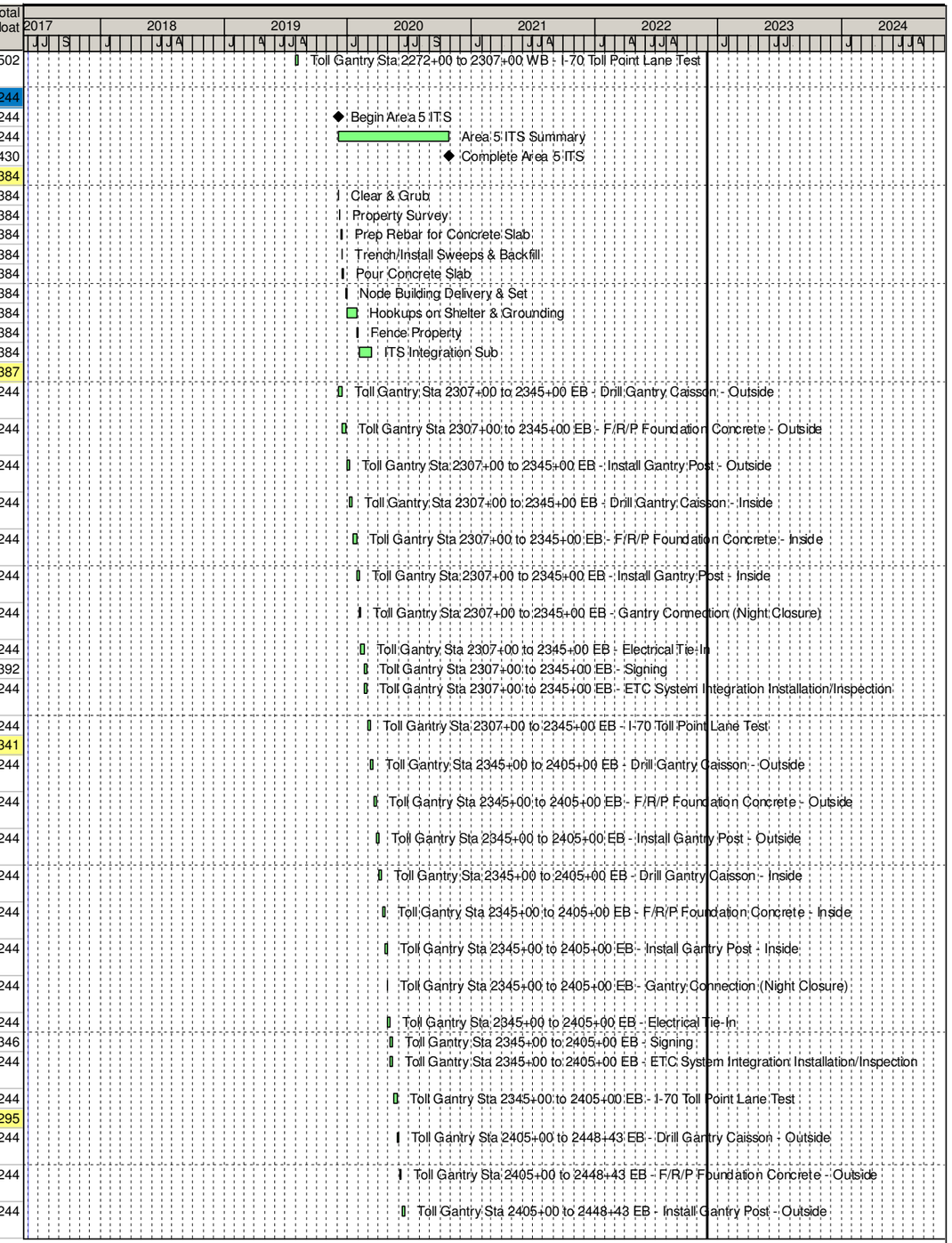


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
A6600	Toll Gantry Sta 2272+00 to 2307+00 WB - I-70 Toll Point Lane Test	5	5	02-Aug-19	08-Aug-19	502
Area 5 - East of Peoria St. to Chambers Road - (Sta 2307+00 to Sta 2448+43.00)		189	189	06-Dec-19	26-Oct-20	244
A7270	Begin Area 5 ITS	0	0	06-Dec-19		244
A7280	Area 5 ITS Summary	189	189	06-Dec-19	26-Oct-20	244
A7290	Complete Area 5 ITS	0	0		26-Oct-20	430
Node Building		49	49	06-Dec-19	13-Mar-20	384
A9170	Clear & Grub	1	1	06-Dec-19	06-Dec-19	384
A9180	Property Survey	1	1	10-Dec-19	10-Dec-19	384
A9190	Prep Rebar for Concrete Slab	3	3	12-Dec-19	16-Dec-19	384
A9200	Trench/Install Sweeps & Backfill	1	1	17-Dec-19	17-Dec-19	384
A9210	Pour Concrete Slab	3	3	18-Dec-19	20-Dec-19	384
A9220	Node Building Delivery & Set	2	2	26-Dec-19	30-Dec-19	384
A9230	Hookups on Shelter & Grounding	15	15	31-Dec-19	29-Jan-20	384
A9240	Fence Property	3	3	30-Jan-20	03-Feb-20	384
A9250	ITS Integration Sub	20	20	05-Feb-20	13-Mar-20	384
Sta 2307+00 to 2345+00 East Bound		46	46	06-Dec-19	09-Mar-20	387
A6830	Toll Gantry Sta 2307+00 to 2345+00 EB - Drill Gantry Caisson - Outside	5	5	06-Dec-19	16-Dec-19	244
A6840	Toll Gantry Sta 2307+00 to 2345+00 EB - F/R/P Foundation Concrete - Outside	5	5	17-Dec-19	26-Dec-19	244
A6850	Toll Gantry Sta 2307+00 to 2345+00 EB - Install Gantry Post - Outside	5	5	30-Dec-19	07-Jan-20	244
A6860	Toll Gantry Sta 2307+00 to 2345+00 EB - Drill Gantry Caisson - Inside	5	5	08-Jan-20	16-Jan-20	244
A6870	Toll Gantry Sta 2307+00 to 2345+00 EB - F/R/P Foundation Concrete - Inside	5	5	17-Jan-20	28-Jan-20	244
A6880	Toll Gantry Sta 2307+00 to 2345+00 EB - Install Gantry Post - Inside	5	5	29-Jan-20	05-Feb-20	244
A6890	Toll Gantry Sta 2307+00 to 2345+00 EB - Gantry Connection (Night Closure)	1	1	07-Feb-20	07-Feb-20	244
A6900	Toll Gantry Sta 2307+00 to 2345+00 EB - Electrical Tie-In	5	5	10-Feb-20	19-Feb-20	244
A6910	Toll Gantry Sta 2307+00 to 2345+00 EB - Signing	5	5	20-Feb-20	28-Feb-20	392
A6920	Toll Gantry Sta 2307+00 to 2345+00 EB - ETC System Integration Installation/Inspection	5	5	20-Feb-20	28-Feb-20	244
A6930	Toll Gantry Sta 2307+00 to 2345+00 EB - I-70 Toll Point Lane Test	5	5	02-Mar-20	09-Mar-20	244
Sta 2345+00 to 2405+00 East Bound		46	46	10-Mar-20	26-May-20	341
A7640	Toll Gantry Sta 2345+00 to 2405+00 EB - Drill Gantry Caisson - Outside	5	5	10-Mar-20	17-Mar-20	244
A7650	Toll Gantry Sta 2345+00 to 2405+00 EB - F/R/P Foundation Concrete - Outside	5	5	19-Mar-20	26-Mar-20	244
A7660	Toll Gantry Sta 2345+00 to 2405+00 EB - Install Gantry Post - Outside	5	5	27-Mar-20	02-Apr-20	244
A7670	Toll Gantry Sta 2345+00 to 2405+00 EB - Drill Gantry Caisson - Inside	5	5	03-Apr-20	10-Apr-20	244
A7680	Toll Gantry Sta 2345+00 to 2405+00 EB - F/R/P Foundation Concrete - Inside	5	5	13-Apr-20	20-Apr-20	244
A7690	Toll Gantry Sta 2345+00 to 2405+00 EB - Install Gantry Post - Inside	5	5	21-Apr-20	28-Apr-20	244
A7700	Toll Gantry Sta 2345+00 to 2405+00 EB - Gantry Connection (Night Closure)	1	1	29-Apr-20	29-Apr-20	244
A7710	Toll Gantry Sta 2345+00 to 2405+00 EB - Electrical Tie-In	5	5	30-Apr-20	07-May-20	244
A7720	Toll Gantry Sta 2345+00 to 2405+00 EB - Signing	5	5	08-May-20	14-May-20	346
A7730	Toll Gantry Sta 2345+00 to 2405+00 EB - ETC System Integration Installation/Inspection	5	5	08-May-20	14-May-20	244
A7740	Toll Gantry Sta 2345+00 to 2405+00 EB - I-70 Toll Point Lane Test	5	5	18-May-20	26-May-20	244
Sta 2405+00 to 2448+43 East Bound		46	46	27-May-20	04-Aug-20	295
A7050	Toll Gantry Sta 2405+00 to 2448+43 EB - Drill Gantry Caisson - Outside	5	5	27-May-20	02-Jun-20	244
A7060	Toll Gantry Sta 2405+00 to 2448+43 EB - F/R/P Foundation Concrete - Outside	5	5	03-Jun-20	09-Jun-20	244
A7070	Toll Gantry Sta 2405+00 to 2448+43 EB - Install Gantry Post - Outside	5	5	11-Jun-20	17-Jun-20	244

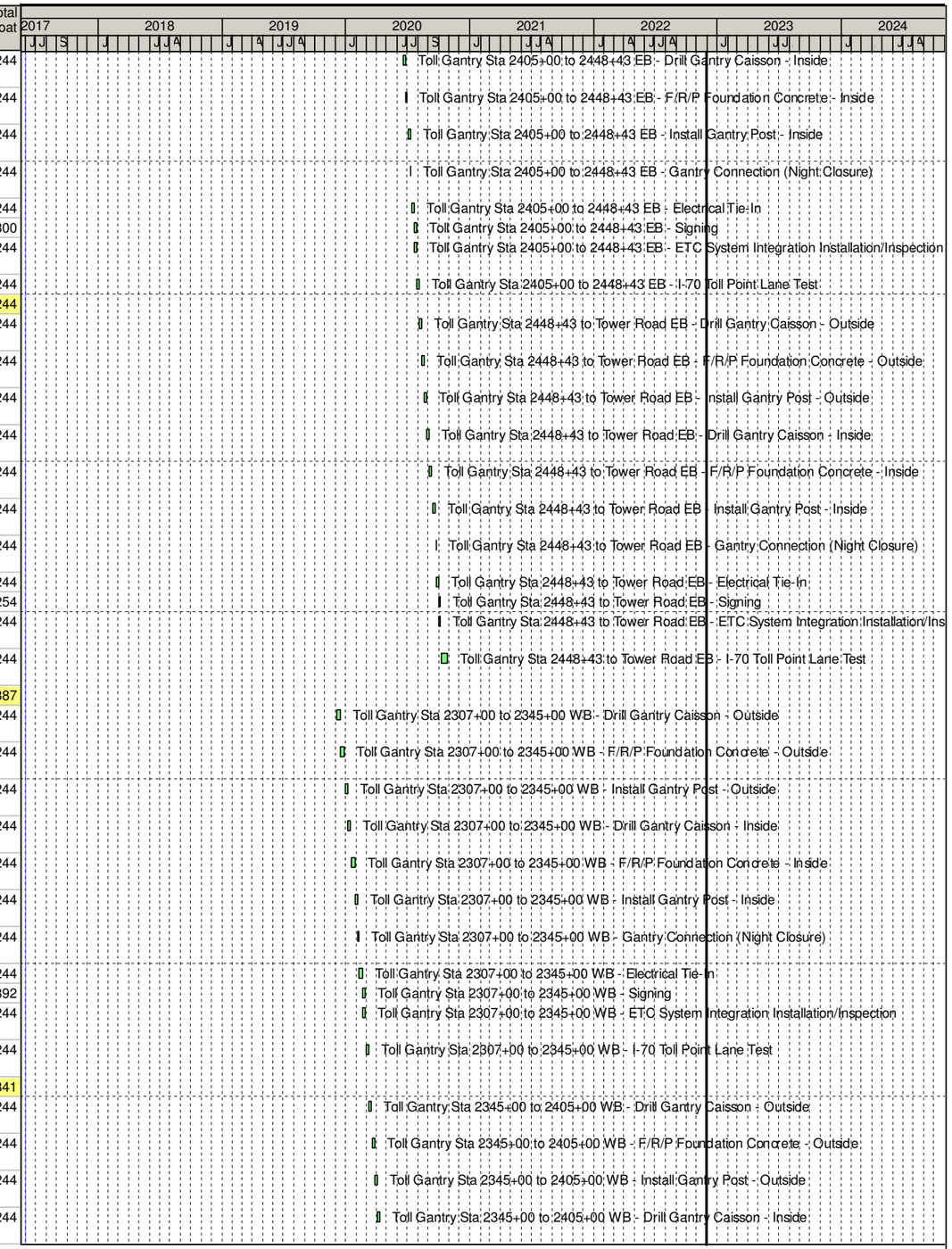


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
A7080	Toll Gantry Sta 2405+00 to 2448+43 EB - Drill Gantry Caisson - Inside	5	5	18-Jun-20	24-Jun-20	244
A7090	Toll Gantry Sta 2405+00 to 2448+43 EB - F/R/P Foundation Concrete - Inside	5	5	25-Jun-20	01-Jul-20	244
A7100	Toll Gantry Sta 2405+00 to 2448+43 EB - Install Gantry Post - Inside	5	5	02-Jul-20	09-Jul-20	244
A7110	Toll Gantry Sta 2405+00 to 2448+43 EB - Gantry Connection (Night Closure)	1	1	10-Jul-20	10-Jul-20	244
A7120	Toll Gantry Sta 2405+00 to 2448+43 EB - Electrical Tie-In	5	5	13-Jul-20	20-Jul-20	244
A7130	Toll Gantry Sta 2405+00 to 2448+43 EB - Signing	5	5	21-Jul-20	27-Jul-20	300
A7140	Toll Gantry Sta 2405+00 to 2448+43 EB - ETC System Integration Installation/Inspection	5	5	21-Jul-20	27-Jul-20	244
A7150	Toll Gantry Sta 2405+00 to 2448+43 EB - I-70 Toll Point Lane Test	5	5	28-Jul-20	04-Aug-20	244
Sta 2448+43 to Tower Road East Bound		51	51	05-Aug-20	26-Oct-20	244
A7860	Toll Gantry Sta 2448+43 to Tower Road EB - Drill Gantry Caisson - Outside	5	5	05-Aug-20	11-Aug-20	244
A7870	Toll Gantry Sta 2448+43 to Tower Road EB - F/R/P Foundation Concrete - Outside	5	5	13-Aug-20	19-Aug-20	244
A7880	Toll Gantry Sta 2448+43 to Tower Road EB - Install Gantry Post - Outside	5	5	20-Aug-20	27-Aug-20	244
A7890	Toll Gantry Sta 2448+43 to Tower Road EB - Drill Gantry Caisson - Inside	5	5	28-Aug-20	03-Sep-20	244
A7900	Toll Gantry Sta 2448+43 to Tower Road EB - F/R/P Foundation Concrete - Inside	5	5	04-Sep-20	11-Sep-20	244
A7910	Toll Gantry Sta 2448+43 to Tower Road EB - Install Gantry Post - Inside	5	5	14-Sep-20	21-Sep-20	244
A7920	Toll Gantry Sta 2448+43 to Tower Road EB - Gantry Connection (Night Closure)	1	1	23-Sep-20	23-Sep-20	244
A7930	Toll Gantry Sta 2448+43 to Tower Road EB - Electrical Tie-In	5	5	24-Sep-20	30-Sep-20	244
A7940	Toll Gantry Sta 2448+43 to Tower Road EB - Signing	5	5	01-Oct-20	07-Oct-20	254
A7950	Toll Gantry Sta 2448+43 to Tower Road EB - ETC System Integration Installation/Inspection	5	5	01-Oct-20	07-Oct-20	244
A7960	Toll Gantry Sta 2448+43 to Tower Road EB - I-70 Toll Point Lane Test	10	10	09-Oct-20	26-Oct-20	244
Sta 2307+00 to 2345+00 West Bound		46	46	06-Dec-19	09-Mar-20	387
A6940	Toll Gantry Sta 2307+00 to 2345+00 WB - Drill Gantry Caisson - Outside	5	5	06-Dec-19	16-Dec-19	244
A6950	Toll Gantry Sta 2307+00 to 2345+00 WB - F/R/P Foundation Concrete - Outside	5	5	17-Dec-19	26-Dec-19	244
A6960	Toll Gantry Sta 2307+00 to 2345+00 WB - Install Gantry Post - Outside	5	5	30-Dec-19	07-Jan-20	244
A6970	Toll Gantry Sta 2307+00 to 2345+00 WB - Drill Gantry Caisson - Inside	5	5	08-Jan-20	16-Jan-20	244
A6980	Toll Gantry Sta 2307+00 to 2345+00 WB - F/R/P Foundation Concrete - Inside	5	5	17-Jan-20	28-Jan-20	244
A6990	Toll Gantry Sta 2307+00 to 2345+00 WB - Install Gantry Post - Inside	5	5	29-Jan-20	05-Feb-20	244
A7000	Toll Gantry Sta 2307+00 to 2345+00 WB - Gantry Connection (Night Closure)	1	1	07-Feb-20	07-Feb-20	244
A7010	Toll Gantry Sta 2307+00 to 2345+00 WB - Electrical Tie-In	5	5	10-Feb-20	19-Feb-20	244
A7020	Toll Gantry Sta 2307+00 to 2345+00 WB - Signing	5	5	20-Feb-20	28-Feb-20	392
A7030	Toll Gantry Sta 2307+00 to 2345+00 WB - ETC System Integration Installation/Inspection	5	5	20-Feb-20	28-Feb-20	244
A7040	Toll Gantry Sta 2307+00 to 2345+00 WB - I-70 Toll Point Lane Test	5	5	02-Mar-20	09-Mar-20	244
Sta 2345+00 to 2405+00 West Bound		46	46	10-Mar-20	26-May-20	341
A7750	Toll Gantry Sta 2345+00 to 2405+00 WB - Drill Gantry Caisson - Outside	5	5	10-Mar-20	17-Mar-20	244
A7760	Toll Gantry Sta 2345+00 to 2405+00 WB - F/R/P Foundation Concrete - Outside	5	5	19-Mar-20	26-Mar-20	244
A7770	Toll Gantry Sta 2345+00 to 2405+00 WB - Install Gantry Post - Outside	5	5	27-Mar-20	02-Apr-20	244
A7780	Toll Gantry Sta 2345+00 to 2405+00 WB - Drill Gantry Caisson - Inside	5	5	03-Apr-20	10-Apr-20	244



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Activity ID	Activity Name	Orgl Dur	Rem Dur	Start	Finish	Total Float
A7790	Toll Gantry Sta 2345+00 to 2405+00 WB - F/R/P Foundation Concrete - Inside	5	5	13-Apr-20	20-Apr-20	244
A7800	Toll Gantry Sta 2345+00 to 2405+00 WB - Install Gantry Post - Inside	5	5	21-Apr-20	28-Apr-20	244
A7810	Toll Gantry Sta 2345+00 to 2405+00 WB - Gantry Connection (Night Closure)	1	1	29-Apr-20	29-Apr-20	244
A7820	Toll Gantry Sta 2345+00 to 2405+00 WB - Electrical Tie-In	5	5	30-Apr-20	07-May-20	244
A7830	Toll Gantry Sta 2345+00 to 2405+00 WB - Signing	5	5	08-May-20	14-May-20	346
A7840	Toll Gantry Sta 2345+00 to 2405+00 WB - ETC System Integration Installation/Inspection	5	5	08-May-20	14-May-20	244
A7850	Toll Gantry Sta 2345+00 to 2405+00 WB - I-70 Toll Point Lane Test	5	5	18-May-20	26-May-20	244
Sta 2405+00 to 2448+43 West Bound		46	46	27-May-20	04-Aug-20	295
A7160	Toll Gantry Sta 2405+00 to 2448+43 WB - Drill Gantry Caisson - Outside	5	5	27-May-20	02-Jun-20	244
A7170	Toll Gantry Sta 2405+00 to 2448+43 WB - F/R/P Foundation Concrete - Outside	5	5	03-Jun-20	09-Jun-20	244
A7180	Toll Gantry Sta 2405+00 to 2448+43 WB - Install Gantry Post - Outside	5	5	11-Jun-20	17-Jun-20	244
A7190	Toll Gantry Sta 2405+00 to 2448+43 WB - Drill Gantry Caisson - Inside	5	5	18-Jun-20	24-Jun-20	244
A7200	Toll Gantry Sta 2405+00 to 2448+43 WB - F/R/P Foundation Concrete - Inside	5	5	25-Jun-20	01-Jul-20	244
A7210	Toll Gantry Sta 2405+00 to 2448+43 WB - Install Gantry Post - Inside	5	5	02-Jul-20	09-Jul-20	244
A7220	Toll Gantry Sta 2405+00 to 2448+43 WB - Gantry Connection (Night Closure)	1	1	10-Jul-20	10-Jul-20	244
A7230	Toll Gantry Sta 2405+00 to 2448+43 WB - Electrical Tie-In	5	5	13-Jul-20	20-Jul-20	244
A7240	Toll Gantry Sta 2405+00 to 2448+43 WB - Signing	5	5	21-Jul-20	27-Jul-20	300
A7250	Toll Gantry Sta 2405+00 to 2448+43 WB - ETC System Integration Installation/Inspection	5	5	21-Jul-20	27-Jul-20	244
A7260	Toll Gantry Sta 2405+00 to 2448+43 WB - I-70 Toll Point Lane Test	5	5	28-Jul-20	04-Aug-20	244
Sta 2448+43 to Tower Road West Bound		51	51	05-Aug-20	26-Oct-20	244
A7970	Toll Gantry Sta 2448+43 to Tower Road WB - Drill Gantry Caisson - Outside	5	5	05-Aug-20	11-Aug-20	244
A7980	Toll Gantry Sta 2448+43 to Tower Road WB - F/R/P Foundation Concrete - Outside	5	5	13-Aug-20	19-Aug-20	244
A7990	Toll Gantry Sta 2448+43 to Tower Road WB - Install Gantry Post - Outside	5	5	20-Aug-20	27-Aug-20	244
A8000	Toll Gantry Sta 2448+43 to Tower Road WB - Drill Gantry Caisson - Inside	5	5	28-Aug-20	03-Sep-20	244
A8010	Toll Gantry Sta 2448+43 to Tower Road WB - F/R/P Foundation Concrete - Inside	5	5	04-Sep-20	11-Sep-20	244
A8020	Toll Gantry Sta 2448+43 to Tower Road WB - Install Gantry Post - Inside	5	5	14-Sep-20	21-Sep-20	244
A8030	Toll Gantry Sta 2448+43 to Tower Road WB - Gantry Connection (Night Closure)	1	1	23-Sep-20	23-Sep-20	244
A8040	Toll Gantry Sta 2448+43 to Tower Road WB - Electrical Tie-In	5	5	24-Sep-20	30-Sep-20	244
A8050	Toll Gantry Sta 2448+43 to Tower Road WB - Signing	5	5	01-Oct-20	07-Oct-20	254
A8060	Toll Gantry Sta 2448+43 to Tower Road WB - ETC System Integration Installation/Inspection	5	5	01-Oct-20	07-Oct-20	244
A8070	Toll Gantry Sta 2448+43 to Tower Road WB - I-70 Toll Point Lane Test	10	10	09-Oct-20	26-Oct-20	244
ETC		25	25	16-Apr-20	28-May-20	64
Area 1 - Brighton Blvd to Dahlia St.- Sta 2000+00 to 2085+00 (1.61 miles)		25	25	16-Apr-20	28-May-20	64
Phase 1		25	25	16-Apr-20	28-May-20	64
Stage 5		25	25	16-Apr-20	28-May-20	64
Segment 2 - E. of York St. to Fillmore St - (Sta 2025+50 to Sta 2042+00)		25	25	16-Apr-20	28-May-20	64
Plenum & Ventilation Plant Room		25	25	16-Apr-20	28-May-20	64
Plant / Ventilation Room		25	25	16-Apr-20	28-May-20	64
A9270	Plenum: Install ITS / ETC Equipment Rack in Equip. Room.	5	5	16-Apr-20	24-Apr-20	64
A9280	Plenum: ETC/ITS System Intergrator Install Equipment in Equip. Room	20	20	27-Apr-20	28-May-20	64

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Front Range Mobility Group

Central 70

Front Range
Mobility Group

APPENDIX C

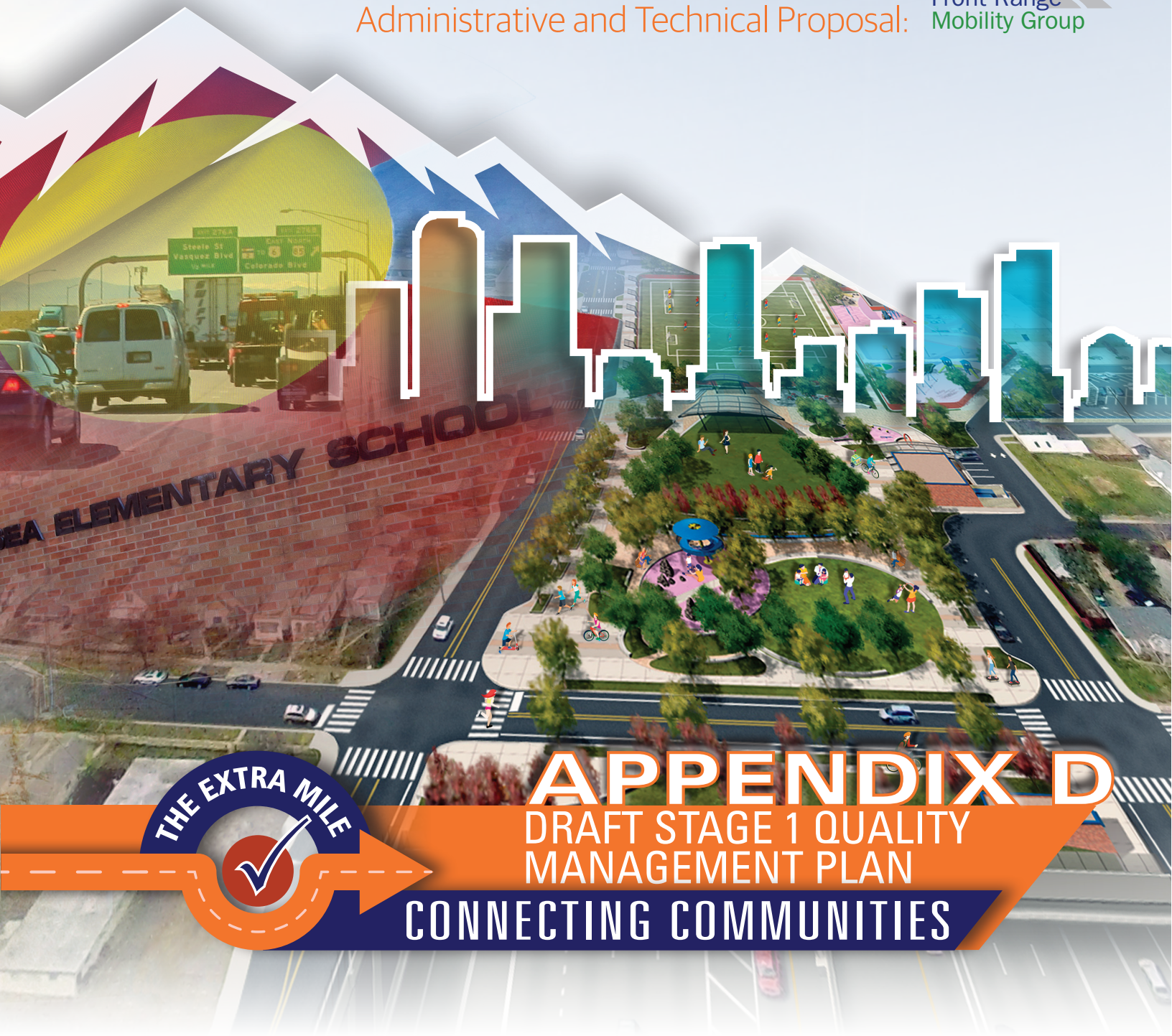
Part 2 of DRAFT PROPOSAL SCHEDULE

VOLUME 2 — TECHNICAL SUBMISSIONS
Binder 7 of 18

CENTRAL 70 PROJECT

PUBLIC DISCLOSURE
Administrative and Technical Proposal:

Front Range Mobility Group



APPENDIX D

DRAFT STAGE 1 QUALITY MANAGEMENT PLAN

THE EXTRA MILE

CONNECTING COMMUNITIES

Quality Management Plan Overview

Front Range Mobility Group's (FRMG's) approach to quality is to design and build quality into all elements of the Work and at every step along the way. It is much more than just checking for quality when required to do so. The FRMG team brings decades of local experience delivering quality design and construction work on some of Colorado's largest and most complex transportation projects. We combine this with our team's successful implementation of comprehensive Quality Management Plans on similar, large-scale public private partnership (P3), design-build (DB), and design-build-maintain (DBM) projects in the U.S. and throughout North America with individual construction values in excess of $1 billion. This unique combination of experience means that we thoroughly understand the Department's quality expectations, that we know how to maintain the highest level of quality while working in the local environment, and that we are prepared to effectively manage quality within the magnitude and accelerated schedule of the Central 70 Project (the Project).

FRMG's Quality Management System (QMS) for the Central 70 Project is focused on meeting or exceeding the Project Agreement requirements, the Department's expectations and those of other applicable stakeholders. FRMG will implement a combination of Project-specific and industry best practices, procedures, and processes to consistently and continuously meet those requirements and expectations. Our QMS has been developed in accordance with the requirements of the Project Agreement, ISO 9001:2015 standards, and on the foundation of our stated Quality Policy:

FRMG Project Quality Policy: *FRMG is committed to ensuring that the design, construction, materials, equipment, and all other elements of the Work performed by FRMG, our subcontractors, and suppliers conform to the requirements of the Project Agreement and the Released for Construction documents. We are further committed to maintaining a consistency of effort to improve the quality of the Work we perform, including the Work performed by our subcontractors.*

This policy is further supported by three tenets that form the culture of all Project team members.

- ✓ **Quality is designed and built in, not inspected in.**
- ✓ **Quality is the responsibility of each individual.**
- ✓ **Do it right the first time.**

FRMG's Quality Management Plan (QMP) describes the QMS organization, management approach, operating systems, and processes that FRMG will utilize to manage and deliver the Project to comply with Project Agreement requirements for design, procurement, construction, testing, and commissioning, and with applicable regulations and laws. The FRMG QMP will apply to all Work performed by FRMG and its subcontractors at all tiers.

The draft QMP presented in this document addresses the requirements of Schedule 8, Section 6 of the Project Agreement. The information is organized in direct alignment with the requirements set forth in Section 6 to clearly show how FRMG's approach addresses each element of the quality management requirements in the Project Agreement.

The draft Stage 1 QMP includes both general quality management items and non-construction (primarily design) related processes and procedures. The Stage 2 QMP covers the construction-related processes and procedures, in addition to the items also discussed in Stage 1. Together, the Stage 1 QMP and Stage 2 QMP submittals make up FRMG's overall QMS and describe the system, procedures, and resulting records that assure the Work meets the requirements of the Project Agreement during the design and construction phases (Construction Period) of the Project. The current emphasis of the draft QMP is on the items required to achieve early approval of the Stage 1 QMP to facilitate issuance of NTP 1.

Experienced Independent Quality Control Firm (IQCF)

FRMG has teamed with Raba Kistner, Inc. (RK) and VIVID Engineering Group, Inc. (VIVID) to perform the IQC functions for the Project. RK and VIVID were chosen for their firms' and proposed staff's experience in similar roles on other large, complex design-build and P3 projects within Colorado and across the U.S.

Commitment to Local Small Businesses

VIVID is a registered **Emerging Small Business** with the Colorado Department of Transportation.

VIVID's office and IQCF Laboratory are located just a few blocks from the East end of the Project at: **4890 Ironton Street, Unit K, Denver, CO.**

RK has extensive experience with transportation infrastructure and has successfully provided services to the owners, developers, and financiers of these projects since 1968. RK is very familiar with the intricacies of the planning, funding, design, construction, and quality needs of governmental transportation agencies across the U.S. Notable experience includes two of the largest DB highway projects in the U.S.—the $1.2 billion I-15 CORE Project in Utah and the $1 billion South Mountain Freeway Project in Arizona.

VIVID is a Colorado-based business that provides quality management, construction management, materials testing and inspection, and geotechnical, environmental and construction phase services to local, state and federal agencies throughout the Front Range. VIVID's personnel have 150 years of collective experience and expertise ensuring effective, responsive and efficient project delivery. VIVID's professionals have significant experience performing process control, quality control, quality assurance, environmental, and geotechnical services on design-build and P3 Projects in Colorado for CDOT and RTD, including the RTD EAGLE FasTracks Project, I-25 and Cimarron Design-Build Project, I-25 TREX Project, and others major projects across the U.S.

IQCF Experience Implementing ISO 9001-Compliant QMPs on Similar DB/P3 Projects

Raba Kistner Infrastructure

- ✓ Developed and implemented an ISO 9001:2008 compliant program on the award-winning, **I-15 CORE Project in Utah** – ***the fastest $1+ billion DB highway reconstruction project ever built in the U.S.***
- ✓ Developed and implemented an ISO 9001:2008 compliant program on the **South Mountain Freeway Project in Arizona** – ***Largest project in the history of ADOT***

VIVID Engineering Group, Inc. (Staff Experience)

- ✓ Currently implementing an effective quality management program on the I-25 / Cimarron Street (US 24) Interchange Design-Build Project – ***Second Largest Highway Project in Colorado Springs' History***
- ✓ Developed and implemented an ISO 9001:2008 accredited program on the RTD EAGLE FasTracks Project in Colorado ***– First P3 Transit Project Completed in the U.S.***
- ✓ Developed and implemented ISO 9001:2008 compliant program on the I-29/I-35 kcICON Project in Missouri ***– MoDOT's second DB Project that included four miles of highway and an iconic cable-stayed bridge across the Missouri River***
- ✓ Operated under ISO 9001 Accredited plan for the I-25 Transportation Expansion (TREX) Project in Colorado ***– Largest multimodal DB Project in the country at time of construction.***

Key Features and Benefits of FRMG's QMP

FRMG is committed to meeting and exceeding the Project requirements for quality and has included several key elements that provide significant added value to the Department. All of these elements have been used by FRMG team members on similar past projects. We believe that these additional elements are critical to delivering a high-quality Project and fostering a partnership environment with our internal team, the Department, and stakeholders. Throughout the draft Stage 1 and Stage 2 QMPs, we have included the icon shown on the right to highlight where FRMG's QMP exceeds the RFP requirements or where we believe our approach provides added value to the Department.

Proven Quality Processes and Procedures

FRMG team members were specifically chosen for their experience in designing and building high-quality transportation projects of similar size and complexity as the Central 70 Project. Through this experience, FRMG has a proven set of quality procedures and processes that have been fully developed and tested on major projects in Colorado and throughout the U.S. This provides a strong foundation for our draft QMP and will facilitate the timely approval of the Stage 1 and Stage 2 QMPs, allowing the FRMG team to begin work on the Project quickly and efficiently.

Design Process Control and Integration of Related Disciplines

FRMG's QMP includes design process control as an integral part of the overall QMS. In addition to the standard design checking and review processes and procedures, the Stage 1 QMP provides for inclusion of FRMG staff from construction, operations and maintenance (O&M), environmental, and right-of-way, as well as staff from the Department and key stakeholders as appropriate. Through the use of task design task forces, progress review meetings, concurrent design reviews, and over the shoulder reviews, the FRMG team provides an ongoing forum for discussing design approaches and resolving constructability or maintainability issues before RFC documents are issued.

Commitment to ISO 9001 Standards

The FRMG team members have extensive experience operating under the ISO 9001 standard, and we bring an extensive audit program that will be implemented on the Project to ensure compliance with ISO 9001: 2015 standards. FRMG's team will commit a certified auditor to perform compliance audits that will confirm the QMP's compliance with the ISO 9001:2015 standard. This will provide additional assurance to FRMG and the Department that the IQCF is implementing a QMP that is consistent with ISO 9001:2015. The certified auditor will remain independent of the Project, will have no responsibilities to the Project (other than auditing), and will be committed to the auditing process throughout Stage 1 and Stage 2 of the Project. FRMG will have the certified auditor confirm compliance with the ISO 9001:2015 standards prior to submission of the Stage 1 and Stage 2 QMPs to the Department. The certified auditor will audit the QMP annually, at a minimum, to maintain continued compliance with the ISO 9001:2015 standards.

Quality Task Force

The weekly Quality Task Force (QTF) meetings provide a forum for FRMG, the Department, and stakeholders (as appropriate) to recognize quality achievements, voice any quality concerns, jointly resolve quality issues, monitor the status of the QMS, implement continual improvement, and ensure that the Department and stakeholder concerns are heard and understood by FRMG. FRMG will work with the Department to establish agreed-upon timelines to address issues and track them to resolution. The QTF will promote open and honest communication and through active participation of all attendees. FRMG has already been holding QTF meetings throughout the RFP process to develop the draft Stage 1 and Stage 2 QMPs. We will continue to hold the QTF meetings immediately after contract award to finalize the Stage 1 QMP for submittal to the Department shortly after contract execution.

Quality Issues Matrix

The Quality Issues Matrix is a valuable tool that we will use to visually depict real time quality performance. Our team members have used this tool on past projects, such as RTD Eagle FasTracks Project, I-29/I-35 kcICON Project, and I-25 TREX Project, with great success. The ongoing issues are color-coded red; current issues are yellow; good trends are green; and steady performers are blue. The colors give a level of importance to the issues that need attention and focus. The issues will be jointly agreed upon between FRMG and the Department. Working together to develop the matrix each month will facilitate communication between the overall Project team and will promote awareness of the Department's needs and concerns.

ELVIS

The IQCF will utilize the Engineering and Laboratory Vital Information System (ELVIS) as FRMG's primary Electronic Records Management System (ERMS) for receiving, storing, transmitting and tracking documents, transmittals, submittals, and correspondence of Quality Records for the Project.

ELVIS is a proprietary product of Raba Kistner and is fully compatible with Aconex. The system has a proven track record on other large-scale design-build and P3 Projects and was developed specifically for managing quality documents on highway/transportation projects. The ELVIS system allows the IQCF to have real time access to plans, specifications, quality checklist, test reports, nonconformance reports, punch lists, and other quality and Project-related documents in the field. The IQCF will use tablets and laptop computers to access this information remotely through the ELVIS system. The Department, stakeholders, subcontractors, and other project participants will be given the access to the same information. Key benefits of the ELVIS system include:

- Enhances the overall performance of the FRMG team
- Provides for real time data collection from IQCF personnel
- Provides real time access to plans and specifications by FRMG, the Department, and other stakeholders, as appropriate
- Documents all “failing” inspection and test results—failing results are flagged, aiding in review and tracks failing results to resolution
- Allows for required certifications by inspectors/technicians to be entered into the ELVIS technician certification module to ensure all tests are performed by certified personnel
- Facilitates a means for the IQCF to review and approve electronic quality records prior to uploading into Aconex
- Identifies hold point verifications on quality records and provides a searchable hold point log
- Reduces document control processing needs and personnel requirements
- Greatly increases the speed and efficiency by allowing IQC test results to be entered into the Department’s quality records database (QRD)
- Is a sustainable, “green” solution

Commitment to Operating an Accredited Laboratory and Participating in CDOT’s Laboratory Inspection and Round Robin Programs

FRMG’s IQCF commits to operating an accredited AASHTO, CCRL, and ASTM E329 Laboratory for the successful delivery of the Project. As an added value, the IQCF Laboratory will participate in CDOT’s annual Laboratory Inspection and Round Robin programs. FRMG team members have previously participated in this Round Robin program and look forward to continuing this very successful program to share best practices and lessons learned across the industry so that this Project delivers a consistently high level of quality.

Draft Stage 1
QMP

Front Range Mobility Group

THE EXTRA MILE

CONNECTING COMMUNITIES

Draft Stage 1 QMP

Draft

Stage 1 Quality Management Plan

For

Central 70 Project

Prepared By:
Front Range Mobility Group

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Stage 1 Attachment

A) Design Quality Procedures

1. DPCP Process Description
    - Design Quality Management Team
    - DPCP Flowchart
    - DPCP Forms and Checklists
2. DPCP Process Control Procedures

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Stage 2 Attachment: Construction Quality Procedures

List of General PC/IQC Procedures

Please refer to Draft Stage 2 QMP (Appendix E).

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Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
ADA	American with Disabilities Act
AFR	Audit Findings Report
AHJ	Authority Having Jurisdiction
ASQ	American Society for Quality
ASTM	American Society for Testing and Materials
ATD	Average Texture Depth
ATM	Asynchronous Transfer Mode
CAR	Corrective Action Request
CCRL	Cement and Concrete Reference Laboratory
CDOT	Colorado Department of Transportation
CIF	Corrected in Field
COC	Certificates of Compliance
CPCM	Construction Process Control Manager
CQP	Construction Quality Procedure
CR	Constructability Review
CSL	Crosshole Sonic Logging
CTR	Certified Test Reports
CVL	Controlled Vocabulary Language
CY	Cubic Yards
DB	Design-Build
DBE	Disadvantaged Business Enterprise
DCN	Design Change Notice
DIR	Daily Inspection Report
DNCR	Design Nonconformance Review
DPCM	Design Process Control Manager
DPCP	Design Process Control Plan
DQA	Design Quality Audit
DRTL	Deliverable Requirements Tracking List
ELVIS	Engineering and Laboratory Vital Information System

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EOR	Engineer of Record
ERMS	Electronic Records Management System
ERW	Early Release of Work
ESB	Emerging Small Business
ETC	Electronic Toll System
FDC	Field Design Change
FHWA	Federal Highway Administration
FRMG	Front Range Mobility Group
HMA	Hot Mix Asphalt
HSP	High-Speed Profiler
IDQC	Independent Design Quality Control
IDQM	Independent Design Quality Manager
IECM	Independent Environmental Compliance Manager
IQC	Independent Quality Control
IQCF	Independent Quality Control Firm
IQCM	Independent Quality Control Manager
IRI	International Roughness Index
ITP	Inspection and Testing Plan
ITR	Independent Technical Review
ITS	Intelligent Transportation System
MHT	Method of Handling Traffic
MIT	Magnetic Imaging Tools
MRI	Mean Roughness Index
MS	Minimum Sampling
MSE	Mechanically Stabilized Earth
MTIP	Materials Testing and Inspection Plan
NCN	Department Issued Nonconformances
NCR	Nonconformance Report
NDC	Notice of Design Change
NTP	Notice to Proceed
OTS	Over-the-Shoulder

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OVT	Owner Verification Testing
PA	Project Agreement
PAR	Preventative Action Request
PC	Process Control
PCCP	Portland Cement Concrete Paving
PDCA	Plan-Do-Check-Act
PO	Purchase Order
PQM	Project Quality Manager
PSA	Professional Service Agreement
QA	Quality Assurance
QC	Quality Control
QCA	Quality Control Analyst
QMP	Quality Management Plan
QMS	Quality Management System
QRD	Quality Records Database
QTF	Quality Task Force
RCSR	Review Comment Summary and Resolution
RFC	Release(d) for Construction
RFI	Request for Information
RFP	Request for Proposal
RK	Raba Kistner, Inc.
ROW	Right-of-Way
RTD	Regional Transportation District
SA	Smoothness Acceptance Testing
SOR	Supplemental Observation Report
SQC	Smoothness Quality Control
SV	Smoothness Verification Testing
TR	Testing Requirements

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1. General

Front Range Mobility Group's (FRMG's) approach to quality management for the Central 70 Project (the Project) during the Construction Period is centered around a comprehensive Quality Management System (QMS) that focuses on the requirements and expectations of the Department and other applicable stakeholders. FRMG will implement a combination of Project-specific and industry best practices, procedures and processes to consistently and continuously meet those requirements and expectations.

To continually evaluate the effectiveness of the QMS, FRMG will implement the Plan-Do-Check-Act (PDCA) process and will practice risk-based thinking during the Construction Period of this Project. The roles and responsibilities for the execution of those processes, as well as the interactions between and relationships among those processes, are clearly defined.

1.1 Quality Management Plan Submittal

FRMG's Quality Management Plan (QMP) for the Construction Period describes the QMS organization, management approaches, systems, and processes that FRMG will use to manage and deliver the Project, including complying with all design, procurement, construction, testing, and commissioning contractual requirements, applicable regulations, and laws.

The Stage 1 Quality Management Plan (QMP) includes the general quality management items and non-construction (specifically design) related procedures and plans. The Stage 2 QMP (Appendix E) covers the construction-related procedures and plans in addition to the general quality management items also discussed in Stage 1. Together, the Stage 1 QMP and Stage 2 QMP submittals make up the QMS and describe the system, procedures, and resulting records that assure the Work meets the requirements of the Project Agreement during the preconstruction and construction phases of the Project. Upon award of the contract, FRMG will submit a QMP that is consistent with contract requirements and expands upon the draft Stage 1 QMP submitted in the Proposal with the goal of early issuance of NTP 1. The draft Stage 2 QMP will be incorporated with the approved Stage 1 QMP and the Stage 2 elements submitted in support of NTP 2. The incorporation of the Stage 1 and Stage 2 QMPs will bridge the gap between non-construction related elements and construction related elements as well as combine procedures that are applicable across all phases of the Project. The FRMG QMP will apply to all Work performed by FRMG and its Subcontractors at all tiers.

The Stage 1 and 2 QMPs incorporate industry best practices and comply with the International Organization for Standardization (ISO) 9001:2015 Standard. FRMG has experience operating under ISO 9001 on past similar projects. To ensure compliance, FRMG will conduct an extensive audit of the Project.

FRMG's Lead Contractor team will employ a certified auditor to perform ISO 9001:2015 compliance audits to assure that the QMP is compliant with the ISO 9001:2015 Standard. This will provide additional assurance to FRMG and the Department that the Independent Quality Control Firm (IQCF) is operating under and implementing a QMP that is compliant with ISO 9001:2015. The certified auditor will have experience with the ISO 9001 standard. The auditor will remain independent of the Project, will have no responsibilities to the Project (other than

auditing), and will be committed to the auditing process throughout the Construction Period of the Project.

FRMG will have the certified auditor confirm compliance with the ISO 9001:2015 Standard prior to the submission of the Stage 1 and Stage 2 QMPs. He or she will audit the QMP annually, at a minimum, to ensure continued compliance.

After acceptance of the Stage 1 and Stage 2 QMPs by the certified lead auditor, FRMG will submit the plans to the Department for Approval. FRMG will obtain approval from the Department of the Stage 1 QMP prior to the first Notice to Proceed (NTP 1) and will obtain approval of the Stage 2 QMP prior to NTP 2.

An overview of the FRMG construction and design team members' experience with ISO 9001 Standards is included below.

Flatiron

- Flatiron operated under an ISO 9001:2008 accredited program, and company practices are based on the ISO 9001 Standard.

Dragados

- Dragados follows the strictest safety and quality standards on its construction sites and consistently executes large-scale construction projects in accordance with Project-specific QMPs that are consistent with ISO 9001 Standards. Dragados' direct parent company is certified ISO 9001 and has a long history of implementing comprehensive quality management systems on complex projects throughout the world.

AECOM

- AECOM's initial ISO 9001 certification in North America was in September 2010, and the firm has 130 offices in the United States and 28 offices in Canada that are ISO 9001 certified. The ISO Certification is for services involved in planning, engineering, design, construction, program management, and operations and maintenance of projects. AECOM added 63 legacy office locations to the certification in 2016. Various AECOM legacy companies were a part of the Wasatch Constructors joint venture that designed and built the $1.3 billion I-15 Reconstruction Project in Salt Lake City, Utah for the 2002 Winter Olympics. The project was fully ISO 9001 certified.

CH2M

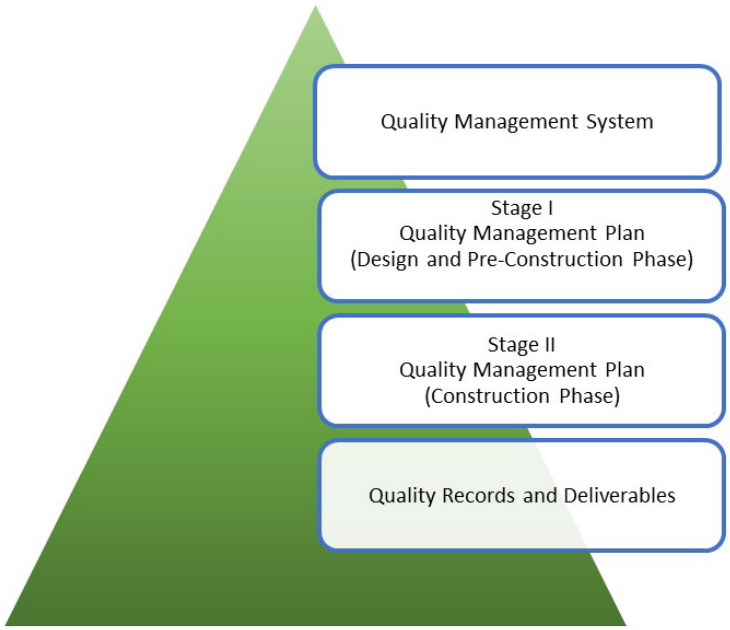
- For the last decade, CH2M has operated worldwide under a Quality Management System that aligns with ISO 9001:2008 requirements, as documented in the company's Enterprise Quality Manual. In addition, specific programs, such as the Atlanta Airport Terminal Maintenance Program, have been determined to be compliant with ISO 9001:2015 standards.

Independent Quality Control Firm (IQCF) – Raba Kistner Infrastructure and VIVID Engineering Group, Inc.:

- Raba Kistner Infrastructure
  - Developed and implemented an ISO 9001:2008 compliant program on the I-15 CORE Project in Utah
  - Developed and implemented an ISO 9001:2008 compliant program on the South Mountain Freeway Project in Arizona
- VIVID Engineering Group, Inc. (Staff Experience)
  - Developed and implemented ISO 9001:2008 Accredited program on the RTD EAGLE FasTracks Project in Colorado
  - Developed ISO 9001:2008 compliant plan for RTD Denver Union Station Project in Colorado
  - Developed and implemented ISO 9001:2008 compliant program on the I-29/I-35 kcICON Project in Missouri
  - Operated under ISO 9001 Accredited plan for the I-25 Transportation Expansion (TREX) Project in Colorado

Figure 1 depicts the hierarchy of the QMS and its various elements.

Figure 1. QMS Hierarchy.



1.2 Project Agreement Compliance

FRMG is committed to meeting the requirements of the Project Agreement at all phases of the Project and for each element of Work. FRMG has reviewed the requirements and drafted a QMP that implements Process Control (PC) and Independent Quality Control (IQC) procedures that:

- Apply to all design disciplines and Construction Work
- Identify applicable requirements
- Plan the work around those requirements
- Establish applicable Quality Hold Points, inspection, and testing criteria
- Verify that the Work is compliant
- Document and resolves nonconformances
- Audit performance against the requirements
- Provide quality records to support the compliance of the Work

In addition to carefully and consistently meeting the Department's needs, FRMG will identify applicable stakeholders, learning from and responding to their respective requirements as they are related to the Project Agreement and to the effective delivery of the Project through FRMG's QMS and its associated plans.

Following NTP 1, FRMG will implement the Stage 1 QMP. Training and management of design staff will emphasize the requirements of the Project Agreement, particularly with respect to input and output requirements. FRMG will implement and monitor the Stage 1 quality processes and procedures throughout the design and preconstruction activities while simultaneously engaging the Department and other stakeholders through task force meetings, design progress meetings, review/comment/resolution processes, and one-on-one contacts as needed to understand and meet the requirements of the Project Agreement.

1.3 Temporary and Permanent Components of the Work

FRMG's QMS applies to both temporary and permanent Construction Work elements. Although the QMS is written with the focus on permanent work, temporary work will follow similar but somewhat different processes. The design of temporary facilities will follow Project Agreement requirements and will be subject to internal FRMG QC reviews. However, many temporary products are not reviewable deliverables and therefore are not subject to review by the Department.

Please refer to Draft Stage 2 QMP (Appendix E) for additional information regarding constructed temporary elements of work.

1.4 FRMG and Department Collaboration

The FRMG Management Team facilitates continuous, frequent, and open communication between the Department, other stakeholders, and their Project team counterparts at all levels of the Project. The majority of this communication will occur through regularly scheduled meetings, such as weekly quality task force meetings, management review meetings, design task force meetings, construction coordination meetings, and other daily, weekly, and monthly work

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scheduling meetings, as identified in the Project Management Plan. The Department and stakeholders will be invited and encouraged to attend these meetings. Records of meetings are published and are available to the Department and other stakeholders.

1.4.a Quality Task Force Meeting

The Quality Task Force (QTF) provides a forum for FRMG, the Department, and stakeholders to recognize quality achievements, voice any quality concerns, jointly resolve quality issues, monitor the status of the QMS, implement continual improvement, and ensure Department and stakeholder concerns are heard and understood by FRMG. FRMG will work with the Department to establish agreed-upon timelines to resolve and track issues. The QTF will promote open and honest communication and expect full participation from all attendees.

This QTF will consist of Quality Leaders from FRMG, the Department, and stakeholders (as appropriate). Attendance is anticipated to be as follows:

- **FRMG:** Project Quality Manager (PQM,) Independent Design Quality Manager (IDQM), Independent Quality Control Manager (IQCM), Design Process Control Manager (DPCM), Construction Process Control Manager (CPCM), Independent Quality Control (IQC) Lab Manager, IQC Leads, IQC Document Control, Project Manager or Technical Director, Design-Build Manager, Construction Manager
- **The Department:** Project Managers, Project Engineers, Lead Auditors, Owner Verification Testing (OVT) Manager
- **Stakeholders:** Applicable quality representatives
- **Others:** From time to time, it will be beneficial to the QTF to invite other individuals with specific knowledge, experience, or authority to discuss or resolve quality-related concerns, such as Governmental Authorities at the Department's request

Attendance will be on an as-needed / as-requested basis.

1.4.a.ii Objective

The QTF will serve as a forum for FRMG to monitor Department and stakeholder satisfaction, resolve quality concerns and issues, and ensure compliance with the Project Agreement.

1.4.a.ii Initial Efforts – Stage 1

In Stage 1, the QTF will focus on reviewing, editing, and approving the Stage 1 QMP and developing the Stage 2 QMP of the QMS. Review and approval of the QMPs by all parties will be critical to the success of the Project. The QMPs will serve as a guiding document for the Project. FRMG and the Department will agree with the processes and procedures defined in the QMS to deliver an effective quality program and compliant Construction Work.

The Stage 1 QMP includes project control activities for the design Work. During this stage, FRMG's team members will hold design-specific meetings, including task force, design progress reviews, and comment/resolution sessions (for more detail, refer to Section 4.2 Design Quality Control of the QMP). Within this framework, the QTF will focus on big-picture design quality achievements, issues, and concerns.

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1.4.a.iii Long-Term Efforts – Stages 1 and 2

On a long-term basis, the QTF will review the effectiveness of the QMP and modify the plan as appropriate. In so doing, the QTF will:

- Monitor the overall state of quality
- Review current quality issues and identify trends
- Review audit findings and Corrective Actions
- Report and tracking of nonconformances
- Report and tracking of Stop Work items
- Monitor Project closeout and management of the punch list

As the Project transitions from one phase to another, the focus of the QTF will shift to match the current stage and needs of the Project.

Typical QTF Agenda items during Stage 1 include the following:

- Weekly
  - Review, edit, and obtain approval of Stage 1 QMP as a priority
  - Review, edit and obtain approval of the Stage 2 QMP after issuance of NTP 1
  - Typical Stage 2 agenda items that are applicable for Stage 1 progress
  - Other
- Monthly
  - Quality Issues Matrix (See QMP Section 1.4.b Quality Issues Matrix)
- Quarterly
  - Management Review

Typical QTF Agenda items during Stage 2 include the following:

- Weekly
  - FRMG-identified Nonconformances
  - Department-identified Nonconformances
  - Stop Work Items
  - Audits
  - Corrective Actions
  - FRMG Concerns
  - Department Concerns
  - Stakeholder Concerns
  - OVT Compliance
  - Other
- Monthly
  - Quality Issues Matrix (See QMP Section 1.4.b Quality Issues Matrix)
- Quarterly
  - Management Review

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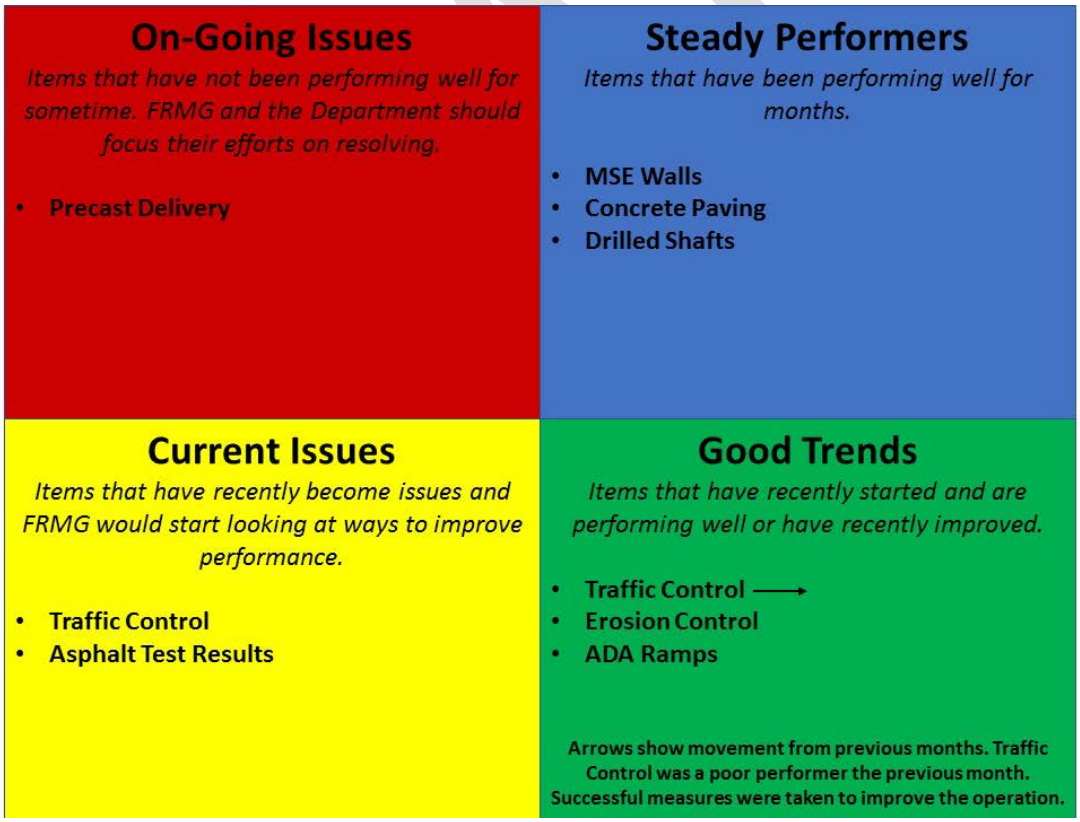
1.4.b Quality Issues Matrix

The Quality Issues Matrix shown in **Figure 2** will visually depict quality issues on the Project. Ongoing issues are color-coded red; current issues are yellow; good trends are green; and steady performers are blue. The colors give a level of importance to the issues that need attention and focus. The issues will be jointly agreed upon between the FRMG Quality Team and the Department's team. Jointly developing the matrix each month facilitates communication between the team and promotes awareness of the Department's needs and concerns. This tool allows senior management to focus the resources where needed to improve the quality of the Project when needed.

Senior management from each team will identify counterparts at appropriate levels within their respective organizations and will encourage team members to resolve issues at the lowest level within the team. Senior management will set timeframes for issue resolution, and issues that are not resolved within those timeframes will be escalated to the next level within the team. Any person may request at any time that an issue be escalated to the next level. Senior management may assist in the negotiation of any issue at the request of any involved team member.

FRMG will work with the Department to resolve any issues or disputes in accordance with Schedule 25, Dispute Resolution Procedure.

Figure 2. Quality Issues Matrix (EXAMPLE).



1.5 Quality Management Plan Elements

FRMG's QMP includes the following elements that describe the procedures and methods to meet the requirements of the Project Agreement:

- Quality Policy, Section 2.2
- Process Control, Section 2.4
- Design Quality Control, Section 4.2
- Independent Quality Control for Construction and Work Improvement, Section 4.0
- Quality Improvement, Section 2.6
- Quality Personnel, Section 2.7
- Training, Section 2.8
- Design Process Control Procedures, Stage 1 QMP Attachment
- Construction Quality Procedures, Stage 2 QMP Attachment

FRMG will submit the Stage 1 QMP and Stage 2 QMP for the Department's approval. Department approval of Stage 1 QMP will be obtained prior to NTP 1. Department approval of Stage 2 QMP will be obtained prior to NTP 2. Revisions to the Stage 1 and Stage 2 QMPs will be reviewed within the QTF meetings and Approved by the Department prior to implementation.

1.6 Restricted Activities on an At-Risk Basis

Project Agreement Schedule 9, Section 3.b provides the context within which FRMG may commence or perform a restricted activity prior to otherwise being permitted to do so pursuant to Section 3.a of Schedule 9. The following procedure defines the process for FRMG to perform restricted activities on an at-risk basis, prior to completion of design, called the Early Release of Work, and for the issuance of related Released for Construction (RFC) documents.

This procedure allows for restricted activities to occur following a risk assessment prior to finalization of the design documents or other authorizations when the critical path of the Project schedule necessitates that such work begins early.

General

FRMG anticipates that a variety of ERW activities will be necessary to advance the schedule in the early months of Project delivery and *prior to* NTP1. The ERW activities are expected to include the following:

- Advancement of design work
- Photo logging, video recordings of facility, and inventories of existing conditions
- Control and topographic surveys
- Geotechnical investigations
- Utility potholing and surveys for location determination
- Drainage system investigations
- Demolition and site clearance
- Foundation packages to start construction of bridges or walls

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It is anticipated that design activities for some Project elements will begin prior to the issuance of NTP 1. It is not expected that the Department's formal review or Acceptance will be required prior to NTP 1; however, FRMG will request over-the-shoulder reviews by the Department.

Definitions

Early Release of Work: Construction or other activities performed by FRMG to progress the Work prior to completion of the design process or other approvals.

Responsibilities

The Construction Manager will be responsible for identifying the need for ERW and the initiation of the early release process. The Construction Manager, Design Manager, and Area Engineer are responsible for assessing the risks associated with progressing ERW.

When design Work is needed, the Design Manager is responsible for issuing early release documents, stamped as such to FRMG document control for issuance to appropriate parties.

The Construction Manager's signature indicating concurrence with the ERW is required prior to start of work.

The FRMG Document Control Manager is responsible for assuring that all required signatures are obtained prior to issuance of ERW documents.

The IQCM will review quality records and verify that restricted activities performed at-risk were performed in conformance with plans and specifications issued with the early release. The IQCM also verifies that work performed under the ERW packages meet the requirements of the final RFC Documents.

Procedure

The Construction Manager identifies a need for the ERW based on identified schedule constraints. Coordination with the Design Manager and the Area Engineer is necessary to assess the risk imposed by beginning construction before design completion, or other site work before required approvals. ERW requests (CQP-0108-1, Early Release of Work Request) will be evaluated on a case-by-case basis assessing the following factors:

- Status and projected completion of the design
- Importance of the field work to the initiation of design work (e.g., surveying, geotechnical investigations)
- Degree of technical difficulty associated with construction of the proposed element(s) and potential issues with correction of work
- Criticality of the early construction to the schedule
- Assessment of risks with proceeding with such work on an at-risk basis

The ERW request will be evaluated by the Construction Manager and his or her approval documented on form CQP-0108-1, ERW Request. In addition, the approving signatures of the Construction Manager and Design Manager will be recorded on the form.

Prior to approval of the ERW Request, the Construction Manager and Design Manager will meet with the Department to discuss the need, risks, and potential impacts associated with the restricted activity. The Department may provide concerns, comments, and suggestions as

appropriate. FRMG will review and may incorporate such feedback into the ERW request as deemed necessary by the Construction Manager and Design Manager.

Once the Construction Manager's and Design Manager's approval is complete, the Design Manager will release a set of plans, specifications, and other required documents for construction, stating the approximate percent design complete and being clearly marked as "Early Release of Work."

After receipt of the ERW documents, the FRMG Document Control Manager will verify the signatures were obtained on form CQP-0108-1, Early Release of Work Request, and will distribute documents.

IQC inspectors will use the ERW documents to verify conformance during the performance of the Work.

RFC plans and specifications will specifically note any changes from the ERW plans. The IQCM will verify IQC records from the restricted activity performed at-risk comply with the final design RFC plans.

Any work that is found in nonconformance with the RFC plans will be addressed. Correction of work will follow the Construction Deficiency procedure (CQP-0104, Construction Deficiency) or the nonconforming items procedure (CQP-0103, Nonconforming Items) as applicable.

References (Stage 2 QMP Attachment, Construction Quality Procedures)

- CQP-0103_Nonconforming_Items
- CQP-0104_Construction_Deficiency

Forms

- CQP-0108-1, Early Release of Work Request

1.7 Updates to the QMP

FRMG is committed to the continual improvement of the QMS and recognizes the need for revisions to the QMP as the Project progresses. When FRMG's quality management organization detects systemic or fundamental shortcomings with respect to the Project Agreement, when inspection or testing reveal deficiencies in the Work (including deficiencies that have caused or may cause Nonconforming Work), or when the Department advises FRMG of such a problem, FRMG will update its QMP and submit to the Department for Approval.

FRMG will also revise the QMP should any of the following conditions exist:

a. QMP or procedure within the QMP no longer adequately addresses the matters it was originally intended to address
b. QMP or procedure within the QMP does not conform with the Project Agreement
c. An audit by FRMG or the Department identifies a deficiency in the QMP requiring an update
d. Organizational structure changes require revision to the QMP
e. FRMG is undertaking, or about to undertake, activities that are not covered within the current QMP
f. The Department requires the QMP to be updated at its request

Any arising need that constitutes a revision to the QMP will be reviewed and evaluated at the Quality Task Force (QTF) meeting. Based on the QTF evaluation, changes will be drafted and reviewed at the next QTF meeting. After agreement and approval by FRMG and the Department, the changes will be implemented immediately. Formal distribution of QMP revisions will be performed quarterly, as required.

2. Administrative Requirements

2.1 Quality Systems Procedures

2.1.a Consistency with Requirements

FRMG has written its QMP procedures to be consistent with the requirements of Section 6.2.1 of Schedule 8 and the FRMG Quality Policy in Section 2.2 Quality Policy and Objective this QMS.

2.1.b Work Methods, Enforcement, and Implementation

Effective implementation of work methods is documented with PC procedures in Section 2.4 Process Controls and IQC procedures in Section 4 Independent Quality Control.

Please refer to the Draft Stage 2 QMP (Appendix E) for information regarding the work planning process as defined in the construction quality procedures.

2.1.c FRMG Liaison and Interfaces

The Project Quality Manager (PQM) acts as the liaison between the quality, design, and construction arms of FRMG. The specific relationships are shown in Figure 4 (Project Quality Organization Chart) in Section 3.2 Responsibility and Authority of this QMP.

The PQM participates in QTF meetings to provide continuity between design, construction, IQC, and the Department. The PQM works to ensure there is a consistent response and approach to quality-related elements across all disciplines. The PQM is a primary point of contact for the Department and stakeholders to discuss and resolve quality-related issues and concerns.

2.1.d Employee Understanding of Quality Procedures

FRMG quality procedures are written in a manner that clearly defines the following:

- Purpose
- Scope
- Definitions
- Responsibilities
- Process steps and work instructions
- Documentation
- References

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All personnel who have responsibilities in the execution of QMP procedures will be trained and / or certified as needed and in accordance with procedure CQP-0140, Training of Personnel Implementing the QMP.

2.1.e Rationale for Procedures Selected

QMP procedures were selected based on the following:

- Requirements of Schedule 8, Section 6.2.1
- ISO 9001:2015 compliance
- Industry best practices
- Lessons Learned on similar projects

2.1.f Quality Procedures

FRMG's submittal of the Stage 1 QMP (NTP 1) and Stage 2 QMP (NTP 2) will be outlined to address the following: procedures listed in Schedule 8, Section 6.2.1.f; procedures required to be compliant with ISO 9001:2015, FRMG recognized industry best practices; and additional procedures identified to meet the Project requirements. Minimum procedures include those identified in Stage 1 QMP Attachment: Design Quality Procedures and Stage 2 QMP Attachment: Construction Quality Procedures, procedures identified throughout this QMP submittal, and the following:

i. Procedure for the preparation, control, and distribution of the Quality Management Plan
ii. Scope
iii. Key personnel
iv. Organizational/technical interfaces
v. Design input requirements
vi. Design output requirements (deliverables)
vii. Design reviews
viii. Department participation
ix. Levels of responsibility and authority
x. Procedure to control, verify, and validate the design
xi. Procedure for document issue, approval, and revision
xii. Procedure for identification of, and where required by Project Agreement, the traceability of, deliverable items such as release for construction documents and As-Builts
xiii. Procedure for the verification and control of computer programs used in design
xiv. Procedures for inspecting, testing, and calibrating equipment
xv. Procedures for handling Nonconforming Work
xvi. Procedures for environmental compliance
xvii. Procedures for corrective / preventative actions
xviii. Procedures for handling storing, packaging, tracking, and submitting deliverables
xix. Training processes
xx. Procedures for internal quality audits
xxi. Procedure for management review

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2.1.g Implementation of the Quality System

FRMG measures and monitors the implementation of the QMS against the Project Agreement, plans, specifications, and the QMP. Performance is evaluated, reviewed and discussed at the QTF meeting. Significant issues and concerns will be documented on the Issues Matrix and tracked to resolution. Implementation of a successful QMS is demonstrated through the results, records, and trending of the following:

- Internal quality audits – performed by IQC and PC
- ISO 9001:2015 Compliance Audits – performed by FRMG certified auditor
- Nonconformances
- Stop work notices
- Deficiencies
- Root-cause analysis
- Corrective Actions
- Preventative actions
- Department audits and observations
- OVT results
- Issues Matrix

2.1.h Documented Procedures

FRMG quality procedures are written in a manner that clearly defines the following:

- Purpose
- Scope
- Definitions
- Responsibilities
- Process steps and work instructions
- Documentation
- References

Documented procedures will make reference to specifications that define how an activity is performed when applicable. Procedures will describe the process steps of what needs to be done, and work instructions will prescribe how it is to be done.

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2.2 Quality Policy and Objective

The FRMG Management Team has established the following Quality Policy for the Project:

FRMG Project Quality Policy

FRMG is committed to ensuring that the design, construction, materials, equipment, and all other elements of the Work performed by FRMG, our Subcontractors, and Suppliers conform to the requirements of the Project Agreement and the Released for Construction documents. We are further committed to maintaining a consistency of effort to improve the quality of the Work we perform, including the Work performed by our Subcontractors.

This policy is further supported by three tenets that form the culture of all Project team members.

- ✓ **Quality is designed and built in, not inspected in**
- ✓ **Quality is the responsibility of each individual**
- ✓ **Do it right the first time**

This Quality Policy establishes the framework for quality objectives and is routinely communicated and reviewed with FRMG staff. As part of the formal training program for the Project, FRMG will kick off the Project with a series of QMS training sessions to communicate the key components, requirements, and expectations of the QMP at Stage 1 and 2 for the following individuals:

- FRMG executive and Project management staff
- FRMG design staff
- FRMG construction staff – foreman level and above
- Department staff
- Stakeholders
- Subcontractors
- Subconsultants
- Suppliers

Additional information on FRMG's training program is included in Section 2.8 Training. Detailed information on the QMS training sessions is defined within CQP-0140 Quality Training (Stage 2 QMP Attachment).

All FRMG staff and on-site subconsultants and Subcontractors will go through a Project orientation process. As part of that process, the Quality Policy, objectives, and critical safety requirements will be communicated prior to staff starting Work on the Project. A hard hat sticker will be issued to visually demonstrate that the wearer has participated in the orientation. All Project staff, including staff from the Department, will be required to attend the Project orientation.

The Quality Policy and objectives will be posted throughout the FRMG Project office, Project site, and on FRMG's Project website. It will be reviewed at key quality meetings, training, and staff orientation. The Quality Policy is available to the Department, FRMG staff, Subcontractors, Suppliers, and stakeholders at any time.

Executive Management Quality Policy

FRMG's executive management will ensure that FRMG's Project Quality Policy is implemented at all levels of the organization. The foundation of FRMG's executive management's philosophy is based on two key elements: (i) a commitment to safety on the Project for the public, the community, and members of FRMG, and (ii) a duty of care to the Department, and to the long-term success of the Project from a performance and investment standpoint.

Fundamental to our successful implementation of this philosophy is:

- Ensuring that the Project is designed and constructed according to FRMG's Project Quality Policy through its oversight of quality management during design and construction
- Carrying through FRMG's commitment to safety and quality to the Operating Period of the Project for routine Operations and Maintenance (O&M) responsibilities and for Renewal Work and handback of the Project
- Facilitating routine and transparent dialogue with the Department for matters related to safety and quality
- Committing to resolve issues related to safety and quality on the Project in a timely, open, and efficient manner in coordination with the Department and with the goal of protecting the long-term performance of the Project

FRMG's executive management will rely on a highly-experienced group of individuals who have led the construction and operations of complex highway P3 projects in North America and globally.

Additionally, the executive management team will receive direct reporting from the IQCF and ensure the IQCF, in cooperation with the Project Manager and the Lead Contractor and Lead Operator, properly carries out its responsibilities of providing independent and expert oversight of FRMG's QMP.

Quality Objectives

FRMG has one key objective: **Design, Construct, and Deliver the Project within the requirements of the Project Agreement.** As simple as this objective may appear, the Project is quite complex. Satisfying the requirements of the Project Agreement, the Department, and other stakeholders will require a robust QMS.

FRMG has developed a QMS capable of meeting this objective. We will achieve it by the following:

- The Project has the full commitment of the FRMG Management Team
- The QMS is based on the requirements of the Project Agreement with a few simple principles in mind:
  - The QMS, although complex, is designed and written in a manner that is easily understood
  - Meet the requirements of the Project Agreement
  - Meet the requirements of ISO 9001:2015
  - Plan, check, and verify the Work as its built
  - Understand and mitigate risks

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- Document and resolve all nonconformances
- Provide documented evidence that the Work meets the requirements

The Quality objective is routinely communicated and reviewed with FRMG staff and performance against these objectives is reviewed during management review meetings. Processes and procedures will be updated or modified as needed to ensure the objective is met.

Performance against this objective can be monitored in many ways. FRMG has identified several keys processes to monitor performance. Performance will be monitored through the results, records, and trending of the following processes:

- Internal Quality Audits – CQP-0130 Construction Audit
- ISO 9001:2015 Compliance Audits
- Nonconformances – CQP-0103 Nonconforming Items
- Deficiencies – CQP-0104 Construction Deficiencies
- Root-Cause Analysis
- Stop Work Notices – CQP-0105 Stop Work Order
- Corrective Actions – CQP-0106 Corrective Action
- Preventative Actions – CQP-0107 Preventative Action
- Department Audits and Observations
- OVT Results
- Issues Matrix

2.3 Quality Planning

2.3.a Evidence of Quality Planning

Through thoughtful planning and execution, FRMG assures our team's ability to deliver services and Work that is compliant with the Department and stakeholder requirements and is provided in a manner consistent with the processes defined within the QMP. This planning process includes determining the following:

- Quality objectives related to the delivered service or work product
- Necessary processes, documented procedures (Stage 1 QMP Attachment and Stage 2 QMP Attachment), and resources to support the delivered service or Work product
- Required verification, validation, monitoring, measurement, inspection, or testing activities, including the Acceptance criteria specific to the delivered service or work product
- Records necessary to provide appropriate objective evidence that delivered services or work products meet contractual requirements
- Establishment of a Design Input Library
- Development and updating of the Deliverable Requirements Tracking List
- Determination and establishment of appropriate design milestones
- Determination of the level of review, verification, and validation activities that are appropriate to each design milestone
- Establishment of responsibilities and authorities for design activities

- Determination of internal and external resources required to complete design
- Determination of appropriate design process and personnel interfaces
- Development of design task forces groups to facilitate Department and stakeholder involvement
- Evaluation and need for post-design services and design submittal certifications

2.3.b FRMG IQC Inspections

The Independent Quality Control Firm (IQCF) will be the team of Raba Kistner, Inc. (RK) and VIVID Engineering Group, Inc. (VIVID). The IQCF will perform IQC inspections during all phases of the Work from NTP 1 until Final Acceptance. IQC inspections assure the work is compliant with the Project Agreement. Please refer to Section 2.5.b Independent Quality Control for further information on the IQCF.

2.3.b.i Engineering and Laboratory Vital Information System (ELVIS)

The IQCF will utilize the Engineering and Laboratory Vital Information System (ELVIS) as FRMG's primary Electronic Records Management System (ERMS) for receiving, storing, transmitting, and tracking documents, transmittals, submittals, and correspondence of quality records for the Construction Work. The ELVIS system allows the IQCF to have real time access to plans, specifications, quality checklist, test reports, nonconformance reports, punch lists, and other quality documents in the field. The IQCF will use tablets and laptops computer to access this information remotely through the ELVIS system. The Department, stakeholders, Subcontractors, and other relevant entities can also be given the same permissions to access to this information remotely.

ELVIS is fully compatible with Aconex. ELVIS does not replace Aconex as the Project's recognized document control system. Instead, ELVIS aims to:

- Enhance the performance of FRMG
- Be a more sustainable, "green" solution
- Reduce document control processing needs and personnel requirements
- Greatly increase the speed and efficiency of entering IQC test results into the Department's QRD
- Facilitate a means for the IQCF to review and approve electronic quality records prior to uploading into Aconex
- Provide real time data collection
- Provide real time access to plans and specifications

This ERMS is a proprietary product of Raba Kistner, Inc. (RK), which was developed for managing transportation/highway Project-related quality documents and records. ELVIS is maintained by RK at no cost to the Department. Records are regularly uploaded from ELVIS to Aconex. Prior to Final Acceptance, FRMG will provide verification that all records generated within ELVIS have been uploaded to Aconex.

The **ELVIS system has a proven track record on FHWA design-build and P3 projects and was specifically designed by and for an independent quality assurance engineering firm** on these types of projects. The ELVIS system is a web-based (server and cloud-based) system

hosted and managed by RK. It is accessible through computers or tablet devices. It has access and security features enabling the control of quality information and data that, on other projects, satisfied FHWA requirements for owner agency use of such a system.

ELVIS is a secured web-based application with controlled user access, which is based on https protocol. Each user's level of access is controlled by individual security permissions to allow access appropriate for each user's position. ELVIS provides a variety of functions that are available based on users' security settings. These functions include daily inspection reports and test results, technical review of test results, engineer review of test results, material quantity tracking, minimum sampling and testing requirements (MS&TR) module, NCR tracking, mix designs, file storage, sharing, versioning, and transmittal and retrieval of documents in a read-only format. Individuals identified as recipient will receive a system generated email that provides notification that documents are ready for download. ELVIS will also populate a log to capture the individual, date, and time when the upload occurred. A powerful search engine is also available to assist in finding and retrieving relevant documents.

ELVIS also provides for use of a Controlled Vocabulary Language (CVL) to promote consistency within the database. These CVLs will be used by all persons creating records in ELVIS. The CVLs will be updated and maintained by RK within ELVIS. The CVL provides a consistent naming convention that aids in the identification, traceability, and retrieval of quality records. The CVL will be consistent with naming conventions established by the Document Control Plan.

Using ELVIS, daily inspection reports will be marked as a pass or fail and tracked to closure. Material quantities will be tracked and used to show that we are meeting the minimum testing requirements. **Figure 3** below is a summary of the items that will be tracked on each inspection report.

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Figure 3. Sample Daily Inspection Report – ELVIS.

TAPPAN ZEE CONSTRUCTORS, LLC

Tappan Zee Hudson River Crossing Project
Contract D214134
PIN 8T21.00
Project TA# TANY 12-18B

Daily Work Report

Report #	QA016	17	03	09	A	Thursday	Weather Conditions	AM		PM	
	Technician	YY	MM	DD	Rev	Day of the Week		Clear	50 °F	Clear	40 °F

OP	Inspection Hours	Foreperson	IP	RE	HP	WP	Final	Weld?	Pass	Fail	N/A
1 of 4	07:00 to 18:00	John Eskins	X						X		

Specification	Specification Description	BIM Category
557.99000099	HIGH-PERFORMANCE PRECAST SUPERSTRUCTURE SLABS	Bridge Superstructure

Inspection Plan	ITP Activity #	Unit
TZC-0506-00	3	11 - Main Span

Location	Sub-Location	Limits
Span 32 WB	FS611	Main Span to

Feature	Sub-Feature	Hold Point
PCCP - Deck Closure Pour		

Fabricator	Piece Mark	EOR
		X

Description of Work and Material Used:

TZC Lathers assembled the reinforcement for FS611 Deck Joints.

QC Inspector Oscar Gonzalez was on site throughout assembly work.

QC and QA conducted an inspection of the reinforcement once work was completed.

Work was deemed satisfactory.

QC and QA signed the rebar signoff sheet in preparation for the concrete placement.

Were there any deficiencies with the work in this entry? __No X CIF __NCR

1 broken hair pin found and repaired at Panel FP2.

1 broken hair pin found at Panel EP3.

See Attached EOR response for Repair concurrence.

SAMPLE

Daily Inspection Report Search and Summary Search

These search engines allow the user to search daily inspection reports input by the various inspectors. The filters available include:

Inspection Date. This uses two date entries to pinpoint a calendar period. Clicking inside the field will open a calendar which allows the user to select the desired From and To dates. This filter's default values are set so that all records to date are included.

Belong To. This drop-down list allows the user to select which major division's (QA, QC, Environmental) DIRs to search.

Affiliation. This drop-down list allows the user to select a specific company's reports to search.

Inspector. This drop-down allows the user to specify an inspector to search for. Available selections are governed by the selection made in the Belong To filter.

DIR Report #. Input text string to search full or partial DIR report numbers.

Report Revision. This drop-down allows the user to search for previous iterations of reports. The default setting searches only for the most current revision of a report.

Specification. Text entry for searching by CDOT or Project specification number.

Inspection Plan. This drop-down allows the user to search for reports associated with a specific Inspection and Testing Plan (ITP).

Activity. Text entry for search for specific ITP activity numbers.

BIM Category. This drop-down list allows the user to select the BIM Category of the documents to be viewed. Options include: Bridge Abutment, Bridge Foundation, Bridge General Metal Fabrication, Bridge Mechanical/Electrical/Plumbing, Bridge Substructure, Bridge Superstructure, Drainage and Erosion, Maintenance Platform, Mechanical/Electrical/Plumbing, N/A, Roadway and Signing and Signaling.

Unit. This drop-down allows the user to filter search results by Design Unit.

Location. This drop-down allows the user to filter by any of the entries in the Location CVL.

Sub-Location. This drop-down allows the user to filter by any of the entries in the Sub-Location CVL.

Feature. This drop-down allows the user to filter by any of the entries in the Feature CVL.

Sub-Feature. This drop-down allows the user to filter by any of the entries in the Sub-Feature CVL.

Limits. Input text string to search the Limits field.

Fabricator. This drop-down allows the user to filter search results by a specific fabrication plant.

Piece Mark. Input text string to search for in this field.

Type. This drop-down allows the user to select the inspection type to view. Options include: I = In process, R = Re-Inspection, H = Quality Hold Point, W = Witness Point, F = Final.

Result. This drop-down allows the user to search for a specific inspection result. Default = All, P = Pass, F = Fail)

Deficiencies Type. This drop-down allows the user to specify the type of deficiency recorded by the inspector. No = No discrepancy noted, CIF = Corrected in Field (identified but subsequently corrected), NCR = inspector recommends an NCR be issued. Note: this does not mean an NCR was issued, only that the inspector recommended an NCR.

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Previous Deficient DIR. Text string input allows the user to search for a failing report to locate the re-inspection record.

RFI, NCR or Submittal. Input text string to locate records pertaining to a specific

Work/Material Used. Input text string to search the report narrative.

Deficiencies/Conversation Log. Input text string to search the deficiency and conversation descriptions.

Workflow Status. This drop-down allows the user to search only for records in a specific stage of the ELVIS workflow. Default setting shows all records. Create, Reviewing, Reviewing2, Closed.

Review By. This drop-down allows the user to search for report closed by a specific supervisor or manager.

DIR Search Result Field. Descriptions are entered only for fields that are not available under filters. This prevents the creation of multiple names for the same reference item and keeps the search criteria consistent. Please see field description under filters for all others.

- Date. Inspection Date
- DIR No. This field also acts as a hot link to the crystal report of the entire DIR.
- OP. DIR Operation (entry). This field also acts as a hot link to the crystal report of the individual OP
- Rev. Report Revision
- Unit
- Location
- Sub-Location
- Feature
- ITP
- Inspected By
- Belong To
- Affiliation
- Workflow Location
- Files. Hotlink to files attached to the entry

DIR Summary Search Result Fields

Result fields in the summary search include all fields in the data set and are user selectable. The user selects the field(s) (hold down the Control key to make multiple selections) they which to view in the center column and then clicks the right arrow to move the fields into the Selected Fields column. The Move Up and Move Down buttons can be used to reposition the selected fields.

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2.3.c Planning Methods to Meet the Requirements of the Project Agreement

2.3.c.i Quality Objectives

FRMG has one key objective: **Design, Construct, and Deliver the Project within the requirements of the Project Agreement.** As simple as this objective may appear, the Project is quite complex. Satisfying the requirements of the Project Agreement, the Department, and other stakeholders will require a robust QMS.

FRMG has developed a QMS capable of meeting this objective. We will achieve it by the following:

- The Project has the full commitment of the FRMG Management Team
- The QMS is based on the requirements of the Project Agreement with a few simple principles in mind:
  - The QMS, although complex, is designed and written in a manner that is easily understood
  - Meet the requirements of the Project Agreement
  - Meet the requirements of ISO 9001:2015
  - Plan, check, and verify the Work as its built
  - Understand and mitigate risks
  - Document and resolve all nonconformances
  - Provide documented evidence that the Work meets the requirements

The Quality Objective is routinely communicated and reviewed with FRMG staff and performance against these objectives is reviewed during management review meetings. Processes and procedures will be updated or modified as needed to ensure the objective is met.

Performance against this objective can be monitored in many ways. FRMG has identified several keys processes to monitor performance. Performance will be monitored through the results, records, and trending of the following processes:

- Internal Quality Audits – CQP-0130 Construction Audit
- ISO 9001:2015 Compliance Audits
- Nonconformances – CQP-0103 Nonconforming Items
- Deficiencies – CQP-0104 Construction Deficiencies
- Root-Cause Analysis
- Stop Work Notices – CQP-0105 Stop Work Order
- Corrective Actions – CQP-0106 Corrective Action
- Preventative Actions – CQP-0107 Preventative Action
- Department Audits and Observations
- OVT Results
- Issues Matrix

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2.3.c.ii Processes, Resources, and IQC Personnel

FRMG has identified the necessary processes, resources, and IQC personnel needed to assure that FRMG's obligations meet the requirements of the Project Agreement. FRMG's QMP identifies and defines the following:

- Required Processes and Procedures
  - Stage 1 QMP Attachment: Design Quality Procedures
  - Stage 2 QMP Attachment: Construction Quality Procedures
  - These procedures are appropriately referenced throughout the QMP
- Required Resources
  - FRMG's executive management is responsible to ensure adequate resources are available to meet the requirements of the Project Agreement. Evidence is provided in Section 2.5.g Resources and Personnel to Perform all IQC Activities to Ensure all Work Meets the Requirements of the Project Agreement, Section 2.7 Quality Personnel, and Section 3.2 Responsibility and Authority (specifically Figure 4, Project Quality Management Organization Chart).
- IQC Personnel
  - FRMG's executive management has established a Quality Management organization with appropriate experience, resources. and training to deliver the requirements of the Project Agreement
  - Evidence is provided in Section 2.5.g Resources and Personnel to Perform all IQC Activities to Ensure all Work Meets the Requirements of the Project Agreement, Section 2.7 Quality Personnel, and Section 3.2 Responsibility and Authority (specifically Figure 4, Project Quality Management Organization Chart)

In addition to the above items, FRMG has prepared the following draft documents, submitted in FRMG's Technical Proposal, which serve as further evidence of FRMG's commitment and ability to meet the requirements of the Project Agreement:

- **Design** – refer to Appendix B: Draft Project Management Plan and Appendix D: Draft Stage 1 Quality Management Plan
- **Construction** – refer to Appendix B: Draft Project Management Plan and Appendix E: Draft Stage 2 Quality Management Plan
- **Environmental Compliance** – refer to Appendix M: Draft Environmental Compliance Work Plan
- **Strategic Communications Requirements** – refer to Appendix J: Draft Strategic Communications Plan
- **Maintenance of Traffic Requirements** – refer to Appendix F: Draft Transportation Management Plan
- **Safety** – refer to Draft Safety Management Plan in Appendix B: Draft Project Management Plan
- **Disadvantaged Business Enterprise (DBE)** – refer to Appendix K: Small and Disadvantaged Business Participation Plan
- **Emerging Small Business (ESB)** – refer to Appendix K: Small and Disadvantaged Business Participation Plan
- **Workforce Development** – refer to Appendix L: Workforce Development Plan

- **Training** – refer to CQP-0140, Quality Training
- **Project Management Processes** – refer to Appendix B: Draft Project Management Plan
- **QMP** – refer to Stage 1 QMP and Stage 2 QMP

2.3.c.iii Compatibility of Design, Construction, Installation, Public Information, Inspection, and Testing Procedures

During Stage 1, Design Work Plans are based on the allocation of resources to produce design products with identified requirements for process control (PC), IQC, and design reviews. Design Quality Procedures identified in Stage 1 QMP Attachment provide a guide for developing a Design Work Plan (DMQP-PR-0020). The Design Work Plan elements consider design inputs, production methods, design outputs, schedule, and quality. The Design Work Plans are implemented at the lowest reasonable level, usually managed by the Area Design Manager.

Please refer to Draft Stage 2 QMP (Appendix E) for information specific to the construction-related activities.

2.3.c.iv QMP Updates

Throughout the performance of the Work, it is anticipated that the QMS will need to be changed, modified, or edited as discussed in Section 1.7 Updates to the QMP. This is evidence that our QMS is functioning properly and the processes implemented for monitoring, measuring, and enabling continual improvement are effective. Before vetting proposed changes to the QMS, we will consider the following:

- Purpose of the requested change
- Consequences of the change
- Integrity of the QMS and compliance with the Project Agreement
- Required resources
- Allocation and/or relocation of responsibilities and resources
- FRMG's knowledge to effectively implement the change
- The Department's Acceptance of proposed changes

The IQC Document Control Manager maintains current controlled electronic versions of the QMS. CQP-0101 Document Control outlines the details to maintain current and controlled versions of the QMS.

2.3.c.v Measurable Compliance with the Project Agreement

FRMG Management will collect data to continually evaluate the suitability and effectiveness of the QMP and to identify opportunities for continual improvement. The objectives against which data are collected and analyzed include the following:

- Client satisfaction assessments
  - Quality Task Force Meeting
  - Quality Issues Matrix
- Compliance of work products with requirements
  - Nonconformances
  - Construction deficiencies

  - Department NCNs
  - Stop work notices
- Performance and effectiveness of the QMS as indicated by audit findings
  - Internal audits
  - ISO 9001:2015 Compliance Audits
  - Department audits
- Test results
  - Pass vs. fail
  - OVT tests standard deviation from IQC tests
- Design Deliverables
  - Deliverable Requirements Tracking List
  - Approval and Acceptance of Reviewable Deliverables design packages
- Performance of vendors, Subcontractors, and subconsultants

2.3.c.vi Quality Hold Points

Please refer to Draft Stage 2 QMP (Appendix E).

2.3.c.vii Standards of Workmanship

Standards of workmanship for design of the Work include the following elements:

- Terms, conditions and requirements of the Project Agreement, including the Schedules (particularly Schedule 10)
- Project standards
- Law
- Government approvals and permits in effect during the Project
- Good industry practices

Please refer to Draft Stage 2 QMP (Appendix E) for information specific to the construction-related activities.

2.3.c.viii Identify, Define, Prepare, and Maintain Quality Records and Quality Plans for all Elements of Design

Please refer to Section 4.2 of this QMP for details on identifying, defining, preparing, and maintaining quality records and quality plans for all elements of design, including but not limited to wet and dry utilities, architectural, civil, structural, geotechnical, survey, hydraulic, environmental, traffic, safety, right-of-way (ROW), railroad work, intelligent transportation system (ITS) work, and temporary work. FRMG will develop a Project-specific Document Control Plan to be implemented prior to NTP 1.

For Stage 1, the design quality records are produced as the design Work progresses. The records are in the form of checked drawings, checklists, QC reports, certification forms, and tracking forms. The records are retained in the Lead Engineer document control system until the RFC Documents are submitted to the Lead Contractor for entry in the overall Project document control system. The records will then be uploaded to the Department's Aconex document control system.

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Please refer to Draft Stage 2 QMP (Appendix E) for information specific to the construction-related activities.

2.3.c.ix Preparation, Control, Approval, and Distribution of the QMP

Ultimate responsibility for the preparation of the QMP falls on the PQM. Support in preparing the QMP comes from the DQM, DPCM, IQCM, CPCM, and IQC Document Control Manager. Draft QMP documents are reviewed with the Department at quality task force meetings. Once concurrence is obtained among FRMG, the Quality Team, and the Department, a formal submittal will be sent to the Department through Aconex. This submittal will formally document the review and approval from the Department.

Once formal approval is obtained, the IQC Document Control Manager maintains current controlled electronic versions of the QMP within Aconex. CQP-0101, Document Control outlines the details to maintain current and controlled versions of the QMP as well as its distribution.

2.3.c.x IQC Auditing of FRMG, Subcontractors, and Suppliers

IQC conducts internal audits of FRMG, Subcontractors, and Suppliers in accordance with a defined annual audit schedule to determine whether:

- The QMP complies with the requirements of the ISO 9001:2015 Standard
- Delivered services or work products comply with Project Agreement requirements and the QMP
- The QMP is effectively implemented and maintained

The documented procedure for IQC auditing is defined in CQP-0130, Construction Audit, which defines the responsibilities and requirements for planning and conducting audits, establishing audit records, and reporting audit results. This procedure also documents the selection and conduct of auditors and provides assurances that auditors are independent of the area being audited.

The FRMG Construction Audit Schedule (CQP-0130-1 which may be revised throughout the duration of the Project) is based on the status and importance of the processes being audited, areas of risk, results of previous audits, nonconformances, or other relevant information.

The FRMG Management responsible for the area being audited assures that necessary Corrective Actions resulting from the audit happen and that follow-up activities occur in accordance with the documented procedures.

Subcontractors and Suppliers are subject to IQC audits. To ensure FRMG has the cooperation of Subcontractors and Suppliers, subcontracts will have a clause in the agreements that states that they must adhere to the provisions of the Project Agreement and the QMP. This is a perquisite for doing business with FRMG. Training on the QMP will be provided for Subcontractors and Suppliers. Training will be tailored to the applicable portions of the QMP.

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2.3.c.xi Corrective and Preventative Actions

Corrective Actions

The design of the QMS can require the enactment of Corrective Actions. Corrective action procedures (QCP-0106 Corrective Action) are integral to the design-and-construction-related nonconformances process and can be initiated in, at minimum, the following noted situations:

- **Construction:** Corrective action will be an outgrowth of inspection or testing, where an NCR or corrective action directive is issued within or to FRMG. (product)
- **Quality audits:** Corrective action will result pursuant to an audit finding or a relevant recommendation documented in the audit report

FRMG's Management will evaluate the effectiveness of implemented corrective actions as well as their influence on other documented quality procedures. Corrective actions will be performed in accordance with CQP-0106, Corrective Action.

Preventative Action

FRMG will implement oversight review and trending processes that will play major roles in the prevention of Nonconformances on the Project. These formal processes, including constructability reviews, readiness reviews, nonconformance reporting, and IQC audits, will assist in keeping the Project on track by preventing the application of erroneous assumptions or directions. Methods for determining, implementing, and documenting actions taken to prevent Nonconforming Work will be done in accordance with CQP 0107, Preventative Action.

2.3.c.xii Executive Management Review

The FRMG executive management team conducts, at a minimum, annual Management Reviews of the QMP to assure its continuing suitability, adequacy, and effectiveness; to assess opportunity for improvement; and to examine the need for any changes to the QMP, the Quality Policy, or the Quality Objectives. The FRMG Management Team reviews the Quality Issues Matrix monthly (Section 1.4 FRMG and Department Collaboration).

The following information and data is input to the management review process:

- Results of audits
- Partnering satisfaction ratings and results
- Performance against quality objectives
- Nonconformance reports
- Status of corrective and preventative Actions
- Action items from previous management review meetings
- Potential changes to the QMP
- Recommendations for improvement to the QMP

Output from the management review process includes any decisions or actions taken related to the following:

- Opportunities for improvement
- Improvement of the effectiveness of the QMP

- Improvements to services provided
- Identified resource needs

2.3.c.xiii Process for Ensuring Quality Regardless of Production or Schedule

The FRMG Quality Team (IQCF and PC Staff) report directly to the FRMG executive management team. The FRMG Quality Team has no responsibilities for production or schedule. The primary responsibility of the FRMG Quality Management Team is to implement the requirements of the QMP to ensure the Work complies with the requirements of the Project Agreement.

2.4 Process Control

2.4.a Process Control Program

FRMG has incorporated industry best practices and lessons learned in the development of Process Control (PC) procedures. PC procedures are implemented to assure that all activities affecting the quality of the Work are accomplished under controlled conditions, using appropriate equipment for the task being performed, and following the requirements for inspection and testing. The purpose of PC inspections and tests are to verify and document that items furnished for incorporation into the Work, and all Work performed for the Project, conforms to the requirements of the Project Agreement and the RFC Documents.

All Work performed by FRMG, our Subcontractors, and our Suppliers will be performed using qualified production personnel, suitable installation methods, and properly serviced equipment in a suitable working environment. Personnel performing Work on the Project will be qualified and certified, where required, to perform the given element of Work.

The Design Process Control Manager (DPCM) will implement and manage the overall design quality program. The DPCM will coordinate with the Design Manager and Deputy Design Manager for Production to understand when design work is programmed, what products are being produced, and when quality reviews should occur. The DPCM will manage the team of discipline experts to schedule design quality reviews, both discipline-specific and cross-disciplinary, and to coordinate constructability, environmental and ROW reviews. Reviews will be conducted at each stage of document production and at final submittal.

Please refer to Draft Stage 2 QMP (Appendix E) for information specific to the construction-related activities.

2.4.a.i PC Work Planning

Design Work Plans will be developed to organize the production of design products, including the required coordination meetings, quality reviews, and submittal packages. The Work Plans include the appropriate process controls for performing the Work and completing the quality procedures. Participation by discipline experts, construction staff, operations and maintenance staff, environmental compliance staff, Department staff, and other individuals are included in the Work Plans. Please refer to design procedure DMQP-PR-0020 and the Design Quality Process

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flowchart presented in the Stage 1 QMP Attachment for details on the process control work planning for design.

Please refer to Draft Stage 2 QMP (Appendix E) for information specific to the construction-related activities.

2.4.a.ii PC Audits

The PQM will audit the PC inspection and testing program, including inspection and test documentation for adequacy and conformance to the Stage 1 and Stage 2 QMP. On a random basis, the IQCM, CPCM, IDQM and/or the DPCM or their designee will audit specific PC processes. These audits will consist of a review of PC documentation demonstrating control of the Work and an inspection by PQM to confirm that the PC processes, procedures, inspections, and tests are complete and adequate to support acceptance of the Work. These inspections may be conducted at specific Quality Hold Points in the Work or as designated by an auditor.

2.4.b PC Materials Testing

Please refer to Draft Stage 2 QMP (Appendix E).

2.4.c Tests or Inspections Performed by Production or PC Personnel

Please refer to Draft Stage 2 QMP (Appendix E).

2.5 Control of Inspection, Measuring, and Test Equipment

2.5.a Documented Procedures to Control, Calibrate, and Maintain Inspection, Measuring and Test Equipment

Please refer to Draft Stage 2 QMP (Appendix E).

2.5.b Independent Quality Control Firm (IQCF)

FRMG has chosen Raba Kistner, Inc. (RK) and VIVID Engineering Group, Inc. (VIVID) to perform the IQC functions outlined in the Project Agreement, specifically Schedule 8, Section 6. RK and VIVID were chosen for their firms' and proposed staff's experience with large, complex design-build and P3 projects within Colorado and across the Unites States. As required, neither firm is a Developer-Related Entity (excluding the role as Subcontractor) or any Affiliate thereof.

RK has extensive experience with transportation infrastructure and has successfully provided services to the owners, developers, and financiers of these projects since 1968. RK is very familiar with the intricacies of the planning, funding, design, construction, and quality needs of state departments of transportation and other transportation agencies. RK has designed innovative solutions for many transportation issues – such as developing recommendations for working with the weak and expansive soil conditions found in many areas – in their 46 years of service, and RK is considered the leaders in their field.

VIVID is a Colorado-based business that provides quality management, construction management, materials testing and inspection, and geotechnical, environmental and construction phase services to local, state and federal agencies throughout the Front Range. VIVID's personnel have 150 years of collective experience and expertise ensuring effective, responsive and efficient Project delivery. VIVID's professionals have significant experience performing Process Control, Quality Control, Quality Assurance, and geotechnical services on design-build and P3 Projects in Colorado for CDOT and RTD as well as others across the United States.

VIVID is a registered Emerging Small Business with the Colorado Department of Transportation.

VIVID's office and IQCF Laboratory are located just a few blocks from the East end of the Project at: 4890 Ironton Street, Unit K, Denver, CO 80239.

2.5.c IQC Program

The IDQM will oversee the Lead Engineer's implementation of the Stage 1 QMP and will perform periodic audits of the Lead Engineer's quality activities. The audits will address the alignment with the design quality processes and procedures and compliance with Project Agreement requirements.

Please refer to Draft Stage 2 QMP (Appendix E) for information specific to the construction-related activities.

Monthly, the PQM will review the status and acceptability of the work performed. As part of the Project Monthly report the PQM will issue a letter certifying the Work that was completed in compliance with the Project Agreement. In addition, the PQM will identify outstanding work that has been identified as not meeting the requirements of the Project Agreement.

2.5.c.i IQC Surveillances

Please refer to Draft Stage 2 QMP (Appendix E).

2.5.c.ii IQC Inspection Plan

Please refer to Draft Stage 2 QMP (Appendix E).

2.5.d IQC Program Separation from PC Program

FRMG's PC and IQC operations are separate. PC procedure are split from the IQC Procedures in the QMP. PC is responsible for the CQP-0200 PC Procedures and IQC is responsible for the CQP-300 IQC Procedures. There is coordination and communication between the two groups, but each entity has its own responsibilities and commitments. IQC will not perform PC activities. The relationship between PC and IQC is shown in Figure 4 (Project Quality Organizational Chart) in Section 3.2 Responsibility and Authority of the QMP.

2.5.e IQCF Testing

Please refer to Draft Stage 2 QMP (Appendix E).

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2.5.f IQC Independence from PC

IQC personnel are not responsible for nor do they perform process control activities. See Section 2.5.d IQC Program Separation from PC Program.

2.5.g Resources and Personnel to Perform all IQC Activities to Ensure all Work Meets the Requirements of the Project Agreement

The FRMG Management Team is committed to assuring that IQC resources are available to fulfill the processes defined within this QMP. The provision of these resources includes the appropriate resources necessary to fulfill Project Agreement required services to achieve the satisfaction of the Department. Figure 4 (Project Quality Organization Chart), included in Section 3.2 Responsibility and Authority of this QMP, shows the expected personnel and responsibilities for IQC to perform its required responsibilities to meet the Project Agreement.

As shown in Figure 4, the staff employed by the IQCF includes the following:

- Project Quality Manager (PQM)
- Independent Design Quality Manager (IDQM)
- Independent Quality Control Manager (IQCM)
- IQC Document Control Manager
- IQC Structures Manager
  - IQC Inspectors
  - IQC Technicians
- IQC Civil Manager
  - IQC Inspectors
  - IQC Technicians
- IQC Procurement Manager
  - IQC Procurement Inspectors
  - IQC Procurement Technicians
- IQC MHT Inspectors
- Environmental IQC Manager
  - Environmental IQC Inspectors
- IQC Laboratory Manager
  - IQC Laboratory Technicians

FRMG has identified Quality Hold Points for IQC testing and inspection. The Quality Hold Points are identified in CQP-0301, Quality Hold Points and Section 4.5 Quality Hold Points of this QMP. FRMG and the IQCF will communicate construction schedules to allow the Department the opportunity to perform its owner verification responsibilities. This coordination is achieved through the following:

- Three-week Look Ahead Schedules
- Weekly Construction Schedules
- Daily IQC Schedules

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2.6 Quality Improvement

2.6.a Program for Quality Improvement

FRMG Management has identified quality objectives related to the performance of the QMP on the Project. Data to assess performance against these objectives is collected and analyzed to make a determination as to the suitability and effectiveness of the QMP, and to identify opportunities for continual improvement. The objectives against which data are collected and analyzed include the following:

- Client satisfaction assessments
- Compliance of work products with requirements
- Performance and effectiveness of the QMS
- If planning has been effective
- Actions to address risk are effective
- Characteristics and trends associated with Opportunities for Improvement
- Performance of vendors, Subcontractors and subconsultants

The Quality Task Force (QTF) Meetings and Quality Issues Matrix play an integral part in assessing the overall compliance of the Work and effectiveness of the QMP against the Project Agreement. Details on these items are located in Section 1.4 FRMG and Department Collaboration of the QMP.

2.6.b Internal Quality and Weekly Quality Meetings

2.6.b.i Internal Audits

IQC conducts internal audits of FRMG, Subcontractors, and Suppliers in accordance with a defined annual audit schedule to determine whether:

- The QMP complies with the requirements of the ISO 9001:2015 Standard
- Delivered services or work products comply with Project Agreement requirements and the QMP
- The QMP is effectively implemented and maintained

The IDQM will oversee the Lead Engineer's implementation of the Stage 1 QMP and will perform periodic audits of the Lead Engineer's quality activities. The audits will address the alignment with the design quality processes and procedures and compliance with Project Agreement requirements.

The documented Procedure for IQC Auditing is defined in CQP-0130, Construction Audit. CQP-0130, Construction Audit defines the responsibilities and requirements for planning and conducting audits, establishing audit records and reporting audit results. This Procedure also documents the selection and conduct of auditors and the assurances that auditors are independent of the area being audited.

The FRMG Construction Audit Schedule (CQP-0130-1, which may be revised throughout the duration of the Project) is based on the status and importance of the processes being audited, areas of risk, results of previous audits, nonconformances, or other relevant information.

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The FRMG Management responsible for the area being audited takes steps for necessary corrective actions resulting from the audit are taken and that follow-up activities occur in accordance with the documented procedures.

Subcontractors and Suppliers are subject to IQC audits. To ensure FRMG has the cooperation of Subcontractors and Suppliers, subcontracts will have a clause in the agreements that states that they must adhere to the provisions of the Project Agreement and the QMP. This is a perquisite for doing business with FRMG. Training on the QMP will be provided for Subcontractors and Suppliers. Training will be tailored to the applicable portions of the QMP.

2.6.b.ii Weekly Quality Meetings

FRMG will conduct weekly quality task force meetings. The Quality Task Force (QTF) provides a forum for FRMG, including construction specialty leads, and the Department and stakeholders to voice their quality concerns, jointly resolve quality issues, monitor the status of the QMS, implement continual improvement, and ensure concerns are heard and understood by FRMG. See Section 1.4.a Quality Task Force Meeting for further details.

2.6.c Timely Implementation of the Necessary Corrective Actions to Improve Nonconformance Found During Audits

Management from the organization/Subcontractor of the audited activity, along with the DPCM, CPCM, IDQM or IQCM, will review, determine, and schedule appropriate corrective actions. Corrective actions will be documented on CQP-0130-2 Construction Audit Findings Report (AFR). The AFR will include identification of who is assigned responsibility for resolution of the audit finding, how the audit finding was or will be corrected, and what has been implemented to prevent further similar audit findings.

The audit team will assure that corrective action is identified for each audit finding and confirm that the corrective action is accomplished. Such confirmation may require a follow-up re-audit; written documentation of the corrective action from the audited organization and IQCM, IDQM, or other appropriate means.

The auditor and the IQCM or IDQM will sign and date a report indicating satisfactory resolution and disposition of audit findings and send written notification to the PQM and the manager of the activity audited and all other parties sent the original audit report findings.

2.6.d Department’s Verification Audits

For verification and Acceptance purposes, the Department will perform assessments/audits of the Work. During this assessment/audit, it may be determined that elements of the Work or QMP need improvement. The IQCF or IDQM evaluates the Department’s findings and determines the need for Corrective Action (CQP-0106 Corrective Action), Preventative Action (CQP-0107 Preventative Action), Internal Audit, FRMG Independent Audit, Nonconformance, or other action as appropriate.

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2.7 Quality Personnel

The Project Quality Organization Chart in Section 3.2 Responsibility and Authority (Figure 4**)**, depicts the quality management personnel, their roles, authorities, and line reporting relationships.

2.7.a FRMG Executive Management and Project Quality Manager

FRMG's QMP has been prepared to describe the Project organization processes and responsibilities so that design, construction, procured equipment and materials, inspection and testing will comply with all specified contract documents. FRMG executive management has the primary responsibility for all quality functions, ensuring contract requirements are met and taking appropriate measures to provide confidence to the Department that all requirements have been met.

The FRMG executive management assures that roles, responsibilities, and levels of authority are defined throughout the Project team via the organizational structure and documented responsibility and authority within this Stage 1 QMP and Stage 2 QMP. Responsibility and authority are established to facilitate the resolution of issue at the lowest appropriate level of responsibility while maintaining transparency throughout the organization.

To further ensure the successful implementation of the QMP, the FRMG executive management has the responsibility to ensure the Process Control and Independent Quality Control personnel have the appropriate education, training, and experience to meet the requirements of the Project Agreement. As such, the FRMG executive management has established the positions and responsibilities to deliver this QMP as described below.

2.7.b Project Quality Manager and Primary Point of Contact for Department

The PQM will report directly to the FRMG's executive management and the Department, is part of the Developer's management team, and has the following responsibilities:

- Serves as the primary point of contact to the Department for all issues related to the QMP including its preparation, implementation, review, and updates
- Reports on the performance of the QMP to FRMG's executive management and the Department for review and continual improvement of the QMP
- Provides all final checks, approvals, and monthly certifications related to quality
- Assures, certifies, and provides documented evidence that the Works meets the requirements of the Project Agreement
- Has the overall authority and responsibility for the success of the QMP
- Ensures that appropriate authority and responsibilities are assigned and communicated throughout the QMP
- Ensures the QMP is established, implemented, and maintained
- Has direct supervisory responsibility for the IDQM and the IQCM and their staff

- Has NO authority for the management and production of the design or construction of Work
- Approves RFC Documents prior to release
- Has the authority to stop work that does not comply with the requirements of the Project Agreement
- Provides overall coordination and responsibility for the construction IQC and PC programs
- Coordinates resolution of quality issues between design, construction, and the Department
- Documents the completion of any Nonconforming Work Remedy and if applicable any Corrective Action, once accomplished and promptly notify the Department so that the Department can perform its verification
- Review and approve the QMP prior to submission to the Department

2.7.c Independent Design Quality Manager (IDQM) and Design Process Control Manager (DPCM)

2.7.c.i Independent Design Quality Manager (IDQM)

The IDQM reports directly to the PQM and is responsible for all design QC activities for the Work. FRMG's IDQM is a registered professional engineer (PE) in Colorado, who is employed by the IQCF and has the following responsibilities:

- The IDQM will see that the methods, QC, and process control (PC) procedures contained in the approved Stage 1 QMP are implemented and followed by FRMG's design team, Subcontractors, fabricators, Suppliers, and vendors in the performance of the Work
- The IDQM will perform periodic audits of the Lead Engineer's quality activities as well as all items related to design by Developer, subcontractors, fabricators, suppliers, and vendors
- The audits will address alignment with the Stage 1 QMP and Attachment and compliance with Project Agreement requirements
- The IDQM has NO authority for the management, production, or scheduling of the Construction Work
- The IDQM ensures that applicable sections of the QMP are implemented and followed by FRMG, Subcontractors, fabricators, Suppliers, and vendors in performance of the Work
- Review and approve the QMP prior to submittal to the Department
- The IDQM has the authority to Stop Work that does not comply with the requirements of the Project Agreement

2.7.c.ii Design Process Control Manager (DPCM)

The DPCM is responsible for all design process control activities, including:

- Ensure that the Stage 1 QMP is being implemented, that appropriate training is being provided and that the requirements of the Stage 1 QMP are being followed

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- Review and approve the QMP prior to submittal to the Department
- Facilitate compliance of design work with the requirements of the Project Agreement and the Approved QMP
- Establish and enforce the Lead Engineer's quality processes and procedures
- Provide and manage appropriate technical personnel for design process controls and quality activities
- Ensure the adequacy and enforcement of quality procedures and processes for design work
- Establish and implement control procedures that direct design work performed by subconsultants and FRMG Subcontractors meet the requirements of the Stage 1 QMP and the Project Agreement
- Report regularly to FRMG's executive management regarding the status of the Stage 1 QMP and its activities
- Ensure that design quality records are properly prepared, completed, maintained, and delivered to the Department, as required by the Project Agreement, to provide evidence of PC and IQC activities performed and quality results achieved
- Ensure that Design quality staff are independent of Lead Engineer's production staff and regularly report to the DPCM regarding design quality activities
- Continually promote awareness of the requirements of the Stage 1 QMP and the Project Agreement throughout the Design organization
- Review and approve the QMP prior to submittal to the Department

The DPCM has no responsibility or authority with respect to the performance of design work but does have the authority to stop design work that does not comply with the requirements of the Project Agreement. This includes activities to ensure the quality of the design work, including:

- Identify, evaluate, and document quality problems
- Initiate action to prevent occurrence of nonconforming design work
- Recommend or initiate quality improvement solutions through established organizational channels
- Ensure the implementation of quality improvement solutions
- When nonconforming design work is identified, stop all design work that is affected by the Nonconforming Work until the deficiency is corrected

The DPCM may be employed by the Lead Engineer but reports directly to the PQM and indirectly through the PQM to the FRMG executive management team. The DPCM communicates and coordinates with the IDQM and the Department and facilitates their independent quality audits of design processes and products.

2.7.d Construction Process Control Manager

The Construction Process Control Manager (CPCM) reports to the PQM and has the following responsibilities:

- Responsible for the establishment, implementation, and updates of PC aspects of the Stage 2 QMP

- Review and approve the QMP prior to submittal to the Department
- Has NO authority for the management and production of the construction of Work
- Ensures the construction-related methods and procedures of the QMP are implemented and followed by FRMG, Subcontractors, fabricators, Suppliers, and vendors in performance of the Work both on and off site
- Has the authority to stop work that does not comply with the requirements of the Project Agreement
- Provides overall coordination and responsibility for the construction PC program
- Provides coordination and distribution of construction PC and IQC procedures, standards, and guidelines
- Develops PC inspection and tests procedures, verification of, and logging of PC personnel qualifications
- Coordinates resolution of quality issues between design, construction, and the Department
- Trains personnel in quality procedures and specific responsibilities in the PC process
- Informs the PQM of the Project quality status during construction

Functional Responsibility: The CPCM promotes quality through training, in process inspection, and enforcement of policies/procedures. Additionally, the CPCM assists in the management of the NCR process and monitors resolution of NCRs in accordance with CQP-0130_Nonconforming_Items.

Inspection: The CPCM audits the PC inspection program, including inspection documentation for adequacy and conformance to the Stage 2 QMP, as a basis for the monthly Project report. On a random basis, the CPCM or designee(s) audits specific PC inspection processes.

Testing: The CPCM audits the PC materials testing program, including documentation for adequacy and conformance to the Stage 2 QMP. The CPCM or designee will coordinate in process testing of the work with a qualified testing agency or in house technician.

2.7.e Independent Quality Control Manager (IQCM)

The on-site IQCM is employed by the IQCF. The IQCM reports directly to the PQM and the Department. The IQCM has the following responsibilities:

- Responsible for the management of the IQC aspects of the Stage 2 QMP
- Review and approve the QMP prior to submittal to the Department
- Has NO authority for the management and production of the construction of Work
- Will have one or more of the following American Society of Quality certifications prior to NTP2:
  - Quality Inspector
  - Quality Engineer
  - Manager of Quality
- Has the authority to stop work that does not comply with the requirements of the Project Agreement
- Establishment, implementation, and update of the QMP
- Overall coordination and responsibility for the construction IQC program

- Coordination and distribution of construction IQC and PC procedures, standards, and guidelines
- Development of IQC inspection and test procedures verification of and logging of IQC personnel qualifications
- Coordination of quality issues between design, construction, and the Department
- Training personnel in quality procedures and specific responsibilities in the QA process
- Informing the PQM of the Project quality status during construction

Functional Responsibility: The IQCM conducts regular audits of the Stage 2 QMP, including documentation, testing, and inspection. In addition, the IQCM performs statistical analysis of IQC test data. The data will be made available to the Department and the PQM. The IQCM identifies and verifies the completion of NCRs.

Inspection: The IQCM audits the IQC inspection program, including inspection of documentation, for adequacy and conformance to the QMP. On a random basis, the IQCM or his/her designee(s) audits specific PC inspection processes.

Testing: The IQCM audits the IQC materials testing program, including documentation, for adequacy and conformance to the QMP. The IQC testing personnel will perform IQC tests for construction processes and activities. IQC tests will be performed at the frequency recommended by the Project specifications and documents or in accordance with third party work agreements. Routine laboratory tests, including but not limited to concrete testing, sieve analysis, and material classification, will be performed by or at the direction of IQC testing personnel at frequencies described the CDOT *Field Materials Manual*.

Audits: The IQCM performs audits of IQC documents to assure that construction performed is in conformance with the Project Agreement. The PQM will conduct periodic reviews to determine that the QMP and the measures therein are functioning properly and are being followed.

2.7.f IQCM and CPCM Certifications

Prior to NTP 2, the IQCM and CPCM will obtain the American Society for Quality (ASQ) certification as either a Quality Inspector, Quality Engineer, or Manager of Quality.

2.7.g Quality Personnel Review and Approval of QMP Prior to Submittal to the Department

The Quality Management Team (PQM, IQCM, IDQM, CPCM, and DPCM) review and approve the Stage 1 and Stage 2 QMP prior to submittal to the Department for review and approval. The Quality Management Team has the responsibility to assure, certify, and provide documented evidence that the Work meets the requirements of the Project Agreement. The PQM reports the status of Work conformance, monthly to the Department.

2.7.h PC and IQC Testing Personnel

Please refer to Draft Stage 2 QMP (Appendix E).

2.7.i IQC Inspection Personnel – Structural Steel Fabrication

Please refer to Draft Stage 2 QMP (Appendix E).

2.7.j IQC Inspection and Testing Personnel – Pre-Stressed and Precast

Please refer to Draft Stage 2 QMP (Appendix E).

2.7.k FRMG Personnel Performing Work

FRMG has the responsibility to ensure that personnel performing Work have the education, skills, and experience to meet the requirements of the Project Agreement. Personnel records of qualification will be kept as a quality record and stored in Aconex in accordance with FRMG document control processes. The responsibilities of personnel who manage, perform, and ensure the quality of the Work include:

- Initiate risk-based thinking and actions appropriate to prevent Nonconforming Work
- Identify, evaluate, and document quality concerns
- Make recommendations or initiate actions to improve quality of the Work
- Stop Work that is affected by or affects identified Nonconforming Work

2.8 Training

2.8.a Personnel Training – Personnel Affecting Quality

FRMG will have a formal training program consistent with the QCP-0140 Quality Training procedure. The FRMG Management Team determines and endorses the necessary competence of the staff responsible for delivery of design and construction services in accordance with the Project Agreement requirements. Individuals will not be assigned to perform services without possessing contractually required certifications and qualifications.

All personnel who have responsibilities in the execution of QMP procedures will be identified and assessed for proper training and certification needs. They will receive training regarding these procedures for achievement of the expected results in accordance with CQP-0140 Quality Training procedure, which includes the training of personnel implementing the QMP. This training will serve to gain active participation of the FRMG work force to achieve a quality Project.

The Quality Management Team assesses the effectiveness of training through supervisory oversight, evaluations of the training itself, and in some cases through the administration of appropriate certification or licensing exams.

Training needs and the effectiveness of training are routinely reviewed by the Quality Management Team through the management review process. Additional training may be required to address changes and revisions to the QMP. Training on QMP revisions may be

communicated through weekly construction meetings, QTF meetings, staff meetings, readiness review meetings, toolbox talks, and other scheduled meetings, as needed.

Project staff are made aware of the relevance and importance of their activities as they relate to quality through QMP orientation training, the communication of quality objectives, training on specific QMP procedures and familiarization with the Quality Policy. The Department is included in QMP orientation training.

Quality Records and attendance logs will be maintained within ELVIS and Aconex. Also, Inspectors/Technicians certifications will be entered into the ELVIS technician certification module to show compliance that tests are being performed by certified personnel. ELVIS flags tests performed by personnel who do not have the required certifications. There is also a Training Resources section of ELVIS for the most up-to-date workflow explanations and other training aids.

2.8.b Training for Interface with Department's Oversight Efforts (Audit Process)

FRMG will provide training to all design and construction personnel interfacing with the Department's Audit Team. Training will be aimed at understanding:

- The Department's role
- Purpose of Department audits
- Interpreting audit findings and severity levels (NC 1, NC 2, conformance)
- Expectations for cooperation with the Department
- Response to Department audits
- How to use the Department's quality oversight database

3. QMP Requirements

3.1 Commitment to Quality and Scope of Activities

3.1.a FRMG Executive Management Team Commitment

FRMG's QMP has been prepared to describe the Project organization processes and responsibilities so that design, construction, procured equipment and materials, inspection, and testing will comply with all specified contract documents. FRMG has the primary responsibility for all quality functions so that contract requirements are met and that measures taken will provide confidence to the Department that all requirements have been met.

The FRMG executive management team commits to the following in support of the successful delivery of the Project:

- Is accountable for the effectiveness of the QMP
- Has established a Quality Policy and Quality Objectives for the Project that are communicated to the staff regularly through organized meetings, and management review updates
- Ensures the QMP processes flow into all elements of the Work

- Supports the adoption of a process approach and risk-based thinking QMP
- Fulfills its commitment to meeting requirements by assuring that qualified resources are available to execute Project Agreement required services
- Communicates to FRMG staff the importance of meeting Project Agreement requirements, beginning with mobilization and continuing throughout the duration of the Project
- Communicates and reinforces to each Project team member that each individual is responsible for quality and that it is the responsibility of each individual to execute the Work in accordance with requirements the first time
- Will promote improvement in all areas of Work
- Supports all levels of FRMG demonstrating their commitment to the QMP

3.1.b Scope of the QMP

FRMG is responsible for the implementation, maintenance, and continual improvement of the QMP. The QMP is designed to manage, control, document, and assure that FRMG meets obligations under the Project Agreement and ISO 9001:2015. FRMG's QMP applies to all Work performed by FRMG and its Subcontractors at all tiers as well as permanent and temporary elements of the Work.

3.1.c Deliverables to the Department

QMP and design deliverables are discussed in Section 7 of FRMG's QMP. Design Reviewable Deliverables required by the Project Agreement are contained in the Deliverable Requirements Tracking List in Technical Proposal, Appendix B: Draft Project Management Plan. Construction deliverables listed in Section 14 of Schedule 8 are specifically addressed in Appendix B: Draft Project Management Plan.

FRMG has thoroughly reviewed the requirements of the Project Agreement and ISO 9001:2015. The processes and procedures included in the Stage 1 QMP and the Stage 2 QMP reflect FRMG's review of those requirements. The processes and procedures (Stage 1 Attachment: Design Quality Procedures and Stage 2 Attachment: Construction Quality Procedures) defined in the QMP were designed to meet those requirements as well as include industry best practices. For each process in the QMP, FRMG will:

- Identify applicable requirements
- Identify the required quality record(s) or deliverables
- Define the process steps
- Define appropriate monitoring, measuring, and performance indicators
- Determine the resources needed
- Assign responsibility and authority
- Address risks
- Monitor the performance and need for changes or improvements
- Revise or modify the process to ensure compliance with the Project Agreement

As appropriate, processes and procedures that generate quality records or deliverables documenting the level of compliance will be maintained and retrievable in the Project document control database, Aconex.

3.2 Responsibility and Authority

3.2.a Organizational Chart

Figure 4, Project Quality Organization Chart, demonstrates FRMG's commitment to delivering an effective quality program with the ability to ensure the Work meets the requirements of the Project Agreement. The Quality Organization Chart shows the hierarchy of FRMG's Quality Organization. Solid lines show authority and reporting structure. Dotted lines show coordination and communication relationships. Changes to the organization structure will be distributed to FRMG and the Department.

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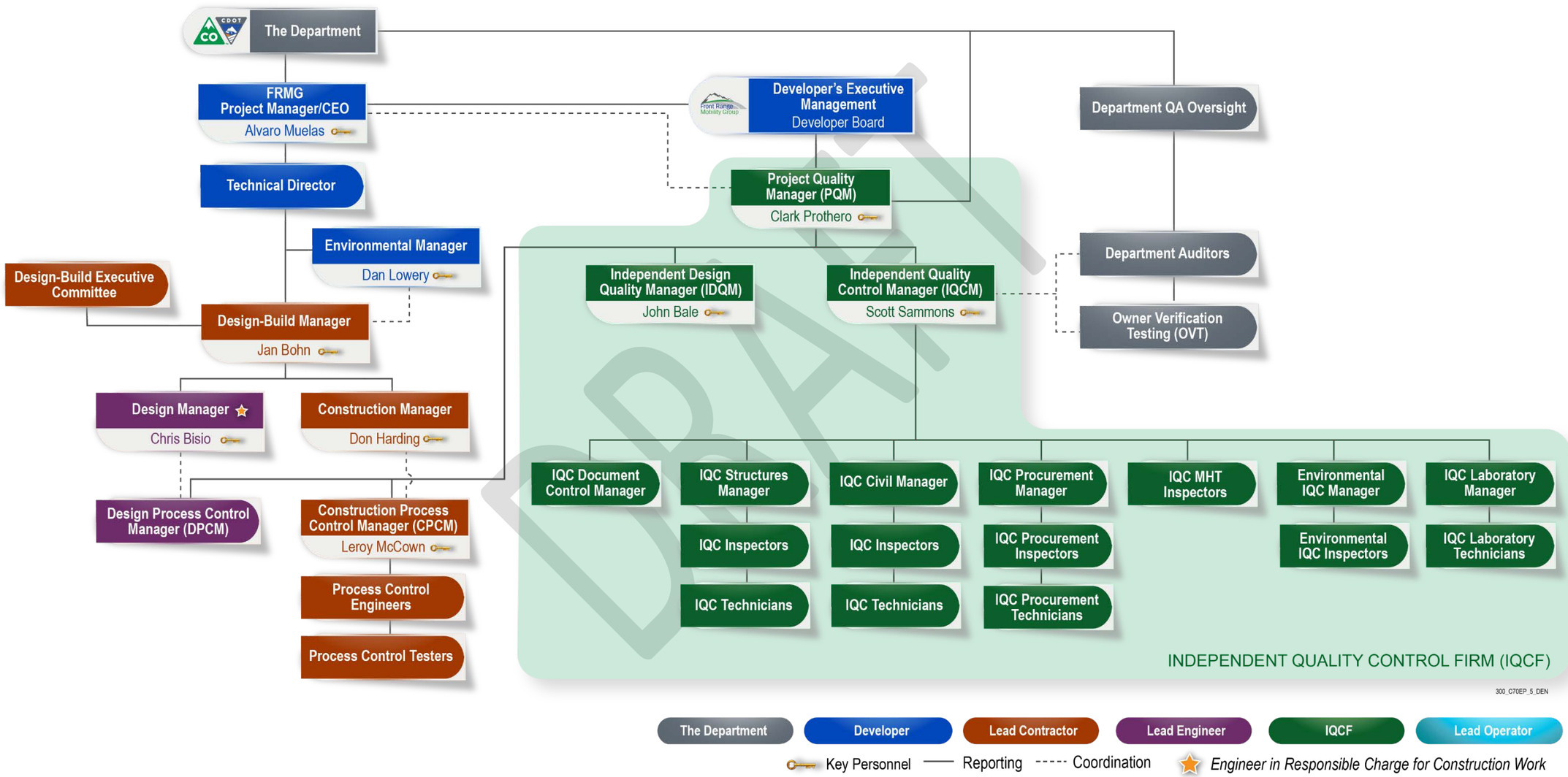
Figure 4. Project Quality Organization Chart.



3.2.b Roles and Responsibilities and Authority to Implement Quality Improvements of the Work

The roles and responsibilities of the PQM, IDQM, DPCM, IQCM, CPCM, and PC and IQC Inspection and Testing personnel were defined previously in Section 2.7 Quality Personnel.

3.2.c IQC Managers and Staff Independence from Management and Production of the Construction Work

The FRMG IQC Managers and Staff have no responsibilities in the management and production of the Work. All IQC personnel have the authority to Stop Work that does not comply with the Project Agreement. CQP-0105 Stop Work Order further defines the roles and responsibilities related to stopping work for quality-related issues.

3.2.d Quality Personnel Responsibilities

FRMG's IQC Managers, IQC Staff, PC Managers, and PC Staff have the following responsibilities:

i. Implement QMP processes and procedures
ii. Identify, evaluate, and document quality problems
iii. Recommend or initiate quality improvement solutions through established organizational channels
iv. Ensure the implementation of quality improvement solutions
v. When Nonconforming Work is identified, stop all Work that is affected by the Nonconforming Work until the deficiency is corrected
vi. Initiate action to prevent the occurrence of Nonconforming Work

Additional details on the responsibilities of the personnel who manage, perform, and ensure the quality of the Work were included in Section 2.7 Quality Personnel.

3.2.e Shared Responsibilities of PQM, IDQM, DPCM, CPCM, and IQCM

In addition to the responsibilities outlined in Section 3.2.d Quality Personnel Responsibilities, the PQM, IDQM, CPCM, DPCM, and IQCM have the following shared responsibilities:

i. Facilitate compliance of the Work with the Project Agreement and QMP
ii. Approve QMP processes and procedures
iii. Provide adequate resources and trained personnel for PC and IQC activities
iv. Ensure the adequacy and enforcement of quality procedures, processes, inspections, and tests for all Work
v. Establish and implement procedures to control and ensure Work performed by Subcontractors, subconsultants, and Suppliers meet the requirements of the Project Agreement

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vi. Ensure the QMP is being implemented and report Monthly to the FRMG executive management regarding the status of the implementation of the QMP
vii. Ensure that quality records are properly prepared, completed, maintained, and delivered to the Department, as required by the Project Agreement, to provide evidence of PC and IQC activities performed and the quality results achieved
viii. Ensure that IQC Staff is independent of FRMG's Project Manager and regularly reports to the FRMG executive management
ix. Continually promote awareness of the requirements of the Project Agreement throughout the FRMG organization

4. Independent Quality Control

4.1 General

4.1.a Independent QC Program

The Independent Quality Control (IQC) program includes elements associated with the design and construction of the Work required by the Project Agreement. These activities are independent of the actual design and construction activities and the IQC Staff have no involvement in, or responsibility for, the performance of design or Construction Work.

The IDQM is responsible for all design QC activities for the Work. FRMG's IDQM is a registered professional engineer who is employed by the IQCF. The IDQM will see that the methods, QC, and process control (PC) procedures contained in the approved Stage 1 QMP are implemented and followed by FRMG's design team in the performance of the Work. The IDQM will perform periodic audits of the Lead Engineer's quality activities. The audits will address alignment with the Stage 1 QMP and Attachment and compliance with Project Agreement requirements.

Please refer to Draft Stage 2 QMP (Appendix E) for information specific to construction-related activities.

4.1.a.i IQC Surveillances

IQC surveillance activities for design and other non-construction services are conducted by the IDQM. These may include oversight of design PC planning, audits of PC review products and review of design PC records. The results of the audits will be provided to the PQM and shared with the DPCM to identify nonconformance issues and initiate corrective actions.

Please refer to Draft Stage 2 QMP (Appendix E) for information specific to construction-related activities.

4.1.a.ii IQC Inspection Plan

Please refer to Draft Stage 2 QMP (Appendix E).

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4.1.b Procedures for Procuring Services

4.1.b.i Design (Stage 1)

The selection of subconsultants and Subcontractors by the Lead Engineer is based on the type and extent of services to be provided. The qualifications and experience of the Subcontractor or subconsultant are evaluated against previously demonstrated capability and performance and quality management programs.

Subconsultants and Subcontractors are engaged by the Lead Engineer through Professional Service Agreements (PSA) or Purchase Orders (PO), as appropriate. The associated requirements are documented within the PSA or PO as provided below:

- Scope of services to be performed
- Products to be produced
- Schedule for performance of work and delivery of products
- Requirements for the approval of services, procedures and processes
- Requirements for the qualification, certification or licensure of personnel
- Requirements related to the fulfillment of the FRMG QMP and Stage 1 QMP
- Verification of work, products, and services against the requirements of the Project Agreement, the PSA or PO, and the Stage 1 QMP
- Participation in applicable scheduling, planning, design and quality meetings

The Lead Engineer submits the PSAs or POs to FRMG for an adequacy review prior to execution. The DPCM conducts a verification review of Subcontractor or subconsultant services and work products periodically and upon completion to ensure compliance with requirements as documented in PSA or PO.

4.1.b.ii Construction (Stage 2)

Please refer to Draft Stage 2 QMP (Appendix E).

4.1.c Measures to Ensure that Subcontractors, Suppliers, and Subconsultants Meet, Implement, Document, and Maintain the QMP Requirements

4.1.c.i Design Phase (Stage 1)

The Lead Engineer plans and performs design activities under controlled parameters that are applicable to all FRMG subconsultants and Subcontractors. These parameters, including quality management requirements, are described below:

- Project Agreement documents, PA schedules, and other information that describe the design on non-construction services to be provided, the associated technical requirements and the products to be produced
- The QMP Stage 1 and associated procedures, including incorporation of the subconsultant or Subcontractor's own QMP activities

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- Verification that the subconsultant or Subcontractor has employed its QMP before submitting required deliverable products
- Incorporation of subconsultant or Subcontractor products in the normal flow of PC activities for design and non-construction products, including discipline, interdisciplinary, constructability, and environmental reviews prior to submittal to FRMG's certification process
- Use of a detailed Review Comment Summary and Response system to track that review comments are incorporated into the subconsultant's or Subcontractor's final work products
- Periodic audits of the subconsultant's or Subcontractor's quality management processes

4.1.c.ii Construction Phase (Stage 2)

Please refer to Draft Stage 2 QMP (Appendix E).

4.1.d Selection of Subcontractors, Suppliers, and Subconsultants

The selection of Subcontractors, Suppliers and subconsultants and the type and extent of control exercised by the Developer will be dependent upon the type of product or service and, where appropriate, on records of Subcontractors', Suppliers' and subconsultants' previously demonstrated capability and performance. Further information on the selection process is defined above in Section 4.1.b. Procedures for Procuring Services above.

4.2 Design Quality Control

The Stage 1 QMP is part of FRMG's overall QMP for the Project. The Stage 1 QMP is compliant with the requirements of the Project Agreement, Schedule 8, and FRMG's stated quality policy. The processes and procedures contained herein will be implemented on all design and other non-construction activities in a uniform manner, with implementation and enforcement conducted through best practice quality management and quality control methods. In cases where actual situations require a deviation from the standard processes, quality activities will be consistent with FRMG's stated quality policy and with the intent of stated QMP processes and procedures. Such activities will be documented and retained in FRMG's quality records.

The Stage 1 QMP contains procedures that address the elements of FRMG Lead Engineer's basic design services. These services include, but are not limited to, architectural, civil, structural, geotechnical, drainage, wet utilities, mechanical, electrical, intelligent transportation system (ITS), landscaping, aesthetics, and traffic work. Design work by the Lead Engineer's subconsultants and Subcontractors is covered by the Stage 1 QMP. In addition, FRMG will require that other team members, including Subcontractors and subconsultants, who provide non-construction services, including but not limited to surveying, dry utilities, environmental, ROW, safety, and temporary work, also be subject to the requirements of the Stage 1 QMP.

The design quality aspects of the Stage 1 QMP (including the Stage 1 QMP Attachment) will be implemented and managed by the Design Process Control Manager (DPCM). The DPCM reports directly to the FRMG executive management team through the Project Quality Manager and coordinates closely with the IDQM. The DPCM is part of the Lead Engineer's management

team but has NO role in the scheduling of design work, performance of design activities or production of design products. The DPCM is responsible for establishing, documenting and implementing a Process Control program for design production processes that meet the requirements of the Project Agreement. The DPCM oversees a team of Design Process Experts who establish the design inputs, conduct quality reviews and quality process audits. The DPCM also provides training to the design teams regarding the Stage 1 QMP and its required processes and procedures.

4.2.a Quality Procedures to Address Design Activities

Detailed Process Control activities for design are contained in the QMP Stage 1 Attachment Design Process Control Plan (DPCP). For clarity, the Stage 1 QMP includes IQC activities, such as planning, and process control activities, including design checks, discipline reviews, interdisciplinary reviews, constructability reviews and environmental reviews, which are managed and recorded within the Lead Engineer's Review Comment Summary and Resolution tracking system. (Procedure DPCP-PR-0015 Review Comment Summary and Resolution Tracking Process and Form DPCP RCSR).

The QMP Stage 1 Attachment Design Process Control Plan (DPCP) provides detailed information on the quality processes and procedures that will be used during production and review of the Lead Engineer's products. The Design Process Control Plan will be implemented, managed and updated by the DPCM. The Process Control team, working under the Stage 1 QMP requirements, will conduct the design reviews and track comment responses. Key elements of the DPCP are discussed below in this section. More detailed information may be found in the Stage 1 QMP Attachment.

Computer programs to be used by the Lead Engineer in engineering analyses, design calculations and drawing production are listed in Section 2.2 of the Design Process Control Plan. Procedures for checking and validating the operation and output of computer programs is discussed in DPCP-PR-004 Checking Computer Calculations.

4.2.b Project Design Schedule and Design Requirements Tracking

The Lead Engineer's design schedule is aligned with FRMG's construction schedule, within the Baseline Schedule. The goal is to provide RFC Documents that coincide with the planned start of construction activities for each Project Element. The design documents are summarized in the Deliverable Requirements Tracking List (DRTL) in the Project Management Plan. The DRTL identifies each Reviewable Deliverable and indicates when each deliverable package is to be submitted for each stage of review and at RFC. The design submittals are included as individual milestones in the design schedule and are reported monthly in the updated DRTL.

The Deliverable Requirements Tracking List:

- Identifies each Reviewable Deliverable that, as of the date of submission of the DRTL, FRMG knows or anticipates will be submitted to the Department
- Specifies the type of Reviewable Deliverable

- Includes FRMG's proposed timeframe and sequence for submission, review, and resolution of each Reviewable Deliverable
- Shows how scheduling of DRTL submittals avoids the Department's concurrent review of five or more Reviewable Deliverables that require review by the same specialty experts

The design schedule includes tasks corresponding to the design process required for each discipline. The tasks typically include design planning, engineering analyses, drawing development, plan sheet production, specification development, calculations and review processes for each stage (30%, 100%, and RFC) of the design process. Design items that require additional steps, such as a 60% submittal, are included in the design schedule as needed. The information in the design schedule is openly shared within the design team and with the Lead Contractor. The design teams provide weekly status reports of progress against the tasks scheduled for their design activities. Progress against the design schedule is evaluated and the design schedule is adjusted as needed. Design progress is reported monthly to the Lead Contractor for use in updating the overall Project schedule. The combined design and construction information is provided to the Department in regularly scheduled Project reports by FRMG.

The Project Agreement prescribes the process for submitting design packages to the Department and for the Department's review of the design documents. FRMG will use reasonable efforts to schedule, prioritize, and coordinate the Reviewable Design Deliverables to allow an efficient and orderly review process by the Department. This includes the scheduling of comment resolution meetings between FRMG and the Department to agree on the activities to be taken in response to each review comment.

Design team meetings will be conducted within FRMG's design organization on a weekly basis. These meetings are intended to provide overarching Project information, coordinate design and PC activities, discuss new input/output requirements, share new information, and manage resources.

Design Checks are routinely performed as part of design quality processes. Checking procedures are described in procedures DPCP-PR-003, DPCP-PR-004, PDCP-PR-005 and DPCP-PR-007 (contained in the Stage 1 QMP Attachment) and are conducted as appropriate at each stage of design submittal. The design checks are performed by design team members of the appropriate discipline who are not associated with development of the subject design product. In addition to design checks, independent design calculations will be prepared for structural elements as specified in the Project Agreement.

FRMG's Construction staff and Operations and Maintenance (O&M) staff, and Project staff from the Department will be invited to attend the weekly task force meetings throughout the design development process. This involvement will encourage comments as the design progresses. Constructability reviews of each design package will be conducted at each submittal stage. The constructability reviews will occur in conjunction with the design process control reviews. Design PC reviews include calculation, design and drawing checks, a design review by Design Process Experts, an interdisciplinary review by a mixed team of Design Process Experts, a constructability review by Lead Contractor staff. Reviews for environmental compliance by FRMG's Environmental Manager and ROW requirements by FRMG's Right-of-Way Consultant

may also be conducted at this time. These reviews will happen concurrently, with all review comments captured in the Lead Engineer's internal Review Comment Summary and Resolution (RCSR) tracking list. Resolutions for each comment will be incorporated into the design product prior to submittal to the Department and so noted in the RCSR Form. The completed RCSR forms will be included in the Project's records.

Following the internal PC process, the Lead Engineer will submit design deliverables to the Lead Contractor for document control processing and submittal by FRMG to the Department.

The Department will provide a written response to each Reviewable Deliverable within 15 Working Days for initial submittals and 10 Working Days for any resubmittals.

FRMG will provide a Review Comment Summary and Resolution tracking form (RCSR Form) for the Department's use in providing review comments. FRMG will provide a written response to each of the Department's review comments. In most cases, FRMG will request a Comment Resolution Meeting with the Department to discuss each comment and to mutually develop a response. The goal of the meeting is to reach agreement on the resolution of each review comment.

