

Appendix C7.

Utilities





C7. Utility Technical Memorandum

June 2023

Project Number: NHPP 006A-06

Subaccount Number: 22922

The following project information can be found in **Attachment A** Project Information:

- Introduction and Background
- Project Study Area
- Purpose and Need
- Proposed Action Description

Legislation

As a publicly funded project within state right-of-way, it is CDOT's responsibility to coordinate with affected utility owners to identify existing and planned facilities, determine conflicts, and negotiate relocation and payment terms. The State Highway Utility Accommodate Code (2 CCR 601-18) and CFR Title 23 Section 645, 646 and 635-309b prescribe the policies, procedures and reimbursement provisions for the adjustment and relocation of utility facilities on Federal-aid and direct Federal projects.

Additionally, the Proposed Action is classified as a subsurface utility engineering-required project per the Colorado Revised Statutes 2018, Title 9, Article 1.5 "Excavation Requirements". For the purposes of this project, a licensed professional engineer shall "attempt to achieve ASCE 38 utility quality level B or its successor utility quality level on all utilities within the proposed excavation area unless a reasonable rationale by a licensed professional engineer is given for not doing so" (Colorado Revised Statutes 2018¹).

Methodology

The subsurface utility exploration (SUE) was completed as part of several field investigations from 2020 to 2022 by SurvWest². Quality level B utility investigations were attempted by the SUE provider utilizing geophysical equipment and surveyed per CDOT standards³. The designations were supplemented by observations of above ground appurtenances and records received. Utilities that were not designated in the field but drawn into the SUE plan per records or field observations are noted as quality level C/D.

The design team will continue to have coordination meetings with utility companies as the design progresses. These coordination meetings will focus on opportunities to avoid or minimize impacts to existing and planned utilities. Where impacts cannot be avoided, the



design team will confirm timing, cost responsibility and design criteria for each utility relocation with the affected utility companies.

Existing Conditions

Eleven utility owners maintain facilities within the study area. Utility owners and type of utility facilities are summarized in [Table 1](#). Existing utility facilities are shown in the SurvWest SUE Plans. Several unknown utility facilities were identified during the SUE investigations and are depicted on the SUE Plans. The design team will work to confirm the utility type and owner as part of the ongoing utility coordination process.

Table 1: Utility Owners in Study Area

Utility Owner	Utility Type	Public/Private
Adams County	Sanitary Sewer	Public
ACET	Communications	Private
CDOT ITS	Communications	Public
CDOT Traffic	Electric	Public
CenturyLink	Communications	Private
City of Commerce City	Storm Sewer	Public
City of Commerce City	Water	Public
Comcast	Communications	Private
Denver Water	Water	Public
Level3	Communications	Private
South Adams County Water and Sanitation District	Sanitary Sewer	Public
South Adams County Water and Sanitation District	Water	Public
Xcel Energy	Gas	Private
Xcel Energy	Electric	Private
Zayo	Communications	Private

Source: SurvWest 202x SUE Plans and utility owner supplied records

The majority of the utility facilities along Vasquez Boulevard are distributed behind the curb on both the east and west sides, beyond the roadway travel lanes. In contrast, there are multiple facilities within the travel lanes of 60th Avenue, 62nd Avenue, Parkway Drive and 64th Avenue.

Most of the Xcel Energy electric facilities along 60th Avenue on the west side of Vasquez Boulevard are overhead lines. The electric facilities throughout the remainder of the study area are underground.



Communications facilities, telephone, cable television and fiber optic are generally underground throughout the corridor. The communications lines are present throughout the study area, including fiber optic located under the proposed roadway improvements.

The South Adams County Water and Sanitation District's (SACWSD) sanitary sewer facilities within the study area are noted to be vitrified clay pipe (VCP) and are mainly 8-inch with one 10-inch pipe.

The storm lines in the project are owned by the City of Commerce City. A storm line runs along Vasquez Boulevard from the southern end of the project to 62nd Avenue. At the intersection of 60th Avenue and Vasquez Boulevard, the storm main branches off to run east along 60th Avenue. There is a separate storm main along 64th Avenue as well. The majority of the stormwater utilities along 60th Avenue to the west of Vasquez Boulevard are smaller networks or culverts. Each storm main has several laterals connecting to them along each respective roadway.

