COLORADO
Department of Transportation

5280 Connectors
Linking Communities

CENTRAL 70 PROJECT

Public Disclosure Administrative and Technical Proposal:
5280 CONNECTORS

VOLUME 2 | Electronic Copy | Binder 1 of 8

TRANSPARENCY | RELIABILITY | ACCOUNTABILITY | INCLUSIVITY

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EXECUTIVE SUMMARY

COLORADO
Department of Transportation

CENTRAL 70 PROJECT

Administrative and Technical Proposal: 5280 CONNECTORS

EXECUTIVE SUMMARY

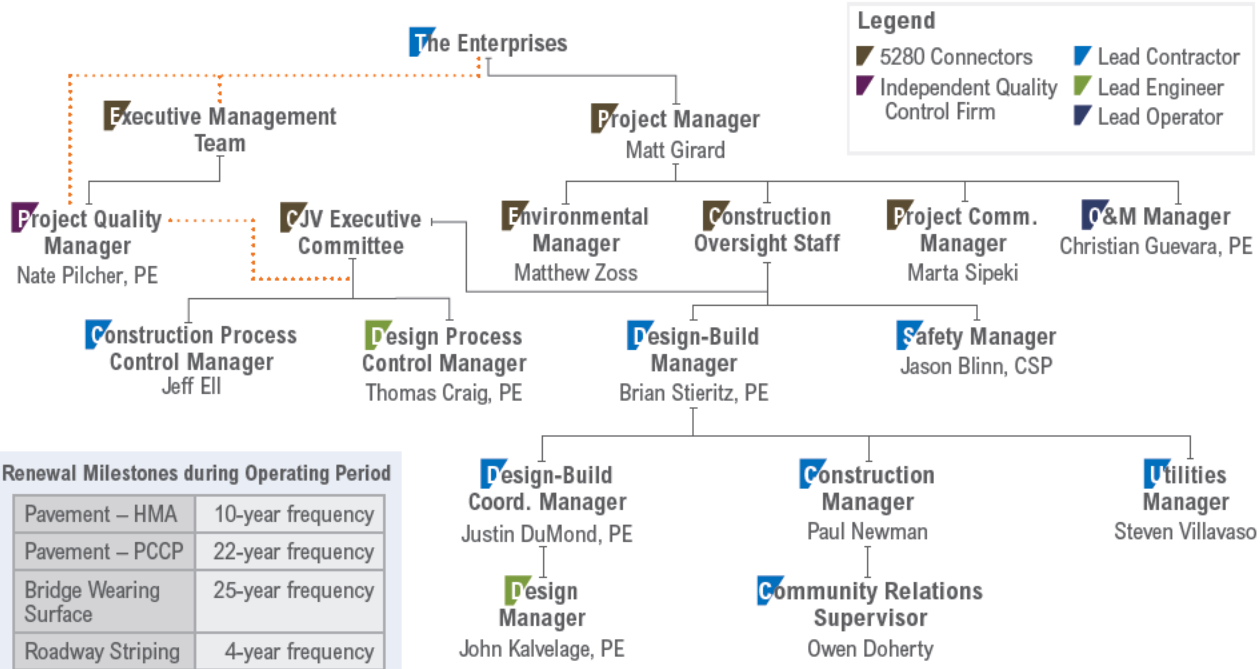
TRANSPARENCY | RELIABILITY | ACCOUNTABILITY | INCLUSIVITY

Delivering Certainty through Risk Management, Flexibility and Accountability

5280 Connectors will take a long-term **partnered approach to managing this project**. We will coordinate regularly with the Enterprises, third parties, project stakeholders, and subcontractors to minimize project risks. Our project management approach includes all project participants to provide delivery certainty for Central 70 through:

- Globally proof-tested processes for successfully managing P3 projects
- Comprehensive risk mitigation processes
- Regular local stakeholder engagement
- Full accountability for team members at all performance levels
- Self-performing operations and maintenance
- Proactive snow and ice removal for clearly defined geographical areas

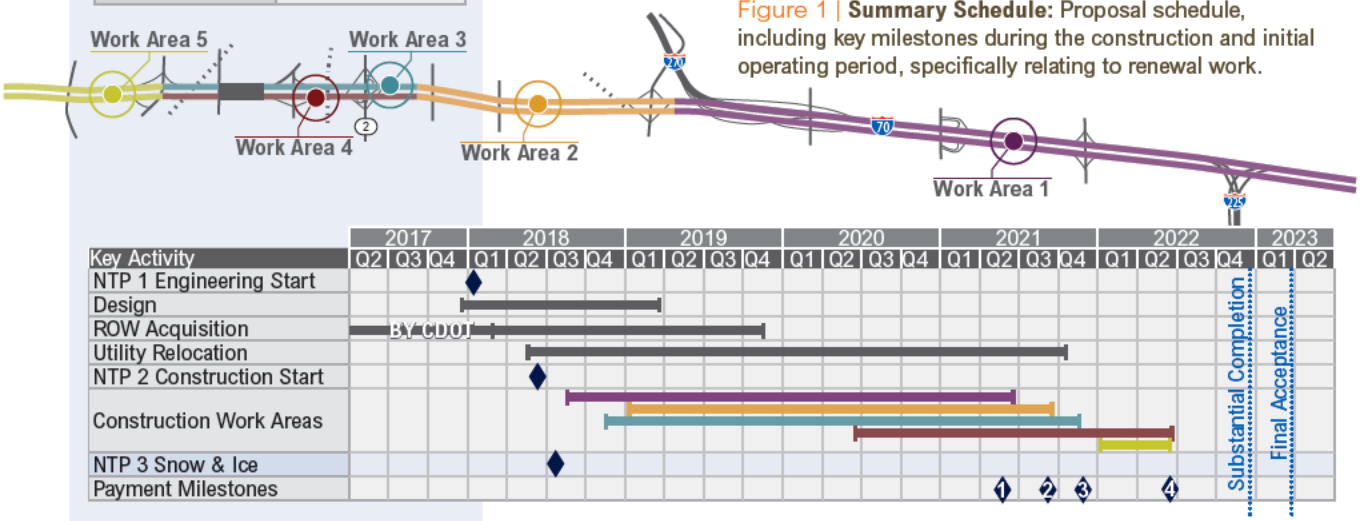
As demonstrated in our **project organization charts**, we provide full accountability through one integrated team that ensures good faith in safety, quality and environmental performance. To meet our schedule commitments for Central 70, 5280 Connectors uses a One Team | One Project approach inclusive of all stakeholders, subcontractors and project partners.



Renewal Milestones during Operating Period

Pavement – HMA	10-year frequency
Pavement – PCCP	22-year frequency
Bridge Wearing Surface	25-year frequency
Roadway Striping	4-year frequency
Cover Lighting	14-year frequency

Figure 1 | **Summary Schedule:** Proposal schedule, including key milestones during the construction and initial operating period, specifically relating to renewal work.

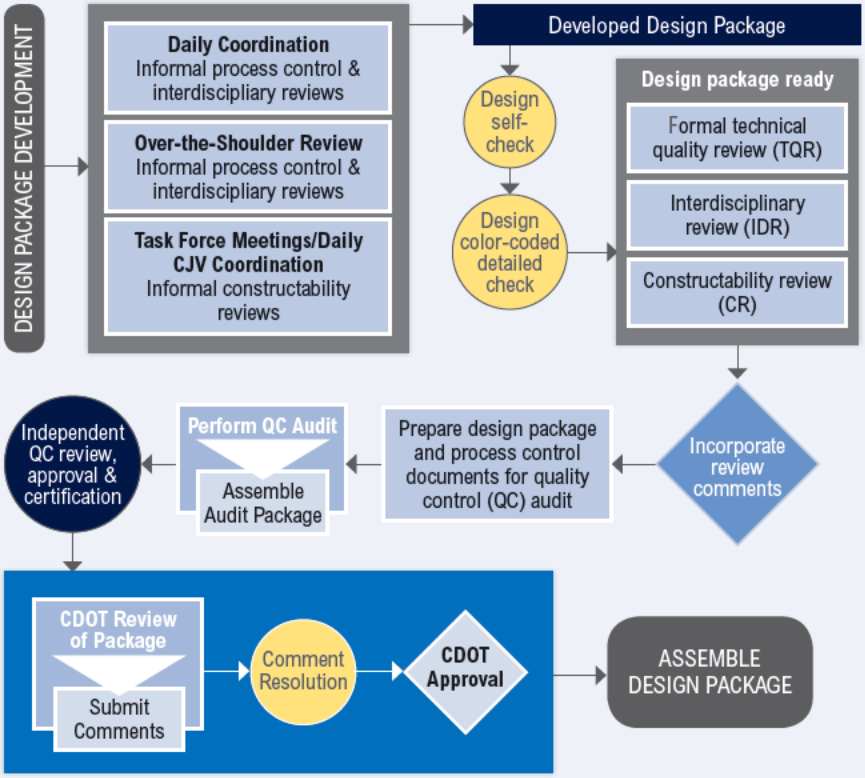


2

Providing a Transparent Quality Program

Process Control (PC) and Independent Quality Control (QC) fully reside with 5280 Connectors, and we clearly define our quality team's organization and roles within the reporting structure and project delivery. In this way, **we align all interests and incorporate the life cycle into the project's planning and execution**. We will develop quality communication plans with the Enterprises and our team, and involving the Enterprises early will accelerate problem solving and resolution.

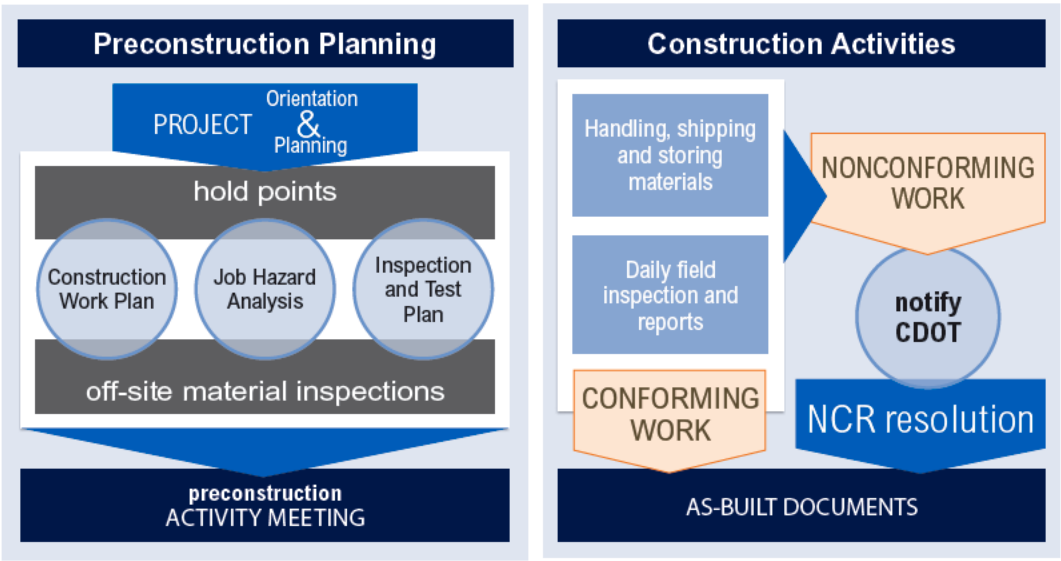
Figure 2 | **Nonconstruction Quality:** We bring clearly defined processes to manage quality for design, permitting, site investigations, and maintenance.



5280 Connectors offers a project management approach providing transparency, reliability, accountability, and inclusivity. Our process was effectively incorporated on the US 36 project to deliver exceptional results, including zero noncompliance points for our O&M performance to date. We will implement our proven processes to:

- Optimize scope and life cycle O&M costs with high-quality materials and techniques
- Provide reliable travel speeds
- Collaborate to enhance community values and project benefits
- Provide a reliable health and safety program for the public and workforce

Figure 3 | **Construction Quality:** We bring clearly defined processes to manage construction quality including inspection, testing, reporting, and incorporating experience gained from previous P3 projects as well as corrective and preventative measures.



5280 Connectors will train and empower all employees, not only the quality team, to prioritize recognizing early mitigations and avoiding quality issues to prevent noncompliance.

3

Reducing Impacts to the Traveling Public and Neighborhoods

5280 Connectors will collaborate with the Enterprises and stakeholders to implement a transportation management plan (TMP) that accommodates the needs of residents, businesses and interstate traffic.

We will educate drivers about our plan through regular public meetings, changeable message boards, email and social media blasts, and collaboration with traffic mapping applications such as Google Maps and Waze.

5280 Connectors' approach to maintenance of traffic integrates work areas, increases capacity, limits construction work zone interaction with traffic, and mitigates noise and dust to minimize impacts to drivers along I-70. As shown in our proposal schedule, we provide our **4x4** (four lanes westbound and four eastbound) lane configuration **two years early** and **eliminate major ramp closures**, thereby improving level of service (LOS) and driver experience across the project in several critical ways (see Figure 4). Additional enhancements include:

- Extending ramp and viaduct connectivity at York Street, Steele Street and Colorado Boulevard
- Reducing on-road construction traffic by 42,000 hours
- Eliminating 15,000 square feet of temporary support of excavation

We use a top-down construction approach to improve cross-street connectivity quickly. All **cross street bridges in the lowered section will provide connectivity in early 2020** allowing cross streets to operate at capacity during remaining mainline construction.

Our overall approach to mainline, ramp and surface street construction saves **an estimated $12 million in travel delay costs** for the public every 180 days.

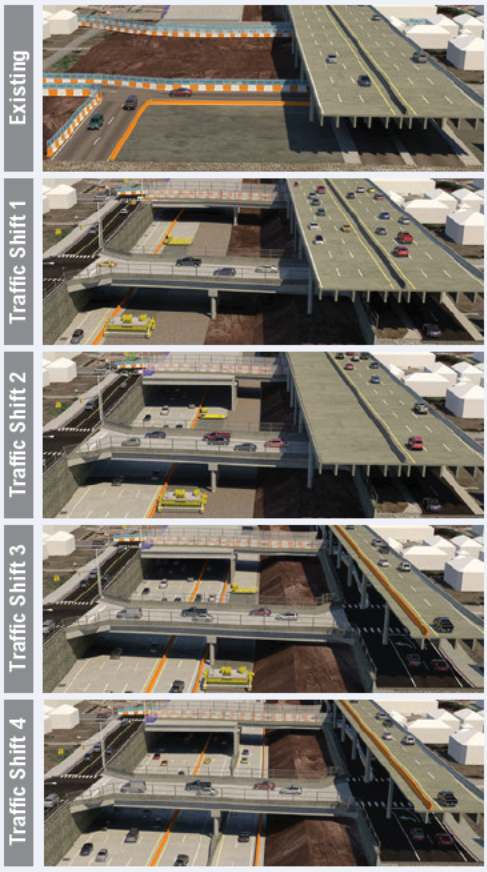
Local Businesses, Residents and Pedestrians

5280 Connectors will improve the effectiveness of our TMP through transparent communication with all stakeholders. We will maintain positive public perception by engaging with the community, mitigating impacts to businesses and the traveling public, meeting project expectations, and coordinating daily with construction supervisors. As an added value, we embed a **community relations superintendent with our field crews** for the **sole purpose of delivering on our commitments** to safety, community impact mitigation and overall project communication.

Figure 4 | **4x4 Concept Improves Capacity:** Our third major traffic shift improves the number of lanes from three in each direction to four in each direction—**two years early**.

4x4 approach

We will deliver full 4x4 capacity configuration halfway through construction, improving the LOS from D to C during construction.



Continuous Safe Access to Swansea Elementary School
Our Columbine Street temporary detour will route local traffic around the new bridge construction to maintain safe, unrestricted access to Swansea Elementary School during construction.

4

Including and Valuing Stakeholders

5280 Connectors has developed a robust communications approach demonstrating understanding, adaptability, and measurability. We will develop short- and long-term strategies to communicate the Enterprises' vision and keep the community well informed. Our recent P3 experience on projects such as the I-4 Ultimate Improvement Public Private Partnership in Florida drives our clear understanding of complex projects like Central 70, which requires a multipronged communication plan to ensure inclusivity and adaptable outreach:

- Environmental Compliance Work Plan (ECWP): Our ECWP outlines practices for minimizing noise, fugitive dust and nuisance light, and it outlines processes for handling hazardous soils and groundwater. Specifically, each excavation and dewatering activity will begin with preplanning, followed by regular sampling and handling procedures. We will document all material handling to record compliance with the appropriate regulation. Additionally, to responsive to community concerns, we will operate a 24/7 hotline to capture feedback and identify appropriate responses.
- Strategic Communications Plan: We will adapt our bilingual public information tools and collateral to meet the needs of residents, businesses, institutions, organizations and other stakeholders impacted by construction and O&M. We will provide two-way communication to address all identified community concerns to ensure a response to each concern, regardless of the outcome. Additionally, we will use new, effective forms of communication to disseminate public information such as social media, YouTube updates, Waze, and Google Maps.
- Community Development Plan: We will tailor our community development efforts to honor the project contract and embrace its intent by enhancing the community. We commit $700,000 in local community development funds and opportunities throughout the life of this project. We will work with local schools to refine our scholarship program and present five scholarships annually.
- Local/Small/Disadvantaged Business Participation Plan: We will help local businesses grow as part of our responsibility to enhance the overall quality of our industry. We have conducted six DBE/ESB outreach events geared toward this project and connected with more than 250 firms to solicit additional project opportunities. We will boost ESB/DBE participation by identifying self-perform scope that we can subcontract and splitting up large packages to accommodate small contractors. Through partnerships, workshops and extensive communication, we will exceed the Central 70 goals of 11.6% DBE and 3% ESB participation for design and 12.5% DBE and 3% ESB for construction.
- Workforce Development (WFD) Plan: We will maintain a well-trained workforce to benefit the project's performance and offer a long-term, sustainable workforce to enhance the quality of life for the community. We will partner with local trade schools to recruit interested candidates and fund apprentices as they expand their skills and achieve 760,000 hours of local hire and 200,000 or more of on-the-job training.

Figure 5 | **Envision™ for Central 70:** Envision provides a holistic framework to approach sustainability in U.S. civil infrastructure projects. From environmental compliance to workforce development, the performance measurements of Envision evaluate a project's positive impact to the community, workforce and environment.

Envision Focus Areas

Climate and Risk	Natural World	Resource Allocation	Leadership	Quality of Life
We will **reduce trucking operations by 20,695 loads** (staging) and **highway emissions by 3.1 tons daily** (4x4 approach) to minimize impacts to local street traffic and environment.	We will **reduce this project's dewatering by 90%** through profile optimizations, and thus greatly reduce the quantity of contaminated water we treat and discharge.	We will **recycle 103,000 cubic yards of material** on this project in our on-site production plants.	We will **conduct a DBE/ESB training/ mentoring program** focused on educating firms in safety, quality, contract management, and accounting.	We will **provide $700,000 in local community development funds** and opportunities to enhance the community.

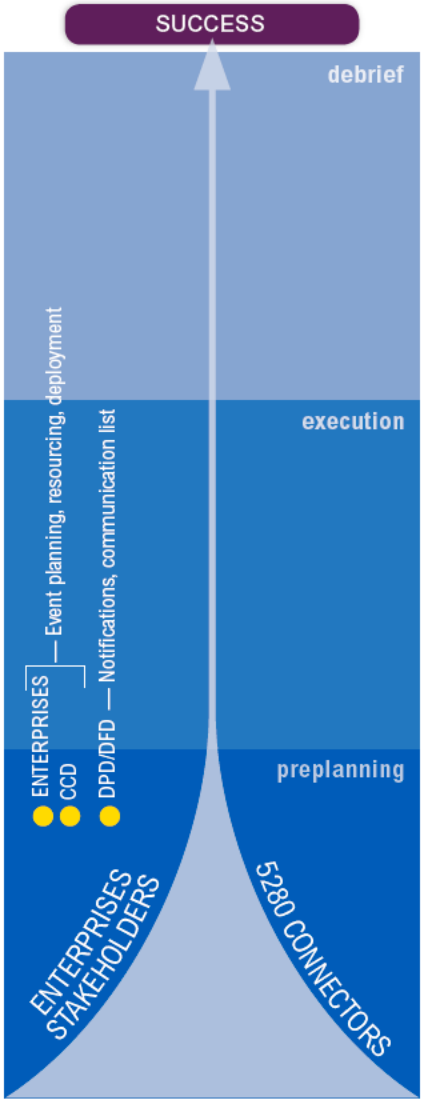
5

Maintaining Accountability as a Long-Term Partner

5280 Connectors is a true long-term partner in operations and maintenance (O&M) activities. We will implement a proactive approach to all scheduled and unscheduled activities, effective communication during activities, and constructive follow-up for an event or activity, with clearly defined roles and responsibilities (see Figure 6). We will meet or exceed all O&M performance requirements in the Project Agreement, keep the Enterprises well informed, and deliver a smoothly run project.

5280 Connectors will self-perform O&M work and incorporate O&M considerations in design and construction planning from the start. This approach has led to design optimizations in durability and maintainability, and thus sustainability, over the project life cycle. As an example, we will include a polyester polymer overlay at bridge locations, based on input from our O&M team. This cover will provide an impermeable layer atop the bridge deck to decrease long-term maintenance costs and enhance value.

Figure 6 | **Proactive Collaboration:** Our O&M plan outlines effective communication for the Enterprises and all stakeholders to achieve a unified project experience.



Operations

5280 Connectors will provide the Enterprises and stakeholders with clear, transparent assurance in performance of operations. The O&M team will participate in weekly MOT task force meetings to provide input to the construction team on specific constraints and configurations affecting O&M. This coordination allows our team to accommodate all aspects of the corridor during construction, including debris removal, snow and ice, Courtesy Patrols, and incident management.

Daily project patrols will assess conditions and, for any deficiencies, generate noncompliance reports in the Maintenance Management Information System (MMIS). These reports are continuously available in the MMIS client portal and reported directly each month.

Maintenance

5280 Connectors brings previous experience collaborating with the Enterprises on a performance-based, P3 O&M project. Based on that experience, we created a robust maintenance program combining regular assessments of life cycle and performance expectations with maintenance and renewal work planning:

Life cycle performance

We will incorporate long-term maintenance and durability into final design and construction planning.

Routine maintenance

We will closely monitor all elements to complete timely routine maintenance and meet O&M criteria.

Renewal and rehabilitation maintenance

We will utilize Colorado-licensed professional engineers to properly complete condition assessments and develop effective life cycle plans.

Cover manual

Throughout design and construction, we will develop maintenance manuals for cover infrastructure to support full life cycle performance. We will include video documentation of critical elements and records management to support the cover maintainer.

Cleaning and aesthetics

We will complete daily patrols to monitor the infrastructure and note areas needing cleaning, graffiti removal, or accident debris clearance.

Meeting All Project Pledges to the Community

To meet the Enterprises' commitments to project stakeholders, 5280 Connectors will coordinate all third-party acceptance of design deliverables by integrating design elements that satisfy identified stakeholder needs. In this way, we enable expedited approvals and early work completion.

Delivering design and construction components

Railroad crossings

5280 Connectors will establish multidiscipline task force groups with each railroad, specific to the design development of the bridges. These will offer the opportunity for over-the-shoulder reviews to streamline design development and approval. Our design and construction team has extensive experience working successfully for the UPRR, BNSF and Denver Rock Island Railroads (DRIR). We understand their design expectations and construction requirements, so we include the railroads in task force meetings from the get-go and provide progress plots. This proactive collaboration will greatly reduce time lines for regular review and acceptance of submittals.

Cover and community facilities

Continuing the Enterprises' outreach with local communities, we will establish a dedicated working group to bring local voices to design of elements such as the splash park. We will gain support and ideas for the final design within the established budget to deliver a project the community truly embraces. Also, we will provide a visible safety barrier to separate the work area from the school, and our communications team will provide safety and construction education in schools and the community.

Figure 7 | **Schematic of ATC 2, Diverging Diamond Interchange at Colorado Boulevard Structure:** Colorado Blvd. remains open at full capacity, and during operation of the interchange, we reduce bicyclist and pedestrian **conflict points by 46%**.

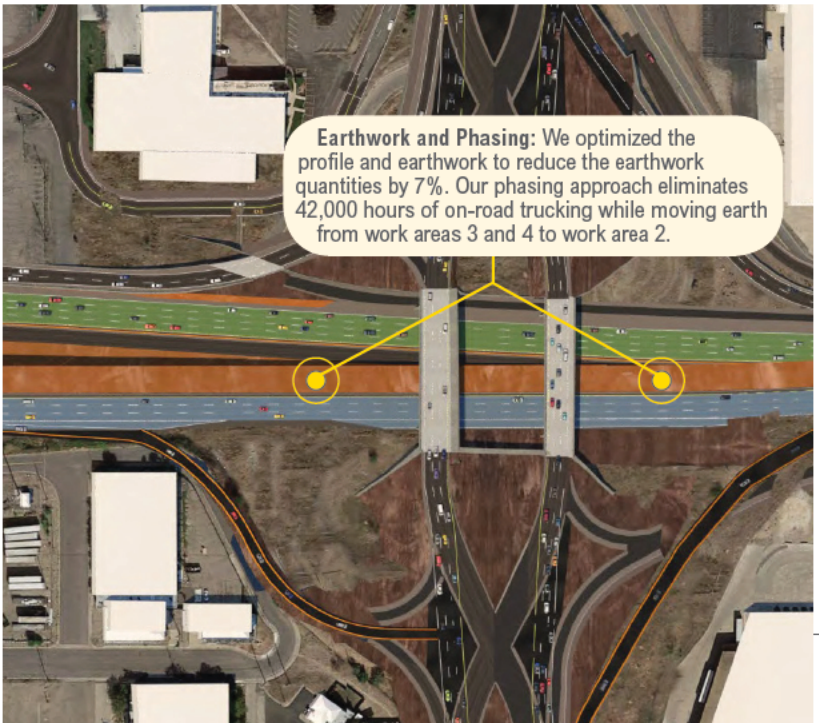


Figure 8 | **Signing, Delineation, Pavement Markings Signalization and Lighting:** We will provide distinguishable and clear guidance to drivers under all lighting conditions.

Drainage

To meet concerns for Swansea and Elyria flood relief and roadway impacts during storms, 5280 Connectors' drainage design will complement adjacent drainage systems and prevent runoff generated south of I-70 from flowing through neighborhoods. We will provide sufficient drainage capacity to improve conditions throughout the corridor and minimize the flooding risks of large-scale precipitation events.

Innovative design concepts

ATCs 4 & 7 – Sanitary/ Storm Sewer Diversion

Divert sewer flows underground to the west, allowing for I-70 mainline profile optimization.

ATC 25 – York Street Drainage Connection

Connect to existing Denver storm drain to eliminate environmental impacts at South Platte River.

ATC 29 – Combine EB Signage at Vasquez Blvd.

Combine overhead roadway and ITS signage west of Steele St./ Vasquez Blvd. to improve sight distances.

ATC 30 – DMS Median Access (Corridorwide)

Provide infrastructure for maintenance personnel to access overhead signage from median of I-70.

ATC 31 – Combined Fire Control Center Site

Combine the Fire Control Center into a single building to improve maintenance and operations.

ATC 37 – I-70 WB Entrance at Steele St./Vasquez Blvd.

Reconfigure the Steele St. and 46th Ave North intersection to eliminate right-of-way impacts.

I-270 Southbound to I-70 Eastbound Connector

Realign the I-270 connector to eliminate environmental and floodplain impacts.

5280 Connectors
Linking Communities

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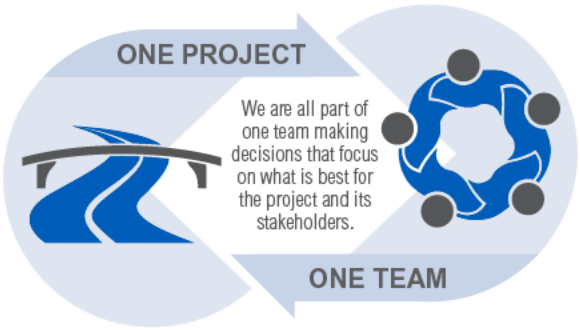
SECTION 2.1.2

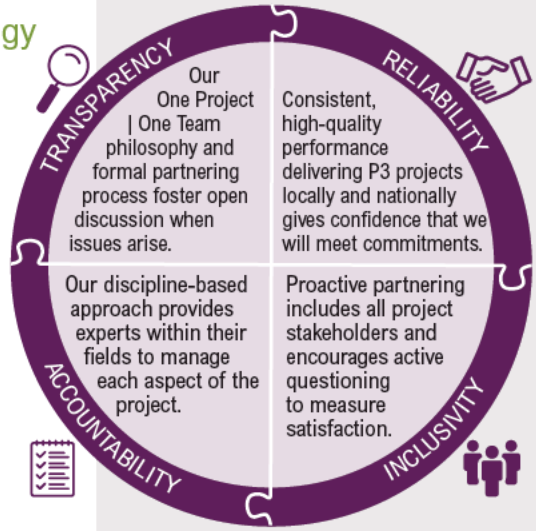
PART 1: PROJECT MANAGEMENT

1.a Management and Organization

1.a.i Management philosophy, approach and strategy for project delivery

5280 Connectors' management approach incorporates a One Project | One Team philosophy and integrates our values of transparency, inclusivity, accountability and reliability.





We will apply our One Project | One Team approach to fulfill all commitments and exceed administrative and work-related requirements of the project. Continuing our procurement strategy, we co-locate team members to collaborate and develop winning solutions through technical, financial and commercial expertise.

One Project | One Team benefits include:

- Most of our staff live and work right here on the front range. We take pride and ownership in Colorado's premier signature project, which will be a capstone in CDOT's and our professional portfolios. We have spent the past 18 months and over 125,000 hours planning and developing innovative solutions for the Central 70 project. We will expand our team with local design, construction and maintenance staff providing the Enterprises with local expertise and upholding the "Always Buy Colorado" philosophy.
- 5280 Connectors is vertically integrated at all levels and within all project disciplines. This provides CDOT with a project that avoids missteps throughout all phases of the project, reduces risk factors that affect the schedule, and avoids surprises to stakeholders. Our team structure begins with a Design-Build Agreement giving Developer/ Lead Operator personnel specific approval rights of key design elements that effect life cycle costs and the residual life of the project. This approach will deliver outstanding quality and performance now and for decades ahead.
- Building on the Enterprises' strong tradition of partnering, we do not define our organization solely as "the Developer." We incorporate CDOT staff and other key stakeholders as active participants and team members. Partnering goes well beyond simply defining communication protocols and meeting contractual obligations. Partnering is a "project first" philosophy that creates an environment of collaboration and trust.

B Part 1 complies with requirements and is consistent with Appendix B Draft Project Management Plan.

Matt Girard
Project Manager

Matt brings 20 years' on-site management of alternative delivery design-build projects, including managing $2 billion in design-build projects and leading PPP projects valued at more than $1 billion. His recent success includes the US 36 Managed Lanes PPP in Colorado. Matt will be the single point of contact for the Enterprises responsible for overall project success.

Partnering

- **Reduce misunderstandings** through knowledge of expectations and increased collaboration.
- **Streamline issue resolution** because parties know what to expect from each other.
- **Improve understanding of stakeholder issues** to proactively address misconceptions.
- **Minimizes potential delays** because communication among parties is more effective.

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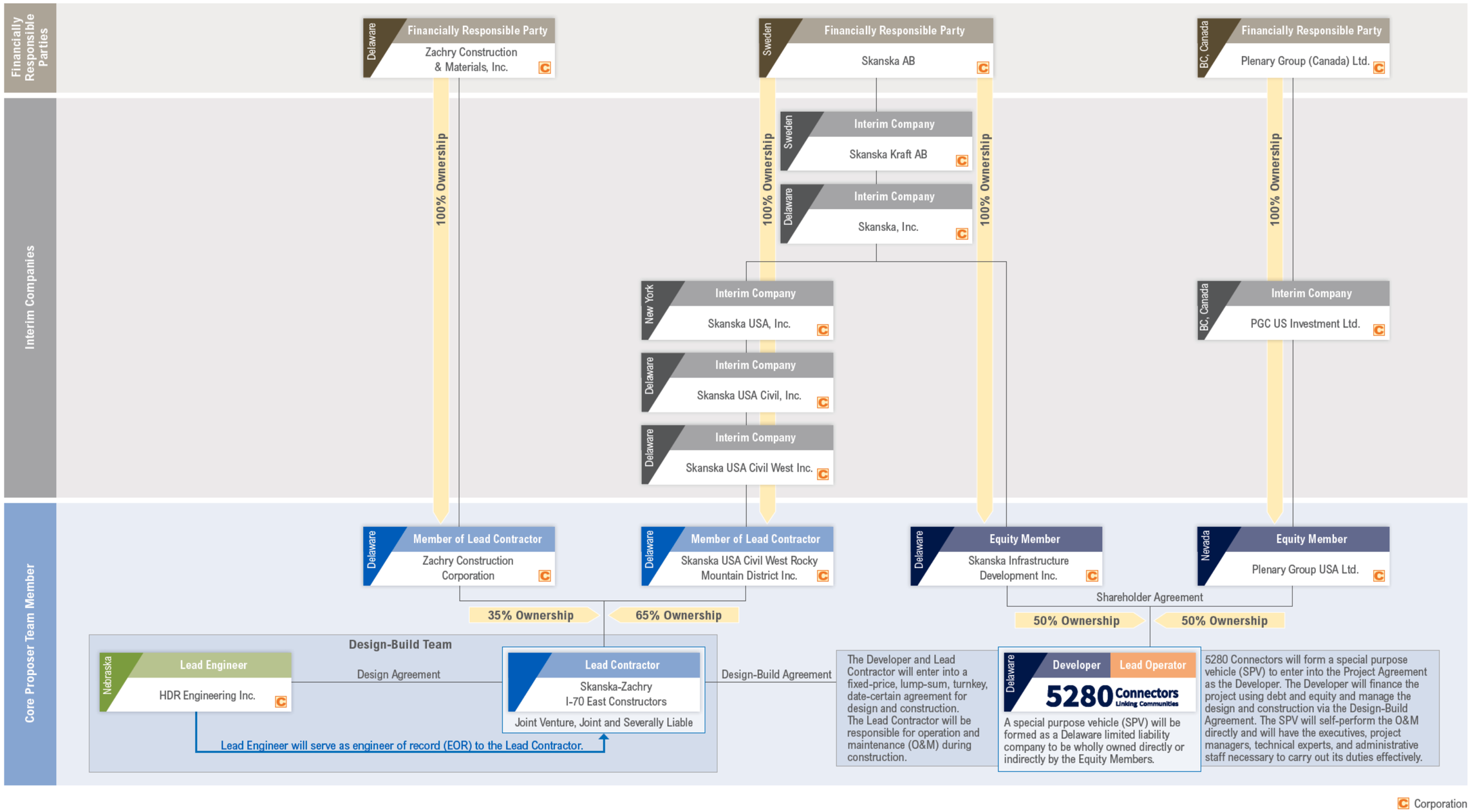
1.a.ii Project management organization

1.a.ii.A Corporate organization

Figure 1.01 | **Corporate Organization Chart:** 5280 Connectors' management organization incorporates clearly defined roles and responsibilities for the major participating entities.



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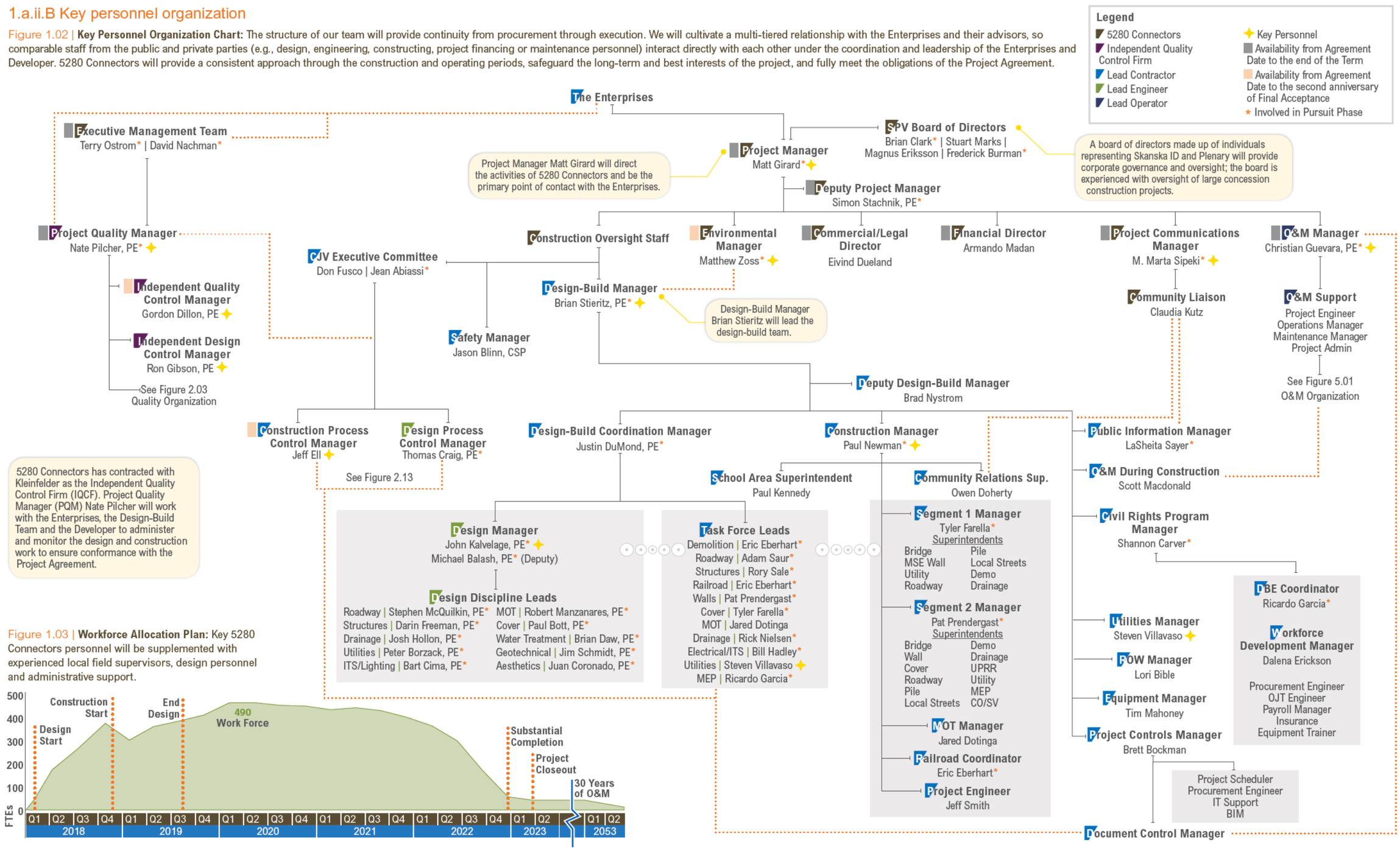
1.a.ii.B Key personnel organization

Figure 1.02 | **Key Personnel Organization Chart:** The structure of our team will provide continuity from procurement through execution. We will cultivate a multi-tiered relationship with the Enterprises and their advisors, so comparable staff from the public and private parties (e.g., design, engineering, constructing, project financing or maintenance personnel) interact directly with each other under the coordination and leadership of the Enterprises and Developer. 5280 Connectors will provide a consistent approach through the construction and operating periods, safeguard the long-term and best interests of the project, and fully meet the obligations of the Project Agreement.



5280 Connectors has contracted with Kleinfelder as the Independent Quality Control Firm (IQCF). Project Quality Manager (PQM) Nate Pilcher will work with the Enterprises, the Design-Build Team and the Developer to administer and monitor the design and construction work to ensure conformance with the Project Agreement.

Figure 1.03 | **Workforce Allocation Plan:** Key 5280 Connectors personnel will be supplemented with experienced local field supervisors, design personnel and administrative support.

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1.a.ii.C Resource plan

Our key personnel bring 262 years' combined experience and will be supplemented with experienced local field supervision, design and administrative staff (see Appendix L, Workforce Development Plan). We will source equipment locally and from our regional fleet inventory. Figure 1.03 on page 3 illustrates our workforce allocation plan.

- For support roles, we will **hire from local universities**, such as the Colorado School of Mines and University of Colorado.
- Knowing the quantity of craft employees required, we created our own **Local Hiring and On-The-Job Training (OJT) program** to supplement agencies, such as Certified Contractors of America (CCA) and Associated General Contractors (AGC), to source employees and exceed local hire and OJT goals.
- Our **on-site Hiring and Training Center** will develop and maintain a craft labor pool, coordinate with professional hiring and training agencies, advertise for positions, interview and hire candidates, and develop employees.
- For specialized work, we will select the most **qualified subcontractors**, giving preference to disadvantaged business enterprises (DBEs) to exceed project goals and integrate the community.

1.b Safety

Our Safety Management Plan (see Appendix B, Section N) enacts our Care for Life core value to create a culture encompassing safety, health and well-being. All employees protect the person standing next to them, whether that is a co-worker, a bicyclist or a child walking to school. Each life that shares our work zone matters, so we ensure each is able to work or travel safely.

Safety begins in our design task groups, where we develop details for pedestrian barriers, overhead protection and fencing. We will implement these positive protections between the I-70 mainline and work zones and emergency pullouts at half-mile increments. We go above and beyond to communicate changes to the public to ensure they understand our traffic control changes. Our culture is ingrained into employees at orientation training. Before job site tasks, we review Construction Work Plans and begin each conversation with a safety minute.

Jason Blinn, CSP
Safety Manager

Jason brings 10 years' experience managing safety on major civil infrastructure projects. Jason will be responsible for implementing the **ISO 14001 and OHSAS 18001 certified SHEMS** on the Central 70 Project. Jason will lead safety training and empower each team member to stop work for any unsafe act.

We base our Safety Management Plan on our Safety, Health, Environmental, Management System (SHEMS) process (see Appendix M for SHEMS details). This system combines our plans, training methods, and tools to safely plan and build work, such as:

- **Construction Work Plans.** Developed for each activity, these outline potential hazards and mitigations, required personal protective equipment, and hold points. We review Traffic Control Plans and details for pedestrian and traffic safety.
- **Crane Location Plan.** This sitewide plan identifies crane locations, ground conditions, critical picks, crane radii, crane load charts, and checklists for each pick and crane move.
- **Daily Toolbox Meeting.** This preshift meeting highlights daily activities with hazards identified by the crew, changes to the work area, and any adjustments to the Construction Work Plan.

