E 74TH AVE/NANCY ST/ E 75TH AVE ROAD RECONSTRUCTION

FINAL DESIGN STUDY MEMORANDUM

DECEMBER 2025

MOA PM&E Project No. 21-02

Prepared for:

Municipality of Anchorage
Project Management &
Engineering Department

4700 Elmore Road
Anchorage, AK 99507

Prepared by:

CRW Engineering Group, Inc.

3940 Arctic Blvd. Suite 300
Anchorage, AK 99503

FINAL DESIGN STUDY MEMORANDUM
E. 74TH AVENUE / NANCY STREET / E. 75TH AVENUE ROAD RECONSTRUCTION

Prepared by:

Bill Johnson, P.E. — Date: 12-1-2025
Design Project Manager
CRW Engineering Group, Inc.

Recommended:

Charles Bang — Date: 1/8/2026
Charles Bang, P.E.
Project Manager
Project Management & Engineering Department

Approved:

Melinda T. Kohlhaas — Date: 1/27/2026
Melinda Kohlhaas, P.E.
Municipal Engineer
Project Management & Engineering Department

Brad Coy, P.E. — Date: 1/27/2026
Municipal Traffic Engineer
Traffic Engineering Department

Executive Summary

Introduction

The Municipality of Anchorage Project Management and Engineering Department (MOA PM&E) has contracted with CRW Engineering Group, Inc. (CRW) to provide professional services to develop and evaluate alternatives to upgrade E. 74th Avenue (74th Avenue), E. 75th Avenue (75th Avenue), Nancy Street, & Petersburg Street (see FIGURE A for project location/limits including parcel numbers referenced in this document and anticipated construction Phasing limits).

Improvements are expected to include:

- Roadway structural section, asphalt pavement, and curbs and gutters
- Storm drain system infrastructure
- Pedestrian facilities (Petersburg Street only)
- Street lighting
- Signage

The project is currently funded through design only. Additional funding will be necessary to complete the construction of the project.

Stakeholder comments were solicited using the Context Sensitive Solutions (CSS) process through the following venues. The residents engaged to date have been very supportive of the project.

- Project Website
- Direct Mailings (2) and Electronic Newsletters (4)
- Project Questionnaire – Mailer & Online (1)
- Abott Loop Community Council Meeting Presentations (2)
- Community Open House Meeting (1)
- Agency Coordination Meeting (1)

This Design Study Memorandum (DSM) evaluates existing conditions, and the proposed improvements as summarized below.

Existing Conditions

The existing roadways are classified as secondary (local) urban residential in the MOA Design Criteria Manual (DCM). Type 2 (rolled) curb and gutter is present on 74th Avenue, Nancy Street and on 75th Avenue (between Nancy Street and Petersburg Street); while Petersburg Street and 75th Avenue (between Petersburg Street and Basel Street) has no curb and gutter. There are no sidewalks within the project area. The existing roadway width varies on the curbed roads from 32-37 feet wide measured from back of curb (BOC) and the uncurbed roads vary from 20-24 feet wide. The existing roadways are in very poor condition with cracked pavement surfacing and heaved irregular curbs and have reached a point where they can no longer be effectively maintained by MOA Street Maintenance Department.

Figure A – Project Location and Vicinity Map with Phase Limits

Design Recommendations

To achieve the project goals, meet some of the requirements of the DCM and Anchorage Municipal Code (AMC) Title 21, and based on comments received from public, agency, and stakeholders the recommended improvements for the project are as follows:

Roadway Cross Sections

The proposed roadway cross section along 74th Avenue, Nancy Street, and 75th Avenue includes two 10-foot wide travel lanes, two 3.5-foot wide shoulders (31 feet total width from BOC), and Type 2 (rolled) curb and gutter. The proposed roadway cross section on Petersburg Street matches the roadways described above, except for the inclusion of a single 5-foot-wide attached sidewalk with adjacent Type 1 (barrier) curb and gutter. No roadway traffic markings are proposed, effectively allowing parking along either side of the roadway. Sidewalks are not proposed along 74th Avenue, Nancy Street, or 75th Avenue, as their average daily trips (ADTs) are below AMC Title 21 requirements. Petersburg Street includes a proposed sidewalk because it serves as an access route to Whisper Faith Kovach Park. See FIGURE B below for the proposed roadway cross sections and structural section.

Roadway Horizontal and Vertical Alignment

The proposed overall roadway cross section (measured from back of curb to back of curb or back of curb to back of sidewalk) will be centered within the right-of-way (ROW) to balance adjacent impacts. The vertical profile design forces high/low spots on a few segments of roadway and has a minimum grade of 0.65%.

Posted Speed

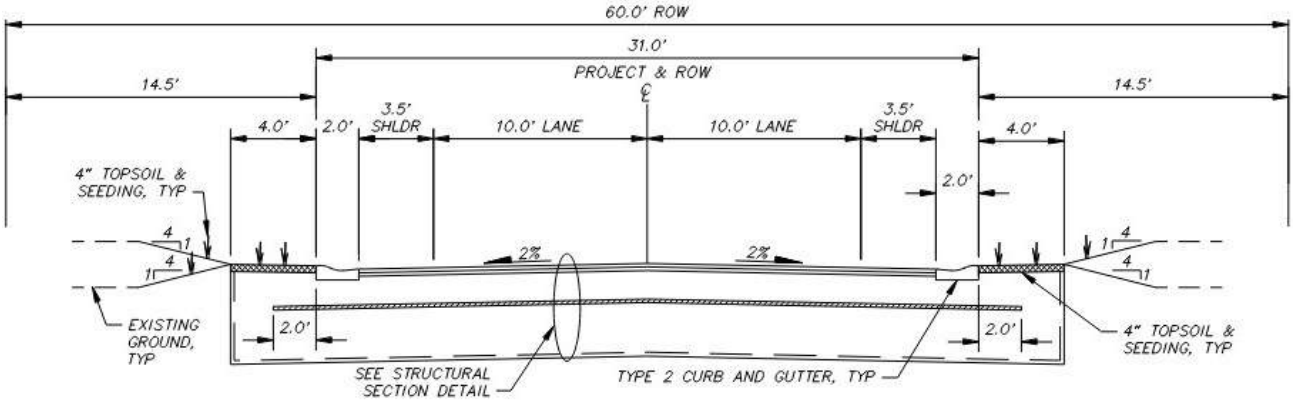
It is proposed that the posted speed limit for the project roadways remain at 25 mph to match the requirements of the DCM.

Drainage

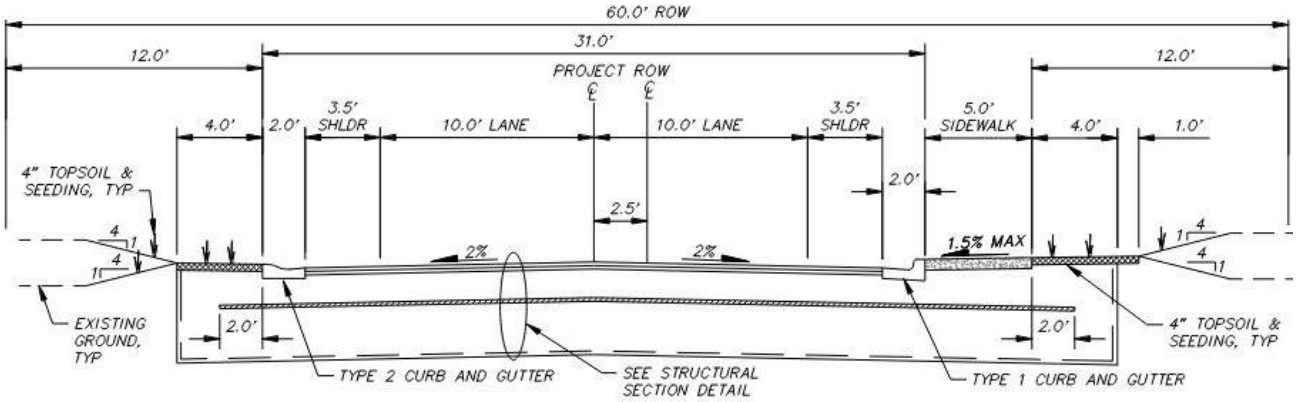
The proposed drainage upgrades involve installing two new storm/subdrain systems that will run the length of 74th and 75th Avenues, Nancy Street, and Petersburg Street within the project area. One system will tie into the existing storm drain on Meadow Street to the west, while the other will connect to the system on Lore Road to the south. These improvements will feature new catch basins at low points and other strategic locations to address ponding and enhance overall drainage. Where feasible, perforated subdrain pipes will be used to lower high groundwater levels, helping to extend the roadway's design life. Footing drain services will be extended from the proposed storm/subdrain system to the property line of each parcel along the project corridor. Stormwater runoff will receive water quality treatment through oil and grit separators (OGS) installed upstream of the connection points. Along 75th Avenue east of Petersburg Street, a rigid frame with helical pile supports on deep foundations are proposed to support the proposed storm drain pipe only at locations where deep peat is encountered.

Lighting

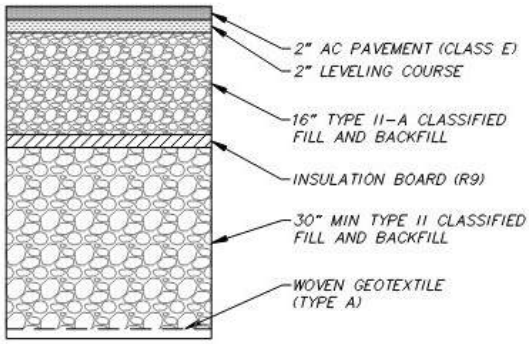
A continuous LED lighting system, consistent with current MOA standards will be installed along the project roadways. The power for the lighting system will come from a new Type 1A load center. The load center location will need to be coordinated and approved by Chugach Electric Association (CEA) during the detailed design.



E. 74TH AVENUE/ NANCY STREET/ E. 75TH AVENUE TYPICAL SECTION



PETERSBURG STREET TYPICAL SECTION



TYPICAL STRUCTURAL SECTION DETAIL

Figure B – Proposed Roadway Cross Sections & Structural Section

Construction Schedule, Phasing and Total Project Costs

Construction Schedule and Phasing

It is anticipated that the project will have two phases and will be constructed over several construction seasons. The Phase 1 construction area includes all project roadways west of Petersburg Street, and the Phase 2 construction area includes Petersburg Street and the remaining portion of 75th Avenue east of Petersburg Street (see FIGURE A for the construction Phase limits).

Total Project Costs

Following is a summary of estimated project costs for each Phase and the total project cost.

Category	Phase 1	Phase 2	Total (Phase 1 +2)
Design & Management Total (estimated)	$886,000	$818,000	$1,704,000
ROW Acquisition Total	$29,000	$29,000	$58,000
Utility Relocation (with 20% Contingency) Total	$533,000	$194,000	$727,000
A. Design, ROW Acquisition, Utility Relocation	**$1,448,000**	**$1,041,000**	**$2,489,000**
Construction			
Roadway Improvements	$2,709,000	$2,048,000	$4,757,000
Drainage Improvements	$1,210,000	$1,070,000	$2,280,000
Illumination Improvements	$332,000	$149,000	$481,000
Construction Subtotal	$4,251,000	$3,267,000	$7,518,000
Construction Contingency (15%)	$638,000	$490,000	$1,128,000
Construction Management / Inspection / Testing	$421,000	$337,000	$758,000
B. Total Estimated Construction Cost (rounded)	$***5,310,000***	**$4,094,000**	**$9,404,000**
C. Overhead / Grant Accounting	**$1,193,000**	**$906,000**	**$2,099,000**
Total Estimated Project Cost (A + B + C)	**$7,951,000**	**$6,041,000**	**$13,992,000**

Table of Contents

List of Figures

List of Tables

Appendices

1.0 Introduction and Background

The Municipality of Anchorage Project Management and Engineering Department (MOA PM&E) has contracted with CRW Engineering Group, Inc. (CRW) to provide professional services to develop and evaluate alternatives to upgrade E. 74th Avenue (74th Avenue), E. 75th Avenue (75th Avenue), Nancy Street, & Petersburg Street (see FIGURE 1 for project location/limits including parcel numbers referenced in this document and anticipated construction Phasing limits).

The project team met with representatives from MOA PM&E, Traffic Engineering, and the Street Maintenance Department to discuss the project in January 2024. Following these discussions, a Draft Technical Memorandum (TM) was prepared in February 2024 and finalized in March 2024 (refer to APPENDIX I for the Final TM). The Final TM presented roadway cross section alternatives to align the project with MOA PM&E Design Criteria Manual (DCM) for local roadways. After further coordination, MOA confirmed that only the roadway cross sections shown in this Design Study Memorandum (DSM) would be analyzed further, with no need for additional alternatives.

The scope of this DSM is to review the existing conditions throughout the project area, evaluate the proposed improvements, evaluate the potential impacts and summarize the project costs. This project is funded by Anchorage Road and Drainage Service Area (ARDSA) bonds and is currently funded through design. Funding for Phase 1 construction is anticipated to be provided in 2026 and Phase 2 in 2028 depending on the approval of the ARDSA bond.

2.0 Existing Conditions

2.1 Purpose and Need

The existing roadways are in very poor condition with cracked pavement surfacing and heaved irregular curbs. The conditions lead to potholes, puddles, and a bumpy ride for vehicles. These roads have deteriorated to a point where maintenance is no longer feasible. Apart from Petersburg Street, the roads in the project area lack piped drainage facilities leading to localized ponding in many areas.

Curb heaving and pavement failure along 75th Avenue

The purpose of this project is to reconstruct the roadways, improve drainage, alleviate maintenance issues, upgrade the roadway lighting, add pedestrian facilities where warranted, and provide a stable base to extend the life of the roadways.

Figure 1 - Project Location and Vicinity Map with Phase Limits

2.2 Area Context and Zoning

The project area consists of four secondary (local) urban residential streets situated east of the Seward Highway, west of Lake Otis Parkway and north of Lore Road. The main access into the neighborhood is from Lore Road south of the project limits with alternate access available from Basel Street east of the project limits. Most homes in the project area were built in the late 1970s and early 1980s (see Appendix A within the Final TM in APPENDIX I for the property information map) prior to the establishment of MOA building and driveway codes.

The neighborhood is zoned as Class A R-2M "multiple family residential." The parcels directly adjacent to the project roadways consist of 30 fourplexes, 9 triplexes, 9 duplexes, 1 single-family home, & 2 vacant properties totaling 51 parcels. Parcel 1 (condominium) & Parcel 21 (fourplex) are adjacent to the storm drain connection limits while Parcel 10 (duplex) & Parcel 11 (vacant) are just east of the reconstruction limits.

2.3 Roadway Characteristics and Conditions

The existing roadways are classified as secondary (local) urban residential in the DCM and have a posted speed limit of 25 miles per hour (mph). The existing roadway grades in the project area are generally flat (0% to 1.5%) but reach a maximum grade of approximately 4.4% on the east side of 75th Avenue near Basel Street. Significant ponding appears along the roadways during spring break up or large rain events. Two notable poorly draining low spots exist at the intersection of 74th Avenue and Nancy Street, and on 75th Avenue near Parcel 45.

Significant ponding at 74th Avenue & Nancy Street intersection

The existing roadway pavement conditions are extremely poor with cracking, settling, and heaving conditions throughout many sections of the project area. Rolled curb and gutter is present on 74th Avenue, Nancy Street and on 75th Avenue between Nancy Street and Petersburg Street; however, some sections of curb are missing or broken. Curbs are not present on Petersburg Street or 75th Avenue east of Petersburg Street. There are no sidewalks within the project area. The existing roadway widths vary throughout the project and can be found in TABLE 1 below.

Table 1 - Existing Roadway Widths

Roadway	Width (ft)	Notes
74th Avenue	37[1]	
Nancy Street	33[1]	
75th Avenue	32[1]	Nancy Street to Petersburg Street
	20[2]	East of Petersburg Street
Petersburg Street	24[2]	

1. Roadway width is measured from back of curb.
2. Roadway width is measured from edge of pavement.

Most driveways in the project are higher than the adjacent roadway and maintain relatively gradual slopes. However, several driveways on 75th Avenue east of Petersburg Street on the south side are lower than the roadway. Many driveways exceed the maximum width requirement based on current MOA Design Criteria.

2.4 Right-of-Way (ROW) and Easements

The existing ROW width is 60 feet along all the project roadways. The existing roadway is approximately centered in the ROW on 74th Avenue, Nancy Street, Petersburg Street & 75th Avenue (west of Petersburg Street) and is skewed to the south side of the ROW on 75th Avenue (east of Petersburg Street). Easements west of Petersburg Street consist of 10-foot-wide utility easements on the back sides of the parcels. An additional 10-foot easement bisects parcels on 74th and 75th Avenue at the approximate midpoint of each block. Easements east of Petersburg Street contain 5-foot-wide underground utility easements on the back side of each parcel. A 5-foot-wide underground utility easement is present on the east and west side of parcels on Petersburg Street excluding parcels 13 and 48.

2.5 Environmental

There are no wetlands, creeks, or flood plains within the project limits. According to the Alaska Department of Environmental Conservation (ADEC) Contaminated Sites Program Database, there are no active sites in or within 1,500 feet of the project area.

2.6 Drainage & Soils

Existing drainage conditions and storm drain are discussed in SECTION 4.0 below. Existing soil conditions are discussed in SECTION 5.0 below.

2.7 Lighting

Street lighting is primarily absent along the project corridor and does not meet current MOA design criteria for roadway illumination. There is one MOA owned streetlight in the project area located at the southwest corner of the 74th Avenue and Petersburg Street intersection. The streetlight consists of a 30-foot luminaire pole mounted on a steel pile foundation equipped with a light-emitting diode

(LED) light fixture. The luminaire is served by underground conductors that continue east on 74th Avenue outside the project limits.

2.8 Utilities

Existing utilities within the project area are summarized below. The location of the utilities are based on field locates and utility company facility maps (See APPENDIX A for the layout, size, and type of existing utilities in the project area). All utility companies listed below were contacted during development of the DSM to ensure utility facility upgrades can be coordinated with this reconstruction project. No utility companies have indicated any future improvement plans within the project area.

2.8.1 Water

Anchorage Water and Wastewater Utility (AWWU) owns and operates water mains, fire hydrants, and water services in the project area. All adjacent parcels are served by AWWU's public water system, excluding Parcels 11 and 20 which are currently vacant. An existing ductile iron (DI) water main extends along the north side of 74th Avenue and 75th Avenue approximately 20 feet from the ROW line and proceeds along the east side of Nancy Street and Petersburg Street located approximately 18-20 feet from the ROW line. The installation of the DI water mains in the project area spanned multiple construction years from 1973 to 1981. The water mains range in size from 8-inch on Nancy Street and 74th Avenue to 12-inch on 75th Avenue and Petersburg Street. The burial depth of the water mains varies between 9 and 14 feet based upon record drawing information, in addition to field information identifying the elevation of the top of nut of multiple water valves with respect to the existing surface elevation. There are five existing fire hydrants within the project limits, located 2-6 feet from the ROW line, and no fire hydrant easements exist on adjacent private property. Several water service keyboxes were not found during the field survey and are likely buried beneath grass or pavement. The missing keyboxes were approximated into the drawings based upon water connect cards provided by AWWU.

2.8.2 Sanitary Sewer

The project area is also entirely served by an AWWU owned and operated piped sewer system consisting of gravity sewer mains, manholes, cleanouts and sewer services. All parcels have sewer services excluding Parcels 11 and 20 which are currently vacant. An existing DI sewer main extends along the south side of 74th Avenue 25 feet from the ROW line and on 75th Avenue approximately 20 feet from the ROW line. DI sewer mains are also located on the west side of Nancy Street and portions of Petersburg Street, approximately 20 feet from the ROW line. There is no sewer main on Petersburg Street from 74th to 75th Avenue, properties in this area are served off mains on either 74th or 75th Avenue. The installation of the DI sewer mains in the project area spanned multiple construction years from 1977 to 1983. The sewer mains range in size from 10-inch to 12-inch on 74th Avenue and are 8-inch on the remaining streets. Existing sewer service locations are approximated in the drawings based upon connect cards provided by AWWU.

2.8.3 Electric

Chugach Electric Association (CEA) owns and operates underground electric lines in the project area. The underground lines run along the backside of the parcels on 74th and 75th Avenue with crossings at Petersburg Street and 75th Avenue.