Following the Comment Resolution Meeting, FRMG will address each comment and incorporate the agreed-upon resolution in the continuing design process. Additions and modifications will be made to design deliverables as necessary to fully address each comment and include resolutions as the design submittal packages are prepared for the next submittal stage. The RCSR tracking form will be submitted along with the Reviewable Deliverable and will clearly indicate how each review comment has been addressed and where the associated resolution changes have been incorporated into the design documents. The RCSR tracking forms will become part of the RFC Documents and the permanent design record.

4.2.c Design Inputs

The Project Agreement is the primary guidance document for design and construction of the Project's elements. The Project Agreement provides specific design direction within the Schedules, and particularly Schedule 10 with its associated discipline Sections. Each Section provides a description of Project elements, design requirements and specifications, including Project-specific specifications and special provisions as appropriate for the discipline. In addition, the Schedules and Sections refer to design manuals, design criteria, reference documents, computer programs, and other information resource materials to be utilized in preparing design products.

4.2.c.i Procedures to Control and Independently Ensure that the Design Meets the Requirements of the Project Agreement.

Design inputs are the Project requirements that describe the elements to be constructed. Considerations may include issues such as: physical characteristics, functional performance, Department requirements, design criteria, industry standards, and specialty requirements including the Project's Ultimate conditions.

The Lead Engineer's team of Design Process Experts (DPEs) will assemble a complete library of design input requirements for the Project. Design inputs will be taken from Schedule 10 and

its discipline-based sections and supplemented as necessary. In most cases, the inputs are directly defined. Others are referenced to secondary sources. The DPEs will individually assemble the design inputs for their area of expertise and will then meet as a team and review the entire Design Input Library to identify overlaps, gaps and conflicts. The library will include manuals, databases, guidelines, design standards and other materials that contain the relevant design inputs to be used by design teams for the Work. The Design Input Library will be made available as web-based media to the extent possible to allow easy access to all design teams, including subconsultants and Subcontractors. The DPEs will be responsible for maintaining the Design Input Library with support from the DPCM. The DPEs will monitor the Design Input Library over the design period, making adjustments and additions as appropriate.

The Lead Engineer's DPEs will provide training to the design teams regarding the availability and usage of the Design Input Library. The design inputs will be directly accessible to the Design Discipline Leads (DDLs) and the relevant designers who are responsible for incorporating design inputs into their design products. The training will include guidance from the DDLs on how the design inputs are to be used in the design process and how the DPEs will consider the incorporation of design inputs in process control reviews. The training will also indicate how changes to design inputs are identified, reviewed, and approved by the DPEs prior to their distribution to the DDLs and implementation by the design teams.

The Lead Engineer's DPEs will perform periodic audits of design activities to ensure that the input requirements are being appropriately integrated into the design work. The audit process will include a review of the design products to ensure that the design, including subconsultant designs, meets the input and output requirements of the Project Agreement. These audits will be in addition to the standard PC processes, which consider design inputs as part of typical PC reviews. The audit findings will be provided to the DPCM for review and possible remedial action.

The Design Input Library will be available to the IDQM and the Department at all times during the design period. Either entity may request to audit the contents of the library or its application to design products at any point in the design process. The DPCM will respond to the requests and will facilitate requested audit processes.

4.2.c.ii Procedures to Identify and Track Design Document Deliverables

The design output requirements for the Project are defined in the Schedules to the Project Agreement, particularly Schedule 10 and its discipline-based Sections. The scope of design work, type of design product, and timing of design submittals are indicated in each Section. In some cases, this includes specific information on the Ultimate configuration of the Project which will be taken into consideration for the design of the current Project.

Design deliverables are included in the design schedule as an integrated process that includes design tasks, document production, PC reviews, and design package submittals. Linkages are provided in the schedule to reflect inter-relationships between design activities. Design submittal packages are shown as milestones to indicate when submittals are planned to be made to the Department.

The design schedule is fully aligned with the Project Baseline Schedule. The primary linkages are between the submittal of RFC Documents and the beginning of construction activities in the field. Additional linkages are included for overarching activities such as Project management, permitting, public information, progress reporting and other non-construction services.

The design deliverable information is summarized in the Deliverable Requirements Tracking List (DRTL) that is a requirement for the Project Management Plan. The DRTL identifies each deliverable design product, when it is planned for submittal to the Department for review and when it is scheduled for release for construction. The DRTL will be used for scheduling work by the design teams and will be updated regularly throughout the design period.

4.2.c.iii Procedures for Approval, Tracking and Recording Revisions to Release for Construction (RFC) Documents.

The Lead Contractor maintains a record of As-Built conditions during the course of construction through a formalized process of RFC drawing mark-ups, field notes, and photographs to document the actual construction results. The As-Built documents are retained in the Design Builder's document control system throughout the Construction Period. A comprehensive set of As-Built documents will be provided by FRMG to the Department at the final completion stage.

Should the Lead Contractor discover a design error during construction, or find the need for a different design than provided in the RFC Documents, a field design change request (Design Change Form: DC Form) will be submitted to the Lead Engineer. The process to be followed is described below.

Upon mutual agreement on the need for the change, the Lead Engineer will prepare a revised set of RFC Documents that will be subject to the standard internal and Department quality review processes prior to Acceptance by the Department. The accepted RFC Documents will then be released to the Lead Contractor to implement the revised design in the field.

<u>Lead Contractor's Construction Manager</u>

1. Prepares a notice of field design change or notice of design change
2. Submits Form FDC/NDC to the Lead Engineer for consideration and action
3. Meets with the Engineer of Record as needed to discuss the issue and agree on a change to the design

<u>Lead Engineer's Engineer of Record</u>

1. Reviews the Construction Manager's Form FDC/NDC
2. Reviews the current RFC Documents and supporting information
3. Meets with the Deputy Design Manager for Production (DDMP) and the Construction Manager to review the issue and agree on a path forward
4. If a design change is needed, plans the required work and obtain DDMP approval to proceed.
5. Prepares necessary revisions to the current RFC document to create revised RFC Documents
6. Submits the revised RFC Documents for process control review
7. Responds to review comments, finalized RFC revisions and submits revised RFC Documents to the DPCM

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8. Attends a Comment Resolution Meeting
9. Makes final revisions (if any)

DPCM

1. Reviews the revised RFC Documents and assigns appropriate DPEs to perform reviews
2. Reviews the results of the reviews and the final revised RFC Documents
3. Provides certification of compliance with Project Agreement requirements
4. Submits final revised RFC Documents to the Lead Contractor for document control processing and transmittal by FRMG to the Department for review and Acceptance

Department

1. Reviews the revised RFC Documents
2. Responds with review comments (if any)
3. Attends a Comment Resolution Meeting to reach consensus on the change
4. Issue Acceptance of the change to the RFC Documents

Lead Contractor

1. Receive and log the revised RFC Documents
2. Initiate construction activities
3. Accurately record the constructed product in As-Built drawings

4.2.c.iv Procedures for FRMG Approval of RFC Documents

FRMG's design documents are programmed in the design section of the Baseline Schedule and they are tracked throughout the design process in the DRTL. This includes regularly scheduled meetings that occur during the design process. A wide spectrum of FRMG's team members, including design, construction, environmental and O&M are included, as appropriate. Quality reviews will be conducted at the various stages (e.g., 30%, 100%, RFC) of design development. Review comments by FRMG team members will be captured in an internal RCSR tracking system and resolved in an interactive process until all comments are appropriately included in the RFC Documents. Upon completion of final RFC Documents, the Lead Engineer will submit the electronic files to the Lead Contractor for document control processing. FRMG will forward the RFC Documents to the Department and will release the RFC Documents to the Lead Contractor for action in the field.

4.2.c.v Procedures for Approval of Supplier-Provided Design Drawings (e.g. Shop Drawings), Including Opportunity for the Department to Perform Audits

After RFC Documents have been released to the field for construction, the Lead Contractor will monitor procurement and construction activities associated with the RFC package. Supplier-provided shop drawings and other vendor information will be forwarded to the Lead Engineer for review and comment. The review comments will be captured in a post-design tracking form to ensure adequate follow-up by Suppliers and vendors. The Department may audit the Supplier and vendor information at its convenience.

4.2.d Design Quality Program Based on FRMG's Obligations

FRMG's Stage 1 QMP has been developed to comply with Project Agreement requirements for the planning, performance, review, and submittal of design products. In general, FRMG's Lead Engineer will prepare design submittal packages for preliminary (30% level) documents on a corridor-wide basis to show how each discipline design meets requirements for the overall Project. This will be followed by final (100% level) documents that will be prepared on an area-specific basis for most disciplines. The RFC Documents will also be specific to a particular Project construction area in most cases. Certain disciplines, such as structures, require a somewhat different sequence, which will be followed by the Lead Engineer. The submittals expected for each discipline and each stage of design development are contained in the Baseline Schedule and identified in the DRTL. In some cases, several of the Reviewable Deliverable products required by the Project Agreement will be assembled into one design submittal package. For example, a roadway plan submittal may also include drainage, traffic, utility, and other plans to allow a more comprehensive review of the complete design by the Department.

The Project Agreement provides direction for design activities in two ways. First, Project Agreement Schedules 8, 9, and particularly 10, provide specific requirements for the elements to be designed, standards to be used and processes to be followed. The expected products are listed in the deliverables section of each Schedule. Second, the reference documents provide additional information on the Department's intended features, configuration, and performance of the current Project. The Design Input section above provides additional detail regarding design requirements.

Most of the design standards are focused on the Work that is to be constructed under the current Project Agreement. In addition, the Ultimate configuration is described for key elements of the Project to ensure that the components initially constructed are compatible with the eventual build-out of Interstate 70 in the Project area and at its connections.

4.2.d.i Prepare Preliminary (30% Level) Plan Packages

To the extent reasonable and practical, preliminary (30% level) plan packages will be prepared on a corridor-wide basis. The level of detail in the plan package at this stage will show how FRMG's design meets the requirements for the Project and how the components fit together for the entire Project, including the Ultimate configuration. Roadway configurations, traffic control systems, drainage plans, ITS facilities, and the other Project features will be shown as complete systems throughout the Project corridor.

The preliminary design will be developed on a discipline basis to ensure that all design input requirements are recognized and incorporated. Output requirements will guide preparation of the design products. The Design Process Experts will provide initial training and guidance, but will not be directly involved in the design process. The Design Discipline Leads will implement the input and output requirements in the preparation of design documents.

The discipline designs will be integrated into a comprehensive design for the Project though an interdisciplinary process that is led by the Area Design Managers. This process will integrate

designs for the various disciplines to avoid conflicts and inconsistencies. Of particular concern are physical limitations and construction requirements for the various Project features to ensure that everything will fit in the prescribed ROW and can be constructed in a reasonable sequence.

As required by Schedule 8 of the Project Agreement, preliminary plans will include:

A. Cover sheet
B. Typical sections
C. Plan and profile for the I-70 Mainline, CDOT Roadways, and Local Agency Roadways
D. Structure Concept Plans include:
    i. Plans, elevations, and appropriate typical sections for each bridge type
    ii. Plan views of the structure identifying each bridge location and type, including documentation of design vehicle turning movement analysis
    iii. Plan views of the structure identifying each wall location and type
    iv. Description of conceptual solutions for complex structural problems identified by FRMG
    v. Description of creative or innovative way the design, construction, and/or choice of structural types will benefit and/or enhance the Project Schedule, quality, aspects of the structure, and minimize traffic impacts
    vi. Structure numbers for major structures
E. Drainage structure general layouts
F. Master drainage plan
G. Master drainage report
H. Master water quality report
I. Preliminary wall layouts
J. Roadway cross sections at 50-foot intervals

The packages submitted at the 30% design level will include the above items and additional materials as required by Project Agreement Schedule 10. The DRTL provides a more comprehensive listing of preliminary design products to be developed and submitted. A number of reports and other documents will be submitted in addition to design drawings as required by the Project Agreement. The format of the submittals will meet the prescribed output requirements, including type of plans and size of drawings.

Prior to submittal, the preliminary plans will be subject to design process control reviews, including discipline, interdisciplinary, constructability, and environmental reviews, as described in other sections of the QMP. The PC reviews will include a thorough review of design input and output requirements to ensure that the design products meet the requirements of the Project Agreement, Schedule 10, including the Ultimate configuration.

The 30% level submittal package will include the Reviewable Deliverables, a blank Review Comment Resolution tracking form and a certification by the Design Process Control Manager that the submittal has been subject to the Approved QMP processes and that it is compliant with Project Agreement requirements.

The Department's review comments will be handled through a RCSR tracking process. (DPCP –PR-015) The review comments will be addressed at a Comment Resolution Meeting where appropriate resolutions will be developed to each comment. The resolutions will be incorporated into the design documents for the next scheduled submittal and will be documented in the

RCSR tracking form. This ensures that each comment will be adequately addressed in the continuing development of design documents while preventing unnecessary resubmittal of previous design documents.

4.2.d.ii Task Force Meetings

Task Force Meetings will be held weekly during the design period to review the status of the design, coordinate design development between disciplines, discuss constructability issues, and address questions associated with design requirements. The task force meetings will be scheduled by discipline, with the primary focus on the integrity and consistency of design products within each discipline. However, issues regarding interdisciplinary coordination will also be considered. Attendees at the task force meetings may include design team leaders, discipline designers, constructors, O&M staff, IECM, IDQM, Department staff and others with interest in the subject matter.

FRMG will prepare an agenda and conduct each Task Force Meeting. Meeting minutes will be prepared and submitted to the Department for Acceptance within four Working Days after each meeting, and final minutes will be provided to the Department via the Department's document management system monthly.

4.2.d.iii Design Progress Review Meetings

In addition to the task force meetings, FRMG will schedule and conduct a design progress review meeting during the development process for each Reviewable Deliverable package. Department staff, along with FRMG team members and local agencies as appropriate, will be invited to the meeting. The primary purpose of the design progress review meetings is to review design concepts, components, configurations and details with Department staff while decisions are still being made. The Department's "over-the-shoulder" comments will be incorporated into the design process and in the resulting submittal packages. This is expected to align design products more closely with the Department's expectations which should expedite the Department's review and Acceptance in a timely manner. Design progress review meetings are planned to be held at the 90% design level. To maximize effectiveness of these meetings, FRMG will consult with the Department about scheduling the design progress review meetings at the 60% design level.

The design progress review meetings will be documented by FRMG, with meeting minutes will be submitted to the Department for Acceptance within four Working Days after each meeting.

4.2.d.iv Final (100% Level) Plan Package

Final plan packages will generally be developed on an area-specific basis to develop design details that are more closely aligned with FRMG's planned construction activities and sequence. Task Force Meetings will continue during this period and design progress review meetings will be held as design products are developed. Internal PC activities and independent oversight and audits will occur. Submittals for Department review will be made in compliance with Project Agreement input and output requirements.

FRMG's Lead Engineer will continue with the design process following submittal of the 30% level documents. The Department's review comments for the 30% submittal will be incorporated

into the continuing design products. The 30% RCSR tracking form will be completed to show how and where each comment was addressed in the Final Plans. The RCSR tracking form will be included in the 100% level design submittal.

The 100% level submittal package will include the design products, a completed 30% RCSR tracking form, a blank 100% Level RCSR tracking form for the Department's use and a certification by the Design Process Control Manager that the submittal has been subject to the Approved QMP processes and is compliant with Project Agreement requirements.

FRMG will conduct a Comment Resolution Meeting with the Department after the Department's review of the 100% level documents to discuss each comment and agree on a mutually satisfactory resolution.

4.2.d.v RFC Documents and Revisions to RFC Documents

FRMG will continue the design process to finalize the 100% level plans and advance them into RFC Documents. The RFC Documents will incorporate resolutions to the 100% level review comments and will contain plans, reports, specifications, and other materials in compliance with design output requirements. The RFC Documents will be subject to the design QC review process.

The RFC submittal package will include the RFC Documents, a completed RCSR tracking form. A blank RFC tracking form and a certification by the Design Process Control Manager that the submittal has been subject to the Approved QMP processes and is compliant with Project Agreement requirements.

FRMG's PQM will approve the RFC Documents prior to submittal and provide an appropriate certification form. FRMG will submit one electronic copy of the RFC submittal package to the Department.

FRMG will also provide a Materials Testing and Inspection Plan (MTIP) with the RFC Documents when required by the Project Agreement. The MTIP will provide testing quantities and frequencies, and IQC inspection Quality Hold Points to confirm that minimum QMP requirements have been met.

After issuance of the RFC Documents, FRMG's Lead Contractor will initiate construction activities. As-Built information will be recorded on a continual basis during the construction process. Should design errors be found, a request will be made to the Lead Engineer to correct the errors and reissue the subject RFC Documents. If a change is required to accommodate construction, a field design change request will be issued to the Lead Engineer who will redesign and reissue the subject RFC plans. The Lead Contractor will maintain a design change during construction log for the preparation, review and approval of all changes and As-Built conditions, including field design changes, RFC Documents, and As-Built documents.

4.2.d.vi RFC Documents for Structure Construction

For structural elements, FRMG's Lead Engineer will prepare the following items prior to the design review process for RFC Documents:

A. Independent design check, completed in accordance with the current CDOT *Bridge Design Manual.* The original final structural design calculations will be revised and

corrected based on comments from the independent design check before the structural design of the element is completed.

B. The Rating Package, as defined by the CDOT *Rating Manual*, completed prior to release of the superstructure construction drawings.

These products will be included in the 100% level and RFC submittal packages to the Department.

4.2.d.vii As-Built Documents

FRMG will submit As-Built documents to the Department for Acceptance. The As-Built documents will be submitted after FRMG has addressed, resolved, and incorporated, to the satisfaction of the Department, any prior FRMG or Department comments. FRMG will provide completed RCSR tracking forms as documentation to the Department that all review comments have been addressed. The Department may review or audit the As-Built documents to ensure completeness and compliance with the requirements of the Project Agreement.

FRMG will bundle the As-Built plans into packages that match the RFC Design Deliverable packages. FRMG will include the following with As-Built documents submittals:

A. All plans reflecting RFC Documents or revisions to RFC Documents
B. Resolution of Nonconformance
C. Design Calculations
D. Design Reports
E. Specifications
F. Electronic CADD files, as specified elsewhere in the Project Agreement
G. Index summarizing all revisions to initial RFC Documents
H. Review, Comment, Resolution Tracking Forms

4.2.d.viii Licensed Engineer in Responsible Charge

FRMG will provide a licensed engineer) who will be in responsible design charge during construction for the preparation, review and approval of all changes, including field design changes, RFC Documents, and As-Built documents. FRMG will maintain a master list of approved design changes and a complete file of As-Built records. The licensed engineer will communicate with the Design Manager and the Construction Manager regarding design changes. The design changes will be entered into FRMG's document control system and issued to those completing the Construction Work on a timely basis, consistent with the progress of construction activities.

4.2.d.ix Environmental Review

The FRMG Environmental Manager (EM) attends internal FRMG meetings and other design task forces on a regular basis. The EM's focus is interdisciplinary review with an emphasis on environmental implications from potential design changes. The EM and the Independent Quality Control Environmental Manager will be invited to participate in scheduled quality reviews for design products. FRMG will require that, at a minimum, an environmental review be part of the 100% level design reviews. Environmental comments showing how FRMG's design meets the Environmental Requirements, including FRMG's obligations under Schedule 17 Environmental

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Requirements, will be included in the RCSR tracking process. If FRMG creates design changes beyond the basic configuration, these changes will be tracked, assessed, and documented by the EM to determine whether or not they have resulted in a new impact of impacts to an environmental resource.

4.2.d.x ROW Processes and Documents

FRMG will invite the right-of-way (ROW) consultant to attend task force meetings and design progress review meetings as well as to participate in scheduled PC reviews for design products. FRMG will require that a ROW review be part of the 100% level PC reviews. ROW comments showing how FRMG's design meets the ROW Requirements, including FRMG's obligations under Schedule 18 will be included in the Comment Resolution process.

In the event FRMG finds an instance of nonconformance or an audit by FRMG's IQC process identifies a nonconformance with respect to Schedule 18 requirements, the Department may choose and engage, at the expense of FRMG, an independent ROW firm to conduct its own quality review. FRMG will implement corrective and preventative actions to eliminate recurrence, if such event occurs.

4.3 Construction Quality Control

Please refer to Draft Stage 2 QMP (Appendix E).

4.3.a Required Construction PC and IQC Activities to Control the Work

Please refer to Draft Stage 2 QMP (Appendix E).

4.3.b Construction IQC Program

Please refer to Draft Stage 2 QMP (Appendix E).

4.4 Materials Testing and Inspection Plan

4.4.a Materials Testing and Inspection Plan

Please refer to Draft Stage 2 QMP (Appendix E).

4.4.b Proposed Inspections and Tests Procedures

Please refer to Draft Stage 2 QMP (Appendix E).

4.4.c Procedures for Delivery, Handling, and Storage of Furnished Products

Please refer to Draft Stage 2 QMP (Appendix E).

4.4.d IQC Inspection and Test Activities

Please refer to Draft Stage 2 QMP (Appendix E).

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4.4.e Summary of Activity-Specific Material Quantities to Document that Minimum Sampling, Testing, and Inspection Requirements Have Been Met

Please refer to Draft Stage 2 QMP (Appendix E).

4.4.f Processes to Control, Calibrate, and Maintain Test Equipment to Ensure It Meets Industry Standards and Other Applicable Requirements

Please refer to Draft Stage 2 QMP (Appendix E).

4.5 Quality Hold Points

Please refer to Draft Stage 2 QMP (Appendix E).

4.6 Reporting and Record-Keeping of Quality Documentation

4.6.a Quality Records

The design quality records are produced as the design Work progresses. The records are in the form of checked drawings, checklists, QC reports, certification forms, and Review, Comment Summary and Resolution (RCSR) forms. The records are retained in the Lead Engineer's document control system until the RFC Documents are submitted to the Lead Contractor for entry in the overall Project document control system. The records will then be uploaded to the Department's Aconex document control system.

The IQCF will utilize the Engineering and Laboratory Vital Information System (ELVIS) as FRMG's primary Electronic Records Management System (ERMS) for receiving, storing, transmitting, and tracking documents, transmittals, submittals, and correspondence of quality records for the Project. The ELVIS system allows the IQCF to have real time access to plans, specifications, quality checklist, test reports, nonconformance reports, punch lists, and other quality documents in the field. The IQCF will use tablets and laptops computer to access this information remotely through the ELVIS system. The Department, stakeholders, Subcontractors, and other relevant entities can also be given the same permissions to access to this information remotely.

ELVIS is fully compatible with Aconex. ELVIS does not aim to replace Aconex as the Project's recognized document control system. Instead, ELVIS aims to:

- Enhance the performance of FRMG
- Be a more sustainable, "green" solution
- Reduce document control processing needs and personnel requirements
- Greatly increase the speed and efficiency of entering IQC test results into the Department's QRD

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- Facilitate a means for the IQCF to review and approve electronic quality records prior to uploading into Aconex
- Provide real time data collection
- Provide real time access to plans and specifications

This ERMS is a proprietary product of Raba Kistner, Inc. (RK), which was developed for managing transportation/highway project-related quality documents and records. ELVIS is maintained by RK at no cost to the Department. Records are regularly uploaded from ELVIS to Aconex. Prior to final Acceptance of construction at the end of the design-build period, a verification that all records generated within ELVIS have been upload to Aconex will be performed.

The ELVIS system has a proven track record on FHWA design-build and P3 projects and was specifically designed by and for an independent quality assurance engineering firm on these types of projects. The ELVIS system is a web-based (server and cloud-based) system hosted and managed by RK. It is accessible through computers or tablet devices. It has access and security features enabling the control of quality information and data that, on other projects, satisfied FHWA requirements for owner agency use of such a system.

ELVIS is a secured web-based application with controlled user access, which is based on https protocol. Each user's level of access is controlled by individual security permissions to allow access appropriate for each user's position. ELVIS provides a variety of functions that are available based on users' security settings. These functions include daily inspection reports and test results, technical review of test results, engineer review of test results, material quantity tracking, minimum sampling and testing requirements (MS&TR) module, NCR tracking, mix designs, file storage, sharing, versioning, and transmittal and retrieval of documents in a read-only format. Individuals identified as recipient will receive a system generated email that provides notification that documents are ready for download. ELVIS will also populate a log to capture the individual, date, and time when the upload occurred. A powerful search engine is also available to assist in finding and retrieving relevant documents.

ELVIS also provides for use of a Controlled Vocabulary Language (CVL) to promote consistency within the database. These CVLs will be used by all persons creating records in ELVIS. The CVLs will be updated and maintained by RK within ELVIS.

Using ELVIS, daily inspection reports will be marked as a pass or fail and tracked to closure. Material quantities will be tracked and used to show that we are meeting the minimum testing requirements. Daily inspection reports include at a minimum:

- Factual evidence that an inspection or test has been performed
- Type of inspection or test performed
- Number of inspection and tests performed
- Inspection and test results
- Nonconforming Work identified and causes for rejection
- Remedial or Corrective Actions Taken
- Include conforming and Nonconforming Work elements

4.6.b Preparation, Maintenance, and Delivery of Quality Records

Upon completion of a quality record, FRMG's Quality Managers will review the document for completeness and accuracy and upload it to ELVIS for tracking and submittal to the Department. Construction IQC records will be originated by IQC Staff.

Please refer to Draft Stage 2 QMP (Appendix E) for information specific to construction-related activities.

4.6.c Submittal of All IQC Test Measurements and Test Results

Please refer to Draft Stage 2 QMP (Appendix E).

4.6.d Maintaining a Daily Log of All Inspections Performed for Both FRMG and Subcontractor Operations

Please refer to Draft Stage 2 QMP (Appendix E).

4.6.e Providing the Department with a Weekly Look Ahead of Specific Scheduled Construction Activities

Please refer to Draft Stage 2 QMP (Appendix E).

5 Nonconformance Work

5.1 – 5.5 CQP-0103 Nonconforming Items

Please refer to Draft Stage 2 QMP (Appendix E).

5.6 and 5.7 Department Issued Nonconformances (NCN)

For verification and Acceptance purposes the Department will perform assessments of the Work. During this assessment, it may be determined that elements of the Work are nonconforming in accordance with Project Agreement and specifications. The Department will notify FRMG through notifications within the QRD. Department Nonconformance Notices are referred to as an NCN. A NCN has one of two severity levels:

- **Level 1:** Nonconforming items that represent an immediate or imminent health or safety hazard, nuisance or other similar immediate or imminent risk to Users or workers or an immediate or imminent risk of structural failure, damage to a third party's property or equipment or damage to the Environment.
- **Level 2:** All other categories of Nonconforming Work.

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Responding to Department NCN

Level 1: FRMG will immediately notify the appropriate level of management and personnel responsible for that element of Work. The identified personnel and the appropriate Department representative will investigate the NCN in the field. A determination of the level of risk and appropriate actions to correct, isolate, or make safe the issue will be made as quickly as possible.

Level 2: The PQM, IDQM, or IQCM (as appropriate) will review the details of the NCN for accuracy and conformance with the Project Agreement and RFC Documents. If in agreement FRMG will respond to the Department issued NCN by issuing an NCR in accordance with CQP-0103 Nonconforming Items.

Required NCN response times are as follows:

- **Level 1:** Within 24 hours of issuance
- **Level 2:** Within five Working Days of issuance

NCN Review and Validation

FRMG will review all notices of NCN for accuracy and conformance with the Project Agreement and RFC Documents. This will be performed by the PQM, IDQM, or IQCM (as appropriate). The process with follow the steps below:

Step 1:

PQM, IDQM, IQCM review of NCN details and compliance with Project documents and specifications.

Step 2:

If PQM, IDQM, or IQCM confirms NCN is nonconforming, an NCR is issued. A response will be provided in QRD indicating an NCR has been issued and a reference to that NCR number.

Step 3:

It is plausible that items identified by the Department as an NCN may be questioned for their validity. This is handled by the PQM, IDQM, or IQCM reviewing the details of the NCN. Should the validity be questioned the PQM, IDQM, or IQCM will contact the Department representative who approved the NCN to review the details and requirements of the NCN. This will be done via email, phone, or in person and will be 5.8

- If it is determined the NCN is valid a Nonconformance Report (NCR) will be issued
- If it is determined by the PQM, IDQM, or IQCM and the Department that the NCN is not valid, the Department will close with a response in QRD from the PQM, DQM, or IQCM

Step 4:

Any issued NCR will be issued and followed through to closure following the CQP-0103 Nonconforming Items procedure.

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5.8 Corrective and Preventative Action

Corrective Action

The design of the QMP can require the enactment of corrective actions. Corrective action procedures are integral to the design-and-construction-related NCR process and can be initiated in the following noted situations at a minimum:

- **Construction:** Corrective action will be an outgrowth of inspection or testing, where an NCR or corrective action directive is issued within or to FRMG. (product)
- **Quality Audits:** Corrective action will be undertaken as the result of the issuing and responding to an audit finding or a relevant recommendation documented in the audit report

The effectiveness of implemented corrective actions, and their influence on other documented quality procedures and the QMP as a whole, will be evaluated by FRMG's Project Manager. Corrective actions will be performed in accordance with CQP-0106 Corrective Action.

The corrective action procedure includes:

- Investigation of the cause of systemic Nonconforming Work
- Proposed Corrective Action plan to prevent recurrence
- Prioritization of Corrective Action effort based on levels of risk to the quality of Work
- Management commitment ensuring corrective actions are implemented when needed
- Implementation, edits, and revisions of QMP procedures as identified from corrective actions

FRMG will submit Corrective Action Plans in response to FRMG issued corrective actions.

Preventative Action

FRMG will implement oversight review and trending processes that will play major roles in the prevention of Nonconformances on the Project. These formal processes, including the constructability reviews, preparatory reviews, Nonconformance Reporting, and IQC audits. These processes will assist in keeping the Project on track by preventing the application of erroneous assumptions or directions. Methods for determining, implementing, and documenting actions taken to prevent Nonconforming Work from occurring will be done in accordance with CQP 0107 Preventative Action.

In addition, a FRMG Managers' meeting, including FRMG and the Department's management staff, will be held bi-weekly, or on an agreed appropriate frequency. Meeting notes will be prepared by FRMG and serve as quality records.

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5.9 Punch List Work

Please refer to Draft Stage 2 QMP (Appendix E).

5.10 Provisions of Section 6.5

FRMG recognizes that the provisions in Schedule 8, Section 6.5 are without prejudice to the provisions of Schedule 6 Performance Mechanism.

6 Quality Assurance Oversight

6.1 Department Quality Oversight

6.1.a Department Acceptance of Work

FRMG recognizes the Department's responsibility for Acceptance of the Work as required in Title 23, Code of Federal Regulations, Part 637.

6.1.b Department Verification Reviews

FRMG recognizes and understands that the Department will perform the following in performance of their responsibility of Acceptance of the Work, per Schedule 8, Section 6.6.1.b:

i. **Design verification reviews**: The Department will perform design verification reviews on the products of design (drawings, specifications, and other design deliverables) on an ongoing basis during the Work. FRMG will submit documents for design verification reviews to the Department for Acceptance a minimum of five Working Days in advance of review meeting.

FRMG will coordinate and cooperate with the Department in their successful performance of the verification reviews listed above.

Please refer to Draft Stage 2 QMP (Appendix E) for information specific to construction-related activities.

6.1.c Verification Review Documentation

Verification reviews will entail the collection and documentation of objective evidence to determine whether the requirements of the Project Agreement have been met. The results of the Department verification reviews will be recorded by the Department and will be documented within the Department's QRD. Any NCNs identified by the Department require a response within the QRD.

FRMG team members understand and have experience with the processes and QRD program in which the Department will use to document the results of verification reviews. FRMG will respond to all Department NCN within the QRD.

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6.1.d Department's Quality Records Database

Department will provide FRMG access to the Department's QRD application to review and respond to observations made during Department quality oversight activities. FRMG is required to utilize the Department's QRD application to record all material test quality records, and to respond to Department generated observations. FRMG is given the option of either directly entering all PC/IQC observations and material test results into the Department's QRD application or providing Department with data collected during PC/IQC efforts in an electronic format compatible for batch upload into Department's QRD application. Department generated observations will be identified either as conforming or nonconforming to related requirements of the Project Agreement. Department observations will be presented to FRMG through Department quality oversight verification reports.

Please refer to Draft Stage 2 QMP (Appendix E) for information specific to construction-related activities.

6.2 Department Owner Verification Testing

Please refer to Draft Stage 2 QMP (Appendix E).

6.3 Independent Assurance

Please refer to Draft Stage 2 QMP (Appendix E).

6.4 Government Authority Inspections

FRMG will provide access to Work activities for Governmental Authority Inspections of the Work, provided the Governmental Authority has jurisdiction over the Work and as required by law.

7. Deliverable Requirements

7.1 Quality Management Plan

FRMG will submit the Stage 1 QMP to the Department for Approval as a condition of NTP 1. FRMG will submit the Stage 2 QMP for all remaining Work to the Department for Approval as a condition of NTP 2. FRMG recognizes that NTP 2 will not be issued until the Stage 2 QMP is Approved by the Department.

7.2 Design Deliverables

This section describes the Reviewable Deliverable products that FRMG will deliver over the course of the Project:

7.2.a. FRMG will submit to the Department all RFC Documents, revisions to RFC Documents, and As-Built documents as described with the Deliverable Requirements Tracking List.

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7.2.b. FRMG will identify in its Baseline Schedule when RFC Documents and As-Built documents will be submitted to the Department. The schedule will also reflect changes to the Work as a result of revisions to RFC Documents.

7.2.c. FRMG will provide one set of electronic files of the design deliverables to the Department. As-Built documents will show all changes. All changes will be noted using CADD. Hand-drawn changes will not be used.

7.2.d. The design deliverables will be delivered to the Department indexed and clearly marked to indicate the date of issue and stage of development (e.g., RFC Documents). All design deliverables will include a title block, consistent with the standard Work drawing format established as part of the QMP, with the following information:

- Date of issuance and including all prior revision dates
- Contract title and number
- The names of FRMG, subconsultants, Subcontractors, Suppliers, and manufacturers, as applicable
- Subject identification by FRMG drawing or Project Agreement reference

7.2.e. All design deliverables will be sealed by the FRMG's engineer consistent with law. All design deliverables will include a sufficient blank space, in the lower right corner, just above the title block on the drawings, and in the lower right corner of the title page of specifications and calculations, in which the FRMG's engineer may indicate the action taken, indicating his or her review and approval.

7.2.f. If a design deliverable requires review approval from a Local Agency or permitting authority, FRMG will obtain such approval pursuant to Section 5 of Schedule 9.

7.2.g. Specifications or CDOT Standard Special Provisions applicable to a design deliverable will be submitted with the design deliverable.

7.2.h. When calculations accompany drawings in a submittal, the body of the calculations will contain cross-references to the individual drawing to which the pages of the calculations pertain. Calculations required will demonstrate conformance with the requirements of the Project Agreement.

7.2.i. The CADD drawings and associated documents will be organized in a logical manner, have a uniform and consistent appearance, and clearly depict the intent of the design and construction. In addition:

i. The software requirements for all submitted design deliverables will be InRoads/MicroStation, in accordance with the current CDOT standards in effect. Project files will be organized and submitted in accordance with CDOT's ProjectWise format.

ii. FRMG will prepare As-Builts for the Work that will include, but not be limited to, the following:
    A. Title sheet
    B. Index
    C. Standard Plan List
    D. Roadway design data
    E. General notes

F. Pavement details
G. Roadway details
H. Drainage details
I. Geotechnical plans
J. Environmental mitigation, as necessary
K. Permanent signing plans and sign structure cross sections
L. Signalization plans
M. Aesthetic elements
N. Roadway typical sections
O. Roadway geometric layout plans
P. Roadway geometric layout tables
Q. Roadway plan
R. Roadway profile
S. Detour construction and phasing plans
T. Detour construction and phasing profiles
U. Intersection plans
V. Pavement plans
W. Drainage plan
X. Drainage profiles
Y. Pavement marking plans
Z. Utility plans
AA. Right-of-Way plans, for Developer acquisitions
BB. Right-of-Way monumentation plans
CC. ITS, ATM, and Tolling plans
DD. ITS Communication Network plans
EE. Landscape/seeding plans
FF. Grading plans
GG. Lighting plans
HH. Bridge plans
II. Wall and shoring plans
JJ. Roadway cross sections
KK. ROW plans for Developer acquisitions
LL. Estimated material quantities
MM. Other details, as needed
NN. Specifications

iii. FRMG will provide one set each of electronic files of Utility As-Built documents to the Department and to the respective Utility Owner for Utility Work constructed by FRMG, within 90 Calendar Days after the Utility Owner has accepted the Utility Work. These electronic deliverables will conform to those requirements set forth in the Project Agreement for CADD requirements, except as modified by the specific requirements of the individual Utility Owners. The Utility As-Built documents will show locations of existing utilities, structures, trees, streets, and existing highway ROW limits. Additionally, FRMG will obtain from each Utility Owner performing its own Utility Relocations Utility As-Built documents for such Utility Relocations showing the foregoing information, and

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will deliver one set of electronic files of such documents on DVD to the Department. FRMG will show this information on the As-Built documents. All As-Built documents electronic files will be submitted in MicroStation and *.pdf format, or other formats as accepted by the Utility Owner.

iv. CADD files will be in accordance with the appropriate Department standards. All CADD files will be documented in a tabular format describing the path, file name, and description.

v. The structure of the reference drawings, Contract Drawings, and CADD files will be used a guideline for file set-up.

7.3 Document and Data Approval

FRMG will ensure that all deliverables include a signed and dated certification by the originator of the deliverables and that the deliverable is complete and meets the requirements of the Project Agreement.

7.4 Document and Data Changes

FRMG will ensure that any changes to deliverables provided to the Department as revised are in a format that can enable changes to be readily apparent and trackable (e.g., documents use the redline/strikeout method).

7.5 Product Data

FRMG will submit to the Department for Acceptance one electronic copy of all manufacturers' warranties, guarantees, instruction sheets, parts lists, and other product data within 20 Working Days after installation of the items to which they relate, and in any event prior to substantial completion. FRMG will ensure that the product data cited in this Section is organized and indexed in a manner that allows easy retrieval of information. FRMG will maintain proper records of product data.

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Stage 1
QMP Attachment

Front Range Mobility Group

THE EXTRA MILE

CONNECTING COMMUNITIES

Design Process Control Plan

Front Range Mobility Group

THE EXTRA MILE

CONNECTING COMMUNITIES

Design Process Control Plan

D R A F T

Central 70 Project
Design Process Control Plan

Prepared by
Front Range Mobility Group

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Attachments

1. **Design Process Control Team**
2. **DPCP Design Process Flowchart**
3. **DPCP Forms and Checklist**

Form Identifier	Form Title
RCSR Form	Review Comment Summary and Resolution
NC-D Form	Design Nonconformance Report
COCQP	Certificate of Compliance with Quality Procedures
DC Form	Design Change
RFI Form	Request for Information
Quality Audit Form	Generally Required Reviews, Forms, and Checklists for Quality Audit
Form ITR	Independent Technical Review Report
Form DQA	Design Quality Audit
Form FDC/NDC	Field Design Change/Notice of Design Change Form
Form DNCR	Design non-conformance review
Form COC	Certificate of Compliance
Non-Project Specific Checklists	• Drawing Review Checklist • General Issues Document Review Checklist • Specification Review Checklist • Study and Report Review Checklist • Calculation Cover Page • Calculation Review Checklist
Project Specific Discipline Review Checklists	• Roadway • Structures • Drainage • Traffic Control Plan • Signing and Striping • ITS • Utilities • Electrical (Power/Lighting) • Potholing • Boring Logs (and associated Quality Procedures)

4. **DCPC Quality Control Procedures**

Document Number	Procedure Title
DCPC-PR-001	Preparation and Revision of Design Quality Management Plan Procedures
DCPC-PR-002	Quality Program for Subconsultants
DPCP-PR-003	Checking Calculations – Line-by-Line Check of Manual Calculations, Method 1
DPCP-PR-004	Checking Computer Calculations
DPCP-PR-005	Checking Plans and Design Drawings
DPCP-PR-006	Review of Reports

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DPCP-PR-007	Review and Checking of Specifications
DPCP-PR-008	Quality Control of CADD-produced Files
DPCP-PR-009	Notice and Documentation of Design Change
DPCP-PR-010	Request for Information
DPCP-PR-011	Field Design Changes during Construction
DPCP-PR-012	As-Built Plans
DPCP-PR-013	Geotechnical Investigation
DPCP-PR-014	Independent Calculations, Method 2
DPCP-PR-015	Review Comment Summary and Resolution Tracking Process
DPCP-PR-016	Quality Assurance Certification
DPCP-PR-017	Subconsultant Quality Control Requirements
DPCP-PR-018	Subconsultant Procurement Procedure
DPCP-PR-019	Design Work Planning
DPCP-PR-020	Managing Design in Multiple Locations
DPCP-PR-021	Design Stop Work Order

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1.0 Design Process Control Plan

1.1 Introduction

The Design Process Control Plan (DPCP) described in this document will be used for all design plans, specifications, and design reports for the Central 70 Project. The DPCP is an Appendix to Front Range Mobility Group's Stage 1 Quality Management Plan. The design processes are dynamic and may require modifications, refinement, or clarifications during the Project. This DPCP will be distributed, as part of the overall Stage 1 QMP, to all design staff assigned to the Project. Revisions or clarifications to the Stage 1 QMP or this DPCP will be discussed during regularly scheduled quality meetings. The resulting changes will be distributed by the Design Process Control Manager to the Design Process Experts (DPEs) and the Design Discipline Leads (DDLs) for discussions with design staff.

Along with the Lead Designer's staff, design subconsultants and subcontractors will be required to adhere to the DPCP for their submittal of design plans, specifications, reports, calculations and other design products. Design team subconsultants will be required to perform their own internal Detail Check per Section 2, utilizing Checkers as described in Section 1.2.7, before submitting the design product and the associated checklists to the Design Process Control Manager (DPCM) for the continuing quality review process.

The overall Design Process Control Plan incorporates the review processes required by the Project Agreement and consists of the following steps, which are elaborated in detail below:

- Planning the design work.
- Implementing the work (preparing design documents).
- Checking the design documents, revising and submitting for quality reviews.
- Discipline, Interdisciplinary, Constructability, Environmental, Right-of-Way reviews.
- Making revisions to design documents.
- Auditing and Certifying.
- Submitting documents to the Lead Contractor for submittal by FRMG to the Department for review or to the field as Release for Construction documents.

Each of the steps has iterations, depending on the discipline and specific type of document, but the basic design quality process is as shown in Attachment 2: Design Process Flow Chart. Specifics regarding the steps are:

1. **Planning the Work**. The Design Manager (DM) and the Deputy Design Manager for Production (DDMP) plan design work activities and associated schedules that incorporate the design quality control checks, review submittals, revisions to plans and audits as outlined in this document. The design products will be planned for production in accordance with the Deliverable Requirements Tracking List and submitted in alignment with the Baseline Schedule.

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2. **Implementation of Plan/Preparation of Design Documents**. The DDMP coordinates with the Area Design Managers for the preparation of the design documents. The design is based on the Design Inputs Library which is developed from the established design requirements for the Project. The products are developed in accordance with Output Requirements stated in the Project Agreement. The design process includes discipline direction by the Discipline Design Leaders, interdisciplinary coordination through Task Force meetings and Department input through Design Progress Reviews. The Task Force meetings will occur at regular intervals (typically weekly) throughout the design process and will include representatives from the Lead Contractor, the Lead Designer, the Department, the Environmental Compliance Manager and others with interest in the subject matter will meet on a regular basis during the design phase. These meetings, combined with the Department's over-the-shoulder review at the Design Progress Meetings, will be an integral part of the process for discussing and resolving design issues outside of the formal review process. Task Forces may be added, combined, or eliminated as design progresses. The Task Forces will be discipline-specific and include Drainage, Roadway, Structures, Traffic, ITS, Maintenance of Traffic, Fire and Life Safety, Cover, Utilities, and others including Right-of-Way, Environmental, Strategic Communications.
3. **Detail Check**. All design documents are subjected to an internal detailed design checking process (red-yellow-green color-code system) per Section 2.1. The Checker will be a qualified professional in accordance with generally accepted professional practice, as determined by the DDMP. The Checker's corrections and comments are evaluated and incorporated into the design documents by the Originator, as appropriate. The Detail Check and design product revisions are made prior to external reviews.
4. **Quality Review.** A Discipline Review (also known as Independent Technical Review), Interdisciplinary Review and Constructability Review will be performed per Section 2.3 for all design documents, including plans and design reports, developed by the Lead Designer and subconsultants. The DPCM will assign the appropriate DPEs for the Discipline and Interdiscipline Reviews. The Lead Contractor will assign staff for the Constructability Review. The Independent Environmental Compliance Manager and the Right-of-Way Manager will be invited to perform concurrent reviews. Review comments will be documented on the Review Comment Summary and Resolution Form (Form RCSR). An Independent Structure Design Check will be performed on the design of major structures (as required by the Project Agreement).
5. **Revise**. Review comments are evaluated and incorporated into the documents by the design Originator. Responses to comments are noted on Form RCSR. The DDMP will ensure each comment is coded with a final disposition of A, C, or T. An 'A' disposition indicates the Originator agrees with the comment and will incorporate the suggestion, a 'C' disposition indicates that the Originator has evaluated the comment but will not be incorporating the suggestion, and a 'T' disposition indicates the comment will be addressed/incorporated on a future submittal. The reviewer's concurrence to all final dispositions must be obtained prior to submittal of the audit package to the DPCM for review/approval. The reviewer's concurrence can be documented by entering his/her initials in the "Reviewer Concurrence" column on the Form RCSR or via email. The DDL will be responsible to track all 'A' and 'T' dispositions and to verify those comments are addressed. The DPCM will add his/her initials in the concurrence column on the Form RCSR for

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each line with A or T dispositions. If a reviewer has no comments, neither final dispositions nor concurrence will be required. At this point, the design documents are ready for submittal.

6. **Audit**. The DPCM audits the quality review processes for all design documents and design reports in accordance with Section 4.0. If the requirements of the Stage 1 QMP are met, the DPCM certifies the documents as meeting the requirements of the DCPC, using Design Quality Audit Checklist Form (Form DQA). The DPCM will advise the IDQM that the design submittal package is ready for submittal for the Department's Formal Review.
7. **Document Control**. Project Wise will be utilized to log and store the audited design packages, to document design reviews, and to notify the Lead Contractor that the design package is ready for submittal.
8. **Formal Design Review (FDR)**. The design package will be submitted electronically to the Lead Contractor who will enter it into the project-wide document control system. The document will be processed within the Front Range Mobility Group's organization, including the Independent Quality Control Firm, as appropriate. After review by the Project Quality Manager, the design document will be submitted electronically into the Department's ACONEX document control system for distribution to CDOT and other approved project stakeholders in accordance with Section 5.1. Review comments will be recorded in a Form RCSR for the design product. This review is expected to take three weeks for original documents and two weeks for resubmittals.
9. **Comment Resolution Meeting**. Representatives from FRMG, the Lead Contractor, the Lead Designer, the Department, and other reviewers, as appropriate, will meet approximately one week after the completed RCSR Form is returned by the Department to FRMG. The purpose of the meeting is to discuss each review comment and agree on a satisfactory resolution for incorporation in the subsequent stage of design development.
10. **Revise**. The Design team makes the necessary revisions to the design documents to address the comments as agreed upon and to advance the design to the next level. The action taken to address each comment will be recorded in the RCSR Form, along with the associated drawing sheet number or report page number, as appropriate. The completed RCSR Form will be included in the next stage of design submittal.
11. **Detail Check/Review/Revise/Audit/FDR.** The process described above will be repeated for each required submittal described in Section 3.1 (Preliminary Design (30%), Final (100%) and Pre-RFC). Similarly design reports will be submitted at draft and final stages.
12. **Acceptance of Pre-RFC Documents**. Acceptance of the Pre-RFC documents by the Deportment occurs after the Designer has completed all design and has addressed, resolved, and incorporated, to the satisfaction of the Department, all comments submitted by the Department, Lead Contractor, IDQM and Third-Parties as described in Section 9.0. The RCSR Forms will provide evidence that that all review comments have been addressed.
13. **Prepare and Audit Final RFC Submittal**. Upon receipt of the Department's acceptance of the Pre-RFC document, the Lead Designer prepares the Final RFC documents in accordance with Section 7.0 and submits the Final RFC package to the DPCM. Using Form DQA, the DPCM audits the Final RFC documents in accordance with Section 7.0.

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14. **Released for Construction (RFC).** When the audited Final RFC submittal package is certified by the DPCM, the plans are stamped "Released for Construction" in accordance with Section 7.0. The RFC documents are then ready for submittal to the Lead Contractor.
15. **Revisions to Post RFC Documents**. The steps for changes to RFC documents that are submitted to the Department for final acceptance, or have been previously released for construction, are described in Section 10.0.
16. **Document Control**. Project Wise will be utilized to log and store all design reviews, and to log and store the audited milestone design packages. Electronic submittals will be made to the Lead Contractor who will transmit to the Department via ACONEX as available for review, acceptance or records.

1.2 Design Process Control Organization

Attachment 1, Design Process Control Organization, Stage 1 QMP Organization Chart, shows the organization of the Lead Designer's team and its relationship with quality personnel in the overall Project team. Overall, the design quality organization emphasizes Design Process Quality Control, integrated with Independent Design Quality Control (DQC) functions. All personnel who manage, perform, and ensure the quality of the design work have the responsibility to:

- Implement and follow the Stage 1 Quality Management Plan for the Project.
- Identify, evaluate, and document quality problems.
- Initiate action to prevent the occurrence of non-conforming work.
- Recommend or initiate quality improvement solutions.
- Stop the work as needed when non-conforming work is identified, until the deficiency is corrected.

Detailed descriptions of the Lead Designer's team members, along with their roles and responsibilities, are provided below.

1.2.1 Design Manager

The Design Manager (DM) reports to the Lead Contractor and manages the overall Design team in the delivery of Reviewable Deliverable design products for the Project. The DM directs the activities of the Deputy Design Manager for Production and Deputy Design Manager for Operations in the performance of the design work and the management of the design contract and subcontracts. The DM coordinates with the DPCM to ensure that the requirements of the Stage 1 QMP are properly implemented.

The DM has the following responsibilities:

a) Administer, manage, and coordinate the overall design delivery program.

b) Provide and maintain sufficient Design team resources to complete assignments on time and in accordance with the specifications of the Project Agreement.

c) Assign resources to perform Design Process Quality Control activities.

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d) Coordinate with the DPCM to provide all Design team members, including design subconsultants, access to the Stage 1 QMP.

e) Keep the lines of communication open with the Lead Contractor and the Department.

f) Verify that the responsibilities of Design team members are being carried out.

g) Monitor the work of the Design team and report progress to the Lead Contractor

h) Provide updates and new information to keep the Design team current on Project decisions, delivery schedule, production requirements and quality issues.

1.2.2 Deputy Design Manager: Production

The Deputy Design Manager: Production (DDMP) reports to the Design Manager and manages the Design Team's production unit. The DDMP directs the activities of the Area Design Managers (ADM) and the Design Discipline Leads (DDL) in the performance of the design work. The DDMP coordinates with the Design Process Control Manager to plan and conduct Stage 1 QMP quality reviews.

The DDMP has the following responsibilities:

a) Coordinate with the Design Manager regarding design delivery requirements, including the schedule for delivery of RFC documents to the Lead Contractor.

b) Establish and implement procedures to control the work performed by the Design team and verify that such work meets the requirements of the Project Agreement.

c) Maintain an effective process for coordinating design production with construction requirements.

d) Manage the Area Design Managers to plan, organize and conduct the design work within each Project area.

e) Manage the Design Discipline Leads to ensure that Project Agreement requirements and Design Inputs are clearly defined and continuously communicated to the design teams.

f) Monitor the design delivery process and adjust resources between Area Design Teams to advance schedule critical work and to remedy design work that is behind the design schedule.

g) Facilitate Task Force Meetings, Progress Review Meetings and other design coordination activities.

h) Coordinate with the DPCM to plan and conduct quality reviews.

i) Oversee the Detail Checking process for design products, including the assignment of Checkers from within the overall Design Team.

j) Review on a regular basis the development of drawings and specifications to be Released for Construction (RFC) and subsequent design changes after RFC.

k) Facilitate interdisciplinary coordination and participate in Design Process Control activities and independent reviews by the IDQM and the Department, as required.

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1.2.3 Design Process Control Manager

The Design Process Control Manager (DPCM) reports to the Independent Project Quality Manager and manages the Stage 1 QMP as related to design quality. The DPCM communicates with the Design Manager and the Deputy Design Manager: Production on a regular basis to establish and maintain alignment between design production activities and design quality processes. The DPCM also coordinates with the Independent Design Quality Manager (IDQM) and the Department regarding their audit activities.

The DPCM has no responsibility for, nor involvement in, the production of design work. The DPCM has the authority to stop design work that does not comply with requirements of the Project Agreement or with the Stage 1 QMP. The DPCM will audit the design submittal packages and certify compliance with quality processes prior to submittal to the Lead Contractor.

The DPCM has the following responsibilities:

a) Implement and manage the Stage 1 QMP to ensure the adequacy and enforcement of design quality procedures and processes.

b) Establish and manage a team of DPEs who will develop the Design Inputs Library and design output requirements, provide training to the design team and conduct design quality reviews.

c) Facilitate compliance of design work with the requirements of the Project Agreement and the Approved Stage 1 QMP.

d) Implement and manage quality processes and procedures related to the design work.

e) Provide monthly reports regarding the status of the Stage 1 QMP. This report will include a summary of:

   – Internal design quality activities
   – Status of RFC documents
   – Status of RFIs
   – Status of NDCs and FDCs
   – Status of design related non-conformances
   – Corrective and preventative actions related to design

f) Ensure that quality process changes are implemented to address issues or concerns raised via internal Non-Conformance Reports (NCRs) related to design. Internal Design NCRs will be documented via Form DNCR, which will be issued for disregard of Stage 1 QMP requirements, such as submitting a milestone design package prior to completion of a quality review or for repetitive systematic deviations from the Approved Stage 1 QMP.

g) Ensure that quality process changes are implemented to address issues or concerns raised via external Non-Conformance Reports (NCRs) related to design. External Design NCRs will be documented via Form CNCR, which will be issued for construction related discrepancies, such as an RFI that identifies a design non-conformance or a field request for redesign to correct a design error.

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h) Ensure that quality records are properly prepared, completed, and maintained as required by the Project Agreement to provide evidence of design quality activities performed and design quality results achieved.

i) Promote awareness of the requirements of the Project Agreement and of the Stage 1 QMP throughout the design team.

j) Provide training for the design team on the Stage 1 QMP. This training will be available throughout the Project. Changes and updates to the Stage 1 QMP will be addressed in follow-up training. The DPCM will maintain a log of all design team personnel who have attended the training.

k) Audit Design Process Quality Control documentation per Form DQA for preliminary design, final design, Pre-RFC, and Final RFC submittals.

l) When an RFC Design Package is completed, sign a certification form verifying the submittal is in substantial compliance with the policies and procedures set forth in the Stage 1 QMP (refer to Form DQA).

1.2.4 Design Process Experts

DPEs are individuals responsible for the overall implementation of design process control functions related to a specific discipline. The DPE is responsible for planning and conducting design process control functions, such as reviews, for his or her respective discipline and may be involved in interdisciplinary reviews. The DPE has no responsibility for, nor involvement in, the production of design work.

DPEs have the following responsibilities:

a) Implement the design process control activities contained within the Stage 1 QMP and monitor compliance by the design team within his or her discipline.

b) Develop and maintain the Design Inputs Library and define design output requirements.

c) Provide training on the Stage 1 QMP design process control requirements and the Design Inputs Library.

d) Coordinate with the DDMP to convey the requirements of the Stage 1 QMP to the design team.

e) Coordinate Design Progress Review Meetings with the DDMP and the Department for design packages and other key deliverables.

f) Conduct Discipline Reviews for design packages in his or her discipline.

g) Participate in Interdisciplinary Reviews for design submittals and other deliverables related to disciplines other than his or her discipline.

h) Coordinate Constructability Reviews for design packages in his or her discipline.

i) When each deliverable is complete and meets Project Agreement and Stage 1 QMP requirements, submit to the DPCM for final audit and certification.

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1.2.5 Design Discipline Leads

Design Discipline Leads (DDLs) are individuals on the Design team who are responsible for the coordinated implementation of design functions related to a specific discipline of engineering. The DDL is responsible for design production activities in his or her discipline across Project Areas and may be directly involved in an Area Design Team.

DDLs have the following responsibilities:

a) Coordinate with the respective Design Process Expert to ensure understanding of the Design Inputs Library, design output requirements and Stage 1 QMP design process control activities.

b) Implement design process control procedures and monitor compliance by the design team members within his or her discipline.

c) Participate in Task Force Meetings and Design Progress Review Meetings for design packages and other deliverables that are related to his or her discipline.

d) Participate as requested in Interdisciplinary Reviews for design submittals and other deliverables related to disciplines other than his or her discipline.

1.2.6 Originators

Originators are the technical staff members that are directly responsible for producing the designs, calculations, studies or design reports, and plans that are necessary to develop a design deliverable. Originators may be a DDL or an assigned discipline designer. They are responsible for reviewing their own work for completeness, technical accuracy, content and format prior to having such work undergo the design process control procedures. The Originator of a document will coordinate with the DDMP and DDL to arrange for Detail Check of his or her design products. The Originator will work closely with personnel performing design quality control processes to address any resulting comments.

1.2.7 Checkers

Checkers are technical staff on the design team who perform a detailed suitability, concept, and numbers check of design documents that are generated by Originators. Checkers may be a DDL or a member of another Area design team working in the same discipline. Checkers will follow the checking procedures outlined in the Stage 1 QMP. Checkers will have the same technical knowledge and qualifications as the Originator for the work element being checked. The Checker of a particular design document will not be the same individual that originated that design document. An individual can serve as both an Originator and a Checker, but not both on the same document. (Note that there are also Backchecker and Verifier designations with roles defined in Section 2.1.)

1.2.8 Discipline Reviewer

A Discipline Reviewer is typically the Design Process Expert responsible for the quality of design products in that discipline. The goal of a Discipline Review is to ensure compliance with design input and output requirements, conformance with discipline systems, programs and technical requirements, production of industry standard design documents and preparation of design calculations and other supporting documentation.

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1.2.9 Interdisciplinary Reviewers

An Interdisciplinary Reviewer is a representative from a particular discipline who is assigned to review design packages or other deliverables associated with disciplines other than the Interdisciplinary Reviewer's own discipline. The goal of an Interdisciplinary Review is to maintain consistency, and eliminate conflicts, between disciplines. The Interdisciplinary Reviewer will typically be a DPE of a different discipline, however, a DDL may also be assigned in some cases.

1.2.10 Constructability Reviewers

Constructability Reviewers will be representatives from the Lead Contractor's team who are responsible for reviewing design deliverables from a construction perspective. The goal of the Constructability Review is to receive formal input related to constructability and compatibility with the Lead Contractor's means and methods.

1.2.11 Environmental Reviewers

The Independent Environmental Compliance Monitor (IECM) will be invited to review design deliverables for conformance with the Project's environmental commitments. The IECM will provide advance guidance to the design team regarding environmental commitments to be addressed through the design process. The goal of the Environmental Review is to provide formal input related to compliance with required environmental commitments.

1.2.12 Right-of Way Reviewers

The Right-of-Way Manager will be invited to review design documents from a right-of-way perspective. The goal of the Right-of-Way Review is to ensure that the Project design fits within the designated right-of-way limits for the Project.

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2.0 Detail Check

General checking procedures applicable to design documents, including design reports, Maintenance of Traffic Plans and computer programs are detailed in this section. All design subconsultants will be required to adhere to Stage 1 QMP requirements for all submittals of design plans, specifications and design reports.

2.1 Design Plans, Specifications, Calculations, Design Reports, and Design Development Supporting Data

Plans, specifications, calculations, design reports, and other design documents are checked using a red-yellow-green color-code system, which is defined below. The documents are checked for conformance with the criteria, standards, and Project Agreement requirements. The design team has a variety of document/submittal review checklists for plans, specifications, calculations, and reports for quality reviews prior to external submittal. The checklists to be used by the design team are attached. It is likely that customization of these checklists will occur during design and that additional checklists will be created during the Project. These customizations and new checklists will not warrant an immediate update to the Stage 1 QMP. The DPCM will maintain a file of current checklists for use by the design team. The latest checklist versions will be included in any necessary formal Stage 1 QMP updates. Each DPE will ensure the latest checklists are available and the DDL will ensure that the checklists are completed as part of the checking process. These checklists will be submitted to the DPE for inclusion with the Form DQA that will be included with formal submittals via Project Wise. For each milestone design package, the DPCM will check the appropriate yes/no/NA box for each row on the Form DQA and will sign the top of the Form DQA certifying that the submittal is complete and meets Project Agreement requirements.

The following steps are for performing the design checking process for designs that are not for major structures. The design team will follow the specific Independent Structure Design Check procedure detailed in the CDOT Bridge Design Manual for checking major structure designs. Because major structures are required to have independent design calculations prepared, a Detail Check of the original bridge designer's calculations will not be required.

Check: The Originator makes a copy of the design documents and applies the check print stamp (Figure 2.1) for all persons involved in the checking process to sign-off.

Figure 2.1.

		Date
Originated By:	_____	_____
Checked By:	_____	_____
Backchecked By:	_____	_____
Corrected By:	_____	_____
Verified By:	_____	_____

The Checker, a qualified professional in accordance with generally accepted professional practice, as determined by the DDL, validates all unchecked information on the document, including

assumptions, calculations, technical specifications, drawing presentation, and details, using the color-code system as follows:

- Red = an error in the document (Note: if the Checker chooses to use MS Word for the Detail Check, errors and suggested edits will be shown via "Track Changes" and will not necessarily be shown in red.)
- Yellow = information is correct.
- Pencil or blue = a comment that is not necessarily an error. (Note: if the Checker chooses to use MS Word for the Detail Check, comments will be shown via the review comments option and will not necessarily be shown in blue.)

When the check is complete, the Checker signs and dates the check print stamp.

Backcheck: The Backchecker (usually the Originator of the document, but may be another designated designer other than the Checker) reviews the Checker's corrections and comments (red and blue/pencil marks). The Backchecker places a green check next to the red if the Backchecker is in agreement with the comments. If the Backchecker does not agree with the comments and then explains to the Checker a valid reason why the original item is correct, the Backchecker then writes the word "stet" in green adjacent to the red marks to indicate that the red is no longer valid and that the Checker has withdrawn his comment. Once all corrections/comments are reviewed and color-coded, the Backchecker signs and dates the check print stamp.

Correction/Update: The Corrector (usually the Backchecker/Originator) makes the revisions to the original document according to the agreed-upon changes marked on the check print. When updates are complete, the Corrector circles, in green, the changes made on the check print and signs and dates the check print stamp on the Corrected line.

Verification: The Verifier (usually the Checker, but may be another designated designer other than the Corrector), reviews that correction/update revisions were made completely and correctly. The Verifier then yellows over the red marks on the check print and signs and dates the check print stamp.

Completion of these design checking procedures are documented by:

- Using the color-code system.
- Signature/initials and date on each appropriate line of the check print stamp

Design Development Supporting Data: Data that are collected and supplied for use as design development input, such as potholing and surveying, will adhere to the following:

Quality control measures for potholing:

- DDMP will assign a coordinator to lead\direct the potholing subcontractor in the field. The coordinator will work with the individual requesting the pothole to ensure the information that is required and the location is understood. The coordinator will complete the Potholing Checklist shown in Attachment 3, sign it and submit to the requester.

  Before using the information in design, the requester will review the submitted information and indicate whether the information does or does not meet requirements by checking "yes" or "no"

at the bottom of the Potholing Checklist. If all the information does not meet the requirements necessary for the design, the requester will check the "no" box and resubmit for another pothole to be performed.

On a monthly basis, DDMP will submit an up-to-date Utility Matrix to DPCM via Project Wise. The Utility Matrix will include the status of all requested, in-process, and completed potholes, along with Potholing Checklists for all completed potholes.

Quality control for design surveying will include:

- The surveyor will conduct a verification of the coordinates and elevations of project control monuments provided in the Reference Documents prior to initiating a survey.
- Measurements will be made between one project control point and at least one other project control point when beginning a design survey setup and at the end of each design survey setup, to verify the coordinates of each point being used and the equipment setup parameters are correct.
- If a discrepancy is discovered in the field between the measured and published values of these points, the discrepancy will be resolved before the survey is allowed to proceed or the survey data are used.
- All raw instrument field data files will be saved for future review.
- Field notes of each survey will include information on instrument setup and verification measurements of each design survey setup.

Quality control for Geotechnical subsurface investigations will include:

- Each submittal that includes boring log information developed by a subconsultant on the Project will include a copy of an up-to-date Boring Log Revision Tracker showing information related to the boring logs in the submittal. Attachment 3 includes an example of this tracker.

2.2 Design Computer Programs

Specific software programs to be used be the Design team on the Project will conform with the requirements of the Project Agreement and with industry standards. The programs expected to be used in the design of the Project include:

Roadway and MOT:

Inroads
Autoturn
Microstation
Excel
Match Cad

ITS:

SKM – Short circuit, device coordination, arc flash analysis
AGi32 – Lighting design
MS Visio – Communication network design

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Bentley Suite CADD Platform

Drainage:

Bentley Inroads Storm and Sanitary
Bentley Flowmaster
Bentley Culvertmaster
FHWA HY-8
HEC-RAS
EPA SWMM
UDFCD: CUHP
UDFCD: Spreadsheets for Detention

Geotechnical:

FB-Pier
APLIE
LPILE
SHAFT
SLIDE
GRLWEAP
SETTLE3D,

Pavement:

AASHTOWare Pavement M-E Design Software

Traffic:

HCS 2010
FREEVAL
Synchro/SimTraffic
AGi32-Lighting
GuidSign
SignCAD

Cover MEP:

HAP – Hourly Analysis Program for ventilation design
Elite - Fire Sprinkler System Design
SKM – Short circuit, device coordination, arc flash analysis
AGi32 – Lighting design
Fire Dynamics Simulator v 6.2 – CFD modeling software

Structures:

LEAP Bridge Concrete
RC-Pier: Concrete Pier Design
STAAD-3D Analysis
Merlin-DASH: Steel Bridge Design

Landscape/Aesthetics:

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AUTOCAD, (with conversion to Micro Station)
Sketch Up

Software programs will be verified and added to a Verified Computer Program Log for the Project, as noted below. Input into validated computer programs will be routinely checked.

Verification of Computer Programs Not Denoted in the Project Agreement. Computer programs not denoted in the Project Agreement may be verified by one of the following methods:

- Using the hand calculation method as described for spreadsheet verification
- Using the same input in another verified computer program and comparing output
- Supplying documentation from the manufacturer or program writer verifying the accuracy of the program

The documentation is then audited by the DPCM and if adequately verified, the program is added to the Verified Computer Program Log for the Project.

Verification of Spreadsheets. Internally developed spreadsheets may be used. They shall be verified by performing hand calculations to check output or by checking the formulas used in the calculations, per the checking process defined in Section 2.0. A comparison shall be made between the computer-generated output and the hand calculations. The spreadsheet and calculations are then audited by the DPCM, and if adequately verified, added to the list of software programs verified for the project. Design subconsultants will perform this verification on their internally developed spreadsheets and provide the verification information to the DPCM for inclusion on the Verified Computer Program Log.

Verified Computer Program Log. The DPCM will maintain a log of all spreadsheets and computer programs that are considered validated via inclusion in the Project Agreement, written approval by CDOT, or by formal verification. This log will be stored in Aconex.

Checking of Design Performed with Verified Computer Programs. Once a spreadsheet or computer program is added to the list of programs verified for this project, the design checking process may be streamlined. The input shall be checked in detail. The computer-generated output shall be reviewed for reasonableness and spot checked for accuracy.

2.3 Design Quality Control Reviews

To ensure the Reviewable Deliverable submittals meet project requirements, several internal design reviews will be conducted as the milestone design packages progress from the preliminary stage to the completed Released for Construction (RFC) documents. The following reviews will be conducted concurrently prior to the Preliminary Design Plans (30%) submittal, Final (100%) design submittal, and Pre-RFC submittal.

2.3.1 Discipline Review

A Discipline Review (also known as an Independent Technical Review) will be performed on all design reports, drawings, and specifications. The objective of the Discipline Review is to examine the suitability of the design, ensure consistency with discipline-specific standards, ensure the materials and method of construction are adequately addressed, and ensure conformance with the

Project Agreement and sound engineering practice. The Discipline Reviewer will typically be the Design Process Expert who is a qualified professional and who has not been involved in design process.

The DDL or a designee assembles the review copy set and submits it and the Form ITR to the Design Document Control Manager for internal distribution. The Originator will note the areas that require review. The Discipline Reviewer is responsible for reviewing the design documents and for recording comments on Form RCSR or on a hardcopy of the review set. The DDL is responsible for ensuring that the Originator addresses all review comments. Once all comments have been resolved to the satisfaction of the Discipline Reviewer, the completed Form ITR will be signed and submitted to the Design Document Control Manager for internal distribution.

2.3.2 Interdisciplinary Review

An Interdisciplinary Review is used for any design reports, plans, and/or specifications that involve more than one discipline, or that may affect another discipline. The objective of the Interdisciplinary Review is to coordinate design between and within disciplines to ensure that conflicts, omissions, or misalignments do not occur between the drawings, between the drawings and the specifications, or between integrated or adjacent work. The DPE for each discipline will be responsible for providing an initial review of each milestone design package to determine whether a thorough review by his/her discipline is needed.

The DDL assembles the review copy set and submits it via the Design Document Control Manager for internal distribution. Each reviewer is responsible for reviewing the document with respect to their responsibilities. The reviewer records comments on Form RCSR.

The DDL reviews all comments and conducts a comment resolution meeting within the design team or consults with other disciplines as necessary to resolve any differences. Resolution of each comment is noted by the DDL or designee on the Form RCSR.

2.3.3 Constructability Meetings

Constructability Reviews (CR) will be conducted for Preliminary (30%) design plans, Final (100%) design plans and Pre-RFC submittals to coordinate and review construction issues and their impact on the design details. The Lead Contractor will assign construction team members to review the documents regarding adequacy of information; tolerances; site access and restrictions; safety, economics, and efficiencies of construction methods and materials; availability of materials, equipment, and required labor; interface and conflicts between utility and construction disciplines; completeness; and prudent construction practices. The construction team will verify that the work can be coordinated between different personnel in the same area, in adjacent areas, or on related tasks.

The DDL assembles the review copy set for distribution and submits it to the Design Document Control Manager for internal submittal to the construction team. The construction team is responsible for reviewing the document with respect to their responsibilities. The reviewer records comments on Form RCSR.

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The DDL reviews all comments and conducts a comment resolution meeting or consults with the construction team as necessary to resolve any differences. Resolution of each comment is noted by the Design Discipline Lead on the Form RCSR.

The construction discipline leads will routinely attend the Task Force meetings associated with their discipline. This continual engagement is anticipated to result in constructability issues being worked through and resolved during the design process.

2.3.4 Environmental Compliance Review

Environmental Compliance Reviews (ECR) will be made available for Preliminary (30%) design plans, Final (100%) design plans and Pre-RFC submittals to assess how the design complies with environmental requirements, commitments, limitations and restrictions. The Environmental Compliance Manager, or designee, will provide review comments in the RCSR Form for consideration by the design team.

The DDL reviews all comments and conducts a comment resolution meeting or consults with the Environmental Compliance Manager as necessary to resolve any differences. Resolution of each comment is noted by the Design Discipline Lead on the Form RCSR.

Environmental team members will be invited to routinely attend Task Force meetings for the various disciplines. This continual engagement is anticipated to result in environmental compliance issues being worked through and resolved during the design process.

2.3.5 Right-of-Way Review

Right-of-Way Reviews (RWR) will be made available for Preliminary (30%) design plans, Final (100%) design plans and Pre-RFC submittals to assess how the design conforms to and fits within the existing and planned Right-of-Way limits for the Project. The Right-of-Way Manager, or designee, will provide review comments in the RCSR Form for consideration by the design team.

The DDL reviews all comments and conducts a comment resolution meeting or consults with the Right-of-Way Manager as necessary to resolve any differences. Resolution of each comment is noted by the Design Discipline Lead on the Form RCSR.

Right-of-Way team members will be invited to routinely attend Task Force meetings for the various disciplines. This continual engagement is anticipated to result in right-of-way issues being worked through and resolved during the design process.

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3.0 Design Submittals

The three major types of design submittals for this project are described below. In rare instances, such as for field-identified safety issues, the Department may waive the need for the 30% design submittal, 100% design submittal and/or the Pre-RFC submittal and allow for the package to advance directly to the Final RFC submittal. The process for the standard submittals is shown in Attachment 2, Design Process Flow Chart.

3.1 Reviewable Deliverable Review Requirements

FRMG's process for the review of Reviewable Deliverable design products for the Project conforms to Project Agreement requirements for performing design quality reviews and certifying compliance with design quality process controls. Design submittals are generally prescribed for 30% design, 100% design and Pre-RFC stages as described below. In some cases, a 60% design package is required, which will be treated similar to a 100% design submittal.

3.2 Preliminary (30% level) Plan Package Submittal

The intent of the Preliminary Design submittal is to provide a formal opportunity for the Department, the Lead Contractor, various design team disciplines, and other project stakeholders to review the design plans to ensure that the design is progressing appropriately and proceeding in the right direction; the plans reflect Lead Contractor requirements for construction; design features are coordinated; and there are no fatal flaws within a given discipline or between disciplines. The contents of the preliminary submittal for each discipline will be as mutually agreed by members of the applicable Task Force and in compliance with Project Agreement requirements. The Preliminary Design Plans will be submitted to allow a minimum of 15 days for Department review. A Comment Resolution Meeting may be scheduled approximately one week after Department review comments are received.

3.3 Final (100% Level) Plan Package Submittal

The Final (100% level) submittal package is prepared when the design for a given element or area is nearing completion. The submittal may include plan sheets, specifications, technical memoranda, design reports, calculations, and other pertinent data, as applicable. As a result of the ongoing discussion and resolution of design and construction issues via the weekly Task Force Meetings, Design Progress Review Meeting, and informal reviews, it is anticipated that few significant revisions or changes will be required at this stage. The Final plan package will be submitted to allow a minimum of 15 days for Department review. A Comment Resolution Meeting will be scheduled approximately one week after Department review comments are received.

3.4 Released for Construction Submittal

The Pre-RFC submittal is prepared when all comments from the Final plan submittal have been addressed and appropriately incorporated. The Pre-RFC submittal will include the design documents including plans, specifications, reports and other materials necessary for construction.

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The Pre-RFC package will be submitted to allow a minimum of 15 days for Department review. A Comment Response Meeting will be scheduled approximately one week later if any review comments are received. The Final RFC documents will be submitted to the Department and issued to the field when any final review comments have been incorporated.

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4.0 Design Input Updates and Audit Processes

After each milestone design package has been checked and before distribution by Project Wise for review or RFC, the DPCM performs an audit to verify the documents have been checked and reviewed in accordance with the Stage 1 QMP and this DPCP. If the milestone design package has previously been reviewed, the DPE will also verify that prior comments have been resolved and incorporated, as applicable. Table 4-1 DQC Audits summarizes the document requirements for design quality audits:

Table 4-1. DQC AUDITS
Document Requirements for Design Quality Audits

Submittal	Original Plan Sheet	Check Print of Plan Sheet or Report	Inter-disciplinary Review, CR, ITR	Form RCSR with Final Code and Verification	Original Calcs	Checked Calcs	Support Docs	Specs	Associated Forms
Design Reports (Geotechnical, Hydraulics, etc.)		➸	5	➸	➸	➸	➸		1
Preliminary Design Plans	➸	➸	➸	➸	➸	➸	➸	➸	1
Final (100%) Level Package	➸	➸	➸	➸	➸	➸	➸	➸	1
Final RFC Package	2	➸	4	➸	➸	3	3	➸	1
NDC	2	➸	3	➸	3	3	3	➸	1
FDC	2	➸	3		3	3	3	➸	1

1. Form DQA, completed and signed by the DPE to document audit. The audit and Form DQA are reviewed and approved by the DPCM.
2. Plan Sheets are signed and sealed for RFC in accordance with Section 7 (RFC Procedure).
3. The Design Discipline Lead (DDL) determines the need for supporting calculations and internal reviews/checking based on the significance and magnitude of the change.
4. The DDMP and the DPCM will review the Department's comments on the 100% submittal to determine if additional Discipline, Interdisciplinary or Constructability Reviews are needed for the RFC submittal. After the 100% Comment Resolution Meeting, the Department may request

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these reviews be conducted. If any of these reviews are waived, the DPCM will add a comment/note to the Form DQA to document the decision.

5. If the Department has comments on the Pre-RFC submittal, the DDMP and the DPCM will review the Department's comments to determine if a Discipline, Interdisciplinary or Constructability Review of the revised final report is needed. The Department may specifically request these reviews be conducted. If any of these reviews are waived, the DPCM will add a comment/note to the Form DQA noting this.

Form DQA (Design Quality Audit Checklist) is used to perform, record, and certify the audit. A non-conformance with the quality process results in the documents being returned to the Originator to bring the package into compliance. If the audit finds all documents in conformance, the DPCM completes and signs Form DQA to document and certify that the Stage 1 QMP requirements have been followed. Form DQA serves as the certification letter and shall be included with each milestone design package submittal to the Lead Contractor for review, approval, and forwarding.

The DPCM shall conduct audits with care, but in a diligent and timely manner so that the design schedule is maintained. The Department and the Independent Design Quality Control Manager will have access to all design audit documentation.

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5.0 Design Deliverable Tracking

The Department and other approved project stakeholders (ie: affected local governments, railroads and utilities) will have opportunities for input on the design as it is developed via Formal Design Reviews (FDR) performed on the Preliminary Design Plans submittals and the 100% design level submittals.

This multiple stage review process is used to ensure all final documents are compatible with project functional and technical requirements, meet required design criteria and contract requirements, and address review comments.

The review process consists of distribution of milestone design packages (including pertinent backup information), preparation of written comments by reviewers (Form RCSR), and a comment resolution meeting. FDRs occur for the 30%, 100% and Pre-RFC submittals.

5.1 FDR Roles and Responsibilities

After the milestone design package (i.e., the design deliverable) has been audited and approved by the DPCM, the Design Document Control Manager will submit the design deliverable and Form RCSR to the Lead Contractor Document Control Manager for submittal to the Department via Project Wise. The design deliverable transmittal letter specifies the date the comments are due and the date of the comment resolution meeting. Fifteen working calendar days, exclusive of holidays, are allowed for each Preliminary (30%), Final (100% level) and Pre-RFC submittal review. The design team will be responsible for coordinating with other entities (such as Local Agencies and permitting agencies) to ensure their approval of designs and concepts in design packages. When necessary, the preliminary designs and pre-RFC design deliverables will include letters to appropriate other entities requesting their review of the design package and submittal of formal comments via Form RCSR. RFC deliverables will include a signed document from appropriate other entities indicating their approval of the RFC submittal. In addition to discussions at Task Force meetings, the design team coordination with these other entities may include one-on-one meetings to discuss the concepts and designs in upcoming milestone design packages. The transmittal letter for each design deliverable will also include a list of any Local Agencies that are party to the design deliverable.

Department reviewers should be individuals who have sufficient relevant experience to provide appropriate critique of the methods, assumptions, and good design practice. Reviewers include the Department, representatives from local government, and utility owners (when their infrastructure or agreements with CDOT within the project limits are involved). The Department will determine which outside entities need to review submittals and will distribute the submittal package accordingly. Each of these entities conducts their respective review with a different focus and objective. The types of reviews to be performed along with roles of the various reviewers are summarized in Table 5-1 Design Reviewers.

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Table 5.1. DESIGN REVIEWERS
Role of Design Reviewers

Reviewer	Type of Review	Role
CDOT Personnel	Formal Design Review (FDR)	Review plans for conformance with the discipline criteria and contract requirements.
Construction Team	Constructability Review (CR)	Review documents for overall constructability including: • Aspects that affect the construction such as site restrictions, availability of materials, construction equipment requirements, and economics of the proposed construction. • Ability to construct the work, including practicality of achieving specified tolerances, access needed to install or construct work, and inter-discipline conflicts. • Adequacy of information on plans and specifications to construct the work.
Design Process Experts	Discipline Review	Review plans for conformance to Design Inputs, design processes and standards, discipline systems, programs and technical requirements, output requirements and industry standard design documents, and design calculations and other supporting documentation.
Design Process Experts (or Leads)	Interdisciplinary Review	Review plans to coordinate design responsibility and design details between and within disciplines. Review the documents for interferences, compatibility between design disciplines, clarity, and completeness. Verify there are no conflicts, omissions, or misalignments with adjacent work.
Environmental Compliance Manager	Environmental Compliance Review	Review documents for compliance with project environmental commitments, mitigation requirements, and permits.
Railroad	Railroad Review	Review plans for conformance with respective standards and requirements.
Utility Owners	Utility Review	Review plans for conformance with respective standards and requirements.
Local Governments	Local Government Review	Review plans for conformance with respective standards and other issues of local government concern.

5.2 Comment Resolution Meetings

Reviewers shall provide their written comments on Form RCSR. If redlines are necessary to clarify comments on Form RCSR, the related redlines shall be submitted with the Form RCSR. Each individual comment/ mark-up on the redlined set shall be detailed on a separate row on Form RCSR, with notes or labels making it clear which redline correlates to which row. Comments are submitted electronically by the date and time indicated on the review package transmittal letter. If a reviewer has no comments, he/she indicates “No Comments” on the Form RCSR and submits it to the DPCM via Project Wise. If a Reviewer has no comments, neither final dispositions nor Reviewer’s concurrence is necessary.

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The DDMP, or designee, conducts a comment resolution meeting to document and resolve responses to review comments. Participants include the design engineer, the Department, a construction representative, and others as applicable (geotechnical engineer, environmental compliance manager, utility coordinator, ROW personnel, and representatives from local governments and utilities). Reviewer comments are discussed and agreement reached on the appropriate action to be taken. Should a comment require further investigation before final resolution, the design team prepares more information and discusses, as appropriate, with the DDMP or designee, the reviewer, and the Department to reach final agreement. A copy of the meeting minutes from the comment resolution meeting can be included to supplement the Form RCSR.

When the Originator has ensured final dispositions are entered on Form RCSR for each comment, Form RCSR will be submitted via Project Wise to obtain concurrence from the reviewer(s) of the final dispositions. The reviewer is responsible for concurrence and signing off (by initialing the "Reviewer Concurrence" column) on Form RCSR that each comment has been resolved, either by incorporation into the plan sheets, special provisions, specifications, or other submittals, as appropriate, or by agreement that the comment will not be incorporated. This concurrence is only for the designer's response and final disposition; the concurrence does not indicate the Department has verified that the changes to meet the final disposition have been completed. The DDL/designer will be responsible to track all 'A' and 'T' dispositions and ensure those comments are addressed on the next submittal of that design package.

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6.0 Over-the-Shoulder Reviews

Over-the-Shoulder (OTS) reviews by Department representatives (and other approved project stakeholders, as appropriate) will occur through attendance at Task Force Meetings, attendance at planned Design Progress Review Meetings, attendance at the Comment Resolution Meetings that occur at the conclusion of formal reviews, and routine day-to-day interaction. Feedback from the reviews will be documented in meeting minutes, which will be submitted within 5 working days of the OTS review. If used as part of an OTS review, the Form RCSR will be included in the minutes.

The intent of OTS is to review the design as it progresses in a way that minimizes disruption to ongoing design work while providing timely comments and feedback on the design.

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7.0 RFC Document Development and Approval

1. After the Final (100% Level) review, the design team makes the necessary revisions to the design documents to address the comments. When a comment is not incorporated (code C on the Form RCSR), a note in the response area will include reference to the resolution meeting date. A copy of the meeting minutes can be included to supplement the Form RCSR.
2. The design team checks all revisions made to the 100% submittal package in accordance with Section 1.1.
3. The DDMP or designee ensures all 100% level submittal review comments are addressed, resolved, and incorporated.
4. The DDMP or designee assembles the Pre-RFC package and has the Engineer-of-Record sign and date their seal on the documents and verifies the date and revision number on each. The DDMP submits the Pre-RFC Package to the DPCM for audit.
5. The DPCM audits the Pre-RFC package in accordance with Section 4. The DPCM signs Form DQA to certify the Pre-RFC submittal package and submits the entire RFC packet for approval and distribution.
6. The Department, and other agencies as appropriate, will review the Pre-RFC package and respond with Acceptance or a requirement to resubmit the documents with resolution to specifically stated deficiencies. Upon the Department's Acceptance of the Pre-RFC submittal, the Lead Contractor will electronically stamp each individual sheet of the RFC submittal packet as 'Released for Construction' with the date as shown in Figure 7-1.

Figure 7-1. Released for Construction Stamp

Central 70 Project

Current Date Is Stamped Here

RELEASED FOR CONSTRUCTION

7. FRMG will log, copy, distribute, and retain the RFC documents. FRMG will provide notification to the Department that the Pre-RFC package has been issued as RFC documents. The RFC documents will be distributed to the Department along with the letter of transmittal, Form DQA, and the responses to comments (Form RCSR).

For RFC of documents associated with changes to previously Released for Construction documents (i.e., NDCs and RFI/FDCs), refer to Section 10 of this DPCP.

Although the Lead Contractor will serve as a resource for the constructability reviewers and will contribute on key design issues as necessary, the Lead Contractor will not be part of the formal

design process and will not sign RFC milestone packages. Similarly, the Construction Process Control Manager (CPCM) will attend Task Force meetings as requested by the DPE, but will not be part of the formal design process and will not sign RFC milestone packages.

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8.0 Shop Drawings, Supplementary Drawings, and MHTs

The minimum required submittals and P.E. seal requirements of shop drawings and working drawings will be as described in subsection 105.02, Table 105-1, of the 2011 CDOT Standard Specifications for Road and Bridge Construction

8.1 Shop Drawings

FRMG will submit shop drawings for permanent work to be incorporated into the Project as appropriate. Prior to submitting the drawings to the DDMP, the construction team will review the constructability of the drawings. If the drawings are determined to be constructible, the Lead Contractor will forward the drawings to the DDMP, where the shop drawings will be assigned a unique ID. Upon receipt by the Design Document Control Manager, a shop drawing review stamp will be placed on the document.

Each time a shop drawing submittal is received, the DDMP or designee will review the scope of the submittal and forward the complete submittal package to the appropriate design team members. Once received by the reviewer, the reviewer will complete a technical review of the drawings to determine their compatibility with the plans and specifications.

If any discrepancies are determined in review of the documents by the design team, they will indicate required changes and request a resubmission by submitting back to the Lead Contractor as unapproved. Following approval or modification by the designer, the DDL will review the drawings and stamp them as “Reviewed, no exception taken,” “Reviewed, revise as noted,” or “Resubmit, revise as noted” to be in conformance with the DPCP requirements and will return them to the DDMP for submittal to the Lead Contractor. If the drawings are not approved, they must be returned to the vendor for correction. Revisions will be resubmitted through this process until they are approved.

FRMG will transmit approved drawings to the Department before the start of any onsite work detailed in the drawings. Shop drawings for Safety Critical Work will be included in the detailed Construction Plan.

As appropriate, submitted shop and supplementary drawings will be reviewed by the design team and approved prior to use on the project. Drawings that require engineering calculations or judgment shall be developed under the supervision of, and sealed by, a professional engineer registered in the State of Colorado.

8.2 Falsework, Shoring and Erection Drawings

FRMG will develop or obtain Engineered Construction Drawings as required by the project specifications. These drawings include but are not limited to falsework, shoring, demolition, and girder erection. These designs may be produced in-house or subcontracted to an engineering firm. The Engineered Construction Drawings will not be developed by the design team.

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Falsework, shoring, erection, or other temporary construction drawings that require a Professional Engineering seal will be reviewed by the construction team. The construction team will forward the submittal to the design team for review where appropriate. The design team will review the submittal for general concurrence but will not review the engineering calculations.

For safety critical work, FRMG will submit the Construction Plan.

8.3 Working Drawings

FRMG will prepare working drawings to assist the construction team in building the work. These working drawings are used to supplement the plans by detailing the construction or providing information on the proposed method of construction.

8.4 Method of Handling Traffic (MHTs)

The Lead Contractor or the traffic control subcontractor will prepare MHTs as required for traffic control. A FRGM team member will review each MHT and coordinate with the Originator if there are questions or revisions necessary. The MHT will then be submitted by the Lead Contractor to the Department for information or review as appropriate.

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9.0 Acceptance of Design

The Department's Acceptance of the Design Documents will occur after the Lead Designer has completed all design and has addressed, resolved, and incorporated, to the satisfaction of the Department, any prior Lead Contractor, IDQM, third-party, and Department review comments. The Lead Contractor's Designer will provide documentation to the Department that all review comments have been addressed. The DPCM provides documentation for the Department that all design packages released for construction are in compliance with the Stage 1 QMP. For certification of construction work, see the Stage 2 QMP.

The following items are transmitted to the Department to document final design:

- All design plans and specifications
- Design calculations
- Design reports
- CADD files as specified in the Project Agreement
- Completed RCSR forms

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10.0 Changes to Post-RFC Documents

Requests for clarifications or changes to Released for Construction (RFC) documents originate from the Lead Contractor via an RFI or an FDC, or from the design team as an NDC resulting in issuance of a formal revision to the RFC documents. All RFIs, FDCs, and NDCs will be processed through Aconex. The DDMP will maintain a master tracking spreadsheet of all approved NDCs and FDCs to ensure subsequent NDCs and FDCs incorporate applicable, previously approved FDCs and NDCs.

All revisions to RFC documents that will be reissued for construction will be re-sealed, re-signed, and re-dated by the Engineer of Record to avoid confusion regarding the true latest version of a document.

The Department and third party questions concerning RFC plans will be submitted to the Lead Contractor via Aconex.

10.1 Requests for Information (RFIs)

The Lead Contractor is responsible for initiating Form RFI and submitting the RFI. See the Request for Information form (Form RFI) in Attachment 3.

- RFI resulting in a written response: The DDL or designee will provide a written response to an RFI if the response can be articulated with a simple explanation, sketch, and/or back-up calculations. The response cannot involve formal drawing revision.
- RFIs should not be submitted if it is apparent the answer will require a formal revision to an RFC drawing/specification. If an RFI is submitted that requires a formal revision, the DDL or designee will return the RFI with a disposition that an FDC is needed. The Lead Contractor will then submit an FDC, via Aconex, to the Lead Designer.

The DDMP will determine which DDL and/or Engineer of Record will be responsible for responding to an RFI. The DDL will provide a response and signature on the Form RFI along with any clarifying sketches and/or back-up calculations and then submit the Form RFI to the DDMP for review, signature, and submittal to the Department, for concurrence. Department concurrence will be obtained prior to formally issuing an RFI response.

If the design team receives an RFI that identifies a nonconformance related to design, the DPCM will complete a Form DNCR in consultation with the DDMP and affected DDL(s). The completed Form DNCR will be submitted to the Lead Contractor within 5 working days.

10.2 Changes to Post-RFC Documents

The following outline describes the process to make revisions to RFC documents in response to an FDC. See Field Design Change/Notice of Design Change form (Form FDC/NDC). This process is for a field-generated, formal revision to an RFC drawing or specification.

- The Lead Contractor is responsible for initiating the Form FDC/NDC and providing to the Lead Designer and the Department via Aconex.

- Upon determination that an FDC is warranted, the Lead Contractor will obtain an FDC number from the Lead Contractor Document Control Manager, and then submit a Form FDC/NDC, via Aconex, with a description of the issue.
- Upon receipt of the FDC, the DDMP or designee will determine which DDL will be responsible for addressing the FDC.
- The assigned DDL will be responsible to ensure the FDC incorporates applicable, previously approved FDCs and NDCs.
- The DDL will ensure FDCs are formally checked and formally reviewed.
- When the checking and review are complete, the Engineer(s) of Record of the original design will indicate their approval(s) of the FDC on the Form FDC/NDC.
- The DDL will sign and submit the revised documents and Form FDC/NDC to the DDMP for review and signature. The revised documents, Form FDC/NDC, and associated checklists and review forms will then be submitted to the DPCM for audit. The DPCM will audit the packet as per Form DQA and then submit for approval and submittal via Aconex.
- After the Department's review and Acceptance, the revised documents will be stamped and sealed by the Engineer(s) of Record and then submitted via Aconex.

10.3 Notices of Design Changes (NDCs)

The following outline describes the process to develop an NDC. See also Field Design Change/Notice of Design Change form (Form FDC/NDC) in Attachment 3.

- The Lead Designer discovers or determines that it may be necessary to revise an RFC drawing/ specification, resulting in an NDC.
- This change is initiated by the design team. The change may be in the form of an updated or additional drawing or an update to an existing specification, for example. This possible change is brought to the attention of the DDL or DDMP. If the DDL or DDMP concur that an NDC is required, the Originator obtains an NDC number from the Lead Contractor Document Control Manager.
- The Originator will complete a Form FDC/NDC and prepare supporting documentation. The supporting documentation identifies the area on a drawing, for example, where the change is to occur so that the Lead Contractor can cease operations in that location.
- The Originator will submit the Form FDC/NDC along with supporting documentation.
- After receipt of approval from the Lead Contractor, the Originator will progress the revised documents through the checking, review and revision process, incorporating all applicable, previously approved FDCs and NDCs.
- The DDL will ensure NDCs are formally checked as per Section 2 and formally reviewed as per Section 2.3.
- When the checking and review are complete, the Engineer(s) of Record of the original design will indicate their approval(s) of the NDC on the Form FDC/NDC.

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- The DDL will sign and submit the revised documents and Form FDC/NDC to the DDMP for review and signature. The revised documents, Form FDC/NDC and associated checklists and review forms are then submitted to the DPCM for audit. The DPCM will audit the packet as per Form DQA and then submit for approval and submittal via Aconex.
- After the Department's review and Acceptance, the revised documents will be stamped and sealed by the Engineer(s) of Record and then submitted via Aconex.

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11.0 Design Quality Improvement

For this project, FRMG will participate in Quality Task Force Meetings. These meetings will be held weekly at the start of design and construction to discuss quality concerns and issues. It is critical to the success of the Project that these meetings be proactive and forward looking with focus on root cause analysis during review of quality concerns. The goal is to determine what is right, rather than who is right. A meeting schedule and agenda will be set by FRMG prior to each meeting. Within 4 calendar days of each meeting, minutes will be submitted to the meeting attendees. The frequency of Quality Task Force meetings may be reduced as quality issues decrease. If design quality performance become questionable, the frequency of these meetings will be increased. Prior to the start of construction, the agenda of the Quality Task Force meetings will primarily be to address and correct issues of design quality and the Design Process Control processes.

Throughout the life of the project, the Stage 1 QMP and DPCP will be living documents, subject to revisions that will further enhance the overall quality of the Project. After a revised Stage 1 QMP has been reviewed and approved by the PQM, the Stage 1 QMP will be re-distributed. The DPCM will promptly notify the DPEs, the DDLs and the design team, including subconsultants, of changes to the Stage 1 QMP. If deemed necessary, the DPCM will conduct revised Stage 1 QMP training for the design team and modify the training log to reflect the revised training and attendees.

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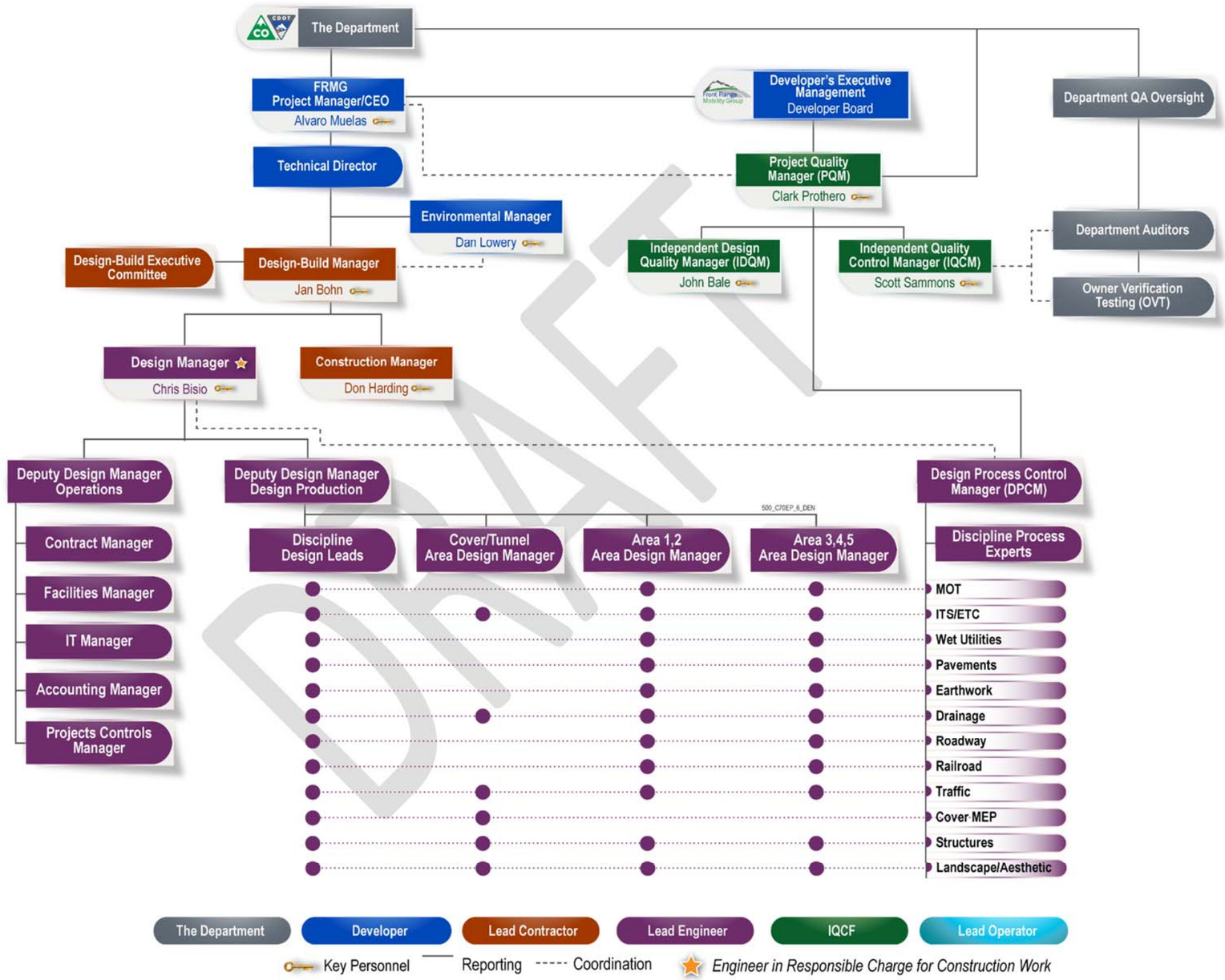
Attachment 1
Design Process Control Team


The Department
FRMG Project Manager/CEO
Alvaro Muelas
Developer's Executive Management
Developer Board
Department QA Oversight
Technical Director
Project Quality Manager (PQM)
Clark Prothero
Environmental Manager
Dan Lowery
Department Auditors
Design-Build Executive Committee
Design-Build Manager
Jan Bohn
Independent Design Quality Manager (IDQM)
John Bale
Independent Quality Control Manager (IQCM)
Scott Sammons
Owner Verification Testing (OVT)
Design Manager
Chris Bisio
Construction Manager
Don Harding
Deputy Design Manager Operations
Deputy Design Manager Design Production
Design Process Control Manager (DPCM)
Contract Manager
Facilities Manager
IT Manager
Accounting Manager
Projects Controls Manager
Discipline Design Leads
Cover/Tunnel Area Design Manager
Area 1,2 Area Design Manager
Area 3,4,5 Area Design Manager
Discipline Process Experts
MOT
ITS/ETC
Wet Utilities
Pavements
Earthwork
Drainage
Roadway
Railroad
Traffic
Cover MEP
Structures
Landscape/Aesthetic
The Department
Developer
Lead Contractor
Lead Engineer
IQCF
Lead Operator
Key Personnel
Reporting
Coordination
Engineer in Responsible Charge for Construction Work

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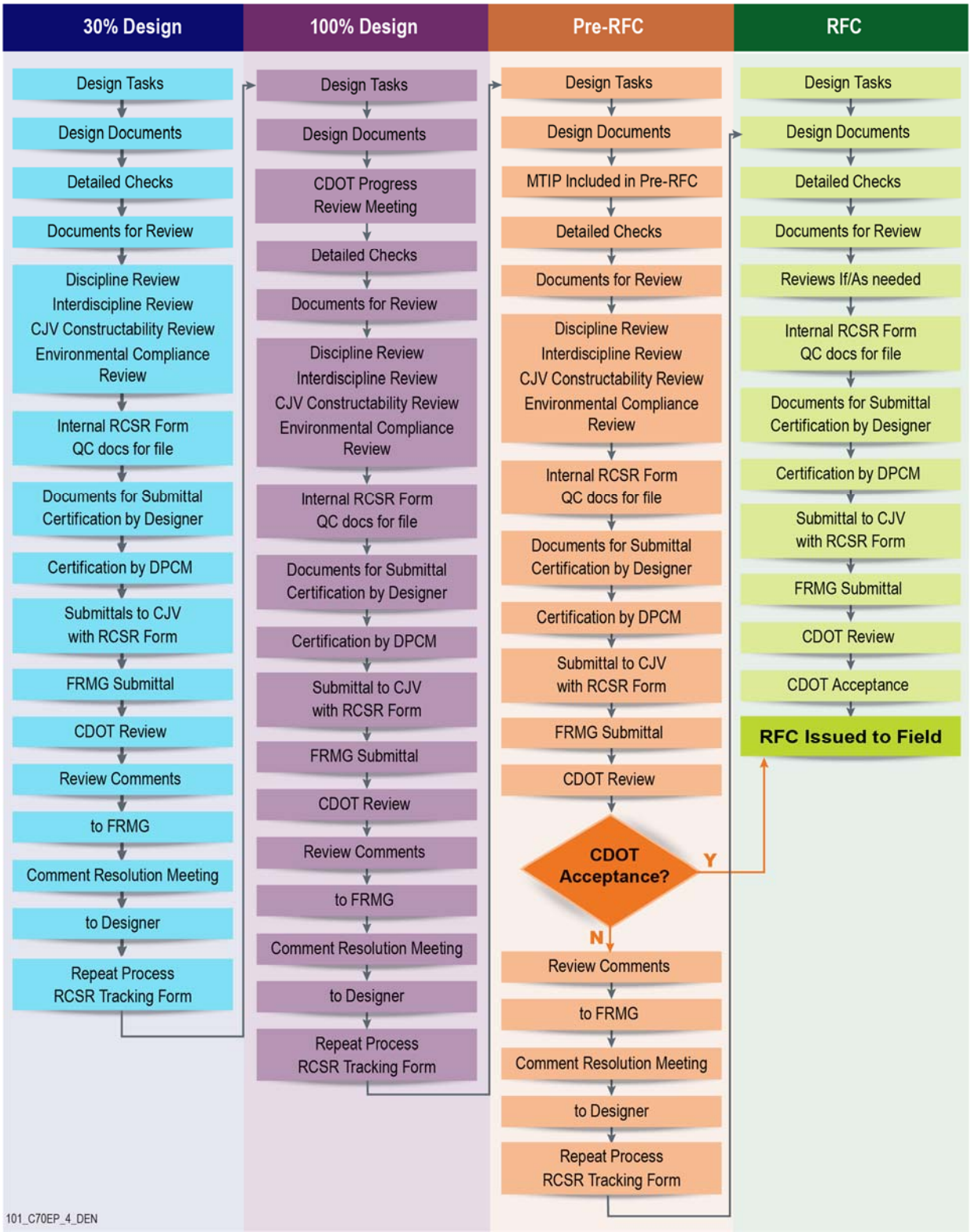
Attachment 2
DPCP Design Process Flowchart


30% Design
Design Tasks
Design Documents
Detailed Checks
Documents for Review
Discipline Review
Interdiscipline Review
CJV Constructability Review
Environmental Compliance Review
Internal RCSR Form
QC docs for file
Documents for Submittal
Certification by Designer
Certification by DPCM
Submittals to CJV
with RCSR Form
FRMG Submittal
CDOT Review
Review Comments
to FRMG
Comment Resolution Meeting
to Designer
Repeat Process
RCSR Tracking Form
100% Design
Design Tasks
Design Documents
CDOT Progress
Review Meeting
Detailed Checks
Documents for Review
Discipline Review
Interdiscipline Review
CJV Constructability Review
Environmental Compliance Review
Internal RCSR Form
QC docs for file
Documents for Submittal
Certification by Designer
Certification by DPCM
Submittal to CJV
with RCSR Form
FRMG Submittal
CDOT Review
Review Comments
to FRMG
Comment Resolution Meeting
to Designer
Repeat Process
RCSR Tracking Form
Pre-RFC
Design Tasks
Design Documents
MTIP Included in Pre-RFC
Detailed Checks
Documents for Review
Discipline Review
Interdiscipline Review
CJV Constructability Review
Environmental Compliance Review
Internal RCSR Form
QC docs for file
Documents for Submittal
Certification by Designer
Certification by DPCM
Submittal to CJV
with RCSR Form
FRMG Submittal
CDOT Review
CDOT Acceptance?
Y
N
Review Comments
to FRMG
Comment Resolution Meeting
to Designer
Repeat Process
RCSR Tracking Form
RFC
Design Tasks
Design Documents
Detailed Checks
Documents for Review
Reviews If/As needed
Internal RCSR Form
QC docs for file
Documents for Submittal
Certification by Designer
Certification by DPCM
Submittal to CJV
with RCSR Form
FRMG Submittal
CDOT Review
CDOT Acceptance
RFC Issued to Field
101_C70EP_4_DEN

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Attachment 3
DPCP Forms and Checklists

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Attachment 3
DPCP Forms and Checklists

Review Comment Summary and Resolution (RCSR) Form

Submittal:	(enter submittal name/title)
Milestone:	(enter Interim, 100%, RFC)
Description:	(enter submittal description)
Reviewer:	(enter your name)
Discipline:	(enter your discipline or agency)
Date:	(enter date)

CODES

A = Accept Comment - Correct, Add to, or Clarify plans
D = Dismiss Comment
C = Clarify or discuss and resolve prior to next design phase
R = Resolve comment in next design phase

NOTES

*Indicate Dwg/Page No. or "G" for general comment
**Agreed Resolution completed by reviewer and designer

Front Range Mobility Group

REVIEWER			DESIGNER			
Item No.	**Dwg. No.***	**Comments**	**Initial Code**	**Response**	**By**	**Final Code****
1						
2						
3						

DRAFT

Design Nonconformance (NC-D) Report Form

From:_____ Date:_____
(Design Quality Assurance Manager)

To:_____
(DB Designer Project Manager)

Project Name: Central 70 Project Design Element:_____

Copy:_____
(DB Project Manager)

Transmittal/File No._____Applicable Contract Requirement:_____
(Part and Section Number)

The design work on the referenced design unit is not in conformance with the noted DQMP requirement for the reasons stated below (Attach additional sheets as necessary):

_____

_____

_____

_____

_____

RESOLUTION: Date:_____

From:_____
(DB Designer Project Manager)

To:_____
(DPCM)

The above noted DQMP nonconformance has been corrected and/or resolved as indicated below (attach additional sheets as necessary):

_____

_____

_____

_____

_____

Acknowledgement of Receipt:_____ Date:_____
(Name & Initials of Design Quality Assurance Manager)

Comments by DPCM, if any:_____ [See attached sheet(s)] None

Send copy of completed, acknowledged form to Central 70 Document Management System

DRAFT

Certificate of Compliance with Quality Procedures (COCQP) Form

This is to certify that the attached document(s) has been produced in accordance with the Design Quality Management Plan.

Document ID: _____

Engineer of Record: _____ _____
(Signature) (Date)

_____
(Printed Name)

QC Checker(s): _____ _____
(Signature) (Date)

_____
(Printed Name)

_____ _____
(Signature) (Date)

_____
(Printed Name)

_____ _____
(Signature) (Date)

_____
(Printed Name)

_____ _____
(Signature) (Date)

_____
(Printed Name)

_____ _____
(Signature) (Date)

_____
(Printed Name)

Constructability Reviewer: _____ _____
(Signature) (Date)

_____
(Printed Name)

DRAFT

Design Change (DC) Form

This form serves as advance notice and is NOT intended to be a formal change to design documents.

To:	**FDC or NDC (Circle)** **Number:**
From:	**Date:**
Design Element:	**Discipline:**
Lead Discipline:	☐ With attachment(s)
Package:	☐ Without attachment(s)

A. Reason for Change

- ☐ Error in Plans
- ☐ Design Progress
- ☐ Conflicting Design Elements
- ☐ Other:
- ☐ Constructability
- ☐ Differing Field Conditions
- ☐ Increase Cost Effectiveness
- ☐ Error or Ambiguity in Plans
- ☐ CDOT – Directed Scope Change

Remarks:_____

B. Description of Change (note area that should not be constructed until plans are reissued):

C. Anticipated Cost and Schedule Impacts:

D. Drawings/Specifications to be Revised:

Revised Drawings/Specifications will be Available on:

Quality Control		**ODOT Oversight**	
☐	☐	☐	☐
☐	☐	☐	☐
☐	☐	☐	☐

Construction		**Design Team**	
☐	☐	☐	☐
☐	☐	☐	☐
☐	☐	☐	☐

Date Received by Construction: _____

DRAFT

Request for Information (RFI) Form

This form serves as advance notice and is NOT intended to be a formal change to the design documents.

Title: _____

Project: Central 70 Project _____ Request No.: _____

To: _____ From: _____

_____ _____

Date Initiated: _____ Date Response Required: _____

Regarding:	Plan Sheet: _____	Spec. Section: _____
Description:		
Engineer's Response:		

Reference Drawings:

Attachments: ☐ **Yes** ☐ **No** **Pages:** _____

Cost Impact: ☐ **Yes** ☐ **No**

Schedule Impact: ☐ **Yes** ☐ **No**

Requested by: _____

Name: _____

Response by: _____ Signed: _____ Date: _____

Name: _____

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Front Range Mobility Group	Central 70 Project Design Process Control Plan Quality Management Plan Forms	
Document Owner:	Revision – 0	
Approved by:	Revision Date:	Review by:
Approved by:	Release Date: TBD	Page 1 of 2

Central 70 -- Generally Required Reviews, Forms and Checklists for Quality Audit

(Audit will be conducted on deliverables to CDOT; internal documents still need to be checked and reviewed, but won't be audited)

	Check/Review to be completed *(see Note 7)*					Project Specific Forms					Non-Project Specific Checklists				Project Specific Checklists
Deliverable Contains /tem(s) below:	Detail Check *(see Note 1)*	Interdisciplinary Review	Constructability Review	Technical Review (/TR)	Post /DR//TR/CR Check Print	Form /TR	Form RCSRs (for each review) and docs to support concurrence; not required for Detail Check	Completed CDOT Review Comment Summary and Resolution Form *(if CDOT has commented on a previous submittal of this package)*	Form FDC *(see Note 2)*	Form NDC *(see Note 2)*	Drawing Review Checklist & Attachment 1 *(see Note 3)*	Specification Review Checklist *(see Note 4)*	Study and Report Review Checklist *(see Note 5)*	Calculation Cover Page & Calculation Review Checklist	include the appropriate discipline checklist for each discipline contained in the submittal
plan sheets / drawings	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓
specifications	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓			
study or report *(see note 8)*	✓	✓	✓	✓	✓	✓	✓	✓					✓		
calculations from validated computer programs or verified spreadsheets	✓ (see note 6)													✓	
calculations	✓													✓	

Notes:

1 Also include check prints and final version of submittal docs
2 /nclude Form FDC/NDC if submittal includes revision to an RFC'd document
3 Because we are doing Form RCSRs for /nterdisciplinary Reviews, you can leave the bottom section of the Drawing Review Checklist blank
4 The Design Discipline Lead needs to complete the bottom section of the checklist also
5 The Design Discipline Lead needs to complete the bottom section of the checklist also
6 Only the /nput and Output need to be checked
7 For major structures, an independent Structure Design Check is also required as per 19.1.8 of CDOT Bridge Design Manual
8 /f the report includes goetechnical boring information, the Boring Log Revision Tracker must also be included for each boring

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Front Range Mobility Group

TECHNICAL REVIEW REPORT

Central 70 Project

PACKAGE DESCRIPTION:

Identifying Information

This section is to be completed by the Design Discipline Lead.

Assigned Technical Reviewer:

Deliverable to be reviewed:

Work Product Originator:

Review Scope: *Review technical concepts with respect to AASHTO and CDOT specifications and guidelines; identify areas of design and/or construction risk.*

Reviewer's comments required by:

Submitted by: _____ _____ _____

Design Discipline Lead (Print) **Signature** **Date**

Reviewer Report

This section is to be completed by the Independent Technical Reviewer.

Check box A **or** B:

A. ☐ Reviewer performed review and has no comments.

_____ _____ _____

Technical Reviewer (Print) **Signature** **Date**

or

B. ☐ The Reviewer's comments have been provided on:

☐ Deliverable
☐ Review Comment Summary and Resolution Form
☐ Other

If B is checked above, this section is to be completed after verification of comment incorporation. Check box C **or** D and E:

C. ☐ Back-check of Reviewer's comments has been performed by Originator AND all issues have been resolved between Originator and Reviewer.

or

D. ☐ Unresolved issues have been submitted to the Design Discipline Lead, Design Manager or designee for resolution.

and

E. ☐ Verification of correct incorporation of resolved comments into final document is complete.

_____ _____ _____

Technical Reviewer (Print) **Signature** **Date**

APPROVAL

To be signed after box A or E is completed.

☐ The review has been completed. Any significant issues not resolved between the Reviewer and the Originator have been resolved by the Approver.

_____ _____

Design Discipline Lead **Date**

Form TRR

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Design Quality Audit

DESIGN PACKAGE/SUBMITTAL NAME: ☐ Preliminary Design ☐ Pre-RFC ☐ RFC ☐ OTHER

DISCIPLINE:

The Design Discipline Lead(s) and Design Manager certify that quality control activities have been conducted throughout the design process in compliance with the Design Quality Management Plan and all contractual requirements. The Design Discipline Lead(s) and Design Manager certify that the deliverable is complete to the appropriate stage of design, is checked, and is ready to be released for construction (if an RFC submittal). The Design Discipline Lead(s) certify this deliverable is complete and meets the requirements of the Contract Documents.

COMMENTS:

SIGNED: _____ DATE: _____
DESIGN DISCIPLINE LEAD(S)

☐ The DDL(s) will mark this box when the deliverable is not 100% complete and/or does not fully meet the requirements of the Contract Documents. In such cases, the DDL(s) will submit a memo detailing the variances; the memo will be attached to this Form DQA.

SIGNED: _____ DATE: _____
DESIGN MANAGER

AUDIT ITEM(S):			**CONFORMS**		
AUDITOR:		**AUDIT DATE(S):**	**YES**	**NO**	**N/A**
1. Calculations:	a) Have both original documents and check prints been provided for audit?		☐	☐	☐
	b) Are procedures for marking-up check prints being followed (R-Y-G)? (Red/Yellow – Checker, Green – Backchecker/Checker, Yellow– Verifier)		☐	☐	☐
	c) Are the check prints appropriately signed-off and dated?		☐	☐	☐
	d) Have Checker comments been incorporated/addressed/resolved?		☐	☐	☐
	e) Did the checker sign-off and date the original documents?		☐	☐	☐
2. Computer Calculations:	a) Have computer programs been validated/ verified? – non-validated programs used:		☐	☐	☐
	b) Has computer input been checked?		☐	☐	☐
	c) For non-verified spreadsheets, has input and output been checked?		☐	☐	☐
	d) Are the check prints appropriately signed-off and dated?		☐	☐	☐
	e) Have Checker comments been incorporated/addressed/resolved?		☐	☐	☐
3. Drawings/Plan Sheets:	a) Have both original documents and check prints been provided for audit?		☐	☐	☐
	b) Are procedures for marking-up check prints being followed (R-Y-G)?		☐	☐	☐
	c) Are the check prints appropriately signed-off and dated?		☐	☐	☐
	d) Have Checker comments been incorporated/addressed/resolved?		☐	☐	☐
4. Specifications:	a) Have both original documents and check prints been provided for audit?		☐	☐	☐
	b) Are procedures for marking-up check prints being followed (R-Y-G)?		☐	☐	☐
	c) Are the check prints appropriately signed-off and dated?		☐	☐	☐
	d) Have Checker comments been incorporated/addressed/resolved?		☐	☐	☐
5. Other Design Documents (Reports, Deviations, etc):	a) Have both original documents and check prints been provided for audit?		☐	☐	☐
	b) Are procedures for marking-up check prints being followed (R-Y-G)?		☐	☐	☐
	c) Are the check prints appropriately signed-off and dated?		☐	☐	☐
	d) Have Checker comments been incorporated/addressed/resolved?		☐	☐	☐
6. Reviews: ITR, Interdisciplinary Review, CR & CDOT Reviews	a) Were scheduled design reviews completed?		☐	☐	☐
	b) Do review comments have an agreed upon action code?		☐	☐	☐
	c) Are the review comments incorporated/addressed/resolved?		☐	☐	☐
	d) Have Reviewers concurred with Final Dispositions on Form RCSRs?		☐	☐	☐

The signatures below certify the requirements of the DQMP have been fulfilled.

DQM: _____ DATE: _____

QCA Approval: _____ DATE: _____

See Reverse Side of this Form for RFC Certifications and Comments/Notes

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RELEASED FOR CONSTRUCTION

The DQM signature below certifies that the documents included in this submittal are in compliance with the requirements to be Released For Construction. The DQM certifies that the Design Process Quality Control procedures have followed the Design Quality Management Plan, that a Colorado registered Professional Engineer in responsible charge has signed all drawings prepared under his or her direction. By signing this release, the QCA approves the audit process and procedures conducted in support of this release. (For those drawings and documents included in the submittal that are prepared by a manufacturer or supplier or other persons not under his or her direct supervision, the Responsible Engineer shall affix a stamp that indicates the design shown on the sheet or document conforms to the overall design and contract requirements.)

DQM:_____DATE: _____

QCA Approval:_____DATE: _____

CDOT Acceptance:_____DATE: _____

Comments/Notes:

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Design Non-Conformance Report (DNCR)	
DNCR No.	
Date:	
Initiated by:	
Affected Discipline:	
Submittal Package:	
Description of Design Non-Conformance:	
Proposed Corrective Action:	

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Initiator (signature & date) _____

Design Manager (signature & date): _____

Design Process Control Manager (signature & date): _____

Design Quality Manager (signature & date): _____

CDOT: _____

Field Design Change/Notice of Design Change — FDC/NDC

This document is an: ☐ **FDC No:**_____ ☐ **NDC No:**_____

SPECIFICATION NO.: _____ DRAWINGS AFFECTED: _____

INITIATED BY: _____ DATE OF REQUEST: _____ DATE RESPONSE IS REQUIRED: _____

SUBJECT: _____ RFI # (if applicable) _____

DESCRIPTION OF ISSUE:

DESCRIPTION OF RESOLUTION:

ATTACHMENTS: _____

DESIGN MANAGER

DESIGN MANAGER'S INITIALS: _____

DISCIPLINES AFFECTED: ☐ Structures ☐ Drainage ☐ Geotechnical ☐ Utilities/Irrigation ☐ Traffic/MOT ☐ Environmental ☐ Roadway ☐ Other _____

☐ Environmental Compliance Manager concurrence by: or ☐ not applicable

_____

Approval by Engineer(s) of Record for original design(s) (sign and print name(s) along with date(s) of approval)

_____ _____

DESIGN DISCIPLINE LEAD (Sign and Print Name) DATE

_____ _____

DESIGN MANAGER (Sign and Print Name) DATE

_____ _____

DESIGN QUALITY MANAGER (Sign and Print Name) DATE

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Certificate of Compliance with Quality Procedures

This is to certify that the attached document(s) has been produced in accordance with established quality procedures.

Document ID: _____

Responsible Engineer: _____ (Date): _____

(Signature)

_____

(Name, FIRM)

Independent Reviewer(s): _____ (Date): _____

(Signature)

_____

(Name, FIRM)

Backchecker: _____ (Date): _____

(Signature)

_____

(Name, FIRM)

Design Process Control Manager _____ (Date): _____

(Signature)

_____

(Name, FIRM)

cc: DCS,

DRAFT

DRAWING REVIEW CHECKLIST

PROJECT		**JOB NO.**
CLIENT	**DISCIPLINE**	**DRAWING NUMBERS**

ORIGINATOR		**DISCIPLINE REVIEWER**	
DISCIPLINE LEAD			

REVIEW LEVEL ☐ Final Submission ☐ Pre-Final Submission ☐ Other:_____% Submission

Discipline Review

	Yes	No	N/A
1. Is the set of drawings consistent with the design intent and the calculation output?	☐	☐	☐
2. Do the drawings meet the percent (%) completion for this submission level?	☐	☐	☐
3. Is there a consistent presentation within the discipline?	☐	☐	☐
4. Have drawings been initialed/signed?	☐	☐	☐
5. Are the materials properly coordinated with the specifications at this submission level?	☐	☐	☐
6. Are the items constructible as shown?	☐	☐	☐
7. Have the appropriate CAD standards been followed?	☐	☐	☐
8. Have duplications and redundancy of information, data and dimensions been eliminated?	☐	☐	☐
9. Are drawing titles and numbers consistent and do they agree with the cover sheet index of drawings?	☐	☐	☐
10. Have sheet cross references been verified?	☐	☐	☐
11. Have all previous internal review comments been addressed and closed out?	☐	☐	☐
12. Have all previous client review comments been addressed and closed out?	☐	☐	☐

Explain "No" responses"

Discipline Reviewer _____

Signature/Date

Interdiscipline Review

Compatibility, interfaces, and potential interferences/conflicts between the designated discipline and all other disciplines have been reviewed using a complete set of drawings by the following reviewers:

Discipline (please specify)	Signature / Date	OK	Comments Made	Comments Resolved
☐		☐	☐	☐
☐		☐	☐	☐
☐		☐	☐	☐
☐		☐	☐	☐
☐		☐	☐	☐
☐		☐	☐	☐
☐		☐	☐	☐
☐		☐	☐	☐
☐		☐	☐	☐
☐		☐	☐	☐
☐		☐	☐	☐

Note: Independent Peer Reviews, where required, and Discipline Lead concurrence are recorded on the Deliverable Release Record which is required for all deliverables

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Attachment 1
GENERAL ISSUES DOCUMENT REVIEW CHECKLIST

Check for incorporation of the following items as applicable on all plan reviews.

YES	N/A	ITEM	
		1.0	**Specification / Plan Coordination Items**
☐	☐	1.1	Coordinate plan layouts and details with specifications and other plan layouts and details
☐	☐	1.1.1	Check for consistency between plan notes and specification language
☐	☐	1.1.2	Check for consistency between material call-outs on plans and material descriptions in specifications
☐	☐	1.1.3	Check for consistency with contractual pay item numbers and descriptions
☐	☐	1.1.4	Confirm that method of payment for all work is identified and that pay item quantities and descriptions are consistent within discipline plan sheets, across disciplines and within the specifications
☐	☐	1.1.5	Confirm non-standard pay item quantities and descriptions are consistent within the plans and supplemental specifications
☐	☐	1.1.6	Determine if any unusual material or equipment requirements are appropriate and consistent with project criteria
☐	☐	1.1.7	Consider removal of repeat information if not warranted on both the plans and in the specs
☐	☐	1.1.8	Check for what is missing from the specs versus what is shown on the plans
		2.0	**Plan Review Items**
☐	☐	2.1	Review notes on plans for risk related issues
☐	☐	2.1.1	Commitments of actions by others (Engineer, owner, etc)
☐	☐	2.1.2	Items identified in Project Risk Register
☐	☐	2.1.3	Items identified in PWP
☐	☐	2.2	Check for consistency with associated discipline drawings and existing conditions
☐	☐	2.3	Confirm that listed standards and code references are current and correct
☐	☐	2.4	Verify that details shown are adequate to assure proper erection and construction sequencing
☐	☐	2.5	Consider community impacts such as noise, dust, etc.
☐	☐	2.6	Have permit requirements that safeguard the environment, the work place and the public been incorporated
☐	☐	2.7	Determine if sufficient geometry or dimensional information is provided to locate, orient and size items noted on plans and eliminate repeat information

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YES	N/A	ITEM	
☐	☐	2.8	Consider whether enough information is provided to preclude RFIs during construction or the receipt of shop drawings that propose construction that wouldn't meet expectations
☐	☐	2.9	Confirm that Contractor 'means and methods' are not dictated by design requirements
☐	☐	2.10	Confirm that proposed construction meets all required clearance requirements
☐	☐	2.11	Intra-discipline drawings are cross checked, as well as inter-discipline drawings. Confirm that the appropriate level of submission checklist is included in the discipline specific plan review.
☐	☐	2.12	Confirm scope and limits of work for non-standard pay items are clearly shown in details and notes within the plans to avoid contractor confusion, claims and potential costly Change Orders during construction.
☐	☐	2.13	Consider constructability
☐	☐		2.13.1 Check for realistic scheduling of work activities
☐	☐		2.13.2 Check the proposed construction schedule for compatibility with the Owner's on-going operations, schedules and maintenance of services
☐	☐		2.13.3 Check for proper sequencing of operations
☐	☐		2.13.4 Check for adequate rights-of-way and access to construction areas. Verify adequacy of areas reserved for Contractor's work, lay-down and storage areas
☐	☐		2.13.5 Check for interference with traffic, utilities and other on-going or sequential contract work by others
		3.0	**CADD Items**
☐	☐	3.1	Confirm all appropriate CADD layers are turned on for all submissions and especially for final deliverables
☐	☐	3.2	Dimensions developed in CAD must be checked – i.e. if there are no independent calculations, confirmation that lines were drawn at the right coordinates such that any additional line work or callouts developed from them by offsetting or fitting curves is correct
		4.0	**Overall items**
☐	☐	4.1	Confirm that all internal, third party and client comments have been addressed
☐	☐	4.2	'Gut check' – does the design make sense? Are the contract documents a correct representation of the proposed construction?

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SPECIFICATION REVIEW CHECKLIST

PROJECT		**JOB NO.**
CLIENT	**DISCIPLINE**	**SPECIFICATION SECTIONS**

ORIGINATOR		**DISCIPLINE REVIEWER**	
DISCIPLINE LEAD		**SPECIFICATION COORDINATOR**	

REVIEW LEVEL ☐ Final Submission ☐ Pre-Final Submission ☐ Other:_____% Submission

Discipline Review

General questions:

	Yes	No	N/A
1. Has the correct specification format been used?	☐	☐	☐
2. Is the specification section coordinated with applicable general and special provisions?	☐	☐	☐
3. Have duplications or variances between drawings and specifications been eliminated?	☐	☐	☐
4. Are nomenclature and item numbering used in specifications exactly as used on drawings and other contract documents?	☐	☐	☐
5. Are requirements for shop drawings specified, both as to content and timely submission?	☐	☐	☐
6. Have cited products and equipment been checked for updates and availability?	☐	☐	☐
7. Have all previous internal review comments been addressed and closed out?	☐	☐	☐
8. Have all of the client's review comments to previous drafts been closed out?	☐	☐	☐

Additional questions for non-standard specifications (only those which have not been created and maintained as a company or client standard):

	Yes	No	N/A
9. Are material/equipment identification requirements properly identified?	☐	☐	☐
10. Are appropriate codes, standards, processes, etc. referenced and dated?	☐	☐	☐
11. Are measurement units and basis of payment properly specified?	☐	☐	☐
12. Are shipping, cleaning, storage and handling requirements properly specified?	☐	☐	☐
13. Are provisions made for the qualification and approval of special construction processes?	☐	☐	☐
14. Are the acceptance criteria tests (tolerances, etc.) specified and are they adequate, realistic, and in line with industry practice?	☐	☐	☐
15. Is test and inspection documentation properly specified?	☐	☐	☐
16. Have client's sole-source requirements been followed?	☐	☐	☐
17. Are manufacturers' installation requirements referenced?	☐	☐	☐

Explain "No" Responses

Discipline Reviewer _____

Signature/Date

Specifications Coordinator Review

(to be completed on lead discipline checklist only)

	Yes	No	N/A
Are the specification format, type, nomenclature, item numbering, and level of detail consistent for all specification sections?	☐	☐	☐
Have required discipline reviews been completed and documented for all specification sections?	☐	☐	☐
Have all specification sections been reviewed for interdiscipline conflicts?	☐	☐	☐
Have methods and measurements of payment been checked for consistency and conflicts?	☐	☐	☐

Explain "No" Responses

Specifications Coordinator _____

Signature/Date

Note: Independent Peer Reviews, where required, and Discipline Lead concurrence are recorded on the Deliverable Release Record which is required for all deliverables.

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STUDY/REPORT REVIEW CHECKLIST

PROJECT		**JOB NO.**
CLIENT	**DISCIPLINE**	**STUDY/REPORT TITLE/CHAPTER**

ORIGINATOR		**DISCIPLINE REVIEWER**	
DISCIPLINE LEAD		**PROJECT MANAGER**	

REVIEW LEVEL ☐ Final Submission ☐ Pre-Final Submission ☐ Other:_____% Submission

Discipline Review

	Yes	No	N/A
1. Does the discipline portion of the study/report meet or support the stated objectives of the project?	☐	☐	☐
2. Are assumptions, criteria, or bases for evaluation of alternatives clearly described?	☐	☐	☐
3. Is supporting material identified and appropriate?	☐	☐	☐
4. Have backup calculations been checked and reviewed?	☐	☐	☐
5. Have embedded drawings, sketches, figures and other graphics been checked and reviewed?	☐	☐	☐
6. Are results logical and reasonable and are they stated accurately?	☐	☐	☐

Explain any "No" responses:

Discipline Reviewer _____
Signature/Date

Project Manager Review
(to be completed on lead discipline checklist only)

	Yes	No	N/A
1. Is the study or report format consistent with the client's requirements?	☐	☐	☐
2. Are all conclusions and recommendations fully supported and explained in the text?	☐	☐	☐
3. Has the report been completed in accordance with the scope of work?	☐	☐	☐
4. Is the index or table of contents complete and accurate?	☐	☐	☐
5. Is tense consistent and has the text been spell-/grammar-checked?	☐	☐	☐
6. Has the report been properly titled and dated?	☐	☐	☐
7. Have all contractually specified alternatives been addressed?	☐	☐	☐
8. Have all previous internal review comments been addressed and closed out?	☐	☐	☐
9. Have all previous client review comments been addressed and closed out?	☐	☐	☐

Explain any "No" responses:

Project Manager _____
Signature/Date

Note: Independent Peer Reviews, where required, and Discipline Lead concurrence are recorded on the Deliverable Release Record which is required for all deliverables.

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CALCULATION COVER PAGE

BASIC INFORMATION

Project	Job No.	TTP No. (if req'd)	Total pages includes attachments Page 1 of _____
Client	Department/Discipline		Calculation No.
Subject / Title			

Calculation Rev. No.	Originator	Discipline Reviewer	Technical Peer Reviewer (if req'd)	Confirmation Req'd Y/N

Calculation Objective:

Calculation Methodology and data to be confirmed:

References / Inputs/ Field Data:

Conclusions including confirmations to be obtained:

This calculation is complete and ready for Discipline Review:

Originator _____

Signature / Date

DRAFT

CALCULATION REVIEW CHECKLIST

PROJECT		**JOB NO.**	
CLIENT	**DISCIPLINE**	**CALCULATION NO._____REV. NO. _____**	
SUBJECT/TITLE			
ORIGINATOR		**DISCIPLINE REVIEWER**	
DISCIPLINE LEAD		**INDEPENDENT CALCULATION PREPARER (if used)**	

Discipline Review

	Yes	No	N/A
1. Is the calculation in accordance with a standard approach to preparing the design?	☐	☐	☐
2. Have input data and information been verified and accepted?	☐	☐	☐
3. Have assumptions requiring follow-up been reviewed and confirmed?	☐	☐	☐
4. Have calculations prepared using technical software or excel spreadsheets (with macros or equations) been confirmed through a secondary method (i.e, manual, alternate software)?	☐	☐	☐
5. Are results and conclusions consistent and reasonable considering the inputs and approach?	☐	☐	☐
6. Have the originator and the checker/reviewer signed and dated the calculation?	☐	☐	☐
7. Have all previous internal review comments been addressed and closed out with the originator?	☐	☐	☐
8. Have all previous client review comments been addressed and closed out?	☐	☐	☐

Explain "No" responses:

Discipline Reviewer _____
Signature/Date

Independent Calculations (**in lieu of Discipline Review**)

A separate, independent set of calculations has been prepared, validating the original calculations.

Independent Calculation Preparer _____
Signature/Date

Note: Independent Peer Reviews, where required, and Discipline Lead concurrence are recorded on the Deliverable Release Record which is required for all deliverables.

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Potholing Checklist

1. The requester has provided construction drawings and the utility/facility is shown ___yes ___no

2. The construction drawing shows the location of the requested pothole ___yes ___no

3. Utililty locates have been marked by the owner before potholing begins ___yes ___no

4. Have utility contact names and phone numbers before potholing begins ___yes ___no

5. Safety reviewed before potholing - show in notes below if necessary ___yes ___no

Unless otherwise directed by the requester, the following information should be collected

6. Facility Owner _____

7. Facility Type _____

8. Diameter of Facility _____

9. Material of Facililty _____

10. Method of locate
Survey _____
GPS _____
Other _____

Coordinater will provided locate information with this form when submitted to requester

11. The coordinator or the pothole contractor will take a picture of the utility
Coordinator will provided picture(s) with this form when submitted to requester

12. Did the requester require addition information to be aquired? ___yes ___no

Notes:

_____

_____

_____

Coordinator _____

Requester _____

Does the information meet requirements ___yes ___no

If no, state reason for rejection in notes above and re-request the pothole with more specific information

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Boring Log Revision Tracker

Boring	Drilled	Rev 0 Completed		Rev 1 Completed		Rev 2 Completed		Rev 3 Completed	
	Date	Date	Initials	Date	Initials	Date	Initials	Date	Initials

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ROADWAY PLAN REVIEW CHECKLIST

SUBMITTAL NAME:
DATE:

Review Item	Included In: 30%	Pre-RFC	RFC	Checked By	Comments
GENERAL					
General Drafting Compliance on All Sheets (1.1.4)					
Project No., Sheet Border & Info., Bar Scale or NTS, North Arrow, Legends, etc.					
Title Sheet (1.2)					
Index of Sheets (1.3)					
Titles and Sheet Numbers Agree with Sheets					
Standard Plans List Sheet (1.4)					
Standard Drawings Referenced					
General Notes (1.5)					
General Notes included from Design Aid					
Project Specific Notes Included					
Typical Sections (1.6)					
Typical Section Details Adequately Describe Design					
Typical Section Notes Included					
Cut and Fill Slopes Shown and Comply with Standards					
Station Limits of Each Typical Shown to Hundredth					
No Station Breaks from BOP to EOP					
Roadway Details (1.8)					
Gore Details					
Design Variances and/or Exceptions Identified					

ROADWAY					
Geometric Layout Sheets (horizontal curve data)					
Include North Arrow					
Annotate (PC, PT, PI, Bearings)					
Include Control Curve Data					
Check that Design Speed is Met					
Plan and Profile Sheets (2.1, 2.2)					
Include North Arrow					
Label Horizontal Alignment(s)					
Display all Horizontal Control Stationing					
Label Street Names					
Bearings Shown on Control Line(s)					
Begin and End Stations on First and Last Sheets					
Call out all Items of Work for New Roadway					
Include Guardrail Data (sta/offset at begin/end, end treatments, ht. above pavement)					
Label all Structures (Bridge, Walls, Culverts >24")					
Display Cut/Fill Lines					
Display and Label Existing and Proposed R.O.W. and Easements					
Display Existing Utilities					
Dimension Travel Lane and Shoulder Width(s)					
Label Pavement Tie-Ins to Existing Pavement & Adjacent Segments					
Label the Start and Stop Stations/Offsets of all Pavement Transitions					
Label the Profile Set					
Display and Label Existing Ground					

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ROADWAY PLAN REVIEW CHECKLIST

SUBMITTAL NAME:
DATE:

Review Item	Included In: 30%	Pre-RFC	RFC	Checked By	Comments
Label Vertical Alignment and Annotate (+/- % Grade, PVI, PVC, PVT, VC Length, SSD)					
Display Stationing and Elevations in Profile Border					
Display & Label Cross Roads, Structures, Culverts, and Washes/Streams/Creeks in both Plan and Profile Views					
Display Clearances (Roadways, Trails, Bridges, Culverts >24")					
Include Superelevation Diagram and Label Station and Rates at All Transition Points					
Check that Design Speed is Met (SSD, K-Values)					
Station Limits for the Sheet and Match Line Stations Match					
Profile Sheets (2.3)					
Label the Profile Set					
Display and Label Existing Ground					
Label Vertical Alignment and Annotate (+/- % Grade, PVI, PVC, PVT, VC Length, SSD)					
Display Stationing and Elevations in Profile Border					
Display & Label Cross Roads, Structures, Culverts, and Washes/Streams/Creeks in both Plan and Profile Views					
Display Clearances (Roadways, Trails, Bridges, Culverts >24")					
Include Superelevation Diagram and Label Station and Rates at All Transition Points					
Check that Design Speed is Met (SSD, K-Values)					
Station Limits for the Sheet and Match Line Stations Match					
Grading Plans (2.5) (if necessary - gore areas, I25 TI)					
Pavement Tie-In Staking Sheets (if necessary)					
Cross Sections (2.6)					
Check that All Cross Sections Included for Current Segment Station Limits					
Display Stationing and Elevations in Cross Section Border					
Annotate Stationing and Elevation at PGL Control Line(s)					
Annotate Roadway Cross Slope(s)					
Annotate Foreslope(s) and Backslope(s)					
Display Structures (Barriers, Walls, Bridges, Culverts >24")					

Note: (#.#) annotations are references to corresponding CDOT CADD Manual (Section 3) checklist

Roadway Plan Review Checklist – Version 1 06/08/2016

DRAFT

STRUCTURES PLAN REVIEW CHECKLIST

SUBMITTAL NAME:
DATE:

Review Item	Included In: 30%	Pre-RFC	RFC	Checked By	Comments
GENERAL					
General Drafting Compliance on All Sheets (1.1.4)					
Project No., Sheet Border & Info., Bar Scale or NTS, North Arrow, Legends, etc.					
Title Sheet (1.2)					
Index of Sheets (1.3)					
Titles and Sheet Numbers Agree with Sheets					
Standard Plans List Sheet (1.4)					
Standard Drawings Referenced					
General Notes (1.5)					
General Notes included from Design Aid					
Project Specific Notes Included					
Design Variances and/or Exceptions Identified					
STRUCTURES					
Bridge layouts					
Vertical Clearances					
Limits of Widenings					
Locations of borings identified					
Retaining wall layouts					
Noise wall layouts					
Retaining Wall Typical Sections					
Noise Wall Typical Sections					
Compliance with structures design criteria					
Compatibility with roadway geometry					
Structure Concept Report & LCCAs					
Structural Standards					
Structural details clear and complete					
Compliance with aesthetic guidelines					
Reinforcement details given for each element of construction					
Bridge Load Ratings					
Retaining Wall Plan & Profile Sheets					
General Notes					
Include North Arrow					
Label Retaining Wall					
Display Retaining Wall Stationing					
Include Begin / End Wall Stationing w/ corresponding Sta/Offset Control from Nearest ML or Ramp Control					
Identify Wall Type and Reference Corresponding Structural Detail(s)					
Include Wall Typical Section Detail and Label (Wall PGL, Type, adjacent slopes/grading, drainage, etc.)					
Label all Structures (Bridge, Culverts >24")					
Display Cut/Fill Lines					
Display and Label Existing and Proposed R.O.W. and Easements					
Display Existing Utilities					
Label the Profile Set					
Display and Label Existing Ground					
Display Wall Layout and Annotate (top of wall & footing elevations)					

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STRUCTURES PLAN REVIEW CHECKLIST

SUBMITTAL NAME:
DATE:

Review Item	Included In: 30%	Pre-RFC	RFC	Checked By	Comments
Display Wall Stationing and Elevations in Profile Border					
Station Limits for the Sheet and Match Line Stations Match					
Noise Wall Plan & Profile Sheets					
General Notes					
Include North Arrow					
Label Noise Wall					
Display Noise Wall Stationing					
Include Begin / End Wall Stationing w/ corresponding Sta/Offset Control from Nearest ML or Ramp Control					
Reference Corresponding Structural Detail(s)					
Include Wall Typical Section Detail and Label (adjacent slopes/grading, drainage, etc.)					
Label all Structures (Bridge, Walls, Culverts >24")					
Display Cut/Fill Lines					
Display and Label Existing and Proposed R.O.W. and Easements					
Display Existing Utilities					
Label the Profile Set					
Display and Label Existing Ground					
Display Wall Layout and Annotate (top of footing elevations, wall height)					
Display Wall Stationing and Elevations in Profile Border					
Station Limits for the Sheet and Match Line Stations Match					

Note: (#.#) annotations are references to corresponding CDOT CADD Manual (Section 3) checklist

Structures Plan Review Checklist – Version 1 06/08/2016

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DRAINAGE REVIEW CHECKLIST

SUBMITTAL NAME:
DATE:

Review Item	Included In: 30%	Pre-RFC	RFC	Checked By	Comments
GENERAL					
General Drafting Compliance on All Sheets (1.1.4)					
Project No., Sheet Border & Info., Bar Scale or NTS, North Arrow, Legends, etc.					
Title Sheet (1.2)					
Index of Sheets (1.3)					
Titles and Sheet Numbers Agree with Sheets					
Standard Plans List Sheet (1.4)					
Standard Drawings Referenced					
General Notes (1.5)					
General Notes included from Design Aid					
Project Specific Notes Included					

DRAINAGE					
Master drainage plan					Per RFP 12.4.4
Master water quality plan					Per RFP 12.4.4
Interim drainage reports					Per RFP 12.4.4
Interim water quality reports					Per RFP 12.4.4
Interim bridge hydraulics report					Per RFP 12.4.4
Final interim drainage report					Per RFP 12.4.4
Final interim water quality report					Per RFP 12.4.4
Final bridge hydraulics report					Per RFP 12.4.4
Revised Floodplain Development permit					Per RFP 12.4.4
FEMA approved CLOMR					Per RFP 12.4.4
Drainage area map					
Drainage Design					
Compliance with drainage design criteria					
Drainage system contained within ROW					
Pond locations					
Drainage system layouts					
Hydrology Calculations					
Hydraulic Calculations					
Storm drain profiles					
Grading consistent with drainage calculations					
Existing and new pipe profiles shown					
Special drainage structure details developed					
Ditch/Open Channel					
Hydrology Calculations					
Hydraulic Calculations					
Layout					
Alignment					
Typical Sections					
Detention/WQ					
Hydrology Calculations					
Hydraulic Calculations					
Pond Layout					

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DRAINAGE REVIEW CHECKLIST

SUBMITTAL NAME:
DATE:

Review Item	Included In: 30%	Pre-RFC	RFC	Checked By	Comments
Grading Details					
Outlet Details/Orifice Plate/Trach Rack					
Trickle Channel/micro pool Details					
Spillway details					
Access Details					
Major Drainage					
Hydrology Calculations					
Hydraulic Calculations					
Plan					
Profile					
diameter, material					
length					
station					
skew					
inverts					
Bridge					
Hydrology Calculations					
Hydraulic Calculations					
Bridge Scour Calculations					
Layout					
Bridge Hydraulic Sheets					
Channel Grading					
Scour Revetment					
SWPPP plans provided					
Conformance with IGAs					
Design continuity with adjacent segments					
Design continuity with connecting systems					

Note: (#.#) annotations are references to corresponding CDOT CADD Manual (Section 3) checklist

Drainage Review Checklist – Version 1 06/08/2016

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TRAFFIC CONTROL PLANS REVIEW CHECKLIST

SUBMITTAL NAME:
DATE:

Review Item	Included In		Checked By	Comments
	Pre-RFC	RFC		
GENERAL				
General Drafting Compliance on All Sheets				
Project No., Sheet Border & Info., Bar Scale or NTS, North Arrow, Legends, etc.				
Title Sheet				
Index of Sheets				
Titles and Sheet Numbers Agree with Sheets				
Standard Plans List Sheet				
Standard Drawings Referenced				
General Notes				
Project Specific Notes Included				
Sequencing				
Typical Sections				
Typical Section Details Adequately Describe Design				
Typical Section Notes Included				
Station Limits of Each Typical Shown				
No Station Breaks				
Roadway Details				
Gore Details				
Design Variances and/or Exceptions Identified				

TCP				
TCP Advanced Sign Sequence				
Typical Singage and Spacing prior to Segment work zone				
TCP Plans				
Include North Arrow				
Label Horizontal Alignment(s)				
Display Necessary Horizontal Control Stationing				
Label Street Names				
Add Construction Notes to further define items (as needed)				
Identify Construction Access Points (as needed)				
Display Traffic Flow Arrows (ML, Ramps, and Cross Roads)				
Include Temporary Drainage Plans				
Include Traffic Control Signage (as needed)				
Add Legend				
Include Matchline and Stationing to begin & end				
Include Dimensions to further define the location of materials or areas of work (as needed)				
TCP Typical Sections				
Typical Section Details Adequately Describe MOT Phase				
Typical Sections Location Labeled				
General Dimensions				
Identify Temorary Pavement & Traffic Control Devices				
Include Traffic Arrows				

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TRAFFIC CONTROL PLANS REVIEW CHECKLIST

SUBMITTAL NAME:
DATE:

Review Item	Included In		Checked By	Comments
	Pre-RFC	RFC		
Identify Existing & Proposed Trail (where applicable)				
Detour Plan & Profile Sheets				
Include North Arrow				
Label Ramp Horizontal Alignment				
Display Ramp Stationing				
Label Street Names				
Include Ramp Geometric Control Data				
Begin and End Stations on First and Last Sheets (as needed)				
Label all Structures (Bridge, Walls, Culverts >24")				
Display and Label Existing and Proposed R.O.W. and Easements				
Display Existing Utilities				
Add Legend				
Label the Profile Set				
Display and Label Existing Ground				
Label Detour Vertical Alignment and Annotate (+/- % Grade, PVI, PVC, PVT, VC Length, SSD)				
Display Stationing and Elevations in Profile Border				
Check that Design Speed is Met (SSD, K-Values)				
TCP in compliance with RFP requirements and CDOT Lane Closure Strategy				

Note: (#.#) annotations are references to corresponding CDOT CADD Manual (Section 3) checklist

Traffic Control Plans Review Checklist – Version 2 08/23/2016

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SIGNING AND STRIPING PLANS REVIEW CHECKLIST

SUBMITTAL NAME:
DATE:

Review Item	Included In: 30%	Pre-RFC	RFC	Checked By	Comments
GENERAL					
General Drafting Compliance on All Sheets (1.1.4)					
Project No., Sheet Border & Info., Bar Scale or NTS, North Arrow, Legends, etc.					
Title Sheet (1.2)					
Index of Sheets (1.3)					
Titles and Sheet Numbers Agree with Sheets					
Standard Plans List Sheet (1.4)					
Standard Drawings Referenced					
General Notes (1.5)					
General Notes included from Design Aid					
Project Specific Notes Included					
Design Variances and/or Exceptions Identified					
SIGNING AND STRIPING					
Signing shall be provided on all Bikeway elements or connections					14.1.1.1 Page 14-3; *Signing shall be provided on all Bikeway elements or connections in accordance with MUTCD and the AASHTO Guide for the Development of Bicycle Facilities, and shall be subject to review and Acceptance by CDOT*
Signs and supports per CDOT standards					14.1.1.1 Page 14-3; *Sign structures shall be designed in accordance with CDOT Standard S-614-50 and S-614-60.*
Signing and striping design plans to respective local agencies for review					14.1.2.1 Page 14-4; *Striping design for the local streets and intersections shall comply with the respective local agency signage and pavement markings guidelines*
Delineators placed at 12' spacing for all buffer zones 4' or greater.					14.1.3.1 Page 14-6; *The Contractor shall prepare a delineator design to be included in the Signage & Pavement Marking Plans. Tubular Flexible Delineators shall be placed at 12' spacing in the buffer zone separating the general purpose lanes and express toll lanes for all buffer zones 4' or greater.*
A manufacturer representative observe delineator installation.					14.1.3.2 Page 14-6; *A manufacturer technical representative shall observe the first day of installation and provide any necessary training to the Contactor to address proper installation. The manufacturer technical representative shall furnish a letter documenting the results of the observations, any training and/or corrections made, and state that installation was performed in accordance with the manufacturer's installation specifications.*
Remove and dispose of all existing signs that do not meet the specifications					14.2.1 Page 14-8; *Remove and dispose of all existing sign structures, ground-mounted signs, and delineators within the Project area that conflict with project modifications or do not meet the specifications contained herein, and they shall become the property of the Contractor.*
Preliminary Signage & Pavement Marking Plans					per RFP 14.4 Page 14-10
Signage & Pavement Marking Plans					per RFP 14.4 Page 14-10

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SIGNING AND STRIPING PLANS REVIEW CHECKLIST

SUBMITTAL NAME:
DATE:

Review Item	Included In: 30%	Pre-RFC	RFC	Checked By	Comments
Class III, major overhead signs, and regulatory and guide signs including scroll plot					per RFP 14.4 Page 14-10; *Signing design for the intersections and local streets shall comply with the respective local agency signage and pavement marking guidelines; signing and striping design plans to respective local agencies for review*
Sign layouts for special signs of all sizes					per RFP 14.4 Page 14-10
Custom-designed monotobe sign structure and foundation plans					per RFP 14.4 Page 14-10
Median butterfly sign structure and foundation plans					per RFP 14.4 Page 14-10
Inspection, report for reuse of existing poles, mast arms					per RFP 14.4 Page 14-10
Reuse of existing ground signs					per RFP 14.4 Page 14-10
B. ALL SHEETS					
Project No					
As Constructed block (except for "Info Only" plan sheets)					
Sheet Numbers (no "total" numbers)					
Reference symbols only used once per sheet					
Note or detail for each symbol on each sheet where symbol is not defined in M-Stds					
Bar scale for each detail or "Not to Scale"					
Sheets referenced from one plan sheet to another by sheet title, not sheet number					
G. ALL PLAN SHEETS					
Scale and north arrow					
Control lines, stations and equations					
Location of existing features (topo) and structures					

Note: (#.#) annotations are references to corresponding CDOT CADD Manual (Section 3) checklist

Signing and Striping Review Checklist – Version 2 08/29/2016

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ITS REVIEW CHECKLIST

SUBMITTAL NAME:
DATE:

Review Item	Included In: 30%	Pre-RFC	RFC	Checked By	Comments
ITS					
Title sheet (1.2)					
Index of Sheets (1.3)					
Standard Plans List Sheet (1.4)					
ITS Legend					
General Notes (1.5)					
Construction Notes					
System Block Diagram					
ITS Plan Sheets					
Is the north arrow shown?					
Is the correct scale (or "NOT to Scale") shown?					
Is the right title block used?					
Is the drawing name correct?					
Is the plan sheet numbered?					
Do the drawing name and plan sheet number match the index sheet?					
Is the ROW line show (correct line type/location)?					
Are the STA Numbers/Mile Posts identified?					
Is there a match line, if so, do they match?					
Is there space in the sheet (top right) to add PE seal/signature.					
Are the right symbols for ITS devices used?					
Are the road names (including directions) correct?					
Are the traffic flow directions shown correctly?					
Can the existing, temporary, and permanent devices be differentiated?					
Are the location of existing features (topo) and structures shown?					
Are the sheets referenced from one plan sheet to another by sheet title, not sheet number?					
Are the notes or details for each symbol on each sheet identified in General Notes sheet?					
Device Locations					
Are the existing ITS devices identified? Do they have a device ID?					
Are the proposed ITS/ETC locations identified? Do they have a device ID?					
Are the temporary ITS elements during construction included?					
Are the offset at the device location identified?					
Are the device coordinates identified?					
Are the devices cabinets identified? Are they oriented properly?					
Conduit and Cabling - Are the conduits (number & type) and cabling (number & type) identified?					
Underground Infrastructure (manhole, pull boxes) - Are they identified?					
Power Source - Are the power sources to the proposed devices identified? Do they have an ID?					
Utility Conflicts - Are all the utility conflicts identified and resolved?					
Communications - are the existing/proposed backbone/lateral fibers/other infrastructures shown?					
Protection (Guardrail/others) - Are the needs for device protection (guardrail/others) identified?					
Drainage - Are the conflicts with drainage identified and resolved?					
MOT - Are the site MOT needs identified?					
Environmental - Are the potential environmental issues identified?					
Structures - Are the structural type for the ITS devices identified?					
Geotech - Are the foundation type identified?					