Figure 1.04 | **Risk Mitigation:** 5280 Connectors identified high-risk operations requiring mitigation.

Risk	Mitigation
Cover construction around Swansea	Developed detour so Columbine St. is never closed. Provided pedestrian barrier protection on street crossings and pedestrian covers for overhead work to ensure Safe Routes to School.
Protecting existing and new infrastructure during viaduct demolition	Developed out 4x4 concept to allow more working room north of the existing structure during demolition of the westbound structure. Place large berms at the toe of cut slope to catch debris. Place demolition netting on the south side of the viaduct to eliminate potential debris affecting nearby infrastructure. Use traffic closures and road plating during demolition over 46th street.
Support of excavation and mass hauls	Place barrier protection for vehicles and restrictive fencing for pedestrians near all leading edges. Reduced on-road truck traffic by 24,000 hours (see Figure 3.06 on page 19).
MOT and continuity between Work Area 2 and Work Areas 3 and 4	Tie major traffic switches to new phases of work, concurrently eliminating driver confusion due excessive traffic switches. Provide extended connectivity and increase capacity earlier, as explained in Section 3.

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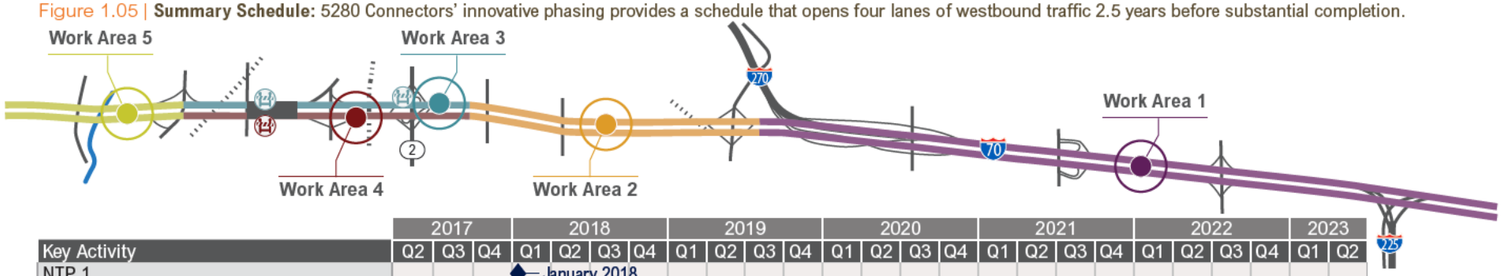
1.c Proposal schedule summary

1.c.i Key milestones

Figure 1.05 | **Summary Schedule:** 5280 Connectors' innovative phasing provides a schedule that opens four lanes of westbound traffic 2.5 years before substantial completion.

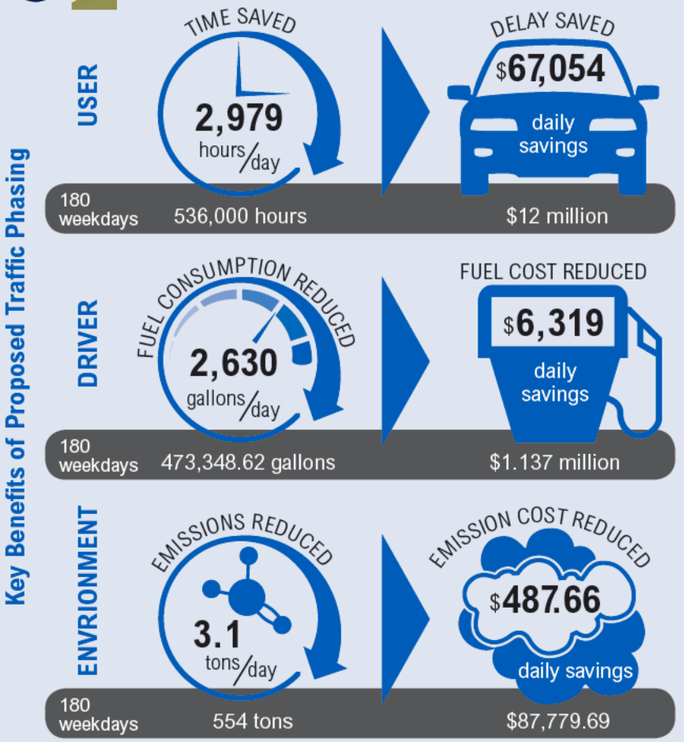


Key Activity	2017 Q2	Q3	Q4	2018 Q1	Q2	Q3	Q4	2019 Q1	Q2	Q3	Q4	2020 Q1	Q2	Q3	Q4	2021 Q1	Q2	Q3	Q4	2022 Q1	Q2	Q3	Q4	2023 Q1	Q2
NTP 1				◆ January 2018																					
Engineering Design	Start December 2017			├				Finish March 2019																	
ROW Acquisition	Start June 2017 BY CDOT				├							Finish June 2020													
Utility Relocation				Start August 2018	├											Finish October 2021									
NTP 2 Start of Construction					◆ May 23, 2018																				
Construction Work Area 1				Start August 2018	├											Finish May 2021									
Construction Work Area 2					Start January 2019	├												Finish September 2021							
Construction Work Area 3				Start November 2018	├													Finish November 2021							
Construction CD Lane Colorado to Brighton												December 28, 2020 — Collector-distributor (CD) lane open to traffic													
4WB Lanes into Lowered Section								January 13, 2020 — Provide 4 lanes of WB traffic 2.5 years early																	
Construction Work Area 4												Start June 2020	├							Finish June 2022					
4WB/2EB Lanes into Lowered Section																May 28, 2021 — Provide 4 lanes of WB and EB traffic 2 years early									
4WB/4EB Lanes into Lowered Section																			November 15, 2021 — All through traffic in lowered section 1 year early						
Construction Work Area 5																				Start January 2022	├	Finish April 2022			
NTP 3 Snow & Ice Commencement						◆ July 1, 2018																			
Payment Milestones																May 28, 2021 ① ② ③						◆ June 16, 2022			
Substantial Completion																September 8, 2021						◆ September 14, 2022			
Final Acceptance																November 30, 2021							◆ December 13, 2022 **+90 days**		

The critical path runs through the WB viaduct demolition, traffic switches 4x2 and 4x4, EB viaduct demolition and the Cover in Work Area 4. It also runs through UPRR bridge and mainline paving in Work Areas 3 and 4 at various points.

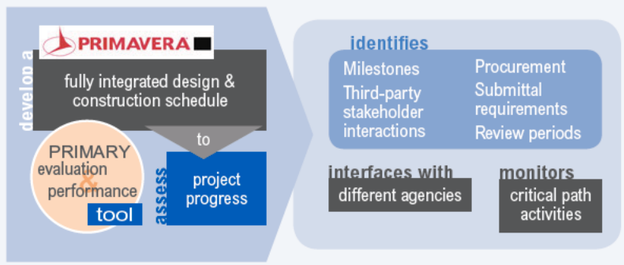
(See Figure 3.02)

Envision: Reducing environmental footprint and improving the quality of life through innovative phasing.



1.c.ii Approach to developing and updating the baseline schedule

Figure 1.06 | **Approach to Scheduling:** 5280 Connectors has developed a fully integrated, resource-loaded, projectwide schedule. The preliminary schedule and work breakdown structure meet Project Agreement Schedule 8 requirements and list over 7,400 activities encompassing engineering, rights of way, utility relocations, and construction of Work Areas 1-5.



We will develop and update the schedule with active participation from all stakeholders and project team members throughout the life of the project.

Figure 1.07 | **Developing the Baseline Schedule:** 5280 Connectors will develop the baseline schedule in Project Agreement Schedule 8, Section 3, as summarized here.

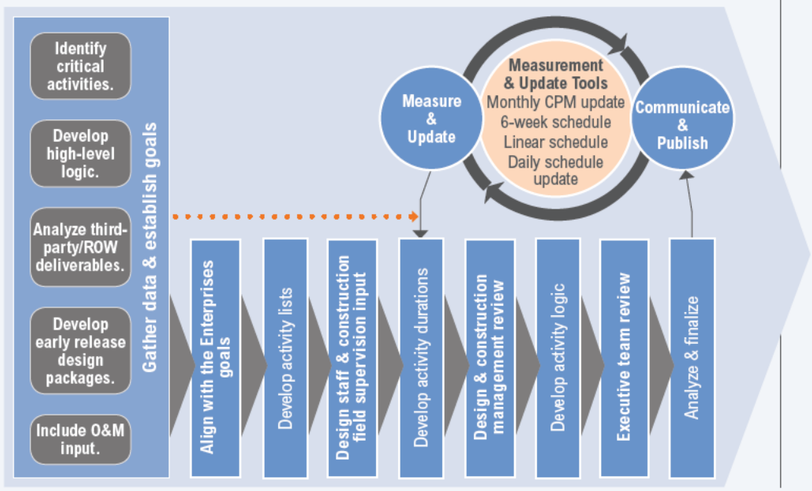
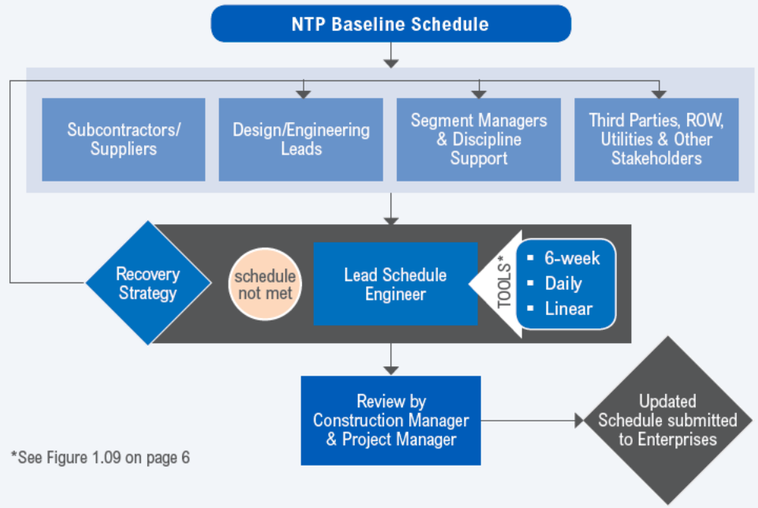


Figure 1.08 | **Updating the Baseline Schedule:** 5280 Connectors will provide the Enterprises with monthly updates of the project schedule per Project Agreement Schedule 8, Section 3.



*See Figure 1.09 on page 6

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1.d Schedule management approach

Our critical path method (CPM) schedule drives the project. This living document outlines our critical path and work sequence and tracks our progress. We resource and cost load the schedule to reflect the executed work and forecast project duration (critical path), potential delays, mitigations and workarounds.

The Schedule Work Plan explains how we develop, review, update, and integrate schedules to accurately track information and update each Monthly Progress Schedule. Continuous updates and team collaboration create a truly living document.

The detailed CPM schedule demonstrates our commitment to transparency in reporting schedule results and key decisions. Figure 1.09 shows additional tools we use to maintain the CPM.

1.d.i Managing resources and activities to achieve key milestones

Using the CPM, we assure progress on self-perform and subcontracted activities. For more complex aspects, such as the Cover, we will integrate the CPM schedule with our Building Information Modeling (BIM) model to **create a 4-D BIM schedule** allowing enhanced resource management and clash detection in achieving key milestones.

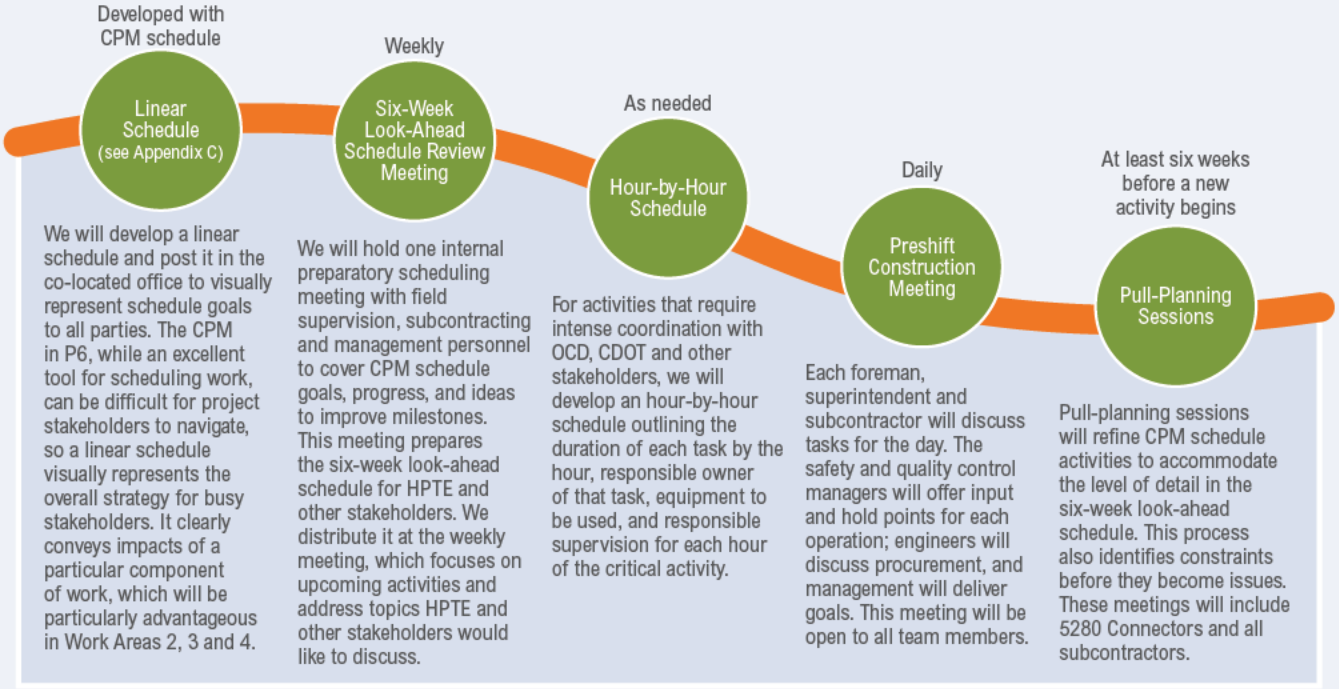
The team uses the logic from the CPM to produce an aligned linear schedule that visualizes big-picture logic. It shows resources and their allocation to particular work areas to coordinate sharing resources.

Segment managers, superintendents and engineers will rely on this tool to ensure appropriate staff and equipment for operations, procure materials on time, address utility and third-party stakeholder activities, obtain proper design documents, and coordinate subcontractors. The construction team will use both CPM and linear schedules to develop goals for six-week schedules and ensure they align with project milestones, which we monitor daily at preshift meetings.

1.d.ii Ensuring timely delivery of materials

5280 Connectors will assign procurement engineers reporting directly to the project controls manager. For long-lead items, they will collaborate with the project team to manage suppliers and ensure deliveries exceed expectations. Our team has already received anticipated procurement schedules, but this lengthy procurement process requires revisiting the schedule once we can execute contracts. Procurement engineers will finalize the contract execution plan and procurement log with critical items tabbed separately and begin executing a procurement schedule immediately following financial close.

Figure 1.09 | **Schedule and Resource Management:** Using these tools, 5280 Connectors will ensure the most current and accurate data is in the schedule.



Applying our One Project | One Team approach, procurement engineers will communicate continuously with suppliers and subcontractors to ensure that suppliers receive design details and Early Release for Construction packages and that shop drawings are submitted and reviewed in a timely manner. They will visit supplier facilities for visual progress updates and speak face to face with suppliers' management to ensure deadlines are met. Long-lead items have been identified, placed on the procurement tracking log, and incorporated into the schedule. Some of the critical items follow:

1.d.iii Approach to effectively managing the scheduling interface, liaison and coordination among key stakeholders

1.d.iii.A. Developer, subcontractors and suppliers

5280 Connectors will implement proven project management controls and subcontractor management processes from past successful P3 projects to manage the work and track the schedule, while remaining flexible to change.

Aaron Letterly
Project Scheduler

Aaron has over 14 years' scheduling experience on projects similar in both scope and complexity to Central 70. He is an AACE International certified Planning and Schedule Professional (PSP).

Given this project's complexity, we will employ an segment scheduler for each work area to keep schedules aligned with all subcontractors and suppliers. They will report to Project Scheduler Aaron Letterly, who will compile and maintain the CPM schedule. Beyond monthly schedule updates, we will update and review the schedule weekly to ensure that work progresses as required. We will thoroughly review the 4-D BIM schedule and six-week look-ahead schedules with all team members, subcontractors and suppliers in regular meetings.

1.d.iii. B. Design, quality management, construction and O&M work streams

5280 Connectors will use a discipline-based approach to coordinate design, quality management, construction, and O&M via inclusive task force groups. We will invite key stakeholders, including the Enterprises, utilities, railroads, and community members, to integrate all stakeholder requirements into comprehensive solutions.

We link design, construction and O&M schedules to efficiently and completely deliver design plans and construction activities.

1.d.iii.C. Developer and Procuring Authorities

Each month, our schedule management process will provide to the Enterprises accurate, realistic information on the project status and upcoming work. We will provide interim updates at weekly meetings.

Additionally, we will collaborate with the Enterprises to comply with Project Agreement Schedule 9, and any concerns identified through partnering efforts.

1.d.iii.D. Developer resources vs. governmental authorities, other stakeholders and agencies

To accommodate local governments, utility owners, railroads, and other key stakeholders, 5280 Connectors will provide a dedicated permitting specialist to facilitate all government approvals. We will incorporate all submittal times into our schedule, and we will identify critical submittals early, paying particular attention in scheduling items with lengthy or complex approval processes, such as the work in the UPRR rail yard.

5280 Connectors' utilities manager and railroad coordinator will own these relationships and facilitate and coordinate this schedule. We will also meter submittals across work groups to avoid overwhelming approving agencies.

We schedule construction activities for all major types of work in the appropriate construction phase, and we base the durations for these activities on proven production rates and preliminary quantities calculated from our proposed design. Appropriate relationships between construction activities within our schedule to ensure logical progression of the work.

SECTION 2.1.3

PART 2: QUALITY MANAGEMENT

2.a General Requirements

Figure 2.01 | **Commitment to Quality:** The Quality Management Plan (QMP) will govern all phases of the project. We promote a culture of quality at every level, empower our staff to make appropriate decisions regarding quality, and insist on timely identification of potential quality issues.

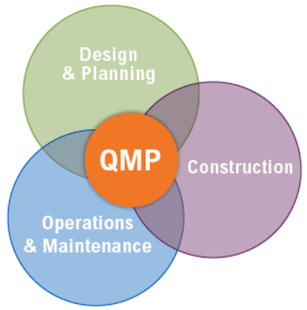
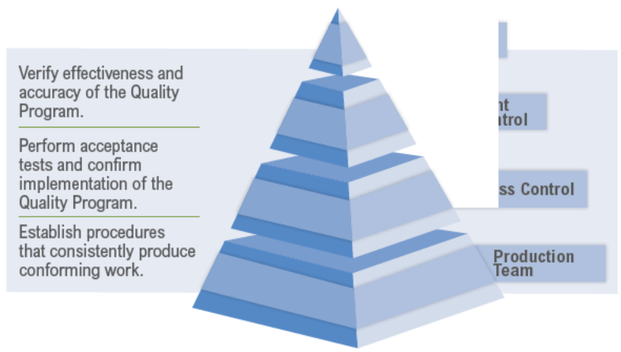


Figure 2.02 | **Quality Hierarchy and a One Project | One Team Approach:** Placing the needs of the project and the affected stakeholders above the individual needs of the Enterprises and the Developer ultimately benefits everyone involved, so we encourage collaboration among team members to resolve issues at the lowest possible level of the quality hierarchy.

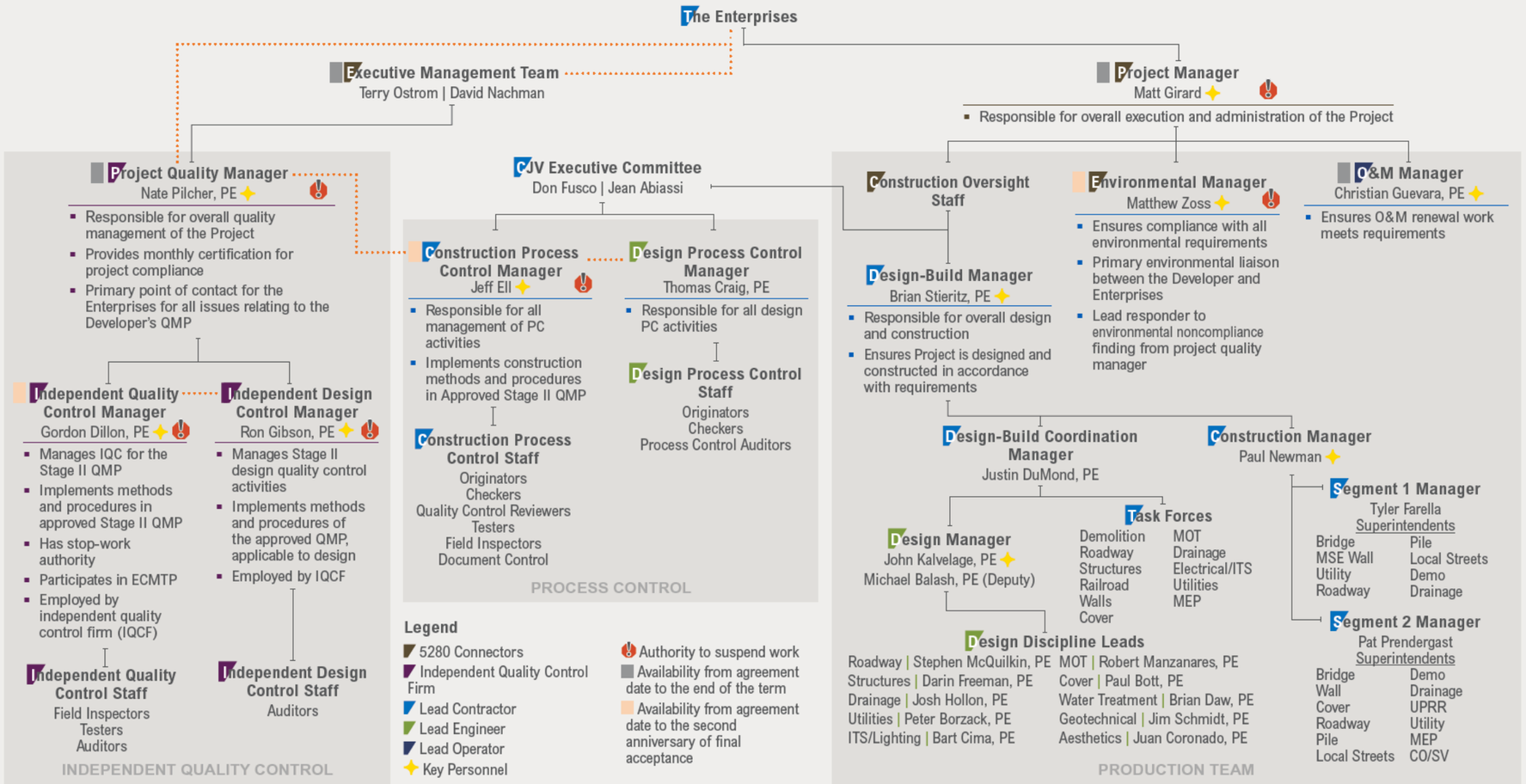


Nate Pilcher, PE
Project Quality Manager

Project Quality Manager Nate Pilcher has over 10 years' experience managing quality programs. He will work with the Enterprises, the Design-Build Team and the Developer to administer and monitor the design and construction work to ensure the project conforms with the Project Agreement.

2.a.i Quality management organization

Figure 2.03 | **Quality Organization Chart:** Quality Management personnel lead a Quality Management Organization (QMO) with collective responsibility for implementing the Quality Management Plans (QMP). All 5280 Connectors employees are responsible for quality and empowered to stop work for quality, safety, or environmental concerns.



D E Part 2 complies with requirements and is consistent with Appendixes D & E, Draft Quality Management Plan. The Draft Quality Management Plan ensures work performed during every phase of the project (design, planning, construction, and operations) meets or exceeds the relevant project requirements and that we document conformance appropriately and in accordance with ISO 9001:2015 and federal compliance standards.

2.a.ii Approach, process and procedures

Figure 2.03 illustrates the lines of authority in the quality organization for operations and decision-making, which is also supported by the processes shown in Figures 2.02 and 2.04.

Figure 2.04 | **Our Quality Management Organization:** We will implement QMP processes and procedures that ensure conformance throughout the project's life cycle.

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2.a.iii Process control and quality control independence

Figure 2.05 | **Ensuring Accountability:** 5280 Connectors ensures accountability by maintaining independence between the QMO and those producing work. We build this independence into our QMO and QMP.

Quality staff do not report to production staff or management.

Key members of the QMO have complete autonomy in enforcing the QMP.

Designated team members may stop work to address quality issues.

2.a.iv Proposed organization systems for communication and documentation

Incorporating our One Project | One Team approach, we will create a QMP that ensures regular, open communication throughout the project, between the management personnel and subcontracting organizations. We will

- Communicate quality processes and expectations to all staff in regular training sessions.
- Obtain input and review across disciplines, so appropriate parties contribute to quality procedures and resolutions.
- Establish clear lines of communication and delineate management responsibility for quality and staff training while maintaining independence of independent quality control (IQC) and process control staff.
- Actively involve stakeholders throughout the project life cycle, including task force, preactivity, design-review, schedule, and progress meetings, as well as during construction and O&M.
- House project records in a central database to offer efficient access for all project team members.
- Perform regular audits of the document control database to ensure proper record storage. Perform audits to assure the Enterprises that we are duly overseeing our performance and compliance for design, construction and nonconstruction work.

See Appendices D and E for additional details.

2.a.v Key personnel roles and responsibilities

Figure 2.03 shows our key personnel and their roles and responsibilities. At every phase of the project, the project team will consist of the following personnel:

- Production: Consistently perform and deliver a product that meets project requirements.
- Process control (PC): Check the work. Document conforming and nonconforming work.
- Independent quality control (IQC). Verify the work at prescribed intervals.

For any nonconforming work, 5280 Connectors will apply the enforcement processes in our QMP to bring the work into conformance with project requirements.

Representatives for all parties will meet regularly in task force meetings to resolve issues. The use of QMP enforcement procedures, including stop-work orders, is solely at the discretion of the key Quality Management Organization personnel (see Figure 2.03). Appendices D and E describe in detail how members of the Quality Management Organization interact to resolve quality issues. For purposes of the renewal work, quality management will follow the same requirements as during the construction phase.

2.a.vi Quality continuous training

5280 Connectors will use only experienced, qualified staff to provide project oversight. In the project database, we maintain resumes describing work experience and applicable professional certifications for all quality staff. We use this database to assign the most qualified specialists to oversee work. Quality staff will oversee only work items for which they have proper training or certifications.

Quality staff will train on QMP processes and procedures and the their role in QMP implementation prior to performing work on the project. We will implement a comprehensive on-boarding process for the entire quality team, and then build ongoing training and auditing for our team, processes and performance into our quality staff's regular meetings.

Weekly quality staff meetings will resolve QMP implementation issues and provide training on updates or changes to the QMP. Regular Quality Task Force meetings with project stakeholders will further refine QMP implementation. Appendices D and E contain details regarding each of these processes.

2.a.vii Staffing methodology

2.a.viii Document control

The project document control procedures contained in our Stage 1 and Stage 2 Quality Management Plans (in Appendices D and E) define the controls needed to identify, retrieve, and retain all quality and construction records.

We will leverage Project Document Portal, our web-based document control system, to customize a centralized project database. Standardized naming conventions and filing systems will keep all project documentation easily searchable and retrievable.

Experienced document control staff will maintain our centralized database to ensure compliance with procedures. Only designated staff or stakeholders with project-specific document control training will add or remove files from the centralized database. We will train all users with access to the document control database to facilitate documentation retrieval.

The QMP outlines review/approval procedures for all design, construction, and quality records to prevent distribution of documents prior to receiving proper approvals. We will carefully control document revisions superseding previous versions to ensure use of the most updated version.

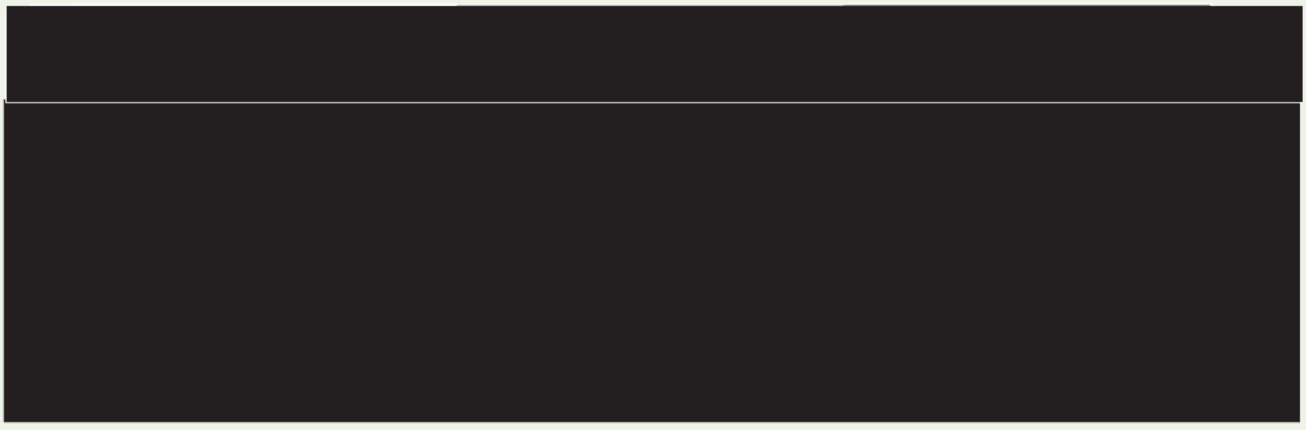
2.a.ix Process control and quality control

Every discipline will apply process and quality control procedures to assure that the work and documentation consistently and reliably meet or exceed requirements. Our process control team will verify that all mechanisms and logistics efficiently and effectively progress the work toward on-time completion, so we consistently produce the highest quality work.

Our QMP outlines process and quality control procedures according to Schedule 8 for all work performed throughout project life, including:

- PC/QC work plans
- Control of procured materials
- Training requirements
- Preactivity and Quality Task Force meetings
- Inspection of major suppliers' facilities
- Reporting and documentation requirements
- Recognizing and resolving nonconforming work
- Preventative and corrective actions
- Requests for information (RFIs)
- As-built drawing preparation

Everyone who performs work on the project will follow the general process control procedures in our QMP. In addition, individual disciplines, subcontractors, and suppliers often utilize complimentary quality control plans and procedures to address their best practices. The construction process control manager must approve these plans before use to ensure that they comply with the QMP.



2.a.x Independent Quality Control

The IQC program will verify the conformance of all work on the project at all phases (see Figure 2.07). IQC will perform and document audits, materials tests, and field inspections at prescribed frequencies or hold points. Auditing includes self-assessments of the performance the IQC personnel and products to verify effective QMP implementation. We will resolve work that is out of compliance using the quality enforcement procedures outlined in Appendices D and E, such as the Non-Conforming Work resolution process. The IQC firm, led by the Project Quality Manager Nate Pilcher, PE, operates independently from the production and process control teams. Figure 2.03 details our entire Quality Management Organization.

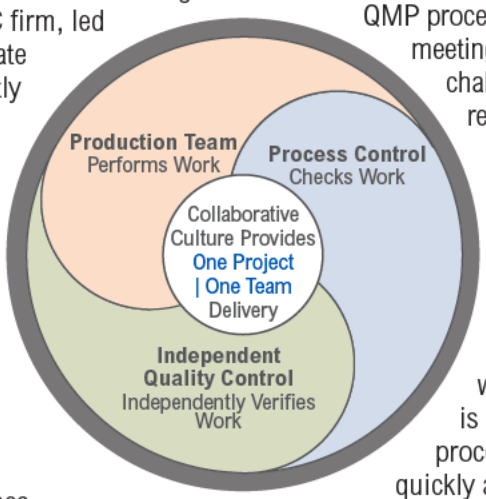


Figure 2.07 | **Every phase of the project:** The project team will consist of production, process control, and IQC personnel.

2.a.xi Quality program continuous improvement

5280 Connectors outlines processes and procedures in our Phase 1 and Phase 2 QMP (in Appendices D and E) to improve performance throughout the project. As a living document, the QMP adapts throughout the project life to best meet project needs and improve implementation. The project quality manager and the Enterprises will approve changes to the QMP in accordance with the procedures established Appendices D and E.

Project stakeholders will regularly participate in Quality Task Force meetings to evaluate the implementation and effectiveness of QMP procedures. Our Phase 1 and 2 QMPs prescribe self-auditing, performed by the quality team, of the overall quality program to correct any implementation issues.

As mentioned previously, we will train all staff on QMP policies and procedures and their roles in producing quality work, during on-boarding and ongoing training. We continuously evaluate the performance of quality staff to ensure consistent implementation of QMP procedures, and regular quality staff meetings allow the entire team to discuss challenges and solutions to prevent repeated issues.

2.a.xii Identify, categorize and resolve nonconformance

Our collaborative approach to quality will minimize the amount of nonconforming work. When nonconformance is discovered, our established procedures will resolve issues quickly and appropriately. We empower team members at every level to identify and immediately report nonconforming work to minimize impacts to project delivery.

Figure 2.08 illustrates our resolution process for nonconforming work, used for all types of nonconformance, no matter the type of work or issuing authority. We will audit and update the nonconformance resolution process as needed.

2.a.xiii Address defects and deficiencies

5280 Connectors developed a detailed QMP to quickly recognize and efficiently resolve quality trends:

- If we identify a potentially systemic quality issue, we will increase the frequency of prescribed work auditing until we rectify the issue.
- If the Enterprises identify nonconformance, we will immediately document it and implement our resolution process, or respond within CDOT's preferred system.
- Electronic accumulation of audit results will allow real-time tracking of compliance performance of all work items.
- Where nonconforming work indicates a systemic failure of process controls or implementation, we issue Corrective Actions to identify causes and effective corrections. For example, we may update plans and retrain staff in those operational areas.
- We continually monitor lists of nonconforming work items to identify trends. Stakeholders will discuss trending items at regular Quality Task Force meetings to implement appropriate resolutions.

2.b Stage 1 quality management

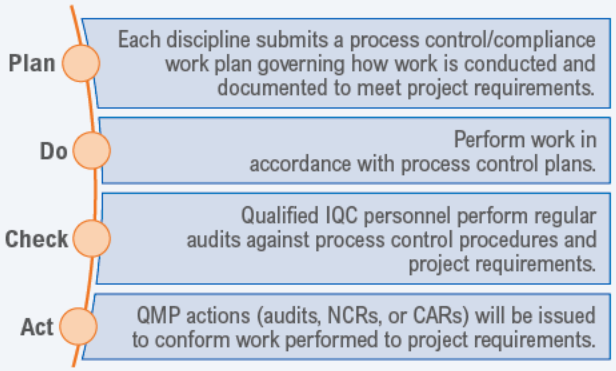
2.b.i Approach to nonconstruction elements

D The Stage 1 QMP in Appendix D conforms with Project Agreement Schedule 8 and details procedures to ensure that nonconstruction work meets or exceeds requirements.

Stage 1 Quality Management Plan

Design	Design Quality Mgmt.	Admin.	Project Management
	Design Packages		Financing
	Design Development		Reinstatement
Construction	Courtesy Patrol Service	Operations & Maintenance	Base Asset Condition Inspection
	Crisis Communication		Maintenance Durability
	Durability		Maintenance Management
	Emergency Response		Maintenance & Operations Communication
	Environmental Compliance Work		Operations Management
	Incident Management		Operations & Maintenance Quality Management
	Property Management		Renewal Work
	Safety Management		Snow & Ice Management

Figure 2.09 | **Quality Management of Nonconstruction Elements:** Despite procedural differences between Stage 1 and 2 QMPs, the quality principles remain the same, and we consistently follow the Plan, Do, Check, Act formula.



2.b.ii Nonconstruction resources and procedures

Design quality and delivery personnel will coordinate in regular scheduling and task force meetings to confirm staff availability. Each design deliverable will be subject to PC, QC and IQC processes as outlined in the Stage 1 QMP. All deliverables will undergo design verification, constructability, interdisciplinary and technical quality reviews, IQC, and the Enterprises' Quality Assurance Oversight program. Railroad and other third-party reviews will follow as needed. Collectively, these fulfill federally mandated quality responsibilities, the ultimate responsibility for the quality of the constructed project, and comply with the requirements of the Project Agreement, including Schedules 8, 14, 15, 17 and 18. Figure 2.10 depicts our design deliverable process.

Each Deliverable Package will be submitted with a Design Audit Package inclusive of:

- PC Forms: Outline the types of reviews and reviewers for each deliverable package.
- Design Discipline Lead/Reviewer Comments: Bluebeam, or similar, forms to resolve comments before submittal.
- Enterprises/Third-Party Comment Forms: Allow comment resolution in task force and over-the-shoulder meetings, before submittal.
- Reports: Incorporating process control
- QC Audit Checklist
- Design Origination and Certification Forms
- Independent Quality Control Documentation

2.b.iii Design development approach

[redacted]

John Kalvelage, PE ✦
Design Manager

John will be responsible for coordinating the timely completion of all design deliverables. His extensive design management experience will be key in managing this multidiscipline design team and finding innovative ways to leverage the design team's skills in proactive problem solving.

2.b.iv Design personnel interface

5280 Connectors structures key quality processes to collaborate across disciplines, including PC and ICQ, to involve the appropriate parties, and we account for considerations for the construction, operation, maintenance and project delivery early in project design. The O&M team will participate in design to ensure that it accounts for safety and ease of operation and maintenance. Similarly, the design team will remain involved during the construction and O&M phases via

- Interface at designated milestones and Design Task Force meetings
- Co-location to facilitate One Team | One Project
- Document control and quality procedures that require and track discipline lead and stakeholder approval before finalization

2.b.v Design approach

2.b.v.a Approach to delivering design

[redacted]

[redacted]

[redacted]

2.b.vi Interface with the Procuring Authorities

5280 Connectors' design team will engage with the Enterprises actively and early to solicit input and involvement throughout the design phase. The Enterprises will also be invited to provide input on the processes to facilitate interface across disciplines and stakeholders, as a part of our One Team | One Project approach to delivery that reflects our principles of transparency and inclusivity. In addition, we will walk though major package submittals with representatives from the Enterprises, and weekly meetings will provide a forum to do so and to solicit over-the-shoulder input as packages progress.

2.b.v.b Managing subconsultants

Thomas Craig, PE
Design Process Control Manager

Tom brings 29 years' experience managing design quality performance on large civil infrastructure projects. He will oversee the design, ensuring that the final design has been inclusive of all design requirements and supports One Team | One Project through collaboration across all disciplines.

[redacted]

2.b.vii Design packages

[redacted]

2.c Stage 2 quality management

2.c.i Approach to construction

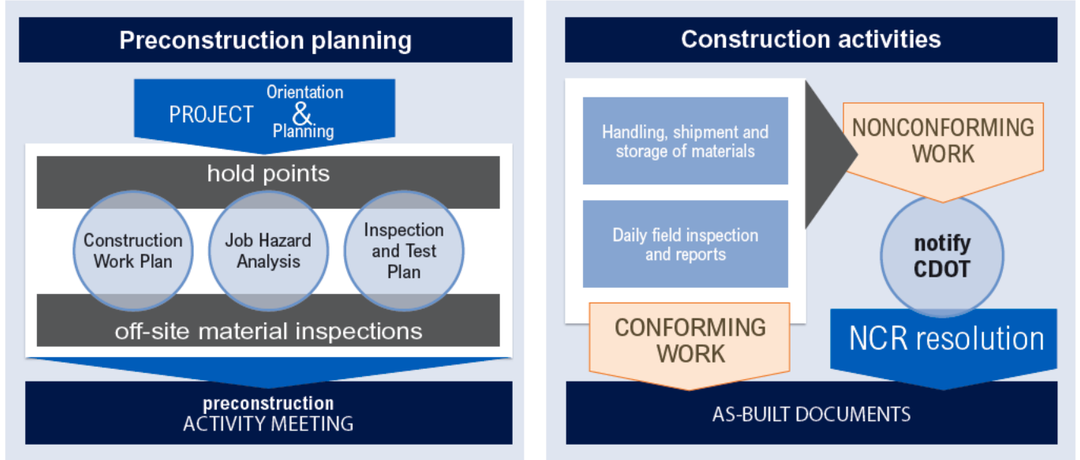
E Part 2 is compliant with requirements and is consistent with Appendix E Stage 2 Draft Quality Management Plan.

Figure 2.11 | **Processes Outlined in Our Stage 2 QMP Govern Elements of Project Construction:** 5280 Connectors' approach to construction quality management is similar to our approach to project quality generally and consists of the following elements.

Plan	Work Plan Developed	▪ Train project staff in quality processes, procedures and expectations before they begin working on the project. ▪ Build quality procedures into work plans for specific construction elements, and discuss them at preactivity meetings with production and quality staff members. ▪ Review work products and plans before beginning construction of an element to ensure conformance to project requirements.
Do	Work Performed to Plan	▪ Perform and document process control throughout the work to consistently produce conforming elements. ▪ Carry out the work in accordance with the construction work plans to ensure quality is built into the construction process. ▪ Relating to safety, quality, and environmental performance, the construction team has stop-work authority and regularly evaluates performance as the work progresses.
Check	Independent Verification	▪ Perform regular inspections of the work elements to verify compliance with the project quality standards and expectations. ▪ Document the inspection process through the project document control system, and maintain a compliance plan audit and surveillance log. ▪ Generate corrective actions through a nonconformance report for any nonconforming work observed.
Act	Resolution of Nonconforming Work	▪ Resolve work that is observed to be nonconforming through QMP enforcement procedures to bring it back into compliance. ▪ Update the Quality Management Plan (QMP) and quality training procedures to incorporate lessons learned into future work planning. ▪ Generate regular reporting for the Enterprises and the independent quality control (IQC) team to validate quality performance.