2.8.4 Telephone

Alaska Communications (ACS) owns and operates underground telephone lines in the project area. The underground telephone lines run along the backside of the parcels on 74th and 75th Avenue and on the east side of Petersburg Street. The telephone line crosses 74th Avenue and 75th Avenue east of Nancy Street with an additional crossing on 75th Avenue east of Petersburg Street. Two crossings are present on Petersburg Street at the back side of Parcels on 74th and 75th Avenue.

2.8.5 Cable & Fiber Optic

General Communications, Inc. (GCI) owns and operates underground cable and fiber optic lines in the project area. The underground cable lines run along the backside of the parcels on 74th and 75th Avenue and cross Petersburg Street. Underground fiber optic lines extend along the south side of 74th Avenue and continue to the west past the project limits. Fiber optic vaults are present at the southwest corner of the 74th Avenue and Nancy Street Intersection and on the southeast corner of the 74th Avenue and Petersburg intersection.

2.8.6 Natural Gas

ENSTAR Natural Gas Company (ENSTAR) owns and operates natural gas facilities within the project area. A 2-inch plastic gas main extends along the north side of 74th and 75th Avenue as well as the east side of Nancy Street and Petersburg Street. Throughout the project area, multiple 1-inch gas crossings are present that tee off the 2-inch gas main to serve properties on the opposite side of the roadways.

2.9 Private Improvements, Mailboxes, & Refuse Containers

Existing refuse containers on 75th Avenue and existing mailboxes on Nancy Street

Few private improvements such as fences, mature trees or planters currently exist in the ROW, however due to the number of fourplexes in the area, large refuse dumpsters are placed near the back of curb for trash collection on roadways west of Petersburg Street. Most mail is delivered to boxes on or within buildings, however mailboxes are present behind curb in select locations.

TABLE 2 below summarizes the existing private improvements within the ROW, excluding refuse dumpsters.

Table 2 – Private Improvements in the ROW

Parcel No.	Private Improvement in ROW
7	Fence
8	Fence
28	Satellite Dish
38	Fence
40	Fence, Planters, & Bushes
41	Fence
45	Fence
46	Fence
47	Fence
48	Fence
50	Parking Bumper
53	Fence & Greenhouse

2.10 Nonconformities

MOA Code of Ordinances Title 21.13 defines "nonconformities" as legal uses, structures, lots, or signs established prior to the effective date of the current title, or future amendments to the current title, that don't conform to the requirements of the current title. The acknowledgement and relief granted to existing property, land uses, and structures are intended to minimize negative economic effects on development that was lawfully established prior to effective date of the current title and subsequent amendments.

The MOA Planning Department completed a review of existing parcels within the projects limits to determine if any legally established nonconformities existing on parcels that could impact the roadway design.

One parcel along the project corridor has previously established nonconforming status. TABLE 3 provides a summary of the parcel and the relevant nonconformities.

Table 3 - Summary of Nonconforming Uses

Parcel No.	Year of Nonconforming Status Determination	Nonconformity
27	2000	• The fourplex structure encroaches into the 20-foot front yard setback and is considered a legal nonconforming structure. • The lack of off-street parking spaces is considered a legal nonconforming characteristic of use.

3.0 Traffic and Parking Analysis

3.1 Existing Traffic Volumes and Operations

Traffic data was gathered by MOA for the project area. The following table summarizes traffic data used for this study.

Table 4 – Traffic Data Summary

Roadway	Location	Date	Speed	Volume (Link)
74th Avenue	West of Petersburg Street	9/12/23 - 9/14/23	X	X
75th Avenue	East of Petersburg Street	9/12/23 - 9/14/23	X	X

3.2 Traffic Volumes

The existing annual average daily traffic (AADT) volume was determined by using the volume data (link counts) taken on 74th Avenue and 75th Avenue on each side of Petersburg Street on three separate days in September 2023. Seasonal Adjustments were factored into the AADT using the nearest permanent traffic recorder on Lake Otis Parkway at 74th Avenue.

The Anchorage Metropolitan Area Transportation Solutions (AMATS) travel demand model includes forecasted future daily traffic volumes for higher volume roadways. The model does not include future traffic volumes for the roadways in the project area.

Although much of the project area is built out, traffic volumes on the roadways are anticipated to increase as the local population grows. There are three vacant parcels adjacent to roadways in the project area that when developed, are also expected to contribute to the projected traffic volumes. Local populated rates were obtained from the Anchorage 2040 Land Use Plan which estimates population growth between 0.3% and 1.1% with a 0.8% annual growth rate. A 0.8% growth rate was used to determine traffic volumes in the anticipated construction year for Phase 2 (2028) and the design year (2048).

The following table summarizes the AADT for 74th and 75th Avenue.

Table 5 – AADT Traffic Data

Roadway	Location	2028 Daily Traffic Volumes[1]	2048 Projected Daily Traffic Volumes[1]
74th Avenue	West of Petersburg Street	290	340
75th Avenue	East of Petersburg Street	110	130

1. Annual Growth Rate of 0.8% Source: Anchorage Land Use Plan 2040

3.3 Traffic Characteristics

All streets in the project area are residential and are not expected to change in the future. As a result, the traffic characteristics are expected to remain unchanged for the life of the project. These characteristics include the design hour volume (DHV) and directional distribution (DD).

DHV is used for capacity and equivalent single axle load computations for roadway sections. The design hour volume was estimated using the 30th Highest Hour of the closest permanent traffic recorder (Lake Otis Parkway and 74th Avenue). DD was estimated using link counts for the peak hour of traffic. Traffic characteristics are summarized in the following table and provided in Appendix J.

Table 6 - Existing and Future Traffic Characteristics

Roadway	DHV	DD
74th Avenue	12%	45/35
75th Avenue	12%	65/35

3.4 Speeds

The current posted speed for roadways in the project area is 25 miles per hour (mph). The traffic speed analysis conducted by MOA recorded the 85th percentile speed as follows:

Table 7 - Observed Speeds

Roadway	Date	85th Percentile Speed (mph)	
		Eastbound	Westbound
74th Avenue	9/12/2023	18	17
	9/13/2023	17	18
	9/14/2023	17	17
75th Avenue	9/12/2023	12	13
	9/13/2023	11	13
	9/14/2023	13	14

The 85th percentile speed is the speed at which 85 percent of the drivers are driving at or below and is typically used to determine a reasonable posted speed limit of a roadway. The remaining 15 percent of drivers above the 85th percentile are the minority of drivers who are considered to be exceeding the reasonable speed. Posted speed limits are typically set at the 85th percentile speed.

On average, the observed 85th percentile speeds in the project area are lower than the posted speed.

3.5 Crash Data

Crash data was reviewed for the project area between 2012 and 2022. A total of 2 crashes occurred within the project corridor during this time frame. One collision occurred at the intersection of 74th Avenue and Petersburg Street. The angle collision was caused by an improper left turn at an unsafe speed. The other collision occurred 15 feet west of the intersection of 74th Avenue and Nancy Street, which involved a collision of a parked vehicle.

3.6 Side Street Intersections/Access Control

There are four minor road-only stop-controlled intersections in the project area. 74th Avenue intersects with Nancy Street and Petersburg Street, while 75th Avenue has intersections at Petersburg Street and Basel Street. Nancy Street and Petersburg Street act as the minor stop-controlled approach at intersections with 74th Avenue while 75th Avenue is the minor stop-controlled approach at Petersburg Street and Basel Street.

3.7 Sight Distance Analysis

The intersection departure sight triangles, per requirements of the DCM, have been drawn at each intersection within the project area to determine any potential issues; see APPENDIX G for intersection departure sight triangles. Permanent features that hinder the sight triangle should be removed or reset to be outside of the intersection departure sight triangles where feasible. The only items that are within the sight triangles are existing trees at the intersections of Petersburg Street and 74th Avenue and at 75th Avenue and Basel Street. Existing trees located within the project's disturbance limits will be removed. Additionally, trees within sight triangles but outside the disturbance limits will be removed upon request by PM&E. New light poles will also be located outside the sight triangles where feasible.

3.8 Parking Study

A parking study was conducted to document the current use of on-street and off-street parking in the ROW for consideration in the design of the proposed improvements. The parking study was based on observations from four separate site visits. Site visits were organized to include one weekday afternoon/evening and one weekend afternoon/evening and took place on Tuesday, September 19, 2023 and Saturday, September 23, 2023 (see APPENDIX J for the parking study memorandum). Based upon the on-street parking study results, there does not appear to be a need for a wider roadway to accommodate more on-street parking than currently exists. On-Street parking demand is summarized below in TABLE 8.

Table 8- On-Street Parking Demand Summary

Segment	Maximum On-Street Parking Demand Observed (Vehicle Count)
74th Avenue	3
75th Avenue (Nancy St to Petersburg St)	5
75th Avenue (Petersburg St to Basel St)	4
Nancy Street	0
Petersburg Street (74th Ave to 75th Ave)	0

The parking study also documented the current use of vehicles parked in each driveway that are within ROW limits and are likely to be impacted by widening of the road or the addition of pedestrian facilities. Many driveways contained double-parked vehicles in short driveways or vehicles parked in grass or gravel side-yards within the ROW. Many of these vehicles would be displaced and require on-street parking if the proposed design shortens driveway lengths and/or reduces driveway widths. Off-Street Parking Demand in the ROW is summarized below in TABLE 9.

Table 9 - Off-Street Parking in the ROW Summary

Segment	Maximum Off-Street Parking Demand in the ROW Observed (Vehicle Count)
74th Avenue	10
75th Avenue (Nancy St to Petersburg St)	13
75th Avenue (Petersburg St to Basel St)	5
Nancy Street	0
Petersburg Street (74th Ave to 75th Ave)	5

3.9 Traffic Calming

Based on the 85th percentile speeds and in coordination with the MOA Traffic Engineering Department, no traffic calming features are proposed for this project.

4.0 Existing Drainage Conditions & Analysis

4.1 Existing Conditions

The existing pavement and curb and gutter are in very poor condition along the project roadways with widespread cracking, potholes, settling, and heaving. These issues are a result of high groundwater, poor soils, ponding, and inadequate storm drain infrastructure to properly convey stormwater runoff off the roadway surface.

This section of the memorandum will summarize the existing storm drain systems in and around the project area (or lack thereof), the drainage areas contributing runoff to these systems, and other drainage related items and concerns. A hydrologic and hydraulic analysis was also developed to analyze peak flows, pipe sizing, and problem areas.

Several pipe segments along Petersburg Street and Lore Road were inspected using a closed-circuit television (CCTV) camera by MOA Street Maintenance. The CCTV data (images & videos) was then provided to CRW for review. Based on the proposed roadway alignment and configuration of existing water and sewer utilities, the existing storm drain pipe on Petersburg will be removed and replaced to align with the proposed improvements. Therefore, no condition assessment was performed on the CCTV information.

Drainage issues along 75th Avenue

SECTION 9.0 discusses the proposed storm and subdrain system, which is designed to improve overall drainage along the project corridor and reduce maintenance issues.

4.1.1 Contributing Drainage Areas

The drainage basins (catchments) that contribute stormwater runoff to the project area were delineated using several methods, including topographical mapping, aerial photography, parcel boundaries, and MOA Watershed Management's hydrography geodatabase (HGDB). Based on HGDB data, the project corridor lies within the Campell Creek watershed in the Anchorage Bowl. HGDB mapping further divides the primary watersheds into subwatersheds. This project is situated between two subwatersheds: North Fork Little Campbell Creek and Little Campbell Creek.

The larger subwatersheds previously identified were further divided into smaller, individual drainage catchments to more accurately represent the surface drainage and hydraulic characteristics directly affecting the project area. These catchments were delineated for the existing conditions analysis based on topography, land cover, and routing of runoff. The drainage area consists of a fully developed neighborhood with multiple family residential housing (zoned R-2M). The municipal roadways are constructed with Type 2 (rolled) curb and gutter (Petersburg Street is strip paved), and asphalt surfacing. As such, land cover generally consists of pervious areas such as lawns and vegetated areas, and impervious surfaces such as roadways, driveways, and roofs.

Both 74th and 75th Avenue slope to the west toward Nancy Street. Nancy Street slopes north from the cul-de-sac at the west end of 75th Avenue to the low point/dead end at 74th Avenue. Petersburg Street slopes north from Lore Road to the intersection of 74th Avenue. Stormwater

runoff is generally directed off private property towards these roadways and flows in the sloped direction noted for each street.

The watersheds and subwatersheds described above, as well as the contributing drainage area and delineated catchments are illustrated in APPENDIX D.

4.1.2 Conveyance Systems

The following sections describe the existing storm and subdrain systems located within and near the project corridor that affect drainage. All of these systems are owned and maintained by MOA Street Maintenance. Refer to FIGURE 2 below for a visual representation of these systems.

74th Avenue/Petersburg Street System

The only storm/subdrain drainage system within the project limits extends from Basel Street west along 74th Avenue, then continues south along Petersburg Street before connecting to the Lore Street system (described below). This system was constructed under two separate MOA PM&E projects.

The upstream segment along 74th Avenue from Basel Street to Petersburg was constructed in 2012-13 (PM&E #08-12 & 08-13). This segment consists of main line perforated 18-inch corrugated polyethylene pipe (CPEP, Type SP), also referred to as subdrain pipe, and 12-inch CPEP, Type SP catch basin leads. The main line pipe connects to a series of Type II catch basin manholes with curb inlets installed along the north curb line, with catch basin leads extending to catch basins on the south curb line.

The downstream segment on Petersburg Street from 74th Avenue to Lore Road was constructed in 2008 (PM&E #06-24). This segment also consists of main line 18-inch CPEP, Type SP, with non-perforated 10-inch CPEP, Type S catch basin leads. The main line pipe between 74th and 75th Avenue connects to a series of Type I manholes located in the center of roadway, with catch basin leads extending to field inlets on either side of the strip paved road. The main line then veers to the west side of Petersburg Street from 75th Avenue to Lore Road, connecting to a Type I catch basin manhole, with a catch basin lead extending to a single catch basin at a low point on the east side of the roadway. The main line continues south between the edge of pavement and ROW along Petersburg Street and ties into a Type I manhole located in the center of Lore Road.

Based on survey data, there's approximately 2-feet of cover over the 18-inch subdrain at the intersection of 74th Avenue and Petersburg Street. This will prohibit the option of extending a proposed subdrain west along the 74th Avenue project corridor. Conversely, there's approximately 6.8-feet of cover over the 18-inch subdrain at the intersection of 75th Avenue and Petersburg. This will provide an opportunity to extend a proposed subdrain east along the 75th Avenue project corridor and possibly west if required, as well.

Meadow Street System

As noted above, the low point for the project area is located at the intersection of Nancy Street and 74th Avenue. Because there are no storms or subdrain conveyance systems or outlet for drainage in this area, significant ponding occurs at this location.

Ponding at Nancy St/74th Ave intersection

Currently, the ROW is undeveloped along 74th Avenue from Meadow Street to Nancy Street. The topography along this corridor continues to slope east to west, providing the option to extend a new system towards Meadow Street. An existing subdrain system runs along Meadow Street extending north and south of 74th Avenue and could serve as a likely connection point for a new system.

Lore Road System

The Lore Road storm/subdrain system located south of the project site was constructed in 1996 (PM&E 93-16). This system extends from O'Brien Street west to Sandlewood Place and the main line pipe ranges in size from 12-inch to 24-inch CPEP, Type S & SP. The Petersburg Street system connects to the Lore Road system via a manhole located in the center of the roadway, with a 15-inch subdrain piping extending downstream from this structure.

4.1.3 Water Quality Treatment

Currently, water quality treatment is not being provided for stormwater runoff generated within the project area. However, stormwater conveyed to the Lore Road system is eventually routed to a sedimentation basin to the south before it discharges into Little Campbell Creek. Sedimentation basins are designed to retain sediment-laden runoff, allowing sediment to settle out before the runoff exits the facility.

4.1.4 Drainage Concerns

Significant ponding occurs throughout the project limits after rain events and spring break up due to flat grades, settled asphalt, and heaving/discontinuous curb and gutter. Runoff cannot effectively drain to the existing curb inlets along the roadway in these conditions, resulting in further roadway degradation such as potholes, cracking, and pavement failure. These issues could be resolved by upgrading the roadway by forcing high/low points to improve surface drainage and extend a storm drain system to collect runoff at the design low points.

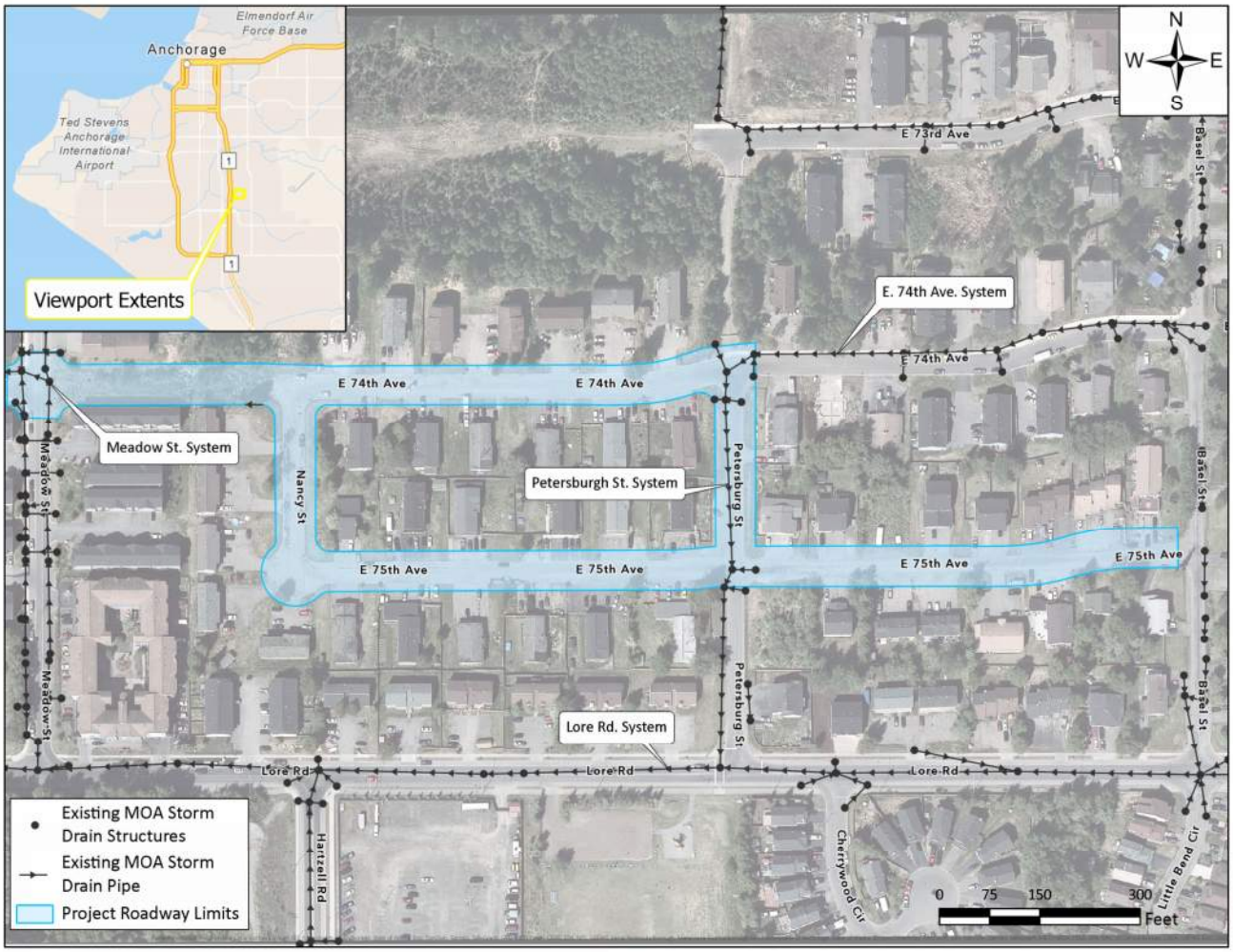


Figure 2 - Existing Storm Drain System Map

4.2 Hydrologic and Hydraulic Analysis

A hydrologic and hydraulic (drainage) model was developed to analyze the existing and proposed conditions for the project corridor and contributing areas. The methodology and key input parameters required to prepare this drainage model are described below.