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ITS REVIEW CHECKLIST

SUBMITTAL NAME:
DATE:

Review Item	Included In: 30%	Pre-RFC	RFC	Checked By	Comments
Traffic - Are the merge/diverge, on-ramp/off ramp, ingress/egress shown?					
ROW - are the devices within the ROW, if so easement/need for ROW acquisition identified?					
Tree Trimming - Are tree trimming/tree removal needs identified?					
ITS Device Cross Sections (for all applicable device locations)					
ITS/ETC Device Details					
CCTV Pole with Lowering Device - General Notes					
CCTV Pole with Lowering Device - Structural Details					
CCTV Pole with Lowering Device - Foundation Details					
CCTV Pole with Lowering Device - Lowering Device Details					
CCTV Camera - Cabinet Details					
VMS - General Notes					
VMS - Structural Details					
VMS - Foundation Details					
VMS - Cabinet Details					
MVRD - General Notes					
MVRD - Structural Details					
MVRD - Foundation Details					
MVRD - Cabinet Details					
MVRD - Attachment Details					
TTI - General Notes					
TTI - Structural Details					
TTI - Foundation Details					
TTI - Cabinet Details					
TTI - Aiming Detail					
TTI - Wiring Detail					
Automatic Traffic Recorder Details					
RWIS Site Details					
Doppler Radar Details					
RMS Installation Details					
RMS Cabinet Rack Details					
RMS Details					
Loop Detector Details					
Toll - Site Layout					
Toll - Site Elevation Details					
Toll - Cabinet Details					
Toll - Wiring Diagrams					
Toll - Structural design					
VTMS VMS Attachment Details					
Conduits and Cabling - ITS Conduit					
Conduits and Cabling - ITS Manhole					
Conduits and Cabling - Pull box					
Conduits and Cabling - Trenching details					
Conduits and Cabling - Conduit bridge attachment details					
Conduits and Cabling - Fiber Optic and Utility Markers					
Power - Wire Schedule					

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ITS REVIEW CHECKLIST

SUBMITTAL NAME:
DATE:

Review Item	Included In: 30%	Pre-RFC	RFC	Checked By	Comments
Power - Transformer to Meter Calculations					
Power - Meter to Cabinet Calculations					
Power - Power Conductor Sizing for Meters and Cabinets					
Power - Load Center Details					
Communication - Fiber Physical Overview					
Communication - Network Diagrams (show redundancy)					
Communication - Fiber Splicing Details					
Communication - Physical Infrastructure and Hardware Connections					
Communication - Fiber Patch Panel Communication Connections					
Communication - Node Patch Panel Details					
Communication - Splice Point Diagrams					
Communication - Fiber Allocation Table					
Communication - Communication Channel Diagram					
Communication Building Details (County Node Building/Hubs) - Plan					
Communication Building Details (County Node Building/Hubs) - Elevation					
Communication Building Details (County Node Building/Hubs) - Racks					
Communication Building Details (County Node Building/Hubs) - General Layout					
Communication Building Details (County Node Building/Hubs) - Existing/Proposed Equipment Location					
Communication Building Details (County Node Building/Hubs) - Routing of conduit/cable					
Misc Details - Pad Mounting Cabinet Foundation Detail					
Misc Details - Model 332D Pad Mounted Cabinet Foundation on Slope					
MOT - Are the construction sequencing identified (in MOT plans)?					
MOT - Does the construction sequencing identify how the existing devices will be maintained?					
CCTV Coverage Plan					
Temporary Communications & Device Plan					
Inspection and design report certification for reuse of existing VMS cabinets					

Note: (#.#) annotations are references to corresponding CDOT CADD Manual (Section 3) checklist

ITS Review Checklist – Version 1 06/08/2016

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UTILITIES REVIEW CHECKLIST

SUBMITTAL NAME:
DATE:

Review Item	Included In: 30%	Pre-RFC	RFC	Checked By	Comments
UTILITIES					
Existing utilities shown on plans	✓	✓	✓		
Compliance with design criteria	✓	✓	✓		
Utility conflicts with roadway, drainage, structures resolved	✓	✓	✓		
Pothole locations identified	✓	✓	✓		
Relocations identified	✓	✓	✓		
Utility contact information	✓	✓	✓		

Utilities Review Checklist – Version 1 06/08/2016

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ELECTRICAL PLAN REVIEW CHECKLIST

SUBMITTAL NAME:
DATE:

Review Item	Included In: 30%	Pre-RFC	RFC	Checked By	Comments
GENERAL					
General Drafting Compliance on All Sheets (1.1.4)					
Project No., Sheet Border & Info., Bar Scale or NTS, North Arrow, Legends, etc.					
Title Sheet (1.2)					
Index of Sheets (1.3)					
Titles and Sheet Numbers Agree with Sheets					
General Notes (1.5)					
General Notes included from Design Aid					
Project Specific Notes Included					
Design Variances and/or Exceptions Identified					

ELECTRICAL					
Electrical Details (14.#)					
One-line Diagrams for each power source					
Wire Schedule					
Electrical Plan Sheets (14.#, 14.#, 14.#)					
Include North Arrow					
Include plan scale					
Verify Titleblock information, design firm logo, dates are correct					
Label Horizontal Alignment(s)					
Display all Horizontal Control Stationing					
Label Street Names					
Station Limits for the Sheet and Match Line Stations Match					
Display and Label Existing and Proposed R.O.W. and Easements					
Display Existing Utilities					
All new work is located within the ROW for this project					
Display and label new and existing roadway light standards					
Display and label existing and proposed points of electric service (power sources)					
Verify plan notes match keyed notes					
Summary of Electrical Quantities					
Display Station and Offset of Light Standards and Lighting Control Centers					
Display circuit designations for tolling, ITS, lighting and other electrical devices					
Indicate conduit and conductor size					
Show voltage drop calculation for each circuit					
Electrical Schedules (14.#)					
Display new and existing panelboard schedules					
Display luminaire schedule with all luminaire types scheduled and specified					
Electrical Tabulations are included with the submittal					
Electrical Details (14.#)					
Service Pedestal Details are included in plan package (if different than CDOT M&S Standards)					
Luminaire Mounting Details are included in package (if different than CDOT M&S Standards)					

DRAFT

ELECTRICAL PLAN REVIEW CHECKLIST

SUBMITTAL NAME:
DATE:

Review Item	Included In:			Checked By	Comments
	30%	Pre-RFC	RFC		
Electrical Specifications					
Section 613 CDOT Specs have been modified for the project					
Section 613 Special Provisions are issued with the specifications					
Section 715 CDOT Specs have been modified for the project					
Section 715 Special Provisions are issued with the specifications					
Electrical Calculations					
Submit Lighting Calculations					
Submit Voltage Drop Calculations					
Submit Available Fault Current Calculations for all services					
RFP Section 14 - Lighting					
Lighting Design meets criteria set forth in the RFP Section 14.1					
Lighting design for each bridge structure is compliant with the information located in the RFP					
Lighting design shall include iso-foot-candle curve plots showing foot candle levels					
RFP Section 19 - ITS and Toll Collection Infrastructure					
Include the electrical and power requirements for the ITS equipment per Section 19					

Note: (#.#) annotations are references to corresponding CDOT CADD Manual (Section 3) checklist

Roadway Plan Review Checklist – Version 1 06/08/2016

DRAFT

Design Quality Procedures

Front Range Mobility Group

THE EXTRA MILE

CONNECTING COMMUNITIES

Design Quality Procedures

DRAFT

Attachment 4
DPCP Quality Control Procedures

Procedure Number: DPCP-PR-001

1.0 Purpose

To define the method, format, and approval requirements related to the preparation and revision of the design process control (PC) procedures.

2.0 Scope

The design PC procedures provide a standard method or basis for the performance of quality activities on the Central 70 Project (Project).

To provide optimum effectiveness, procedure preparation must be coordinated with the Lead Designer's Design Manager (DM) and the Deputy Design Manager for Production (DDMP) so that their review and comments can be considered before the procedure is finalized.

The design PC procedures, which are contained in the Stage 1 Quality Management Plan (Stage 1 QMP) and the Design Process Control Pan (DPCP), are dynamic documents, and changes will be issued to them as the program requires refinement or adaptation.

3.0 Responsibilities

The Design Process Control Manager (DPCM) is responsible for identifying the activities that require a procedure, defining the scope and content of the procedures, and preparing and distributing the procedures. The DPCM is also responsible for the maintenance and initial approval of the design PC procedures as well as the coordination and future maintenance.

The Design Process Control Manager reports to Project Quality Manager (PQM) and is responsible for all design PC activities as defined in the Stage 1 QMP. The DPCM has the authority to Stop Work that does not comply with the requirements of the Project Agreement, but has NO authority for the management and production of design or construction Work.

Individuals within the design organization assigned the responsibility for assisting with the preparation and maintenance of the procedures are to follow the format established in this procedure.

The members of the design organizations involved in this project shall comply with the design PC procedures contained within the Stage 1 QMP and this DPCP.

4.0 Procedures

1. Design PC procedures are produced with the header shown on this procedure.
2. Procedure numbers prefixed by "DPCP" are assigned by the Design Process Control Manager in coordination with the Design Process Control Plan.
3. Procedures generally follow the format dictated below. The procedure will provide a logical, sequential method for performing the design PC activity.

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4. When a revision is issued to a previously approved procedure, the revision history at the end of the document will be completed.
5. The revised text is underscored to show the manual holder exactly where the procedure has changed.
6. All design PC procedures are approved by the DPCM. Revisions to procedures follow the same general review pattern as original procedures

5.0 Procedure Format

5.1 Purpose

The purpose is a concise statement of the reason(s) for issuing the procedure.

5.2 Scope

Generally identifies the conditions under which the procedure is applied within the Project. This section also contains statements relative to the extent of treatment or coverage provided by the procedure.

5.3 Background or Introduction (Optional)

This section may be included to provide extended background or explanatory information to assist in the understanding and implementation of the procedure.

5.4 Responsibilities

This section defines the responsibilities of the individuals (by job title) or management units that implement the procedure. Specific responsibilities are delineated to the level necessary to avoid ambiguity.

5.5 Procedures

This section describes the approved method used by employees to uniformly achieve the intent of the procedure. All forms and figures used will be referenced in this section.

5.6 Exceptions (Optional)

This section describes the process under which waivers or deviations from the procedure may be requested, reviewed, and approved.

5.7 References (Optional)

This section, when used, is a listing of documents to amplify or identify other interfacing procedures.

5.8 Forms (Optional)

This section, when used, lists the titles and numbers of all forms necessary to implement the procedure.

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5.9 Figures (Optional)

Figures may be included, when necessary, for effective implementation of the procedure. Figures may be in the form of tables or other supporting descriptive information necessary to amplify the requirements or use of the procedure.

6.0 Revision History

Procedure	Revision	Date	Description

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Procedure Number: DPCP-PR-002

1.0 Purpose

To establish the requirements for quality control of design documents prepared by subconsultants.

2.0 Scope

This procedure applies to all technical design consultants retained as subconsultants. It is to be used in conjunction with procedure DPCP-PR-017 “Subconsultant Quality Control Requirements”.

3.0 Background

FRMG requires that its subconsultants demonstrate a professional level of diligence and care in performance of the scope of services equal to that expected of its own staff. Subcontracted design and related services must comply with the Stage 1 Quality Management Plan, including all applicable provisions of the Design Process Control Plan and the Document Management processes.

PC audits of design submittals and formal audits of the quality process will document the subconsultant’s compliance with the quality program. All prospective subconsultants will be made aware of the quality requirements.

4.0 Responsibilities

The subconsultant’s project manager has the responsibility of ensuring that his/her staff gain familiarity with the Stage 1 QMP and its procedures through continuous liaison with the design PC personnel. The subconsultant will be responsible for performing quality control of all of their work and adhering to the FRMG’s Stage 1 QMP.

The Design Process Control Manager will conduct PC training during the early stages of the Project, which all subconsultants are required to attend. In addition, copies of the approved Stage 1 QMP and the DPCP, which contain the design PC procedures, will be distributed to all subconsultants for implementation.

The Design Process Control Manager is responsible for assessing the subconsultant’s understanding of the quality program through PC audits.

5.0 Procedures

1. Subconsultants are to be advised of the intent of this procedure.
2. Subconsultants are to be provided the Stage 1 QMP and are required to attend quality training.
3. Subconsultants shall follow the Stage 1 QMP and its procedures.

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4. Compliance with the program is assessed during PC audits by the Design Process Control Manager.

6.0 Revision History

Procedure	Revision	Date	Description

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Procedure Number: DPCP-PR-003

1.0 Purpose

Two methods are acceptable for validating the accuracy of calculations. The procedure outlined here describes a line-by-line check of calculations.

2.0 Scope

This procedure applies to all manual calculations developed as part of the project work.

3.0 Responsibilities

Checker – Verifies the conformance of the design calculations and drawings to the project design criteria and contract requirements.

Backchecker – Reviews and resolves checker comments.

Correcter – Corrects calculations based upon resolved comments.

Verifier – Verifies that comments are updated in accordance with agreed resolution.

The table below illustrates the general requirements for individuals responsible for checking calculations.

	Design Check
Checker	PC Engineer
Backchecker	Designer
Correcter	Designer
Verifier	PC Engineer

4.0 Procedures

4.1 Requirements

1. Calculations will be neat, orderly, and legibly printed.
2. The title block on each calculation sheet or first page of a set of calculation sheets will be neatly and completely filled in. The project title, full name or initials of the individual performing the calculations, date of performance, name or initials of the checker and date, and a title for the specific calculation performed shall be shown.
3. Calculations will be performed on standard calculation sheets using black pencil lead or ink to facilitate copying.

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4. Calculations will list the assumptions and as necessary, references (codes, etc), derivation of equations, formulas and names of computer programs.
5. When required, sketches that accurately show the problem and solutions will be made.
6. Results/answers will be clearly delineated. Answers may be accompanied by brief concluding remarks to augment conclusions and recommendations.
7. Units of measurement will be specifically included and unit conversions explicitly shown as a calculation element.
8. Final calculations will be numbered, indexed, and filed in a 3-ring project notebook using a numbering or indexing system developed by the Lead Discipline Engineer appropriate for each discipline. Superseded calculations are marked with the word "superseded," dated and stored below the current calculation. Checking copies of calculations are stored in a second, separate notebook.
9. Calculator or computer printouts associated with the calculations will be attached and properly labeled with names and dates of originating person and reviewer (see below).

4.2 Detailed Procedures

1. When a calculation or set of calculations have been completed and initialed and dated by the designer, a formal check set copy is provided to the checker. The marked-up check set of calculations will be kept as a permanent record.
2. The checker checks each component of the calculations and highlights in yellow all portions checked as correct. Information identified as incorrect is lined through and corrected in red. Comments are made in red. When the calculation has been completely checked, the checker initials and dates the “checked” block on the checked calculations.
3. The backchecker reviews the checker’s marks on the calculations. To document the back- checking process, the backchecker checkmarks in green each of the checker’s red- marked changes if in agreement; adds in green, with the concurrence of the checker, any additional changes not picked up by the checker; and crosses out in green each of the checker’s red-marked changes that both the designer and checker agree that should not be changed. The backchecker should not obliterate the checker’s marks.
4. The verifier reviews the backcheckers comments and marks in blue indicating the resolution of the comment or error.
5. The following table summarizes the color-code scheme described above.

Color-Code Scheme	Action	By
Yellow Highlight	Calculation is correct	Checker
Red Pencil	Delete; Error and correction; Comment	Checker
Green Pencil	Error has been resolved(Check Mark √) Additional Changes	Backchecker
Blue Pencil	Resolution of error or comment addressed and corrected on original document	Verifier

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6. Any disputes that cannot be reconciled between the designer and checker will be reported to the Design Discipline Lead to initiate an internal resolution process. If the Design Discipline Lead is unable to resolve the dispute, the Design Process Control Manager will be consulted to make a final determination of the resolution. If necessary, the DPCM may involve independent Design Process Expert for consultation and/or mediation.
7. After all disputes are resolved, the designer will make all of the necessary corrections to the original calculations to reflect the agreed-to corrections.
8. The checker will examine the original calculations and verify that all of the changes have been made. When all corrections have been verified, the checker will initial and date the “checked” block of the original calculations. Original calculations and record check calculation set will be returned to the Lead Discipline Engineer.

5.0 Records

The checking process is documented by a check calculation set (copy of the original calculations with the color-code scheme). It is also documented by a signed off set of original calculations. The check calculation set will be included in the Final (100%) design submittal package.

Record Name	Record Owner	Record Location	Retention Time (Minimum)
Check Calculation Set	DCPM	Document Management	Final (100%) Submittal
Original Signed Calculations	Designer	Document Management	Final Acceptance of Project

6.0 Revision History

Procedure	Revision	Date	Description

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Procedure Number: DPCP-PR-004

1.0 Purpose

This procedure describes checking of input and output into computer programs. It is not intended for design elements utilizing the independent checking procedure.

2.0 Scope

This procedure applies to all computer calculations developed as part of the project work.

3.0 Responsibilities

Checker - Verifies the conformance of the design calculations and drawings to the project design criteria and contract requirements.

Backchecker – Reviews and resolves checker comments.

Correcter – Corrects calculations based upon resolved comments.

Verifier – Verifies that comments are updated in accordance with agreed resolution.

The table below illustrates the general requirements for individuals responsible for checking computer input and output.

	Design Check
Checker	PC Engineer
Backchecker	Designer
Correcter	Designer
Verifier	PC Engineer

4.0 Procedures

4.1 Requirements

1. Hard copy of computer printout including both input and output is included in the project calculations.
2. Computer program is appropriate for use for this calculation.
3. Name and version of computer program is identified.
4. Date of computer run is stated.
5. Input values are correct.
6. Units associated with input are correct.

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7. Computer input consistent with drawings.
8. Names of designer and checker and dates of calculations and checking are attached.

4.2 Detailed Procedures

1. Upon completion of a set of computer calculations, a formal check print copy of the computer calculations (input and output) is provided to the checker. The first page is stamped with the Check Print Stamp (Figure DPCP 4-1). The marked-up check print copy will be kept as a permanent record.
2. The checker checks each component of the computer input and highlights in yellow all portions checked as correct. Information identified as incorrect is lined through and corrected in red. Comments are made in red. The checker also checks the computer output ensuring results are in conformance with the contract. When the calculation has been completely checked, the checker initials and dates the “checked” block on the checked calculations.
3. The backchecker reviews the checker’s marks on the calculations. To document the back- checking process, the backchecker checkmarks in green each of the checker’s red- marked changes if in agreement; adds in green, with the concurrence of the checker, any additional changes not picked up by the checker; and crosses out in green each of the checker’s red-marked changes that both the designer and checker agree that should not be changed. The backchecker should not obliterate the checker’s marks. The backchecker initials and dates the “backchecked” box.
4. The verifier reviews the backcheckers comments and marks in blue indicating the resolution of the comment or error.
5. The following table summarizes the color-code scheme described above.

Color-Code Scheme	Action	By
Yellow Highlight	Calculation is correct	Checker
Red Pencil	Delete; Error and correction; Comment	Checker
Green Pencil	Error has been resolved(Check Mark √) Additional Changes	Backchecker
Blue Pencil	Resolution of error or comment addressed and corrected on original document	Verifier

6. Any disputes that cannot be reconciled between the designer and checker will be reported to the Design Discipline Lead to initiate an internal resolution process. If the Design Discipline Lead is unable to resolve the dispute, the Design Process Control Manager will be consulted to make a final determination of the resolution. If necessary, the DPCM may involve independent Design Process Expert for consultation and/or mediation.
7. After all disputes are resolved, the designer will make all of the necessary corrections to computer input to reflect the agreed-to corrections. The designer will initial and date the “corrected” box on the check print copy.
8. A final revised computer calculation set with input and output will be provided to the checker for verification. The checker will verify that the changes that have been made to the input and the

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results in the output are in accordance with the contract documents. When all corrections have been verified, the checker will initial and date the "verified" block of the check print copy and will initial and date the "checked" box of the final calculation set. The final calculation set and check print copy will be returned to the Design Discipline Lead.

FIGURE DPCP 4-1
Check Print Stamp

CHECK/REVIEW PRINT

	By:	Date:
Checked:	_____	_____
Backchecked:	_____	_____
Corrected:	_____	_____
Verified:	_____	_____

5.0 Records

The checking process is documented by a check print copy (copy of the original calculations with the color-code scheme). It is also documented by a signed off set of final calculations. The check print copy will be included in the Final (100%) design submittal package.

Record Name	Record Owner	Record Location	Retention Time (Minimum)
Check Print Copy	Design Process Control Manager	Document Management	Final (100%) Submittal
Final Calculation Set	Designer	Document Management	Final Acceptance of Project

6.0 Revision History

Procedure	Revision	Date	Description

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Procedure Number: DPCP-PR-005

1.0 Purpose

This procedure addresses the checking of plans and design drawings.

2.0 Scope

This procedure applies to all plans and design drawings submitted to the Deprtment or used for construction.

3.0 Responsibilities

Checker - Verifies the conformance of the plans to the project design criteria, contract requirements and calculations.

Backchecker – Reviews and resolves checker comments.

Correcter – Corrects drawings based upon resolved comments.

Verifier – Verifies that comments are updated in accordance with agreed resolution.

The table below illustrates the general requirements for individuals responsible for checking drawings.

	Design Check
Checker	PC Engineer
Backchecker	Designer
Correcter	Designer or CADD Tech
Verifier	PC Engineer or Designer

4.0 Procedures

1. Upon completion of a design drawing(s), a check print copy is given to the checker. The drawing is stamped with the Check Print Stamp (Figure DPCP 5-1).
2. The checker reviews the drawing for content and conformance to contract requirements. The checker may elect to use checklists as a tool for performing his/her check work. The checker also checks that the plans are consistent with the information contained in the calculations. All check work is recorded by marking the drawings.
3. The checker checks the check print drawing and highlights in yellow all portions checked as correct. Information identified as incorrect is lined through and corrected in red. Any additions are added in red. Comments are made in red. When the check print drawing has been completely checked, the checker initials and dates the “checked” block on the check print drawing.

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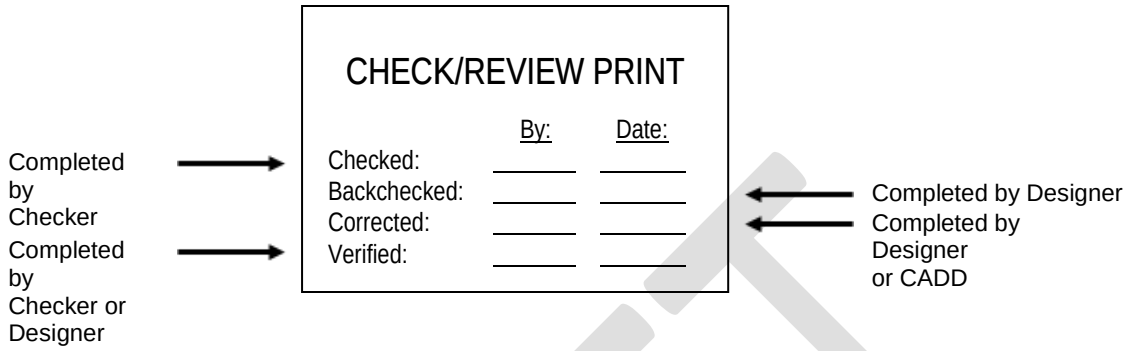
FIGURE DPCP 5-1

Check Print Stamp



4. The designer back checks the checker's marks on the check print drawings. To document the back-checking process, the designer check marks in green each of the checker's red- marked changes if in agreement; adds in green, with the concurrence of the checker, any additional changes not picked up by the checker; and crosses out in green each of the checker's red-marked changes that both the designer and checker agree that should not be changed. The designer should not obliterate the checker's marks. The designer initials and dates the "backchecked" box.
5. The following table summarizes the color-code scheme described in this procedure:

Color-Code Scheme	Action	By
Yellow Highlight	Item is correct	Checker
Red Pencil	Delete; Error and correction; Addition; Comment	Checker
Green Pencil	Error has been resolved(Check Mark √) Additional Changes	Backchecker
Blue Pencil	Resolution of error or comment addressed and corrected on original document	Verifier
Colored Highlight	Revision has been made	CADD

6. Any disputes that cannot be reconciled between the designer and checker will be reported to the Design Discipline Lead to initiate an internal resolution process. If the Design Discipline Lead is unable to resolve the dispute, the Design Process Control Manager will be consulted to make a final determination of the resolution. If necessary, the DPCM may involve independent Design Process Expert for consultation and/or mediation.
7. After all disputes are resolved, all of the necessary corrections to the original drawings to reflect the agreed-to corrections will be made, typically by the CADD technician. The CADD technician uses a highlighter to cross off the corrections that they make and initials and dates the "corrected" box.
8. The checker or designer will examine the revised drawings to verify that all of the changes have been made. The checker or designer will use a blue pencil to identify resolution of the comment or error. When all corrections have been verified, the checker or designer will initial and date the

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"verified" block on the drawings and give the original and record check print drawing set to the Design Discipline Lead.

9. The Design Discipline Lead will be responsible for overview of the work. Copies of the final drawings and check print drawing set will be maintained as records.

5.0 Records

The drawing checking process is documented by a check print set, which is a copy of the original drawings used by the checker. A color-code scheme is used by the checker to identify correct and incorrect geometric layout information, details, and component dimensions.

Record Name	Record Owner	Record Location	Retention Time (Minimum)
Check Print	Design Process Control Manager	Document Management	Milestone Submittal

6.0 Revision History

Procedure	Revision	Date	Description

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Procedure Number: DPCP-PR-006

1.0 Purpose

This procedure describes the checking of technical reports.

2.0 Scope

This procedure applies to all reports developed as part of the project work.

3.0 Responsibilities

Checker - Verifies the conformance of the report to the project design criteria and contract requirements.

Backchecker – Reviews and resolves checker comments.

Correcter – Corrects report based upon resolved comments.

Verifier – Verifies that comments are updated in accordance with agreed resolution.

The table below illustrates the general requirements for individuals responsible for checking reports.

	Design Check
Checker	PC Engineer
Backchecker	Report Writer
Correcter	Report Writer
Verifier	PC Engineer

4.0 Procedures

4.1 Requirements

1. The report must meet the requirements set forth in the contract.
2. Grammar and spelling to be correct.
3. Illustrations, typing, and binding is commensurate with accepted practices set for the project.

4.2 Detailed Procedures

The checker can check the document using one of two methods: Manually review a hard copy of the document and making marks on paper or electronically recording comments in “tracking mode” in Microsoft Word.

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4.2.1 Manual Check Procedures

1. Upon completion of the report, a formal check print copy is given to the checker. The first page of the report is stamped with the Check Print Stamp (Figure DPCP 5-1). The check print copy will be kept as a permanent record.
2. The reviewer reviews the report for content and conformance to contract requirements, professional practices, and content. As the reviewer progresses through the document, the reviewer makes comments and corrections in red. The reviewer may use a yellow highlighter as a tool to verify items that are correct, but this is not necessary. When the review of the report is complete, the reviewer initials and dates the "checked" block.
3. The backchecker reviews the reviewer's comments on the report. To document the back- checking process, the backchecker checkmarks in green each of the reviewer's red- marked changes if in agreement; adds in green, with the concurrence of the reviewer, any additional changes not picked up by the reviewer; and crosses out in green each of the reviewer's red-marked changes that both the designer and reviewer agree that should not be changed. The backchecker should not obliterate the reviewer's marks. The backchecker initials and dates the "backchecked" box.
4. The verifier reviews the backcheckers responses and marks in blue indicating the resolution of the comment or error.

4.2.2 Electronic Check Procedures

1. An electronic version of the report is provided to the reviewer. The electronic version shall have the version saved to prevent any untracked changes by the checker and Track Changes Mode set to ON.
2. The reviewer reviews the report for conformance to contract requirements, professional practices, and content. As the reviewer progresses through the document, the reviewer makes comments and corrections utilizing tracked changes. Upon completion, the reviewer shall save the version which includes changes, print a copy and initial and date the "checked" box.
3. The printed copy and the electronic file will be provided to the backchecker. The backchecker reviews the reviewer's comments on the report. To document the back- checking process, the backchecker checkmarks in green each of the reviewer's red- marked changes if in agreement; adds in green, with the concurrence of the reviewer, any additional changes not picked up by the reviewer; and crosses out in green each of the reviewer's red-marked changes that both the designer and reviewer agree that should not be changed. The backchecker should not obliterate the reviewer's marks. The backchecker initials and dates the "backchecked" box.
4. The verifier reviews the backcheckers responses and marks in blue indicating the resolution of the comment or error.

4.2.3 Manual and Electronic Procedures

The following table summarizes the color-code scheme described above.

Color-Code Scheme	Action	By
Yellow Highlight (if utilized)	Correct	Checker

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Red Pencil	Delete; Error and correction; Comment	Checker
Green Pencil	Error has been resolved(Check Mark √) Additional Changes	Backchecker
Blue Pencil	Resolution of error or comment addressed and corrected on original document	Verifier

- Any disputes that cannot be reconciled between the designer and checker will be reported to the Design Discipline Lead to initiate a dispute resolution process. If the Design Discipline Lead is unable to resolve the dispute, the Design Process Control Manager will be consulted to assist in reaching a final determination of the resolution. If necessary, the DPCM may involve independent Design Process Expert for consultation and/or mediation
- After all disputes are resolved, the report will be revised to reflect the agreed resolution. The designer will initial and date the "corrected" box on the check print copy.
- After the report has been revised, the verifier will be provided the revised report. After the changes are verified to be in accordance with the agreed resolution, the verifier will initial and date the "verified" box on the check print copy.

5.0 Records

The report review process is documented by a check print copy (copy of the original report with the color-code scheme). The design reports will be verified for conformance by the Design Process Control Manager prior to submission to the Department.

Record Name	Record Owner	Record Location	Retention Time (Minimum)
Check Prints Copies	Design Process Control Manager	Document Management	Milestone Submittal

6.0 Revision History

Procedure	Revision	Date	Description

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Procedure Number: DPCP-PR-007

1.0 Purpose

This procedure describes the review and checking of specifications.

2.0 Scope

This procedure applies to all specifications developed as part of the project work.

3.0 Responsibilities

Checker - Verifies the conformance of the specifications to the project design criteria, contract requirements and plans.

Backchecker – Reviews and resolves checker comments.

Correcter – Corrects specifications based upon resolved comments.

Verifier – Verifies that comments are updated in accordance with agreed resolution.

The table below illustrates the general requirements for individuals responsible for checking specifications.

	Design Check
Checker	PC Engineer
Backchecker	Specification Writer
Correcter	Specification Writer
Verifier	PC Engineer

4.0 Procedures

4.1 Requirements

1. Specification must meet the requirements set forth in the contract and reference applicable CDOT specifications.
2. Grammar and spelling to be correct.
3. Specification is achievable in implementation and constructible.
4. Information in specification is compatible with information depicted in the drawings.

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4.2 Detailed Procedures

After the specifications have been developed, the originator spell checks the document and reproduces the document to be checked by a checker. The originator shall send an electronic version of the document to the checker.

The checker can check the document using one of two methods: Manually review a hard copy of the document and making marks on paper or electronically recording comments in “tracking mode” in Microsoft Word.

4.2.1 Manual Check Procedures

1. Upon completion of a specification package, a formal check print copy is given to the checker. The first page of the specification is stamped with the Check Print Stamp (Figure DPCP 5-1). The check print copy will be kept as a permanent record.
2. The reviewer reviews the document for conformance to contract requirements, professional practices, and content. As the reviewer progresses through the document, the reviewer makes comments and corrections in red. The reviewer may use a yellow highlighter as a tool to verify items that are correct, but this is not necessary. When the review of the document is complete, the reviewer initials and dates the “checked” block.
3. The backchecker reviews the reviewer’s comments on the document. To document the back-checking process, the backchecker checkmarks in green each of the reviewer’s red- marked changes if in agreement; adds in green, with the concurrence of the reviewer, any additional changes not picked up by the reviewer; and crosses out in green each of the reviewer’s red-marked changes that both the designer and reviewer agree that should not be changed. The backchecker should not obliterate the reviewer’s marks. The backchecker initials and dates the “backchecked” box.
4. The verifier reviews the backcheckers responses and marks in blue indicating the resolution of the comment or error.

4.2.2 Electronic Check Procedures

1. An electronic version of the document is provided to the reviewer. The electronic version shall have the version saved to prevent any untracked changes by the checker and Track Changes Mode set to ON.
2. The reviewer reviews the document for conformance to contract requirements, professional practices, and content. As the reviewer progresses through the document, the reviewer makes comments and corrections utilizing tracked changes. Upon completion, the reviewer shall save the version which includes changes, print a copy and initial and date the “checked” box.
3. The printed copy and the electronic file will be provided to the backchecker. The backchecker reviews the reviewer’s comments on the document. To document the back- checking process, the backchecker checkmarks in green each of the reviewer’s red- marked changes if in agreement; adds in green, with the concurrence of the reviewer, any additional changes not picked up by the reviewer; and crosses out in green each of the reviewer’s red-marked changes that both the

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designer and reviewer agree that should not be changed. The backchecker should not obliterate the reviewer's marks. The backchecker initials and dates the "backchecked" box.

4. The verifier reviews the backcheckers responses and marks in blue indicating the resolution of the comment or error.

4.2.3 Manual and Electronic Procedures

The following table summarizes the color-code scheme described above:

Color-Code Scheme	Action	By
Yellow Highlight	Correct	Checker
Red Pencil	Delete; Error and correction; Comment	Checker
Green Pencil	Error has been resolved(Check Mark √) Additional Changes	Backchecker
Blue Pencil	Resolution of error or comment addressed and corrected on original document	Verifier

- Any disputes that cannot be reconciled between the designer and checker will be reported to the Design Discipline Lead to initiate an internal resolution process. If the Design Discipline Lead is unable to resolve the dispute, the Design Process Control Manager will be consulted to assist in reaching a final determination of the resolution If necessary, the DPCM may involve independent Design Process Expert for consultation and/or mediation
- After all disputes are resolved, the document will be revised to reflect the agreed resolution. The designer will initial and date the "corrected" box on the check print.
- After the document has been revised, the verifier will be provided the revised document. After the changes are verified to be in accordance with the agreed resolution, the verifier will initial and date the "verified" box on the check print copy.

5.0 Records

The document review process is documented by a check print copy (copy of the original document with the color-code scheme). The specification will be included with design submittal packages.

Record Name	Record Owner	Record Location	Retention Time (Minimum)
Check Prints Copies	Design Process Control Manager	Document Management	Milestone Submittal

6.0 Revision History

Procedure	Revision	Date	Description

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Procedure Number: DPCP-PR-008

1.0 Purpose

This procedure describes the process to be followed for the generation of computer-aided design and drafting (CADD) produced files.

2.0 Scope

This process applies to all CADD files developed as part of the project deliverables. This procedure has been developed to define and control the basic interfaces between CADD technicians, designers and design management in order to prepare timely and quality CADD documents.

Procedure DPCP-PR-005 (Checking Plans and Design Drawings) is the primary means to be used in the checking of CADD documents.

3.0 Responsibilities

Lead CADD Technician – Responsible for coordinating the overall CADD effort for the project.

CADD Technician – Maintains discipline drawing list and coordinates updates with Lead CADD Technician. Accurately inputs the design data into the CADD system.

Design Team – Provides to the CADD technician the design data required to accurately input into the CADD system. Initiates the checking processes for designs under his/her direction.

Design Process Control Manager (or designee) – Performs informal quality audits to verify that work is being performed in accordance with the quality procedures.

4.0 Procedures

- As a first order of work, the Lead CADD Technician reviews project CADD instructions for use by the design team. As a minimum, the instructions will:
  - Be consistent with this procedure.
  - Provide clear direction to the design team for the consistent, neat, and orderly set-up, preparation, filing, sharing, and archiving of CADD files and drawings.
  - Reference the contract requirements and performance specifications governing CADD files and drawings and be in compliance with those requirements and specifications.
- When it has been determined that the CADD system will be used for a design, the lead discipline engineer notifies the CADD Technician as to what final drawings will be generated. The Lead CADD Technician and CADD technician list how the system files will be created and what will be on each designated level in the file, utilizing contract specified standards as necessary.

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  - File names should reflect the nature of their contents.
  - Reference files and container files should be used instead of copying of existing data. All contract drawings should be referenced from master design files.
  - Seed files or libraries of standard features/details may be added but no changes should be made to an existing approved standard.

- As referenced files are baselined, they may be plotted as strip maps and the yellow-line checking performed at this level. On the subsequent contract drawings, these areas do not need to be rechecked.
- The designer develops the design calculations using the CADD or other systems and provides this input and plotting instructions to the CADD technician for the detailing necessary for document preparation.
- All CADD-produced prints will have produced on them automatically the date, time and file name.
- At a point where individual drawings are deemed complete for a milestone submittal, check prints are made and the final checking process started. If significant changes to the design or drawing are required after the initial check print, another check print is issued.
- Individual submittal sheets shall have the appropriate engineer's name, number and date on the sheets before release to Document Management.
- During construction, the designated CADD Technician manages drawing revisions to ensure that all revised drawings, including as-built drawings, are issued appropriately and archived to maintain complete and accurate records of issued drawings.

5.0 References

The following documents are referenced in, or are relevant to, the material presented in this document.

DPCP-PR-005 Checking Plans and Design Drawings

6.0 Revision History

Procedure	Revision	Date	Description

Procedure Number: DPCP-PR-009

1.0 Purpose

This procedure describes the process for controlling and documenting design changes initiated by the Lead Designer after a design package has been released for construction.

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2.0 Scope

This procedure applies to design packages (plans, specifications, etc) previously released for construction (RFC) but not yet constructed in which the Lead Designer determines changes are required. Procedure DPCP-PR-011 should be used for items already released for construction in which the change is initiated from the field.

3.0 Background

When the design team discovers that a change is required to a document already RFC'd, the Deputy Design Manager for Production (DDMP) and the Design Process Control Manager (DPCM) are promptly advised of the circumstances involved. The Design Discipline Lead sends the completed Design Change Form (DC Form) indicating a Notice of Design Change (NDC) to the DDPM and the DPCM. This notification will occur in a timely fashion, sooner if the condition is classified as an emergency.

In cases where emergency conditions could exist, such as unsafe or hazardous conditions, or possible cessation of work, the DDMP addresses the situation immediately, advising those responsible of immediate short-term actions to be taken if required. Oral directions given are followed up in writing within 24 hours of their issuance, which is included with the DC Form. Copies of the DC Form are distributed to the list of recipients listed therein.

4.0 Responsibilities

Deputy Design Manager for Production (DDMP)- Assesses the validity of the potential change and obtains sufficient background information to thoroughly describe the conditions involved. Coordinates with the Design Discipline Lead regarding the scope of the revisions and the time frame in which the change must be completed and issued.

Design Document Manager (DDM)– The Design Document Manager is responsible for the internal design document management system. The Document Manager will maintain a log documenting each NDC by number, design segment, discipline, NDC date, revised drawings target date, approved for construction date, and description of the design change.

Design Discipline Lead (DDL) - Assists the DDMP in the assessment of the potential DC. Assigns staff to perform the design, prepare the documents and perform the checking. Submits completed DC Form to the Design Process Control Manager and to the DDMP.

Design Process Control Manager (DPCM)– Assigns DC Numbers and verifies that the appropriate design quality control procedures have been followed (if applicable) and that documents are compliant. Uploads completed DC form into the internal Design Document Management System for logging and distribution.

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5.0 Procedures

1. A design team member identifies the need for a NDC due to an error, design progress, conflicting design elements, or other reasons. The design team member notifies the DDL. The DDL then notifies the DDMP and the DPCM.
2. After discussing and confirming the need for a DC with the DDMP and the DPCM, the DDL completes the DC Form and provides it to the DDMP and the DPCM. The DC Form will include a description of the change, the drawings or special provisions the change relates to, and the date when the updated documents will be ready for RFC.
3. Design Document Management logs the DC Form and distributes to the DPCM and DDMP.
4. All changed drawings, specifications, and reports are stamped, signed and dated by a licensed professional engineer. All design work will conform to the quality control procedures governing design as identified in the Stage 1 QMP. The DPCM verifies that the design change has been audited for compliance with the Stage 1 QMP and the DPCP.
5. All drawings and documents modified under a NDC are uniquely identified from the original design. Each time a drawing or specification is RFC'd, it is given a sequential number of the release and the date it is released. This number and date are tracked by Design Document Management to control each drawing change that is RFC'd. The drawings will have the changed area clouded. On drawings, the revision number is placed inside a triangle next to the clouded area and also in the revision box with an explanation of the changes made to the document along with reference to the NDC number associated with the change and the date the sheet is RFC'd. For each subsequent revision to the drawing sheet, the previous cloud is removed and the new change area is clouded along with adding the associated revision number in a triangle next to the clouded area and in the revision box. The revision box provides a history of the changes to each drawing sheet and RFC dates. Up to five (5) changes may be made before a drawing is re-issued. If required for clarity, drawings may be re-issued with fewer than five changes. Revisions to specifications will be tracked utilizing an issue record table at the front of the specifications. New text will be underlined while deleted text will be noted with a strikethrough of the text. Revisions to calculations will be made by re- issuing the revised page or pages with the revision number and date shown at the top of the page.
6. The DDL or designer makes changes to the drawing/specification:
    a. The designer checks the RFC log with Design Document Management to ensure that the latest issued drawings are being used as a basis for the revisions.
    b. A check print is created for the change and revisions are made.
    c. The revision is distributed for review and a comment resolution meeting is held.
        i. The DPCM may authorize a shortened version of this review process.
        ii. For the shortened review process, the DDL or designer will hand carry or email the revision package to key reviewers, including design and construction. The reviewers will make their

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comments and initial the review set stamp. For minor changes, the review set can be the same as the check print set.

iii. Upon receipt of the NDC notification, the DDMP will verify each NDC and the verification report will accompany an DC submittal when it is provided to DPCM.

d. The review plan set, check prints, RCSR Form, and any other needed materials are given to the Design Process Control Manager for review and verification.

7. After verification is received, each drawing is stamped RFC by the DPCM. When an RFC drawing is revised, the DPCM will verify any changes to the drawing and stamp it "Amended Release for Construction". The DDMP issues the RFC on each design drawing.

8. The NDC log is updated to show the RFC date.

6.0 References

The following documents are referenced in, or are relevant to, the material presented in this document.

DPCP-PR-011	Field Design Changes During Construction
RCSR Form	Review Comment Summary and Resolution Form
DC Form	Design Change Form
RFI Form	Request for Information Form

7.0 Revision History

Procedure	Revision	Date	Description

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Procedure Number: DPCP-PR-010

1.0 Purpose

This procedure provides a uniform and documented process to deal with requests for information (RFI) or clarifications required by construction personnel, subcontractors, fabricators, suppliers, vendors or manufacturers.

2.0 Scope

This procedure is a component of the interface between the Lead Contractor and the Lead Designer, through the Deputy Design Manager for Production and is used to clarify design intent or address field issues and inquiries. Changes to construction documents may result from an RFI but are not addressed within this procedure. Changes to construction documents resulting from an RFI are addressed in Procedure DPCP-PR-011. Specifics regarding involvement of the Department in the RFI process are contained in the Stage 1 QMP.

3.0 Responsibilities

Deputy Design Manager for Production (DDMP) - Receives RFI from the Lead Contractor and determines who needs to be involved in providing the response (Design Discipline Lead, designer, subcontractor, etc).

Document Management (DDM)– Document Management is Design internal document management system. Document Management maintains a RFI log and serves as document coordinator.

4.0 Procedures

1. The Lead Contractor contacts the DDMP directly (face-to-face, by phone, by email) before creating and sending a RFI.
2. If the DDMP or a DDL can provide a response/answer, a conversation memorandum or email is generated by the DDMP with a copy to Document Management.
3. Should the initial conversation not result in a response/answer, the Lead Contractor fills out an RFI (using a RFI Form) along with a deadline and any clarifying or supporting documentation that the DDMP may have requested. The RFI form is distributed through the Document Management.
4. The DDMP takes action by contacting the appropriate Design Discipline Lead or subconsultant to discuss the issue and develop a plan to meet the agreed-upon deadline.
5. For design related inquiries, the DDL performs a full investigation of the inquiry including a field review when the inquiry involves changed conditions. The DDL documents the method and details of the complete analysis and completes the RFI form for the project files. The DDMP may allow a sketch as part of the RFI response.

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a. When a sketch showing the revised design is created. The package and drawing number that the sketch applies to must be shown.

b. The sketch will include the name of the designer and the checker. If considered appropriate by the DDMP, the sketch will be signed and sealed by a licensed professional engineer.

c. If requested by the Department, the sketch will be submitted for their review prior to distribution.

d. The response and any sketches needed for clarification are to be attached to the RFI form. The DDL submits the RFI package (including the form) to the DDMP and the DPCM. Sketches that require a minor change in the plans will be captured in the As-Builts.

6. To eliminate the risk of misinterpretation or dispute, the DDMP and the DPCM review the RFI package. After approval by the DDMP and the DPCM, the DDM uploads the RFI package to the Document Management System for distribution.
7. If the response to the RFI results in a change to the design drawings and/or specifications, Procedure DCPC-PR-011 (Field Design Changes During Construction) will be followed.

5.0 References

The following documents are referenced in, or are relevant to, the material presented in this document.

DPCP-PR-011	Field Design Changes during Construction
RFI Form	Request for Information Form

6.0 Revision History

Procedure	Revision	Date	Description

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Procedure Number: DPCP-PR-011

1.0 Purpose

This procedure describes the process for controlling and documenting field initiated design changes resulting from an RFI after the design package has been released for construction.

2.0 Scope

This procedure applies to design packages (plans, specifications, etc) previously released for construction (RFC) in which a change is initiated from the field through the request for information (RFI) process (Procedure DPCP-PR-010). Modifications may consist of changes to the drawings and/or specifications. Procedure DPCP-PR-009 should be used for items already released for construction but not yet constructed in which the design team identifies the need for a change to the plans and/or specifications.

3.0 Background

When the Lead Designer determines through reviewing an RFI that a change is required to a document already RFC'd, the Deputy Design Manager for Production is promptly advised of the circumstances involved. After assessing the validity of the potential change and obtaining sufficient background information, the DDMP or a DDL notifies the Design Process Control Manager by filling out a Design Change Form (DC Form) indicating a Field Design Change during Construction (FDC).

4.0 Responsibilities

Deputy Design Manager for Production (DDMP) - Assesses the validity of the potential change and obtains sufficient background information to thoroughly describe the conditions involved. Coordinates with the Design Discipline Lead regarding the scope of the revisions and the time frame in which the change can be completed and issued.

Design Document Management (DDM)– Document Management is the design document management system. Document Management maintains a log documenting each FDC by number, design segment, discipline, FDC date, revised drawings target date, approved for construction date, and description of the design change.

Design Discipline Lead (DDL) – Assists DDMP in the assessment of the potential FDC. Assigns staff to perform the design, prepare the documents and perform the checking. Submits completed DC Form to the DDMP and the Design Process Control Manager.

Design Process Control Manager (DPCM) – Verifies that the appropriate design quality control procedures have been followed (if applicable) and that documents are compliant.

Lead Contractor or Designee - Assigns FDC Numbers

5.0 Procedures

1. Upon determining that a change to drawings and/or specifications is needed as a result of an RFI, the Design Discipline Lead notifies the Deputy Design Manager for Production and the Design Process Control Manager of the need for a FDC.
2. After discussing and confirming the need for a FDC with the DDMP AND THE DPCM, the DDL completes the DC Form and provides it to the Design Process Control Manager and the DQM. The

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DC Form will include a description of the change, the drawings or special provisions the change relates to, and the date when the updated documents will be ready for RFC.

3. Document Management logs the DC Form and distributes.
4. All changed drawings, specifications, and reports are stamped, signed and dated by a licensed professional engineer. All design work will conform to the quality control procedures governing design as identified in the Stage 1 QMP. The DDMP verifies that the design change has been audited for compliance with the DPCM.
5. All drawings and documents modified under a FDC are uniquely identified from the original design. Each time a drawing or specification is released, it is given a sequential number of the release and the date it is released. This number and date are tracked by Document Management to control each drawing change that is RFC'd. The drawings will have the changed area clouded. On drawings, the revision number is placed inside a triangle, next to the clouded area and also in the revision box with an explanation of the changes made to the document along with reference to the FDC number associated with the change and the date the sheet is RFC'd. For each subsequent revision to the drawing sheet, the previous cloud is removed and the new change area is clouded along with adding the associated revision number in a triangle next to the clouded area and in the revision box. The revision box provides a history of the changes to each drawing sheet and RFC dates. Up to five (5) changes may be made before a drawing is re-issued. If required for clarity, drawings may be re-issued with fewer than five changes. Revisions to specifications will be tracked utilizing an issue record table at the front of the specifications. New text will be underlined while deleted text will be noted with a strikethrough of the text. Revisions to calculations will be made by re-issuing the revised page or pages with the revision number and date shown at the top of the page.
6. The Design Discipline Lead or designer makes changes to the drawing/specification:
   a. The designer checks the RFC log with Document Management to ensure that the latest issued drawings are being used as a basis for the revisions.
   b. A check print is created for the change and revisions are made.
   c. The revision is distributed for review and a comment resolution meeting is held.
      i. The Design Process Control Manager may authorize a shortened version of the review process.
      ii. For the shortened review process, the DDL or designer will hand carry or email the revision package to reviewers, including design and construction. The reviewers will make their comments and initial the review set stamp. For minor changes, the review set can be the same as the check print set.
      iii. Each drawing is stamped RFC by the Design Process Control Manager. When an RFC drawing is revised, the DDMP will verify any changes to the drawing and stamp it "Amended Release for Construction".

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d. The review plan set, check prints, RCSR Form, and any other needed materials are given to the DPCM for review and verification.

7. After the verification is received, the Design Process Control Manager issues the RFC on each design drawing.
8. The FDC log is updated to show the RFC date.

6.0 References

The following documents are referenced in, or are relevant to, the material presented in this document.

DCPC-PR-009	Notice and Documentation of Design Change
DPCP-PR-010	Request for Information
RCSR Form	Review Comment Summary and Resolution Form
DC Form	Design Change Form
RFI Form	Request for Information Form

7.0 Revision History

Procedure	Revision	Date	Description

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Procedure Number: DPCP-PR-012

1.0 Purpose

To provide a documented process for the compilation and preparation of As-Built Plans.

2.0 Scope

The As-Built Plans shall depict the final completed project, including all changes and data.

3.0 Responsibilities

Post Design Services Engineer (PDSE) - Maintains ongoing and complete documentation of as- built conditions and verifies that the project was completed in accordance with the plans, contract documents, Governmental Approvals, and applicable Law.

Contractor Document Management (CDM) – Contractor Document Management is the Lead Contractor's document management system. CDM provides the Post Design Services Engineer copies of all Requests for Information, Field Design Changes, Notice of Design Changes, construction field notes, surveyed field conditions, notations on plan sheets, or other documents prepared and maintained in accordance with the procedures set forth in the Construction Quality Management Plan (CQMP).

4.0 Procedures

1. The Post Design Services Engineer is on the construction site and is aware of general construction activities.
2. Contractor Document Management provides the Post Design Services Engineer copies of all Requests for Information, Field Design Changes, Notice of Design Changes, construction field notes, surveyed field conditions, notations on plan sheets, or other documents prepared and maintained in accordance with the procedures set forth in the Stage 2 QMP.
3. The Post Design Services Engineer maintains an up to date set of drawings reflecting current as-built conditions.
4. At the completion of construction, the Post Design Services Engineer provides the marked up set of plans to be used as the basis for the final as-built plans.
5. The Post Design Services Engineer oversees the production of the as-built set of plans, reviews the completed plans for accuracy and verifies the plans are in accordance with the State of Colorado Statutes.
6. The Design Process Control Manager verifies that the as-built plans have accurately incorporated all documented change conditions beyond the RFC status.

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5.0 References

The following documents are referenced in, or are relevant to, the material presented in this document.

DPCP-PR-009 Notice and Documentation of Design Change

DPCP-PR-010 Request for Information

DPCP-PR-012 Field Design Changes during Construction

6.0 Revision History

Procedure	Revision	Date	Description

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Procedure Number: DPCP-PR-013

1.0 Purpose

This procedure describes the geotechnical field investigation quality control process.

2.0 Scope

This procedure applies to all geotechnical field investigation data, the field boring logs, the final boring logs and laboratory test results.

3.0 Responsibilities

Design Geotechnical Engineer or Geologist – Inspects all geotechnical field explorations and develops a field log of all borings.

Senior Engineer – Reviews laboratory test results against field descriptions to develop the boring logs. Reviews final boring logs.

4.0 Procedures

1. The field geotechnical engineer or geologist logs the borings in the field and generates a field boring log.
2. A draft boring log is developed by hand or electronically utilizing the required software.
3. A Senior Engineer (may be the Design Discipline Lead) will check the lab test results against the soils descriptions contained in the draft boring logs. The soils descriptions are modified as required per the laboratory test results, leading to establishment of final boring logs. The review shall be initialed and dated by the Senior Engineer.
4. A Senior Engineer will perform a review of the final boring logs to be used in design documents. The Senior Engineer will edit and correct the logs as necessary. If requested, a folder containing the reviewed and corrected boring logs will be provided to the Independent Quality Firm (IQF) for audit.
5. The Design Discipline Lead (or the Design Process Expert of the DDL is the Senior Engineer) will review the final boring logs. The review will be documented using the RCSR Form. The geotechnical reviews of final boring logs by the Design Discipline Lead will be included in design submittal packages for verification for conformance by the Design Process Control Manager.

5.0 Records

The Senior Engineer shall maintain a folder of the reviews that have been performed on laboratory test results and the draft boring logs. As requested, the folder shall be provided to IQF for audit. Records of

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the final boring log checking by the Design Discipline Lead will be included within the submittals in which they are contained (i.e. geotechnical reports).

6.0 References

The following documents are referenced in, or are relevant to, the material presented in this document.

RCSR Form Review Comment Summary and Resolution Form

7.0 Revision History

Procedure	Revision	Date	Description

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Procedure Number: DPCP-PR-014

1.0 Purpose

Two methods are acceptable for validating the accuracy of design. The procedure outlined here is referred to as Method 2 and describes an independent check of design. Method 1 is described in Procedure DPCP-PR-003.

2.0 Responsibilities

Independent Checking Engineer - Verifies the conformance of the design to the project design criteria and contract requirements.

Backchecker – Reviews and resolves checker comments.

Updater – Updates design based upon resolved comments.

Verifier – Verifies that design is updated in accordance with agreed resolution.

The engineer leading the independent design efforts and ultimately verifying the design is in accordance with the contract requirements shall be a licensed professional engineer.

3.0 Procedures

1. Upon completion of the design plans, a formal plan review package is provided to the Independent Checking Engineer. Preliminary information may be provided to the Independent Checking Engineer in advance to expedite the checking process.
2. The Independent Checking Engineer performs a complete analysis and prepares design calculations to certify the design is in accordance with the contract requirements.
3. Upon completion, the Independent Checking Engineer prepares comments documenting nonconformance's with the contract in the RCSR Form or provides a statement in the form that the design is in accordance with the contract.
4. Any disputes that cannot be reconciled between the designer and Independent Checking Engineer will be reported to the Design Discipline Lead to initiate a dispute resolution process. If the Lead Design Discipline Lead is unable to resolve the dispute, the Deputy Design Manager for Production Manager and appropriate Design Process Expert will be consulted to assist in reaching a final determination of the resolution
5. After all disputes are resolved, the appropriate calculations, if required, will be revised to reflect the agreed resolution.
6. The Independent Checking Engineer signs the Certificate of Compliance with Quality Procedures Form certifying the design is in accordance with the contract requirements.

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4.0 Records

The design and checking process is documented by two sets of calculations, the original calculations and the independent check calculations. The independent check calculations will be included in 100% design submittal packages for the verification for conformance by the Independent Quality Firm (IQF).

Record Name	Record Owner	Record Location	Retention Time (Minimum)
Independent Design Calculations	Design Process Control Manager	Document Management	Final Submittal
Original Calculations	Designer	Document Management	Final Acceptance of Project

5.0 References

The following documents are referenced in, or are relevant to, the material presented in this document.

RCSR Form Review Comment Summary and Resolution Form

6.0 Revision History

Procedure	Revision	Date	Description

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Procedure Number: DPCP-PR-015

1.0 Purpose

To define the method, format and approval requirements related to the capture, recording and response to comments associated with the review of design documents.

2.0 Scope

To establish the sequence and responsibilities for the multi-discipline review of documents, including a Design Discipline Review (DDR) (also known as Independent Technical Review) and Interdisciplinary Design Review (IDR). This procedure applies to all design reports, drawings and specifications whether for one discipline or where more than one discipline is involved. The IDR is a review to coordinate design responsibility and design details between and within disciplines and subconsultants. The IDR is conducted at milestone points and as part of the RFC (Release for Construction) process. The review is conducted by Design Process Expert (DPE) and others as deemed necessary by the Design Process Control Manager. The DPEs review the documents regarding interferences, compatibility between design disciplines, completeness, and prudent engineering practices. Review comments are recorded on the Review Comment Summary and Resolution Form (RCSR). The DDR is a review to examine the design products from a discipline perspective. It assesses the suitability of the design, consistency with standards and client requirements, and sound engineering practice. If deemed necessary by the Design Process Control Manager, based upon the scope and complexity of the design, a DDR may be conducted by more than one DPE or other senior engineers possessing recognized expertise in their respective design discipline. Review comments are recorded on the RCSR.

3.0 Responsibilities

The Design Process Control Manager is responsible for overall implementation of this procedure, for tracking design packages to receive a DDR and IDR reviews and to assign the appropriate Design Process Expert. The Design Discipline Lead is responsible for assembling the DDR and IDR packages, distributing the packages, collecting and consolidating review comments, resolving comments and their final disposition, and ensuring that the comments are addressed and incorporated in the documents as the design progresses. The DPE reviewers assigned to perform a DDR or IDR are responsible for completing the review in accordance with this procedure to ensure that design issues and interferences or potential problems with construction are identified and recorded on the RCSR Forms.

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4.0 Procedure

4.1 Initiation of the Review

The Design Discipline Lead distributes the design package to the reviewers, with a covering memo containing instruction on filling out the RCSR Form, expected return date, and schedule for the Comment Resolution Meeting.

4.2 Review

The designated Reviewers thoroughly review the document(s) with respect to their areas of responsibility or expertise. The Reviewer fills out the appropriate portions of the RCSR with his/her name, discipline, and date of the review. The comments are entered, each time referencing the sheet number of the document to the comment. The comments should be numbered consecutively, and the form page number noted, as well as the total number of pages. The Reviewer returns the completed RCSR Form and the review documents to the Design Discipline Lead in accordance with the schedule.

4.3 Comment Resolution

The, Design Discipline Lead (DDL) is responsible for the responding to the review comments for each design document or package. They examine the comments of the Reviewers and, in coordination with the designer and the Deputy Design Manager for Production, enter a response to each comment on the Comment Review Summary and Resolution Form, also filling in the “Status and Date of Response” columns as appropriate. The DDL leads the discussion of the review comments at a Comment Resolution Meeting attended by the designer and the Reviewers to resolve any disagreement or conflict. The DDL also records the names of the reviewing persons, disciplines or agencies that were requested to comment and those that responded. Once all the conflicts are resolved, the Responsible/Action, Incorporated, and Date Incorporated columns are completed along with additional notes as applicable. Comments that cannot be resolved are brought to the attention of the Deputy Design Manager for Production for assistance in reaching a final determination of the resolution. If necessary, the DDMP may involve independent Design Process Expert for consultation and/or mediation

After all disputes are resolved, the document will be revised to reflect the agreed resolution. The designer will initial and date the “corrected” box on the check print.

After the document has been revised, the verifier will be provided the revised document. After the changes are verified to be in accordance with the agreed resolution, the verifier will initial and date the “verified” box on the check print copy.

The design documents are updated by the designer in response to the review comments and prepared for submittal for Department review.

5.0 Records

The design review is documented via the Review Comment Summary and Resolution Forms that are maintained in the project records along with the associated design documents.

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Record Name	Record Owner	Record Location	Retention Time (Minimum)
Review Comment Summary and Resolution Form	Design Process Control Manager	Document Management	Final Submittal

6.0 References

The following documents are referenced in, or are relevant to, the material presented in this document.

RCSR Form Review Comment Summary and Resolution Form

7.0 Revision History

Procedure	Revision	Date	Description

DRAFT

Procedure Number: DPCP-PR-016

1.0 Purpose

To define the method, format and approval requirements related to the quality assurance verifications of design deliverables.

2.0 Scope

This procedure applies to Reviewable Deliverables that are to be submitted by the Lead Designer for formal design review by the Department. The comments and documents from the design process control reviews will be forwarded to the Design Process Control Manager (DPCM). This typically occurs at the 30%, 100% and Pre-RFC design stages for plan sets and at draft and final submittals for reports. The project control documentation will be reviewed by the DPCM for verification that the review process and products comply with the Stage 1 QMP requirements. The documents, along with a certification from the DPCM, are uploaded to the internal document control system.

3.0 Responsibility

The Deputy Design Manager for Production (DDMP) and the Design Discipline Lead (DDL) are responsible for the design development process and for conducting appropriate design reviews.

The Design Process Control Manager is responsible for auditing the design review documentation and certifying conformance with Stage 1 QMP requirements.

4.0 Procedures

The DDMP, and the appropriate DDL, will submit design plans, forms and other materials that document the process control review for each deliverable design product. A Certificate of Compliance with Quality Procedures (COCQP) form will be included. It will be signed by the designer, checkers, and reviewers. A Design Quality Audit (DQA) form, signed by the DDMP and the DDL will be attached for use by the Design Process Control Manager.

The DPCM will perform an audit of the documentation provided by the DDMP and DDL, using the DQA form as a guideline. The quality audit reviews the process control documentation to assure that design products have been checked, reviewed and properly signed-off in conformance with the Stage 1 QMP. This includes inspection of marked up plans, RCSR Forms, signoff by reviewers, etc. The audit will determine compliance of the process control materials with Project Agreement and Stage 1 QMP requirements.

If the DPCM's audit finds that the required processes have not been followed or not properly documented, the process control documents will be returned to the DDL for remedial action by the design team and reviewers before resubmittal to the DPCM.

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If the DPCM's audit verifies that required process control procedures have been implemented in accordance with Project Agreement requirements and the Stage 1 QMP, the DPCM will issue a Certificate of Compliance (COC). The signed COC will be attached to the review documentation and forwarded to the Lead Designer's Project Wise system for appropriate storage.

5.0 Records

The design review documents submitted to the DPCM and the Quality Assurance Certification will be maintained in the Lead Designer's project records along with the associated design documents.

Record Name	Record Owner	Record Location	Retention Time (Minimum)
Design review documentation package	Design Discipline Lead	Document Management	Final Submittal
Certificate of Compliance with Quality Procedures Form	Deputy Design Manager for Production and Design Discipline Lead	Document Management	Final Submittal
Design Quality Audit Form	Design Process Control Manager	Document Management	Final Submittal
Certificate of Compliance Form	Design Process Control Manager	Document Management	Final Submittal

6.0 References

The following documents are referenced in, or are relevant to, the material presented in this document.

COCQP Form Certificate of Compliance with Quality Procedures Form

DQA Form Design Quality Audit

COC Form Certificate of Compliance Form

RCSR Form Review Comment Summary and Resolution Form

7.0 Revision History

Procedure	Revision	Date	Description

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Procedure Number: DPCP-PR-017

1.0 Purpose

To establish the requirements for quality control of design work products prepared by subconsultants and subcontractors.

2.0 Scope

This procedure describes the quality control requirements to be followed by all subconsultants retained to provide design-related services and to the work products they produce.

3.0 Responsibilities

The Deputy Design Manager for Production (DDMP) is responsible for integrating subconsultants into the overall design team and directing their activities in alignment with design work plans and process control requirements.

The Design Discipline Lead (DDL) is responsible for directing subconsultants regarding design input and output requirements and design processes.

Subconsultants are required to perform design services and associated process control procedures in accordance with their own quality management program. In addition, they are responsible for conducting their work in accordance with the subconsultant agreement and the Stage 1 QMP.

The subconsultant's manager has the responsibility for informing their staff of the required process control program and procedures through initial training and ongoing liaison with the DDMP and DDL.

The Design Process Control Manager will conduct process control training during the early stages of the project, which the subconsultant's staff are required to attend. In addition, copies of the approved Stage 1 QMP will be made available to all subconsultant staff for implementation.

The Design Process Control Manager is responsible for assessing the subconsultant's understanding of the program through formal audits.

4.0 Procedures

1. Subconsultants will be made aware of the quality control requirement at the time they are contacted for their services in accordance will procedures DPCP-PR-002 and DPCP-PR-018.
2. Subconsultants will be provided with the Stage 1 QMP and will be required to attend quality training conducted by the DPCM.
3. Subconsultants must follow their own quality management program in the development of their design products. Evidence of compliance with their program must be submitted when their design products are submitted. In addition, subconsultants must follow FRMG's Stage 1 QMP and its associated processes and procedures, along with the rest of the design team.

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4. Design products submitted to the Lead Designer will be subject to the review and audit processes of the Stage 1 QMP. This includes discipline and interdisciplinary reviews by the Design Process Expert, Constructability, Environmental and Right-of-Way reviews by Lead Contractor staff, and audits by the Design Process Control Manager.
5. Certifications will be issued in accordance with procedure DPCP-PR-016 for subconsultant products that conform to Project Agreement and Stage 1 QMP requirements. Products not meeting these requirements will be returned to the subconsultant for remedial work.

5.0 Records

Design review documents submitted by subconsultants to the DPCM, along with any certifications, will be maintained in the Lead Designer's project records along with the associated design documents. The documents are expected include the following:

Record Name	Record Owner	Record Location	Retention Time (Minimum)
Subconsultant review documentation package	Design Discipline Lead	Document Management	Final Submittal
Certificate of Compliance with Quality Procedures Form	Deputy Design Manager for Production and Design Discipline Lead	Document Management	Final Submittal
Design Quality Audit Form	Design Process Control Manager	Document Management	Final Submittal
Certificate of Compliance Form	Design Process Control Manager	Document Management	Final Submittal

6.0 References

The following documents are referenced in, or are relevant to, the material presented in this document.

DPCP-PR-002 Quality Program for Subconsultants

DPCP-PR-016 Quality Audit Certification

DPCP-PR-018 Subconsultant Procurement Procedure

7.0 Revision History

Procedure	Revision	Date	Description
DPCP-PR-017			Initial Release

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Procedure Number: DPCP-PR-018

1.0 Purpose

To establish the requirements for the procurement of design subconsultant services.

2.0 Scope

This procedure applies to all of the subconsultants retained by the Lead Designer to provide design work products for the Project. In the procurement process, prospective subconsultants will be advised of the purpose and intent of this procedure. They will be provided access to the Stage 1 QMP and will be advised of the requirement to attend design process control training. The subconsultants will also be advised of the need to follow all design processes and procedures along with the rest of the design team.

3.0 Responsibilities

The Deputy Design Manager for Production (DDMP) will be responsible for the defining the scope, schedule and products to be provided by each subconsultant agreement. Procedures DPCP-PR-019 and DPCP-PR-020 will be considered in the development of subconsultant work scopes and operating requirements. The DDMP will be responsible for administration of the design subconsultant agreements and purchase orders.

The Deputy Design Manager for Operations (DDMO) will be responsible for development of the subconsultant agreements and for running the procurement and contracting processes. The DDMO will work with the Lead Designer's procurement group to process subconsultant agreements or purchase orders as appropriate for the associated services to be provided.

Subconsultants will be required to provide relevant qualifications and experience information and to provide a scope and cost proposal for the design services requested to the DDMP.

The Design Manager (DM) will participate in the review of subconsultant information and in the selection of subconsultants for each design assignment. The DM will coordinate with the Lead Contractor regarding proposed the scope, schedule and cost of subconsultant agreements. .

4.0 Procedures

Procurement of design subconsultant services will follow the following procedures:

Qualify and Select Suppliers and subcontractors.

- Consider any constraints to the project (such as location, local resources, and work force restrictions).
- Conduct market research.

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- Consider Project requirements for engagement of minority, small or disadvantaged businesses.
- Identify conflicting issues that may influence the supplier or subcontractor's ability to perform (such as actual or perceived conflicts of interest).
- Include client-preferred suppliers and subcontractors.
- Review and select preferred suppliers and subcontractors.
- Prepare and issue pre-qualification documents.
- Evaluate pre-qualification submittals.
- Establish a list of suppliers and subcontractors or document sole/single-source justification.
- Obtain client approval of the source list, if required.
- Verify that proposed suppliers and subcontractors meet the experience and capability requirements.

Requisition and Solicit Bids and Proposals

- Initiate the procurement requisition.
- Address strategic single or sole-source considerations.
- Consider the benefits of a large-list solicitation versus the savings accomplished through strategic relationships.
- Consider schedule implications.
- Enable competitive bidding where appropriate.
- Define the scope for goods or services to identify additional unbudgeted costs and/or schedule delay.
- Consider any interfaces between work packages.
- Identify pricing breakdowns so variations in the scope will be priced with regard to additions and deletions.
- Request the appropriate cost or pricing data as required by the RFP or prime contract.
- Source selection evaluation criteria is adequate to evaluate for best value.
- Suppliers and subcontractors have adequate time and information to provide a compliant proposal.
- Document and manage inquiries.
- Address non-compliant proposals

Evaluate Bids and Proposals and Award Agreement

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- Document and record receipt of each bid or proposal.
- Determine if the bid or proposal complies with the inquiry documents.
- Identify the bids or proposals that merit full evaluation (non-compliant or significantly high bids or proposals do not warrant full evaluation).
- The bids and proposals under consideration are complete in all aspects and within the parameters acceptable to the Project.
- Distribute applicable sections of the bid or proposal for review by responsible project disciplines (such as engineering, construction, HSE, quality, and project controls).
- Evaluate bids and proposals based on selected award basis and/or documented source selection criteria.
- Establish written responses to clarifications requested by each discipline evaluating the selected bids or proposals.
- All potential issues have been reviewed and acknowledged by each short-listed supplier or subcontractor.
- Determine price reasonableness on every award and document procurement file.
- Determine a technically acceptable shortlist of suppliers or subcontractors and clarify/negotiate to achieve the best solution.
- Draft negotiation objectives and document outcomes.
- Identify any factors with the selected supplier or subcontractor that may affect their performance when the work is awarded (such as competing projects, capacity constraints).
- The time to be expended by all disciplines in trying to obtain a better solution is compatible with the potential savings in cost or schedule.
- The project team has considered all the benefits that can be accrued from value engineering, rescheduling, or development of a new execution plan and/or techniques.
- The selected supplier or subcontractor has been determined to be responsible.
- Recommend award to the offeror with the most responsive, responsible bid or proposal that represents the best value.
- Draft the procurement agreement documents to include the issues discussed and agreed in negotiations.
- Obtain all required award certifications and forms required by the client contract.
- Award and issue using the appropriate agreement form.

Administer Purchase Order or Subcontracts

- Administration of the procurement agreement.

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- Identify the schedule criticality of the goods or services.
- Identify the level of effort needed to pro-actively ensure supplier or subcontractor compliance with the agreement.
- Identify and assign all of the required support functions (i.e. health & safety, security, quality, project controls).
- Actively manage the work interfaces between scopes of work to avoid changes and delays.
- Identify the risk mitigation plans needed for an event that may increase cost or delay the schedule.
- Expediting, inspection, receiving.
- Transportation logistics.
- Field material control.
- Insurance and bonding administration.
- Backcharge administration.
- Change order control.
- Invoicing and payment.
- Non-conformance reporting.
- Non-performance management.
- Claims and disputes management.
- Management of required notifications, reporting, consent certifications and deliverables required by the client contract**Close-Out Purchase Order or Subcontract**
- Resolve open issues and adequately document their disposition.
- Ensure each discipline carries out its role in procurement agreement closeout.
- Confirm and verify contracted scope is complete and deliverable items received.
- Require a performance bond or payment retention to establish leverage with the supplier or subcontractor at the end of the agreement term.
- Negotiate claims.
- Reconcile payments.
- Initiate and complete any required final rate audits.
- Disposition of any non-Project property.
- Receive final release of liens.
- Issue closeout change orders.

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- Obtain supplier or subcontractor final release of claims.
- Release final payment.
- Initiate warranty period.
- Evaluate and record performance (lessons learned, performance records).
- Prepare files and records for archiving and retain in accordance with Project requirements

5.0 Records

Documents associated with the procurement and contracting of subconsultants for design services will be maintained in the Lead Designer's project records. The documents are expected include the following:

Record Name	Record Owner	Record Location	Retention Time (Minimum)
Subconsultant work scope, schedule and product requirements	Deputy Design Manager for Production and Design Discipline Lead	Document Management	Final Submittal
Subconsultant Agreement	Deputy Design Manager for Operations	Document Management	Final Submittal
Process Control Audit Form	Design Process Control Manager	Document Management	Final Submittal

6.0 References

The following documents are referenced in, or are relevant to, the material presented in this document.

DPCP-PR-002 Quality Program for Subconsultants

DPCP-PR-016 Quality Audit Certification

DPCP-PR-018 Subconsultant Procurement Procedure

7.0 Revision History

Procedure	Revision	Date	Description
DPCP-PR-018			Initial Release

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Procedure Number: DPCP-PR-019

1.0 Purpose

Design Work Planning will be developed to organize the production of design products, including the required coordination meetings, quality control reviews and submittal packages. The design work plans include the appropriate process controls for performing the work and completing the quality procedures.

2.0 Scope

Design work plans will address the design of all elements of the Project in compliance with Project Agreement requirements, particularly the Design Inputs, discipline sections and output requirements. Development of design work plans will consider Procedure DPCP-PR-020 regarding design work in multiple locations.

The design work plan aligns the Lead Designer's delivery program to prepare and submit deliverable design products in accordance with the Baseline Schedule for the Project. Design Process Expert are organized for engagement in technical reviews of design products in their area of expertise and for interdisciplinary reviews.

Design work plans also account for Task Force Meetings, Progress Review Meetings and other coordination activities. This includes coordination with the Lead Contractor, Environmental Compliance Manager and Right-of Way Manager for milestone reviews of design products as they are developed.

3.0 Responsibilities

- The Deputy Design Manager for Production (DDMP) will be responsible for all design work planning and associated deliverables.
- The Design Process Control Manager (DPCM) will be responsible for the process control program for all design deliverables.
- The Design Discipline Lead (DDL) will be responsible for developing work plans to implement design input and output requirements across the entire design team, including subconsultants.

4.0 Procedure

The design work planning will require weekly task force meetings with the designers and construction personnel to collaborate on the design for design activity. Inter-discipline meeting will coordinate all the design task force teams. A design review tracking list is prepared which includes each Reviewable Deliverable that, as of the date of submission of the DRTL, FRMG knows or anticipates will be submitted to the Department.

The DRTL includes:

- Specifies the type of Reviewable Deliverable;

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- Includes FRMG's proposed timeframe and sequence for submission, review, and resolution of each Reviewable Deliverable; and
- Shows how scheduling of DRTL submittals avoids the Department's concurrent review of five or more Reviewable Deliverables that require review by the same specialty experts.

The design schedule includes tasks corresponding to the design process required for each discipline. The tasks typically include design planning, engineering analyses, drawing development, plan sheet production, specification development, calculations and review processes for each stage (30%, 100%, and Pre-RFC) of the design process. Design items that require additional steps, such as a 60% submittal, are included in the design schedule as needed. The information in the design schedule is openly shared within the design team and with the Lead Contractor.

The design teams provide weekly status reports of progress against the tasks scheduled for their design activities. Progress against the design schedule is evaluated and the design schedule is updated as needed. Design progress is reported monthly to the Lead Contractor for use in updating the overall Project schedule. The combined design and construction information is provided to the Department in regularly scheduled project reports by FRMG.

The Project Agreement prescribes the process for submitting design packages to the Department and for the Department's review of the design documents. FRMG will use reasonable efforts to schedule, prioritize, and coordinate the Reviewable Design Deliverables to allow an efficient and orderly review process by the Department. This includes the scheduling of Comment Resolution meetings between FRMG and the Department to agree on the activities to be taken in response to each review comment.

Design team meetings will be conducted within FRMG's design organization on a weekly basis. These meetings are intended to provide overarching Project information, coordinate design and PC activities, discuss new input/output requirements, share new information, and manage resources.

Design Checks are routinely performed as part of design quality processes. Checking procedures are described in Procedure DPCP-PR-005 and are conducted at each stage of design submittal. The Design Checks are performed by design team members of the appropriate discipline who are not associated with development of the subject design product. In addition to design checks, independent design calculations will be prepared for structural elements as specified in the Project Agreement.

5.0 Records

The design products produced by the design team will all be retained in the Lead Designer's Project Wise system, regardless of where it was produced or by which designer or subconsultant. Relevant design records will be forwarded to the Lead Contractor along with design product submittals.

6.0 References

The following documents are referenced in, or are relevant to, the material presented in this document.

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DPCP-PR-005 Checking Plans and Design Drawings

DPCP-PR-020 Managing Design in Multiple Locations

7.0 Revision History

Procedure	Revision	Date	Description
DPCP-PR-019			Initial Release

DRAFT

Procedure Number: DPCP-PR-020

1.0 Purpose

This procedure provides a framework for the development of quality design products that are produced in multiple locations.

2.0 Scope

This procedure applies to the Lead designer's entire design team including the Lead Designer's staff and all subconsultant staff. It includes all locations at which design services are provided and covers the design of all Project elements.

The intent of this procedure is to facilitate the uniform application of design input and output requirements, efficient management of design production, consistent application of design process control activities and overall compliance with Project Agreement requirements.

This procedure will be applied in unison with DPCP-PR-0019 "Design Work Planning" and DPCP-PR-0017 "Subconsultant Quality Control Requirements".

3.0 Responsibilities

Implementation of this procedure will require the active participation of the Design Process Control Manager, the Deputy Design Manager for Production, the Area Design Managers, the Design Process Expert and the Design Discipline Leads. It is a primary driver in the organization and operation of the design team. The responsibilities of the team members are described below:

- Design Process Control Manager (DPCM) is responsible for establishment, implementation and maintenance of the design process control program with emphasis on the development of quality design products.
- Deputy Design Manager for Production (DDMP) is responsible for planning of all design work and production of deliverables, for design staff and subconsultants
- Area Design Managers (ADM) are responsible for the design of the Project elements within their assigned area. This includes the design of discipline specific products and for interdisciplinary coordination for design staff and subconsultants.
- Design Process Expert (DPE) are responsible for the development and dissemination of the Design Inputs Library, for process control training and for quality reviews across all design staff and subconsultants.
- Design Discipline Leads (DDL) are responsible for implementing discipline-specific design input requirements across all area design teams and for participating in design quality reviews.

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4.0 Procedure

The Design Team is organized in a matrix format with equal consideration for production activities and for design quality process controls. This format is necessary to manage design work to be accomplished in various locations and by design staff and subconsultant staff who are employed by a number of companies. Project management activities and process control activities will be uniformly applied to the design of all Project Elements, regardless of discipline or location.

The Deputy Design Manager for Production will direct the activities of design staff and subconsultants in the production of all design products. In accordance with Design Work Planning activities, the DDPM will coordinate with the Design Manager and the DPCM to plan design activities in alignment with the Baseline Schedule and the Deliverable Requirements Tracking List. The DDPM will work with the Area Design Managers to assemble design teams as appropriate for the work to be accomplished for each Project Area. This includes the Lead Designer's staff members and subconsultant staff. The DDPM will routinely communicate across all locations and employers, and will visit each production location at least once a quarter for first hand observation of design activities and to provide training and updates.

Each Area Design Manager will charter their entire design team to define the discipline design work for the Area, to understand the interfaces between disciplines and to build a team-oriented approach where everyone works toward common goals. Design team members will be managed equally and will be held responsible for the performance regardless of their location or employer. Area Design Managers will communicate with design staff in all locations at least weekly and will visit each design location at least every 6 weeks to provide onsite direction, review design progress, participate in design checks and evaluate performance.

The Design Process Expert will work with the DDMP and the DDLs to develop the Design Inputs Library. They will provide training to the Area design teams on the availability and use of the Design Inputs and on the process control activities that will be employed throughout the design process. This includes subconsultants where the provisions of DPCP-PR-0017 "Subconsultant Quality Control Requirements" will prevail in addition to the overall design process control reviews. The DPEs will perform audits of design activities for compliance with process controls and perform quality reviews at design locations across the Design Team.

The Design Discipline Leads will coordinate with the DPEs to fully understand discipline-specific requirements, design processes and production expectations. The DDLs will work within the Area design teams to guide design activities and monitor compliance with discipline requirements. The DDLs may be the discipline designer for one of the Area teams or may operate in an overall project role, as directed by the DDMP. Regardless, they will be involved in day-to-day design activities and will be responsible for the production of quality design products across all Area design teams, including subconsultants. The DDLs will work closely with design staff wherever they are located, including frequent visits to each design location. In addition, the DDLs will work with the other DDLs on the Project to coordinate design relationships between disciplines and will participate in design quality activities, particularly interdisciplinary reviews.

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5.0 Records

The design products produced by the design team will all be retained in the Lead Designer's Project Wise system, regardless of where it was produced or by which designer or subconsultant. Relevant design records will be forwarded to the Lead Contractor along with design product submittals.

6.0 References

The following documents are referenced in, or are relevant to, the material presented in this document.

DPCP-PR-0019 Design Work Planning

DPCP-PR-0017 Subconsultant Quality Control Requirements

7.0 Revision History

Procedure	Revision	Date	Description
DPCP-PR-020			Initial Release

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Procedure Number: DPCP-PR-021

1.0 Purpose

This procedure describes the responsibilities, methods, and documents used to prevent the continuation of design work being performed by the Lead Designer that is not in conformance with the requirements of the Project Agreement or released for construction (RFC) documents.

This is intended to prevent the continuation of design work that will result in extensive design rework or construction repair, removal or replacement to bring the Work back into conformance.

2.0 Scope

This procedure applies to items of design work where continuation using the same inputs, design methods or production processes will result in a design product that does not conform to Project Agreement requirements.

This procedure also applies to design work that is being performed contrary to, or in the absence of, approved design methods, process controls, environmental requirements and/or right-of-way limits, and where further design work would make it difficult or impossible to establish acceptability of the design products.

3.0 Responsibilities

Everyone on the design team has the responsibility to recognize and report nonconforming design work. The nonconformance is to be reported to the appropriate Design Discipline Lead (DDL) for investigation.

The DDL is responsible for the initial assessment and drafting the Design Stop Work Order if warranted.

The Deputy Design Manager for Production (DDMP), the Area Design Manager (ADM) and the Design Process Expert (DPE) may help in assessing the need for a Design Stop Work Order and in any necessary remedial actions.

The DPCM will review the situation and issue the Design Stop Work Order when warranted.

The DDMP is responsible for determining the course of action after a Design Stop Work Order is issued.

The ADM directs the design team to comply with the Stop Work Order.

The DDL, in association with the ADM, implements approved corrective actions.

4.0 Procedure

A Stop Work Order can be recommended by the Design Manager, DDMP, DPCM, DPEs, DDLs, ADMs when a nonconfoming situation is directly observed or is reported by a member of the design team. Individuals from the construction, environment or right-of-way teams may report a design nonconformance, as also may, individuals from the Department or stakeholders. For reasons including:

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- Observed design activities or products are clearly not compliant with design input or output requirements, non-standard design methods are being employed, process control activities are not occurring or review comments are not being incorporated.
- The design work is clearly not consistent with designs for adjacent areas or with Project-wide discipline requirements.
- The design work is proceeding outside of Right-of-Way limits or Environmental compliance requirements.
- Repeated design nonconformances of the same type.
- The design work has previously been identified as a nonconforming and continues without correction.
- Contractor is building something now that aligns with a nonconforming design.

Observations and reports of nonconforming design work will be forwarded to the DDL via a Design Nonconformance Report (NC-D). The DDL will coordinate with the Area Design Manager and the appropriate Design Process Expert to assess the situation. If a Design Stop Work Order appears to be warranted, the DDL will prepare a draft Order and forward to the Design Process Control Manager (DPCM).

The DPCM will review the NC-D and draft Stop Work Order and will consult with the DDMP, DPE and others such as the Environmental Manager, to assess the situation. The DPCM will issue a Design Stop Work Order when it is warranted.

When a Design Stop Work Order is issued, the DDMP and the ADM overseeing the subject design work will be notified of the Order. The ADM will assure that design production stops.

The DDMP and DDL will determine how to implement a corrective action. When the determination is made, the DPCM must concur before the ADM is directed to implement redial work as needed and to implement process changes to prevent reoccurrence of the nonconforming design activity.

The DDL will verify that the subject design work was performed as directed and in conformance with the Stage 1 QMP and Project Agreement requirements.

Copies of the completed Design Stop Work Order will be transmitted to the project personnel involved in the action. A copy of the Stop Work Order Request, with any associated documentation, will also be filed as a Quality Record by Document Management.

5.0 Records

A copy of the Design Stop Work Order, along with any supporting materials, will be forwarded to the Lead Designer's Project Wise system. The Design Stop Order will also be forwarded to the Lead Contractor as a Quality Record in the Project Document Control system.

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Record Name	Record Owner	Record Location	Retention Time (Minimum)
Design Nonconformance Report	Design Discipline Lead	Document Management	Final Submittal
Design Stop Work Order	Design Process Control Manager	Document Management	Final Submittal

6.0 References

The following documents are referenced in, or are relevant to, the material presented in this document.

Form NC-D Design Nonconformance Report Form

7.0 Revision History

Procedure	Revision	Date	Description
DPCP-PR-021			Initial Release

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Front Range Mobility Group

APPENDIX D

DRAFT STAGE 1 QUALITY MANAGEMENT PLAN

VOLUME 2 – TECHNICAL SUBMISSIONS

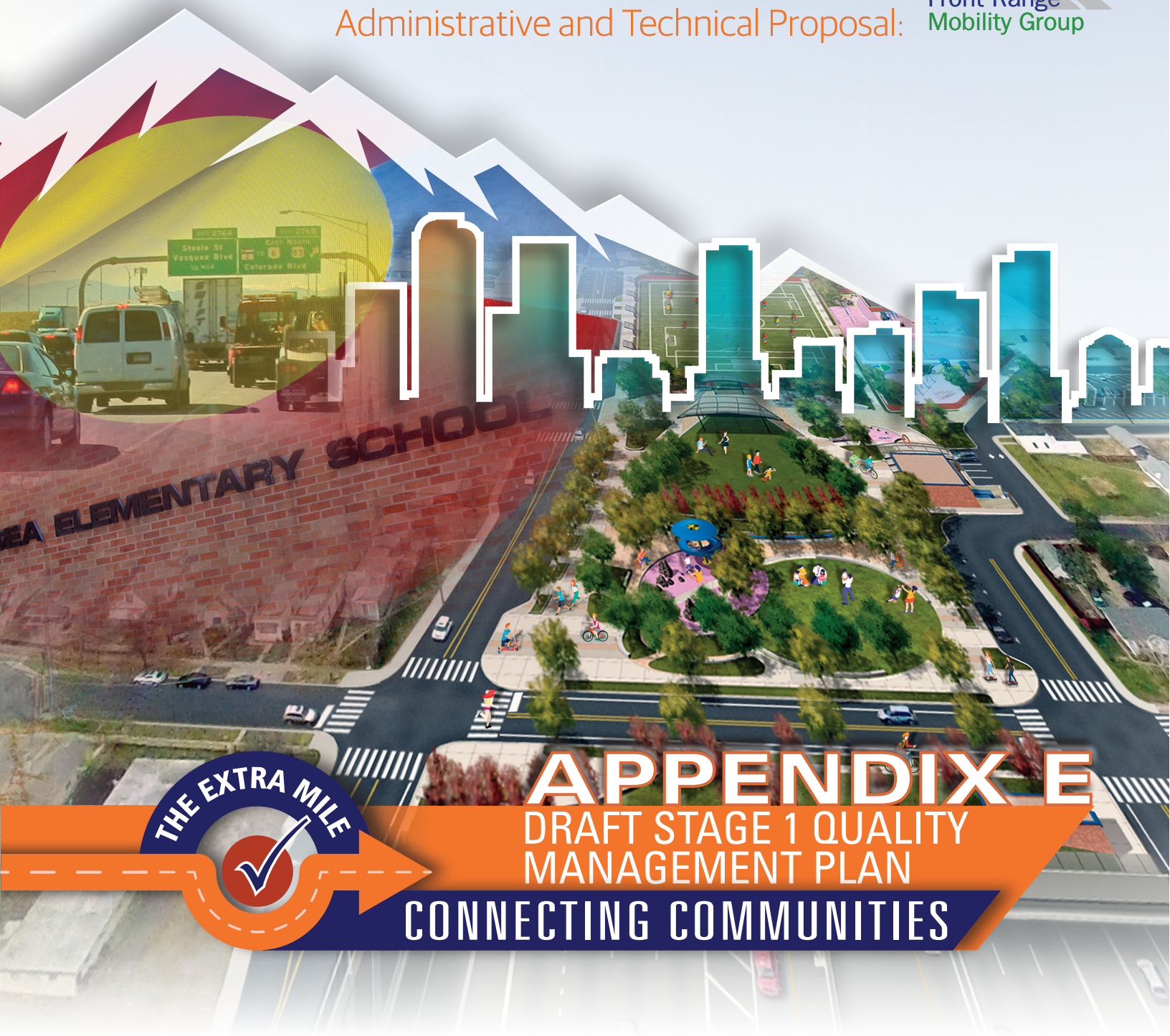
Binder 8 of 18

CENTRAL 70 PROJECT

PUBLIC DISCLOSURE

Administrative and Technical Proposal:

Front Range Mobility Group



THE EXTRA MILE

APPENDIX E

DRAFT STAGE 1 QUALITY MANAGEMENT PLAN

CONNECTING COMMUNITIES

Quality Management Plan Overview

Front Range Mobility Group's (FRMG's) approach to quality is to design and build quality into all elements of the Work and at every step along the way. It is much more than just checking for quality when required to do so. The FRMG team brings decades of local experience delivering quality design and construction work on some of Colorado's largest and most complex transportation projects. We combine this with our team's successful implementation of comprehensive Quality Management Plans on similar, large-scale public private partnership (P3), design-build (DB), and design-build-maintain (DBM) projects in the U.S. and throughout North America with individual construction values in excess of $1 billion. This unique combination of experience means that we thoroughly understand the Department's quality expectations, that we know how to maintain the highest level of quality while working in the local environment, and that we are prepared to effectively manage quality within the magnitude and accelerated schedule of the Central 70 Project (the Project).

FRMG's Quality Management System (QMS) for the Central 70 Project is focused on meeting or exceeding the Project Agreement requirements, the Department's expectations and those of other applicable stakeholders. FRMG will implement a combination of Project-specific and industry best practices, procedures, and processes to consistently and continuously meet those requirements and expectations. Our QMS has been developed in accordance with the requirements of the Project Agreement, ISO 9001:2015 standards, and on the foundation of our stated Quality Policy:

FRMG Project Quality Policy: *FRMG is committed to ensuring that the design, construction, materials, equipment, and all other elements of the Work performed by FRMG, our subcontractors, and suppliers conform to the requirements of the Project Agreement and the Released for Construction documents. We are further committed to maintaining a consistency of effort to improve the quality of the Work we perform, including the Work performed by our subcontractors.*

This policy is further supported by three tenets that form the culture of all Project team members.

- ✓ **Quality is designed and built in, not inspected in.**
- ✓ **Quality is the responsibility of each individual.**
- ✓ **Do it right the first time.**

FRMG's Quality Management Plan (QMP) describes the QMS organization, management approach, operating systems, and processes that FRMG will utilize to manage and deliver the Project to comply with Project Agreement requirements for design, procurement, construction, testing, and commissioning, and with applicable regulations and laws. The FRMG QMP will apply to all Work performed by FRMG and its subcontractors at all tiers.

The draft QMP presented in this document addresses the requirements of Schedule 8, Section 6 of the Project Agreement. The information is organized in direct alignment with the requirements set forth in Section 6 to clearly show how FRMG's approach addresses each element of the quality management requirements in the Project Agreement.

The draft Stage 1 QMP includes both general quality management items and non-construction (primarily design) related processes and procedures. The Stage 2 QMP covers the construction-related processes and procedures, in addition to the items also discussed in Stage 1. Together, the Stage 1 QMP and Stage 2 QMP submittals make up FRMG's overall QMS and describe the system, procedures, and resulting records that assure the Work meets the requirements of the Project Agreement during the design and construction phases (Construction Period) of the Project. The current emphasis of the draft QMP is on the items required to achieve early approval of the Stage 1 QMP to facilitate issuance of NTP 1.

Experienced Independent Quality Control Firm (IQCF)

FRMG has teamed with Raba Kistner, Inc. (RK) and VIVID Engineering Group, Inc. (VIVID) to perform the IQC functions for the Project. RK and VIVID were chosen for their firms' and proposed staff's experience in similar roles on other large, complex design-build and P3 projects within Colorado and across the U.S.

Commitment to Local Small Businesses

VIVID is a registered **Emerging Small Business** with the Colorado Department of Transportation.

VIVID's office and IQCF Laboratory are located just a few blocks from the East end of the Project at: **4890 Ironton Street, Unit K, Denver, CO.**

RK has extensive experience with transportation infrastructure and has successfully provided services to the owners, developers, and financiers of these projects since 1968. RK is very familiar with the intricacies of the planning, funding, design, construction, and quality needs of governmental transportation agencies across the U.S. Notable experience includes two of the largest DB highway projects in the U.S.—the $1.2 billion I-15 CORE Project in Utah and the $1 billion South Mountain Freeway Project in Arizona.

VIVID is a Colorado-based business that provides quality management, construction management, materials testing and inspection, and geotechnical, environmental and construction phase services to local, state and federal agencies throughout the Front Range. VIVID's personnel have 150 years of collective experience and expertise ensuring effective, responsive and efficient project delivery. VIVID's professionals have significant experience performing process control, quality control, quality assurance, environmental, and geotechnical services on design-build and P3 Projects in Colorado for CDOT and RTD, including the RTD EAGLE FasTracks Project, I-25 and Cimarron Design-Build Project, I-25 TREX Project, and others major projects across the U.S.

IQCF Experience Implementing ISO 9001-Compliant QMPs on Similar DB/P3 Projects

Raba Kistner Infrastructure

- ✓ Developed and implemented an ISO 9001:2008 compliant program on the award-winning, **I-15 CORE Project in Utah** – ***the fastest $1+ billion DB highway reconstruction project ever built in the U.S.***
- ✓ Developed and implemented an ISO 9001:2008 compliant program on the **South Mountain Freeway Project in Arizona** – ***Largest project in the history of ADOT***

VIVID Engineering Group, Inc. (Staff Experience)

- ✓ Currently implementing an effective quality management program on the I-25 / Cimarron Street (US 24) Interchange Design-Build Project – ***Second Largest Highway Project in Colorado Springs' History***
- ✓ Developed and implemented an ISO 9001:2008 accredited program on the RTD EAGLE FasTracks Project in Colorado ***– First P3 Transit Project Completed in the U.S.***
- ✓ Developed and implemented ISO 9001:2008 compliant program on the I-29/I-35 kcICON Project in Missouri ***– MoDOT's second DB Project that included four miles of highway and an iconic cable-stayed bridge across the Missouri River***
- ✓ Operated under ISO 9001 Accredited plan for the I-25 Transportation Expansion (TREX) Project in Colorado ***– Largest multimodal DB Project in the country at time of construction.***

Key Features and Benefits of FRMG's QMP

FRMG is committed to meeting and exceeding the Project requirements for quality and has included several key elements that provide significant added value to the Department. All of these elements have been used by FRMG team members on similar past projects. We believe that these additional elements are critical to delivering a high-quality Project and fostering a partnership environment with our internal team, the Department, and stakeholders. Throughout the draft Stage 1 and Stage 2 QMPs, we have included the icon shown on the right to highlight where FRMG's QMP exceeds the RFP requirements or where we believe our approach provides added value to the Department.

Proven Quality Processes and Procedures

FRMG team members were specifically chosen for their experience in designing and building high-quality transportation projects of similar size and complexity as the Central 70 Project. Through this experience, FRMG has a proven set of quality procedures and processes that have been fully developed and tested on major projects in Colorado and throughout the U.S. This provides a strong foundation for our draft QMP and will facilitate the timely approval of the Stage 1 and Stage 2 QMPs, allowing the FRMG team to begin work on the Project quickly and efficiently.

Design Process Control and Integration of Related Disciplines

FRMG's QMP includes design process control as an integral part of the overall QMS. In addition to the standard design checking and review processes and procedures, the Stage 1 QMP provides for inclusion of FRMG staff from construction, operations and maintenance (O&M), environmental, and right-of-way, as well as staff from the Department and key stakeholders as appropriate. Through the use of task design task forces, progress review meetings, concurrent design reviews, and over the shoulder reviews, the FRMG team provides an ongoing forum for discussing design approaches and resolving constructability or maintainability issues before RFC documents are issued.

Commitment to ISO 9001 Standards

The FRMG team members have extensive experience operating under the ISO 9001 standard, and we bring an extensive audit program that will be implemented on the Project to ensure compliance with ISO 9001: 2015 standards. FRMG's team will commit a certified auditor to perform compliance audits that will confirm the QMP's compliance with the ISO 9001:2015 standard. This will provide additional assurance to FRMG and the Department that the IQCF is implementing a QMP that is consistent with ISO 9001:2015. The certified auditor will remain independent of the Project, will have no responsibilities to the Project (other than auditing), and will be committed to the auditing process throughout Stage 1 and Stage 2 of the Project. FRMG will have the certified auditor confirm compliance with the ISO 9001:2015 standards prior to submission of the Stage 1 and Stage 2 QMPs to the Department. The certified auditor will audit the QMP annually, at a minimum, to maintain continued compliance with the ISO 9001:2015 standards.

Quality Task Force

The weekly Quality Task Force (QTF) meetings provide a forum for FRMG, the Department, and stakeholders (as appropriate) to recognize quality achievements, voice any quality concerns, jointly resolve quality issues, monitor the status of the QMS, implement continual improvement, and ensure that the Department and stakeholder concerns are heard and understood by FRMG. FRMG will work with the Department to establish agreed-upon timelines to address issues and track them to resolution. The QTF will promote open and honest communication and through active participation of all attendees. FRMG has already been holding QTF meetings throughout the RFP process to develop the draft Stage 1 and Stage 2 QMPs. We will continue to hold the QTF meetings immediately after contract award to finalize the Stage 1 QMP for submittal to the Department shortly after contract execution.

Quality Issues Matrix

The Quality Issues Matrix is a valuable tool that we will use to visually depict real time quality performance. Our team members have used this tool on past projects, such as RTD Eagle FasTracks Project, I-29/I-35 kcICON Project, and I-25 TREX Project, with great success. The ongoing issues are color-coded red; current issues are yellow; good trends are green; and steady performers are blue. The colors give a level of importance to the issues that need attention and focus. The issues will be jointly agreed upon between FRMG and the Department. Working together to develop the matrix each month will facilitate communication between the overall Project team and will promote awareness of the Department's needs and concerns.

ELVIS

The IQCF will utilize the Engineering and Laboratory Vital Information System (ELVIS) as FRMG's primary Electronic Records Management System (ERMS) for receiving, storing, transmitting and tracking documents, transmittals, submittals, and correspondence of Quality Records for the Project.

ELVIS is a proprietary product of Raba Kistner and is fully compatible with Aconex. The system has a proven track record on other large-scale design-build and P3 Projects and was developed specifically for managing quality documents on highway/transportation projects. The ELVIS system allows the IQCF to have real time access to plans, specifications, quality checklist, test reports, nonconformance reports, punch lists, and other quality and Project-related documents in the field. The IQCF will use tablets and laptop computers to access this information remotely through the ELVIS system. The Department, stakeholders, subcontractors, and other project participants will be given the access to the same information. Key benefits of the ELVIS system include:

- Enhances the overall performance of the FRMG team
- Provides for real time data collection from IQCF personnel
- Provides real time access to plans and specifications by FRMG, the Department, and other stakeholders, as appropriate
- Documents all “failing” inspection and test results—failing results are flagged, aiding in review and tracks failing results to resolution
- Allows for required certifications by inspectors/technicians to be entered into the ELVIS technician certification module to ensure all tests are performed by certified personnel
- Facilitates a means for the IQCF to review and approve electronic quality records prior to uploading into Aconex
- Identifies hold point verifications on quality records and provides a searchable hold point log
- Reduces document control processing needs and personnel requirements
- Greatly increases the speed and efficiency by allowing IQC test results to be entered into the Department’s quality records database (QRD)
- Is a sustainable, “green” solution

Commitment to Operating an Accredited Laboratory and Participating in CDOT’s Laboratory Inspection and Round Robin Programs

FRMG’s IQCF commits to operating an accredited AASHTO, CCRL, and ASTM E329 Laboratory for the successful delivery of the Project. As an added value, the IQCF Laboratory will participate in CDOT’s annual Laboratory Inspection and Round Robin programs. FRMG team members have previously participated in this Round Robin program and look forward to continuing this very successful program to share best practices and lessons learned across the industry so that this Project delivers a consistently high level of quality.

Draft Stage 2
QMP

Front Range Mobility Group

THE EXTRA MILE

CONNECTING COMMUNITIES

Draft Stage 2 QMP

Draft

Stage 2 Quality Management Plan

For

Central 70 Project

Prepared By:
Front Range Mobility Group

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Stage 1 Attachment

A) Design Quality Procedures

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    - DPCP Flowchart
    - DPCP Forms and Checklists
2. DPCP Process Control Procedures

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Stage 2 Attachment: Construction Quality Procedures

List of General PC/IQC Procedures

CQP 0100	Numbering and Indexing
CQP 0101	Document Control
CQP 0102	Control of Records
CQP 0102-1	Reference Number List
CQP 0102-2	Naming Conventions
CQP 0103	Nonconforming Items
CQP 0103-1	Nonconformance Report
CQP 0103-2	Nonconformance Report Flowchart
CQP 0103-3	Nonconformance Report Log
CQP 0104	Construction Deficiency
CQP 0104-1	Deficiency Log
CQP 0105	Stop Work Order
CQP 0105-1	Stop Work Order Request
CQP 0105-2	Stop Work Order Flowchart
CQP 0105-3	Stop Work Order Request Log
CQP 0106	Corrective Action
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CQP 0107-3	Preventative Action Request Flowchart
CQP 0108	Early Release of Work
CQP 0108-1	Early Release of Work Request
CQP 0109	IQC Compliance Certification
CQP 0109-1	IQC Compliance Certification Form

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CQP 0110 Control of Materials

CQP 0110-1 Receiving Record

CQP 0110-2 Receiving Record - Rail

CQP 0111 Construction Submittals

CQP 0111-1 Construction Submittal Cover Sheet

CQP 0111-2 Construction Submittal Flowchart

CQP 0120 Request for Information

CQP 0120-1 RFI Form

CQP 0120-2 RFI Flowchart

CQP 0130 Construction Audit

CQP 0130-1 Construction Audit Schedule

CQP 0130-2 Construction Audit Findings Report

CQP 0130-6 Construction Audit Log

CQP 0140 Quality Training

PC Procedures

CQP 0201 PC Survey Data

CQP 0202 PC Survey Set-up, Layout and Control

CQP 0203 PC Shop and Working Drawings

CQP 0206 PC As-Built Documents

CQP 0225 PC Notification for IQC Inspections, Sampling, and Testing

CQP 0225-1 PC Concrete Placement Notification Form

CQP 0225-2 PC Asphalt Placement Notification Form

CQP 0225-3 PC Systems Inspection Request Form

CQP 0229 Work Planning

CQP 0230 PC Inspection Process

CQP 0230-1 PC Initial Inspection Report

CQP 0230-2 PC Completion Inspection Report

CQP 0230-3 Readiness Review Meeting Agenda

CQP 0230-4 PC Daily Inspection Report

CQP 0230-5 PC Completion Inspection Log

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CQP 0230-6 PC Daily Inspection Instruction Sheet

CQP 0230-7 PC Wetland / Waterbody Restoration Checklist

CQP 0230-12 Traffic Control Audit Findings Report

CQP 0230-15 Record of Daily Girder Inspection

CQP 0250 PC Concrete Pre-Placement Inspection

CQP 0250-1 PC Concrete Pre-Placement Inspection Form

CQP 0251 PC Earthwork Management

CQP 0252 PC Structures Foundation Management

CQP 0253 PC Asphalt Management

CQP 0254 PC PCCP Management

IQC Procedures

CQP 0300 IQC Quantity Tracking for Test Frequency

CQP 0301 IQC Construction Quality Hold Points

CQP 0302 IQC Deviation from RFC Plans and/or Specifications

CQP 0303 IQC ADA Compliance Inspection Process

CQP 0303-1 IQC ADA Measurement and Frequency Guidelines Matrix

CQP 0304 IQC Punch List Procedure

CQP 0304-1 IQC Field Punch List Form

CQP 0310 IQC Daily Inspection Report Process

CQP 0310-2 IQC Inspection Checklist -Earthwork and Embankment

CQP 0310-3 IQC Inspection Checklist - Structural Concrete

CQP 0310-4 IQC Inspection Checklist - Drilled Shaft Foundations

CQP 0310-5 IQC Inspection H-Pile-Driving Log

CQP 0310-6 IQC Inspection Checklist – H-Pile Load Bearing

CQP 0310-8 IQC Inspection Checklist - Bridge Deck

CQP 0310-9 IQC Inspection Checklist - MSE Walls

CQP 0310-10 IQC Inspection Checklist - Barrier Rail

CQP 0310-11 IQC Inspection Checklist - Soil Nail Wall

CQP 0310-12 IQC Inspection Checklist – Air Quality

CQP 0310-13 IQC Inspection Checklist - Landscape: Planting

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CQP 0310-14 IQC Inspection Checklist - Storm Drain
CQP 0310-15 IQC Inspection Checklist - Electrical Underground Ductbank
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CQP 0310-23 IQC Inspection Checklist - Discharge Monitoring Report
CQP 0310-24 IQC Inspection Checklist – Water Quality
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CQP 0310-26 IQC Inspection Checklist - Spill Response Report
CQP 0310-27 IQC Inspection Checklist - Supplemental Observation Report (SOR)
CQP 0310-28 IQC Western Burrowing Owl Survey Checklist
CQP 0310-29 IQC Nuclear Density Gauge Utilization Log
CQP 0310-30 IQC Asbestos Containing Soils Inspection Checklist
CQP 0310-31 IQC Asbestos Abatement Inspection Checklist
CQP 0310-32 IQC Inspection Checklist - OCS Foundation
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CQP 0310-34 IQC Contaminated Groundwater Disposition Report
CQP 0310-35 IQC Environmental Unexpected Asbestos Discovery Report
CQP 0310-36 IQC Asbestos Building Manifest Report
CQP 0310-37 IQC General Soil Disposition Report
CQP 0310-38 Construction Noise Monitoring
CQP 0310-40 IQC Asphalt Density Report
CQP 0310-41 IQC Inspection Checklist - Chain Link Fence
CQP 0310-42 IQC Environmental Sodding Inspection Checklist
CQP 0310-43 IQC Environmental Seeding Inspection Checklist
CQP 0310-44 IQC Inspection Checklist - Girder Set

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CQP 0310-45	IQC Inspection Checklist - Handrail
CQP 0310-46	IQC Inspection Checklist - Guardrail
CQP 0310-47	IQC Inspection Checklist - Waterproofing
CQP 0310-48	IQC Inspection Checklist - Structural Steel
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CQP 0310-50	IQC Masonry Checklist
CQP 0310-57	IQC Pedestrian Railing Checklist
CQP 0310-63	Spray-Applied Fire Resistant Material Checklist
CQP 0310-64	Weld Checklist
CQP 0310-67	ADA Compliance Checklist
CQP 0310-68	ADA Intersection Compliance Checklist
CQP 0310-69	IQC Environmental Hardscapes Inspection Checklist
CAP 0310-70	IQC Noxious Weed Inspection Checklist
CQP 0320	IQC Source Inspection
CQP 0320-1	IQC Concrete Batch Plant Inspection Checklist
CQP 0320-2	IQC Concrete Tie Batch Plant Inspection Checklist
CQP 0320-3	IQC Plant Welding Inspection
CQP 0320-4	IQC Girder Pre-Shipment Inspection

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Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
ADA	American with Disabilities Act
AFR	Audit Findings Report
AHJ	Authority Having Jurisdiction
ASQ	American Society for Quality
ASTM	American Society for Testing and Materials
ATD	Average Texture Depth
ATM	Asynchronous Transfer Mode
CAR	Corrective Action Request
CCRL	Cement and Concrete Reference Laboratory
CDOT	Colorado Department of Transportation
CIF	Corrected in Field
COC	Certificates of Compliance
CPCM	Construction Process Control Manager
CQP	Construction Quality Procedure
CR	Constructability Review
CSL	Crosshole Sonic Logging
CTR	Certified Test Reports
CVL	Controlled Vocabulary Language
CY	Cubic Yards
DB	Design-Build
DBE	Disadvantaged Business Enterprise
DCN	Design Change Notice
DIR	Daily Inspection Report
DNCR	Design Nonconformance Review
DPCM	Design Process Control Manager
DPCP	Design Process Control Plan
DQA	Design Quality Audit
DRTL	Deliverable Requirements Tracking List
ELVIS	Engineering and Laboratory Vital Information System

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EOR	Engineer of Record
ERMS	Electronic Records Management System
ERW	Early Release of Work
ESB	Emerging Small Business
ETC	Electronic Toll System
FDC	Field Design Change
FHWA	Federal Highway Administration
FRMG	Front Range Mobility Group
HMA	Hot Mix Asphalt
HSP	High-Speed Profiler
IDQC	Independent Design Quality Control
IDQM	Independent Design Quality Manager
IECM	Independent Environmental Compliance Manager
IQC	Independent Quality Control
IQCF	Independent Quality Control Firm
IQCM	Independent Quality Control Manager
IRI	International Roughness Index
ITP	Inspection and Testing Plan
ITR	Independent Technical Review
ITS	Intelligent Transportation System
MHT	Method of Handling Traffic
MIT	Magnetic Imaging Tools
MRI	Mean Roughness Index
MS	Minimum Sampling
MSE	Mechanically Stabilized Earth
MTIP	Materials Testing and Inspection Plan
NCN	Department Issued Nonconformances
NCR	Nonconformance Report
NDC	Notice of Design Change
NTP	Notice to Proceed
OTS	Over-the-Shoulder

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OVT	Owner Verification Testing
PA	Project Agreement
PAR	Preventative Action Request
PC	Process Control
PCCP	Portland Cement Concrete Paving
PDCA	Plan-Do-Check-Act
PO	Purchase Order
PQM	Project Quality Manager
PSA	Professional Service Agreement
QA	Quality Assurance
QC	Quality Control
QCA	Quality Control Analyst
QMP	Quality Management Plan
QMS	Quality Management System
QRD	Quality Records Database
QTF	Quality Task Force
RCSR	Review Comment Summary and Resolution
RFC	Release(d) for Construction
RFI	Request for Information
RFP	Request for Proposal
RK	Raba Kistner, Inc.
ROW	Right-of-Way
RTD	Regional Transportation District
SA	Smoothness Acceptance Testing
SOR	Supplemental Observation Report
SQC	Smoothness Quality Control
SV	Smoothness Verification Testing
TR	Testing Requirements

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1. General

Front Range Mobility Group's (FRMG's) approach to quality management for the Central 70 Project (the Project) during the Construction Period is centered around a comprehensive Quality Management System (QMS) that focuses on the requirements and expectations of the Department and other applicable stakeholders. FRMG will implement a combination of Project-specific and industry best practices, procedures and processes to consistently and continuously meet those requirements and expectations.

To continually evaluate the effectiveness of the QMS, FRMG will implement the Plan-Do-Check-Act (PDCA) process and will practice risk-based thinking during the Construction Period of this Project. The roles and responsibilities for the execution of those processes, as well as the interactions between and relationships among those processes, are clearly defined.

1.1 Quality Management Plan Submittal

FRMG's Quality Management Plan (QMP) for the Construction Period describes the QMS organization, management approaches, systems, and processes that FRMG will use to manage and deliver the Project, including complying with all design, procurement, construction, testing, and commissioning contractual requirements, applicable regulations, and laws.

The Stage 1 Quality Management Plan (QMP) includes the general quality management items and non-construction (specifically design) related procedures and plans. The Stage 2 QMP covers the construction-related procedures and plans in addition to the general quality management items also discussed in Stage 1. Together, the Stage 1 QMP and Stage 2 QMP submittals make up the QMS and describe the system, procedures, and resulting records that assure the Work meets the requirements of the Project Agreement during the preconstruction and construction phases of the Project. Upon award of the contract, FRMG will submit a QMP that is consistent with contract requirements and expands upon the draft Stage 1 QMP submitted in the Proposal with the goal of early issuance of NTP 1. The draft Stage 2 QMP will be incorporated with the approved Stage 1 QMP and the Stage 2 elements submitted in support of NTP 2. The incorporation of the Stage 1 and Stage 2 QMPs will bridge the gap between non-construction related elements and construction related elements as well as combine procedures that are applicable across all phases of the Project. The FRMG QMP will apply to all Work performed by FRMG and its Subcontractors at all tiers.

The Stage 1 and 2 QMPs incorporate industry best practices and comply with the International Organization for Standardization (ISO) 9001:2015 Standard. FRMG has experience operating under ISO 9001 on past similar projects. To ensure compliance, FRMG will conduct an extensive audit of the Project.

FRMG's Lead Contractor team will employ a certified auditor to perform ISO 9001:2015 compliance audits to assure that the QMP is compliant with the ISO 9001:2015 Standard. This will provide additional assurance to FRMG and the Department that the Independent Quality Control Firm (IQCF) is operating under and implementing a QMP that is compliant with ISO 9001:2015. The certified auditor will have experience with the ISO 9001 standard. The auditor will remain independent of the Project, will have no responsibilities to the Project (other than

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auditing), and will be committed to the auditing process throughout the Construction Period of the Project.

FRMG will have the certified auditor confirm compliance with the ISO 9001:2015 Standard prior to the submission of the Stage 1 and Stage 2 QMPs. He or she will audit the QMP annually, at a minimum, to ensure continued compliance.

After acceptance of the Stage 1 and Stage 2 QMPs by the certified lead auditor, FRMG will submit the plans to the Department for Approval. FRMG will obtain approval from the Department of the Stage 1 QMP prior to the first Notice to Proceed (NTP 1) and will obtain approval of the Stage 2 QMP prior to NTP 2.

An overview of the FRMG construction and design team members' experience with ISO 9001 Standards is included below.

Flatiron

Flatiron operated under an ISO 9001:2008 accredited program, and company practices are based on the ISO 9001 Standard.

Dragados

Dragados follows the strictest safety and quality standards on its construction sites and consistently executes large-scale construction projects in accordance with Project-specific QMPs that are consistent with ISO 9001 Standards. Dragados' direct parent company is certified ISO 9001 and has a long history of implementing comprehensive quality management systems on complex projects throughout the world.

AECOM

AECOM's initial ISO 9001 certification in North America was in September 2010, and the firm has 130 offices in the United States and 28 offices in Canada that are ISO 9001 certified. The ISO Certification is for services involved in planning, engineering, design, construction, program management, and operations and maintenance of projects. AECOM added 63 legacy office locations to the certification in 2016. Various AECOM legacy companies were a part of the Wasatch Constructors joint venture that designed and built the $1.3 billion I-15 Reconstruction Project in Salt Lake City, Utah for the 2002 Winter Olympics. The project was fully ISO 9001 certified.

CH2M

For the last decade, CH2M has operated worldwide under a Quality Management System that aligns with ISO 9001:2008 requirements, as documented in the company's Enterprise Quality Manual. In addition, specific programs, such as the Atlanta Airport Terminal Maintenance Program, have been determined to be compliant with ISO 9001:2015 standards.

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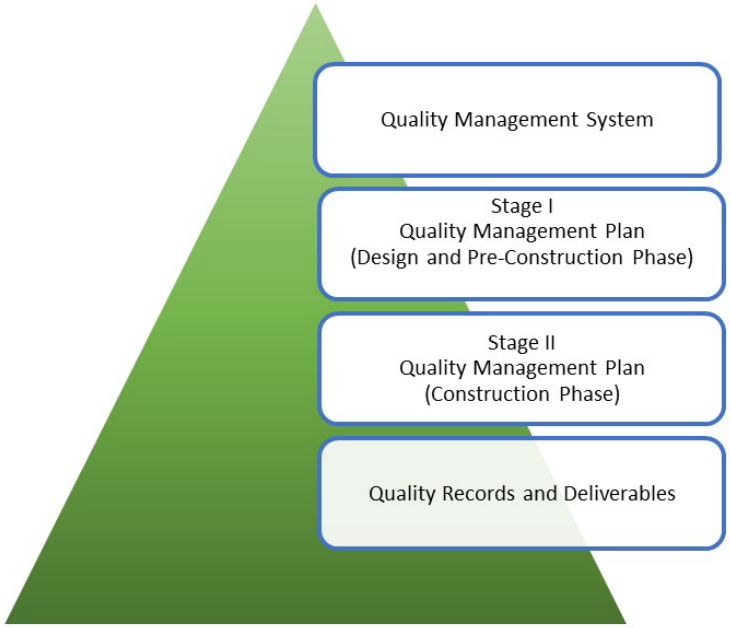
Independent Quality Control Firm (IQCF) – Raba Kistner Infrastructure and VIVID Engineering Group, Inc.:

- Raba Kistner Infrastructure
  - Developed and implemented an ISO 9001:2008 compliant program on the I-15 CORE Project in Utah
  - Developed and implemented an ISO 9001:2008 compliant program on the South Mountain Freeway Project in Arizona
- VIVID Engineering Group, Inc. (Staff Experience)
  - Developed and implemented ISO 9001:2008 Accredited program on the RTD EAGLE FasTracks Project in Colorado
  - Developed ISO 9001:2008 compliant plan for RTD Denver Union Station Project in Colorado
  - Developed and implemented ISO 9001:2008 compliant program on the I-29/I-35 kcICON Project in Missouri
  - Operated under ISO 9001 Accredited plan for the I-25 Transportation Expansion (TREX) Project in Colorado

Figure 1 depicts the hierarchy of the QMS and its various elements.

Figure 1. QMS Hierarchy.



1.2 Project Agreement Compliance

FRMG is committed to meeting the requirements of the Project Agreement at all phases of the Project and for each element of Work. FRMG has reviewed the requirements and drafted a QMP that implements Process Control (PC) and Independent Quality Control (IQC) procedures that:

- Apply to all design disciplines and Construction Work
- Identify applicable requirements
- Plan the work around those requirements
- Establish applicable Quality Hold Points, inspection, and testing criteria
- Verify that the Work is compliant
- Document and resolves nonconformances
- Audit performance against the requirements

Provide quality records to support the compliance of the Work

In addition to carefully and consistently meeting the Department's needs, FRMG will identify applicable stakeholders, learning from and responding to their respective requirements as they are related to the Project Agreement and to the effective delivery of the Project through FRMG's QMS and its associated plans.

Following NTP 1, FRMG will implement the Stage 1 QMP. Training and management of design staff will emphasize the requirements of the Project Agreement, particularly with respect to input and output requirements. FRMG will implement and monitor the Stage 1 quality processes and procedures throughout the design and preconstruction activities while simultaneously engaging the Department and other stakeholders through task force meetings, design progress meetings, review/comment/resolution processes, and one-on-one contacts as needed to understand and meet the requirements of the Project Agreement.

1.3 Temporary and Permanent Components of the Work

FRMG's QMS applies to both temporary and permanent Construction Work elements. Although the QMS is written with the focus on permanent work, temporary work will follow similar but somewhat different processes. The design of temporary facilities will follow Project Agreement requirements and will be subject to internal FRMG QC reviews. However, many temporary products are not reviewable deliverables and therefore are not subject to review by the Department.

Constructed temporary elements will be subject to the same quality processes but may have different Quality Hold Points, inspection, and testing requirements. For example, we anticipate that temporary asphalt paving will be required during construction of the Project. The planning process will be as follows:

Temporary Asphalt Paving

- Work plan will be prepared for the operation
- Requirements identified for the temporary asphalt paving
- Hold points established

  - Subgrade proof roll
  - Milling depth, cleanliness, and tach coat application
  - Pavement thickness
  - Signing and striping
- Inspections conducted
  - Subgrade
  - Milling
  - Paving
  - Signage
  - Striping
  - MHT
- Testing
  - Requirements determined based on CDOT Standard Specifications for Road and Bridge Construction and CDOT Field Materials Manual
- Nonconformances or safety-related items identified and corrected prior to opening to traffic

Documentation verifying work is compliant with the Project Agreement

1.4 FRMG and Department Collaboration

The FRMG Management Team facilitates continuous, frequent, and open communication between the Department, other stakeholders, and their Project team counterparts at all levels of the Project. The majority of this communication will occur through regularly scheduled meetings, such as weekly quality task force meetings, management review meetings, design task force meetings, construction coordination meetings, and other daily, weekly, and monthly work scheduling meetings, as identified in the Project Management Plan. The Department and stakeholders will be invited and encouraged to attend these meetings. Records of meetings are published and are available to the Department and other stakeholders.

1.4.a Quality Task Force Meeting

The Quality Task Force (QTF) provides a forum for FRMG, the Department, and stakeholders to recognize quality achievements, voice any quality concerns, jointly resolve quality issues, monitor the status of the QMS, implement continual improvement, and ensure Department and stakeholder concerns are heard and understood by FRMG. FRMG will work with the Department to establish agreed-upon timelines to resolve and track issues. The QTF will promote open and honest communication and expect full participation from all attendees.

This QTF will consist of Quality Leaders from FRMG, the Department, and stakeholders (as appropriate). Attendance is anticipated to be as follows:

- **FRMG:** Project Quality Manager (PQM,) Independent Design Quality Manager (IDQM), Independent Quality Control Manager (IQCM), Design Process Control Manager (DPCM), Construction Process Control Manager (CPCM), Independent Quality Control (IQC) Lab Manager, IQC Leads, IQC Document Control, Project Manager or Technical Director, Design-Build Manager, Construction Manager

- **The Department:** Project Managers, Project Engineers, Lead Auditors, Owner Verification Testing (OVT) Manager
- **Stakeholders:** Applicable quality representatives

Others: From time to time, it will be beneficial to the QTF to invite other individuals with specific knowledge, experience, or authority to discuss or resolve quality-related concerns, such as Governmental Authorities at the Department's request

Attendance will be on an as-needed / as-requested basis.

1.4.a.ii Objective

The QTF will serve as a forum for FRMG to monitor Department and stakeholder satisfaction, resolve quality concerns and issues, and ensure compliance with the Project Agreement.

1.4.a.ii Initial Efforts – Stage 1

In Stage 1, the QTF will focus on reviewing, editing, and approving the Stage 1 QMP and developing the Stage 2 QMP of the QMS. Review and approval of the QMPs by all parties will be critical to the success of the Project. The QMPs will serve as a guiding document for the Project. FRMG and the Department will agree with the processes and procedures defined in the QMS to deliver an effective quality program and compliant Construction Work.

The Stage 1 QMP includes project control activities for the design Work. During this stage, FRMG's team members will hold design-specific meetings, including task force, design progress reviews, and comment/resolution sessions (for more detail, refer to Section 4.2 Design Quality Control of the QMP). Within this framework, the QTF will focus on big-picture design quality achievements, issues, and concerns.

1.4.a.iii Long-Term Efforts – Stages 1 and 2

On a long-term basis, the QTF will review the effectiveness of the QMP and modify the plan as appropriate. In so doing, the QTF will:

- Monitor the overall state of quality
- Review current quality issues and identify trends
- Review audit findings and Corrective Actions
- Report and tracking of nonconformances
- Report and tracking of Stop Work items

Monitor Project closeout and management of the punch list

As the Project transitions from one phase to another, the focus of the QTF will shift to match the current stage and needs of the Project.

Typical QTF Agenda items during Stage 1 include the following:

- Weekly
  - Review, edit, and obtain approval of Stage 1 QMP as a priority
  - Review, edit and obtain approval of the Stage 2 QMP after issuance of NTP 1
  - Typical Stage 2 agenda items that are applicable for Stage 1 progress
  - Other

- Monthly
  - Quality Issues Matrix (See QMP Section 1.4.b Quality Issues Matrix)
- Quarterly
  - Management Review

Typical QTF Agenda items during Stage 2 include the following:

- Weekly
  - FRMG-identified Nonconformances
  - Department-identified Nonconformances
  - Stop Work Items
  - Audits
  - Corrective Actions
  - FRMG Concerns
  - Department Concerns
  - Stakeholder Concerns
  - OVT Compliance
  - Other
- Monthly
  - Quality Issues Matrix (See QMP Section 1.4.b Quality Issues Matrix)
- Quarterly
  - Management Review

1.4.b Quality Issues Matrix

The Quality Issues Matrix shown in **Figure 2** will visually depict quality issues on the Project. Ongoing issues are color-coded red; current issues are yellow; good trends are green; and steady performers are blue. The colors give a level of importance to the issues that need attention and focus. The issues will be jointly agreed upon between the FRMG Quality Team and the Department's team. Jointly developing the matrix each month facilitates communication between the team and promotes awareness of the Department's needs and concerns. This tool allows senior management to focus the resources where needed to improve the quality of the Project when needed.

Senior management from each team will identify counterparts at appropriate levels within their respective organizations and will encourage team members to resolve issues at the lowest level within the team. Senior management will set timeframes for issue resolution, and issues that are not resolved within those timeframes will be escalated to the next level within the team. Any person may request at any time that an issue be escalated to the next level. Senior management may assist in the negotiation of any issue at the request of any involved team member.

FRMG will work with the Department to resolve any issues or disputes in accordance with Schedule 25, Dispute Resolution Procedure.

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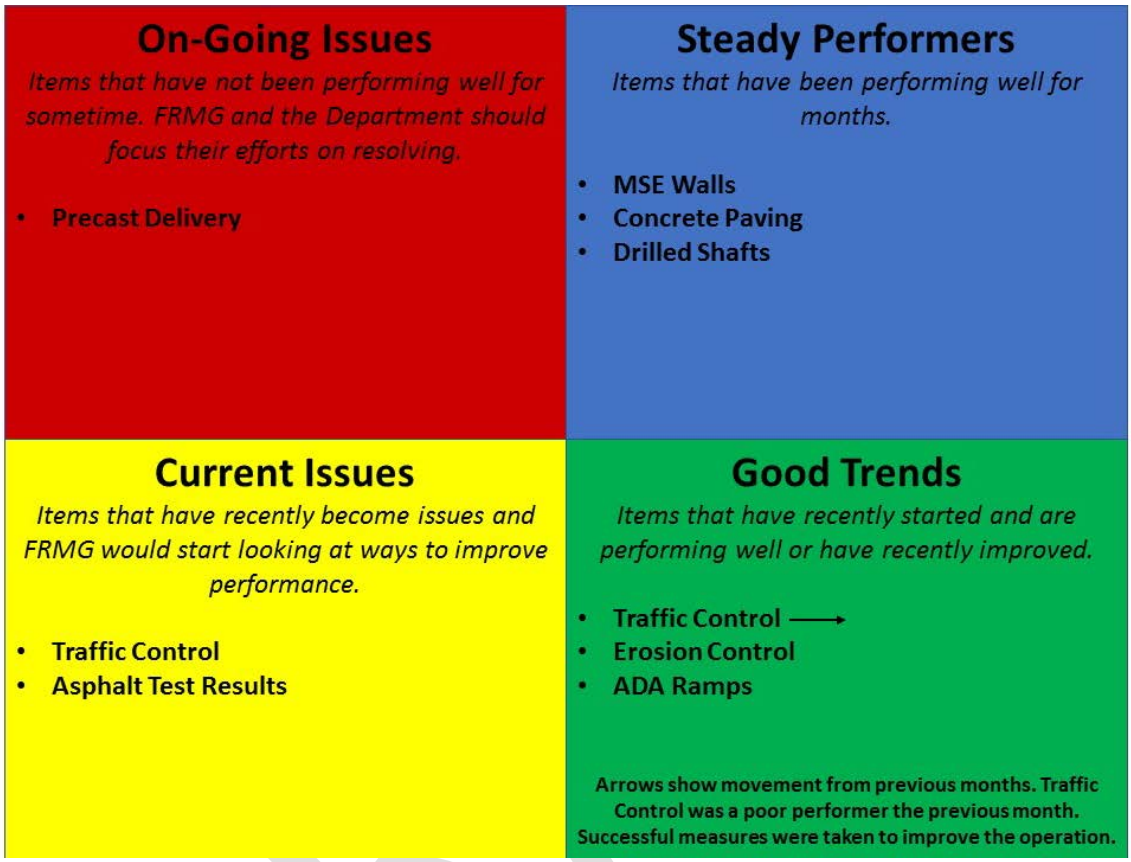
Figure 2. Quality Issues Matrix (EXAMPLE).



1.5 Quality Management Plan Elements

FRMG's QMP includes the following elements that describe the procedures and methods to meet the requirements of the Project Agreement:

- Quality Policy, Section 2.2
- Process Control, Section 2.4
- Design Quality Control, Section 4.2
- Independent Quality Control for Construction and Work Improvement, Section 4.0
- Quality Improvement, Section 2.6
- Quality Personnel, Section 2.7
- Training, Section 2.8
- Design Process Control Procedures, Stage 1 QMP Attachment

Construction Quality Procedures, Stage 2 QMP Attachment

FRMG will submit the Stage 1 QMP and Stage 2 QMP for the Department's approval. Department approval of Stage 1 QMP will be obtained prior to NTP 1. Department approval of Stage 2 QMP will be obtained prior to NTP 2. Revisions to the Stage 1 and Stage 2 QMPs will be reviewed within the QTF meetings and Approved by the Department prior to implementation.

1.6 Restricted Activities on an At-Risk Basis

Project Agreement Schedule 9, Section 3.b provides the context within which FRMG may commence or perform a restricted activity prior to otherwise being permitted to do so pursuant to Section 3.a of Schedule 9. The following procedure defines the process for FRMG to perform restricted activities on an at-risk basis, prior to completion of design, called the Early Release of Work, and for the issuance of related Released for Construction (RFC) documents.

This procedure allows for restricted activities to occur following a risk assessment prior to finalization of the design documents or other authorizations when the critical path of the Project schedule necessitates that such work begins early.

General

FRMG anticipates that a variety of ERW activities will be necessary to advance the schedule in the early months of Project delivery and *prior to* NTP1. The ERW activities are expected to include the following:

- Advancement of design work
- Photo logging, video recordings of facility, and inventories of existing conditions
- Control and topographic surveys
- Geotechnical investigations
- Utility potholing and surveys for location determination
- Drainage system investigations
- Demolition and site clearance
- Foundation packages to start construction of bridges or walls

It is anticipated that design activities for some Project elements will begin prior to the issuance of NTP 1. It is not expected that the Department's formal review or Acceptance will be required prior to NTP 1; however, FRMG will request over-the-shoulder reviews by the Department.

Definitions

Early Release of Work: Construction or other activities performed by FRMG to progress the Work prior to completion of the design process or other approvals.

Responsibilities

The Construction Manager will be responsible for identifying the need for ERW and the initiation of the early release process. The Construction Manager, Design Manager, and Area Engineer are responsible for assessing the risks associated with progressing ERW.

When design Work is needed, the Design Manager is responsible for issuing early release documents, stamped as such to FRMG document control for issuance to appropriate parties.

The Construction Manager's signature indicating concurrence with the ERW is required prior to start of work.

The FRMG Document Control Manager is responsible for assuring that all required signatures are obtained prior to issuance of ERW documents.

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The IQCM will review quality records and verify that restricted activities performed at-risk were performed in conformance with plans and specifications issued with the early release. The IQCM also verifies that work performed under the ERW packages meet the requirements of the final RFC Documents.

Procedure

The Construction Manager identifies a need for the ERW based on identified schedule constraints. Coordination with the Design Manager and the Area Engineer is necessary to assess the risk imposed by beginning construction before design completion, or other site work before required approvals. ERW requests (CQP-0108-1, Early Release of Work Request) will be evaluated on a case-by-case basis assessing the following factors:

- Status and projected completion of the design
- Importance of the field work to the initiation of design work (e.g., surveying, geotechnical investigations)
- Degree of technical difficulty associated with construction of the proposed element(s) and potential issues with correction of work
- Criticality of the early construction to the schedule

Assessment of risks with proceeding with such work on an at-risk basis

The ERW request will be evaluated by the Construction Manager and his or her approval documented on form CQP-0108-1, ERW Request. In addition, the approving signatures of the Construction Manager and Design Manager will be recorded on the form.

Prior to approval of the ERW Request, the Construction Manager and Design Manager will meet with the Department to discuss the need, risks, and potential impacts associated with the restricted activity. The Department may provide concerns, comments, and suggestions as appropriate. FRMG will review and may incorporate such feedback into the ERW request as deemed necessary by the Construction Manager and Design Manager.

Once the Construction Manager's and Design Manager's approval is complete, the Design Manager will release a set of plans, specifications, and other required documents for construction, stating the approximate percent design complete and being clearly marked as "Early Release of Work."

After receipt of the ERW documents, the FRMG Document Control Manager will verify the signatures were obtained on form CQP-0108-1, Early Release of Work Request, and will distribute documents.