2.c.ii Planning and controlling construction work

Figure 2.12 | **Construction Planning and Control:** As new elements appear on the schedule, 5280 Connectors conducts preactivity meetings to develop work plans that incorporate the processes outlined in our QMP into the construction work. At minimum, we will invite relevant subcontractors, the Enterprises, PC and IQC teams. We review and approve work products and specific PC and IQC plans prior to the start of construction. This planning yields consistently conforming work to answer key milestones.



2.c.iii Construction management approach

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2.c.iv Staged construction

5280 Connectors has developed a plan for the Central 70 project that allows our construction joint venture team to manage maintenance activities during the construction period. We will integrate quality planning into each stage of construction to ensure that quality remains at the forefront of all work.

Our staff will include experts with many years of Denver experience who can plan for local weather. During inclement weather, we will ensure the safest and most efficient operations possible within the maintenance management plans laid out by the Enterprises. In addition, we will dedicate crews to handle miscellaneous and routine maintenance activities during construction, just as we will during the O&M period.

2.c.v Interface with the Enterprises

Our One Team | One Project approach fosters a partnering relationship between the development team and the Enterprises. Our Stage 1 and 2 QMPs include the Enterprises in our processes and procedures to ensure formal interaction and check-points between our QMO and the Enterprises. In addition, our IQC firm and construction staff at all levels will engage the Enterprises to collaboratively resolve issues in a timely manner. To do so, we will host regular meetings and remain consistently available for collaboration using tools such as co-location and Skype for Business. Also, we will fully integrate CDOT's ACONEX document control system into our processes.

2.c.vi Constructibility, durability, maintainability and environmental compliance

5280 Connectors accommodates constructibility, durability, maintainability, and environmental compliance into our design drawings and specifications governing construction (see Figure 2.15). For example, we will incorporate discipline leads and experts from construction and O&M teams during the design development process to ensure the design process includes construction and O&M input at all times.

Our nonconformance report (NCR) process will correct any work that does not comply with project requirements. In our NCR process, corrective actions must consider their impact on constructibility, durability, maintainability and environmental compliance prior to their approval by the Project Quality Manager Nate Pilcher, PE, and the Enterprises.

Figure 2.15 | **Constructability, Durability, Maintainability, and Environmental Compliance:** These touchstones are incorporated in each quality management program stage.

Constructability
Our team possesses a tremendous amount of heavy highway construction and construction oversight experience dating back to E470 Toll Road (Segments 1, 2, 3 & 4) and the Northwest Highway Toll Road Trail, both in Denver. We will engage our experts at critical points to ensure work elements can be constructed efficiently.

Durability
We will design our quality processes to maximize the facility's life cycle by integrating quality systems and discipline experts at every project stage.

Maintainability
We are committed to the effectiveness of the constructed elements as a top priority and will review all elements during design to ensure newly constructed elements can be readily maintained.

Environmental Compliance
Our quality team will provide input into the creation of Environmental Compliance work plans, oversee these plans' implementation during construction, report the results of that implementation, and issue noncompliance reports to initiate corrective action as necessary.

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SECTION 2.1.4

PART 3: MAINTENANCE OF TRAFFIC

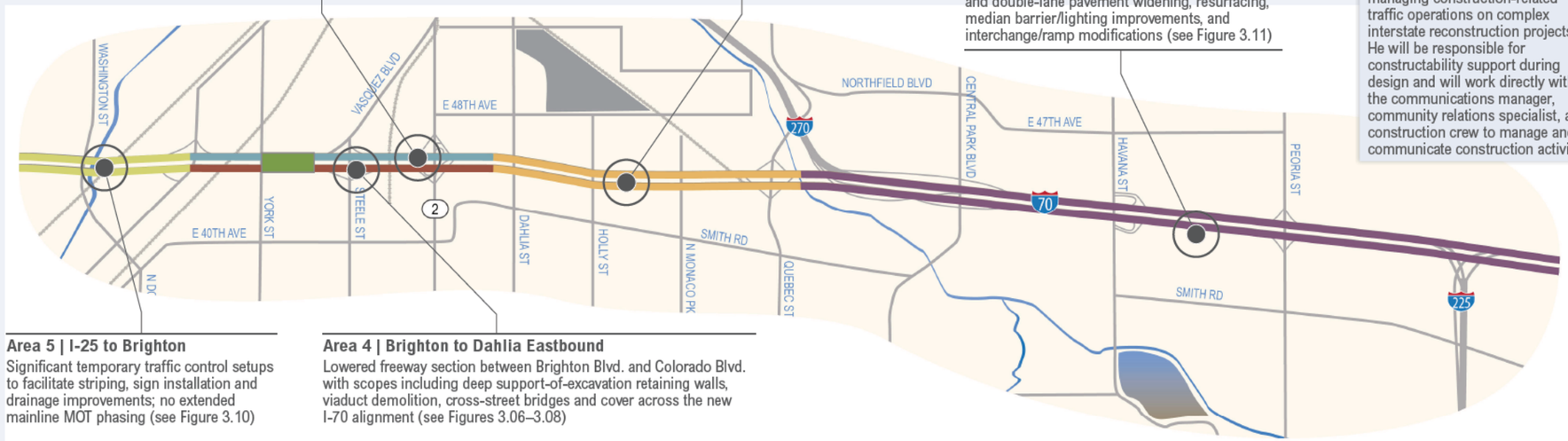
3a Traffic Management Control, Coordination and Sequencing Approach

Figure 3.01 | **Schematic of Maintenance of Traffic (MOT) Work Areas:** 5280 Connectors' MOT strategy exceeds requirements during construction by enhancing cross-street and pedestrian access, extending existing ramp and viaduct connectivity, eliminating the need to use allowable ramp closures, and providing an improved level of service on I-70 two and a half years prior to project completion. Each Work Area MOT concept delineates construction work zones without reducing traffic flow and capacity.

Area 3 | Brighton to Dahlia Westbound
Lowered freeway section between Brighton Blvd. and Colorado Blvd. with scopes including deep support-of-excavation retaining walls, a large viaduct demolition, cross-street bridges, a covered crossing of the new I-70 alignment, and a challenging multiphased UPRR crossing (see Figures 3.04 & 3.05)

Area 2 | Dahlia to Sand Creek
Full reconstruction freeway section that requires phased reconstruction of the elevated I-70, the at-grade Stapleton Dr. frontage road, several minor cross-street intersections, and the high-traffic-volume Quebec St. interchange (see Figure 3.09)

Area 1 | Sand Creek to Chambers
At-grade freeway widening section requiring a multiphased MOT approach to facilitate single- and double-lane pavement widening, resurfacing, median barrier/lighting improvements, and interchange/ramp modifications (see Figure 3.11)



Area 5 | I-25 to Brighton
Significant temporary traffic control setups to facilitate striping, sign installation and drainage improvements; no extended mainline MOT phasing (see Figure 3.10)

Area 4 | Brighton to Dahlia Eastbound
Lowered freeway section between Brighton Blvd. and Colorado Blvd. with scopes including deep support-of-excavation retaining walls, viaduct demolition, cross-street bridges and cover across the new I-70 alignment (see Figures 3.06–3.08)

Jared Dotinga
MOT Manager

Jared brings 18 years' experience managing construction-related traffic operations on complex interstate reconstruction projects. He will be responsible for constructability support during design and will work directly with the communications manager, community relations specialist, and construction crew to manage and communicate construction activities.

F Part 3 complies with requirements and is consistent with Appendix F, Draft Transportation Management Plan.

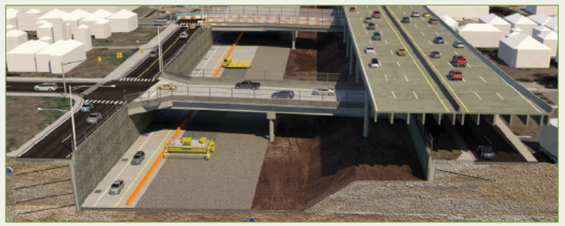
Figure 3.03 | **Schedule of Key Innovations:** We developed key innovations to integrate Work Areas, increase capacity, and limit construction work zone interaction with traffic.

Exceeding Requirements through Key Innovations

- Colorado Blvd. Diverging Diamond Interchange (DDI) allows us to construct the new interchange off-line, keeping full capacity on Colorado Blvd. throughout construction.
- Quebec St. Bridge Single-Span Structure reduces traffic control at Quebec St. and eliminates a center pier.
- Top-Down Bridge Construction at Cross Streets in the lowered section will be completed with Work Area 3, allowing surface street connectivity during mainline construction.
- 4x4 Concept will tie Work Areas 3 and 4 to Work Area 2 median section earthwork, eliminating 24,000 hours of on-road truck hauling.
- Optimized Viaduct Phasing enhances connectivity at eastbound Steel and York St. off-ramps for an additional 6 months by avoiding an allowable closure.
- Reduced Excavation Footprint in Work Area 3 eliminates 15,000 square feet of temporary support of excavation.

Figure 3.02 | **Schematic of 4x4 MOT Concept:** The 4x4 concept integrates Work Areas 3 and 4 to condense the project schedule; we will begin the westbound viaduct demolition, while using the existing eastbound viaduct for an extended duration to improve traffic flow. We will shift traffic in five movements from the existing 3x3 (three westbound and three eastbound) lane configuration to a 4x4 (four westbound and four eastbound) lane configuration delivering a full-capacity Central 70 two and a half years before substantial completion. The view below is looking East at Josephine St. (foreground) and Columbine St. (background).


Existing Configuration (3 WB and 3 EB Lanes)


Traffic Shift 1 (3 WB and 3 EB Lanes)


Traffic Shift 2 (4 WB and 3 EB Lanes)


Traffic Shift 3 (4 WB and 4 EB Lanes)


Traffic Shift 4 (4 WB and 4 EB Lanes, Local Access on Viaduct)

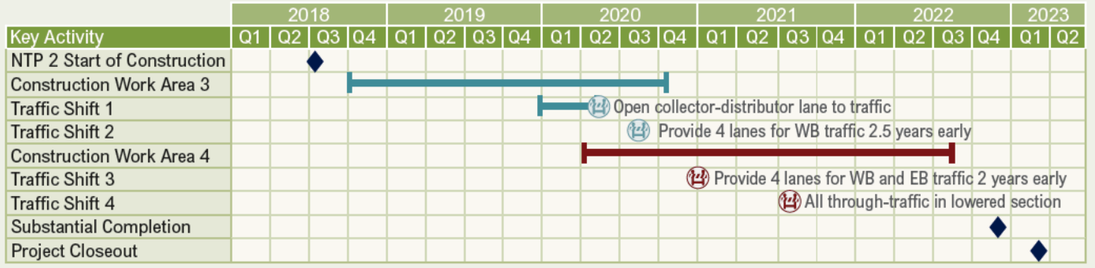


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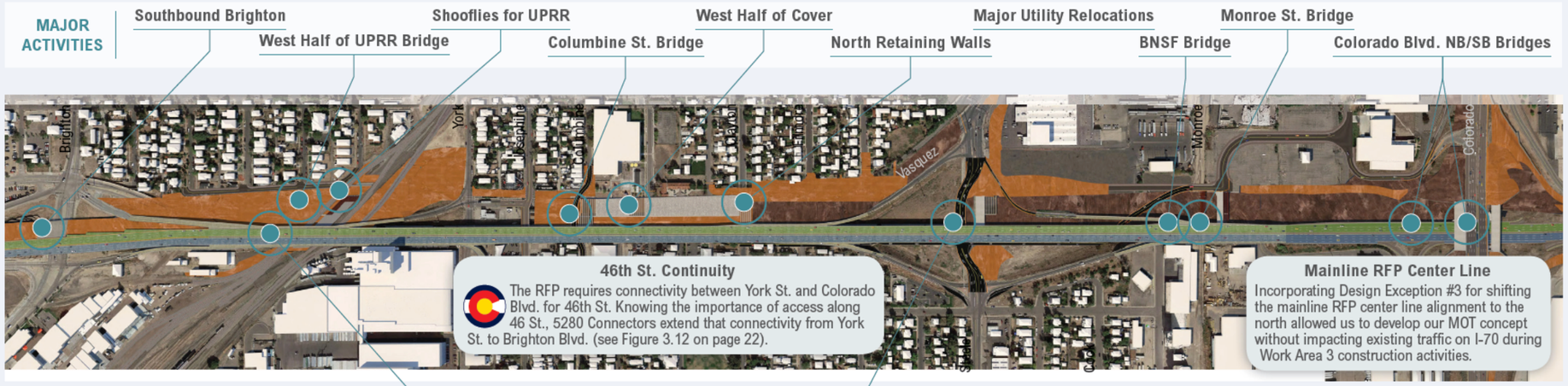
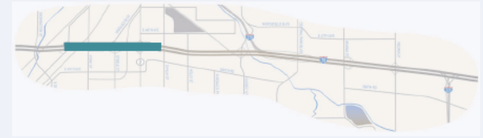
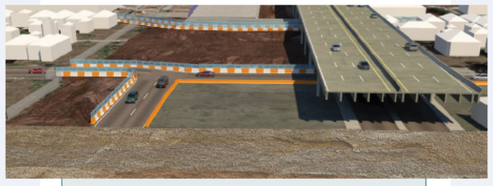
Figure 3.04 | **Schematic of Work Area 3, Brighton to Dahlia Westbound (Existing Configuration):** This MOT concept focuses on cross-street connectivity, exceeding east-west traffic connections on 46th Street, reconstruction of the arterial street at Brighton Boulevard, and the enhanced diverging diamond interchange (DDI) at Colorado Boulevard outlined in ATC 2 (see Figure 3.16 on page 13).





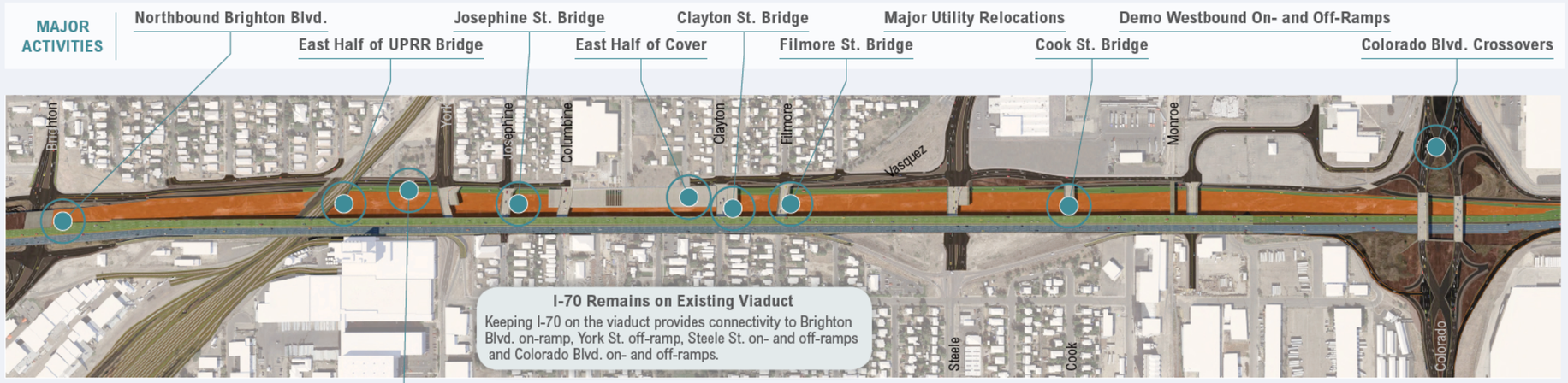
4x4 approach

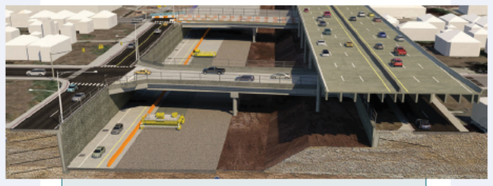


Existing Configuration (3 WB and 3 EB Lanes)
Our FIVE-step I-70 traffic switch begins in Work Area 3 with construction of the collector-distributor (CD) lane and surface street bridges, without impacting the mainline I-70 traffic.

Our 4x4 approach allows travelers to continue using the I-70 viaduct eastbound and westbound during construction activities in Work Area 3. This approach creates familiarity in the driving experience and improves safety for travelers.

Figure 3.05 | **Schematic of Work Area 3, Brighton to Dahlia Westbound (Traffic Shift 1)**





Traffic Shift 1 (3 WB and 3 EB Lanes)
With the viaduct open for three lanes in each direction, we add a CD lane in the lower section to provide an additional lane of traffic heading west on I-70.

Legend:
Construction | WB Traffic | EB Traffic

INTENTIONALLY

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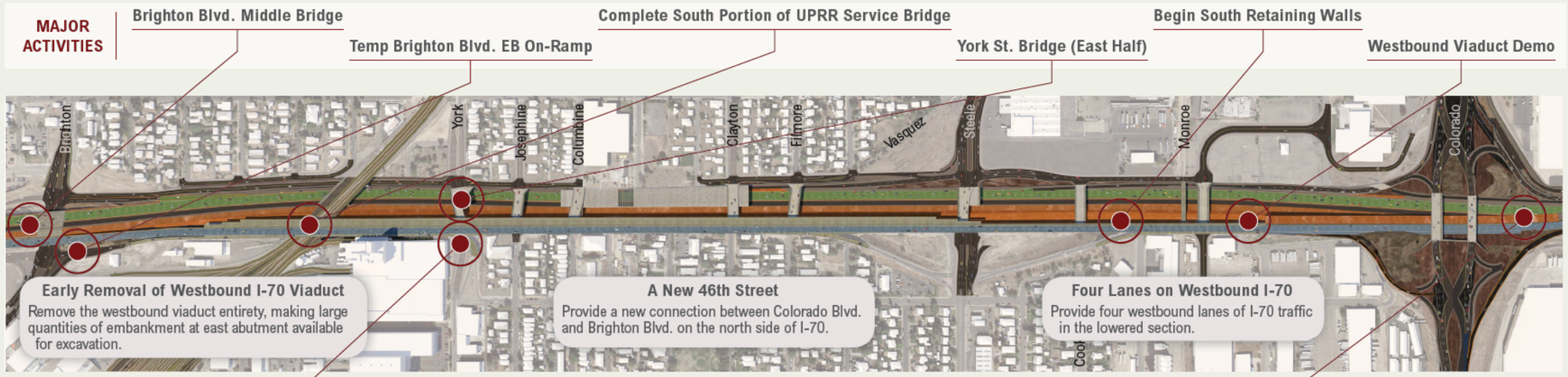
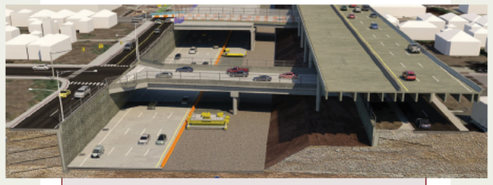
Figure 3.06 | **Schematic of Work Area 4, Brighton to Dahlia Eastbound (Traffic Shift 2):** This MOT concept focuses on segmental demolition of the viaduct, completing the I-70 mainline while exceeding ramp connectivity requirements and optimizing traffic shifts to continue to build on enhancements provided by our 4x4 approach.



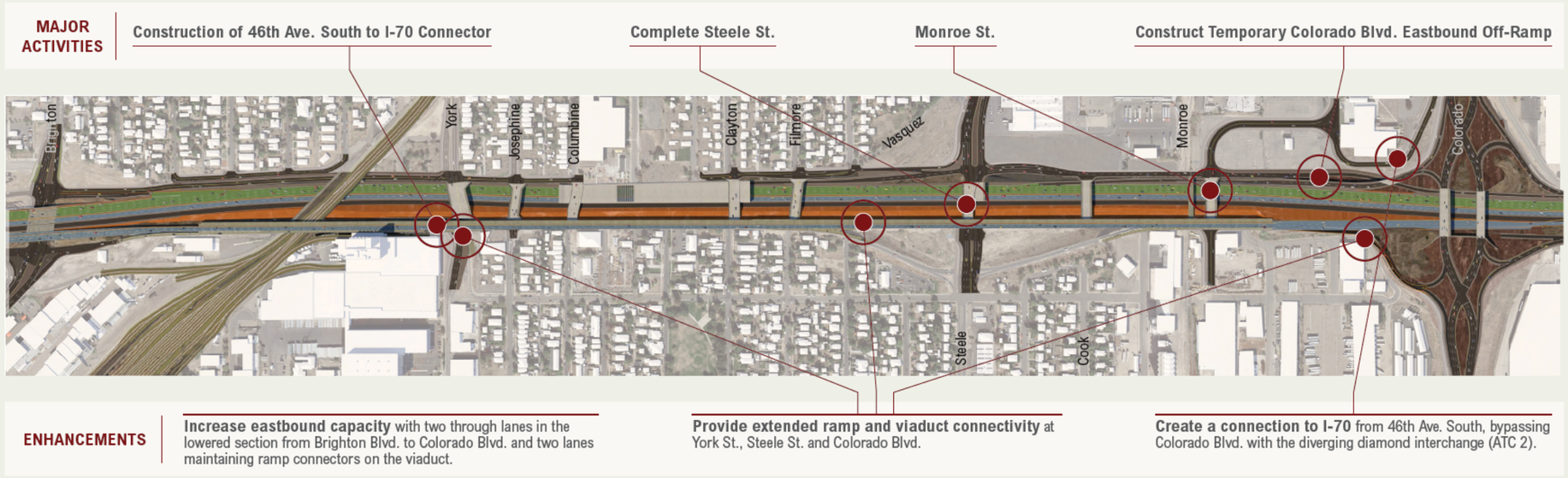
approach

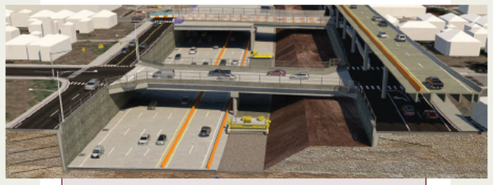


Traffic Shift 2 (4 WB and 3 EB Lanes)
We shift three westbound lanes from the existing viaduct onto the lowered section, adding a lane 2.5 years before project completion. Doing so allows us to begin westbound viaduct demolition 6 months early and eliminates 45,000 square feet of support of excavation at the existing eastbound viaduct abutment.

Our 4x4 approach
Accelerating westbound demolition aligns the time line with the Phase 2 traffic switch to the outside in Work Area 2 (see Figure 3.09). As a result, we will transport over 300,000 CY of excavation off-road from Work Area 4 to Work Area 2 and keep intact the existing center bridges at Dahlia, Holly and Monaco Streets. This approach **eliminates over 24,000 hours of on-road construction traffic.**

Figure 3.07 | **Schematic of Work Area 4 Brighton to Dahlia Eastbound (Traffic Shift 3)**





Traffic Shift 3 (4 WB and 4 EB Lanes)
We will shift two eastbound lanes into the new alignment and separate them with a concrete barrier. Two lanes will remain active on the viaduct, retaining eastbound connectivity to Brighton Blvd. and York St. on-ramps and Steele St. and Colorado Blvd. on- and off-ramps, as well as the connection to I-70. This approach provides full capacity 2 years before completion.

Legend:
Construction | WB Traffic | EB Traffic

INTENTIONALLY

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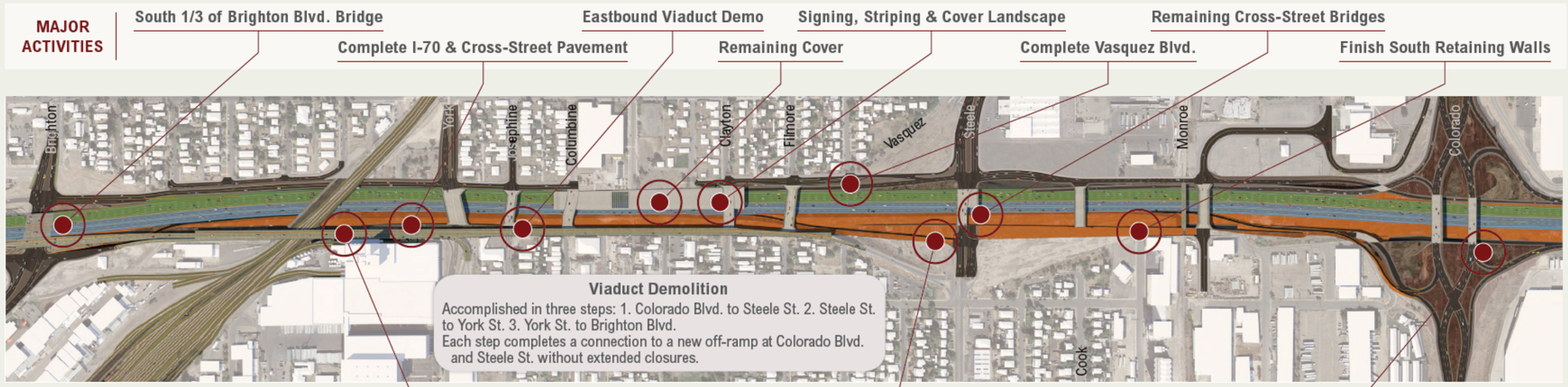
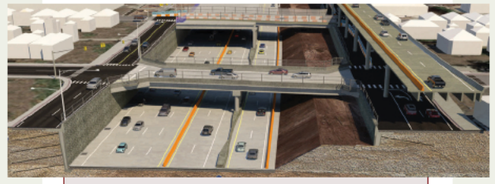
Figure 3.08 | **Schematic of Work Area 4, Brighton to Dahlia Eastbound (Traffic Shift 4):** This MOT concept centers around segmental demolition of the viaduct. We will complete the I-70 mainline while exceeding ramp connectivity requirements and optimizing traffic shifts to build on enhancements provided by our 4x4 approach.

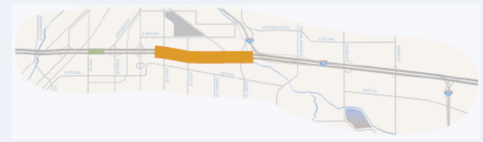


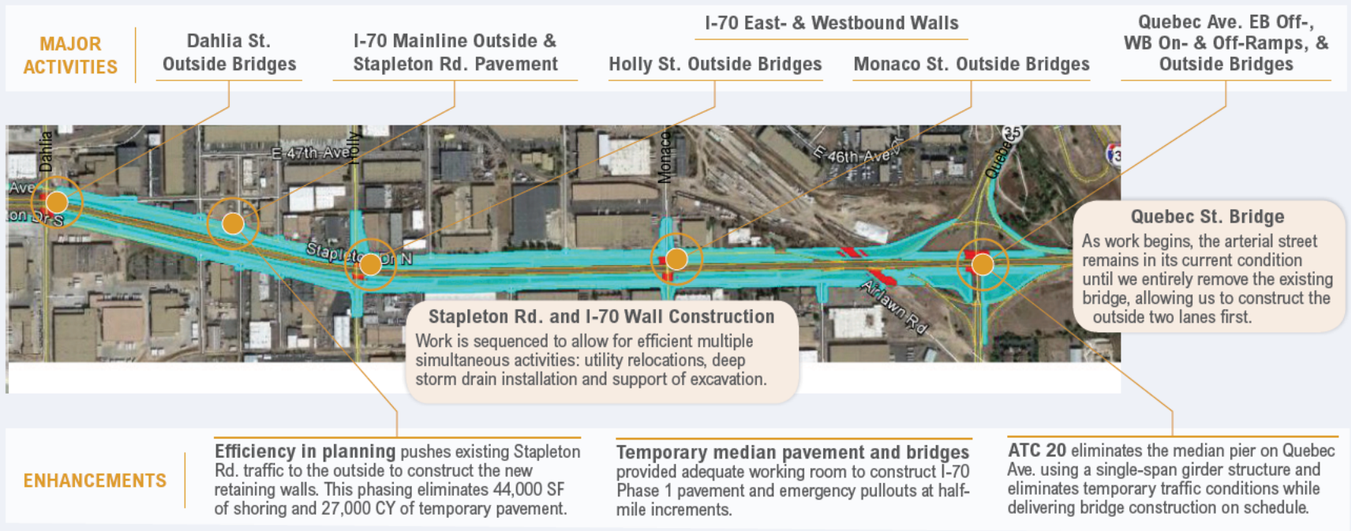


Traffic Shift 4 (4 WB and 4 EB Lanes)
We shift the final two eastbound lanes to the lowered section, providing four westbound and four eastbound lanes with two on each side of the center line. The viaduct extends exit ramp connectivity before demolition.

Legend:
Construction | WB Traffic | EB Traffic

Figure 3.09 | **Schematic of Work Area 2, Dahlia to Sand Creek:** We will use an "outside-in" approach to deliver this work area, which includes the elevated section of the project outlined with tall retaining walls and mainline bridges with narrow working room between the elevated I-70 alignment and Stapleton Frontage Road. We have developed a strategy using existing pavement in Work Area 2 that supports early utility relocations and right of way acquisition on Stapleton Road, followed by construction of the mainline retaining wall, bridges and elevated outside lane sections. We will construct lanes wide enough to handle mainline traffic as we build the center section.





Existing Configuration

Outside Improvements (Step 1)

Inside Improvements (Step 2)
Three lanes of traffic will be maintained on the existing I-70 mainline and a 16-foot lane will be maintained in each direction on Stapleton Frontage Road.

Final Configuration
Four lanes in a each direction with an Interim Condition Express Lane.

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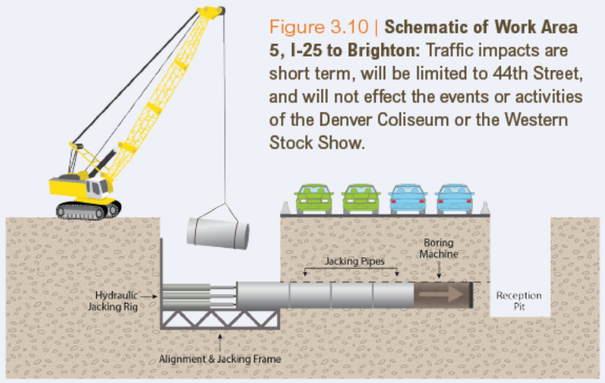
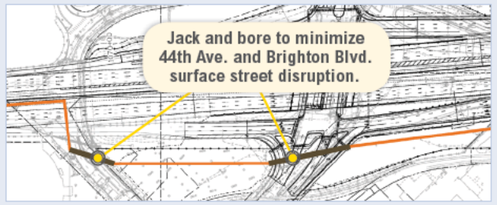


Figure 3.10 | **Schematic of Work Area 5, I-25 to Brighton:** Traffic impacts are short term, will be limited to 44th Street, and will not effect the events or activities of the Denver Coliseum or the Western Stock Show.

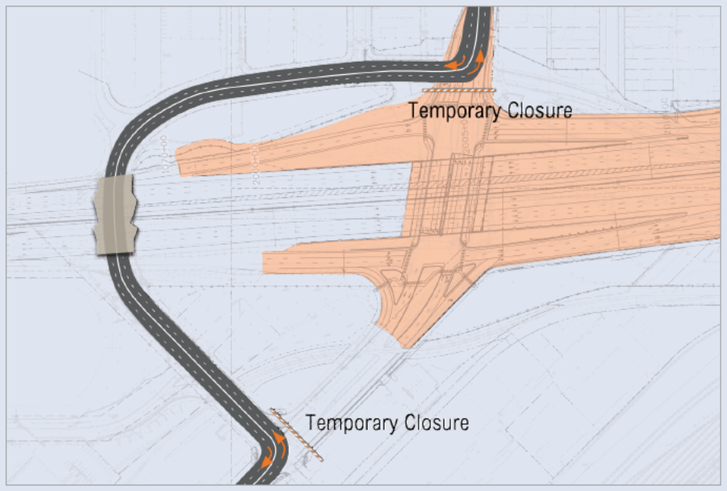


A critical component of work in is the connection of the tie-in of the Sanitary Sewer associated with ATC 07. To minimize impacts to local streets and the mainline, we use move the alignment into the National Western Stock Show parking lot and use jack and bore tunneling across streets.

Critical final connections for the ITS system, drainage and sanitary sewer lie on the west end of Work Area 5.

For maintenance of traffic activities, we will use temporary traffic control during new striping and installation or modification of the 18 sign structures west of Brighton Blvd.

Brighton Blvd. and 44th St. are so close together that they provide excellent alternate routes for one another if closures are required.



5280 Connectors have staged Brighton Blvd. bridge construction so that northbound traffic can be routed to Brighton Blvd. and southbound traffic to 44th Ave. This plan will expedite bridge construction to minimize impacts to the National Western Stock Show and Colosseum. We will complete this work between February and December 2020 to avoid any traffic impacts to the Stock Show in January 2020 or 2021.

Figure 3.11 | **Schematic of Work Area 1, Sand Creek to Chambers:** This "inside-out" approach involves full reconstruction of the Peoria Street interchange, demolition and construction of a new flyover structure at the I-70/I-270 interchange, outside widening from STA 2194+00 to 2379+00 with resurfacing of existing pavement, replacement of the median barrier and lighting system, and restriping/signing of the I-225/I-70 interchange.

Existing Condition

This MOT concept first reconstructs the median barrier to allow for early relocation of the ITS backbone outside of the roadway, as well as installing new permanent lighting in the median to replace the existing lighting that lines much of the 4.5-mile corridor.

After completing median improvements, we will remove existing light poles and construct new lanes and shoulders outside, behind temporary concrete barriers.

Final Condition

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3.b Impacts, Closures and Detours

Figure 3.12 | **Local Connectivity Work Areas 3 and 4:** To provide better access to the communities between Brighton and Colorado Boulevards, our MOT concept enhances the 46th Avenue route by providing a continuous connection between those streets; we will construct a detour at the beginning of Work Area 3 to facilitate all required construction activities.

UPRR Bridge construction will necessarily sever the connection on 46th Ave. between Brighton Blvd. and York St. 5280 Connectors will use existing ramps at York St. and Brighton Blvd. to mtaintain the connection.

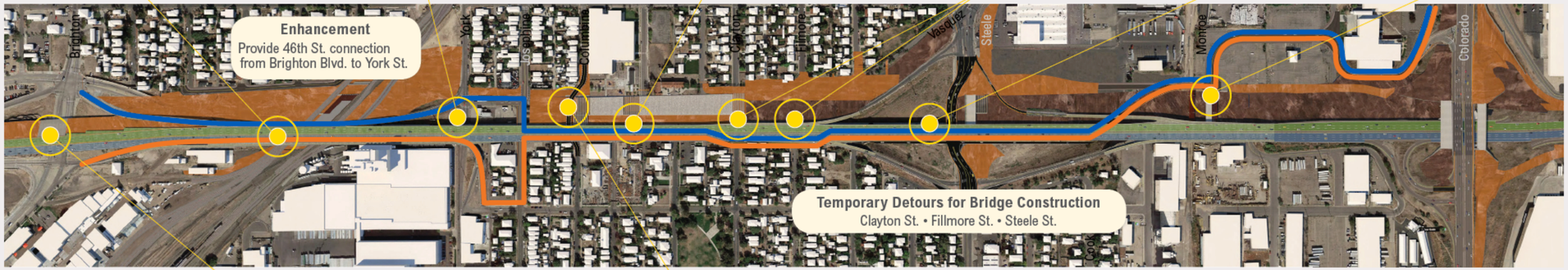
Constructing a temporary detour at Columbine St. early in the project offers schedule flexibility. We will capitalize on this by constructing the bridge in one summer and relocating the water transmission main between October and March.

Critical storm drain installation between York St. and Steele St. will be an early work package because its alignment parallels the 46th St. detour. ATC 37 will reduce right-of-way impacts to streamline scheduling (see page 45).

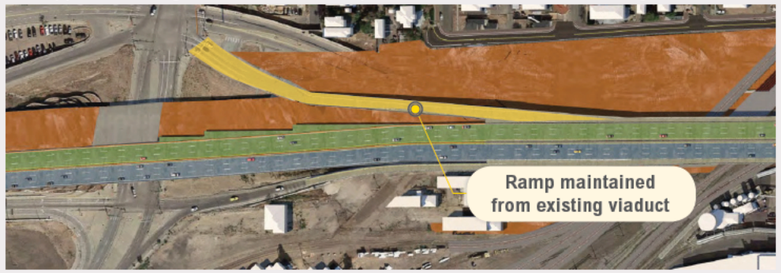
Clayton St. and Fillmore St. Bridge abutments extend further south to accommodate the new Steele St. eastbound off-ramp. A detour of 46th St. south of the existing viaduct columns will allow bridge construction and shoring.

Our MOT concept's four-lane detour from Steele St. to Vasquez Blvd. allows construction of the new structure over I-70.

Early work for Monroe St. and 46th St. to Colorado Blvd./48th creates new pavement that connects the detour to Colorado Blvd. and creates two new arterial connections to the neighborhood.



Existing elevated Brighton Blvd. westbound off-ramp cuts off the ability to complete the new I-70 approach to Brighton Blvd. This off-ramp will be maintained at all times during construction.



The newly constructed CD Lane will push traffic through the newly constructed lowered section approach to Brighton Boulevard. The off-ramp will be maintained at all times during construction to allow for demolition of the Brighton Boulevard WB off-ramp and construction of the approach to the bridge.

The Columbine St. temporary detour will route local traffic around the new bridge construction, maintaining unrestricted access to Swansea Elementary School.

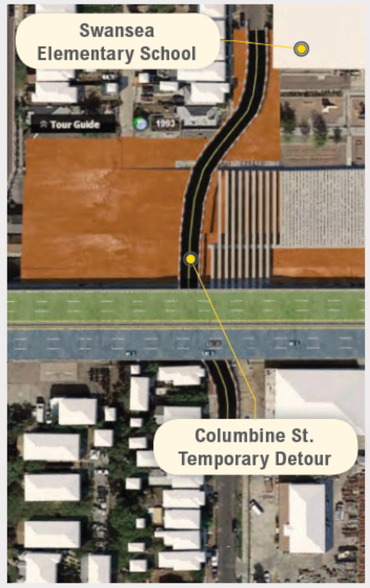


Figure 3.13 | **Schematic of Impacts, Closures and Detours:** Our approach will greatly reduce closure durations associated with bridge construction for surface streets, saving the public an estimated $3.143 million in public impact delay costs. To facilitate detour planning and minimize impacts, **no consecutive street closures will occur** during bridge construction.

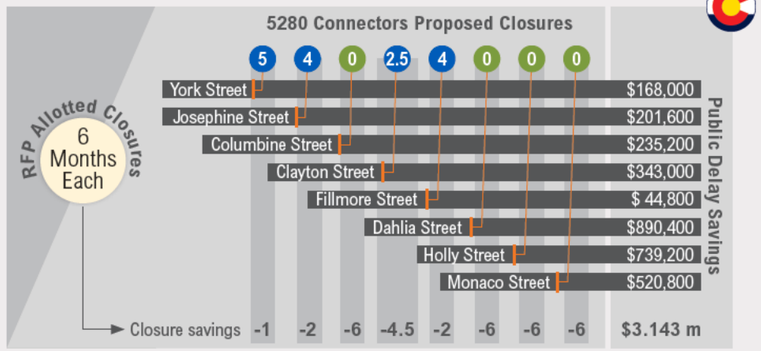


Figure 3.14 | **Schedule of 5280 Connectors Commitments for Established Neighborhood Groups and Organizations**

we WILL		
engage local stakeholders with a focused outreach program to disseminate information on our numerous Traffic Demand Management strategies.	provide traffic capacity enhancement to ensure the available capacity is used in the most efficient and effective way possible.
manage work around traffic demands as much as practical by shifting modes or times of day, or eliminating the need to travel at all.	work directly with local major employers (Purina, Safeway, Anschutz Medical Campus, DIA, etc.) to refine access routes and detour planning along the alignment.	continue to engage local stakeholders such as the City and County of Denver, Regional Transportation District, and Swansea Elementary to minimize impacts for pedestrians and drivers.

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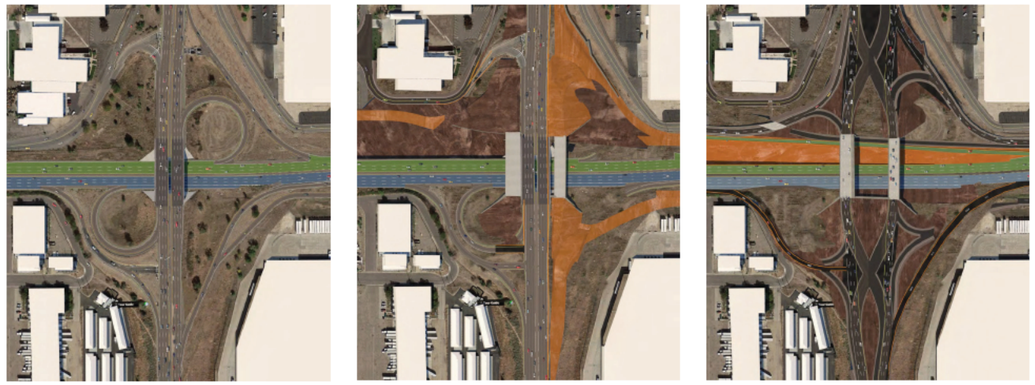
3.c Full Closures of I-70 Mainline and Ramps

Figure 3.15 | **Schedule of Ramp Closures:** Our approach saves the public a total of $146,100 per weekday in travel delay costs—this money stays right in the pockets of travelers on the highway.