4.2.1 Design Storm Depth and Distribution

The design storm distribution used for this drainage analysis is based on the Anchorage and Eagle River 24-hour storm duration provided in APPENDIX D of the Anchorage Stormwater Manual (ASM). The base design storm depth values are per ASM Table 4.2-1 (MOA Design Storm Depths) and are as follows:

- Water Quality Treatment: 90th Percentile, 24-hour – 0.52-inches.
- Conveyance Design and Peak Flow Control: 10-year, 24-hour – 2.28-inches.
- Project Flood Bypass: 100-year, 24-hour – 3.59-inches.

The 10-year, 24-hour design storm event was used to evaluate the conveyance capacity of the existing storm drain systems and if they are adequately sized. The proposed storm drain system will utilize the same storm event to size the piped system.

4.2.2 Orographic Factor

Based on the project location, a 1.08 orographic factor was applied to increase the base design storm depths listed above. Orographic factors are used to adjust design storm volumes to reflect the increase in storm intensity based on your proximity to mountainous geography. Refer to FIGURE D3, APPENDIX D.

4.2.3 Model Information

The Green and Ampt method was used for this drainage analysis. The drainage analysis was developed using Personal Computer Storm Water Management Model (PCSWMM) software. The PCSWMM software runs calculations that convert rainfall into excess runoff. This excess runoff is then routed through the storm drain networks described above to determine peak flow rates, evaluate pipe sizing, and identify problem areas such as surcharged pipes.

Refer to FIGURE D2, APPENDIX D for a map showing the project area and the soil classifications in the surrounding area.

The input paraments for the existing storm drain piping systems included in the model were based on surveyed data and record drawings. These parameters included information like pipe size, type, inverts, and slopes.

4.2.4 Hydrologic and Hydraulic Model Results

The contributing catchments were delineated and evaluated for runoff response for the existing condition drainage model. The peak stormwater runoff of each catchment and the peak discharge leaving the project corridor (at specific design points) during the 10-year, 24-hour design storm event is show on FIGURE D4, APPENDIX D.

The drainage model results indicate that the existing 74th Avenue/Petersburg Street system is inadequately sized to convey the design storm. As detailed in the PCSWMM Report in APPENDIX D, most pipe segments in this system experience significant surcharging. Additionally, one pipe segment at the intersection of 74th Avenue and Petersburg Street has a reverse slope, which exacerbates the surcharging issue. Despite these conditions, the model does not predict any structural overtopping at the peak of the storm.

Complete drainage modeling results and input parameters for the existing conveyance systems and contributing areas described above are provided in APPENDIX D. For reference, the naming convention used for the storm drain pipes and structures in this modeling analysis uses the identification numbers as presented int the MOA Stormwater Asset online GIS mapping tool.

Analyzing the downstream storm drain systems along Lore Road and 74th Avenue were not part of the scope of this DSM. Also see Section 9.1.3 regarding the redirection of Subbasins.

5.0 Geotechnical Analysis

Shannon & Wilson, Inc. (S&W) conducted a geotechnical investigation on October 4th and 5th, 2021 consisting of drilling and sampling 11 boreholes along the project roadways to depths approximately 16.5 below ground surface (BGS). The investigation also included placing a PVC piezometer well in select borings for groundwater level monitoring. S&W also performed a multi-channel analysis of surface waves (MASW) survey in the summer of 2024 to support the design and infer the presence and location of possible organic soils (i.e. peat) along the roadway alignment. Boring locations along with the soil boring logs and details of the investigations and recommendations can be found in the Geotechnical Reports in APPENDIX E.

5.1 Existing Conditions

5.1.1 Historical Bore Logs

S&W performed geotechnical investigations along Petersburg Street between Lore Road and 74th Avenue in March 2007. Three borings were advanced to a depth of approximately 16 feet BGS. The subsurface soils encountered generally consisted of silty sand, and silty gravel with frost classifications ranging from F2 to F3. No peat was encountered during the investigation.

Seven test hole logs were also reviewed from explorations conducted by MOA and others in the project area in 1982 and 1983. The subsurface soils encountered generally consisted of sandy silty, silty sand, and silty gravel with frost classifications ranging from F2 to F4. Peat was encountered at the ground surface in several borings and ranged from 2 to 12 feet thick. The deepest deposits were encountered along the Nancy Street ROW and along 75th Avenue, east of Petersburg Street.

5.1.2 Field Investigation

The pavement thickness, where encountered, ranged from 0.5 to 2 inches based on measurements of recovered samples. The subsurface conditions within the existing road prism where borings occurred generally consisted of a 2 to 4.5-foot thick layer which typically consisted of silty sand, silty sand with gravel, and silty gravel with sand. The frost susceptibility was estimated to range between F-2 to F-3 frost classification. Native soils below fill materials, excluding borings B-08 and B-09, typically consisted of silty sand, silty sand with gravel, and silt with sand. with gravel. The frost susceptibility was estimated to be F-3 frost classification.

Boring B-11, advanced in the undeveloped ROW of 74th Avenue encountered 2.2 feet of peat above native soils. A layer of peat was encountered below fill soils in borings B-08 and B-09 to depths of approximately 5.5 and 7 feet below ground surface below ground surface (BGS) respectively. In Boring B-09 the peat was underlain by silt containing organics to approximately 9.5 feet BGS. Peat was not encountered along Nancy Street in borings B-03 and B-04 where it was found in a previous exploration by MOA in 1983. It is unclear whether the peat exists in a localized condition or if it was removed.

The MASW survey showed shear wave velocities consistent with organic soils (i.e. peat) or low density material on 75th Avenue east of Petersburg Street from approximately Station 9+00 to 10+00 and from Station 11+00 to 12+50 at depths up to approximately 16 feet BGS.

The groundwater table was observed during drilling in Borings B-05 and B-09, at approximately 7.5 feet and 15 feet BGS respectively, groundwater was not encountered in the remaining borings. During drilling the structural section materials were observed to be saturated indicating a perched water condition due to infiltration of surface water in the structural section rather than effects of the water table. The absence of groundwater in the borings was believed to be a function of low hydraulic conductivity of the silty soils which makes groundwater determination difficult during drilling operations. Additional groundwater readings were collected on October 11th, 2021, one day after a significant rainfall event. Groundwater measurements varied between the ground surface and 3.9 feet BGS, it was believed that the shallow readings are reflective of the perched water and demonstrate poor drainage conditions in the project area.

5.2 Recommendations

5.2.1 Site Preparation and Dewatering

All pavements, existing fill, existing curbs and gutters, trees, stumps, and other deleterious material should be cleared from the roadway reconstruction limits and be excavated to the design elevation of the bottom of the structural section fill. The base of the excavation should be observed, and proof rolled to identify loose or unsuitable materials. It is recommended to establish a crown or sloping the subgrade at a minimum of 2 percent to encourage draining of water from the structural section.

Removing the peat along 75th Avenue east of Petersburg Street would result in unacceptable construction risks and costs that are prohibitive to construction of the project. A deep excavation to remove the peat would likely impact the existing water and sewer pipes, and would also likely require obtaining construction easements outside the existing ROW. The presence of shallow groundwater, underground utilities and other development will create constructability issues for the project if deep peat soils were to be excavated and replaced. Therefore, a variance to allow peat to remain beneath the roadway will be requested and the structural section along 75th Avenue east of Petersburg Street will use an alternate structural section as described in the section below. Additional construction requirements for excavation within peat are noted in the additional pavement structural section memo provided by S&W (included in APPENDIX E) and will be implemented into the project documents during the design.

Static groundwater levels observed one week after drilling suggest that groundwater will likely be encountered during construction for excavations needed to install the structural section and drainage improvements.

5.2.2 Recommended Road Structural Sections

To provide a roadway structural section that complies with the MOA DCM, a roadway section without insulation would require 8 feet of structural fill. An insulated roadway section would be

52 inches thick and is included in TABLE 10 below. It is recommended that the section should be extended a minimum of 4 feet beyond the outermost edge of new curbs or sidewalks.

Table 10 – Recommended Structural Section

Layer	Minimum Thickness (inches)
Asphalt Pavement (Class E)	2
Leveling Course	2
MOA Type II-A	16
Insulation (R9)	2
MOA Type II	30
Geotextile	N/A
Total Thickness	52

Insulation is recommended to have a minimum R-value of R-4.5 per inch and meet current MASS requirements. Board insulation should extend a minimum of 2 feet beyond the outer edge of curb and gutter and sidewalks or pathways that are attached to the curb and gutter. Sidewalks or pathways that are detached from the curb and gutter do not require insulation as long as some vertical displacement during winter months can be tolerated.

Due to the presence of peat a woven geotextile should be placed over the excavated subgrade soils for each structural section prior to placement of classified fill and backfill materials to increase the stability and provide separation between the subgrade materials and new structural section fills.

Transitions between insulated and non-insulated sections should involve the extension of insulation beyond the roadway section 20 feet with the thickness reduced in these areas to minimize the possibility of differential heave. The insulation can be tapered from an R-value of 9 to an R-value of 4.5 in the transition zone. The subgrade transition should be graded (tapered) at a 4H:1V (horizontal to vertical) slope if construction distances permit.

Based upon the groundwater level readings, subdrains are recommended to discourage seasonal saturation of the structural section during periods of high groundwater. The depth of the subdrain should be placed no more than 4.5 feet below the finished grade of the surface so that the system only receives water during periods of high groundwater. Subdrains are recommended to be placed on both sides of the roadway, in the 4-foot extension of the structural section behind curb/gutter or walkways. However, due to the location of existing water and sewer mains throughout the project area, there is not an opportunity to provide two subdrains without significant impacts to the existing water/sewer infrastructure. A less costly drainage option that is used in Anchorage is a single perforated storm drain located at a varying horizontal location. This section may result in poorer structural performance over time when compared to the use of dual subdrains but will still be an overall improvement to the current structural section. Installing a new subdrain on 75th Avenue east of Petersburg Street in sections of roadway that peat will remain below the structural section is not recommended due to the

concern of dewatering the peat which may lead to surface settlement. Therefore, storm drain pipes will only be installed along 75th Avenue east of Petersburg Street in areas where the peat will remain.

5.2.3 Helical Pipe Support

New storm drain pipe will need to be installed through peat along 75th Avenue east of Petersburg Street. To mitigate future pipe displacement, a rigid frame with helical pile supports on deep foundations are proposed to support the proposed storm drain pipe. The helices of the anchors must be installed such that they extend deeper than the peat and into the underlying dense sandy silt layer. The actual spacing, design, and installation depths of the helical anchors would depend on the loading conditions and manufacturer specifications which will be addressed during the design. For this DSM, it was assumed the spacing would be 10' on-center. See FIGURE 3 below for the helical pile support concept typical section.

The proposed footing drain services will not be supported by pipe supports.

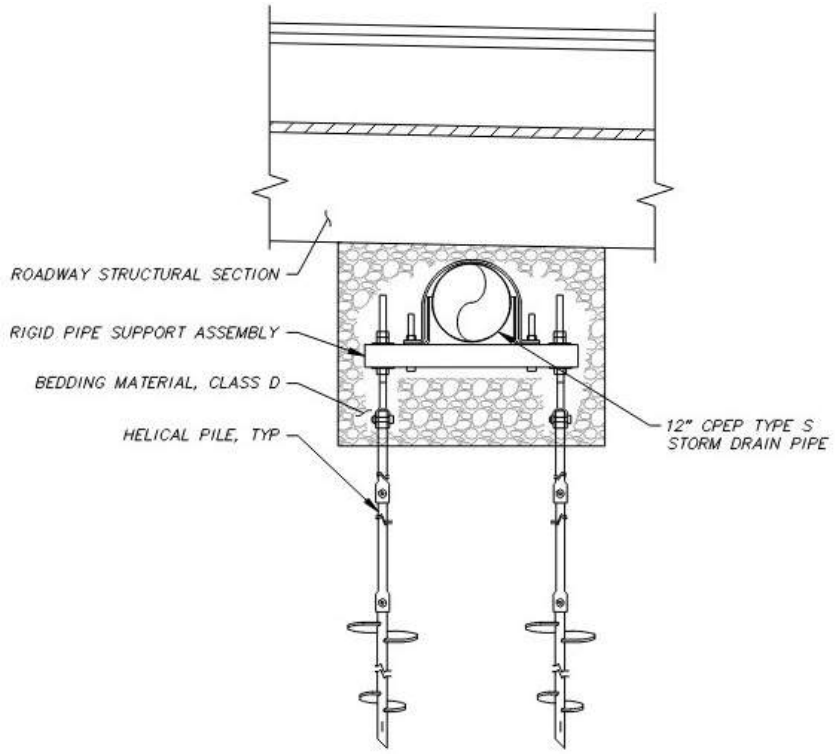


Figure 3 - Helical Pile Support Concept Typical Section

6.0 Design Criteria and Standards

Project design criteria are based on the roadway characteristics, functional classification, and road ownership. The project roadways are classified as secondary (local) urban residential roadways and are owned and maintained by the MOA. The DCM provides detailed design criteria for the development of roadways and infrastructure within the MOA. Anchorage Municipal Code (AMC) Title 21 also provides design requirements for all municipal land within the corporate limits of the MOA.

6.1 Roadway Design Criteria

A summary of roadway design criteria pertinent to this project can be found in TABLE 11 below. Proposed variances from design criteria are described in SECTION 16.0.

Table 11 – Roadway Design Criteria Summary

	Criteria	Design Standard Value	Reference
Traffic Data	Functional Classification	Secondary Street: Urban Residential	OSH&P
	AADT (average)	200	2023 Traffic Study
	Design Vehicle	WB-50	DCM 6.4 B
	Design Structural Loading	HS 20	ASM 5.3.10
	Design/Posted Speed	25 MPH	DCM Table 1-6
Horizontal Alignment	Horizontal Curve Radius, Minimum, No Superelevation	150 ft	DCM Table 1-9
	Stopping Sight Distance, Min	155 ft	DCM Figure 1-20
	Clear Sight Triangle Length	280 ft	DCM Figure 1-19
Vertical Alignment	Vertical Grade, Maximum	6.0%	DCM 1.9.D.2.b
	Vertical Grade, Minimum	0.5% for street w/ curb and gutter	DCM 1.9.D.2.a
	Vertical Curve K-Value, Min, Crest	12	DCM Figure 1-16
	Vertical Curve K-Value, Min Sag	26	DCM Figure 1-17
Cross Section	Side slopes	2Horizontal:1Vertical max	DCM 1.9.D.5
	Snow storage area	7 feet outward from back of curb	AMC Title 21.08.030.F.3
	Number of Traffic Lanes and Width	2, 10 ft	DCM Table 1-6
	Number of Parking Lanes and Width	1, 7 ft	DCM Table 1-6
	Shoulder Width (No Parking Lane)	3.5 ft	DCM Table 1-6
	Curb & Gutter Type	Type 2 (DCM)	DCM 1.9.F.1.c
	Sidewalk Requirements and Width	0 – 2, 5 ft min	AMC Title 21.07.060.E.2.d
	Sidewalk Separation from Back of Curb	7 ft (for collectors and higher classification)	DCM 4.2 H
Intersections & Driveways	Curb Return Radii at Side Streets	20 ft (local/local) 30 ft (local/collector)	DCM Figure 1-22
	Driveway width: up to 7-plex	12 – 28 ft	MOA Driveway Standards 11/3/21
	Max residential driveway grade and Landing grade/length	Max grade = ± 12% ± 2% for 12 ft	MOA Driveway Standards 11/3/21

6.2 Roadway Cross Section Standards

Per the DCM Table 1-6, secondary (local) urban residential streets with less than 300 average daily trips (ADT) should have a street width of 31 feet (measured from BOC) with 2 travel lanes, 1 parking lane (or 2 shoulders), and curb and gutter. The lane width for a local residential street with less than 300 ADT is 10 feet and the parking lane width is 7 feet. If a parking lane is not provided, shoulders should be provided with typical widths of 3.5 feet. Per the MOA Traffic Engineering Department, no roadway traffic markings are typically installed on local streets.

Per the DCM 1.5.G, pedestrian facilities shall be provided as specified in AMC Title 21 for local streets. Per AMC 21.07.060.E.2.d sidewalks are not required on streets or cul-de-sacs with fewer than 300 ADT. For streets or cul-de-sacs with 150–300 ADT that are within a designated school walking boundary, a transit supportive development corridor identified in the online Anchorage 2040 Land Use Plan, or that provide access to a park, a sidewalk on one side is required. For streets or cul-de-sacs with 300–1,000 ADT, a sidewalk on one side is required. Where sidewalks are installed, it is preferable for them to be separated from the roadway to provide pedestrian comfort and safety, increase intersection sight distances, and provide room for snow storage however separation is not required for a local roadway. A clear area of 7 feet beyond the back of curb is required for snow storage. The sidewalk can be considered as part of the snow storage area. Roadway sections with narrow shoulders provide little room for snow storage on the street and require snow to be temporarily plowed behind the curb. This may impede pedestrian passage on an attached sidewalk and/or buffer area during major snow events until the snow is cleared.

Per DCM 1.9.F.1 curb type for secondary (local) streets is required to be Type 2 (rolled) curb and gutter. AMC Title 21.08.050.G requires curb and gutters to be in accordance with the DCM but shall be Type 1 (barrier) except for certain exceptions. AMC Title 21 Chapter 8 requirements do not apply to this project since it is an MOA Capital Improvement Project and not a subdivision development.

6.3 Lighting Criteria

Light levels and uniformity ratios for roadway, pedestrian facilities, and at intersections per Chapter 5 of the DCM are summarized below:

- Roadway (not including intersections):

  For a local roadway with low pedestrian activity, such as the roadways in the project area, the DCM recommends a minimum maintained average of 0.4 foot-candles with an average-to-minimum uniformity ratio no greater than 6:1 and a veiling luminance ratio no greater than 0.4.

- Pedestrian Facilities:

  Pedestrian activity within the project area meets the “low” criteria provided in Chapter 5 of the DCM. For adjacent pedestrian facilities within the low pedestrian volume criteria, Chapter 5 of the DCM includes three light level requirements based on land use: rural/semi-rural, low-density residential, and medium-density residential. In areas with medium-density

homes such as the project area, a minimum maintained average of 0.4 foot-candles with an average-to-minimum uniformity ratio no greater than 4:1 is required.

- Intersections:

  For lighting intersections, the DCM uses the following roadway classifications based upon the Average Daily Traffic (ADT), note these do not apply to standard street classifications:

  Major: over 3,500 ADT

  Collector: 1,500 to 3,500 ADT

  Local: 100 to 1,500 ADT

Below, in TABLE 12, is a summary from the DCM Table 5-5 for lighting design criteria of intersections and is based upon the ADT roadway classifications.

Table 12 – Illuminance & Maximum Uniformity for Intersections (DCM Table 5-5)

Functional Lighting Classification	Average Maintained Illuminance (low pedestrian area)	Maximum Uniformity Ratio
Major/Major	1.8	3.0
Major/Collector	1.5	3.0
Major/Local	1.3	3.0
Collector/Collector	1.2	4.0
Collector/Local	1.0	4.0
Local/Local	0.8	6.0

All intersections in the project area are considered Local/Local and will require a minimum average illuminance of 0.8 FC foot-candles with an average-to-minimum uniformity ratio no greater than 6:1. Providing illumination within Lore Road is not in the scope of this project.

7.0 General Design Considerations

7.1 Right-of-Way Acquisition and Temporary Construction Permits

A key element for the successful completion of any project is the acquisition of any required ROW, easements, and/or permits while providing fair and equitable treatment to all affected property owners, tenants and lessees. Individual parcel's acquisition details are determined on a case-by-case basis and negotiated privately between the MOA and the property owner.

In general, public use easements (PUE) are required in areas where the footprint of the improvements is outside the ROW. Slope easements (SE) are required for areas where the cut and fill slopes are outside of the ROW and need to be maintained. Drainage easements (DE) are required for drainage facilities installed outside the ROW. Temporary construction permits (TCP) are required outside the ROW for matching new driveway grades to existing driveway grades, installation of

sewer services or water key boxes at the property line, and the relocation, removal or repair of improvements such as mailboxes, curbs, landscaping, fencing, and encroaching structures. Temporary construction easements (TCE) allow the contractor temporary access outside the ROW to construct improvements that are within the ROW, but where there is insufficient space within the ROW or an existing easement to conduct the work. Right-of-way impacts are discussed in SECTION 10.0 below.