There are several networks of water lines owned by Denver Water, Commerce City and SACWSD throughout the study area. SACWSD's 6-inch cast iron pipe (CIP) water line runs along 60th Avenue from the western to the eastern project limits. SACWSD's 12-inch ductile iron pipe (DIP) water line runs east along 60th Avenue and turns north along the west side of Vasquez Boulevard to the Vasquez Boulevard on-ramp from Highway 2. Two SACWSD 6-inch CIP water lines run along the east side of Vasquez Boulevard from the southern to the northern limits of the project. There are many water service lines, fire hydrant laterals, and a few other, less notable, mains along the study area as well. These facilities are made up of CIP, DIP and polyvinyl chloride (PVC).

The gas lines within the project are owned by Xcel Energy and are mainly made of steel and polyethylene (PE). There is a 2-inch steel pipeline that runs east along 60th Avenue, then splits into three pipelines: one running south along Vasquez Boulevard, one running north along Vasquez Boulevard, and one line running northeast along Parkway Drive. The pipeline along Parkway Drive increases from a 4-inch steel pipe to an 8-inch steel pipe. The pipeline that runs south along Vasquez Boulevard tees off to a gas line that runs east along 60th Avenue to the eastern project limit. There is also a 1 ¼-inch steel pipeline running north along Vasquez Boulevard from the southern project limit and a pipeline that runs south along Vasquez Boulevard from the northern project limits that connect into the 2-inch steel line at the western side of the intersection of Vasquez Boulevard and 60th Avenue. Gas service lines branch off from each of the gas lines throughout the entire project as well.

Xcel Energy also has a 24-inch steel gas line starting at the south end of the project limits that runs north along the west side of Vasquez Boulevard and turns west along 60th Avenue. This is considered a critical high-pressure utility with a pressure of between 67 to 175 pounds per square inch gauge (psig).

Most utility facilities appear to be located within the public right of way. A title search will be completed during final design which will confirm if any utility easements are encumbered



on properties that will be acquired. During the final design utility coordination process, the design team will request information from the utility companies on planned facilities.

Impacts

No Action

Under the No Action, the utilities throughout the study area can be protected in place as no transportation or drainage impacts would occur.

Proposed Action

The Proposed Action along 62nd Avenue widens the roadway on the north side, as well as in several other locations where turn lanes are proposed and includes drainage improvements throughout the corridor. This will require that all above ground utility features that fall within the proposed travel lanes be shifted outside of the proposed roadway. This is also the case for above ground features that are within the proposed sidewalks. The service lines will also need to be relocated or adjusted to connect into the relocated above ground appurtenance. The depth of underground utilities will need to be verified to determine if they can be protected in place during construction.

The extensive grading that will be performed throughout the study area to complete the Proposed Action will be the greatest risk to the existing utilities. An underground utility could be hit and damaged during construction and result in safety, environmental and/or cost impacts varying in scale depending on the utility. Additionally, a decrease or increase in the ground cover over a utility could cause the utility to be damaged under loading or freeze. A decrease in ground cover may also require a relocation of a utility if the ground cover falls below the required minimum depth of 48" below finished grade (with the exception of storm sewer) per the State Highway Utility Accommodation Code 2 CCR 601-18.

The facility with the highest risk to the environment within the study area is the 24-inch steel gas line and smaller gas lines. If these lines were to be broken or damaged, the gas could leak into the ground and contaminate the ground water or cause fires or explosions that would result in damage to infrastructure, the surrounding environment and/or any person within the vicinity of the damaged pipeline. Under the Proposed Action, the 24-inch steel gas line will only be paved over and should not be impacted. A detailed summary of utility impacts will be provided in the utility matrix as part of the utility relocation plan set developed for FIR and revised as part of final design. As design progresses, mitigation opportunities to reduce utility impacts will be considered.



Mitigation

The goal of SUE and utility coordination is to minimize impacts on utilities and reduce unexpected encounters with utilities during construction. This, in turn, decreases the cost of the overall project, reduces risk of safety impacts during construction and reduces risk of a disturbed utility impacting the environment.