Location	Ramp	How Will We Minimize Closures?	Closure	Public Delay Savings per Weekday
Brighton Blvd. Interchange	WB off-ramp	Constructing a collector-distributor lane and temporary connection to Brighton Blvd. allows removal of the WB off-ramp without an extended ramp closure.	No closure	$10,000
York St.	EB off-ramp	Our 4x4 approach extends access on the viaduct and the connection to the York St. EB off-ramp for three years.	Remains in service 3 additional years	$4,100
	WB on-ramp	We maintain this connection when UPRR work begins and retain it until the bridge is nearly complete and becomes critical to completion of I-70.	Remains in service 1 additional year	$4,600
Steele St./ Vasquez Blvd. Interchange	WB off-ramp	The diverging diamond interchange at Colorado Blvd. (ATC 2) allows early construction completion there. With a small temporary connection, this off-ramp can be kept in service.	No closure	$5,600
	EB off-ramp	Our 4x4 plan allows extended connection on the existing ramp; we will transfer traffic to a new off-ramp from the lowered section after severing the viaduct connection.	No closure	$10,900
Colorado Blvd. Interchange	EB entrance (loop ramp from NB Colorado Blvd.)	The current condition has two connections to EB I-70 from Colorado Blvd. During construction, NB and SB Colorado Blvd. will always remain connected to EB I-70.	EB entrance ramp from Colorado Blvd. remains active	$16,200
I-70 slip ramps to Stapleton Dr.	EB off-ramp at Dahlia St.	Accelerated early construction of outside walls in Area 2 will allow ramps to be connected to the new I-70 earlier.	Accelerates reconnection by 6 months	$15,000
	WB on-ramp at Dahlia St.	Accelerated early construction of outside walls in Area 2 will allow ramps to be connected the to new I-70 earlier.	Accelerates reconnection by 6 months	$15,600
Quebec St. Interchange	EB off-ramp	We will accelerate construction to open earlier, and build as much as possible prior to beginning a closure.	4 months	$32,700
	WB on- ramp	We will accelerate construction to open earlier, and build as much as possible prior to beginning a closure.	4 months	$31,400

Figure 3.16 | **Schematic of ATC 2, Diverging Diamond Interchange at Colorado Boulevard:** 5280 Connectors developed a dynamic innovation by using a diverging diamond interchange (DDI) to benefit the project during and after construction.



The DDI allows us to accelerate Colorado Blvd. Interchange construction by building both structures offline, instead of one half at a time. This strategy will reduce four mainline full closures by building both bridges concurrently. Ultimately, the DDI increases the level of service (LOS) compared to the original design concept and provides connections to and from I-70 for 46th Avenue north and south frontage roads; these were not depicted in the RFP configuration.

Figure 3.17 | **Schedule of Commitments to Limit Mainline Closures:** 5280 Connectors have devised several strategies to limit the quantity of full closures of I-70.

Commitment

We will concurrently construct both northbound and southbound bridges of the DDI at Colorado Blvd. to reduce the amount of closures required by half (see Figure 3.16).

daily cost savings
$1 million
per 24 hours

Commitment

We will group sign structures to build multiple structures during one closure, to optimize traffic control and further reduce the quantity and length of closures on I-70.

daily cost savings
$11,500
per night of closure

Commitment

We will use single-night shoofly detours for westbound and eastbound I-70 at Washington St., Quebec St., Central Park Blvd., Peoria St., westbound I-225 South, and eastbound I-70 at Brighton Blvd. to eliminate full closures on I-70 (see Figure 3.18).

daily cost savings
$27,000
per combined EB/WB shoofly

Figure 3.18 | **Shoofly Detour for Sign Structure Installation at Washington Street:** 5280 Connectors will build sign structures in groups to optimize traffic control and reduce night time impacts on I-70. We will use shoofly detours in several cases to eliminate detour routes for I-70. This approach works similarly to a double lane closure with a cross-street closure and allows traffic to continue moving on I-70.

Figure 3.19 | **Accelerated Bridge Construction:** On the ADOT I-10/Perryville Rd. Traffic Interchange project, we used an innovative MOT approach to reduce phases of construction, eliminate impacts to I-10 traffic during construction and accelerate removal and replacement of the mainline bridges. We detoured three lanes of I-10 traffic through on- and off-ramps, constructing 70% of the final ramps configuration. This allowed us to remove and replace the I-10 mainline bridges and approaches in 75 calendar days with no traffic impacts or closures.

Image taken April 23, 2014 at beginning of bridge demolition

Image taken July 31, 2014 after roadway completion of Perryville Road

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3.d Residential, Business and Pedestrian Access

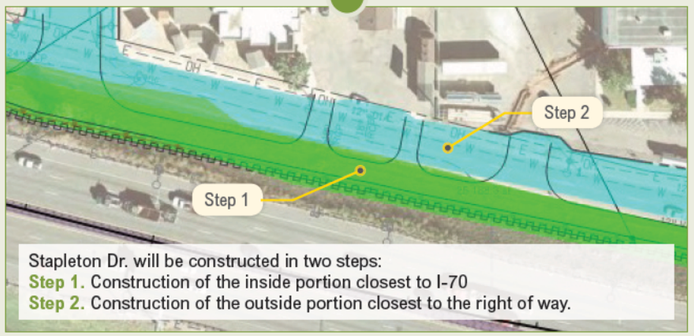
Figure 3.20 | **Schedule of Local Access:** Interaction with business, residential, and pedestrian access throughout the project.

Businesses

Stapleton Drive serves as primary access for businesses between Quebec Street and Colorado Boulevard. This area will require the most outreach to businesses during construction.

Plan Highlights

- Provide access across work zones and traffic during work, such as new utilities, pavement and demolition.
- For each MOT phase, provide a temporary pavement connection, temporary striping and business access signage.
- Construct temporary entrances and striping to direct motorists in impacted areas.
- Set up meetings for communications manager and community relations superintendent to discuss the project and construction plans with each business.
- Host monthly meetings to discuss upcoming construction activities with business owners and managers and determine how to best accommodate them.
- Provide each business newsletters with links to the project website.



Stapleton Dr. will be constructed in two steps:
Step 1. Construction of the inside portion closest to I-70
Step 2. Construction of the outside portion closest to the right of way.

Residents

Clear communication with local residents, particularly between Brighton and Colorado Boulevards, will educate residents of street closures and alternate routes. We will maintain emergency access and egress at all times.

Plan Highlights

- Enhance the 46th Street connection from Brighton Boulevard to Colorado Boulevard to improve connectivity, as depicted in Figure 3.12 on page 11.
- Implement compliant cross-street bridge construction, as shown in section 3b.
- Provide enhancements via detour routes at Steele Street, Vasquez Boulevard and Columbine Street to keep the streets open during construction.
- Provide message boards and advanced warning signs to notify local residents of upcoming closures.
- Host monthly meetings to inform local residents of upcoming traffic changes and closures and to address concerns.
- Maintain emergency access and egress routes at all times.

Each cross-street bridge will be delivered back to the public within five months, allowing I-70 work to continue without impacting surface street connectivity.

Pedestrians

Maintaining and enhancing pedestrian access around Swansea Elementary School is a critical responsibility of the Central 70 project.

Plan Highlights

- Maintain school bus routes and drop-off locations for students. **We will never close Columbine Street and always maintain two routes around Swansea Elementary.**
- Create temporary walkways during construction to protect the existing pedestrian walkway.
- Eliminate impacts to Regional Transportation District routes and stops, or replace them with equal or better services for school staff using transit.
- Keep Columbine Street open, and avoid closures adjacent to the school.
- Post access maps and host information sessions for parents and students to discuss access during construction. Use newsletters to address route changes.
- Provide positive protection using curtain walls between the construction zone and elementary school to restrict work zone access and improve visibility for students.

RELIABILITY

We maintain positive public perception through community engagement, mitigate negative impacts to area businesses and the traveling public, and coordinate daily with construction supervisors to ultimately exceed project expectations.

Community Relations Superintendent

- Provide the direct link among the Enterprises public outreach staff, our construction crews, and the community.
- Specialize in communicating and coordinating urban construction activities with area businesses and residents.
- Place the community's concerns before the construction process, and include businesses and residents as team members.

Construction Crews

- Serve as on-the-ground project ambassadors who coordinate with and mitigate impacts to businesses, residents and stakeholders.
- Train during orientation on the effects of our operations on local businesses and residents.
- Take a proactive approach to minimize impacts.
- Go above and beyond to be a good neighbor.

Owen Doherty
Community Relations Superintendent

Owen will be embedded with our field crews for the sole purpose of delivering on our commitments to safety, community impact mitigation, and overall project communication. He is responsible for coordinating all work with affected business and property owners, and has the authority to stop work and adjust schedules to accommodate individual needs when necessary.

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3.e Lay-Down, Recycling, Staging, Disposal and Maintenance Locations

Envision for Central 70
As Part 4 describes in greater detail, 5280 Connectors have designed and planned this project with a focus on Envision: an approach to project delivery and leadership that minimizes impacts to communities, the environment, and natural resources while improving quality of life for those impacted by the project. Specifically, our lay-down, recycling, staging, disposal, and maintenance locations support the Envision goals.

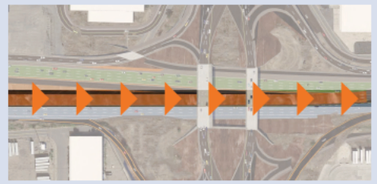
22% commuter capacity & efficiency INCREASED

excavation emission REDUCED 7%

on-road trucking 24,000 HOURS ELIMINATED

4x4 approach = pollutants 3.1 TONS REDUCED DAILY

Figure 3.21 | **Schematic of lay-down, recycling, staging, disposal and maintenance locations**



Our approach creates an opportunity to transport over 300,000 CY of excavation off-road from Work Area 4 to Work Area 2, without mixing construction and public traffic. **This reduces over 24,000 hours of on-road construction traffic.**

We will not use the Havana Maintenance Yard for construction phasing. Not used for construction equipment maintenance.

L Lay-Down

These specific areas on the site will receive construction equipment and materials and support activities like equipment fueling, assembly or partial assembly of construction components, and storage of construction tools and materials. Each lay-down area will have a designated site manager.

R Recycling

These areas on or near the project support reuse of on-site materials. The primary component of recycling for this project will be aggregate reproduction, using processes such as screening/crushing aggregates, batching concrete/asphalt and storing earth for reuse. Each process will have a designated materials manager.

S Staging

Staging areas, though similar to lay-down areas, are specific to one bridge or work site. Each bridge location and intersection will require a staging area away from the traveling public for materials, equipment and employee parking. The operations superintendent will be responsible for housekeeping and restoration of staging areas.

D Disposal

We researched various locations for disposal of excess earthwork materials generated by the Central 70 Project; some accept contaminated materials, and some do not. 5280 Connectors have acquired three times the disposal site resources necessary to handle project exports, and we will ensure sufficient opportunities exist 1 year after financial close.

M Maintenance

Maintenance yards support major repairs on equipment, store components and tools for repairs, and provide a covered, lit work area for maintenance work during off-shift hours; in short, they keep the projects equipment operating effectively. The maintenance superintendent will oversee housekeeping, spill prevention and site restoration.

Rehabilitation of Temporary Lay-Down, Recycling, Staging, Disposal, and Maintenance Locations | 5280 Connectors will restore each temporary location to its natural state, providing reseeding to rehabilitate the site to a stable condition.

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SECTION 2.1.5

PART 4: ENVIRONMENTAL MANAGEMENT, STRATEGIC COMMUNICATIONS, COMMUNITY DEVELOPMENT PROGRAMS, SMALL AND DISADVANTAGED BUSINESS PARTICIPATION AND WORKFORCE DEVELOPMENT

Approach to Environmental Management

5280 Connectors will exceed the project requirements for environmental compliance, strategic communications, community programs, disadvantaged business enterprise/emerging small business (DBE/ESB) participation, and workforce development. Using the Envision framework for sustainable infrastructure, 5280 Connectors will tie together the diverse programs outlined in this section into one comprehensive, sustainable system. We are not simply building a "green" project today; we are contributing sustainable growth for this community.

Envision™ for Central 70

Administered by Institute for Sustainable Infrastructure (ISI), Envision functions much like LEED® and "provides a holistic framework for evaluating and rating the community, environmental, and economic benefits of all types and sizes of infrastructure projects." Our preliminary assessment for the Central 70 Project (see the attachment in Appendix M) **confirms this project's ability to achieve gold level certification**.

5280 Connectors will apply sustainability lessons learned to incorporate the Envision philosophy into our work from design through operation with little or no increases in cost or scope (see Figure 4.01). Obtaining Envision certification will document the Enterprises' efforts and earn recognition for sustainability.

5280 Connectors will meet Envision qualifications to certify and recognize CDOT's sustainability efforts on the Central 70 Project.

Figure 4.01 | **Envision Commitments:** 5280 Connectors will leverage our past sustainability successes to meet Central 70 Project commitments and create a sustainable project worthy of Envision certification.

		Central 70 Project Commitments	Past Sustainability Successes
ENVISION Focus Areas	Quality of Life	5280 Connectors will frequently interact with the local communities to communicate up-to-date construction plans. We will provide **$700,000 in local community development funds**, including scholarship opportunities.	We are proud sponsors of the ACE Mentor Program. ACE offers high school students scholarship funding and hands-on training to encourage them to pursue careers in architecture, construction, and engineering.
	Leadership	Our **DBE/ESB training/mentorship program** will educates firms about safety, quality, contract management, accounting, and other areas of project management.	Our successful small business academy and boot camps in Los Angeles and Seattle created sustainable mentorship programs to support future small business opportunities.
	Resource Allocation	Our on-site production plants will **recycle 103,000 cubic yards of concrete and asphalt material**, 46% of the total amount we expect to demolish.	Our I-215 Segments 1 and 2 project sent less than 5% of the project's waste to landfill. We produced roughly 150,000 tons of base and aggregate material from on-site recycled materials, accounting for around 30% of all materials used.
	Natural World	Our design's profile optimizations will **reduce the amount of dewatering on this project by 90%**, and this greatly reduces the amount of contaminated water we treat and discharge.	Our I-15 Express Lanes design-build project uses cast-in-steel-shell piles for the Santa Ana River Bridge to eliminate the impacts to the riverbed environment associated with alternatives like large-diameter drilled shafts.
	Climate and Risk	Optimizing the alignment profile will **reduce trucking operations on the project by 20,695 loads**, thereby reducing excavation trucking emissions by 7%.	Our I-215 Segments 1 and 2 project, we reduced its carbon footprint from 79,807 tCO2e to 66,859 tCO2e by reusing waste concrete and asphalt materials on site, a 16% reduction overall.

4.a Environmental Compliance Work Plan (ECWP)

Matthew Zoss leads 5280 Connectors' Environmental Compliance Team (ECT) composed of water quality and noise mitigation specialists, hazardous materials managers, biologists, and National Environmental Policy Act (NEPA) compliance specialists with local Denver and transportation industry expertise. Our ECWP outlines processes and procedures to keep construction and operations work in compliance with the record of decision (ROD) at every project stage.

Exceeding the environmental commitments in the final EIS and ROD

The ECT will create an effective document guiding the design, build and operational teams through the project's lifetime based on the approach outlined in Figure 4.02. Applying mitigation measures described in Exhibit 14 of Chapter 5 in the ROD, we incorporate environmental planning and permanent mitigation measures into the final design. During construction, all on-site employees will attend environmental compliance training.

The ECT will supply project management and the Enterprises daily, weekly and monthly tracking and status reports to ensure compliance with regulations and requirements. Regular assessments will document the program's effectiveness.

Matthew Zoss ✦
Environmental Manager

Matthew Zoss brings 15 years of environmental compliance experience including PPP experience in the Denver area. He has led the development of the Draft Environmental Compliance Workplan and will carry this knowledge forward to deliver a Plan focused on transparency and accountability on the Central 70 Project.

Figure 4.02 | **Schedule of Key EIS/ROD Commitments:** Strategy for implementing key commitments in Environmental Impact Statement (EIS)/Record of Decision (ROD).

		Strategy and Implementation
Key EIS/ROD Commitment	Stakeholder Involvement	• Formal partnering sessions will establish rapport and lay the foundation for our One Project | One Team approach, which puts the project first in decision-making. • The Project On-Going Mitigation Actions (POMA) process will collect community stakeholder concerns (closures, noise, etc.) to identify and implement mitigations. POMA will be available in English and Spanish to improve its community accessibility. • The POMA work flow will define the construction and environmental teams' collaborative mitigations.
	NEPA & Design/Field Changes	• Include relevant mitigations on each design drawing to ensure any changes fully account for mitigations. • Project review will include environmental manager (EM) review, field inspection and monitoring, EM inspection (weekly or more frequently in sensitive areas or in response to major storms), and monthly updates in the Mitigation Measure Status Report.
	Hazardous Materials and Dewatering	• We will apply our thorough understanding of site conditions to anticipate problems and design the project to reduce soil and groundwater removal. By raising the profile of Central 70, we reduce by 90% the amount of treated groundwater over the 30-year life cycle. • 5280 Connectors will leverage our team members' excellent track record with regulatory agencies to involve them early and keep the correct people informed at all times. • Our multidisciplined staff understands regulations and identifies compliant solutions. • Understanding means and methods allows our construction-based team to ensure feasibility. • Through early soil sampling, we will develop an earthwork model for strata of contaminated materials to quantify those materials and optimize their handling prior to construction.
	Construction Noise	• 5280 Connectors will identify areas with noise concerns and install soundwalls or other mitigations before significant work commences, to minimize the impact of construction noise on those communities. • We will evaluate sensitive receptors during preconstruction meetings to implement site-specific mitigations documented in POMA. • We will acquire a semi-trailer and sound blankets for the duration of the project and move them as necessary to provide on-site monitoring and controls for noise near Swansea Elementary School.
	Air Quality/ Dust	• 5280 Connectors will calibrate our dust mitigation measures for the specific soils and associated potential contaminates throughout the project. • Regular monitoring of the site for dust and particulates will minimize the effect dust has on the community.

4.a.i Management approach and processes used to manage hazardous substances

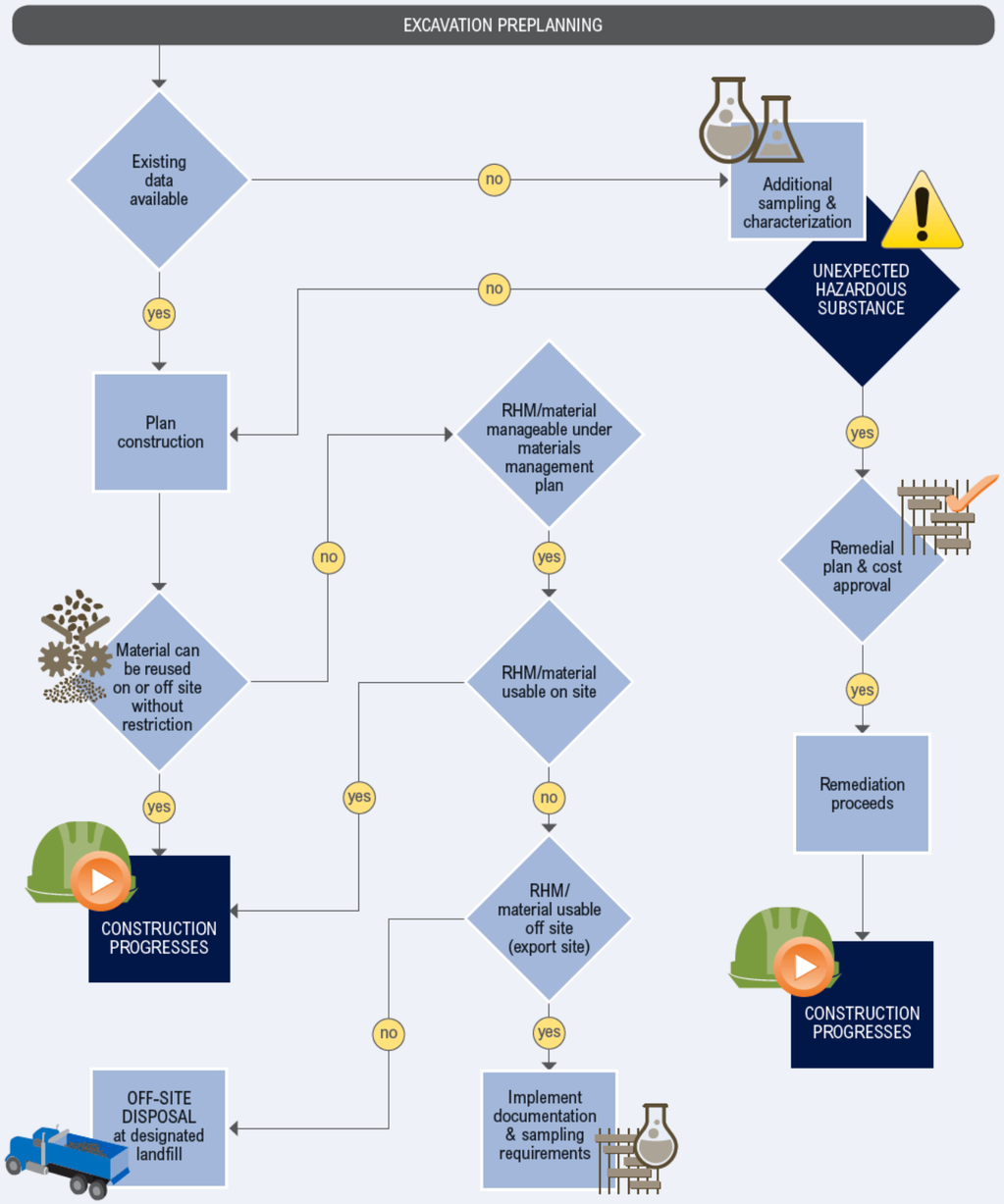
Figure 4.03 | **Approach and Processes to Manage Hazardous Substances on Subsurface and Groundwater Levels:** We will minimize the risks associated with hazardous waste sites using proven means and methods, our Health and Safety Plan (HASP), trained laborers, close monitoring, and material precharacterization. **Environmental Manager Matt Zoss** and **Environmental Specialist Mark White** will oversee training in recognizing hazardous materials for all staff members.

M Part 4 complies with requirements and is consistent with Appendix M, Draft Environmental Compliance Work Plan.

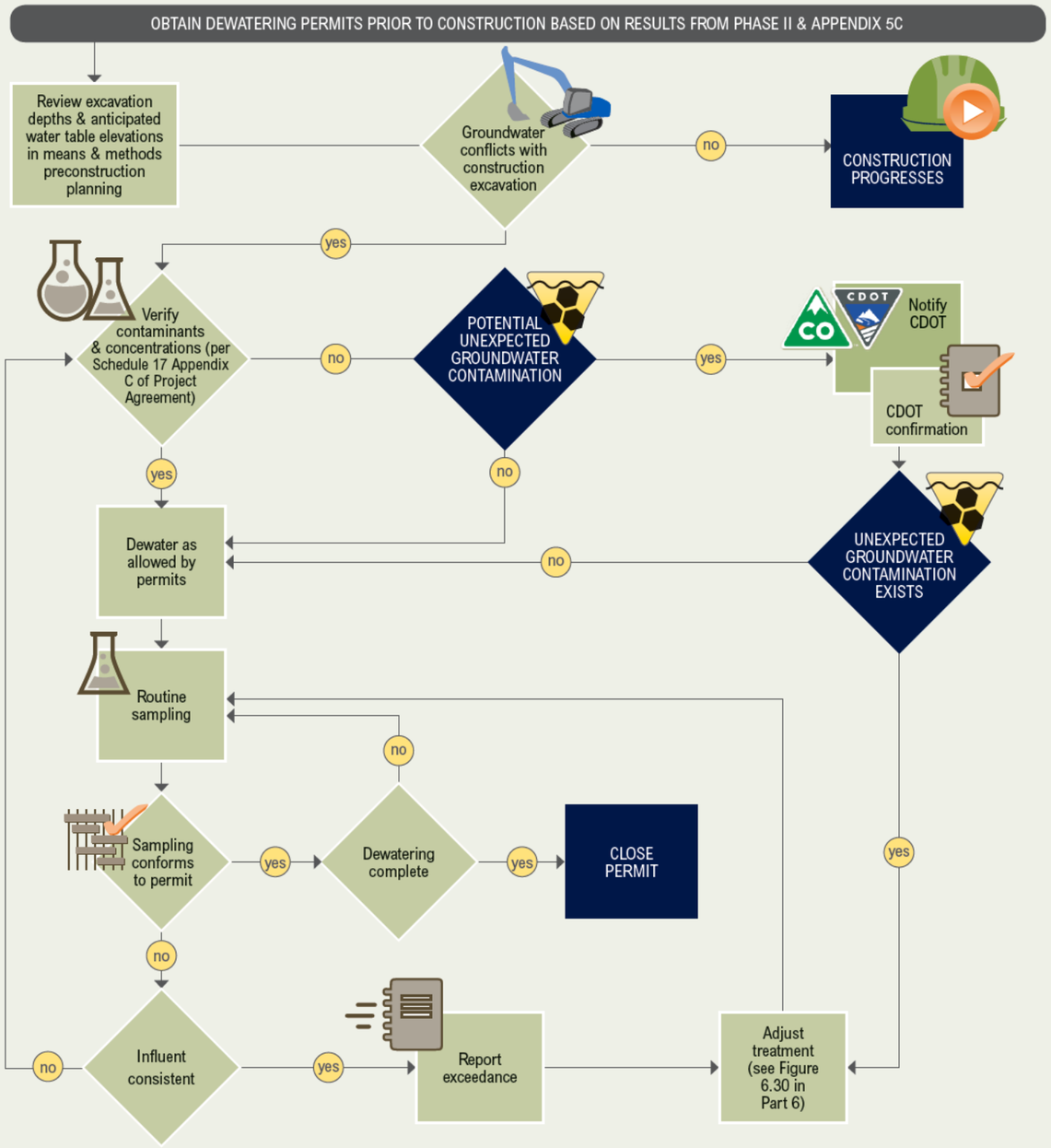
Targeting Envision

We optimized the Central 70 profile and reduced groundwater dewatering by 90% throughout the life of the project and reduced trucking emissions by 7% for excavation related work.

Management Approach for Subsurface and Unexpected Hazardous Encounters



Management Approach for Groundwater Encounters



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4.b.i Strategic Communications: Two-Way Communication with Residents, Businesses, Institutional Organizations and Others Impacted by Construction and Long-Term O&M

Targeting Envision

We keep the public informed with up-to-date information to allow travelers and local residents to plan ahead for upcoming construction activities.

Figure 4.04 | **Addressing Public Information and Communications Management:** 5280 Connectors' approach to strategic communications incorporates the expectations of the Envision program yet is customized to meet the needs of Central 70 stakeholders and support the Enterprises' project goals. The communications team will assist the Enterprises with media relations, including developing press releases and electronic or print project information packets. Our strategic communication plan will include strategies, tactics and innovations to engage the public, agencies, elected officials, local businesses, and other stakeholders, and will detail plans and schedules for outreach activities.

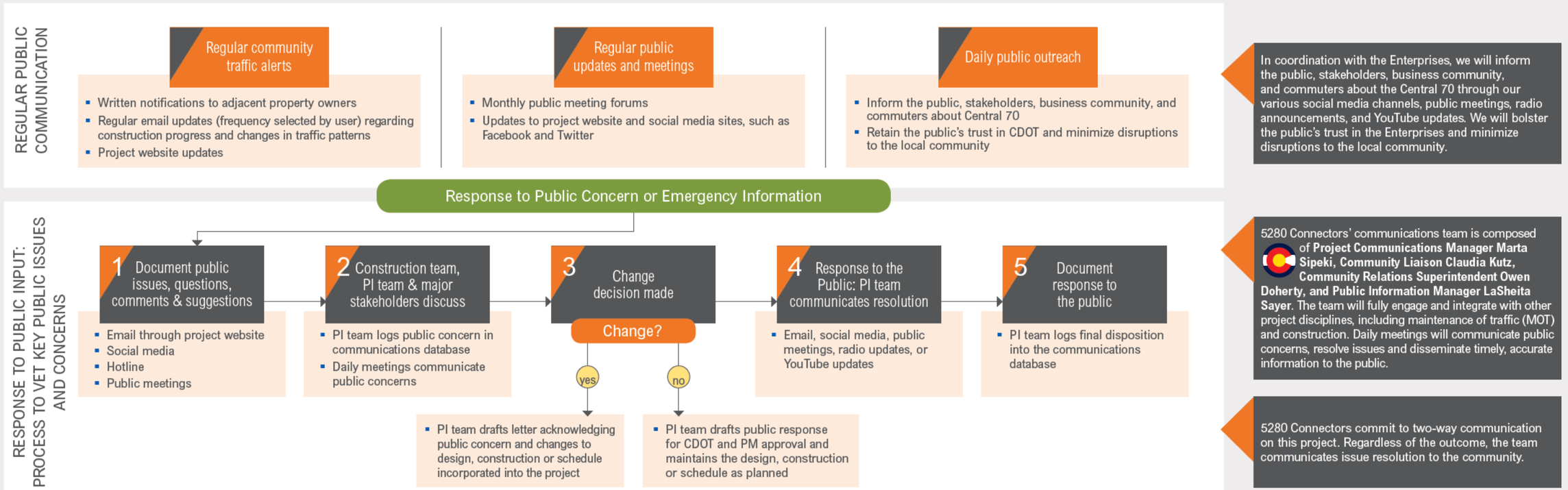

Figure 4.05 | **Schedule of Outreach Activities:** To further enhance two-way communication, we will use a variety of outreach tools and in coordination with and upon approval by CDOT. We will tailor tools for to each audience of the Central 70 Project, so information will flow freely between our team and various community groups (Figure 4.07 outlines additional ways we will communicate with the Central 70 community).

Institutions & Organizations
- Proactive briefings with Q&A sessions
- E-newsletter
- Construction email updates
- Project website with comment capabilities

Traveling Public
- Social media
- Online notifications through news feeds
- Construction email updates
- Travel app integration with Google Maps and Waze
- Dynamic message signs
- Project website with comment capabilities

Local Businesses
- Targeted face-to-face briefings with Q&A sessions
  - Construction business packets
  - Flyers
  - Construction email updates
  - Project website with comment capabilities
- School presentations
- Door hangers and mailers
- Construction email updates
- Project website with comment capabilities

Community/Neighborhood Groups
- Targeted face-to-face briefings with Q&A sessions
- Social media
- Homeowner association presentations

Figure 4.06 | **Schedule of Strategic Communication Commitments**

we WILL

uphold the Enterprises's goal to minimize impacts to the community and traveling public.	hold weekly coordination meetings with the Enterprises to develop and update outreach strategies and tactics.
solicit the Enterprises feedback & approval in openly communicating the effectiveness of the public outreach campaign and making adjustments as needed.	maintain flexibility in our plan and tailor it to meet the ongoing needs of the Central 70 Project.
leverage our team's familiarity with the processes, approval channels, structure, and systems of local agencies to increase effectiveness.	expedite outreach campaign launch using tactics and strategies proven successful for these neighborhoods and stakeholders.

Marta Sipeki
Project Communications Manager

Marta brings 25 years' experience managing public relations, marketing, community relations, special events. She will implement our strategic approach, support CDOT goals and provide customized public relations solutions to minimize disruptions, enhance two-way communication, and ensure positive community perception of the project.

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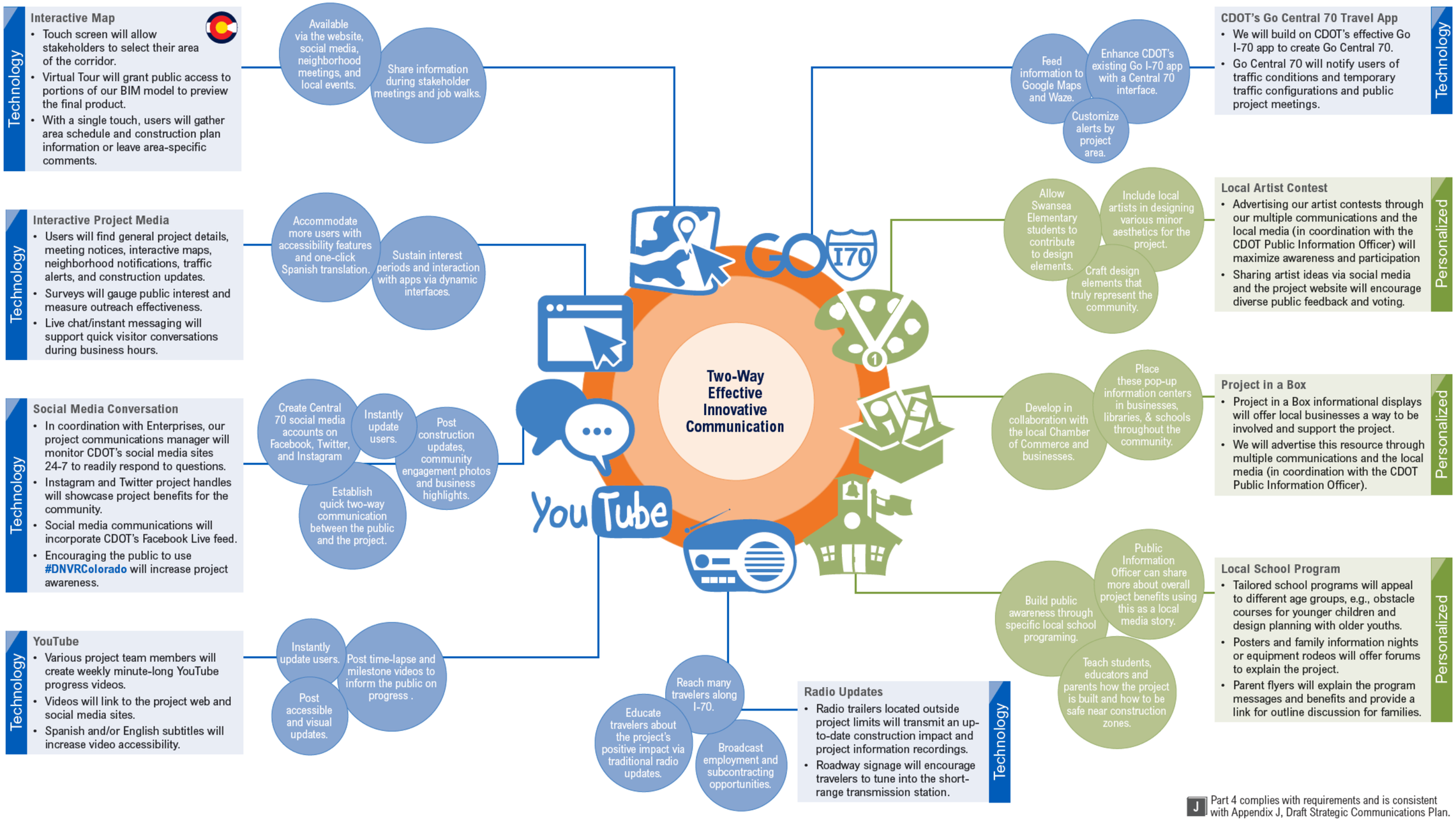
4.b.ii Use of new and effective ways of communicating with the community and stakeholders

Figure 4.07 | **Schedule of New and Effective Ways for Communicating with the Community and Stakeholders:** Using the latest technology and a personalized approach, 5280 Connectors will implement a multilingual communications strategy that provides timely and clear information to a broad audience.



J Part 4 complies with requirements and is consistent with Appendix J, Draft Strategic Communications Plan.

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4.c Community development program

The Central 70 Project will significantly economic impact on the Globeville, Elyria and Swansea neighborhoods by **providing $700,000 in community development funds**. Examples of these funds are identified below. Our community development program will conform to Schedule 15 of the Project Agreement.

Claudia Kutz
Community Liaison

Claudia brings 15 years' experience implementing dynamic community development programs. She will regularly meet with members of the community and ensure development opportunities are advertised at local schools and businesses to maximize benefits to community members.

Business opportunities

Using the Colorado Common Grant Forms provided by the Colorado Community Resource Center (CRC), we will establish a **grant program to distribute $10,000 per year** among local businesses and nonprofits that supply goods and services to the project. Grant applications will be evaluated and awarded by 5280 Connectors with a primary focus on opening up or improving access to the project for neighborhood businesses. We welcome the Enterprises' participation in evaluating and awarding those grants.

We will establish safe areas for food vendors adjacent to project work areas. We will choose sites where workers are likely to congregate that are accessible to neighborhood residents. We will give preference to local businesses and fresh food providers, such as The GrowHaus, a nonprofit farm in Elyria-Swansea that grows and distributes food to local communities.

5280 Connectors will also purchase $2–$5 discount coupons, totaling **$20,000 per year**, from local businesses and distribute these to construction teams at daily craft briefings. These coupons will encourage workers to patronize local businesses. The local hiring requirement (see page 34 of this proposal) will result in roughly **30% of these coupons going to people from local neighborhoods for use in their own communities**. We will supplement this with outreach and collateral activities shown in Figure 4.07 to ensure local businesses are properly highlighted and gain exposure through the project.

Local, nonprofit, food access organizations will be encouraged to participate in grant programs and to set up booths in the alloted project vendor space, which will increase access to their services for both the workforce and the local community.

Targeting Envision

We provide 760,000 hours of local hiring opportunities to grow the local workforce. We will also invest $700,000 in community development funds to bring them lasting benefits.

College scholarship program

We will conduct essay contests five times a year with Swansea Elementary, Garden Place Elementary, and Bruce Randolph Middle Schools. 5280 Connectors' executive board will judge essays, and we welcome participation from the Enterprises and school faculty. The winner of each essay contest will be **awarded a $2,500-per-year scholarship** renewable for up to four years (subject to maintaining a 3.0 GPA) to the post-secondary educational institution of their choice.

Construction education curriculum

5280 Connectors will **set aside 1,500 hours of time** for our construction, engineering and design staff to work with Swansea Elementary faculty to develop a program that introduces students to the project's technical concepts. Our staff, together with the faculty, will present age-appropriate lessons that tie into the work being performed adjacent to the school. The construction team will host tours of the work during safe times, and we will invite students that demonstrate aptitude to train on our equipment training simulators.

Other programs

5280 Connectors also commit to implementing the following programs to contribute to the community:

1. ACE Mentor Program. Engages and inspires students to pursue careers in design and construction
2. Construction Management Building Blocks Training Program. Introduces and familiarizes emerging businesses with management tools
3. Connect2DOT's Leading Edge Training Program. Helps local businesses and consultants with transportation related business planning

Figure 4.08 | **Schedule of Subcontractor Outreach Efforts to Date:** Over the past 12 months, 5280 Connectors have taken many steps to create awareness and opportunities so DBE and ESB firms can join the Central 70 Project.

*Our first of five outreach events introduced interested subcontractors to the project and 5280 Connectors.

Our team will also host or participate in targeted DBE and ESB business development events to exceed the established goals.

Subcontractor Business Development Events
CDOT's Leading Edge (8 weeks)
Hispanic Contractors of Colorado (HCC), Black Construction Group (BCG), & Minority Chamber events
5280 Connectors Mentor Protégé Program
CDOT and Connect2DOT educational and subcontractor forums
Contractor associations' events
Colorado Small Business Development Center (SBDC) events

Our outreach events offer interested DBE and ESB firms the opportunity to gather information about the project and scopes of work available in an interactive forum, while networking with our team and each other.

4.d Small and disadvantaged business participation

Approach to engaging DBE and ESB firms

Ricardo Garcia
DBE Coordinator

Ricardo brings 20 years' experience promoting DBE, ESB, and local firms opportunities to support commercially useful functions on large infrastructure projects. He will work closely with the project team identify scopes and solicit opportunities for DBE and ESB subcontracting. Also, he will provide regular status reports to the project management team and the Enterprises.

To create jobs, inspire business growth, and cultivate workforce development, 5280 Connectors have crafted a Small and Disadvantaged Business Participation Plan (SDBPP) conforming to the requirements in Appendix K. It reflects our commitment to exceed the DBE participation goals of 11.6% for design and 12.5% for construction and the ESB goals of 3% each.

Our SDBPP defines our approach to maximizing opportunities for these firms to execute meaningful work while preserving our highest standards of quality, safety and value for the Enterprises. We customized our SDBPP for the community to identify interested DBE and ESB subcontractors and suppliers and communicate contracting opportunities in a timely manner.

We will invite all interested firms to outreach events like those shown in Figure 4.08, including firms in directories at www.coloradodbe.org and www.coloradoesb.org. As the project progresses, we will list opportunities on our 5280 Connectors (www.5280connectors.com) and project websites, as well as the Connect2DOT site (www.connect2dot.org). We will supply all interested firms with access to the same project information and sufficient notice to apply for opportunities.

Exceeding construction work small business goals

We will exceed established DBE and ESB goals with a complete canvassing of the Colorado business community to identify existing certified DBE and ESB firms, plus those with potential to be certified, that can provide services needed for the project. We maintain a list of identified firms in our subcontractor database, through which we communicate project information to interested firms.

We will unbundle specific design, construction, operations and maintenance services to provide smaller firms better competitive opportunities (see Figure 4.09 and 4.10). We will prequalify subcontractors and award contracts based on the open, transparent process outlined in Figure 4.11. When appropriate and in compliance with he federal DBE program's best practices, we will provide support services to assist DBE and ESB firms in overcoming specified barriers to participation, such as relaxing insurance requirements and providing bonding and supplemental training. Major subcontractors and vendors will be required to follow this same approach to meet DBE and ESB participation goals.

K Part 4 complies with requirements and is consistent with Appendix K, Small and Disadvantaged Business Participation Plan.

Figure 4.09 | **Subcontracting Work Packages**

	Identified in Proposal	Low Bid	Value-Based	Early Work	Multiple Contracts	DBE Potential	Lower-Tier DBE	Specialty
Aesthetics & Landscaping		■			■	■		
Aesthetics & Landscaping Design	■		■					
Bridge Construction	■	■	■			■	■	
Concrete Barriers		■			■	■		
Concrete Flatwork		■				■		
Construction/Design Survey			■	■	■	■		
Crane & Hoist			■		■			■
Drainage		■		■	■	■		
Drainage & Flood Control Design	■		■	■	■	■		
Environmental Consultants & Monitors			■	■	■	■		■
Erosion Control		■		■		■		
Fencing		■		■	■	■		
Flagging		■				■		
Geotechnical Design	■							■
Heavy Excavation & Embankment		■						
Highway Lighting			■			■	■	■
Signing, Lighting, & ITS Design	■		■			■		■
Land Clearing		■		■		■		
MBGR, Cable Railing & Crash Cushions		■				■		
Miscellaneous Metals		■				■		■
MSE Wall Panel Fabrication		■					■	
Post-Tensioning			■					■
Processing & Manufacturing Aggregate		■				■		
QC Testing & Inspection			■	■	■	■		
Rebar			■	■		■	■	■
Roadway Design	■							
Rock Excavation & Blasting			■		■			■
Shoring & Falsework								
Sign Structure & Roadside Signs		■				■		
Signage, Striping & Rumble Strips		■			■	■		
Structures, Drainage & Bridge Design	■							
Surfacing, Paving, & Asphalt		■						
Sweeping, Trackout & Concrete Washout		■		■		■		
Temporary Shoring								
Traffic Control		■		■		■		■
Trucking		■			■	■	■	
Utility Design for Water or Electric			■	■		■		
Utility Relocation			■	■	■	■	■	
Water Conveyance System			■	■		■		
Water Trucks		■		■	■	■		

Targeting Envision

To deliver a transformative Central 70 project that develops local communities, we will ensure DBE participation of 11.6% during design and 12.5% during construction, as well as 3% ESB participating for each. Committing to 760,000 hours of local hiring will also boost the local economy.