7.2 Mailboxes

Individual mailboxes at some residences will be impacted by the proposed improvements. Some past projects have attempted to change mail delivery from individual mailboxes to cluster mailboxes. Recent communication with the United States Postal Service (USPS) indicates that to change from individual to cluster mailboxes the following must occur:

- Every affected resident must agree to the change from individual mailboxes to cluster. If even one resident doesn't agree, the mailboxes cannot be switched to cluster style. To officially make the change in mail service, a signed concurrence from each owner is required.
- MOA is required to purchase the cluster mailboxes and install concrete foundations.

From past PM&E project experiences, it is very hard to gain concurrence from all affected residents, thus this project plans to re-install individual mailboxes. Existing mailboxes/posts will be replaced with new boxes and posts that meet current standards.

7.3 Lighting

The proposed lighting system for the project roadways will include round streetlight poles on pile foundations with light fixtures mounted at 30 feet above the roadway surface. Per Chapter 5 of the DCM, in low-speed urban areas like the project area, luminaire pole bases should be fixed base (i.e. non-breakaway). This is because the impact on a vehicle and its occupants with a fixed base at low speeds is considered less hazardous than the potential harm from falling (breakaway) poles.

The lighting system will include energy efficient LED luminaires that provide a full cutoff light distribution. Where feasible, the poles will be located at property lines to reduce the light trespass into adjacent homes located on each parcel. The lights will also be equipped with backlight shields to minimize light trespass.

Based upon the ADT, all roadways in the project area are classified as Local roads. Roadway lighting between intersections will meet the DCM requirements for a local low-speed urban road with low pedestrian activity.

The proposed lighting system will consist of approximately 20 LED street light poles and a new Type 1A load center. The load center location will need to be coordinated and approved by CEA during the detailed design.

7.4 Private Improvements in ROW

Property owners who have personal improvements in the ROW, such as fences, have the option of applying for encroachment permits for the improvements, removing them at their own expense, or allowing the corrective action be incorporated into the project design. Encroachment permits for fences within the roadway clear zone or within the snow storage area (7 feet from back of curb) are usually not granted. Fences within the ROW for this project will be removed and reset onto the property line. If an owner doesn't wish for the fence to be reset, it will be disposed. Refuse containers will be removed from the ROW and placed onto the property.

8.0 Roadway Design

To correct the poor condition of the roadway surfacing and irregular curbs, the roadway structural section needs to be replaced. Vertical profile adjustments are anticipated to improve drainage and promote positive stormwater flows to the new storm drain system. Pedestrian facilities are proposed to provide safe walking routes for residents. Details of the roadway design elements are discussed below. Roadway plan and profile drawings depicting the upgrades and the location of individual parcels can be found in APPENDIX B.

8.1 Design Challenges

Some of the significant roadway design challenges associated with the project include:

- There are 49 parcels, and most are multifamily that have direct access to the project roadways with some driveways located closely together. The closely spaced driveways limit available snow storage between the driveways.
- Many parcels were developed prior to municipal code requirements for driveway width and offsets from ROW lines which require parking to extend into the ROW.
- The existing rolled (Type 2) curb and lack of curb on 75th Avenue east of Petersburg Street allows for full frontage access to on-property parking. Installation of barrier (Type 1) curb and gutter along the roadway would limit property access to driveway curb cut locations and could affect the ability for property owners to access existing parking spaces.
- Many existing driveways have no landings. Along Petersburg Street an addition of a sidewalk will make driveway grades steeper than existing.
- Roadway grades are typically flat, as low as 0% in some places. There are known surface drainage issues in the project area.
- Residents may perceive the grassed ROW area in front of their house as part of "their front yard." Reconstructing the roadway and impacting those improvements may be perceived as impacting private property.

75th Avenue viewing east - several parked cars extend into the ROW

8.2 Roadway Cross Section

Multiple cross section alternatives were developed in the TM but only one roadway cross section was chosen by MOA to be presented in the DSM. To upgrade the roadways to be in conformance or closer to conformance with current DCM and AMC requirements the proposed roadway cross section along 74th Avenue, Nancy Street, and 75th Avenue includes two 10-foot wide travel lanes, two 3.5-foot wide shoulders (31 feet total width from BOC) and Type 2 (rolled) curb and gutter. The proposed roadway cross section on Petersburg Street matches the roadways described above, except for the inclusion of a single 5-foot wide attached sidewalk with adjacent Type 1 (barrier) curb and gutter. No roadway traffic markings are proposed, effectively allowing parking along either side of the roadway. Sidewalks are not proposed along 74th Avenue, Nancy Street, or 75th Avenue, as their ADTs are below AMC Title 21 requirements. Petersburg Street includes a proposed sidewalk because it serves as an access route to Whisper Faith Kovach Park. The structural section will adhere to the geotechnical recommendations discussed in SECTION 5.0. See FIGURE 4 below for the proposed roadway cross sections and structural section.

8.3 Horizontal Design Alignment

The proposed overall roadway cross section (measured from back of curb to back of curb or back of curb to back of sidewalk) will be centered within the right-of-way (ROW) to balance adjacent impacts.

8.4 Vertical Profile Design Alignment

The overall intent of the proposed roadway vertical profile design is to increase roadway grades to promote positive drainage to storm drain structures while minimizing impacts to driveways and minimizing easements/permits on adjacent properties. As can be expected, there will be more impacts beyond the sidewalk/back of curb the more the roadway is changed from the existing grade. The vertical profile design forces high/low spots and has a minimum grade of 0.65%. Both alternatives will require some special fill grading areas to be constructed onto property to provide positive drainage toward the roadway where the proposed profile grade is raised. The locations where the profile grade is to be adjusted were chosen to balance driveway grade changes by not

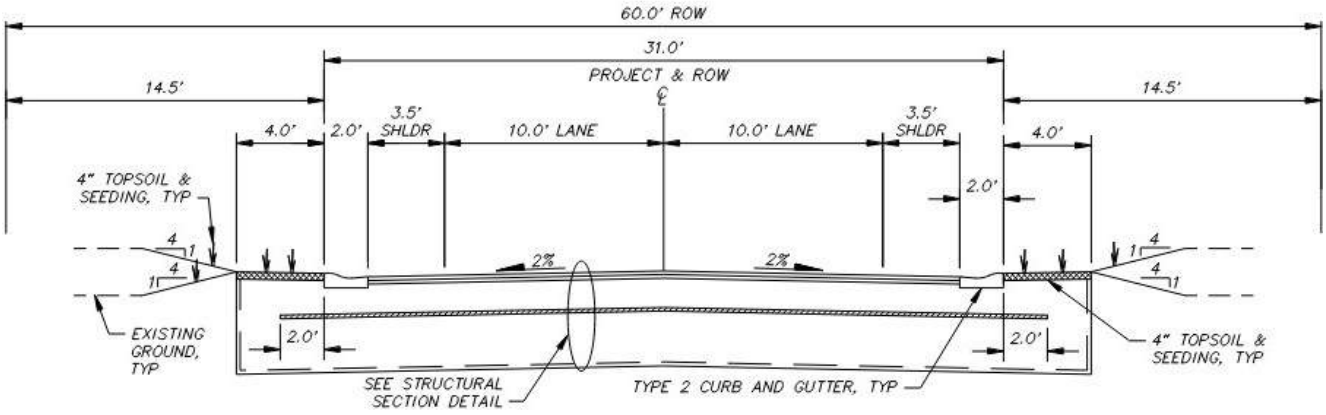
making proposed driveway grades too steep while also maintaining minimum driveway grades to ensure positive drainage. Even though undesirable, there may be some locations where a storm drain field inlet will need to be installed behind the sidewalk/curb and gutter to drain the area appropriately.

8.5 Driveways

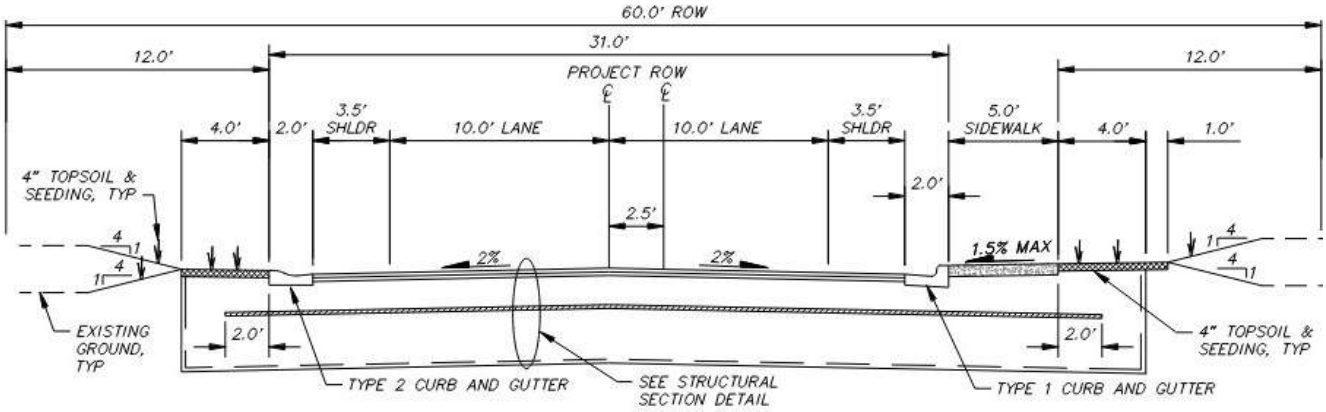
Driveways will need to be reconstructed to match the proposed vertical profile design. The length of driveway improvements will depend on the proposed grade adjustments required at each driveway. Proposed conceptual driveway grades were analyzed and are summarized along with existing grades in APPENDIX H. Many driveways do not have the DCM required landings and some have relatively steep grades (8-12%). Therefore, driveway landings beyond the back of curb or sidewalk are not recommended to minimize significant grade changes. Where Type 1 (barrier) curb and gutter is proposed, driveway curb cuts will need to be provided at each driveway. Proposed conceptual plan view driveway locations, widths and reconstruction limits are shown on the roadway plan and profile drawings in APPENDIX B. The proposed driveway widths are generally consistent with the existing ones, although some of the existing driveways exceed the maximum width permitted by the MOA. Because many multifamily residences require on-site parking, reducing driveway widths to the maximum allowed by MOA standards is likely not feasible. A design variance waiver request will be submitted to the MOA for any driveway that does not meet current MOA requirements.

8.6 Posted Speed Limit

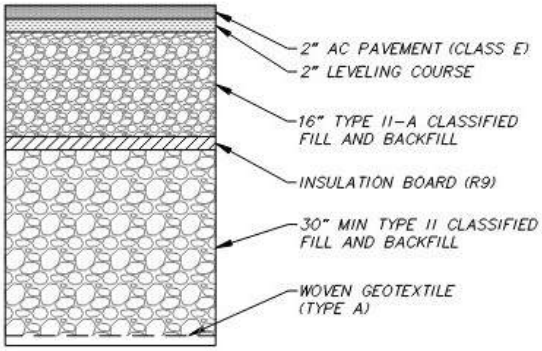
The recommended posted speed limit is 25 mph, which matches the current posted speed limit.



E. 74TH AVENUE/ NANCY STREET/ E. 75TH AVENUE TYPICAL SECTION



PETERSBURG STREET TYPICAL SECTION



TYPICAL STRUCTURAL SECTION DETAIL

Figure 4 – Proposed Roadway Cross Sections & Structural Section

9.0 Drainage Design

The hydrologic & hydraulic analysis discussed in SECTION 4.0 identified several deficiencies in the existing storm drain system within the project limits. Also noted throughout this memo is the poor condition of the roadway, heaving curb and gutter, and ponding issues either caused by or made worse by the lack of proper drainage facilities along the project corridor. This project will correct these drainage issues and install the appropriate infrastructure to provide a functioning roadway for years to come.

The proposed drainage improvements consist of the following:

- Install new storm/subdrain system to accommodate the design storm event.
- Install catch basins at designed roadway low points and provide positive roadway drainage to alleviate ponding issues.
- Provide water quality treatment for stormwater runoff exiting project corridor.
- Install footing drain services to each parcel.
- Fix deficiencies in existing storm drain systems within project limits.

9.1 Proposed Storm/Subdrain System

The proposed storm/subdrain systems were developed to address existing drainage issues along the project corridor and to meet current ASM design standards. The proposed upgrades consist of two separate systems, Phase 1 & 2, designed to improve overall drainage in the project area.

The proposed pipe for each system will be a combination of CPEP, Type S (non-perforated storm drain pipe) and Type SP (perforated subdrain pipe) ranging in size from 10-inch to 24-inch. Storm drain plan and profile drawings depicting the improvements described in this section can be found in APPENDIX C.

Footing drain services will be extended from the proposed storm/subdrain system to property line of each parcel along the project corridor. The footing drain service consists of a gravity fed 6-inch CPEP, Type SP that connects to the main storm/subdrain pipe with a tee or saddle and extends to property line. The property owner has the option to connect to this pipe and drain/pump any groundwater that may accumulate in their crawl space or building foundation.

9.1.1 Phase 1 – Meadow Street Connection

The Phase 1 system includes extending continuous storm/subdrain pipe along 74th & 75th Avenues from Nancy Street to Petersburg Street, along Nancy Street from 75th Avenue to 74th Avenue, and installing storm/subdrain improvements at the Petersburg Street and 74th Avenue intersection. The existing subdrain pipe east of Petersburg Street on 74th Avenue will be tied into this system. This system will extend west along the undeveloped 74th Avenue ROW corridor from Nancy Street to Meadow Street, where it will connect to an existing catch basin manhole (MOA ID No. 2132-099) located on the east side of Meadow Street. Some pipe segments will be installed under curb line, while others will be installed near the center of the roadway to maintain required separation distances from water and sewer utilities. Curb inlets will be placed

to intercept stormwater runoff at low points and other intermediate locations along these roadways.

9.1.2 Phase 2 – Lore Road Connection

The Phase 2 system includes extending continuous storm/subdrain pipe along 75th Avenue from Basel Street to Petersburg Street, and along Petersburg Street from the south side of 74th Avenue to Lore Road. This system will connect to an existing manhole (MOA ID No. 2133-541) on the west side of Petersburg Street, which is just upstream of the Lore Road system connection. The mainline pipe for this system will be installed along roadway centerline or offset to maintain required separation distance from water and sewer utilities. Similar to the Phase 1 system, curb inlets will be placed to intercept stormwater runoff at low points and other intermediate locations along these roadways.

9.1.3 Redirection of Subbasins

The drainage system from 74th Avenue east of Petersburg Street, and a portion of the drainage to Petersburg Street will be directed west along 74th Avenue to Meadow Street instead of south to Lore Road. This is required because Petersburg Street slopes north, the opposite direction of the current storm drain slope, which results in only 2 feet of cover over the storm drain at the intersection of 74th Avenue and Petersburg Street. Additionally, one pipe segment at the intersection of 74th Avenue and Petersburg Street has a reverse slope, which creates a surcharging issue.

9.2 Water Quality Treatment

Section 3.3.2.1 of the ASM states that roadway projects with narrow ROW (60-feet or less) may choose to provide water quality treatment for stormwater runoff through either Green Infrastructure (GI) or traditional treatment. The roadways within the project area were constructed within a 60-foot ROW corridor. Given the narrow ROW, location of existing utilities, and other site constraints, implementation of Green Infrastructure (GI) was determined to be infeasible for this project. Therefore, water quality treatment will be provided by oil & grit separators (OGS).

For both the Phase 1 & 2 storm drain systems, an OGS will be provided just upstream of the existing system connection point to maximize treatment. A bypass system will be installed around each OGS for maintenance and cleaning purposes. The OGS and bypass systems will be detailed during assembly of the preliminary design drawings.

9.3 Freeze Protection

According to ASM Section 5.3.3, the minimum depth of cover over a gravity storm drain pipe without thaw protection is 4-feet. Insulation is required for pipes with a diameter less than 30-inches if the depth of cover is less than four feet. However, if a storm drain pipe is located under a roadway structural section with insulation, additional insulation for the pipe is not required. A thaw system is required if the depth of cover is less than 3-feet.

The roadway structural section includes insulation for this project, so additional insulation will not be required for storm drain that is located between three and four feet of cover. Heat trace is

required for pipes that have less than 3-feet of cover, however, that's not anticipated for this project.

9.4 Hydrologic and Hydraulic Model Results

A hydrologic and hydraulic (drainage) model was developed for the proposed storm/subdrain conveyance systems, following the same methodology described in SECTION 4.2 for the existing conditions model. The objective of the proposed drainage model is to appropriately size the new stormwater infrastructure and address deficiencies identified in the current system. This includes designing pipe systems to eliminate surcharging observed in the existing system during peak flow events.

The contributing catchment areas within the project boundaries were modified from existing conditions to incorporate the planned addition of new inlets along 74th and 75th Avenues, Nancy Street, and Petersburg Street, as well as the revised stormwater flow paths resulting from the new storm and subdrain systems.

Peak runoff from each catchment and peak flows exiting the project corridor at select locations for the proposed drainage systems are reflected in FIGURES D4 & D5, APPENDIX D. Complete modeling report and results can also be found in APPENDIX D. Proposed pipe sizing, type, and configuration for the drainage improvements is described in SECTION 9.1 above.

10.0 Right-of-Way Impacts

Preliminary estimated easement and permit requirements are summarized for each Phase in TABLE 13 below and are detailed in APPENDIX K. As the planning and design of this project progresses, the required easements and temporary construction permits will be refined.

Table 13 - Preliminary Estimated Easements / Permits

Phase	Public Use Easements (PUE)	Slope Easements (SE)	Drainage Easements (DE)	Fire Hydrant Easements (FHE)	Temporary Construction Easements (TCE)	Temporary Construction Permits (TCP)
1	0	0	0	2	0	31
2	0	0	3	2	0	19

11.0 Utility Impacts

When roadway and drainage improvements are made in urban areas, impacts to utilities need to be analyzed. Existing utility facilities are shown in APPENDIX A. The location of the utilities is based on field locates/survey and utility company facility maps.

In the ROW, the Municipality requires a minimum burial depth of 42 inches for buried gas lines, electric cables, fiber optic lines, telephone cables, and cable television lines. It is assumed that the existing buried facilities in the project area are buried at the minimum depth. As a result, any reduction of cover

over existing facilities or impacts from storm drain improvements will require relocation of the facility. In some locations, the roadway structural section excavation will impact utilities. In these locations the utilities will either require relocation or will require support in place for the contractor to work around the utility. The utility relocation cost estimates for each Phase are shown in APPENDIX F.

AWWU requires a minimum depth of cover of 10 feet over their water mains and 8 feet over their sewer mains. Changes to the roadway grade where sewer and water mains exist along the corridor are minor and are not anticipated to substantially reduce the existing cover over the water and sewer mains.

12.0 Permitting Requirements

Permits and agency approvals for the project required for construction of proposed improvements will be limited. Because the roadway is classified as a secondary (local) urban road, it is not necessary to obtain approval of the DSM from the MOA Planning and Zoning Commission or the MOA Urban Design Commission. Anticipated permits and agency approvals required for design include:

- MOA Watershed Management Services Stormwater Plan Approval
- ADEC Approval of Separation Waivers

Additional permit requirements may be identified as the design develops.

13.0 Construction Schedule, Phasing and Cost Estimates

It is anticipated that the project will be phased over multiple construction seasons. The Phase 1 construction area includes all project roadways west of Petersburg Street, and the Phase 2 construction area includes Petersburg Street and the remaining portion of 75th Avenue east of Petersburg Street (see FIGURE 1 for the construction phasing limits). A summary of estimated project costs for each phase is presented in TABLE 14 below. A breakdown of the ROW, construction, utility, design, and management cost estimates can be found in APPENDIX F.