The Proposed Action may be adjusted to accommodate major facilities, such as the 24-inch steel gas line, to ensure that the facility can be protected in place as these major facilities are costly and have a long lead time to relocate. The utilities that will be impacted during construction or by the Proposed Action that cannot be accommodated within the design can be relocated or adjusted ahead of time or during construction. During the utility coordination process, the licensed professional engineer may also gain knowledge of facilities that were not designated or recorded during the initial investigation as well. This can further reduce the risk of damaging an existing facility.

The design team worked closely with Xcel Energy to evaluate betterment options for undergrounding overhead electric lines as part of the one percent fund in Xcel Energy's franchise agreement with City of Commerce City. While the segments of potential undergrounding were not considered reasonable for this project through the one percent funding, this is an example of the team's consideration of utility mitigation during design development. However, CDOT can request that Xcel Energy relocate the overhead lines since Xcel Energy is in CDOT right-of-way (ROW) by permit.



Table 2: Resource Impacts and Mitigation Measures

Context			
<p>Eleven utility owners have communications, electric, gas, water, sanitary sewer, and/or storm sewer utility facilities in the study area. Utility facilities are distributed throughout the project right of way, predominantly underground. Xcel Energy has overhead electric lines on 60th Avenue and the west side of Vasquez Boulevard. Xcel Energy's 24-inch steel gas line at the south end of Vasquez and west along 60th Avenue is a priority to avoid and protect during construction.</p>			
Impact Type	No Action	Proposed Action	Mitigation
Utility adjustments and relocations	<p>Permanent Impacts: No impact.</p>	<p>Permanent Impacts: Relocation or adjustment of communications, electric, gas, water, sanitary sewer and storm sewer facilities to accommodate roadway and drainage improvements.</p> <p>Temporary Impacts: None anticipated. The contractor may request temporary utility adjustments for constructability purposes.</p>	<p>Permanent: Design and utility coordination processes will identify opportunities to avoid and minimize potential utility impacts.</p> <p>Temporary: None</p>
Potential damage during construction	<p>Permanent Impacts: No impact.</p>	<p>Permanent Impacts: None</p> <p>Temporary Impacts: The contractor may damage known or unknown utilities during excavation and construction.</p>	<p>Permanent: None</p> <p>Temporary: SUE investigations will be provided to the contractor to reduce unexpected utility encounters.</p>



Permits

For utility lines and features that are impacted, the utility coordination process will confirm the timing, cost responsibility and relocation of the affected utility. Should the utility have to relocate in CDOT right-of-way before notice-to-proceed is awarded, the utility company will obtain a CDOT Utility/Special Use permit (Form #1233). All utilities installations in CDOT ROW shall comply with the CDOT Pointman Specification under the State Highway Utility Accommodation Code 2 CCR 601-18, and Section 718: Markers for Underground Facilities of the CDOT 2021 Standard Specifications.

References

Goodbee & Associates. 2022. Utility Relocation Plans.

¹Colorado Revised Statutes 2018 Title 9 Article 1.5 Excavation Requirements. Accessed May 2022. (<https://leg.colorado.gov/sites/default/files/images/olls/crs2018-title-09.pdf><https://leg.colorado.gov/sites/default/files/images/olls/crs2018-title-09.pdf>)

²SurvWest. 202x. SUE Plans.

³Colorado Department of Transportation Right of Way/Survey Program, Survey Manual, Colorado Department of Transportation, 2021.

2 CCR 601-18, State Highway Utility Accommodation Code, Colorado Department of Transportation, 2021.

Section 718: Markers for Underground Facilities, Colorado Department of Transportation 2021 Standard Specifications, Colorado Department of Transportation, 2021.

Attachment A.
Project Information



Attachment A:

Project Information

June 2023

Project Number: NHPP 006A-06

Subaccount number: 22922

Introduction and Background

The Vasquez Boulevard (United States Route 6 [US 6]) I-270 to 64th Avenue project (Project) is located within the limits of the City of Commerce City (Commerce City) in Adams County. The Colorado Department of Transportation (CDOT), in cooperation with the Federal Highway Administration (FHWA) and local agencies including Adams County, the City of Commerce City, City and County of Denver, Denver Regional Council of Governments (DRCOG) and the Regional Transportation District (RTD), conducted a Planning and Environmental Linkages (PEL) study in 2018. The Vasquez Boulevard PEL study provided a framework for the implementation of transportation improvements along the corridor between 52nd Avenue and 64th Avenue and along I-270 for a ½-mile north and south of the I-270/Vasquez Boulevard interchange. The Project falls within the limits of the PEL study and is now following the NEPA process to prepare an Environmental Assessment to identify a preferred alternative based on the needs identified in the PEL.