Figure 4.10 | **Anticipated Construction Work Opportunities**

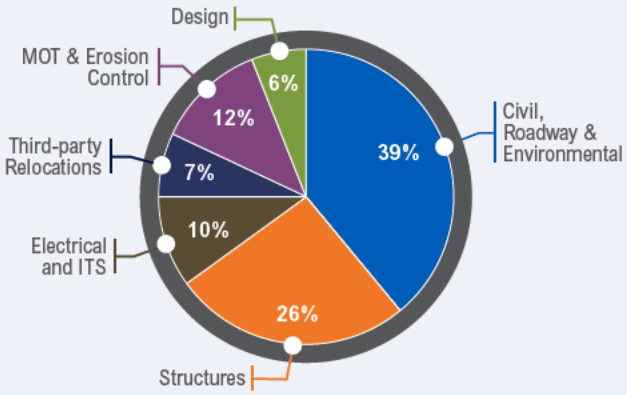
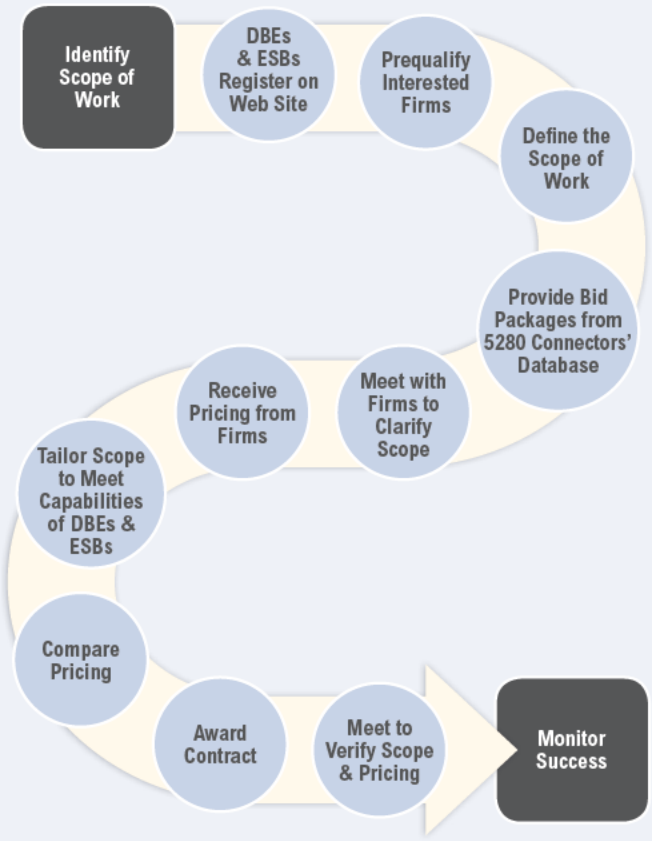
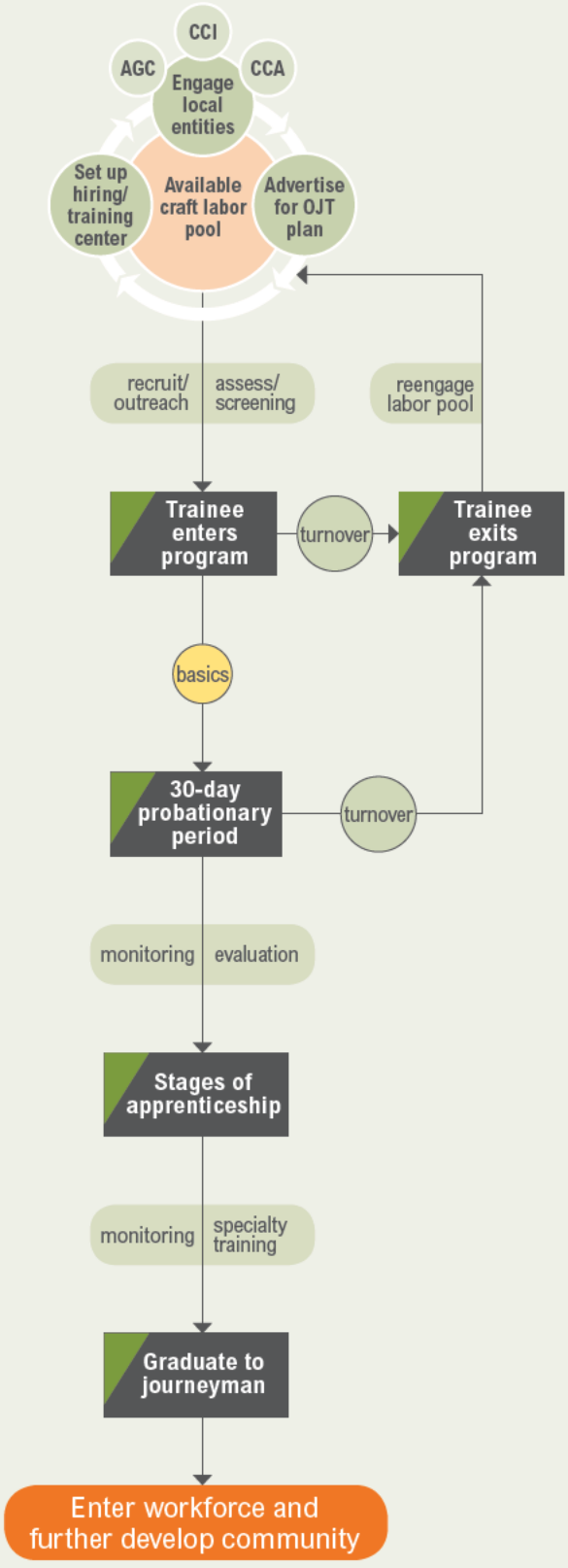


Figure 4.11 | **Our Process:** We use this process to award subcontracts for all qualified firms.



L Part 4 complies with requirements and is consistent with Appendix L, Workforce Development Plan.

Figure 4.12 | **Process for Exceeding On-the-Job-Training Goals**



Targeting Envision

5280 Connectors will provide hands-on, high-tech training centers to support local hiring of qualified craft labor. Providing these opportunities will enhance quality of life socially, economically and environmentally and sustain a qualified workforce within the community.

4.e Workforce development

The Central 70 Project allows us to educate the community on construction career opportunities and provide employment and training in diverse local neighborhoods near the project. 5280 Connectors will enhance the community's perception of the construction field by **providing an on-site Workforce Center and presenting trade information at high schools, career fairs and community outreach events**.

Implementing our Workforce Development Plan allows us to give back to the community affected by this project. To achieve 760,000 hours of local hiring, our Workforce Development team **created our own on-the-job training (OJT) and local hiring plan**. This plan will supplement approved programs from the Colorado Contractors Association (CCA) and Associated General Contractors (AGC). It focuses on acquiring qualified individuals from the local community, incorporating them into the project as tradesman, and providing apprenticeships that grow into professional careers through the OJT program. We used a similar program on our I-4 Ultimate Public Private Partnership in Florida, where we provided high-tech training modules and equipment simulators and reached out to local communities and schools to increase the pool qualified entry-level craft employees.

4.e.i Exceeding the construction period OJT goal

The Workforce Development team will continue to populate the craft labor pool using the Workforce Center, local hiring agencies and advertising to meet the project's manpower needs and projected turnover rates. Figure 4.12 outlines our process.

4.e.ii Exceeding the local hiring goal

The team will advertise construction positions in local newspapers and on radio and television, and establishing our local Workforce Center will allow candidates to apply in person. As we did in the OJT plan, the team will work with local hiring agencies and continue to produce an available craft labor pool to ensure sufficient individuals are available to exceed the project goals.

SECTION 2.1.6

PART 5: OPERATIONS AND MAINTENANCE MANAGEMENT

5.a Operations Management Plan

5.a.i Operations obligations

Figure 5.02 | Schedule of Operations Obligations: 5280 Connectors' approach will deliver clear, transparent adherence to the operations obligations checklist.

Snow and Ice Control

We will apply forecasting and resource planning to manage winter weather. We will coordinate with CDOT and other local agencies to monitor and respond to snow and ice events.

CTMC Use

For incidents or hazards along I-70, we will work within the Colorado Transportation Management Center (CTMC), which will be our primary dispatch point. We will provide 24/7 monitoring and operations of the Cover Command Control and Monitoring System from the CTMC.

Courtesy Patrol/Incident Response

We will work with the Enterprises, Colorado State Patrol, City and County of Denver (CCD), and Adams County to respond to incidents. We will focus our efforts toward quick resolution to minimize effects on the traveling public.

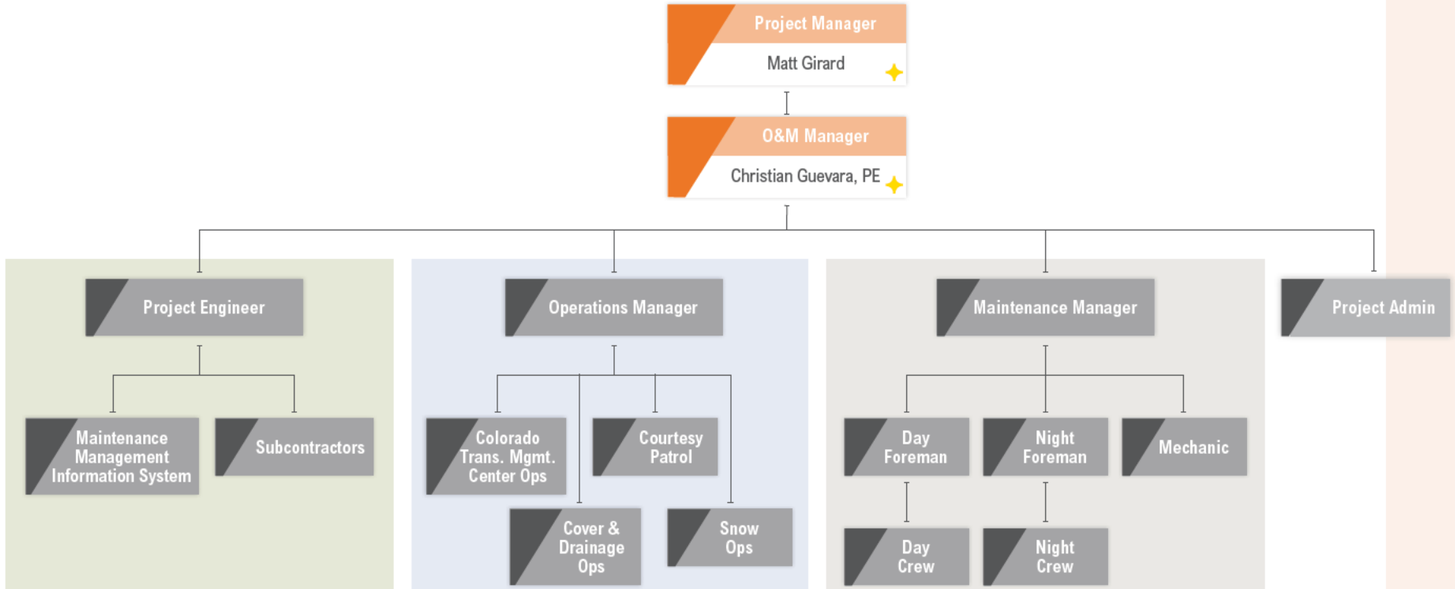
Cover Operations

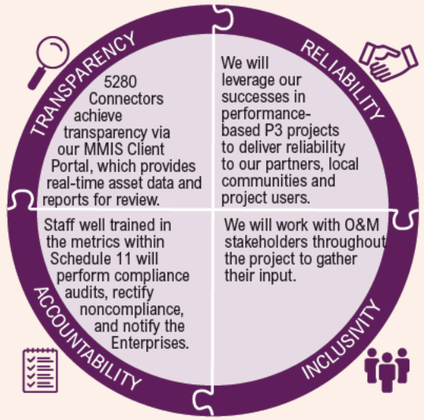
We will provide design input to optimize cover operations. Our stringent maintenance schedule will optimize the life cycle of the infrastructure, and we will coordinate with the Cover Maintainer regularly with a focus on fire life safety and emergency response.

H Part 5 complies with requirements and is consistent with Appendix H, Draft Operations Management Plan.

5.a.i.A Organizational chart and management structure (in conformity with Schedule 11 of Project Agreement)

Figure 5.01 | **Operations and Maintenance (O&M) Organization:** We will structure the Central 70 O&M team with clear lines of reporting and responsibility to expedite communication and decision-making. Based on varying levels of scope during the construction period, that organization chart may differ slightly for the construction period.





Christian Guevara, PE
Operation and Maintenance Manager

Christian brings 12 years' experience managing operations and maintenance on highway infrastructure projects. He provides oversight of all O&M activities and will work closely with the Enterprises throughout the project life cycle.

5.a.i.B Approach to operations during construction and operating period in title

Figure 5.04 | **Schedule of Approach to Operations:** 5280 Connectors have developed a proactive approach to delivering operations during and after construction.

Construction Period: up to 5 years → 30 years after construction: OPERATION Period

Up-front approach to managing operations during construction

The long-term O&M team will participate in weekly MOT task force meetings to provide input to the construction team on specific constraints and configurations that affect O&M operations. This coordination allows our team to consider all aspects of the corridor during the construction phase, including planning for debris removal, snow and ice control, Courtesy Patrol staging, and incident management during construction.


Debris Removal During Construction

RELIABILITY


Snow and Ice Removal During Construction


Incident Management

Smooth Transition

The O&M team will work directly with the design and construction teams to provide input on maintainability, accessibility and durability of the final design and associated infrastructure. With O&M team participation throughout the project life cycle, we will design and craft the project with an eye toward safe, efficient O&M. Also, the already cohesive team will be up to speed on the project's details and history for a smooth transition into the O&M phase.

Proactive approach to operations

5280 Connectors' O&M team will execute the operations activities via a self-perform strategy that leverages our knowledge of local jurisdictions and CDOT's Transportation Systems Management and Operations (TSM&O) group. We will approach Central 70 Project operations with three major considerations: Communication, Collaboration and Reliability.

Communication

TRANSPARENCY

We will maintain an open dialog with the Enterprises, local agencies, and stakeholders to foster collaboration throughout the project. We will accomplish this through regular meetings with interested parties, collaborative planning with affected agencies for O&M in transitional areas, and comprehensive use of the Maintenance Management Information System (MMIS) to report on the Central 70 facility.

Collaboration

INCLUSIVITY

We will work closely with Colorado State Patrol, local agencies and first responders to enhance incident response and inform participants of their specific roles and responsibilities. We will collaborate with the CDOT Region 1 Maintenance group and Denver Public Works to provide safe operations and efficient plow routes to mitigate snow and ice issues in transitional areas.

Reliability

ACCOUNTABILITY

The MMIS will log routine inspections, and regular patrols and other functions will provide a reliable stream of information regarding defects. The project management team will be notified of defects, which are also visible through the Enterprises' client portal.

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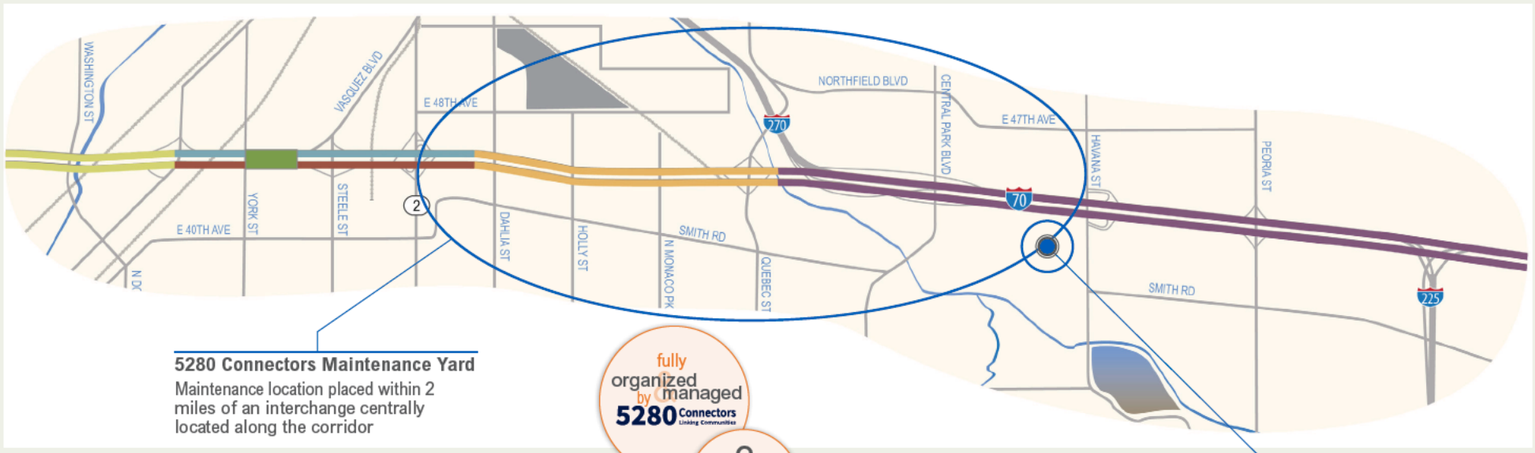
5.a.i.C Proposed maintenance facilities

Figure 5.05 | **5280 Connectors Yard:** We will place our primary maintenance facility within 2 miles of an interchange centrally located along the I-70 corridor to centralize our operations hub and maximize efficiency during event response. We intend to use Havana Street only during construction and then supplement with a permanent facility location.



5.a.i.D Utilization of own workforce, expertise and subcontractors

Figure 5.06 | **Workforce and Expertise:** Although 5280 Connectors can readily self-perform most operations activities, we will plan operations to optimize contracting opportunities for specialty items within the operations field, particularly with regards to local and emerging small business hiring goals.

	Activities	Expertise (yrs exp.)	Benefit
5280 Connectors	All activities not relating to hazardous material remediation, heavy equipment support, landscaping, and vegetation	10 years	This self-perform model benefits the Enterprises by offering a single level of communication and administration for the management and oversight of these activities. We will deploy specific feedback from the Enterprises on initial notification and maintain open collaboration with adjacent roadway operators.
Subcontractor Opportunities	Remediating third-party releases of hazardous material	10 years	5280 Connectors will identify subcontractors to remediate any release of hazardous materials on the roadway/roadside. This offers the Enterprises local expertise in hazardous material remediation to ensure compliance with environmental requirements.
	Heavy equipment support	5 years	Using local subcontractors assures the Enterprises that supplemental heavy equipment support will be quickly mobilized to mitigate snow impacts throughout the corridor.
	Landscaping and vegetation	5 years	Dedicating a consistent staff to maintaining landscaping will protect the aesthetic appeal of the corridor's green spaces.

"Plenary [with HDR] has provided great leadership and guidance in the delivery and execution of CDOT's first P3 project, and it is proven to be an excellent partnership for future projects within the State of Colorado."

– Mark Gosselin
CDOT Project Director for US36 (retired)

5.a.ii Proposed operation strategy and plan

Figure 5.03 | **Operations Risk Mitigation Strategy:** 5280 Connectors have evaluated the risks associated with operations and put in place mitigation strategies to control these risks.

1 Snow and Ice

MITIGATION Using 5280 Connectors' experience in the Colorado market, we will work with the Enterprises and their representatives to ensure that expectations are understood and discuss transitional areas to optimize efficiencies.

BENEFIT Our experience ensures reliability in these critical operations of the Central 70 Project. Snow and ice operations are some of the most visible indicators of O&M performance to the public, and we know how to plan and execute the work successfully throughout the project term, no matter the weather.

2 Incident Management

MITIGATION We will work directly with CDOT's Transportation Systems Management and Operations (TSM&O) group and the Enterprises' operations manager to develop a comprehensive plan outlining roles and responsibilities for response to roadway incidents. Members of our incident response team will be certified as National TIM Responders.

BENEFIT We will organize a Courtesy Patrol to quickly identify incidents and work with local first responders to mitigate hazards to the roadway and provide a safe, efficient facility for the traveling public.

3 Debris Removal

MITIGATION 5280 Connectors will utilize a proven method of truck-mounted attenuators (TMAs) with debris plows on the front to remove debris from the roadway.

BENEFIT Debris on roadways can cause accidents as people maneuver to avoid it. Our prompt removal operation will enhance the safety of the corridor by reliably and safely removing debris from the roadway. TMAs expedite debris removal while allowing our operators to stay safely within the vehicle.

4 Impacts from Routine and Renewal Maintenance Activities

MITIGATION 5280 Connectors' O&M team will provide input throughout the design and construction phases to accommodate routing and renewal maintenance activities from the beginning, which will optimize durability and maintainability during the operations phase.

BENEFIT This early participation will minimize interventions throughout the infrastructure life cycle and reduce intrusive work in the corridor, thus maximizing corridor availability and efficiency in the operations period. It will optimize the condition of the infrastructure delivered to the Enterprises at the end of the project term.

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5.a.iii Approach to performing operations for the Project

5.a.iii.A Ensuring the safety of the workforce and the traveling public

As described in 5280 Connectors' O&M Safety plan (see Appendix I, Draft Maintenance Management Plan), project safety is integral to our O&M activities. Our safety plan holds everyone accountable and focuses on safety through routine practices including daily toolbox talks, weekly O&M safety meetings, and ongoing safety training.

At the transition points for long-term work zones, vehicles on I-70 will travel between concrete wall barriers to provide positive protection for workers and drivers. In addition, members of our team pioneered the use of hard hats with lighted halos to improve safety and visibility for nighttime work, and we will bring that innovation to the Central 70 project.

5.a.iii.B Response to emergencies hazardous weather, accidents and incidents

5280 Connectors Colorado Traffic Management Center (CTMC) personnel will be the eyes and ears of the operation. Within two months of NTP 1, we will establish communication trees with CDOT, local agencies and first responders. CTMC personnel will often be the first to observe or receive notification of abnormal conditions. We will certify all incident response personnel with National Traffic Incident Management (TIM) Responder Training to prepare them, both mentally and physically, to respond efficiently and safely to incidents or accidents and to interface with first responders.

The operations management team will continually monitor forecasts and work with the Enterprises and Transportation Systems Management and Operations (TSM&O) operations to prepare for weather events. At those times, the CTMC plays a critical role in detecting accidents or hazardous conditions and informing supervisors and operators of specific areas to treat as requested by agencies or roadway users.

5.a.iii.C Communication and working with Procuring Authorities and emergency services

Within two months of NTP1, 5280 Connectors will meet with first responders to develop a communications tree for incident coordination and inform them of our capabilities and resources. We will maintain ongoing communication for ready response to incidents.

Figure 5.07 | **Positive protection:** Provided between long-term construction activities and vehicles traveling Central 70.

We will establish an Emergency Operations Center (EOC) at the Havana Street maintenance facility, during a Level 2 or higher incident or when requested by local agencies or the Colorado State Patrol. When requested, we will host a hot debrief meeting with internal teams and first responder agencies to gather immediate feedback from all partners in specific incident responses. We will also include debrief feedback in our training to continuously improve our processes. In this way, we will optimize the performance of the first responding partners to better serve the traveling public and create a safe environment for roadway users and first responders.

5.a.iii.D Interfacing with the Procuring Authorities, CDOT, adjacent maintaining authorities, and other interested third-party entities and stakeholders

From initial mobilization through the operation period, 5280 Connectors will work closely with CDOT Region 1, the TSM&O group and local agencies to clearly delineate interface areas and ensure full coverage at interfaces with different operators. Monthly coordination meetings with the Procuring Authorities will ensure consistent, comprehensive points of interface. At interfaces with the Limited O&M work areas, we will closely coordinate with the Enterprises' maintenance team to identify issues before accelerated deterioration and allow the Enterprises to remediate issues without requiring large-scale replacement.

Additionally, these meetings will identify and work through efficiency optimizations for all parties to benefit all organizations' operations. Based on their outcomes, we will document the interface among the parties to foster open, transparent communication.

5.a.iii.E Traffic management and maintaining lane availability during the O&M work

Given the vitality of the Central 70 corridor, as well as the Region 1 Lane Closure Strategy and the requirements in Schedule 10, Section 2, we will plan operations and maintenance activities to meet these time restrictions and self-perform traffic control to streamline traffic management during O&M work.

To minimize impacts to travelers, we will execute maintenance activities that significantly impact the roadway during low-volume times. Throughout project construction, we will coordinate with CTMC personnel and traffic applications, such as Google Maps and Waze, to provide roadway users with advance notification of activities to inform trip planning.

5.a.iii.F Courtesy Patrol services

The Mile High Courtesy Patrol (MHCP) program's primary objective is to remove safety hazards from the mainline travel way or shoulder to alleviate congestion and increase overall safety. Likewise, our Courtesy Patrol will assist stranded vehicles and help resolve incidents. Trained Courtesy Patrol officers with fully outfitted vehicles will respond as needed.

Each Courtesy Patrol vehicle will contain equipment that will best assist stranded motorists and complies with MHCP guidelines and Appendix B, Schedule 11. The Courtesy Patrol will help motorists continue their trips or access towing assistance and enhance safety for others motorists by quickly resolving issues.

We will identify drop sites to serve as safe locations for relocated motorists with inoperable vehicles, and we will receive full approval from property owners before using these critical safety sites.

5.a.iii.G Performance monitoring

Because the relevance of many operations depends on conditions and incidents on the roadway, detailed planning and preparation will ensure compliance. During event, incident or accident responses, the CTMC will log response times and actions, which they will report to the project management team for compliance monitoring.

CTMC staff will promptly enter incident response activities into the MMIS, which houses project data for reporting to the Enterprises. We will analyze data to keep operational recommendations relevant and ensure our practices keep pace with project needs.

During operations, performance monitoring will be most critical during snow and ice events. Our operations management team will patrol every two hours during a storm to give feedback and direction to the supervisors and operators to produce optimal roadway conditions. These monitoring patrols will also be completed at or near the anticipated end of a precipitation event to support performance reporting to the Enterprises on roadway conditions. We will monitor snow and ice control efforts through the automatic vehicle location (AVL) systems on equipment deployed for the activity. This monitoring will inform the cycle times and routes driven to optimize efficiency and monitor compliance within the Snow and Ice Services plan.

5.a.iii.H Groundwater dewatering

Figure 5.08 | **Methodology, approach and criteria to be used for the final disposition of water:** By raising the I-70 Roadway profile, we have minimized impact on the groundwater level for dewatering requirements.

Dewatering Methodology: Underdrains			
Approach	Criteria for final disposition	Environmental Approvals	Minimizing the quantity of dewatering
• Install underdrains following construction of the cutoff wall. • Underdrains will run east-west (3 in WB Phase, 2 in EB Phase) with inverts at roughly Elevation 5150. • Groundwater will flow by gravity to a sump that will remove groundwater to the treatment plant facility if levels rise more than 2ft above historic piezometic surface to Elevation 5160.	• Reg. 38- Platte River Segment 15 Discharge • Reg. 41- Groundwater Discharge • Reg. 31- Surface Waters Discharge	The construction groundwater treatment system and discharge to Segment 15 of the South Platte River will be operated under the Colorado Discharge Permit System (CDPS) General Permit COG315000 – Remediation Activities Discharging to Surface Water, managed by the Colorado Department of Public Health and Environment (CDPHE) Water Quality Control.	• Install a cutoff wall embedded into the bedrock prior to dewatering. • Soil cement, geomembrane, and the cutoff wall will minimize groundwater inflow into the lowered section. • Design and construct the dewatering system to allow for regular O&M and renewal work without impact to dewatering system components.

5.b Maintenance Management Plan

5.b.i Maintenance obligations

5280 Connectors' obligations in conformity with, and based on Schedule 11 Performance Metrics are identified in Figure 5.09. This figure illustrates our proactive approach to provide the Enterprises and stakeholders with clear, transparent assurance maintenance obligation performance.

Organizational chart

For the structure and organization of the maintenance management, see Figure 5.01 on page 35 of this section.

5.b.ii Characteristics of the management approach to and strategy in meeting the maintenance obligations

To achieve the obligations set forth within the O&M requirements, 5280 Connectors will develop an in-depth knowledge base of the performance metrics and their specific application to the infrastructure. We will train all personnel and subcontractors to maintain a fundamental understanding of the performance metrics to give the team an "all eyes on deck" approach, meaning that everyone works to meet performance metrics at all times. This includes not only project leaders but Courtesy Patrol staff, maintenance technicians, landscaping personnel, and snow and ice equipment operators.

Part 5 complies with requirements and is consistent with Appendix I, Draft Maintenance Management Plan.

5.b.iii Proposed Maintenance Strategy and Plan

Figure 5.10 | **Maintenance Risk Mitigation Strategy:** 5280 Connectors have evaluated risks associated with maintenance and put in place mitigation strategies to control these risks.

1	**Infrastructure Life Cycle Performance Risk**	
MITIGATION	Work closely with the quality management, design and construction teams to ensure quality of construction and compliance with specifications.	BENEFITS: Quality construction and optimal life cycle performance
2	**Environmental Impacts (Deterioration) Risk**	
MITIGATION	Use durable materials and wearing surfaces to prolong the life of the infrastructure.	BENEFITS: Optimal life cycle performance
3	**Vehicle Damage to Infrastructure Risk**	
MITIGATION	Work with design and construction engineers during the design phase to optimize safety and reduce risks associated with vehicles making abrupt movements.	BENEFITS: Safer corridor for travelers, decreased incident rates, and reduced damage to infrastructure
4	**Abnormal Usage of Roadway (Heavy Vehicles) Risk**	
MITIGATION	Design a more durable pavement structure section to account for greater-than-anticipated loading.	BENEFITS: Structurally robust pavement surface, resilient to traffic volumes, and thus optimized life cycle performance
5	**Cover Infrastructure Reliability Risk**	
MITIGATION	Work closely with engineers to develop the desired mean time between failures (MTBF) and install necessary equipment to meet those criteria.	BENEFITS: Optimal performance of the cover infrastructure throughout the project term

Figure 5.09 | **Schedule of Maintenance Obligations:** Our approach clearly assures the Enterprises and related stakeholders that we will faithfully and completely adhere to the maintenance obligations checklist.

Maintenance Obligations

Infrastructure Routine Maintenance

Closely monitor the condition of the maintained elements off of the roadway to properly complete routine maintenance as necessary or prescribed by the performance criteria.

Infrastructure Renewal/Rehabilitation Maintenance

Utilize trained and Colorado-licensed professional engineers to properly complete condition assessments. Develop effective life cycle plans that preserve the infrastructure condition. Account for major maintenance of railroads, including flagging activities.

Cover/MEP Systems Maintenance

Throughout the design and construction period, develop maintenance manuals for critical cover infrastructure to delineate procedures and frequencies, as prescribed by the manufacturer, to achieve full life cycle performance. Execute the plans and manuals as prescribed.

Cleaning and Aesthetics

Monitor the condition of the infrastructure and note areas in need of cleaning or graffiti removal. Complete daily routine patrols of the main line to maintain the visual appeal of the corridor and remedy items such as roadside debris, graffiti and over-vegetated areas.

5.b.iv Approach to performing routine maintenance and its relationship to renewal work

5280 Connectors' routine maintenance program prioritizes high-value activities to promote the life cycle performance of the infrastructure. We will create a Bridge Durability Program and plan specific maintenance to mitigate damage risks for the bridge and infrastructure and enhance life cycle performance.

5.b.iv.A Assumptions made in developing the proposed regime of routine maintenance and inspections

Figure 5.11 | **Routine Maintenance and Inspections:** 5280 Connectors will implement a routine maintenance program to prolong the life of the infrastructure elements on the project.

	Typical Work Activities	Assumptions Regarding Renewal Work
Bi-annually	Structure Maintenance and Inspection	Early detection of deterioration will mitigate larger issues.
	Bridge Joints	Keeping joints clean allows unimpeded thermal expansion of the structure and protects critical bridge areas against advanced deterioration to glands and joint header compression.
Weekly	Vegetation and Aesthetics Maintenance	Clean and debris-free infrastructure optimizes performance while maintaining corridor aesthetics.
	Drainage Maintenance	An efficient drainage system moves moisture away from the infrastructure and optimizes infrastructure performance.
	Traffic Services	Clean and well-maintained traffic appurtenances create a safe corridor and decrease traffic impacts to the infrastructure.
	Pavement Maintenance	Routine pavement maintenance preserves the pavement condition and prevents deterioration, especially in pavement exposed to vehicular traffic. Small fixes can prevent large rehabilitation efforts.
Daily	Roadside Maintenance	Keeping the roadside in good condition allows for efficient drainage, decreases efforts during winter events, and maintains the desired aesthetics of the corridor. These actions reduce moisture on the assets, directly benefiting infrastructure performance.

5.b.iv.B Approach to general sweeping, cleaning, and removal of debris and graffiti

Figure 5.12 | **Keeping the Corridor Clean:** Accumulations of gravel and debris can corrode steel surfaces by retaining moisture on critical elements. Moisture can inhibit proper movement of the structure and paving expansion joints, reduce the efficiency of drainage, and freeze and thaw inside of joints to cause spalling and pavement deterioration. 5280 Connectors will mitigate these issues with out methodical approach to maintenance on this project

Cleaning

To optimize life cycle performance, we will diligently clean the infrastructure (roads, bridges, infields, etc.) to maintain compliance with Project Agreement Schedule 11 and promote a functioning infrastructure that reduces the risk of unplanned large-scale rehabilitation. This effort includes activities such as sweeping; picking up litter; and cleaning sign bases, bridge bearing areas, and expansion joints.

Removal of Debris

5280 Connectors commits to prompt removal of debris per Schedule 11. We will maintain two debris-specific trucks to remove safety hazards. Each will include a front mounted V-plow and truck-mounted attenuator to move large debris from the travel way to the shoulder for safe loading and disposal. This approach greatly reduces workers' direct exposure to traffic and the need to stop traffic by maintaining a moving pace around obstacles.

General Sweeping

5280 Connectors will implement a programmed sweeping operation to ensure that the accumulation of debris and gravel never exceeds the specification of Schedule 11. These sweeping cycles will keep the inlets and drainage systems clear of surface debris and protect drainage flow paths, and thereby improve life cycle performance.

Graffiti

We will use routine patrols and special inspections to identify graffiti. When graffiti is reported, we will update the MMIS with location information and deploy a technician, who will arrive with proper equipment to access and remove the graffiti. We will remove offensive graffiti within 6 hours and other graffiti within 24 hours.

5.b.iv.C Approach to inspection and testing of project assets and components

5280 Connectors will utilize only qualified inspectors to maintain the infrastructure and optimize life cycle performance. We inspect and test across maintenance elements to give a full view and assess residual life for life cycle planning. We will regularly test critical drainage and cover facility equipment to ensure operation as designed and within prescribed capacities.

We will conduct all inspections and testing in accordance with Project Agreement Schedule 11, and Figure 5.13 identifies our supplemental standards and criteria. These inspections comply with Federal Highway Administration (FHWA) Biennial Bridge Inspection requirements and the FHWA National Tunnel Inspection Standards (NTIS) Manual. We gather life cycle evaluation information from these inspections to define the five-year maintenance plan.

Routine daily patrols by project personnel will identify typical and unanticipated issues in roadway maintenance and operations. We will note items such as drainage infrastructure condition, graffiti and guardrail defects from these routine inspections as observed from the travel way. These patrols will serve as the eyes for the maintenance team in developing notifications of defects and short-term maintenance plans.

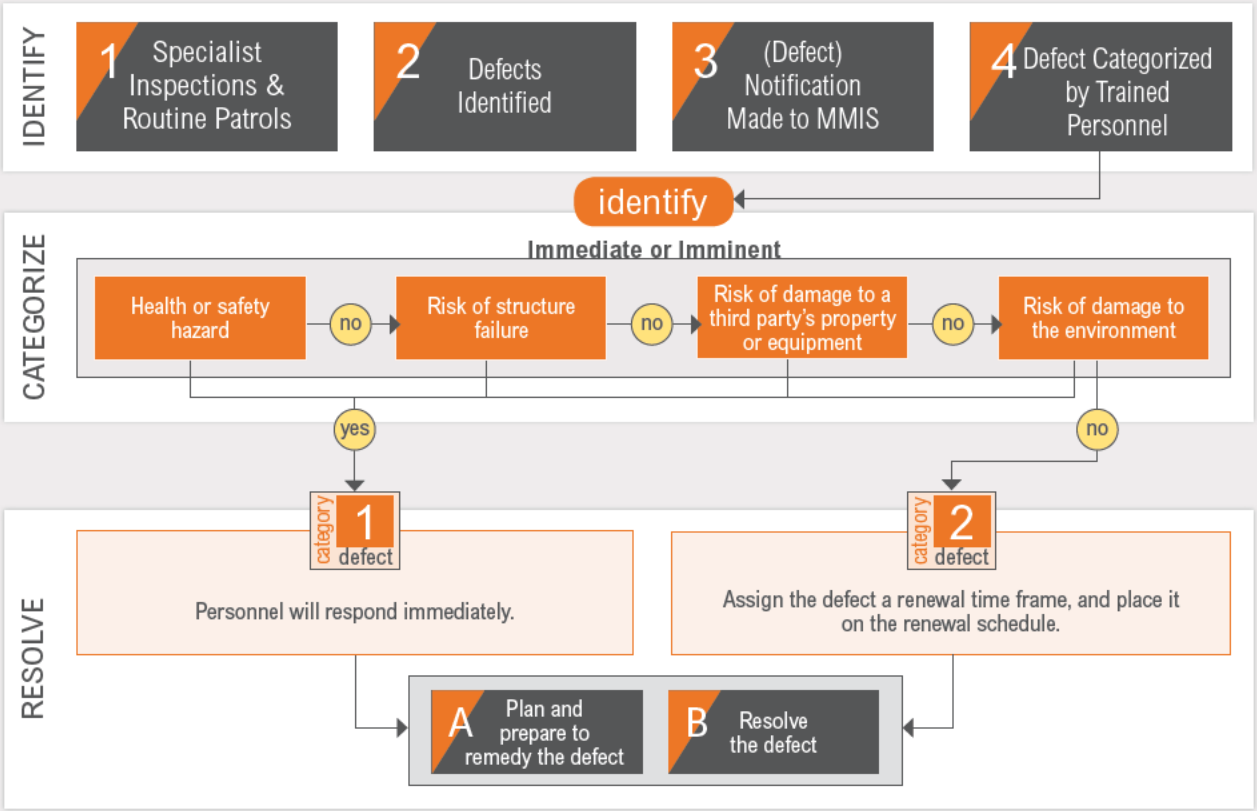
Figure 5.13 | **Additional Inspections of Project Assets**

Type of Inspections	Standards
Specialist Inspections of structures (Biennially).	• National Bridge Inspection Standards (NBIS) • National Tunnel Inspection Standards (NTIS)
Inspection and testing of the MEP and FFFS contained within the cover, plus ventilation and jet fans	• NFPA 502: Standard for Road Tunnels, Bridges, and Other Limited Access Highways

5.b.iv.D Approach to identification, classification and rectification of defects and inspection failures

To meet timeliness requirements for defect corrections, the project engineer will immediately categorize any defect as Category 1 or 2 (see Figure 5.14). The project engineer will be a certified Colorado Professional Engineer trained in the Project Agreement who understands the critically important time frames of Category 1 defects. The MMIS will record and store defect information from notification through to remediation, including work orders and time lines.

Figure 5.14 | **Identifying, Categorizing, and Resolving Defects**



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5.b.iv.E Maintenance Management Information System

Figure 5.15 | **Schedule of MMIS Activities:** 5280 Connectors will use the MMIS as a planning and reporting tool to organize the data provided to the Enterprises.

1 Geographic data input by crews
We populate MMIS data as functional locations (geographically identified), accompanied by activities relating to those locations. The MMIS uses this to report on activities, defects, mean times between failure (MTBF), and mean times to repair (MTTR).

2 Maintenance actions
The MMIS will store actions associated with each functional location, such as construction, installation, maintenance, inspection, modification, MTBF, replacement, or removal.

3 Inventory management
The MMIS also provides inventory levels to properly ensure sufficient quantities of spare parts and equipment given the MTBF data.

4 Transparency in the system
The MMIS provides transparency in the activities to the Enterprises.

5 Secure information management
The Enterprises can view MMIS data via a read-only access portal to protect data integrity.