Table 14 – Summary of Estimate Project Costs

Category	Phase 1	Phase 2	Total (Phase 1 +2)
Design & Management Total (estimated)	$886,000	$818,000	$1,704,000
ROW Acquisition Total	$29,000	$29,000	$58,000
Utility Relocation (with 20% Contingency) Total	$533,000	$194,000	$727,000
A. Design, ROW Acquisition, Utility Relocation	**$1,448,000**	**$1,041,000**	**$2,489,000**
Construction			
Roadway Improvements	$2,709,000	$2,048,000	$4,757,000
Drainage Improvements	$1,210,000	$1,070,000	$2,280,000
Illumination Improvements	$332,000	$149,000	$481,000
Construction Subtotal	$4,251,000	$3,267,000	$7,518,000
Construction Contingency (15%)	$638,000	$490,000	$1,128,000
Construction Management / Inspection / Testing	$421,000	$337,000	$758,000
B. Total Estimated Construction Cost (rounded)	**$5,310,000**	**$4,094,000**	**$9,404,000**
C. Overhead / Grant Accounting	**$1,193,000**	**$906,000**	**$2,099,000**
Total Estimated Project Cost (A + B + C)	**$7,951,000**	**$6,041,000**	**$13,992,000**

14.0 Stakeholder Coordination/Public Involvement

Public involvement for the 74th Avenue/Nancy Street/75th Avenue Road Reconstruction Project is following the MOA Context Sensitive Solutions (CSS) process for a local roadway as a general guide for best practices. The goal of the CSS process is to collaborate with all stakeholders to improve the roadway, balance diverse interests, find areas of compromise that address concerns and solicit feedback from stakeholders. A description of public involvement activities is below. All public involvement documents can be found in APPENDIX L.

14.1 Stakeholders

The project team began the public and agency outreach in September of 2023 with the identification of approximately 200 project stakeholders. See TABLE 15 below for list of stakeholders.

Table 15 – List of Stakeholders

MOA Agencies	Other
Project Management & Engineering Traffic Engineering Street Maintenance and Operations AWWU Anchorage Fire & Police Department Anchorage School District Solid Waste Services Transit Parks & Recreation Anchorage Assembly Member Meg Zaletel Anchorage Assembly Member Felix Riveria	Area Property Owners, Business Owners, Property Managers, Employees, and Residents Abbott Loop Community Council ACS GCI CEA ENSTAR Natural Gas Company Alaska DOT&PF Senator James Kaufman Representative Calvin Schrage

14.2 Stakeholder Involvement Activities

A variety of forms of outreach were used to inform, consult, involve, and collaborate with stakeholders including website updates, mailed postcards, a project questionnaire, e-newsletters, community council presentations, and an open house.

TABLE 16 below summarizes each major public involvement activity for the duration of the project through May 2025.

14.3 Project Website

The project website (74th-75thavereconstruction.com) was developed for ease of project information sharing and soliciting comments from the public. Website content includes a project home page overview, a documents and resources page, project team contact information, a link to provide comments and a link to sign up to receive e-newsletter project updates. The website will continue to be updated with information, meeting details, and documents as the project progresses.

14.4 Project Questionnaire

In October of 2023, a project questionnaire was emailed to the project email list and mailed via the USPS to the project mailing list to gather additional, site specific information from project stakeholders. This tool also allows people to participate who cannot attend meetings in-person. The paper mailer included return postage and also a QR code for respondents to fill out the questionnaire online. There were 16 responses to the questionnaire (8 paper, 8 online). A full summary of questions and results can be found in APPENDIX L.

Table 16 - Public Involvement Activities

Date	Activity	Comments
September 2023	Mailing List Developed	Approximately 200 Contacts
September 2023 - Present	Website Development & Maintenance	Launched and Updated at Key Project Milestones
September 2023	Mailer #1	Introduce Project
September 28, 2023	Abbott Loop Community Council Meeting #1	Introduce Project, Inform Stakeholders, Answer Project Questions, Listen to Comments
October 2023	Project Questionnaire – Mailer & Online	Collected Responses for 30 Days
October 9, 2023	E-Newsletter #1	Project Email Introduction, Project Questionnaire
April 2024	Mailer #2	Announce Open House #1
April 17, 2024	E-Newsletter #2	Announce Open House #1
April 25, 2024	Abbott Loop Community Council Meeting #2	Announce Open House #1, Inform Stakeholders, Answer Project Questions, Listen to Comments
April 29, 2024	E-Newsletter #3	Open House #1 Reminder
May 1, 2024	Open House #1	Introduce project, preliminary designs and receive comments on the designs, existing conditions and issues in the project area
May 6, 2024	E-Newsletter #4	Thank you for attending Open House #1

14.5 Community Council Meetings

Project representatives attended the Abbott Loop Community Council (ALCC) meeting on September 28, 2023, to provide a project introduction, answer project questions, and listen to stakeholder comments. On April 25, 2024, the project team attended the council again to announce Open House #1, answer project questions, and listen to comments. Full meeting summaries can be found in the APPENDIX L.

14.6 Open House

A public open house (Open House #1) was held on May 1, 2024, from 5:00 – 7:00 pm. The meeting was held at Polaris K-12 School (6200 Ashwood Street). Two community members were in

attendance. Open House #1 presented scrolls with aerial images of the existing layout and proposed roadway improvements. Attendees had the opportunity to draw and mark up the scrolls with comments regarding known issues or concerns of existing conditions along the project corridor. They also had the opportunity to comment on the proposed roadway improvements. Displays also included a project timeline, summary of proposed improvements, questionnaire responses, and a proposed roadway cross section. Comment sheets were provided for attendees to share written comments. Materials presented at the Open House #1, comments received, and sign-in sheets are included in APPENDIX L in Open House #1 Meeting Summary.

14.7 Summary of Public Comments Received

Comments were received from individuals through public meetings, community council meetings, and questionnaire responses. Additional comments were recorded on project scrolls and documented in meeting records. All project comments that were received from the beginning of the project through August 28, 2025, are documented in APPENDIX L.

Stakeholders and members of the public will have the continued opportunity to obtain information and provide feedback via the project website, and through direct feedback by phone calls and emails to project staff.

15.0 Design Recommendations

To achieve the project goals, meet some of the requirements of the DCM and AMC Title 21, and based on comments received from public, agency, and stakeholders the recommended improvements for the project are as follows:

15.1 Roadway Cross Section

The proposed roadway cross section along 74th Avenue, Nancy Street, and 75th Avenue includes two 10-foot wide travel lanes, two 3.5-foot wide shoulders (31 feet total width from BOC), and Type 2 (rolled) curb and gutter. The proposed roadway cross section on Petersburg Street matches the roadways described above, except for the inclusion of a single 5-foot wide attached sidewalk with adjacent Type 1 (barrier) curb and gutter. No roadway traffic markings are proposed, effectively allowing parking along either side of the roadway. Sidewalks are not proposed along 74th Avenue, Nancy Street, or 75th Avenue, as their ADTs are below AMC Title 21 requirements. Petersburg Street includes a proposed sidewalk because it serves as an access route to Whisper Faith Kovach Park. See FIGURE 4 for the proposed roadway cross sections and structural section.

15.2 Roadway Horizontal and Vertical Alignment

The proposed overall roadway cross section (measured from back of curb to back of curb or back of curb to back of sidewalk) will be centered within the right-of-way (ROW) to balance adjacent impacts.

The vertical profile design forces high/low spots on a few segments of roadway and has a minimum grade of 0.65%.

15.3 Posted Speed

It is proposed that the posted speed limit for the project roadways remain at 25 mph to match the requirements of the DCM.

15.4 Drainage

The proposed drainage upgrades involve installing two new storm/subdrain systems that will run the length of 74th and 75th Avenues, Nancy Street, and Petersburg Street within the project area. One system will tie into the existing storm drain on Meadow Street to the west, while the other will connect to the system on Lore Road to the south. These improvements will feature new catch basins at low points and other strategic locations to address ponding and enhance overall drainage. Where feasible, perforated subdrain pipes will be used to lower high groundwater levels, helping to extend the roadway's design life. Stormwater runoff will receive water quality treatment through oil and grit separators (OGS) installed upstream of the connection points. Due to the presence of peat along 75th Avenue east of Petersburg Street a rigid frame with helical pile supports on deep foundations are proposed to support the proposed storm drain pipe.

15.5 Lighting

A continuous LED lighting system, consistent with current MOA standards will be installed along the project roadways. The power for the lighting system will come from a new Type 1A load center. The load center location will need to be coordinated and approved by CEA during the detailed design.

16.0 Proposed Variances

16.1 MOA DCM

The proposed variances from the DCM will be justified and approved under a separate document during the design process. A variance request from CRW will be sent to the Municipal Engineer and the Municipal Traffic Engineer for approval along with the Preliminary Plans, Specifications, and Estimate. There are several design criteria that may not be able to meet the DCM. Below is a list of potential variances for this project. Additional variances may be required as the design progresses:

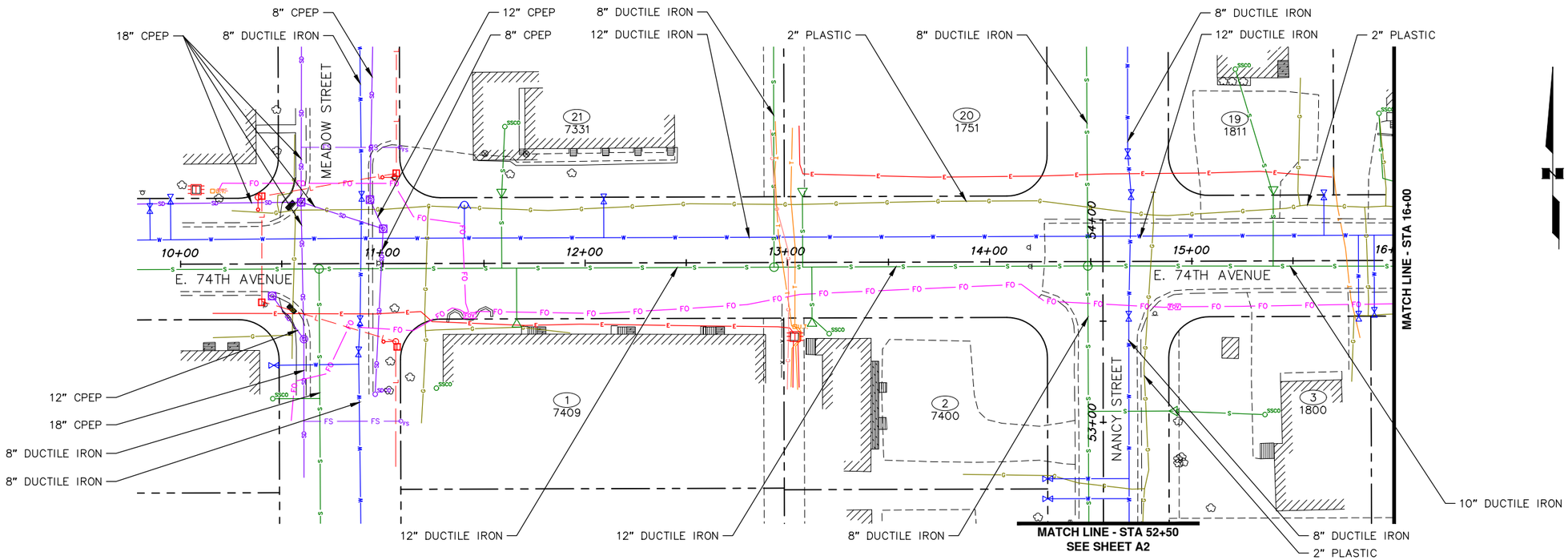
- Curb type - DCM Section 1.9.F requires Type 2 (rolled) curb on local roadways. Type 1 (barrier) curb is proposed for this project on the east side of Petersburg Street where the proposed sidewalk is planned. A variance will be required for installing Type 1 curb.
- Driveway width - the DCM allows for driveway widths (up to 7-plexes) of 28 feet, with restrictions; commercial driveways can be up to 34 feet wide. Many of the existing driveways exceed this width and are located on parcels with structures constructed before adoptions of the code that restricted driveway widths. Proposed driveway widths will need to match existing driveway widths when a reduced width would impede access to required on-site parking.
- Driveway landings and grades - The DCM requires that residential driveways have a minimum 12-foot landing length and a maximum grade of ±12%; The grade of the landings must be 2% maximum. Some of the driveways will not be able to meet these landing or grade requirements due to existing infrastructure/grades and will require a variance.

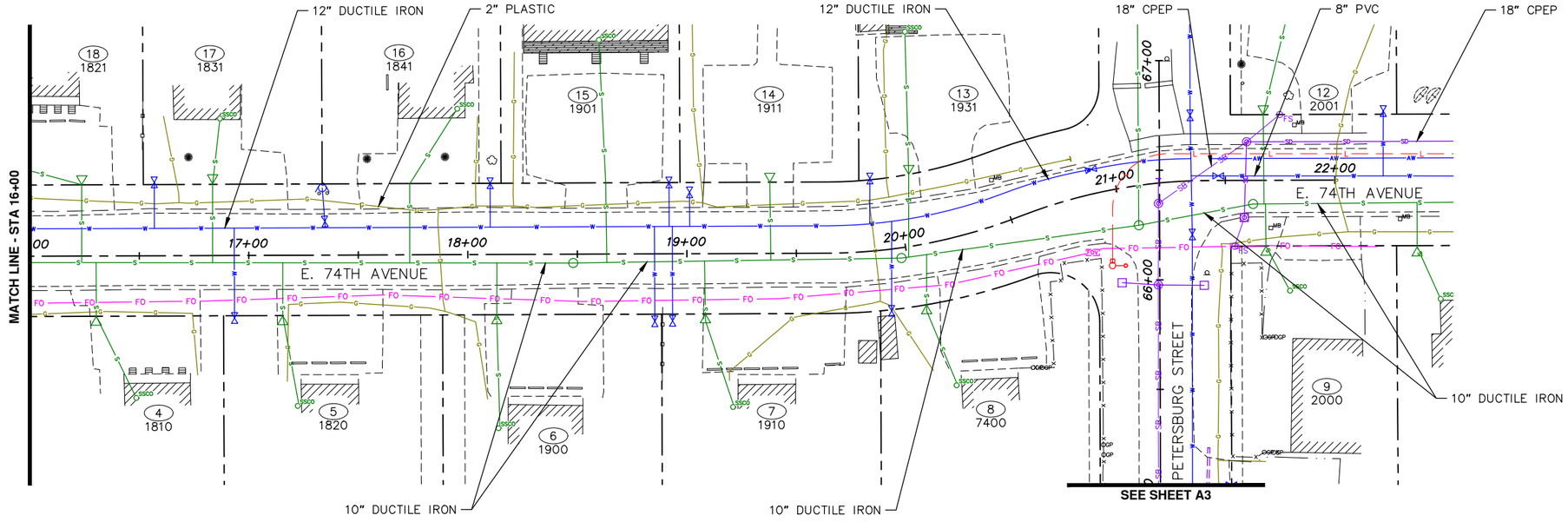
- Organic soils - Allowing peat soils to remain beneath the roadway along 75th Avenue east of Petersburg Street.

****** End of Memorandum******

APPENDIX A

Existing Utility Map





EXISTING UTILITY LEGEND

SANITARY SEWER	LIGTHING	KEY BOX / WATER VALVE	CABLE PEDESTAL
NATURAL GAS	EDGE OF GRAVEL	FIRE HYDRANT	TELEPHONE PEDESTAL
WATER	EDGE OF PAVEMENT	STORM DRAIN CATCH BASIN	TELEPHONE VAULT
WATER (ABANDONED)	CURB & GUTTER	STORM DRAIN MANHOLE	ELECTRIC JUNCTION BOX TYPE IA
STORM DRAIN	PROPERTY LINE	STORM DRAIN CATCH BASIN MANHOLE	LIGHT POLE
SUBDRAIN	EASEMENT	STORM DRAIN CLEANOUT	TRANSFORMER
CABLE TELEVISION	CONCRETE	FOOTING DRAIN SERVICE	PARCEL NUMBER & ADDRESS (8 / 7400)
TELEPHONE	SANITARY SEWER MANHOLE	CULVERT	
ELECTRIC	SANITARY SEWER SERVICE	FIBER OPTIC VAULT	

30' 0 30' 60'

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE

EXISTING UTILITY MAP

SCALE HOR. 1"=30' VER. N/A | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET A1 of A3

File: J:\JobsData\10158.00 74th-75th Ave Road Reconstruction\00 CADD\02 Figures\01 DSR\01 Existing Utilities\10158.00 Existing Utilities.dwg

8" DUCTILE IRON

MATCH LINE - STA 52+50
SEE SHEET A1

8" DUCTILE IRON

2" PLASTIC

NANCY STREET

52+00

22
7410

23
7420

53
1831

52
1841

51
1901

50
1911

49
1931

48
7440

30+00

31+00

32+00

33+00

34+00

35+00

E. 75TH AVENUE

36+00

37+

MATCH LINE - STA 37+00

24
7500

25
1830

26
1832

27
1840

28
1900

29
1910

30
1920

31
7500

8" DUCTILE IRON

8" DUCTILE IRON

2" PLASTIC

8" DUCTILE IRON

8" DUCTILE IRON

8" DUCTILE IRON

SEE SHEET A3

PETERSBURG STREET

64+00

63+00

47
2001

46
2011

45
2021

44
2031

43
2101

42
2111

41
2121

40
2131

38+00

39+00

40+00

41+00

E. 75TH AVENUE

42+00

43+00

44+00

45+00

BASEL STREET

32
2000

33
2010

34
2020

35
2030

36
2100

37
2110

38
2120

39
7500

8" DUCTILE IRON

8" DUCTILE IRON

8" DUCTILE IRON

8" DUCTILE IRON

2" PLASTIC

8" DUCTILE IRON

8" DUCTILE IRON

8" DUCTILE IRON

8" DUCTILE IRON

30' 0 30' 60'

EXISTING UTILITY LEGEND

- SANITARY SEWER
- NATURAL GAS
- WATER
- WATER (ABANDONED)
- STORM DRAIN
- SUBDRAIN
- CABLE TELEVISION
- TELEPHONE
- ELECTRIC
- LIGTHING
- EDGE OF GRAVEL
- EDGE OF PAVEMENT
- CURB & GUTTER
- PROPERTY LINE
- EASEMENT
- CONCRETE
- SANITARY SEWER MANHOLE
- SANITARY SEWER SERVICE
- KEY BOX / WATER VALVE
- FIRE HYDRANT
- STORM DRAIN CATCH BASIN
- STORM DRAIN MANHOLE
- STORM DRAIN CATCH BASIN MANHOLE
- STORM DRAIN CLEANOUT
- FOOTING DRAIN SERVICE
- CULVERT
- FIBER OPTIC VAULT
- CABLE PEDESTAL
- TELEPHONE PEDESTAL
- TELEPHONE VAULT
- ELECTRIC JUNCTION BOX TYPE IA
- LIGHT POLE
- TRANSFORMER
- PARCEL NUMBER & ADDRESS (8 / 7400)

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

MUNICIPALITY OF ANCHORAGE

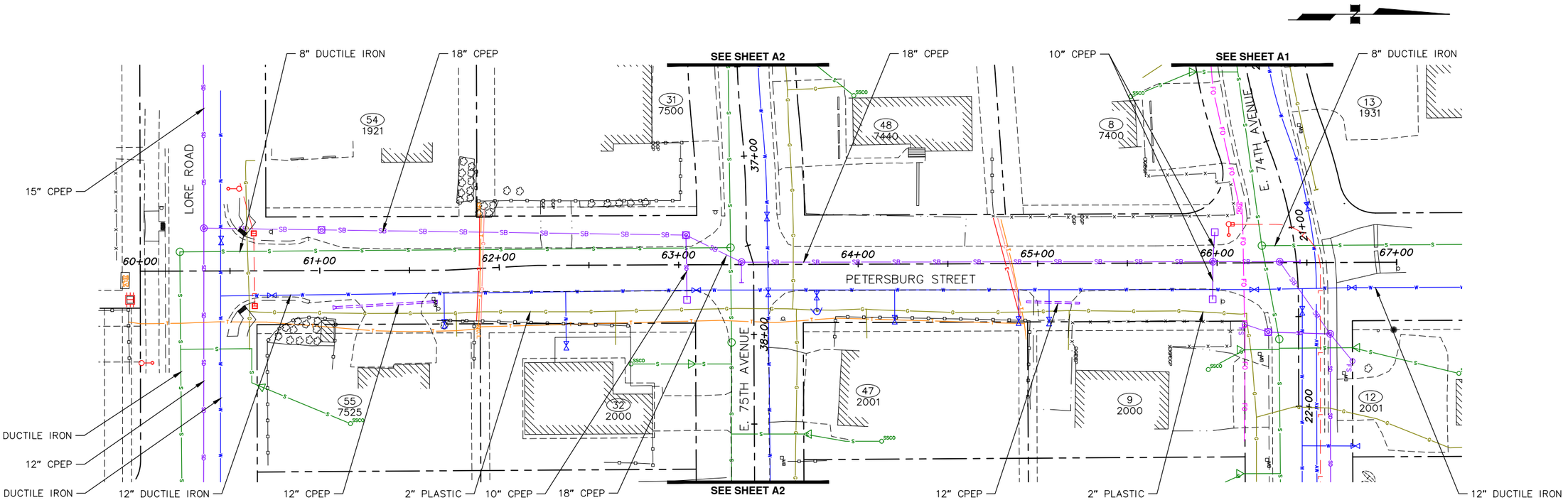
PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE