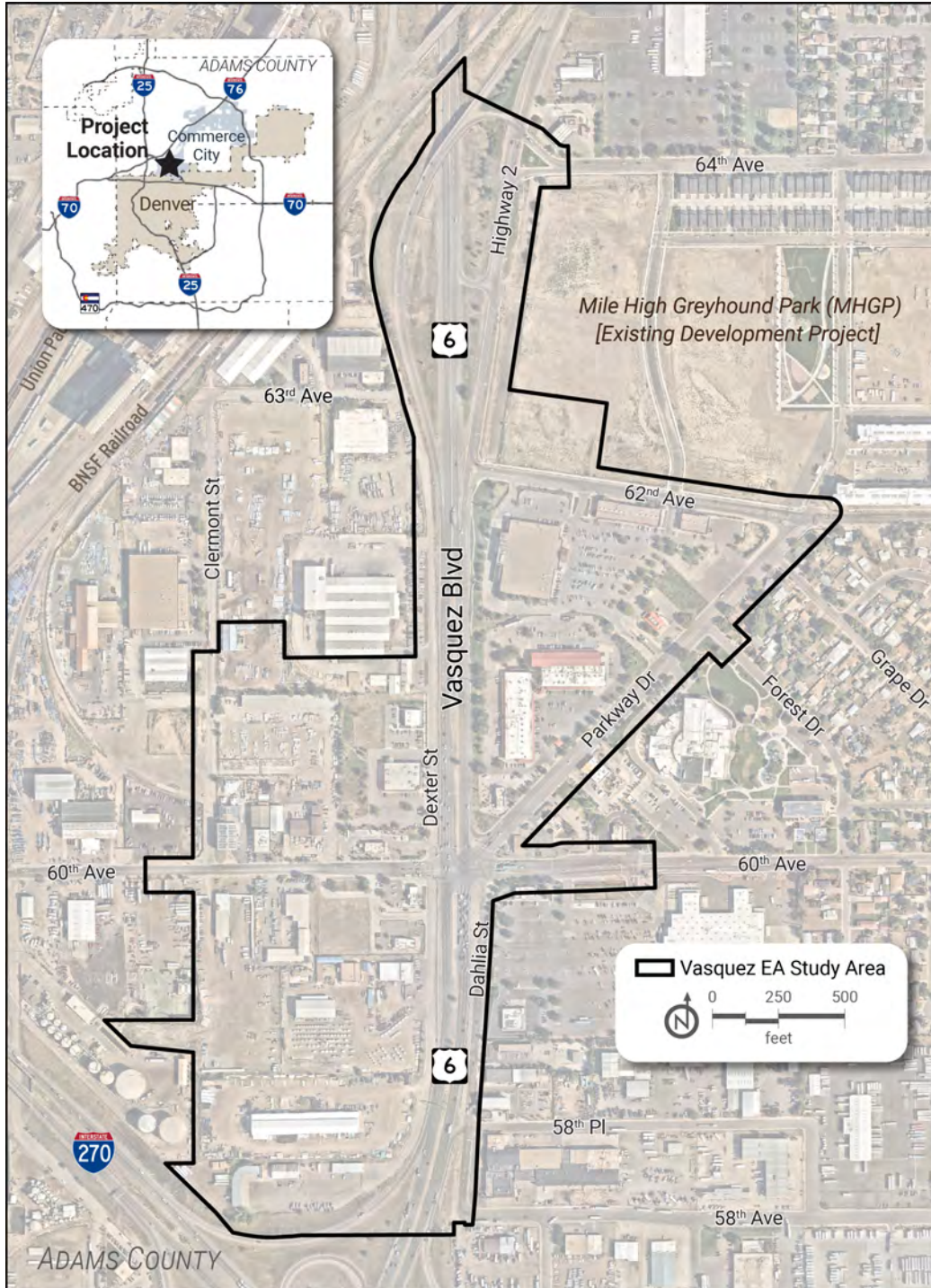
The PEL study identified long-term transportation improvements and evaluated potential projects that could be implemented with available funding as near-term improvements. Potential near-term improvements were identified to improve operations, safety, and connectivity along Vasquez Boulevard, focusing on the Vasquez Boulevard/60th Avenue and Vasquez Boulevard/62nd Avenue intersections. Transportation Improvement Program (TIP) funding, state funding and other sources were obtained for this current Project to construct these near-term improvements along Vasquez Boulevard.