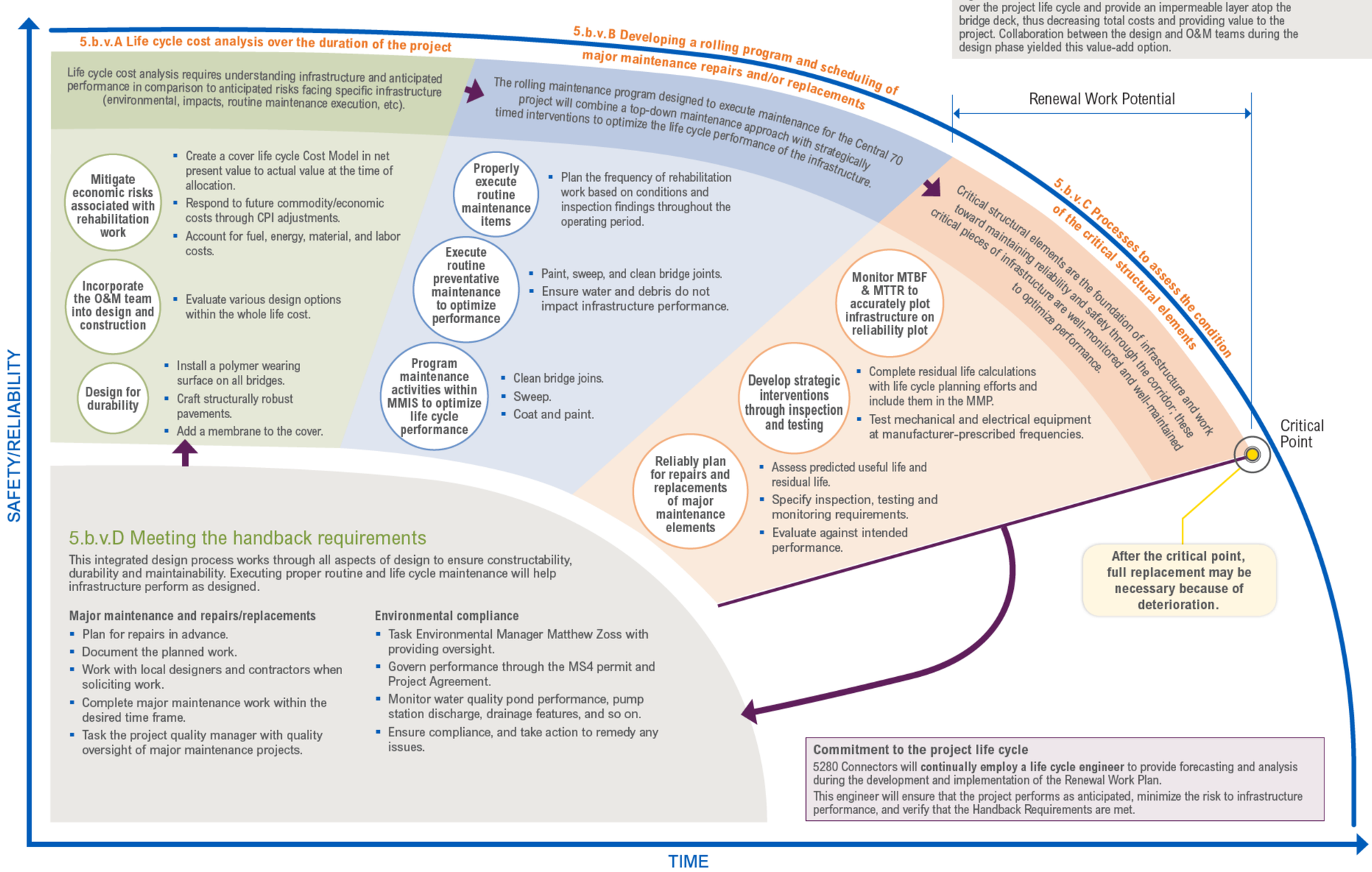
6 Interface by the Enterprises
The Enterprises' client portal will show open notifications, pending work orders and activities, inventory levels, and completed work.

7 Real-time management of Central 70 maintenance
Maintenance activities will be covered in monthly O&M meetings, but this portal provides real-time feedback if urgent matters require attention.

5.b.v Approach to Renewal Work

Figure 5.16 | **Schematic of Life Cycle Curve:** Renewal work is necessary when nearing the location on the life cycle curve, because safety and reliability degrade over time. This work directly relates to the initial life cycle planning, supported by the rolling program for maintenance against the residual life assessment leading to the handback of the project.

Making Decisions to Optimize Design and Construction
Our team chose to include a polyester polymer overlay at bridge locations purely to optimize the use of resources allocated to bridge surface treatment, even though the overlay has a substantially higher initial cost of construction. However, it will reduce interventions over the project life cycle and provide an impermeable layer atop the bridge deck, thus decreasing total costs and providing value to the project. Collaboration between the design and O&M teams during the design phase yielded this value-add option.



5.b.v.D Meeting the handback requirements

This integrated design process works through all aspects of design to ensure constructability, durability and maintainability. Executing proper routine and life cycle maintenance will help infrastructure perform as designed.

Major maintenance and repairs/replacements
- Plan for repairs in advance.
- Document the planned work.
- Work with local designers and contractors when soliciting work.
- Complete major maintenance work within the desired time frame.
- Task the project quality manager with quality oversight of major maintenance projects.

Environmental compliance
- Task Environmental Manager Matthew Zoss with providing oversight.
- Govern performance through the MS4 permit and Project Agreement.
- Monitor water quality pond performance, pump station discharge, drainage features, and so on.
- Ensure compliance, and take action to remedy any issues.

Commitment to the project life cycle
5280 Connectors will **continually employ a life cycle engineer** to provide forecasting and analysis during the development and implementation of the Renewal Work Plan.
This engineer will ensure that the project performs as anticipated, minimize the risk to infrastructure performance, and verify that the Handback Requirements are met.

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5.c Cover Top O&M Manual Summary

5.c.i Approach to video recording of installation of key components on top of the cover

Figure 5.17 | **Video Recording:** We will record the installation of all key components on top of the cover to produce a valuable tool for the Cover Maintainer.

Construction Video
We will record high-quality videos with date and time stamps and provide them in the Cover Maintainer's preferred format.

Subsurface Elements
A tape measure used in the video will indicate depth to the element.

Training
We will also record any training by manufacturer representatives and provided those videos for reference.

5.c.ii Recommended load restrictions on Cover

Figure 5.18 | **Schedule of Recommended Load Restrictions on the Cover**

Vehicle Loading

Limitations
Roadways: Clayton and Columbine
Central plaza space: NB/SB direction
Along 46th Ave: EB/WE direction

Limitations
Allowed: Anywhere on cover structure

Pedestrian Load

Limitations
Anywhere on cover structure: 90 psf

Fire Trucks

Limitations
Roadways: 46th Ave. N.
Central Plaza Space: NB/SB direction

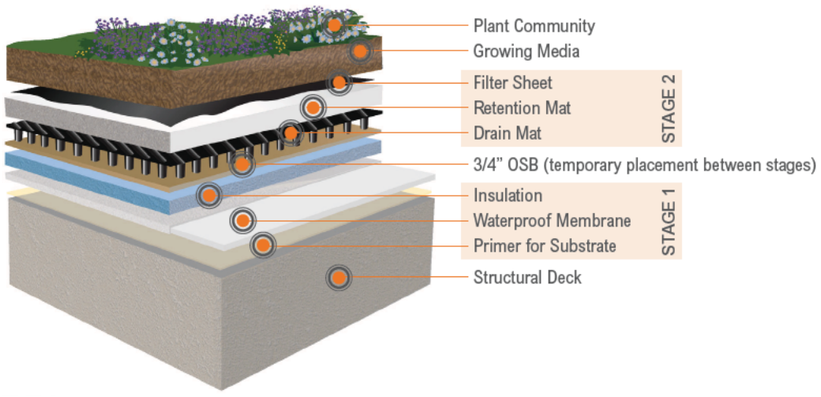
5.c.iii Waterproofing layer damage preventative measures to be carried out during performance of the cover top O&M work

Figure 5.19 | **Damage Preventative Measures during the Performance of the Water-Proofing Layer on the Cover Top O&M Work:** The waterproof membrane is composed of a six-layer system, constructed in two independent stages.

Stage 1 Construction
Installed/as other construction activity is being preformed adjacent to the area.

Protective Measure
Insulation will act as a protective layer and will also be supplemented by a temporary layer of 3/4" OSB plywood until growth media is ready to be placed.

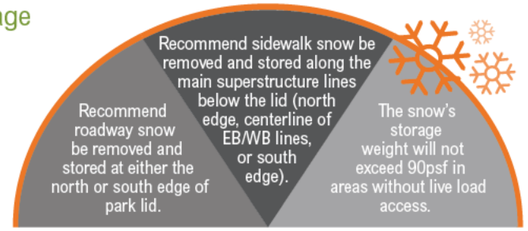
Stage 2 Construction
Perform final inspection of the insulation layer (and make repairs as necessary), and install final layers, growing media and plant community.



STORED IN RECORD KEEPING

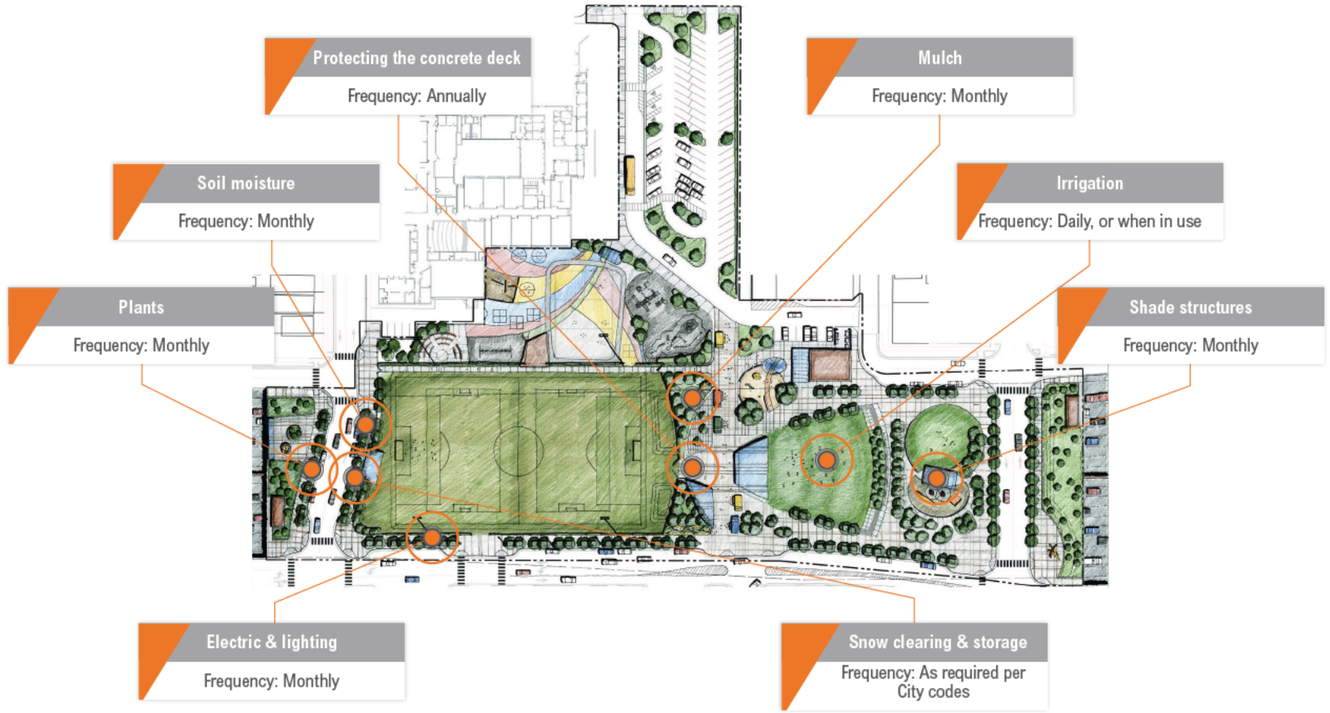
5.c.iv Snow removal and storage restrictions

Figure 5.20 | **Snow Removal and Storage**



5.c.v Elements requiring regular inspections and maintenance

Figure 5.21 | **Elements Requiring Inspection and Maintenance:** We will document installation of all items needing inspection in accordance with the record keeping requirements of the cover top O&M work.



5.c.vi Record keeping of Cover Top O&M Work

Figure 5.22 | **Record-Keeping of Cover Top O&M Work:** We will maintain records of cover top O&M work installation in the MMIS, where they will be available to the Enterprises immediately upon installation of the work.

1. 5280 Connectors will work with CCD and the Cover Maintainer to review changes to the configuration of the cover.
2. The Cover Maintainer will provide a monthly report on actions or inspections that have occurred within the extents of the cover.
   a. Outlining work completed that month
   b. Listing work planned for next month
3. 5280 Connectors will attach a monthly report from the Cover Maintainer to our monthly report to the Enterprises.
4. 5280 Connectors will supply the Enterprises records for activities and inspections completed by the Cover Maintainer.
5. 5280 Connectors will document cover activities that are our responsibility within the MMIS.

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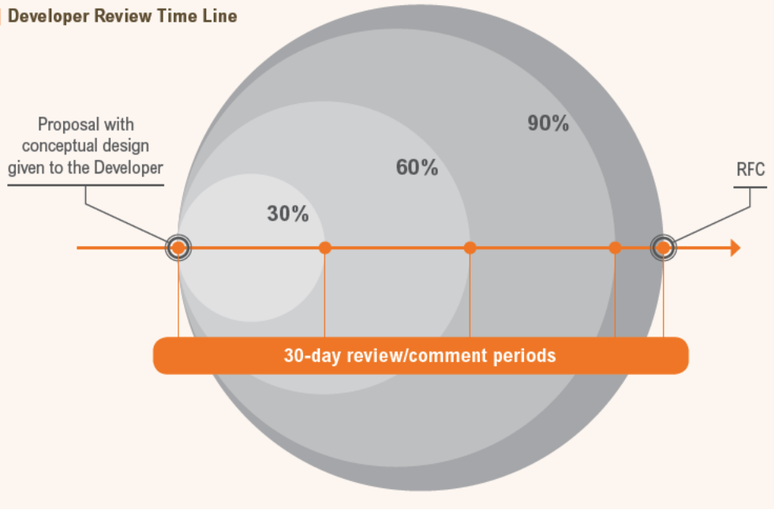
5.c.vii Developer review time line and requirement for major modification by the Cover Maintainer on top of the Cover impacting Developer's carrying out of the cover O&M work

Figure 5.23 | **Developer Review Time Line**



A history of incorporating modifications

On the Expo Phase 2 project in Los Angeles, we worked closely with the City of Santa Monica to incorporate more than $30 million in betterments including additional entrances, changing the station design from a center platform to side platforms, and incorporating final aesthetic elements into the terminus station design. The terminus station betterment was identified early, was near the critical path, and affected every discipline. Using numerous over-the-shoulder design and constructability reviews with the City and Metro, we reconfigured the station to integrate with the future Esplanade project at 4th and Colorado.

"You listen to us when we make suggestions on scheduling street closures and phasing work. I mean truly listen to us."

– Alex Nararchuk, P.E.
Construction Manager
City of Santa Monica

5.c.viii Other coordination and interface requirements with Developer

Figure 5.24 | **Coordination for Events Impacting the Developer:** The following types of events and activities on the cover will require interface, which could affect operations.

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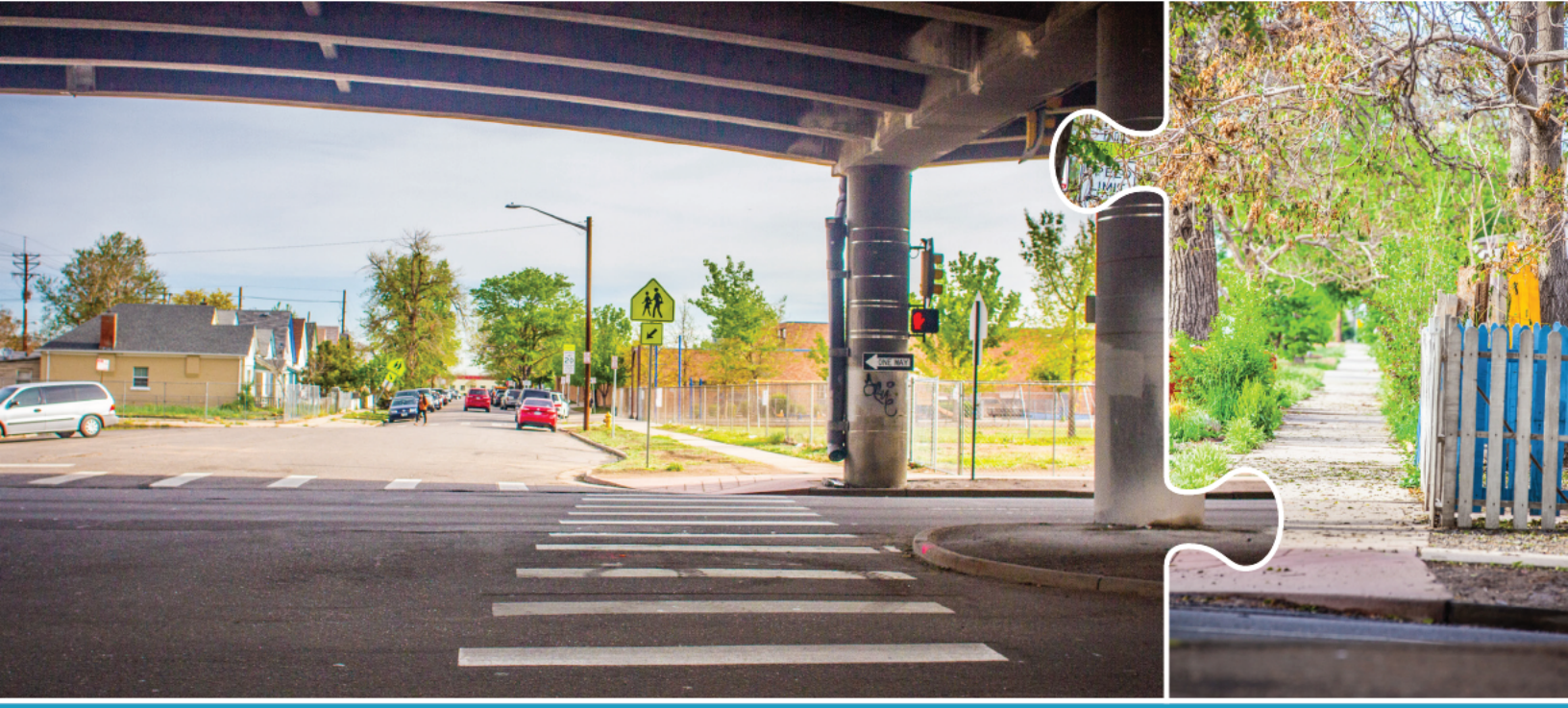


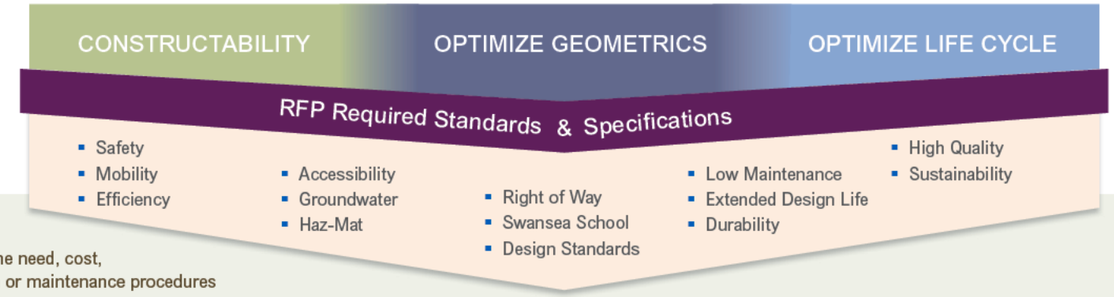
SECTION 2.1.7

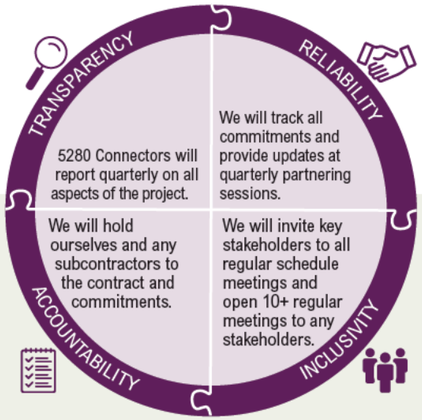
PART 6: TECHNICAL APPROACH AND SOLUTIONS

6.a Design Approach

Figure 6.01 | **Schedule of Commitments for approach to design:** 5280 Connectors have developed an approach to design focused on delivering the needs of the Enterprises, the project stakeholders and local communities.

A Part 6 complies with requirements and is consistent with Appendix A, Draft Design Drawings.





6.b Description of Design Features

Figure 6.02 | **Design Features:** We have incorporated design features that reduce the need, cost, duration, efficiency, and increase safety of maintenance activities or make inspection or maintenance procedures more efficient, safer or less costly.

ATC 4 | Storm Sewer Diversion
Benefit: Diverting storm sewer flows underground, to the west to an existing storm sewer line will eliminate a storm sewer bridge crossing over I-70, allowing for a raised I-70 mainline profile.

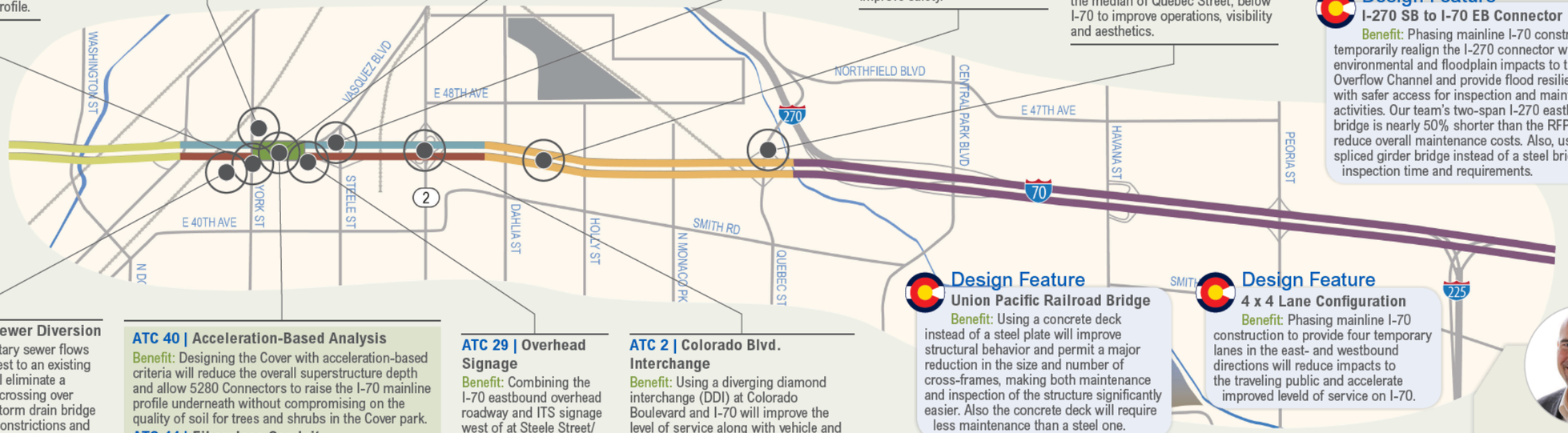
ATC 25 | York St. Drainage Connection
Benefit: Connecting CDOT's on-site outfall system to existing Denver storm drain at York Street and 47th Avenue will eliminate 4,400 linear feet of micro-tunnel drainage pipe. Eliminating the storm drain tunnel and using existing storm drain capacity reduces impacts along the approximately 1 mile storm drain alignment, eliminates environmental impacts of a new outlet to the South Platte River and reduces ROW acquisition.

ATC 31 | Plant and Services Room
Benefit: Combining the Fire Control Center into a single building reduces connections required between two separate buildings. One centralized building will house controls and functions, allowing more landscaping on the Cover in lieu of mechanical buildings near the portals.

ATC 37 | Steele St./Vasquez Blvd. Entrance Ramp
Benefit: Reconfiguring the Vasquez Boulevard and 46th Avenue North intersection and I-70 westbound entrance ramp will reduce the vertical grade differential at Milwaukee Street, thereby removing ROW impacts of tying down Milwaukee Street roadway grades onto adjacent private property.

ATC 36 | Storm Sewer Utilization
Benefit: Optimizing the drainage system will allow the use of the existing storm drain crossings at Forest and Grape Streets and reduce drainage impacts north of I-70. This solution also will reduce construction impacts and improve safety.

ATC 20 | Quebec St. Exit Ramp
Benefit: Revising the design speed for the Quebec Street westbound exit ramp will accommodate a single-span bridge for I-70 over Quebec Street. With a single-span structure, we will eliminate the pier structure in the median of Quebec Street, below I-70 to improve operations, visibility and aesthetics.



ATC 7 | Sanitary Sewer Diversion
Benefit: Diverting sanitary sewer flows underground to the west to an existing sanitary sewer line will eliminate a sanitary sewer bridge crossing over I-70. Eliminating the storm drain bridge will reduce overhead constrictions and allow us to optimize the I-70 profile to minimize excavation and groundwater intrusion. It will improve safety through the lowered section of I-70 and reduce inspection and maintenance requirements.

ATC 40 | Acceleration-Based Analysis
Benefit: Designing the Cover with acceleration-based criteria will reduce the overall superstructure depth and allow 5280 Connectors to raise the I-70 mainline profile underneath without compromising on the quality of soil for trees and shrubs in the Cover park.

ATC 44 | Fiberglass Conduit
Benefit: Phenolic fiberglass conduit has been used widely throughout the US in both road and rail tunnel applications. Using fiberglass for exposed conduit will provide a durable, cost-effective, corrosion-resistant and fire-rated alternative to metallic conduit.

ATC 41 | Portal Entrance Finish Grading
Benefit: Slightly revising the grading above the Cover entrance portals will raise the I-70 roadway profile.

ATC 28 | Tunnel Lighting Drivers
Benefit: Consolidating LED light fixtures and drivers will eliminate wall-mounted driver cabinets and associated conduit wiring to lighting fixtures.

ATC 29 | Overhead Signage
Benefit: Combining the I-70 eastbound overhead roadway and ITS signage west of at Steele Street/ Vasquez Boulevard will improve sight distance.

ATC 2 | Colorado Blvd. Interchange
Benefit: Using a diverging diamond interchange (DDI) at Colorado Boulevard and I-70 will improve the level of service along with vehicle and pedestrian traffic operational safety.

Design Feature
I-270 SB to I-70 EB Connector
Benefit: Phasing mainline I-70 construction to temporarily realign the I-270 connector will eliminate environmental and floodplain impacts to the Sand Creek Overflow Channel and provide flood resilient infrastructure with safer access for inspection and maintenance activities. Our team's two-span I-270 eastbound connector bridge is nearly 50% shorter than the RFP layout and will reduce overall maintenance costs. Also, using a concrete spliced girder bridge instead of a steel bridge will reduce inspection time and requirements.

Design Feature
Union Pacific Railroad Bridge
Benefit: Using a concrete deck instead of a steel plate will improve structural behavior and permit a major reduction in the size and number of cross-frames, making both maintenance and inspection of the structure significantly easier. Also the concrete deck will require less maintenance than a steel one.

Design Feature
4 x 4 Lane Configuration
Benefit: Phasing mainline I-70 construction to provide four temporary lanes in the east- and westbound directions will reduce impacts to the traveling public and accelerate improved leveld of service on I-70.

Corridorwide

ATC 27 | Intermediate Diaphragms for PC Girders
Benefit: Eliminating intermediate diaphragms for precast concrete (PC) girders will reduce maintenance and inspection requirements.

ATC 32 | Florida I-Beam (FIB) Girder
Benefit: Using this more efficient, precast girder type will reduce the amount of girders required, resulting in a smaller section depth and reducing overall project costs.

ATC 30 | DMS Median
Benefit: Providing this infrastructure will allow maintenance personnel to access overhead signage from the I-70 median.

ATC 42 | Precast Fill Wall
Benefit: Using this versatile precast fill wall system will accommodate on-site material, instead of generating more waste excavation to leave the site.

John Kalvelage, PE
Design Manager

John brings 25 years' experience in design management, and will be responsible for overseeing our multidiscipline design team throughout the project. In addition to coordinating all aspects of project design, his strengths include his ability to keep design-build projects within funding limits by finding innovative ways to leverage the design team's skills to resolve issues.

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6.c Pavement Design

Our current pavement design incorporates all RFP data. It smoothly combines pavement reconstruction and overlay strategies to produce consistent, full-width surfacing of the highest quality. Although our preliminary designs incorporate CDOT library mix designs, the final design will employ precise, project-specific mixes designed with refined values obtained through fine-grained sensitivity analyses.

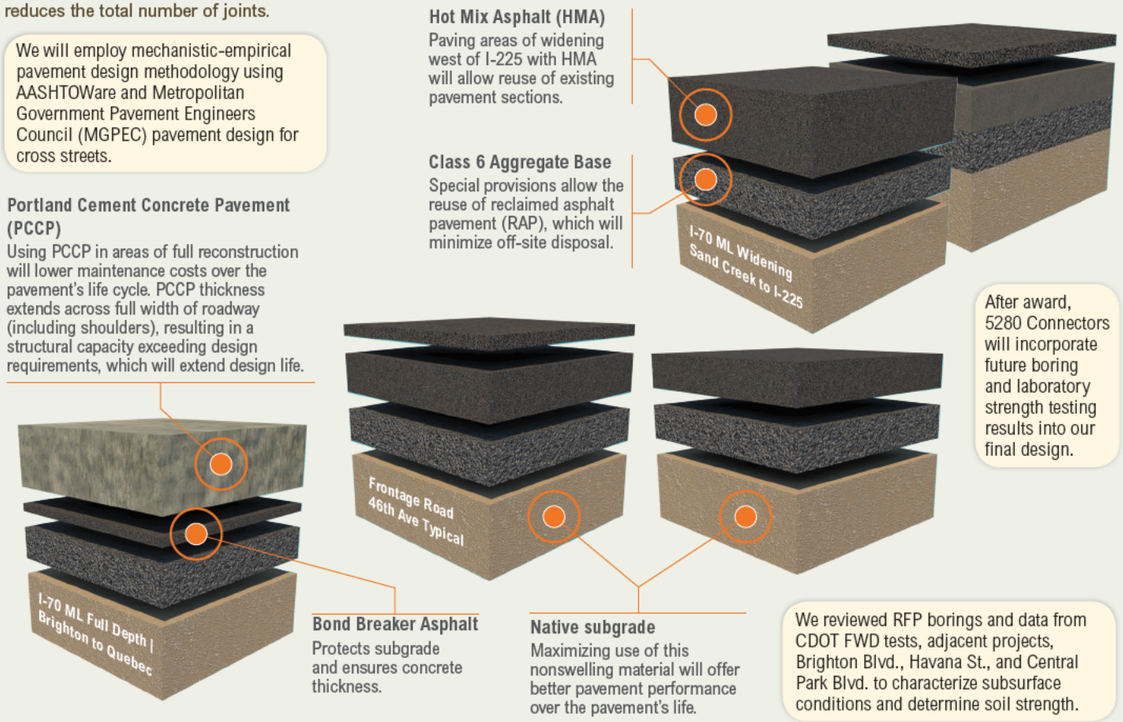
Figure 6.03 | **Pavement Material Types Applied to Central 70:** Our paving approach maximizes paving widths, minimizes paver stoppages, and reduces the total number of joints.

We will employ mechanistic-empirical pavement design methodology using AASHTOWare and Metropolitan Government Pavement Engineers Council (MGPEC) pavement design for cross streets.

Hot Mix Asphalt (HMA)
Paving areas of widening west of I-225 with HMA will allow reuse of existing pavement sections.

Class 6 Aggregate Base
Special provisions allow the reuse of reclaimed asphalt pavement (RAP), which will minimize off-site disposal.

Portland Cement Concrete Pavement (PCCP)
Using PCCP in areas of full reconstruction will lower maintenance costs over the pavement's life cycle. PCCP thickness extends across full width of roadway (including shoulders), resulting in a structural capacity exceeding design requirements, which will extend design life.



After award, 5280 Connectors will incorporate future boring and laboratory strength testing results into our final design.

Bond Breaker Asphalt
Protects subgrade and ensures concrete thickness.

Native subgrade
Maximizing use of this nonswelling material will offer better pavement performance over the pavement's life.

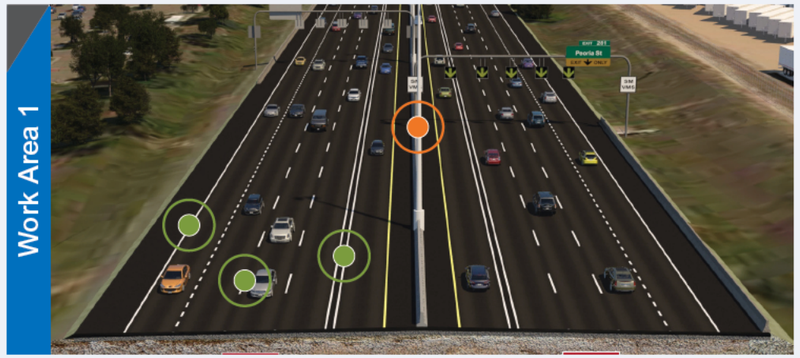
We reviewed RFP borings and data from CDOT FWD tests, adjacent projects, Brighton Blvd., Havana St., and Central Park Blvd. to characterize subsurface conditions and determine soil strength.

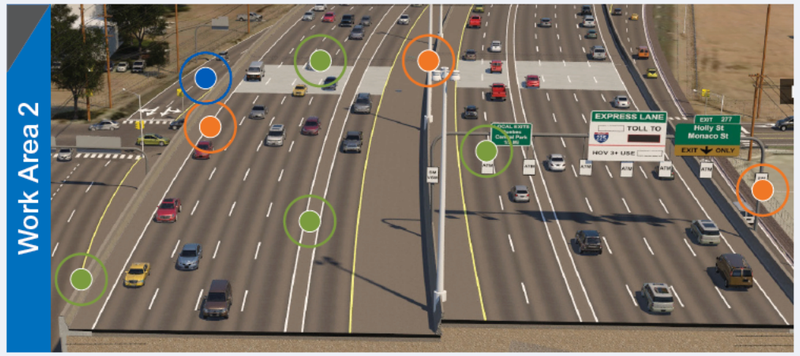
Figure 6.04 | **Pavement Design Methodology:** Per Table 6-1, Schedule 10, Section 6.3, 5280 Connectors' pavement design will adhere to the current CDOT Pavement Design Manual (2016) for interstate, frontage road, and ramp construction.

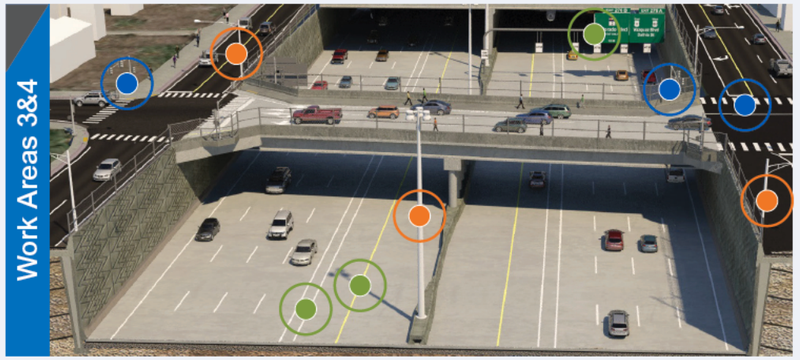
		Design Methodology	Pavement Type	Roadway Classification	Traffic Loading - trucks/day (AADTT)	Design Life Considerations
LOCATION	I-70 mainline full depth (Brighton Blvd. to Sand Creek)	CDOT M-E Pavement Design	Rigid	Interstate	23,000	30 years
	I-70 mainline widening (Sand Creek to I-225)	CDOT M-E Pavement Design	Flexible	Interstate	23,000	20 years
	I-70 mainline widening (I-225 to Chambers Rd.)	CDOT M-E Pavement Design	Rigid	Interstate	23,000	30 years
	I-70 mainline ramps (Brighton Blvd. to Sand Creek)	CDOT M-E Pavement Design	Rigid	Interstate	3,000–13,000	20 years
	I-70 mainline ramps (Sand Creek to Chambers Rd.)	CDOT M-E Pavement Design	Flexible	Interstate	3,000–13,000	20 years
	State ROW cross streets (Brighton Blvd., Steele St., Colorado Blvd.)	(CDOT Provided M-E Designs)	Flexible	Major Arterial	Variable	20 years
	Frontage Roads, CCD (Stapleton Rd., N 46th Ave.)	MGPEC	Flexible	Minor Arterial	Variable	20 years
	Surface Streets - CCD	MGPEC	Flexible	Minor Arterial to Residential	Variable	20 years

6.d Signing, Delineation, Pavement Markings, Signalization and Lighting

Figure 6.05 | Signing, Delineation, Pavement Markings, Signalization and Lighting







Signing, Delineation and Pavement Markings
Our design approach will provide signing and pavement markings compliant with the approved FHWA Interstate Access Request (IAR) and CDOT and local agency requirements, while providing positive and clear guidance to drivers under all lighting conditions (*per Project Agreement Schedule 10, Sections 11, 11.4 and 11.5*).

Signalization
ITS fiber optic infrastructure will connect traffic signals and metering (for designated I-70 on-ramps) and allow railroad signal preemption at crossings. We will coordinate traffic signal poles and other infrastructure with existing and proposed utilities and other improvements (per *Project Agreement Schedule 10, Section 11.5)*.

Lighting
We will optimize the electrical power distribution system for lighting and ITS equipment to minimize the number of independent service connection points required from Xcel Energy *(per Project Agreement Schedule 10, Section 11.7.1.e)*

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6.e Earthwork

5280 Connectors will be efficient with its earthwork operations by excavating soil from the proposed limits along I-70 from Brighton to Colorado Boulevards and place the soil as embankment along I-70 from Colorado Boulevard to Peoria Street.

6.e.i Geotechnical

5280 Connectors will base geotechnical designs on current CDOT design manuals, per Project Agreement section 7.3.1, Schedule 10. We will base loading and design requirements on from the latest AASHTO LRFD. We will develop geotechnical design recommendation requirements based on major structure foundations, cut wall retention systems, and fill wall types using design parameters for the alluvium and bedrock based on the RFP data, future data, and engineering experience.

we WILL

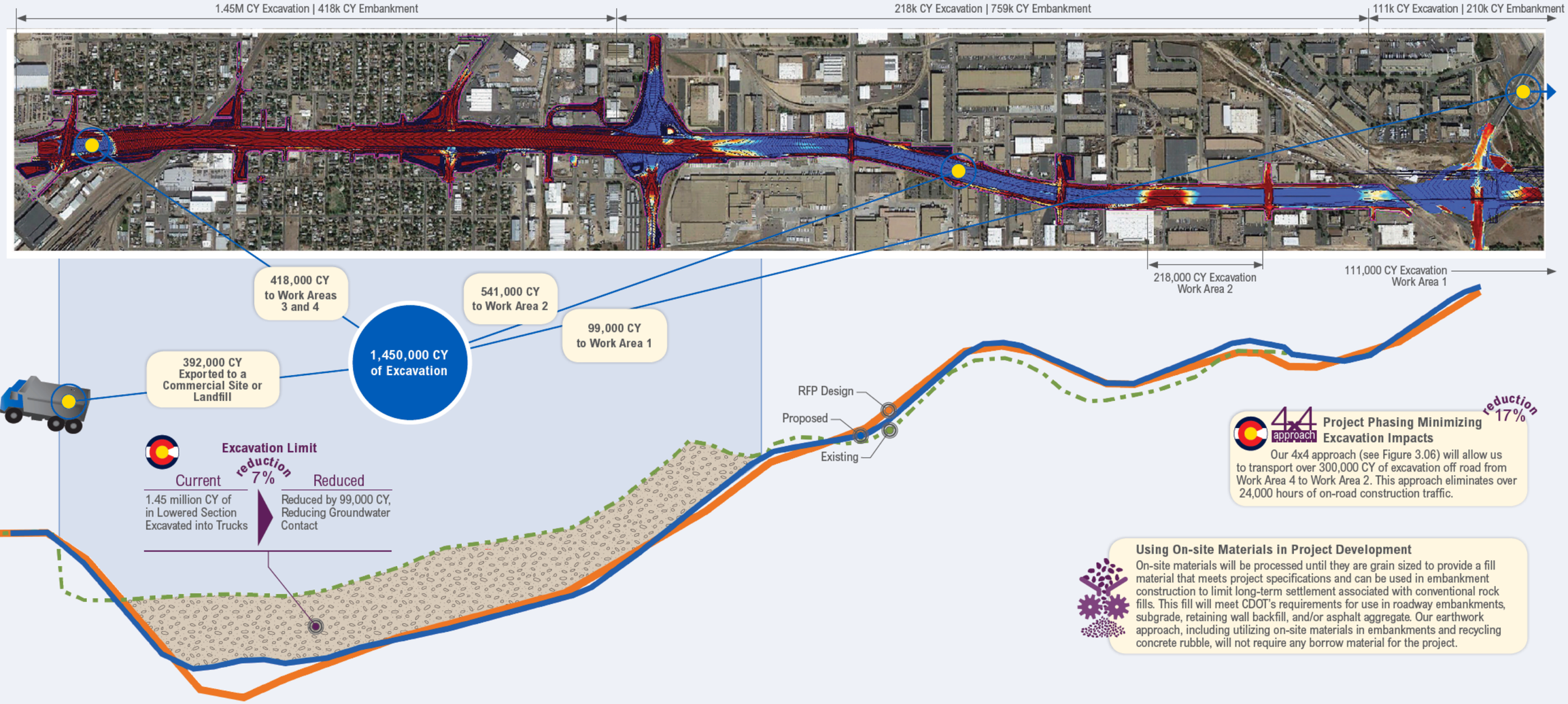
- **minimize off-site soil disposal** and reuse the alluvium soil within the MSE wall reinforced zone as allowed by retaining wall backfill zone.
- **use thermal integrity profile testing** on drilled shafts to reduce testing time and allow quick installation modifications if warranted.
- **develop a comprehensive future exploration program** of boring and in-situ testing to verify and support the information contained in the RFP borings and laboratory testing reports.

Figure 6.06 | **Schedule:** We will address these key geotechnical issues for successful, timely completion.

- Assess engineering properties of soil and bedrock types, including strength, lateral, and deformation properties.
- Evaluate lateral earth pressures in the lowered section to reduce long-term maintenance.
- Ensure embankment stability of large fills to reduce long-term maintenance.
- Provide appropriate foundation recommendations to reduce long-term settlement.
- Provide pavement design recommendations that minimize maintenance and meet handback requirements.