IQC inspectors will use the ERW documents to verify conformance during the performance of the Work.

RFC plans and specifications will specifically note any changes from the ERW plans. The IQCM will verify IQC records from the restricted activity performed at-risk comply with the final design RFC plans.

Any work that is found in nonconformance with the RFC plans will be addressed. Correction of work will follow the Construction Deficiency procedure (CQP-0104, Construction Deficiency) or the nonconforming items procedure (CQP-0103, Nonconforming Items) as applicable.

References (Stage 2 QMP Attachment, Construction Quality Procedures)

CQP-0103_Nonconforming_Items

CQP-0104_Construction_Deficiency

Forms

CQP-0108-1, Early Release of Work Request

1.7 Updates to the QMP

FRMG is committed to the continual improvement of the QMS and recognizes the need for revisions to the QMP as the Project progresses. When FRMG's quality management organization detects systemic or fundamental shortcomings with respect to the Project Agreement, when inspection or testing reveal deficiencies in the Work (including deficiencies that have caused or may cause Nonconforming Work), or when the Department advises FRMG of such a problem, FRMG will update its QMP and submit to the Department for Approval.

FRMG will also revise the QMP should any of the following conditions exist:

a. QMP or procedure within the QMP no longer adequately addresses the matters it was originally intended to address
b. QMP or procedure within the QMP does not conform with the Project Agreement
c. An audit by FRMG or the Department identifies a deficiency in the QMP requiring an update
d. Organizational structure changes require revision to the QMP
e. FRMG is undertaking, or about to undertake, activities that are not covered within the current QMP
f. The Department requires the QMP to be updated at its request

Any arising need that constitutes a revision to the QMP will be reviewed and evaluated at the Quality Task Force (QTF) meeting. Based on the QTF evaluation, changes will be drafted and reviewed at the next QTF meeting. After agreement and approval by FRMG and the Department, the changes will be implemented immediately. Formal distribution of QMP revisions will be performed quarterly, as required.

2. Administrative Requirements

2.1 Quality Systems Procedures

2.1.a Consistency with Requirements

FRMG has written its QMP procedures to be consistent with the requirements of Section 6.2.1 of Schedule 8 and the FRMG Quality Policy in Section 2.2 Quality Policy and Objective this QMS.

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2.1.b Work Methods, Enforcement, and Implementation

A major tool within FRMG's QMS is the work planning process, defined in CQP-0229, Work Planning. The four major elements of a good work plan are safety, quality, schedule, and productivity. FRMG will prepare a work plan to identify the inspection and activities to be performed by the PC Coordinator(s), the Construction Segment Manager(s), and Subcontractors during the performance of the Work. Section 2.4 Process Controls contains specific details for work planning.

The work planning process evaluates the necessary construction methods, processes, and techniques needed to deliver an acceptable product. FRMG recognizes that situations may require a departure from planned schedules and these conditions are anticipated in the procedures and allow for control of these activities. It may be necessary to modify typical or normal construction methods to address complex elements, unique work environments, or complexity of the Work. Work Plans are reviewed in detail at readiness review meetings, defined in CQP-0230, PC Inspection Process.

Enforcement of the work planning process is monitored through PC and IQC inspection processes and issuance of nonconformances, Stop Work notices, and Department NCNs. Issuances of these items will require that Work methods be evaluated and potentially changed to deliver a Work product that meets the requirements of the Project Agreement.

Effective implementation of work methods is documented with PC procedures in Section 2.4 Process Controls and IQC procedures in Section 4 Independent Quality Control.

2.1.c FRMG Liaison and Interfaces

The Project Quality Manager (PQM) acts as the liaison between the quality, design, and construction arms of FRMG. The specific relationships are shown in Figure 4 (Project Quality Organization Chart) in Section 3.2 Responsibility and Authority of this QMP.

The PQM participates in QTF meetings to provide continuity between design, construction, IQC, and the Department. The PQM works to ensure there is a consistent response and approach to quality-related elements across all disciplines. The PQM is a primary point of contact for the Department and stakeholders to discuss and resolve quality-related issues and concerns.

2.1.d Employee Understanding of Quality Procedures

FRMG quality procedures are written in a manner that clearly defines the following:

- Purpose
- Scope
- Definitions
- Responsibilities
- Process steps and work instructions
- Documentation
- References

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All personnel who have responsibilities in the execution of QMP procedures will be trained and / or certified as needed and in accordance with procedure CQP-0140, Training of Personnel Implementing the QMP.

2.1.e Rationale for Procedures Selected

QMP procedures were selected based on the following:

- Requirements of Schedule 8, Section 6.2.1
- ISO 9001:2015 compliance
- Industry best practices

Lessons Learned on similar projects

2.1.f Quality Procedures

FRMG's submittal of the Stage 1 QMP (NTP 1) and Stage 2 QMP (NTP 2) will be outlined to address the following: procedures listed in Schedule 8, Section 6.2.1.f; procedures required to be compliant with ISO 9001:2015, FRMG recognized industry best practices; and additional procedures identified to meet the Project requirements. Minimum procedures include those identified in Stage 1 QMP Attachment: Design Quality Procedures and Stage 2 QMP Attachment: Construction Quality Procedures, procedures identified throughout this QMP submittal, and the following:

i. Procedure for the preparation, control, and distribution of the Quality Management Plan
ii. Scope
iii. Key personnel
iv. Organizational/technical interfaces
v. Design input requirements
vi. Design output requirements (deliverables)
vii. Design reviews
viii. Department participation
ix. Levels of responsibility and authority
x. Procedure to control, verify, and validate the design
xi. Procedure for document issue, approval, and revision
xii. Procedure for identification of, and where required by Project Agreement, the traceability of, deliverable items such as release for construction documents and As-Builts
xiii. Procedure for the verification and control of computer programs used in design
xiv. Procedures for inspecting, testing, and calibrating equipment
xv. Procedures for handling Nonconforming Work
xvi. Procedures for environmental compliance
xvii. Procedures for corrective / preventative actions
xviii. Procedures for handling storing, packaging, tracking, and submitting deliverables
xix. Training processes
xx. Procedures for internal quality audits
xxi. Procedure for management review

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2.1.g Implementation of the Quality System

FRMG measures and monitors the implementation of the QMS against the Project Agreement, plans, specifications, and the QMP. Performance is evaluated, reviewed and discussed at the QTF meeting. Significant issues and concerns will be documented on the Issues Matrix and tracked to resolution. Implementation of a successful QMS is demonstrated through the results, records, and trending of the following:

- Internal quality audits – performed by IQC and PC
- ISO 9001:2015 Compliance Audits – performed by FRMG certified auditor
- Nonconformances
- Stop work notices
- Deficiencies
- Root-cause analysis
- Corrective Actions
- Preventative actions
- Department audits and observations
- OVT results

Issues Matrix

2.1.h Documented Procedures

FRMG quality procedures are written in a manner that clearly defines the following:

- Purpose
- Scope
- Definitions
- Responsibilities
- Process steps and work instructions
- Documentation

References

Documented procedures will make reference to specifications that define how an activity is performed when applicable. Procedures will describe the process steps of what needs to be done, and work instructions will prescribe how it is to be done.

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2.2 Quality Policy and Objective

The FRMG Management Team has established the following Quality Policy for the Project:

FRMG Project Quality Policy

FRMG is committed to ensuring that the design, construction, materials, equipment, and all other elements of the Work performed by FRMG, our Subcontractors, and Suppliers conform to the requirements of the Project Agreement and the Released for Construction documents. We are further committed to maintaining a consistency of effort to improve the quality of the Work we perform, including the Work performed by our Subcontractors.

This policy is further supported by three tenets that form the culture of all Project team members.

- ✓ **Quality is designed and built in, not inspected in**
- ✓ **Quality is the responsibility of each individual**
- ✓ **Do it right the first time**

This Quality Policy establishes the framework for quality objectives and is routinely communicated and reviewed with FRMG staff. As part of the formal training program for the Project, FRMG will kick off the Project with a series of QMS training sessions to communicate the key components, requirements, and expectations of the QMP at Stage 1 and 2 for the following individuals:

- FRMG executive and Project management staff
- FRMG design staff
- FRMG construction staff – foreman level and above
- Department staff
- Stakeholders
- Subcontractors
- Subconsultants
- Suppliers

Additional information on FRMG's training program is included in Section 2.8 Training. Detailed information on the QMS training sessions is defined within CQP-0140 Quality Training.

All FRMG staff and on-site subconsultants and Subcontractors will go through a Project orientation process. As part of that process, the Quality Policy, objectives, and critical safety requirements will be communicated prior to staff starting Work on the Project. A hard hat sticker will be issued to visually demonstrate that the wearer has participated in the orientation. All Project staff, including staff from the Department, will be required to attend the Project orientation.

The Quality Policy and objectives will be posted throughout the FRMG Project office, Project site, and on FRMG's Project website. It will be reviewed at key quality meetings, training, and staff orientation. The Quality Policy is available to the Department, FRMG staff, Subcontractors, Suppliers, and stakeholders at any time.

Executive Management Quality Policy

FRMG's executive management will ensure that FRMG's Project Quality Policy is implemented at all levels of the organization. The foundation of FRMG's executive management's philosophy is based on two key elements: (i) a commitment to safety on the Project for the public, the community, and members of FRMG, and (ii) a duty of care to the Department, and to the long-term success of the Project from a performance and investment standpoint.

Fundamental to our successful implementation of this philosophy is:

- Ensuring that the Project is designed and constructed according to FRMG's Project Quality Policy through its oversight of quality management during design and construction
- Carrying through FRMG's commitment to safety and quality to the Operating Period of the Project for routine Operations and Maintenance (O&M) responsibilities and for Renewal Work and handback of the Project
- Facilitating routine and transparent dialogue with the Department for matters related to safety and quality

Committing to resolve issues related to safety and quality on the Project in a timely, open, and efficient manner in coordination with the Department and with the goal of protecting the long-term performance of the Project

FRMG's executive management will rely on a highly-experienced group of individuals who have led the construction and operations of complex highway P3 projects in North America and globally.

Additionally, the executive management team will receive direct reporting from the IQCF and ensure the IQCF, in cooperation with the Project Manager and the Lead Contractor and Lead Operator, properly carries out its responsibilities of providing independent and expert oversight of FRMG's QMP.

Quality Objectives

FRMG has one key objective: **Design, Construct, and Deliver the Project within the requirements of the Project Agreement.** As simple as this objective may appear, the Project is quite complex. Satisfying the requirements of the Project Agreement, the Department, and other stakeholders will require a robust QMS.

FRMG has developed a QMS capable of meeting this objective. We will achieve it by the following:

- The Project has the full commitment of the FRMG Management Team
- The QMS is based on the requirements of the Project Agreement with a few simple principles in mind:
  - The QMS, although complex, is designed and written in a manner that is easily understood
  - Meet the requirements of the Project Agreement
  - Meet the requirements of ISO 9001:2015
  - Plan, check, and verify the Work as its built
  - Understand and mitigate risks

- Document and resolve all nonconformances
- Provide documented evidence that the Work meets the requirements

The Quality objective is routinely communicated and reviewed with FRMG staff and performance against these objectives is reviewed during management review meetings. Processes and procedures will be updated or modified as needed to ensure the objective is met.

Performance against this objective can be monitored in many ways. FRMG has identified several keys processes to monitor performance. Performance will be monitored through the results, records, and trending of the following processes:

- Internal Quality Audits – CQP-0130 Construction Audit
- ISO 9001:2015 Compliance Audits
- Nonconformances – CQP-0103 Nonconforming Items
- Deficiencies – CQP-0104 Construction Deficiencies
- Root-Cause Analysis
- Stop Work Notices – CQP-0105 Stop Work Order
- Corrective Actions – CQP-0106 Corrective Action
- Preventative Actions – CQP-0107 Preventative Action
- Department Audits and Observations
- OVT Results

Issues Matrix

2.3 Quality Planning

2.3.a Evidence of Quality Planning

Through thoughtful planning and execution, FRMG assures our team's ability to deliver services and Work that is compliant with the Department and stakeholder requirements and is provided in a manner consistent with the processes defined within the QMP. This planning process includes determining the following:

- Quality objectives related to the delivered service or work product
- Necessary processes, documented procedures (Stage 1 QMP Attachment and Stage 2 QMP Attachment), and resources to support the delivered service or Work product
- Required verification, validation, monitoring, measurement, inspection, or testing activities, including the Acceptance criteria specific to the delivered service or work product
- Records necessary to provide appropriate objective evidence that delivered services or work products meet contractual requirements
- Establishment of a Design Input Library
- Development and updating of the Deliverable Requirements Tracking List
- Determination and establishment of appropriate design milestones
- Determination of the level of review, verification, and validation activities that are appropriate to each design milestone
- Establishment of responsibilities and authorities for design activities

- Determination of internal and external resources required to complete design
- Determination of appropriate design process and personnel interfaces
- Development of design task forces groups to facilitate Department and stakeholder involvement

Evaluation and need for post-design services and design submittal certifications

2.3.b FRMG IQC Inspections

The Independent Quality Control Firm (IQCF) will be the team of Raba Kistner, Inc. (RK) and VIVID Engineering Group, Inc. (VIVID). The IQCF will perform IQC inspections during all phases of the Work from NTP 1 until Final Acceptance. IQC inspections assure the work is compliant with the Project Agreement. Please refer to Section 2.5.b Independent Quality Control for further information on the IQCF.

2.3.b.i Engineering and Laboratory Vital Information System (ELVIS)

The IQCF will utilize the Engineering and Laboratory Vital Information System (ELVIS) as FRMG's primary Electronic Records Management System (ERMS) for receiving, storing, transmitting, and tracking documents, transmittals, submittals, and correspondence of quality records for the Construction Work. The ELVIS system allows the IQCF to have real time access to plans, specifications, quality checklist, test reports, nonconformance reports, punch lists, and other quality documents in the field. The IQCF will use tablets and laptops computer to access this information remotely through the ELVIS system. The Department, stakeholders, Subcontractors, and other relevant entities can also be given the same permissions to access to this information remotely.

ELVIS is fully compatible with Aconex. ELVIS does not replace Aconex as the Project's recognized document control system. Instead, ELVIS aims to:

- Enhance the performance of FRMG
- Be a more sustainable, "green" solution
- Reduce document control processing needs and personnel requirements
- Greatly increase the speed and efficiency of entering IQC test results into the Department's QRD
- Facilitate a means for the IQCF to review and approve electronic quality records prior to uploading into Aconex
- Provide real time data collection

Provide real time access to plans and specifications

This ERMS is a proprietary product of Raba Kistner, Inc. (RK), which was developed for managing transportation/highway Project-related quality documents and records. ELVIS is maintained by RK at no cost to the Department. Records are regularly uploaded from ELVIS to Aconex. Prior to Final Acceptance, FRMG will provide verification that all records generated within ELVIS have been uploaded to Aconex.

The **ELVIS system has a proven track record on FHWA design-build and P3 projects and was specifically designed by and for an independent quality assurance engineering firm** on these types of projects. The ELVIS system is a web-based (server and cloud-based) system

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hosted and managed by RK. It is accessible through computers or tablet devices. It has access and security features enabling the control of quality information and data that, on other projects, satisfied FHWA requirements for owner agency use of such a system.

ELVIS is a secured web-based application with controlled user access, which is based on https protocol. Each user's level of access is controlled by individual security permissions to allow access appropriate for each user's position. ELVIS provides a variety of functions that are available based on users' security settings. These functions include daily inspection reports and test results, technical review of test results, engineer review of test results, material quantity tracking, minimum sampling and testing requirements (MS&TR) module, NCR tracking, mix designs, file storage, sharing, versioning, and transmittal and retrieval of documents in a read-only format. Individuals identified as recipient will receive a system generated email that provides notification that documents are ready for download. ELVIS will also populate a log to capture the individual, date, and time when the upload occurred. A powerful search engine is also available to assist in finding and retrieving relevant documents.

ELVIS also provides for use of a Controlled Vocabulary Language (CVL) to promote consistency within the database. These CVLs will be used by all persons creating records in ELVIS. The CVLs will be updated and maintained by RK within ELVIS. The CVL provides a consistent naming convention that aids in the identification, traceability, and retrieval of quality records. The CVL will be consistent with naming conventions established by the Document Control Plan.

Using ELVIS, daily inspection reports will be marked as a pass or fail and tracked to closure. Material quantities will be tracked and used to show that we are meeting the minimum testing requirements. **Figure 3** below is a summary of the items that will be tracked on each inspection report.

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Figure 3. Sample Daily Inspection Report – ELVIS.

TAPPAN ZEE CONSTRUCTORS, LLC

Tappan Zee Hudson River Crossing Project
Contract D214134
PIN 8T21.00
Project TA# TANY 12-18B

Daily Work Report

Report #	QA016	17	03	09	A	Thursday	Weather Conditions	AM		PM	
	Technician	YY	MM	DD	Rev	Day of the Week		Clear	50 °F	Clear	40 °F

OP	Inspection Hours	Foreperson	IP	RE	HP	WP	Final	Weld?	Pass	Fail	N/A
1 of 4	07:00 to 18:00	John Eskins	X						X		

Specification	Specification Description	BIM Category
557.99000099	HIGH-PERFORMANCE PRECAST SUPERSTRUCTURE SLABS	Bridge Superstructure

Inspection Plan	ITP Activity #	Unit
TZC-0506-00	3	11 - Main Span

Location	Sub-Location	Limits
Span 32 WB	FS611	Main Span to

Feature	Sub-Feature	Hold Point
PCCP - Deck Closure Pour		

Fabricator	Piece Mark	EOR
		X

Description of Work and Material Used:

TZC Lathers assembled the reinforcement for FS611 Deck Joints.

QC Inspector Oscar Gonzalez was on site throughout assembly work.

QC and QA conducted an inspection of the reinforcement once work was completed.

Work was deemed satisfactory.

QC and QA signed the rebar signoff sheet in preparation for the concrete placement.

Were there any deficiencies with the work in this entry? __No X CIF __NCR

1 broken hair pin found and repaired at Panel FP2.

1 broken hair pin found at Panel EP3.

See Attached EOR response for Repair concurrence.

SAMPLE

Daily Inspection Report Search and Summary Search

These search engines allow the user to search daily inspection reports input by the various inspectors. The filters available include:

Inspection Date. This uses two date entries to pinpoint a calendar period. Clicking inside the field will open a calendar which allows the user to select the desired From and To dates. This filter's default values are set so that all records to date are included.

Belong To. This drop-down list allows the user to select which major division's (QA, QC, Environmental) DIRs to search.

Affiliation. This drop-down list allows the user to select a specific company's reports to search.

Inspector. This drop-down allows the user to specify an inspector to search for. Available selections are governed by the selection made in the Belong To filter.

DIR Report #. Input text string to search full or partial DIR report numbers.

Report Revision. This drop-down allows the user to search for previous iterations of reports. The default setting searches only for the most current revision of a report.

Specification. Text entry for searching by CDOT or Project specification number.

Inspection Plan. This drop-down allows the user to search for reports associated with a specific Inspection and Testing Plan (ITP).

Activity. Text entry for search for specific ITP activity numbers.

BIM Category. This drop-down list allows the user to select the BIM Category of the documents to be viewed. Options include: Bridge Abutment, Bridge Foundation, Bridge General Metal Fabrication, Bridge Mechanical/Electrical/Plumbing, Bridge Substructure, Bridge Superstructure, Drainage and Erosion, Maintenance Platform, Mechanical/Electrical/Plumbing, N/A, Roadway and Signing and Signaling.

Unit. This drop-down allows the user to filter search results by Design Unit.

Location. This drop-down allows the user to filter by any of the entries in the Location CVL.

Sub-Location. This drop-down allows the user to filter by any of the entries in the Sub-Location CVL.

Feature. This drop-down allows the user to filter by any of the entries in the Feature CVL.

Sub-Feature. This drop-down allows the user to filter by any of the entries in the Sub-Feature CVL.

Limits. Input text string to search the Limits field.

Fabricator. This drop-down allows the user to filter search results by a specific fabrication plant.

Piece Mark. Input text string to search for in this field.

Type. This drop-down allows the user to select the inspection type to view. Options include: I = In process, R = Re-Inspection, H = Quality Hold Point, W = Witness Point, F = Final.

Result. This drop-down allows the user to search for a specific inspection result. Default = All, P = Pass, F = Fail)

Deficiencies Type. This drop-down allows the user to specify the type of deficiency recorded by the inspector. No = No discrepancy noted, CIF = Corrected in Field (identified but subsequently corrected), NCR = inspector recommends an NCR be issued. Note: this does not mean an NCR was issued, only that the inspector recommended an NCR.

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Previous Deficient DIR. Text string input allows the user to search for a failing report to locate the re-inspection record.

RFI, NCR or Submittal. Input text string to locate records pertaining to a specific

Work/Material Used. Input text string to search the report narrative.

Deficiencies/Conversation Log. Input text string to search the deficiency and conversation descriptions.

Workflow Status. This drop-down allows the user to search only for records in a specific stage of the ELVIS workflow. Default setting shows all records. Create, Reviewing, Reviewing2, Closed.

Review By. This drop-down allows the user to search for report closed by a specific supervisor or manager.

DIR Search Result Field. Descriptions are entered only for fields that are not available under filters. This prevents the creation of multiple names for the same reference item and keeps the search criteria consistent. Please see field description under filters for all others.

- Date. Inspection Date
- DIR No. This field also acts as a hot link to the crystal report of the entire DIR.
- OP. DIR Operation (entry). This field also acts as a hot link to the crystal report of the individual OP
- Rev. Report Revision
- Unit
- Location
- Sub-Location
- Feature
- ITP
- Inspected By
- Belong To
- Affiliation
- Workflow Location
- Files. Hotlink to files attached to the entry

DIR Summary Search Result Fields

Result fields in the summary search include all fields in the data set and are user selectable. The user selects the field(s) (hold down the Control key to make multiple selections) they which to view in the center column and then clicks the right arrow to move the fields into the Selected Fields column. The Move Up and Move Down buttons can be used to reposition the selected fields.

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2.3.c Planning Methods to Meet the Requirements of the Project Agreement

2.3.c.i Quality Objectives

FRMG has one key objective: **Design, Construct, and Deliver the Project within the requirements of the Project Agreement.** As simple as this objective may appear, the Project is quite complex. Satisfying the requirements of the Project Agreement, the Department, and other stakeholders will require a robust QMS.

FRMG has developed a QMS capable of meeting this objective. We will achieve it by the following:

- The Project has the full commitment of the FRMG Management Team
- The QMS is based on the requirements of the Project Agreement with a few simple principles in mind:
  - The QMS, although complex, is designed and written in a manner that is easily understood
  - Meet the requirements of the Project Agreement
  - Meet the requirements of ISO 9001:2015
  - Plan, check, and verify the Work as its built
  - Understand and mitigate risks
  - Document and resolve all nonconformances
  - Provide documented evidence that the Work meets the requirements

The Quality Objective is routinely communicated and reviewed with FRMG staff and performance against these objectives is reviewed during management review meetings. Processes and procedures will be updated or modified as needed to ensure the objective is met.

Performance against this objective can be monitored in many ways. FRMG has identified several keys processes to monitor performance. Performance will be monitored through the results, records, and trending of the following processes:

- Internal Quality Audits – CQP-0130 Construction Audit
- ISO 9001:2015 Compliance Audits
- Nonconformances – CQP-0103 Nonconforming Items
- Deficiencies – CQP-0104 Construction Deficiencies
- Root-Cause Analysis
- Stop Work Notices – CQP-0105 Stop Work Order
- Corrective Actions – CQP-0106 Corrective Action
- Preventative Actions – CQP-0107 Preventative Action
- Department Audits and Observations
- OVT Results
- Issues Matrix

2.3.c.ii Processes, Resources, and IQC Personnel

FRMG has identified the necessary processes, resources, and IQC personnel needed to assure that FRMG's obligations meet the requirements of the Project Agreement. FRMG's QMP identifies and defines the following:

- Required Processes and Procedures
  - Stage 1 QMP Attachment: Design Quality Procedures
  - Stage 2 QMP Attachment: Construction Quality Procedures
  - These procedures are appropriately referenced throughout the QMP
- Required Resources
  - FRMG's executive management is responsible to ensure adequate resources are available to meet the requirements of the Project Agreement. Evidence is provided in Section 2.5.g Resources and Personnel to Perform all IQC Activities to Ensure all Work Meets the Requirements of the Project Agreement, Section 2.7 Quality Personnel, and Section 3.2 Responsibility and Authority (specifically Figure 4, Project Quality Management Organization Chart).
- IQC Personnel
  - FRMG's executive management has established a Quality Management organization with appropriate experience, resources. and training to deliver the requirements of the Project Agreement
  - Evidence is provided in Section 2.5.g Resources and Personnel to Perform all IQC Activities to Ensure all Work Meets the Requirements of the Project Agreement, Section 2.7 Quality Personnel, and Section 3.2 Responsibility and Authority (specifically Figure 4, Project Quality Management Organization Chart)

In addition to the above items, FRMG has prepared the following draft documents, submitted in FRMG's Technical Proposal, which serve as further evidence of FRMG's commitment and ability to meet the requirements of the Project Agreement:

- **Design** – refer to Appendix B: Draft Project Management Plan and Appendix D: Draft Stage 1 Quality Management Plan
- **Construction** – refer to Appendix B: Draft Project Management Plan and Appendix E: Draft Stage 2 Quality Management Plan
- **Environmental Compliance** – refer to Appendix M: Draft Environmental Compliance Work Plan
- **Strategic Communications Requirements** – refer to Appendix J: Draft Strategic Communications Plan
- **Maintenance of Traffic Requirements** – refer to Appendix F: Draft Transportation Management Plan
- **Safety** – refer to Draft Safety Management Plan in Appendix B: Draft Project Management Plan
- **Disadvantaged Business Enterprise (DBE)** – refer to Appendix K: Small and Disadvantaged Business Participation Plan
- **Emerging Small Business (ESB)** – refer to Appendix K: Small and Disadvantaged Business Participation Plan
- **Workforce Development** – refer to Appendix L: Workforce Development Plan

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- **Training** – refer to CQP-0140, Quality Training
- **Project Management Processes** – refer to Appendix B: Draft Project Management Plan

QMP – refer to Stage 1 QMP and Stage 2 QMP

2.3.c.iii Compatibility of Design, Construction, Installation, Public Information, Inspection, and Testing Procedures

During Stage 1, Design Work Plans are based on the allocation of resources to produce design products with identified requirements for process control (PC), IQC, and design reviews. Design Quality Procedures identified in Stage 1 QMP Attachment provide a guide for developing a Design Work Plan (DMQP-PR-0020). The Design Work Plan elements consider design inputs, production methods, design outputs, schedule, and quality. The Design Work Plans are implemented at the lowest reasonable level, usually managed by the Area Design Manager.

During Stage 2 (the construction phase), FRMG will implement several procedures, such as CQP-0229 Work Planning and CQP-0230 PC Inspection Process, to ensure the compatibility of design, construction, installation, public information, inspection, and testing procedures. As part of those procedures, FRMG develops Work Plans and holds readiness review meetings. Construction Work Plans are a major tool in the Project's QMS. CQP-0299, Work Planning details the requirements for developing a work plan. FRMG will prepare a work plan to identify the inspection activities to be performed by the PC Coordinator(s), the Construction Segment Manager(s), and the Subcontractors during the performance of the Work. The Work Plan includes identifying pertinent quality requirements including the inspection and testing requirements which will include the following:

- Identification of the individuals or groups responsible for performing the inspection
- Item to be inspected
- Location of the inspection (on/off site)
- Identification of characteristics and activities to be inspected
- A description of the method of inspection
- Quality control criteria
- Identification of required procedures, drawings, and specifications
- The frequencies of the required inspections
- Identify Quality Hold Points for PC and IQC Inspection and Testing
- IQC requirements

Testing frequencies

FRMG holds readiness review meetings prior to the start of specific critical work activities so that all personnel involved have the same understanding of the intent, design criteria, specifications, special details or regulations, public information, method for handling traffic, work instructions, and safety of the procedures that need to be followed. These reviews will also provide the opportunity to fine-tune work procedures so that work will proceed as smoothly and efficiently as possible. These meetings also ensure specific public information needs and requirements have been met. Full details of the readiness review meeting can be found in CQP-0230, PC Inspection Process.

2.3.c.iv QMP Updates

Throughout the performance of the Work, it is anticipated that the QMS will need to be changed, modified, or edited as discussed in Section 1.7 Updates to the QMP. This is evidence that our QMS is functioning properly and the processes implemented for monitoring, measuring, and enabling continual improvement are effective. Before vetting proposed changes to the QMS, we will consider the following:

- Purpose of the requested change
- Consequences of the change
- Integrity of the QMS and compliance with the Project Agreement
- Required resources
- Allocation and/or relocation of responsibilities and resources
- FRMG's knowledge to effectively implement the change

The Department's Acceptance of proposed changes

The IQC Document Control Manager maintains current controlled electronic versions of the QMS. CQP-0101 Document Control outlines the details to maintain current and controlled versions of the QMS.

2.3.c.v Measurable Compliance with the Project Agreement

FRMG Management will collect data to continually evaluate the suitability and effectiveness of the QMP and to identify opportunities for continual improvement. The objectives against which data are collected and analyzed include the following:

- Client satisfaction assessments
  - Quality Task Force Meeting
  - Quality Issues Matrix
- Compliance of work products with requirements
  - Nonconformances
  - Construction deficiencies
  - Department NCNs
  - Stop work notices
- Performance and effectiveness of the QMS as indicated by audit findings
  - Internal audits
  - ISO 9001:2015 Compliance Audits
  - Department audits
- Test results
  - Pass vs. fail
  - OVT tests standard deviation from IQC tests
- Design Deliverables
  - Deliverable Requirements Tracking List
  - Approval and Acceptance of Reviewable Deliverables design packages

Performance of vendors, Subcontractors, and subconsultants

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2.3.c.vi Quality Hold Points

FRMG has planned Quality Hold Points for specific disciplines of Work. Quality Hold Points are established at critical stages of the Work to allow for inspection, testing, and verification of elements that may not be accessible or would require extensive rework to ensure compliance. Quality Hold Points must be verified prior to Work continuing. See CQP-0301, Construction Quality Hold Points and Section 4.5 Quality Hold Points of this QMP for specific details.

2.3.c.vii Standards of Workmanship

Standards of workmanship for design of the Work include the following elements:

- Terms, conditions and requirements of the Project Agreement, including the Schedules (particularly Schedule 10)
- Project standards
- Law
- Government approvals and permits in effect during the Project

Good industry practices

Standards of workmanship for construction will be identified and implemented during the work planning process defined in CQP-0229, Work Planning and reviewed at the readiness review meeting defined in CQP-0230 PC, Inspection Process. Standards of workmanship will be set at a minimum to meet industry standards and specifications. Additional standards may be adopted to accommodate high-risk operations, special conditions, or results of nonconformances.

2.3.c.viii Identify, Define, Prepare, and Maintain Quality Records and Quality Plans for all Elements of Design

Please refer to Section 4.2 of this QMP for details on identifying, defining, preparing, and maintaining quality records and quality plans for all elements of design, including but not limited to wet and dry utilities, architectural, civil, structural, geotechnical, survey, hydraulic, environmental, traffic, safety, right-of-way (ROW), railroad work, intelligent transportation system (ITS) work, and temporary work. FRMG will develop a Project-specific Document Control Plan to be implemented prior to NTP 1.

For Stage 1, the design quality records are produced as the design Work progresses. The records are in the form of checked drawings, checklists, QC reports, certification forms, and tracking forms. The records are retained in the Lead Engineer document control system until the RFC Documents are submitted to the Lead Contractor for entry in the overall Project document control system. The records will then be uploaded to the Department's Aconex document control system.

For Stage 2, the construction quality records are produced as the Construction Work progresses. The records are in the form of test reports, checklists, audits, certification of compliance, NCRs, and so forth. The records are retained in the IQCF's document control system (ELVIS) until the records have been reviewed and approved. The records will then be uploaded to the Department's Aconex document control system.

2.3.c.ix Preparation, Control, Approval, and Distribution of the QMP

Ultimate responsibility for the preparation of the QMP falls on the PQM. Support in preparing the QMP comes from the DQM, DPCM, IQCM, CPCM, and IQC Document Control Manager. Draft QMP documents are reviewed with the Department at quality task force meetings. Once concurrence is obtained among FRMG, the Quality Team, and the Department, a formal submittal will be sent to the Department through Aconex. This submittal will formally document the review and approval from the Department.

Once formal approval is obtained, the IQC Document Control Manager maintains current controlled electronic versions of the QMP within Aconex. CQP-0101, Document Control outlines the details to maintain current and controlled versions of the QMP as well as its distribution.

2.3.c.x IQC Auditing of FRMG, Subcontractors, and Suppliers

IQC conducts internal audits of FRMG, Subcontractors, and Suppliers in accordance with a defined annual audit schedule to determine whether:

- The QMP complies with the requirements of the ISO 9001:2015 Standard
- Delivered services or work products comply with Project Agreement requirements and the QMP

The QMP is effectively implemented and maintained

The documented procedure for IQC auditing is defined in CQP-0130, Construction Audit, which defines the responsibilities and requirements for planning and conducting audits, establishing audit records, and reporting audit results. This procedure also documents the selection and conduct of auditors and provides assurances that auditors are independent of the area being audited.

The FRMG Construction Audit Schedule (CQP-0130-1 which may be revised throughout the duration of the Project) is based on the status and importance of the processes being audited, areas of risk, results of previous audits, nonconformances, or other relevant information.

The FRMG Management responsible for the area being audited assures that necessary Corrective Actions resulting from the audit happen and that follow-up activities occur in accordance with the documented procedures.

Subcontractors and Suppliers are subject to IQC audits. To ensure FRMG has the cooperation of Subcontractors and Suppliers, subcontracts will have a clause in the agreements that states that they must adhere to the provisions of the Project Agreement and the QMP. This is a perquisite for doing business with FRMG. Training on the QMP will be provided for Subcontractors and Suppliers. Training will be tailored to the applicable portions of the QMP.

2.3.c.xi Corrective and Preventative Actions

Corrective Actions

The design of the QMS can require the enactment of Corrective Actions. Corrective action procedures (QCP-0106 Corrective Action) are integral to the design-and-construction-related nonconformances process and can be initiated in, at minimum, the following noted situations:

- **Construction:** Corrective action will be an outgrowth of inspection or testing, where an NCR or corrective action directive is issued within or to FRMG. (product)

Quality audits: Corrective action will result pursuant to an audit finding or a relevant recommendation documented in the audit report

FRMG's Management will evaluate the effectiveness of implemented corrective actions as well as their influence on other documented quality procedures. Corrective actions will be performed in accordance with CQP-0106, Corrective Action.

Preventative Action

FRMG will implement oversight review and trending processes that will play major roles in the prevention of Nonconformances on the Project. These formal processes, including constructability reviews, readiness reviews, nonconformance reporting, and IQC audits, will assist in keeping the Project on track by preventing the application of erroneous assumptions or directions. Methods for determining, implementing, and documenting actions taken to prevent Nonconforming Work will be done in accordance with CQP 0107, Preventative Action.

2.3.c.xii Executive Management Review

The FRMG executive management team conducts, at a minimum, annual Management Reviews of the QMP to assure its continuing suitability, adequacy, and effectiveness; to assess opportunity for improvement; and to examine the need for any changes to the QMP, the Quality Policy, or the Quality Objectives. The FRMG Management Team reviews the Quality Issues Matrix monthly (Section 1.4 FRMG and Department Collaboration).

The following information and data is input to the management review process:

- Results of audits
- Partnering satisfaction ratings and results
- Performance against quality objectives
- Nonconformance reports
- Status of corrective and preventative Actions
- Action items from previous management review meetings
- Potential changes to the QMP

Recommendations for improvement to the QMP

Output from the management review process includes any decisions or actions taken related to the following:

- Opportunities for improvement
- Improvement of the effectiveness of the QMP
- Improvements to services provided

Identified resource needs

2.3.c.xiii Process for Ensuring Quality Regardless of Production or Schedule

The FRMG Quality Team (IQCF and PC Staff) report directly to the FRMG executive management team. The FRMG Quality Team has no responsibilities for production or schedule.

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The primary responsibility of the FRMG Quality Management Team is to implement the requirements of the QMP to ensure the Work complies with the requirements of the Project Agreement.

2.4 Process Control

2.4.a Process Control Program

FRMG has incorporated industry best practices and lessons learned in the development of Process Control (PC) procedures. PC procedures are implemented to assure that all activities affecting the quality of the Work are accomplished under controlled conditions, using appropriate equipment for the task being performed, and following the requirements for inspection and testing. The purpose of PC inspections and tests are to verify and document that items furnished for incorporation into the Work, and all Work performed for the Project, conforms to the requirements of the Project Agreement and the RFC Documents.

All Work performed by FRMG, our Subcontractors, and our Suppliers will be performed using qualified production personnel, suitable installation methods, and properly serviced equipment in a suitable working environment. Personnel performing Work on the Project will be qualified and certified, where required, to perform the given element of Work.

The Design Process Control Manager (DPCM) will implement and manage the overall design quality program. The DPCM will coordinate with the Design Manager and Deputy Design Manager for Production to understand when design work is programmed, what products are being produced, and when quality reviews should occur. The DPCM will manage the team of discipline experts to schedule design quality reviews, both discipline-specific and cross-disciplinary, and to coordinate constructability, environmental and ROW reviews. Reviews will be conducted at each stage of document production and at final submittal.

The Construction Process Control Manager (CPCM), or his or her designee, will perform selected inspections of the Work, as required, to verify the effectiveness of the Stage 2 QMP. PC procedures are contained within the CQP-0200s, PC Procedures. For a full list of CQP-0200 procedures, refer to Stage 2 Attachment: Construction Quality Procedures. Some examples of PC procedures include the following:

- CQP-0201 PC Survey Data
- CQP-0203 PC Shop and Working Drawings
- CQP-0206 PC As-Built Documents
- CQP-0230 PC Inspection Process
- CQP-0230-4 PC Daily Inspection Report
- CQP-0230-12 Traffic Control Audit Findings Report
- CQP-0250 PC Concrete Pre-Placement Inspection

CQP-0253 PC Asphalt Management

In general, the following inspection phases will be performed on the Project for all major construction activities. The Readiness Review, Initial, Follow-up and Completion Inspections are described in part below and in detail in CQP-0230 PC Inspection Process.

- **Readiness Review:** FRMG will participate in readiness review meetings prior to the start of specific critical work activities so that all personnel involved have the same understanding of the intent, design criteria, specifications, special details or regulations, and safety of the procedures that need to be followed. These reviews will also provide the opportunity to fine-tune work procedures so that work will proceed as smoothly and efficiently as possible.
- **Initial Inspection:** Initial inspections will be performed as work begins on a representative item or segment of Construction Work. This inspection confirms that the information agreed to during the readiness review meeting is effective and the Work product conforms to the Project Agreement.
- **Follow-up Inspection:** Follow-up inspections are performed as needed during definable features of Work to confirm corrective actions identified in the Initial Inspection are in place and effective.

Completion Inspection: The completion inspection is performed at the completion of all work in a designated area or associated with a definable phase of the work.

2.4.a.i PC Work Planning

Design Work Plans will be developed to organize the production of design products, including the required coordination meetings, quality reviews, and submittal packages. The Work Plans include the appropriate process controls for performing the Work and completing the quality procedures. Participation by discipline experts, construction staff, operations and maintenance staff, environmental compliance staff, Department staff, and other individuals are included in the Work Plans. Please refer to design procedure DMQP-PR-0020 and the Design Quality Process flowchart presented in the Stage 1 QMP Attachment for details on the process control work planning for design.

Construction Work Plans are a major tool in the Project's QMS. CQP-0229, Work Planning details the requirements for developing a Work Plan. The four major elements that a good Work Plan addresses are safety, quality, schedule, and productivity. FRMG will prepare a Work Plan to identify the inspection and activities to be performed by the PC Coordinator(s), the Construction Segment Manager(s), and the Subcontractors during the performance of the Work. The Work Plan includes identifying pertinent quality requirements including the inspection and testing requirements, which will include the following:

- Identification of the individuals or groups responsible for performing the inspection
- Item to be inspected
- Location of the inspection (on/off site)
- Identification of characteristics and activities to be inspected
- A description of the method of inspection
- Process control criteria
- Identification of required procedures, drawings, and specifications
- The frequencies of the required inspections
- Identify Quality Hold Points for PC and IQC Inspection and Testing
- IQC requirements
- Testing frequencies

Where mandatory inspection or test Quality Hold Points are required, the superintendents, Subcontractors, or Suppliers will not proceed without the specific consent of the PC Coordinator(s) or the IQCF, as appropriate. The specific Quality Hold Points will be indicated in the Work Plan and communicated during readiness review meetings. Acceptance at specified Quality Hold Points will be recorded and will include documentation of the CPCM's, IQCM's, the Department's or their representative's, as appropriate, consenting to the acceptance, prior to continuation beyond the designated Quality Hold Point.

2.4.a.ii PC Audits

The PQM will audit the PC inspection and testing program, including inspection and test documentation for adequacy and conformance to the Stage 1 and Stage 2 QMP. On a random basis, the IQCM, CPCM, IDQM and/or the DPCM or their designee will audit specific PC processes. These audits will consist of a review of PC documentation demonstrating control of the Work and an inspection by PQM to confirm that the PC processes, procedures, inspections, and tests are complete and adequate to support acceptance of the Work. These inspections may be conducted at specific Quality Hold Points in the Work or as designated by an auditor.

2.4.b PC Materials Testing

PC testing will be performed by a testing firm(s) employed by the Lead Contractor that will work under the direction of the CPCM. Test frequencies will at a minimum be consistent with those specified in the CDOT *Field Materials Manual* and CDOT *Standard Specifications for Road and Bridge Construction*. Fluctuations in performance, Work complexity, and increased risk may increase minimum testing requirements.

PC materials testing for Suppliers may be provided by the Suppliers themselves or by the testing firm(s) employed by the Lead Contractor, in compliance with the QMP, as determined on a case-by-case basis depending on the individual Suppliers' capabilities, schedule, and other relevant factors.

The construction PC materials testing activities will use statistical analyses of material test results, including mean, variance, range, and running averages, measurements; clearances; and interactions between PC and IQC.

The CPCM will oversee the tracking and use of material control charts. Control charts will be developed for applicable products with significant quantities to justify the use of control charts to monitor and track the variation of materials over time. Examples of materials that may utilize control charts are asphalt mix properties, concrete compressive strength per mix design, aggregate base course gradations, and other considerations. Control charts and analytical data will be made available to the Department within 24 hours of request.

Inspections and tests of the Work will be accomplished under the direction of the CPCM. Construction PC Staff will review the results of all inspections for conformance to the acceptance criteria and will be retained in Aconex.

The CPCM notifies the IQCF of the completion and results (pass/fail) of PC testing, inspections, and when a Quality Hold Point is reached. The scheduling of IQC testing by PC is defined in CQP-0225, PC Notification for IQC Inspection, Sampling and Testing.

2.4.c Tests or Inspections Performed by Production or PC Personnel

Tests or inspections performed by production or PC personnel as part of the PC process will not be used to satisfy the IQC requirements.

2.5 Control of Inspection, Measuring, and Test Equipment

2.5.a Documented Procedures to Control, Calibrate, and Maintain Inspection, Measuring and Test Equipment

FRMG uses standard or contractually required inspection and test methods and provides appropriate monitoring and measurement equipment to provide evidence of compliance with requirements, including provisions of the CDOT *Field Materials Manual* as addressed within the IQCF's laboratory manual.

When necessary to assure valid results, FRMG assures that measurement, inspection, and test equipment is:

- Calibrated, verified, or both, at specified intervals, or prior to use, against applicable standards
- Adjusted or re-adjusted as necessary to achieve in tolerance conditions
- Identified to determine its calibration status
- Safeguarded against adjustments that would invalidate the measurement result

Protected from damage or deterioration during handling, maintenance and storage

When a piece of measuring, inspection, or test equipment is found out of tolerance, FRMG assesses the validity of all measurements made with that piece of equipment since its last known acceptable calibration or verification and will take any required actions based upon this assessment. FRMG validates the use and accuracy of test software prior to its use when applicable.

Records of calibration and verification activities are maintained in accordance with the laboratory manual. FRMG's IQCF will operate an accredited AASHTO, CCRL, and ASTM E329 laboratory for the successful delivery of the Project.

2.5.b Independent Quality Control Firm (IQCF)

FRMG has chosen Raba Kistner, Inc. (RK) and VIVID Engineering Group, Inc. (VIVID) to perform the IQC functions outlined in the Project Agreement, specifically Schedule 8, Section 6. RK and VIVID were chosen for their firms' and proposed staff's experience with large, complex design-build and P3 projects within Colorado and across the Unites States. As required, neither firm is a Developer-Related Entity (excluding the role as Subcontractor) or any Affiliate thereof.

RK has extensive experience with transportation infrastructure and has successfully provided services to the owners, developers, and financiers of these projects since 1968. RK is very familiar with the intricacies of the planning, funding, design, construction, and quality needs of

state departments of transportation and other transportation agencies. RK has designed innovative solutions for many transportation issues – such as developing recommendations for working with the weak and expansive soil conditions found in many areas – in their 46 years of service, and RK is considered the leaders in their field.

VIVID is a Colorado-based business that provides quality management, construction management, materials testing and inspection, and geotechnical, environmental and construction phase services to local, state and federal agencies throughout the Front Range. VIVID's personnel have 150 years of collective experience and expertise ensuring effective, responsive and efficient Project delivery. VIVID's professionals have significant experience performing Process Control, Quality Control, Quality Assurance, and geotechnical services on design-build and P3 Projects in Colorado for CDOT and RTD as well as others across the United States.

VIVID is a registered Emerging Small Business with the Colorado Department of Transportation.

VIVID's office and IQCF Laboratory are located just a few blocks from the East end of the Project at: 4890 Ironton Street, Unit K, Denver, CO 80239.

2.5.c IQC Program

The IDQM will oversee the Lead Engineer's implementation of the Stage 1 QMP and will perform periodic audits of the Lead Engineer's quality activities. The audits will address the alignment with the design quality processes and procedures and compliance with Project Agreement requirements.

IQC inspections and tests will be performed by the IQCF, under the direction of the IQCM, who is an employee of the IQCF and reports to the PQM and the Department. The IQCM will be responsible managing the IQC aspects of the Stage 2 QMP to verify and document conformance of the Work to the requirements of the Project Agreement, the RFC Documents, and the referenced rules and regulations. Quality Control testing performed by the IQCF may be validated and/or verified by the Department Owner Verification Testing (OVT), in accordance with the Department's Quality Assurance Program. The IQC inspection and test results will be collected electronically in real time, using tablets and laptop computers, within ELVIS and provided to the Department through Aconex and QRD as applicable. Procedures for IQC Inspections, Sampling and Testing are CQP-0300s IQC Procedures. For a full list of CQP-0300 procedures refer to Stage 2 Attachment: Construction Quality Procedures. Some examples of IQC procedures are:

- CQP-0300 IQC Quantity Tracking for Test Frequencies
- CQP-0301 IQC Construction Quality Hold Points
- CQP-0302 IQC Deviation from RFC Plans and/or Specifications
- CQP-0304 IQC Punch List Procedure
- CQP-0310 IQC Daily Inspection Report Process
- CQP-0320 IQC Source Inspection

Monthly, the PQM will review the status and acceptability of the work performed. As part of the Project Monthly report the PQM will issue a letter certifying the Work that was completed in

compliance with the Project Agreement. In addition, the PQM will identify outstanding work that has been identified as not meeting the requirements of the Project Agreement.

2.5.c.i IQC Surveillances

IQC Surveillance of the construction/installation activities may include any combination of the following:

- Observation of the physical performance of the Work
- Review, or spot checks, of procedures or instructions governing the Work, including inspection and test results
- Evaluation or verification of the presence and effectiveness of controls
- Discussion with personnel performing or supervising the Work

Surveillance results will be documented in the IQC Daily Report by the respective IQC representative and reported to the IQC Discipline Manager.

The IQC Discipline Manager will review records of all inspections and tests daily. Deficient or Nonconforming Work will be documented and corrected and verified as conforming prior to release for further construction and / or installation of the item of Work.

2.5.c.ii IQC Inspection Plan

IQC inspection needs will be reviewed, identified, and planned using a combination of procedures. The first is CQP-0229 Work Planning, which is where FRMG construction personnel review the requirements and identify the need for PC and IQC inspection, testing and Quality Hold Points (CQP-0301 IQC, Construction Quality Hold Points).

The second is CQP-0230, PC Inspection Process, which outlines the requirements for a readiness review meeting which reviews the PC and IQC requirements. These are reviewed jointly with Construction, PC, IQC, and the Department personnel. IQC personnel come to this meeting and present their understanding of the required Quality Hold Points, inspection, and testing requirements.

The third is the performance of the inspection in accordance with CQP-0310 IQC, Daily Inspection Report Process, which documents how inspections are performed, which inspection checklist to use, and how to document the results. Inspections are performed at appropriate Quality Hold Point (CQP-0301 IQC Construction Quality Hold Points).

2.5.d IQC Program Separation from PC Program

FRMG's PC and IQC operations are separate. PC procedure are split from the IQC Procedures in the QMP. PC is responsible for the CQP-0200 PC Procedures and IQC is responsible for the CQP-300 IQC Procedures. There is coordination and communication between the two groups, but each entity has its own responsibilities and commitments. IQC will not perform PC activities. The relationship between PC and IQC is shown in Figure 4 (Project Quality Organizational Chart) in Section 3.2 Responsibility and Authority of the QMP.

2.5.e IQCF Testing

At a minimum, using ELVIS, the IQC testing will include the observations, measurements, and documentation specified in the CDOT *Field Materials Manual* and its *Frequency Guide Schedule* for minimum materials sampling, testing, and inspection for all quality acceptance tests required. Items identified as pre-tested or pre-inspected by the Department will be performed by the IQC Staff. The IQC documents results and shows if the test passed or failed based on the "Pass/fail criteria" established in the Project Agreement. If a test has failed, it will require a passing retest, be evaluated to NCR, or given an engineering decision to close the test. The IQC includes failing tests results in the test documentation.

The ELVIS system identifies and flags tests as passing or failing as well as tracks test frequencies against material quantities.

As an added value and to provide confidence to the Department, the IQCF Laboratory will participate in CDOT's Laboratory Inspection and Round Robin programs.

2.5.f IQC Independence from PC

IQC personnel are not responsible for nor do they perform process control activities. See Section 2.5.d IQC Program Separation from PC Program.

2.5.g Resources and Personnel to Perform all IQC Activities to Ensure all Work Meets the Requirements of the Project Agreement

The FRMG Management Team is committed to assuring that IQC resources are available to fulfill the processes defined within this QMP. The provision of these resources includes the appropriate resources necessary to fulfill Project Agreement required services to achieve the satisfaction of the Department. Figure 4 (Project Quality Organization Chart), included in Section 3.2 Responsibility and Authority of this QMP, shows the expected personnel and responsibilities for IQC to perform its required responsibilities to meet the Project Agreement.

As shown in Figure 4, the staff employed by the IQCF includes the following:

- Project Quality Manager (PQM)
- Independent Design Quality Manager (IDQM)
- Independent Quality Control Manager (IQCM)
- IQC Document Control Manager
- IQC Structures Manager
  - IQC Inspectors
  - IQC Technicians
- IQC Civil Manager
  - IQC Inspectors
  - IQC Technicians
- IQC Procurement Manager
  - IQC Procurement Inspectors
  - IQC Procurement Technicians

- IQC MHT Inspectors
- Environmental IQC Manager
  - Environmental IQC Inspectors
- IQC Laboratory Manager
  - IQC Laboratory Technicians

FRMG has identified Quality Hold Points for IQC testing and inspection. The Quality Hold Points are identified in CQP-0301, Quality Hold Points and Section 4.5 Quality Hold Points of this QMP. FRMG and the IQCF will communicate construction schedules to allow the Department the opportunity to perform its owner verification responsibilities. This coordination is achieved through the following:

- Three-week Look Ahead Schedules
- Weekly Construction Schedules
- Daily IQC Schedules

2.6 Quality Improvement

2.6.a Program for Quality Improvement

FRMG Management has identified quality objectives related to the performance of the QMP on the Project. Data to assess performance against these objectives is collected and analyzed to make a determination as to the suitability and effectiveness of the QMP, and to identify opportunities for continual improvement. The objectives against which data are collected and analyzed include the following:

- Client satisfaction assessments
- Compliance of work products with requirements
- Performance and effectiveness of the QMS
- If planning has been effective
- Actions to address risk are effective
- Characteristics and trends associated with Opportunities for Improvement
- Performance of vendors, Subcontractors and subconsultants

The Quality Task Force (QTF) Meetings and Quality Issues Matrix play an integral part in assessing the overall compliance of the Work and effectiveness of the QMP against the Project Agreement. Details on these items are located in Section 1.4 FRMG and Department Collaboration of the QMP.

2.6.b Internal Quality and Weekly Quality Meetings

2.6.b.i Internal Audits

IQC conducts internal audits of FRMG, Subcontractors, and Suppliers in accordance with a defined annual audit schedule to determine whether:

- The QMP complies with the requirements of the ISO 9001:2015 Standard
- Delivered services or work products comply with Project Agreement requirements and the QMP

- The QMP is effectively implemented and maintained

The IDQM will oversee the Lead Engineer's implementation of the Stage 1 QMP and will perform periodic audits of the Lead Engineer's quality activities. The audits will address the alignment with the design quality processes and procedures and compliance with Project Agreement requirements.

The documented Procedure for IQC Auditing is defined in CQP-0130, Construction Audit. CQP-0130, Construction Audit defines the responsibilities and requirements for planning and conducting audits, establishing audit records and reporting audit results. This Procedure also documents the selection and conduct of auditors and the assurances that auditors are independent of the area being audited.

The FRMG Construction Audit Schedule (CQP-0130-1, which may be revised throughout the duration of the Project) is based on the status and importance of the processes being audited, areas of risk, results of previous audits, nonconformances, or other relevant information.

The FRMG Management responsible for the area being audited takes steps for necessary corrective actions resulting from the audit are taken and that follow-up activities occur in accordance with the documented procedures.

Subcontractors and Suppliers are subject to IQC audits. To ensure FRMG has the cooperation of Subcontractors and Suppliers, subcontracts will have a clause in the agreements that states that they must adhere to the provisions of the Project Agreement and the QMP. This is a perquisite for doing business with FRMG. Training on the QMP will be provided for Subcontractors and Suppliers. Training will be tailored to the applicable portions of the QMP.

2.6.b.ii Weekly Quality Meetings

FRMG will conduct weekly quality task force meetings. The Quality Task Force (QTF) provides a forum for FRMG, including construction specialty leads, and the Department and stakeholders to voice their quality concerns, jointly resolve quality issues, monitor the status of the QMS, implement continual improvement, and ensure concerns are heard and understood by FRMG. See Section 1.4.a Quality Task Force Meeting for further details.

2.6.c Timely Implementation of the Necessary Corrective Actions to Improve Nonconformance Found During Audits

Management from the organization/Subcontractor of the audited activity, along with the DPCM, CPCM, IDQM or IQCM, will review, determine, and schedule appropriate corrective actions. Corrective actions will be documented on CQP-0130-2 Construction Audit Findings Report (AFR). The AFR will include identification of who is assigned responsibility for resolution of the audit finding, how the audit finding was or will be corrected, and what has been implemented to prevent further similar audit findings.

The audit team will assure that corrective action is identified for each audit finding and confirm that the corrective action is accomplished. Such confirmation may require a follow-up re-audit;

written documentation of the corrective action from the audited organization and IQCM, IDQM, or other appropriate means.

The auditor and the IQCM or IDQM will sign and date a report indicating satisfactory resolution and disposition of audit findings and send written notification to the PQM and the manager of the activity audited and all other parties sent the original audit report findings.

2.6.d Department's Verification Audits

For verification and Acceptance purposes, the Department will perform assessments/audits of the Work. During this assessment/audit, it may be determined that elements of the Work or QMP need improvement. The IQCF or IDQM evaluates the Department's findings and determines the need for Corrective Action (CQP-0106 Corrective Action), Preventative Action (CQP-0107 Preventative Action), Internal Audit, FRMG Independent Audit, Nonconformance, or other action as appropriate.

2.7 Quality Personnel

The Project Quality Organization Chart in Section 3.2 Responsibility and Authority (Figure 4**)**, depicts the quality management personnel, their roles, authorities, and line reporting relationships.

2.7.a FRMG Executive Management and Project Quality Manager

FRMG's QMP has been prepared to describe the Project organization processes and responsibilities so that design, construction, procured equipment and materials, inspection and testing will comply with all specified contract documents. FRMG executive management has the primary responsibility for all quality functions, ensuring contract requirements are met and taking appropriate measures to provide confidence to the Department that all requirements have been met.

The FRMG executive management assures that roles, responsibilities, and levels of authority are defined throughout the Project team via the organizational structure and documented responsibility and authority within this Stage 1 QMP and Stage 2 QMP. Responsibility and authority are established to facilitate the resolution of issue at the lowest appropriate level of responsibility while maintaining transparency throughout the organization.

To further ensure the successful implementation of the QMP, the FRMG executive management has the responsibility to ensure the Process Control and Independent Quality Control personnel have the appropriate education, training, and experience to meet the requirements of the Project Agreement. As such, the FRMG executive management has established the positions and responsibilities to deliver this QMP as described below.

2.7.b Project Quality Manager and Primary Point of Contact for Department

The PQM will report directly to the FRMG's executive management and the Department, is part of the Developer's management team, and has the following responsibilities:

- Serves as the primary point of contact to the Department for all issues related to the QMP including its preparation, implementation, review, and updates
- Reports on the performance of the QMP to FRMG's executive management and the Department for review and continual improvement of the QMP
- Provides all final checks, approvals, and monthly certifications related to quality
- Assures, certifies, and provides documented evidence that the Works meets the requirements of the Project Agreement
- Has the overall authority and responsibility for the success of the QMP
- Ensures that appropriate authority and responsibilities are assigned and communicated throughout the QMP
- Ensures the QMP is established, implemented, and maintained
- Has direct supervisory responsibility for the IDQM and the IQCM and their staff
- Has NO authority for the management and production of the design or construction of Work
- Approves RFC Documents prior to release
- Has the authority to stop work that does not comply with the requirements of the Project Agreement
- Provides overall coordination and responsibility for the construction IQC and PC programs
- Coordinates resolution of quality issues between design, construction, and the Department

Documents the completion of any Nonconforming Work Remedy and if applicable any Corrective Action, once accomplished and promptly notify the Department so that the Department can perform its verification
Review and approve the QMP prior to submission to the Department

2.7.c Independent Design Quality Manager (IDQM) and Design Process Control Manager (DPCM)

2.7.c.i Independent Design Quality Manager (IDQM)

The IDQM reports directly to the PQM and is responsible for all design QC activities for the Work. FRMG's IDQM is a registered professional engineer (PE) in Colorado, who is employed by the IQCF and has the following responsibilities:

- The IDQM will see that the methods, QC, and process control (PC) procedures contained in the approved Stage 1 QMP are implemented and followed by FRMG's design team, Subcontractors, fabricators, Suppliers, and vendors in the performance of the Work

- The IDQM will perform periodic audits of the Lead Engineer's quality activities as well as all items related to design by Developer, subcontractors, fabricators, suppliers, and vendors
- The audits will address alignment with the Stage 1 QMP and Attachment and compliance with Project Agreement requirements
- The IDQM has NO authority for the management, production, or scheduling of the Construction Work
- The IDQM ensures that applicable sections of the QMP are implemented and followed by FRMG, Subcontractors, fabricators, Suppliers, and vendors in performance of the Work
- Review and approve the QMP prior to submittal to the Department

The IDQM has the authority to Stop Work that does not comply with the requirements of the Project Agreement

2.7.c.ii Design Process Control Manager (DPCM)

The DPCM is responsible for all design process control activities, including:

- Ensure that the Stage 1 QMP is being implemented, that appropriate training is being provided and that the requirements of the Stage 1 QMP are being followed
- Review and approve the QMP prior to submittal to the Department
- Facilitate compliance of design work with the requirements of the Project Agreement and the Approved QMP
- Establish and enforce the Lead Engineer's quality processes and procedures
- Provide and manage appropriate technical personnel for design process controls and quality activities
- Ensure the adequacy and enforcement of quality procedures and processes for design work
- Establish and implement control procedures that direct design work performed by subconsultants and FRMG Subcontractors meet the requirements of the Stage 1 QMP and the Project Agreement
- Report regularly to FRMG's executive management regarding the status of the Stage 1 QMP and its activities
- Ensure that design quality records are properly prepared, completed, maintained, and delivered to the Department, as required by the Project Agreement, to provide evidence of PC and IQC activities performed and quality results achieved
- Ensure that Design quality staff are independent of Lead Engineer's production staff and regularly report to the DPCM regarding design quality activities
- Continually promote awareness of the requirements of the Stage 1 QMP and the Project Agreement throughout the Design organization
- Review and approve the QMP prior to submittal to the Department

The DPCM has no responsibility or authority with respect to the performance of design work but does have the authority to stop design work that does not comply with the requirements of the Project Agreement. This includes activities to ensure the quality of the design work, including:

- Identify, evaluate, and document quality problems

- Initiate action to prevent occurrence of nonconforming design work
- Recommend or initiate quality improvement solutions through established organizational channels
- Ensure the implementation of quality improvement solutions

When nonconforming design work is identified, stop all design work that is affected by the Nonconforming Work until the deficiency is corrected

The DPCM may be employed by the Lead Engineer but reports directly to the PQM and indirectly through the PQM to the FRMG executive management team. The DPCM communicates and coordinates with the IDQM and the Department and facilitates their independent quality audits of design processes and products.

2.7.d Construction Process Control Manager

The Construction Process Control Manager (CPCM) reports to the PQM and has the following responsibilities:

- Responsible for the establishment, implementation, and updates of PC aspects of the Stage 2 QMP
- Review and approve the QMP prior to submittal to the Department
- Has NO authority for the management and production of the construction of Work
- Ensures the construction-related methods and procedures of the QMP are implemented and followed by FRMG, Subcontractors, fabricators, Suppliers, and vendors in performance of the Work both on and off site
- Has the authority to stop work that does not comply with the requirements of the Project Agreement
- Provides overall coordination and responsibility for the construction PC program
- Provides coordination and distribution of construction PC and IQC procedures, standards, and guidelines
- Develops PC inspection and tests procedures, verification of, and logging of PC personnel qualifications
- Coordinates resolution of quality issues between design, construction, and the Department
- Trains personnel in quality procedures and specific responsibilities in the PC process
- Informs the PQM of the Project quality status during construction

Functional Responsibility: The CPCM promotes quality through training, in process inspection, and enforcement of policies/procedures. Additionally, the CPCM assists in the management of the NCR process and monitors resolution of NCRs in accordance with CQP-0130_Nonconforming_Items.

Inspection: The CPCM audits the PC inspection program, including inspection documentation for adequacy and conformance to the Stage 2 QMP, as a basis for the monthly Project report. On a random basis, the CPCM or designee(s) audits specific PC inspection processes.

Testing: The CPCM audits the PC materials testing program, including documentation for adequacy and conformance to the Stage 2 QMP. The CPCM or designee will coordinate in process testing of the work with a qualified testing agency or in house technician.

2.7.e Independent Quality Control Manager (IQCM)

The on-site IQCM is employed by the IQCF. The IQCM reports directly to the PQM and the Department. The IQCM has the following responsibilities:

- Responsible for the management of the IQC aspects of the Stage 2 QMP
- Review and approve the QMP prior to submittal to the Department
- Has NO authority for the management and production of the construction of Work
- Will have one or more of the following American Society of Quality certifications prior to NTP2:
  - Quality Inspector
  - Quality Engineer
  - Manager of Quality
- Has the authority to stop work that does not comply with the requirements of the Project Agreement
- Establishment, implementation, and update of the QMP
- Overall coordination and responsibility for the construction IQC program
- Coordination and distribution of construction IQC and PC procedures, standards, and guidelines
- Development of IQC inspection and test procedures verification of and logging of IQC personnel qualifications
- Coordination of quality issues between design, construction, and the Department
- Training personnel in quality procedures and specific responsibilities in the QA process
- Informing the PQM of the Project quality status during construction

Functional Responsibility: The IQCM conducts regular audits of the Stage 2 QMP, including documentation, testing, and inspection. In addition, the IQCM performs statistical analysis of IQC test data. The data will be made available to the Department and the PQM. The IQCM identifies and verifies the completion of NCRs.

Inspection: The IQCM audits the IQC inspection program, including inspection of documentation, for adequacy and conformance to the QMP. On a random basis, the IQCM or his/her designee(s) audits specific PC inspection processes.

Testing: The IQCM audits the IQC materials testing program, including documentation, for adequacy and conformance to the QMP. The IQC testing personnel will perform IQC tests for construction processes and activities. IQC tests will be performed at the frequency recommended by the Project specifications and documents or in accordance with third party work agreements. Routine laboratory tests, including but not limited to concrete testing, sieve analysis, and material classification, will be performed by or at the direction of IQC testing personnel at frequencies described the CDOT *Field Materials Manual*.

Audits: The IQCM performs audits of IQC documents to assure that construction performed is in conformance with the Project Agreement. The PQM will conduct periodic reviews to

determine that the QMP and the measures therein are functioning properly and are being followed.

2.7.f IQCM and CPCM Certifications

Prior to NTP 2, the IQCM and CPCM will obtain the American Society for Quality (ASQ) certification as either a Quality Inspector, Quality Engineer, or Manager of Quality.

2.7.g Quality Personnel Review and Approval of QMP Prior to Submittal to the Department

The Quality Management Team (PQM, IQCM, IDQM, CPCM, and DPCM) review and approve the Stage 1 and Stage 2 QMP prior to submittal to the Department for review and approval. The Quality Management Team has the responsibility to assure, certify, and provide documented evidence that the Work meets the requirements of the Project Agreement. The PQM reports the status of Work conformance, monthly to the Department.

2.7.h PC and IQC Testing Personnel

2.7.h.i PC Testing Personnel

PC testing personnel report to the CPCM. All PC testing personnel performing concrete and hot bituminous pavement process control tests will meet the requirements of Section CP-10 of the CDOT *Field Materials Manual*.

2.7.h.ii IQC Testing Personnel

IQC testing personnel report to the IQCM. All IQC testing personnel performing concrete and hot bituminous pavement process control tests will meet the requirements of Section CP-10 of the CDOT *Field Materials Manual*. All IQC testing personnel performing tests for pre-stressed and precast products will be qualified in accordance with Section 3.0 of the CDOT *Staff Bridge Fabrication Inspection Manual, Fabrication Inspection of Pre-Stressed and Precast Concrete Products*. IQC testing personnel have the authority to stop work that does not comply with the requirements of the Project Agreement.

2.7.i IQC Inspection Personnel – Structural Steel Fabrication

IQC Inspection Personnel report to the IQCM. All IQC Inspection Personnel performing inspections for pre-stressed and precast products will be qualified in accordance with Section 3.0 of the CDOT *Staff Bridge Fabrication Inspection Manual, Fabrication Inspection of Pre-Stressed and Precast Concrete Products*. All IQC Inspection Personnel performing fabrication inspections of structural steel elements will be qualified in accordance with Section 4.0 of the CDOT *Staff Bridge Fabrication Inspection Manual, Fabrication Inspection of Structural Steel Items for CDOT Roads and Bridge*. IQC testing personnel have the authority to Stop Work that does not comply with the requirements of the Project Agreement.

2.7.j IQC Inspection and Testing Personnel – Pre-Stressed and Precast

See Sections 2.7.h PC and IQC Testing Personnel and 2.7.i IQC Inspection Personnel above.

2.7.k FRMG Personnel Performing Work

FRMG has the responsibility to ensure that personnel performing Work have the education, skills, and experience to meet the requirements of the Project Agreement. Personnel records of qualification will be kept as a quality record and stored in Aconex in accordance with FRMG document control processes. The responsibilities of personnel who manage, perform, and ensure the quality of the Work include:

- Initiate risk-based thinking and actions appropriate to prevent Nonconforming Work
- Identify, evaluate, and document quality concerns
- Make recommendations or initiate actions to improve quality of the Work
- Stop Work that is affected by or affects identified Nonconforming Work

2.8 Training

2.8.a Personnel Training – Personnel Affecting Quality

FRMG will have a formal training program consistent with the QCP-0140 Quality Training procedure. The FRMG Management Team determines and endorses the necessary competence of the staff responsible for delivery of design and construction services in accordance with the Project Agreement requirements. Individuals will not be assigned to perform services without possessing contractually required certifications and qualifications.

All personnel who have responsibilities in the execution of QMP procedures will be identified and assessed for proper training and certification needs. They will receive training regarding these procedures for achievement of the expected results in accordance with CQP-0140 Quality Training procedure, which includes the training of personnel implementing the QMP. This training will serve to gain active participation of the FRMG work force to achieve a quality Project.

The Quality Management Team assesses the effectiveness of training through supervisory oversight, evaluations of the training itself, and in some cases through the administration of appropriate certification or licensing exams.

Training needs and the effectiveness of training are routinely reviewed by the Quality Management Team through the management review process. Additional training may be required to address changes and revisions to the QMP. Training on QMP revisions may be communicated through weekly construction meetings, QTF meetings, staff meetings, readiness review meetings, toolbox talks, and other scheduled meetings, as needed.

Project staff are made aware of the relevance and importance of their activities as they relate to quality through QMP orientation training, the communication of quality objectives, training on specific QMP procedures and familiarization with the Quality Policy. The Department is included in QMP orientation training.

Quality Records and attendance logs will be maintained within ELVIS and Aconex. Also, Inspectors/Technicians certifications will be entered into the ELVIS technician certification module to show compliance that tests are being performed by certified personnel. ELVIS flags tests performed by personnel who do not have the required certifications. There is also a Training Resources section of ELVIS for the most up-to-date workflow explanations and other training aids.

2.8.b Training for Interface with Department's Oversight Efforts (Audit Process)

FRMG will provide training to all design and construction personnel interfacing with the Department's Audit Team. Training will be aimed at understanding:

- The Department's role
- Purpose of Department audits
- Interpreting audit findings and severity levels (NC 1, NC 2, conformance)
- Expectations for cooperation with the Department
- Response to Department audits
- How to use the Department's quality oversight database

3. QMP Requirements

3.1 Commitment to Quality and Scope of Activities

3.1.a FRMG Executive Management Team Commitment

FRMG's QMP has been prepared to describe the Project organization processes and responsibilities so that design, construction, procured equipment and materials, inspection, and testing will comply with all specified contract documents. FRMG has the primary responsibility for all quality functions so that contract requirements are met and that measures taken will provide confidence to the Department that all requirements have been met.

The FRMG executive management team commits to the following in support of the successful delivery of the Project:

- Is accountable for the effectiveness of the QMP
- Has established a Quality Policy and Quality Objectives for the Project that are communicated to the staff regularly through organized meetings, and management review updates
- Ensures the QMP processes flow into all elements of the Work
- Supports the adoption of a process approach and risk-based thinking QMP
- Fulfills its commitment to meeting requirements by assuring that qualified resources are available to execute Project Agreement required services
- Communicates to FRMG staff the importance of meeting Project Agreement requirements, beginning with mobilization and continuing throughout the duration of the Project

- Communicates and reinforces to each Project team member that each individual is responsible for quality and that it is the responsibility of each individual to execute the Work in accordance with requirements the first time
- Will promote improvement in all areas of Work
- Supports all levels of FRMG demonstrating their commitment to the QMP

3.1.b Scope of the QMP

FRMG is responsible for the implementation, maintenance, and continual improvement of the QMP. The QMP is designed to manage, control, document, and assure that FRMG meets obligations under the Project Agreement and ISO 9001:2015. FRMG's QMP applies to all Work performed by FRMG and its Subcontractors at all tiers as well as permanent and temporary elements of the Work.

3.1.c Deliverables to the Department

QMP and design deliverables are discussed in Section 7 of FRMG's QMP. Design Reviewable Deliverables required by the Project Agreement are contained in the Deliverable Requirements Tracking List in Technical Proposal, Appendix B: Draft Project Management Plan. Construction deliverables listed in Section 14 of Schedule 8 are specifically addressed in Appendix B: Draft Project Management Plan.

FRMG has thoroughly reviewed the requirements of the Project Agreement and ISO 9001:2015. The processes and procedures included in the Stage 1 QMP and the Stage 2 QMP reflect FRMG's review of those requirements. The processes and procedures (Stage 1 Attachment: Design Quality Procedures and Stage 2 Attachment: Construction Quality Procedures) defined in the QMP were designed to meet those requirements as well as include industry best practices. For each process in the QMP, FRMG will:

- Identify applicable requirements
- Identify the required quality record(s) or deliverables
- Define the process steps
- Define appropriate monitoring, measuring, and performance indicators
- Determine the resources needed
- Assign responsibility and authority
- Address risks
- Monitor the performance and need for changes or improvements
- Revise or modify the process to ensure compliance with the Project Agreement

As appropriate, processes and procedures that generate quality records or deliverables documenting the level of compliance will be maintained and retrievable in the Project document control database, Aconex.

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3.2 Responsibility and Authority

3.2.a Organizational Chart

Figure 4, Project Quality Organization Chart, demonstrates FRMG's commitment to delivering an effective quality program with the ability to ensure the Work meets the requirements of the Project Agreement. The Quality Organization Chart shows the hierarchy of FRMG's Quality Organization. Solid lines show authority and reporting structure. Dotted lines show coordination and communication relationships. Changes to the organization structure will be distributed to FRMG and the Department.

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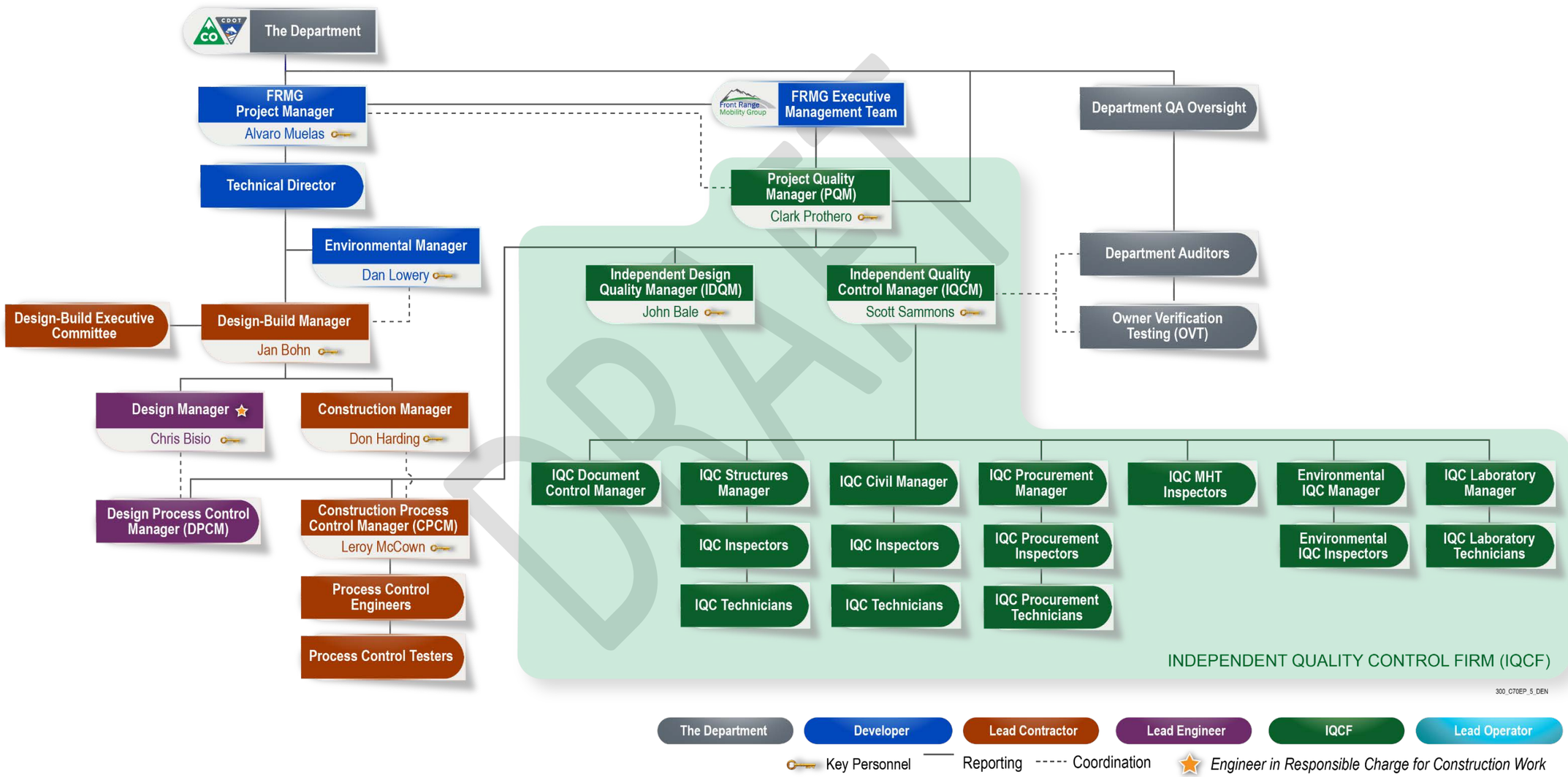
Figure 4. Project Quality Organization Chart.



3.2.b Roles and Responsibilities and Authority to Implement Quality Improvements of the Work

The roles and responsibilities of the PQM, IDQM, DPCM, IQCM, CPCM, and PC and IQC Inspection and Testing personnel were defined previously in Section 2.7 Quality Personnel.

3.2.c IQC Managers and Staff Independence from Management and Production of the Construction Work

The FRMG IQC Managers and Staff have no responsibilities in the management and production of the Work. All IQC personnel have the authority to Stop Work that does not comply with the Project Agreement. CQP-0105 Stop Work Order further defines the roles and responsibilities related to stopping work for quality-related issues.

3.2.d Quality Personnel Responsibilities

FRMG's IQC Managers, IQC Staff, PC Managers, and PC Staff have the following responsibilities:

i. Implement QMP processes and procedures
ii. Identify, evaluate, and document quality problems
iii. Recommend or initiate quality improvement solutions through established organizational channels
iv. Ensure the implementation of quality improvement solutions
v. When Nonconforming Work is identified, stop all Work that is affected by the Nonconforming Work until the deficiency is corrected
vi. Initiate action to prevent the occurrence of Nonconforming Work

Additional details on the responsibilities of the personnel who manage, perform, and ensure the quality of the Work were included in Section 2.7 Quality Personnel.

3.2.e Shared Responsibilities of PQM, IDQM, DPCM, CPCM, and IQCM

In addition to the responsibilities outlined in Section 3.2.d Quality Personnel Responsibilities, the PQM, IDQM, CPCM, DPCM, and IQCM have the following shared responsibilities:

i. Facilitate compliance of the Work with the Project Agreement and QMP
ii. Approve QMP processes and procedures
iii. Provide adequate resources and trained personnel for PC and IQC activities
iv. Ensure the adequacy and enforcement of quality procedures, processes, inspections, and tests for all Work
v. Establish and implement procedures to control and ensure Work performed by Subcontractors, subconsultants, and Suppliers meet the requirements of the Project Agreement

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vi. Ensure the QMP is being implemented and report Monthly to the FRMG executive management regarding the status of the implementation of the QMP
vii. Ensure that quality records are properly prepared, completed, maintained, and delivered to the Department, as required by the Project Agreement, to provide evidence of PC and IQC activities performed and the quality results achieved
viii. Ensure that IQC Staff is independent of FRMG's Project Manager and regularly reports to the FRMG executive management
ix. Continually promote awareness of the requirements of the Project Agreement throughout the FRMG organization

4. Independent Quality Control

4.1 General

4.1.a Independent QC Program

The Independent Quality Control (IQC) program includes elements associated with the design and construction of the Work required by the Project Agreement. These activities are independent of the actual design and construction activities and the IQC Staff have no involvement in, or responsibility for, the performance of design or Construction Work.

The IDQM is responsible for all design QC activities for the Work. FRMG's IDQM is a registered professional engineer who is employed by the IQCF. The IDQM will see that the methods, QC, and process control (PC) procedures contained in the approved Stage 1 QMP are implemented and followed by FRMG's design team in the performance of the Work. The IDQM will perform periodic audits of the Lead Engineer's quality activities. The audits will address alignment with the Stage 1 QMP and Attachment and compliance with Project Agreement requirements.

IQC inspections and tests will be performed by the IQCF, under the direction of the IQCM. The IQCM will be responsible for the management of the IQC aspects of the QMP to verify and document conformance of the Work to the requirements of the Project Agreement, the RFC Documents, and the referenced rules and regulations. Quality Control testing performed by the IQCF may be validated and/or verified by the Department's Owner Verification Testing (OVT) program, in accordance with the Department's Quality Assurance Program. The IQCF inspection and test results will be electronically provided through Aconex and Quality Records Database (QRD) as applicable. Procedures for IQC Inspections, Sampling and Testing are defined in the CQP-0300s IQC procedures.

4.1.a.i IQC Surveillances

IQC surveillance activities for design and other non-construction services are conducted by the IDQM. These may include oversight of design PC planning, audits of PC review products and review of design PC records. The results of the audits will be provided to the PQM and shared with the DPCM to identify nonconformance issues and initiate corrective actions.

IQC surveillance of the construction/installation activities may include any combination of the following:

- Observation of the physical performance of the Work
- Review, or spot checks, of procedures or instructions governing the Work, including inspection and test results
- Evaluation or verification of the presence and effectiveness of controls
- Discussion with personnel performing or supervising the Work

Surveillance results will be documented in the IQC Daily Report by the respective IQC representative and reported to the IQC Discipline Manager.

The IQC Discipline Manager will review records of all inspections and tests daily. Deficient or Nonconforming Work will be documented and corrected and verified as conforming prior to release for further construction/installation of the item of Work.

4.1.a.ii IQC Inspection Plan

IQC inspections needs will be reviewed, identified, and planned using a combination of procedures. The first is CQP-0229, Work Planning, which is where FRMG construction personnel review the requirements and identify the need for PC and IQC inspection, testing, and Quality Hold Points (CQP-0301 IQC, Construction Quality Hold Points).

The Second is CQP-0230 PC, Inspection Process, which outlines the requirements for a readiness review meeting which reviews the PC and IQC requirements. These are reviewed jointly with Construction, PC, IQC, and the Department personnel. IQC personnel come to this meeting and present their understanding of the required Quality Hold Points, Inspection, and Testing requirements.

The third is the performance of the inspection in accordance with CQP-0310 IQC, Daily Inspection Report Process which documents how inspections are performed, which inspection checklist to use, and how to document the results. Inspections are performed at appropriate hold -points (CQP-0301 IQC, Construction Quality Hold Points).

4.1.b Procedures for Procuring Services

4.1.b.i Design (Stage 1)

The selection of subconsultants and Subcontractors by the Lead Engineer is based on the type and extent of services to be provided. The qualifications and experience of the Subcontractor or subconsultant are evaluated against previously demonstrated capability and performance and quality management programs.

Subconsultants and Subcontractors are engaged by the Lead Engineer through Professional Service Agreements (PSA) or Purchase Orders (PO), as appropriate. The associated requirements are documented within the PSA or PO as provided below:

- Scope of services to be performed
- Products to be produced
- Schedule for performance of work and delivery of products
- Requirements for the approval of services, procedures and processes
- Requirements for the qualification, certification or licensure of personnel
- Requirements related to the fulfillment of the FRMG QMP and Stage 1 QMP

- Verification of work, products, and services against the requirements of the Project Agreement, the PSA or PO, and the Stage 1 QMP
- Participation in applicable scheduling, planning, design and quality meetings

The Lead Engineer submits the PSAs or POs to FRMG for an adequacy review prior to execution. The DPCM conducts a verification review of Subcontractor or subconsultant services and work products periodically and upon completion to ensure compliance with requirements as documented in PSA or PO.

4.1.b.ii Construction (Stage 2)

FRMG management team assures that services or work products provided by Subcontractors or subconsultants meet specified requirements. The amount of control exercised by FRMG over Subcontractors or subconsultants is risk-based, which is evaluated upon the expertise, performance history, and complexity of the products and services provided by the Subcontractor or subconsultant, as well as the impact of procured services or work products on Project quality. Refer to Appendix B: Draft Project Management Plan.

FRMG Management evaluates Subcontractors or subconsultants using defined criteria based upon their ability to perform services in accordance with contractual requirements. Subcontractors and subconsultants are continually evaluated throughout the contract life cycle to assure continued compliance with requirements.

Records of Subcontractor or subconsultant evaluations are maintained by the FRMG Management Team.

4.1.c Measures to Ensure that Subcontractors, Suppliers, and Subconsultants Meet, Implement, Document, and Maintain the QMP Requirements

4.1.c.i Design Phase (Stage 1)

The Lead Engineer plans and performs design activities under controlled parameters that are applicable to all FRMG subconsultants and Subcontractors. These parameters, including quality management requirements, are described below:

- Project Agreement documents, PA schedules, and other information that describe the design on non-construction services to be provided, the associated technical requirements and the products to be produced
- The QMP Stage 1 and associated procedures, including incorporation of the subconsultant or Subcontractor's own QMP activities
- Verification that the subconsultant or Subcontractor has employed its QMP before submitting required deliverable products
- Incorporation of subconsultant or Subcontractor products in the normal flow of PC activities for design and non-construction products, including discipline, interdisciplinary, constructability, and environmental reviews prior to submittal to FRMG's certification process

- Use of a detailed Review Comment Summary and Response system to track that review comments are incorporated into the subconsultant's or Subcontractor's final work products
- Periodic audits of the subconsultant's or Subcontractor's quality management processes

4.1.c.ii Construction Phase (Stage 2)

When FRMG uses vendors to facilitate the delivery of work products, the associated requirements are documented within a purchase order. These documents describe the work products to be provided by Subcontractors and Suppliers and include, where appropriate:

- Scope of services or products to be provided
- Requirements for the approval of services, procedures, processes and equipment or laboratories
- Requirements for the qualification, certification or licensure of personnel
- Requirements to maintain traceable calibration of measuring, inspection and test equipment
- Requirements related to the fulfillment of the FRMG QMP
- Requirements related to FRMG or the Department's verification of provided services or work products;
  - All vendors are subject to the requirements of the FRMG Project QMP
  - Work, products, and services will be evaluated and accepted based on the requirements of the Project Agreement and the QMP
- Participation in applicable scheduling, planning, and quality meetings

FRMG conducts an adequacy review of purchase orders prior to their transmission for execution.

FRMG conducts verification of Subcontractor or subconsultant provided services or work products to assure compliance with requirements as documented in purchase orders. Subcontractors and subconsultants are subject to the same quality requirements and processes that govern FRMG performed Work.

4.1.d Selection of Subcontractors, Suppliers, and Subconsultants

The selection of Subcontractors, Suppliers and subconsultants and the type and extent of control exercised by the Developer will be dependent upon the type of product or service and, where appropriate, on records of Subcontractors', Suppliers' and subconsultants' previously demonstrated capability and performance. Further information on the selection process is defined above in Section 4.1.b. Procedures for Procuring Services above.

4.2 Design Quality Control

The Stage 1 QMP is part of FRMG's overall QMP for the Project. The Stage 1 QMP is compliant with the requirements of the Project Agreement, Schedule 8, and FRMG's stated quality policy. The processes and procedures contained herein will be implemented on all design and other non-construction activities in a uniform manner, with implementation and enforcement

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conducted through best practice quality management and quality control methods. In cases where actual situations require a deviation from the standard processes, quality activities will be consistent with FRMG's stated quality policy and with the intent of stated QMP processes and procedures. Such activities will be documented and retained in FRMG's quality records.

The Stage 1 QMP contains procedures that address the elements of FRMG Lead Engineer's basic design services. These services include, but are not limited to, architectural, civil, structural, geotechnical, drainage, wet utilities, mechanical, electrical, intelligent transportation system (ITS), landscaping, aesthetics, and traffic work. Design work by the Lead Engineer's subconsultants and Subcontractors is covered by the Stage 1 QMP. In addition, FRMG will require that other team members, including Subcontractors and subconsultants, who provide non-construction services, including but not limited to surveying, dry utilities, environmental, ROW, safety, and temporary work, also be subject to the requirements of the Stage 1 QMP.

The design quality aspects of the Stage 1 QMP (including the Stage 1 QMP Attachment) will be implemented and managed by the Design Process Control Manager (DPCM). The DPCM reports directly to the FRMG executive management team through the Project Quality Manager and coordinates closely with the IDQM. The DPCM is part of the Lead Engineer's management team but has NO role in the scheduling of design work, performance of design activities or production of design products. The DPCM is responsible for establishing, documenting and implementing a Process Control program for design production processes that meet the requirements of the Project Agreement. The DPCM oversees a team of Design Process Experts who establish the design inputs, conduct quality reviews and quality process audits. The DPCM also provides training to the design teams regarding the Stage 1 QMP and its required processes and procedures.

4.2.a Quality Procedures to Address Design Activities

Detailed Process Control activities for design are contained in the QMP Stage 1 Attachment Design Process Control Plan (DPCP). For clarity, the Stage 1 QMP includes IQC activities, such as planning, and process control activities, including design checks, discipline reviews, interdisciplinary reviews, constructability reviews and environmental reviews, which are managed and recorded within the Lead Engineer's Review Comment Summary and Resolution tracking system. (Procedure DPCP-PR-0015 Review Comment Summary and Resolution Tracking Process and Form DPCP RCSR).

The QMP Stage 1 Attachment Design Process Control Plan (DPCP) provides detailed information on the quality processes and procedures that will be used during production and review of the Lead Engineer's products. The Design Process Control Plan will be implemented, managed and updated by the DPCM. The Process Control team, working under the Stage 1 QMP requirements, will conduct the design reviews and track comment responses. Key elements of the DPCP are discussed below in this section. More detailed information may be found in the Stage 1 QMP Attachment.

Computer programs to be used by the Lead Engineer in engineering analyses, design calculations and drawing production are listed in Section 2.2 of the Design Process Control Plan. Procedures for checking and validating the operation and output of computer programs is discussed in DPCP-PR-004 Checking Computer Calculations.

4.2.b Project Design Schedule and Design Requirements Tracking

The Lead Engineer's design schedule is aligned with FRMG's construction schedule, within the Baseline Schedule. The goal is to provide RFC Documents that coincide with the planned start of construction activities for each Project Element. The design documents are summarized in the Deliverable Requirements Tracking List (DRTL) in the Project Management Plan. The DRTL identifies each Reviewable Deliverable and indicates when each deliverable package is to be submitted for each stage of review and at RFC. The design submittals are included as individual milestones in the design schedule and are reported monthly in the updated DRTL.

The Deliverable Requirements Tracking List:

- Identifies each Reviewable Deliverable that, as of the date of submission of the DRTL, FRMG knows or anticipates will be submitted to the Department
- Specifies the type of Reviewable Deliverable
- Includes FRMG's proposed timeframe and sequence for submission, review, and resolution of each Reviewable Deliverable

Shows how scheduling of DRTL submittals avoids the Department's concurrent review of five or more Reviewable Deliverables that require review by the same specialty experts

The design schedule includes tasks corresponding to the design process required for each discipline. The tasks typically include design planning, engineering analyses, drawing development, plan sheet production, specification development, calculations and review processes for each stage (30%, 100%, and RFC) of the design process. Design items that require additional steps, such as a 60% submittal, are included in the design schedule as needed. The information in the design schedule is openly shared within the design team and with the Lead Contractor. The design teams provide weekly status reports of progress against the tasks scheduled for their design activities. Progress against the design schedule is evaluated and the design schedule is adjusted as needed. Design progress is reported monthly to the Lead Contractor for use in updating the overall Project schedule. The combined design and construction information is provided to the Department in regularly scheduled Project reports by FRMG.

The Project Agreement prescribes the process for submitting design packages to the Department and for the Department's review of the design documents. FRMG will use reasonable efforts to schedule, prioritize, and coordinate the Reviewable Design Deliverables to allow an efficient and orderly review process by the Department. This includes the scheduling of comment resolution meetings between FRMG and the Department to agree on the activities to be taken in response to each review comment.

Design team meetings will be conducted within FRMG's design organization on a weekly basis. These meetings are intended to provide overarching Project information, coordinate design and PC activities, discuss new input/output requirements, share new information, and manage resources.

Design Checks are routinely performed as part of design quality processes. Checking procedures are described in procedures DPCP-PR-003, DPCP-PR-004, PDCP-PR-005 and

DPCP-PR-007 (contained in the Stage 1 QMP Attachment) and are conducted as appropriate at each stage of design submittal. The design checks are performed by design team members of the appropriate discipline who are not associated with development of the subject design product. In addition to design checks, independent design calculations will be prepared for structural elements as specified in the Project Agreement.

FRMG's Construction staff and Operations and Maintenance (O&M) staff, and Project staff from the Department will be invited to attend the weekly task force meetings throughout the design development process. This involvement will encourage comments as the design progresses. Constructability reviews of each design package will be conducted at each submittal stage. The constructability reviews will occur in conjunction with the design process control reviews. Design PC reviews include calculation, design and drawing checks, a design review by Design Process Experts, an interdisciplinary review by a mixed team of Design Process Experts, a constructability review by Lead Contractor staff. Reviews for environmental compliance by FRMG's Environmental Manager and ROW requirements by FRMG's Right-of-Way Consultant may also be conducted at this time. These reviews will happen concurrently, with all review comments captured in the Lead Engineer's internal Review Comment Summary and Resolution (RCSR) tracking list. Resolutions for each comment will be incorporated into the design product prior to submittal to the Department and so noted in the RCSR Form. The completed RCSR forms will be included in the Project's records.

Following the internal PC process, the Lead Engineer will submit design deliverables to the Lead Contractor for document control processing and submittal by FRMG to the Department.

The Department will provide a written response to each Reviewable Deliverable within 15 Working Days for initial submittals and 10 Working Days for any resubmittals.

FRMG will provide a Review Comment Summary and Resolution tracking form (RCSR Form) for the Department's use in providing review comments. FRMG will provide a written response to each of the Department's review comments. In most cases, FRMG will request a Comment Resolution Meeting with the Department to discuss each comment and to mutually develop a response. The goal of the meeting is to reach agreement on the resolution of each review comment.

Following the Comment Resolution Meeting, FRMG will address each comment and incorporate the agreed-upon resolution in the continuing design process. Additions and modifications will be made to design deliverables as necessary to fully address each comment and include resolutions as the design submittal packages are prepared for the next submittal stage. The RCSR tracking form will be submitted along with the Reviewable Deliverable and will clearly indicate how each review comment has been addressed and where the associated resolution changes have been incorporated into the design documents. The RCSR tracking forms will become part of the RFC Documents and the permanent design record.

4.2.c Design Inputs

The Project Agreement is the primary guidance document for design and construction of the Project's elements. The Project Agreement provides specific design direction within the Schedules, and particularly Schedule 10 with its associated discipline Sections. Each Section provides a description of Project elements, design requirements and specifications, including

Project-specific specifications and special provisions as appropriate for the discipline. In addition, the Schedules and Sections refer to design manuals, design criteria, reference documents, computer programs, and other information resource materials to be utilized in preparing design products.

4.2.c.i Procedures to Control and Independently Ensure that the Design Meets the Requirements of the Project Agreement.

Design inputs are the Project requirements that describe the elements to be constructed. Considerations may include issues such as: physical characteristics, functional performance, Department requirements, design criteria, industry standards, and specialty requirements including the Project's Ultimate conditions.

The Lead Engineer's team of Design Process Experts (DPEs) will assemble a complete library of design input requirements for the Project. Design inputs will be taken from Schedule 10 and its discipline-based sections and supplemented as necessary. In most cases, the inputs are directly defined. Others are referenced to secondary sources. The DPEs will individually assemble the design inputs for their area of expertise and will then meet as a team and review the entire Design Input Library to identify overlaps, gaps and conflicts. The library will include manuals, databases, guidelines, design standards and other materials that contain the relevant design inputs to be used by design teams for the Work. The Design Input Library will be made available as web-based media to the extent possible to allow easy access to all design teams, including subconsultants and Subcontractors. The DPEs will be responsible for maintaining the Design Input Library with support from the DPCM. The DPEs will monitor the Design Input Library over the design period, making adjustments and additions as appropriate.

The Lead Engineer's DPEs will provide training to the design teams regarding the availability and usage of the Design Input Library. The design inputs will be directly accessible to the Design Discipline Leads (DDLs) and the relevant designers who are responsible for incorporating design inputs into their design products. The training will include guidance from the DDLs on how the design inputs are to be used in the design process and how the DPEs will consider the incorporation of design inputs in process control reviews. The training will also indicate how changes to design inputs are identified, reviewed, and approved by the DPEs prior to their distribution to the DDLs and implementation by the design teams.

The Lead Engineer's DPEs will perform periodic audits of design activities to ensure that the input requirements are being appropriately integrated into the design work. The audit process will include a review of the design products to ensure that the design, including subconsultant designs, meets the input and output requirements of the Project Agreement. These audits will be in addition to the standard PC processes, which consider design inputs as part of typical PC reviews. The audit findings will be provided to the DPCM for review and possible remedial action.

The Design Input Library will be available to the IDQM and the Department at all times during the design period. Either entity may request to audit the contents of the library or its application to design products at any point in the design process. The DPCM will respond to the requests and will facilitate requested audit processes.

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4.2.c.ii Procedures to Identify and Track Design Document Deliverables

The design output requirements for the Project are defined in the Schedules to the Project Agreement, particularly Schedule 10 and its discipline-based Sections. The scope of design work, type of design product, and timing of design submittals are indicated in each Section. In some cases, this includes specific information on the Ultimate configuration of the Project which will be taken into consideration for the design of the current Project.

Design deliverables are included in the design schedule as an integrated process that includes design tasks, document production, PC reviews, and design package submittals. Linkages are provided in the schedule to reflect inter-relationships between design activities. Design submittal packages are shown as milestones to indicate when submittals are planned to be made to the Department.

The design schedule is fully aligned with the Project Baseline Schedule. The primary linkages are between the submittal of RFC Documents and the beginning of construction activities in the field. Additional linkages are included for overarching activities such as Project management, permitting, public information, progress reporting and other non-construction services.

The design deliverable information is summarized in the Deliverable Requirements Tracking List (DRTL) that is a requirement for the Project Management Plan. The DRTL identifies each deliverable design product, when it is planned for submittal to the Department for review and when it is scheduled for release for construction. The DRTL will be used for scheduling work by the design teams and will be updated regularly throughout the design period.

4.2.c.iii Procedures for Approval, Tracking and Recording Revisions to Release for Construction (RFC) Documents.

The Lead Contractor maintains a record of As-Built conditions during the course of construction through a formalized process of RFC drawing mark-ups, field notes, and photographs to document the actual construction results. The As-Built documents are retained in the Design Builder's document control system throughout the Construction Period. A comprehensive set of As-Built documents will be provided by FRMG to the Department at the final completion stage.

Should the Lead Contractor discover a design error during construction, or find the need for a different design than provided in the RFC Documents, a field design change request (Design Change Form: DC Form) will be submitted to the Lead Engineer. The process to be followed is described below.

Upon mutual agreement on the need for the change, the Lead Engineer will prepare a revised set of RFC Documents that will be subject to the standard internal and Department quality review processes prior to Acceptance by the Department. The accepted RFC Documents will then be released to the Lead Contractor to implement the revised design in the field.

<u>Lead Contractor's Construction Manager</u>

1. Prepares a notice of field design change or notice of design change
2. Submits Form FDC/NDC to the Lead Engineer for consideration and action

3. Meets with the Engineer of Record as needed to discuss the issue and agree on a change to the design

Lead Engineer's Engineer of Record

1. Reviews the Construction Manager's Form FDC/NDC
2. Reviews the current RFC Documents and supporting information
3. Meets with the Deputy Design Manager for Production (DDMP) and the Construction Manager to review the issue and agree on a path forward
4. If a design change is needed, plans the required work and obtain DDMP approval to proceed.
5. Prepares necessary revisions to the current RFC document to create revised RFC Documents
6. Submits the revised RFC Documents for process control review
7. Responds to review comments, finalized RFC revisions and submits revised RFC Documents to the DPCM
8. Attends a Comment Resolution Meeting
9. Makes final revisions (if any)

DPCM

1. Reviews the revised RFC Documents and assigns appropriate DPEs to perform reviews
2. Reviews the results of the reviews and the final revised RFC Documents
3. Provides certification of compliance with Project Agreement requirements
4. Submits final revised RFC Documents to the Lead Contractor for document control processing and transmittal by FRMG to the Department for review and Acceptance

Department

1. Reviews the revised RFC Documents
2. Responds with review comments (if any)
3. Attends a Comment Resolution Meeting to reach consensus on the change
4. Issue Acceptance of the change to the RFC Documents

Lead Contractor

1. Receive and log the revised RFC Documents
2. Initiate construction activities
3. Accurately record the constructed product in As-Built drawings

4.2.c.iv Procedures for FRMG Approval of RFC Documents

FRMG's design documents are programmed in the design section of the Baseline Schedule and they are tracked throughout the design process in the DRTL. This includes regularly scheduled meetings that occur during the design process. A wide spectrum of FRMG's team members, including design, construction, environmental and O&M are included, as appropriate. Quality reviews will be conducted at the various stages (e.g., 30%, 100%, RFC) of design development. Review comments by FRMG team members will be captured in an internal RCSR tracking system and resolved in an interactive process until all comments are appropriately included in the RFC Documents. Upon completion of final RFC Documents, the Lead Engineer will submit

the electronic files to the Lead Contractor for document control processing. FRMG will forward the RFC Documents to the Department and will release the RFC Documents to the Lead Contractor for action in the field.

4.2.c.v Procedures for Approval of Supplier-Provided Design Drawings (e.g. Shop Drawings), Including Opportunity for the Department to Perform Audits

After RFC Documents have been released to the field for construction, the Lead Contractor will monitor procurement and construction activities associated with the RFC package. Supplier-provided shop drawings and other vendor information will be forwarded to the Lead Engineer for review and comment. The review comments will be captured in a post-design tracking form to ensure adequate follow-up by Suppliers and vendors. The Department may audit the Supplier and vendor information at its convenience.

4.2.d Design Quality Program Based on FRMG's Obligations

FRMG's Stage 1 QMP has been developed to comply with Project Agreement requirements for the planning, performance, review, and submittal of design products. In general, FRMG's Lead Engineer will prepare design submittal packages for preliminary (30% level) documents on a corridor-wide basis to show how each discipline design meets requirements for the overall Project. This will be followed by final (100% level) documents that will be prepared on an area-specific basis for most disciplines. The RFC Documents will also be specific to a particular Project construction area in most cases. Certain disciplines, such as structures, require a somewhat different sequence, which will be followed by the Lead Engineer. The submittals expected for each discipline and each stage of design development are contained in the Baseline Schedule and identified in the DRTL. In some cases, several of the Reviewable Deliverable products required by the Project Agreement will be assembled into one design submittal package. For example, a roadway plan submittal may also include drainage, traffic, utility, and other plans to allow a more comprehensive review of the complete design by the Department.

The Project Agreement provides direction for design activities in two ways. First, Project Agreement Schedules 8, 9, and particularly 10, provide specific requirements for the elements to be designed, standards to be used and processes to be followed. The expected products are listed in the deliverables section of each Schedule. Second, the reference documents provide additional information on the Department's intended features, configuration, and performance of the current Project. The Design Input section above provides additional detail regarding design requirements.

Most of the design standards are focused on the Work that is to be constructed under the current Project Agreement. In addition, the Ultimate configuration is described for key elements of the Project to ensure that the components initially constructed are compatible with the eventual build-out of Interstate 70 in the Project area and at its connections.

4.2.d.i Prepare Preliminary (30% Level) Plan Packages

To the extent reasonable and practical, preliminary (30% level) plan packages will be prepared on a corridor-wide basis. The level of detail in the plan package at this stage will show how FRMG's design meets the requirements for the Project and how the components fit together for the entire Project, including the Ultimate configuration. Roadway configurations, traffic control systems, drainage plans, ITS facilities, and the other Project features will be shown as complete systems throughout the Project corridor.

The preliminary design will be developed on a discipline basis to ensure that all design input requirements are recognized and incorporated. Output requirements will guide preparation of the design products. The Design Process Experts will provide initial training and guidance, but will not be directly involved in the design process. The Design Discipline Leads will implement the input and output requirements in the preparation of design documents.

The discipline designs will be integrated into a comprehensive design for the Project though an interdisciplinary process that is led by the Area Design Managers. This process will integrate designs for the various disciplines to avoid conflicts and inconsistencies. Of particular concern are physical limitations and construction requirements for the various Project features to ensure that everything will fit in the prescribed ROW and can be constructed in a reasonable sequence.

As required by Schedule 8 of the Project Agreement, preliminary plans will include:

A. Cover sheet
B. Typical sections
C. Plan and profile for the I-70 Mainline, CDOT Roadways, and Local Agency Roadways
D. Structure Concept Plans include:
    i. Plans, elevations, and appropriate typical sections for each bridge type
    ii. Plan views of the structure identifying each bridge location and type, including documentation of design vehicle turning movement analysis
    iii. Plan views of the structure identifying each wall location and type
    iv. Description of conceptual solutions for complex structural problems identified by FRMG
    v. Description of creative or innovative way the design, construction, and/or choice of structural types will benefit and/or enhance the Project Schedule, quality, aspects of the structure, and minimize traffic impacts
    vi. Structure numbers for major structures
E. Drainage structure general layouts
F. Master drainage plan
G. Master drainage report
H. Master water quality report
I. Preliminary wall layouts
J. Roadway cross sections at 50-foot intervals

The packages submitted at the 30% design level will include the above items and additional materials as required by Project Agreement Schedule 10. The DRTL provides a more comprehensive listing of preliminary design products to be developed and submitted. A number of reports and other documents will be submitted in addition to design drawings as required by

the Project Agreement. The format of the submittals will meet the prescribed output requirements, including type of plans and size of drawings.

Prior to submittal, the preliminary plans will be subject to design process control reviews, including discipline, interdisciplinary, constructability, and environmental reviews, as described in other sections of the QMP. The PC reviews will include a thorough review of design input and output requirements to ensure that the design products meet the requirements of the Project Agreement, Schedule 10, including the Ultimate configuration.

The 30% level submittal package will include the Reviewable Deliverables, a blank Review Comment Resolution tracking form and a certification by the Design Process Control Manager that the submittal has been subject to the Approved QMP processes and that it is compliant with Project Agreement requirements.

The Department's review comments will be handled through a RCSR tracking process. (DPCP –PR-015) The review comments will be addressed at a Comment Resolution Meeting where appropriate resolutions will be developed to each comment. The resolutions will be incorporated into the design documents for the next scheduled submittal and will be documented in the RCSR tracking form. This ensures that each comment will be adequately addressed in the continuing development of design documents while preventing unnecessary resubmittal of previous design documents.

4.2.d.ii Task Force Meetings

Task Force Meetings will be held weekly during the design period to review the status of the design, coordinate design development between disciplines, discuss constructability issues, and address questions associated with design requirements. The task force meetings will be scheduled by discipline, with the primary focus on the integrity and consistency of design products within each discipline. However, issues regarding interdisciplinary coordination will also be considered. Attendees at the task force meetings may include design team leaders, discipline designers, constructors, O&M staff, IECM, IDQM, Department staff and others with interest in the subject matter.

FRMG will prepare an agenda and conduct each Task Force Meeting. Meeting minutes will be prepared and submitted to the Department for Acceptance within four Working Days after each meeting, and final minutes will be provided to the Department via the Department's document management system monthly.

4.2.d.iii Design Progress Review Meetings

In addition to the task force meetings, FRMG will schedule and conduct a design progress review meeting during the development process for each Reviewable Deliverable package. Department staff, along with FRMG team members and local agencies as appropriate, will be invited to the meeting. The primary purpose of the design progress review meetings is to review design concepts, components, configurations and details with Department staff while decisions are still being made. The Department's "over-the-shoulder" comments will be incorporated into the design process and in the resulting submittal packages. This is expected to align design products more closely with the Department's expectations which should expedite the Department's review and Acceptance in a timely manner. Design progress review meetings are

planned to be held at the 90% design level. To maximize effectiveness of these meetings, FRMG will consult with the Department about scheduling the design progress review meetings at the 60% design level.

The design progress review meetings will be documented by FRMG, with meeting minutes will be submitted to the Department for Acceptance within four Working Days after each meeting.

4.2.d.iv Final (100% Level) Plan Package

Final plan packages will generally be developed on an area-specific basis to develop design details that are more closely aligned with FRMG's planned construction activities and sequence. Task Force Meetings will continue during this period and design progress review meetings will be held as design products are developed. Internal PC activities and independent oversight and audits will occur. Submittals for Department review will be made in compliance with Project Agreement input and output requirements.

FRMG's Lead Engineer will continue with the design process following submittal of the 30% level documents. The Department's review comments for the 30% submittal will be incorporated into the continuing design products. The 30% RCSR tracking form will be completed to show how and where each comment was addressed in the Final Plans. The RCSR tracking form will be included in the 100% level design submittal.

The 100% level submittal package will include the design products, a completed 30% RCSR tracking form, a blank 100% Level RCSR tracking form for the Department's use and a certification by the Design Process Control Manager that the submittal has been subject to the Approved QMP processes and is compliant with Project Agreement requirements.

FRMG will conduct a Comment Resolution Meeting with the Department after the Department's review of the 100% level documents to discuss each comment and agree on a mutually satisfactory resolution.

4.2.d.v RFC Documents and Revisions to RFC Documents

FRMG will continue the design process to finalize the 100% level plans and advance them into RFC Documents. The RFC Documents will incorporate resolutions to the 100% level review comments and will contain plans, reports, specifications, and other materials in compliance with design output requirements. The RFC Documents will be subject to the design QC review process.

The RFC submittal package will include the RFC Documents, a completed RCSR tracking form. A blank RFC tracking form and a certification by the Design Process Control Manager that the submittal has been subject to the Approved QMP processes and is compliant with Project Agreement requirements.

FRMG's PQM will approve the RFC Documents prior to submittal and provide an appropriate certification form. FRMG will submit one electronic copy of the RFC submittal package to the Department.

FRMG will also provide a Materials Testing and Inspection Plan (MTIP) with the RFC Documents when required by the Project Agreement. The MTIP will provide testing quantities

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and frequencies, and IQC inspection Quality Hold Points to confirm that minimum QMP requirements have been met.

After issuance of the RFC Documents, FRMG's Lead Contractor will initiate construction activities. As-Built information will be recorded on a continual basis during the construction process. Should design errors be found, a request will be made to the Lead Engineer to correct the errors and reissue the subject RFC Documents. If a change is required to accommodate construction, a field design change request will be issued to the Lead Engineer who will redesign and reissue the subject RFC plans. The Lead Contractor will maintain a design change during construction log for the preparation, review and approval of all changes and As-Built conditions, including field design changes, RFC Documents, and As-Built documents.

4.2.d.vi RFC Documents for Structure Construction

For structural elements, FRMG's Lead Engineer will prepare the following items prior to the design review process for RFC Documents:

A. Independent design check, completed in accordance with the current CDOT *Bridge Design Manual.* The original final structural design calculations will be revised and corrected based on comments from the independent design check before the structural design of the element is completed.
B. The Rating Package, as defined by the CDOT *Rating Manual*, completed prior to release of the superstructure construction drawings.

These products will be included in the 100% level and RFC submittal packages to the Department.

4.2.d.vii As-Built Documents

FRMG will submit As-Built documents to the Department for Acceptance. The As-Built documents will be submitted after FRMG has addressed, resolved, and incorporated, to the satisfaction of the Department, any prior FRMG or Department comments. FRMG will provide completed RCSR tracking forms as documentation to the Department that all review comments have been addressed. The Department may review or audit the As-Built documents to ensure completeness and compliance with the requirements of the Project Agreement.

FRMG will bundle the As-Built plans into packages that match the RFC Design Deliverable packages. FRMG will include the following with As-Built documents submittals:

A. All plans reflecting RFC Documents or revisions to RFC Documents
B. Resolution of Nonconformance
C. Design Calculations
D. Design Reports
E. Specifications
F. Electronic CADD files, as specified elsewhere in the Project Agreement
G. Index summarizing all revisions to initial RFC Documents
H. Review, Comment, Resolution Tracking Forms

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4.2.d.viii Licensed Engineer in Responsible Charge

FRMG will provide a licensed engineer) who will be in responsible design charge during construction for the preparation, review and approval of all changes, including field design changes, RFC Documents, and As-Built documents. FRMG will maintain a master list of approved design changes and a complete file of As-Built records. The licensed engineer will communicate with the Design Manager and the Construction Manager regarding design changes. The design changes will be entered into FRMG's document control system and issued to those completing the Construction Work on a timely basis, consistent with the progress of construction activities.

4.2.d.ix Environmental Review

The FRMG Environmental Manager (EM) attends internal FRMG meetings and other design task forces on a regular basis. The EM's focus is interdisciplinary review with an emphasis on environmental implications from potential design changes. The EM and the Independent Quality Control Environmental Manager will be invited to participate in scheduled quality reviews for design products. FRMG will require that, at a minimum, an environmental review be part of the 100% level design reviews. Environmental comments showing how FRMG's design meets the Environmental Requirements, including FRMG's obligations under Schedule 17 Environmental Requirements, will be included in the RCSR tracking process. If FRMG creates design changes beyond the basic configuration, these changes will be tracked, assessed, and documented by the EM to determine whether or not they have resulted in a new impact of impacts to an environmental resource.

4.2.d.x ROW Processes and Documents

FRMG will invite the right-of-way (ROW) consultant to attend task force meetings and design progress review meetings as well as to participate in scheduled PC reviews for design products. FRMG will require that a ROW review be part of the 100% level PC reviews. ROW comments showing how FRMG's design meets the ROW Requirements, including FRMG's obligations under Schedule 18 will be included in the Comment Resolution process.

In the event FRMG finds an instance of nonconformance or an audit by FRMG's IQC process identifies a nonconformance with respect to Schedule 18 requirements, the Department may choose and engage, at the expense of FRMG, an independent ROW firm to conduct its own quality review. FRMG will implement corrective and preventative actions to eliminate recurrence, if such event occurs.

4.3 Construction Quality Control

4.3.a Required Construction PC and IQC Activities to Control the Work

The FRMG Quality Team performs and documents the required construction PC and IQC activities necessary to control the Work. These are captured electronically, real time, using tablet and laptop computers where applicable within ELVIS. Records of inspection and testing

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activities (other than materials inspection and testing) will be submitted to the Department through Aconex.

ELVIS will generate a daily batch file for all data that is required to be loaded daily into Aconex and for remaining documents that are required to be uploaded in the Departments Quality Records Database (QRD), ELVIS has a programmed batch routine where these pdf documents are exported out of ELVIS and then can manually uploaded into the QRD. FRMG will work with the Department to data map the test results from ELVIS to the Department's QRD. This will allow a batch upload of multiple tests at a given time. This will auto populate the meta-data fields for analysis and comparison to the Department's verification test results. The IQCF firm has experience performing this on similar projects and with the same system the Department is using, QRD.

The QMP extends to both permanent (bridges, retaining walls, roadways, etc.) and temporary Work (erosion control, traffic control, drainage, and so forth).

4.3.b Construction IQC Program

4.3.b.i Certification

FRMG has included in the QMP a process (CQP-0109 IQC, Compliance Certification) to certify to the Department at the following times that the Work performed meets the requirements of the Project Agreement (CQO-0109-1 IQC Compliance Certification Form):

A. Prior to each Milestone Completion
B. Prior to Substantial Completion
C. Prior to Final Acceptance
D. At any other time requested by the Department (including in relation to any Renewal Work)

To verify compliance, the PQM will audit the elements of Work requiring certifications. Quality records associated with the Work are audited. ELVIS produces a quality record log that aids in the auditing of the Work. Audits will focus on the following:

- Ensure records are available and complete (submittals, inspections, tests, and so forth)
- Verify pass/fail criteria
- NCRs are resolved/closed
- Department NCNs are resolved/closed
- Construction deficiencies are resolved/closed

Minimum test frequencies were met

4.3.b.ii Inspection

FRMG has prepared, as part of the QMP, the draft Stage 2 QMP, which will be submitted to the Department for Approval prior to receiving NTP 2. The Stage 2 QMP contains all the elements necessary to meet the requirements of a Materials Testing and Inspection Plan (MTIP), including detailed inspection procedures to be used in cases where inspections are to serve as the basis for verifying compliance with the requirements of the Project Agreement. The Stage 2 QMP, which encompasses the requirements of MTIP, includes specific inspection and testing

procedures for both Process Control (CQP-0200s PC Procedures) and Independent Quality Control (CQP-0300s IQC Procedures). See Stage 2 Attachment: Construction Quality Procedures for further details.

FRMG will submit to the Department (A) all records of inspection and testing (other than materials inspection and testing) through Aconex and (B) all records of materials inspection and testing through the Department's QRD.

FRMG conducts each inspection in accordance with the Approved QMP. Inspections are flagged as passing or failing based on the Pass/fail criteria established in the procedure and the requirements of the Project Agreement. FRMG documents all failing inspection results, when applicable, in the inspection documentation. Failing results are flagged in the ELVIS system. This aids in review and ensures that all failing results are resolved prior to issuance of the Compliance Certification.

4.3.b.iii Testing

FRMG will follow the CDOT *Field Materials Manual* and its *Frequency Guide Schedule* for minimum materials sampling, testing, and inspection requirements identified under the column titled "Work Verification Sampling & Testing Frequency" for all IQC tests required. FRMG documents the results of all testing (showing if the test passed or failed based on the "Pass/fail criteria" established in the Project Agreement) and submits such results to the Department through Aconex (other than the results of materials testing, which will be submitted through the Department's QRD). FRMG includes failing tests results in the test documentation.

Independent laboratories will submit signed and certified test reports to FRMG not more than 10 Working Days after completion of the tests for all tests which require an independent laboratory. The Department may witness any test conducted for independent assurance purposes.

FRMG's use of ELVIS automatically generates a current test log for all tests required by the Project Agreement. The test log is updated every time a test is uploaded. As a minimum, FRMG will document results of tests in report format and include the following:

- Project Agreement Project identification number
- Identification of items tested
- Quantity
- Date and time test conducted
- Location of items tested
- Test procedure used
- Name of technician
- Acceptance criteria
- Results - Acceptance or rejection

Authorized signature

FRMG will data map the test results generated using ELVIS with the required meta-data for the Department's QRD. This will allow for a stream lined process to upload multiple records at a given time. The will ensure that results are delivered to the Department in a timely manner, reduce errors in data entry, and reduce document control staff.

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4.3.b.iv Certificate of Compliance, Certified Test Report and Buy America Documentation

FRMG will enforce "Buy America" compliance by including the requirements in all subcontracts and purchase orders written to Subcontractors and Suppliers. The procurement documents will also contain provisions to allow access to vendor and Subcontractor premises for inspections by FRMG and the Department.

4.3.b.iv.A Method of Handling and Documenting Work/Products Accepted in the Work by Certificate of Compliance or Certified Test Report

FRMG reviews, evaluates, and accepts or rejects Certificates of Compliance (COC) and Certified Test Reports (CTR) based on their compliance with the Project Agreement, and all Schedules including Schedule 10 and RFC Documents. FRMG tracks the acceptance and rejection of COC and CTR using a submittal workflow developed and implemented within Aconex. The process is detailed in CQP-0111, Construction Submittals.

4.3.b.iv.B Method for Documenting and Tracking Compliance with Buy America Requirements

The FRMG will maintain a certifications file that includes every process performed on steel or iron products, including the application of a coating, either has or has not been carried out in the United States of America. This certification applies to every iron or steel product that requires pre-inspection, pretesting, certified test results, or a certificate of compliance. FRMG will obtain a certification from each Supplier, distributor, fabricator, and manufacturer that has handled each steel or iron product. These certifications will create a chain of custody trail that includes every Supplier, distributor, fabricator, and manufacturer that handles the steel or iron product. The lack of any certification in that chain will be justification for rejection of the steel or iron product.

FRMG will maintain a Material Inspection Receipt, as further described in CQP-0110 Control of Materials and documented on CQP-0110-1 Receiving Record form, which summarizes the date and quantity of all steel and iron material delivered to the Project. The Receiving Record form will show the pay item and quantity of material delivered to the Project. Daily inspection reports will quantify the material installed by the cutoff date for the monthly Progress Report. The monthly Progress Report will also reconcile the pay item quantities to the submitted Buy America certifications. FRMG will also maintain documentation of the Project delivered cost of all foreign steel or iron permanently incorporated into the Project. That summary and cost information will be submitted to the IQC Procurement Manager within five Working Days of the cutoff date for each monthly Progress Report during both the Construction Period and during the Operating Period for any month in which any renewal work is being performed that includes steel or iron products. The monthly summary will be submitted even if no steel or iron products are incorporated into the Project during the month.

4.3.b.iv.C Obtaining COCs and CTRs Prior to Incorporation in the Work and Maintaining a Complete Log of COCs and CTRs

COCs and CTRs are tracked by the Lead Contractor's Project engineers who initiate the submittal workflow within Aconex. Submittals are reviewed, approved, and/or rejected within the

submittal workflow process established in Aconex. The COC and CTR submittal process is defined within CQP-0111 Construction Submittals.

4.3.b.iv.D Signed Certification that all Materials Represented by Each COC/CTR were Installed in the Work

A COC/CTR log will be maintained within Aconex for review by the Department at any time. Signed certifications stating that all materials represented by the COC/CTR were installed in the work will also be filled within Aconex.

4.3.b.v Quality Reviews

The PQM will perform formal quality reviews of the Stage 1 QMP and Stage 2 QMP to verify they are being effectively implemented. These reviews will consist of the review of multiple processes and procedures to gauge the overall performance and effectiveness of the Stage 1 QMP and Stage 2 QMP. The PQM evaluation is based on the following processes and procedures:

- Frequency and repetitiveness of NCRs
- Frequency and repetitiveness of Department NCNs, Audits, and OVT
- Results of Internal Audits
- ISO 9001:2015 Compliance Audits
- Feedback from the Quality Task Force Meeting

Results of the Quality Issues Matrix

Formal PQM quality reviews are documented as a quality record, published in Aconex, and transmitted to the Department for review.

4.3.b.vi Environmental Compliance in Construction

FRMG performs IQC Environmental Inspections to ensure compliance of Environmental Requirements during constructions. IQC Environmental Inspections are performed in accordance with Schedule 17 Environmental Requirements (Construction-related), Appendix M: Draft Environmental Compliance Work Plan, and CQP-0310 IQC, Daily Inspection Report Process and the draft list of associated Environmental Inspection Checklists:

- CQP-0310-12 IQC Inspection Checklist - Air Quality
- CQP-0310-13 IQC Inspection Checklist – Landscape Planting
- CQP-0310-18 IQC Inspection Checklist – Environmental Preconstruction
- CQP-0310-19 IQC Inspection Checklist – Environmental Screening and Monitoring
- CQP-0310-20 IQC Inspection Checklist – Storm Water Management
- CQP-0310-23 IQC Inspection Checklist – Discharge Monitoring Report
- CQP-0310-24 IQC Inspection Checklist – Water Quality
- CQP-0310-26 IQC Inspection Checklist – Spill Response Report
- CQP-0310-28 IQC Western Burrowing Owl Survey Checklist
- CQP-0310-30 IQC Asbestos Containing Soils Inspection Checklist
- CQP-0310-31 IQC Asbestos Abatement Inspection Checklist
- CQP-0310-33 IQC Contaminated Soils Disposition Report

- CQP-0310-34 IQC Contaminated Groundwater Disposition Report
- CQP-0310-35 IQC Environmental Unexpected Asbestos Discovery Report
- CQP-0310-36 IQC Asbestos Building Manifest Report
- CQP-0310-37 IQC General Soil Disposition Report
- CQP-0310-38 IQC Construction Noise Monitoring
- CQP-0310-42 IQC Environmental Sodding Inspection Checklist
- CQP-0310-43 IQC Environmental Seeding Inspection Checklist
- CQP-0310-69 IQC Environmental Hardscapes Inspection Checklist
- CQP-0310-70 IQC Noxious Weed Inspection Checklist

4.4 Materials Testing and Inspection Plan

4.4.a Materials Testing and Inspection Plan

FRMG has prepared, as part of the QMP, the draft Stage 2 QMP, which will be submitted to the Department for Approval prior to NTP 2. The Stage 2 QMP includes the necessary components of the Materials Testing and Inspection Plan (MTIP), including detailed inspection procedures to be used in cases where inspections are to serve as the basis for verifying compliance with the requirements of the Project Agreement. The Stage 2 QMP includes specific inspection and testing procedures for both Process Control (CQP-0200s PC Procedures) and Independent Quality Control (CQP-0300s IQC Procedures). See Stage 2 QMP Attachment: Construction Quality Procedures for further details.

As part of the Stage 2 QMP, FRMG has included appropriate criteria, tests, and inspection requirements identified in CDOT's *Standard Specifications*, *Field Materials Manual*, CDOT *Staff Bridge Fabrication Inspection Manual*, FRMG-prepared inspection checklists (CQP-0200s PC Procedures and CQP-0300s IQC Procedures); and any requirements established as part of the Stage 2 QMP.

4.4.b Proposed Inspections and Tests Procedures

The Stage 2 QMP describes the proposed inspections procedures within CQP-0200s PC Procedures and CQP-0300s IQC Procedures. Testing procedure will be in accordance with specified testing standards specified within the CDOT *Field Materials Manual*, Project specifications, RFC drawings, or another applicable standard. The Stage 2 QMP is applicable to products provided by Suppliers during the manufacturing, receiving, and installation process, to ensure the requirements of the Project Agreement are met.

The Stage 2 QMP identifies inspections and tests required to meet the requirements of the Project Agreement. Frequency of the inspections and tests will be at a minimum those specified in the CDOT *Field Materials Manual* or applicable requirement that may be more stringent. Where no inspections or test standard exists in any of CDOT's manuals, FRMG will develop specific criteria, based upon the best-available industry standard information and technology. These criteria will be added to the Stage 2 QMP as a revision.

Below is a sample list of inspection requirements for an earthwork and embankment operation:

- Has the area of excavation/embankment had the necessary clearing, grubbing, and stripping?
- Have all cuts and fills been finished to a reasonably smooth and uniform finish?
- Has all roadway excavation and embankment been made to the proper alignment, grade, and cross-section?
- Have all brush, weeds, mud and debris been removed from the fill material?
- Is the fill material suitable for backfill?
- Are the embankments free of snow and ice?
- Is embankment against a 6 to 1 slope benched out continuously with 12-inch rises?
- Is the cut surface below roadway scarified and recompacted at least 6-inches?
- Are all roadway embankment lifts 8-inches or less?
- Are all rock embankment lifts 24-inches or less?
- Is there 90% standard compaction and 95% compaction in upper 18-inch lifts?
- Do all tests not exceed optimum moisture content by more than 3%?
- Is the roadway passable and well drained?
- Were the materials tested at the required frequency?
- Did today's completed work meet with the Project specifications?

4.4.c Procedures for Delivery, Handling, and Storage of Furnished Products

The Stage 2 QMP procedure for delivery, handling, and storage of furnished products ensuring that they are properly handled and stored to prevent damage, deterioration, or theft is CQP-0110, Control of Materials.

4.4.c.i Material Submittals

The applicable field engineer will prepare a requisition for all materials to be purchased for incorporation into the Work. The requisition will include the quality and technical requirements of the RFC Documents and the required documentation attesting to the conformance of the materials to the requirements. The procurement document will include the requirements of the requisition including such documentation as certified test results or certificates of compliance that must accompany or be part of material certification. The procurement document will identify special processes requiring qualified/certified production, inspection, and test personnel to perform highly skilled work, such as welding, brazing, soldering, non-destructive testing, machining, coating, or plating.

Material submittals will be handled as outlined in CQP-0111, Construction Submittals.

4.4.c.ii Receiving

The field engineer or designee will receive and check material against the purchase order for material description and quantity. They will notify IQC of the received material and the location of storage.

IQC Inspectors conduct a visual examination of:

- Quality

- Packaging and handling
- Coatings or protective finishes
- General dimension
- Documents attesting to the conformance of the material (e.g., COC, CTR, etc.)

The procurement documents accompanying the shipment; assuring that they were previously received, or have been submitted as a Project wide coverage

Material found acceptable will be identified as acceptable and stored in accordance with applicable storage and handling requirements.

Material or equipment that is found to be damaged or otherwise nonconforming will be clearly identified and will not be used on the Project.

CQP-0110-1 Receiving Record is used to document that material was inspected for compliance and damage. Delivery records, packaging slips, and any other traceability documents required to be provided by the Supplier will be attached to the Receiving Record and filed in Aconex.

4.4.c.iii Storage of Materials

Materials will be handled and stored in a way that prevents damage, deterioration, or loss. Materials will be transported in accordance with the Supplier's or manufacturer's instructions, or more generally in a manner to prevent damage, loss, or segregation after loading and measuring.

Storage areas will be identified locations. Locations and security measures will be chosen to prevent against damage occurring from vandalism, theft, weather, or other external elements such as dust or excessive vibration. Materials will be stored so that they may be easily inspected and retested.

Only materials that have been pre-approved or inspected, tested and accepted will be incorporated into the Work.

IQC Staff may perform periodic inspections of materials stored for long periods of time, as determined by the IQCM.

4.4.d IQC Inspection and Test Activities

The various checklists (CQP-0200 PC Procedures and CQP-0300 IQC Procedures) within the MTIP detail the specific inspection criteria for a specific element of Work. Checklists are generated based on the CDOT Specifications for Road and Bridge Construction requirements. Specific specification sections are used as a guide to establish inspection criteria for the associated element of Work. For example, CDOT specification 203 was used as a guide for CQP-0310-2 IQC Inspection Checklist – Earthwork & Embankment. Inspection criteria for this checklist is also provided in Section 4.4.b Proposed Inspections and Test Procedures above as an example.

Testing procedures and frequencies are, at a minimum, based on the CDOT *Field Materials Manual, Quality Assurance Frequency Guide.*

For each major operation, Quality Hold Points are established to verify compliance with the requirements of the Project Agreement. Inspection checklists utilized within the ELVIS system

will document inspection performed at a Quality Hold Point as well as document pass/fail status. Quality Hold Point details are detailed in CQP-0301 IQC, Construction Quality Hold Points as well as Section 4.5.a Quality Hold Points.

FRMG notifies the Department of construction operation schedules and planned Quality Hold Points. The Department may choose to perform an independent audit or Inspection at a Quality Hold Point. Regardless of the presence of the Department, it is the responsibility of the IQC Staff to release work past a Quality Hold Point.

4.4.e Summary of Activity-Specific Material Quantities to Document that Minimum Sampling, Testing, and Inspection Requirements Have Been Met

Each inspection and test report documents the quantity of materials represented by that test. ELVIS tracks the quantities to date against the number of tests performed so that the minimum inspection and test frequency requirements can be verified. Conformance to the minimum requirement can be verified within the ELVIS system daily. The Department will have access to this information.

4.4.f Processes to Control, Calibrate, and Maintain Test Equipment to Ensure It Meets Industry Standards and Other Applicable Requirements

The IQCF will operate an accredited AMRL, CCRL, and ASTM laboratory. The IQCF will obtain and maintain AASHTO R18 and ASTM E329 accreditation throughout the Construction Period of the Project. As an accredited laboratory, calibration, maintenance, handling, labeling, tracking, and environment for test equipment in the facility will be governed by the AASHTO R18 and ASTM E329 requirements. The IQCF Laboratory Manual will be an appendix to the MTIP.

IQC testing will only be performed by an appropriately accredited laboratory. Tests performed by an independent laboratory will be required to have the AMRL, CCRL, or ASTM accreditation, as appropriate for the tests being performed.

FRMG uses standard or contractually required inspection and test methods and provides appropriate monitoring and measurement equipment to provide evidence of compliance with requirements, including provisions of the CDOT *Field Materials Manual*, ASTM, AASHTO, ACI, etc. as addressed within the MTIP and IQCF Laboratory Manual.

When necessary to assure valid results, FRMG assures that measurement, inspection, and test equipment is:

- Calibrated, verified, or both, at specified intervals, or prior to use, against applicable standards
- Adjusted or re-adjusted as necessary to achieve in tolerance conditions
- Identified to determine its calibration status
- Safeguarded against adjustments that would invalidate the measurement result

- Protected from damage or deterioration during handling, maintenance and storage

When a piece of measuring, inspection or test equipment is found out of tolerance, FRMG assesses the validity of all measurements made with that piece of equipment since its last known acceptable calibration or verification, and will take any required actions based upon this assessment.

Records of calibration and verification activities are maintained in accordance with the laboratory manual.

4.4.f.i Identification of the Test Required and Accuracy Required

FRMG identifies the required tests to be performed and the applicable referenced test method to be followed. The required equipment and accuracy will be in accordance with the applicable test method (CP, ASTM, AASHTO, ACI, etc.). See Section 4.4.f Processes to Control, Calibrate, and Maintain Test Equipment to Ensure It Meets Industry Standards and Other Applicable Requirements above.

4.4.f.ii Procedures to Calibrate all Test Equipment Prior to Initial Use and at Prescribed Maintenance Intervals

For each test method, the IQC laboratory is accredited for, the laboratory manual will identify the calibration procedures to be followed and the appropriate calibration and maintenance interval based on the test method requirements. The IQC laboratory will maintain an Equipment Inventory log to track the condition, in-service date, calibration date, and calibration due date. See Section 4.4.f Processes to Control, Calibrate, and Maintain Test Equipment to Ensure It Meets Industry Standards and Other Applicable Requirements above.

4.4.f.iii Test Equipment with a Suitable Indicator

Each piece of equipment in which calibration is required will have a calibration sticker attached. Calibration Stickers will indicate the calibration date and calibration due date at a minimum. Each piece of testing equipment will have a unique laboratory identification number. See Section 4.4.f Processes to Control, Calibrate, and Maintain Test Equipment to Ensure It Meets Industry Standards and Other Applicable Requirements above.

4.4.f.iv Maintain Current Calibration for Test Equipment

Test equipment will be calibrated prior to use and maintain current calibration status or otherwise be removed from service. Calibration records will be available with the IQC laboratory and made available upon request. See Section 4.4.f Processes to Control, Calibrate, and Maintain Test Equipment to Ensure It Meets Industry Standards and Other Applicable Requirements above.

4.4.f.v Procedures to Ensure that Environmental Conditions Are Suitable for Calibrating Test Equipment

The laboratory environment will be suitable for calibration, in accordance with applicable test methods and calibration procedures. See Section 4.4.f Processes to Control, Calibrate, and

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Maintain Test Equipment to Ensure It Meets Industry Standards and Other Applicable Requirements above.

4.4.f.vi Procedures to Ensure the Handling and Storage of Test Equipment

Test equipment is maintained, stored, and handled in a manner consistent to ensure it is suitable for use. Test equipment is visually inspected for damage and current calibration prior to use. Damaged equipment will be removed from service until it can be brought back to a condition and calibration suitable for use. See Section 4.4.f Processes to Control, Calibrate, and Maintain Test Equipment to Ensure It Meets Industry Standards and Other Applicable Requirements above.

4.4.f.vii Procedures to Safeguard Test Equipment

Testing equipment is safeguarded from damage or deterioration during handling, maintenance and storage. See Section 4.4.f Processes to Control, Calibrate, and Maintain Test Equipment to Ensure It Meets Industry Standards and Other Applicable Requirements above.

4.4.f.viii Procedures with Respect to Paving

4.4.f.viii.1 Pavement Smoothness Requirements

Concrete Pavement Smoothness

FRMG uses Section 105 of the CDOT *Standard Specifications* as guide for the Project specifications for Conformity to Roadway Smoothness Criteria of Portland Cement Concrete Pavement.

Roadway smoothness testing and corrective work will be performed as described below. The pavement smoothness category will be MRI Category II unless otherwise shown on the plans. Pavement smoothness categories are based on the CDOT's Design Bulletin guidelines for assigning pavement smoothness categories.

https://www.codot.gov/business/designsupport/bulletins_manuals/design-bulletins/.

(a) Smoothness Quality Control Testing.

1. FRMG will perform Smoothness Quality Control (SQC) testing. A profile will be taken for each day's paving within 24 hours after the concrete has achieved sufficient strength. FRMG will not perform the SQC testing until after the concrete has attained a compressive strength of 1,000 psi if a light weight profiler is used or 2,000 psi if a high-speed profiler is used. The test results will be submitted to the IQCM within 48 hours of completion. SQC test results will show the Mean Roughness Index (MRI) for each 0.10 mile.
   SQC testing will be performed using the FRMG's inertial profiler, pursuant to the methods described in subsection 105.08(b) and in accordance with the manufacturer's recommendations. The FRMG's Profiler will be certified according to CP 78. A list of certified profilers is located at https://www.codot.gov/business/designsupport/materials-and-geotechnical/pave-smooth-testing/2016-certified-profilers/view.

Production will be suspended if SQC testing indicates that corrective work is required in accordance with subsection 105.08 (c). If the SQC data becomes available after production has started for the day, suspension will begin at the end of that production day. Production will remain suspended until the problem is identified and corrected. Each time production is suspended, corrective actions will be proposed in writing by FRMG. Production will not be allowed to resume until the proposed corrective actions have been accepted by the IQCM in writing.

When production resumes, FRMG will profile the day's paving. The conditions above for suspension of work will apply.

2. The finished transverse and longitudinal surface elevation of the pavement will be measured using a 10-foot straightedge. Areas to be measured will be directed by the IQCM. FRMG will furnish an approved 10-foot straightedge, depth gauge and operator to aid the IQCM in testing the pavement surface. Areas showing high spots of more than 3/16 inch in 10 feet will be marked and diamond-ground until the high spot does not exceed 3/16 inch in 10 feet.
3. No more than five Working Days prior to the IQC's Initial Acceptance (Smoothness Acceptance (SA)) Testing, FRMG will profile each lane three times following the procedures in subsection 105.08 (b). One profile will be collected in the morning (~6:00 am to 10:00 am), one profile will be collected mid-day (~12:00 pm to 4:00 pm) and one profile will be collected in the evening (~6:00 pm to 10:00 pm). The Contractor will submit the data electronically to the IQCM. FRMG will use this data to determine the best time of day for IQC to perform SA testing.

(b) Initial Smoothness Acceptance Testing.

IQC will perform Smoothness Acceptance Testing which will be used for acceptance and corrective action.

1. Longitudinal Pavement Surface Smoothness Acceptance. Pavement surfaces will be tested and accepted for longitudinal smoothness as described herein.
   A. Testing Procedure (General).
   The longitudinal surface smoothness of the final pavement surface will be tested by IQC in accordance with CP 74 and using an approved high-speed profiler (HSP).

   FRMG will lay out a distance calibration site. The distance calibration site will be located no more than 10 miles from the Project limits. The distance calibration site will be 1056 feet long and will be on a relatively flat, straight section of pavement as approved by the IQCM. The site will have a speed limit equal to the Project's highest speed limit that allows for the HSP to operate uninterrupted. The limits of the site will be clearly marked and the distance will be measured to an accuracy of +/- 3 inches. The Contractor will provide in writing the site location to the IQCM.

   The entire length of each through lane, climbing lane and passing lane including bridge approaches, bridge decks and intersections from the beginning to the end of the Project will be profiled in their planned final configuration. Shoulders with a width of 12 feet or greater, ramps, tapers, turn slots, acceleration lanes and deceleration lanes will be profiled Shoulders with a width of 12 feet or more, ramps, tapers, turn

slots, acceleration lanes, and deceleration lanes will be evaluated for MRI and will require corrective work if a 0.10 mile or fraction thereof section exceeds an MRI greater than 100.0 in/mile. The profile of the entire length of a lane will be taken at one time. However, the IQCM may break the Project into sections to accommodate Project phasing.

A sufficient distance will be deleted from the profile to allow the profiler to obtain the testing speed plus a 300-foot distance to stop and start when required. The final surface of these areas will be tested in accordance with subsection 105.08(a) 2.

Shoulders less than 12 foot in width and medians constructed as part of this Project will be measured in accordance with subsection 105.08(a) 2.

The profile will include transverse joints when pavement is placed by the Project on both sides of the joint. When pavement is placed on only one side of the joint, the profile will start and stop at Project paving limits.

The profile of the section of pavement 25 feet outside the paving limits to 5 feet inside paving limits will be evaluated in accordance with subsection 105.08(a) 2.

The profile of the area 25 feet each side of every railroad crossing, cattle guard, bus pad, manhole, gutter pan and intersection (where there is a planned breakpoint in the profile grade line in the direction of traffic) will be deleted from the profile before the MRI is determined. Areas deleted from the profile will be tested in accordance with subsection 105.08(a) 2.

When both new pavement and a new bridge or new bridge pavement are being constructed in a Project, the profile of the area 25 feet each side of the bridge deck will be deleted from the profile before the MRI is determined. Areas deleted from the profile will be tested in accordance with subsection 105.08(a) 2. For all other projects, the profile of the area 25 feet each side of the bridge deck will be deleted from the profile before the MRI is determined. Smoothness Testing Procedures.

FRMG will submit a Method for Handling Traffic (MHT) to the IQCM for approval at least 10 days in advance of SA testing. The MHT will detail the methods for traffic control that will allow for continuous non-stop profiling of each lane to be profiled at a minimum speed of 15 mph and for the placement of triggers. FRMG will provide the traffic control in accordance with the approved MHT. SA testing will not be performed without an approved MHT

FRMG will mark the profiling limits and excluded areas. The IQCM will verify that FRMG's marks are located properly. The IQCM will use traffic cones with reflective tape or reflective tape on the pavement at the beginning and end of each lane for triggering the start and stop locations on the profiler and at any other location, where portions of the profile are being excluded. FRMG will provide sufficient traffic control for the Department to safely place the traffic cones or reflective tape.

The ambient temperature will be at least 34 °F for the profiler to operate.

FRMG will clear the lanes to be tested of all debris before profiling.

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Each lane will be profiled at least once. Profiling will be at a constant speed (+/- 5 mph of the distance calibration speed) with a minimum speed of 15 mph and a maximum speed of 70 mph. Shoulders with a width of 12 feet or more, ramps, tapers, turn slots, acceleration lanes and deceleration lanes will be profiled**.** The profile will be taken in the planned direction of travel. The left and right wheel paths will be profiled simultaneously. The collected profiles will be analyzed using CP 74.

The IQCM will determine a MRI for each 0.1 mile section or fraction thereof of completed pavement. The MRI consists of the left and right wheel path's profile passed through the International Roughness Index (IRI) filter. The IRI for the left and right wheel paths will be averaged to determine MRI.

The SA test results will be available within 10 Working Days of the completion of SA testing. The IQCM will give FRMG a report that will include the lane profiled, the MRI in 0.10 mile increments and a summary of areas requiring corrective work. SA test results will be filled in Aconex as a quality record. The IQCM may determine that it is necessary to re-profile a lane.

Areas requiring corrective work will be determined according to subsection 105.08(c)

Sections less than 0.005 miles in length will not be subject to corrective work as specified by Table 105-10. Sections less than 0.005 miles in length will be evaluated in accordance with subsection 105.08(a) 2.