EXISTING UTILITY MAP

SCALE HOR. 1"=30' VER. N/A | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET A2 of A3

File: J:\JobsData\10158.00 74th-75th Ave Road Reconstruction\00 CADD\02 Figures\01 DSR\01 Existing Utilities\10158.00 Existing Utilities.dwg



EXISTING UTILITY LEGEND

SANITARY SEWER	LIGTHING	KEY BOX / WATER VALVE	CABLE PEDESTAL
NATURAL GAS	EDGE OF GRAVEL	FIRE HYDRANT	TELEPHONE PEDESTAL
WATER	EDGE OF PAVEMENT	STORM DRAIN CATCH BASIN	TELEPHONE VAULT
WATER (ABANDONED)	CURB & GUTTER	STORM DRAIN MANHOLE	ELECTRIC JUNCTION BOX TYPE IA
STORM DRAIN	PROPERTY LINE	STORM DRAIN CATCH BASIN MANHOLE	LIGHT POLE
SUBDRAIN	EASEMENT	STORM DRAIN CLEANOUT	TRANSFORMER
CABLE TELEVISION	CONCRETE	FOOTING DRAIN SERVICE	PARCEL NUMBER & ADDRESS (8 / 7400)
TELEPHONE	SANITARY SEWER MANHOLE	CULVERT	
ELECTRIC	SANITARY SEWER SERVICE	FIBER OPTIC VAULT	

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#ACCL882-AK

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE

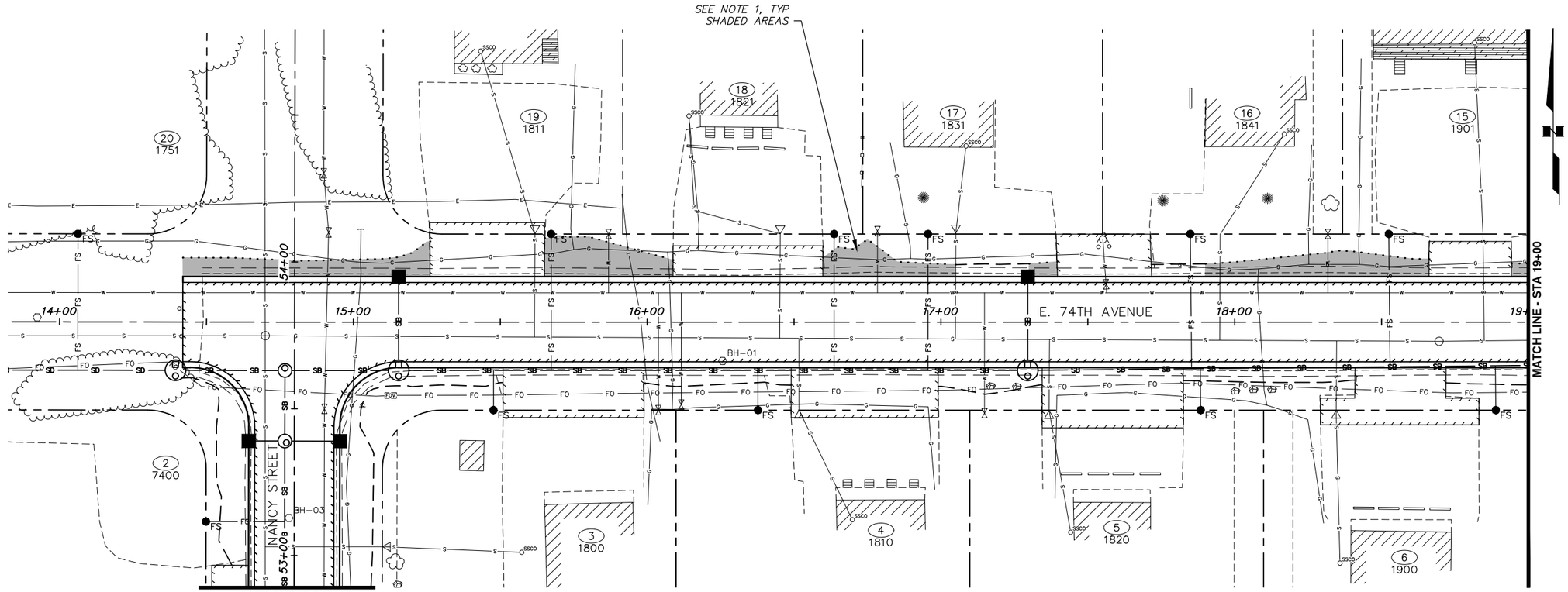
EXISTING UTILITY MAP

SCALE HOR. 1"=30' VER. N/A | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET A3 of A3

File:J:\Jobs\Data\10158.00 74th-75th Ave Road Reconstruction\00 CADD\02 Figures\01 DSR\01 Existing Utilities\10158.00 Existing Utilities.dwg

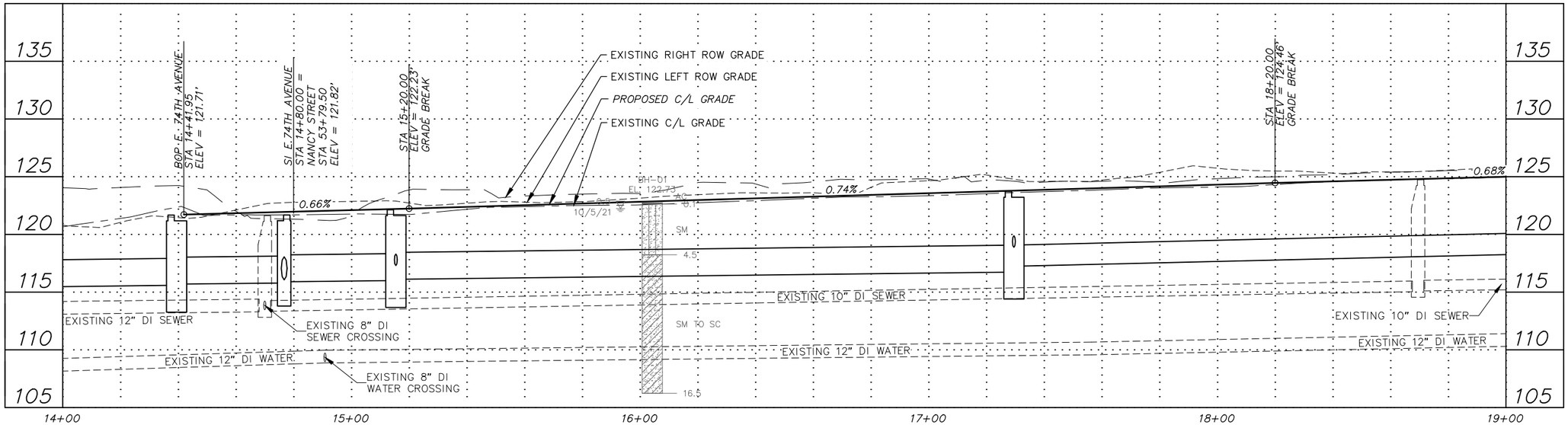
APPENDIX B

Roadway Plan & Profile



NOTES:

1. *GRADE AREA TO DRAIN TOWARDS ROADWAY TO PROVIDE MINIMUM 1.0% POSITIVE GRADE TOWARD ROADWAY.*



RECORD DRAWING

1. DATA PROVIDED BY: _____ TITLE: _____
   THIS WILL SERVE TO CERTIFY THAT THESE RECORD DRAWINGS ARE A TRUE AND ACCURATE REPRESENTATION OF THE PROJECT AS CONSTRUCTED.
   CONTRACTOR: _____
   BY: _____ TITLE: _____ DATE: _____
2. DATA TRANSFERRED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
3. BASED ON PERIODIC FIELD OBSERVATIONS BY THE ENGINEER (OR AN INDIVIDUAL UNDER HIS/HER DIRECT SUPERVISION), THE CONTRACTOR-PROVIDED DATA APPEARS TO REPRESENT THE PROJECT AS CONSTRUCTED.
   DATA TRANSFER CHECKED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
   BY: _____

DATA	DRAWN BY	CHECKED BY
BASE	R&M	R&M
TOPOGRAPHY	R&M	R&M
PROFILE	RB	JK
STORM SEWER	JM	JH
WATER/SANITARY SEWER	R&M	R&M
GAS	R&M	R&M
TELEPHONE	R&M	R&M
ELECTRIC	JH	TK
DESIGN	RB	JK
QUANTITIES	RB	JK
PRELIMINARY/FINAL	RB	JK
MUNICIPAL/STATE	RB	JK

PLAN CHECK

GRAPHIC SCALE 40 20 0 20 40

FIELD BOOKS	BM NO.	LOCATION	ELEV.
DESIGN			
STAKING			
ASBUILT			
CONTRACTOR	BASIS OF THIS DATUM		
INSPECTOR			

CONSTRUCTION RECORD | VERTICAL DATUM

REV	DATE	DESCRIPTION	BY

REVISIONS

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

CONSULTANT | SEAL

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

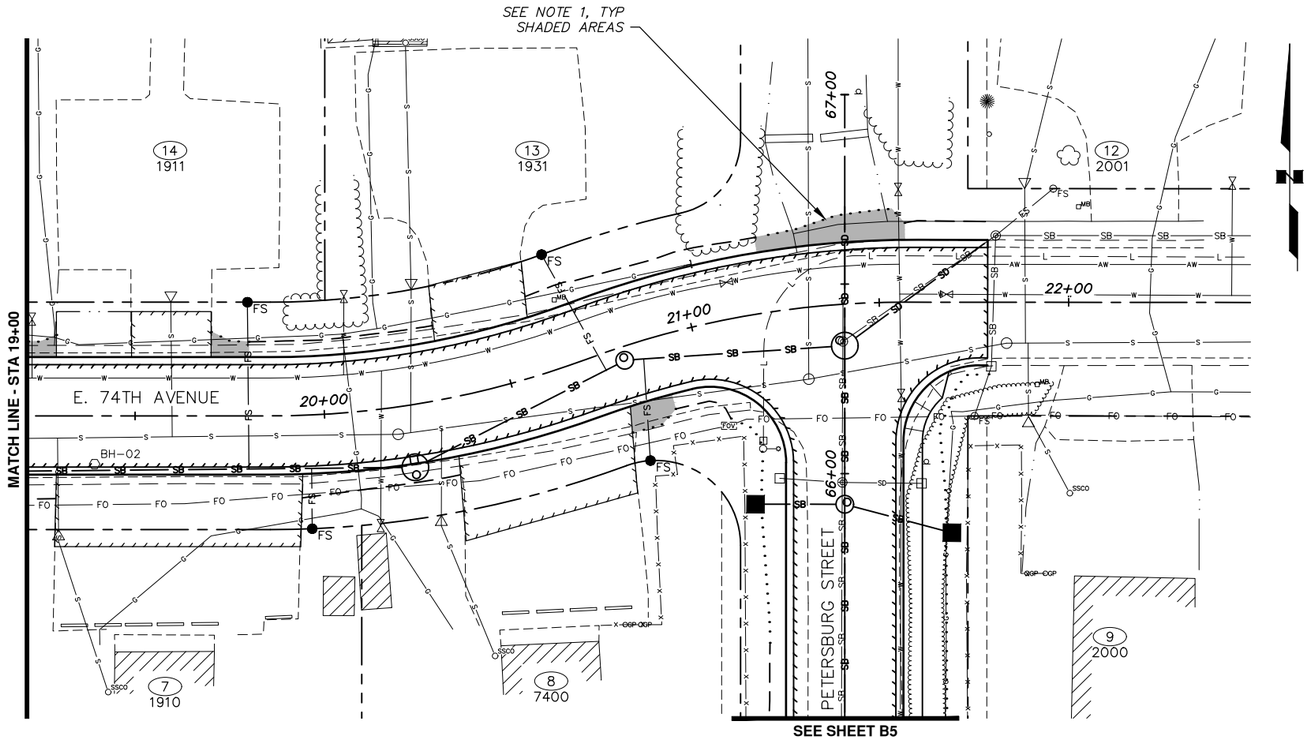
21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE ROAD RECONSTRUCTION SCHED A

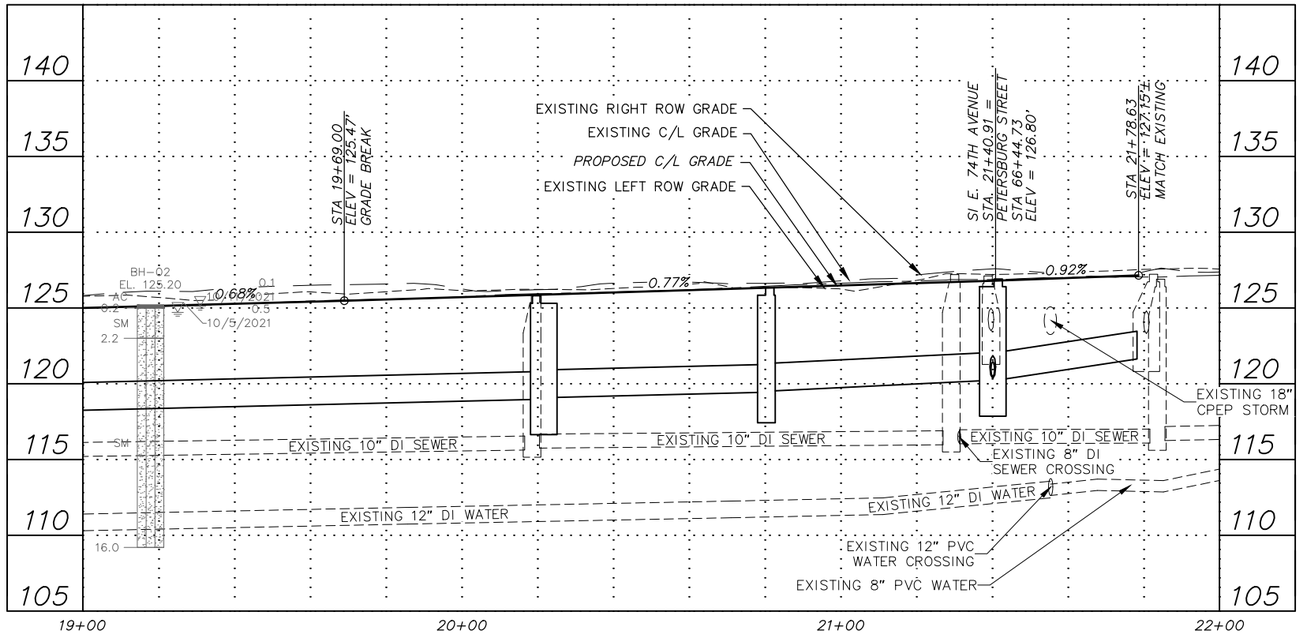
ROADWAY PLAN & PROFILE

E. 74TH AVENUE – STA 14+00 TO STA 19+00

SCALE HOR. 1"=20' VER. 1"=5' | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET B1 of B8

File: J:\Jobs\Data\10158.00 74th-75th Ave Road Reconstruction\00 CADD\01 Working Set\01 Civil\10158.00 Plan & Profile – Roadway.dwg





NOTES:

1. GRADE AREA TO DRAIN TOWARDS ROADWAY TO PROVIDE MINIMUM 1.0% POSITIVE GRADE TOWARD ROADWAY.

RECORD DRAWING

1. DATA PROVIDED BY: _____ TITLE: _____
   THIS WILL SERVE TO CERTIFY THAT THESE RECORD DRAWINGS ARE A TRUE AND ACCURATE REPRESENTATION OF THE PROJECT AS CONSTRUCTED.
   CONTRACTOR: _____
   BY: _____ TITLE: _____ DATE: _____
2. DATA TRANSFERRED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
3. BASED ON PERIODIC FIELD OBSERVATIONS BY THE ENGINEER (OR AN INDIVIDUAL UNDER HIS/HER DIRECT SUPERVISION), THE CONTRACTOR-PROVIDED DATA APPEARS TO REPRESENT THE PROJECT AS CONSTRUCTED.
   DATA TRANSFER CHECKED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
   BY: _____

DATA	DRAWN BY	CHECKED BY
BASE	R&M	R&M
TOPOGRAPHY	R&M	R&M
PROFILE	RB	JK
STORM SEWER	JM	JH
WATER/SANITARY SEWER	R&M	R&M
GAS	R&M	R&M
TELEPHONE	R&M	R&M
ELECTRIC	JH	TK
DESIGN	RB	JK
QUANTITIES	RB	JK
PRELIMINARY/FINAL	RB	JK
MUNICIPAL/STATE	RB	JK

PLAN CHECK

GRAPHIC SCALE 40 20 0 20 40

FIELD BOOKS	BM NO.	LOCATION	ELEV.
DESIGN			
STAKING			
ASBUILT			
CONTRACTOR	BASIS OF THIS DATUM		
INSPECTOR			

CONSTRUCTION RECORD | VERTICAL DATUM

REV	DATE	DESCRIPTION	BY

REVISIONS

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

CONSULTANT

SEAL

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

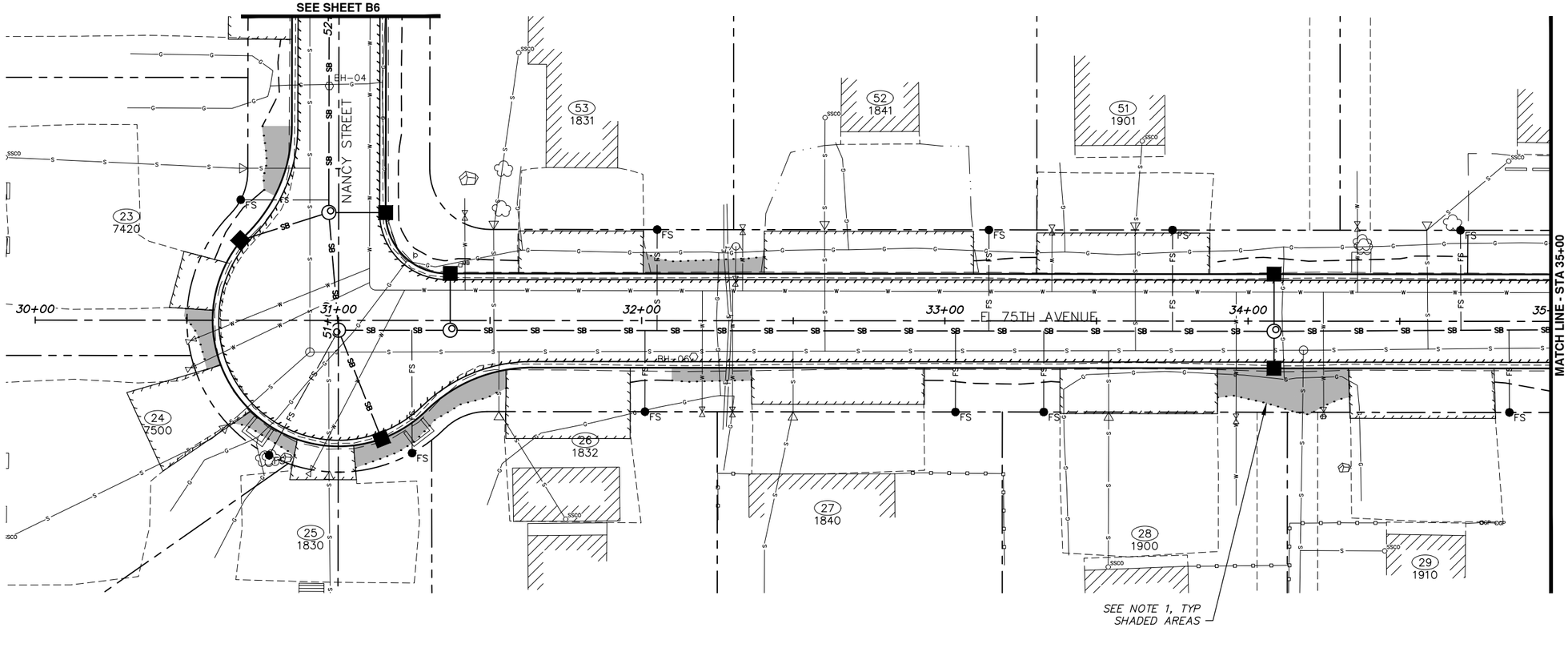
21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE ROAD RECONSTRUCTION SCHED A