6.e.ii Excavation

Figure 6.07 | **Schematic of Mass Haul of Material:** 5280 Connectors have prepared an excavation plan that pulls the bulk of the material from Work Areas 3 and 4 and transports it to Work Area 2. This profile optimization will reduce excavation and improve the overall balance of the earthwork.



4x4 approach — Project Phasing Minimizing Excavation Impacts (reduction 17%)

Our 4x4 approach (see Figure 3.06) will allow us to transport over 300,000 CY of excavation off road from Work Area 4 to Work Area 2. This approach eliminates over 24,000 hours of on-road construction traffic.

Using On-site Materials in Project Development

On-site materials will be processed until they are grain sized to provide a fill material that meets project specifications and can be used in embankment construction to limit long-term settlement associated with conventional rock fills. This fill will meet CDOT's requirements for use in roadway embankments, subgrade, retaining wall backfill, and/or asphalt aggregate. Our earthwork approach, including utilizing on-site materials in embankments and recycling concrete rubble, will not require any borrow material for the project.

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6.e.iii - Environmental approach

Figure 6.07 | **Environmental Approach**

6.e.iii.A Screening and sampling soil in accordance with the Materials Management Plan

Field screening in the excavation area, whenever feasible, will minimize handling and transportation.

Soil Sampling

We will place excavated material in long windrows for sampling, according to the quantities established in the Beneficial Reuse and Materials Management Plan (BRMMP), based on the windrow cross-sectional area.

We will use the minimum Target Analyze List (TAL), unless field observations indicate further testing is required

- PAHs by U.S. EPA method 8270SIM
- RCRA 8 metals by U.S. EPA method 6010B/7041
- VOCs by U.S. EPA method 8260B
- Individual COCs will be further analyzed by TLCP

Does Soil Meet the RSL-Rs?

no → **Excavated Soil Cannot Be Reused On Site**

Material will be characterized and transported off site for disposal at a facility appropriately licensed in accordance with local, state and federal regulations.

Unsuitable Material Testing prior to Hauling to Landfills (Minimum Requirements)

- TCLP analysis for individual compounds exceeding the 20-times rule
- Flash point by U.S. EPA method SW1010
- pH by U.S. EPA method SW9045C (soil with free liquid only)
- Paint filter by U.S. EPA method 9095 (soil with free liquid only)
- PCBs (evaluated based on site history or laboratory analysis)

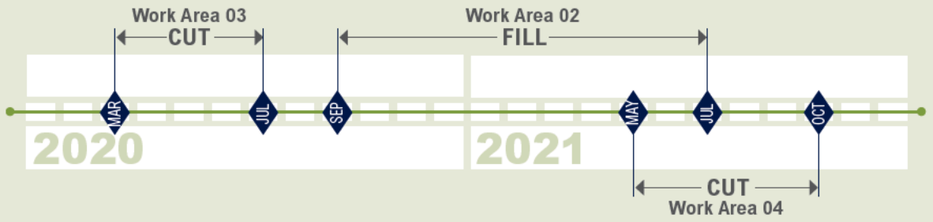
yes

6.e.iii.B Completing construction phasing to allow for the reuse of materials on-site in accordance with the Materials Management Plan

Implement the construction phasing managing excavated material based on the BRMMP

- Perform field screening during excavation procedures following the "looks bad, smells bad" protocol.
- Reuse impacted soil within the project (place beneath paved areas and/or within large embankments).
- Transport unsuitable or impacted materials off site in accordance with the BRMMP.

Aligning the excavation in Work Area 3 with the fill construction in Work Area 2 will allow beneficial reuse of the existing materials.



Following removal of the near surface soils and appropriate stockpiling and sampling, we can reuse most of the excavated material from Work Area 3 in Work Area 2. Our 4x4 MOT approach will allows off-road earthwork hauls, eliminating 24,000 hours of on-road construction traffic from May to July of 2021.

6.e.iii.C Minimizing the disposal of materials, including with respect to the phasing, excavation and construction stockpiling of such materials

Minimizing Disposal of Materials

ATCs 42 and 43 will allow the use of T-wall system for the fills behind walls in Work Area 2.

We will apply this system and schedule work to coincide with the excavation in Work Area 3 to allow the reuse of more than one million cubic yards of material, which would otherwise require exportation.

Our 4X4 MOT approach and phased viaduct demolition will allow us to crush and reuse viaduct concrete to eliminate the export of 103,000 cubic yards of asphalt and concrete waste.

6.e.iii.D Tracking and documenting the final disposition of materials

Document the final disposition of **all material** in the Materials Management Database.

- Disposal quantities
- Excavation quantities
- Excavation materials sampling
- Final disposition of all excavated material

Procedures for tracking and documenting chemically impacted material disposal is outlined in the Beneficial Reuse and Materials Management Plan.

Matthew Zoss
Environmental Manager

Matthew Zoss brings 15 years' environmental experience in the Denver area. He led the development of the Draft Environmental Compliance Work Plan and will oversee implementation of 5280 Connectors' approach to environmental compliance for soil handling, disposal and reuse.

we WILL

- minimize the amount of groundwater requiring treatment during and post-construction by building a groundwater cutoff wall to stop horizontal flow and a geo-membrane barrier beneath the pavement to stop vertical flow.
- minimize the use of off-site disposal to reduce the Enterprises' potential long-term liability from transporting the material to an off-site disposal facility.
- protect humans and the environment by reusing as much on-site soil as possible within the project.
- perform soil and groundwater management in accordance with the Enterprises' site-specific Materials Management Plan (MMP) provided in the RFP.

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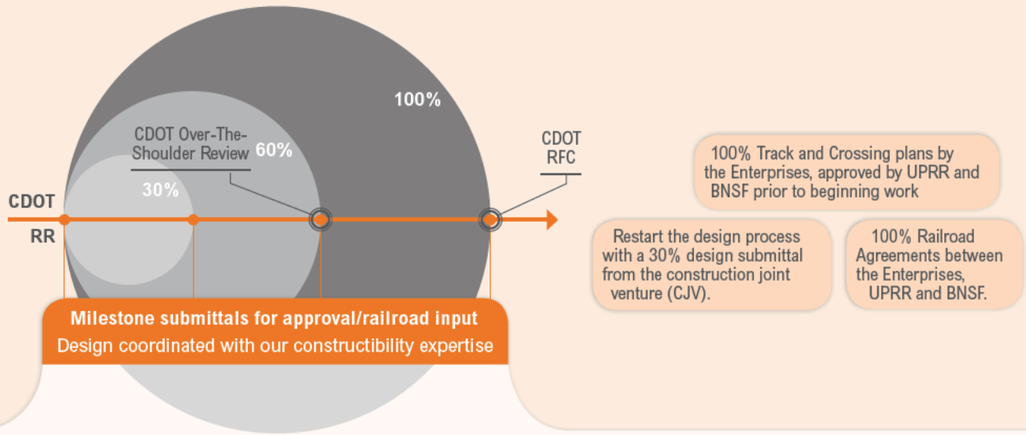
6.f Railroad Coordination

6.f Design Approach and Coordination

Figure 6.10 | **Design Approach and Coordination:** UPRR and BNSF have been major design and construction clients of HDR's for more than 35 years. We will apply this knowledge to implement a transparent approach that includes all stakeholders.



5280 Connectors will coordinate internally to generate 30%, 60%, 100% and RFC milestone submittals.

- Safety training and verification for all appropriate personnel
- Resolve railroad & CDOT milestone submittal comments
- Coordinate bridge design and procurement with schedule
- Develop detailed construction schedule
- MOT plans for all track crossing activities
- Constructability review
- Coordinate design and constructability challenges with railroad and CDOT at regularly scheduled task force meetings
- Advanced planning for security and access to site: use of fence, gates & guards (flaggers) to regulate traffic
- Interdisciplinary review
- On-site meetings to discuss and build common understanding of site challenges
- Submittal quality control (PC/IQC)
- Design Submittal Ready

Eric Eberhart
Railroad Coordinator

As a best practice for efficient coordination with railroads, 5280 Connectors will assign Railroad Coordinator Eric Eberhart. He will report to Construction Manager Paul Newman and ensure that all railroad design and construction tasks are efficiently planned and executed in accordance with the contracts for UPRR, BNSF and DRIR, as well as the stringent rules established by the Federal Rail Commission.

6.f.i. Coordinate Railroad Responsible Work

Figure 6.11 | **Railroad Coordination Process:** We have excellent working relationships with key personnel from UPRR's public project review team, project design (track/civil) and structures design. Our understanding of UPRR's operational needs, design requirements and detailing preferences, will expedite reviews and approvals. We will take a similar approach with BNSF and Denver Rock Island Railroad (DRIR) work.

Railroad Coordination

Acquire Rights of Entry

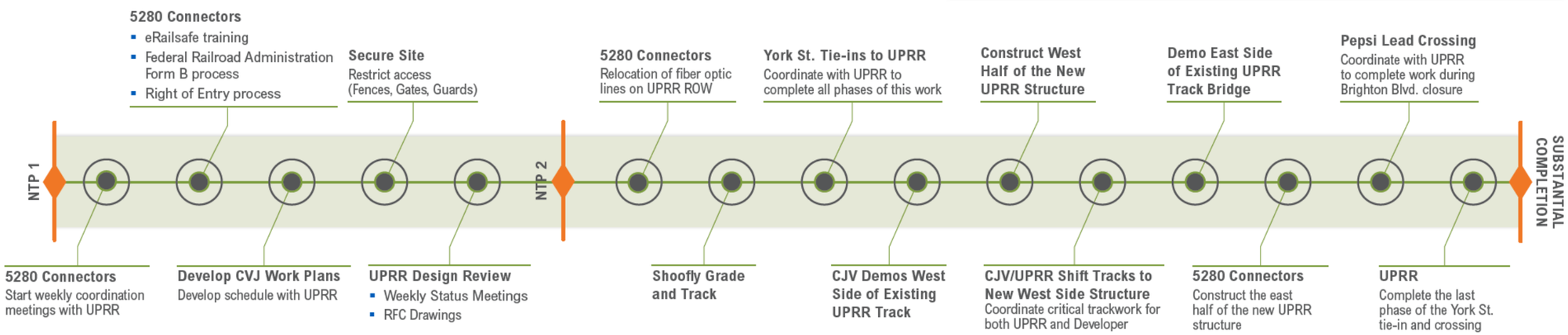
We will acquire right of entry permits to access each railroad right of way, allowing sufficient time to receive the permits before work begins (i.e., 30 days to 6 months, depending on the railroad and permit).

Designate a Crossing Coordinator

We will designate an on-site crossing coordinator to balance MOT, contractors, railroads, cities, and utility owners at each of the railroad crossings. The crossing coordinator will ensure that all stakeholder needs are met while minimizing impacts to the rail lines and community, including the Manna Pro and Weakland Investments on the south side of the BNSF tracks.

eRailsafe Safety and Awareness Training

All 5280 Connectors employees and subcontractors who work in the vicinity of any rail line will receive background checks and safety and awareness training via eRailsafe, as well as counter-terrorism awareness training. Every employee on 5280 Connectors' work site will be up to speed and badged. Developing strong relationships with railroads will also assist in Form B operations, which govern all work within 25 feet of the tracks.



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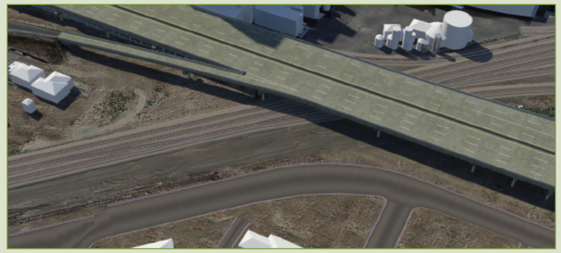
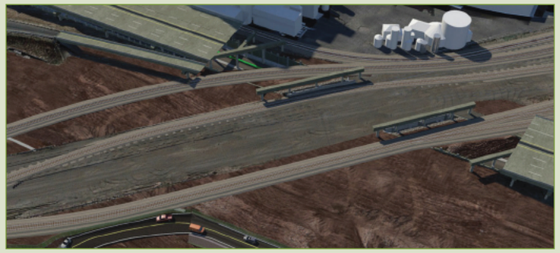
6.f.i. Coordinate Railroad Responsible Work (continued)

Figure 6.12 | **UPRR Crossing:** Coordination of railroad work, including the means to ensure that such work is carried out in order to achieve the key milestones in accordance with project schedule.

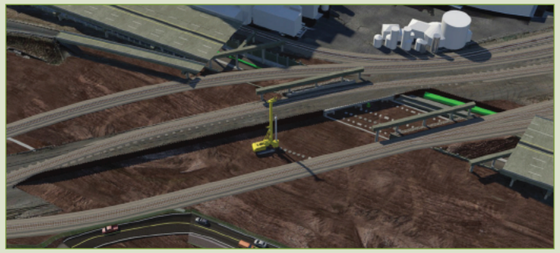
1 Current condition of the I-70 viaduct crossing over the existing rail configuration.



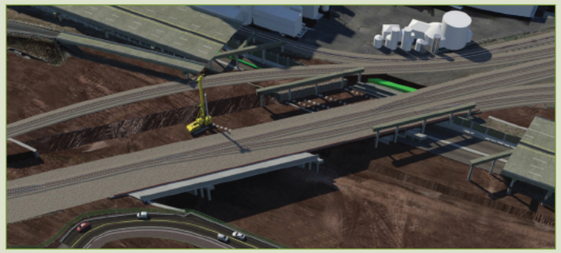
2 The viaduct continues over the top but was removed for visual purposes. Create a shoofly on either side of existing tracks and maintain rail traffic. Coordinate UPRR's tie-in work. RR Responsibilities: Tie in switches; flagging; Form B protection.



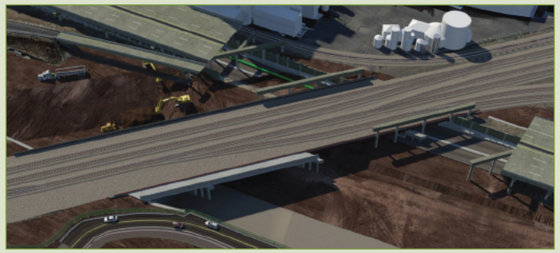
3 Construction the west half of the UPRR bridge under Form B while protecting shoofly tracks. RR Responsibilities: Flagging; Form B protection.



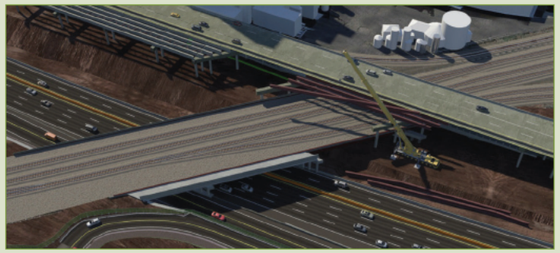
4 Moved UPRR Yard Lead 12 onto the newly constructed bridge, allowing construction of the east half to begin, while I-70 remains on the viaduct above. RR Responsibilities: Tie in switches; flagging; Form B protection.



5 With tracks shifted to the completed UPRR bridge, excavate to the east down to the final lowered section grade, where we will begin installing the pavement in the lowered section. RR Responsibilities: Tie-in switches; flagging; Form B protection.

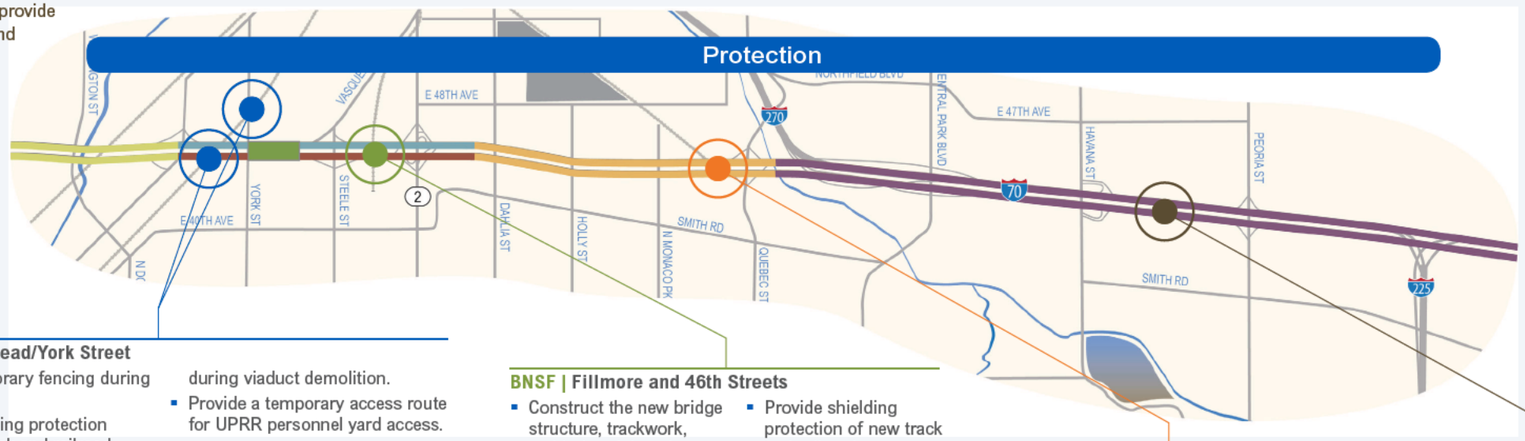


6 Demolish the existing viaduct while protecting the railroad below. RR Responsibilities: Tie-in switches; Flagging; Form B protection.



6.f.ii. Protection of Existing Railroads

Figure 6.13 | **Railroad Protections:** 5280 Connectors will provide MOT, traffic control, and pedestrian protection for the railroad to complete trackwork and signalization at each location.



UPRR | Pepsi Lead/York Street

- Provide temporary fencing during construction.
- Provide shielding protection of the new track and railroad structures during viaduct demolition and debris removal.
- Design support of excavation for Cooper E-80 train loading.
- Protect the Purina industrial track and loading dock structure during viaduct demolition.
- Provide a temporary access route for UPRR personnel yard access.
- Support temporary shoofly tracks with a reinforced earth embankment.
- Protect and relocate existing utilities to their final configurations.

BNSF | Fillmore and 46th Streets

- Construct the new bridge structure, trackwork, and industrial yard improvements during a 9-month track shutdown.
- Coordinate BNSF Market Lead Crossing work within MOT phase 1 Stages 3 and 5.
- Provide shielding protection of new track and railroad structures during the demolition of the existing I-70 viaduct.
- Protect and relocate facilities and existing utilities to their final configurations.

DRIRR | Quebec Street

- Provide ROW fencing between I-70 and the DRIRR Industrial Track
- Provide protection to existing track and work areas during construction operations.

UPRR Industrial Track | Peoria and Havana Streets

- Provide ROW fencing between Havana St. and Peoria St. between I-70 and the UPRR industrial track.
- Provide protection to existing track and work areas during construction operations.

we WILL

certify all employees via eRailSafe with applicable endorsements to ensure proper protection of the work zones	maintain a 25-foot clear zone and provide safe, controlled access to the project site
coordinate daily with railroads for all railroad-related operations to provide open, transparent communication	maintain radio communication with all crews and mobile equipment to provide safe operations on the project site
work with railroad EIC and CIC supporting open communication under the FRA Form B process	schedule efficient work windows with hourly schedule tracking to ensure on-time track opening

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6.g - Cover Design Approach

Figure 6.14 | **Cover Design Approach:** The 5280 Connectors technical approach for the Cover systems will provide a complete and coordinated system that provides safety for the general public, visibility and awareness for the Enterprises at the CTMS, and resiliency for long-term life and ease of maintenance.

ITS

ITS Communication Devices

The ITS communication system will allow operation of the Cover from the Colorado Transportation Management Center (CTMC). A backup control center provided at the Service building, per ATC 31, will contain all necessary facilities to control the Cover if the CTMC becomes unavailable. The fire alarm system will communicate with the Fire Department. The communication subsystems will inform users, the public, emergency services and CDOT of an event at the Cover.

Fan

Jet Fans

The jet fan system provides both smoke control in the event of a fire from a heavy goods truck and pollution control during congested traffic within the Cover.

FFS

FFS Spray Nozzles

The arrangement of nozzles under the Cover will deliver 0.2 gpm/square foot of area covered.

Deluge Valve Cabinet DVC

In conjunction with the ventilation system, the activation of the fixed fire deluge suppression systems from the Deluge Valve Cabinet will limit the growth and spread of a fire within the cover.

Control

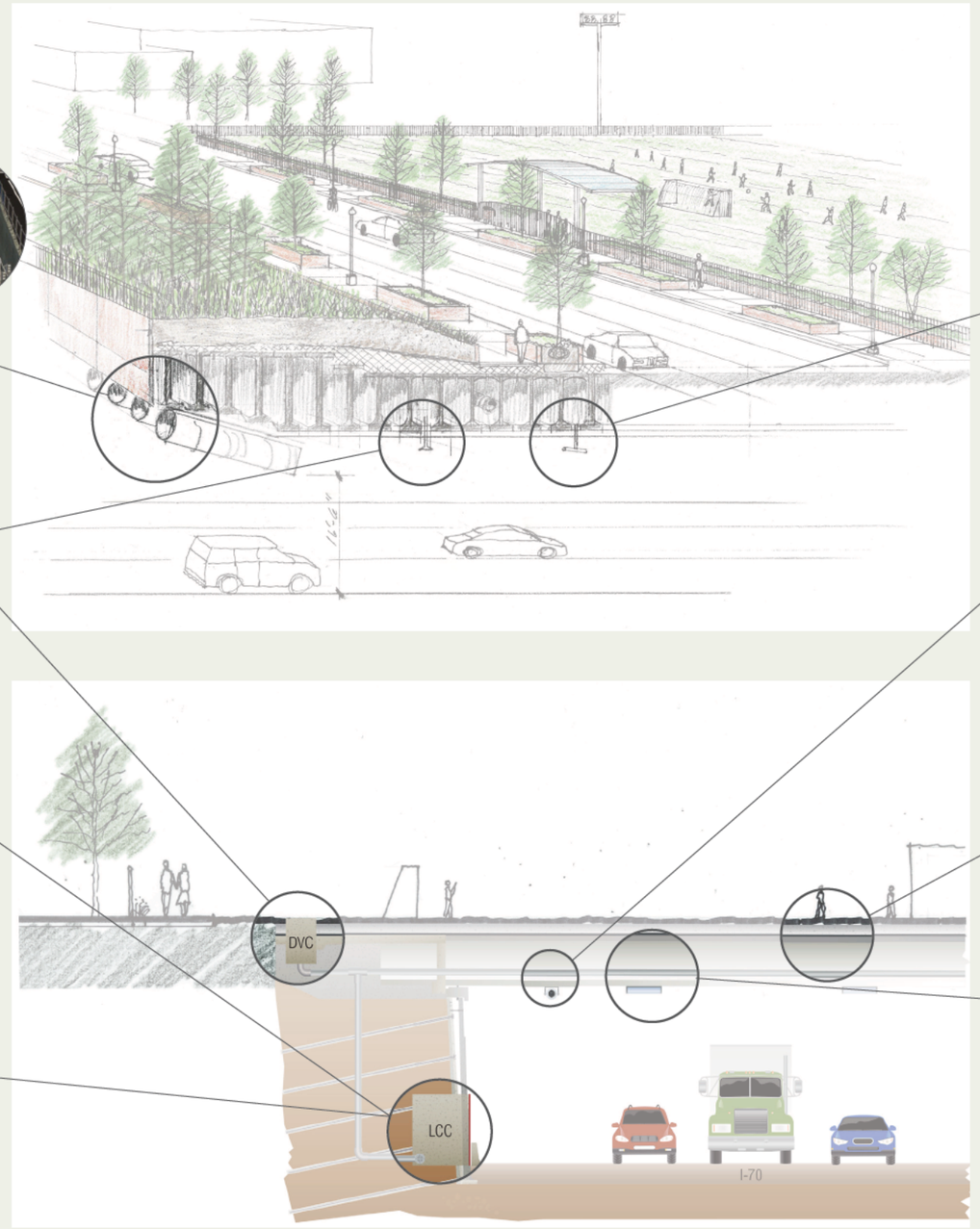
Local Control Center

To consolidate firefighting and life safety systems, a Local Control Center (LCC) will be located near each portal of the Cover. The LCC will contain local controls and monitoring of the fire life safety systems, including manual ventilation controls, fixed firefighting systems, fire detection monitoring, mass notification interface, and radio communication.

Emergency Points

Stand Pipes, Hydrants, and Portable Fire Extinguishers

We will flush mount emergency points to the side walls below the Cover.



CCMS

Component Content Management System

The CCMS facility will be a monitor and manage all electrical and mechanical systems. Systems monitoring will include the entire Cover MEP system, including all sensors and alarms. The system will allow Cover operations staff to monitor the operation of the Cover and immediate approaches.

CCTV

CCTV Cameras

The CCTV cameras will provide pan, tilt and zoom capabilities along with wash/wipe controls. The system will support direct integration into the CCMS for primary operational monitoring. The CCTV system recording functionality will be integrated into CDOT's video management system.

Monitors

Tunnel Environmental Monitors

Various sensors will monitor air quality, air velocity, and pollution within the tunnel. The Equipment Control Center, at the corner of Josephine Street and 42nd Avenue North, will house the monitoring system, keeping records of the three air systems. The air quality monitors will work in conjunction with the jet fans to eject gases that may be toxic to drivers on the roadway.

Structure

Prestressed Concrete Girders

FIB girders will be more efficient here than CDOT bulb-tee girders, allowing our team to reduce the depth or spacing of the girders in the Cover.

Lighting

Lane Lighting (Below Cover)

The roadway tunnel lighting system will consist of stainless-steel LED luminaries mounted above the center of each lane. The system will mitigate the "black-hole" effect to provide a safe transition for drivers as they travel from the bright exterior environment to the interior of the Cover. The lighting control system will use automatic LED driver dimming to maximize energy efficiency and component longevity.

Paul Bott, PE
Cover Design Lead

Paul brings 38 years' experience in designing complex highway bridge structures, including interface with MEP and fire life safety systems. He will oversee the design of the Cover structure and manage the interface between design disciplines for MEP systems, fire life safety systems, aesthetics components on the cover.

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6.h Cover and Swansea Elementary School Landscape and Aesthetic Design Approach

6.h.i Integration of Cover MEP Systems, Structures, Drainage, Utilities and ITS

Figure 6.15 | **Integration of Cover Elements:** 5280 Connectors commit to matching the Enterprises' proposed design intention for the Cover park and Swansea Elementary School, which all parties have agreed to. We will identify design discipline task force members to create interdisciplinary designs with regularly scheduled meetings.

Fire Life Safety (FLS)

Fire Detection

The fire detection system will use several methods for detection, including passive linear heat detection, alarming through pull station and emergency roadside calls, and CCTV monitoring through active visual monitoring and intelligent analytical detection (e.g., stopped vehicles, thermal imaging).

Fire Fighting

Fixed firefighting systems (FFFS) will provide immediate fire suppression for fires within the Cover through the use of an overhead deluge system. Additionally, a Class 1 dry standpipe system will be provided, including hose connection stations along the walls of the cover.

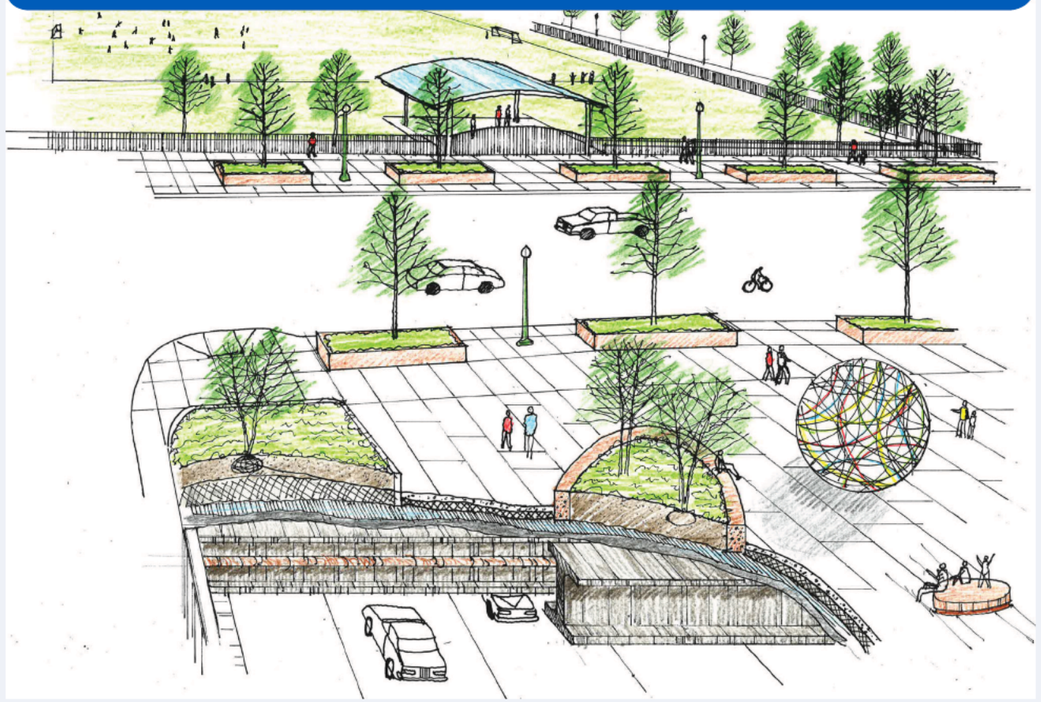
Ventilation

The ventilation systems, which are some of the most complex aspects of tunnels, will use jet fans to direct smoke in the event of a fire and will draw fresh air within the tunnel to help dilute any accumulation of hydrocarbons and carbon monoxide. Designs for the tunnel ventilation will use advanced software modeling to guide the design for heat and smoke control in the event of a fire within the Cover.

Communication/ITS Systems

The Cover Control and Monitoring System (CCMS) will include control systems for monitoring (CCTV) of the cover, control of the ITS systems, monitoring and control of FLS systems, and provision of the multiple Cover communication systems for both FLS and convenience.

Task Force Design Group



Mechanical

The mechanical systems will include all necessary booster and fire pumps necessary for firefighting systems.

Drainage

Drainage design will complement performance of adjacent drainage projects through coordination with City of Denver Wastewater. We will craft an integrated system that accommodates flow rates, and our drainage modeling and analysis will integrate off-site improvement into overall modeling. We will ensure sufficient drainage design capacity to reduce ponding water conditions.

Utilities

We will coordinate existing utility lines around and below the Cover and avoid collisions with FLS, electrical, and landscape (tree wells) elements below the Cover.

Electrical

Complete electrical power systems will be provided for the Cover. The fundamental electrical design concept will provide redundant and resilient power to the Cover to keep critical systems operating at all times.

Landscape

The substructure design will align tree wells between FIB girders to achieve greater root growth space. The green roof system atop the Cover slab will absorb moisture and reduce traffic noise from the roadway below. The park will cover the lowered highway section and provide a resource for the local community.

Juan Coronado, PE
Aesthetics Design Lead

Juan brings 13 years' experience delivering context sensitive aesthetics design elements. He will work closely with Paul Bott to integrate the aesthetics design elements into the cover structure. Juan will look for ways to integrate the MEP and fire life safety systems into a final aesthetics design that is practical and visually pleasing for the public park patrons.

6.h.ii Long-Term O&M of Relevant Elements

Figure 6.16 | **Landscape O&M Items:** The following elements require inspection and maintenance upon completion of the Cover construction.

Element	Frequency	O&M Task
Concrete Deck Protection	During Installation	In turf and planting areas, check the protective layers covering the deck for damage to the filter fabric and drainage mats. If damage or disturbance is found, check that the waterproofing is intact.
Soil Moisture	Monthly	Check the soil moisture with a meter. Colorado weather and the location of this project (exposed to high winds) will cause the lightweight soils to dry very quickly, so this check will be done all year.
Mulch	Monthly	Check depth of mulch in landscaped areas. Mulch helps to retain moisture in the soil.
Irrigation	Monthly	Check condition of irrigation heads for coverage. Low trajectory heads will provide better coverage in windy weather. Insure that coverage is not being blocked by other plants, utilities, play structures or shade structures. Inspect irrigation head condition especially in high traffic areas such as playgrounds. Due to the light weight soils, the irrigation system should be available all year, to prevent soils and plants from drying out in the winter months.
Plants	Monthly	Remove dead or dying trees and shrubs immediately. Before replacing, check for conditions that may have caused the problem: unhealthy plants, poor soil conditions, vandalism, lack of water or over-watering, wrong plant for that location. Replace plants only when weather conditions are best suited for planting. Prune trees and shrubs as needed to promote density and full growth.
Electrical and Lighting	Monthly	Review the condition of all electrical fixtures, including nighttime inspection of all lights. Inspect electrical outlets and devices for damage from high traffic, vandalism, and normal wear. Provide equipment that can access lights on multipurpose field towers as well as on shade structures. Check outlets for excess moisture from irrigation.
Shade Structures	Yearly	Review the condition of all shade structures for damage from storms, normal use, and vandalism. Repair vandalized structures immediately.
Snow Clearing and Storage	Remove Snow as Required per City Codes	Restrict snow removal to only areas that are used in cold weather, such as walks and paved play areas, leaving the lawn areas and multipurpose field covered until the sun can warm them, because snow cover can protect plants from drying winds and extreme cold temperatures. Minimize the use of de-icing chemicals adjacent to landscaped areas. Provide snow storage on the Cover under the direction of the structural engineer. Heavy dumping of snow on top of shrub beds can damage plants, but in play areas, snow piles can be a temporary play feature.

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6.i Construction Near Swansea Elementary School

6.i.i Traffic Phasing for Local Streets and School Bus/Parent Drop-Off/Pick-Up

The focus of our method of handling traffic plans around the "Success Express" school shuttle schedule and student drop-off locations. We have spent time with boots on the ground near Swansea Elementary School identify drop-off locations and key pedestrian pathways. Any adjacent roadwork will include adequate temporary sidewalk and pedestrian protection, and we will communicate any sidewalk modifications via our Safe Routes to School program.

As an added value, we will maintain access to the existing primary drop-off/pick-up point on the southeast side of the school. Students are dropped off where teachers pick them up each morning. We will maintain this critical access point for the school at all times.

we WILL

coordinate	with the school and its transportation services to understand their needs and potential construction impacts.
incorporate	the school calendar into our construction phasing adjacent to the school.
complete	the northern abutment of the Cover during the Swansea Elementary summer break (May 17 to August 30)
ensure	construction will not impact Clayton St. until right of way parcels near the school are acquired to provide detour routes.

6.i.ii - Construction Activities

Help	the students understand the critical nature of safety when crossing an active construction site.
Give	the students an up close and personal view of the project with a 5280 Connectors project guide to explain what is happening on the project.
Provide	information on how to safely navigate around and through the project.
Tour	the project with school children each semester throughout the project.
Include	a safe, hands-on activity after each tour with an opportunity for the children to take photos with workers and equipment.

Major construction activities around the school include

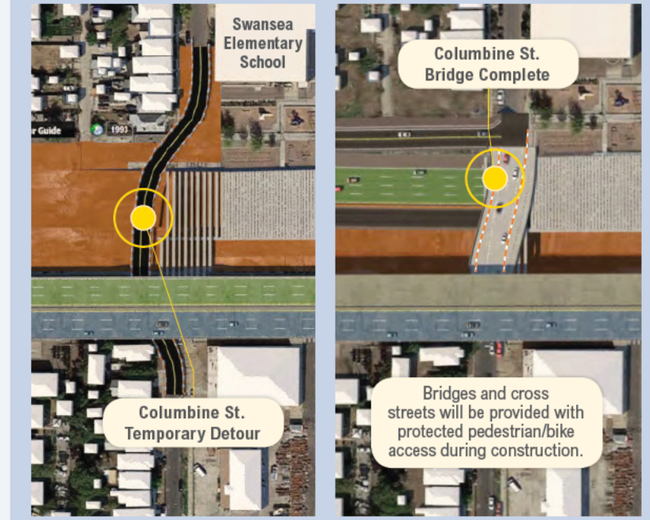
- Cover and park
- Columbine St., 46th Ave. & Clayton St.
- New wall just south of the playground

Figure 17 | **Educating the school on construction activities:** We will organize kid-friendly project tours of the construction zone with teachers of Swansea Elementary School.

On the Expo Phase 2 project in Los Angeles, CA, our crews regularly met with the local schools to promote safety awareness around the project.

6.i.iii - Providing Safe Routes to School

Figure 6.18 | **Columbine St. Temporary Detour:** We will route local traffic around the new bridge construction allowing unrestricted access to Swansea Elementary School. All improvements will be coordinated with the current Swansea Elementary School improvements plan.



During Columbine St. bridge construction

Columbine St bridge complete, during mainline and cover construction

Claudia Kutz
Community Liaison

Claudia brings 15 years' experience implementing Safe Routes to Schools programs. She will partner with local schools to apply for a Safe Routes to School grant to build a program for the students, parents and teachers to educate students on the best route to schools.

Safe Routes to School Program

- Swansea Elementary School
- Garden Place Elementary School
- Bruce Randolph Middle School

5280 Connectors' partnership for creating a Safe Routes to School program

Safe Route to School Program Implementations include
Construction safety elements
Teaching students about work zones and traffic control
Offering pedestrian and bicycle safety education to teachers and K-8 students
Teaching traffic safety to students and parents (Bike Rodeo)
Completing and acting on a Bicycle or Pedestrian Audit
Creating a crossing guard program
Developing a walking school bus program
Developing a bike train program

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6.j Geotechnical Design That Addresses Proposer's Approach to the Major Foundation Design elements

Figure 6.19 | **Schedule of Geotechnical design elements addressing our approach to foundations**

Fill Walls

Cast-in-Place Walls

Live Load
- Traffic or fill
- Slope surcharge
- Noise wall loading
- Lateral earth loading

Material Types
- Reinforced concrete
- Substructure backfill

Reinforcement: Relies on soil mass weight for stability. Internal resisting strength provided by steel reinforced wall stem and footing.

Design Methodology
AASHTO LRFD/CDOT Bridge Design Manual & computations (Mathcad, spreadsheets)

Design Life Considerations
Most time-tested system used by CDOT. Retained fill zone protected by heavy reinforced concrete walls.

T-Walls

Live Load
- Traffic or fill surcharge
- Lateral earth loading

Material Types
- Reinforced concrete
- T-wall reinforcement of soil

Reinforcement: T-wall system or cast-in-place reinforced concrete

Design Methodology
AASHTO LRFD/CDOT Bridge Design Manual, computations (Mathcad, spreadsheets), finite element analysis, MSEW, & slide.

Design Life Considerations
Precast Concrete integral wall face and stem leg eliminates Mechanical Stabilized Earth (MSE) connections.

Cut Walls

Soil Nail

Live Load
- Traffic or adjacent structure surcharge
- Dead load
- Lateral earth loading

Material Types
- Soil nails
- Precast concrete fascia
- Shotcrete
- Reinforced Concrete

Reinforcement: Soil nails

Design Methodology
FHWA Geotechnical Engineering Circular No. 7-Soil Nail Walls NHI-14-007, computations & computer software.

Design Life Considerations
Allows for shorter reinforcement length to fit within the right-of-way.

Secant/Tangent Pile

Live Load
- Traffic, railroad, or adjacent structure surcharge
- Dead load
- Lateral earth/ hydrostatic loading

Material Types
- Concrete secant/tangent piles
- Precast concrete fascia

Reinforcement: N/A

Design Methodology
AASHTO LRFD/CDOT Bridge Design Manual, FHWA Drilled Shaft Design Manual, computations (Mathcad, spreadsheets, & commercial software.

Design Life Considerations
Allows for the wall system to also be used as part of the groundwater cutoff system.

Cutoff Wall - Groundwater Control

Seepage Forces

Material Types
- Soil/cement/ bentonite slurry
- Concrete secant/ tangent piles
- Precast concrete fascia

Reinforcement: N/A

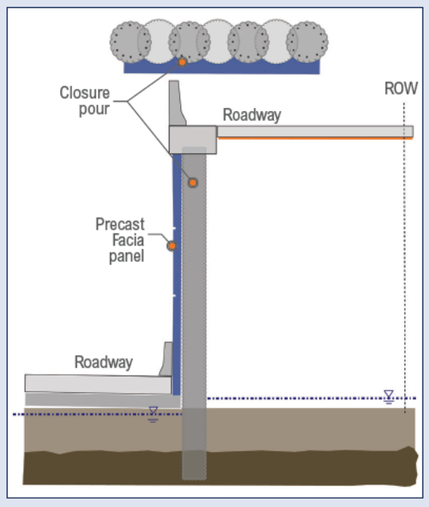
Design Methodology
Computations (Mathcad, spreadsheets).

Design Life Considerations
Allows the system to be installed in phases to assist with maintenance of traffic.