B. Acceptance for pavement smoothness will be made on a square yard basis in accordance with the following:

Table 105-10
PCCP SMOOTHNESS (INCHES/MILE)
CORRECTIVE WORK CRITERIA (INCHES/MILE)
0.005 TO 0.10 MILE SECTIONS
MEAN ROUGHNESS INDEX

Pavement Smoothness Category	Corrective Work Required D = Section Length (miles)
I	MRI > 0.9318 (134.32 - 463.16 D)
II	MRI > 0.9390 (125.16 - 431.58 D)
III	MRI > 148.05 - 510.53 D

The adjustment factors applied to pavement smoothness categories I and II reflect the deviation from the CDOT standard specification to the requirements in the final RFP (Addendum 1). The adjustment factors were determined as follows:

- Pavement Smoothness Category I: Standard Spec limit/RFP limit = 82/88 = 0.9318

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- Pavement Smoothness Category II: Standard Spec limit/RFP limit = 77/82 = 0.9390

(c) Corrective Work.
The IQCM will analyze the SA testing for acceptance and indicate areas requiring corrective work in accordance with subsection 105.08(b). Corrective work will be proposed in writing by FRMG. Corrective work will not be performed until approved in writing by the IQCM. FRMG will perform corrective work in the areas indicated by the SA testing.

FRMG will profile the roadway pavement to demonstrate the required corrective work has been completed.

The criteria for determining if a 0.1-mile section requires corrective work is specified in Table 105-10. The criteria for determining if a section less than 0.10 miles in length and greater than 0.005 miles in length requires corrective work is specified in Table 105-11.

Corrective work will consist of diamond grinding. Grinding will not reduce planned pavement thickness by more than 0.3 inches. Diamond grinding will be the full width of a wheel path, the wheel path is from the stripe to the center of the lane. When any grinding on concrete pavement occurs where a core for determining pavement thickness has been previously taken, another core will be taken after the grinding has been completed and will replace the original core in the calculation of pavement thickness. Joint sealant that has been damaged by grinding on concrete pavement will be repaired or replaced in accordance with Standard Plan M-412-1 and subsection 412.18. Cores will be taken to verify that minimum pavement thicknesses have been maintained. A minimum of one core will be taken every 100 cumulative feet or fraction thereof per lane of diamond grinding, as directed by the IQCM.

The grinding process will produce a pavement surface that is true to grade and uniform in appearance. The grooves will be evenly spaced. Any ridges on the outside edge next to the shoulder, auxiliary, ramps or adjacent lanes greater than 3/16-inch-high will be feathered out to the satisfaction of the IQCM in a separate, feather-pass operation.

The pavement surface after grinding will have no depressions or misalignment of slope in the longitudinal direction exceeding 1/8 inch in 12 feet when measured with a 12-foot straightedge placed parallel to the centerline.

Diamond-ground surface texture will be considered acceptable when the average texture depth (ATD) of the panel is greater than 0.05 inch. FRMG will perform surface texture testing in accordance with CP 77 Method B. Each area in a lane that required diamond grinding will be tested at least once. Areas in a lane with more than 500 continuous feet of grinding will be tested at a frequency of one test per 500 linear feet. Areas with deficient surface texture will be diamond-ground and retested.

The slurry and residue resulting from the grinding operation will not be allowed to flow across lanes occupied by the traffic and will be continuously removed during the grinding operation, leaving the pavement in a clean condition. FRMG will haul the grinding residue to a suitable location at an approved location at no additional cost.

(d) *Final Smoothness Acceptance Testing.*

After FRMG has completed the required corrective work the IQCM will retest the pavement in accordance with subsection 105.08(b). Final SA testing will only be required on lanes with sections requiring corrective work. Final SA testing will start and stop at the same locations as the Initial SA testing. If additional corrective work is required, FRMG will perform the corrective and additional Final SA testing will be performed by the IQCM.

FRMG will notify the IQCM pursuant to 105.08(b) to schedule the Final SA testing.

Those sections requiring corrective work indicated by the Initial SA testing will be re-evaluated.

Asphalt Pavement Smoothness

FRMG uses Section 105 of the Standard Specifications as a guide for the Project specification Asphalt Pavement Smoothness.

105.07 Conformity to Roadway Smoothness Criteria of HMA.

Roadway smoothness testing and corrective work will be performed as described below. The pavement smoothness category will be MRI Category II unless shown on the plans. Pavement smoothness category based on the CDOT's Design Bulletin guidelines for assigning pavement smoothness categories.

https://www.codot.gov/business/designsupport/bulletins_manuals/design-bulletins/.

(a) Smoothness Quality Control Testing.

FRMG will perform Smoothness Quality Control (SQC) testing. The test results will be submitted to the IQCM within 48 hours of completion. SQC test results will show the Mean Roughness Index (MRI) for each 0.10 mile.

SQC testing will be performed on the first 2,000 tons for the final layer.

SQC testing will be performed using FRMG's inertial profiler, pursuant to the methods described in subsection 105.07(b) and in accordance with the manufacturer's recommendations. FRMG's Profiler will be certified according to CP 78.

Production will be suspended if SQC testing indicates that corrective work is required in accordance with subsection 105.07 (c). If the SQC data becomes available after production has started for the day, suspension will begin at the end of that production day. Production will remain suspended until the problem is identified and corrected. Each time production is suspended, corrective actions will be proposed in writing by FRMG. Production will not be allowed to resume until the proposed corrective actions have been accepted by the IQCM in writing.

When production resumes, FRMG will profile the first 2,000 tons of HMA. The conditions above for suspension of work will apply.

2. The finished transverse and longitudinal surface elevation of the pavement will be measured using a 10-foot straightedge. Areas to be measured will be directed by the IQCM. FRMG will furnish an approved 10-foot straightedge, depth gauge and operator to aid the IQCM in testing the pavement surface. Areas showing high spots of more than 3/16 inch in 10 feet will be marked and diamond-ground until the high spot does not exceed 3/16 inch in 10 feet.

(b) *Initial Smoothness Acceptance Testing.*
FRMG will perform Smoothness Acceptance Testing (SA) which will be used for acceptance and corrective action.

1. Longitudinal Pavement Surface Smoothness Acceptance.
   Pavement surfaces will be tested and accepted for longitudinal smoothness as described herein.

   A. Testing Procedure (General).
   The longitudinal surface smoothness of the final pavement surface will be tested by FRMG in accordance with CP 74 and using FRMG's high-speed profiler (HSP). The Contractor's Profiler will be certified according to CP 78.

   The HSP instrumentation will be verified in accordance with CP 74 prior to measurements. FRMG will lay out a distance calibration site. The distance calibration site will be located no more than 10 miles from the Project limits. The distance calibration site will be 1056 feet long and will be on a relatively flat, straight section of pavement as approved by the IQCM. The site will have a speed limit equal to the Project's highest speed limit that allows for the HSP to operate uninterrupted. The limits of the site will be clearly marked and the distance will be measured to an accuracy of +/- 3 inches. FRMG will provide in writing the site location to the IQCM.

   The entire length of each through lane, climbing lane, and passing lane including bridge approaches, bridge decks and intersections from the beginning to the end of the Project will be profiled in their planned final configuration. Shoulders less than 12 foot in width and medians will not be profiled. Shoulders with a width of 12 feet or greater, ramps, tapers, turn slots, acceleration lanes and deceleration lanes will be profiled, but will not be subject to corrective action. Shoulders with a width of 12 feet or more, ramps, tapers, turn slots, acceleration lanes and deceleration lanes will be evaluated for MRI and will require corrective work if a 0.10 mile or fraction thereof section exceeds an MRI greater than 100.0 in/mile. The profile of the entire length of a lane will be taken at one time. However, the IQCM may break a project into sections to accommodate Project phasing.

   A sufficient distance will be deleted from the profile to allow the profiler to obtain the testing speed plus a 300-foot distance to stop and start when required. The final surface of these areas will be tested in accordance with subsection 105.07(a) 2.

   Shoulders less than 12 foot in width and medians constructed as part of this Project will be measured in accordance with subsection 105.07(a) 2.

   The profile will include transverse joints when pavement is placed by the Project on both sides of the joint. When pavement is placed on only one side of the joint, the profile will start and stop at Project paving limits.

   The profile of the section of pavement 25 feet outside the paving limits to 5 feet inside paving limits will be evaluated in accordance with subsection 105.07(a) 2.

The profile of the area 25 feet each side of every railroad crossing, cattle guard, bus pad, manhole, gutter pan and intersection (where there is a planned breakpoint in the profile grade line in the direction of traffic) will be deleted from the profile before the MRI is determined. Areas deleted from the profile will be tested in accordance with subsection 105.07(a) 2.

When both new pavement and a new bridge or new bridge pavement are being constructed in a project, the profile of the area 25 feet each side of the bridge deck will be deleted from the profile before the MRI is determined. Areas deleted from the profile will be tested in accordance with subsection 105.07(a) 2. For all other projects, the profile of the area 25 feet each side of the bridge deck will be deleted from the profile before the MRI is determined.

FRMG will notify the IQCM in writing at least five Working Days in advance of his intention to perform SA testing. FRMG will profile the Project within 14 days after the completion of paving operations. The IQCM will witness the SA profiling. Within 24 hours after each profile is collected, FRMG will submit the data to the IQCM.

FRMG will not perform any corrective work that will affect the pavement smoothness for 10 Working Days after completion of the SA testing or as approved by the IQCM. This time is to allow for the IQCM to analyze the data and perform smoothness verification testing.

B. Smoothness Testing Procedures.
FRMG will submit a Method for Handling Traffic (MHT) to the IQCM for approval at least five days in advance of SA testing. The MHT will detail the methods for traffic control that will allow for continuous non-stop profiling of each lane to be profiled at a minimum speed of 15 mph and for the placement of triggers. FRMG will provide the traffic control in accordance with the approved MHT. SA testing will not be performed without an approved MHT

FRMG will mark the profiling limits and excluded areas. The IQCM will verify that FRMG's marks are located properly. FRMG will use traffic cones with reflective tape or reflective tape on the pavement at the beginning and end of each lane for triggering the start and stop locations on the profiler and at any other location, where portions of the profile are being excluded. These locations will be marked with temporary paint so that the IQC's profiler uses the same locations for smoothness verification testing.

The ambient temperature will be at least 34°F for the profiler to operate.

FRMG will clear the lanes to be tested of all debris before profiling.

Each lane will be profiled at least once. Profiling will be at a constant speed (+/- 5 mph of the distance calibration speed) with a minimum speed of 15 mph and a maximum speed of 70 mph. Shoulders with a width of 12 feet or more, ramps, tapers, turn slots, acceleration lanes and deceleration lanes will be profiled**.** The profile will be taken in the planned direction of travel. The left and right wheel paths will be profiled simultaneously. The collected profiles will be electronically submitted to the IQCM to be analyzed using CP 74.

(1) The Department will determine a MRI for each 0.1-mile section or fraction thereof of completed pavement. The MRI consists of the left and right wheel path's profile passed through the International Roughness Index (IRI) filter. The IRI for the left and right wheel paths will be averaged to determine MRI. FRMG's SA test results will be available within 10 Working Days of the completion of SA testing. The IQCM will give FRMG a report that will include the lane profiled, the MRI in 0.10 mile increments and a summary of areas requiring corrective work. The IQCM may determine that it is necessary for FRMG to re-profile a lane.

Areas requiring corrective work will be determined according to subsection 105.07(c)

Sections less than 0.005 miles in length will not be subject to corrective work as specified by Table 105-10. Sections less than 0.005 miles in length will be evaluated in accordance with subsection 105.07(a) 2.

C. Acceptance and corrective action for pavement smoothness will be made on a square yard basis in accordance with the following:

Acceptance will be based on the MRI for each 0.1-mile section or fraction thereof. Acceptance for Pavement Smoothness will be made in accordance with Table 105-6**.**

Acceptance will not be made until all sections requiring corrective work have been corrected.

Table 105-6
HMA PAVEMENT SMOOTHNESS (INCHES/MILE)
MEAN ROUGHNESS INDEX

Pavement Smoothness Category	Acceptable Smoothness	Corrective Work Required
I	MRI ≤ 87.89	MRI > 88.0
II	MRI ≤ 81.9	MRI > 82.0
III	MRI ≤ 96.9	MRI > 97.0

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Table 105-7
CORECTIVE WORK CRITERIA (INCHES/MILE)
0.005 to 0.10 MILE SECTIONS
MEAN ROUGHNESS INDEX

Pavement Smoothness Category	Corrective Work Required D = Section Length (miles)
I	MRI >134.32 – 463.16 D
II	MRI > 125.16 – 431.58 D
III	MRI > 148.05 – 510.53 D

(c) *Corrective Work.*

The IQCM will analyze the SA testing for acceptance and indicate areas requiring corrective work in accordance with subsection 105.07(b). Corrective work will be proposed in writing by FRMG. Corrective work will not be performed until approved in writing by the IQCM. FRMG will not perform any corrective work on the final layer until after the IQCM returns the results of the Initial Smoothness Acceptance testing and after the Department's Smoothness Verification testing, if performed. FRMG will perform corrective work in the areas indicated by the SA testing.

Corrective work on lower layers will be at FRMG's discretion.

FRMG will profile the roadway to demonstrate the required corrective work has been completed.

The criteria for determining if a 0.1-mile section requires corrective work is specified in Table 105-6. The criteria for determining if a section less than 0.10 miles in length and greater than 0.005 miles in length requires corrective work is specified in Table 105-7

A. Corrective Methods.
Corrective work will consist of diamond- grinding, an approved overlay, or removal and replacement.

Corrective work will conform to of one of the following conditions:

(1) Removal and Replacement. The pavement requiring corrective work will be removed, full width of the lane and the full thickness of the layer in accordance with subsection 202.09. The removal area will begin and end with a transverse butt joint, which will be constructed with a transverse saw cut perpendicular to centerline. Replacement material will be placed in sufficient quantity so the finished surface conforms to grade and smoothness requirements. Sections removed and replaced will be at least 0.20 miles in length.

(2) Overlay. The overlay will cover the full width of the pavement including shoulders. The area overlaid will begin and end with a transverse butt joint, which will be constructed with a transverse saw cut and asphalt removal. All material will be

approved hot bituminous mixtures that meet all contract requirements. The overlay will be placed so that the finished surface conforms to grade and smoothness requirements. The overlay area will be compacted to the specified density. The overlay thickness will be equivalent to that of the final layer in accordance with the contract. Sections overlaid will be at least 0.20 miles in length.

Diamond Grinding. Grinding will not reduce planned pavement thickness by more than 0.3 inches. Diamond grinding will be the full width of a wheel path, the wheel path is from the stripe to the center of the lane. The entire ground area of the final pavement surface will be covered with a Tack Coat conforming to Section 407 (CSS-1h at 0.1 gallons per square yard of diluted emulsion; the emulsion will be diluted with water at the rate of 50% water and 50% emulsion) when grinding is complete. The grinding process will produce a pavement surface that is true to grade and uniform in appearance. The grooves will be evenly spaced. Any ridges on the outside edge next to the shoulder, auxiliary, ramps or adjacent lanes greater than 3/16-inch-high will be feathered out to the satisfaction of the IQCM in a separate, feather-pass operation.

The pavement surface after grinding will have no depressions or misalignment of slope in the longitudinal direction exceeding 1/8 inch in 12 feet when measured with a 12-foot straightedge placed parallel to the centerline. All areas of deviation will be reground at no additional cost.

The slurry and residue resulting from the grinding operation will not be allowed to flow across lanes occupied by the traffic and will be continuously removed during the grinding operation, leaving the pavement in a clean condition. FRMG will haul the grinding residue to a suitable location at an approved location

Cores will be taken to verify that minimum pavement thicknesses have been maintained. A minimum of one core will be taken every 100 cumulative feet or fraction thereof per lane of diamond grinding, as directed by the IQCM. *Final Smoothness Acceptance Testing.*

After FRMG has completed the required corrective work FRMG will retest the pavement in accordance with subsection 105.07(b). Final SA testing will only be required on lanes with sections requiring corrective work. Final SA testing will start and stop at the same locations as the Initial SA testing. If additional corrective work is required, FRMG will perform the corrective work and perform additional Final SA testing.

FRMG will notify the IQCM pursuant to 105.07(b) to schedule the Final SA testing.

Those sections requiring corrective work indicated by the Initial SA testing, will be re-evaluated.

(d) *IQC Smoothness Verification Testing (SV).*

The IQCM may choose to perform smoothness verification (SV) testing using the IQC's inertial profiler, with the methods described in subsection 105.07(b). The IQCM will notify FRMG of the IQC's intention to perform SV testing.

MRI Category IV: HMA Recycling Treatments Thin Lifts and Urban Rehabilitation Treatments Smoothness Criteria.

For MRI Category IV pavements, the following will be used for acceptance:

An MRI for each 0.1-mile section will be determined on the original pavement surface prior to beginning the work.

An MRI for each 0.1-mile section will be determined on the pavement surface after the work is complete.

When a 0.1-mile section has a final MRI greater than 92.0 in/mile and the final MRI is greater than the MRI prior to performing the work, that 0.1-mile section will be corrected by a method approved in writing by the IQCM. Corrective work will be such that the resulting final MRI is equal to or less than the initial MRI or 92.0 in/mile, whichever is greater.

The pavement smoothness for HMA Recycling Treatments and Thin Lifts that will be overlaid with a final riding surface will not be evaluated by the IQCM for Smoothness acceptance.

FRMG will require paving contractors to submit a detailed paving plan for review and approval by the IQCM. Paving operations will not commence without acceptance of the paving plan by the IQCM. Paving plans will address the following:

- Procedures for monitoring, minimizing and correcting for lane to lane roughness variation
- Procedures for the control of segregation in HMA paving and process to address unacceptable segregation that includes, at a minimum, a Stop Work provision and root-cause analysis prior to restart
- Procedures for dowel bar placement and Magnetic Imaging Tools (MIT) testing and auditing, including FRMG's obligation to provide additional test sections for MIT testing and auditing at the Department's discretion
- A portland cement concrete pavement (PCCP) plan for addressing noted issues with performance and procedures to correct such issues

4.5 Quality Hold Points

4.5.a Quality Hold Points

Procedure CQP-0301 Construction Quality Hold Points describes the responsibilities and process to administer and document established Quality Hold Points to assure compliance with Project plans and specifications prior to moving forward with construction.

The procedure has been developed to ensure that timely notification is provided to IQC and the Department for the performance of required IQC and Department inspections, sampling and/or testing prior to start of the next operation that may cover or conceal existing work, such as:

- Reinforcement and embedded items prior to concrete placement
- Succeeding lifts of embankment

- Base
- Pavement
- Asphaltic concrete

Definitions

Quality Hold Point: An established point in the construction process at which an IQC inspection, sampling and/or testing must be made and documented as passing prior to proceeding to the next phase of construction. The last opportunity for an element of work to be inspected, sampled, and/or tested prior to being concealed.

Responsibilities

The PQM ensures that this procedure is implemented and that the Department receives adequate notification that a Quality Hold Point has been reached.

The CPCM or designee will be responsible developing Quality Hold Points, making sure they are recognized in the field, providing sufficient daily notice of the need for inspection to the IQCM for response, and reviewing their effectiveness

The IQCM is responsible for developing Quality Hold Points, scheduling IQC inspection or testing of the Quality Hold Point, and reviewing their effectiveness.

The IQC Inspector or Technician will be responsible for performing the necessary inspections and upon successful completion releasing the Quality Hold Point.

Procedure

The IQCM or designee will identify the specific Quality Hold Point sand schedule the appropriate inspection or testing. Identification of Quality Hold Point swill occur at readiness review meetings (CQP-0230 PC Inspection Process). Hold/control points may be added as deemed necessary to control the quality of Work by either the CPCM or the IQCM.

The CPCM will notify the IQCM and the Department of upcoming Quality Hold Point so that proper testing and inspection can be performed.

IQC Staff will perform Quality Hold Point inspection, sampling and /or testing in accordance with defined procedures, standards, or specifications. IQC checklists, test reports, logs or pre-pour signoff cards may be completed at each Quality Hold Point as a record of inspection, sampling and/or testing. Quality records associated with Quality Hold Points may or may not specifically identify the Quality Hold Point. Often an entire checklist, multiple checklists, or multiple record types may be required at a Quality Hold Point. However, checklist items verified within the ELVIS system are easily identified as a Quality Hold Point verification. ELVIS provides a searchable Quality Hold Point inspection log, as shown in **Figure 5**.

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Figure 5. Quality Hold Point Inspection Log Example.

Hold Point Search

Date of Inspection:
From: To:
HoldPoint No:
HoldPoint Status:
Subject:
Design Unit:
Location:
Sub-location:
ITP (root): 0144
Activity:
Search

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#	HoldPoint No.	Date of Inspection	Subject	Design Unit	Location	Sub-Location	ITP	Activity	Status	DWR-OP	Files
1	HP-00001	12/19/2013	Welding	11	Pier 32 EB/WB	014	TZC-0144-03	Welding inspection	Closed	QC029131219-1	1 file(s)
2	HP-00002	12/20/2013	Welding	11	Pier 32 EB/WB	015	TZC-0144-03	Welding Inspection	Closed	QC029131220-1	1 file(s)
3	HP-00003	12/27/2013	Welding	11	Pier 32 EB/WB	016	TZC-0144-03	Welding Inspection	Closed	QC029131227-1	1 file(s)
4	HP-00005	1/17/2014	Welding	11	Pier 31 EB/WB	015	TZC-0144-03	Welding Inspection, UT NDT	Closed	QC022140117-8 more	
5	HP-00007	12/16/2013	Welding	11	Pier 31 EB/WB	019	TZC-0144-03		Closed	QC032131216-2	1 file(s)
6	HP-00008	12/18/2013	Welding	11	Pier 31 EB/WB	024	TZC-0144-03		Closed	QC032131218-2	2 file(s)
7	HP-00009	12/19/2013	Welding	11	Pier 31 EB/WB	019	TZC-0144-03		Closed	QC032131219-3	1 file(s)
8	HP-00010	12/20/2013	Welding	11	Pier 31 EB/WB	023	TZC-0144-03		Closed	QC032131220-1	1 file(s)
9	HP-00011	1/2/2014	Welding	11	Pier 32 EB/WB	010	TZC-0144-03	Welding inspection	Closed	QC029140102-1	1 file(s)
10	HP-00012	12/16/2013	Welding	11	Pier 32 EB/WB	012	TZC-0144-03		Closed	QC002131216-1	1 file(s)
11	HP-00013	12/16/2013	Welding	11	Pier 32 EB/WB	013	TZC-0144-03		Closed	QC002131216-2	1 file(s)
12	HP-00014	12/16/2013	Welding	11	Pier 31 EB/WB	019	TZC-0144-03		Closed	QC002131216-3	1 file(s)
13	HP-00015	12/18/2013	Welding	11	Pier 32 EB/WB	013	TZC-0144-03		Closed	QC002131218-1	1 file(s)
14	HP-00016	12/19/2013	Welding	11	Pier 31 EB/WB	019	TZC-0144-03		Closed	QC002131219-3	1 file(s)
15	HP-00017	12/20/2013	Welding	11	Pier 32 EB/WB	015	TZC-0144-03		Closed	QC002131220-1	1 file(s)
16	HP-00018	12/26/2013	Welding	11	Pier 32 EB/WB	015	TZC-0144A-00		Closed	QC002131226-1	1 file(s)
17	HP-00019	12/13/2013	Welding	11	Pier 32 EB/WB	011	TZC-0144-03	7A, 7B, 7C	Closed	QC009131213-1 more	1 file(s)
18	HP-00021	12/13/2013	Welding	11	Pier 32 EB/WB	012	TZC-0144-03	Ultrasonic Testing	Closed	QC032131213-2	1 file(s)
19	HP-00022	12/27/2013	Welding	11	Pier 31 EB/WB	019	TZC-0144-03	Welding Inspection, UT NDT	Voided	QC032131227-1	2 file(s)
20	HP-00023	12/27/2013	Welding	11	Pier 31 EB/WB	020	TZC-0144-03	Welding Inspection, UT NDT	Closed	QC032131227-2 more	2 file(s)

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The following list of Quality Hold Points established for the Project may not represent all elements of work and may be revised as needed to address work elements requiring Quality Hold Points. Quality Hold Points will be generated in time to be presented at readiness review meetings. During surveillances and audits, the effectiveness of assigned Quality Hold Points will be reviewed. The CPCM or IQCM may add, delete, or change a Quality Hold Point as needed and notify FRMG and the Department of any changes.

Below is a list of Quality Hold Points for the Project, which includes but is not limited to the list of Quality Hold Points provided by the Department in Schedule 8, Section 6.4.5.a.i. through 6.4.5.a.v.

4.5.a.i Environmental

A. After the establishment of Water Quality BMPs and prior to initial ground disturbance
B. Upon completion of surveys for nesting birds and protected species, prior to ground disturbance, in accordance with Project Special Provision 240, Schedule 17 Environmental Requirements
C. Upon completion of protection of environmental resources, in accordance with Schedule 17 Environmental Requirements, where fencing or other appropriate protection mechanism is required, prior to ground disturbance
D. At the end of each month to review FRMG's weekly and post-storm inspections

4.5.a.ii Embankments

A. After the completion of drainage and utility relocations and prior to backfill
B. After clearing, grubbing, and excavation to check subgrade
C. Per specifications for lift requirements at five-foot intervals of embankment construction
D. After the completion of mechanically stabilized earth (MSE) wall panel placement
E. At the completion of embankment placement

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4.5.a.ii.1 Roadway Subbase/Base

A. Density testing based on the frequency requirements provided by the appropriate municipality/owner

4.5.a.iii Structures

A. At the completion of placement for bridge deck reinforcement and prior to the placement of concrete
B. At the completion of placement for abutment wall reinforcement and prior to the placement of concrete
C. After the completion of pile-driving at each structure support, including pile-driving results and records
D. At the completion of placement for footing reinforcement steel and prior to the placement of concrete
E. At the completion of excavation for drilled shaft foundations and prior to concrete placement
F. After setting rails for screed machine and prior to placing concrete overlays
G. After the completion of the first component to receive specified aesthetic wall treatment/form liner and prior to proceeding with the construction of subsequent components
H. After the completion of every 500 feet of noise wall posts and panels

4.5.a.iii.1 Drilled Shaft

A. Prior to concrete placement:
   - Measurement for minimum depth of hole
   - Minimum embedment into bedrock confirmed
   - Cleanliness of hole
   - Hole free of water or means provided for wet shaft placement
   - Reinforcing steel cage inspected, approved and placed correctly
   - Protruding rebar, imbeds and /or CSL tubes in the correct location
B. Concrete testing at a frequency of one set of tests per 100 cubic yards or fraction thereof, or as otherwise specified
   - If air entrainment is required: Test first three trucks for air, slump, temperature, and unit weight, then one set of tests for every 50 cubic yards thereafter with one set of cylinders cast for strength testing every 100 cubic yards or fraction thereof

4.5.a.iii.2 Driven Piles

A. Prior to driving pile:
   - Verify that pile size and type are in accordance with Project plans
B. Splices properly field-welded or commercial splices fastened in accordance with manufacturer's recommendations
C. Minimum depth and refusal criteria confirmed prior to the next phase of work
D. After the completion of pile-driving at each structure support, including pile-driving results and records

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4.5.a.iii.3 MSE Walls

A. Panel procurement and receiving inspection
B. After the completion of mechanically stabilized earth (MSE) wall panel placement
C. Coping procurement and receiving inspection

4.5.a.iii.4 Bridge Girder Set

A. Prior to setting girders
    - Receiving inspection of girders prior to setting

4.5.a.iii.5 Structural Coating

A. Prior to coating
    - Pre-coating inspection/approval of structure

4.5.a.iv Utilities

A. After the installation of direct-burial duct banks and prior to backfill operations
B. For concrete-encased duct banks, after the installation of conduits and prior to the placement of concrete
C. For all Utility lines intended to transport pressurized materials and lines intended to carry liquids, after the installation and prior to the completion of pressure testing

4.5.a.iv.1 Storm Sewer and Culvert Installation

A. Strength verified to meet specifications for cast-in-place prior to backfill operations
B. Density testing of backfill based on frequency requirements provided by the appropriate municipality/owner

4.5.a.v Paving and Sidewalks

A. Before the placement of each course above subgrade on permanent roadway components
B. Before the placement of each lift of asphalt or Portland cement concrete
C. Prior to the placement of concrete for sidewalks

4.5.a.v.1 Asphalt Paving

A. Prior to paving:
    - Proof roll of subgrade
    - Subgrade free from frost and grade verified
B. In-place density testing at frequency based on the requirements provided by the appropriate municipality/owner

4.5.a.v.2 Concrete Paving

A. Prior to paving:
    - Proof roll of subgrade
    - Subgrade free from frost and grade verified
B. Concrete tests based on the frequency requirements provided by the appropriate municipality/owner

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C. Required strength achieved prior to opening pavement construction equipment or traffic

4.5.a.v.3 Sidewalks

A. Prior to placing concrete:
   - Subgrade approved and not frozen
B. Concrete tests based on the frequency requirements provided by the appropriate municipality/owner

4.5.a.v.4 Curb and Gutter

A. Concrete tests based on the frequency requirements provided by the appropriate municipality/owner

4.5.a.vi ITS and Tolling

A. After the completion of the requirements identified in each of Schedule 10, Sections 3.5.7, 3.5.8 and 3.5.9, and prior to the ETC System Integrator's work
B. After completion of staking for ITS and tolling locations and prior to installation, per Schedule 10, Section 3.8.8.a.i
C. After installation of manhole, pull box, or conduit and prior to backfilling
D. After installation of sign structures, pole and mounting brackets; and prior to installation of ITS devices
E. After fiber installation and prior to fiber splicing or cutover, per Schedule 10, Section 3.8.8.b.iii and 3.8.26.a

4.5.a.vii Cover (Similar for Both West Bound Lanes and East Bound Lanes)

4.5.a.vii.1 Electrical/ITS

A. After rough-in of electrical conduit for AHJ inspection.
B. Prior to closing up the girder area with the Cover top.
C. Final electrical system inspection by AHJ
D. Start-up
E. Commissioning

4.5.a.vii.2 Mechanical

A. Prior to closing up the girder area with the Cover top
B. Final inspection by AHJ
C. Start-up
D. Commissioning

4.5.a.vii.3 Fire Protection

A. After rough-in of fire sprinkler piping
B. Pressure testing of sprinkler piping for AHJ approval
C. Final inspection by AHJ
D. Start-up
E. Commissioning

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4.5.a.viii Cover Buildings, Pump Room and Plant Room

4.5.a.viii.1 Electrical/ITS

A. After rough-in of electrical conduit for AHJ inspection.
B. Final electrical system inspection by AHJ
C. Fire Marshal inspection of generator and above ground fuel tank for generator (for each of three generators)
D. Start-up
E. Commissioning

4.5.a.viii.2 Mechanical

A. After rough-in of CVS, HVAC, and mechanical/plumbing systems
B. Pressure testing of plumbing systems for AHJ approval
C. Final inspection by AHJ
D. Start-up
E. Commissioning

4.5.a.viii.3 Fire Protection

A. After rough-in of fire sprinkler piping
B. Pressure testing of sprinkler piping for AHJ approval
C. Final inspection by AHJ
D. Start-up
E. Commissioning

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4.6 Reporting and Record-Keeping of Quality Documentation

4.6.a Quality Records

The design quality records are produced as the design Work progresses. The records are in the form of checked drawings, checklists, QC reports, certification forms, and Review, Comment Summary and Resolution (RCSR) forms. The records are retained in the Lead Engineer's document control system until the RFC Documents are submitted to the Lead Contractor for entry in the overall Project document control system. The records will then be uploaded to the Department's Aconex document control system.

The IQCF will utilize the Engineering and Laboratory Vital Information System (ELVIS) as FRMG's primary Electronic Records Management System (ERMS) for receiving, storing, transmitting, and tracking documents, transmittals, submittals, and correspondence of quality records for the Project. The ELVIS system allows the IQCF to have real time access to plans, specifications, quality checklist, test reports, nonconformance reports, punch lists, and other quality documents in the field. The IQCF will use tablets and laptops computer to access this information remotely through the ELVIS system. The Department, stakeholders, Subcontractors, and other relevant entities can also be given the same permissions to access to this information remotely.

ELVIS is fully compatible with Aconex. ELVIS does not aim to replace Aconex as the Project's recognized document control system. Instead, ELVIS aims to:

- Enhance the performance of FRMG
- Be a more sustainable, "green" solution
- Reduce document control processing needs and personnel requirements
- Greatly increase the speed and efficiency of entering IQC test results into the Department's QRD
- Facilitate a means for the IQCF to review and approve electronic quality records prior to uploading into Aconex
- Provide real time data collection
- Provide real time access to plans and specifications

This ERMS is a proprietary product of Raba Kistner, Inc. (RK), which was developed for managing transportation/highway project-related quality documents and records. ELVIS is maintained by RK at no cost to the Department. Records are regularly uploaded from ELVIS to Aconex. Prior to final Acceptance of construction at the end of the design-build period, a verification that all records generated within ELVIS have been upload to Aconex will be performed.

The ELVIS system has a proven track record on FHWA design-build and P3 projects and was specifically designed by and for an independent quality assurance engineering firm on these types of projects. The ELVIS system is a web-based (server and cloud-based) system hosted and managed by RK. It is accessible through computers or tablet devices. It has access and

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security features enabling the control of quality information and data that, on other projects, satisfied FHWA requirements for owner agency use of such a system.

ELVIS is a secured web-based application with controlled user access, which is based on https protocol. Each user's level of access is controlled by individual security permissions to allow access appropriate for each user's position. ELVIS provides a variety of functions that are available based on users' security settings. These functions include daily inspection reports and test results, technical review of test results, engineer review of test results, material quantity tracking, minimum sampling and testing requirements (MS&TR) module, NCR tracking, mix designs, file storage, sharing, versioning, and transmittal and retrieval of documents in a read-only format. Individuals identified as recipient will receive a system generated email that provides notification that documents are ready for download. ELVIS will also populate a log to capture the individual, date, and time when the upload occurred. A powerful search engine is also available to assist in finding and retrieving relevant documents.

ELVIS also provides for use of a Controlled Vocabulary Language (CVL) to promote consistency within the database. These CVLs will be used by all persons creating records in ELVIS. The CVLs will be updated and maintained by RK within ELVIS.

Using ELVIS, daily inspection reports will be marked as a pass or fail and tracked to closure. Material quantities will be tracked and used to show that we are meeting the minimum testing requirements. Daily inspection reports include at a minimum:

- Factual evidence that an inspection or test has been performed
- Type of inspection or test performed
- Number of inspection and tests performed
- Inspection and test results
- Nonconforming Work identified and causes for rejection
- Remedial or Corrective Actions Taken
- Include conforming and Nonconforming Work elements

4.6.b Preparation, Maintenance, and Delivery of Quality Records

Upon completion of a quality record, FRMG's Quality Managers will review the document for completeness and accuracy and upload it to ELVIS for tracking and submittal to the Department. Construction IQC records will be originated by IQC Staff.

Typical QA Records include:

- Daily Inspection Reports
- Material Test Result Reports
- Inspection Logs
- Statistical Analysis Reports
- Material Variation Control Charts
- Lab Accreditation Certificates
- Lab Equipment Calibrations
- Manufacturers' Test Reports (Supplement)

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- Personnel Qualifications
- Nonconformance Report (NCR) generated by FRMG or IQC Staff
- Corrective Action Request (CAR)
- Preventative Action Request (PAR)

Records are handled in a manner to prevent deterioration, damage or loss.

4.6.c Submittal of All IQC Test Measurements and Test Results

Quality records are uploaded into ELVIS and transmitted to the appropriate FRMG Quality Managers for review and approval as applicable.

Quality records within ELVIS will be transferred to Aconex for final document retention. The Department will have access to quality records within Aconex and ELVIS. Reports are available for review as soon as FRMG Quality Manager approves the record. Test records, as directed by the Department will be uploaded to the Department's Quality Records Database (QRD) within 24 hours following the completion of the test.

Test reports are authorized by the technician and the technician's supervisor.

4.6.d Maintaining a Daily Log of All Inspections Performed for Both FRMG and Subcontractor Operations

As inspection records are uploaded into ELVIS, an inspection log is automatically generated.

Inspection records document the following requirements at a minimum:

- Apply to both FRMG and Subcontractor operations
- Inspections conducted
- Date of Inspection
- Inspection Results
- Location
- Nonconformances identified
- Causes of rejection
- Corrective Actions taken
- Consistent with CDOT's Field Materials Manual and Construction Manual

Inspection records are authorized by the inspector and the inspector's supervisor.

4.6.e Providing the Department with a Weekly Look Ahead of Specific Scheduled Construction Activities

FRMG will conduct a weekly construction scheduling meeting, which will provide the following information:

- Provide the Department with a weekly look ahead schedule
- Location of designated work to be performed
- Quantities of materials to be placed
- Protocols of identifying completed Work
- Summary of completed Work the previous week
- Locations and quantities of materials placed the previous week

5 Nonconformance Work

Included below is the construction quality procedure for nonconforming items (CQP-0103), which covers all of the items required under Schedule 8, Sections 6.5.1 through Section 6.5.5.

5.1 – 5.5 CQP-0103 Nonconforming Items

Purpose

This procedure applies to nonconforming items discovered during construction and will be used to guide FRMG in the preparation and resolution of nonconformance reports.

General

This procedure describes the methods and responsibilities for preventing the use or installation of nonconforming items when other control methods, inspection reports, and surveillance reports are considered inadequate. This procedure provides for the identification, documentation, evaluation, disposition, notification, segregation (prevention of use/installation), and re-inspection of those nonconforming items. Construction materials, constructed items or work elements and permanent equipment which are found not in conformance with the approved Project requirements, specifications, drawings, codes, and standards will require the generation of a Nonconformance Report (NCR) when any of the following conditions exist:

The material, equipment or constructed elements of the work cannot be repaired or reworked and retested or re-inspected to verify it meets Project requirements using normal work procedures or when other control methods and inspection/testing reports are considered inadequate to initiate correction and control of the problem or when the work has progressed passed a designated Quality Hold Point or requires design evaluation.

Examples of reworking under normal procedures, which would not require an NCR, include but are not limited to the following:

- Moisture conditioning and/or re-compacting fill or subgrade to meet the specifications
- Adjusting reinforcement to meet specifications before concrete placement
- Re-tightening bolts or installing missing bolts to meet specifications
- Rework that can be performed prior to the Nonconforming Work being covered, attached, or otherwise made not accessible without removing, destroying subsequent Work or rework of the Nonconforming Work (item) etc.
- Addition of air entraining agent to increase the percentage of air in concrete

These examples will be handled in accordance with CQP-0104-1_Deficiency_Log.

Definitions

Table 1 provides a summary of definitions.

Term	Definition
Nonconformance	Any item (material, part, product or process) that deviates from drawings, specifications, or other engineering requirements. The material, equipment or constructed elements of the work cannot be repaired or reworked and retested or re-inspected to verify it meets Project requirements using normal work procedures or when other control methods and inspection/testing reports are considered inadequate to initiate correction and control of the problem or when the work has progressed passed a designated Quality Hold Point or requires design evaluation.
Disposition	The decision determining how to resolve a nonconformance.
Reject	A disposition imposed on a nonconforming item when it is established that the discrepancy renders the item unfit for its intended use, and it is impractical or uneconomical to correct (Removed and Replaced). This disposition requires IQCM and the Department to verify the nonconforming item was removed from the Project and replaced with an item that conforms to the plans and specifications. The Department is made aware of the decision to reject the nonconforming item.
Remedy	The process by which a nonconforming item is made (Rework or Repair) to conform to the original requirements or a disposition which is applied to a nonconforming item when the item does not meet all specified requirements but will continue to meet its intended use and continue to meet applicable Code and functional requirements. This disposition requires an Engineer of Record, the Department, and any applicable third party review and approval. The IQCM and the Department will verify rework is per plans, specifications or engineer's direction.

Responsibilities

CPCM

1. Initiate NCRs for nonconforming Items of Work identified by the PC inspection personnel
2. Review proposed nonconformance and verify they are a valid nonconformance
3. Submit the NCR to the Construction Manager for disposition; who with FRMG will decide on disposition of NCRs
4. Ensure production staff understand and follow this procedure
5. Assist with root-cause analysis and proposed corrective actions
6. Communicate to FRMG Management NCR status and severity
7. Provide a monthly list of completed NCRs to FRMG for review

Construction Manager or Designee

1. Provide the suggested disposition
2. Provide a proposed correction action and root-cause analysis to prevent recurrence
3. Submit the NCR to the Engineer of Record for approval if applicable
4. Provide construction schedule for proposed reject, remedy, and/or corrective action

IQCM or IDQM

1. Initiate NCRs for nonconforming Items of Work identified by the IQC Inspection Personnel
2. Review proposed nonconformance and verify they are a valid nonconformance

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3. Assure nonconforming items at the site are controlled to prevent inadvertent use
4. Assist with root-cause analysis and proposed corrective actions
5. Verify acceptable completion of NCR per the approved disposition
6. Verify acceptable implementation/completion of corrective actions per the Corrective Action plan
7. Close NCRs
8. Submit NCR to the Department for concurrence

FRMG Engineer of Record

1. Review FRMG's proposed dispositions
2. Provide appropriate review, edits, calculation, instruction, etc. to support, modify, or reject the proposed disposition
3. Submit approved disposition to the FRMG Project Manager for concurrence with disposition

FRMG Project Manager

1. Review FRMG's proposed dispositions
2. Provide appropriate review, approval or reject the proposed disposition
3. Submit approved disposition to the Department for concurrence with disposition

PQM

1. Document completion of Nonconforming Work remedy
2. Document completion of corrective actions
3. Notify the Department of Nonconforming Work Remedy and corrective action completion

Department

1. Review proposed dispositions and provide concurrence
2. Perform inspections
3. Review IQCM documentation and closure of NCR
4. Verify acceptable completion of NCR per the approved disposition
5. Verify acceptable implementation/completion of corrective actions per the Corrective Action plan
6. Provide concurrence with closure of NCR

Procedure

Reporting Nonconforming Items of Work:

Personnel who determine that an item is nonconforming will record (or request the responsible inspection organization to record) the condition on an NCR.

The initiator will forward the NCR to the IQCM or IDQM to verify the NCR as valid.

Validation:

If the NCR is not properly completed or lacks sufficient detail to allow a disposition to be made, the required information will be obtained and recorded. If the IQCM or IDQM concurs that the condition is not a proper subject for an NCR (e.g., a matter concerning a financial or legal issue), processing of the NCR will be discontinued and resolution coordinated with the initiator.

NCRs falling into this category will be returned to IQCM or IDQM and the disposition withdrawn and recorded in the NCR Log. **Figure 6** shows a sample NCR log.

Figure 6. Sample NCR Log – ELVIS.

#	NCR No.	Issuing Agency	Originator's Document No	Subject	NCR Type	SSI	Date of Occurrence	Date Issued	Date Closed	Ageing	Workflow Status	Sent in Court	Attachments	Crystal Report	Web Form
1721	NCR-1721	TZC	RFI-STR-TZC-00261	MS-STR-Line Assembly for G1409N to G1410N	Construction		2/16/2017	2/16/2017		27	Design Engineer Concurrence	MarcoBuyson	View	View	View
1722	NCR-1722	QC		Span 29, South Barrier Pour 89 Concrete Out of Spec	Construction		2/8/2017	2/10/2017		32	Resolution/Disposition	AndreyNovikov	View	View	View
1723	NCR-1723	QA		Low Compressive Strength for 01-13-17 Concrete Placement of WISA South DR656 Repair	Construction		1/13/2017	2/10/2017		33	Resolution/Disposition	SivaAncha	View	View	View
1724	NCR-1724	NYSTA	TA_TZC_12111_NCR_ENV	Concrete Discharge during Barrier Pour at 4WB	Environmental		10/20/2016	2/17/2017		26	Resolution/Disposition	ElenaBarnett	View	View	View
1725	NCR-1725	QA		QA and QC Unable to perform inspection of Deck Panels at Coeymans as part of Unistress Shipment #110 (6EB-B6)	Management		2/15/2017	2/16/2017	3/8/2017	20	Closed	Closed	View	View	View
1726	NCR-1726	QA		Unistress Shipment #104 (3EB-B11) for deck panel loaded on barge not according to loading plan and damaged panel	Construction		1/13/2017	1/16/2017		58	Resolution/Disposition	BenCurry	View	View	View
1727	NCR-1727	QA		CIF unresolved after two weeks for Spall in Panel# 0174A-130 Unit 6 Span 21EB	Construction		2/3/2017	2/21/2017		22	Action Verification	AmrHafez	View	View	View
1728	NCR-1728	QA		Defects found during Underdeck Inspection of Unit 5EB Span 16EB, 17EB and 18EB	Construction		2/6/2017	2/6/2017		37	Resolution/Disposition	BenCurry	View	View	View

Upon completion of the review with the determination that the condition is a proper subject for an NCR, the IQCM or IDQM will assign a unique number to the NCR and enter the applicable data in the NCR Log, sign and date the NCR in the "Initiation Approved" block, and forward the original to the Construction Manager for disposition. The PQM or CPCM may also validate the NCR in the absence of the IQCM or IDQM.

Nonconforming items will be physically segregated in designated hold areas, when practical. When an item is not segregated, it will be appropriately tagged or other means of positive identification will be employed. Nonconforming Work product tags will only be removed by the originator of the NCR or the originator's supervisor, and only when FRMG has demonstrated to the Department that the Nonconforming Work product meets the requirements of the Project Agreement.

<u>Proposed Disposition:</u>

The Construction Manager will review and evaluate the NCR with the appropriate production personnel. Construction Manager will provide a description of the proposed disposition and assign one of the following:

1. Reject
2. Remedy

For remedy dispositions, the Construction Manager will submit the NCR to the FRMG Engineer of Record (EOR) for review and approval of the disposition.

Reject dispositions, will be submitted to IQC and forwarded to the Department.

<u>Review and Approval by Engineering:</u>

EOR will review and evaluate the disposition per the QMP and determine if the proposed disposition meets the design criteria of the Project. EOR may approve, reject or modify the proposed disposition as needed. EOR will determine whether the proposed solution should trigger the formal Design Change Notice (DCN) Procedure. The DCN procedure is defined in the Stage 1 QMP Attachment (Design Quality Procedures).

EOR will attach the following to the NCR as needed:

1. Work instructions

2. Specifications
3. Design review notes
4. Calculations
5. Modifications to the disposition

After the EOR has approved the disposition, the EOR will submit the disposition to the FRMG Project Manager for concurrence.

FRMG Project Manager Concurrence with Disposition

The FRMG Project Manager will have the opportunity to review and concur with the disposition of remedy prior to work being completed and issuance to the Department. Once the FRMG Project Manager concerns have been adequately addressed, the disposition will be forwarded to the Department for review and concurrence, within five Working Days after the issuance of the nonconformance.

Third Party Concurrence with Disposition

Affected third parties (local jurisdictions, governmental agencies, etc.) will have the opportunity to review and concur with the disposition of remedy prior to work being completed. If an issue is raised, the party will coordinate their concern with the EOR and/or the Construction Manager. Once third party concerns have been adequately addressed, the disposition will be forwarded to the Department for review and concurrence.

Department Concurrence with Disposition

The Department will have the opportunity to review and concur with the disposition of remedy prior to the work being completed. If the Department has an issue or concern with the repair they will coordinate with the EOR and/or the Construction Manager. After all concerns have been addressed or resolved, the Department will provide concurrence with the disposition.

NCR Disposition Implementation:

FRMG will not commence with any NCR Remedy until EOR and the Department have approved the proposed disposition.

Production will complete the approved disposition in timely manner with the appropriate PC in place. FRMG will consider if Appendix A-1 or Appendix A-2 to Schedule 11 Operations and Maintenance Requirements applies to any Nonconforming Work that is O&M Work, the remedy period for completion of such Nonconforming Work Remedy that applies pursuant to such Appendix.

Production will notify PC, IQC, the Department, and any applicable third parties with the scheduled date and time of the repair.

IQC Inspection and Closure:

IQCM will schedule the appropriate inspection and testing of the disposition. IQC will verify work was done in accordance with the plans, specifications and disposition requirements. Inspection and testing records will be referenced in the NCR. IQCM or IDQM will review these records and close the NCR, if acceptable.

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Nonconforming Work will not be used or built upon until the nonconformance has been resolved and accepted by the IQCM or IDQM.

The PQM will document the completion of the nonconformance and submit the closed NCR to the Department for concurrence with the NCR closure.

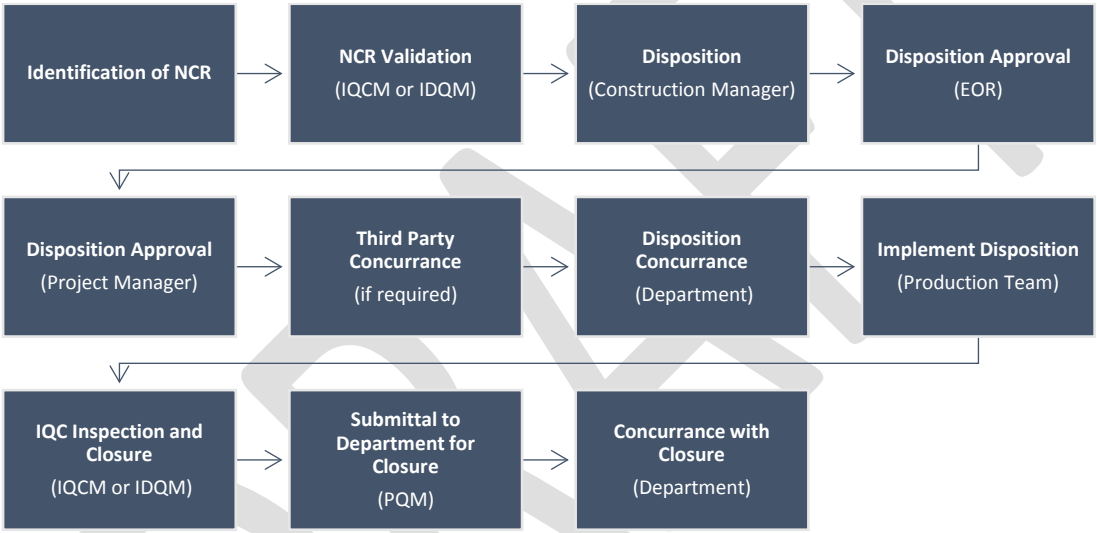
Department Concurrence:

The Department will review, inspect, test, and audit the closure of the NCRs deemed acceptable by IQCM or IDQM as needed to provide concurrence and closure.

Once the Department concurrence is given the CPCM will update the NCR Log. The original closed NCR and related documentation will be filed and maintained as a quality record within Aconex.

A summary of the NCR workflow is shown in **Figure 7**.

Figure 7. NCR Workflow Summary.



NCR Tracking and Analysis:

The following items will be used for trending and analysis of NCR's:

- Identifying department
- Contractor
- Discipline

Cause

Root-Cause Analysis and Corrective Action:

The CPCM, IQCM or IDQM will assess a root cause on the NCR. At their discretion, a Corrective Action Request will be issued. At that time, a full analysis of the root cause will be determined.

In the event a corrective action is required, CQP-0106, Corrective Action procedure will be followed.

Corrective Action plans are subject to the approval of the Department.

The IQCM or IDQM verify that any applicable Corrective Action has been completed in accordance with the Corrective Action plan.

The PQM will document the closure of corrective actions and notify the Department of closure.

5.6 and 5.7 Department Issued Nonconformances (NCN)

For verification and Acceptance purposes the Department will perform assessments of the Work. During this assessment, it may be determined that elements of the Work are nonconforming in accordance with Project Agreement and specifications. The Department will notify FRMG through notifications within the QRD. Department Nonconformance Notices are referred to as an NCN. A NCN has one of two severity levels:

- **Level 1:** Nonconforming items that represent an immediate or imminent health or safety hazard, nuisance or other similar immediate or imminent risk to Users or workers or an immediate or imminent risk of structural failure, damage to a third party's property or equipment or damage to the Environment.
- **Level 2:** All other categories of Nonconforming Work.

Responding to Department NCN

Level 1: FRMG will immediately notify the appropriate level of management and personnel responsible for that element of Work. The identified personnel and the appropriate Department representative will investigate the NCN in the field. A determination of the level of risk and appropriate actions to correct, isolate, or make safe the issue will be made as quickly as possible.

Level 2: The PQM, IDQM, or IQCM (As appropriate) will review the details of the NCN for accuracy and conformance with the Project Agreement and RFC Documents. If in agreement FRMG will respond to the Department issued NCN by issuing an NCR in accordance with CQP-0103 Nonconforming Items.

Required NCN response times are as follows:

- **Level 1:** Within 24 hours of issuance
- **Level 2:** Within five Working Days of issuance

NCN Review and Validation

FRMG will review all notices of NCN for accuracy and conformance with the Project Agreement and RFC Documents. This will be performed by the PQM, IDQM, or IQCM (as appropriate). The process with follow the steps below:

Step 1:

PQM, IDQM, IQCM review of NCN details and compliance with Project documents and specifications.

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Step 2:

If PQM, IDQM, or IQCM confirms NCN is nonconforming, an NCR is issued. A response will be provided in QRD indicating an NCR has been issued and a reference to that NCR number.

Step 3:

It is plausible that items identified by the Department as an NCN may be questioned for their validity. This is handled by the PQM, IDQM, or IQCM reviewing the details of the NCN. Should the validity be questioned the PQM, IDQM, or IQCM will contact the Department representative who approved the NCN to review the details and requirements of the NCN. This will be done via email, phone, or in person and will be 5.8

If it is determined the NCN is valid a Nonconformance Report (NCR) will be issued

If it is determined by the PQM, IDQM, or IQCM and the Department that the NCN is not valid, the Department will close with a response in QRD from the PQM, DQM, or IQCM

Step 4:

Any issued NCR will be issued and followed through to closure following the CQP-0103 Nonconforming Items procedure.

5.8 Corrective and Preventative Action

Corrective Action

The design of the QMP can require the enactment of corrective actions. Corrective action procedures are integral to the design-and-construction-related NCR process and can be initiated in the following noted situations at a minimum:

- **Construction:** Corrective action will be an outgrowth of inspection or testing, where an NCR or corrective action directive is issued within or to FRMG. (product)
- **Quality Audits:** Corrective action will be undertaken as the result of the issuing and responding to an audit finding or a relevant recommendation documented in the audit report

The effectiveness of implemented corrective actions, and their influence on other documented quality procedures and the QMP as a whole, will be evaluated by FRMG's Project Manager. Corrective actions will be performed in accordance with CQP-0106 Corrective Action.

The corrective action procedure includes:

- Investigation of the cause of systemic Nonconforming Work
- Proposed Corrective Action plan to prevent recurrence
- Prioritization of Corrective Action effort based on levels of risk to the quality of Work
- Management commitment ensuring corrective actions are implemented when needed
- Implementation, edits, and revisions of QMP procedures as identified from corrective actions

FRMG will submit Corrective Action Plans in response to FRMG issued corrective actions.

Preventative Action

FRMG will implement oversight review and trending processes that will play major roles in the prevention of Nonconformances on the Project. These formal processes, including the constructability reviews, preparatory reviews, Nonconformance Reporting, and IQC audits. These processes will assist in keeping the Project on track by preventing the application of erroneous assumptions or directions. Methods for determining, implementing, and documenting actions taken to prevent Nonconforming Work from occurring will be done in accordance with CQP 0107 Preventative Action.

In addition, a FRMG Managers' meeting, including FRMG and the Department's management staff, will be held bi-weekly, or on an agreed appropriate frequency. Meeting notes will be prepared by FRMG and serve as quality records.

5.9 Punch List Work

Purpose

To define the process of developing and closing out punch list items associated with completion inspection and Project Completion walk-throughs.

Scope

This procedure establishes the method to develop, track, and closeout punch list items associated with Project Completion.

Definitions and Acronyms

Completion Inspection: Preliminary QC walk-through of a specific element of work. Used to identify any incomplete work and develop an initial PC punch list.

Project Completion Walk-through: Final Acceptance walk of the work. This will be used to develop a final Acceptance punch list for that area of work. There will be no further punch list walks for that area. Punch lists will capture items identified by all parties (FRMG, O&M, PC, IQC, the Department, and applicable Local Jurisdictions). The intent is to have one final agreed to punch list that all parties can use.

Responsibilities

Process Control (Includes Production Staff): Responsible for compiling the Completion Inspection (CQP- 0230 PC Inspection Process) punch list and reviewing the work for completeness. PC is responsible for adding all NCRs to the Completion Inspection punch list, notifying IQC when an area or item of work is ready for a walk-through and scheduling a day and time for the walk. PC is responsible for jointly adding to the punch list, determining when the punch list items need to be complete, scheduling work for the completion of the punch list items, and providing notification when the items are complete and ready for re-inspection. PC will notify, schedule, and coordinate the attendance of FRMG, O&M, IQC, PC, the Department, and applicable local jurisdictions when an area of work is ready for a Project Completion walk-through.

Independent Quality Control: Responsible for reviewing the work for compliance with the Project plans and specifications. IQC is responsible for jointly adding to the existing punch list, determining when the punch list items need to be completed, gathering all identified punch list

items, and inputting the punch list items into a Punch List Log. IQC is responsible to verify by inspection when punch list items are complete and update the status of the punch list items in the Punch List Log.

IQCM: Responsible to assure this procedure is implemented and maintaining the Punch List Log in the ELVIS Database.

Department: Responsible to participate at their discretion in Completion Inspections and Project Completion walk-throughs. The Department will assist in the identification of punch list items when present and acknowledge the items identified are accurate and appropriate for that element of work.

Procedure

Scheduling a Project Completion Walk-through

PC will review the work against the contract drawings, combined specifications, and RFIs for completeness and compile the Completion Inspection. All outstanding NCRs will be added to the Completion Inspection. Once PC feels they have completed a significant portion of the items identified during the Completion Inspection PC will notify IQC, the Department, O&M, and any applicable local jurisdiction that an area or item of work is ready for a Project Completion walk-through, provide the Completion Inspection punch list, and schedule a day and time for the walk. An area or item of work will be defined as one or any combination of the activity descriptions outlined by the Work Areas in CQP 0102-1.

The appropriate Department representatives will be notified and given the opportunity to participate in both the Completion Inspection and the Project Completion walk-through. It is critical that the Department and any applicable local jurisdiction be present at the Project Completion walk-through and a time will be coordinated to accommodate their required attendance.

Developing Project Completion Punch List Items

During the Project Completion walk-through IQC and PC will jointly document punch list items using the CQP-0304-1, Field Punch List Form. Identified items will be reviewed at the end of the walk to make sure all items were captured. Items identified that meet the criteria of an NCR will be documented and resolved using CQP-0103 Nonconforming Items.

Putting Punch Items into Punch List Log

After the Project Completion walk-through, any remaining Completion Inspection items and all items documented on CQP 0304-1, Field Punch List Forms, will be collected by IQC for input into the Punch List Log. At the time of input each punch list item will be assigned a unique number for tracking purposes. The Punch List Log is in the ELVIS Database and will be made available for review and/or correction.

Completion of Punch Items

Production will schedule work for completion of the punch list items. PC will notify IQC when punch list items are complete and ready for observation. When a punch list item has been completed, IQC will verify by observation and change the status of the punch list item in the Punch List Log. Status options on the Punch List Log are:

- **Production to Complete** – Indicates that production must perform the necessary work to complete/repair the identified item
- **IQC to Close** – Indicates that production has completed the work and IQC needs to verify the work is complete and satisfactory
- **Complete** – Indicates that IQC has observed the item and determined it is acceptable
- **Closed** – Indicates the Department concurs with the closure of the punch list item

Quality Records

The Punch List Log will be stored in the ELVIS Database. CQP 0304-1, Field Punch List Forms, and CQP 0230-2, QC Completion Inspection Report will be kept as a quality records and stored in Aconex.

5.10 Provisions of Section 6.5

FRMG recognizes that the provisions in Schedule 8, Section 6.5 are without prejudice to the provisions of Schedule 6 Performance Mechanism.

6 Quality Assurance Oversight

6.1 Department Quality Oversight

6.1.a Department Acceptance of Work

FRMG recognizes the Department's responsibility for Acceptance of the Work as required in Title 23, Code of Federal Regulations, Part 637.

6.1.b Department Verification Reviews

FRMG recognizes and understands that the Department will perform the following in performance of their responsibility of Acceptance of the Work, per Schedule 8, Section 6.6.1.b:

i. **Design verification reviews**: The Department will perform design verification reviews on the products of design (drawings, specifications, and other design deliverables) on an ongoing basis during the Work. FRMG will submit documents for design verification reviews to the Department for Acceptance a minimum of five Working Days in advance of review meeting.
ii. **Construction verification inspections**: The Department will perform construction verification inspections on construction activities.
iii. **Construction verification testing**: The Department will perform sampling and testing of materials to validate the FRMG IQC testing program. Verification test results will be stored in the QRD.
iv. **Process audits**: The Department will perform process audits on the implementation of all FRMG Work activities, excluding design and construction. Such activities may include the requirements of the Project Agreement, such as public information, maintenance of traffic, environmental compliance, safety, project management processes, and meeting the requirements of the Approved QMP.

FRMG will coordinate and cooperate with the Department in their successful performance of the verification reviews listed above.

6.1.c Verification Review Documentation

Verification reviews will entail the collection and documentation of objective evidence to determine whether the requirements of the Project Agreement have been met. The results of the Department verification reviews will be recorded by the Department and will be documented within the Department's QRD. Any NCNs identified by the Department require a response within the QRD.

FRMG team members understand and have experience with the processes and QRD program in which the Department will use to document the results of verification reviews. FRMG will respond to all Department NCN within the QRD.

6.1.d Department's Quality Records Database

Department will provide FRMG access to the Department's QRD application to review and respond to observations made during Department quality oversight activities. FRMG is required to utilize the Department's QRD application to record all material test quality records, and to respond to Department generated observations. FRMG is given the option of either directly entering all PC/IQC observations and material test results into the Department's QRD application or providing Department with data collected during PC/IQC efforts in an electronic format compatible for batch upload into Department's QRD application. Department generated observations will be identified either as conforming or nonconforming to related requirements of the Project Agreement. Department observations will be presented to FRMG through Department quality oversight verification reports.

A construction Nonconformance Report will be closed by Department upon the verification of a resolution of the issue Approved by the Department.

FRMG acknowledges its responsibility to respond to observations made by the Department during quality oversight activities. FRMG will exercise the right to electronically upload test results into the QRD. FRMG will work with the Department to provide an electronic format that is compatible for batch uploads into QRD.

6.2 Department Owner Verification Testing

The Department will perform periodic verification tests to ensure that FRMG's materials meet the requirements of the Project Agreement. The Department will enter verification test results in the QRD. The Department will perform a statistical analysis to ensure that the FRMG's IQC test results correlate statistically with the Department verification test results and meet the requirements of the Project Agreement. If the Department determines that the compared test results do not correlate, the Department will follow procedures outlined in the CDOT *Field Materials Manual for Non-Validation and Status of Material Quality*.

The IQCF will cooperate with the Department to ensure the necessary IQC results are entered into QRD for statistical analysis. IQCF will assist the Department with the resolution of results

that do not statistically correlate with the Department, through the use of the procedures outlined in the CDOT *Field Materials Manual* for Non-Validation and Status of Material Quality.

6.3 Independent Assurance

The IQCF will support the Department in the performance of Independent Assurance Test by:

- Coordinating IQC testing activities for the Department to witness
- Provide certification and training records of IQC personnel to demonstrate understanding of the test procedures they are performing
- Provide access to equipment calibration records
- Participating in split sampling procedures

6.4 Government Authority Inspections

FRMG will provide access to Work activities for Governmental Authority Inspections of the Work, provided the Governmental Authority has jurisdiction over the Work and as required by law.

7. Deliverable Requirements

7.1 Quality Management Plan

FRMG swill submit the Stage 1 QMP to the Department for Approval as a condition of NTP 1. FRMG will submit the Stage 2 QMP for all remaining Work to the Department for Approval as a condition of NTP 2. FRMG recognizes that NTP 2 will not be issued until the Stage 2 QMP is Approved by the Department.

7.2 Design Deliverables

This section describes the Reviewable Deliverable products that FRMG will deliver over the course of the Project:

7.2.a. FRMG will submit to the Department all RFC Documents, revisions to RFC Documents, and As-Built documents as described with the Deliverable Requirements Tracking List.

7.2.b. FRMG will identify in its Baseline Schedule when RFC Documents and As-Built documents will be submitted to the Department. The schedule will also reflect changes to the Work as a result of revisions to RFC Documents.

7.2.c. FRMG will provide one set of electronic files of the design deliverables to the Department. As-Built documents will show all changes. All changes will be noted using CADD. Hand-drawn changes will not be used.

7.2.d. The design deliverables will be delivered to the Department indexed and clearly marked to indicate the date of issue and stage of development (e.g., RFC Documents). All design deliverables will include a title block, consistent with the standard Work drawing format established as part of the QMP, with the following information:

- Date of issuance and including all prior revision dates

- Contract title and number
- The names of FRMG, subconsultants, Subcontractors, Suppliers, and manufacturers, as applicable
- Subject identification by FRMG drawing or Project Agreement reference

7.2.e. All design deliverables will be sealed by the FRMG's engineer consistent with law. All design deliverables will include a sufficient blank space, in the lower right corner, just above the title block on the drawings, and in the lower right corner of the title page of specifications and calculations, in which the FRMG's engineer may indicate the action taken, indicating his or her review and approval.

7.2.f. If a design deliverable requires review approval from a Local Agency or permitting authority, FRMG will obtain such approval pursuant to Section 5 of Schedule 9.

7.2.g. Specifications or CDOT Standard Special Provisions applicable to a design deliverable will be submitted with the design deliverable.

7.2.h. When calculations accompany drawings in a submittal, the body of the calculations will contain cross-references to the individual drawing to which the pages of the calculations pertain. Calculations required will demonstrate conformance with the requirements of the Project Agreement.

7.2.i. The CADD drawings and associated documents will be organized in a logical manner, have a uniform and consistent appearance, and clearly depict the intent of the design and construction. In addition:

i. The software requirements for all submitted design deliverables will be InRoads/MicroStation, in accordance with the current CDOT standards in effect. Project files will be organized and submitted in accordance with CDOT's ProjectWise format.

ii. FRMG will prepare As-Builts for the Work that will include, but not be limited to, the following:

   A. Title sheet
   B. Index
   C. Standard Plan List
   D. Roadway design data
   E. General notes
   F. Pavement details
   G. Roadway details
   H. Drainage details
   I. Geotechnical plans
   J. Environmental mitigation, as necessary
   K. Permanent signing plans and sign structure cross sections
   L. Signalization plans

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M. Aesthetic elements
N. Roadway typical sections
O. Roadway geometric layout plans
P. Roadway geometric layout tables
Q. Roadway plan
R. Roadway profile
S. Detour construction and phasing plans
T. Detour construction and phasing profiles
U. Intersection plans
V. Pavement plans
W. Drainage plan
X. Drainage profiles
Y. Pavement marking plans
Z. Utility plans
AA. Right-of-Way plans, for Developer acquisitions
BB. Right-of-Way monumentation plans
CC. ITS, ATM, and Tolling plans
DD. ITS Communication Network plans
EE. Landscape/seeding plans
FF. Grading plans
GG. Lighting plans
HH. Bridge plans
II. Wall and shoring plans
JJ. Roadway cross sections
KK. ROW plans for Developer acquisitions
LL. Estimated material quantities
MM. Other details, as needed
NN. Specifications

iii. FRMG will provide one set each of electronic files of Utility As-Built documents to the Department and to the respective Utility Owner for Utility Work constructed by FRMG, within 90 Calendar Days after the Utility Owner has accepted the Utility Work. These electronic deliverables will conform to those requirements set forth in the Project

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Agreement for CADD requirements, except as modified by the specific requirements of the individual Utility Owners. The Utility As-Built documents will show locations of existing utilities, structures, trees, streets, and existing highway ROW limits. Additionally, FRMG will obtain from each Utility Owner performing its own Utility Relocations Utility As-Built documents for such Utility Relocations showing the foregoing information, and will deliver one set of electronic files of such documents on DVD to the Department. FRMG will show this information on the As-Built documents. All As-Built documents electronic files will be submitted in MicroStation and *.pdf format, or other formats as accepted by the Utility Owner.

iv. CADD files will be in accordance with the appropriate Department standards. All CADD files will be documented in a tabular format describing the path, file name, and description.

v. The structure of the reference drawings, Contract Drawings, and CADD files will be used a guideline for file set-up.

7.3 Document and Data Approval

FRMG will ensure that all deliverables include a signed and dated certification by the originator of the deliverables and that the deliverable is complete and meets the requirements of the Project Agreement.

7.4 Document and Data Changes

FRMG will ensure that any changes to deliverables provided to the Department as revised are in a format that can enable changes to be readily apparent and trackable (e.g., documents use the redline/strikeout method).

7.5 Product Data

FRMG will submit to the Department for Acceptance one electronic copy of all manufacturers' warranties, guarantees, instruction sheets, parts lists, and other product data within 20 Working Days after installation of the items to which they relate, and in any event prior to substantial completion. FRMG will ensure that the product data cited in this Section is organized and indexed in a manner that allows easy retrieval of information. FRMG will maintain proper records of product data.

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Stage 2 QMP Attachment (Construction Quality Procedures List)

Front Range Mobility Group

THE EXTRA MILE

CONNECTING COMMUNITIES

Stage 2 QMP Attachment (Construction Quality Procedures List)

Front Range Mobility Group	Central 70 Project Draft Stage 2 Quality Management Plan Stage 2 Attachment: Construction Quality Procedures (CQPs)	
Document Owner:	Revision – 0	
Approved by:	Revision Date:	Review by:
Approved by:	Release Date: TBD	

General PC/IQC Procedures

CQP 0100	Numbering and Indexing
CQP 0101	Document Control
CQP 0102	Control of Records
CQP 0102-1	Reference Number List
CQP 0102-2	Naming Conventions
CQP 0103	Nonconforming Items
CQP 0103-1	Nonconformance Report
CQP 0103-2	Nonconformance Report Flowchart
CQP 0103-3	Nonconformance Report Log
CQP 0104	Construction Deficiency
CQP 0104-1	Deficiency Log
CQP 0105	Stop Work Order
CQP 0105-1	Stop Work Order Request
CQP 0105-2	Stop Work Order Flowchart
CQP 0105-3	Stop Work Order Request Log
CQP 0106	Corrective Action
CQP 0106-1	Corrective Action Request (CAR)
CQP 0106-2	Corrective Action Request (CAR) Log
CQP 0106-3	Corrective Action Process Flowchart
CQP 0107	Preventive Action
CQP 0107-1	Preventive Action Request (PAR)
CQP 0107-2	Preventive Action Request (PAR) Log
CQP 0107-3	Preventive Action Request Flowchart
CQP 0108	Early Release of Work
CQP 0108-1	Early Release of Work Request
CQP 0109	IQC Compliance Certification

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CQP 0109-1	IQC Compliance Certification Form
CQP 0110	Control of Materials
CQP 0110-1	Receiving Record
CQP 0110-2	Receiving Record - Rail
CQP 0111	Construction Submittals
CQP 0111-1	Construction Submittal Cover Sheet
CQP 0111-2	Construction Submittal Flowchart
CQP 0120	Request for Information
CQP 0120-1	RFI Form
CQP 0120-2	RFI Flowchart
CQP 0130	Construction Audit
CQP 0130-1	Construction Audit Schedule
CQP 0130-2	Construction Audit Findings Report
CQP 0130-6	Construction Audit Log
CQP 0140	Quality Training

PC Procedures

CQP 0201	PC Survey Data
CQP 0202	PC Survey Setup, Layout and Control
CQP 0203	PC Shop and Working Drawings
CQP 0206	PC As-Built Documents
CQP 0225	PC Notification for IQC Inspections, Sampling and Testing
CQP 0225-1	PC Concrete Placement Notification Form
CQP 0225-2	PC Asphalt Placement Notification Form
CQP 0225-3	PC Systems Inspection Request Form
CQP 0229	Work Planning
CQP 0230	PC Inspection Process

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CQP 0230-1	PC Initial Inspection Report
CQP 0230-2	PC Completion Inspection Report
CQP 0230-3	Readiness Review Meeting Agenda
CQP 0230-4	PC Daily Inspection Report
CQP 0230-5	PC Completion Inspection Log
CQP 0230-6	PC Daily Inspection Instruction Sheet
CQP 0230-7	PC Wetland / Waterbody Restoration Checklist
CQP 0230-12	Traffic Control Audit Findings Report
CQP 0230-15	Record of Daily Girder Inspection
CQP 0250	PC Concrete Pre-Placement Inspection
CQP 0250-1	PC Concrete Pre-Placement Inspection Form
CQP 0251	PC Earthwork Management
CQP 0252	PC Structures Foundation Management
CQP 0253	PC Asphalt Management
CQP 0254	PC PCCP Management

IQC Procedures

CQP 0300	IQC Quantity Tracking for Test Frequency
CQP 0301	IQC Construction Hold Points
CQP 0302	IQC Deviation from RFC Plans and/or Specifications
CQP 0303	IQC ADA Compliance Inspection Process
CQP 0303-1	IQC ADA Measurement and Frequency Guidelines Matrix
CQP 0304	IQC Punchlist Procedure
CQP 0304-1	IQC Field Punchlist Form
CQP 0310	IQC Daily Inspection Report Process
CQP 0310-2	IQC Inspection Checklist -Earthwork & Embankment
CQP 0310-3	IQC Inspection Checklist - Structural Concrete

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CQP 0310-4	IQC Inspection Checklist - Drilled Shaft Foundations
CQP 0310-5	IQC Inspection H-Pile Driving Log
CQP 0310-6	IQC Inspection Checklist – H-Pile Load Bearing
CQP 0310-8	IQC Inspection Checklist - Bridge Deck
CQP 0310-9	IQC Inspection Checklist - MSE Walls
CQP 0310-10	IQC Inspection Checklist - Barrier Rail
CQP 0310-11	IQC Inspection Checklist - Soil Nail Wall
CQP 0310-12	IQC Inspection Checklist – Air Quality
CQP 0310-13	IQC Inspection Checklist --Landscape: Planting
CQP 0310-14	IQC Inspection Checklist - Storm Drain
CQP 0310-15	IQC Inspection Checklist - Electrical Underground Ductbank
CQP 0310-16	IQC Inspection Checklist - Asphalt Pavement
CQP 0310-17	IQC Inspection Checklist - Portland Cement Concrete Pavement
CQP 0310-18	IQC Inspection Checklist - Environmental Pre-Construction
CQP 0310-19	IQC Inspection Checklist - Environmental Screening & Monitoring
CQP 0310-20	IQC Inspection Checklist - Storm Water Management
CQP 0310-21	IQC Concrete Truck Log
CQP 0310-22	IQC Inspection Checklist - Flatwork
CQP 0310-23	IQC Inspection Checklist - Discharge Monitoring Report
CQP 0310-24	IQC Inspection Checklist – Water Quality
CQP 0310-25	IQC Soil Density Report
CQP 0310-26	IQC Inspection Checklist - Spill Response Report
CQP 0310-27	IQC Inspection Checklist - Supplemental Observation Report (SOR)
CQP 0310-28	IQC Western Burrowing Owl Survey Checklist
CQP 0310-29	IQC Nuclear Density Gauge Utilization Log
CQP 0310-30	IQC Asbestos Containing Soils Inspection Checklist
CQP 0310-31	IQC Asbestos Abatement Inspection Checklist

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CQP 0310-32	IQC Inspection Checklist - OCS Foundation
CQP 0310-33	IQC Contaminated Soil Disposition Report
CQP 0310-34	IQC Contaminated Ground Water Disposition Report
CQP 0310-35	IQC Environmental Unexpected Asbestos Discovery Report
CQP 0310-36	IQC Asbestos Building Manifest Report
CQP 0310-37	IQC General Soil Disposition Report
CQP 0310-38	Construction Noise Monitoring
CQP 0310-40	IQC Asphalt Density Report
CQP 0310-41	IQC Inspection Checklist - Chain Link Fence
CQP 0310-42	IQC Environmental Sodding Inspection Checklist
CQP 0310-43	IQC Environmental Seeding Inspection Checklist
CQP 0310-44	IQC Inspection Checklist - Girder Set
CQP 0310-45	IQC Inspection Checklist - Handrail
CQP 0310-46	IQC Inspection Checklist - Guardrail
CQP 0310-47	IQC Inspection Checklist - Waterproofing
CQP 0310-48	IQC Inspection Checklist - Structural Steel
CQP 0310-49	IQC Inspection Checklist - Traffic Control
CQP 0310-50	IQC Masonry Checklist
CQP 0310-57	IQC Pedestrian Railing Checklist
CQP 0310-63	Spray-Applied Fire Resistant Material Checklist
CQP 0310-64	Weld Checklist
CQP 0310-67	ADA Compliance Checklist
CQP 0310-68	ADA Intersection Compliance Checklist
CQP 0310-69	IQC Environmental Hardscapes Inspection Checklist
CAP 0310-70	IQC Noxious Weed Inspection Checklist
CQP 0320	IQC Source Inspection
CQP 0320-1	IQC Concrete Batch Plant Inspection Checklist

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CQP 0320-2 IQC Concrete Tie Batch Plant Inspection Checklist

CQP 0320-3 IQC Plant Welding Inspection

CQP 0320-4 IQC Girder Pre-Shipment Inspection

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Front Range Mobility Group

APPENDIX E

DRAFT STAGE 2 QUALITY MANAGEMENT PLAN

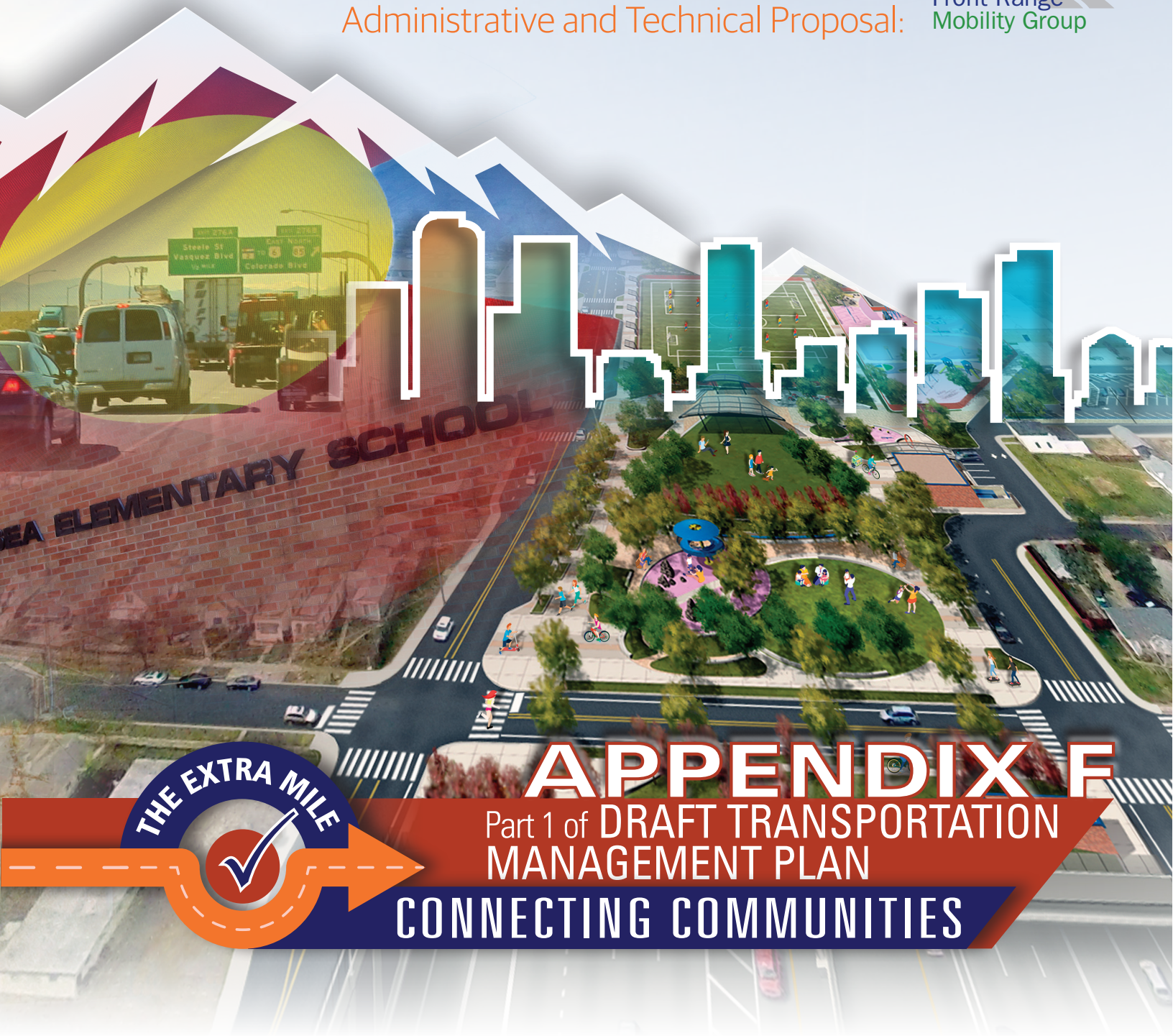
VOLUME 2 — TECHNICAL SUBMISSIONS
Binder 9 of 18

CENTRAL 70 PROJECT

PUBLIC DISCLOSURE

Administrative and Technical Proposal:

Front Range Mobility Group



APPENDIX F

Part 1 of DRAFT TRANSPORTATION MANAGEMENT PLAN

THE EXTRA MILE

CONNECTING COMMUNITIES

Draft

Transportation Management Plan

For

Central 70 Project

Prepared By:
Front Range Mobility Group

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Draft Transportation Management Plan Attachments

Attachment - 1 MOT Plans

Attachment - 2 Courtesy Patrol Specifications

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Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
ADA	American with Disabilities Act
AFR	Audit Findings Report
AHJ	Authority Having Jurisdiction
ASQ	American Society for Quality
ASTM	American Society for Testing and Materials
ATC	Alternative Technical Concept
ATD	Average Texture Depth
ATM	Asynchronous Transfer Mode
CAR	Corrective Action Request
CCD	City and County of Denver
CCRL	Cement and Concrete Reference Laboratory
CDOT	Colorado Department of Transportation
CIF	Corrected in Field
COC	Certificates of Compliance
CPCM	Construction Process Control Manager
CPCP	Construction Period Communication Plan
CQP	Construction Quality Procedure
CR	Constructability Review
CSL	Crosshole Sonic Logging
CTMC	Colorado Transportation Management Center
CTR	Certified Test Reports
CVL	Controlled Vocabulary Language
CY	Cubic Yards
DB	Design-Build
DBE	Disadvantaged Business Enterprise
DCN	Design Change Notice
DEN	Denver International Airport

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DIR	Daily Inspection Report
DNCR	Design Nonconformance Review
DPS	Denver Public Schools
DRCOG	Denver Regional Council of Governments
EIS	Environmental Impact Statement
EMS	Emergency Services
FHWA	Federal Highway Administration
FRMG	Front Range Mobility Group
HOV	High-Occupancy Vehicle
IMP	Incident Management Plan
ITS	Intelligent Transportation System
LOS	Levels of Service
MHT	Methods of Handling Traffic
MOT	Maintenance of Traffic
MUTCD	Manual on Uniform Traffic Control Devices
PI	Public Information
PIP	Public Information Plan
ROD	Record of Decision
RTD	Regional Transportation District
TCP	Traffic Control Plan
TCS	Traffic Control Supervisors
TDM	Travel Demand Management
TMO	Transportation Management Organization
TMP	Transportation Management Plan
TOP	Transportation Operation
URA	Utility Relocation Agreement
VMS	Variable Message Sign

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Executive Summary

The Front Range Mobility Group's (FRMG's) Draft Transportation Management Plan (TMP) identifies the Maintenance of Traffic Program requirements, obligations, and goals for the Construction and Operating Periods of the Central 70 Project (the Project) as set out in Schedule 10, Section 2 and describes corresponding means and methods to ensure that the Work activities, deliverables and final outcomes meet or exceed the goals and requirements defined by the Project Agreement.

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1. Organization and Content of the Draft Transportation Management Plan

The contents of FRMG's Draft TMP align with the organization and requirements of Schedule 10, Section 2 of the Agreement and the section headings specifically match the numbering and requirements defined in Section 2.2.

2.2 Draft Transportation Management Plan is broken down as follows:

Section 2.2.1 describes the preparation of the TMP and outlines Temporary Traffic Control Plan (TCP) Strategies, Transportation Operations (TOP) Strategies, and Public Information (PI) Strategies for the Construction Period. The Draft TMP follows the requirements shown in Colorado Department of Transportation's (CDOT) *Work Zone Safety and Mobility Rule Procedures Document* and documents how traffic is managed during Construction.

Section 2.2.2 presents our steps for submission and approval of the final plan prior to NTP2.

Section 2.2.3 provides these elements of FRMG's TMP:

a. An overview and description of the Project
b. Existing and future conditions
c. List of known or potential Closures
d. Description of proposed detour routes
e. Typical Section requirements
f. Emergency requirements
g. Temporary Closures scenarios
h. Access

Section 2.2.4 Temporary TCP Strategies includes:

a. Approach to development of TCPs
b. Implementing and Monitoring TCPs and Methods of Handling Traffic (MHT)
c. Business and Private Access
d. Colorado Transportation Management Center Coordination

Section 2.2.5 Transportation Operations Strategies addresses:

a. Travel Demand Management
b. Coordination with RTD
c. Traffic Access Management
d. Coordination with Denver International Airport
e. Management of Bicycle and Pedestrian Mobility associated with all school routes within the site
f. Pedestrian and bicycle movements associated with the UPRR York St. Crossing
g. Development of a detailed IMP
h. Coordination with Transportation Management Organization (TMO)
i. Coordination with Special Events and the National Western Stock Show

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Section 2.2.6 Public Information Strategies presents our detailed approach to coordinating and communicating TMP activities.

Attachment 1 presents phase-specific MOT plans.

Attachment 2 presents our Courtesy Patrol specification.

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2. Maintenance of Traffic

2.1 General

Stakeholders of the Central 70 corridor have long been concerned about traffic congestion issues in the corridor, safety problems associated with the aging highway infrastructure, and continuing noise, air quality and multimodal connectivity challenges faced by the adjacent residents and business community.

In 2003, the Federal Highway Administration (FHWA) and CDOT began preparation of an Environmental Impact Statement (EIS) for the I-70 Corridor from I-25 to Tower Road. As stated in the EIS: "The purpose of the project is to implement a transportation solution that improves safety, access, and mobility and address congestion on I-70 in the project area." The Central 70 Project was defined as Phase 1 of the I-70 East project and was allowed to advance as a standalone project because the segment has logical termini and operates with independent utility. The Record of Decision (ROD), allowing the Project to proceed to implementation, was signed on Jan. 19, 2017.

I-70 is one of the most heavily traveled and congested highway corridors in Colorado. The EIS determined that four elements dictated the need for the Project: 1) transportation infrastructure deficiencies, 2) increased transportation demand, 3) limited transportation capacity, and 4) safety concerns.

The Project's transportation infrastructure deficiencies are primarily a consequence of the aging viaduct. This structure was originally built in 1964 and has reached the end of its design life. The Metro Denver area continues to grow with the new National Western Center; major redevelopment at Stapleton, Gateway, and Lowry; and high-density developments in the downtown Denver area, resulting in increased transportation demands. East-west transportation corridors in this part of the Denver metro area are limited and are at capacity in the neighboring area. Safety concerns center on deficiencies created by the use of then-current design standards that created inadequate acceleration and deceleration lengths, insufficient sight distance at entrance and exit ramps, insufficient shoulder widths, short traffic weaving areas, and inadequate roadway drainage.

FRMG is responsible for designing, providing, and maintaining safe and effective traffic control on all roadways affected by the Project Construction Work. This TMP is FRMG's strategic plan for the safe and efficient movement of people, goods, and services through the Project area during the Construction Period.

This TMP supports the Project Goals, established by the Procuring Authorities and the Department, which include:

a. Optimize the scope of the transportation and supporting infrastructure delivered through the Project in order to promote corridor-wide economic and community vitality
b. Optimize operating and life cycle maintenance costs by delivering a Project using quality design, materials and techniques

c. Minimize impacts to the traveling public, businesses and nearby communities during and after construction
d. Once operational, ensure reliable travel speeds in the managed lanes and, for all lanes, a minimum appropriate standard of maintenance
e. Utilize a collaborative process to enhance community values and Project benefits
f. Protect the health and safety of the workforce and public

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2.2. Draft Transportation Management Plan

2.2.1 Preparation of the Plan

This TMP includes Temporary TCP Strategies, Transportation Operation (TOP) Strategies, and Public Information (PI) Strategies for all proposed Work during the Construction Period and follows the requirements outlined in CDOT's *Work Zone Safety and Mobility Rule Procedures Document*. FRMG will monitor and update the TMP throughout the Construction Period.

The TMP will be used as a planning and policy guide to develop and execute the Maintenance of Traffic (MOT) program. The TCP will address traffic safety and control throughout the Work zone, the TOP strategies will address sustained operations and management of the Work zone impact area, and the PI strategies will address communication with the public and concerned stakeholders.

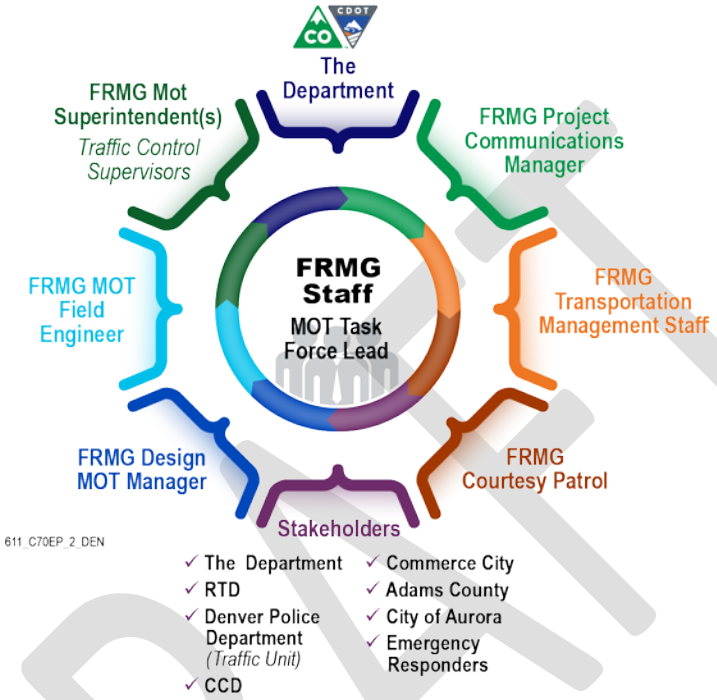
General Elements include the following:

- TCP Strategies will form the basis for this Project's method of handling traffic. Major features include identification of roadway, ramp and lane Closures; proposed detour routes; provision of emergency services; maintenance of access to local businesses and residences; and coordination with the Colorado Transportation Management Center (CTMC) for the effective use of Project area and regional Intelligent Transportation System (ITS) devices. Our TCP Strategies also address the movement of construction materials, vehicles, and workforce to and from active work Areas. The TCP Strategies address all major aspects of construction in individual Project areas, phases, and stages.
- TOP Strategies will address policies and operational issues associated with the Project's construction. Major elements include coordination with all affected agencies, including RTD, National Western Center, and Denver International Airport; maintenance of safe pedestrian and bicycle routes in the Project area; management of traffic incidents and emergency operations; and support of measures to reduce travel demand in the Project area during construction — particularly motor vehicle demand.
- PI Strategies will address the dissemination of information impacting the public during construction, the enhancement of community connectivity as a key Project value, and the coordination of affected stakeholder agencies. Major activities include processes for working with the Department's Communications Manager for Project outreach and communications, and the organization of formal processes, such as the MOT Task Force, to coordinate Project activities for all proposed Work associated with the Project during the Construction Period. FRMG's Project Communications Manager and the Department's Communications Manager will meet once per week to discuss PI and management activities on the Project.

To support the implementation of the TMP, FRMG will establish an internal traffic management leadership team composed of senior design, construction, and communications staff. This team will be charged with facilitating internal communications on traffic management issues, and will also participate in the Project's MOT Task Force (see Section 2.2.6.d) that will coordinate traffic management issues and strategies with the Department and the Project's key stakeholders.

FRMG will submit the proposed list of MOT Task Force members to the Department for Acceptance within 30 Calendar Days after issuance of NTP1.The structure of the Task Force is preliminarily shown in **Figure 1** below.

Figure 1. Proposed MOT Task Force



FRMG's design and traffic management plan **fully integrates** an enhancement of the Reference Design through a minor 46' realignment to the north between Brighton Blvd. and Colorado Blvd. in the Lowered Section of the Project and delivers the **key benefit of maximizing safety and minimizing impacts to residents, businesses, and other key stakeholders**. Driving factors for the development of this TMP include:

- Safety for the traveling public, adjacent neighborhoods, and construction workers
- Clear communication of MOT planning between design, construction, and the Department staff
- Minimizing traffic congestion and travel time
- Eliminate one phase of construction and associated major traffic shift by constructing almost all of the Lowered Section in a single phase
- Eliminating of the requirement for eastbound I-70 traffic to use the westbound Express Toll Lanes in a temporary condition in the Lowered Section
- Earlier opening of the westbound I-70 general purpose lanes and Tolled Express Lanes in the Lowered Section
- Limited Closures of the eastbound I-70 Exit Ramp to Steele/Vasquez

- Limited Closures of the westbound I-70 Entrance Ramp from Steele/Vasquez
- **Maintaining effective north-south multimodal connectivity between neighborhoods during construction by constructing most cross street bridge construction in single phase, with reduced overlap with the existing I-70 viaduct structure**
- Maximizing the available areas for Work in each stage of construction, allowing for more efficient construction operations that will minimize the overall duration of construction
- Improving safety of workers and the traveling public by maximizing the amount of space adjacent to the Work Areas, which will be designed to maximize the width of shoulders available to motorists (Concrete barrier-separated work zones will protect construction workers and the traveling public.)
- Enhanced team communication by including the MOT program as a standing agenda item in weekly management team meetings
- Enhanced communication and quality assurance by designating an on-site Work site Traffic Supervisor to act as eyes on the ground for unexpected traffic changes
- Maintaining the function of existing transportation management, operations systems, and supporting ITS devices throughout the Project until new ITS devices have been installed, tested, approved, and are operational
- **Maintaining traffic on the existing viaduct while the majority of the Lowered Section is constructed, resulting in less impact from construction and safer passage through the construction zone**
- Greater capacity of 46th Avenue during construction, due to greater separation from excavation activities in the Lowered Section
- Faster, less segmented construction phasing reducing the Project schedule

2.2.2. Submission of TMP by the Developer

FRMG will submit a final TMP for Approval by the Department prior to issuance of the NTP2. FRMG will monitor and update the TMP throughout the Construction Period and submit any revisions to the Department for Approval.

2.2.3 TMP Plan Content

FRMG's TMP defines the strategic plan for traffic management and addresses major aspects of the Construction Work. Specific strategies addressed in this section of this TMP include:

a. An overview and description of the Project
b. Existing and future conditions
c. List of known or potential Closures
d. Description of proposed detour routes
e. Typical Section requirements
f. Emergency requirements
g. Temporary Closures scenarios
h. Access

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2.2.3.a Overview and Description of the Project

FRMG has developed a MOT plan that is well organized, consistent, and easy to understand. Transitions between Areas have been well thought out, and FRMG's Areas correspond closely with the areas described by the Department to stakeholders — with slight differences related to the result of shifts in construction limits to optimize our MOT approach.

The traffic management approach provides independent MOT plans by Area of the Project and incorporates a construction approach based on manageable work Areas. This allows for each Area to be constructed independently and opened to traffic as construction is completed. FRMG's proposed plan for constructing all elements of the Project ***are detailed on the MOT plans, Attachment 1 to this TMP***. Specifically, FRMG has subdivided the Project into the following components.

2.2.3.a.i Work Areas

Areas 1-5 Specifically Grouping the Construction Work into Segments Organized by the Project's Major Work Components, as shown in Figure 2 below and further described by narrative:

Figure 2. FRMG Project Work Areas

Area 1 (I-25 to Colorado Blvd.)

Starting near the ramp gore east of I-25, Area 1 construction extends to just east of Colorado Blvd. The first mile of the Project is the restriping of existing I-70 to develop the Tolled Express Lane configuration. At this point, reconstruction of I-70 to create a lowered section continues for 1.6 miles to the east side of Colorado Blvd. The total length in Area 1 is 2.6 miles.

The I-70 over Brighton Blvd. Bridge is where the elevated portion of I-70 begins to transition to the lowered section. **FRMG's design shifts the alignment of I-70 to the north from that shown in the Project's Reference Drawings. The realignment allows for nearly full**

construction of the lowered section of I-70 in a single phase by reducing overlap with the existing I-70 viaduct structure. Major Project features in Area 1 include:

- **Reconstruction of I-70** from Brighton Blvd. to Colorado Blvd.
- **I-70 Tolled Express Lanes** on the inside of the general purpose lanes
- **Interchange improvements at Brighton Blvd., Steele St./Vasquez St., and Colorado Blvd.:** Brighton Blvd. and Colorado Blvd. will be full interchanges; Steele/Vasquez will be a half diamond interchange, providing the eastbound exit ramp and westbound entrance ramp
- **A portion of the Lowered Section of I-70 that will be enclosed:** Recreational amenities will be constructed on the Cover; the I-70 design will accommodate an additional future Cover between Steele St. and Cook St.
- **Cross street bridges at York, Josephine, Columbine, Clayton, Fillmore, Steele, Cook, and Monroe Streets:** East-west connectivity of the community is accomplished by a couplet of 46th Avenue North (westbound) and South (eastbound, with some two-way segments); the connectivity of 46th Avenue North is broken at the Swansea Elementary School to provide direct pedestrian access to the Cover's park from the school
- **Union Pacific Railroad Bridge** over I-70 near Brighton Blvd., serving the UPRR's primary yards
- **BNSF Railroad Bridge** over I-70 for the spur track next to Monroe St.

Area 2 (Colorado Blvd. to Sand Creek Bridge)

Area 2 of the Project begins immediately east of Colorado Blvd. At this point, the profile of I-70 transitions from the lowered configuration to the existing on-grade portion of I-70. Area 2 ends at the Sand Creek Bridge, for a segment length of approximately 2.0 miles. Major Project features in Area 2 include:

- Improved I-70 alignment between Dahlia St. and Holly St. to increase the highway's design speed
- I-70 Tolled Express Lanes developed on the inside of the general purpose lanes
- Reconstruction of the frontage road system for Stapleton Drive North and South; bridges at Dahlia and Monaco Streets provide local connectivity between Stapleton Drive North and South
- Maintaining the Denver Rock Island Railroad crossing under I-70 east of Quebec St. (a switching point for the railroad)
- Improved I-70 bridges over Dahlia, Holly, and Quebec Streets
- A new Holly St. Interchange with full connectivity to I-70

Area 3 (Sand Creek Bridge to Havana Interchange)

Starting at the Sand Creek Bridge, Area 3 extends for approximately 1.5 miles to the Havana St. Interchange. Major Project features in Area 3 include:

- Mill and overlay of the existing highway with full-depth widening along the edges

- I-70 Tolled Express Lanes on the inside of the general purpose lanes
- Slope correction of the highway surface to provide proper drainage of the widened pavement section
- Reconstruction of the eastbound I-270 lanes to eastbound I-70, including replacement and realignment of the existing bridge.

Area 4 (Havana St. Interchange)

Area 4 is approximately 0.6-mile long and surrounds the Havana St./I-70 Interchange, which was recently reconstructed by CDOT. Major Project features in Area 4 include:

- Restriping of I-70 to match the Tolled Express Lane configuration of the Project
- I-70 Tolled Express Lanes on the inside of the general purpose lanes
- Completion of roadway widening initiated in the earlier CDOT project

Area 5 (Havana Interchange to Chambers Road)

Area 5 extends for approximately 2.7 miles, from the Havana St. Interchange to the Project's terminus at Chambers Road. Major Project features in Area 5 include:

- I-70 Tolled Express Lanes developed on the inside of the general purpose lanes
- Mill and overlay of I-70, with full-depth widening along the edges
- Full reconstruction of I-70 at Peoria St.
- Full-depth widening at the I-70/I-225 interchange
- Restriping near Chambers Road to return to the existing I-70 lane configuration

2.2.3.a.ii Work Phases

The FRMG Phases identify the specific sequence of Work within Areas 1-5, during which major traffic shifts are undertaken until Work is complete and redirected to another location. This will require development of specific TCPs.

As discussed above, Attachment 1 includes Phase-specific MOT plans from which specific TCPs will be developed. These are summarized below as:

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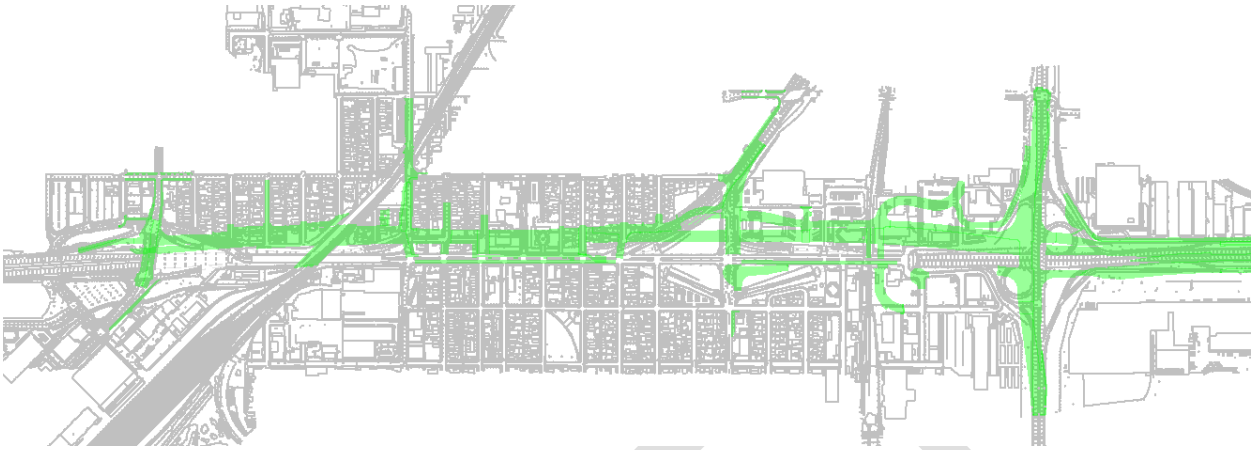
Area 1, Phase 1



The general intent of Phase 1 in Area 1 is to **construct the majority of the improvements between Brighton Blvd. and Colorado Blvd. and to move westbound traffic into the lowered section and associated new roadways at the end of this phase**.

In Area 1 Phase 1, mainline I-70 through traffic will remain unchanged on the viaduct structure. Traffic on 46th Avenue will be closed between Brighton Blvd. and York St. and reduced to one lane each way in various configurations from York St. to Milwaukee St. Cross streets will be closed as allowed by Section 2.2.3.c of Schedule 10 in order to construct the cross street bridges; traffic will be reopened on the new bridges as soon as is practical. Major Work items include:

- Utility Relocations
- Offsite drainage system in 46th Avenue South
- Brighton Blvd. Bridge widening to the north
- UPRR railroad bridges and portion of the service Bridge
- Entire westbound lowered section and the majority of the eastbound Lowered Section
- Entire Cover Structure and associated systems and commissioning
- Majority of cross street bridge construction during Phase 1
- Drainage pump station and outfall connection
- Full construction of the Colorado Blvd. Bridge
- Construction of 46th Avenue North

At the end of Phase 1, westbound I-70 traffic will be shifted into the newly constructed westbound lanes from Colorado Blvd. to Brighton Blvd.

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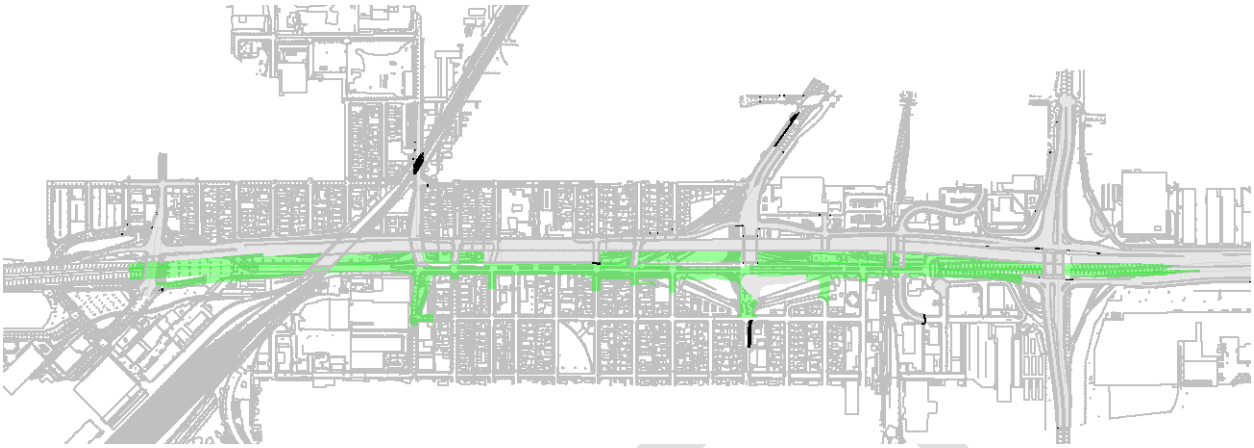
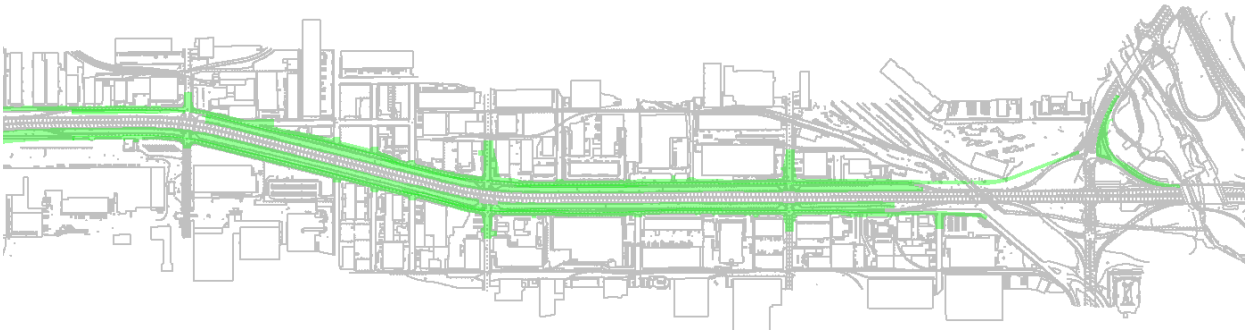
Area 1, Phase 2



In Area 1 Phase 2, eastbound I-70 traffic will remain in its existing configuration on the viaduct while the westbound viaduct is demolished and then move into newly constructed eastbound lanes; westbound I-70 traffic will operate in the newly constructed westbound lowered section and approaches. The newly constructed 46th Avenue North will be open to two-way traffic from Brighton Blvd. to Colorado Blvd. Major Work items include:

- Center section of Brighton Blvd. overcrossing and associated approach fills and temporary walls
- Removal of the westbound viaduct structure
- Portion of eastbound lowered section previously in conflict with westbound viaduct structure
- Remaining portions of cross street bridges not completed in Phase 1
- South section of Brighton Blvd. Overcrossing and associated approach wall and fill
- Removal of the eastbound viaduct
- 46th Avenue South

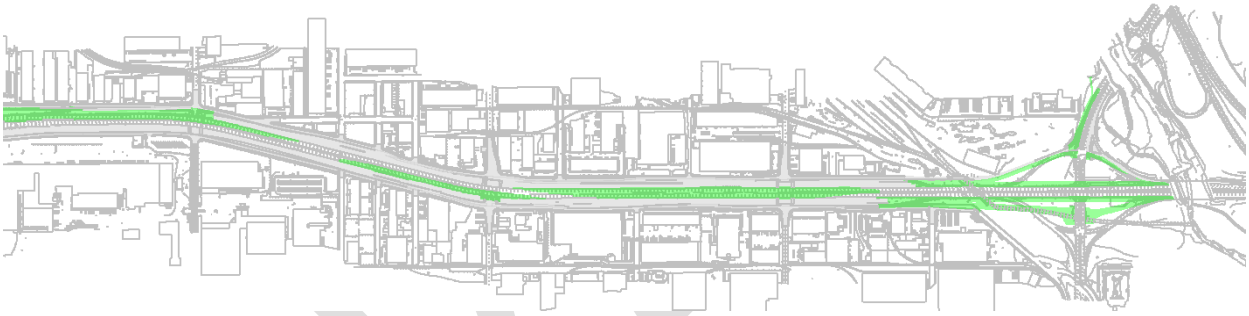
Area 2, Phase 1



In Area 2 Phase 1, traffic on I-70 will be shifted as necessary to accommodate progression of temporary and permanent pavement and widenings. Temporary pavement will be constructed in the I-70 median and along the I-70 side of both Stapleton Drive North and South. Major Work items include:

- Removal of I-70 median curb and guardrail and placement of temporary pavement in the median
- Relocation of utilities out of widened I-70 footprint and into new Stapleton Drive North and South
- Offsite drainage improvements in Stapleton Drive North and South
- Outside widenings including embankment and retaining walls along majority of eastbound and westbound I-70 Phase 1 roadway
- Portions of Dahlia, Holly and Monaco Streets Bridges
- Portion of Quebec St. westbound on- and off-ramps

Area 2, Phase 2



In Area 2 Phase 2, traffic on I-70 will be shifted as necessary to accommodate progression of bridge widenings. Multilane traffic will be opened where available on Stapleton Drive North and South. Major Work items include:

- Portions of Dahlia, Holly, and Quebec Streets Bridges
- Remaining Quebec St. ramps
- Remaining Monaco St. bridge
- Remaining outside widenings including embankment and retaining walls along eastbound and westbound I-70 Phase 2 roadway
- I-70 inside pavement from Forest St. to Monaco St.

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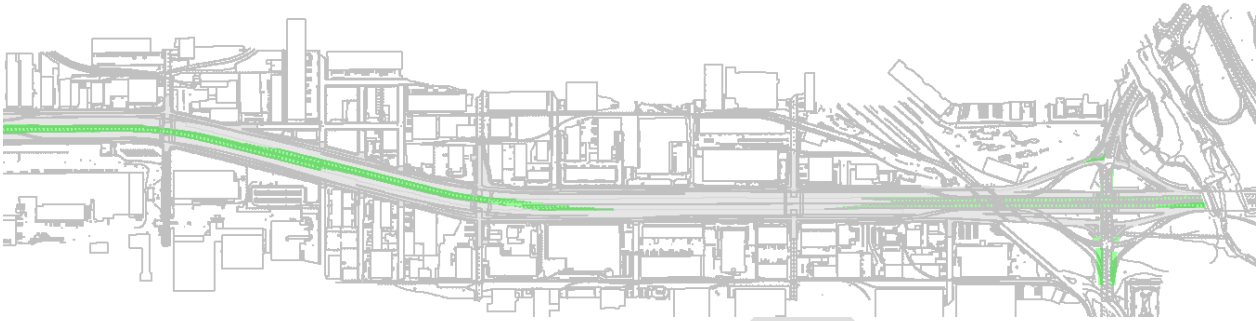
Area 2, Phase 3



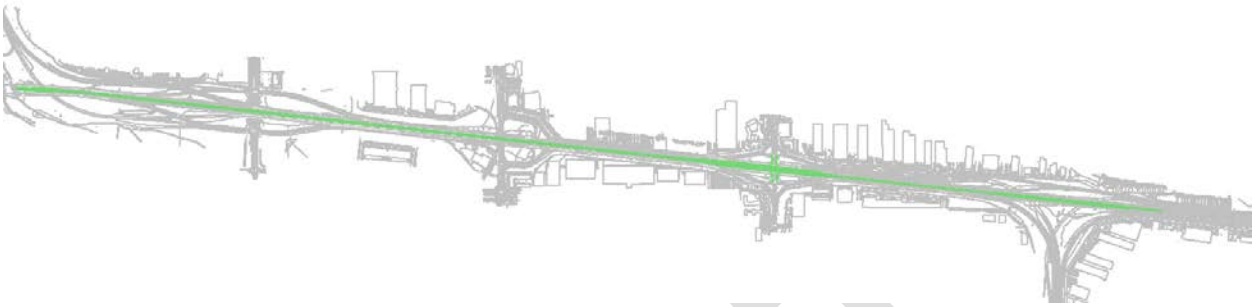
In Area 2 Phase 3, traffic on I-70 will be shifted to the outside lanes in each direction. Traffic on Stapleton Drive North and Stapleton Drive South will be in its final configuration. Major Work items include:

- Completion of Dahlia, Holly, and Quebec St. Bridges
- Completion of remaining I-70 inside pavement
- Quebec St. widening

Area 3-5, Phase 1

In Area 3-5, Phase 1 activities include construction of the new I-270 flyover bridge and removal of the existing structure. This phase constructs the outside widening of eastbound and westbound I-70, Central Park Boulevard ramps, and the new outside portion of the Peoria St. Bridge (outside portion), and completes tie-ins to the recently constructed Havana St. Interchange.

Area 3-5, Phase 2



Area 3-5, Phase 2 includes milling and overlaying the inside portion of the I-70 Mainline. Work will include construction of all necessary improvements including guardrail, lighting, and drainage.

2.2.3.a.iii Work Stages

Stages subdividing the Work within a Phase and combining similar components are also included in Attachment 1, MOT plans. In addition, FRMG's plans identify critical Work elements within each stage that must be completed before critical Work in the next stage of construction, location of traffic, temporary construction elements, noncritical work Areas available providing opportunities to speed completion of the Work, and general comments important for optimized traffic control management. FRMG Work Stages are summarized below as:

Area 1, Phase 1, Stage 1

- Temporary northbound Brighton Blvd. detour
- Temporary Steele St. detour
- Temporary westbound Steele St. exit
- 46th Avenue North (Steele to Colorado)
- Clayton St. structure and roadway

Area 1, Phase 1, Stage 2

- Northbound Brighton Blvd.
- York St. (partial)
- Columbine St. structure and roadway
- Steele St. Bridge
- Cook St. Bridge (partial)
- BNSF Bridge
- Monroe St. bridge and roadway (partial)
- Utility relocation in 46th Avenue

Area 1, Phase 1 Stage 3

- Southbound Brighton Blvd.

- York St. Bridge (partial)
- Josephine St. Bridge
- 46th Avenue North (overhang) between York and Josephine Streets, between Clayton and Milwaukee Streets
- Fillmore St. Bridge
- Temporary 46th Avenue detour – 46th Avenue south between Clayton and Milwaukee Streets
- Proposed eastbound I-70 east of Colorado Blvd.

Area 1, Phase 1 Stage 4

- Brighton Blvd. westbound entrance (partial)
- 46th Avenue North between Colorado Blvd. and Monroe St.
- Temporary westbound Steele St. entrance
- Colorado Blvd. Bridge (partial)
- Colorado Blvd. westbound exit
- Proposed westbound I-70 east of Colorado Blvd.

Area 1, Phase 1 Stage 5

- Brighton Blvd. Bridge (partial)
- Brighton Blvd. westbound entrance (partial)
- Brighton Blvd. westbound exit
- York St. Bridge (partial)
- Proposed westbound I-70 from Brighton Blvd. to Colorado Blvd.
- Proposed I-70 tunnel
- Tunnel systems
- 46th Avenue North from Brighton Blvd. to Steele St.
- Steele St. westbound entrance
- Temporary eastbound Colorado Blvd. exit
- Remaining Colorado Blvd.
- Colorado eastbound entrance

Area 1, Phase 2, Stage 1

- Demolish westbound viaduct
- Brighton Blvd. Bridge (partial)
- Temporary eastbound Brighton Blvd. entrance
- Remaining portions of the cross street bridges
- Eastbound I-70
- Eastbound Steele St. exit (proposed and temporary)

Area 1, Phase 2, Stage 2

- Eastbound Colorado Blvd. exit (partial)
- Remaining eastbound I-70 pavement at Colorado Blvd.

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Area 1, Phase 2, Stage 3

- Demolish eastbound viaduct
- Brighton Bridge (partial)
- Eastbound Brighton Blvd. entrance
- Remaining Eastbound I-70
- Remaining eastbound Steele St. exit
- Remaining eastbound Colorado Blvd. exit
- 46th Avenue South and cross street connections

Area 2, Phase 1, Stage 1

- Removal of I-70 median barrier and guardrail
- Temporary paving of I-70 median
- Stapleton Drive North and South detour

Area 2, Phase 1, Stage 2

- Stapleton Drive North outside construction (partial)
- Stapleton Drive South outside construction (partial)

Area 2, Phase 1, Stage 3

- Westbound I-70 widening
- Eastbound I-70 widening
- Dahlia St. eastbound bridge widening
- Holly St. westbound bridge widening
- Monaco St. outside bridge widening
- Westbound Quebec St. slip ramp to Stapleton Drive North and bridge
- Westbound Quebec St. exit widening

Area 2, Phase 2, Stage 1

- I-70 widening and median pavement
- Westbound Dahlia St. bridge widening
- Eastbound Holly St. bridge widening
- Monaco St. inside bridge
- Westbound railroad bridge
- Eastbound railroad bridges
- Westbound Quebec St. bridge widening
- Eastbound Quebec St. bridge widening
- Eastbound Quebec St. exit and temporary detour
- Eastbound Quebec St. entrance (partial)
- Westbound Quebec St. exit (partial)
- Westbound Quebec St. entrance
- Quebec St. widening (partial)

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Area 2, Phase 3, Stage 1

- I-70 remaining pavement
- Dahlia St. remaining bridge
- Holly St. remaining bridge
- Quebec St. inside bridge
- Quebec St. outside widening

Area 2, Phase 3, Stage 2

- Quebec St. inside pavement

Areas 3-5, Phase 1, Stage 1

- Construction of the I-270 flyover bridge
- I-270 roadway and ramp connections
- Demolition of the existing I-270 flyover bridge

Areas 3-5, Phase 1, Stage 2

- Drainage
- Widening excavation and embankment
- Widening full-depth pavement section
- Central Park Boulevard ramp connections
- Havana St. ramp connections
- Peoria St. ramp connections
- Peoria St. Bridge (partial)
- Southbound I-225 widening
- Outside guardrail removal and replacement
- Electrical & ITS infrastructure
- Landscaping

Areas 3-5, Phase 2, Stage 1

- Median drainage
- Mill and overlay of the existing roadway
- Demolition of existing Peoria St. Bridge
- Peoria St. Bridge (inside)
- Peoria St.
- Guardrail removal and replacement
- Electrical & ITS infrastructure
- Signage and pavement markings

2.2.3.b Existing and Future Conditions

As described in Section 2.1, existing transportation infrastructure deficiencies, increased transportation demand, limited transportation capacity, and existing safety concerns provided the impetus to develop an effective transportation solution for the Central 70 corridor.

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Traffic

An analysis of existing (2012) traffic conditions on mainline I-70 through the Project area, documented in the *I-70 East Phase 1 Interstate Access Request,* shows poor levels of service (LOS) in both directions of I-70 in the a.m. and p.m. peak periods.

A.M. Peak Period: For westbound traffic, the segment of I-70 from Havana St. to Peña Boulevard experiences LOS E or poorer operations from 6:30 a.m. to 9:00 a.m. Operations between Colorado Blvd. and Havana St. are improved, with LOS E or poorer operations occurring between 8:00 a.m. to 9:00 a.m. From Colorado Blvd. to Brighton Blvd., operations are similar to the west end of the corridor, with LOS E or poorer operations from 6:30 a.m. to 9:30 a.m. West of Brighton Blvd., a.m. peak operations are LOS D or better.

Eastbound, mainline I-70 from I-25 to Quebec St. experiences mainline or ramp congestion (LOS E or poorer) from 6:30 a.m. to 9:30 a.m. Other than some hotspot locations, the I-70 Mainline and ramps generally operate at LOS D or better east of Quebec St.

P.M. Peak Period: In the p.m. peak period, westbound operations show significant congestion (LOS E or poorer) from I-25 to Chambers Road. York St. to Quebec St. is the most congested segment of I-70, with LOS E or poorer operations occurring from 2:30 p.m. to 7:30 p.m. East of Quebec St., mainline I-70 experiences LOS E or poorer operations from 4:30 p.m. to 7:00 p.m.

Eastbound, mainline I-70 operates at LOS E or poorer from I-25 to Chambers Road from 4:30 p.m. to 7:15 p.m., with some hotspot locations operating at poor levels of service for the entire afternoon.

Off-Peak: Operations on I-70 improve to LOS D or better during midday, with overnight operations improving to LOS B or better.

The Project's lane and ramp Closure restrictions reflect this constrained operating environment and the need to maintain available capacity. FRMG's MOT plans will be developed to maximize traffic-carrying capacity during each major phase of construction by maximizing the use of desirable (rather than minimum) design criteria for lane shifts and realignments, maintaining full-shoulders where feasible, and limiting the use of mainline speed reductions. As permanent construction elements are completed and opened to the traveling public, traffic operations will continue to improve over the course of Project construction.

Safety

During construction, our goal is to reduce impacts to regional mobility and to safely, and also to effectively provide continued and reliable means of travel through the corridor. To accomplish this, Project specific minimum lane widths, shoulder widths, number of lanes, barrier/wall locations, and proposed work zones during construction will be maintained; these are further detailed in Section 2.2.3.e below. Through FRMG's minor shift in alignment between Brighton Blvd. and Colorado Blvd., traffic will remain in the existing configuration on the existing viaduct for the majority of construction in this area, ensuring limited disruption and a maximized work zone separation between the traveling public and construction workers. Throughout other areas of the Project, 8-foot shoulders will be maintained where possible. Where 8-foot shoulders can't be maintained, emergency pull-outs will be provided every half-mile, as further detailed in

Section 2.2.3.f.i below. Safely responding to traffic incidents will require coordination and management with appropriate agencies. A robust Incident Management Plan (IMP) will be developed to manage traffic incidents and emergency operations on the Project, improving responder safety and traffic flow, while decreasing of secondary traffic incidents and motorist delays. Intersections will be evaluated for traffic operations, as well as in advance of all major construction phases, and to safely optimize signal coordination. Construction signing and traffic control devices will be installed and will comply with CDOT Standard Specifications, the MUTCD, and other applicable standards. Glare screens, barrier reflectors, and delineators will be used throughout the Project, including in lighted areas, to further identify work zones and traffic devices to the traveling public. Pavement markings, striping, and minimum retroreflectivity will be maintained in accordance with *CDOT Standards and Specifications*. All traffic control devices will be continuously maintained along the Project, including the local street system.

Lighting

Existing and temporary lighting will be used to enhance safety within the Project limits during the Construction Period. Prior to the issuance of NTP 2, FRMG will submit an inventory of all existing lighting affected by the Construction Work to the Department for Acceptance. The report will indicate whether each individual light is working (or not) during nighttime conditions. Any existing lighting not in operation when NTP 2 is issued will be remedied by FRMG within 30 Calendar Days. FRMG will ensure existing lighting that has yet to be impacted by the Construction Work will be maintained and operated at its current level and will not be required to meet the minimum criteria in Table 16. Please reference Section 2.2.4.a for a complete discussion of temporary lighting strategies.

Business/Community Access

FRMG has completed a comprehensive inventory of business and private access points in the Project area. Please reference Section 2.2.4.c for MOT Strategies and construction sequencing to maintain public and private access.

2.2.3.c Known or Potential Closures

Closure strategies will include combining Closures where possible to increase construction activity within specific areas and limit overall disruption and duration to the traveling public; this is summarized in Table 1 below. Considerations that were made include:

- Optimized design that limited Closures of existing Steele/Vasquez I70 ramps, maintaining local connectivity to Interstate System
- Optimized design allowing for the near-full construction of cross street bridges in one phase, minimizing disruption/construction duration
- Temporary detour/pavement north of York St. bridge, minimizing and/or eliminating truck traffic on adjacent cross streets
- Mainline Closures being coordinated with planned ramp Closures, where possible, to limit disruption
- Major cross streets phased, reducing the number of traffic shifts and allowable night Closures

- Detour routes that use improved and/or temporary roadways to limit out-of-direction travel for ramp Closures when possible

Future MOT Variance Process

FRMG meets the requirements of Schedule 10, Section 2. However, during the continued development of the construction schedule and Work planning, if any innovation is discovered that benefits the Project by minimizing impacts to stakeholders, improves safety, or improves quality, an MOT variance will be submitted to the Department for Approval. Any MOT variance submitted by FRMG will include the following information:

- Summary of the MOT Variance request
- Justification for the MOT Variance request, including a list of the criteria that cannot be met and the reasons for not being able to meet the criteria
- Hour-by-hour schedule of planned Work activities during the variance
- Public notification methods and schedule
- List of affected emergency services and the schedule for notification
- List of affected local agencies or private owners and the method(s) and schedule for notification
- Description of additional public information surveys to be performed, if required
- List of any potential safety hazards to which the public may be exposed
- Proposed revisions to the accepted TCP or current MHT
- Proposed duration of lane Closure, detour, or phasing change for which a MOT variance is requested
- Confirmation that the variance complies with Local Agency requirements

FRMG will submit any MOT variance request to the Department and/or Local Agencies for approval 30 calendar days prior to implementation.

If during the above process, a Local Agency declares that a MOT variance is required, FRMG will comply with all Local Agency requirements to include submittal contents and time periods relating to the MOT variance and detours utilized on non-State owned facilities. After FRMG has received approval from the Local Agency, a copy of the approved MOT variance will be submitted to the Department for informational purposes.

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FRMG's MOT and Closure Plan Incorporates Approved ATC 45 and 49

- ATC 45 temporarily closes (one week Closure to construct detour) Colorado Blvd. Interchange EB Exit Ramp – **subject to final Approval by the Department and local agencies through the MOT Variance process as described above.**
- ATC 49 temporarily reduces the required vertical clearance for the I-70 underpasses at the Colorado Blvd. interchange during construction of the proposed Colorado Blvd. bridges over I-70.

2.2.3.c.i – 2.2.3.c.iv Traffic Shifts, Detour Description, Number of Shifts and Closures Expected; and Duration of Shifts, Closures, and Detours

Full I-70 Mainline, Ramps, and Roadway Closures

FRMG will not exceed 10 nighttime Closures of I-70 and four weekend Closures of I-70.

Full Closures of the I-70 Mainline, ramps, and specific Local Agency Roadways are permitted per Schedule 10, Section 2.11.5 and 2.11.6. In accordance with Project requirements, FRMG will submit a Closure request for every permitted full Closure for Acceptance. Each Closure request will include the following:

- Detailed description of the permitted full Closure, its need, and Closure type
- Construction activities that will occur, and the date, timing, and duration of requested Closure
- Detours for full-permitted Closures
- Description of the coordination and relationship between the requested permitted Closure and:
  - Any other Closures that will be in effect during the same period of time
  - Any past Closures relating to the requested Closure, along with results and outcomes of past Closures
  - Future Closures of the same facility

Table 1 identifies expected known or potential I-70 Mainline, roadway, and ramp full Closures, along with our plan to meet and manage MOT phasing requirements. FRMG complies with section 2.11.5-2.11.11 regarding potential roadway, ramp and lane Closures. The table below depicts major activities as currently identified in our MOT plans and schedule. This table will be continuously updated as the design, schedule and TCPs are finalized and in compliance with the Project Agreement roadway and lane closure restrictions.

By paragraph number of Schedule 10, Section 2, Table 1 presents:

2.2.3.c.i. Traffic Shifts

FRMG's proposed traffic shifts are described in the fourth column of Table 1. Our MOT minimizes traffic shifts and complies with rules and regulations.

2.2.3.c.ii .Detours

The detours are listed in the sixth column of Table 1.

2.2.3.ii.A. Identification of Detour Limits

The numbers in the sixth column of Table 1 show the detour number that corresponds to the detour maps shown below in section 2.2.3.d Proposed Detour Routes.

2.2.3.ii.B. Identification and Coordination with Other Construction Projects

This section follows Table 1.

2.2.3.iii. Number of Shifts Expected

The number of shifts are shown in the seventh column of Table 1.

2.2.3.c.iv. Duration of Shifts and Detours

The approximate duration of shifts and detours is the eighth column of Table 1.