Study Area

The study area extends along Vasquez Boulevard from 58th Avenue (just north of the I-270 interchange) north to the BNSF Railroad bridge. West of Vasquez Boulevard, the study area extends to Clermont Street, between the on-ramp to I-270 and just north of 60th Avenue. East of Vasquez Boulevard, the study area includes Parkway Drive, 60th Avenue and 62nd Avenue. The study area also includes proposed drainage work to an existing water quality pond within the Mile High Greyhound Park (MHGP) property at the corner of 62nd Avenue and Highway 2. Some environmental resources evaluated for the NEPA process may have a slightly different study area depending on specific resource requirements.



Figure 1: Project Study Area





Purpose and Need

The purpose of the Vasquez Boulevard I-270 to 64th Avenue Project is to address the following needs:

- improve operations for vehicles and freight;
- improve safety;
- improve multimodal connections.

Proposed Action

The Proposed Action includes improvements at the Vasquez Boulevard/60th and Vasquez Boulevard/62nd intersections, as well as the local street network and multimodal facilities, as shown in [Figure 2](#).

Vasquez Boulevard/60th Avenue

The Proposed Action includes the elements listed below for the Vasquez Boulevard/60th Avenue intersection:

- Only right turn movements to northbound Vasquez Boulevard from Parkway Drive. No access to other roads.
 - All inbound movements to Parkway Drive remain open as they exist now.
- All inbound movements from Vasquez Boulevard/60th to frontage roads remain as they exist now, but outbound movements are restricted.
 - Right turn only from southeast frontage road and all in movements allowed (all movements remain as they exist)
 - Right turn only from northwest frontage road and all in movements allowed (in movements remain as they exist)
 - No movement out from southwest frontage road and all in movements allowed (in movements remain as they exist)
- Two new local road connections to Clermont Street west of Vasquez Boulevard provide full access between frontage roads and 60th Avenue.
- Driveways on 60th Avenue, Parkway Drive and frontage roads remain as currently structures or have minor changes
- Restriping of existing crosswalks and new pedestrian refuges improve safety and accessibility of pedestrian infrastructure
- Corner curb bulb-outs would be added at the Parkway/Forest intersection as a deterrent to drivers who may think Forest Drive is an alternate route to 60th Avenue. The bulb-outs and crosswalk will provide visual indication of Forest Drive as a neighborhood street.



Vasquez Boulevard/62nd Avenue

The Proposed Action includes the elements listed below for the Vasquez Boulevard/62nd intersection:

- New traffic signal required at 62nd Avenue with the Vasquez Boulevard/60th Avenue intersection improvements to provide movements restricted from Parkway Drive to Vasquez Boulevard.
- Traffic signal provides full access to/from 62nd Avenue and Vasquez Boulevard/Highway 2.
- Southbound Highway 2 off ramp remains in existing configuration.
- Southbound traffic on Vasquez Boulevard and the Highway 2 off ramp have continuous green time without stopping at the signal for 62nd Avenue traffic.

Vasquez Boulevard Improvements

In addition to the improvements at the Vasquez Boulevard/60th Avenue and 62nd Avenue intersections, a portion of Vasquez Boulevard will be reconstructed. The southbound lanes of Vasquez Boulevard will remain as they currently exist (12-foot travel lanes; roadway width varies from 24-feet to 60-feet). Northbound Vasquez Boulevard will be widened a maximum of two feet between 60th Avenue and 62nd Avenue and a maximum of 20 feet north of 62nd Avenue, and the existing median will be modified to add left turn lanes into and out of the new 62nd Avenue intersection. A 10-foot detached multi-use path will be constructed along the eastern side of Vasquez Boulevard, between 60th Avenue and 62nd Avenue.

Local Road Connections

New local roadway connections west of Vasquez Boulevard are part of the Project to enhance the local circulation and pedestrian and bicyclist connectivity of the local street network. The new roadways are two-lane, two-way local roads with the potential for direct property driveway access as approved by Commerce City.



Figure 2: Proposed Action