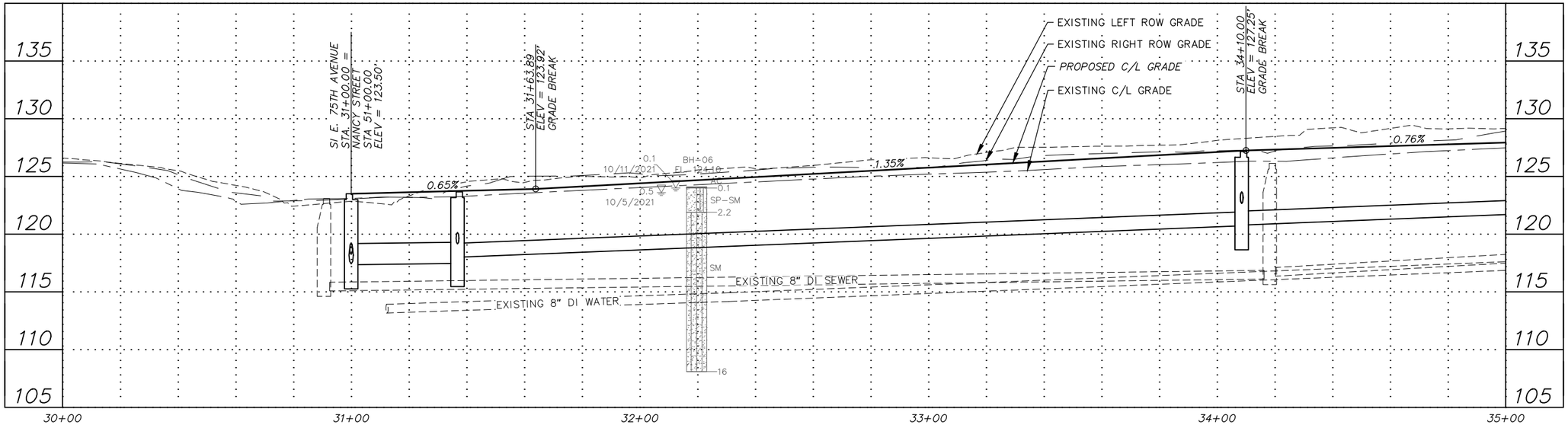
ROADWAY PLAN & PROFILE

E. 74TH AVENUE – STA 19+00 TO STA 22+00

SCALE HOR. 1"=20' VER. 1"=5' | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET B2 of B8

File: J:\Jobs\Data\10158.00 74th-75th Ave Road Reconstruction\00 CADD\01 Working Set\01 Civil\10158.00 Plan & Profile - Roadway.dwg





NOTES:

1. GRADE AREA TO DRAIN TOWARDS ROADWAY TO PROVIDE MINIMUM 1.0% POSITIVE GRADE TOWARD ROADWAY.

RECORD DRAWING

1. DATA PROVIDED BY: _____ TITLE: _____
   THIS WILL SERVE TO CERTIFY THAT THESE RECORD DRAWINGS ARE A TRUE AND ACCURATE REPRESENTATION OF THE PROJECT AS CONSTRUCTED.
   CONTRACTOR: _____
   BY: _____ TITLE: _____ DATE: _____
2. DATA TRANSFERRED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
3. BASED ON PERIODIC FIELD OBSERVATIONS BY THE ENGINEER (OR AN INDIVIDUAL UNDER HIS/HER DIRECT SUPERVISION), THE CONTRACTOR-PROVIDED DATA APPEARS TO REPRESENT THE PROJECT AS CONSTRUCTED.
   DATA TRANSFER CHECKED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
   BY: _____

DATA	DRAWN BY	CHECKED BY
BASE	R&M	R&M
TOPOGRAPHY	R&M	R&M
PROFILE	RB	JK
STORM SEWER	JM	JH
WATER/SANITARY SEWER	R&M	R&M
GAS	R&M	R&M
TELEPHONE	R&M	R&M
ELECTRIC	JH	TK
DESIGN	RB	JK
QUANTITIES	RB	JK
PRELIMINARY/FINAL	RB	JK
MUNICIPAL/STATE	RB	JK

PLAN CHECK

GRAPHIC SCALE 40 20 0 20 40

FIELD BOOKS	BM NO.	LOCATION	ELEV.
DESIGN			
STAKING			
ASBUILT			
CONTRACTOR	BASIS OF THIS DATUM		
INSPECTOR			

CONSTRUCTION RECORD | VERTICAL DATUM

REV	DATE	DESCRIPTION	BY

REVISIONS

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

CONSULTANT | SEAL

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

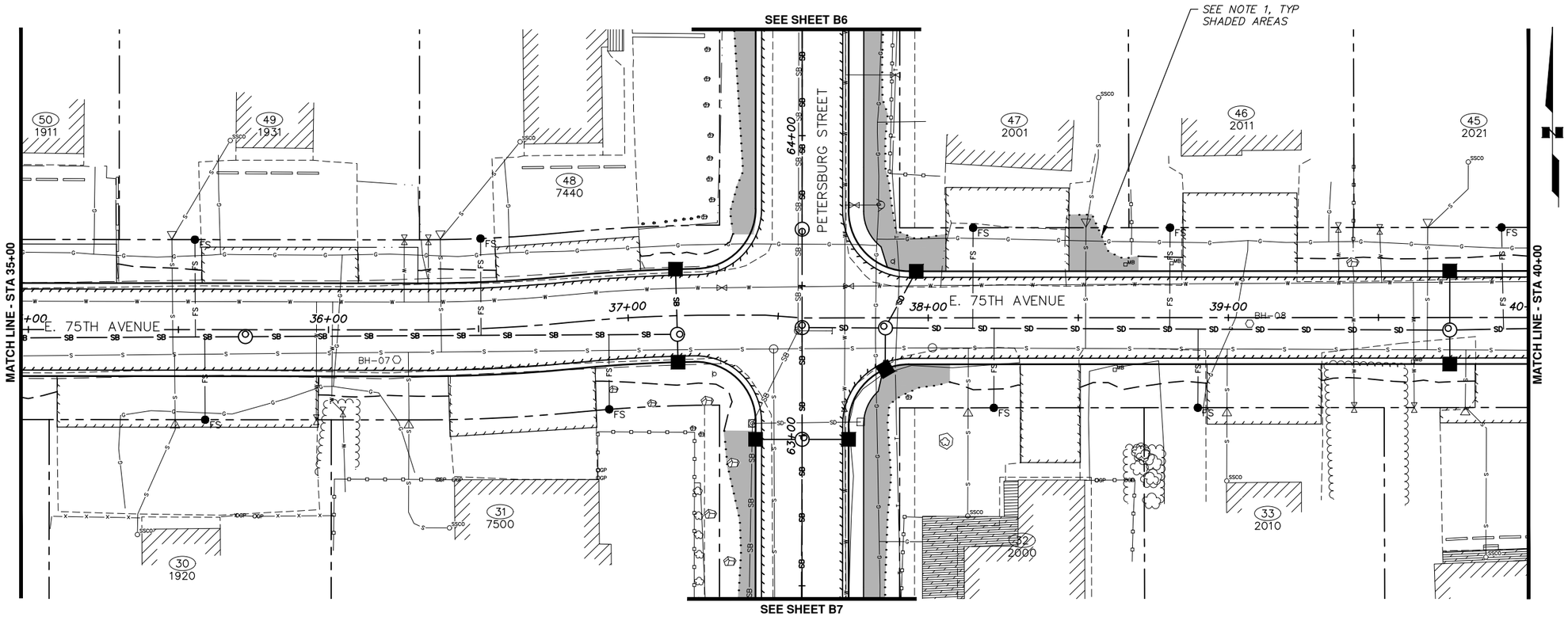
21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE ROAD RECONSTRUCTION SCHED A

ROADWAY PLAN & PROFILE

E. 75TH AVENUE – STA 31+00 TO STA 35+00

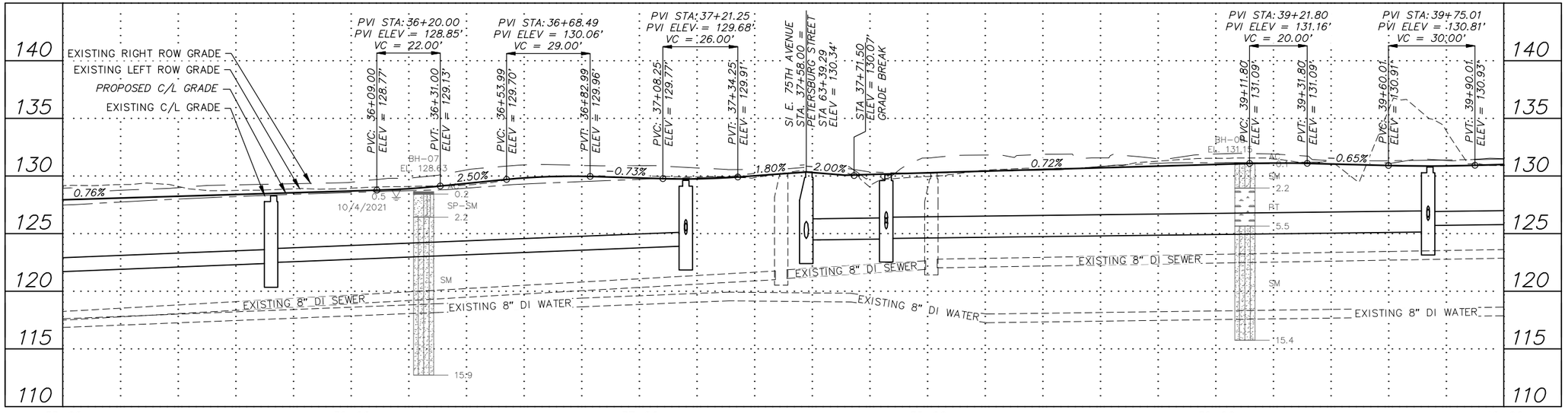
SCALE HOR. 1"=20' VER. 1"=5' | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET B3 of B8

File: J:\JobsData\10158.00 74th-75th Ave Road Reconstruction\00 CADD\01 Working Set\01 Civil\10158.00 Plan & Profile – Roadway.dwg



NOTES:

1. GRADE AREA TO DRAIN TOWARDS ROADWAY TO PROVIDE MINIMUM 1.0% POSITIVE GRADE TOWARD ROADWAY.



RECORD DRAWING
1. DATA PROVIDED BY: _____ TITLE: _____
THIS WILL SERVE TO CERTIFY THAT THESE RECORD DRAWINGS ARE A TRUE AND ACCURATE REPRESENTATION OF THE PROJECT AS CONSTRUCTED.
CONTRACTOR: _____
BY: _____ TITLE: _____ DATE: _____
2. DATA TRANSFERRED BY: _____ TITLE: _____
COMPANY: _____ DATE: _____
3. BASED ON PERIODIC FIELD OBSERVATIONS BY THE ENGINEER (OR AN INDIVIDUAL UNDER HIS/HER DIRECT SUPERVISION), THE CONTRACTOR-PROVIDED DATA APPEARS TO REPRESENT THE PROJECT AS CONSTRUCTED.
DATA TRANSFER CHECKED BY: _____ TITLE: _____
COMPANY: _____ DATE: _____
BY: _____

DATA	DRAWN BY	CHECKED BY
BASE	R&M	R&M
TOPOGRAPHY	R&M	R&M
PROFILE	RB	JK
STORM SEWER	JM	JH
WATER/SANITARY SEWER	R&M	R&M
GAS	R&M	R&M
TELEPHONE	R&M	R&M
ELECTRIC	JH	TK
DESIGN	RB	JK
QUANTITIES	RB	JK
PRELIMINARY/FINAL	RB	JK
MUNICIPAL/STATE	RB	JK
PLAN CHECK		

GRAPHIC SCALE 40 20 0 20 40

FIELD BOOKS	BM NO.	LOCATION	ELEV.
DESIGN			
STAKING			
ASBUILT			
CONTRACTOR	BASIS OF THIS DATUM		
INSPECTOR			

CONSTRUCTION RECORD | VERTICAL DATUM

REV	DATE	DESCRIPTION	BY

REVISIONS

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

CONSULTANT | SEAL

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

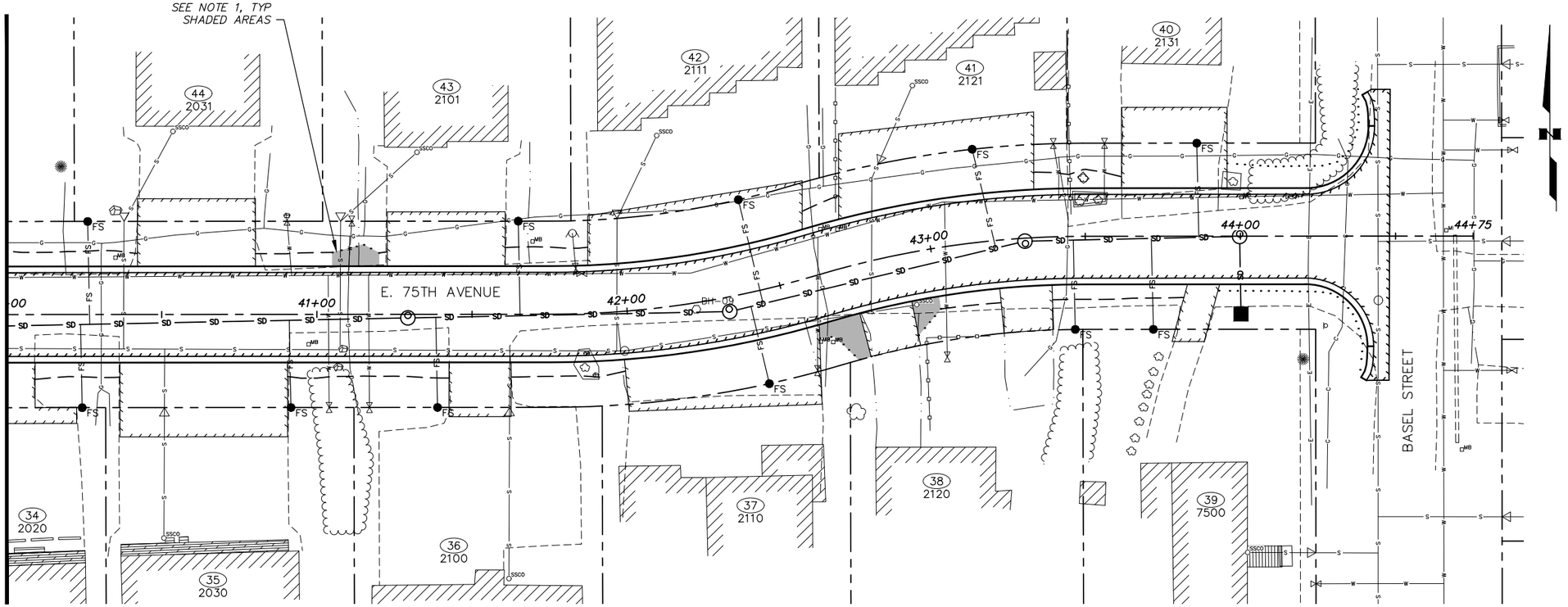
21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE ROAD RECONSTRUCTION SCHED A

ROADWAY PLAN & PROFILE

E. 75TH AVENUE – STA 35+00 TO STA 40+00

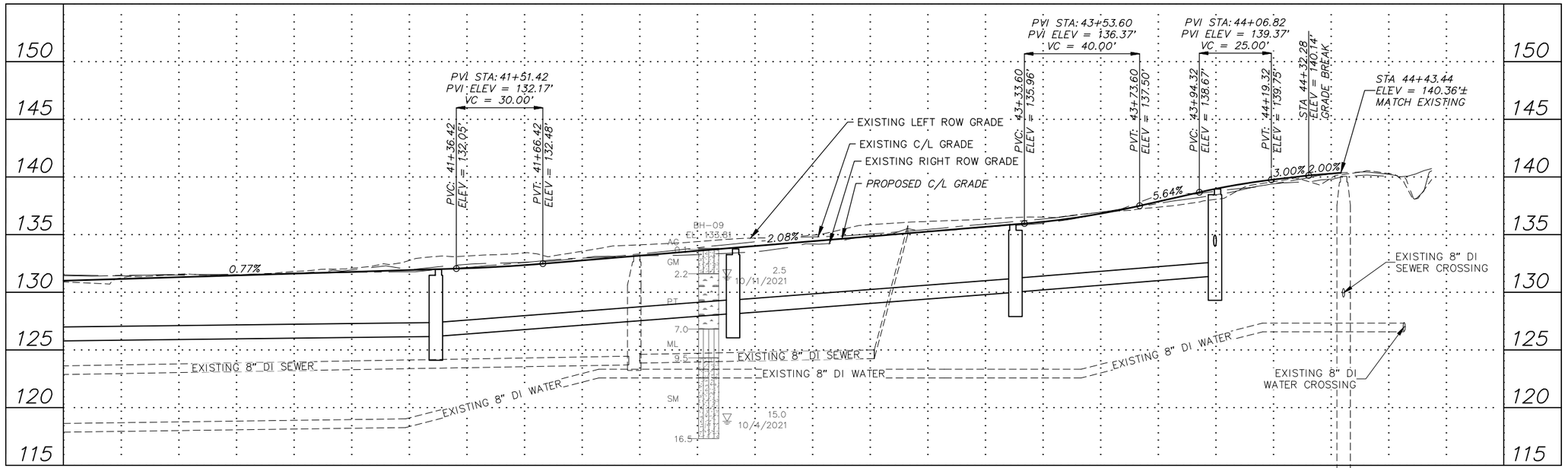
SCALE HOR. 1"=20' VER. 1"=5' | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET B4 of B8

File: J:\Jobs\Data\10158.00 74th-75th Ave Road Reconstruction\00 CADD\01 Working Set\01 Civil\10158.00 Plan & Profile - Roadway.dwg



NOTES:

1. GRADE AREA TO DRAIN TOWARDS ROADWAY TO PROVIDE MINIMUM 1.0% POSITIVE GRADE TOWARD ROADWAY.



RECORD DRAWING

1. DATA PROVIDED BY: _____ TITLE: _____
   THIS WILL SERVE TO CERTIFY THAT THESE RECORD DRAWINGS ARE A TRUE AND ACCURATE REPRESENTATION OF THE PROJECT AS CONSTRUCTED.
   CONTRACTOR: _____
   BY: _____ TITLE: _____ DATE: _____
2. DATA TRANSFERRED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
3. BASED ON PERIODIC FIELD OBSERVATIONS BY THE ENGINEER (OR AN INDIVIDUAL UNDER HIS/HER DIRECT SUPERVISION), THE CONTRACTOR-PROVIDED DATA APPEARS TO REPRESENT THE PROJECT AS CONSTRUCTED.
   DATA TRANSFER CHECKED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
   BY: _____

DATA	DRAWN BY	CHECKED BY
BASE	R&M	R&M
TOPOGRAPHY	R&M	R&M
PROFILE	RB	JK
STORM SEWER	JM	JH
WATER/SANITARY SEWER	R&M	R&M
GAS	R&M	R&M
TELEPHONE	R&M	R&M
ELECTRIC	JH	TK
DESIGN	RB	JK
QUANTITIES	RB	JK
PRELIMINARY/FINAL	RB	JK
MUNICIPAL/STATE	RB	JK