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Table 1. Known or Potential I-70 Mainline, Roadway, and Ramp Full Closures

Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
Area 1								
I-70 Mainline								
Phase 1 Stage 1	Mainline	Between Colorado and Dahlia	Shift EB and WB traffic toward outside shoulder to pave median and remove barriers	Nightly lane Closure to set traffic	NA	1	2 Mo SH	2.11.9
Phase 1 Stage 3	Mainline	Between Colorado and Dahlia	Shift EB and WB traffic toward median	Nightly lane Closure to set traffic	NA	1	5 Mo SH	2.11.9
Phase 1 Stage 4	Mainline	Between Colorado and Dahlia	Shift WB traffic onto existing EB lanes, shift EB traffic onto new pavement	Nightly lane Closure to set traffic	NA	1	18 Mo SH	2.11.9
Phase 1 Stage 4	Mainline	@ Colorado	NA	Night Closure to set girders	D-1	NA	1 Night CL	2.11.6.a
Phase 1 Stage 4	Mainline	@ Colorado	NA	Night Closure to pour deck	NA	NA	1 Night CL	2.11.9
Phase 1 Stage 4	WB Mainline	@ Colorado	NA	Reduced vertical clearance at Colorado	D-1	NA	18 Mo	ATC 49
Phase 1 Stage 5	Mainline	@ Colorado	NA	Weekend Closure to Demo Colorado bridge	D-1	NA	1 Weekend CL	2.11.6.a
Phase 1 Stage 5	Mainline	@ Colorado	NA	Night Closure to set girders	D-1	NA	1 Night CL	2.11.6.a
Phase 1 Stage 5	Mainline	@ Colorado	NA	Night Closure to pour deck	NA	NA	1 Night CL	2.11.9
Phase 1 Stage 5	EB Mainline	@ Colorado	NA	Reduced vertical clearance at Colorado	D-1	NA	26 Mo	ATC 49

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Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
Phase 1 Stage 5	Mainline	WB @ Brighton Blvd.	Shift WB traffic toward median for construction of Brighton Blvd bridge.	Nightly lane Closure to set traffic	NA	1	3 Mo SH	2.11.9
Phase 1 Stage 5	Mainline	Between Colorado and Dahlia	Shift EB and WB traffic onto new and existing pavement to allow construction of bridges at Dahlia, Holly, Monaco, Railroad, and Quebec	Nightly lane Closure to set traffic	NA	1	4 Mo SH	2.11.9
Phase 2 Stage 1	Mainline	WB	Shift WB traffic onto new pavement in the trench	Nightly lane Closure to set traffic	D-1	1		2.11.6.a
Phase 2 Stage 1	Mainline	EB	Shift EB traffic to outside shoulder on the viaduct	Nightly lane Closure to set traffic	NA	1	8 Mo SH	2.11.9
Phase 2 Stage 2	Mainline	EB	Shift EB traffic onto new pavement in the trench	Nightly lane Closure to set traffic	D-1	1		2.11.6.a
Final	Mainline		Shift traffic to completed I-70 Mainline	Nightly lane Closure to set traffic	NA	1		2.11.9
I-70 Ramps								
Phase 1 Stage 4	Brighton WB entrance		Shift traffic to outside	Night Closure to set traffic	D-5	1	1 Mo SH 1 Night CL	2.11.10
Phase 1 Stage 5	Brighton WB entrance		Shift traffic onto new pavement	Night Closure to set traffic	D-5	1	1 Mo SH 1 Night CL	2.11.10
Final	Brighton WB entrance		Shift traffic to completed ramp	Night Closure to set traffic	D-5	1	1 Night CL	2.11.10
Phase 1 Stage 5	Brighton WB exit		NA	6month Closure to construct ramp	D-4	1	6 Months CL	2.11.6.b

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Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
Final	Brighton EB exit		Shift traffic to completed ramp	Night Closure to set traffic	D-51	1	1 Night CL	2.11.6.10
Phase 2 Stage 2	Brighton EB entrance		Shift traffic to temporary detour	Night Closure to set traffic	D-6	1	1 Night CL	2.11.10
Final	Brighton EB entrance		Shift traffic to completed ramp	Night Closure to set traffic	D-6	1	1 Night CL	2.11.10
Phase 1 Stage 1	York WB entrance		NA	Closed due to construction of UPRR Bridge	D-10	NA	NA	2.11.6.b
Phase 2 Stage 2	York EB exit		York traffic to use existing viaduct and York exit	NA	NA	1	NA	2.11.6.b
Phase 2 Stage 3	York EB exit		NA	Closed due to viaduct removal	D-9	1	NA	2.11.6.b
Phase 1 Stage 2	Steele WB exit		Shift traffic to temporary detour (D-12)	Night Closure to set traffic and construct tie-in	D-15	1	1 Night CL 2 Mo SH	2.11.6.b
Phase 1 Stage 5	Steele WB exit		Traffic to use proposed Colorado exit and 46th North	Ramp permanently closed	NA	NA	NA	2.11.6.b
Phase 1 Stage 2	Steele WB entrance		Shift traffic to tie into temporary Steele detour	Night Closure to set traffic	D-13	1	1 Night CL	2.11.6.b
Phase 1 Stage 3	Steele WB entrance		Shift traffic to tie into proposed Steele	Night Closure to set traffic	D-13	1	1 Night CL	2.11.6.b
Phase 1 Stage 5	Steele WB entrance		Shift traffic to temporary detour (D-50)	Night Closure to set traffic	D-13	1	1 Night 2 Mo SH	2.11.6.b
Phase 2 Stage 1	**Steele WB entrance**		**Open traffic to completed ramp**	**Night Closure to set traffic**	**D-13**	**1**	**1 Night CL**	**2.11.6.b**
Phase 2 Stage 2	Steele EB exit		Traffic to use existing viaduct and Steele exit	NA	NA	1	NA	2.11.6.b

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Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
Phase 2 Stage 3	Steele EB exit		Shift traffic to temporary detour (D-14)	Night Closure to set traffic	D-17	1	1 Night CL 4 MO SH	2.11.6.b
Final	Steele EB exit		Open traffic to completed ramp	Night Closure to set traffic	D-17	1	1 Night CL	2.11.6.b
Phase 2 Stage 2	Steele EB entrance		Traffic to use existing viaduct and Colorado exit	NA	NA	1	NA	2.11.6.b
Phase 2 Stage 3	Steele EB entrance		NA	Closed due to viaduct removal	D-16	NA	NA	2.11.6.b
Phase 1 Stage 4	Colorado WB loop entrance		NA	Ramp permanently closed	D-19	NA	NA	2.11.6.b
Phase 1 Stage 4	Colorado EB loop entrance		NA	Ramp permanently closed	D-20	NA	NA	2.11.6.b
Phase 1 Stage 4	Colorado EB exit		Shift ramp to tie in with Colorado to construct Colorado widening	Night Closure to set traffic	D-21	1	1 Night CL	2.11.10
Phase 1 Stage 5	Colorado EB exit		Shift traffic to temporary detour (D-25)	Closure to construct detour	D-21	1	1 Week CL 7 MO SH	ATC 45 & Pending MOT Variance Process Approval
Phase 2 Stage 3	Colorado EB exit		Shift traffic to new pavement	Night Closure to set traffic	D-21	1	1 Night CL	2.11.10
Final	Colorado EB exit		Shift traffic to completed ramp	Night Closure to set traffic	D-21	1	1 Night CL	2.11.10
Phase 1 Stage 4	Colorado WB exit		NA	5month Closure to construct ramp	D-22	1	5 Months CL	2.11.6.b

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Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
Phase 1 Stage 5	Colorado WB exit		NA	1month Closure to complete Colorado Blvd	D-22	1	1 Month CL	2.11.6.b
Final	Colorado WB exit		Open traffic to completed ramp	NA	NA	1	NA	2.11.6.b
Phase 1 Stage 4	Colorado EB entrance		Shift traffic to temporary detour	Night Closure to set traffic	D-23	1	1 Night CL	2.11.10
Phase 2 Stage 2	Colorado EB entrance		Open traffic to completed ramp	Night Closure to set traffic	D-23	1	1 Night CL	2.11.10
Brighton Blvd								
Phase 1 Stage 2	Brighton Blvd		Shift NB traffic to temporary detour (D-3)	Nightly Lane Closure to set traffic	D-2	1	4 MO SH	2.11.5.a.iii
Phase 1 Stage 3	Brighton Blvd		Shift SB traffic onto new NB pavement	Nightly Lane Closure to set traffic	D-2	1		2.11.5.a.iii
Phase 1 Stage 4	Brighton Blvd		Shift traffic onto new pavement	Nightly Lane Closure to set traffic	D-2	1		2.11.5.a.iii
Phase 1 Stage 5	Brighton Blvd		Shift traffic to construct Columns and abutments	Night Closure to set girders & pour deck	D-2	2	2 Nights CL	2.11.5.a.iii
Phase 2 Stage 1	Brighton Blvd		Shift traffic to construct Columns and abutments	Night Closure to set girders & pour deck	D-2	2	2 Nights CL	2.11.5.a.iii
Phase 2 Stage 3	Brighton Blvd		Shift traffic to construct Columns and abutments	Night Closure to set girders & pour deck	D-2	2	2 Nights CL	2.11.5.a.iii
Final	Brighton Blvd		Open traffic to completed Brighton Blvd	NA	NA	NA	NA	2.11.5.a.iii

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Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
York St.								
Phase 1 Stage 1	York St		Provide bidirectional traffic from 47th to Stevenson	Night Closure to set traffic	D-7	1	1 Night CL	2.11.5.a.iv
Phase 1 Stage 3	York St		Shift traffic to temporary detour (D-8)	Night Closure to set traffic	D-7	1	1 Night CL 4 MO SH	2.11.5.a.iv
Phase 1 Stage 5	York St		NA	Closed between 46th N and 46th Ave to complete bridge	D-7	1	4 Mo CL	2.11.5.a.iv
Phase 2 Stage 1	York St		NA	Temporary Closure for WB viaduct removal	D-7	NA	10 Day CL	2.11.5.a.iv
Phase 2 Stage 3	York St		NA	Temporary Closure for EB viaduct removal	D-7	NA	10 Day CL	2.11.5.a.iv
Final	York St		Shift traffic to completed York St	NA	NA	NA	NA	2.11.5.a.iv
Josephine St.								
Phase 1 Stage 1	Josephine St		Shift traffic for utility relocation	NA	NA	2		2.11.5.a.iv
Phase 1 Stage 2	Josephine St		Shift traffic for utility relocation	NA	NA	2		2.11.5.a.iv
Phase 1 Stage 3	Josephine St		NA	Closure for construction of bridge	D-42	NA	5 Mo CL	2.11.5.a.iv
Phase 1 Stage 4	Josephine St		Open traffic to new bridge	NA	NA	1	NA	2.11.5.a.iv
Phase 2 Stage 1	Josephine St		NA	Temporary Closure for WB viaduct removal and construction of approach slabs	D-42	1	10 Day CL	2.11.5.a.iv

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Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
Phase 2 Stage 3	Josephine St		NA	Temporary Closure for EB viaduct removal and construction of 46th S	D-42	NA	10 Day CL	2.11.5.a.iv
Final	Josephine St		Shift traffic to completed Josephine	NA	NA	NA	NA	2.11.5.a.iv
Columbine St.								
Phase 1 Stage 1	Columbine St		Shift traffic for utility relocation	NA	NA	2		2.11.5.a.iv / 2.11.7
Phase 1 Stage 2	Columbine St		NA	2-month Closure for bridge construction	D-43	NA	2 Mo CL	2.11.5.a.iv / 2.11.7
Phase 1 Stage 5	Columbine St		Shift traffic for cover systems completion	NA	NA	2	1 Mo SH	2.11.5.a.iv / 2.11.7
Phase 2 Stage 1	Columbine St		NA	Temporary Closure for WB viaduct removal and construction of approach slabs	D-43	2	10 Day CL	2.11.5.a.iv / 2.11.7
Phase 2 Stage 3	Columbine St		NA	Temporary Closure for EB viaduct removal and construction of 46th S	D-43	2	10 Day CL	2.11.5.a.iv / 2.11.7
Final	Columbine St.		Shift traffic to completed Columbine St.	NA	NA	NA	NA	2.11.5.a.iv / 2.11.7
Clayton St.								
Phase 1 Stage 1	Clayton St		Shift traffic for utility relocation	NA	NA	2		2.11.5.a.iv / 2.11.7
Phase 1 Stage 1	Clayton St		NA	2-month Closure for bridge construction	D-44	2	2 Mo CL	2.11.5.a.iv / 2.11.7

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Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
Phase 1 Stage 5	Clayton St		Shift traffic for cover systems completion	NA	NA	2	1 Mo SH	2.11.5.a.iv / 2.11.7
Phase 2 Stage 1	Clayton St		NA	Temporary Closure for WB viaduct removal and construction of approach slabs	D-44	2	10 Day CL	2.11.5.a.iv / 2.11.7
Phase 2 Stage 3	Clayton St		NA S	Temporary Closure for EB viaduct removal and construction of 46th S	D-44	2	10 Day CL	2.11.5.a.iv / 2.11.7
Final	Clayton St.		Shift traffic to completed Clayton St	NA	NA	NA	NA	2.11.5.a.iv / 2.11.7
Fillmore St.								
Phase 1 Stage 3	Fillmore St		NA	Closed for bridge construction	D-45	NA	6 Mo CL	2.11.5.a.iv
Phase 1 Stage 4	Fillmore St		Shift traffic to new bridge	NA	NA	NA	NA	2.11.5.a.iv
Phase 2 Stage 1	Fillmore St		NA	Temporary Closure for WB viaduct removal and construction of approach slabs	D-45	2	10 Day CL	2.11.5.a.iv
Phase 2 Stage 3	Fillmore St		NA	Temporary Closure for EB viaduct removal and construction of 46th S	D-45	2	10 Day CL	2.11.5.a.iv
Final	Fillmore St.		Shift traffic to completed Fillmore St	NA	NA	NA	NA	2.11.5.a.iv

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Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
Steele/Vasquez Boulevard								
Phase 1 Stage 1	Vasquez	West of Steele	NA	Permanently closed for construction of I-70	NA	NA	NA	2.11.5.a.iii -
Phase 1 Stage 2	Steele		Shift traffic to temporary detour (D-12)	Nightly lane Closure to set traffic	D-11	1	4 Mo SH	2.11.5.a.iii
Phase 1 Stage 3	Steele/Vasquez		Shift traffic to new bridge, shift traffic to construct Vasquez north of I-70	Nightly lane Closure to set traffic	D-11	1		2.11.5.a.iii
Phase 2 Stage 1	Steele		NA	Closure for WB viaduct removal	D-11	NA	2 Night CL	2.11.5.a.iii
Phase 2 Stage 3	Steele		NA	Temporary Closure for EB viaduct removal	D-11	NA	2 Night CL	2.11.5.a.iii
Final	Steele/Vasquez		Shift traffic to completed Steele/Vasquez	NA	NA	NA	NA	2.11.5.a.iii
Colorado Blvd.								
Phase 1 Stage 3	Colorado Blvd		Shift traffic to set temporary barrier along the SB outside shoulder	Nightly lane Closure to set traffic	D-18	1		2.11.5.a.iii
Phase 1 Stage 5	Colorado Blvd		Shift traffic to new bridge, shift traffic to construct proposed Colorado tie-ins	Night Closure to set traffic	D-18	4	2 Nights CL	2.11.5.a.iii
Phase 2 Stage 1	Colorado Blvd		Shift traffic to completed Colorado Blvd	NA	NA	NA	NA	2.11.5.a.iii
Monroe St.								
Phase 1 Stage 3	Monroe St		Open traffic to Monroe St	NA	NA	NA	NA	NA

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Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
Phase 2 Stage 1	Monroe St		Closed	Temporary Closure for WB viaduct removal	NA	NA	10 Day CL	NA
Phase 2 Stage 3	Monroe St		Closed	Temporary Closure for EB viaduct removal	NA	NA	10 Day CL	NA
Final	Monroe St		Shift traffic to completed Monroe St	NA	NA	NA	NA	NA
Existing 46th Avenue								
Phase 1 Stage 1	46th	Brighton to York	NA	Closed for construction of UPRR Bridge	D-10	NA	39 Mo CL	2.11.5.c.i
Phase 1 Stage 1	46th	York to Jackson	Shift 1 lane in each direction to north side of 46th	NA	NA	2	7 Mo SH	2.11.5.c.ii
Phase 1 Stage 2	46th	Fillmore to Jackson	Shift traffic to north and south sides of 46th	NA	NA	1	4 Mo SH	2.11.5.c.ii
Phase 1 Stage 3	46th	York to Fillmore	Shift 1 lane in each direction to south side of 46th	NA	NA	1	6 Mo SH	2.11.5.c.ii
Phase 1 Stage 3	46th	Steele to Monroe	NA	WB 46th permanently closed from Steele to Monroe	46th N	NA	NA	2.11.5.c.iv
Phase 1 Stage 4	46th	Columbine to Steele	Shift traffic to temporary detour (D-40)	NA	NA	1	1 Day SH	2.11.5.c.ii
Phase 2 Stage 2	46th	York to Colorado	NA	Closed for viaduct removal and construction of 46th S	46th N	NA	4 Mo CL	2.11.5.c.ii/iii
Area 2								
I-70 Mainline								
Phase 1 Stage 1	Mainline		Shift EB and WB traffic toward outside shoulder	Nightly lane Closure to set traffic	NA	1	2 Mo SH	2.11.9

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Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
			to pave median and remove barriers					
Phase 1 Stage 3	Mainline		Shift EB and WB traffic toward median	Nightly lane Closure to set traffic	NA	1	5 Mo SH	2.11.9
Phase 2 Stage 1	Mainline		Shift EB and WB traffic onto new and existing pavement to allow construction of bridges at Dahlia, Holly, Monaco, Railroad, and Quebec	Nightly lane Closure to set traffic	D-1	1		2.11.6.a
Phase 3 Stage 1	Mainline		Shift EB and WB traffic onto new pavement to allow construction of bridges at Dahlia, Holly, Monaco, Railroad, and Quebec	Nightly lane Closure to set traffic	D-1	1		2.11.6.a
Final	Mainline		Shift EB and WB to completed I-70 Mainline	Nighttime lane Closures to stripe	NA	1		2.11.9
I-70 Ramps								
Phase 1 Stage 2	Stapleton WB entrance		Shift traffic onto temp pavement	Night Closure to set traffic	D-24	1	5 Mo SH 1 Night CL	2.11.10
Phase 1 Stage 2	Stapleton EB exit		Shift traffic onto temp pavement	Night Closure to set traffic	D-26	1	5 Mo SH 1 Night CL	2.11.10
Phase 1 Stage 2	Stapleton WB exit		Shift traffic onto temp pavement	Night Closure to set traffic	D-27	1	5 Mo SH 1 Night CL	2.11.10
Phase 1 Stage 2	Stapleton EB entrance		Shift traffic onto temp pavement	Night Closure to set traffic	D-28	1	5 Mo SH 1 Night CL	2.11.10

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Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
Phase 1 Stage 3	Quebec WB exit		Shift traffic to inside of ramp	Night Closure to set traffic	D-33	1	7 Mo SH 1 Night CL	2.11.10
Phase 1 Stage 3	Quebec WB entrance		Shift traffic to inside of ramp	Night Closure to set traffic	D-34	1	7 Mo SH 1 Night CL	2.11.10
Phase 2 Stage 1	Stapleton/Holly WB entrance		Shift traffic to Holly ramp and tie into shifted mainline configuration	NA	NA	1	1 Night	2.11.10
Phase 2 Stage 1	Stapleton/Holly EB exit		Shift traffic to Holly ramp and tie into shifted mainline configuration	NA	NA	1	1 Night	2.11.10
Phase 2 Stage 1	Stapleton/Holly WB exit		Shift traffic to Holly ramp and tie into shifted mainline configuration	NA	NA	1	1 Night	2.11.10
Phase 2 Stage 1	Stapleton/Holly EB entrance		Shift traffic to Holly ramp and tie into shifted mainline configuration	NA	NA	1	1 Night	2.11.10
Phase 2 Stage 1	Quebec WB exit		Shifted onto new pavement	Night Closure to set traffic	D-33	1	1 Night CL	2.11.10
Phase 2 Stage 1	Quebec WB entrance		NA	6-month Closure to construct ramp	D-30	NA	6 Month CL	2.11.6.b
Phase 2 Stage 1	Quebec EB exit		NA	6-month Closure to construct ramp	D-31	NA	6 Month CL	2.11.6.b
Phase 3 Stage 1	Holly WB entrance		Shift traffic to tie into shifted mainline configuration	Night Closure to set traffic	D-24	1	1 Night CL	2.11.10

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Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
Phase 3 Stage 1	Holly EB exit		Shift traffic to tie into shifted mainline configuration	Night Closure to set traffic	D-26	1	1 Night CL	2.11.10
Phase 3 Stage 1	Holly WB exit		Shift traffic to tie into shifted mainline configuration	Night Closure to set traffic	D-27	1	1 Night CL	2.11.10
Phase 3 Stage 1	Holly EB entrance		Shift traffic to tie into shifted mainline configuration	Night Closure to set traffic	D-28	1	1 Night CL	2.11.10
Phase 3 Stage 1	Quebec WB exit		Shift traffic to completed ramp	Night Closure to set traffic	D-33	1	1 Night CL	2.11.10
Phase 3 Stage 1	Quebec WB entrance		Open traffic to completed ramp	NA	NA	1	1 Night	2.11.10
Phase 3 Stage 1	Quebec EB exit		Open traffic to new pavement and temp pavement	NA	NA	1	1 Night	2.11.10
Phase 3 Stage 1	Quebec EB entrance		Shift traffic to construct ramp tie	Night Closures to construct ramp tie-in	D-34	2	2 Night CL	2.11.10
Phase 3 Stage 2	Holly WB entrance		Shift traffic to completed ramp	Night Closure to set traffic	D-24	1	1 Night CL	2.11.10
Phase 3 Stage 2	Holly EB exit		Shift traffic to completed ramp	Night Closure to set traffic	D-26	1	1 Night CL	2.11.10
Phase 3 Stage 2	Holly WB exit		Shift traffic to completed ramp	Night Closure to set traffic	D-27	1	1 Night CL	2.11.10
Phase 3 Stage 2	Holly EB entrance		Shift traffic to completed ramp	Night Closure to set traffic	D-28	1	1 Night CL	
Phase 3 Stage 2	Quebec EB entrance		Shift traffic to completed ramp	Night Closure to set traffic	D-34	1	1 Night CL	2.11.10

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Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
Stapleton Drive North and South								
Phase 1 Stage 1	Stapleton Drive North and South		Shift traffic away from the freeway to construct temp widening pavement	Nightly lane Closure to set traffic	NA	1	5 Mo SH	2.11.5.c.v
Phase 1 Stage 2	Stapleton Drive North and South		Shift traffic onto pavement	Nightly lane Closure to set traffic	NA	1	5 Mo SH	2.11.5.c.v
Phase 2 Stage 1	Stapleton Drive North and South		Shift traffic to completed road	Nightly lane Closure to set traffic	NA	1		2.11.5.c.v
Dahlia St.								
Phase 1 Stage 1	Dahlia St. @ I-70		NA	Closures to construct pavement	D-46	NA	10 Day CL	2.11.5.a.iv
Phase 1 Stage 2	Dahlia St. @ I-70		NA	Closures to construct proposed intersection	D-46	NA	10 Day CL	2.11.5.a.iv
Phase 1 Stage 3	Dahlia St. @ Stapleton Dr. S		NA	Closures to construct widening and to set bridge girders and pour deck	D-46	NA	2 Mo CL	2.11.5.a.iv
Phase 2 Stage 1	Dahlia St. @ Stapleton Dr. N		NA	Closures to construct widening and to set bridge girders and pour deck	D-46	NA	2 Mo CL	2.11.5.a.iv
Phase 3 Stage 1	Dahlia St. @ I-70		NA	Closures to construct widening and to set bridge girders and pour deck	D-46	NA	2 Mo CL	2.11.5.a.iv

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Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
Holly St.								
Phase 1 Stage 1	Holly St. @ I-70		NA	Closures to construct pavement	D-47	NA	10 Day CL	2.11.5.a.iv
Phase 1 Stage 2	Holly St. @ I-70		NA	Closures to construct proposed intersection	D-47	NA	10 Days CL	2.11.5.a.iv
Phase 1 Stage 3	Holly St. @ Stapleton Dr. N		NA	Closures to construct widening and to set bridge girders and pour deck	D-47	NA	2 Mo CL	2.11.5.a.iv
Phase 2 Stage 1	Holly St. @ Stapleton Dr. S		NA	Night Closures to construct widening and to set bridge girders and pour deck	D-47	NA	2 Night CL	2.11.5.a.iv
Phase 3 Stage 1	Dahlia St. @ I-70		NA	Night Closures to construct widening and to set bridge girders and pour deck	D-47	NA	2 Night CL	2.11.5.a.iv
Monaco St.								
Phase 1 Stage 1	Monaco St. @ I-70		NA	Closures to construct temp pavement	D-48	NA	10 Day CL	2.11.5.a.iv
Phase 1 Stage 2	Monaco St. @ I-70		NA	Closures to construct proposed intersection	D-48	NA	10 Day CL	2.11.5.a.iv
Phase 1 Stage 3	Monaco St. @ I-70		NA	Closures to construct widening and to set bridge girders and pour deck	D-48	NA	4 Mo CL	2.11.5.a.iv
Phase 2 Stage 1	Monaco St. @ I-70		NA	Closures to construct widening and to set bridge girders and pour deck	D-48	NA	3 Mo CL	2.11.5.a.iv

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Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
Quebec St.								
Phase 2 Stage 1	Quebec St. @ I-70		Shift traffic toward median	Night Closures set traffic and to set girders and pour deck	D-29	1	2 Night CL 2.5 Mo SH	2.11.5.a.iii
Phase 3 Stage 1	Quebec St. @ I-70		NA	Night Closures to set girders and pour deck	D-29	NA	2 Night CL	2.11.5.a.iii
Phase 3 Stage 2	Quebec St. @ I-70		Shift traffic to outside on new pavement to construct inside pavement	Nightly lane Closure to set traffic	D-29	1	2.5 Mo SH	2.11.5.a.iii
Areas 3-5								
I-70 Mainline								
Phase 1 Stage 1	Mainline	I-270 to Chambers	Shift EB and WB traffic to median and construct mainline widening to outside	Nightly lane Closure to set traffic	NA	1	13 Mo SH	2.11.6.a
Phase 1 Stage 1	Mainline	@ I-270	Shift EB and WB to outside to construct I-270 flyover column	Nightly lane Closure to set traffic	NA	1	1 Mo SH	2.11.6.a
Phase 1 Stage 1	Mainline	@ I-270	NA	Night Closure to set bridge girders	D-1	NA	2 Night CL	2.11.6.a
Phase Stage 1	Mainline	@ I-270	NA	Night lane Closures to set deck panels	NA	2		2.11.6.a
Phase 1 Stage 1	Mainline	@ I-270	NA	Night Closure to cast deck		2	1 Night CL	2.11.6.a
Phase 1 Stage 2	Mainline	@ I-270	NA	weekend Closure to demo existing 270 flyover structure	D-1	NA	1 Weekend	2.11.6.a

Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
Phase 1 Stage 2	Mainline	@ I-270	Shift EB and WB to median to construct mainline widening to outside	Nightly lane Closure to set traffic	D-1	1		2.11.6.a
Phase 2 Stage 1	Mainline	Sand Creek to Chambers	Shift EB and WB traffic to completed outside lanes and mill/overlay inside	Night lane Closures to mill/overlay inside lanes	NA	1		2.11.6.a
Final	Mainline	Sand Creek to Chambers	Shift EB and WB to completed I-70 Mainline	Nightly lane Closure to set traffic	NA	1		2.11.6.a
I-270								
Phase 1 Stage 1	I-270 EB ramp		NA	Night lane Closure to complete ramp tie-in overlay	NA	1		2.11.9
Phase 1 Stage 2	I-270 WB ramp		NA	Night lane Closure to complete ramp tie-in	NA	1		2.11.9
I-70 Ramps								
Phase 1 Stage 2	WB I-70 Ramp to WB I-270		NA	Night lane Closure to complete ramp tie-in Open to final configuration at end of Stage 1	NA	1		2.11.9
Phase 1 Stage 2	Central Park Blvd. Interchange	EB and WB exit ramp	NA	Night Closure to complete ramp tie-in	D-36	1	1 Night CL	2.11.10

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Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
		EB and WB entrance ramp						
Phase 1 Stage 2	Havana St. Interchange	EB and WB exit ramp EB and WB entrance ramp	NA	Night Closure to complete ramp tie-in overlay	D-37	1	1 Night CL	2.11.10
Phase 1 Stage 2	Peoria St. Interchange	EB exit ramp EB and WB entrance ramp	NA	Night Closure to complete ramp tie-in overlay	D-39	1	1 Night CL	2.11.10
Phase 2 Stage 1	Chambers Blvd. Interchange	EB exit ramp	No roadway reconstruction; restripe in final configuration	Nightly lane Closure to restripe	NA	NA		2.11.10
Peoria St.								
Phase 1 Stage 2	Peoria St. Interchange	NB and SB Peoria	Shift traffic toward median	Night Closures set traffic and to set girders and pour deck	D-38	1	2 Night CL 2.5 Mo SH	2.11.5.a.iii

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Phase/ Stage	Roadway/ Ramp	Location	Description of Shift	Description of Closure	Detour	No. of Shifts	Approx. Shift (SH) Closure (CL) Duration	Section
Phase 1 Stage 2	Peoria St. Interchange	NB and SB Peoria	NA	Night Closures to set girders and pour deck	D-38	NA	2 Night CL	2.11.5.a.iii
Phase 2 Stage 1	Peoria St. Interchange	NB and SB Peoria	Shift traffic to outside on new pavement to construct inside pavement	Nightly lane Closure to set traffic	D-38	1	2.5 Mo SH	2.11.5.a.iii

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North-South Facilities Roadway Closures

In addition to the Department's requirements, FRMG will follow City and County of Denver traffic control procedures for St./Public Occupancy Permits and required approvals for roadway closures. Table 2 summarizes Local Agency north-south roadway Construction Work restrictions where concurrent full-road Closures are not permitted.

Table 2. Concurrent Full Roadway Closure Restrictions for North-South Facilities

	Roadway Closures Not Permitted								
	UPRR Crossing	York St.	Josephine St.	Columbine St.	Clayton St.	Fillmore St.	Dahlia St.	Holly St.	Monaco St.
York St.		-	X	X					
Josephine St.		X	-	X					
Columbine St.		X	X	-	X				
Clayton St.				X	-	X			
Fillmore St.					X	-			
Dahlia St.							-	X	
Holly St.							X	-	X
Monaco St.								X	-

X means concurrent full roadway Closures are not permitted

Permitted Roadway Lane Closure Hours

In addition to the full Closure requirements identified above, nightly lane Closures are allowed per Schedule 10, Section 2.11.

FRMG will meet the following requirements:

- Closures will be Approved by the Department.
- Closure time restrictions will be met as identified in Tables 3 through 13.
- No lane Closures are permitted on a holiday.
- I-70 Mainline interchange entrance and exit Ramp Lane Closure will be permitted if:
  - An alternate route or temporary detour is provided
  - Such Closure is for duration of 48 hours or less
  - Two consecutive eastbound and westbound exit ramps are not permitted to be subject to a Closure at the same time
- During restricted Closure hours, all lanes and turn lanes as they exist prior to construction must be maintained.

The following tables, directly from the requirements of Schedule 10, Section 2.11, identify the lane Closure restrictions on the Project.

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Table 3. Central 70 Lane Closure Requirements – Key to Tables 4 through 13

Table Description	Mile Marker
Table 4 Single-Lane Closures on the I-70 Mainline from Pecos St. to Airport Boulevard	Pecos St. to Airport Boulevard (MM 273 to MP 284.627)
Table 5 Multi-Lane Closures on the I-70 Mainline from Pecos St. to Airport Boulevard	Pecos St. to Airport Boulevard (MP 273 to MP 284.627)
Table 6 Single-Lane Closures on the I-270 Mainline from I-70 to Vasquez Boulevard	I-70 to Vasquez Boulevard (MM 5.351 to MP 2.358)
Table 7 Single-Lane Closures on the I-225 Mainline from I-70 to 6th Avenue	I-70 to 6th Avenue (MP 11.997 to MP 8.954)
Table 8 Multi-Lane Closures on the I-225 Mainline from I-70 to 6th Avenue	I-70 to 6th Avenue (MP 11.997 to MP 8.954)
Table 9 Permitted Ramp Lane Closures on the I-70 Mainline from Pecos St. to Airport Boulevard	Pecos St. to Airport Boulevard (MP 273 to MP 284.627)
Table 10 Brighton Blvd./York St. Single-Lane Closure Times	Brighton Blvd./York St. from 6th Ave to York St. (MP 8.954 to MP 0.961)
Table 11 Steele St./Vasquez Boulevard Single-Lane Closure Times	Steele St./Vasquez Boulevard from I-70 to 56th Ave (MP 290.980 to MP 292.479)
Table 12 Colorado Blvd. Single-Lane Closure Times	Colorado Blvd. from US 40 to Vasquez Blvd (MP 5.993 to MP 9.843)
Table 13 Quebec St. Single-Lane Closure Times	Quebec St. from I-70 to I-270 (MP 8.553 to MP 8.898)

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Table 4. Single-Lane Closures on the I-70 Mainline from Pecos St. to Airport Boulevard

Pecos St. to Airport Boulevard (MM 273 to MP 284.627)				
Beginning of Section (MP)	End of Section (MP)	Direction	Weekday	Weekend
270.496	274.000	EB	7 p.m. to Midnight	7 p.m. to Midnight
(Sheridan Blvd)	(I-25)		Midnight to 5:30 a.m.	Midnight to 9 a.m.
274.000	270.496	WB	7 p.m. to Midnight	7 p.m. to Midnight
(I-25)	(Sheridan Blvd)		Midnight to 5:30 a.m.	Midnight to 9 a.m.
274.000	276.572	EB	8 p.m. to Midnight	8 p.m. to Midnight
(I-25)	(SH 2)		Midnight to 5 a.m.	Midnight to 8 a.m.
276.572	274.000	WB	8 p.m. to Midnight	8 p.m. to Midnight
(SH 2)	(I-25)		Midnight to 5:30 a.m.	Midnight to 8 a.m.
276.572	282.563	EB	7 p.m. to Midnight	7 p.m. to Midnight
(SH 2)	(I-225)		Midnight to 5:30 a.m.	Midnight to 9 a.m.
282.563	276.572	WB	7 p.m. to Midnight	7 p.m. to Midnight
(I-225)	(SH 2)		Midnight to 5:30 a.m.	Midnight to 9 a.m.
282.563	285.727	EB	10 p.m. to Midnight	11 p.m. to Midnight
(I-225)	(Tower Rd)		Midnight to 5 a.m.	Midnight to 6 a.m.
285.727	282.563	WB	10 p.m. to Midnight	11 p.m. to Midnight
(Tower Rd)	(I-225)		Midnight to 5 a.m.	Midnight to 7 a.m.

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Table 5. Multi-Lane Closures on the I-70 Mainline from Pecos St. to Airport Boulevard

Pecos St. to Airport Boulevard (MP 273 to MP 284.627)								
Beginning of Section (MP)	End of Section (MP)	Direction	Two-Lane Closure		Three-Lane Closure		Four-Lane Closure	
			Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
270.496 (Sheridan Blvd)	274.000 (I-25)	EB	10 p.m. to Midnight Midnight to 5 a.m.	11 p.m. to Midnight Midnight to 6 a.m.				
274.000 (I-25)	270.496 (Sheridan Blvd)	WB	10 p.m. to Midnight Midnight to 5:30 a.m.	11 p.m. to Midnight Midnight to 7 a.m.				
274.000 (I-25)	276.572 (SH 2)	EB	10 p.m. to Midnight Midnight to 5 a.m.	Midnight to 6 a.m.				
276.572 (SH 2)	274.000 (I-25)	WB	11 p.m. to Midnight Midnight to 5 a.m.	Midnight to 6 a.m.				
276.572 (SH2)	278.548 (Quebec St)	EB	10 p.m. to Midnight Midnight to 5 a.m.	11 p.m. to Midnight Midnight to 6 a.m.				
278.548 (Quebec St)	276.572 (SH 2)	WB	10 p.m. to Midnight Midnight to 5 a.m.	11 p.m. to Midnight Midnight to 6 a.m.				
278.548 (Quebec St)	279.291 (I-270)	EB	10 p.m. to Midnight Midnight to 5 a.m.	11 p.m. to Midnight Midnight to 6 a.m.				
279.291 (I-270)	278.548 (Quebec St)	WB	10 p.m. to Midnight Midnight to 5 a.m.	11 p.m. to Midnight Midnight to 6 a.m.				
279.291 (I-270)	282.563 (I-225)	EB	9 p.m. to Midnight Midnight to 5 a.m.	10 p.m. to Midnight Midnight to 7 a.m.	11 p.m. to Midnight Midnight to 4 a.m.	Midnight to 1 a.m. 2 a.m. to 5 a.m.		

Pecos St. to Airport Boulevard (MP 273 to MP 284.627)							
282.563 (I-225)	279.291 (I-270)	WB	10 p.m. to Midnight Midnight to 5 a.m.	10 p.m. to Midnight Midnight to 7 a.m.	11 p.m. to Midnight Midnight to 5 a.m.	Midnight to 6 a.m.	

Table 6. Single-Lane Closures on the I-270 Mainline from I-70 to Vasquez Boulevard

I-70 to Vasquez Boulevard (MM 5.351 to MP 2.358)				
Beginning of Section (MP)	End of Section (MP)	Direction	Weekday	Weekend
5.351 (I-70)	2.358 (Vasquez Blvd)	WB	9 p.m. to Midnight Midnight to 5:30 a.m.	10 p.m. to Midnight Midnight to 7 a.m.
2.358 (Vasquez Blvd)	5.351 (I-70)	EB	8 p.m. to Midnight Midnight to 5 a.m.	10 p.m. to Midnight Midnight to 7 a.m.

Table 7. Single-Lane Closures on the I-225 Mainline from I-70 to 6th Avenue

I-70 to 6th Avenue (MP 11.997 to MP 8.954)				
Beginning of Section (MP)	End of Section (MP)	Direction	Weekday	Weekend
11.997 (I-70)	8.954 (6th Ave)	SB	8 p.m. to Midnight Midnight to 5:30 a.m.	6 p.m. to Midnight Midnight to 5 a.m.
8.954 (6th Ave)	11.997 (I-70)	NB	7 p.m. to Midnight Midnight to 5:30 a.m.	8 p.m. to Midnight Midnight to 9 a.m.

Table 8. Multi-Lane Closures on the I-225 Mainline from I-70 to 6th Avenue

I-70 to 6th Avenue (MP 11.997 to MP 8.954)								
Beginning of Section (MP)	End of Section (MP)	Direction	Two-Lane Closure		Three-Lane Closure		Four-Lane Closure	
			Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
11.997 (I-70)	8.954 (6th Ave)	NB	Midnight to 5:30 a.m.	1 a.m. to 8 a.m.				
8.954 (6th Ave)	11.997 (I-70)	SB	10 p.m. to Midnight Midnight to 5 a.m.	Midnight to 7 a.m.				

Interchange Ramp Lane Closure Hours

Table 9. Permitted Ramp Lane Closures on the I-70 Mainline from Pecos St. to Airport Boulevard

Pecos St. to Airport Boulevard (MP 273 to MP 284.627)						
Exit #	Crossroad Name	Direction	On-Ramp		Off-Ramp	
			Weekday	Weekend	Weekday	Weekend
273	Pecos St.	WB	6 p.m. to 5:30 a.m. 9 a.m. to 3 p.m.	6 p.m. to Midnight Midnight to 11 a.m.	8 p.m. to Midnight Midnight to 5:30 a.m.	8 p.m. to Midnight Midnight to 9 a.m.
		EB	8 p.m. to Midnight Midnight to 5:30 a.m.	8 p.m. to Midnight Midnight to 9 a.m.	6 p.m. to 5:30 a.m. 9 a.m. to 3 p.m.	6 p.m. to Midnight Midnight to 11 a.m.
275A	Washington St.	EB	6 p.m. to 5:30 a.m. 9 a.m. to 3 p.m.	7 p.m. to Midnight Midnight to 10 a.m.	8 p.m. to Midnight Midnight to 5:30 a.m.	8 p.m. to Midnight Midnight to 9 a.m.
		WB	9 p.m. to Midnight Midnight to 5:30 a.m.	9 p.m. to Midnight Midnight to 8 a.m.	6 p.m. to 5:30 a.m. 9 a.m. to 3 p.m.	7 p.m. to Midnight Midnight to 10 a.m.
275B	Brighton Blvd.	EB	7 p.m. to 5:30 a.m. 10 a.m. to Noon	7 p.m. to Midnight Midnight to 10 a.m.	6 p.m. to 5:30 a.m. 9 a.m. to 3 p.m.	6 p.m. to Midnight Midnight to 11 a.m.
		WB	6 p.m. to 5:30 a.m. 9 a.m. to 3 p.m.	6 p.m. to Midnight Midnight to 11 a.m.	7 p.m. to 5:30 a.m. 10 a.m. to Noon	7 p.m. to Midnight Midnight to 10 a.m.
275C	York St.	EB	NO RAMP EXISTS		7 p.m. to 5:30 a.m. 10 a.m. to Noon	8 p.m. to Midnight Midnight to 9 a.m.
		WB	8 p.m. to Midnight Midnight to 5:30 a.m.	8 p.m. to Midnight Midnight to 9 a.m.	NO RAMP EXISTS	
276A	Steele St.	EB	6 p.m. to 5:30 a.m.	7 p.m. to Midnight	7 p.m. to 5:30 a.m.	7 p.m. to Midnight

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Pecos St. to Airport Boulevard (MP 273 to MP 284.627)						
Exit #	Crossroad Name	Direction	On-Ramp		Off-Ramp	
			Weekday	Weekend	Weekday	Weekend
			9 a.m. to 3 p.m.	Midnight to 10 a.m.	10 a.m. to Noon	Midnight to 10 a.m.
		WB	8 p.m. to Midnight Midnight to 5:30 a.m.	8 p.m. to Midnight Midnight to 9 a.m.	6 p.m. to 5:30 a.m. 9 a.m. to 3 p.m.	6 p.m. to Midnight Midnight to 11 a.m.
276B	Colorado Blvd. NB	EB	8 p.m. to Midnight Midnight to 5:30 a.m.	8 p.m. to Midnight Midnight to 9 a.m.	NO RAMP EXISTS	
	Colorado Blvd. SB	EB	6 p.m. to 5:30 a.m. 9 a.m. to 3 p.m.	6 p.m. to Midnight Midnight to 11 a.m.	NO RAMP EXISTS	
	Colorado Blvd.	EB	NO RAMP EXISTS		6 p.m. to 5:30 a.m. 9 a.m. to 3 p.m.	6 p.m. to Midnight Midnight to 11 a.m.
	Colorado Blvd. NB	WB	8 p.m. to Midnight Midnight to 5:30 a.m.	9 p.m. to Midnight Midnight to 8 a.m.	NO RAMP EXISTS	
	Colorado Blvd.	WB	NO RAMP EXISTS		8 p.m. to Midnight Midnight to 5:30 a.m.	9 p.m. to Midnight Midnight to 8 a.m.
277	Dahlia St. / Holly St. / Monaco St. (existing slip ramps)	WB	8 p.m. to Midnight Midnight to 5:30 a.m.	8 p.m. to Midnight Midnight to 9 a.m.	7 p.m. to Midnight 10 a.m. to Noon	7 p.m. to Midnight Midnight to 10 a.m.
		EB	7 p.m. to Midnight 10 a.m. to Noon	8 p.m. to Midnight Midnight to 9 a.m.	8 p.m. to Midnight Midnight to 5:30 a.m.	8 p.m. to Midnight Midnight to 9 a.m.
278	Quebec St	WB	9 p.m. to Midnight Midnight to 5:30 a.m.	9 p.m. to Midnight Midnight to 8 a.m.	9 p.m. to Midnight Midnight to 5:30 a.m.	9 p.m. to Midnight Midnight to 8 a.m.

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Pecos St. to Airport Boulevard (MP 273 to MP 284.627)						
Exit #	Crossroad Name	Direction	On-Ramp		Off-Ramp	
			Weekday	Weekend	Weekday	Weekend
		EB	9 p.m. to Midnight Midnight to 5:30 a.m.	9 p.m. to Midnight Midnight to 8 a.m.	10 p.m. to Midnight Midnight to 5:30 a.m.	11 p.m. to Midnight Midnight to 8 a.m.
280	Havana St	WB	8 p.m. to Midnight Midnight to 5:30 a.m.	8 p.m. to Midnight Midnight to 9 a.m.	7 p.m. to 5:30 a.m. 10 a.m. to Noon	7 p.m. to Midnight Midnight to 10 a.m.
		EB	7 p.m. to 5:30 a.m. 10 a.m. to Noon	7 p.m. to Midnight Midnight to 10 a.m.	8 p.m. to Midnight Midnight to 5:30 a.m.	9 p.m. to Midnight Midnight to 8 a.m.
281	Peoria St.	WB	9 p.m. to Midnight Midnight to 5:30 a.m.	9 p.m. to Midnight Midnight to 8 a.m.	8 p.m. to Midnight Midnight to 5:30 a.m.	9 p.m. to Midnight Midnight to 8 a.m.
		EB	8 p.m. to Midnight Midnight to 5:30 a.m.	8 p.m. to Midnight Midnight to 9 a.m.	10 p.m. to Midnight Midnight to 5:30 a.m.	11 p.m. to Midnight Midnight to 8 a.m.
282	I-225 NB	WB	10 p.m. to Midnight Midnight to 5:30 a.m.	Midnight to 8 a.m.	10 p.m. to Midnight Midnight to 5:30 a.m.	Midnight to 8 a.m.
283	Chambers Road	EB	6 p.m. to 5:30 a.m. 9 a.m. to 3 p.m.	6 p.m. to Midnight Midnight to 11 a.m.	10 p.m. to Midnight Midnight to 5:30 a.m.	11 p.m. to Midnight Midnight to 8 a.m.
		WB	10 p.m. to Midnight Midnight to 5:30 a.m.	11 p.m. to Midnight Midnight to 8 a.m.	6 p.m. to 5:30 a.m. 9 a.m. to 3 p.m.	6 p.m. to Midnight Midnight to 11 a.m.
285	Airport Boulevard NB	EB	NO RAMP EXISTS		6 p.m. to 5:30 a.m. 9 a.m. to 3 p.m.	6 p.m. to Midnight Midnight to 11 a.m.
	Airport Boulevard SB		NO RAMP EXISTS		8 p.m. to Midnight	8 p.m. to Midnight

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Pecos St. to Airport Boulevard (MP 273 to MP 284.627)						
Exit #	Crossroad Name	Direction	On-Ramp		Off-Ramp	
			Weekday	Weekend	Weekday	Weekend
					Midnight to 5:30 a.m.	Midnight to 9 a.m.
	Airport Boulevard		6 p.m. to 5:30 a.m. 9 a.m. to 3 p.m.	6 p.m. to Midnight Midnight to 11 a.m.	NO RAMP EXISTS	
	Airport Boulevard NB	WB	NO RAMP EXISTS		6 p.m. to 5:30 a.m. 9 a.m. to 3 p.m.	6 p.m. to Midnight Midnight to 11 a.m.
	Airport Boulevard SB		NO RAMP EXISTS		6 p.m. to 5:30 a.m. 9 a.m. to 3 p.m.	6 p.m. to Midnight Midnight to 11 a.m.
	Airport Boulevard		8 p.m. to Midnight Midnight to 5:30 a.m.	8 p.m. to Midnight Midnight to 9 a.m.	NO RAMP EXISTS	

State Highway and Arterial Roadway Lane Closure Hours

Table 10. Brighton Blvd./York St. Single-Lane Closure Times

Brighton Blvd./York St. from 6th Ave to York St. (MP 8.954 to MP 0.961)				
Arterial Single-Lane Closure Schedules				
Beginning of Section (MP)	End of Section (MP)	Direction	Weekday	Weekend
8.954 (6th Ave)	11.997 (I-70)	NB	7 p.m. to Midnight Midnight to 5:30 a.m.	8 p.m. to Midnight Midnight to 9 a.m.
11.997 (I-70)	8.954 (6th Ave)	SB	8 p.m. to Midnight Midnight to 5:30 a.m.	8 p.m. to Midnight Midnight to 9 a.m.
0.000 (I-70)	0.961 (York St)	NB	Anytime	Anytime
0.961 (York St)	0.000 (I-70)	SB	Anytime	Anytime

Table 11. Steele St./Vasquez Boulevard Single-Lane Closure Times

Steele St./Vasquez Boulevard from I-70 to 56th Ave (MP 290.980 to MP 292.479)				
Arterial Single-Lane Closure Schedules				
Beginning of Section (MP)	End of Section (MP)	Direction	Weekday	Weekend
290.980 (I-70)	292.479 (56th Ave)	NB	7 p.m. to 8 a.m. 10 a.m. to Noon	6 p.m. to Midnight Midnight to 11 a.m.
292.479 (56th Ave)	290.980 (I-70)	SB	6 p.m. to 7 a.m. 10 a.m. to 11 a.m.	6 p.m. to Midnight Midnight to 11 a.m.

Table 12. Colorado Blvd. Single-Lane Closure Times

Colorado Blvd. from US 40 to Vasquez Blvd (MP 5.993 to MP 9.843)				
Arterial Single-Lane Closure Schedules				
Beginning of Section (MP)	End of Section (MP)	Direction	Weekday	Weekend
5.993 (US 40)	8.660 (I-70)	NB	7 p.m. to Midnight Midnight to 5 p.m.	Anytime
8.660 (I-70)	5.993 (US 40)	SB	6 p.m. to 5:30 a.m. 10 a.m. to 3 p.m.	Anytime
8.660 (I-70)	9.842 (Vasquez Blvd)	NB	Anytime	Anytime
9.842 (Vasquez Blvd)	8.660 (I-70)	SB	Anytime	Anytime

Table 13 Quebec St. Single-Lane Closure Times

Quebec St. from I-70 to I-270 (MP 8.553 to MP 8.898)				
Arterial Single-Lane Closure Schedules				
Beginning of Section (MP)	End of Section (MP)	Direction	Weekday	Weekend
8.553 (I-70)	8.898 (I-270)	NB	7 p.m. to Midnight Midnight to 2 p.m.	5 p.m. to Midnight Midnight to 1 p.m.
8.898 (I-270)	8.553 (I-70)	SB	6 p.m. to 5:30 a.m. 9 a.m. to 3 p.m.	5 p.m. to Midnight Midnight to 1 p.m.

2.2.3.c.ii.B. Coordination with Concurrent Construction Projects

Many other potentially concurrent drainage and roadway projects have been identified in the vicinity of the Project. FRMG will work with the leadership of these projects to coordinate Work and share information to verify construction schedules, avoid conflicts, look for situations that could be mutually beneficial, and minimize the overall disruption to local communities. At times when Project work is anticipated to impact any concurrent projects, FRMG will invite the project manager to attend our MOT Task Force Meeting.

The major venue of coordination with the local jurisdictions and the Department on these projects will occur within the MOT Task Force meetings. FRMG, the Department, and any relevant jurisdictions will be attendees to these meetings. Such jurisdictions would include the City and County of Denver (CCD), Commerce City, Adams County, the City of Aurora, Denver Water, Denver Wastewater, RTD, Denver International Airport, and others as needed.

Involvement by the FRMG Project Communication Manager will also be utilized in these meetings to ensure that messaging to the public regarding projects is consistent and pertinent. Department representatives of the MOT Task Force will provide an opportunity for sharing information about other projects that might be adjacent to and/or impact operations along the Project.

All the adjacent projects will be on the Central 70 Project stakeholder distribution list and will receive a weekly Lane Closure Report and periodic Traffic Alerts.

The following is a preliminary list of known projects in the vicinity that might be under construction concurrently with the Central 70 Project.

Funded Projects

- Martin Luther King Jr. Boulevard (Havana St. to Peoria St.)
- Central Park Boulevard (40th Avenue to 56th Avenue)
- Brighton Blvd., 29th to 44th
- 33rd St. Outfall
- Festival St. (between 33rd and 35th Streets) & 33rd Streets (between Brighton Blvd. and the South Platte River)
- 40th Avenue Widening (Central Park Boulevard to Havana St.)
- Central Park Boulevard (56th Avenue north to City Limits)
- Central Park Boulevard Widening (36th Avenue to I-70)
- National Western Center Master Plan Improvements
- Westerly Creek North
- Platte to Park Hill Stormwater Solutions – City Park, 39th Avenue
- Greenway/Channel and Globeville Landing Outfall
- Brighton Blvd. (47th to Race Court/City Limits)
- Xcel gas regulator station within Parcel AP-169

Unfunded Projects (2015-2020)

- Globeville-Elyria Swansea Rec Center Improvements
- 40th and Colorado Blvd. Multimodal Connections

- 40th Avenue Reconstruction – York St. to Colorado Blvd.
- Safety Training Facility (near 31st and the South Platte River)
- Public Works Solid Waste Facility (NE Denver – location unknown)
- Police District Station 5 Replacement (at current location at 46th and Peoria St. or elsewhere in NE Denver)
- Swansea Recreation Center Enhancements
- Parks Maintenance Facility (Smith Road and Havana St.)
- 56th Avenue Reconstruction, Havana St. to Peña Boulevard
- Washington St. – 47th to 52nd Reconstruction
- 35th St. from Arkins Court to Wazee St.
- Quebec St. Reconstruction (35th to 53rd Place)/Pedestrian and Trails Connectivity
- 35th St. Pedestrian Bridge over South Platte River
- 38th & Blake Station Signalization and Multimodal Improvements
- Globeville-Elyria-Swansea Pedestrian Connectivity Improvements
- 47th & York St. Pedestrian Bridge
- RiNo Pedestrian Bridge (South Platte River)
- Swansea Neighborhood Park Improvements (52nd and Steele St.)
- Elyria Park Improvements
- Heron Pond/Northside Park/52nd and Emerson St. Infrastructure
- Ongoing Local Roadway Improvements and Development north of I-70 in Stapleton, from I-70 to City Limits
- Havana St. from Smith Road to Florence
- Sand Creek Channel and Park Improvements (Stapleton)
- Smith Road Construction from Sand Creek to Havana St. (Stapleton)
- Urban Greenway Corridor North (River North) Trail Improvements
- Urban Waterways Project (in partnership with the U.S. Army Corps of Engineers)
- 38th St. Railroad Underpass Replacement and Connections
- 38th St. and Walnut St. Intersection Reconstruction/Bike-Pedestrian Connectivity
- Peña Boulevard Capacity Improvements (I-70 to 56th Avenue)
- Green Valley Ranch (GVR)/Aerotropolis Improvements (Tower Road, GVR Boulevard, 56th Avenue)
- New Northfield (Stapleton) Fire Station at 51st and Beeler
- 48th Avenue sidewalks, Brighton to York St.
- Peoria St. Pedestrian and Trails Connectivity (37th Avenue to 56th Avenue)

Unfunded Projects (2020-2026)

- County Jail Improvements (Havana and Smith Road)
- Brighton Blvd./Race St. BNSF Underpass
- Brighton Blvd./York BNSF Underpass
- 48th & Holly St. Roadway Expansion
- 47th & York Long-Term Improvement
- 40th & Colorado Station Area Connectivity

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- Brighton Blvd. – Northern Section and Railroad Bridge at Race Court
- 31st St. Bike-Pedestrian Bridge
- Platte River Enhancements (Confluence Park to I-70)
- Platte River Enhancements (I-70 to City Limits)
- River Promenade (River North) 29th to 38th
- Peña Boulevard Capacity Improvements (I-70 to E-470)

2.2.3.c.iii Number of Shifts Expected has been provided as part of Section 2.2.3.c above

Shifts are shown on Table 1 in Section 2.2.3.c above.

2.2.3.c.iv. Duration of Shifts and Detours has been provided as part of Section 2.2.3.c above

Durations are shown on Table 1 in Section 2.2.3.c above.

2.2.3.d Proposed Detour Routes

FRMG's optimized roadway design includes a developed MOT that minimizes roadway Closures, exceeding the overall goal of minimizing impacts to the traveling public, businesses, and nearby communities during and after construction. Detours provided for the temporary Closures of ramps and local roads will be clearly delineated in accordance with the approved TCPs and MHTs to ensure the traveling public can easily navigate them and will meet the requirements for the lane Closures and detours specified in Section 2. Advanced notice of roadway Closures and detour routes will be provided.

Only state roadways will be used for I-70 Mainline detours. Local Agency Roadways proposed to be used as detours will be coordinated and approved by the Local Agency, including concurrent full roadway Closure restrictions per Section 2.2.3.c above and in relation to MOT Variances required from a Local Agency. Any Closure of a roadway designated as a bike route will provide an equivalent bicycle detour route. Pedestrians will be detoured to the nearest available route when Closures are required, not exceeding 1,000 feet in out-of-direction travel, unless Approved by the Department. The MOT Task Force will review all proposed detour routes and submit to the Department and/or Local Agency for Approval.

Detour routes for known roadway Closures are described in the following table and a graphic depiction(s) of detour routes are shown in Table 14 and Detours 1 through 49 on the following pages. Proposed detours were designed to require the least out-of-direction travel possible, while considering the traffic-carrying capacity of possible alternative streets for implementing detours.

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Table 14. Potential Detours.

Detour #	Roadway Location	Description of Closure	Detour Route
D-1	I-70	Night and Weekend Closures of I-70 Between Brighton and I-270 & oversized vehicles	EB: I-25 N to I-76 E to I-270 S to I-70 E WB: I-270 N to I-76 W to I-25 S to I-70 W
D-2	Brighton Blvd	Night Closures of Brighton Blvd @ I-70	NB: Lt on 44th St, Lt on Brighton Blvd SB: Rt on 46th Ave, Rt on Brighton Blvd
D-3	NB Brighton	Temporary pavement detour @ I-70	NB: Brighton to use temporary pavement
D-4	Brighton WB exit	6-month Closure of Brighton WB exit	Continue on I-70 WB, Exit Washington, Lt on Washington to Brighton
D-5	Brighton WB entrance	Night Closure of Brighton WB entrance	Brighton to 38th/Washington, Lt @ Washington WB entrance
D-6	Brighton EB entrance	Night Closure of Brighton EB entrance	Brighton to 38th/Washington, Rt @ Washington EB entrance
D-7	York St	Temporary Closure of York at 46th Ave	NB: Rt on 45th, Lt on Columbine, Lt on 47th to York SB: Lt on 47th, Rt on Columbine, Rt on 45th to York
D-8	York St	Temporary pavement detour from 47th to 46th	Traffic to use temporary pavement
D-9	York EB exit	Closure of York EB exit	Exit temporary Steele EB exit, Rt on Steel, Rt on 45th to York
D-10	46th Ave & York WB entrance	Closure of 46th Ave west of York and York WB entrance	York to 48th Ave, Lt on Brighton
D-11	Steele/Vasquez	Night Closures of Steele/Vasquez @ I-70	NB: Rt on 40th, Lt on Colorado, Lt on 48th to Vasquez SB: Lt on 48th, Rt on Colorado, Rt on 40th to Steele
D-12	Steele/Vasquez & Steele WB exit	Temporary pavement detour @ I-70	Traffic to use temporary pavement
D-13	Steele WB entrance	Temporary Closure of Steele WB entrance	NB: Rt on 48th, Rt on Dahlia, Rt on Stapleton SB: Lt on 40th, Lt on Colorado, Colorado WB loop entrance
D-14	Steele EB exit	Temporary ramp	Traffic to use temporary ramp
D-15	Steele WB exit	Night Closure of Steele WB exit	Exit Colorado, Lt on 48th to Vasquez
D-16	Steele EB entrance	Temporary Closure of Steele EB entrance	NB: Rt on Vasquez, Rt on 48th, Rt on Colorado, Lt @ Colorado EB entrance SB Lt on 48th, Rt on Colorado, Lt @ Colorado EB entrance
D-17	Steele EB exit	Temporary Closure of Steele EB exit	Exit Colorado, Lt on Colorado, Lt on 46th N to Steele

Detour #	Roadway Location	Description of Closure	Detour Route
D-18	Colorado Blvd	Night Closure of Colorado Blvd	NB: Lt on 40th, Rt on Steele, Rt on Vasquez, Rt on 48th to Colorado SB: Rt on 48th, Lt on Vasquez, Lt on Steele, Lt on 40th to Colorado
D-19	Colorado WB loop entrance	Closure of Colorado WB loop entrance	Lt on 48th, Lt on Vasquez, Lt on Steele, Rt @ Steele WB entrance
D-20	Colorado EB loop entrance	Closure of Colorado EB loop entrance	Rt on 48th, Lt on Vasquez, Lt on Steele, Lt @ Steele EB entrance
D-21	Colorado EB exit	1 Week Closure of Colorado EB exit	Exit Stapleton/Holly, Lt on Holly, use Stapleton/Holly WB entrance, exit Colorado
D-22	Colorado WB exit	6-month Closure of Colorado WB exit	Exit Holly, continue on Stapleton to Colorado
D-23	Colorado EB entrance	Night Closure of Colorado EB entrance	Lt on 48th, Lt on Vasquez, Lt on Steele, Rt @ Steele EB entrance
D-24	Stapleton WB entrance	Night Closure of Stapleton WB entrance	Stapleton to 48th, Lt on Vasquez, Lt on Steele, Rt @ Steele WB entrance
D-25	Colorado EB exit	Temporary ramp	Traffic to use temporary ramp
D-26	Stapleton EB exit	Night Closure of Stapleton EB exit	Exit Quebec, Rt on Quebec, Rt on 42nd, Rt on Monaco to Stapleton
D-27	Stapleton WB exit	Night Closure of Stapleton WB exit	Exit Quebec, Lt on Quebec, Rt on 42nd/Sandown, Rt on Monaco to Stapleton
D-28	Stapleton EB entrance	Night Closure of Stapleton EB entrance	Use Monaco, Lt on 42nd/Sandown, Lt on Quebec, Rt @ Quebec EB entrance
D-29	Quebec St	Night Closure of Quebec St	NB: Rt on 35th, Lt on Central Park, Lt on Northfield to Quebec SB: Lt on Northfield, Rt on Central Park, Rt on 35th to Quebec
D-30	Quebec WB entrance	6-month Closure of Quebec WB entrance	Use Quebec WB slip ramp to Stapleton to Holly WB entrance
D-31	Quebec EB exit	6-month Closure of Quebec EB exit	Exit Holly, Rt on Holly, Lt on 42nd to Quebec
D-32	Quebec EB exit	Temporary ramp	Traffic to use temporary ramp
D-33	Quebec WB exit	Night Closure of Quebec WB exit	Exit Stapleton/Holly, Lt on Monaco/Holly, Lt on 42nd/Sandown to Quebec

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Detour #	Roadway Location	Description of Closure	Detour Route
D-34	Quebec EB entrance	Night Closure of Quebec EB entrance	NB: Rt on 49th, Rt on Central Park, Lt @ Central Park EB entrance SB: Use Quebec/Smith interchange to U-turn, follow NB detour
D-35	Quebec WB entrance	Night Closure of Quebec WB entrance	SB: Exit Sandown, Rt on Sandown, Rt on Monaco, Lt on Stapleton, Use Stapleton WB entrance NB: Lt on 47th to WB 48th, Lt on Holly, Rt on Stapleton, Use Stapleton WB entrance
D-36	Central Park Ramps	Night Closure of Central Park Ramps	WB entrance: 49th to Quebec, use Quebec WB entrance WB exit: Quebec, Rt on Quebec, Rt on 49th to Central Park EB entrance: 40th/47th to Havana, use Havana EB entrance EB exit: Exit Havana, Rt on Havana, Lt on 47th to Central Park
D-37	Havana Ramps	Night Closure of Havana Ramps	WB entrance: 47th/Smith to Peoria, use Peoria WB entrance WB exit: Exit Peoria, Rt on Peoria, Lt on 47th to Havana EB entrance: 7th/Smith to Peoria, use Peoria EB entrance EB exit: Exit Peoria, Rt on Peoria, Rt on Smith to Havana
D-38	Peoria St	Night Closure of Peoria St	NB: Lt on Smith Rd, Rt on Havana, Rt on 47th to Peoria SB: Rt on 47th, Lt on Havana, Lt on Smith to Peoria
D-39	Peoria Ramps	Night Closure of Peoria Ramps	WB entrance: 47th/Smith to Havana, use Havana WB entrance WB exit: Exit Havana, Rt on Havana, Rt on 47th to Peoria EB entrance: 7th/Smith to Havana, use Havana EB entrance EB exit: Exit Havana, Rt on Havana, Rt on 47th to Peoria
D-40	46th Ave	Temporary pavement detour between Columbine and Steele	Traffic to use temporary pavement
D-41	46th Ave	Temporary Closure of 46th Ave between Steele and Monroe	EB: Lt on Steele, Rt on Vasquez, Rt on 48th, Rt on 46th WB: Garfield to 46th, Lt on 48th, Lt, on Vasquez, Lt on Steele, Lt on 46th

Detour #	Roadway Location	Description of Closure	Detour Route
D-42	Josephine St	Temporary Closure of Josephine at 46th Ave	NB: Rt on 45th, Lt on Columbine, Lt on 47th to Josephine SB: Lt on 47th, Rt on Columbine, Rt on 45th to Josephine
D-43	Columbine St	Temporary Closure of Columbine at 46th Ave	NB: Rt on 45th, Lt on Clayton, Lt on 47th to Columbine SB: Lt on 47th, Rt on Clayton, Rt on 45th to Columbine
D-44	Clayton St	Closure of Clayton at 46th Ave	NB: Lt on 45th, Rt on Columbine, Rt on 47th to Clayton SB: Rt on 47th, Lt on Columbine, Lt on 45th to Clayton
D-45	Fillmore St	Temporary Closure of Fillmore	NB: Lt on 45th, Rt on Clayton, Rt on 48th to Fillmore SB: Rt on 48th, Lt on Clayton, Lt on 45th to Fillmore
D-46	Dahlia St	Temporary Closure of Dahlia St	NB: Rt on Smith, Lt on Holly, Lt on Stapleton to Dahlia SB: Lt on 48th, Rt on Holly, Rt on Smith to Dahlia
D-47	Holly St	Temporary Closure of Holly St	NB: Rt on Stapleton, Lt on Monaco, Lt on Stapleton to Holly SB: Rt on Stapleton, Lt on Dahlia, Lt on Stapleton to Holly
D-48	Monaco St	Temporary Closure of Monaco St	NB: Rt on Stapleton to Quebec, exit Quebec, Lt on Quebec, Lt @ Quebec WB entrance to Stapleton to Monaco SB: WB Stapleton, Lt on Holly, Lt on Stapleton to Monaco
D-49	46th Ave & Steele WB entrance	EB 46th Ave restricted from turning Lt onto temporary Steele WB entrance detour	Rt on Milwaukee, Lt on 45th, Lt on Steele, Lt @ Steele WB entrance
D-50	Steele St/Vasquez Blvd WB entrance	Closure of exiting ramp alignment	Temporary WB entrance ramp
D-51	Brighton Blvd EB exit	Night closure of Brighton Blvd EB exit	Exit Washington St, Rt on Washington St, Lt on Brighton Blvd

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D-1
E 66th Ave.
76
25
Brighton Blvd.
Vasquez Blvd.
Colorado Blvd.
Dahlia St.
Central Park Blvd.
W 48th Ave.
70
DETOUR
DETOUR
215_C70EP_2_DEN
Detour for night time/weekend closures of I-70 between Brighton and 270:
EB I-70 Traffic
25N to 76E to 270S to 70E
WB I-70 Traffic
270N to 76W to 25S to 70W

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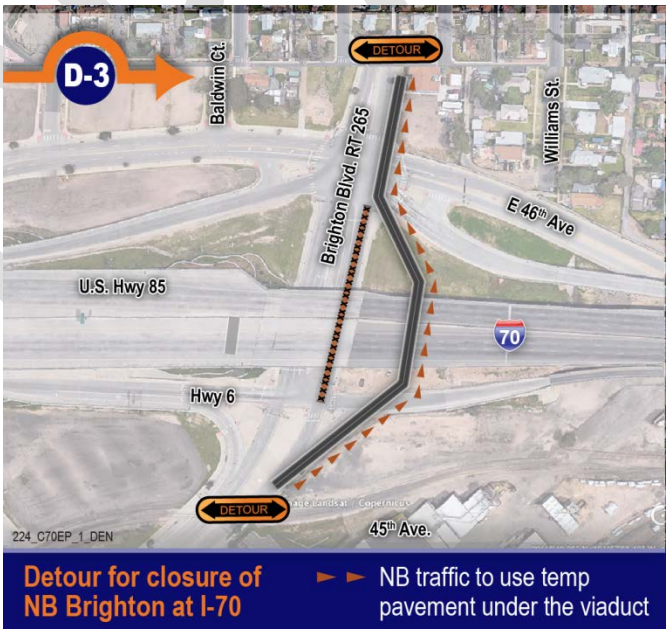
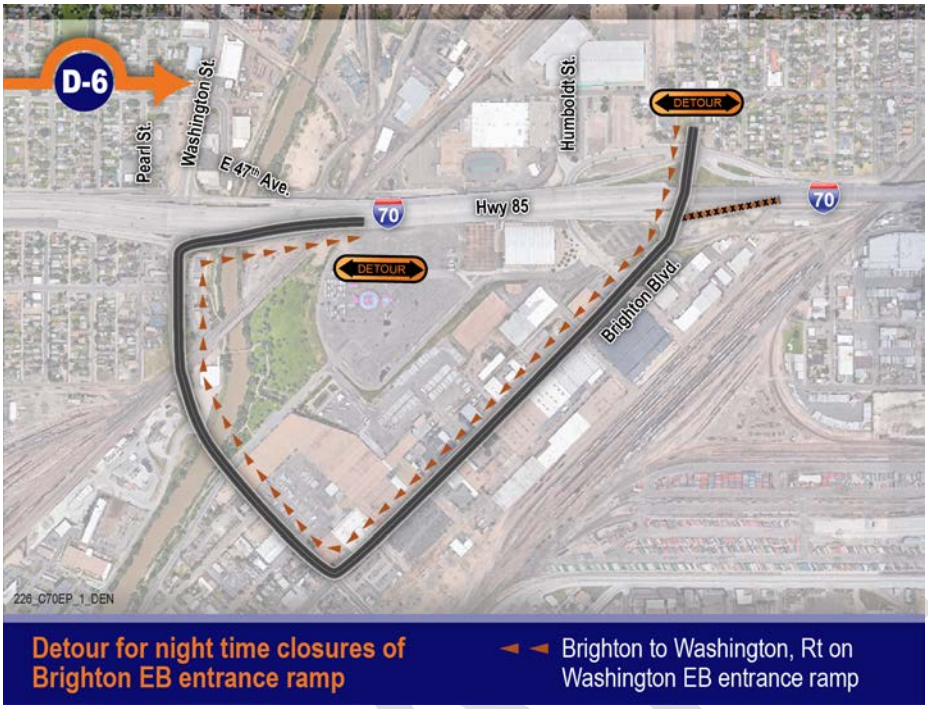
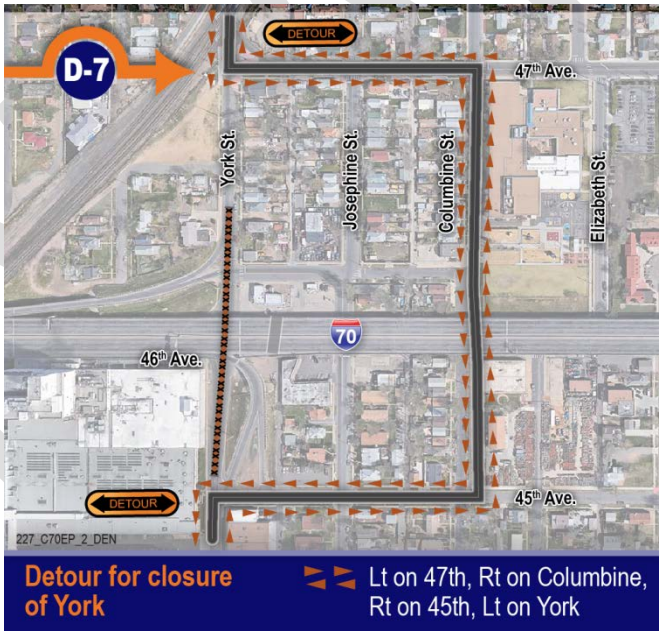
D-2
DETOUR
Franklin St.
Baldwin Ct.
Brighton Blvd.
46th Ave.
70
70
44th St.
DETOUR
Brighton Blvd.
216_C70EP_2_DEN
Detour for night time closures of Brighton under I-70
NB Brighton - Lt on 44th St. to 46th Ave., Lt on Brighton
SB Brighton - Rt on 46th Ave. to 44th St., Rt on Brighton
Ramp remain open with with Lt turn restrictions


D-3
Baldwin Ct.
DETOUR
Brighton Blvd. RT 265
Williams St.
E 46th Ave
U.S. Hwy 85
70
Hwy 6
DETOUR
45th Ave.
224_C70EP_1_DEN
Detour for closure of NB Brighton at I-70
NB traffic to use temp pavement under the viaduct

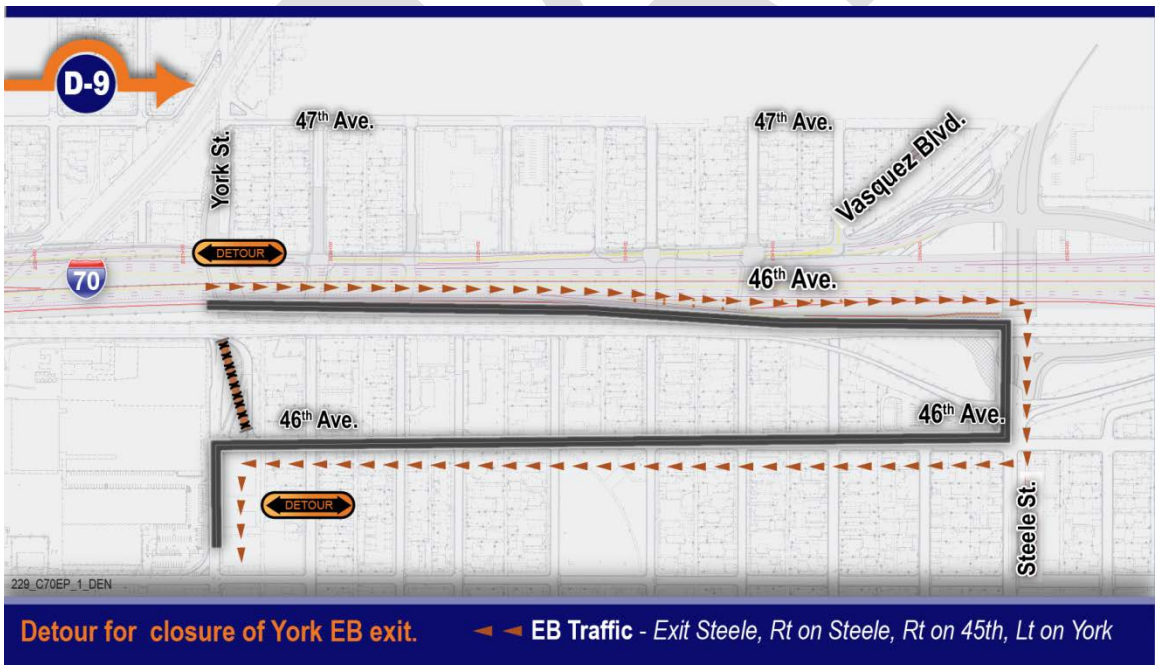
D-4
47th Ave.
46th Ave.
70
DETOUR
DETOUR
44th St.
Washington St.
Brighton Blvd.
38th St.
217_C70EP_2_DEN
Detour for 6 month closure of WB Exit to Brighton
Continue to WB Washington Exit, Lt on Washington, Lt on Brighton

D-5
47th Ave.
DETOUR
Columbine St.
Elizabeth St.
Clayton St.
DETOUR
70
46th Ave.
York St.
Steele St.
45th Ave.
219_C70EP_1_DEN
Detour for night time closure of 46th Ave. between York and Steel
Brighton to 48th Ave to York to 46th (2 way traffic on York) or York to 47th to Columbine if needed


D-6
Washington St.
Pearl St.
E 47th Ave.
Humboldt St.
DETOUR
Hwy 85
70
DETOUR
Brighton Blvd.
226_C70EP_1_DEN
Detour for night time closures of Brighton EB entrance ramp
Brighton to Washington, Rt on Washington EB entrance ramp


D-7
DETOUR
47th Ave.
York St.
Josephine St.
Columbine St.
Elizabeth St.
70
46th Ave.
DETOUR
45th Ave.
227_C70EP_2_DEN
Detour for closure of York
Lt on 47th, Rt on Columbine, Rt on 45th, Lt on York

D-8
York St.
DETOUR
47th Ave.
Steavenson Pl.
DETOUR
46th Ave.
70
70
York St.
228_C70EP_1_DEN
Detour for closure of York between Steavenson and 46th

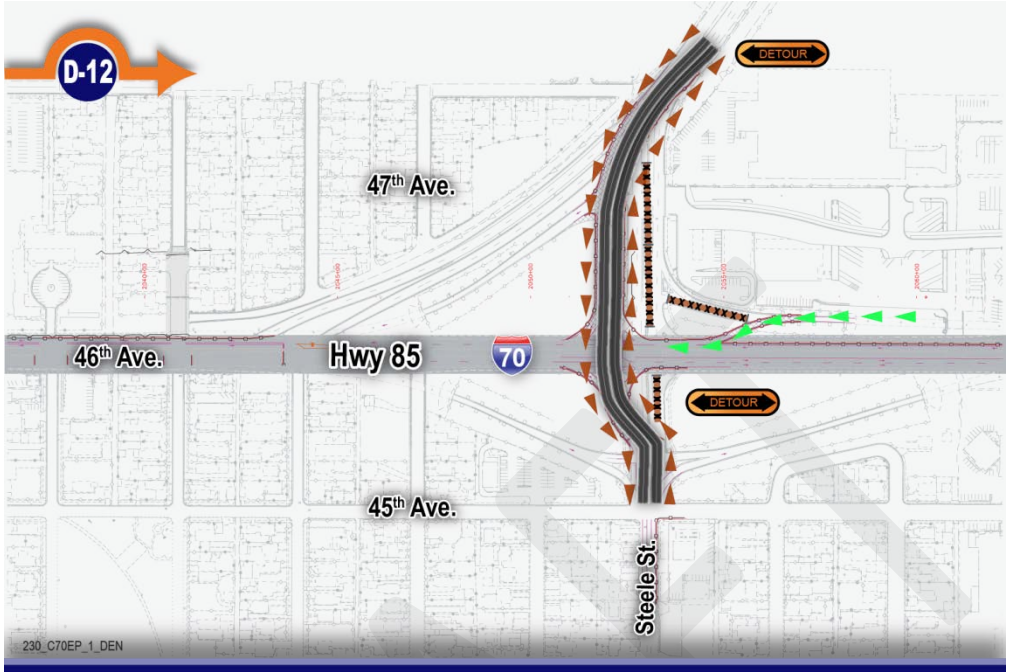

D-9
47th Ave.
47th Ave.
Vasquez Blvd.
York St.
DETOUR
70
46th Ave.
46th Ave.
46th Ave.
DETOUR
Steele St.
229_C70EP_1_DEN
Detour for closure of York EB exit.
EB Traffic - Exit Steele, Rt on Steele, Rt on 45th, Lt on York

Detour 46th Ave between York and Brighton and Detour for closure of WB York on ramp

Brighton to 48th ave to York to 46th (2 way traffic on York) or York to 47th to Columbine if needed

Detour for night time closure of Steele/Vasquez Blvd.

48th to Colorado to 40th to Steele

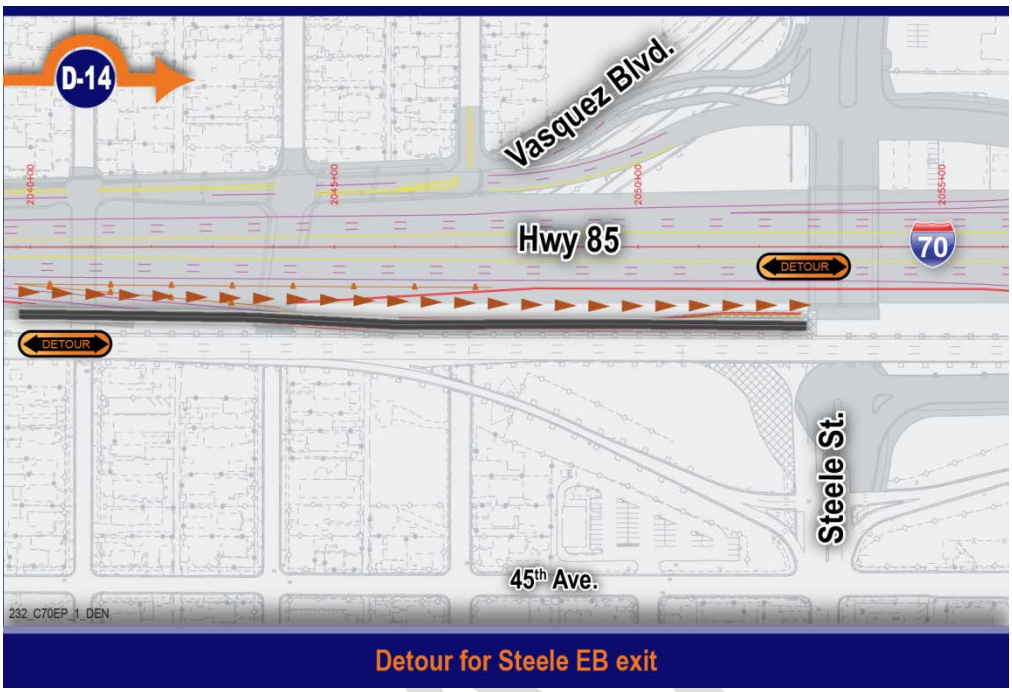


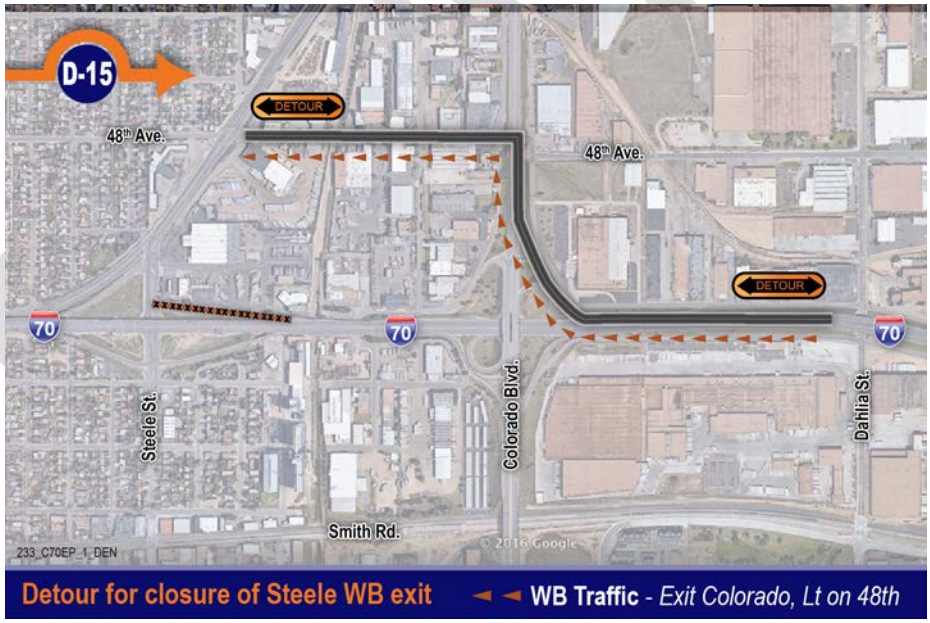
Temporary pavement detour for closures of Steele and WB Steel exit

Detour for closure of Steele WB entrance

◄ **NB Traffic** - *Rt on 48th, Rt on Dahlia, Rt on Stapleton N, Stapleton N slip ramp*

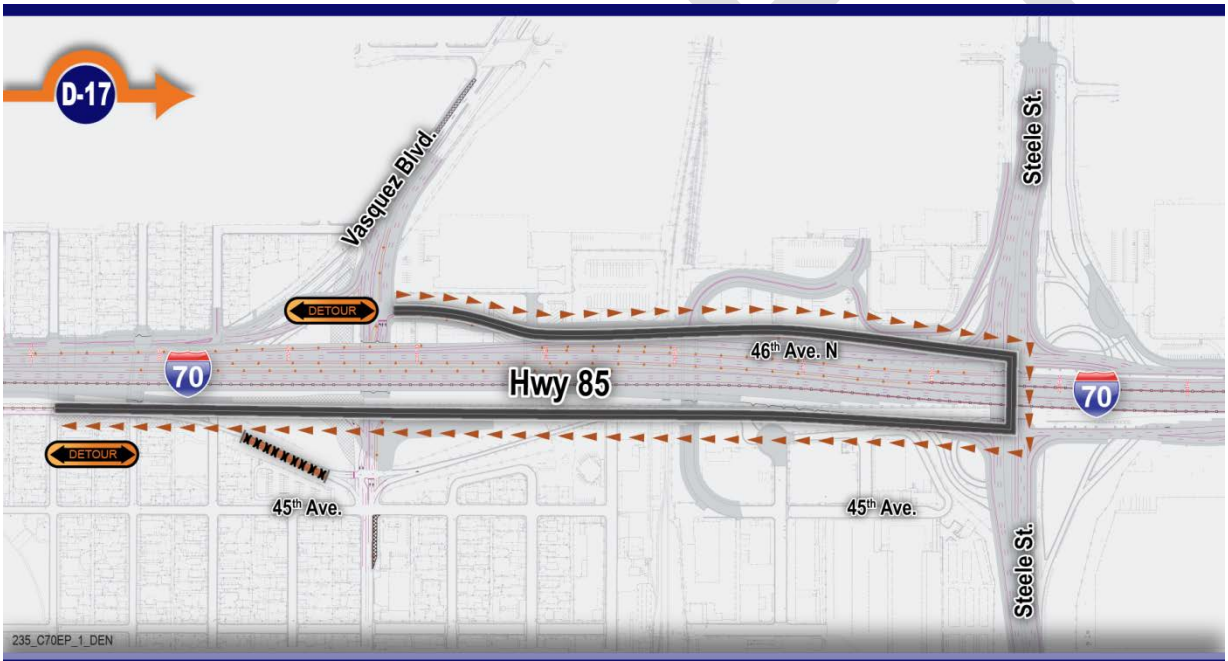
► **SB Traffic** - *Lt on 40th, Lt on Colorado, Colorado loop ramp*


D-14
Vasquez Blvd.
Hwy 85
70
DETOUR
DETOUR
Steele St.
45th Ave.
232_C70EP_1_DEN
Detour for Steele EB exit


D-15
DETOUR
48th Ave.
48th Ave.
DETOUR
70
70
70
Steele St.
Colorado Blvd.
Dahlia St.
Smith Rd.
233_C70EP_1_DEN
Detour for closure of Steele WB exit
WB Traffic - Exit Colorado, Lt on 48th

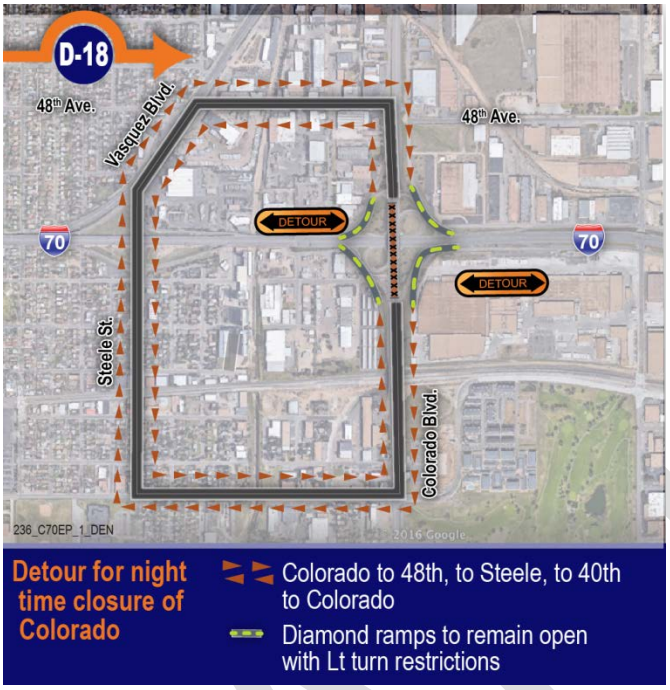
Detour for closure of Steele EB Entrance

EB Traffic - *Steele, to 48th, Rt on Colorado, Lt on proposed Colorado EB entrance*



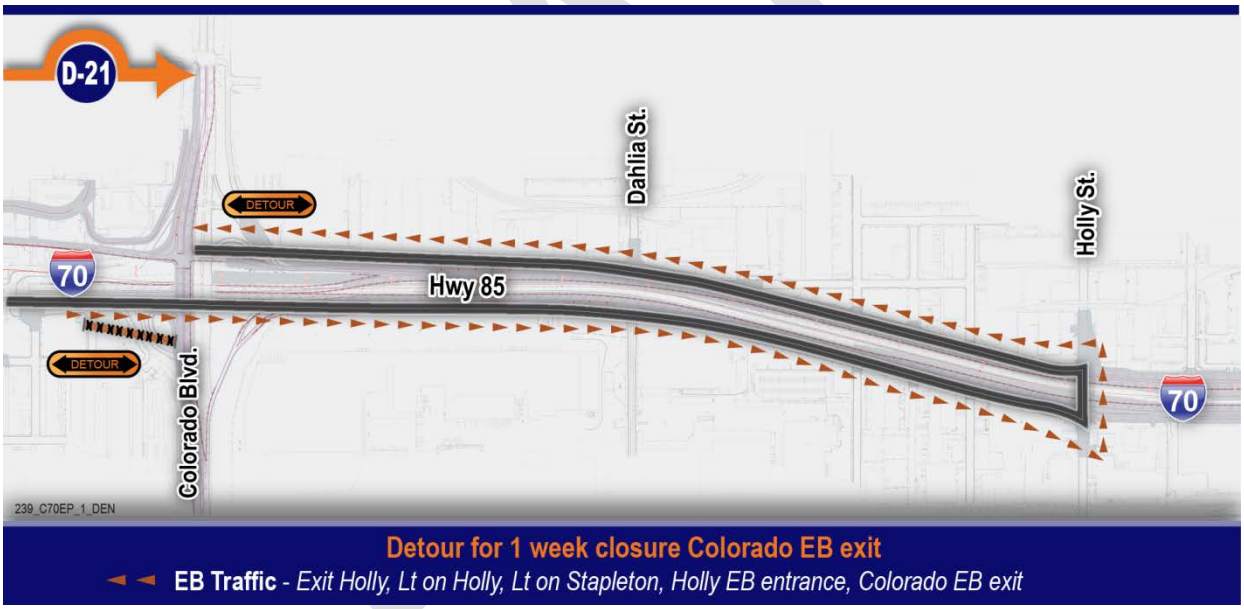
Detour temporary closure of Steele EB exit

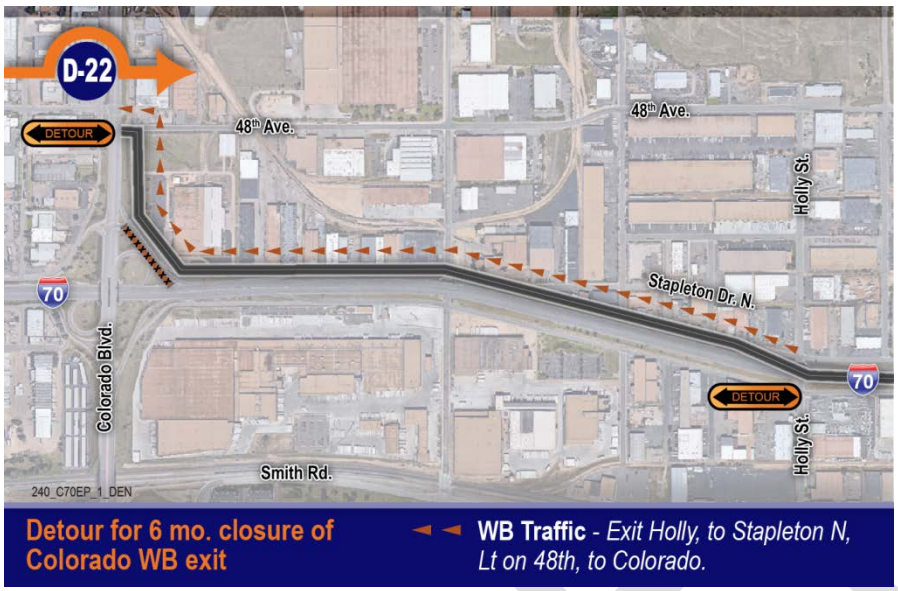
EB Traffic - *Exit Colorado, Lt on Colorado, Lt on 46th N to Steele*


D-18
48th Ave.
Vasquez Blvd.
48th Ave.
DETOUR
70
70
DETOUR
Steele St.
Colorado Blvd.
236_C70EP_1_DEN
2016 Google
Detour for night time closure of Colorado
Colorado to 48th, to Steele, to 40th to Colorado
Diamond ramps to remain open with Lt turn restrictions

D-19
48th Ave.
Vasquez Blvd.
DETOUR
70
70
DETOUR
Steele St.
Colorado Blvd.
Smith Rd.
237_C70EP_1_DEN
Detour for night time closure of Colorado
Lt on 48th, Lt, on Vasquez, Lt on Steele, Steele WB entrance

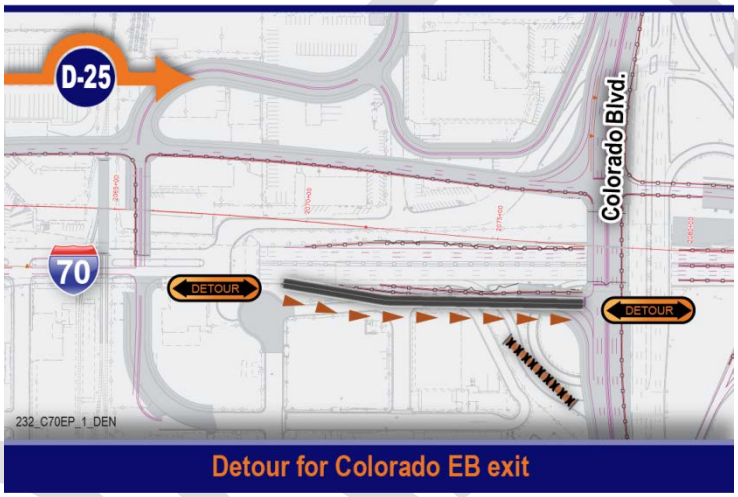
D-20
DETOUR
48th Ave.
Vasquez Blvd.
Colorado Blvd.
70
70
DETOUR
Steele St.
238_C70EP_1_DEN
Detour for closure of Colorado EB loop entrance
Rt on 48th, Lt on Vasquez, Lt on Steele, Steele EB entrance

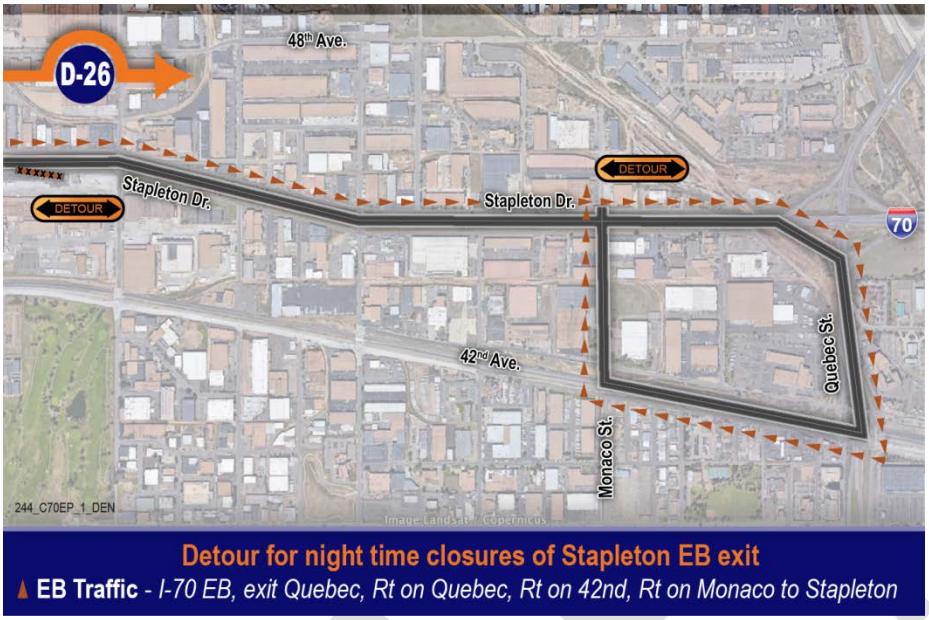

D-21
DETOUR
Dahlia St.
Holly St.
70
Hwy 85
DETOUR
Colorado Blvd.
70
239_C70EP_1_DEN
Detour for 1 week closure Colorado EB exit
EB Traffic - Exit Holly, Lt on Holly, Lt on Stapleton, Holly EB entrance, Colorado EB exit


D-22
DETOUR
48th Ave.
48th Ave.
Holly St.
Stapleton Dr. N.
70
Colorado Blvd.
DETOUR
70
Holly St.
Smith Rd.
240_C70EP_1_DEN
Detour for 6 mo. closure of Colorado WB exit
WB Traffic - Exit Holly, to Stapleton N, Lt on 48th, to Colorado.

D-23
48th Ave.
Vasquez Blvd.
48th Ave.
70
70
Colorado Blvd.
70
DETOUR
Steele St.
DETOUR
Smith Rd.
© 2016 Google
241_C70EP_1_DEN
Detour for 6 mo. closure of Colorado WB exit
WB Traffic - Exit Holly, to Stapleton N, Lt on 48th, to Colorado

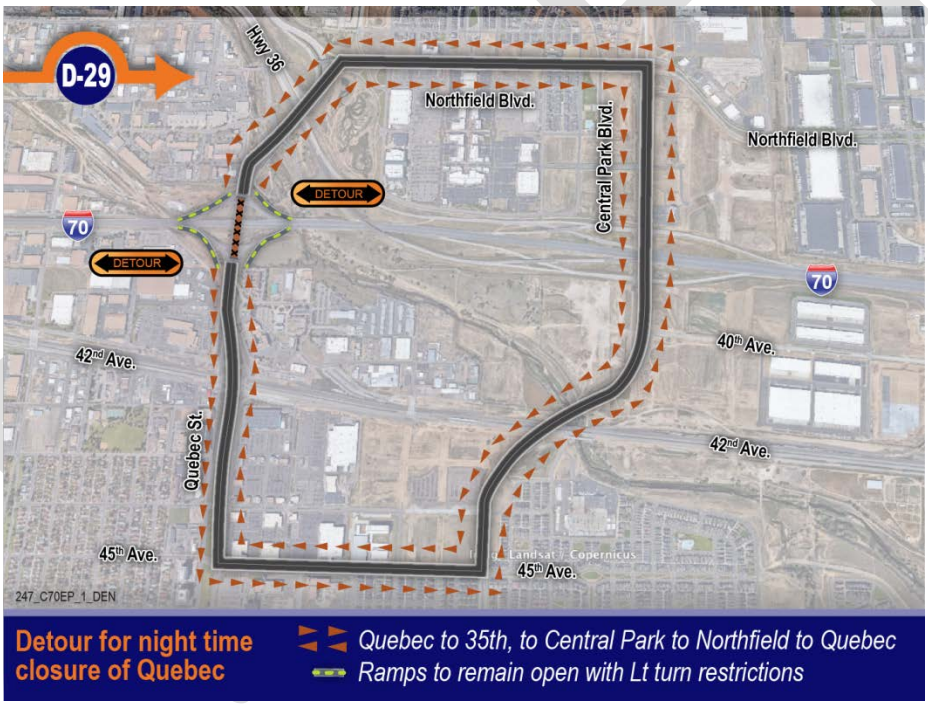
D-24
48th Ave.
48th Ave.
Vasquez Blvd.
Stapleton Dr. N
Steele St.
70
Colorado Blvd.
DETOUR
DETOUR
70
Dahlia St.
242_C70EP_1_DEN
Detour for night time closures of Stapleton WB entrance
Stapleton to 48th, Lt on 48th, Lt on Vasquez, Lt on Steele, Steele WB entrance


D-25
Colorado Blvd.
70
DETOUR
DETOUR
232_C70EP_1_DEN
Detour for Colorado EB exit


D-26
48th Ave.
Stapleton Dr.
DETOUR
Stapleton Dr.
DETOUR
70
42nd Ave.
Quebec St.
Monaco St.
244_C70EP_1_DEN
Detour for night time closures of Stapleton EB exit
EB Traffic - I-70 EB, exit Quebec, Rt on Quebec, Rt on 42nd, Rt on Monaco to Stapleton

D-27
Quebec St.
Stapleton Dr.
70
DETOUR
70
DETOUR
42nd Ave.
Monaco Pkwy.
245_C70EP_1_DEN
Detour for night time closures of Stapleton WB exit
WB Traffic - Exit Quebec, Lt on Quebec, Rt on 42nd, Rt on Monaco to Stapleton

D-28
70
DETOUR
Stapleton Dr.
Quebec St.
70
DETOUR
Sandown Rd
42nd Ave.
Monaco Pkwy.
246_C70EP_1_DEN
Detour for night time closures of Stapleton EB entrance
EB Traffic - Monaco, Lt on Sandown, Lt on Quebec, Quebec EB entrance


D-29
Hwy 36
Northfield Blvd.
Northfield Blvd.
Central Park Blvd.
DETOUR
70
DETOUR
70
42nd Ave.
40th Ave.
Quebec St.
42nd Ave.
45th Ave.
45th Ave.
247_C70EP_1_DEN
Detour for night time closure of Quebec
Quebec to 35th, to Central Park to Northfield to Quebec
Ramps to remain open with Lt turn restrictions

D-30
DETOUR
Stapleton Dr.
DETOUR
70
Holly St.
Monaco Pkwy.
Quebec St.
42nd Ave.
248_C70EP_1_DEN
Detour for 6 mo. closure of Quebec WB entrance
WB Traffic - Quebec to Stapleton N, Holly WB entrance

D-31
DETOUR
Stapleton Dr.
70
70
Monaco Pkwy.
42nd Ave.
Quebec St.
Holly St.
DETOUR
249_C70EP_1_DEN
Detour for 6 mo. closure of Quebec EB exit
EB Traffic - Exit Holly, Rt on Holly, Lt on 42nd to Quebec

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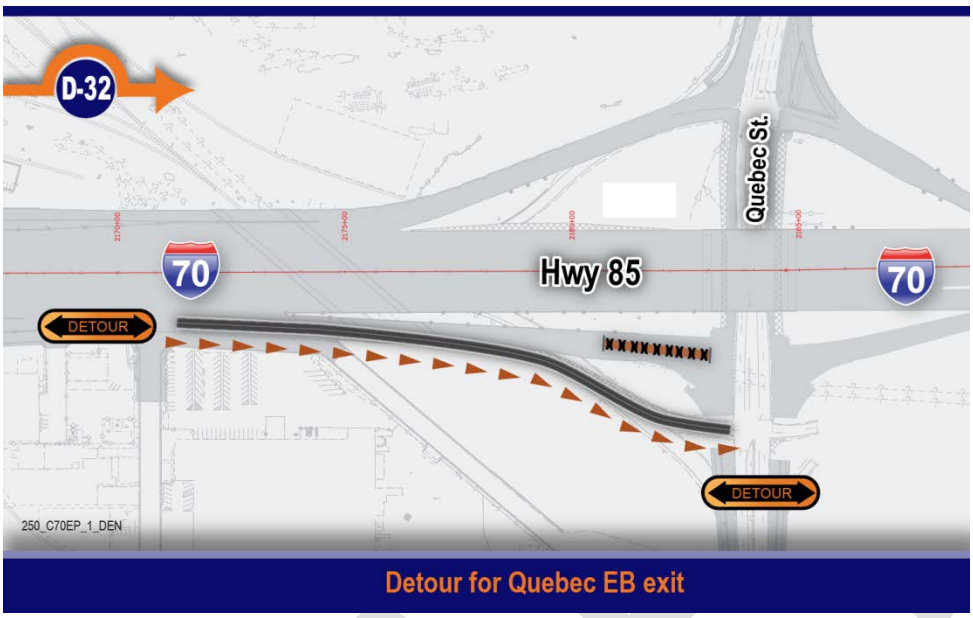
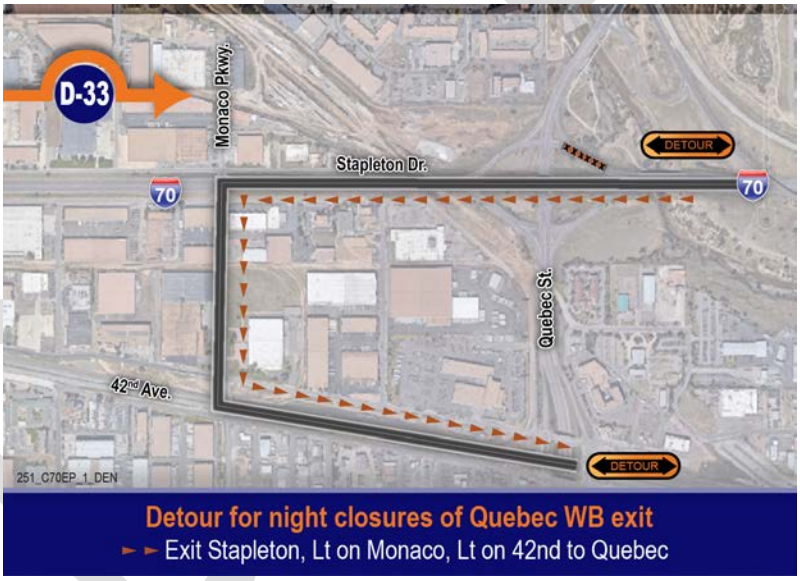
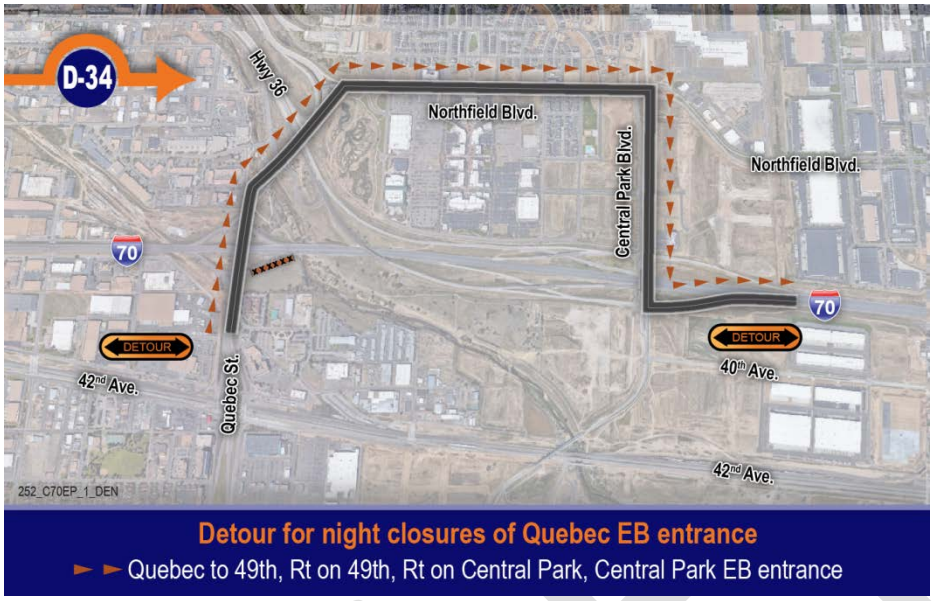
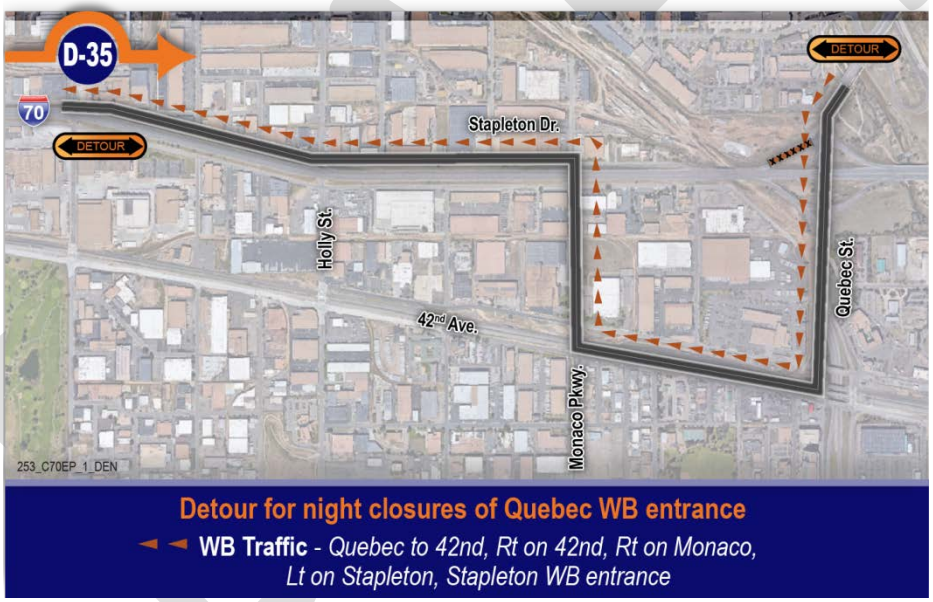
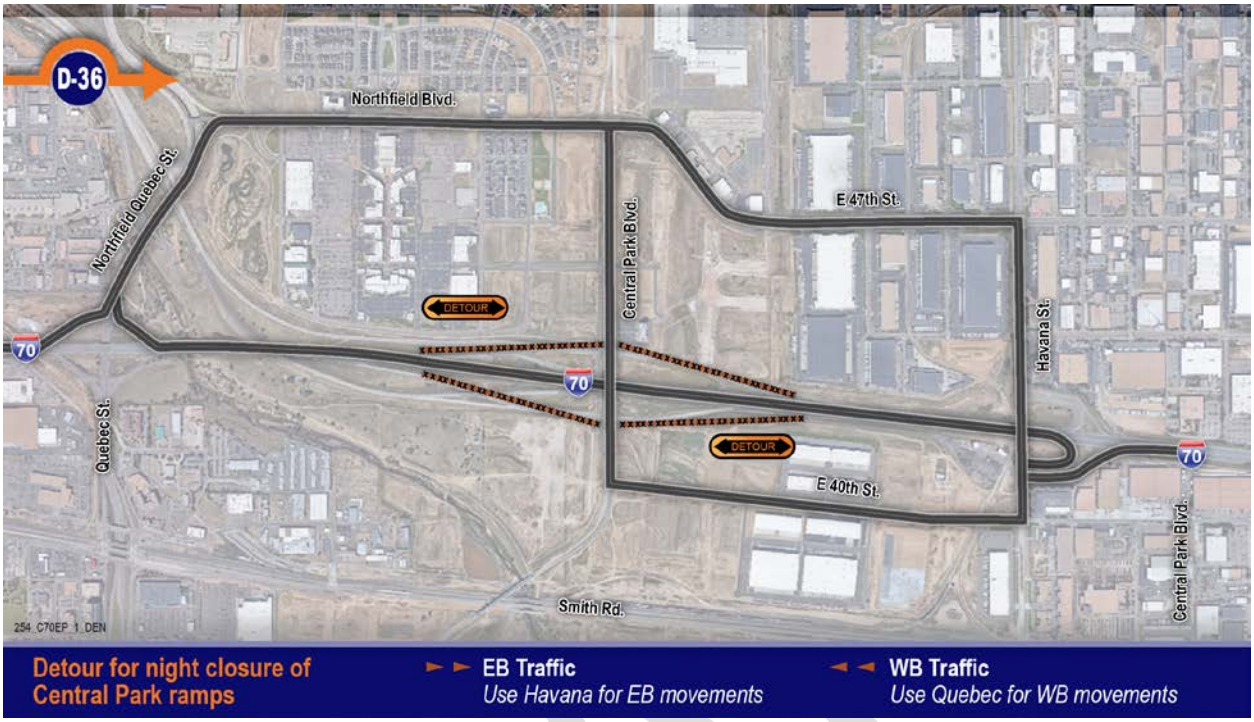
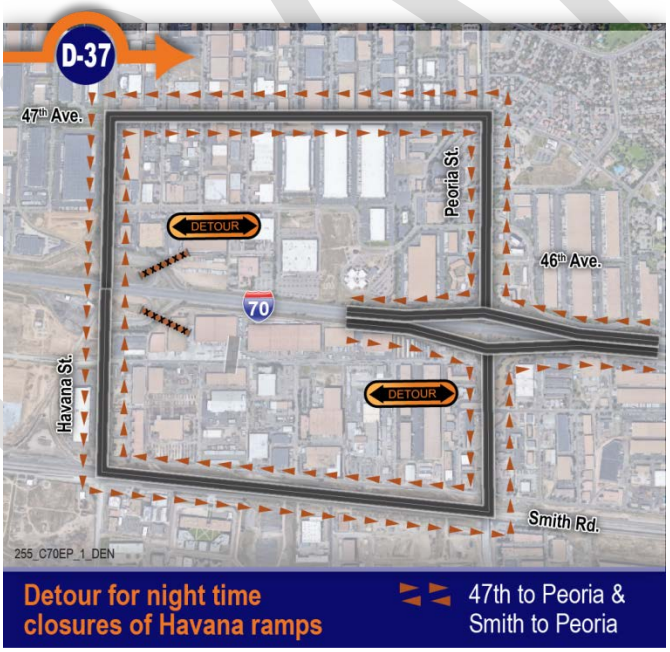

D-32
Quebec St.
70
Hwy 85
70
DETOUR
DETOUR
250_C70EP_1_DEN
Detour for Quebec EB exit

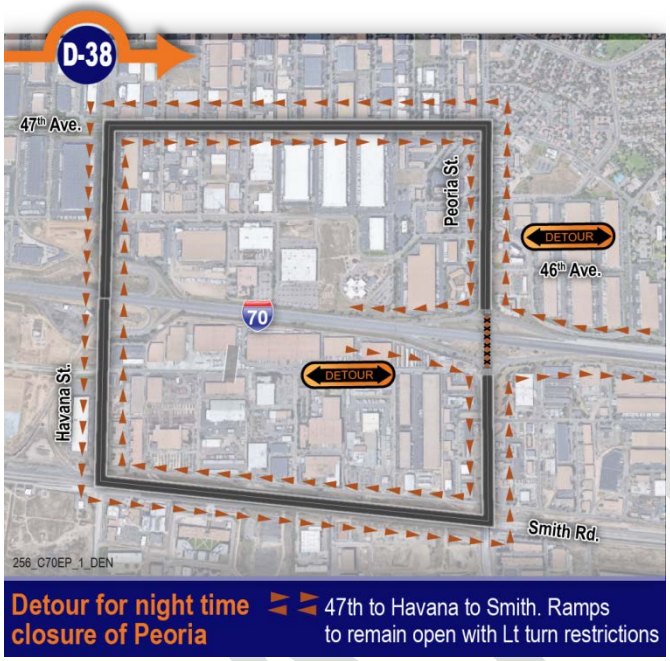

D-33
Monaco Pkwy.
Stapleton Dr.
DETOUR
70
70
Quebec St.
42nd Ave.
DETOUR
251_C70EP_1_DEN
Detour for night closures of Quebec WB exit
Exit Stapleton, Lt on Monaco, Lt on 42nd to Quebec


D-34
Hwy 36
Northfield Blvd.
Central Park Blvd.
Northfield Blvd.
70
70
DETOUR
DETOUR
42nd Ave.
Quebec St.
40th Ave.
42nd Ave.
252_C70EP_1_DEN
Detour for night closures of Quebec EB entrance
Quebec to 49th, Rt on 49th, Rt on Central Park, Central Park EB entrance

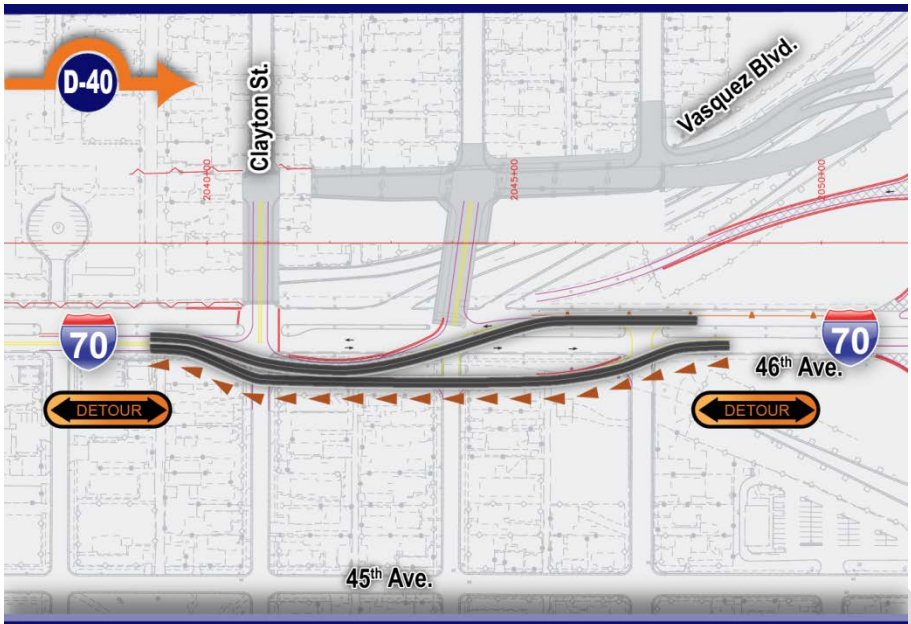

D-35
DETOUR
70
DETOUR
Stapleton Dr.
Holly St.
42nd Ave.
Quebec St.
Monaco Pkwy.
253_C70EP_1_DEN
Detour for night closures of Quebec WB entrance
WB Traffic - Quebec to 42nd, Rt on 42nd, Rt on Monaco,
Lt on Stapleton, Stapleton WB entrance


D-36
Northfield Blvd.
Northfield Quebec St.
Central Park Blvd.
E 47th St.
Havana St.
DETOUR
70
Quebec St.
E 40th St.
Smith Rd.
254_C70EP_1_DEN
Detour for night closure of Central Park ramps
EB Traffic
Use Havana for EB movements
WB Traffic
Use Quebec for WB movements


D-37
47th Ave.
Peoria St.
DETOUR
46th Ave.
70
Havana St.
Smith Rd.
255_C70EP_1_DEN
Detour for night time closures of Havana ramps
47th to Peoria & Smith to Peoria


D-38
47th Ave.
Peoria St.
DETOUR
46th Ave.
70
DETOUR
Havana St.
Smith Rd.
256_C70EP_1_DEN
Detour for night time closure of Peoria
47th to Havana to Smith. Ramps to remain open with Lt turn restrictions

D-39
47th Ave.
DETOUR
Peoria St.
46th Ave.
70
Havana St.
DETOUR
Smith Rd.
257_C70EP_1_DEN
Detour for night time closures of Peoria ramps
47th to Havana & Smith to Havana



Detour for closure of 46th Ave between Columbine and Steel

Detour for temporary closure of 46th Ave between Steele and Monroe

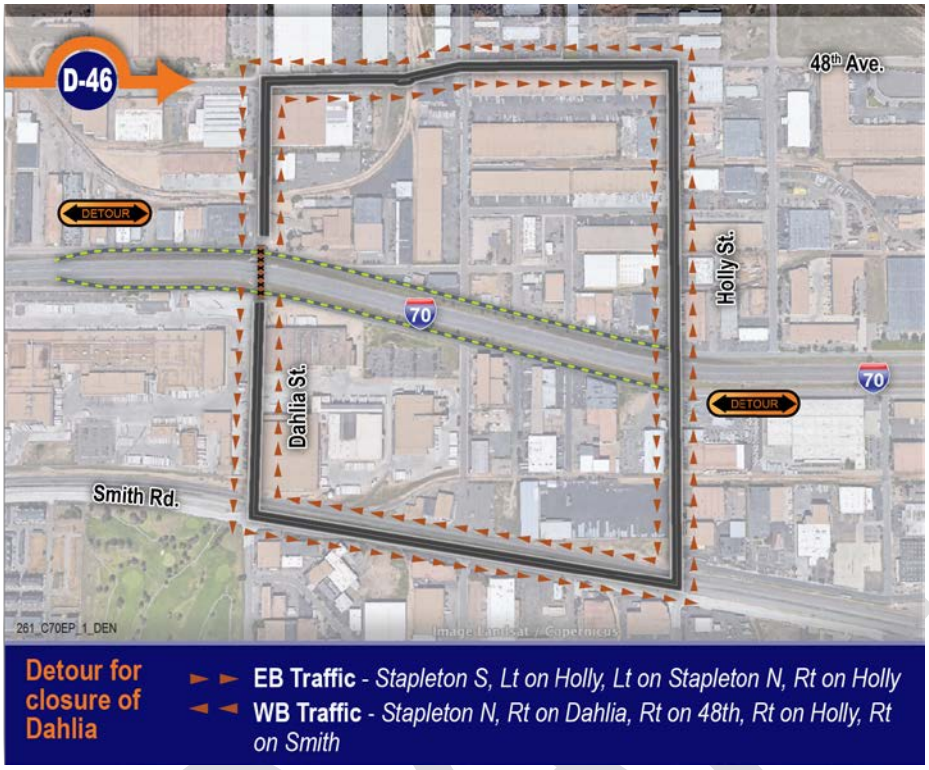
Steele to Vasquez to 48th to 46th

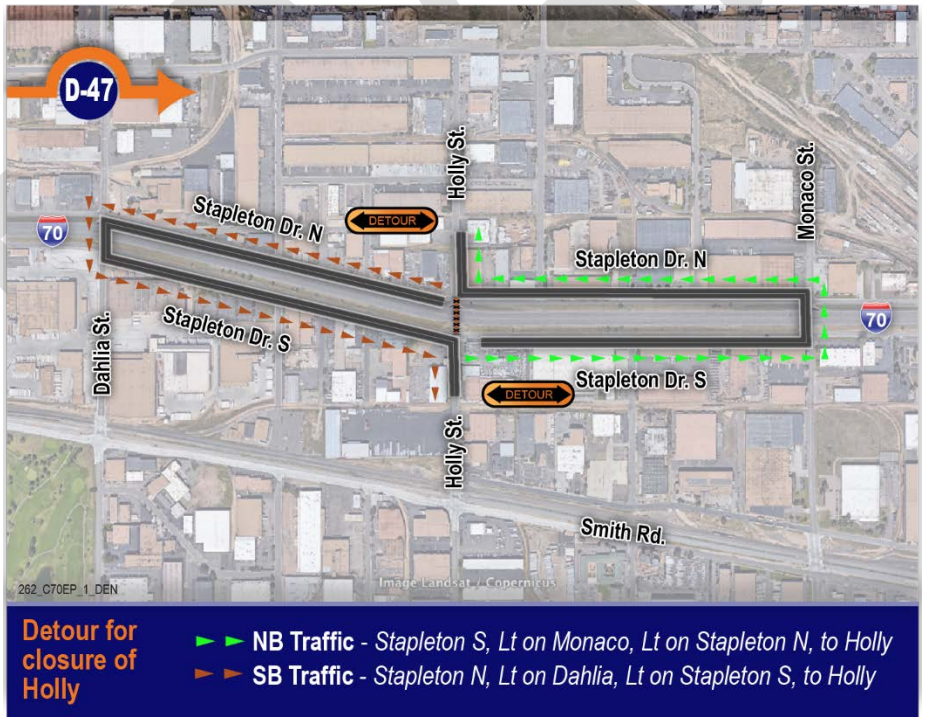
D-42
48th Ave.
Josephine St.
DETOUR
DETOUR
46th Ave.
Columbine St.
45th Ave.
70
221_C70EP_1_DEN
Detour for closure of Josephine at 46th Ave.
47th to Columbine to 45th

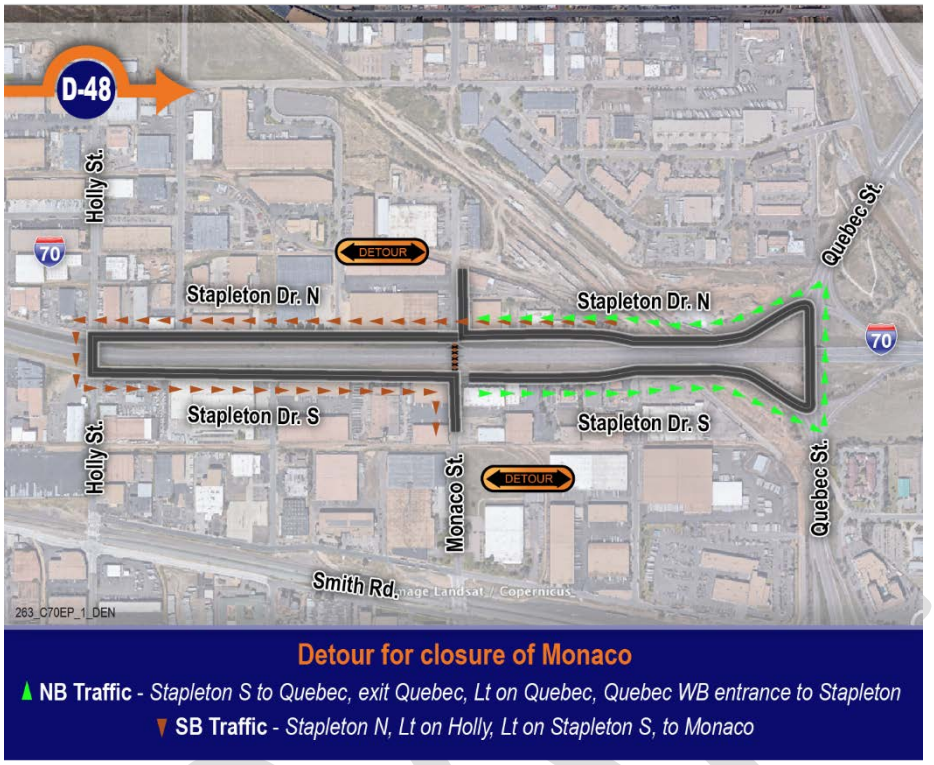
D-43
48th Ave.
Josephine St.
Elizabeth St.
Clayton St.
E 47th Ave.
DETOUR
70
46th Ave.
DETOUR
Columbine St.
45th Ave.
222_C70EP_1_DEN
Detour for closure of Columbine at 46th Ave
47th to Clayton to 45th
Josephine as alt route

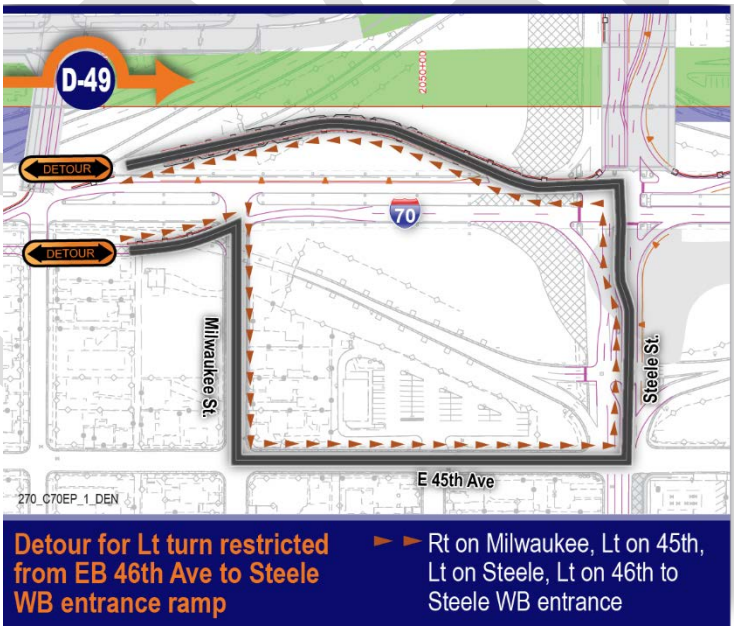
D-44
E 47th Ave.
Josephine St.
Elizabeth St.
Clayton St.
DETOUR
70
46th Ave.
Columbine St.
DETOUR
E 45th Ave.
259_C70EP_1_DEN
Detour for closure of Clayton at 46th Ave. 45th to Columbine to 47th
Clayton is a bike route. This detour will serve as the alt bike route

D-45
48th Ave.
Clayton St.
Fillmore St.
Vasquez Blvd.
DETOUR
Colorado Blvd.
70
70
45th Ave.
260_C70EP_1_DEN
Detour for closure of Filmore
48th to Clayton to 45th


D-46
48th Ave.
DETOUR
Holly St.
70
Dahlia St.
DETOUR
70
Smith Rd.
261_C70EP_1_DEN
Image Landsat / Copernicus
Detour for closure of Dahlia
EB Traffic - Stapleton S, Lt on Holly, Lt on Stapleton N, Rt on Holly
WB Traffic - Stapleton N, Rt on Dahlia, Rt on 48th, Rt on Holly, Rt on Smith


D-47
Holly St.
Monaco St.
70
Stapleton Dr. N
DETOUR
Stapleton Dr. N
70
Dahlia St.
Stapleton Dr. S
Stapleton Dr. S
DETOUR
Holly St.
Smith Rd.
262_C70EP_1_DEN
Image Landsat / Copernicus
Detour for closure of Holly
NB Traffic - Stapleton S, Lt on Monaco, Lt on Stapleton N, to Holly
SB Traffic - Stapleton N, Lt on Dahlia, Lt on Stapleton S, to Holly


D-48
Holly St.
70
DETOUR
Stapleton Dr. N
Stapleton Dr. N
Quebec St.
70
Stapleton Dr. S
Stapleton Dr. S
Holly St.
Monaco St.
DETOUR
Quebec St.
Smith Rd.
263_C70EP_1_DEN
Detour for closure of Monaco
NB Traffic - Stapleton S to Quebec, exit Quebec, Lt on Quebec, Quebec WB entrance to Stapleton
SB Traffic - Stapleton N, Lt on Holly, Lt on Stapleton S, to Monaco


D-49
DETOUR
DETOUR
70
Milwaukee St.
Steele St.
E 45th Ave
270_C70EP_1_DEN
Detour for Lt turn restricted from EB 46th Ave to Steele WB entrance ramp
Rt on Milwaukee, Lt on 45th, Lt on Steele, Lt on 46th to Steele WB entrance

D-50
DETOUR
DETOUR
70
Steele St.
269_C70EP_1_DEN
Temporary Detour of WB Steele Entrance

D-51
DETOUR
70
Washington St.
Brighton Blvd.
DETOUR
268_C70EP_1_DEN
Detour for nighttime closure of EB Brighton exit
Exit Washington, RT on Washington to Brighton

2.2.3.e Typical Section Requirements

FRMG's development of Project MOT plans conforms to the Project's minimum lane requirements for I-70 and other Project roadways.

I-70 Mainline

i.-iii Lane Widths, Shoulder Widths, and Number of Lanes

- Minimum lane width – 11 feet
- Minimum inside and outside shoulder widths – 2 feet
- Minimum number of lanes – The same number of existing lanes unless otherwise permitted in Schedule 10, Section 2. If reduced to one lane, a minimum clear width of 16 feet is required to accommodate oversize vehicles or provide alternative route for oversize vehicles.

Iv Barrier/Wall Locations

- Provide a barrier a minimum of two feet from the edge of traveled way.
- Provide an 18-inch glare screen on all temporary barriers between I-70 Mainline opposing traffic within four feet of the barrier.
- Install barrier reflector strips on all temporary barriers, both right and left sides, as per CDOT Standard S-612-1; spacing between each three-foot panel will be no more than seven feet.
- Use delineators throughout the Project, including lighted areas.
- Provide emergency pull-outs as needed per Section 2.2.3.f below.

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v. Proposed Work Zone Locations

Figures 3 and 4 below demonstrate our plan and identify Work zones for Areas 1-5.

Figure 3. Areas 1, 2 and 3 to Central Park Boulevard

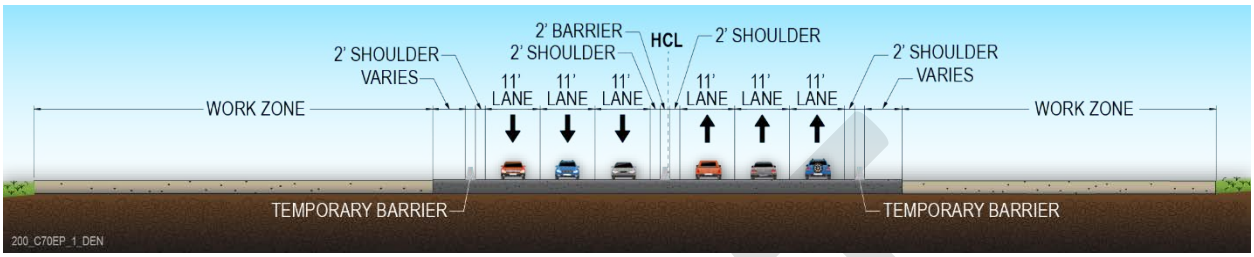
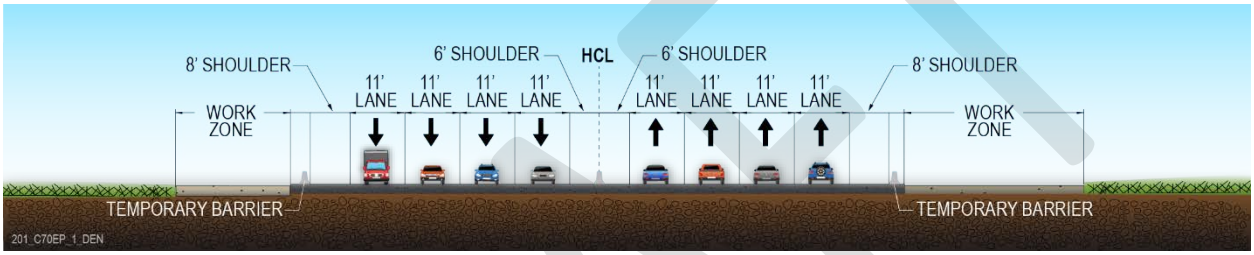


Figure 4. Area 3 East of Central Park Boulevard, Area 4 and Area 5



I-70 Mainline interchanges entrance and exit ramps

i.-iii Lane Widths, Shoulder Widths, and Number of Lanes

- Minimum lane width – 11 feet
- Minimum inside and outside shoulder widths – 2 feet
- Minimum number of lanes – One lane will remain open on all ramps, unless otherwise permitted in Schedule 10, Section 2.11.6.

iv Barrier/Wall Locations

- Barrier will be located a minimum of two feet from the edge of traveled way.

v Proposed Work Zone Locations

- Please refer to Figure 5 which demonstrate our plan and identify Work zones for Areas 1-5 interchanges entrance and exit ramps.

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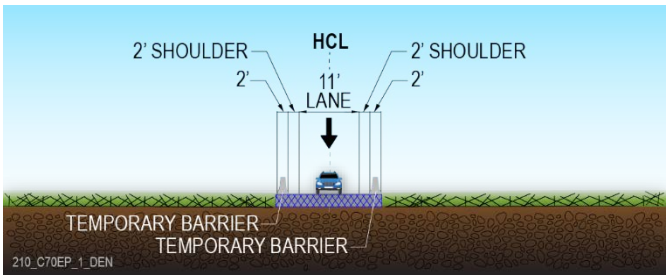
Figure 5. I-70 Mainline Interchanges Entrance and Exit Ramps



I-70 Interchange Roadways (Brighton Blvd., Steele/Vasquez Blvd., Colorado Blvd., Quebec St., and Peoria St.), 46th Avenue, and Stapleton Drive

<u>i.-iii Lane Widths, Shoulder Widths, and Number of Lanes</u>

- Minimum lane width – 11 feet
- Minimum shoulder width – two feet. Curb and gutter sections do not require a two-foot shoulder.
- Full roadway Closures of Brighton Blvd., Steele St., Vasquez Boulevard, Colorado Blvd., Quebec St., and Peoria St. are not allowed except as permitted by the requirements in Table 1 or by obtaining MOT variance, which are both described in Section 2.2.3.c.v. At a minimum, FRMG will maintain the same number of through lanes and left-turn lanes as are provided in the existing conditions, unless alternative measures are used to mitigate the loss of existing conditions through the MOT Variance Process.
- In single-lane situations, a minimum clear width will be 16 feet.

<u>iv Barrier/Wall Locations</u>

- Barrier will be located a minimum of two feet from the edge of traveled way.

<u>V Proposed Work Zone Locations</u>

- Please refer to Figures 6 through 13, which demonstrate our plan and identify Work zones for Areas 1-5.
- Figure 6. Steele St. Phase 1

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Figure 6. Steele St. Phase 1

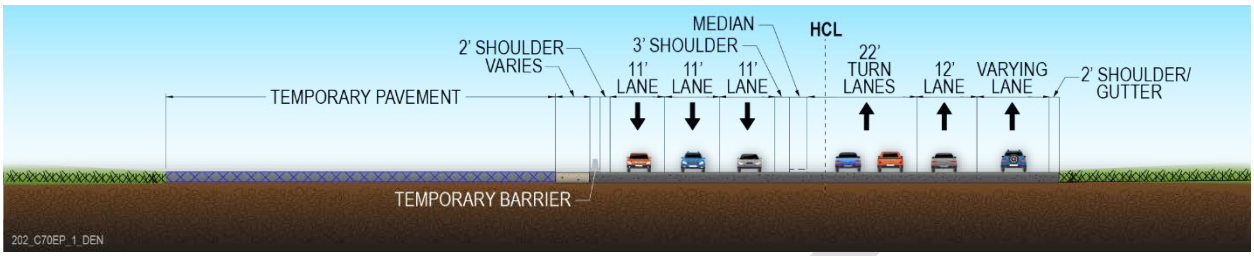

Figure 7. Steele St. Phase 2.

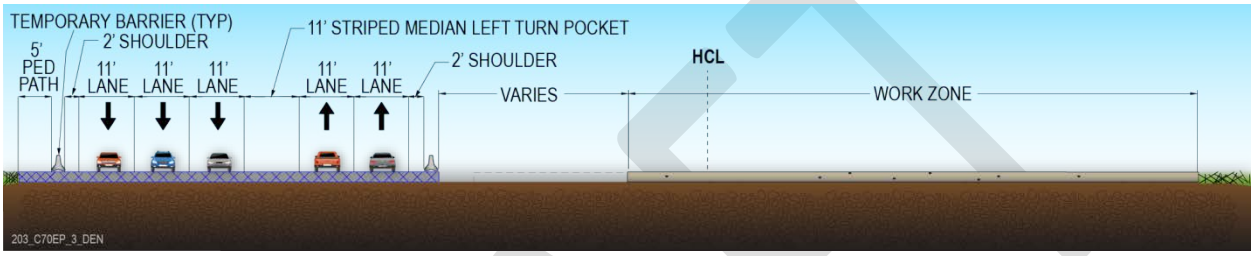

Figure 8. Stapleton Drive North Existing.

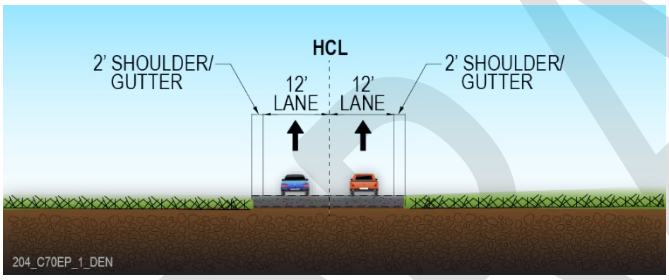

Figure 9. Stapleton Drive North Phase 1.

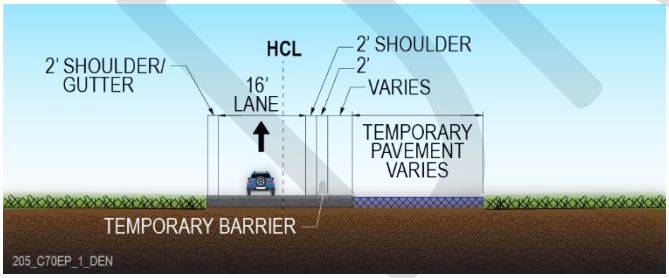

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Figure 10. Stapleton Drive North Phase 2.

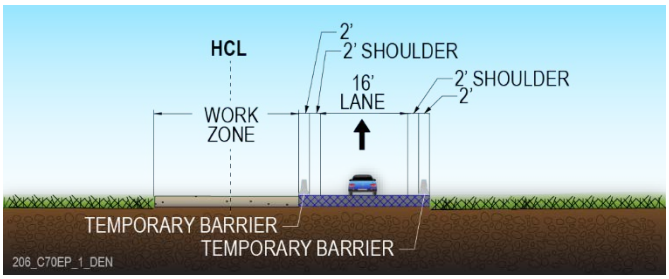


Figure 11. Stapleton Drive South Existing.

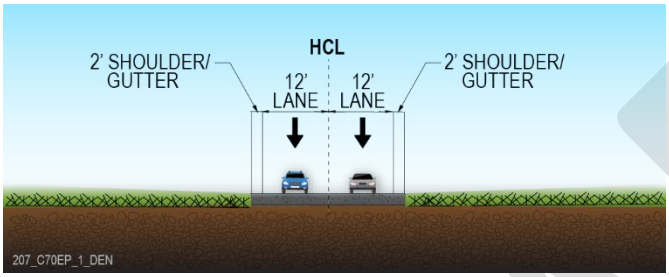


Figure 12. Stapleton Drive South Phase 1.

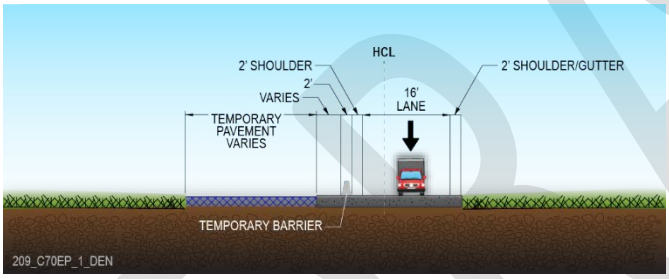
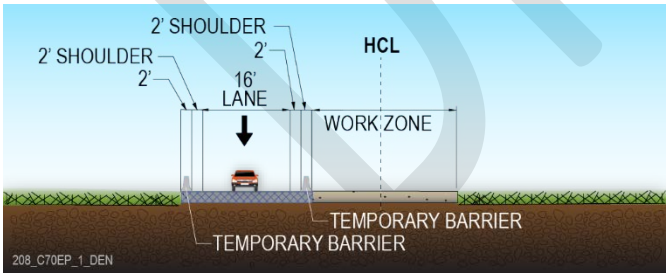


Figure 13. Stapleton Drive South Phase 2.



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Other Local Agency Roadways (York St., Josephine St., Columbine St., Clayton St., Fillmore St., Dahlia St., Holly St., and Monaco St.)

<u>i.-iii Lane Widths, Shoulder Widths, and Number of Lanes</u>

- Minimum lane width – 11 feet
- Minimum shoulder width – two feet. Curb and gutter sections do not require a two-foot shoulder.

<u>iv Barrier/Wall Locations</u>

- Barrier will be located a minimum of two feet from the edge of traveled way.

<u>v Proposed Work Zone Locations</u>

- Please refer to the MOT plans appended to this TMP in Attachment F-1, which identify Work zones for Areas 1-5

2.2.3.f Emergency Requirements

FRMG is sensitive to the needs of emergency services providers and the general public in an construction environment where the I-70 Mainline and ramps, and the local street network, are subject to traffic shifts, lane Closures, and full Closures of facilities. In the following section and in coordination with the Incident Management Plan as defined in Section 2.2.5.g below, FRMG's approach to providing physical and operational assets for emergency services is described. Specific elements of our approach include:

2.2.3.f.i Pull-Out Locations

FRMG MOT design maintains eight feet and greater shoulders wherever possible.

Pull-outs will be provided on I-70 Mainline Project areas where available shoulder widths are less than eight feet along a 0.5-mile length of roadway. Pull-out locations are shown in Table 15 and are detailed on the MOT plans appended to this TMP. Emergency pull-outs along the outside shoulder will be provided during staged construction for use by disabled vehicles, staging of incident management, and for use by law enforcement vehicles as outlined in Section 2. FRMG's approved ATC 43 has been incorporated in the FRMG MOT design, which revises the minimum spacing of temporary emergency pull-outs to allow for spacing greater than 0.5 miles. With this ATC, spacing of the pull-outs is between each interchange or up to one mile between east of Colorado Blvd and Chambers Road, whichever is less, and up to 0.5 mile throughout the rest of the Project. FRMG MOT design has been optimized to reduce pull-outs spacing and increase shoulder widths.

FRMG's Project design will meet the geometric requirements for pull-outs (14-foot widths, 15:1 transitions). Pull-outs will be signed for emergency use only. Snow removal will be provided in all pull-outs.

Table 15. Emergency Pull-Outs

Phase/Stage	Direction	Station/Location
Area 1		
Phase 1 Stage 4	WB	2072+55
	EB	2085+71
Phase 1 Stage 5	WB	2072+55
Area 2		
Phase 1 Stage 1	WB	2116+72
		2141+81
	EB	2122+35
		2167+70
Phase 1 Stage 3	WB	2099+55
		2151+79
	EB	2122+35
		2167+70
Phase 2 Stage 1	WB	2091+43
		2117+66
		2139+93
		2165+35
	EB	2115+16
		2139+17
		2162+12
Phase 3 Stage 1	WB	2107+35
		2179+30
	EB	2098+38
		2124+63
Area 3-5		
Phase 1 Stage 1	WB	2204+58
		2333+79
	EB	2215+79
		2242+02
Phase 1 Stage 2	WB	2204+58
		2333+79
	EB	2215+79
		2242+02
Phase 2 Stage 1	EB	2202+84
		2350+05

2.2.3.f.ii Emergency Access

For the safety of the FRMG workforce and the general public, it is essential that emergency services providers understand work zone conditions and access points for each phase of construction. The following measures will be implemented by the FRMG team to ensure that emergency services providers have a clear understanding of the nature of construction and

access to the work zone during each phase of construction. To facilitate that understanding, FRMG will:

- Clearly identify designated streets along the Project for emergency services vehicle access to the local community and Work Areas. These designated streets for emergency use will be reviewed with emergency service providers, either at the regularly scheduled MOT Task Force meeting, or at separate meetings held specifically to review emergency procedures.
- Establish a direct line of communication between emergency service providers and FRMG Construction Superintendents through a designated on-call number. This number will let emergency responders directly communicate with the construction crews in the field. It will be monitored 24/7 throughout construction.
- Invite emergency services providers to attend a kick-off meeting of the Incident Management Plan to discuss construction phasing, construction methods, information dissemination, etc.
- Provide the Project Safety Management Plan to the Construction Area 1 and Area 2-5 MOT Leads and the emergency services providers.

2.2.3.f.iii Courtesy Patrol

Courtesy patrols will be utilized to reduce congestion and potential safety risks on the Project, and will provide assistance when motorists are stranded or disabled. FRMG will provide courtesy patrol vehicles and dedicated dispatch staff (including colocation with CTMC staff unless otherwise agreed by the Department) responsible for dispatching of courtesy patrol vehicles when there are incidents, accidents, or other events requiring the services of courtesy patrol vehicles. FRMG's courtesy patrol will interface with the Department's Mile High Courtesy Patrol program and in coordination with the Project Incident Management Plan (IMP). FRMG will follow specifications for the courtesy patrol per Schedule 11 of the Agreement (these appear in Attachment 2). Our specifications include:

- Days and times of courtesy patrol operation
- Staffing, vehicles, and equipment requirements
- Services to be provided and prohibited activities
- Protocols for responding to an incident
- Documentation requirements
- Staff training

In addition to the courtesy patrol, Uniformed Traffic Control officers will provide an important role in providing traffic control and enforcement throughout the Project. FRMG will employ off-duty police officers to provide traffic control and enforcement as required. A number of critical Project activities will require the use of Uniformed Traffic Control personnel, including but not limited to

- Lane Closures on I-70 Mainline and ramps
- Night construction on I-70 Mainline and ramps
- Lane Closures on Local Agency or CDOT roadways
- Night construction on Local Agency or CDOT roadways
- On roadways with active Traffic Control Management

- Other activities, such as traffic signal power switches, that are identified by FRMG

FRMG will meet the training and equipment requirements for Uniformed Traffic Control personnel as defined in Schedule 10, Section 2.11.22.

2.2.3.g Temporary Closure Scenarios

FRMG has included a list of known temporary Closure scenarios, including time and duration, within Table 1 of Section 2.2.3.c.i through 2.2.3.c.iv above.

2.2.3.h Access

FRMG will actively manage MOT activities to minimize inconvenience to the traveling public, regardless of travel mode. Our plan focuses on minimizing disruption to the local residents, businesses, and commuters by implementing the following techniques:

2.2.3.h.i. Pedestrian/Bicycle

Specific bicycle and pedestrian routes are discussed in Section 2.2.5.c, e, and f below; additionally, FRMG will:

- Ensure compliance with all Schedule 17 Environmental Requirements
- Provide temporary trail detours that meet requirements as outlined in the CCD *Construction Detour Standards for Bikeways and Multi-Use Trails*
- Not close trails in the vicinity of the Project without detours that address:
  - Public Information Plan (PIP) requirements identified and all applicable public notifications provided
  - Compliance with CCD *Construction Detour Standards for Bikeways and Multi-Use Trails*
- Maintain existing trail systems, temporary trails, sidewalks, and pedestrian routes at all times and meet all requirements of the Americans with Disabilities (ADA) Act for all Construction Work that impacts existing trails and pedestrian routes or those used for temporary detour routes
- Maintain pedestrian access and connectivity of the local neighborhoods. Pedestrian access on north-south roadway facilities will be maintained and sidewalk detours will be implemented, if necessary, per the Project Agreement. Shared-use paths will be maintained along 46th Ave during construction at all times. Pedestrian and bike detours will be signed to provide minimum out-of-direction travel.
- Provide a dedicated crossing of 46th Ave at Columbine St./Clayton St. with crossing guards for pedestrians. Crosswalk markings will be maintained, and construction fencing and overhead protection will be provided, along all sidewalks adjacent to construction activities.
- Ensure separate pedestrian traffic from the construction zone with portable concrete barriers adjacent to sidewalks
- Coordinate with Denver Public Schools to ensure safe, reliable transportation is provided to students during construction

- Ensure any Closure of a roadway designated as a bike route will provide an equivalent bicycle detour route

2.2.3.h.ii. Business

FRMG has completed a comprehensive inventory of business access points in the Project area, and our MOT strategies reflect our commitment to maintain public and private access to the local street system. FRMG will maintain business access at all times, in accordance with Section 2.9 of Schedule 10, unless otherwise approved by the Department. Please reference Section 2.2.4.c for business access points, anticipated construction activities, phasing, and staging requirements for any affected improvements.

FRMG will conduct weekly neighborhood "walkabouts" in which FRMG's Community Liaison (with the Department's Approval) will walk along the Project area and stop in at businesses and organizations. The Community Liaison will relay Project updates, solicit feedback, and work to strengthen relationships with the community. This is good for community involvement and promotes access awareness.

FRMG will inform small local businesses potentially affected by construction on how they can communicate construction detours to their customers. Throughout construction, special care will be taken to prenotify businesses, maintain access, and use signage to make access clear. FRMG will communicate and document the relevant business and private access information per Section 2.2.4.c.i-v of this TMP.

TCPs and MHTs will incorporate stakeholder information from the neighborhood walkabouts, PI, available surveys, and other pertinent studies relating to business and private access to the local street system and the highway facilities.

2.2.3.h.iii. Local/Adjacent Property Owner

FRMG has completed a comprehensive inventory of local/adjacent property owner access points in the Project area, and our MOT strategies reflect our commitment to maintain access to the local street system. Please reference Section 2.2.4.c for local/adjacent property owner access points, anticipated construction activities, phasing, and staging requirements for any affected improvements. FRMG will communicate and document the relevant business and private access information per Section 2.2.4.c.i-v of this TMP.

Access to the Elyria and Swansea Neighborhoods is critical, as is the reduction of out-of-direction travel. FRMG will consider construction phasing and directions of travel during construction in the roadway network to maintain circulation and prevent isolation of communities. FRMG's approach to maintaining access for Swansea Elementary and other local schools is shown/discussed below in Section 2.2.5.e – Transportation Operations Strategies.

FRMG will coordinate with Denver Public Schools (DPS), including implementation of DPS Phase 3 School Layout during summer 2018 (and risks associated with any reconfiguration of these improvements) in relation to scheduling all construction activities on the Cover. We will also coordinate access for school personnel as needed per the requirements of the Agreement.

TCPs and MHTs will incorporate stakeholder information from the neighborhood walkabouts, PI, available surveys, and other pertinent studies relating to business and private access to the local street system and highway facilities.

2.2.3.h.iv. Project Access

FRMG's conceptual construction access points are identified on the MOT plans appended to this TMP, and final haul routes will be addressed in the final design of the TCPs. Figure 14 shows our Intended lay-down, recycling, staging, disposal and maintenance locations to be used during Construction.

The major haul routes for the Project will be designated along state roadways to the extent feasible to avoid local streets.

Figure 14. Intended Lay-down, Recycling, Staging, Disposal and Maintenance Locations to be used During Construction.

2.2.3.h.v Bus/Transit

FRMG has identified bus routes and stop locations, shown in Section 2.2.5.b, along the Project, and will coordinate with RTD to minimize any impacts to the RTD transit system as a result of the Construction Work. FRMG will maintain access to all RTD stations within the Project during construction, and any modifications to RTD station access or bus stop locations will be submitted to RTD for approval and the Department copied. CCD will be included on all coordination with RTD.

Prior to disruptions to RTD service areas and schedules, FRMG will coordinate with RTD at least 30 Calendar Days in advance to allow notifications to transit users of any Closures, delays, or modifications and/or relocation of transit stops or routes. FRMG will utilize the Project Strategic Communications Plan to communicate changes of RTD service to RTD patrons and the public.

Additional information about strategies for residents and business owners adversely impacted by construction activities is contained in Section 2.2.4.c of this TMP.

2.2.4 Temporary Traffic Control Plan (TCP) Strategies

FRMG's Temporary TCP is a series of systematic strategies that will guide the deployment, maintenance, and removal of devices for handling traffic and maintaining local accesses during every phase of construction. Specific strategies addressed in this section of this TMP include:

a. Approach to development of TCPs
b. Implementing and Monitoring TCPs and MHTs
c. Business and Private Access
d. Colorado Transportation Management Center (CTMC) Coordination

2.2.4.a Approach to Development of TCPs and MHTs

The TCP will address traffic safety and control throughout the work zone. FRMG's design will include a reduced number of traffic shifts, limited ramp Closures, provision of large work zones, and opening of Work areas early in the Project. This will maximize congestion relief and ensure separation of pedestrian and local traffic from Work Areas, construction access, etc.

TCPs will be developed through collaboration among FRMG, the Department, and any applicable stakeholders. FRMG's TCP will conform to the requirements in Section 2.11.1 of Schedule 10 and the CDOT *Standard Specifications*. In general, the objectives are to provide a safe roadway for the workers and the traveling public, maximize the Work scope within a Phase, reduce temporary Work, and minimize the number of major traffic switches. The main components of this include the following:

- Task Force Meetings – The MOT Task Force will meet weekly to develop and refine the traffic management strategy on the Project.
- The preliminary design will be reviewed in the Task Force meetings and over-the-shoulder reviews. The first formal submittal to the Department for Acceptance will be prior to Release for Construction packages. If any major revision to the TCP is required by the Department, FRMG will incorporate all comments and submit a revised TCP for Acceptance.
- Project Phasing – The Project is broken up into manageable Segments and Phases as described in the previous section. There are unique constraints for each Segment, and the TCPs will be distinctly developed to accommodate these constraints.
- Standardization – The general approach for use of concrete barrier, lane, and shoulder widths; emergency pull-outs; and ingress and egress points will be standardized for use throughout the corridor and included on the TCPs.

- Glare screens, barrier reflector strips and delineators will be installed per Section 2.2.3.e above.
- Constructability Reviews will be made by the construction team and subcontractors.
- TCP development will be consistent with the approved Stage 1 QMP.

In addition to the information listed in Section 2.11.1 to be included in the TCP, FRMG anticipates including the following content listed below. This list is only a guideline; the specific content of each TCP will be controlled by Project-specific needs.

- MOT operations and analysis
- General notes and legends
- Typical Section sheets
- Lane configurations
- Lane and shoulder widths
- Median widths
- Work Areas
- Locations of existing pavement and proposed pavement
- Signing (location, spacing, etc.)
- Pavement marking
- Traffic control devices (spacing, tapers, etc.)
- Emergency pull-out locations
- Temporary concrete barriers
- Business access
- Pedestrian and bicycle accommodations
- Detour route plans
- Location of Closure
- Temporary signalization
- Permanent signalization impacts
- Temporary pavement sections
- Stationing
- Temporary drainage
- Construction access
- Personnel parking areas if within the Work Area
- Noise ordinance mitigation and Construction Work hours

Each TCP will be submitted to the Department for Acceptance prior to implementation. Any major revision to a TCP, as determined by the Department, will require submission of a new TCP for Acceptance.