Figure 6.20 | **Foundation Types and Wall Structures**

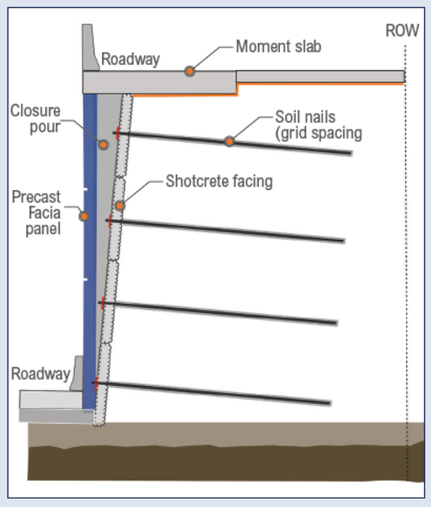
Drilled Shaft /Secant Wall outside Cover

- Significant local experience with wall type
- Integrate water cutoff into system if needed
- Large cantilever height possible



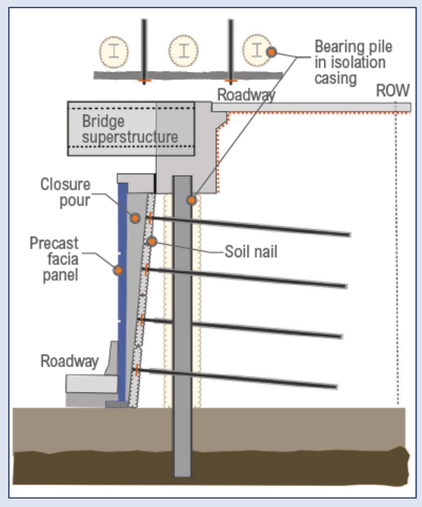
Soil Nail Wall

- Significant local experience with wall type
- Requires separate watertight cutoff wall if below water table
- Soil nails to fit within ROW easement and avoid utilities



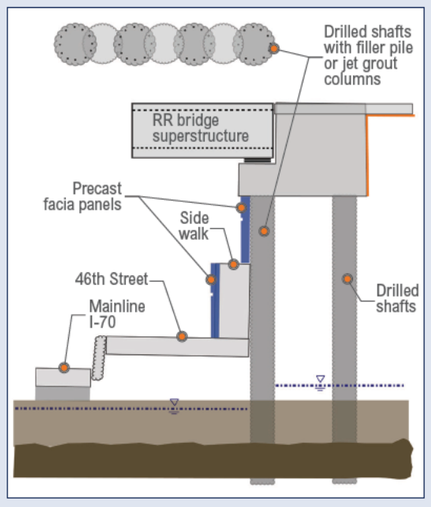
Abutment – Roadway

- Relatively easy to install, particularly low-overhead
- Uses small components
- Widens lowered section



Coupled Abutment – Railroad

- Large cantilever height possible where ground anchors are not permitted
- Eliminates potential interference with utilities
- Forms part of groundwater cutoff system at UPRR



Jim Schmidt, PE
Geotechnical Design Lead

Jim brings 34 years' experience leading geotechnical design on large civil infrastructure projects. He was instrumental in developing the cutoff wall design concept to reduce groundwater dewatering by 90% throughout the life of the project. Jim will work closely across disciplines to incorporate future design innovations on Central 70.

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6.k Structure Design

Figure 6.21 | **Schedule of Proposed Design Methodology**

Cover

Live Load
- Fire truck, pedestrian load
- Permanent loads/AASHTO 3.5
- Seismic considerations per AASHTO 3.10
- Harmonic loading for events
- Lateral and longitudinal forces as applicable per AASHTO sections 3.6 & 3.8
- Acceleration based vibration design (ATC 41)

Material Types
- Concrete deck
- Precast I-beams

Foundation
Drilled shaft embedded into bedrock or driven pile embedded into bedrock.

Design Methodology
AASHTO LRFD/CDOT bridge design manual, building codes (IBC), Conspan, L-pile, manual computations, SHAFT, & finite element analysis.

Design Life Considerations
Buried and waterproofed deck will extend design life. Utilizing precast prestressed concrete will control cracking and extend service life.

Typical Highway Overcrossing

Live Load
- HL-93, CO permit truck permanent loads per AASHTO 3.5
- Seismic considerations per AASHTO 3.10
- Lateral and longitudinal forces as applicable per AASHTO sections 3.6 & 3.8

Material Types
- Concrete Deck
- Precast I-beams

Foundation
Drilled shaft embedded into bedrock or driven pile embedded into bedrock.

Design Methodology
AASHTO LRFD/CDOT bridge design manual, leap bridge concrete, L-pile, manual computations, SHAFT; & finite element analysis.

Design Life Considerations
Moved expansion devices from bearing seat, prestressed concrete to control cracking, high performance thin bonded overlay increased to 3/4" to extend deck life.

I-270 EB Connector

Live Load
- HL-93, CO permit truck permanent loads per AASHTO 3.5
- Seismic considerations per AASHTO 3.10
- Lateral and longitudinal forces as applicable per AASHTO sections 3.6 & 3.8

Material Types
- Concrete Deck
- Spliced Precast Post-tensioned I-beams

Foundation
Drilled shaft embedded into bedrock.

Design Methodology
AASHTO LRFD/CDOT bridge design manual; Consplice; PGsplice; L-pile; manual computations; SHAFT; finite element analysis.

Design Life Considerations
Moved expansion devices from bearing seat, prestressed concrete to control cracking, high-performance thin-bonded overlay increased to 3/4 inch to extend deck life.

UPRR over I-70

Live Load
- Cooper E-80, Alternate Live Load per AREMA 15-1-3
- Permanent loads, lateral loading, and seismic loading considerations per AREMA Vol 2, section 1.3

Material Types
- Concrete Deck
- Steel Plate Girders

Foundation
Drilled shaft embedded into bedrock.

Design Methodology
AREMA/UPRR&BNSF grade separation guidelines, refined analysis, SHAFT, finite element analysis, & manual computations.

Design Life Considerations
Utilizes weathering steel, ballasted deck with waterproofing, & concrete deck to relieve loads in cross-frames. Reduces maintenance with disc bearings. Eliminates two piers.

BNSF Market Lead over I-70

Live Load
- Cooper E-80, Alternate Live Load per AREMA 15-1-3
- Permanent loads, lateral loading, and seismic loading considerations are per AREMA Vol 2, section 1.3

Material Types
- Concrete Deck
- Steel Thru-Plate Girders

Foundation
Drilled shaft embedded into bedrock.

Design Methodology
AREMA/UPRR&BNSF grade separation guidelines, Mathcad, manual computations, SHAFT, & finite element analysis.

Design Life Considerations
Utilizes weathering steel, ballasted deck with waterproofing. Avoids fatigue-prone steel details. Reduces maintenance with disc bearings and bolted bottom flange connection.

Noise Walls

Live Load
- Wind loading
- Dead load
- Traffic Impact (as applicable

Material Types
- Precast Concrete or Steel Posts
- Concrete Caissons
- Precast Concrete Panels

Foundation
Drilled shaft embedded in native soil or bedrock

Design Methodology
AASHTO LRFD/CDOT bridge design manual, computations, finite element analysis, & SHAFT.

Design Life Considerations
Use of epoxy coated reinforcing within splash zone, concrete texture for aesthetic pattern to protect wall reinforcing, and galvanized steel at steel posts and connections.

Overhead Sign Structures

Live Load
- Wind loading, including dynamic effects
- Ice loading
- Dead load

Material Types
- Steel Monotube
- High-Strength Bolted Steel Connections
- Reinforced Concrete

Foundation
Drilled shaft embedded into bedrock.

Design Methodology
AASHTO signs and luminaire design specifications, CDOT M&S standards, SHAFT, & manual computations.

Design Life Considerations
Utilizes time-tested CDOT standard designs as much as possible. Monotube structures present less opportunity for fatigue issues.

Design innovations implemented on the Central 70 project

Moving the I-270 connector bridge to the east of the existing bridge will reduce impacts to the flood plain and allow future alignments to reuse the existing I-270 embankment. Utilizing an innovative combination of spliced precast girders and post tensioning will significantly reduced the bridge footprint itself.

Alternative Florida I-beams (FIB) are used to reduce the number of girder lines and allow a reduction of one girder size from conventional bulb-tee girders to provide a more efficient superstructure.

We minimized structure depths over the lowered section of I-70 when possible using techniques such as CIP post-tensioned superstructures on York and Josephine Streets, and using a refined analysis on the UPRR bridge. These techniques allowed the design team to raise I-70 profile (12-feet) to minimize excavation into the groundwater table.

Bridge abutments have been designed to act independently of walls, allowing bridge construction and operation to commence prior to wall construction completion. Micro-pile foundations allow for headroom construction underneath the existing viaduct to construct structures in a single phase.

Darin Freeman, PE
Structures Design Lead

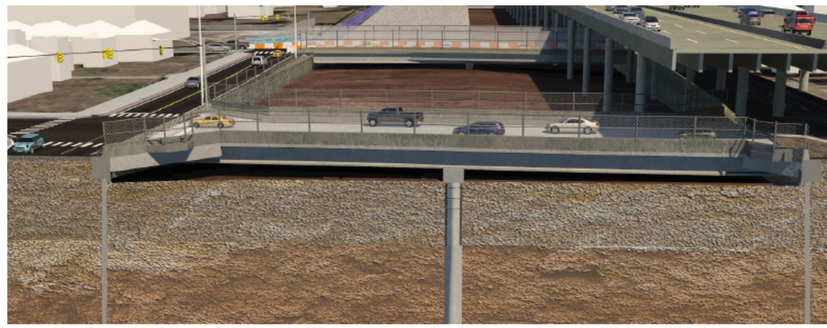
Darin brings 19 years' experience leading structures design on large highway infrastructure projects. Darin will work through the task force process to facilitate cross discipline design elements relating to structures design. Darrin has been involved throughout the pursuit phase and will carry this knowledge forward into final design.

Nathan Dickerson, PE
Railroad Structures Design Lead

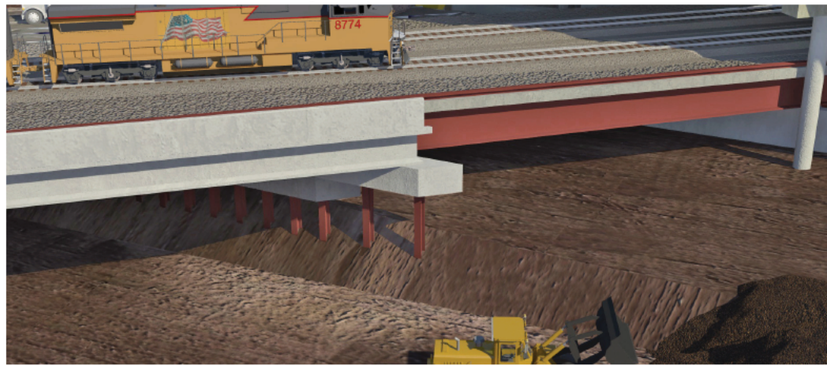
Based in HDR's Omaha, Nebraska office, Nathan brings over 16 years of experience working directly with UPRR and BNSF on complex railroad bridge projects. Nathan will be supplemented by his team of railroad bridge engineers that have designed numerous steel deck plate girder and steel through plate girder bridges for Class I railroads.

Figure 6.22 | **Accelerated Bridge Construction**

Our team has developed a design that allows bridge pier columns to be precast and constructed top down while excavation operations of the lowered I-70 sections are still ongoing. This provides the advantage of being able to construct and open the side street bridges to traffic earlier, and allows the new bridges to begin service before the existing viaduct columns are removed.



Similarly, the Railroad Crossings at UPRR and BNSF will also utilize a top down approach for support at the intermediate piers. Heavy rolled steel columns will be utilized to construct the pier supports below grade. Once the lowering of I-70 has been completed, a concrete facing will be placed around the columns achieving the required aesthetic look.



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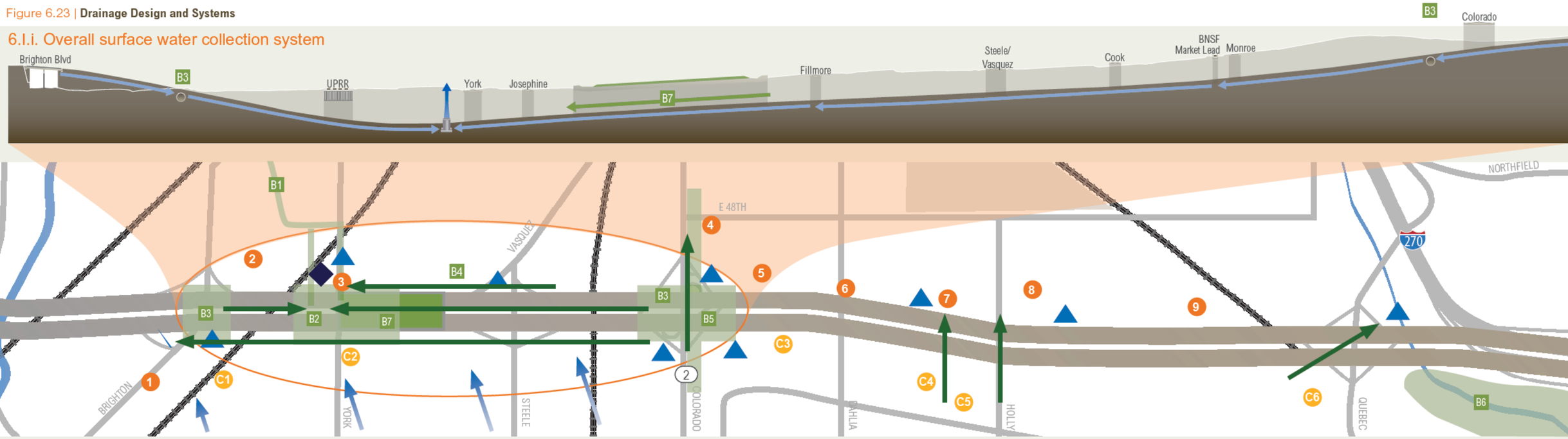
6.I Drainage Design

Figure 6.23 | **Drainage Design and Systems**

6.I.i. Overall surface water collection system



Outfall Connections to CCD Storm Drain

1 GLO
2 Race & 47th
3 York St.
4 Colorado & 48th
5 Station 2090+00
6 Dahlia
7 Grape
8 Holly
9 Monaco

Inflow Connections from CCD Storm Drain

C1 UPRR
C2 York
C3 Safeway
C4 Forest
C5 Grape
C6 Quebec

Flood Storage/ Water Quality Pond
Stormwater Pump Station
Major Drainage Element
Offsite Runoff

6.I.ii. On-site and off-site drainage systems

Detention ponds will attenuate peak discharges from the project to maintain historical flow paths and utilize existing storm drain capacity. Ponds incorporated into the hydraulic modeling for the new drainage system will provide adequate volume and minimize impacts to existing downstream systems.

on-site

The on-site drainage system captures and conveys runoff in the lowered section of I-70 to a stormwater pump station. Runoff is pumped to existing ground elevations, routed through a water quality pond, and discharged to the existing CCD storm drain system to maintain historical flow paths and utilize existing storm drain capacity.

off-site

The off-site drainage system captures runoff from the remnant drainage basin north of the TBDP and discharges to meet the requirements of the GLO outfall.

6.I.iii. Methodology, approach, and criteria used during design and construction identifying existing and new locations

B1 **ATC 25 |** Eliminate the on-site storm outfall tunnel; use a storm water pump station and connection to existing CCD storm drain:
- Eliminates impacts along 1 mile tunnel alignment
- Reduces ROW acquisition
- Optimizes use of existing storm drain capacity
- Eliminates new outfall at South Platte River and environmental impacts
- Eliminates maintenance of outfall tunnel and off-site facility

B2 **ATC 4 |** Eliminate the of storm drain and sanitary sewer bridge crossings:
- Eliminates overhead utility risk
- Allows for I-70 profile raise
- Reduces cubic yards of excavation
- Reduces GPM of groundwater infiltration
- Reduces flows north of I-70 and increases level of service for existing systems

B3 Optimize the profile and storm drain for the lowered section:
- Reduces runoff to lowest part of I-70
- Improves safety

B4 Relocate Vasquez Blvd. north pond:
- Reduces environmental impact
- Optimizes detention volume
- Reduces impacts to Swansea Elementary

B5 Eliminate the Smith Road culvert diversion:
- Maintains historical drainage patterns
- Reduces impacts at Colorado Blvd. and 48th Ave.

B6 Revise the I-270 flyover alignment:
- Eliminates impacts to Sand Creek overflow channel
- Reduces environmental and floodplain impacts

B7 Capture and treat potential spills with a Cover-specific drainage system:
- Optimizes the system to eliminate pumps and valves
- Minimizes maintenance and operation equipment

6.I.iv. Maintenance requirements

Maintenance Reduction

- Maintaining minimum pipe slope and self-cleaning velocities
- Appropriate manhole spacing
- Coordinated storm drain alignment and utility avoidance
- Pond forebays, trickle channels and access roads
- Additional sediment storage in inlets and manholes for lowered section
- Access to CDOT infrastructure from CDOT ROW
- Elimination of on-site storm outfall to South Platte River
- Elimination of off-site pond and pump station

Josh Hollon, PE
Drainage Design Lead

Josh brings 20 years' experience in stormwater and floodplain management. He specializes in identification of drainage needs and development of project solutions. Josh has been involved throughout the pursuit phase and will carry this knowledge forward into final design.

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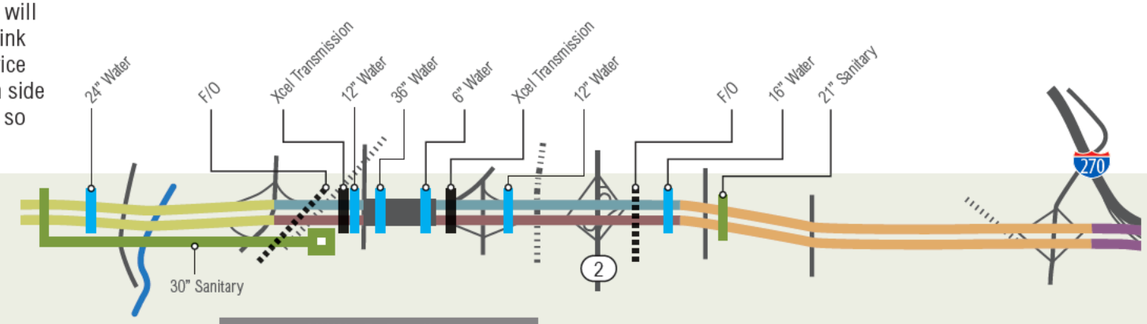
6.m - Design Approach to Utilities

6.m.i Approach to identifying, verifying and documenting the presence and locations of utilities that may impact or be impacted by the construction work

Overall Project Goals

To construct the westbound mainline in step with the north right of way clearing, we will relocate and transfer in advance all existing dead-end poles, services and Century Link conduit crossing this area, and we will fully account for cable splices and all in-service cables impacted by excavation. This design will include proposed manholes on each side of I-70, bridge attachment hangers, pipe sleeves in abutments, and conduit trenches so that cables have a smooth constructible installation path.



Peter Borzack, PE
Utility Design Coordinator

Peter Borsack, PE, routinely directs utility coordination and relocation design efforts on large DOT projects throughout the Mountain Region. In his 20-year career as a civil engineer, he has provided utility coordination and design on multi-million-dollar design-build highway projects like IH-15 The Point in Utah, IH-635 Managed Lanes Project in Dallas, and SR-154 at Redwood Road Interchange Project in Utah.

Figure 6.24 | **Design Approach**

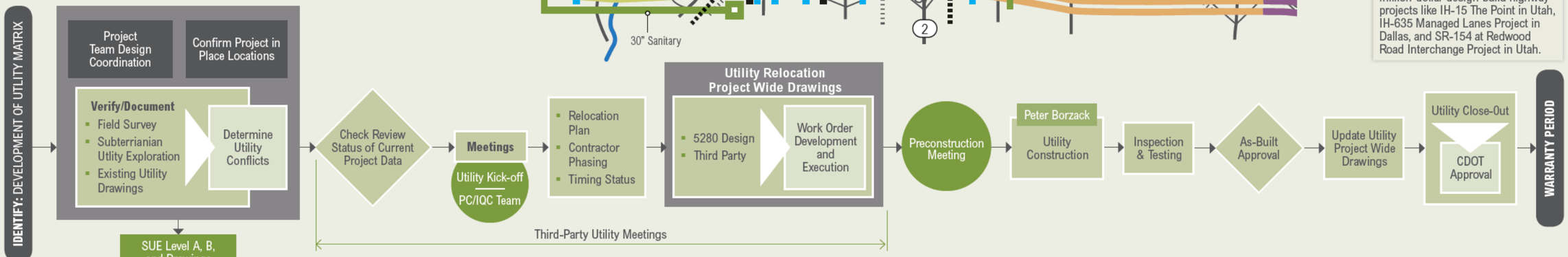


Figure 6.25 | **Utility Work Phasing Strategies**

Utility Work Phasing Strategies						
Prior to MOT phase grading along the WB mainline in advance of north ROW clearing, we will coordinate early work orders and agreements among CDOT, Utility and Developer teams.	Relocation coordination will include conduit-to-manhole connections, splice locations, bridge attachment hangars, abutment leave-out surveys, utility clash detection, and required clearance designs.	The team, which included XCEL Energy, will design lift station and utility services.	Railroad and City permit acquisitions will be coordinated weekly. We will review work order scope, cost and schedules for overall project compliance.	We reinforce cooperation by maintaining active fiber services for entities, as shown in Figure 6.24.	Collaborating with electric and gas priorities, as well as City of Denver water, sewer and storm improvements will advance each MOT & bridge phase identified in project orientations.	Weekly internal design meetings with HDR will synchronize design & service transfer schedules with necessary third-party design information, considering all adjacent projects to Central I-70. We review work order scope, cost and schedules for overall project compliance.

Figure 6.26 | **Schedule of Utility Commitments**

Utility Project Kick-off Meeting

Goal: Establish open and transparent lines of communication with utility owners.

Actions
- Invite to all utility owners to Project Orientation Meeting upon NTP.
- Summarize overall project scope limits and adjacent project indirect impacts.
- Communicate construction phases and maintenance of traffic plans.
- Provide schedule phasing and milestone overviews.
- Show mapping of relocation priorities and describe preparation activities.

Outcomes
- Identify priority relocations, construction scope of work, MOT plan, and project schedule plan.
- Summarize each utility scope of work.

Regularly Scheduled Utility Coordination Meetings

Goal: Reinforce collaboration with all necessary stakeholders for adjustments, abandonments, and protections in place.

Actions
- Develop meeting schedule to confirm work order priorities, DRALS, CRALS, & close-out confirmations.

Outcomes
- Minimize utility impacts and transfer services to phased relocations with no interruptions.

Goal: Meet scope execution schedule.

Actions
- Provide design support data for review of existing depths, service tees, valves, fittings, manholes, raised appurtenances, poles, pull boxes, cables and splices, risers, and conductors affected by proposed alignments during each meeting.
- Request utility owner, Developer, and CDOT participate in PC/IQC reviews.

Outcomes
- All existing relevant data is included in design consideration.

Goal: Schedule permits, contractor selection and WO execution and signatures.

Actions
- Establish MOT milestone predecessors.
- Utility scope phasing, relocations and utility service protections.

Outcomes
- Work order files (DRAL, CRAL, No-Conflict, Cost Estimate, Schedule and Acquisition)

Goal: Submit project utility drawings to CDOT on a quarterly basis.

Actions
- Hold separate project PC/IQC meetings..

Outcomes
- Inform stakeholders of preapproval processes.

Preconstruction Utility Meetings

Goal: Close out the project.

Actions
- Performs construction staking and inspection.
- Review cost and schedule.
- Review and approve as-build surveys.

Outcomes
- Project contractor-Developer-CDOT communication structure approval of utility relocation design

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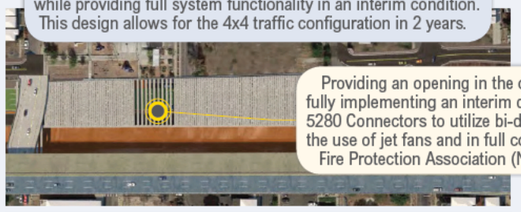
6.n - Construction of the Project

Figure 6.27 | **Proposed Phasing of the Work:** 5280 Connectors has developed an approach to construction that will provide capacity early, address the schedule-critical UPRR bridge, maintain safety during all construction phases of the Cover, and optimize use of earthwork material across work areas.

Cover Ventilation

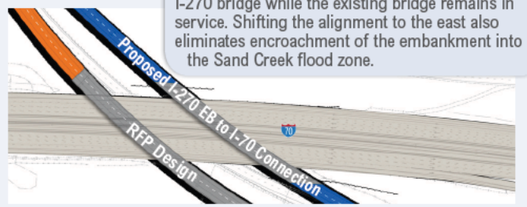
5280 Connectors designed a fire life safety (FLS) system that allows us to build the Covered section one half at a time while providing full system functionality in an interim condition. This design allows for the 4x4 traffic configuration in 2 years.



Providing an opening in the center of the Cover and fully implementing an interim deluge system will allow 5280 Connectors to utilize bi-directional traffic without the use of jet fans and in full compliance with National Fire Protection Association (NFPA) 502.

I-270 Flyover

Shifting the I-270 flyover alignment to the east will allow 5280 Connectors to construct the new I-270 bridge while the existing bridge remains in service. Shifting the alignment to the east also eliminates encroachment of the embankment into the Sand Creek flood zone.

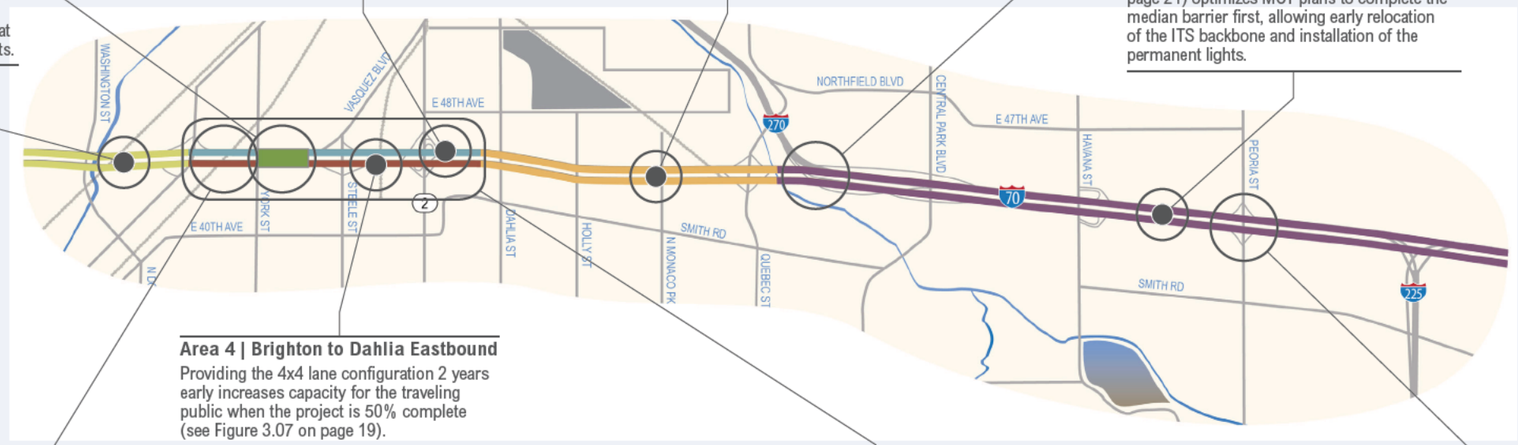


Area 5 | I-25 to Brighton
Short-term traffic impacts will facilitate traffic tapers and utility connections. We will relocated utility mainlines and use a jack-and-bore approach for relocations to minimize impacts at these tie-ins and along E. 47th and 44th Streets.

Area 3 | Brighton to Dahlia Westbound
Our top-down construction approach allows us to complete all the cross-street bridges as we finish Work Area 3—1.5 years before substantial completion.

Area 2 | Dahlia to Sand Creek
We calibrate Work Area 2 construction with major excavation elements in Work Areas 3 and 4 to reduce the impact of construction traffic mixing with local traffic.

Area 1 | Sand Creek to Chambers
Our inside-out approach (see Figure 3.11 on page 21) optimizes MOT plans to complete the median barrier first, allowing early relocation of the ITS backbone and installation of the permanent lights.



Area 4 | Brighton to Dahlia Eastbound
Providing the 4x4 lane configuration 2 years early increases capacity for the traveling public when the project is 50% complete (see Figure 3.07 on page 19).

Low Headroom Equipment

Using low headroom equipment to construct the UPRR bridge abutment prior to viaduct demolition will allows us to open the collector-distributor (CD) lane early and provide through access for westbound traffic while we construct 46th Avenue and maintain eastbound traffic on the viaduct. Also, providing the CD early in the project will reduce the duration of ramp closures and in some cases completely avoid closures during construction (see Figure 3.05 on page 18).

Top-Down Bridge Construction

We will construct the new bridges structures in Work Areas 3 and 4 early to create surface street connectivity prior to excavating the mainline. After constructing the bridges, we will excavate and finish the roadway for the lowered section of I-70. This approach reduces impacts to local traffic and maintains connectivity for Swansea Elementary School.

Paul Newman
Construction Manager

Paul brings 36 years' experience in heavy and highway construction. He will be responsible for overall construction performance, including managing resources, scheduling, implementing safe work practices, and meeting environmental expectations to deliver the highest quality Central 70 project.

Use of T-Wall® System

5280 Connectors optimized our retaining wall design with the T-Wall system. We will utilize earthwork from Work Areas 3 and 4 as backfill to eliminate the export of over 500,000 CY of earth. This innovation will reduce on-road trucking of material.

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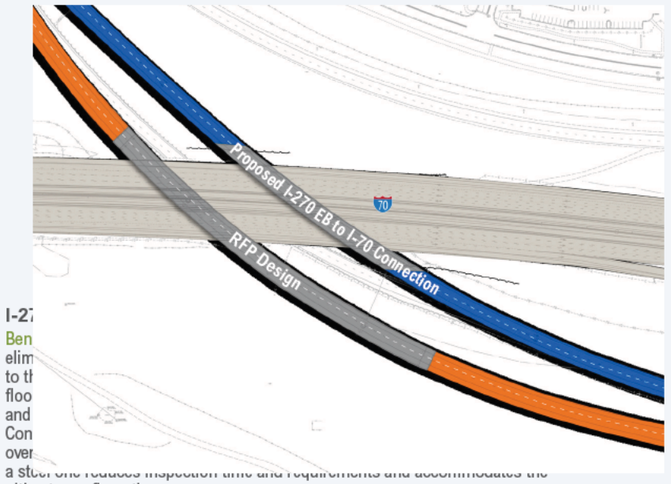
6.o - Proposed Changes to Reference Documents

Figure 6.28 | **Technical Innovations:** 5280 Connectors proposes changes to the reference documents that benefit the project, community and Enterprises throughout the project life cycle. We innovate not simply to limit scope or cost but to deliver the best possible Central 70.

I-270 Connector



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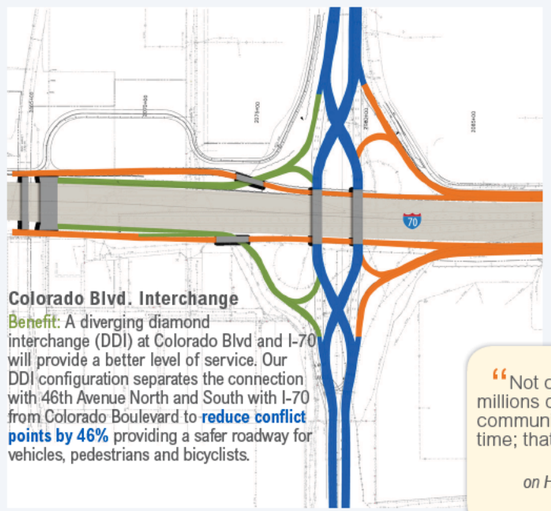
ATC 2: Colorado Blvd. Diverging Diamond Interchange

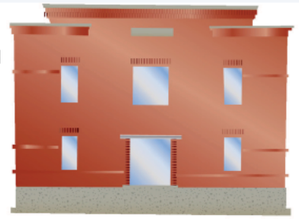


Colorado Blvd. Interchange
Benefit: A diverging diamond interchange (DDI) at Colorado Blvd and I-70 will provide a better level of service. Our DDI configuration separates the connection with 46th Avenue North and South with I-70 from Colorado Boulevard to **reduce conflict points by 46%** providing a safer roadway for vehicles, pedestrians and bicyclists.

"Not only did we save our residents millions of dollars, but we made our community a safer place at the same time; that's a huge win in my book."
– Superior, CO Mayor Clint Folsom on HDR's design of the US 36 McCaslin Blvd. Diverging Diamond Interchange

ATC 31: Plant and Services Room

Equipment Control Center, Josephine St. & 46th Ave.
Benefit: Removing the two proposed system controls from the Cover will allow for increased landscaping aesthetics at each end of the structure. Integrating the interface of the electrical and mechanical components in a single location will expedite Cover testing and integration, facilitate communication links between on-site equipment components and operation system, and reduce the time frame to find and resolve any potential or future issues within the Cover FLS system.


Service Building-Entry
NTS

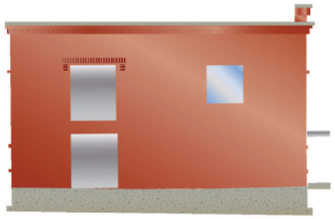
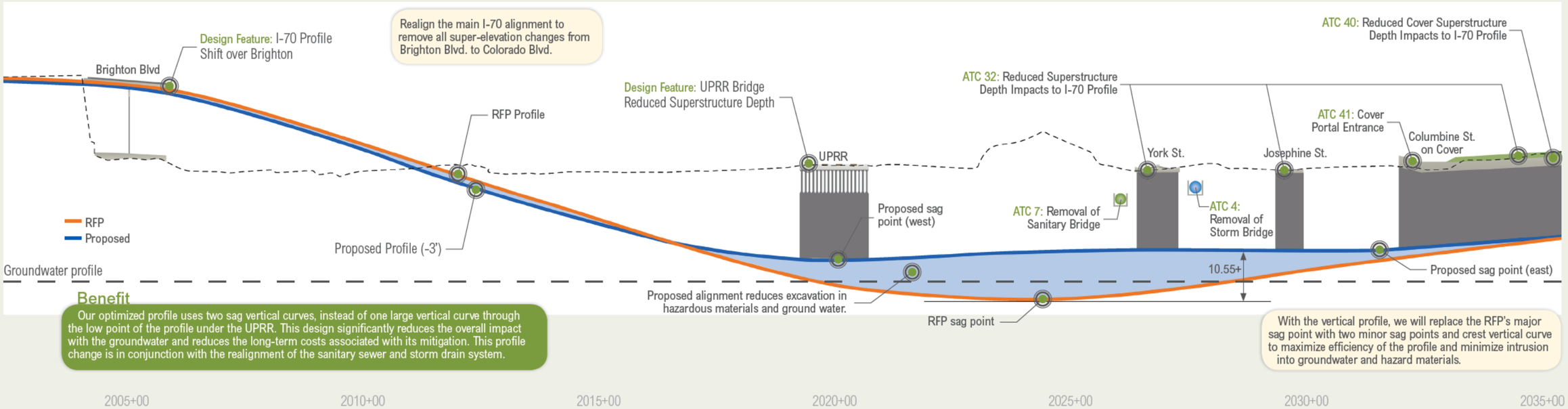

Service Building-Side
NTS

Figure 6.29 | **Profile Optimization:** Enhancing groundwater treatment, constructability, and earthwork operations through profile optimization.



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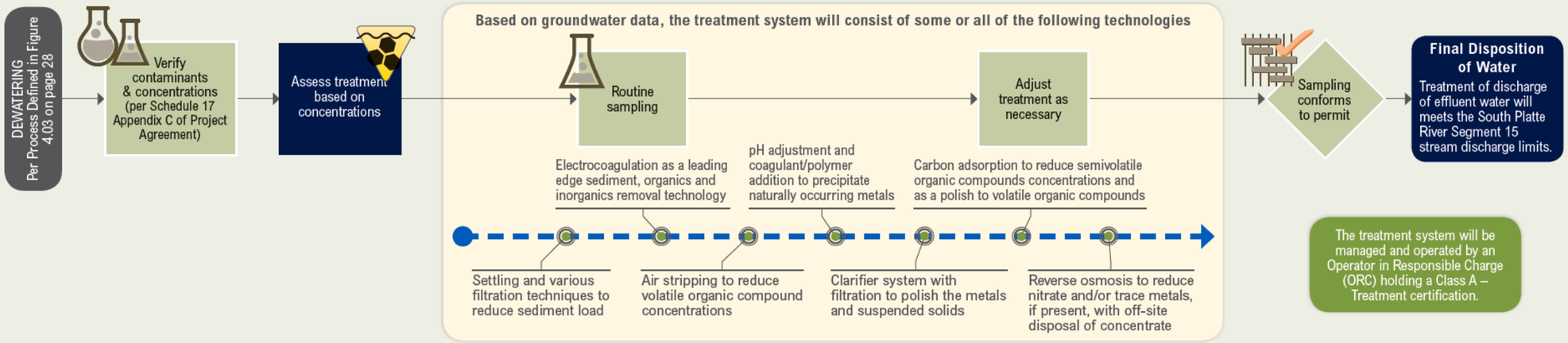
6.p - Approach to Construction Dewatering

6.p.i - Methodology, approach and criteria to be used for the final disposition of water

Figure 6.30 | **Methodology, Approach and Criteria for Final Disposition of Water**



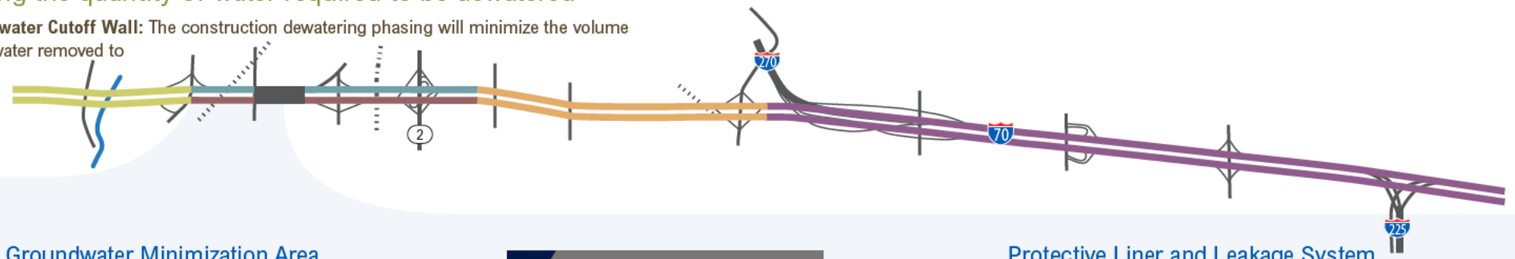
6.p.ii Environmental Approvals

Figure 6.31 | **Environmental approvals:** 5280 Connectors will adhere to the following environmental approvals.

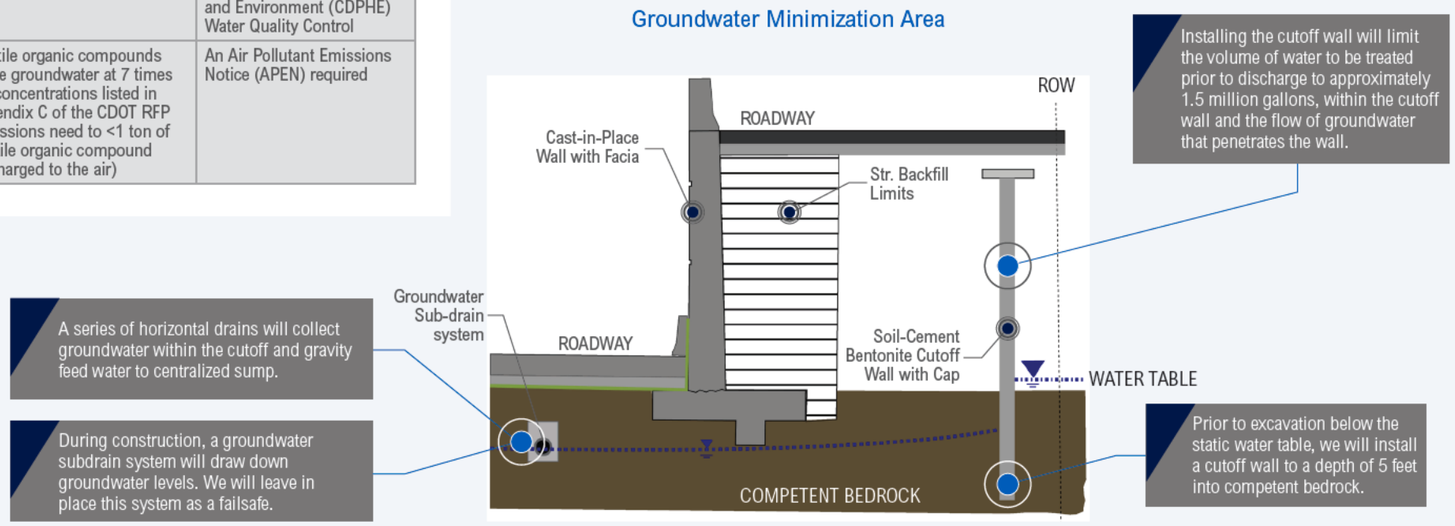
Type	Agency Approval
The construction groundwater treatment system and discharge to Segment 15 of the South Platte River	Operated under the Colorado Discharge Permit System (CDPS) General Permit COG315000
Remediation activities discharging to surface water	Managed by the Colorado Department of Public Health and Environment (CDPHE) Water Quality Control
Volatile organic compounds in the groundwater at 7 times the concentrations listed in Appendix C of the CDOT RFP (emissions need to <1 ton of volatile organic compound discharged to the air)	An Air Pollutant Emissions Notice (APEN) required

6.p.iii minimizing the quantity of water required to be dewatered

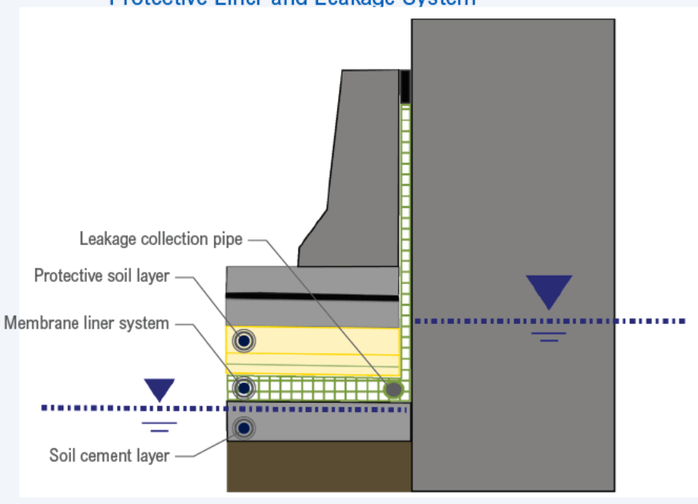
Figure 6.32 | **Groundwater Cutoff Wall:** The construction dewatering phasing will minimize the volume of subsurface groundwater removed to reduce treatment and discharge.



Groundwater Minimization Area



Protective Liner and Leakage System



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Technical Appendices

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