FRMG will ensure jurisdictional alignment by obtaining approval from the Local Agency jurisdictions in writing on any TCPs that modify the traffic pattern on their facilities before implementation.

Additionally, TCPs will address:

- Management of Temporary Drainage

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- Temporary Lighting
- Temporary ITS during construction

Temporary Drainage

Drainage measures to minimize hydroplaning and roadway icing will be implemented during construction and coordinated within the phases. Proposed temporary surface drainage measures for each construction Area are described below.

Area 1 will require temporary drainage facilities to accommodate phased excavation for the installation of walls and bridges, as well as the subsequent construction of pavement. Starting at the UPRR Bridge, the Temporary drainage process will be to pump the Phase 1 portion of the new bridge up to the Bridgton outfall. From York St. to the Brighton Blvd. outfall, a 60-inch pipe will be constructed on the existing eastbound portion of 46th Avenue. This pipe collects the local drainage from about 39th Avenue to the north and will flow under the UPRR to the Brighton Pond. Upon removal of the I-70 Viaduct, the permanent connection from York St. to the Brighton Pond will be built.

FRMG will start at Clayton St. and progress to the west building and the Cover Structure, and then York and Josephine. Temporary drainage will be collected within the excavation and pumped to the storm sewer located in York St. Note; the excavation below groundwater east of the UPRR Bridge will not occur until the entire groundwater cutoff wall has been completed.

East of Steele St., the excavation of the trench will continue, with drainage being collected into the trench and pumped into the Vasquez Ponds.

During construction, surface drainage flows will be directed toward the base of the secant pile walls on the inside of the excavation. At this point, the flow will be collected, treated as necessary, and pumped up to adjacent storm sewer systems. Temporary low points will be phased in the center of the proposed alignment to permit installation of bridge piers. Cross culverts or pumps will be used to move these flows to the larger pumps, which will lift the flows out of the excavation. Off-site surface flows from the south will be captured in 46th street and conveyed through existing, temporary, and permanent drainage systems around the trench work.

In Area 2, the first Phase of construction will allow for the widening of 46th and Stapleton Drive. During this Phase, temporary pavement will be constructed inside of the existing pavement. This pavement will be mostly sloped to drain to temporary ditches which will convey the runoff to low points, where it will be collected and conveyed to the local storm sewer system.

The second and third Phase of construction in Area 2 will construct mainline I-70, which will require temporary drainage via open ditch and/or French drains, conveying stormwater to existing and previously constructed permanent drainage systems.

Construction of Areas 3 through 5 consists of widening, milling, and overlay of existing I-70. As part of the widening, the cross slopes will be corrected to meet the design requirements. This correction results in raising the right-hand shoulder and existing grade. Rock drains will be placed along the existing roadway to collect stormwater and provide a drainage path. The Rock

drains will be left in place, as they will provide a suitable subgrade. The existing culverts under I-70 will be extended to the toe of the widened slopes.

Temporary Lighting

Temporary lighting on the Project will be used to enhance safety within the Project limits during construction. Special consideration of areas where vehicular traffic, pedestrians, and bicyclists coexist will be taken into account to provide visibility. In the predominant neighborhood section between Brighton Blvd. and Garfield St., within Construction Work, temporary lighting for all existing traffic areas (including locations where existing sidewalk is not present), and proposed pedestrian and bicycle movements (including detour routes), will meet the minimum requirements as shown in Table 16. Impacts to adjacent residences will be minimized by installing light shields on fixtures.

Prior to the issuance of NTP 2, the FRMG will submit an inventory of all existing lighting affected by the Construction Work to the Department for Acceptance. The report will indicate if each individual light is working or not during nighttime conditions. Any existing lighting that is not in operation when NTP 2 is issued will be remedied by FRMG within 30 Calendar Days.

FRMG will ensure that existing lighting yet to be impacted by the Construction Work will be maintained and operated at its current level and will not be required to meet the minimum criteria in Table 16.

Temporary lighting will be designed and will complement the overall construction phasing of the Project. Where existing lighting needs to be removed to construct the new roadway improvements but permanent lighting is not yet operational, temporary lighting will be provided. Plans and calculations will be submitted to the Department prior to construction and will meet the minimum lighting requirements in Table 16.

FRMG will provide all temporary lighting to meet Project requirements that include freeways, traffic shifts, detours, emergency pull-out locations, merge/diverge locations, arterials, Local Agency Roadways, intersections, pedestrian walkways, and bikeways impacted by Construction Work per Table 16 below.

Table 16. Temporary Lighting Minimum Requirements

	Design Method	Luminance Range (cd/m^2)	Uniformity (avg:min)	Veiling Luminance Ratio (L_{vmax}/L_{avg})	Visibility Level	Illuminance Range (avg. fc)
Freeway, Interchanges, Highway Underpasses	Luminance	0.4 – 0.6	3.5	0.3		
	STV	0.3 – 0.5	6.0 (max:min)		2.6 – 3.8	
	Illuminance		3.0	0.3		0.4 – 1.4
Municipal Streets	Luminance	0.3 – 0.8	3.0 – 6.0	0.4		
	STV	0.3 – 0.6	6.0 – 10.0 (max:min)		1.6 – 3.8	
	Illuminance		4.0 – 6.0	0.4		0.4-1.2

	Design Method	Luminance Range (cd/m^2)	Uniformity (avg:min)	Veiling Luminance Ratio (L_{vmax}/L_{avg})	Visibility Level	Illuminance Range (avg. fc)
Pedestrian walkways, Bikeways	Illuminance (Mixed vehicle and pedestrian)		4.0			2.0
	Illuminance (pedestrian only)		4.0			1.0
	Illuminance (Walkways/ Bikeways)		4.0			0.5

Temporary ITS

FRMG has conducted meetings with Zayo Group (shared resource owner of the Project ITS backbone) to coordinate Project ITS Work. The topics of discussion included various methods that would ensure continued service during construction, such as exposing and shifting ITS cable and temporary relocates of ITS cable. Our design team has identified potential conflicts between new construction and existing Project ITS that must remain operational until replaced, and we have accounted for this by using protect-in-place methods where possible and temporary relocations where necessary.

FRMG will actively work to minimize the impact to existing communication, power infrastructure, and distribution systems currently used by CDOT, CCD, Zayo, and partner agencies. FRMG will maintain connectivity between all existing Project ITS device installations and the existing fiber backbone, collectively referred to as the shared resource. When required and per the approved Maintenance of Project ITS plans, all splicing to the existing shared resource will be performed by Zayo, and the associated costs will be reimbursed to Zayo by FRMG, as specified by existing Utility Relocation Agreements and Project requirements. FRMG will furnish and install all materials (including conduit, fiber, pull boxes, splice Closures, and manholes) required to maintain connectivity to existing devices.

Standard industry practices — including those specified in the Zayo Outside Plant manual — will be followed by FRMG to maintain and protect the existing CDOT shared resource backbone and CCD backbone until the new trunk cables and infrastructure are installed, tested, and Accepted by the CDOT, Zayo, CCD, and other stakeholders. If and when relocation of the shared resource is required during construction, FRMG will coordinate with Zayo and the Department to provide adequate advance notice, as stipulated in the Utility Relocation Agreement, for coordination and notification of the scheduled outage. FRMG will be responsible for coordinating and notifying CCD of any system outages due to required relocations of the existing CCD backbone and laterals. FRMG will be responsible for performing the relocation work, along with reconnecting and resetting any existing connected CCD infrastructure, as approved by CCD.

ITS During Construction

Traffic Signals and Ramp Meters

FRMG will ensure that existing traffic signals and ramp meters within the Project footprint are operational. Where power to traffic signals must be temporarily turned off, FRMG will provide Uniformed Traffic Control to direct traffic during the short period when the signals are nonoperational. Local traffic enforcement agencies, along with the Department, CCD, and other local jurisdictions, will be notified in advance of any operational shutdown of a traffic signal.

ITS Field Devices

Given the critical role of Project ITS installations for the Department's management of traffic operations, FRMG will actively work to minimize disruptions and maintain and keep operational all existing ITS device installations within the Project footprint. These would include variable message boards (VMS), vehicle detectors, cameras (CCTV), travel time indicators, ATRs, and weather stations, along with all mounting structures and infrastructure, in the footprint. If impacted by construction activities, FRMG will develop Maintenance of Project ITS plans for the Department's review and Approval prior to the start of relocation work in any Area. Per Project requirements, the Maintenance of Project ITS plans will include a list of all impacted existing installations, proposed new installations in the area, method statement and details for maintaining power and fiber communications to the impacted installation(s), start/end dates including durations for testing and commissioning, and justification for the proposed reset of the installation(s). The same protocol will be followed for relocation and resetting of CCD installations.

FRMG has prepared a portable VMS deployment plan and will deploy portable VMS boards to inform motorists of delays, diversions, rolling slowdowns, and traffic impacts as necessary. VMS will also be used to increase driver awareness of the hazards created by the presence of construction vehicles and general traffic entering and exiting the Project area. Decision and access points will be clearly signed to help motorists stay alert at conflict points and facilitate smooth traffic flow through the Project area by avoiding sudden lane change and weaving. The VMS will be of a type and size Approved by the Department, and it will be placed in coordination with the Denver Traffic Management Center and Colorado Transportation Management Center. Portable VMS message sets will be Approved by the Department.

Methods of Handling Traffic (MHT)

MHT will be developed for each different activity of construction, showing phasing and proposed traffic control devices consistent with the TCP and as required by the Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways, the Colorado Supplement to the MUTCD, and in accordance with the Agreement, including:

a. Submittal to the Department and/or Local Agency for Acceptance 14 Calendar Days prior to implementation

b. Construction signing per CDOT *Standard Specifications*, the MUTCD, and all other applicable standards

c. Temporary traffic signals and ramp meters per Schedule 10, Section 11

d. Pavement Marking and Signing per CDOT *Standard Specifications*, other Contract requirements, and per Table 17 below:

Table 17. Pavement Marking Reflectivity

Color	Retro-reflectivity Reading (R) in a one-mile section (mcd/m²/lux)
White	R ≥ 375 (Newly applied marking less than 3 weeks old) Newly applied marking minimum 375 mcd/m²/lux. Less than this reading for newly applied marking; remove and replace, impose a Working Time Violation Incident and stop work.
Yellow	R ≥ 250 (Newly applied marking less than 3 weeks old) Newly applied marking minimum 250 mcd/m²/lux. Less than this reading for newly applied marking; remove and replace, impose a Working Time Violation Incident and stop work

The following process outlines the FRMG's typical approach to producing MHTs:

- TCPs will set the basis for the development of the MHTs.
- FRMG Field Engineer will formally communicate the MHT needs to the team for development.
- The MHT will be developed by FRMG, reviewed and then submitted to the Department and/or the local jurisdiction for Acceptance prior to implementation.
- The MHT will be produced based on the applicable TCP or traffic control typical application contained in CDOT M&S Standard S-630-1; if one is not applicable, then the MHT will be based on MUTCD standards and guidelines, Section 630.10 of the *Standard Specifications for Road and Bridge Construction* (CDOT).
- When an MHT requires a lane Closure, the MHT must be submitted to the Department for Acceptance prior to implementation of said MHT.
- When an MHT is developed for nighttime construction operations, the MHT must comply with Section 632, Night Work Lighting, as applicable.
- A file of the MHTs will be stored and maintained per the Project document control system.
- A look-ahead schedule will identify the MHT needed for a specific activity if applicable.
- Noise ordinance mitigation and Construction Work hours will be reflected.

2.2.4.b Implementing and Monitoring TCPs and MHTs

FRMG's overall approach for implementing and monitoring TCPs and MHTs on the Project includes MOT inspections, standard procedures for opening new Phases of Work, general and winter maintenance of devices, monitoring for safety and effectiveness, and refinement of processes when implementing new setups as outlined below.

2.2.4.b.i. MOT Inspections Process

General TCP monitoring is the responsibility of all FRMG team members as specified in the Stage 2 QMP. Specifically, FRMG's MOT Lead(s) will monitor and evaluate effectiveness and ensure construction impacts related to the TCPs are acceptable to the Department and the Local Agencies, and will implement modifications as necessary. FRMG will monitor intersection operations and queue lengths and report any increases, including modification to the TCP, as necessary to mitigate impacts to traffic operations if queues and delays exceed the predicted values. Any modifications will require Acceptance by the Department. Expected queue lengths and delays will be projected by using the traffic modeling software provided in the Reference Documents. Additional analysis will be provided if necessary and include all necessary Project Agreement Contract requirements (i.e., Location/Description, Alternatives, Traffic Analysis, Detour Calculations, Summary and Recommendations). Development of the TCP and MHT will be consistent with the approved Stage 2 QMP.

Additionally, at a minimum, two Traffic Control Supervisors (TCS) will be designated for Traffic Control Device Management on a 24-hour basis every day. One TCS will be responsible for Area 1, the other for Areas 2 through 5. Additional traffic control staffing will be provided as needed. The TCS will be responsible for inspecting traffic control devices on every calendar day that the devices are in use, masked, or turned away from traffic.

2.2.4.b.ii. Opening New MOT Phases

Proposed new MOT phases and stages will be reviewed in advance with the Project's MOT Task Force (see Section 4.d of this TMP). The MOT Task Force will be provided with narrative descriptions and drawings that depict the intent of the MOT activity, geographic extent, major features, coordination needs, anticipated traffic operations, anticipated start date, and duration. Input received from the Task Force will be used to refine the MOT prior to deployment. Information of approved MOT phases will be provided to the communications team for deployment on the Project's outreach channels. See Section 2.2.4.a. Temporary ITS for additional coordination prior to opening new MOT phases.

Before and during the deployment of the MOT phases and/or stages, a safety review will be performed by Project personnel to evaluate the new setup, including an initial drive-through to determine whether there are any apparent deficiencies. Once approved, the new setup will be accepted as safe to open. As described in Section 2.2.4.b.v, new setups will be closely monitored to determine the effectiveness of the TCPs and MHTs.

2.2.4.b.iii Opening New MOT Phases on Local Agency Roadways

Implementing new MOT phases on Local Agency Roadways will follow a similar procedure to that described in Section 2.2.4.b.ii. Because MOT phases on the local street system could increase circuity of access, an additional consideration for MOT planning is the inclusion of an **emergency services (EMS) liaison during the MOT phase planning and pre-deployment activities. The purpose of this special coordination is to review access points and ensure suitability for emergency vehicles for access to the general public and to construction crews.**

The EMS liaison will provide timely information to the Project Communications Manager, who will inform area emergency service providers about any changes to planned events.

2.2.4.b.iv Winter Maintenance of MOT

All devices used for temporary traffic control will be cleaned as necessary to preserve their effectiveness, particularly during periods where road spray obscures legibility and retroreflectivity. During snow events, the Traffic Control Supervisor will coordinate with plow crews and follow the snow clearing operation procedures to restore devices that may be knocked over or displaced by plowing.

Striping will be refreshed before winter months and will be refreshed during the winter if its effectiveness deteriorates. This will be completed during a warmer period for peak product performance. Striping visibility and effectiveness will be reviewed regularly with the MOT Task Force.

2.2.4.b.v Monitoring Safety and Effectiveness

In addition to the required daily evaluations performed by the TCSs discussed in section 2.2.4.b.i, FRMG requests that invited Department representatives conduct a weekly drive-through with the FRMG traffic control team to observe traffic control installations and review the effectiveness of the plans. This drive-through will focus on identifying any needed improvements to the traffic control schemes. The action plan will look to improve upon:

- Placement of traffic control devices
- Motorist comprehension of the TCP
- Guide signing and detours
- Traffic-related impacts on neighborhoods and businesses

2.2.4.b.vi Refining Unsafe or Ineffective TCPs and MHTs

FRMG is committed to the safety of the traveling public. The Traffic Control Supervisor will immediately refine any situation determined hazardous to the traveling public, whether identified by our own personnel, or from an external source and submit to the Department for Acceptance. Aside from remedying immediate hazards, refinements to proposed and approved TCPs and MHTs to enhance the simplicity or efficiency of the plan will be reviewed with the MOT Task Force and implemented upon concurrence. These refinements will be made in accordance with QMP protocols and Safety guidelines. The weekly drive-through also will provide a means to find opportunities to refine and improve the TCPs and MHTs. Additional traffic analysis may be performed to predict and assess the effectiveness of alternative MOT plans.

In addition, FRMG will request and prepare weekly reports of any accidents in the Project area's traffic control zones, and in close coordination with the Project IMP per Section 2.2.5.g, to identify trends and to aid in refinement and modification of applicable TCPs and MHTs. Accident locations and characteristics will be reviewed at the weekly MOT Task Force meeting.

2.2.4.c Business and Private Access

As shown on Figure 15, FRMG has completed a comprehensive inventory of business and private access points in the Project area, and our MOT strategies reflect our commitment to maintain public and private access to the local street system. MOT strategies are shown in Table 18.

In accordance with Section 2.9 of Schedule 10, FRMG will maintain business accesses at all times unless otherwise Approved by the Department. When a driveway Closure is necessary to progress Construction Work, FRMG will have no single driveway closed for more than 30 consecutive Calendar Days or more than 45 Calendar Days in aggregate for businesses with multiple driveways. FRMG will work with the property owners to coordinate access restrictions during that particular construction Phase.

TCP and MHTs will incorporate stakeholder information from the PI, surveys, and other information as available relating to business and private access to the local street and highway system. FRMG will communicate and document the following information and as also contained in Table 18 below:

i. Access points impacted by a particular construction phase or stage
ii. Notifications of affected businesses and land owners
iii. Schedule of Closure and estimated durations
iv. Project-specific access or delivery requirements (wide loads to be handled on a case-by-case basis with each property owner)
v. Proposed mitigation efforts including initial construction sequencing, estimated temporary works, etc.

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Figure 15. Business and Private Access Points.

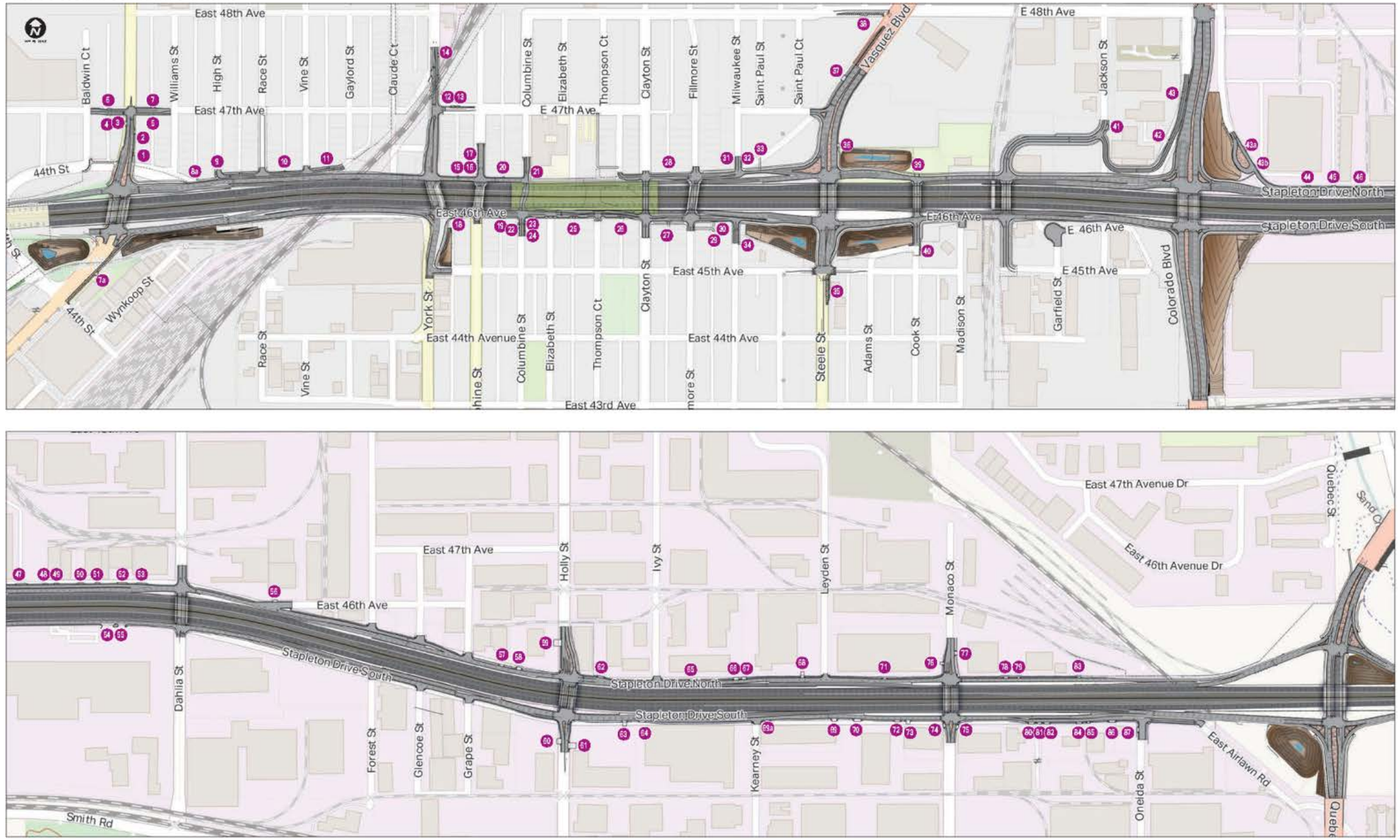

Table 18. Business and Private Access Points.

Driveway #	Address	Commercial or Residential	Proposed Driveway Width (ft)	Construction	Estimated Temp. Pavement (Sq. Ft.)	Construction Stage and Phase
1	Garbagio LLC – (Possibly closed. Google still shows some storage at the site, but business address is listed as Washington St. online.) 4640 Brighton Blvd.	Commercial	16.1	If business is closed: Close driveway and build at one time. If business is open: Build in two phases, maintaining at least 11' of pavement at all times for travel lane & barrels. Will need to add approximately 6' of temporary pavement south of proposed driveway.	92	P1-S5
2	Gordon's Auto-Truck Wash 4670 Brighton Blvd.	Commercial	20.0	Build in two phases, maintaining at least 11' of pavement at all times for travel lane & barrels. Will need to add approximately 2' of temporary pavement south of proposed driveway.	26	P1-S5
3	7-Eleven 1670 E 47th Ave.	Commercial	20.0	Build in two phases, maintaining at least 11' of pavement at all times for travel lane & barrels. Will need to add approximately 2' of temporary pavement north of proposed driveway. Coordinate with property owner regarding gasoline deliveries. Half-width driveway will probably not be able to accommodate large trucks. Consider adding Driveway #3a to design. Driveway is needed for truck circulation.	25	P1-S3
4	Alley	-	10.0	Build entire alley at one time. All properties have additional access points/on-street parking available.		P1-S1
5	Alley	-	10.0	Build entire alley at one time. All properties have		P1-S1

Driveway #	Address	Commercial or Residential	Proposed Driveway Width (ft)	Construction	Estimated Temp. Pavement (Sq. Ft.)	Construction Stage and Phase
				additional access points/on-street parking available.		
6	Alley	-	10.0	Build entire alley at one time. All properties have additional access points/on-street parking available.		P1-S5
7	Alley	-	10.0	Build entire alley at one time. All properties have additional access points/on-street parking available.		P1-S5
7a	Denver Fire Department - Fire Station 9 4400 Brighton Blvd.	Commercial	21.0	Build in two phases, maintaining at least 11' of pavement at all times for travel lane & barrels. Add approximately 1' of temporary pavement north of proposed driveway.	26	P1-S1
8	4635 High St.	Residential	10.0	Build entire driveway at one time. Property has additional access point/on-street parking available.		P1-S5
8a	Alley	-	10.0	Build entire alley at one time. All properties have additional access points/on-street parking available.		P1-S5
9	Alley	-	10.0	Build entire alley at one time. All properties have additional access points/on-street parking available.		P1-S5
10	Alley	-	10.0	Build entire alley at one time. All properties have additional access points/on-street parking available.		P1-S5
11	Alley	-	10.0	Build entire alley at one time. All properties have additional access points/on-street parking available.		P1-S5
12	Board of Water Commissioners City and County of Denver - Storage 4700 York St.	Commercial	24.0	Driveway is wide enough to be built in two phases. No temporary pavement needed.		P1-S5

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Driveway #	Address	Commercial or Residential	Proposed Driveway Width (ft)	Construction	Estimated Temp. Pavement (Sq. Ft.)	Construction Stage and Phase
13	Alley	-	16.0	Build entire alley at one time. All properties have additional access points/on-street parking available.		P1-S5
14	Alpine Roofing Company, Inc. 4750 York St.	Commercial	16.0	Coordinate with property owner. Driveway can probably be closed and built in one phase. There are two driveways north of the project limits used for parking and loading. This driveway appears to just lead to a garage with some minor storage.		P1-S5
15	Alley	-	8.0	Build entire alley at one time. All properties have additional access points/on-street parking available.		P1-S3
16	Alternative Auto Solutions (Business appears closed according to October 2016 Google St. View) 4631 Josephine St.	Commercial	20.0	Business appears closed. Driveway can be closed and built in one phase. Property also has access from alley.		P1-S3
17	4647 Josephine St.	Residential	12.0	Build entire driveway at one time. Property has additional access point/on-street parking available.		P1-S3
18	Alley	-	12.3	Build entire alley at one time. All properties have additional access points/on-street parking available.		P2-S3
19	Alley	-	17.0	Build entire alley at one time. All properties have additional access points/on-street parking available.		P2-S3
20	Alley	-	10.0	Build entire alley at one time. All properties have additional access points/on-street parking available.		P1-S5

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Driveway #	Address	Commercial or Residential	Proposed Driveway Width (ft)	Construction	Estimated Temp. Pavement (Sq. Ft.)	Construction Stage and Phase
21	Swansea Elementary School 4650 Columbine St.	Commercial	27.4	Build entire driveway at one time. Driveway appears to be small loading zone with only access to dumpsters. Additional parking and loading zones available on the street.		P1-S2
22	4543 Columbine St.	Residential	22.0	Build entire driveway at one time. Property has additional access point/on-street parking available.		P2-S3
23	Conley DC Solutions Inc. 4570 Columbine St.	Commercial	20.0	Build in two phases, maintaining at least 11' of pavement at all times for travel lane & barrels. Will need to add approximately 2' of temporary pavement south of proposed driveway. Unable to build in one phase while maintaining southernmost driveway (driveway #24) due to loading dock location.	37	P2-S3
24	Conley DC Solutions Inc. 4570 Columbine St.	Commercial	23.0	Driveway is wide enough to be built in two phases. No temporary pavement needed. Unable to build in one phase while maintaining northernmost driveway (driveway #23) due to loading dock location.		P2-S3
24a	46th/Elizabeth intersection converted to driveway	-	26.0	Build in one phase. Access from Columbine provided.		P2-S3
25	Alley	-	12.0	Coordination with El Tepetate Market (4555 Thompson Ct.) on the corner of Thompson Ct. and 46th Ave. may be necessary.		P2-S3

Driveway #	Address	Commercial or Residential	Proposed Driveway Width (ft)	Construction	Estimated Temp. Pavement (Sq. Ft.)	Construction Stage and Phase
				Alley is only access to parking in rear of business. Some on-street parking is available.		
26	Alley	-	14.0	Build entire alley at one time. All properties have additional access points/on-street parking available.		P2-S3
27	Alley	-	12.0	Build entire alley at one time. All properties have additional access points/on-street parking available.		P2-S3
28	Alley	-	15.7	Build entire alley at one time. All properties have additional access points/on-street parking available.		P1-S3
29	Alley	-	10.0	Build entire alley at one time. All properties have additional access points/on-street parking available.		P2-S3
30	Alley	-	10.0	Build entire alley at one time. All properties have additional access points/on-street parking available.		P2-S3
31	4635 Milwaukee St.	Residential	10.0	Build entire driveway at one time. Property has additional access point/on-street parking available.		P1-S3
32	4630 Milwaukee St.	Residential	15.0	Build entire driveway at one time. Property has additional access point/on-street parking available.		P1-S3
33	4621 Vasquez Blvd.	Vacant Land	14.2	Build entire driveway at one time. Driveway leads to vacant land.		P1-S3
34	4524 Milwaukee St.	Residential	18.8	Build entire driveway at one time. Property has additional access point/on-street parking available.		P2-S3

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Driveway #	Address	Commercial or Residential	Proposed Driveway Width (ft)	Construction	Estimated Temp. Pavement (Sq. Ft.)	Construction Stage and Phase
35	7-Eleven 3200 E. 45th Ave.	Commercial	35.0	Driveway is wide enough to be built in two phases. No temporary pavement needed. Coordinate with property owner regarding gasoline deliveries. Half-width driveway will probably not be able to accommodate large trucks.		P1-S2
36	Premier Tire Terminal Inc., Chinese Massage 4650 Steele St.	Commercial	23.0	Coordinate with property owner to provide temporary access during new roadway and driveway construction.		P1-S2
37	Western Motor Inn 4757 Vasquez Blvd.	Commercial	35.0	Build entire driveway at one time while keeping drive along 48th Ave. (driveway #38) open.		P1-S3
38	Western Motor Inn 4757 Vasquez Blvd.	Commercial	50.0	Build entire driveway at one time while keeping drive along Vasquez Blvd. (driveway #37) open.		P1-S3
39	Pilot Travel Center 4640 Steele St.	Commercial	26.1	Build entire driveway at one time. Property is being acquired. Driveway is being constructed for planned future development.		P1-S1
40	4530 Cook St.	Residential	10.0	Build entire driveway at one time. Property has additional access point/on-street parking available.		P2-S3
41	Romantix Corporate Campus 4655 Colorado Blvd.	Commercial	34.0	Driveway is wide enough to be built in two phases. No temporary pavement needed.		P1-S1
42	Romantix Corporate Campus 4655 Colorado Blvd.	Commercial	24.0	Driveway is wide enough to be built in two phases. No temporary pavement needed.		P1-S1
43	Englewood Winsupply 4701 Colorado Blvd.	Commercial	36.0	Driveway is wide enough to be built in two phases. No temporary pavement needed. Additional access to loading		P1-S1

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Driveway #	Address	Commercial or Residential	Proposed Driveway Width (ft)	Construction	Estimated Temp. Pavement (Sq. Ft.)	Construction Stage and Phase
				area available from Jackson St.		
43a	Eagle Claw Fishing Tackle Co. 4245 E. 46th Ave.	Commercial	30.0	Driveway can be built at one time. There is an existing driveway north of the project limits that leads to the same access points.		P1-S4
43b	Eagle Claw Fishing Tackle Co. 4245 E. 46th Ave.	Commercial	35.0	Driveway can be built at one time. Build while keeping driveway #44 open. Customers can access the same parking with driveway #44.		P1-S4
44	Eagle Claw Fishing Tackle Co. 4245 E. 46th Ave.	Commercial	20.0	Driveway can be built at one time. Build after completing driveway #43b construction. Customers can access the same parking with driveway #43b.		P1-S2
45	Eagle Claw Fishing Tackle Co. 4245 E. 46th Ave.	Commercial	20.0	Driveway can be closed and built at one time. Additional truck access to loading docks is available North of the building.		P1-S2
46	Access to 3 properties: Aeridyne 4401 E. 46th Ave. Unknown 4351 E. 46th Ave. Vacant 4330 E. 48th Ave.	Commercial	90.0	Driveway is wide enough to be built in two phases. No temporary pavement needed.		P1-S2
47	Aeridyne 4401 E. 46th Ave.	Commercial	70.0	Driveway is wide enough to be built in two phases.		P1-S2

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Driveway #	Address	Commercial or Residential	Proposed Driveway Width (ft)	Construction	Estimated Temp. Pavement (Sq. Ft.)	Construction Stage and Phase
				No temporary pavement needed.		
48	Vacant - As of 9/2016 4455 E. 46th Ave.	Commercial	16.0	Driveway can be closed and built in one phase. Building is vacant according to Google St. View as of September 2016.		P1-S2
49	Correctional Management Inc. 4511 E. 46th Ave.	Commercial	24.0	Driveway is wide enough to be built in two phases. No temporary pavement needed.		P1-S2
50	Appliance Nation 4555 E. 46th Ave.	Commercial	35.0	Driveway is wide enough to be built in two phases. No temporary pavement needed. Coordination needed if property receives many large semi-truck deliveries. Half-width driveway will probably not be able to accommodate large semi.		P1-S2
51	Vacant - As of 9/2016 4595 E. 46th Ave.	Commercial	24.0	Driveway can be closed and built in one phase. Building is vacant according to Google St. View as of September 2016.		P1-S2
52	Vacant - As of 9/2016 4611 E. 46th Ave.	Commercial	60.0	Driveway can be closed and built in one phase. Building is vacant according to Google St. View as of September 2016.		P1-S2
53	Bath and Granite 4755 E. 46th Ave.	Commercial	60.0	Driveway is wide enough to be built in two phases. No temporary pavement needed.		P1-S2
54	Safeway Distribution Center 4600 E. Stapleton Dr. S	Commercial	78.1	Driveway can remain open at all times. Work is only occurring on the islands wrapping around the driveway.		P1-S2
55	Safeway Distribution Center 4600 E. Stapleton Dr. S	Commercial	45.4	Driveway can remain open at all times. Work is only occurring on		P1-S2

Driveway #	Address	Commercial or Residential	Proposed Driveway Width (ft)	Construction	Estimated Temp. Pavement (Sq. Ft.)	Construction Stage and Phase
				the islands wrapping around the driveway.		
56	Iron Mountain - Google reports this location closed 5151 E. 46th Ave.	Commercial	28.9	Driveway can be closed and built in one phase. Location is closed according to Google.		P1-S2
57	Tuff Shed 4500 Grape St.	Commercial	30.0	Driveway can be built at one time while maintaining existing driveways. Existing driveways to be closed after new is complete.		P1-S2
58	Univar 4545 Holly St.	Commercial	30.0	Coordination with property owner is needed. Ideally, would redirect all traffic (trucks included) to driveway #59 during construction.		P1-S2
59	Univar 4545 Holly St.	Commercial	44.0	Coordination with property owner is needed. Ideally, would redirect all traffic (trucks included) to driveway #58 during construction.		P1-S2
60	ProCoat Systems Inc. 4343 Holly St.	Commercial	34.0	Driveway is wide enough to be built in two phases. No temporary pavement needed. Currently, truck traffic uses driveway off of Stapleton Dr. S (driveway #60a)		P1-S2
61	Univar 4300 Holly St.	Commercial	38.0	Driveway can be closed and built in one phase while maintaining access at driveway #63.		P1-S2
62	CCC Parts Company / Truck Parts Specialists 5701 Stapleton Dr. N.	Commercial	40.0	Build driveway in two phases. Assuming property has regular large truck traffic, will need to add approximately 8' of temporary pavement west of proposed driveway.	100	P1-S2

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Driveway #	Address	Commercial or Residential	Proposed Driveway Width (ft)	Construction	Estimated Temp. Pavement (Sq. Ft.)	Construction Stage and Phase
63	Univar 4300 Holly St.	Commercial	26.0	Driveway can be closed and built in one phase while maintaining access at driveway #61.		P1-S2
64	Goodwill Outlet World - Denver 4355 Kearney St.	Commercial	36.0	Driveway can be closed and built at one time. Additional truck access to loading docks is available off Kearney St.		P1-S2
65	I-70 Business Center - Business center with multiple companies 5855 Stapleton Dr. N.	Commercial	27.0	Driveway can be closed and built at one time if access is maintained driveway #66. One additional driveway is available north of the project limits on Ivy St.		P1-S2
66	I-70 Business Center - Business center with multiple companies 5855 Stapleton Dr. N.	Commercial	32.0	Driveway can be closed and built at one time if access is maintained driveway #65. One additional driveway is available north of the project limits on Ivy St.		P1-S2
67	John Deere Parts Depot 6101 Stapleton Dr. N.	Commercial	29.1	Driveway is wide enough to be built in two phases. No temporary pavement needed.		P1-S2
68	John Deere Parts Depot 6101 Stapleton Dr. N.	Commercial	24.0	Driveway can be closed and built in one phase. Additional access to parking lot available from driveway off of Leyden St.		P1-S2
69	Hilti Center - Denver 6100 Stapleton Dr. S.	Commercial	31.1	Driveway can be closed and built in one phase as long as access is maintained at driveway #69a.		P1-S2
69a	Hilti Center - Denver 6100 Stapleton Dr. S.	Commercial	32.5	Driveway is wide enough to be built in two phases. No temporary pavement needed.		P1-S2
70	Environmental Stoneworks 6300 Stapleton Dr. S.	Commercial	46.9	Driveway can be closed and built at one time as long as driveway #72 remains open.		P1-S2

Driveway #	Address	Commercial or Residential	Proposed Driveway Width (ft)	Construction	Estimated Temp. Pavement (Sq. Ft.)	Construction Stage and Phase
71	Safeway Beverage 6405 Stapleton Dr. N.	Commercial	23.0	Driveway is wide enough to be built in two phases. No temporary pavement needed.		P1-S2
72	Environmental Stoneworks 6300 Stapleton Dr. S.	Commercial	35.0	Driveway can be closed and built at one time as long as driveway #70 remains open.		P1-S2
73	Business Center - Multiple companies 6400 Stapleton Dr. S.	Commercial	25.7	Driveway can be closed and built at one time as long as driveway #74 remains open.		P1-S2
74	Business Center - Multiple companies 6400 Stapleton Dr. S.	Commercial	22.3	Driveway can be closed and built at one time as long as driveway #73 remains open.		P1-S2
75	Business Center - Multiple companies 6500 Stapleton Dr. S.	Commercial	24.6	If Driveway #75a is added, #75 can be closed and built at one time while access is maintained at Driveway #75a. If Driveway #75a is planned to be removed, #75 will need to be built in two phases, maintaining at least 11' of pavement at all times for travel lane & barrels. No temporary pavement will be needed.		P1-S2
76	Safeway Beverage 6405 Stapleton Dr. N.	Commercial	16.0	Build in two phases, maintaining at least 11' of pavement at all times for travel lane & barrels. Will need to add approximately 6' of temporary pavement north of proposed driveway.	184	P1-S2

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Driveway #	Address	Commercial or Residential	Proposed Driveway Width (ft)	Construction	Estimated Temp. Pavement (Sq. Ft.)	Construction Stage and Phase
77	Granite Depot 6501 Stapleton Dr. N.	Commercial	24.0	Build the driveway in two phases, maintaining at least 11' of pavement at all times for travel lane & barrels. No temporary pavement needed. Coordinate with property owner regarding any large truck deliveries. Large trucks will probably not be able to maneuver half-width driveway.		P1-S2
78	Granite Depot 6501 Stapleton Dr. N.	Commercial	28.0	Driveway is wide enough to be built in two phases. No temporary pavement needed.		P1-S2
79	Abundant Foods 6701 Stapleton Dr. N.	Commercial	20.3	Coordination with property owner required. Driveway will need to be closed in order to construct.		P1-S2
80	Rocky Mountain High Dispensary 6666 Stapleton Dr. S.	Commercial	37.6	Driveway is wide enough to be built in two phases. No temporary pavement needed.		P1-S2
81	Business Center - Multiple companies 6700 Stapleton Dr. S.	Commercial	24.0	Driveway is wide enough to be built in two phases. No temporary pavement needed. Coordination with property owner may be required if any businesses receive large truck deliveries. A large semi will probably not be able to maneuver half-width driveway.		P1-S2
82	Competition Headwear 6748 Stapleton Dr. S.	Commercial	34.0	Driveway is wide enough to be built in two phases. No temporary pavement needed. Coordination with property owner may be required if any businesses receive large truck deliveries. A large semi will probably not		P1-S2

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Driveway #	Address	Commercial or Residential	Proposed Driveway Width (ft)	Construction	Estimated Temp. Pavement (Sq. Ft.)	Construction Stage and Phase
				be able to maneuver half-width driveway.		
83	Abundant Foods 6701 Stapleton Dr. N.	Commercial	22.8	Driveway is wide enough to be built in two phases. No temporary pavement needed.		P1-S2
84	Business Unknown - As of August 2016, Google St. View shows: "Coming Soon - Stapleton Executive Plaza" sign 6750 Stapleton Dr. S.	Commercial	31.6	Driveway can be closed and built at one time as long as driveway #82 remains open.		P1-S2
85	Motion & Flow Control Products Inc. 6800 Stapleton Dr. S.	Commercial	17.5	Build in two phases, maintaining at least 11' of pavement at all times for travel lane & barrels. Will need to add approximately 4.5' of temporary pavement north of proposed driveway.	107	P1-S2
86	Motion & Flow Control Products Inc. 6800 Stapleton Dr. S.	Commercial	43.5	Driveway is wide enough to be built in two phases. No temporary pavement needed.		P1-S2
87	Colorado Radiator Service 4395 Oneida St.	Commercial	30.0	Driveway is wide enough to be built in two phases. No temporary pavement needed.		P1-S2

As described in Section 2.2.6 of this TMP, FRMG will implement a comprehensive outreach program with residents and local businesses to minimize construction impacts on these stakeholders. Outreach efforts will include notification of upcoming lane restrictions and Closures, along with proposed detour routes. Our outreach team will work with adversely affected businesses to identify location-specific access mitigation.

2.2.4.d Colorado Transportation Management Center Coordination

FRMG's approach to implementing temporary ITS during the Construction period is detailed in Section 2.2.4.a. and includes coordinating with and utilizing the assets of the Colorado Transportation Management Center (CTMC).

During construction, FRMG will provide a staff person at the CTMC to monitor I-70 traffic operations from 6:30 a.m. to 8:00 p.m. on weekdays and from 10:00 a.m. to 7:00 p.m. on weekends. The CTMC person will be trained and knowledgeable with working with ITS cameras, digital message signs, ITS devices, and CTMC operating procedures. Traffic operations on the I-70 Mainline between I-25 to Tower Road will be monitored. Our approach is to coordinate between FRMG, the Department, CCD, and the courtesy patrol, including extensions of operating hours (up to 30 hours each calendar year) due to emergencies, severe weather events, or planned Special Events as identified by FRMG and accepted by the Department, or as required by the Department. Equipment and work space will be provided by CDOT.

2.2.4.d.i. Use of Intelligent Transportation System/Variable Message Sign (VMS) Boards and traffic signal/ramp meter stations

FRMG will coordinate regularly with CTMC and the CCD traffic management center for use of VMS boards and traffic signal/ramp meter station modifications.

I-70 Closures will include advance planning Task Force meetings and all available outreach media available through the Department including VMS boards

Lane and ramp Closures for each condition where existing permanent ITS assets are available, a request will be made to the CTMC to post an appropriate message for motorists. FRMG will coordinate with CTMC to develop standard message sets.

2.2.4.d.ii Routine Requests for CTMC VMS Boards

FRMG will submit routine requests for use of the CTMC VMS boards to the Department by 10:30 a.m. on the Thursday of the week prior to when the VMS boards will be needed (Sunday through Saturday of the following week). FRMG will coordinate directly with our designated staff person and the CTMC at 303-512-5830 following the Department's review of FRMG's request.

2.2.4.d.iii After-Hours Coordination

For activities such as modifying text on VMS boards, FRMG will coordinate directly with the CTMC during non-Construction Work times.

2.2.4.d.iv Coordination with CDOT, CCD, and CTMC

FRMG MOT Team will interface regularly with the CTMC and CCD's traffic management center. The MOT Lead will hold a weekly meeting with representatives of CDOT, CCD, and other applicable Local Agency and/or stakeholders to discuss:

- Upcoming lane Closure requests

- Operational issues observed during prior Work activities
- Maintenance of CDOT ITS assets and coordination with FRMG temporary ITS
- Traffic signal timing or ramp meter modifications
- Coordination for upcoming Special Events
- Coordination during weather and other emergencies
- Coordination with Denver International Airport (see Section 3.d)
- Other issues impacting traffic operations

FRMG's primary point of contact for CDOT and CCD during any emergency will be designated and will coordinate the use of FRMG assets in conjunction with public assets in emergency management, in accordance with the Incident Management Plan.

2.2.5 Transportation Operations Strategies

Specific strategies addressed in this section of this TMP include:

a. Travel Demand Management
b. Coordination with RTD
c. Traffic Access Management
d. Coordination with Denver International Airport
e. Management of Bicycle and Pedestrian Mobility associated with all school routes within the site
f. Pedestrian and bicycle movements associated with the UPRR York St. Crossing
g. Development of a detailed IMP
h. Coordination with Transportation Management Organization (TMO)
i. Coordination with Special Events and the National Western Stock Show

2.2.5.a Travel Demand Management Strategies

Travel Demand Management (TDM) strategies are designed to improve traffic operations by reducing reliance on single-occupant vehicles. The FHWA Reference Sourcebook for Reducing Greenhouse Gas Emissions from Transportation Sources (February 2012 edition) identified eight categories of effective TDM strategies: road pricing, parking management and parking pricing, car sharing, Pay-as-You-Drive insurance, ridesharing and high-occupancy vehicle (HOV) lanes, transit incentives, transit improvements, and telework. Locally, the Denver Regional Council of Governments' corridor visioning for the I-70 East (I-25 to E-470) included the formation of a Transportation Management Organization (TMO), targeted efforts to encourage transit use on the University of Colorado A Line and Aurora's R Line, subarea-specific programs for the Stapleton redevelopment area, and improved bicycle/pedestrian trail connections. We know that CDOT has long been involved with TDM strategies, such as the Transportation Demand and Management & Corridor Projects study in 2002.

FRMG recognizes that TDM can be an effective tool for congestion mitigation during construction. The Project will impact travelers throughout the metropolitan area and beyond, so the focus of our strategies will include FRMG employees, local residents and businesses, and the wide range of people who live in the region, along with those simply traveling through.

Targeted information to the public allows better decision-making as to the transportation route chosen, time of day for travel, or even trip avoidance (such as the use of telecommuting).

In support of TDM goals for the I-70 East corridor, FRMG's approach to TDM includes the following strategies, which are also further detailed below:

- Supply of VMS boards used exclusively for TDM outreach, as defined in Section 2.2.5.h below
- Education of I-70 travelers about peak travel times and implementation of programs to encourage off-peak travel
    - Provide travelers with seasonal, holiday, and weekend forecasts in coordination with FRMG's Construction Period Communication Plan (CPCP)
    - Improve community awareness of various travel and route alternatives during construction
    - Because this is a heavy truck corridor, provide regular communications to major trucking companies and rest stops on planned construction activities (and direct them to the Project website for the most current information)
    - Coordinate with DEN to highlight the construction activities (and direct people to Project website for further information)
    - Broadcast radio ads to highlight the available options and benefits of alternative transportation
- Develop internal FRMG employee programs to encourage alternate methods of transportation
    - Sample slogan: "Be Part of the Solution: Take Transit, Carpool, Bike or Walk to Central 70!"
- Support of the Department's real-time information resources through GoI70.com, CoTrip, Twitter, other social media, and Project communication tools to the public:
    - Encourage motorists through VMS board to subscribe to CDOT's transportation information system "Alerts" at cdot@service.govdelivery.com to obtain up-to-date information on the Project's traffic conditions
    - Leverage the Department's existing mobile technology (apps), including ***Colorado Roads*** and other available technology such as ***Powerline***, to provide time sensitive updates to the community
    - Subject to Department approval, include a direct link on the Project website to the six Project cameras, providing real-time visual information on corridor traffic conditions that can be accessed in one easy location
    - Coordinate with CTMC to provide critical construction information via VMS throughout the region
    - Provide real-time information to the Department on incidents, accidents, or traffic slowdowns along the Project for Twitter posts
- Set up a TDM portion of the Project website to encourage (and provide information about) alternative travel options during construction
- Encourage use and support of area transit systems

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- Support of EcoPass memberships
  - Provide EcoPass cards for FRMG staff
  - Include in business outreach efforts providing information on ECO Passes and benefits to Project-area businesses
- Advertise benefits of transit options and ECO Passes on Project website
- Provide all new employees orientation of bus and LRT options
- Provide pick-up service for FRMG construction staff at the Colorado Blvd. Station of LRT. In addition, there are two bus stops within the Project limits: Routes 44 and 48. This provides a central location for transporting workers from coming in from around the metro area to the construction site.

- Encourage use of DRCOG's Vanpool program for area residents
  - DRCOG's Vanpool program provides vans for two or more persons traveling in the same direction. FRMG will refer employees to this program and promote its use.
  - Host ZIP code meetings around the worksite to introduce and promote the program

- Support of carpooling and carpooling parking
  - Support registration and use of SkiCarpool.org to facilitate carpooling to Colorado ski resorts through CPCP
  - Provide FRMG employee incentives for carpooling and communication of FRMG's site-specific carpooling plan to other area businesses for possible incorporation of the similar practices
    - Inclusion of carpooling in all employee site orientation sessions
    - Preferential parking at FRMG's work site (e.g., 10% of all employee spaces)
    - Conduct annual FRMG carpooling registration surveys and incentive awards
- Support bicycling and walking for FRMG employees, business, and area residents
  - Provide bicycle information to local biking organizations
  - Support Bike to Work Week
  - Encourage walking to work where feasible including providing maps of safe routes during construction
- On-site promotional events
  - Hold education events and distribute information on travel alternatives to employees, business, and area residents
- Provide expanded school bus service
  - FRMG will develop and provide a shuttle service program in coordination with Denver Public Schools to specifically address safety delays caused by the UPRR train movements at the York St. Crossing. **This program is detailed in Section 2.2.5.f below.**

Flyers and promotional materials distributed in association with planned outreach activities

2.2.5.b Coordination with Regional Transportation District

FRMG has already taken RTD stop locations and route operations into consideration in our proposed design. As shown on Figure 16, RTD operates two local bus routes in the Project area that will be affected by the Project construction: Routes 44 and 48. RTD will be a specific agenda item during FRMG's weekly MOT Task Force meetings. As RTD will be a member, its representatives will be able to participate and specifically address ongoing impacts to these routes.

Route 44 crosses I-70 at York St., Josephine St., and Clayton St. During the Construction of the York St. Bridge over I-70, traffic on York St. will be detoured one block east to Josephine St. This one-block detour (two blocks of out-of-direction travel) is expected to impact the Route 44 schedule by several minutes due to the required left turns. Construction of the Josephine Bridge over I-70 will use a similar detour. During the Closure of Clayton St., Route 44 will be detoured down Thompson St. from 47th Avenue to 46th Ave. During the removal of the existing viaduct and reconstruction of 46th Avenue South, FRMG is proposing to use 45th St. for Route 44 during the demolition and reconstruction work.

RTD Route 48 crosses the Project for a length of one block along Brighton Blvd. Traffic will be maintained on Brighton Blvd. during its reconstruction; impacts to this route will be minimal.

Figure 16. RTD Bus Routes 44 and 48 along the I-70 Corridor.

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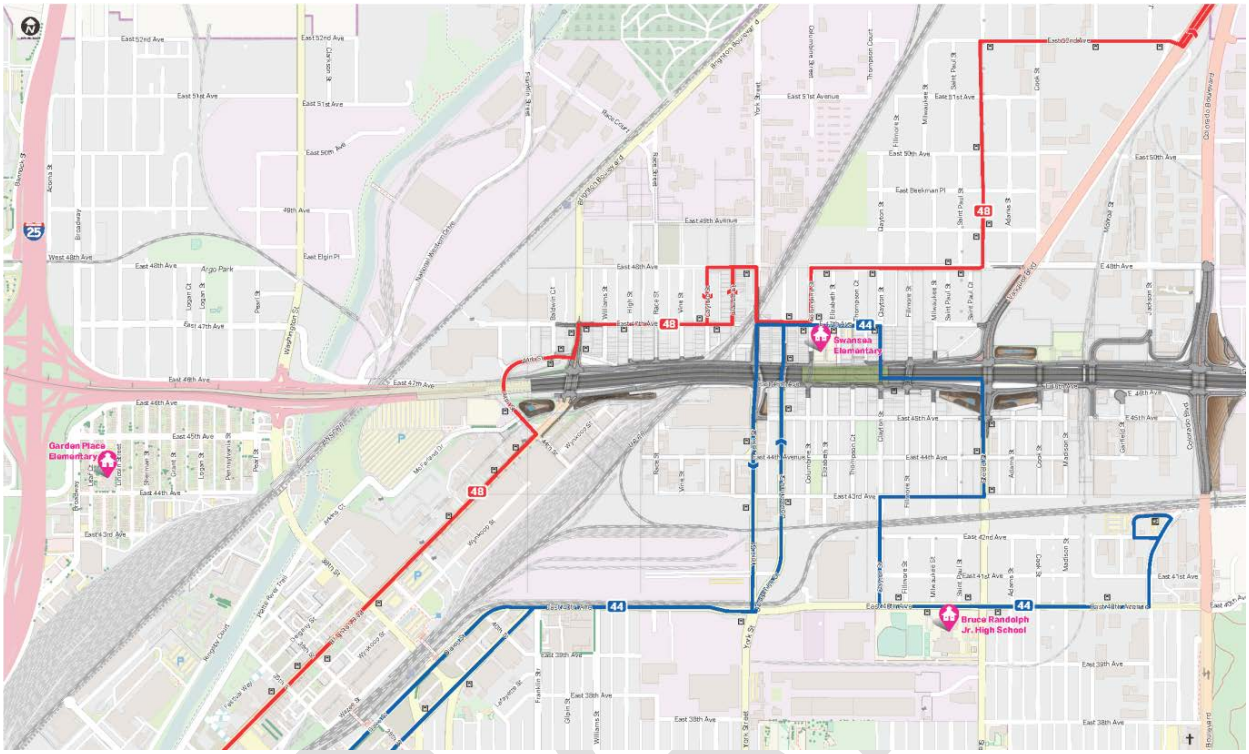

2.2.5.c Traffic Access Management

FRMG's approach for traffic access will be to provide, as necessary due to construction activities, the shortest detour routes allowable. Detour routes will include provisions for bicycles, pedestrian, and handicap mobility as outlined below:

Bicycles

Any Closure of a roadway that is a designated as a bike route will provide an equivalent bicycle detour route. Temporary trail detours will meet the requirements for trail detours as outlined in the CCD *Construction Detour Standards for Bikeways and Multi-Use Trails*

The Denver Bike Map 2015 Edition has been reviewed to identify bicycle facilities in the Project area. Figure 17 below highlights the sections of the bike map along the Project corridor. The anticipated following conflicts will be addressed during the coordination with local agencies:

- Signed Route/Shared Lane D9 – Clayton St. from E 44th Avenue to E 48th Avenue, York St. from E 47th Avenue to E 48th Avenue
- Signed Route/Shared Lane D15 – Dahlia St.
- Multi-use Trail D21 – Sand Creek Trail
- Shared-use Sidewalk – Along Central Park Boulevard, connecting D2 and D19

(https://www.denvergov.org/content/dam/denvergov/Portals/708/documents/BIKE_MAP_FINAL-web.pdf)

Figure 17. Bike Map along the I-70 Corridor.

Pedestrians

Temporary trail detours will meet the requirements for trail detours as outlined in the CCD *Construction Detour Standards for Bikeways and Multi-Use Trails*

Pedestrian detour routes will be developed for any construction activities that impact existing sidewalks or create an adjacent hazard for pedestrians. Routes will be clearly marked in accordance with applicable MUTCD, CDOT, and CCD work zone signing and temporary fencing requirements. Pedestrian detour routes will be designed to minimize out-of-direction travel and will maintain access to businesses and transit stops. New curb ramps and refreshed crosswalk marks will be provided where necessary to provide safe crossings and accommodate all users.

Information regarding trail construction and detours will be distributed through the Construction Period Communications Plan described in Section 2.2.6 below, and in particular through the weekly Lane Closure Reports and Traffic Alerts, along with providing the needed information to the Department for social media updates.

The local street sidewalk system will remain open with the exception of specific construction activities such as girder erection and/or bridge demolition. When a sidewalk needs to be closed for pedestrian safety, the Closure will be provided on the TCPs and/or MHTs and Approved by the Department.

In situations where sidewalks are closed, flaggers will be used to move pedestrians safely through the construction zone once it is safe to do so.

Potential Impacts to Handicapped Mobility

Handicap and Americans with Disabilities Act (ADA) access will be maintained throughout the Project by using temporary measures where needed and constructing permanent features as early as is practical. Construction Work that impacts existing trails and pedestrian facilities, or that will be used for temporary detour routes, will meet the requirements of the ADA. FRMG will maintain existing trail systems, temporary trails, sidewalks, and pedestrian routes at all times.

2.2.5.d Coordination with Denver International Airport

Denver International Airport (DEN) provides a critical transportation link for travelers and businesses, and it is a major economic driver for the state of Colorado and the Denver metro region. Peak travel at DEN is more than just the holiday rush — weekly peaks also occur. These peaks are typically on Monday mornings and Thursday evenings, when business commuters are leaving and arriving at DEN. Central 70 provides important vehicle access for travelers and airport-related employees.

Particularly during peak holiday times, when airport resources are stretched to capacity, reliable travel times to the airport are of critical importance to airport users. The management of the Project activities described in this TMP, will be of significant benefit to providing reliable travel times. Additionally, FRMG, in close cooperation with the CTMC, will make its Project VMS available for reporting travel times to the DEN terminal during highest air travel periods. FRMG also will meet with DEN managers to coordinate our construction schedule with known peak travel times and set up regular update meetings. Project information (e.g., upcoming lane Closures, detour routes, work schedules, major Project delivery timeframes) will be made available to DEN representative per FRMG's PIP for dissemination to airport employees.

DEN coordination will be a standing agenda item for FRMG's weekly MOT Task Force meeting and will ensure appropriate representatives are invited and/or copied on applicable Project correspondence.

2.2.5.e Pedestrian and Bicycle Movements Associated With All School Routes within the Site

A primary focus area for planning is multimodal access to schools in and near the Project. Garden Place Elementary School, Swansea Elementary School, and Bruce Randolph Junior High are schools near and/or adjacent to the Project.

Particularly in the lowered section of the Project, construction of the Project improvements will disrupt existing patterns of pedestrian and bicycle movement in the Project area. FRMG will develop detailed plans for the maintenance of pedestrian and bicycle movement between 45th Avenue and 47th Avenue as the lowered portion of I-70 is constructed and the existing viaduct is removed.

As north-south streets are closed for the construction of the bridges, comprehensive detour routes for pedestrian, bicycle, and vehicular traffic will be implemented. A primary goal of detour planning is to minimize out-of-direction travel distance.

FRMG will implement the following key elements for providing quality circulation for bus and shuttle parking and access, parent drop-off and pick-up circulation, lighting, before- and after-school activities, and pedestrian and bicycle movements within the Project area:

- TCPs will document how pedestrians and bicyclists will be addressed in each Phase of construction.

- Access through the work zone will be defined by orange construction fencing that delineates pedestrian/bicycle paths, or by delineating detours either from one side of a roadway to the other side or along designated pedestrian/bicycle detours.
- Access through the work zone and delineated detours will be ADA-compliant.
- Lighting in the work zones and delineated detours will be implemented as per Section 2.2.4.a above.
- All delineated pedestrian/bicycle paths will be maintained in a clean and usable form with clear signage indicating the pathway.
- Construction traffic will be separated from pedestrian/bicycle paths to minimize hazards associated with people on foot around moving equipment.
- Existing trails will not be closed without an approved detour.
- A Trail Closure and Detour Communication Plan will be submitted at least 30 days prior to an approved trail Closure.
- The Trail Detour Signing Plan will be submitted 14 days prior to detour execution.
- Signing, pavement marking, and pedestrian signalization in compliance with the MUTCD and CCD standards
- Coordination with the Department and DPS for all Closures and operational impacts in the area of the School
- Coordination with the CCD Safe Route to Schools coordinator

Swansea Elementary School

To maintain safe and effective operation of Swansea Elementary School, FRMG's MOT plan reflects the following requirements of Schedule 10, Section 2.11.7:

- Columbine St. and Clayton St. will not be closed when school is in session
- During Closures of 46th Avenue, 47th Avenue will remain open between Clayton St. and York St.
- All Closures in the vicinity of Swansea Elementary School will be coordinated with DPS.
- Pedestrian and bicycle movements in the vicinity of the school will be addressed.
- TCPs will be coordinated with the Safe Route to School plan that exists for Swansea Elementary School
- Traffic management plans for the school area will incorporate Travel Demand Management strategies defined in this TMP.

FRMG's review of the Safe Routes to School: Swansea Elementary Walk Audit Report indicates much of the area has no sidewalk or has sidewalks of five feet or less.

FRMG's Safe Route to School program will include a dedicated shared-use path along the south side of existing 46th Avenue from York St. to Fillmore St. in order to provide direct access to Columbine and Clayton Streets. Crossing guards will be provided at both Clayton and/or Columbine Streets along 46th Avenue as necessary during Phase 1. In Phase 2, the east/west connectivity will be along the newly constructed 46th Avenue north. Crossing guards will also be provided during this Phase. Curb ramps, ADA measures, and crosswalks along the route to school illustrated below in Figure 18 will be maintained throughout the Project using temporary

measures where needed and constructing permanent features as early as practical. Temporary lighting will be provided along the shared-use path as required by Section 2.2.4.a above.

Figure 18. Crosswalks along the Route to School

In addition and as described in Section 2.2.3.h above, FRMG will coordinate with Denver Public Schools (DPS), including implementation of DPS Phase 3 School Layout occurring during the summer of 2018 (and risks associated with any reconfiguration of these improvements) in relation to scheduling of all construction activities on the Cover. It also will provide access for school personnel per the requirements of the Agreement

Bruce Randolph Junior High will have the least impact to pedestrian and bicycle movements, as it is six blocks from the construction area. Access to Bruce Randolph Junior High will benefit the shared-use path along the south side of 46th Avenue during Phase 1.

Garden Place Elementary School will see minimal impact, as Brighton Blvd. will be reconstructed under traffic.

2.2.5.f Pedestrian and Bicycle Movements at the UPRR York St. Crossing

A location-specific pedestrian and bicycle access issue that merits special discussion and consideration is the crossing of the UPRR tracks. Currently, the only reliable access across the UPRR in the immediate Project area is 46th Avenue. This access will be closed during the construction of the UPRR Bridge over I-70.

CCD has concluded a study of pedestrian and bicycle crossing options for the 47th Avenue and York St. area. The preferred option of the City's study, a bridge, is not fully funded as yet.

FRMG will develop and provide a shuttle service program for students of Swansea Elementary School in coordination with Denver Public Schools, and in conjunction with DPS' Success Express, to specifically address safety and delays caused by the UPRR train movements at the York St. Crossing until 46th Avenue is reopened between Brighton Blvd. and York St. In addition, FRMG will use pedestrian flagging services as necessary before and after school to assist in the control of potential unsafe pedestrian crossing at York St.

2.2.5.g Incident Management Plan (IMP)

CDOT's *Guidelines for Traffic Incident Management in Work Zones* recognizes that complex, long-term projects such as Central 70 require the development of comprehensive programs, involving numerous stakeholder partners. Formalized procedures are required to maximize the efficiency of the significant resources required to implement the IMP.

The Project IMP will have the primary goal of establishing a formal, coordinated approach to managing incidents that occur in the Project area. The IMP will include specific elements that focus on the detection, response, removal, and restoration activities associated with traffic incidents. More specifically, the IMP will include detailed procedures related to:

i. Coordination with the PIP
ii. Incident detection and identification
iii. Incident response
iv. Incident site management
v. Incident clearance
vi. Dissemination of traveler information regarding incidents
vii. Courtesy Patrol
viii. Emergency Services notification, including local area police departments, the Colorado State Patrol, local area fire departments, ambulance services, and any other emergency response providers
ix. Notification of local school districts about possible impacts to school bus routes, student drop-offs, and/or pedestrian facilities
x. Geographic and other special constraints
xi. Available resources
xii. Operational procedures
xiii. Detour routes to be used in the event of a catastrophic incident along I-70 Mainline or ramps that would require a Closure that is not permitted; these will be coordinated with

any impacted Local Agency and ensure the routes work for each traffic phase and stage throughout construction

FRMG will submit the IMP for Acceptance by the Department within 30 days after the issuance of NTP1.

2.2.5.h Transportation Management Organization

FRMG will work with the Department and CCD in coordinating with a corridor-focused Transportation Management Organization (TMO). FRMG will cooperate with TMO-developed programs that may include commuter-specific communication. In this instance, FRMG will provide four (4) VMS boards for the exclusive use of TDM outreach.

In addition to these specific strategies, FMRG will fund a $100,000 (total amount) grant program during the first three years of the Operating Period. This will support community-based projects that reduce vehicle use and encourage multimodal options within the Project area. Some of these community-based projects might include support for bus stops, sidewalks, bike lanes, and crossing guards at key pedestrian crossing locations. FRMG will administer an annual competitive grant application program open to all nonprofit groups, registered neighborhood organizations, and schools located within the Project area to award the grant funds.

2.2.5.i Dynamic Ride Sharing

Advances in communications and computing technology have created explosive growth in the popularity of dynamic ride sharing. Unlike formal carpooling programs, dynamic ridesharing allows participants to participate as a rider or ride provider on little notice. The Denver Business Journal reports that Denver is one of the top 10 cities in the United States for dynamic ride sharing use. Public agencies, including CDOT, see important benefits to expanded dynamic ride sharing programs, including more efficient use of the transportation infrastructure, improved air quality, and reduced fuel consumption.

FRMG will cooperate with the Department and its partner agencies on implementing dynamic ride sharing programs established in the metro area. A standing agenda item during the Project weekly Task Force Meeting will be provided, with available information shared as applicable.

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2.2.6 Public Information (PI) Strategies

One of the most critical aspects of PI is to develop and effectively manage relationships with the stakeholders impacted by the Project. FRMG will identify each stakeholder's relationship to the Project, evaluate that stakeholder's potential impacts, and then assess what reactions might be expected to various situations. To manage these relationships, FRMG's PI approaches and tools will be tailored to each stakeholder's individual needs, ensuring they have accurate information about the Project schedule, progress, and construction impacts as they arise.

Building effective stakeholder partnerships helps address the social needs of the impacted community. FRMG intends to work closely with community, government, and business stakeholders to create an effective partnering approach throughout construction. We understand that constructive stakeholder relationships improve risk management and provide better outcomes for all parties.

We recognize that construction of the Project will affect the operations of many businesses in the surrounding area. We have identified these businesses and their potential impacts, and we have developed a comprehensive Business Outreach approach to assist businesses (including small businesses) understand the potential impacts of the Project and the available resources to manage their business during construction. This approach is further described below and detailed in Appendix J, Strategic Communications Plan – Section 5.12. We will work with them to provide advance information on traffic pattern changes and incorporate the Project-related changes into their advertising, marketing promotions, and materials.

The objective of FRMG's Business Outreach approach is to help minimize construction impacts on local area businesses and by assisting businesses in planning alternative access (as needed) for their customers/clients during construction. We will ensure that all adversely affected businesses are aware of impacts prior to the activation of major Project phases and have the opportunity to participate in the Business Outreach Plan as defined in approach in Appendix J, Section 5.12.

In addition to the impact on businesses, FRMG is aware of the impact traffic shifts/detours/road Closures will have on local residents and individual property owners. To that end, we will provide timely notification of scheduled activities and work with individual property owners to ensure they are aware and informed.

FRMG is committed to providing time-sensitive notification of all detours and traffic shifts to associated stakeholders. We will update the Project website and send email notifications as conditions change. Social media and text messaging will be used to help highway commuters modify their travel plans. As described elsewhere in this plan, VMS boards will be strategically placed to communicate upcoming route changes and detours. Depending on the duration of the route changed, we might also use Highway Advisory Radios. We will utilize the Department's existing apps, such as *Colorado Roads*, and incorporate other available apps to provide time-sensitive updates.

Upon award of the Project, FRMG will begin to build relationships with local transit organizations, handicapped mobility operators, and the Regional Transportation District (RTD).

These partnerships will be paramount to the successful mitigation of impacts and route changes to these stakeholders. We will widely distribute our Work Zone Safety Brochures and update them as needed to facilitate efficient, safe travel through the construction area. We also will enact communication campaigns that effectively reflect the changing routes.

FRMG will submit a weekly traveler alert each Thursday for distribution on GovDelivery and CoTrip throughout construction. This alert will include I-70 Mainline, CDOT Roadways, and Local Agency Roadways, and any other activity that could impact the traveling public. Upcoming alerts will be reviewed and discussed during the weekly Strategic Communications meetings.

FRMG will provide weekly traveler alerts to local media outlets for dissemination to the general public and to local event venues including Denver International, the National Western Center, and RTD. These alerts may be distributed more often dependent upon the severity of the traffic impact.

Traffic alerts and Lane Closure Reports also will be added to the Project website to ensure the community at large has the most up-to-date information as they plan travel along I-70. We will analyze website hits on a monthly basis to determine what information is most important to our stakeholders, and we will identify and measure the audience engagement by web page and leverage future information output to their needs.

2.2.6.a Coordination of TMP Activities

FRMG will coordinate TMP activities per the requirements of Section 2.2.6 and Schedule 14 Strategic Communications. Transportation management involves the balancing of three competing interests: 1) the traveling public and how their trip is managed; 2) the Construction Work itself and how it is efficiently performed; and 3) adjacent businesses, institutions, and residents, and how their impacts are managed and how they are kept informed.

The goal of this TMP is to strike a balance among these three competing interests. It seeks to maintain construction quality while optimizing the concerns of the owner and the users without compromising public or worker safety. In planning and executing our Work, FRMG will consider a number of variables, including traffic control measures, construction requirements, operational performance, constructability, emergency planning, and PI and coordination. Our key objective is to efficiently construct the Project while meeting the expectations of the Department, businesses, community members, road users, and the public at large.

FRMG's Traffic Management Team and Strategic Communication Team will be colocated at the Project Office. These two arms of the FRMG Team will develop two-way communications to deliver the most up-to-date traffic information to the community.

FRMG will host weekly Strategic Communications Meetings that include the Department's Communication Team, FRMG's Communication Team, and key operational personnel. These will be hosted in the Project Office. They will be used to discuss weekly communication issues and provide details for upcoming media advisories, press releases, community meetings, Lane Closure Reports, website updates, and information line recordings. FRMG's Communication Team will work very closely with local emergency responders and stakeholders and will host a

monthly Project Stakeholder Meeting designed to provide a forum for all stakeholders to have a voice, jointly resolve any issues, and ensure their concerns are heard and understood. We will establish an agenda to identify information sharing protocols and specifically coordinate activities. Information will seamlessly flow from FRMG's Traffic Management team to the community.

Coordination with Special Events and the National Western Stock Show

In addition to (and in cooperation with) the Department's Communication Manager and representatives of local agencies, FRMG will develop and maintain a list of event venues in the Project area. That will be particularly true of the National Western Complex, but it also will include northwest Denver entertainment venues and major sports/concert venues (e.g., Dick's Sporting Goods Park; Coors Field, Sports Authority Field at Mile High). Event calendars will be regularly collected from these venues so that Special Events can be identified and planned for well in advance. Special Events will be a standing discussion topic at the MOT Task Force meeting, where the requirement for event-specific mitigation plans will be discussed.

Mitigation plans for Special Events will be developed in cooperation with the Department and local agencies. FRMG will make efforts to mitigate the effect of lane Closures on Special Event traffic.

The National Western Stock Show, held annually in January at the National Western complex, is a 16-day long event that attracts almost 700,000 visitors. FRMG will implement restrictions on Construction Work in the vicinity of Brighton Blvd., the Brighton Blvd. interchange, and 47th Avenue west of Williams St. prior to, during, and immediately following the National Western Stock Show, as defined in Schedule 10. Section 2.6.

The National Western Stock Show coordination will be a standing agenda item for FRMG's weekly MOT Task Force meeting preceeding the yearly event as necessary. This agenda item will ensure appropriate representatives are invited and/or copied on applicable Project correspondence. FRMG will monitor traffic operations during the event and make modifications as applicable, including providing of a summary report at the end of each year's event for incoporation of recommendation/refinements into the next years event traffic control strategy.

2.2.6.b Checklist

The FRMG Project Communications Manager will develop a detailed checklist of MOT items to be provided to the Department, including required lead times. A preliminary version of this checklist of TMP activities, showing standing items, is shown in **Table 19**. Items provided from this checklist are used to create and communicate key messages based on the degree of stakeholder impact. The checklist will aid in formulating information that will assist stakeholders in short-term and long-term decision-making to focus on TMP activities with as little disruption as possible.

Table 19. TMP Activities

Check	MOT Item	Information to be Provided	Advance Information, Acceptance, or Approval
	Lane Closures on I-70 (mainline, ramps)	Limits of Closure Duration of Closure Days and hours of work	7 days
	Lane Closures on all other streets	Limits of Closure Duration of Closure Days and hours of work	7 days
	Roadway Closures on I-70 (mainline, ramps)	Limits of Closure Duration of Closure Description of detour	7 days
	Roadway Closures on all other streets	Limits of Closure Duration of Closure Description of detour	7 days
	Major Roadway Shifts	Limits of shift Duration of shift	14 days
	Bridge Demolitions	Roadways affected Day and hours of work Description of detours	14 days
	Trail Detours	Closure points Duration of Closure Description of detour	14 days
	Other Types of Construction	Roadways affected Day and hours of work	7 days

FRMG will operate and maintain the construction information dissemination process continually throughout construction, providing monthly reports that summarize communication activities throughout each month.

2.2.6.c Communication Manager Meeting

The FRMG Project Communications Manager (PCM) and the Department's Communication Manager will meet each week at the Strategic Communication Meeting to discuss PI and management activities on the Project. The checklist described in the previous section will identify supporting information relevant to coping messages and public awareness. This

information will be included in the Construction Period Communications Plan (CPCP), as described in Schedule 14, Strategic Communications.

2.2.6.d MOT Task Force

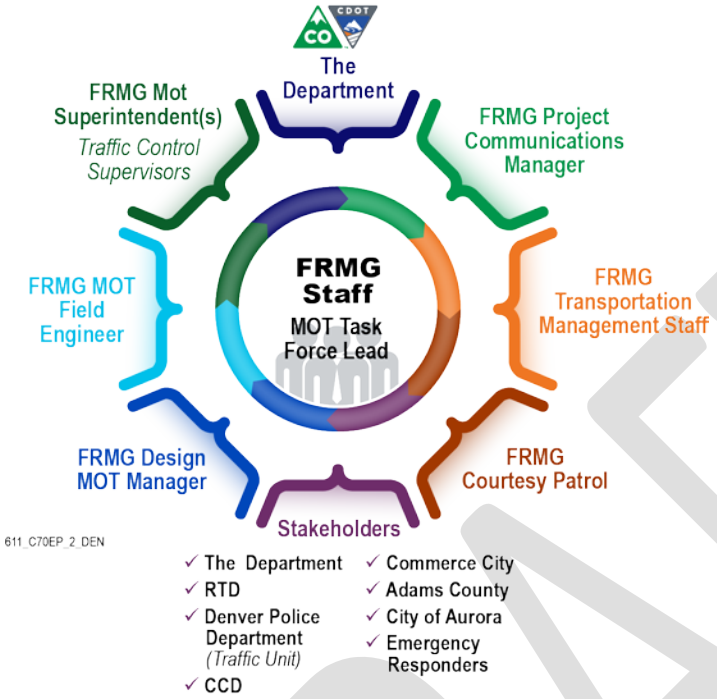
FRMG will create an MOT Task Force to provide formal coordination of MOT activities with affected stakeholder agencies. As shown on the following organizational chart, we anticipate the MOT Task Force will be led by key staff from the Department and FRMG. Invited attendees to the Task Force will include representatives from two segments. One segment will include Department staff; FRMG's PCM, Traffic Control Supervisors, Independent Quality Control Firm (IQCF), and technical discipline leads. The other segment would include representatives of local public agencies, transportation services providers, emergency responders, railroads, and utility companies, among others.

Representatives from other surrounding communities will be invited to participate as discussion topics dictate. Additional meetings with emergency services providers will be described in the IMP, which is a separate document from the TMP.

FRMG will submit the proposed list of the MOT Task Force members to the Department for Acceptance within 30 calendar days after the issuance of NTP1 (shown in the Figure 19 below). Within 14 calendar days after Acceptance of the proposed list of MOT Task Force members, FRMG will convene an MOT Task Force kickoff meeting, which will be used to develop agreements upon any additional level of detail required for the final TMP.

DRAFT

Figure 19. Proposed MOT Task Force.



The MOT Task Force will be an integrated component of the CPCP, as described in Schedule 14, Strategic Communications. FRMG will prepare and distribute agendas, meeting materials, and meeting minutes to the Department for Acceptance in accordance with Section 9 of Schedule 8, Project Administration.

2.2.6.e MOT Task Force Frequency

The MOT Task Force will meet weekly during the design development process and throughout construction until Project completion. The MOT Task Force meetings will be scheduled and chaired by the MOT Construction Lead. The purpose of these meetings will be to further the development and refinement of TCPs and MHTs; review upcoming lane Closures; discuss pertinent information that must be disseminated to the general public; and to obtain input from, and share information with, meeting attendees.

In addition to the weekly MOT Task Force meetings, FRMG will hold meetings on an as-needed basis to review agency comments on previously submitted design plans. These meetings generally will be held immediately following the MOT Task Force meeting. Once construction begins, FRMG will hold weekly construction coordination meetings to review current and upcoming construction activities.

Front Range Mobility Group

APPENDIX F

Part 1 of DRAFT TRANSPORTATION MANAGEMENT PLAN

CENTRAL 70 PROJECT

PUBLIC DISCLOSURE

Administrative and Technical Proposal:

Front Range Mobility Group

THE EXTRA MILE

CONNECTING COMMUNITIES

APPENDIX F

Part 2 of DRAFT TRANSPORTATION MANAGEMENT PLAN

Attachment 1
MOT Plans - Area 1

Front Range Mobility Group

Attachment 1 MOT Plans - Area 1

LEGEND:

- AREA AVAILABLE FOR CONSTRUCTION (SEE NOTE 1)
- AREA CRITICAL FOR CONSTRUCTION (SEE NOTE 2)
- AREA CONSTRUCTED IN PREVIOUS STAGE
- TEMPORARY PAVEMENT CONSTRUCTED THIS STAGE
- TEMPORARY PAVEMENT CONSTRUCTED IN PREVIOUS STAGE
- TEMPORARY CONCRETE BARRIER (PLAN VIEW)
- TEMPORARY CONCRETE BARRIER (TYPICAL SECTIONS)
- TEMPORARY CONCRETE BARRIER WITH GLARE SCREEN (TYPICAL SECTIONS)
- APPROXIMATE LIMITS OF TEMPORARY SHORING
- CHANNELIZING DEVICES (PLAN VIEW)
- CHANNELIZING DEVICES (TYPICAL SECTIONS)
- CONSTRUCTION FENCE (TYPICAL SECTIONS)
- 4' DOUBLE SOLID YELLOW LINE
- 4" SOLID LIN (YELLOW/WHITE)
- 4" DOTTED WHITE LINE
- 4" BROKEN WHITE LINE
- TRAFFIC DIRECTION AND NUMBER OF LANES OPEN ON ROADWAY
- CONSTRUCTION ENTRANCE — CONSTRUCTION ACCESS LOCATION

NOTES

1. AREA AVAILABLE FOR CONSTRUCTION: AREAS OF CONSTRUCTION MAY INCLUDE CONSTRUCTION ACTIVITIES IN THE CURRENT STAGE AND PHASE BUT ARE NOT NECESSARY TO BE COMPLETED PRIOR TO PROCEEDING TO THE NEXT STAGE OR PHASE.
2. AREA CRITICAL FOR CONSTRUCTION: AREAS TO BE CONSTRUCTED PRIOR TO THE NEXT STAGE OR PHASE.
3. USE CDOT M&S STANDARD S-630-1 FOR SHOULDER CLOSURES TO INSTALL DRAINAGE INLETS WEST OF BRIGHTON BOULVARD.

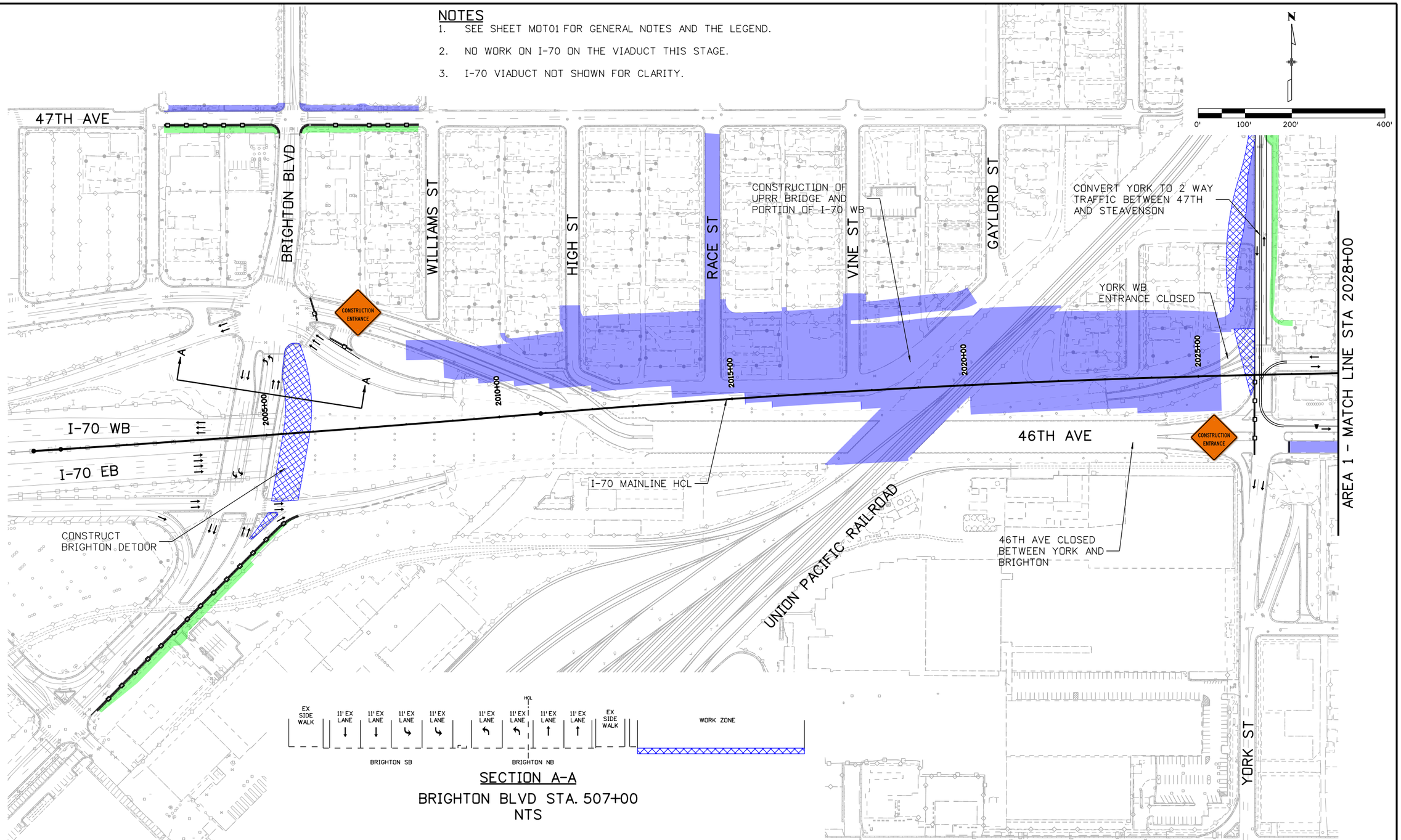
CONCURRENT FULL ROADWAY CLOSURE RESTRICTIONS FOR NORTH-SOUTH FACILITIES PER SCHEDULE 10 SECTION 2.11.5.iv, TABLE 2-2

	ROADWAY CLOSURES NOT PERMITTED								
	UPRR CROSSING	YORK STREET	JOSEPHINE STREET	COLUMBINE STREET	CLAYTON STREET	FILLMORE STREET	DAHLIA STREET	HOLLY STREET	MONACO STREET
YORK STREET		–	X	X					
JOSEPHINE STREET		X	–	X					
COLUMBINE STREET		X	X	–	X				
CLAYTON STREET				X	–	X			
FILLMORE STREET					X	–			
DAHLIA STREET							–	X	
HOLLY STREET							X	–	X
MONACO STREET								X	–

X MEANS CONCURRENT FULL ROADWAY CLOSURES ARE NOT PERMITTED

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. NO WORK ON I-70 ON THE VIADUCT THIS STAGE.
3. I-70 VIADUCT NOT SHOWN FOR CLARITY.



SECTION A-A

BRIGHTON BLVD STA. 507+00
NTS

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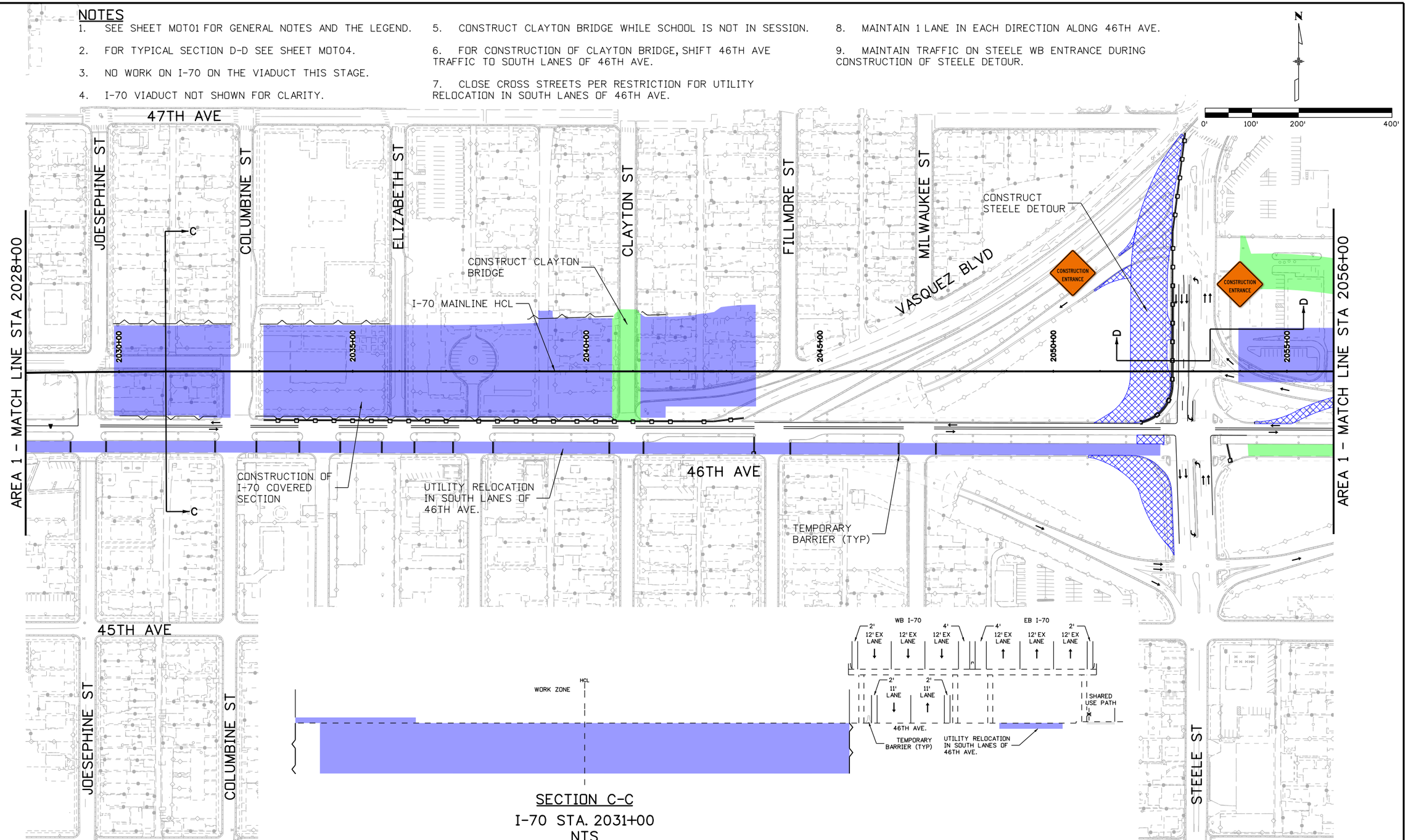
File Name: See sheet edge for information		Date:	Comments	Init.	
Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

Colorado Department of Transportation
2000 South Holly Street
Denver, CO 80222
Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 1 PHASE 1 STAGE 1		Project No./Code
No Revisions:	Designer: R. MITRY	Structure Numbers	FBR 0704-234
Revised:	Detailer: C. SNYDER		19631
Void:	Sheet Subset: MOT	Subset Sheets: 02 of 83	Sheet Number

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. FOR TYPICAL SECTION D-D SEE SHEET MOT04.
3. NO WORK ON I-70 ON THE VIADUCT THIS STAGE.
4. I-70 VIADUCT NOT SHOWN FOR CLARITY.
5. CONSTRUCT CLAYTON BRIDGE WHILE SCHOOL IS NOT IN SESSION.
6. FOR CONSTRUCTION OF CLAYTON BRIDGE, SHIFT 46TH AVE TRAFFIC TO SOUTH LANES OF 46TH AVE.
7. CLOSE CROSS STREETS PER RESTRICTION FOR UTILITY RELOCATION IN SOUTH LANES OF 46TH AVE.
8. MAINTAIN 1 LANE IN EACH DIRECTION ALONG 46TH AVE.
9. MAINTAIN TRAFFIC ON STEELE WB ENTRANCE DURING CONSTRUCTION OF STEELE DETOUR.



SECTION C-C
I-70 STA. 2031+00
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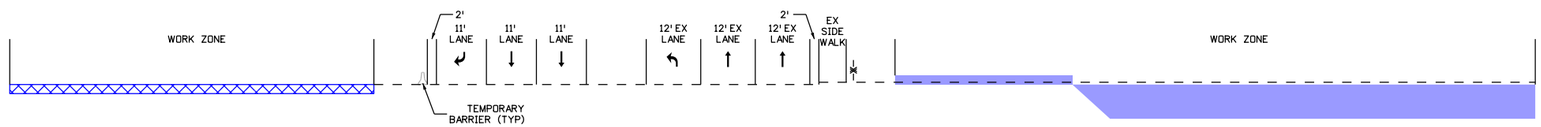
File Name: See sheet edge for information		Date:	Comments	Init.	2000 South Holly Street Denver, CO 80222 Phone: 303-757-9934 FAX: 303-757-9907	No Revisions:		FBR 0704-234
Front Range Mobility Group	Horiz. Scale: As Noted					Revised:	Designer: R. MITRY / Structure Numbers	19631
	Vert. Scale: As Noted						Detailer: C. SNYDER	
	Unit Information					Void:	Sheet Subset: MOT / Subset Sheets: 03 of 83	Sheet Number
	Unit Leader				Region 1 KJS			



SECTION D-D

STEELE ST STA. 510+00
NTS

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.

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	Unit Information		
	Unit Leader		

Sheet Revisions		
Date:	Comments	Init.

Colorado Department of Transportation
2000 South Holly Street
Denver, CO 80222
Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL
No Revisions:
Revised:
Void:

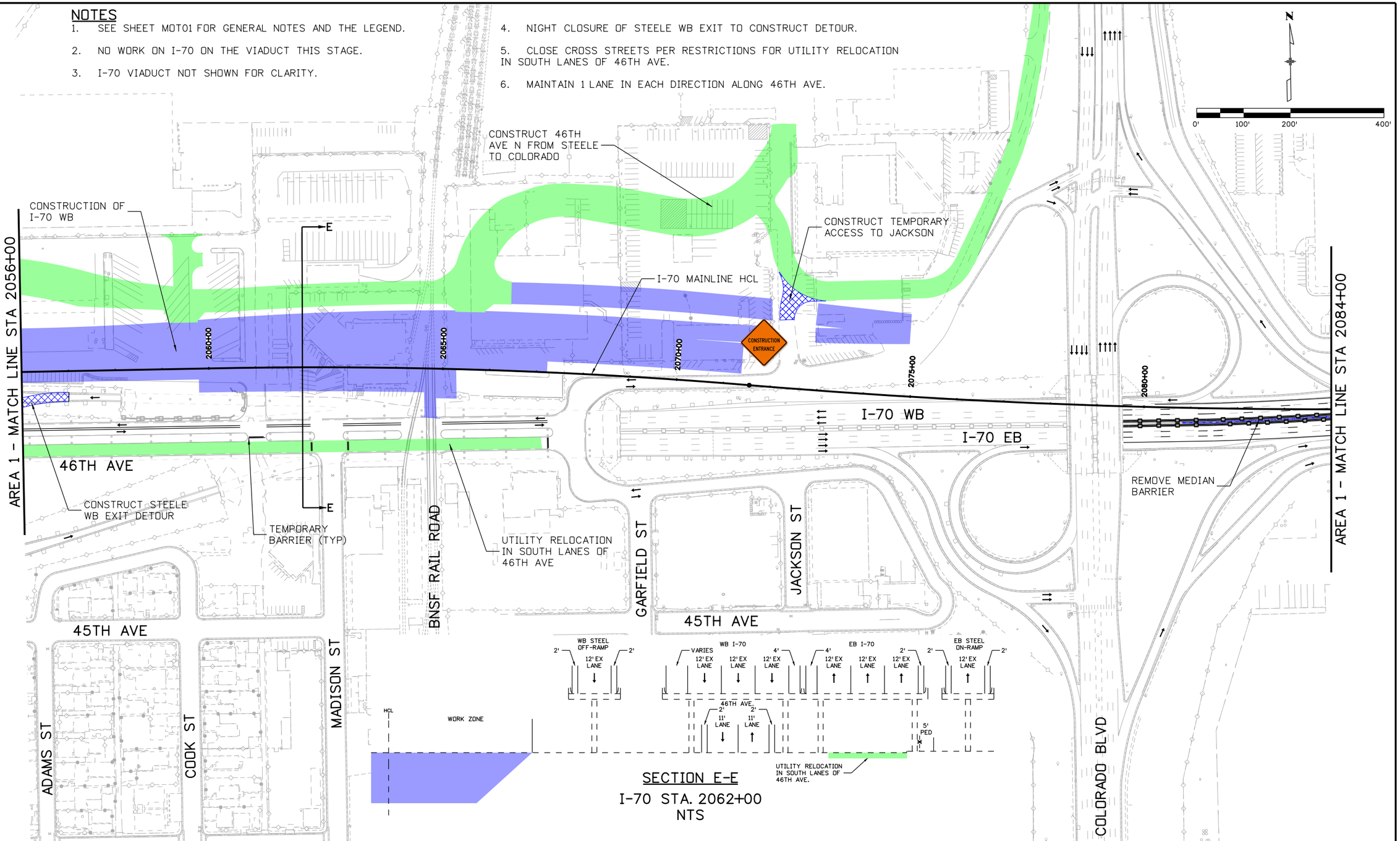
CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1 PHASE 1 STAGE 1
TYPICAL SECTIONS

Designer:	R. MITRY	Structure Numbers	
Detailer:	C. SNYDER		
Sheet Subset:	MOT	Subset Sheets: 04 of 83	

Project No./Code
FBR 0704-234
19631
Sheet Number

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. NO WORK ON I-70 ON THE VIADUCT THIS STAGE.
3. I-70 VIADUCT NOT SHOWN FOR CLARITY.
4. NIGHT CLOSURE OF STEELE WB EXIT TO CONSTRUCT DETOUR.
5. CLOSE CROSS STREETS PER RESTRICTIONS FOR UTILITY RELOCATION IN SOUTH LANES OF 46TH AVE.
6. MAINTAIN 1 LANE IN EACH DIRECTION ALONG 46TH AVE.



SECTION E-E

I-70 STA. 2062+00
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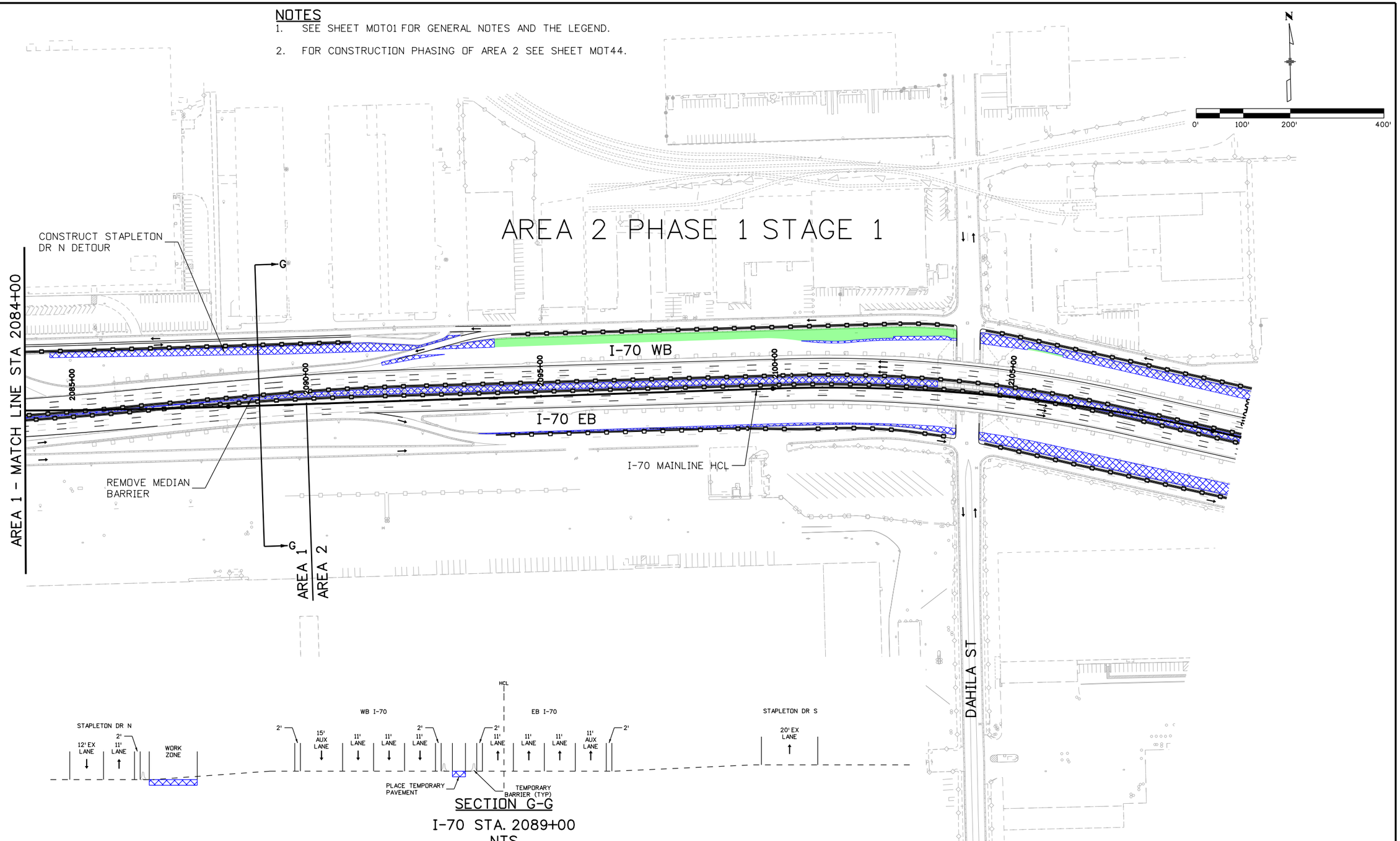
Front Range Mobility Group	Horiz. Scale: As Noted			Revised:	Designer: R. MITRY / Structure Numbers	19631
	Vert. Scale: As Noted				Detailer: C. SNYDER	
	Unit Information		Region 1 KJS	Void:	Sheet Subset: MOT / Subset Sheets: 05 of 83	Sheet Number
	Unit Leader					

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. FOR CONSTRUCTION PHASING OF AREA 2 SEE SHEET MOT44.



SECTION G-G

I-70 STA. 2089+00

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	Vert. Scale: As Noted						Detailer: C. SNYDER	
	Unit Information					Void:	Sheet Subset: MOT / Subset Sheets: 06 of 83	Sheet Number
	Unit Leader				Region 1 KJS			

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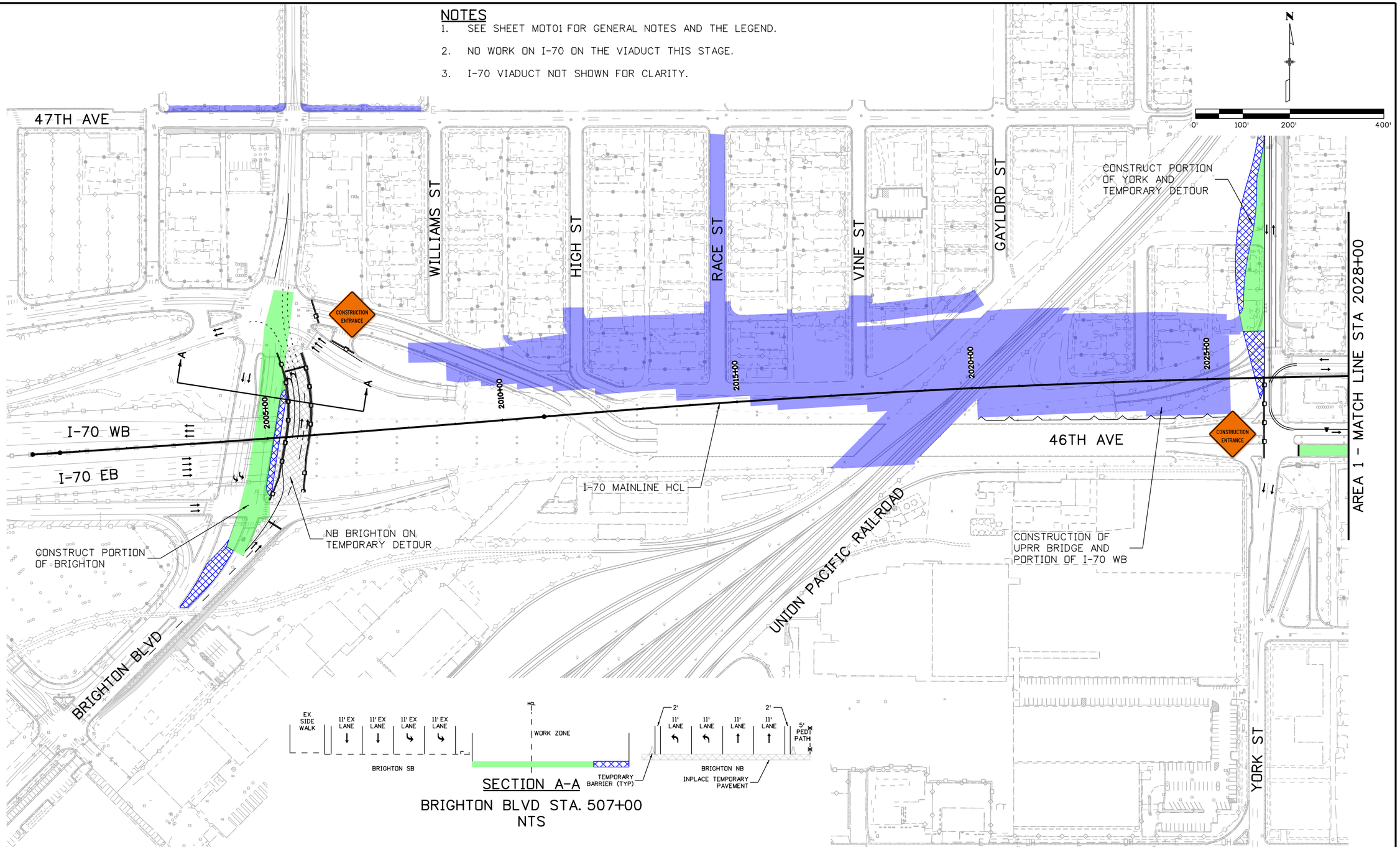
NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. NO WORK ON I-70 ON THE VIADUCT THIS STAGE.
3. I-70 VIADUCT NOT SHOWN FOR CLARITY.



SECTION A-A

BRIGHTON BLVD STA. 507+00
NTS

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Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

Colorado Department of Transportation
2000 South Holly Street
Denver, CO 80222
Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 1 PHASE 1 STAGE 2			Project No./Code
No Revisions:	Designer: R. MITRY	Structure Numbers		FBR 0704-234
Revised:	Detailer: C. SNYDER			19631
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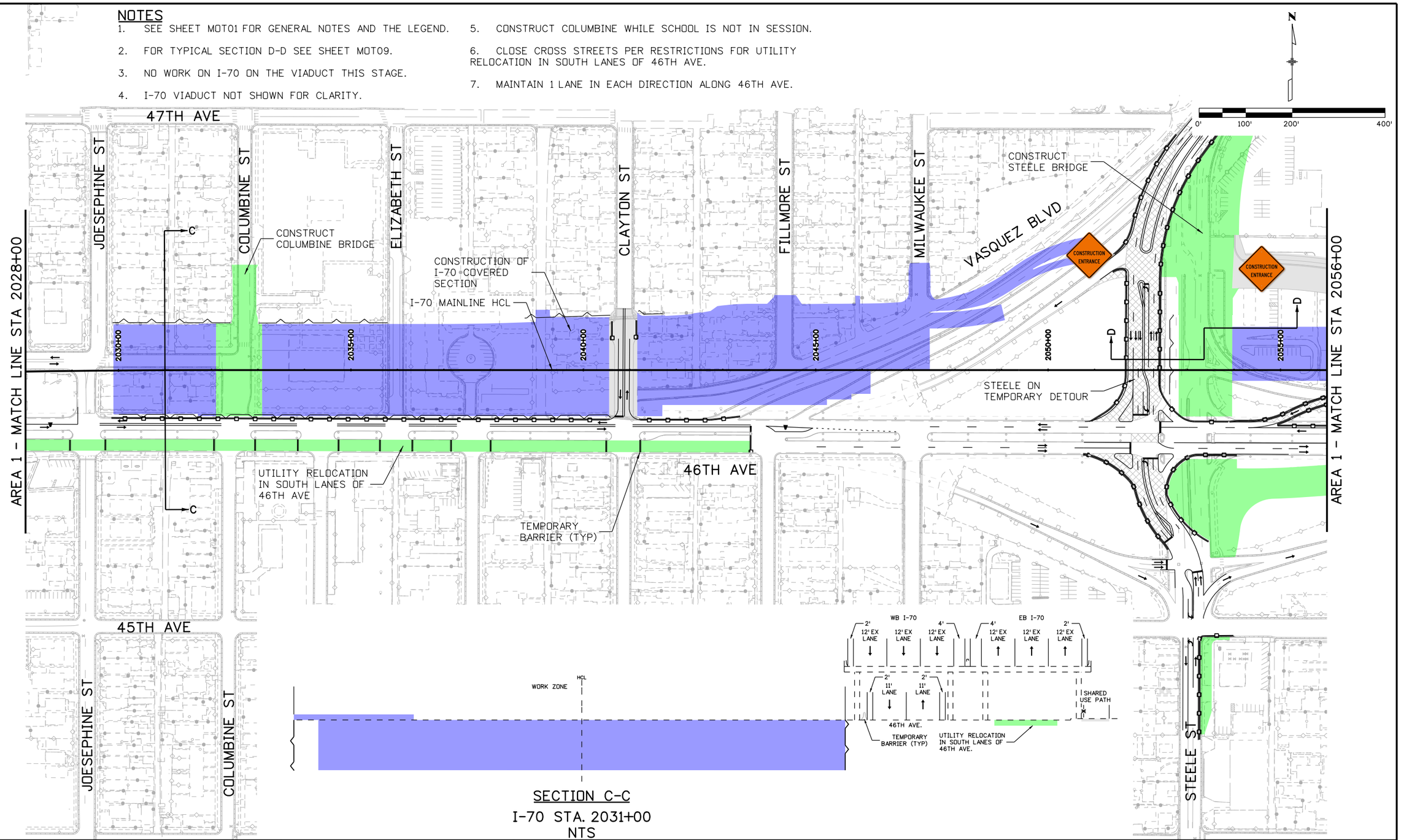
NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. FOR TYPICAL SECTION D-D SEE SHEET MOT09.
3. NO WORK ON I-70 ON THE VIADUCT THIS STAGE.
4. I-70 VIADUCT NOT SHOWN FOR CLARITY.
5. CONSTRUCT COLUMBINE WHILE SCHOOL IS NOT IN SESSION.
6. CLOSE CROSS STREETS PER RESTRICTIONS FOR UTILITY RELOCATION IN SOUTH LANES OF 46TH AVE.
7. MAINTAIN 1 LANE IN EACH DIRECTION ALONG 46TH AVE.



SECTION C-C

I-70 STA. 2031+00

NTS

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Front Range Mobility Group	Horiz. Scale: As Noted					Revised:	Designer: R. MITRY / Structure Numbers	19631
	Vert. Scale: As Noted						Detailer: C. SNYDER	
	Unit Information				Region 1 KJS	Void:	Sheet Subset: MOT / Subset Sheets: 08 of 83	Sheet Number
	Unit Leader							

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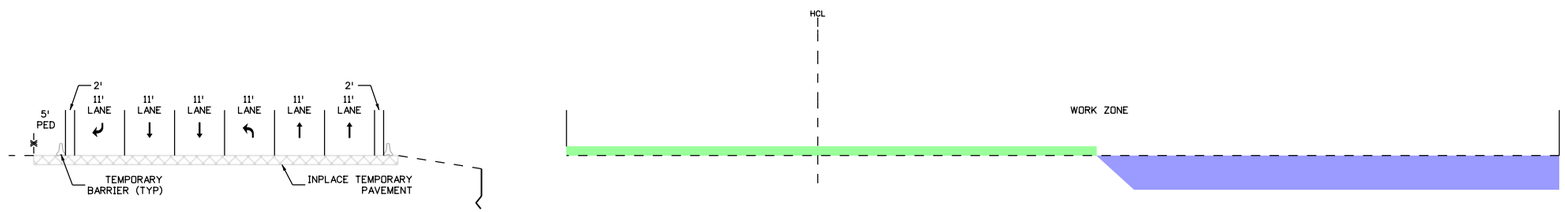

SECTION D-D

STEELE ST STA. 510+00

NTS

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.

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File Name: See sheet edge for information		Date:	Comments	Init.	
Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

Colorado Department of Transportation
2000 South Holly Street
Denver, CO 80222
Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL
No Revisions:
Revised:
Void:

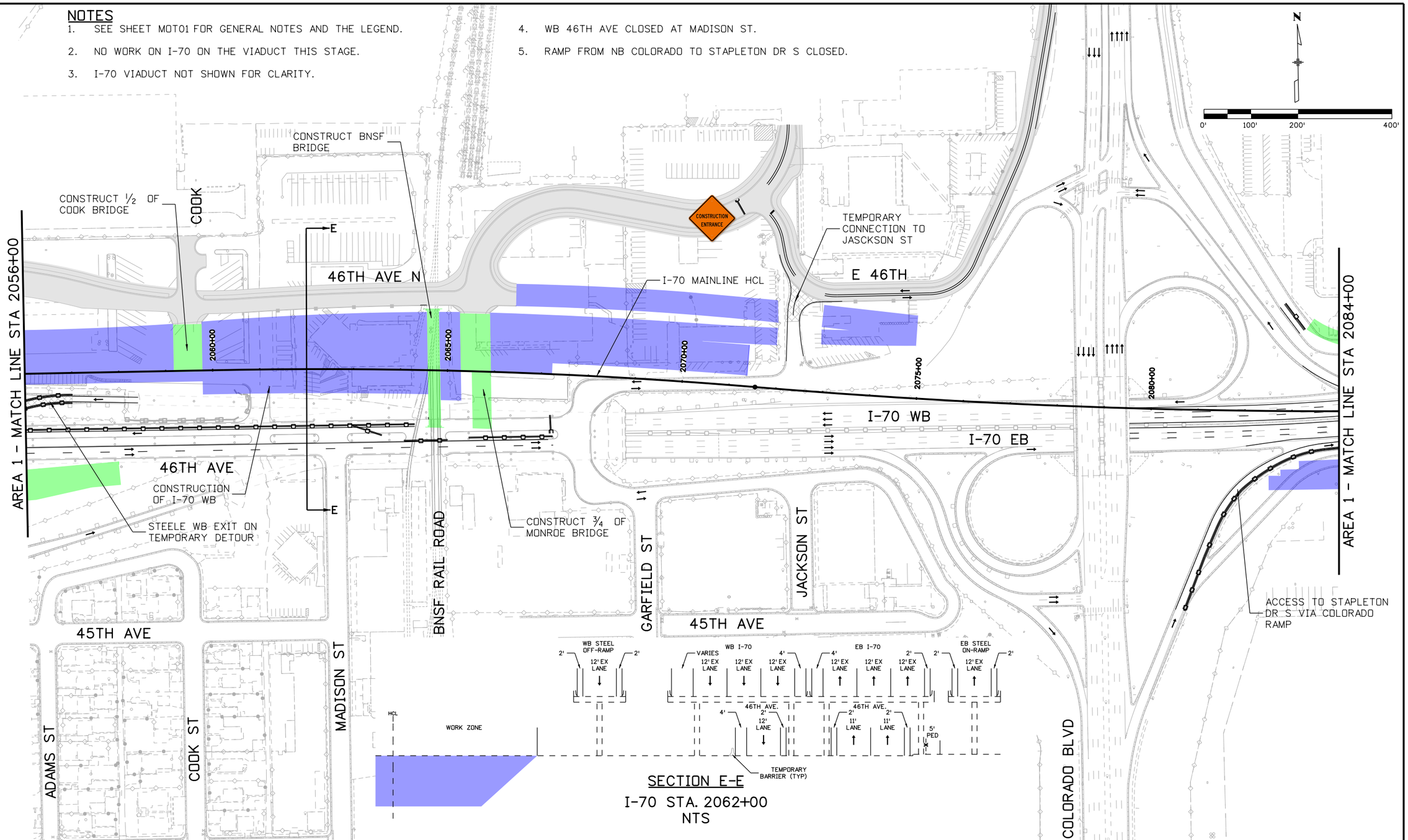
CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1 PHASE 1 STAGE 2
TYPICAL SECTIONS

Designer:	R. MITRY	Structure Numbers	
Detailer:	C. SNYDER		
Sheet Subset:	MOT	Subset Sheets: 09 of 83	

Project No./Code
FBR 0704-234
19631
Sheet Number

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. NO WORK ON I-70 ON THE VIADUCT THIS STAGE.
3. I-70 VIADUCT NOT SHOWN FOR CLARITY.
4. WB 46TH AVE CLOSED AT MADISON ST.
5. RAMP FROM NB COLORADO TO STAPLETON DR S CLOSED.



SECTION E-E
I-70 STA. 2062+00
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Front Range Mobility Group	Horiz. Scale: As Noted					Revised:
	Vert. Scale: As Noted					Void:
	Unit Information				Region 1 KJS	
	Unit Leader					

CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 1 PHASE 1 STAGE 2			Project No./Code
Designer: R. MITRY	Structure Numbers		FBR 0704-234
Detailer: C. SNYDER			19631
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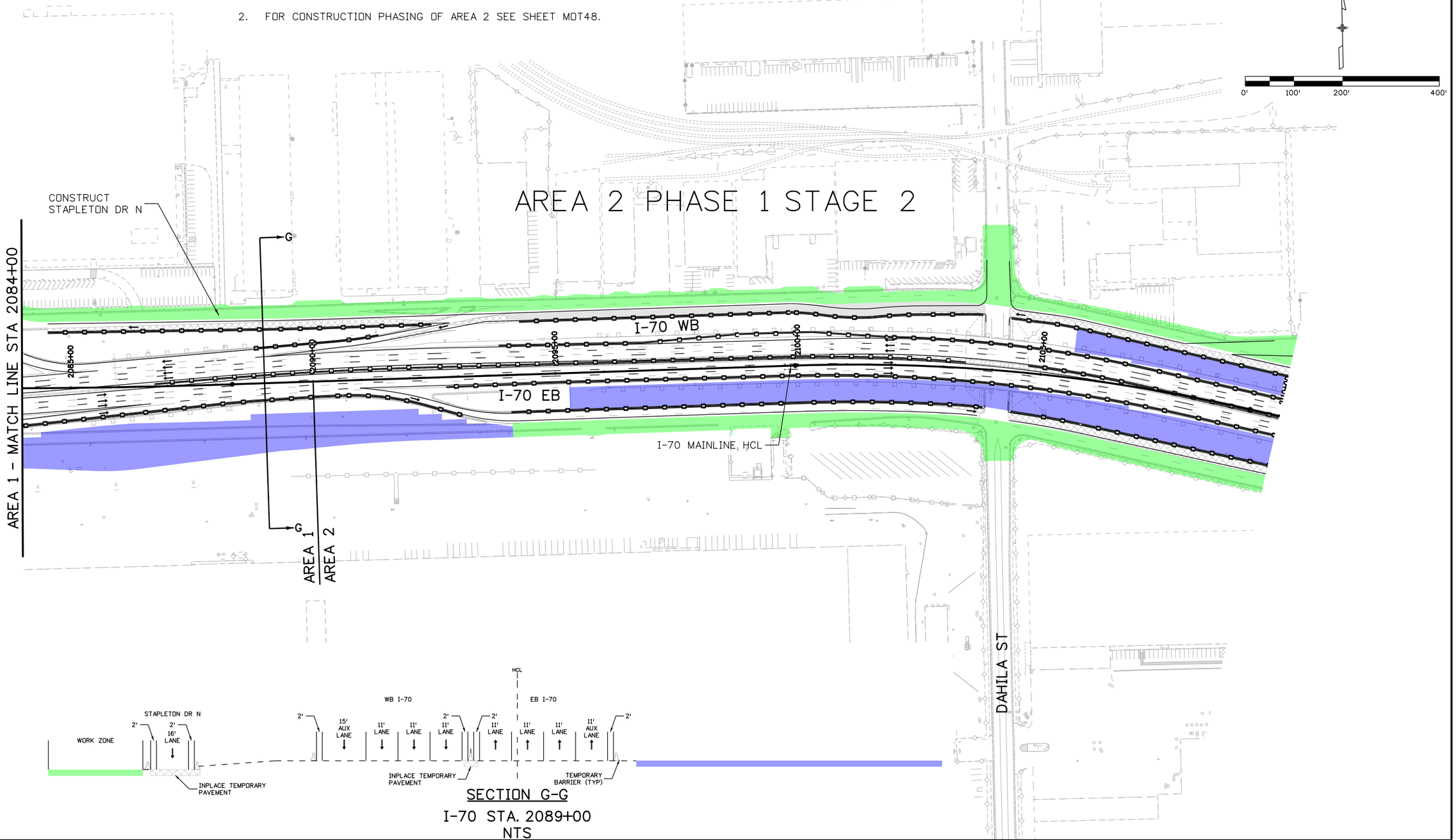
NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. FOR CONSTRUCTION PHASING OF AREA 2 SEE SHEET MOT48.



SECTION G-G

I-70 STA. 2089+00

NTS

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Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

Colorado Department of Transportation
2000 South Holly Street
Denver, CO 80222
Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL
No Revisions:
Revised:
Void:

CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 1 STAGE 2

Designer:	R. MITRY	Structure Numbers	
Detailer:	C. SNYDER		
Sheet Subset:	MOT	Subset Sheets: 11 of 83	

Project No./Code
FBR 0704-234
19631
Sheet Number

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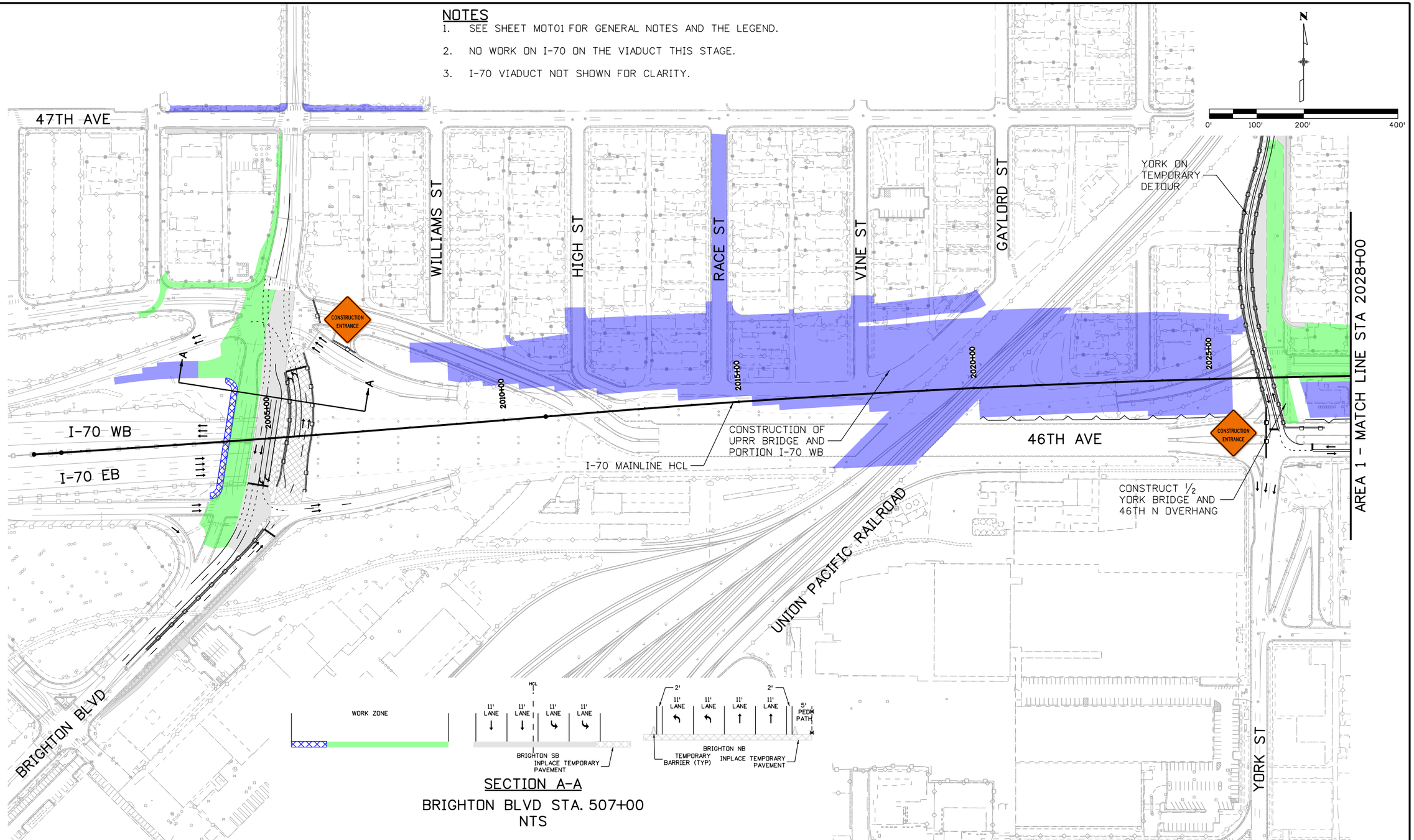
NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. NO WORK ON I-70 ON THE VIADUCT THIS STAGE.
3. I-70 VIADUCT NOT SHOWN FOR CLARITY.



SECTION A-A

BRIGHTON BLVD STA. 507+00
NTS

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Front Range Mobility Group	Horiz. Scale: As Noted					Revised:	Designer: R. MITRY / Structure Numbers	19631
	Vert. Scale: As Noted						Detailer: C. SNYDER	
	Unit Information				Region 1 KJS	Void:	Sheet Subset: MOT / Subset Sheets: 12 of 83	Sheet Number
	Unit Leader							

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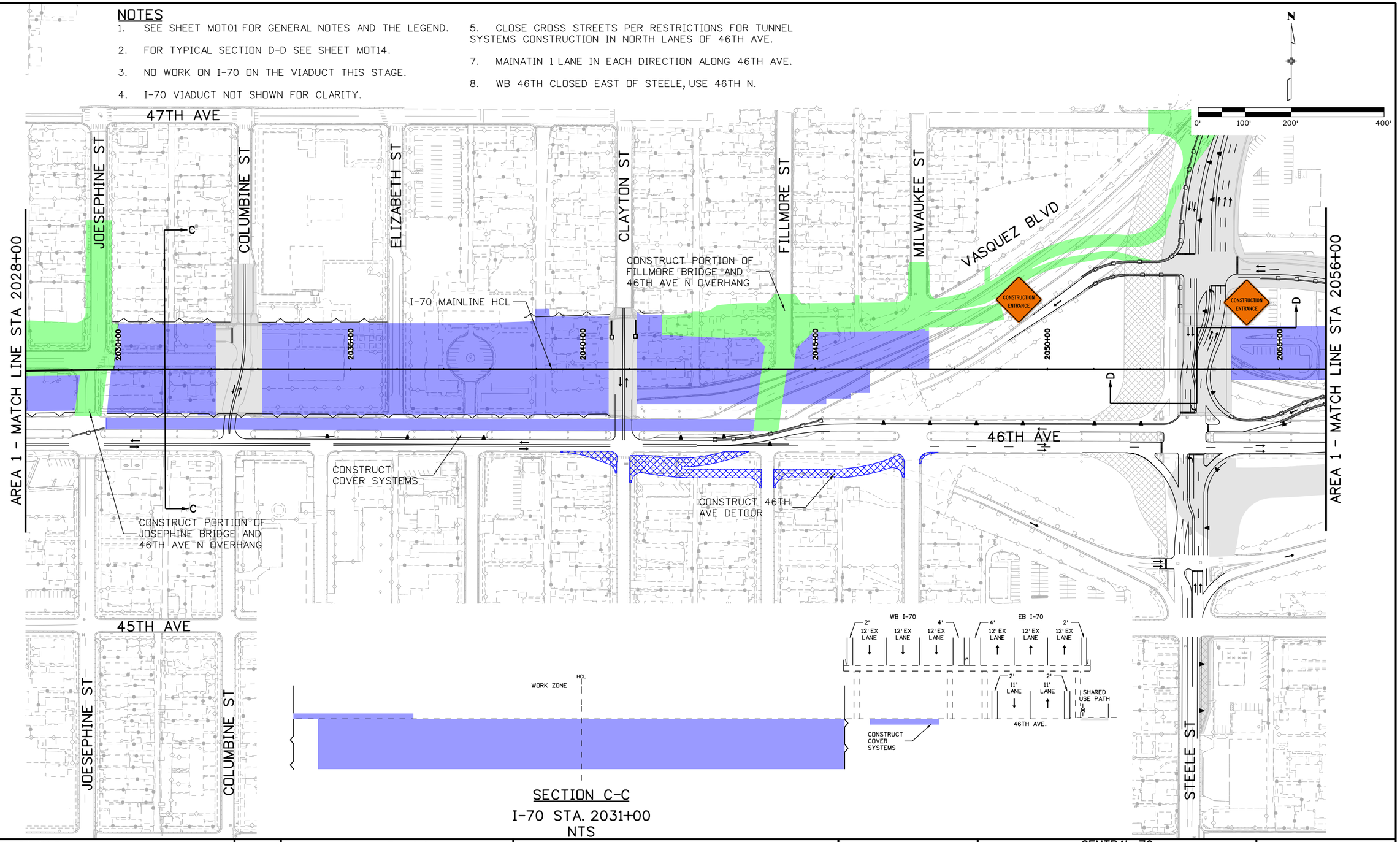
NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. FOR TYPICAL SECTION D-D SEE SHEET MOT14.
3. NO WORK ON I-70 ON THE VIADUCT THIS STAGE.
4. I-70 VIADUCT NOT SHOWN FOR CLARITY.
5. CLOSE CROSS STREETS PER RESTRICTIONS FOR TUNNEL SYSTEMS CONSTRUCTION IN NORTH LANES OF 46TH AVE.
7. MAINATIN 1 LANE IN EACH DIRECTION ALONG 46TH AVE.
8. WB 46TH CLOSED EAST OF STEELE, USE 46TH N.



SECTION C-C

I-70 STA. 2031+00

NTS

Print Date: 5/11/2017		Sheet Revisions	Colorado Department of Transportation	PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 1 PHASE 1 STAGE 3	Project No./Code
File Name: See sheet edge for information		Date: / Comments / Init.	2000 South Holly Street Denver, CO 80222 Phone: 303-757-9934 FAX: 303-757-9907	No Revisions:	Designer: R. MITRY	FBR 0704-234
Front Range Mobility Group	Horiz. Scale: As Noted			Revised:	Detailer: C. SNYDER / Structure Numbers	19631
	Vert. Scale: As Noted					
	Unit Information		Region 1 KJS	Void:	Sheet Subset: MOT / Subset Sheets: 13 of 83	Sheet Number
	Unit Leader					

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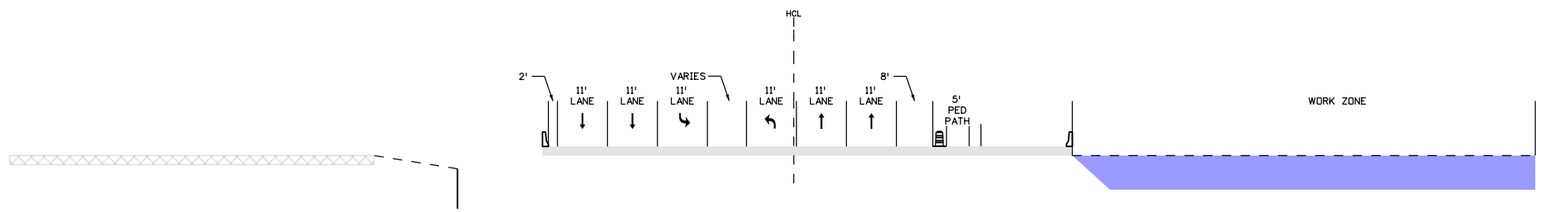

SECTION D-D

STEELE ST STA. 510+00
NTS

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.

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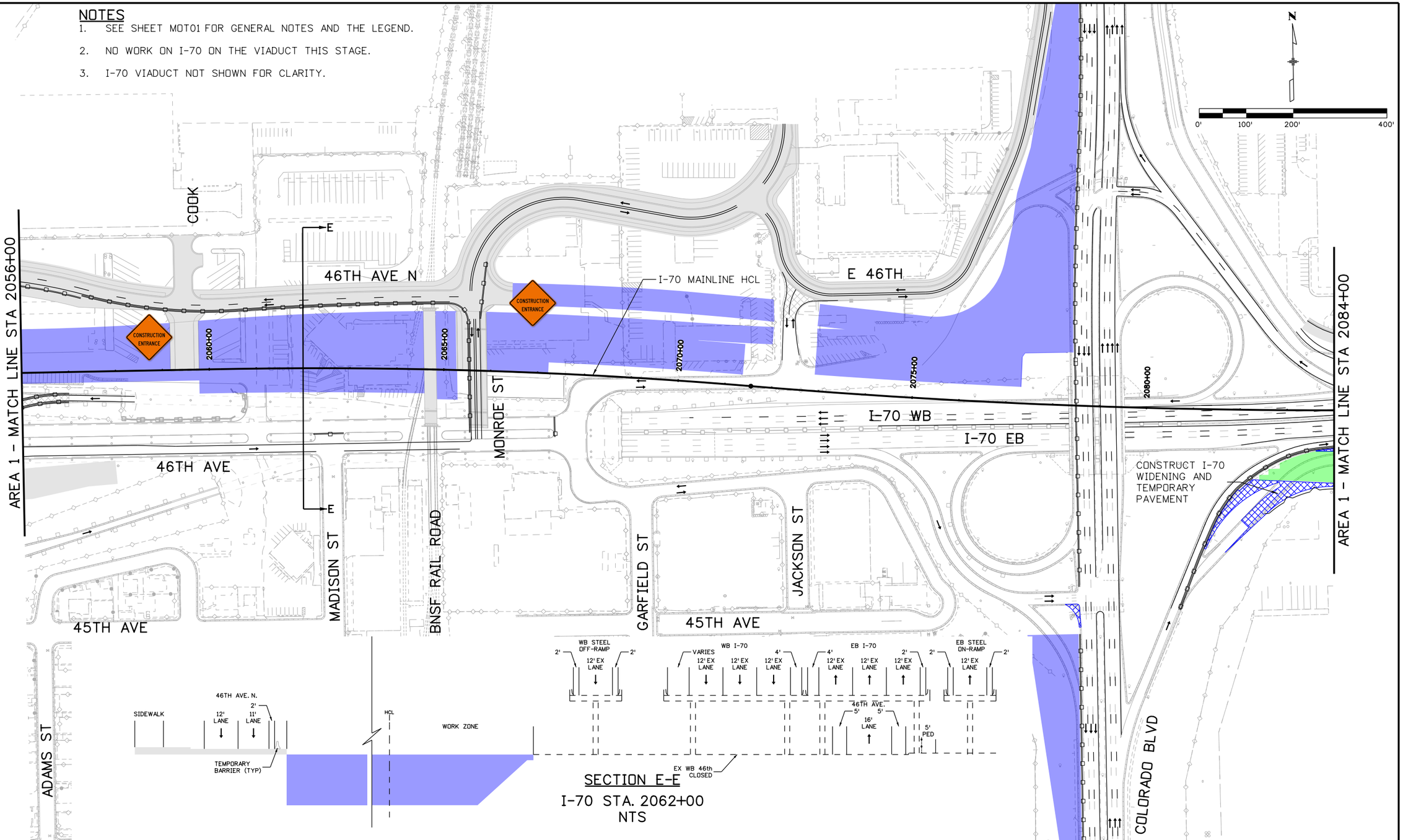
Print Date: 5/11/2017		Sheet Revisions			
File Name: See sheet edge for information		Date:	Comments	Init.	
Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

Colorado Department of Transportation
2000 South Holly Street
Denver, CO 80222
Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 1 PHASE 1 STAGE 3 TYPICAL SECTIONS			Project No./Code
No Revisions:				FBR 0704-234
Revised:	Designer: R. MITRY	Structure Numbers		19631
	Detailer: C. SNYDER			
Void:	Sheet Subset: MOT	Subset Sheets:14 of 83		Sheet Number

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. NO WORK ON I-70 ON THE VIADUCT THIS STAGE.
3. I-70 VIADUCT NOT SHOWN FOR CLARITY.



SECTION E-E

I-70 STA. 2062+00
NTS

Print Date: 5/11/2017		Sheet Revisions			
File Name: See sheet edge for information		Date:	Comments	Init.	
Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

Colorado Department of Transportation
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Region 1 KJS

PROPOSAL
No Revisions:
Revised:
Void:

CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 1 STAGE 3

Designer: R. MITRY
Detailer: C. SNYDER
Sheet Subset: MOT
Structure Numbers
Subset Sheets: 15 of 83

Project No./Code
FBR 0704-234
19631
Sheet Number

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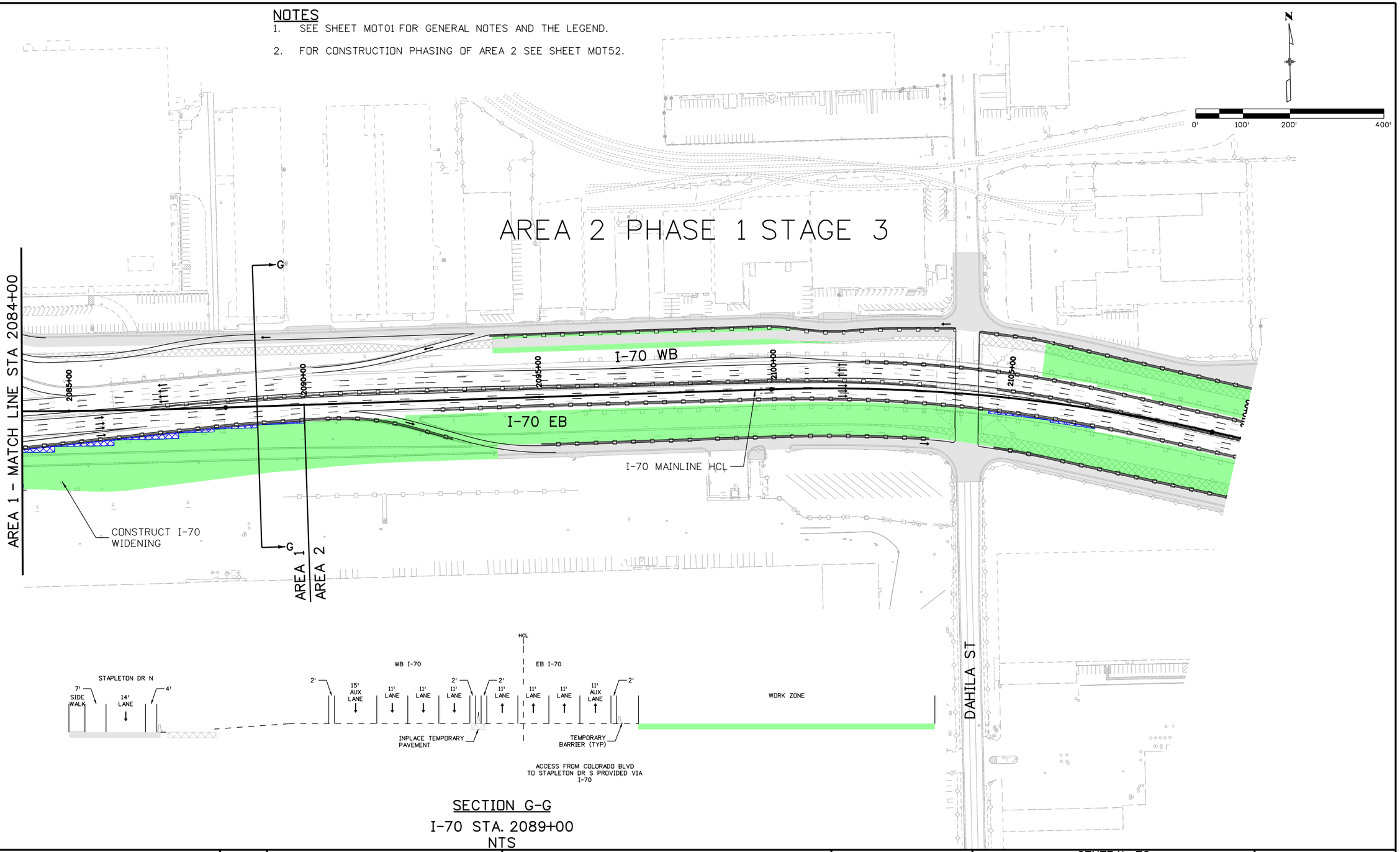
NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. FOR CONSTRUCTION PHASING OF AREA 2 SEE SHEET MOT52.



SECTION G-G

I-70 STA. 2089+00

NTS

Print Date: 5/11/2017		Sheet Revisions			
File Name: See sheet edge for information		Date:	Comments	Init.	
Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

Colorado Department of Transportation
2000 South Holly Street
Denver, CO 80222
Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL
No Revisions:
Revised:
Void:

CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 1 STAGE 3

Designer: R. MITRY
Detailer: C. SNYDER
Structure Numbers
Sheet Subset: MOT
Subset Sheets: 16 of 83

Project No./Code
FBR 0704-234
19631
Sheet Number

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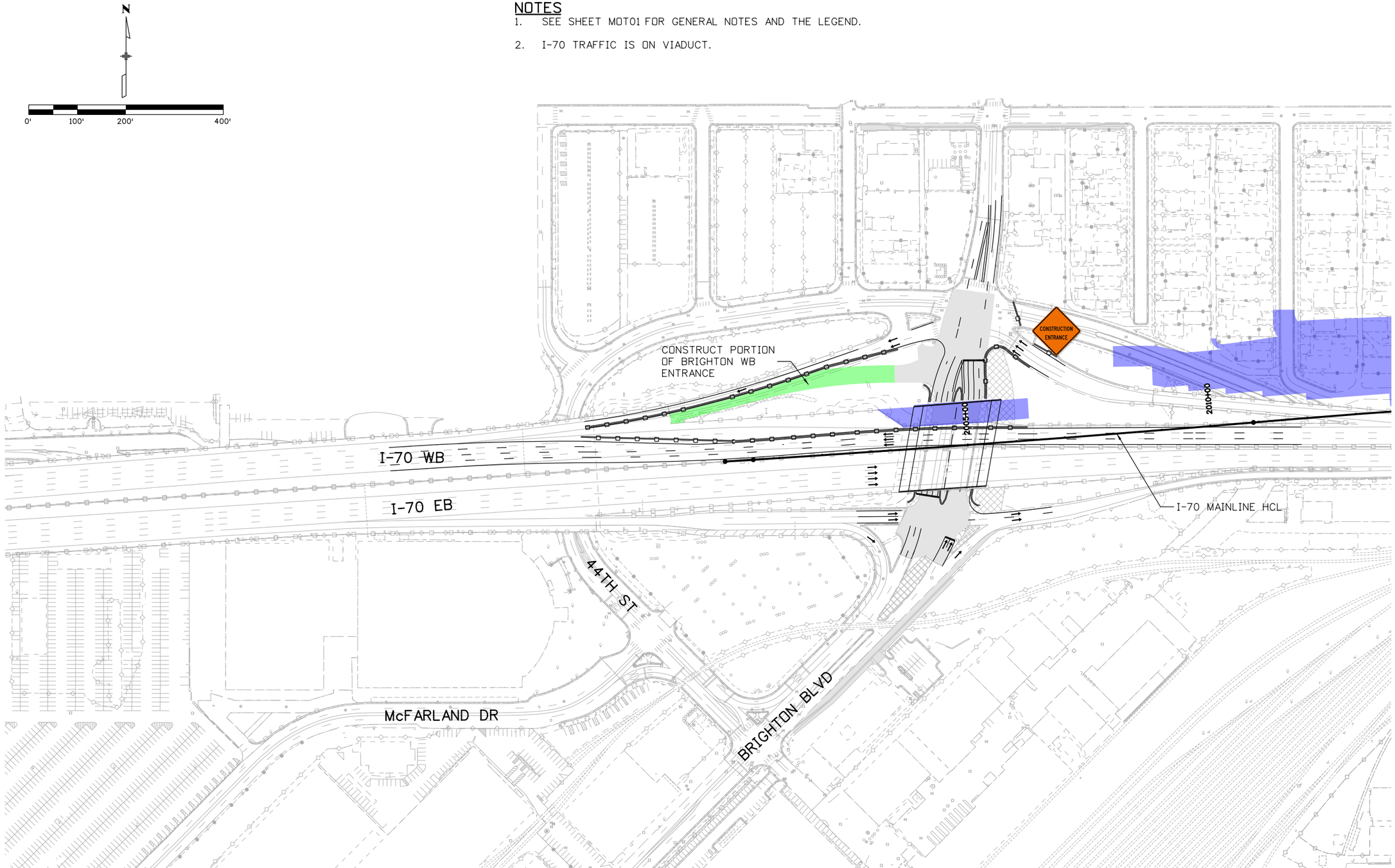
NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. I-70 TRAFFIC IS ON VIADUCT.



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Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

Colorado Department of Transportation
2000 South Holly Street
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Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL
No Revisions:
Revised:
Void:

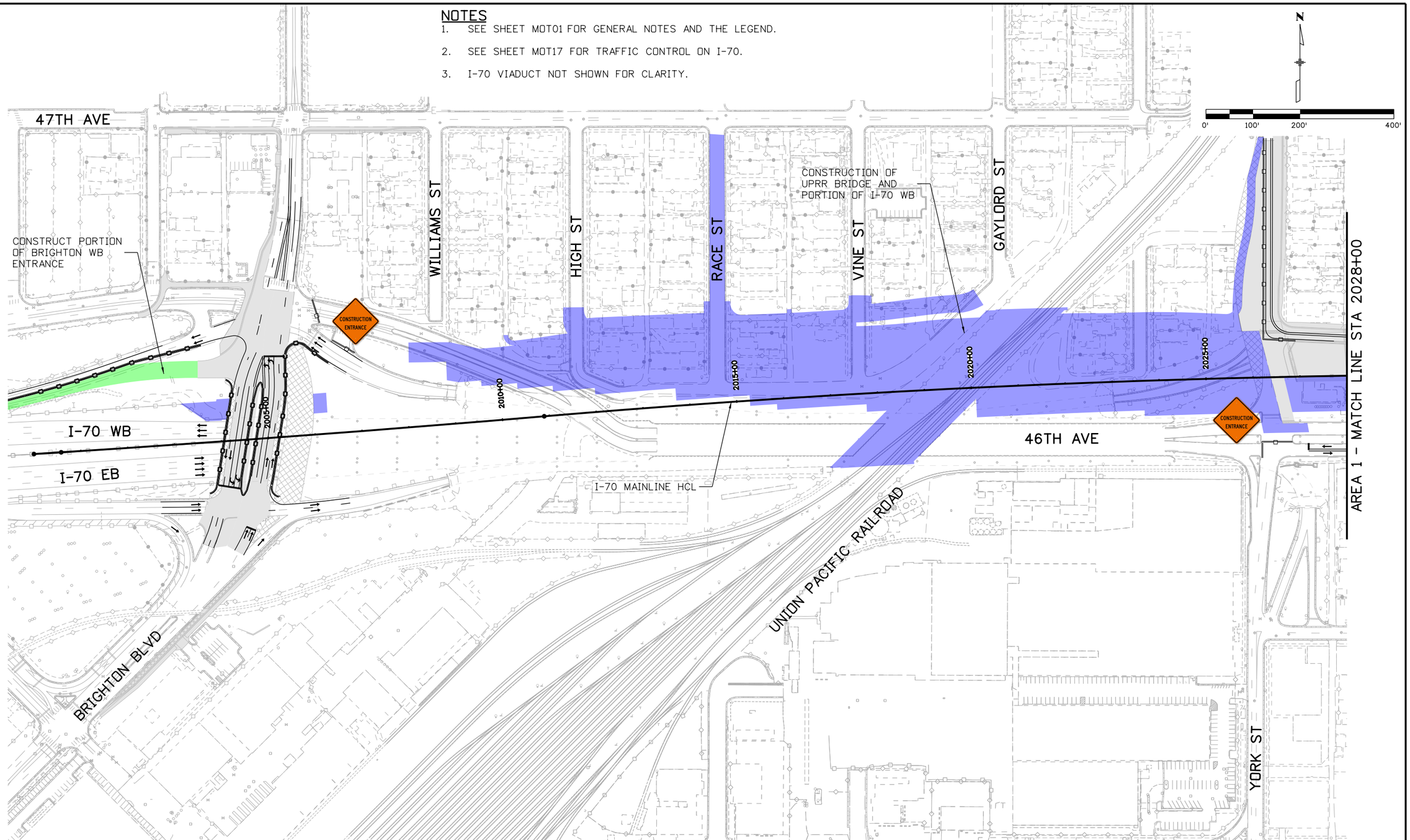
CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 1 STAGE 4

Designer:	R. MITRY	Structure Numbers	
Detailer:	C. SNYDER		
Sheet Subset:	MOT	Subset Sheets:17	of 83

Project No./Code
FBR 0704-234
19631
Sheet Number

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. SEE SHEET MOT17 FOR TRAFFIC CONTROL ON I-70.
3. I-70 VIADUCT NOT SHOWN FOR CLARITY.



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File Name: See sheet edge for information		Date:	Comments	Init.	
Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

Colorado Department of Transportation
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Region 1
KJS

PROPOSAL
No Revisions:
Revised:
Void:

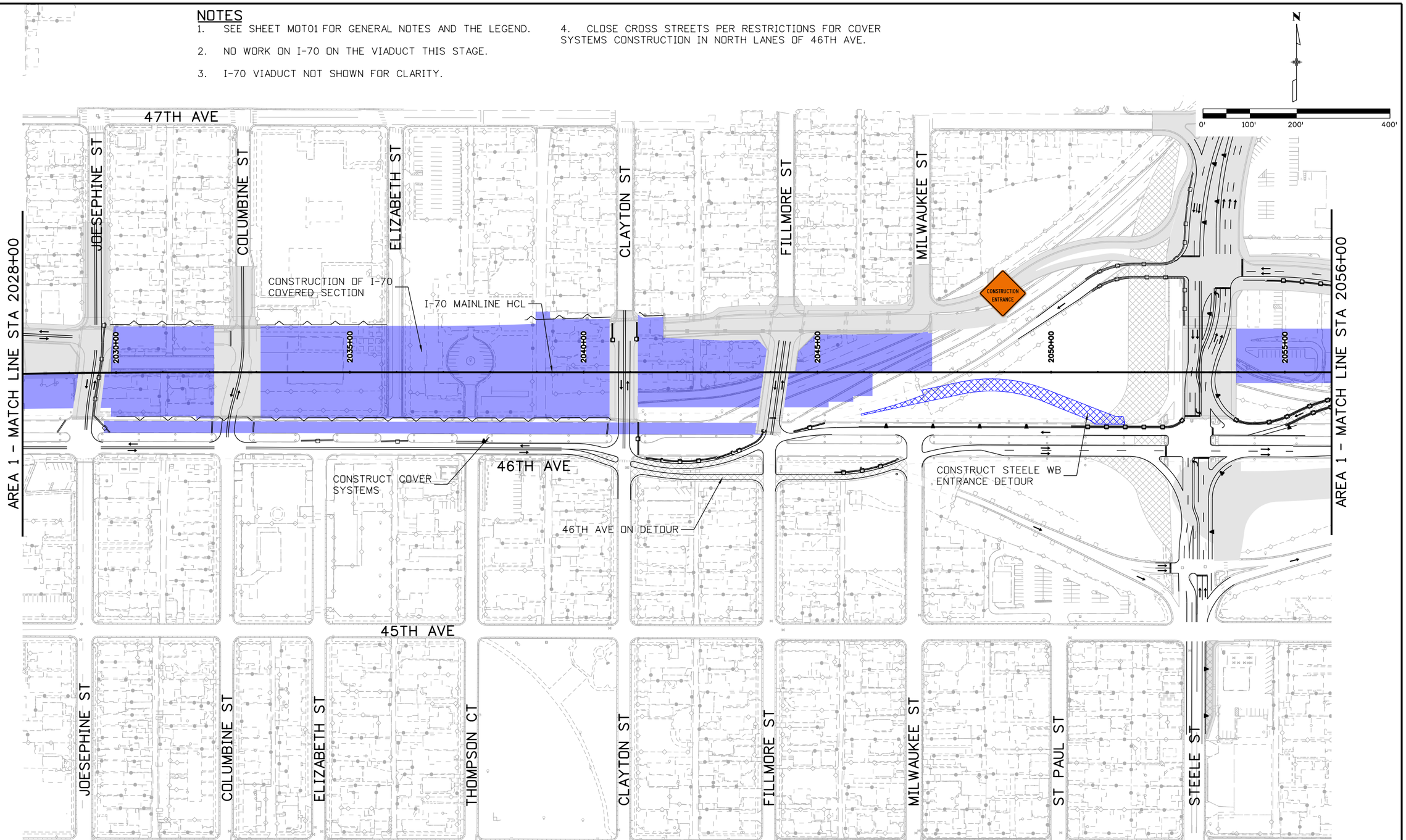
CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 1 STAGE 4

Designer:	R. MITRY	Structure Numbers	
Detailer:	C. SNYDER		
Sheet Subset:	MOT	Subset Sheets: 18 of 83	

Project No./Code
FBR 0704-234
19631
Sheet Number

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. NO WORK ON I-70 ON THE VIADUCT THIS STAGE.
3. I-70 VIADUCT NOT SHOWN FOR CLARITY.
4. CLOSE CROSS STREETS PER RESTRICTIONS FOR COVER SYSTEMS CONSTRUCTION IN NORTH LANES OF 46TH AVE.



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Print Date: 5/11/2017		Sheet Revisions		
File Name: See sheet edge for information		Date:	Comments	Init.
Front Range Mobility Group	Horiz. Scale: As Noted			
	Vert. Scale: As Noted			
	Unit Information			
	Unit Leader			

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Region 1 KJS

PROPOSAL
No Revisions:
Revised:
Void:

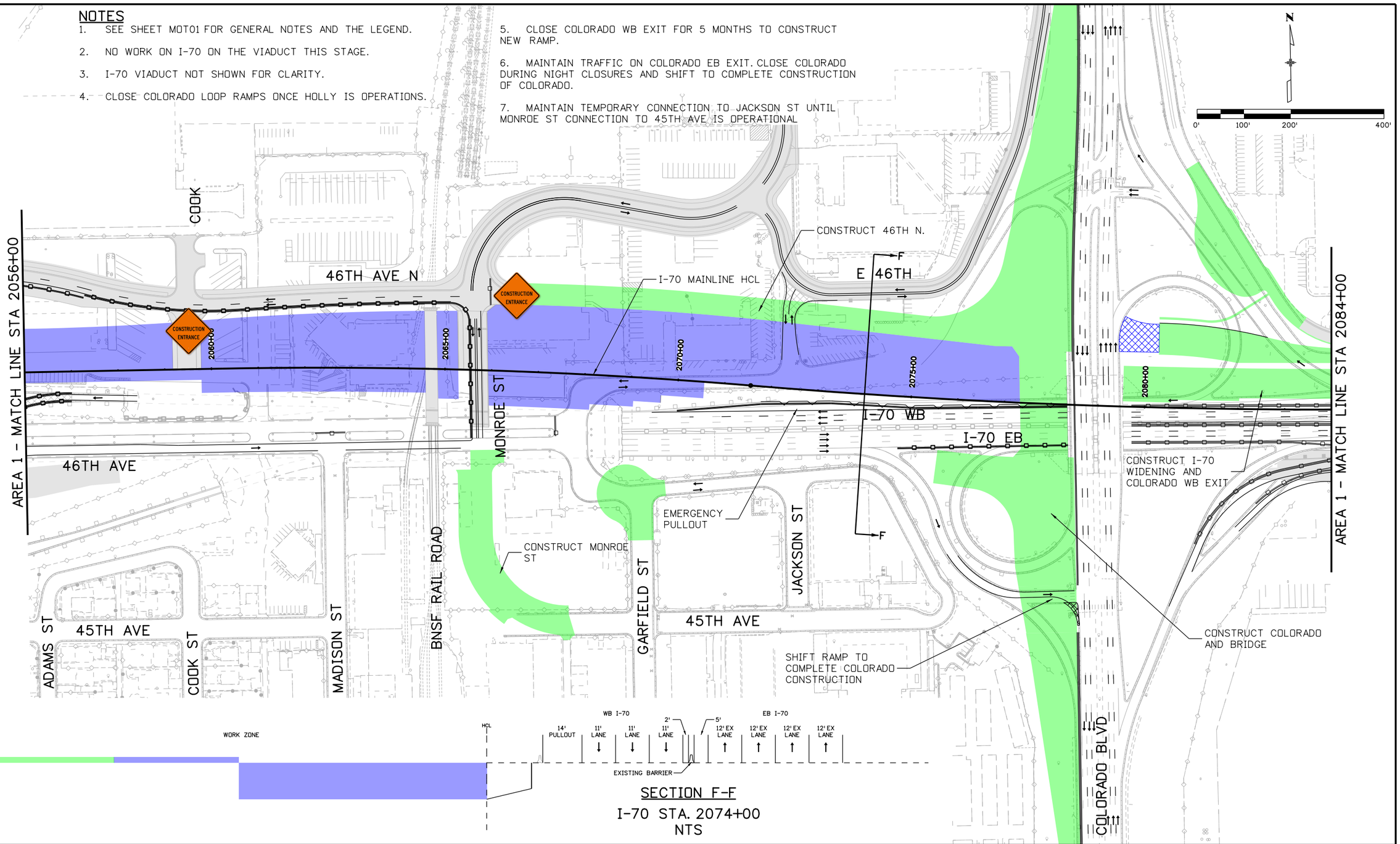
CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 1 STAGE 4

Designer:	R. MITRY	Structure Numbers	
Detailer:	C. SNYDER		
Sheet Subset:	MOT	Subset Sheets: 19 of 83	

Project No./Code
FBR 0704-234
19631
Sheet Number

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. NO WORK ON I-70 ON THE VIADUCT THIS STAGE.
3. I-70 VIADUCT NOT SHOWN FOR CLARITY.
4. CLOSE COLORADO LOOP RAMPS ONCE HOLLY IS OPERATIONS.
5. CLOSE COLORADO WB EXIT FOR 5 MONTHS TO CONSTRUCT NEW RAMP.
6. MAINTAIN TRAFFIC ON COLORADO EB EXIT. CLOSE COLORADO DURING NIGHT CLOSURES AND SHIFT TO COMPLETE CONSTRUCTION OF COLORADO.
7. MAINTAIN TEMPORARY CONNECTION TO JACKSON ST UNTIL MONROE ST CONNECTION TO 45TH AVE IS OPERATIONAL



SECTION F-F

I-70 STA. 2074+00
NTS

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Print Date: 5/11/2017		Sheet Revisions			
File Name: See sheet edge for information		Date:	Comments	Init.	
Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

Colorado Department of Transportation
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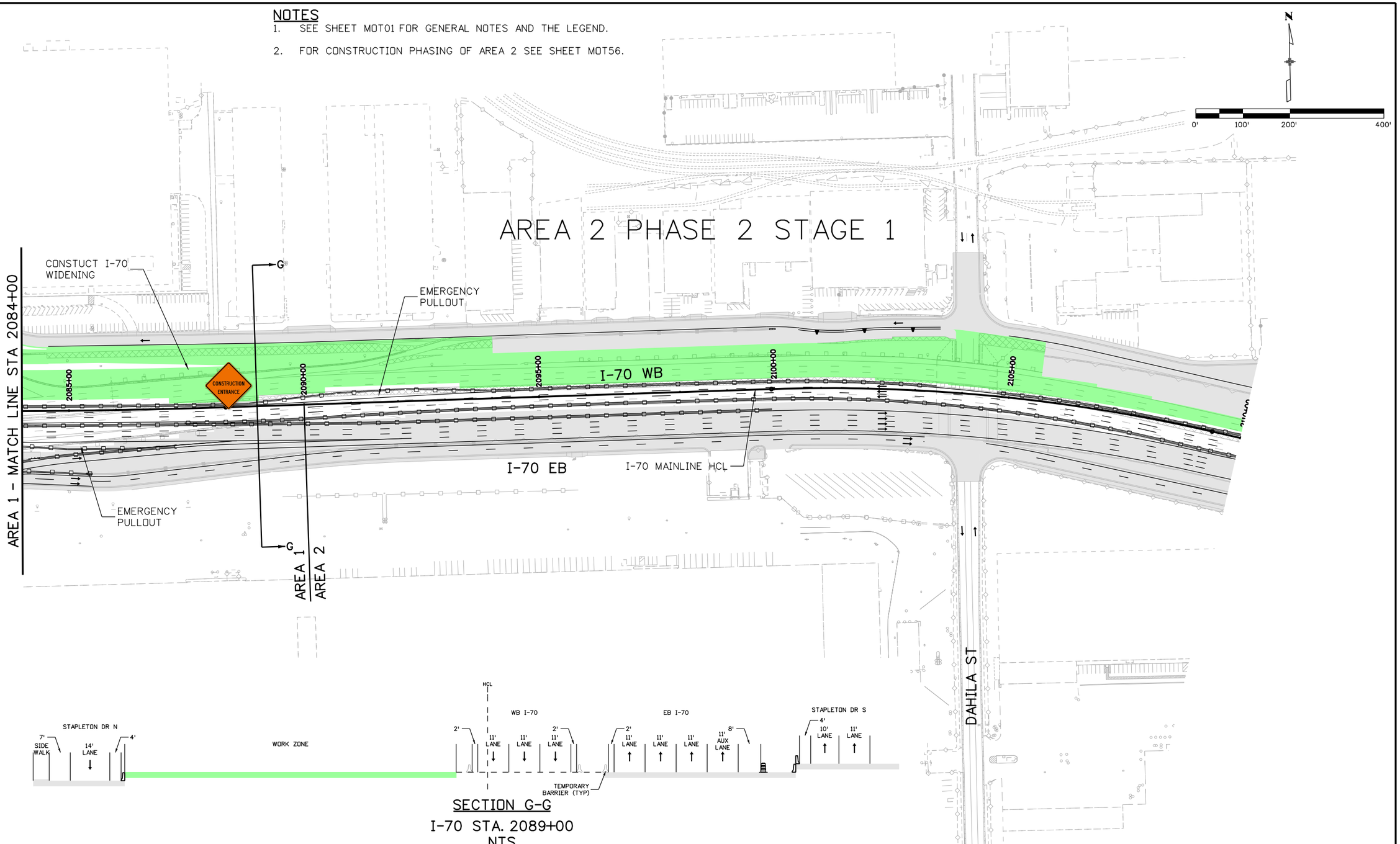
Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 1 PHASE 1 STAGE 4		Project No./Code
No Revisions:	Designer: R. MITRY	Structure Numbers	FBR 0704-234
Revised:	Detailer: C. SNYDER		19631
Void:	Sheet Subset: MOT	Subset Sheets: 20 of 83	Sheet Number

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. FOR CONSTRUCTION PHASING OF AREA 2 SEE SHEET MOT56.



SECTION G-G

I-70 STA. 2089+00

NTS

Print Date: 5/11/2017		Sheet Revisions			
File Name: See sheet edge for information		Date:	Comments	Init.	
Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

Colorado Department of Transportation
2000 South Holly Street
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Region 1 KJS

PROPOSAL
No Revisions:
Revised:
Void:

CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 1 STAGE 4

Designer: R. MITRY
Detailer: C. SNYDER
Sheet Subset: MOT
Structure Numbers
Subset Sheets: 21 of 83

Project No./Code
FBR 0704-234
19631
Sheet Number

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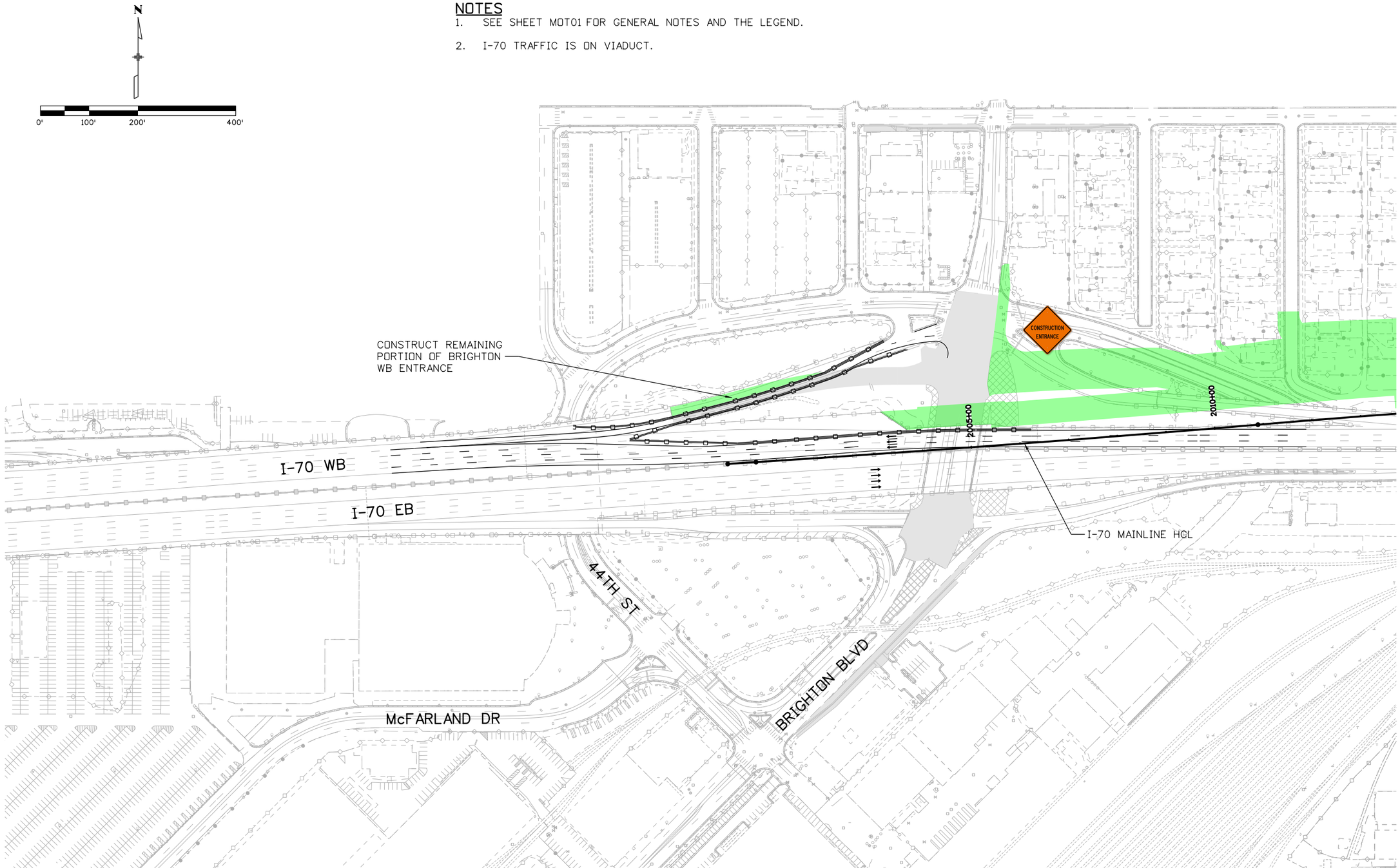
NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. I-70 TRAFFIC IS ON VIADUCT.



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Print Date: 5/11/2017		Sheet Revisions		
File Name: See sheet edge for information		Date:	Comments	Init.
Front Range Mobility Group	Horiz. Scale: As Noted			
	Vert. Scale: As Noted			
	Unit Information			
	Unit Leader			

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PROPOSAL
No Revisions:
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Void:

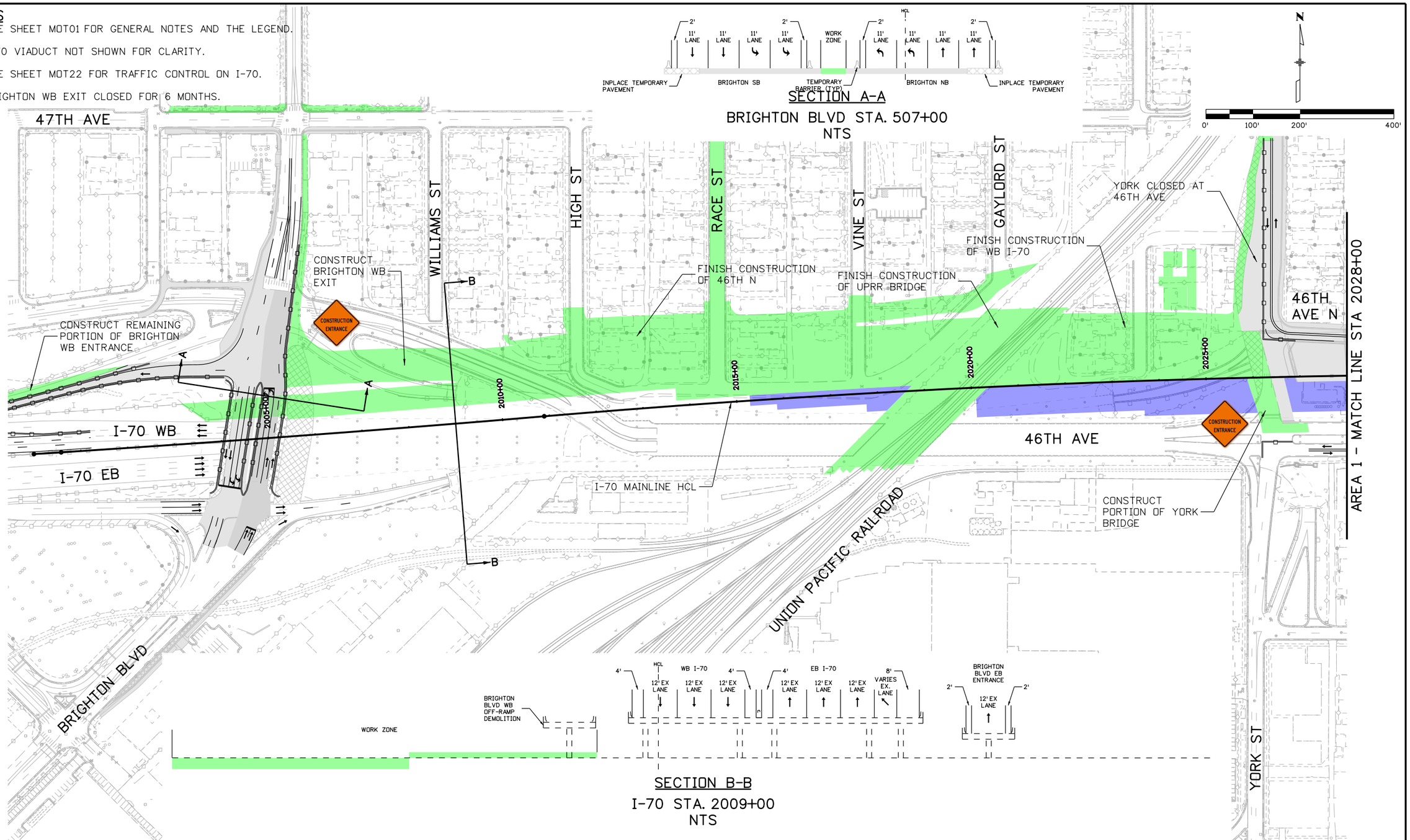
CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 1 STAGE 5

Designer: R. MITRY
Detailer: C. SNYDER
Sheet Subset: MOT
Structure Numbers
Subset Sheets: 22 of 83

Project No./Code
FBR 0704-234
19631
Sheet Number

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. I-70 VIADUCT NOT SHOWN FOR CLARITY.
3. SEE SHEET MOT22 FOR TRAFFIC CONTROL ON I-70.
4. BRIGHTON WB EXIT CLOSED FOR 6 MONTHS.



SECTION A-A
BRIGHTON BLVD STA. 507+00
NTS

SECTION B-B
I-70 STA. 2009+00
NTS

Print Date: 5/11/2017		Sheet Revisions			
File Name: See sheet edge for information		Date:	Comments	Init.	
Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

Colorado Department of Transportation
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Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL
No Revisions:
Revised:
Void:

CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 1 STAGE 5

Designer:	R. MITRY	Structure Numbers	
Detailer:	C. SNYDER		
Sheet Subset:	MOT	Subset Sheets: 23 of 83	

Project No./Code
FBR 0704-234
19631
Sheet Number

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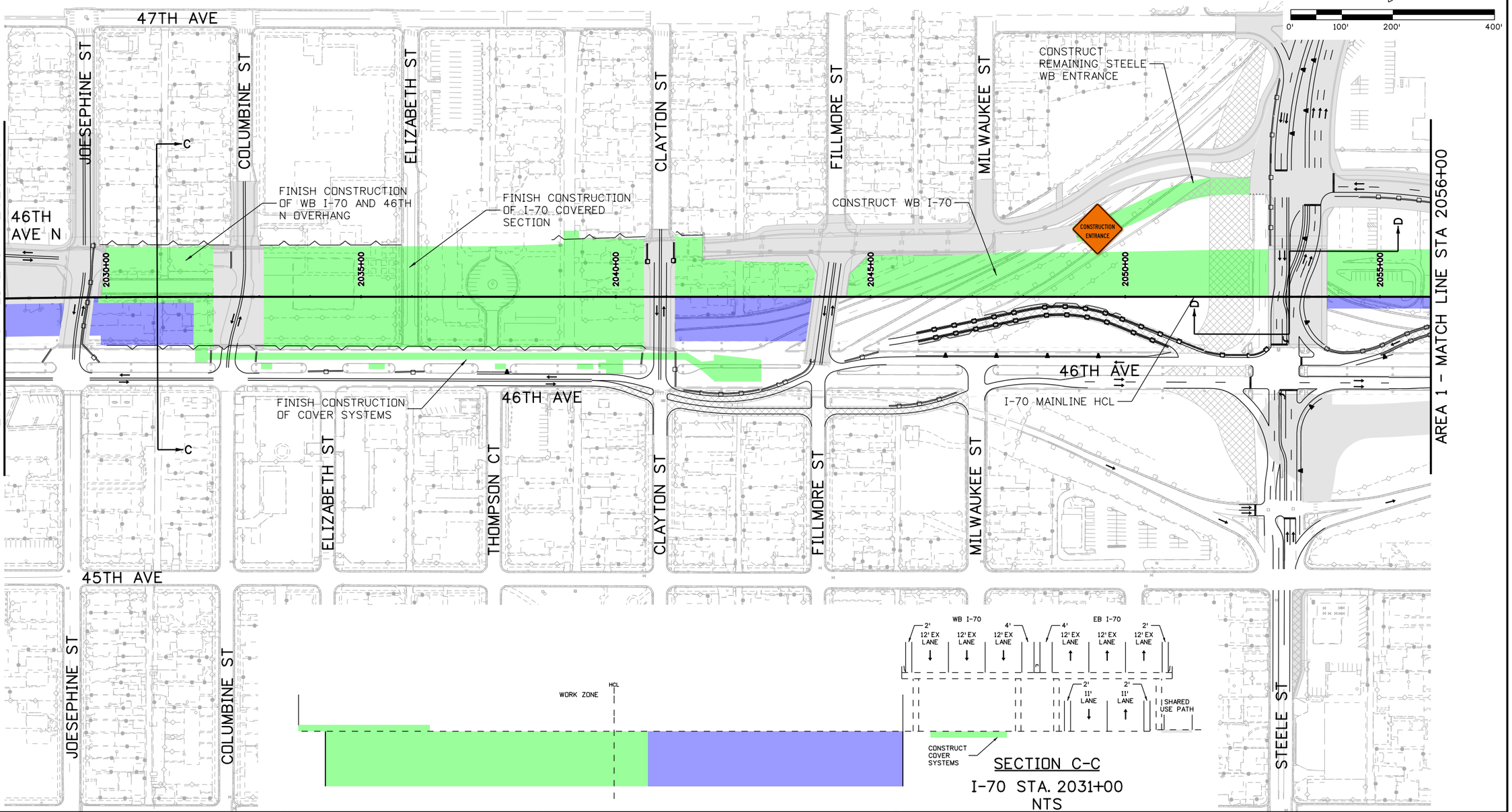
NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. FOR TYPICAL SECTION D-D SEE SHEET MOT25.
3. NO WORK ON I-70 ON THE VIADUCT THIS STAGE.
4. I-70 VIADUCT NOT SHOWN FOR CLARITY.



SECTION C-C
I-70 STA. 2031+00
NTS

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Print Date: 5/11/2017			
File Name: See sheet edge for information			
Front Range Mobility Group	Horiz. Scale: As Noted		
	Vert. Scale: As Noted		
	Unit Information		
	Unit Leader		

Sheet Revisions		
Date:	Comments	Init.

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2000 South Holly Street
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Region 1 KJS

PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 1 PHASE 1 STAGE 5		Project No./Code
No Revisions:			FBR 0704-234
Revised:	Designer: R. MITRY	Structure Numbers	19631
Void:	Detailer: C. SNYDER		Sheet Number
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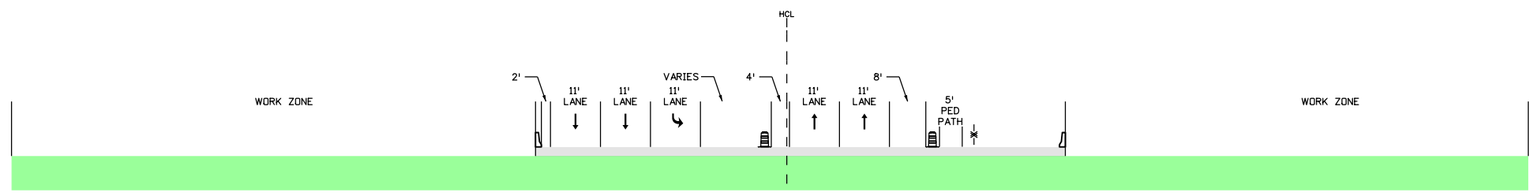
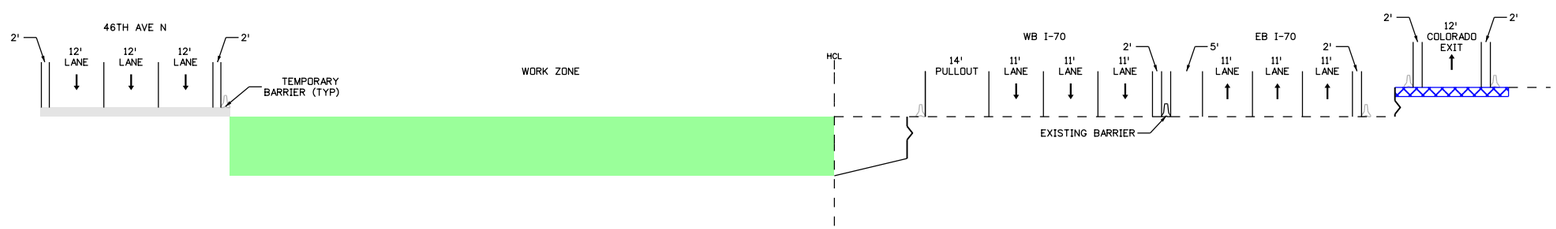


SECTION D-D

STEELE ST STA. 510+00
NTS



SECTION F-F

I-70 STA. 2074+00
NTS

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.

Print Date: 5/11/2017		Sheet Revisions			
File Name: See sheet edge for information		Date:	Comments	Init.	
Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

Colorado Department of Transportation
2000 South Holly Street
Denver, CO 80222
Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 1 PHASE 1 STAGE 5 TYPICAL SECTIONS			Project No./Code
No Revisions:	Designer: R. MITRY	Structure Numbers		FBR 0704-234
Revised:	Detailer: C. SNYDER			19631
Void:	Sheet Subset: MOT	Subset Sheets: 25 of 83		Sheet Number

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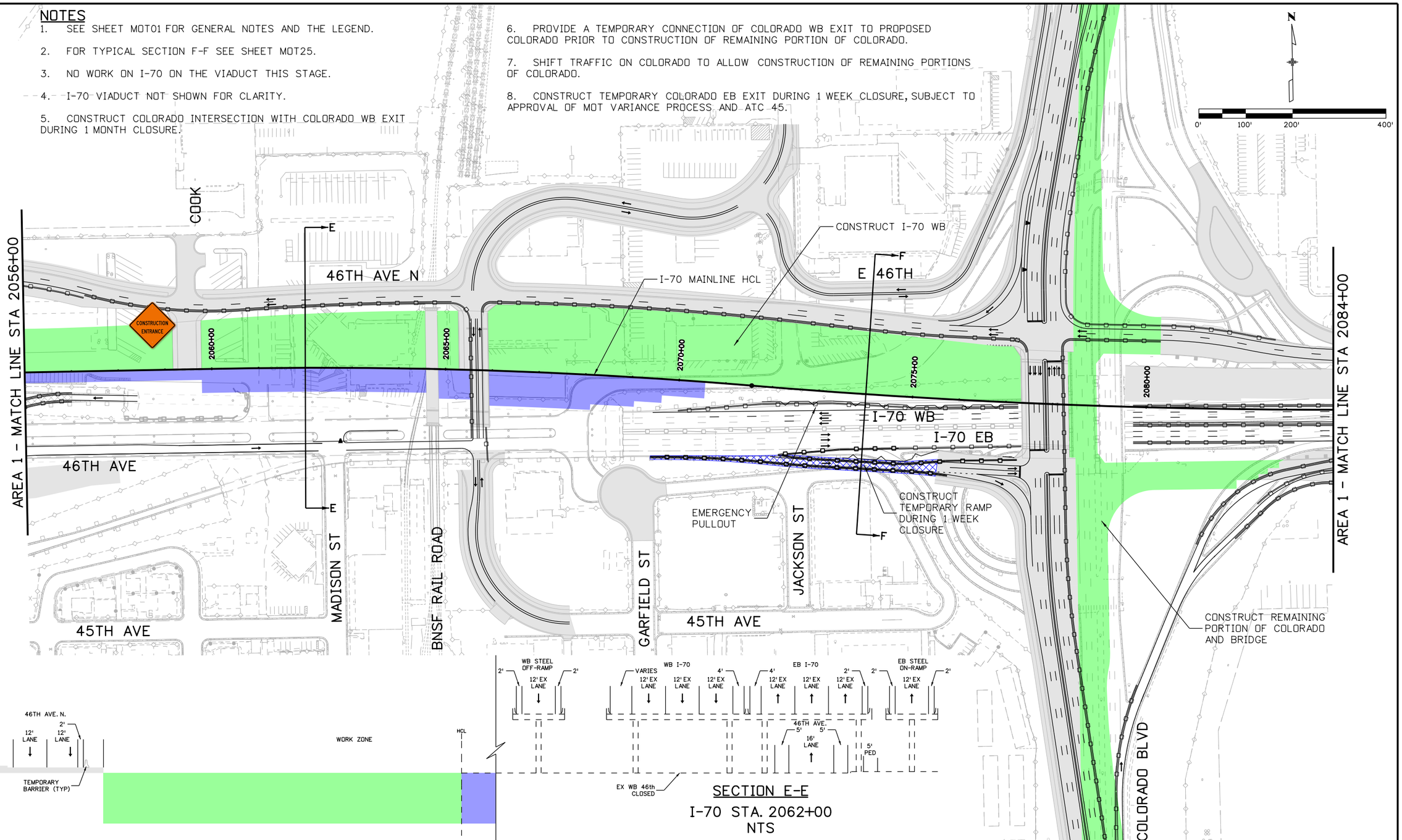
NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. FOR TYPICAL SECTION F-F SEE SHEET MOT25.
3. NO WORK ON I-70 ON THE VIADUCT THIS STAGE.
4. I-70 VIADUCT NOT SHOWN FOR CLARITY.
5. CONSTRUCT COLORADO INTERSECTION WITH COLORADO WB EXIT DURING 1 MONTH CLOSURE.
6. PROVIDE A TEMPORARY CONNECTION OF COLORADO WB EXIT TO PROPOSED COLORADO PRIOR TO CONSTRUCTION OF REMAINING PORTION OF COLORADO.
7. SHIFT TRAFFIC ON COLORADO TO ALLOW CONSTRUCTION OF REMAINING PORTIONS OF COLORADO.
8. CONSTRUCT TEMPORARY COLORADO EB EXIT DURING 1 WEEK CLOSURE, SUBJECT TO APPROVAL OF MOT VARIANCE PROCESS AND ATC 45.



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Front Range Mobility Group	Horiz. Scale: As Noted		
	Vert. Scale: As Noted		
	Unit Information		
	Unit Leader		

Colorado Department of Transportation
2000 South Holly Street
Denver, CO 80222
Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 1 PHASE 1 STAGE 5		Project No./Code
No Revisions:	Designer: R. MITRY	Structure Numbers	FBR 0704-234
Revised:	Detailer: C. SNYDER		19631
Void:	Sheet Subset: MOT	Subset Sheets: 26 of 83	Sheet Number

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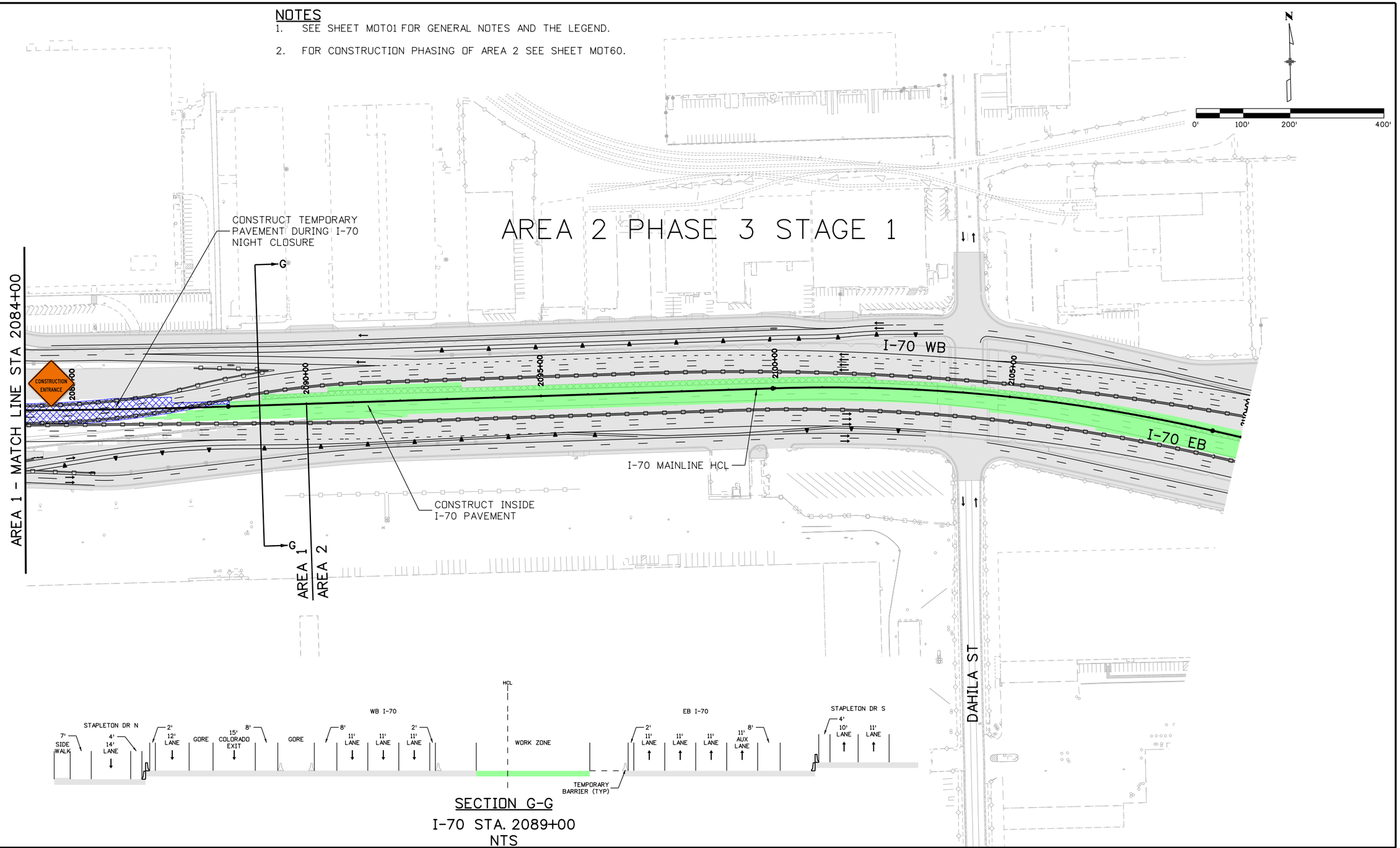
NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. FOR CONSTRUCTION PHASING OF AREA 2 SEE SHEET MOT60.



SECTION G-G

I-70 STA. 2089+00

NTS

Print Date: 5/11/2017		Sheet Revisions			
File Name: See sheet edge for information		Date:	Comments	Init.	
Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

Colorado Department of Transportation
2000 South Holly Street
Denver, CO 80222
Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL
No Revisions:
Revised:
Void:

CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 1 STAGE 5

Designer: R. MITRY
Detailer: C. SNYDER
Sheet Subset: MOT
Structure Numbers
Subset Sheets: 27 of 83

Project No./Code
FBR 0704-234
19631
Sheet Number

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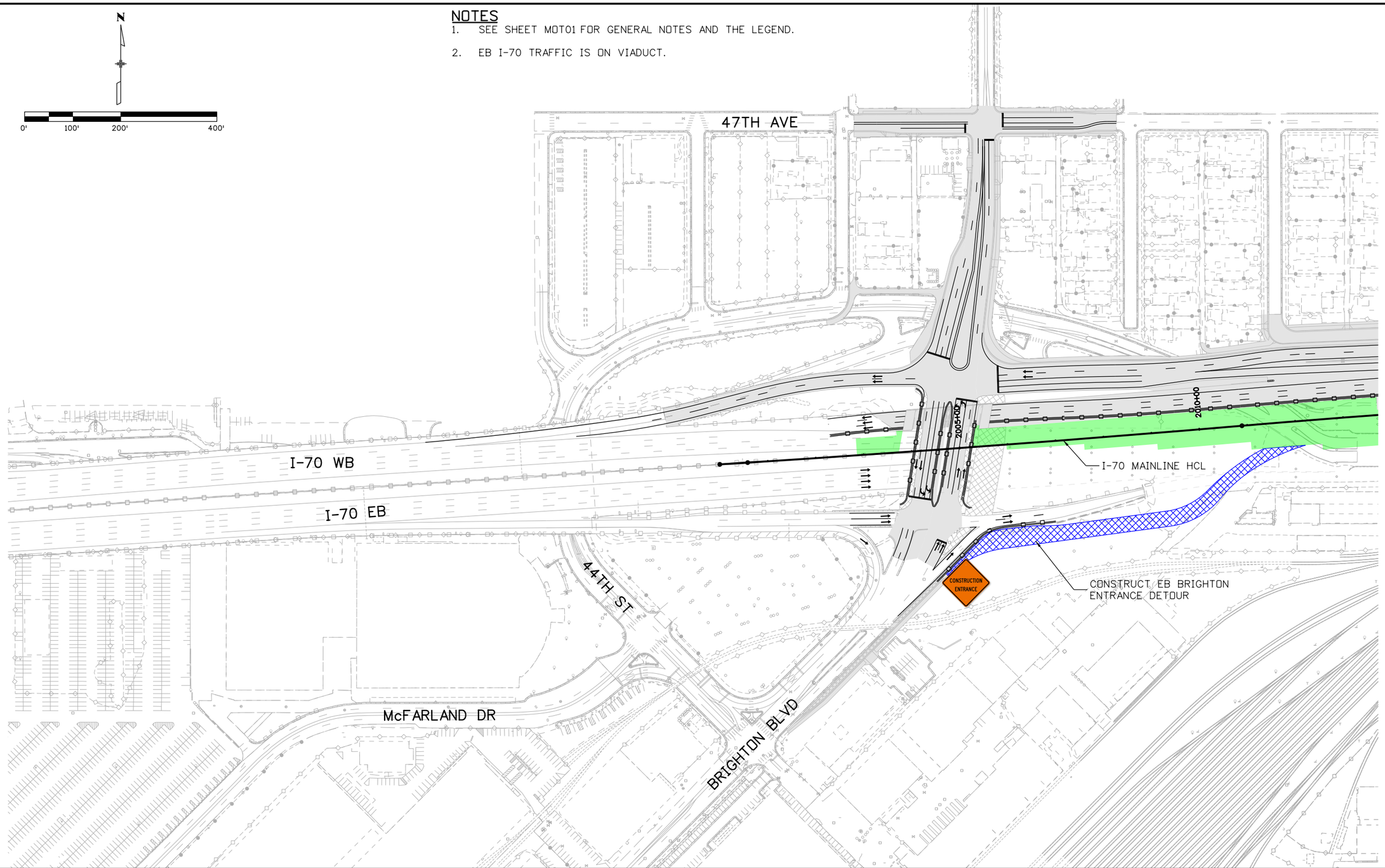
NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. EB I-70 TRAFFIC IS ON VIADUCT.



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Print Date: 5/11/2017			
File Name: See sheet edge for information			
Front Range Mobility Group	Horiz. Scale: As Noted		
	Vert. Scale: As Noted		
	Unit Information		
	Unit Leader		

Sheet Revisions		
Date:	Comments	Init.

Colorado Department of Transportation
2000 South Holly Street
Denver, CO 80222
Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL
No Revisions:
Revised:
Void:

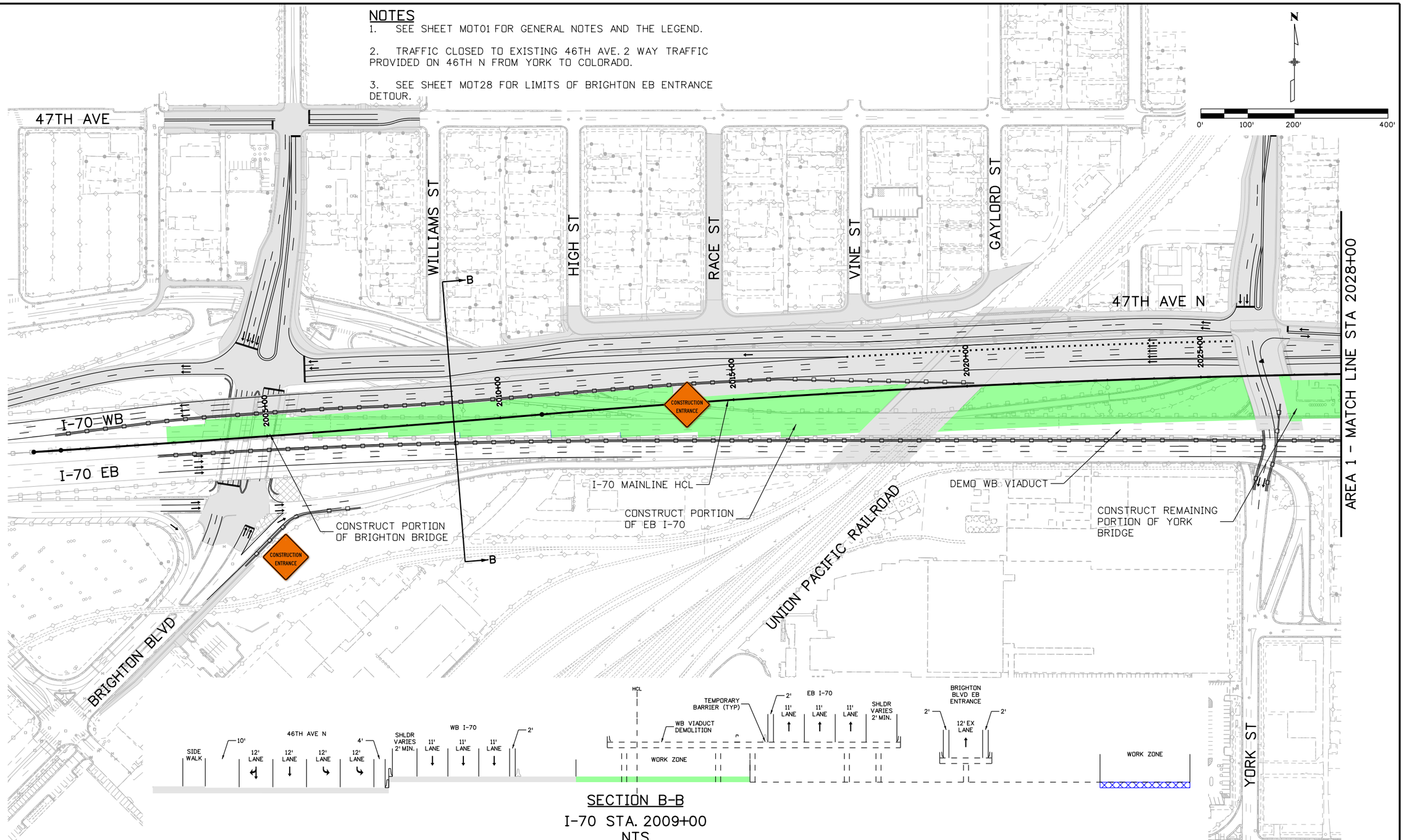
CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 2 STAGE 1

Designer:	R. MITRY	Structure Numbers	
Detailer:	C. SNYDER		
Sheet Subset:	MOT	Subset Sheets: 28	of 83

Project No./Code
FBR 0704-234
19631
Sheet Number

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. TRAFFIC CLOSED TO EXISTING 46TH AVE. 2 WAY TRAFFIC PROVIDED ON 46TH N FROM YORK TO COLORADO.
3. SEE SHEET MOT28 FOR LIMITS OF BRIGHTON EB ENTRANCE DETOUR.



SECTION B-B

I-70 STA. 2009+00
NTS

Print Date: 5/11/2017		Sheet Revisions			Colorado Department of Transportation	PROPOSAL
File Name: See sheet edge for information		Date:	Comments	Init.	2000 South Holly Street Denver, CO 80222 Phone: 303-757-9934 FAX: 303-757-9907	No Revisions:
Front Range Mobility Group	Horiz. Scale: As Noted					Revised:
	Vert. Scale: As Noted					
	Unit Information				Region 1 KJS	Void:
	Unit Leader					

CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 2 STAGE 1

Designer:	R. MITRY	Structure Numbers	
Detailer:	C. SNYDER		
Sheet Subset:	MOT	Subset Sheets: 29 of 83	

Project No./Code
FBR 0704-234
19631
Sheet Number

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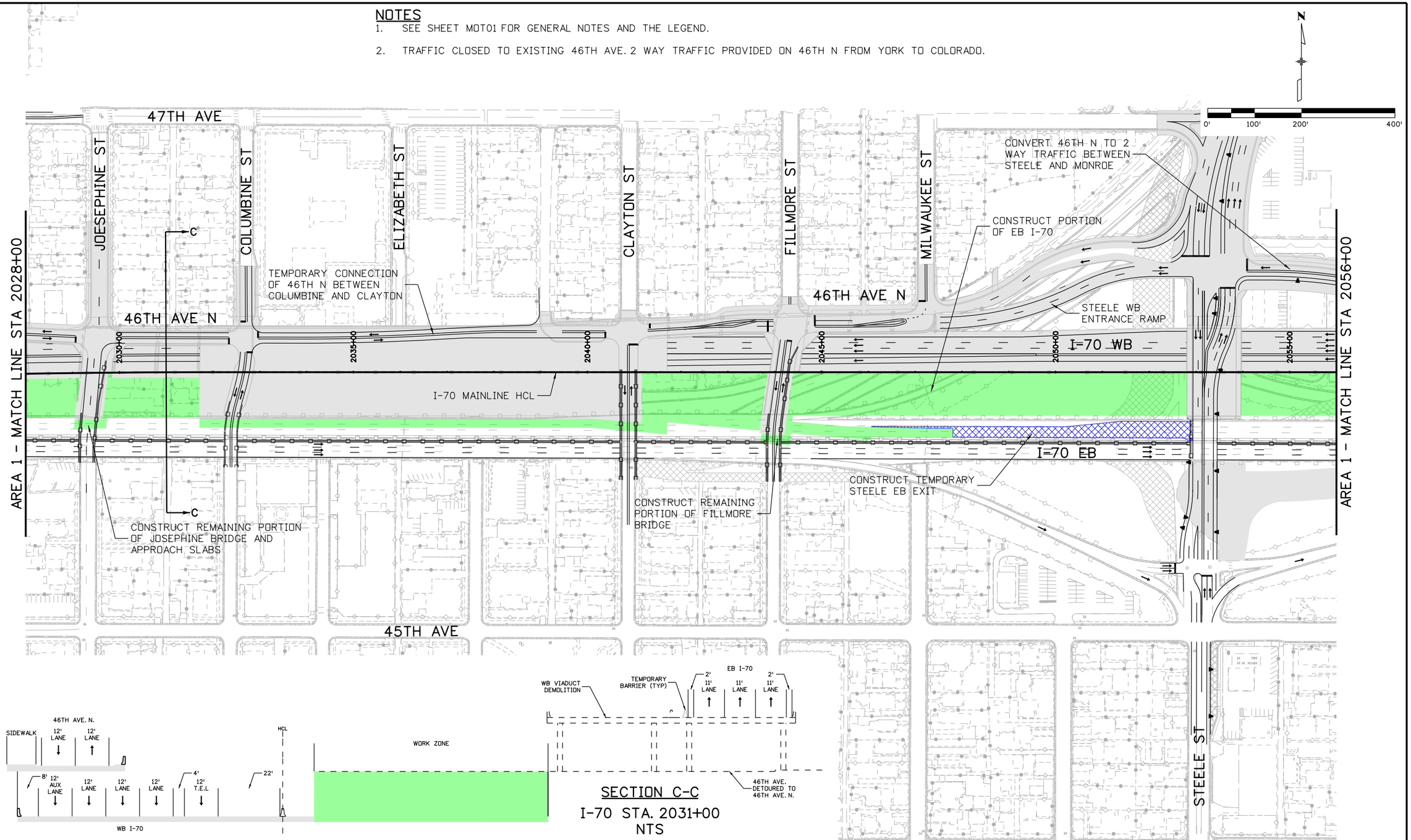
NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. TRAFFIC CLOSED TO EXISTING 46TH AVE. 2 WAY TRAFFIC PROVIDED ON 46TH N FROM YORK TO COLORADO.



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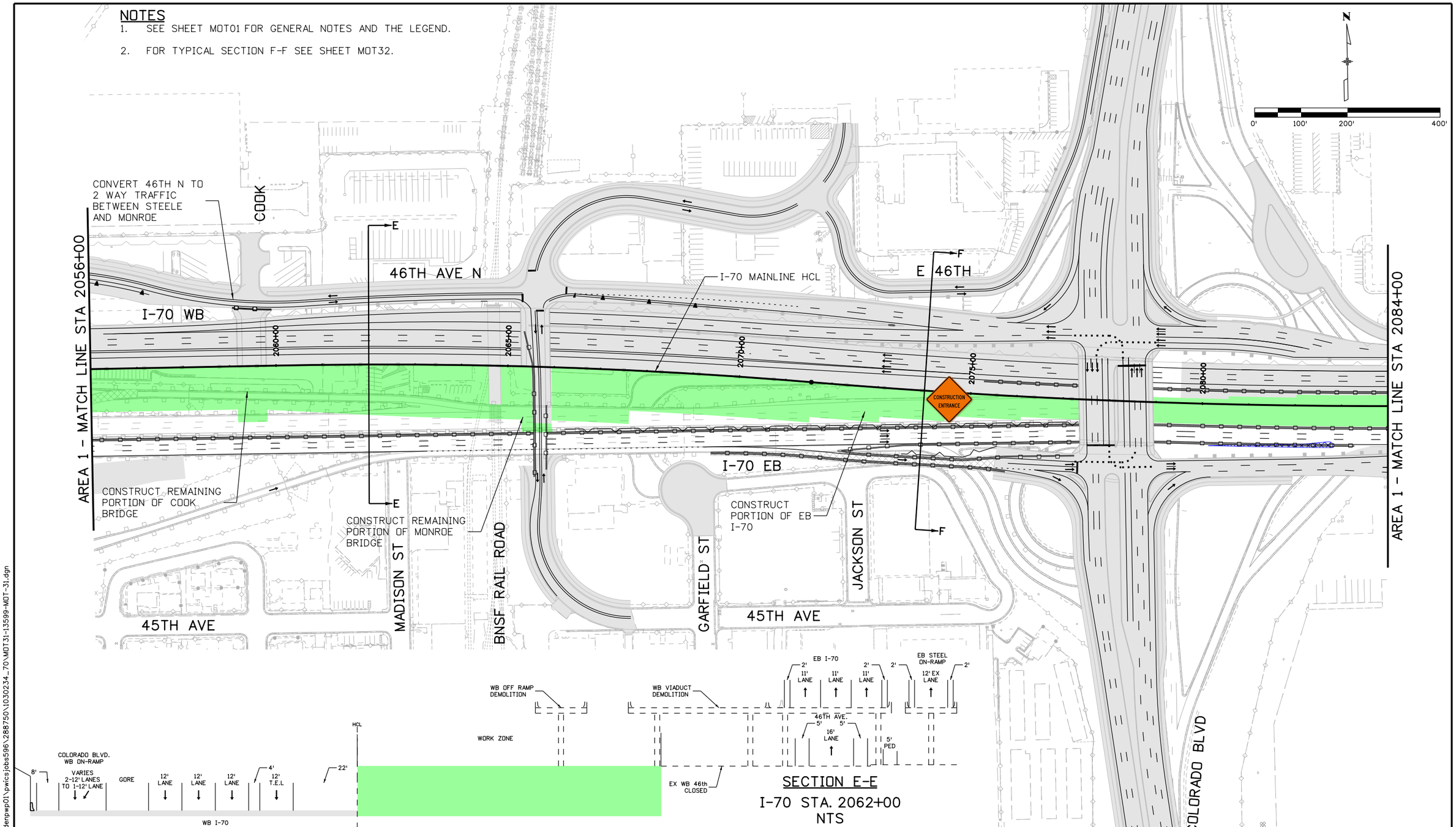
Print Date: 5/11/2017		Sheet Revisions			Colorado Department of Transportation	PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 1 PHASE 2 STAGE 1	Project No./Code
File Name: See sheet edge for information		Date:	Comments	Init.	2000 South Holly Street Denver, CO 80222 Phone: 303-757-9934 FAX: 303-757-9907	No Revisions:		FBR 0704-234
Front Range Mobility Group	Horiz. Scale: As Noted					Revised:	Designer: R. MITRY	Structure Numbers	19631
	Vert. Scale: As Noted						Detailer: C. SNYDER		
	Unit Information					Void:	Sheet Subset: MOT	Subset Sheets: 30 of 83	Sheet Number
	Unit Leader				Region 1 KJS				

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. FOR TYPICAL SECTION F-F SEE SHEET MOT32.



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File Name: See sheet edge for information		Date:	Comments	Init.	2000 South Holly Street Denver, CO 80222 Phone: 303-757-9934 FAX: 303-757-9907	No Revisions:
Front Range Mobility Group	Horiz. Scale: As Noted					Revised:
	Vert. Scale: As Noted					Void:
	Unit Information				Region 1 KJS	
	Unit Leader					

CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 2 STAGE 1

Designer:	R. MITRY	Structure Numbers	
Detailer:	C. SNYDER		
Sheet Subset:	MOT	Subset Sheets: 31	of 83

Project No./Code
FBR 0704-234
19631
Sheet Number

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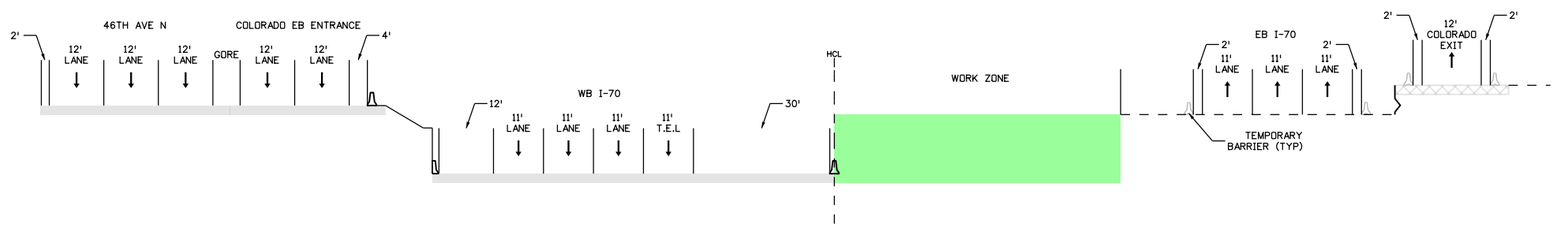

SECTION F-F

I-70 STA. 2074+00
NTS

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.

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Print Date: 5/11/2017		Sheet Revisions	
File Name: See sheet edge for information		Date: / Comments / Init.	
Front Range Mobility Group	Horiz. Scale: As Noted		
	Vert. Scale: As Noted		
	Unit Information		
	Unit Leader		

Colorado Department of Transportation
2000 South Holly Street
Denver, CO 80222
Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL
No Revisions:
Revised:
Void:

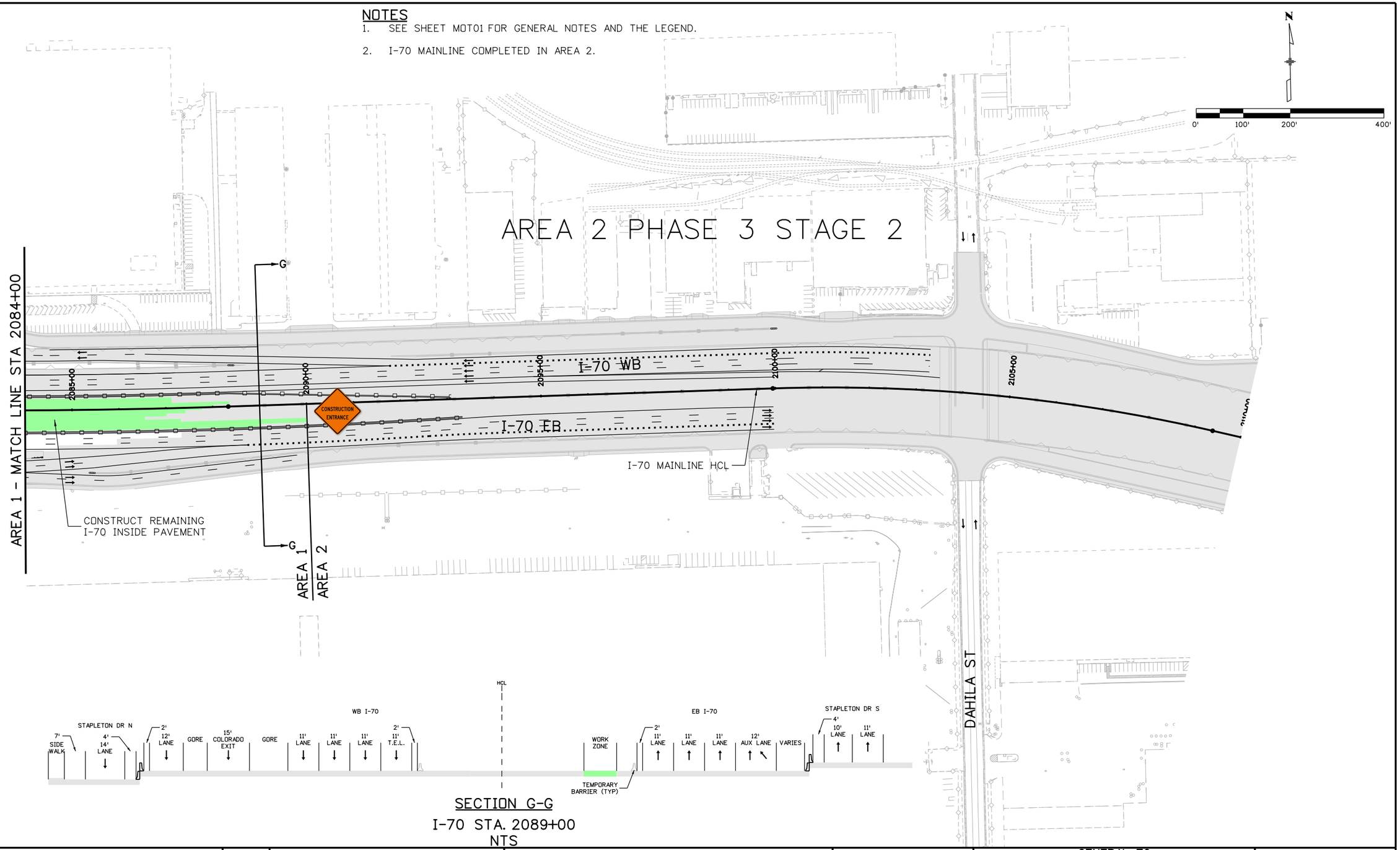
CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1 PHASE 2 STAGE 1
TYPICAL SECTIONS

Designer:	R. MITRY	Structure Numbers	
Detailer:	C. SNYDER		
Sheet Subset:	MOT	Subset Sheets: 32 of 83	

Project No./Code
FBR 0704-234
19631
Sheet Number

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. I-70 MAINLINE COMPLETED IN AREA 2.



SECTION G-G

I-70 STA. 2089+00

NTS

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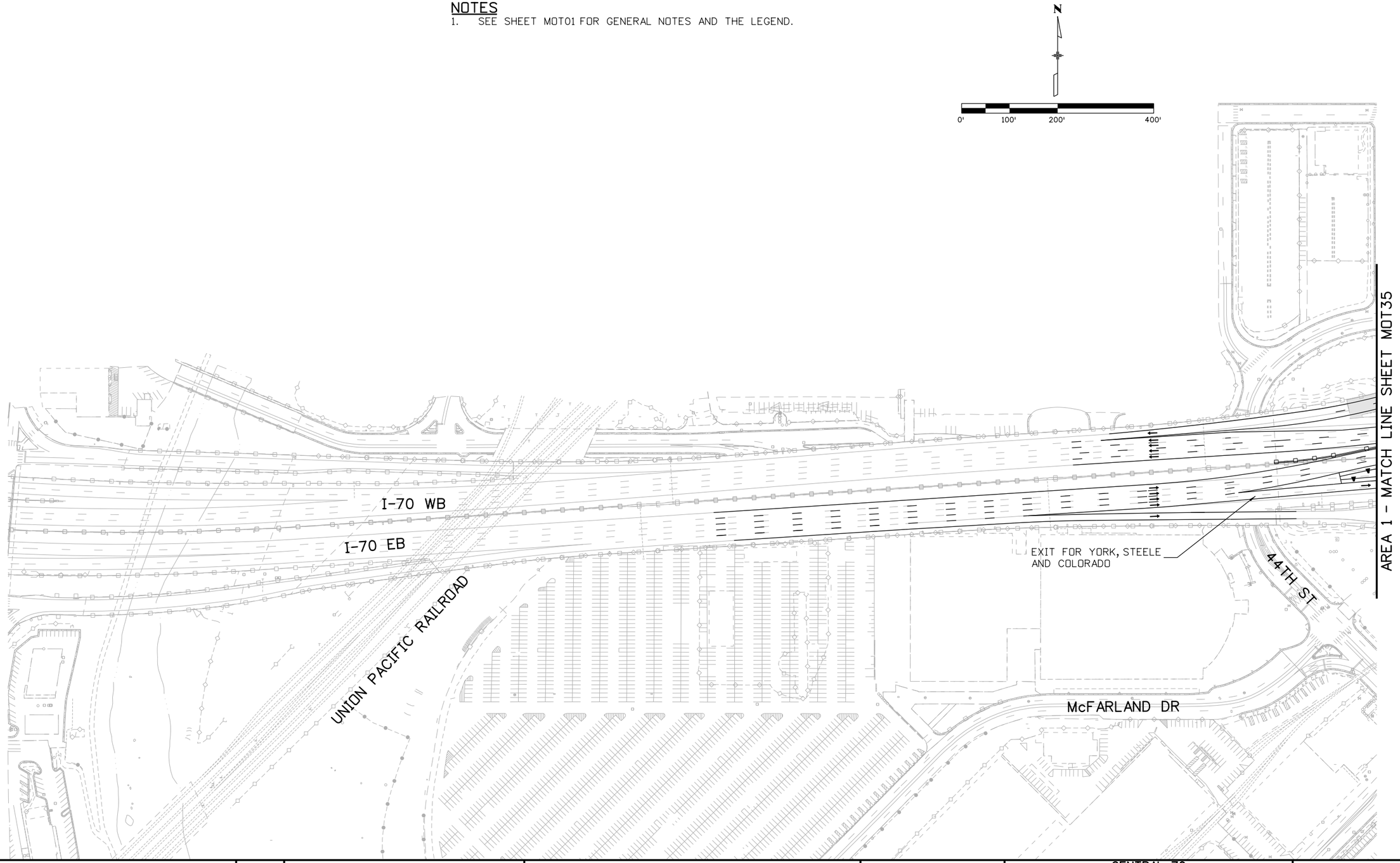
Print Date: 5/11/2017		Sheet Revisions			
File Name: See sheet edge for information		Date:	Comments	Init.	
Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

Colorado Department of Transportation
2000 South Holly Street
Denver, CO 80222
Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 1 PHASE 2 STAGE 1		Project No./Code
No Revisions:	Designer: R. MITRY	Structure Numbers	FBR 0704-234
Revised:	Detailer: C. SNYDER		19631
Void:	Sheet Subset: MOT	Subset Sheets: 33 of 83	Sheet Number

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.



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Print Date: 5/11/2017			
File Name: See sheet edge for information			
Front Range Mobility Group	Horiz. Scale: As Noted		
	Vert. Scale: As Noted		
	Unit Information		
	Unit Leader		

Sheet Revisions		
Date:	Comments	Init.

Colorado Department of Transportation
2000 South Holly Street
Denver, CO 80222
Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL
No Revisions:
Revised:
Void:

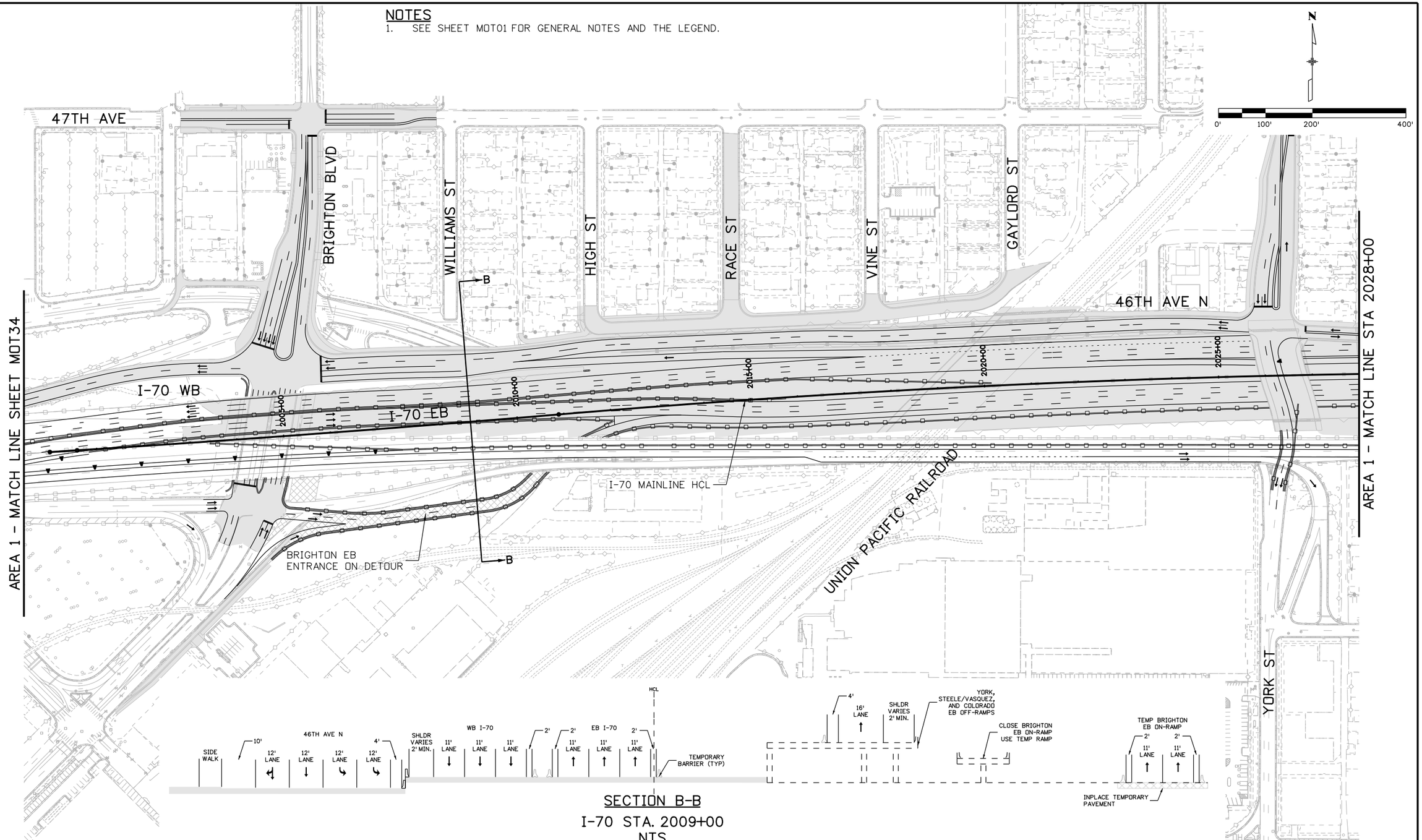
CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 2 STAGE 2

Designer:	R. MITRY	Structure Numbers	
Detailer:	C. SNYDER		
Sheet Subset:	MOT	Subset Sheets: 34	of 83

Project No./Code
FBR 0704-234
19631
Sheet Number

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.



SECTION B-B

I-70 STA. 2009+00
NTS

Print Date: 5/11/2017		Sheet Revisions	Colorado Department of Transportation	PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 1 PHASE 2 STAGE 2	Project No./Code
File Name: See sheet edge for information		Date: / Comments / Init.	2000 South Holly Street, Denver, CO 80222, Phone: 303-757-9934 FAX: 303-757-9907	No Revisions:		FBR 0704-234
Front Range Mobility Group	Horiz. Scale: As Noted			Revised:	Designer: R. MITRY / Structure Numbers	19631
	Vert. Scale: As Noted				Detailer: C. SNYDER	
	Unit Information			Void:	Sheet Subset: MOT / Subset Sheets: 35 of 83	Sheet Number
	Unit Leader		Region 1 KJS			

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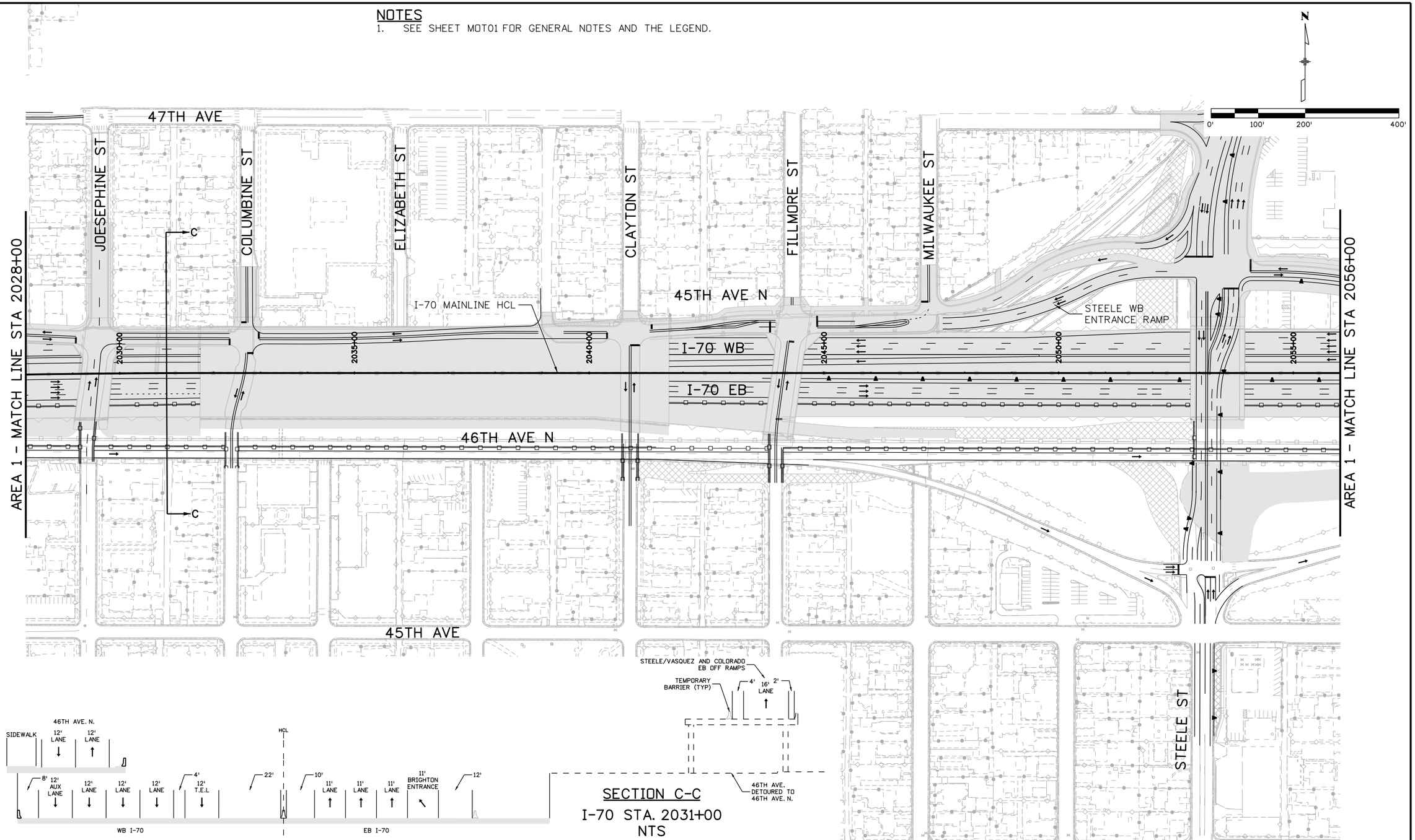
NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.



SECTION C-C
I-70 STA. 2031+00
NTS

Print Date: 5/11/2017		Sheet Revisions			Colorado Department of Transportation	PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 1 PHASE 2 STAGE 2	Project No./Code
File Name: See sheet edge for information		Date:	Comments	Init.	2000 South Holly Street Denver, CO 80222 Phone: 303-757-9934 FAX: 303-757-9907	No Revisions:		FBR 0704-234
Front Range Mobility Group	Horiz. Scale: As Noted					Revised:	Designer: R. MITRY	19631
	Vert. Scale: As Noted						Detailer: C. SNYDER	Structure Numbers
	Unit Information					Void:	Sheet Subset: MOT	Subset Sheets: 36 of 83
	Unit Leader				Region 1 KJS			Sheet Number

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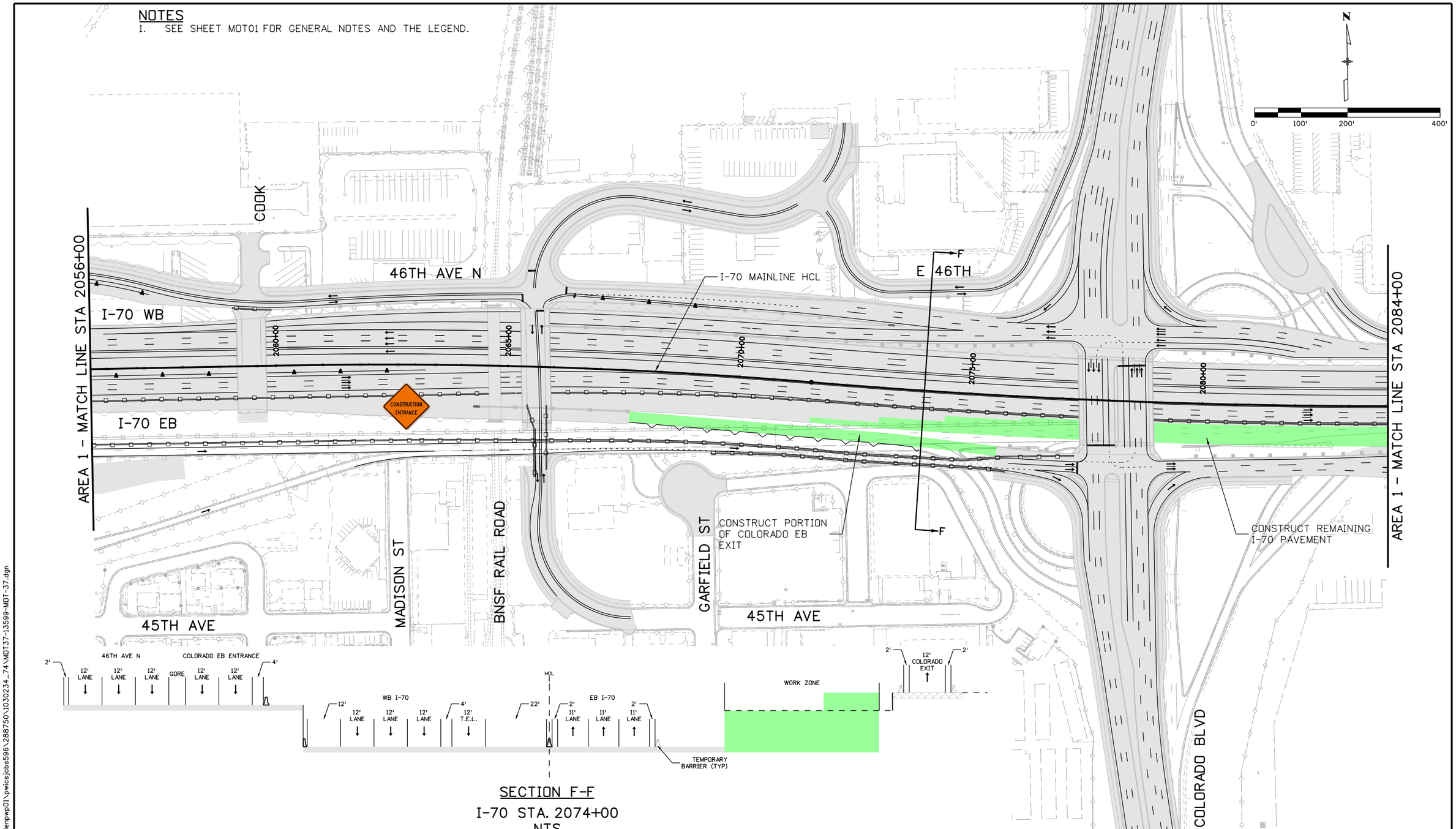
NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.



SECTION F-F

I-70 STA. 2074+00

NTS

Print Date: 5/11/2017		Sheet Revisions			
File Name: See sheet edge for information		Date:	Comments	Init.	
Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

Colorado Department of Transportation
2000 South Holly Street
Denver, CO 80222
Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL
No Revisions:
Revised:
Void:

CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 2 STAGE 2

Designer: R. MITRY
Detailer: C. SNYDER
Sheet Subset: MOT
Structure Numbers
Subset Sheets: 37 of 83

Project No./Code
FBR 0704-234
19631
Sheet Number

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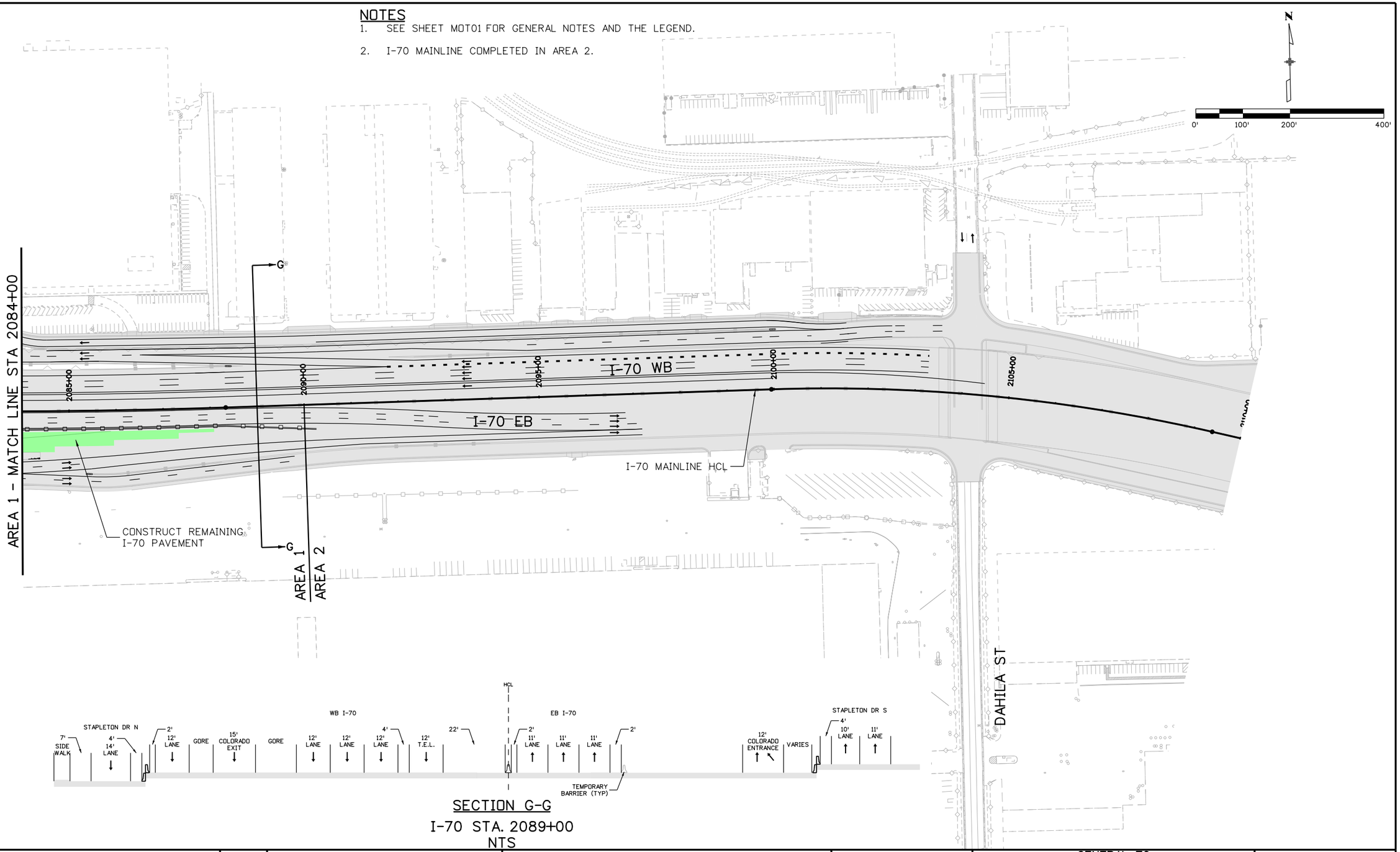
NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. I-70 MAINLINE COMPLETED IN AREA 2.



SECTION G-G

I-70 STA. 2089+00

NTS

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Print Date: 5/11/2017		Sheet Revisions			
File Name: See sheet edge for information		Date:	Comments	Init.	
Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

Colorado Department of Transportation
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Region 1 KJS

PROPOSAL
No Revisions:
Revised:
Void:

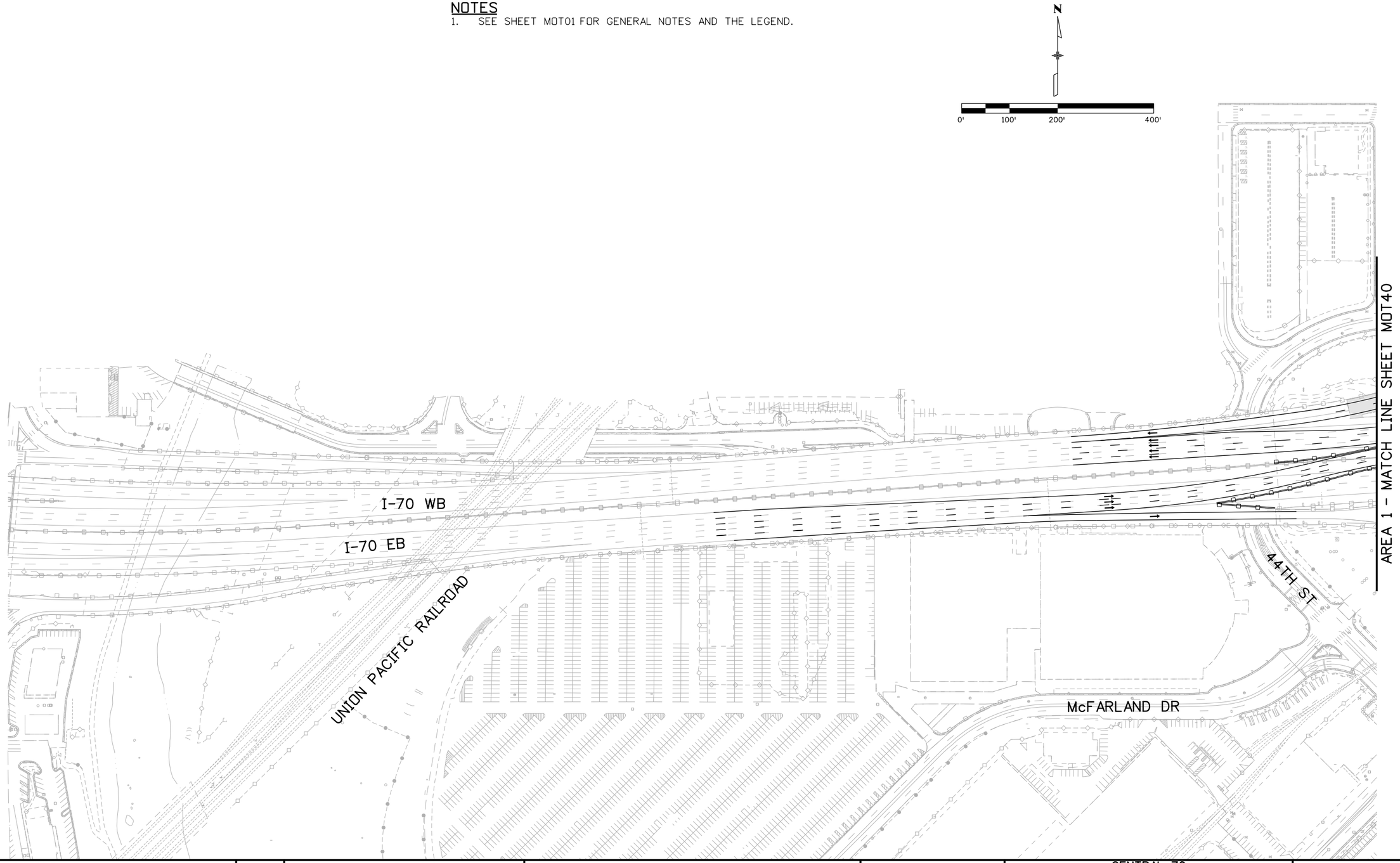
CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 2 STAGE 2

Designer:	R. MITRY	Structure Numbers	
Detailer:	C. SNYDER		
Sheet Subset:	MOT	Subset Sheets: 38	of 83

Project No./Code
FBR 0704-234
19631
Sheet Number

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.



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Print Date: 5/11/2017			
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Front Range Mobility Group	Horiz. Scale: As Noted		
	Vert. Scale: As Noted		
	Unit Information		
	Unit Leader		

Sheet Revisions		
Date:	Comments	Init.

Colorado Department of Transportation
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Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL
No Revisions:
Revised:
Void:

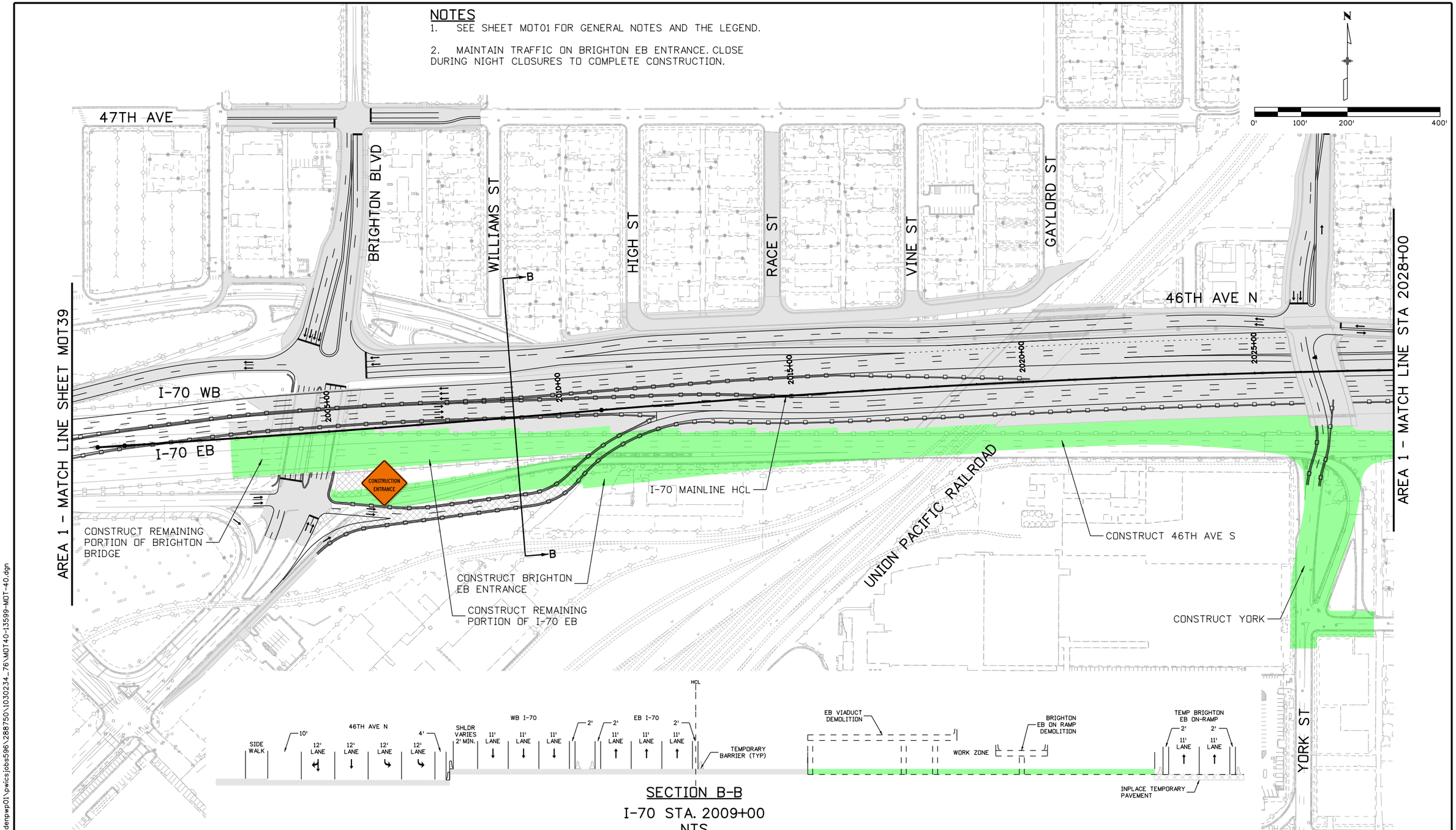
CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 2 STAGE 3

Designer:	R. MITRY	Structure Numbers	
Detailer:	C. SNYDER		
Sheet Subset:	MOT	Subset Sheets: 39	of 83

Project No./Code
FBR 0704-234
19631
Sheet Number

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. MAINTAIN TRAFFIC ON BRIGHTON EB ENTRANCE. CLOSE DURING NIGHT CLOSURES TO COMPLETE CONSTRUCTION.



SECTION B-B

I-70 STA. 2009+00

NTS

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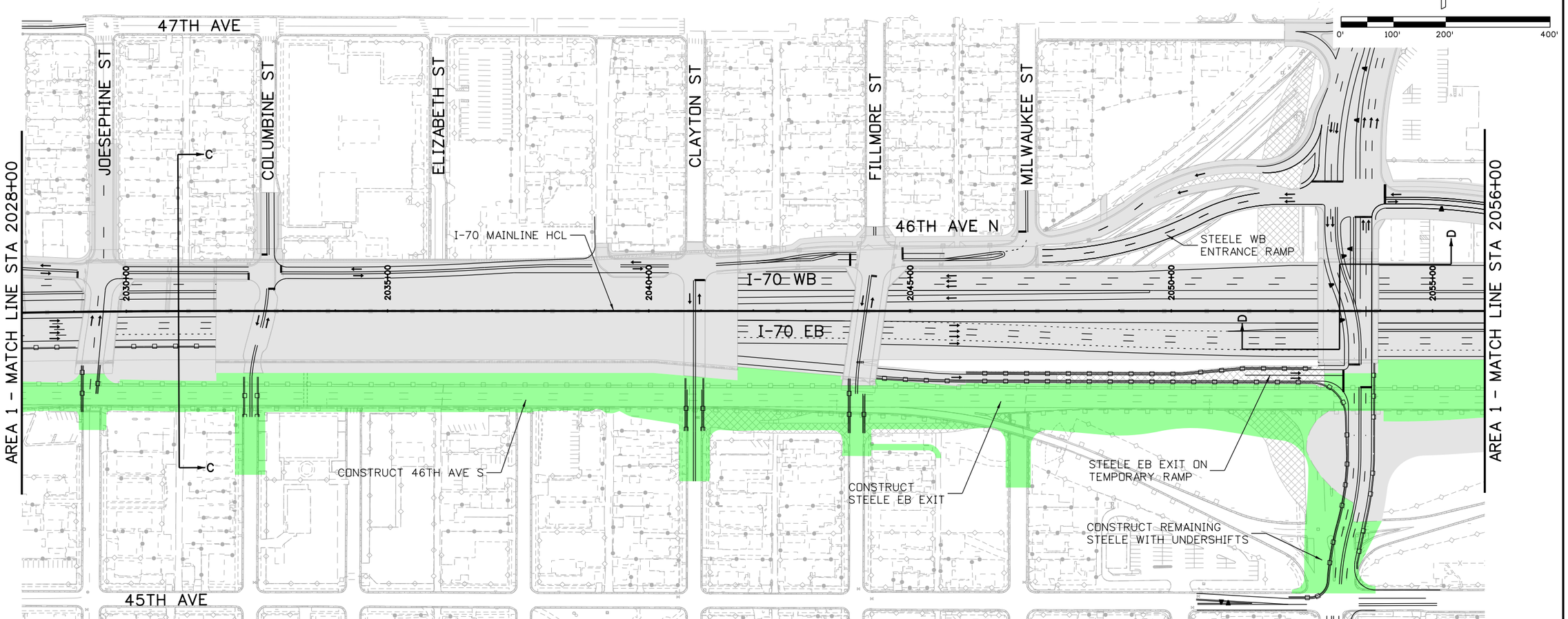
File Name: See sheet edge for information		Date:	Comments	Init.
Front Range Mobility Group	Horiz. Scale: As Noted		
	Vert. Scale: As Noted		
	Unit Information		
	Unit Leader		

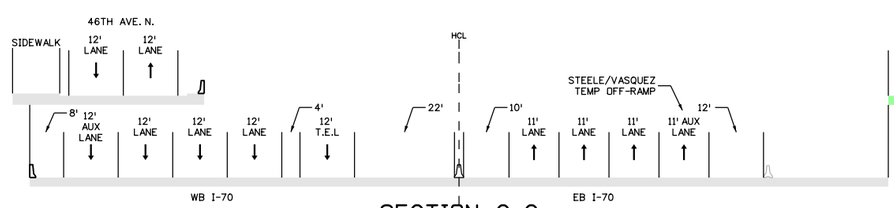
Colorado Department of Transportation
2000 South Holly Street
Denver, CO 80222
Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

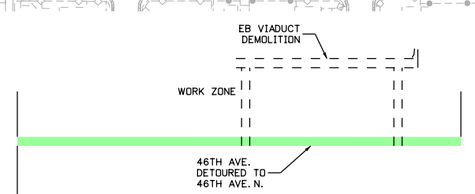
PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 1 PHASE 2 STAGE 3		Project No./Code
No Revisions:			FBR 0704-234
Revised:	Designer: R. MITRY	Structure Numbers	19631
Void:	Detailer: C. SNYDER		
	Sheet Subset: MOT	Subset Sheets: 40 of 83	Sheet Number

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. FOR TYPICAL SECTION D-D SEE SHEET MOT42.
3. CLOSE CROSS STREETS PER RESTRICTIONS TO COMPLETE 46TH AVE S.







SECTION C-C

I-70 STA. 2031+00

NTS

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File Name: See sheet edge for information		Date:	Comments	Init.	
Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

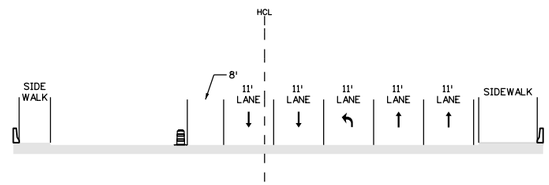
Colorado Department of Transportation
2000 South Holly Street
Denver, CO 80222
Phone: 303-757-9934 FAX: 303-757-9907
Region 1 KJS

PROPOSAL
No Revisions:
Revised:
Void:

CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 2 STAGE 3

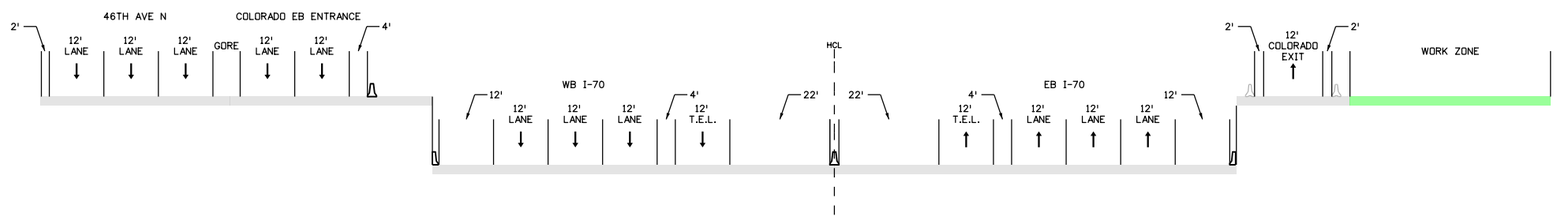
Designer:	R. MITRY	Structure Numbers	
Detailer:	C. SNYDER		
Sheet Subset:	MOT	Subset Sheets: 41	of 83

Project No./Code
FBR 0704-234
19631
Sheet Number



SECTION D-D

STEELE ST STA. 510+00
NTS



SECTION F-F

I-70 STA. 2074+00
NTS

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.

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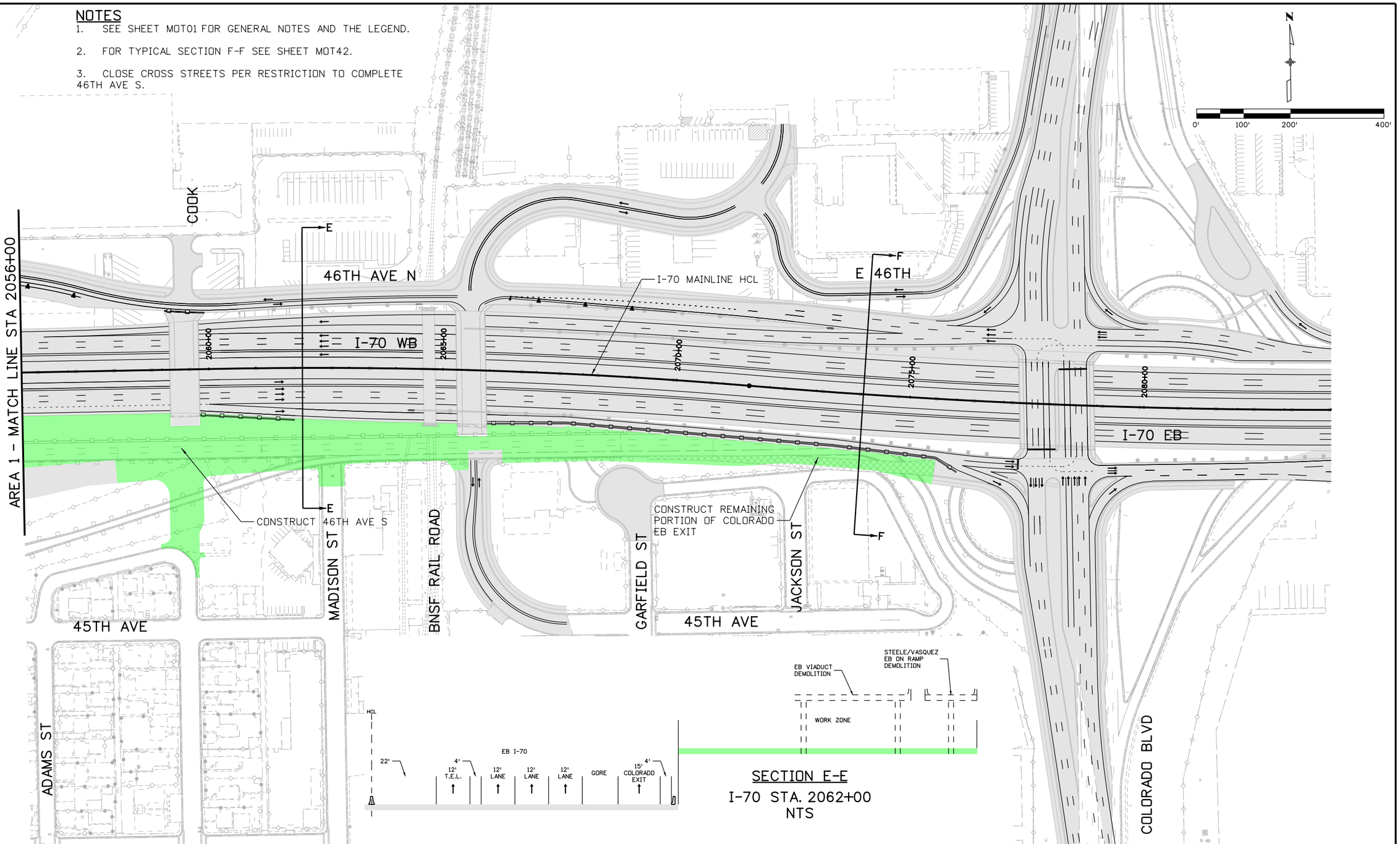
Print Date: 5/11/2017		Sheet Revisions	Colorado Department of Transportation	PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 1 PHASE 2 STAGE 3 TYPICAL SECTIONS	Project No./Code
File Name: See sheet edge for information		Date: / Comments / Init.	2000 South Holly Street Denver, CO 80222 Phone: 303-757-9934 FAX: 303-757-9907	No Revisions:		FBR 0704-234
Front Range Mobility Group	Horiz. Scale: As Noted			Revised:	Designer: R. MITRY / Structure Numbers	19631
	Vert. Scale: As Noted				Detailer: C. SNYDER	
	Unit Information			Void:	Sheet Subset: MOT / Subset Sheets: 42 of 83	Sheet Number
	Unit Leader		Region 1 KJS			

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. FOR TYPICAL SECTION F-F SEE SHEET MOT42.
3. CLOSE CROSS STREETS PER RESTRICTION TO COMPLETE 46TH AVE S.



SECTION E-E
I-70 STA. 2062+00
NTS

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File Name: See sheet edge for information		Date:	Comments	Init.	2000 South Holly Street Denver, CO 80222 Phone: 303-757-9934 FAX: 303-757-9907	No Revisions:
Front Range Mobility Group	Horiz. Scale: As Noted					Revised:
	Vert. Scale: As Noted					
	Unit Information				Region 1 KJS	Void:
	Unit Leader					

CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 1
PHASE 2 STAGE 3

Designer:	R. MITRY	Structure Numbers	
Detailer:	C. SNYDER		
Sheet Subset:	MOT	Subset Sheets: 43 of 83	

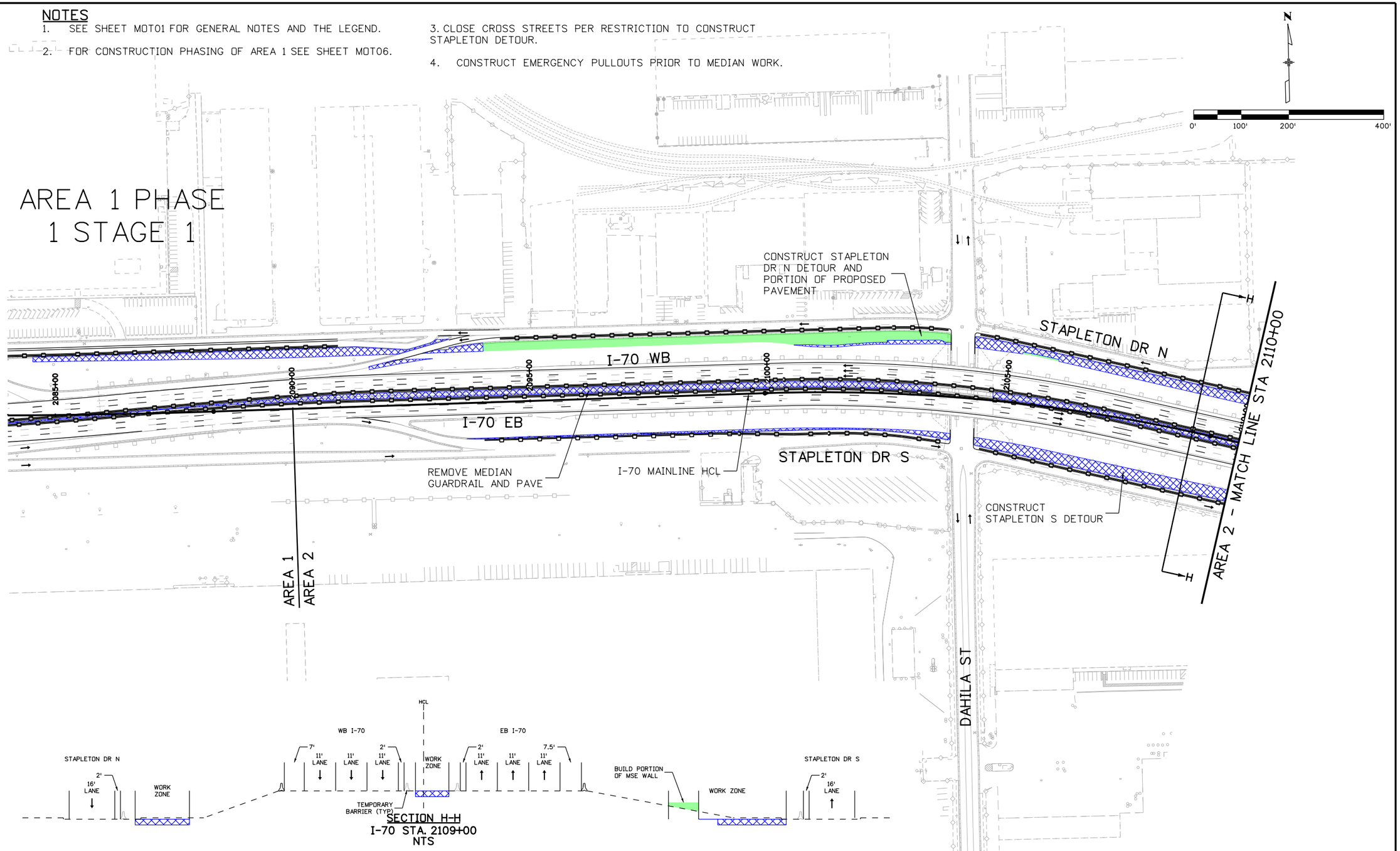
Project No./Code
FBR 0704-234
19631
Sheet Number

Attachment 1
MOT Plans - Area 2

Front Range Mobility Group

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. FOR CONSTRUCTION PHASING OF AREA 1 SEE SHEET MOT06.
3. CLOSE CROSS STREETS PER RESTRICTION TO CONSTRUCT STAPLETON DETOUR.
4. CONSTRUCT EMERGENCY PULLOUTS PRIOR TO MEDIAN WORK.



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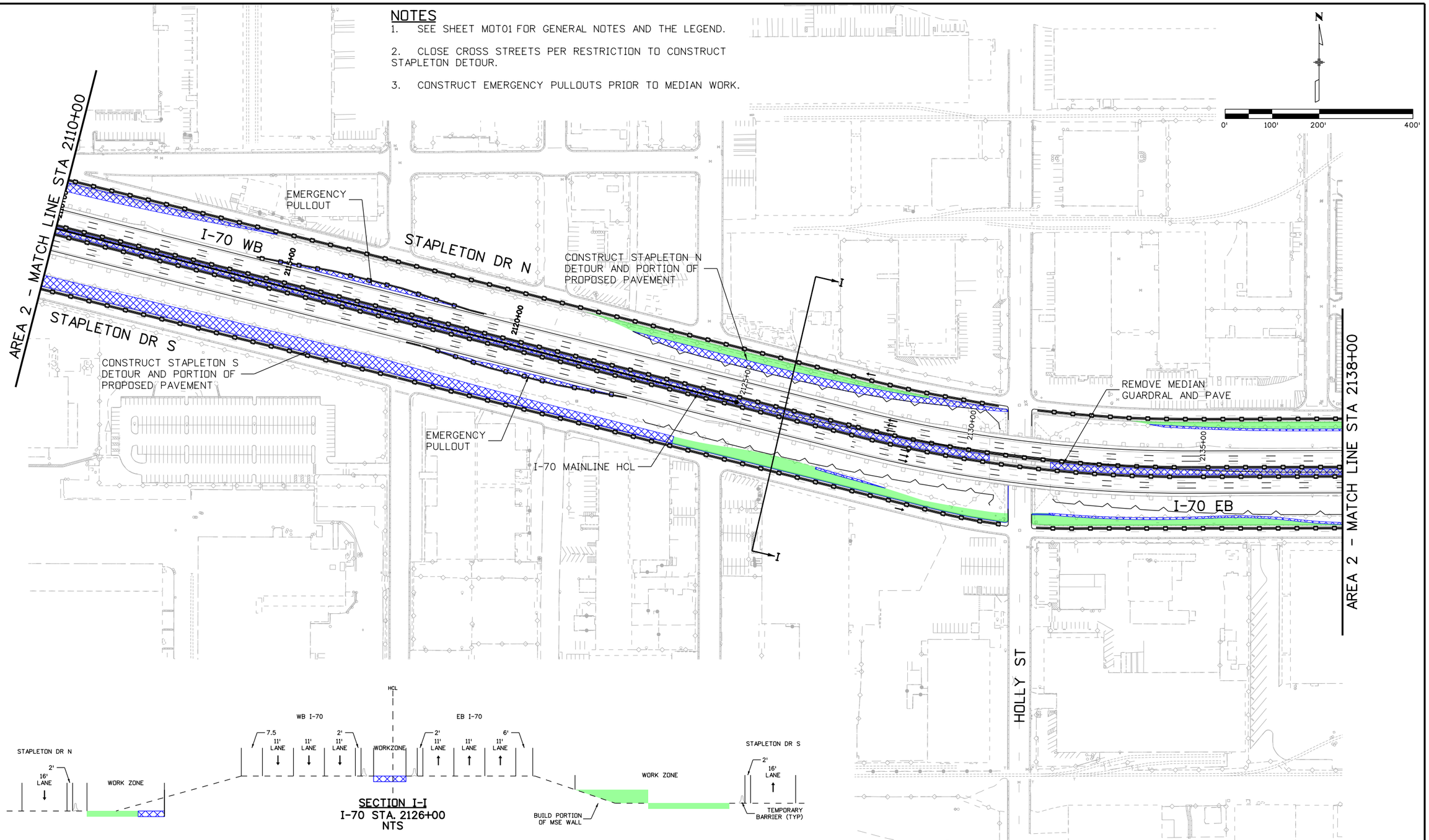
Print Date: 5/11/2017		Sheet Revisions			Colorado Department of Transportation	PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 2 PHASE 1 STAGE 1	Project No./Code
File Name: See sheet edge for information		Date:	Comments	Init.	2000 South Holly Street Denver, CO 80222 Phone: 303-757-9934 FAX: 303-757-9907	No Revisions:		FBR 0704-234
Front Range Mobility Group	Horiz. Scale: As Noted					Revised:	Designer: R. MITRY / Structure Numbers	19631
	Vert. Scale: As Noted						Detailer: C. SNYDER	
	Unit Information					Void:	Sheet Subset: MOT / Subset Sheets: 44 of 83	Sheet Number
	Unit Leader				Region 1 KJS			

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. CLOSE CROSS STREETS PER RESTRICTION TO CONSTRUCT STAPLETON DETOUR.
3. CONSTRUCT EMERGENCY PULLOUTS PRIOR TO MEDIAN WORK.



SECTION I-I
I-70 STA. 2126+00
NTS

Print Date: 5/11/2017		Sheet Revisions		
File Name: See sheet edge for information		Date:	Comments	Init.
Front Range Mobility Group	Horiz. Scale: As Noted			
	Vert. Scale: As Noted			
	Unit Information			
	Unit Leader			

Colorado Department of Transportation
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Region 1 KJS

PROPOSAL
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Void:

CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 2
PHASE 1 STAGE 1

Designer: R. MITRY
Detailer: C. SNYDER
Structure Numbers
Sheet Subset: MOT
Subset Sheets: 45 of 83

Project No./Code
FBR 0704-234
19631
Sheet Number

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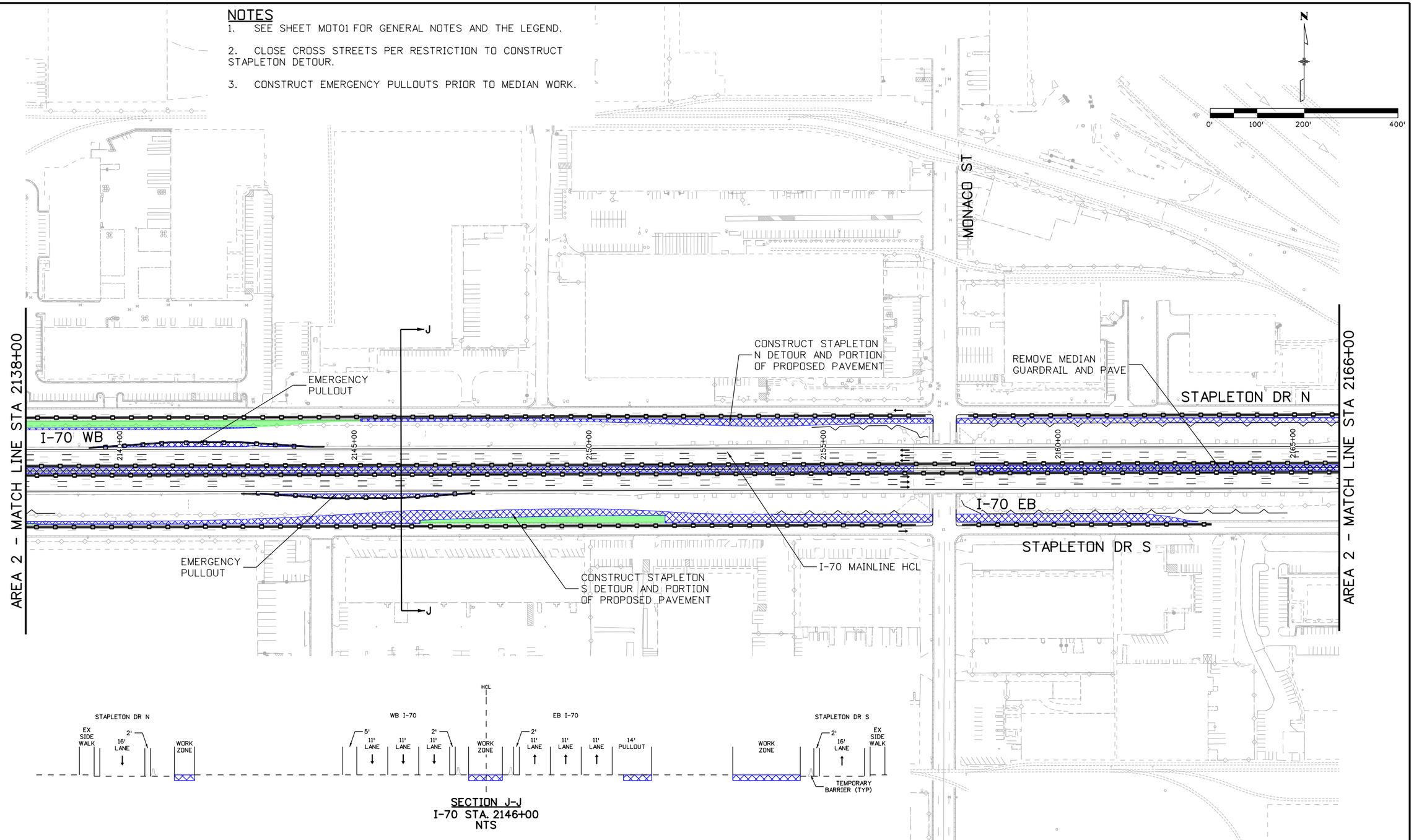
NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. CLOSE CROSS STREETS PER RESTRICTION TO CONSTRUCT STAPLETON DETOUR.
3. CONSTRUCT EMERGENCY PULLOUTS PRIOR TO MEDIAN WORK.



SECTION J-J
I-70 STA. 2146+00
NTS

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Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

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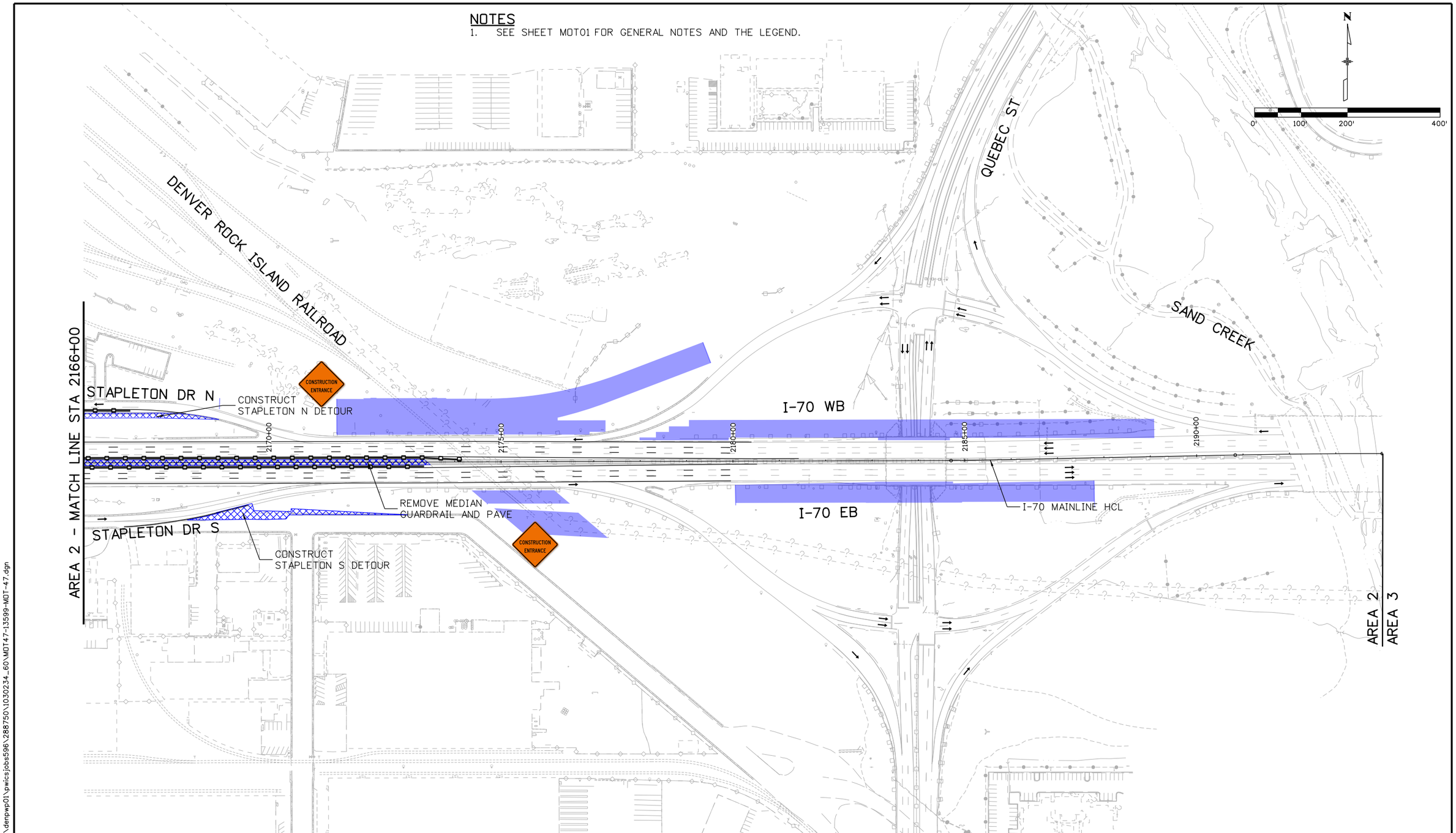
Region 1 KJS

PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 2 PHASE 1 STAGE 1			Project No./Code
No Revisions:	Designer: R. MITRY	Structure Numbers		FBR 0704-234
Revised:	Detailer: C. SNYDER			19631
Void:	Sheet Subset: MOT	Subset Sheets: 46 of 83		Sheet Number

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.



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Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

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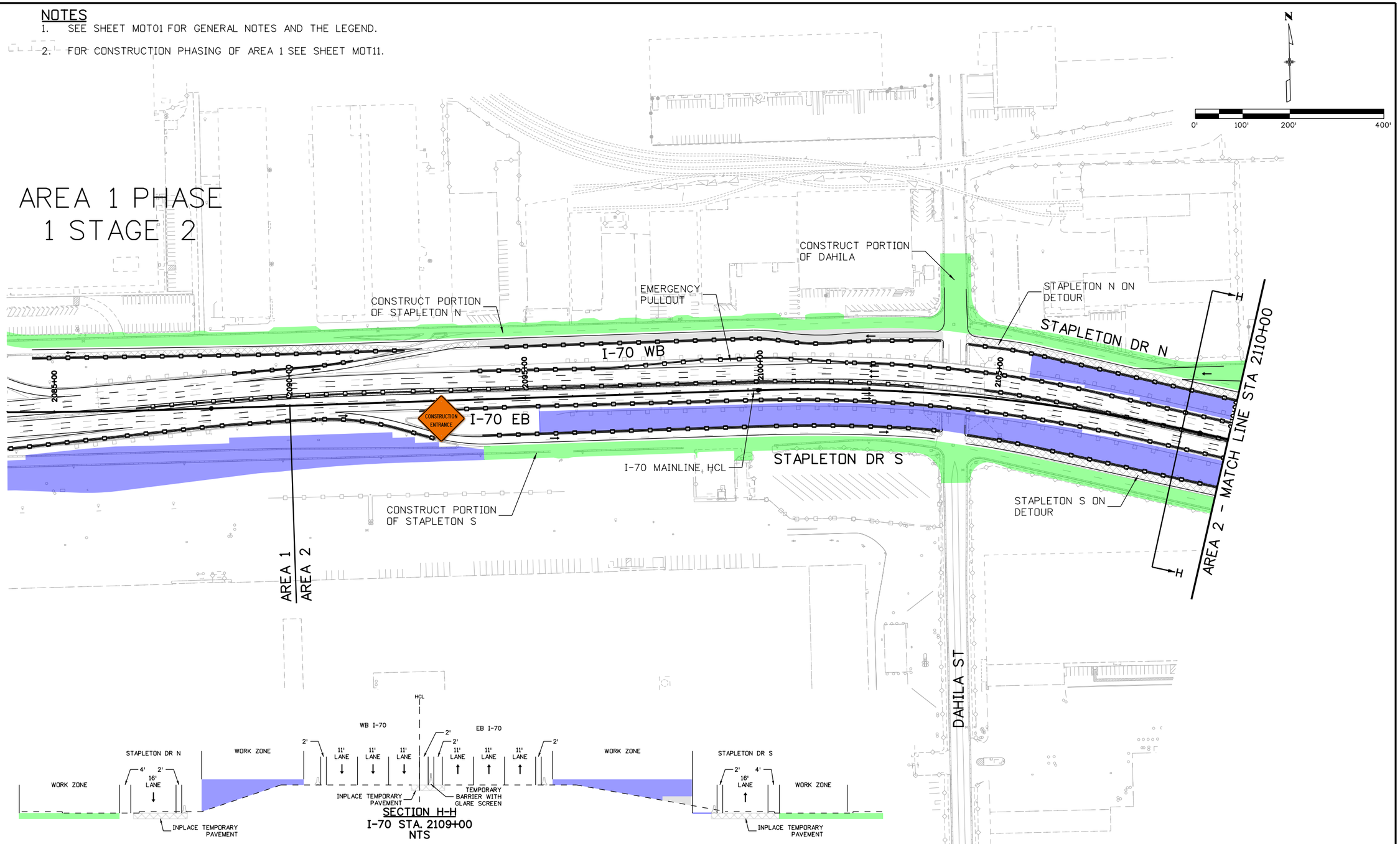
PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 2 PHASE 1 STAGE 1			Project No./Code
No Revisions:				FBR 0704-234
Revised:	Designer: R. MITRY	Structure Numbers		19631
Void:	Detailer: C. SNYDER			Sheet Number
	Sheet Subset: MOT	Subset Sheets: 47 of 83		

NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. FOR CONSTRUCTION PHASING OF AREA 1 SEE SHEET MOT11.



SECTION H-H
I-70 STA. 2109+00
NTS

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Front Range Mobility Group	Horiz. Scale: As Noted				
	Vert. Scale: As Noted				
	Unit Information				
	Unit Leader				

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No Revisions:
Revised:
Void:

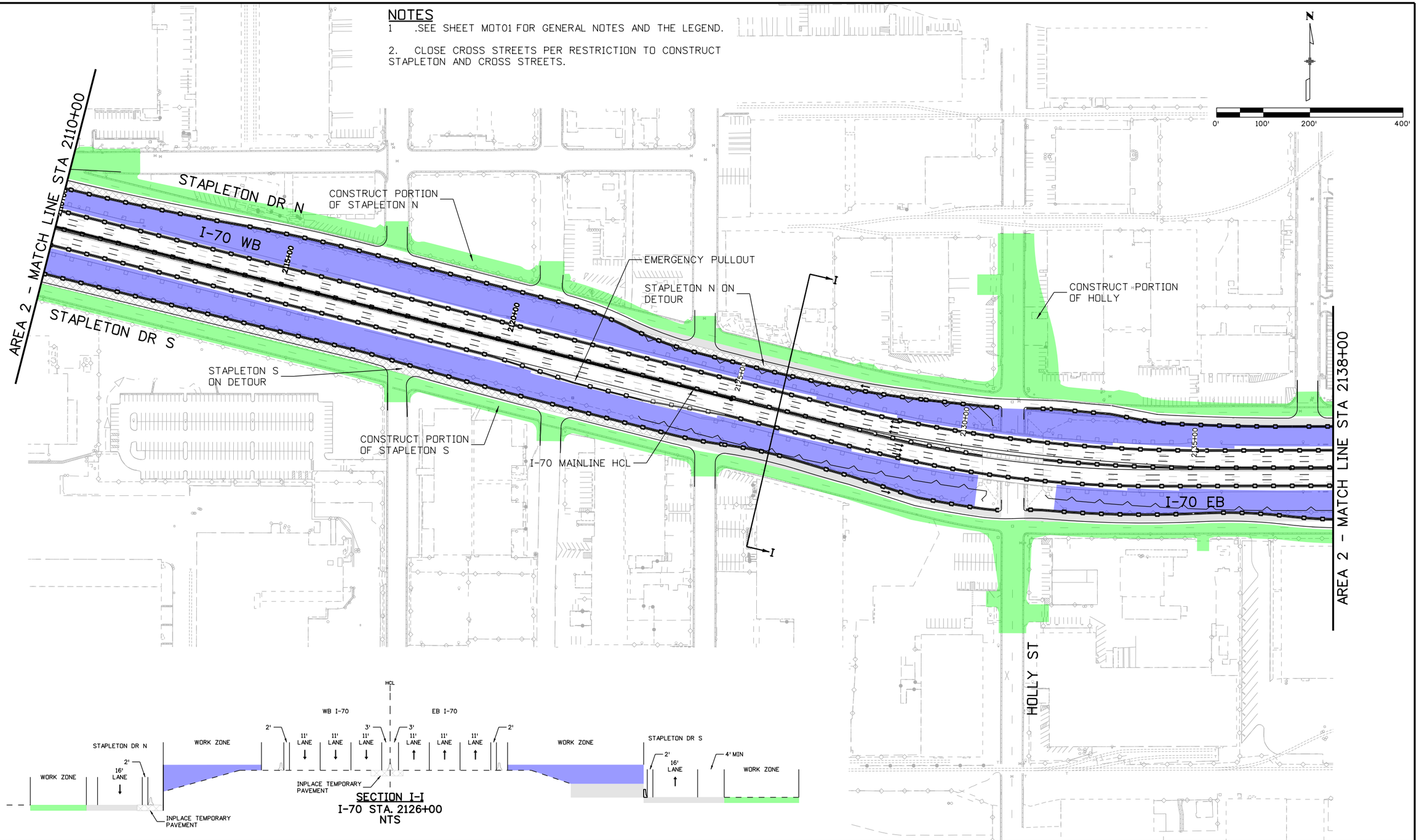
CENTRAL 70
MAINTENANCE OF TRAFFIC
AREA 2
PHASE 1 STAGE 2

Designer:	R. MITRY	Structure Numbers	
Detailer:	C. SNYDER		
Sheet Subset:	MOT	Subset Sheets: 48	of 83

Project No./Code
FBR 0704-234
19631
Sheet Number

NOTES

1. .SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. CLOSE CROSS STREETS PER RESTRICTION TO CONSTRUCT STAPLETON AND CROSS STREETS.



SECTION I-I
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Print Date: 5/11/2017		Sheet Revisions			Colorado Department of Transportation	PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 2 PHASE 1 STAGE 2	Project No./Code
File Name: See sheet edge for information		Date:	Comments	Init.	2000 South Holly Street Denver, CO 80222 Phone: 303-757-9934 FAX: 303-757-9907	No Revisions:		FBR 0704-234
Front Range Mobility Group	Horiz. Scale: As Noted					Revised:	Designer: R. MITRY / Structure Numbers	19631
	Vert. Scale: As Noted						Detailer: C. SNYDER	
	Unit Information				Region 1 KJS	Void:	Sheet Subset: MOT / Subset Sheets: 49 of 83	Sheet Number
	Unit Leader							

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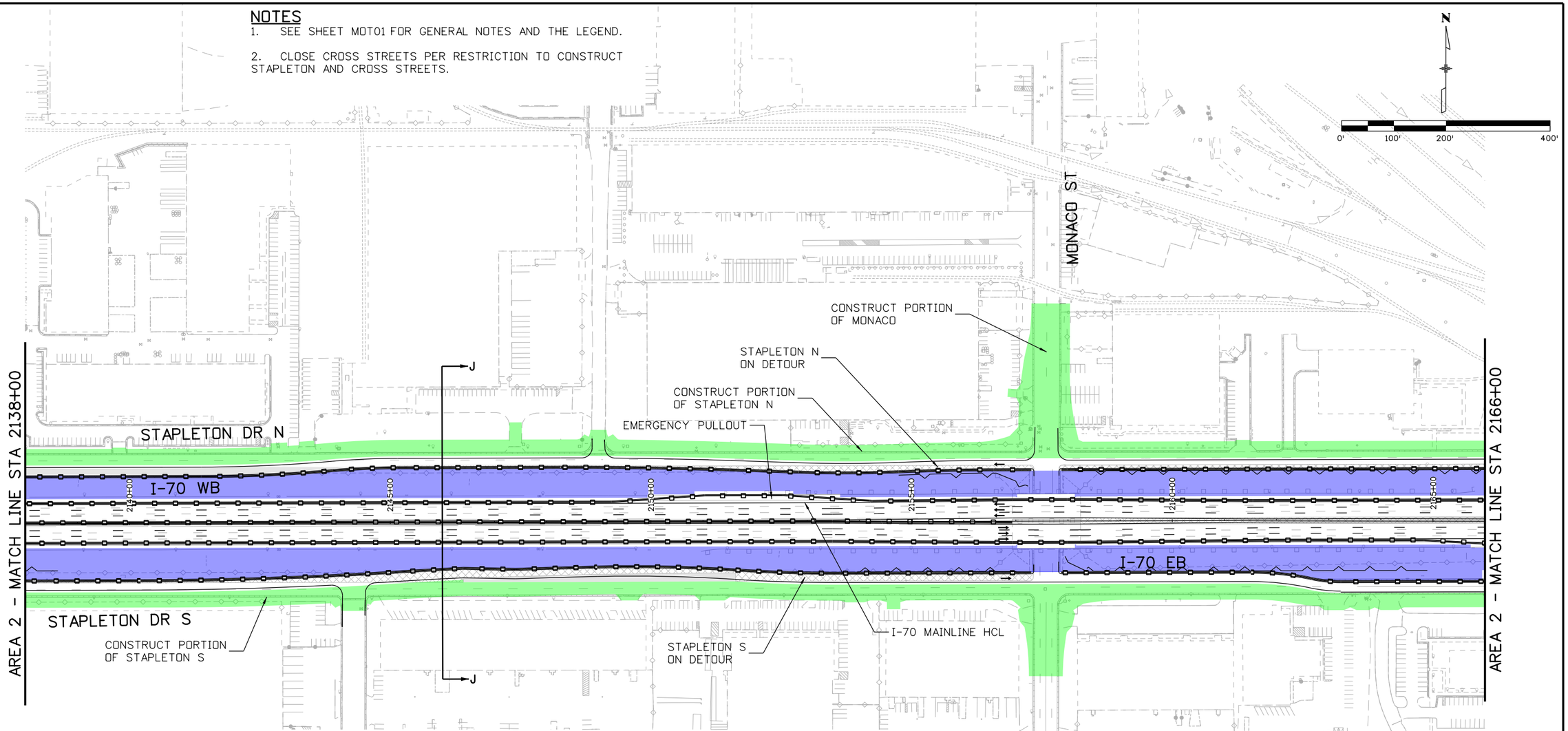
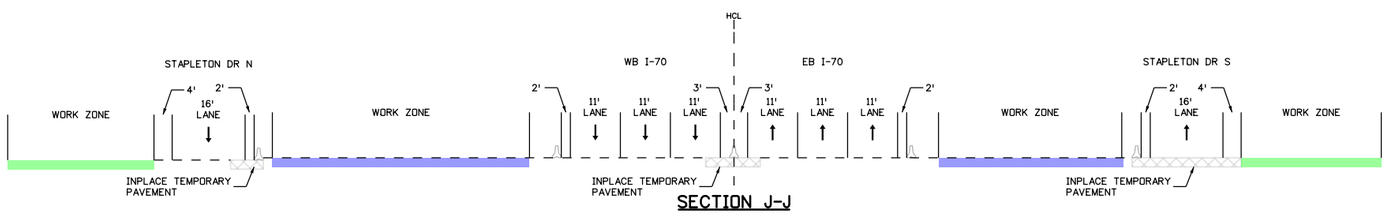
NOTES

1. SEE SHEET MOT01 FOR GENERAL NOTES AND THE LEGEND.
2. CLOSE CROSS STREETS PER RESTRICTION TO CONSTRUCT STAPLETON AND CROSS STREETS.





SECTION J-J
I-70 STA. 2146+00
NTS

Print Date: 5/11/2017		Sheet Revisions			Colorado Department of Transportation	PROPOSAL	CENTRAL 70 MAINTENANCE OF TRAFFIC AREA 2 PHASE 1 STAGE 2	Project No./Code
File Name: See sheet edge for information		Date:	Comments	Init.	2000 South Holly Street Denver, CO 80222 Phone: 303-757-9934 FAX: 303-757-9907	No Revisions:		FBR 0704-234
Front Range Mobility Group	Horiz. Scale: As Noted					Revised:	Designer: R. MITRY / Structure Numbers	19631
	Vert. Scale: As Noted						Detailer: C. SNYDER	
	Unit Information				Region 1 KJS	Void:	Sheet Subset: MOT / Subset Sheets: 50 of 83	Sheet Number
	Unit Leader							

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