PLAN CHECK

GRAPHIC SCALE 40 20 0 20 40

FIELD BOOKS	BM NO.	LOCATION	ELEV.
DESIGN			
STAKING			
ASBUILT			
CONTRACTOR	BASIS OF THIS DATUM		
INSPECTOR			

CONSTRUCTION RECORD | VERTICAL DATUM

REV	DATE	DESCRIPTION	BY

REVISIONS

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

CONSULTANT | SEAL

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

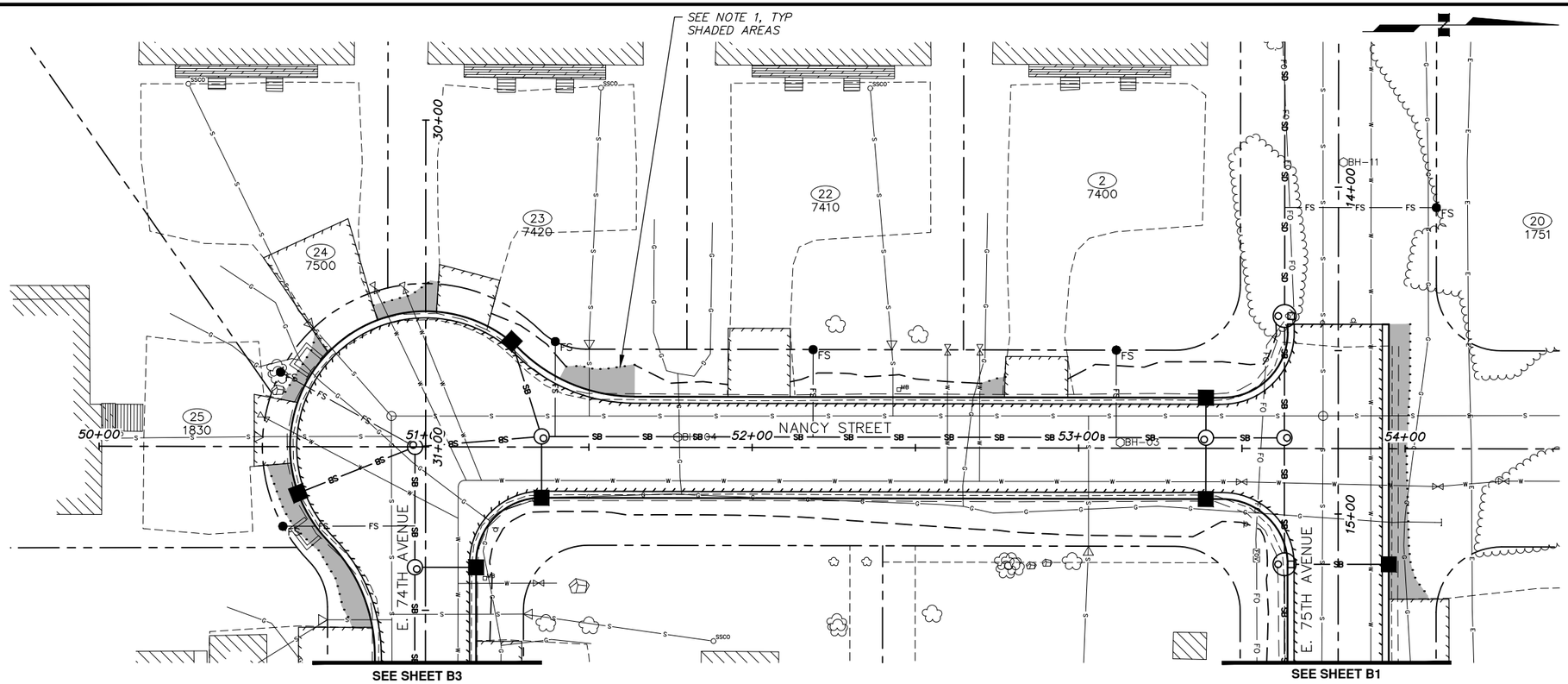
21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE ROAD RECONSTRUCTION SCHED A

ROADWAY PLAN & PROFILE

E. 75TH AVENUE – STA 40+00 TO STA 45+00

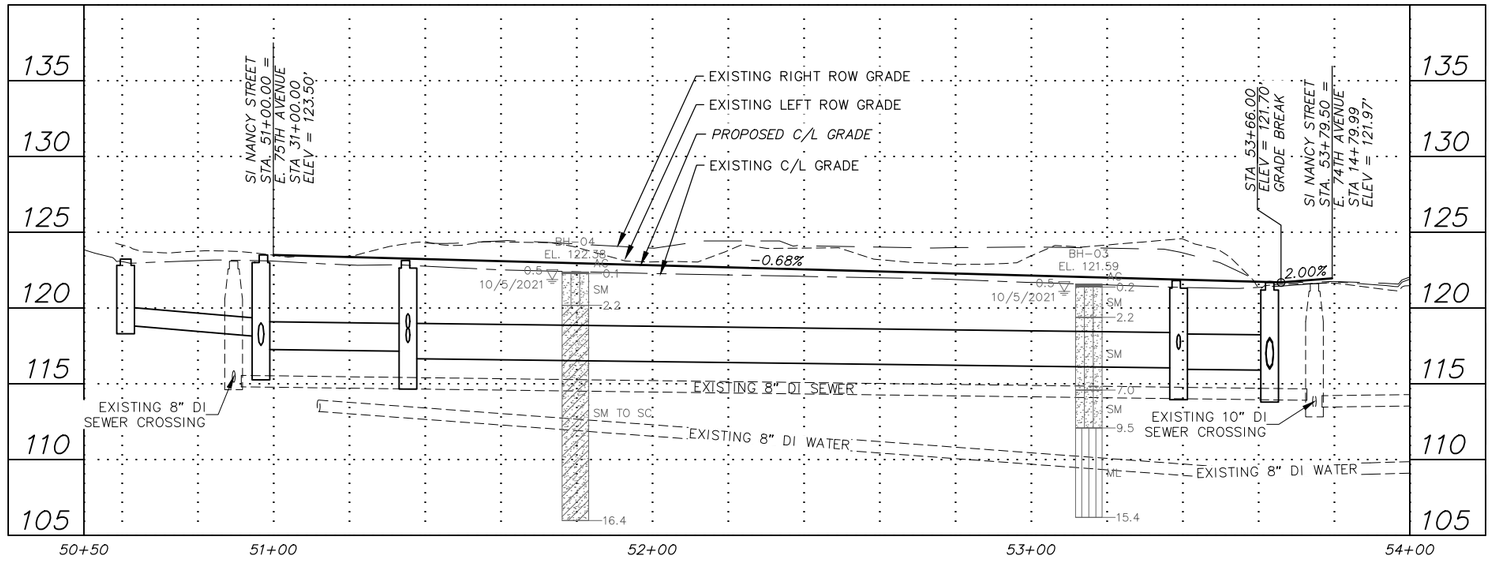
SCALE HOR. 1"=20' VER. 1"=5' | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET B5 of B8

File: J:\JobsData\10158.00 74th-75th Ave Road Reconstruction\00 CADD\01 Working Set\01 Civil\10158.00 Plan & Profile - Roadway.dwg



NOTES:

1. GRADE AREA TO DRAIN TOWARDS ROADWAY TO PROVIDE MINIMUM 1.0% POSITIVE GRADE TOWARD ROADWAY.



RECORD DRAWING

1. DATA PROVIDED BY: _____ TITLE: _____
   THIS WILL SERVE TO CERTIFY THAT THESE RECORD DRAWINGS ARE A TRUE AND ACCURATE REPRESENTATION OF THE PROJECT AS CONSTRUCTED.
   CONTRACTOR: _____
   BY: _____ TITLE: _____ DATE: _____
2. DATA TRANSFERRED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
3. BASED ON PERIODIC FIELD OBSERVATIONS BY THE ENGINEER (OR AN INDIVIDUAL UNDER HIS/HER DIRECT SUPERVISION), THE CONTRACTOR-PROVIDED DATA APPEARS TO REPRESENT THE PROJECT AS CONSTRUCTED.
   DATA TRANSFER CHECKED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
   BY: _____

DATA	DRAWN BY	CHECKED BY
BASE	R&M	R&M
TOPOGRAPHY	R&M	R&M
PROFILE	RB	JK
STORM SEWER	JM	JH
WATER/SANITARY SEWER	R&M	R&M
GAS	R&M	R&M
TELEPHONE	R&M	R&M
ELECTRIC	JH	TK
DESIGN	RB	JK
QUANTITIES	RB	JK
PRELIMINARY/FINAL	RB	JK
MUNICIPAL/STATE	RB	JK

PLAN CHECK

GRAPHIC 40 20 0 20 40 SCALE

FIELD BOOKS	BM NO.	LOCATION	ELEV.
DESIGN			
STAKING			
ASBUILT			
CONTRACTOR	BASIS OF THIS DATUM		
INSPECTOR			

CONSTRUCTION RECORD | VERTICAL DATUM

REV	DATE	DESCRIPTION	BY

REVISIONS

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

CONSULTANT | SEAL

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

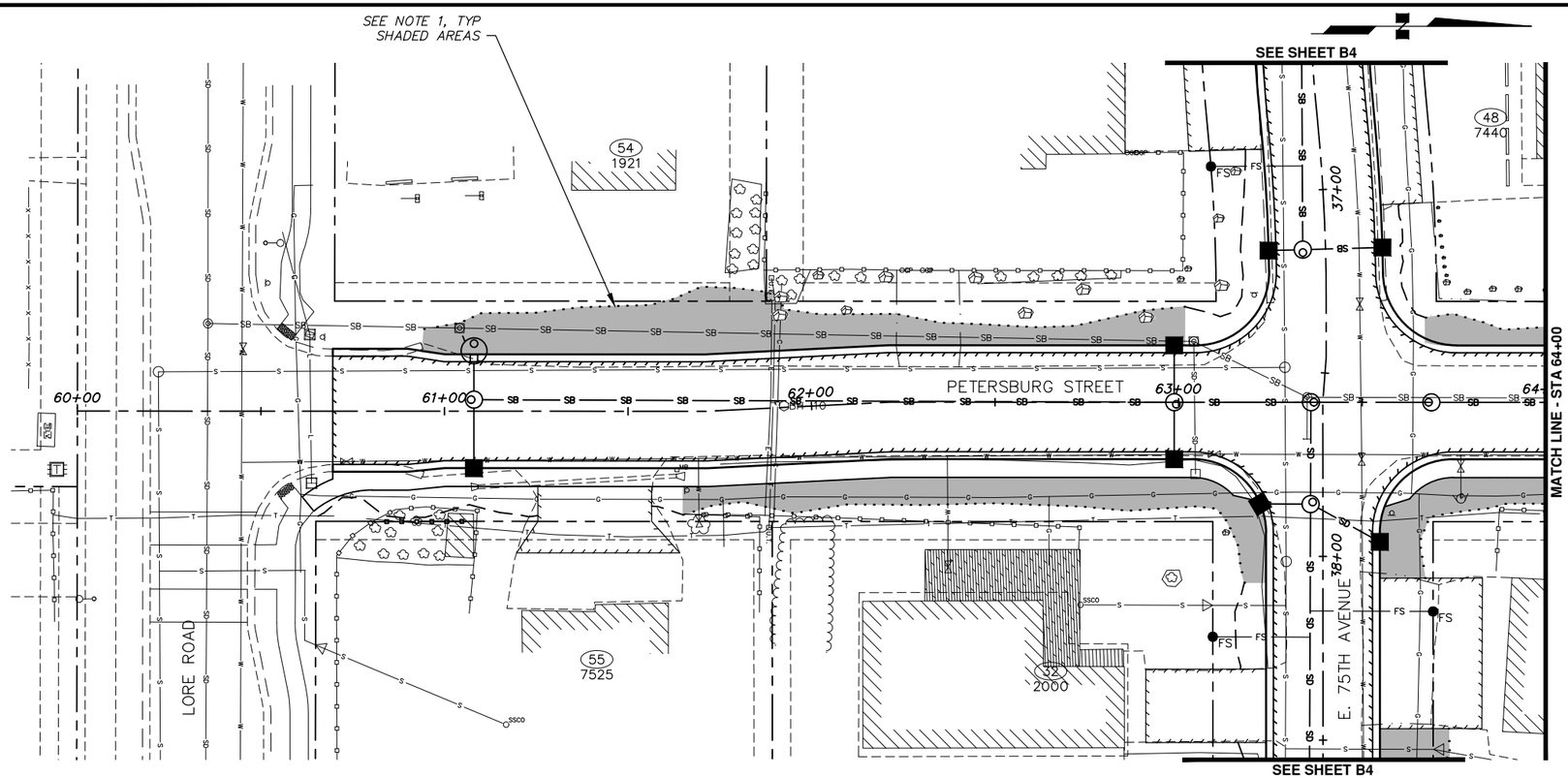
21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE ROAD RECONSTRUCTION SCHED A

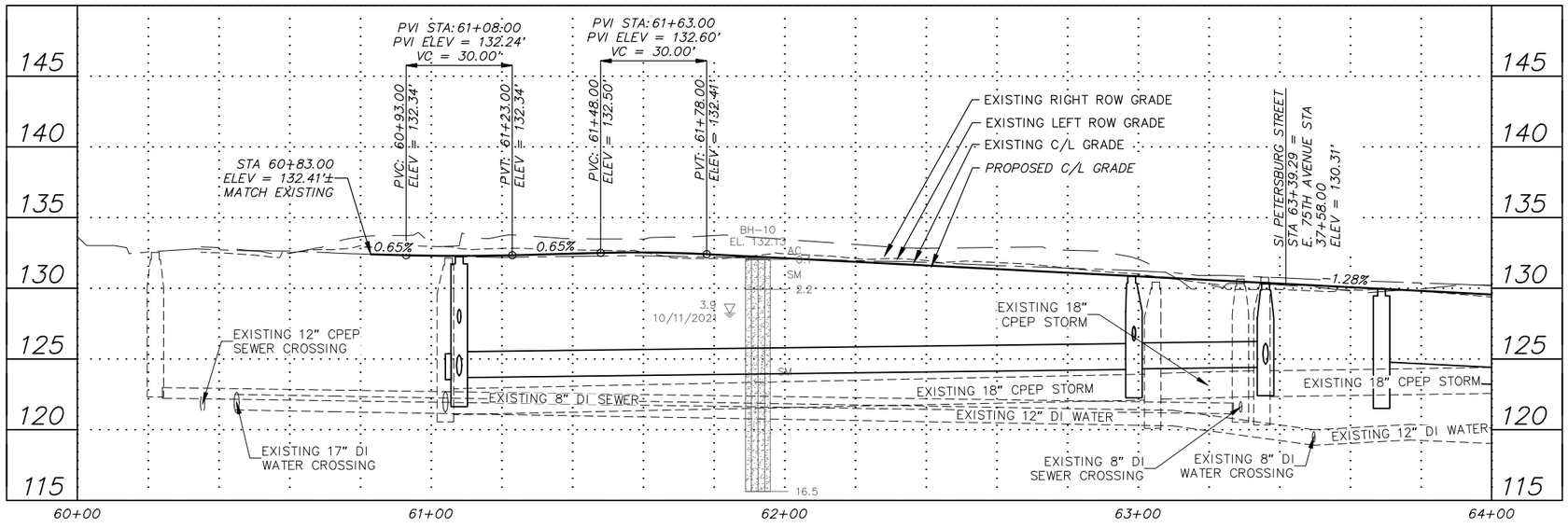
ROADWAY PLAN & PROFILE

NANCY STREET – STA 51+00 TO STA 54+00

SCALE HOR. 1"=20' VER. 1"=5' | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET B6 of B8

File: J:\JobsData\10158.00 74th-75th Ave Road Reconstruction\00 CADD\01 Working Set\01 Civil\10158.00 Plan & Profile - Roadway.dwg





NOTES:

1. GRADE AREA TO DRAIN TOWARDS ROADWAY TO PROVIDE MINIMUM 1.0% POSITIVE GRADE TOWARD ROADWAY.

RECORD DRAWING

1. DATA PROVIDED BY: _____ TITLE: _____
   THIS WILL SERVE TO CERTIFY THAT THESE RECORD DRAWINGS ARE A TRUE AND ACCURATE REPRESENTATION OF THE PROJECT AS CONSTRUCTED.
   CONTRACTOR: _____
   BY: _____ TITLE: _____ DATE: _____
2. DATA TRANSFERRED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
3. BASED ON PERIODIC FIELD OBSERVATIONS BY THE ENGINEER (OR AN INDIVIDUAL UNDER HIS/HER DIRECT SUPERVISION), THE CONTRACTOR-PROVIDED DATA APPEARS TO REPRESENT THE PROJECT AS CONSTRUCTED.
   DATA TRANSFER CHECKED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
   BY: _____

DATA	DRAWN BY	CHECKED BY
BASE	R&M	R&M
TOPOGRAPHY	R&M	R&M
PROFILE	RB	JK
STORM SEWER	JM	JH
WATER/SANITARY SEWER	R&M	R&M
GAS	R&M	R&M
TELEPHONE	R&M	R&M
ELECTRIC	JH	TK
DESIGN	RB	JK
QUANTITIES	RB	JK
PRELIMINARY/FINAL	RB	JK
MUNICIPAL/STATE	RB	JK

PLAN CHECK

GRAPHIC SCALE 40 20 0 20 40

FIELD BOOKS	BM NO.	LOCATION	ELEV.
DESIGN			
STAKING			
ASBUILT			
CONTRACTOR	BASIS OF THIS DATUM		
INSPECTOR			

CONSTRUCTION RECORD | VERTICAL DATUM

REV	DATE	DESCRIPTION	BY

REVISIONS

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

CONSULTANT | SEAL

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

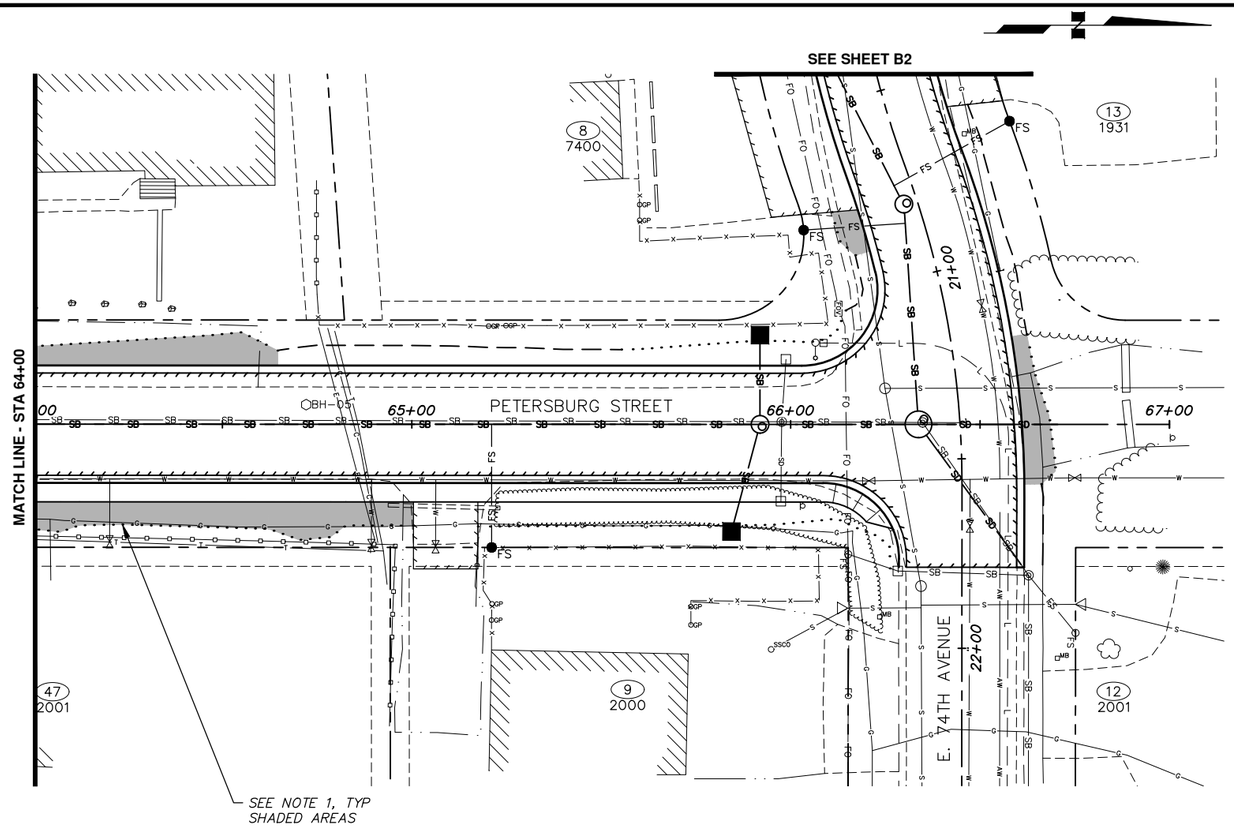
21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE ROAD RECONSTRUCTION SCHED A

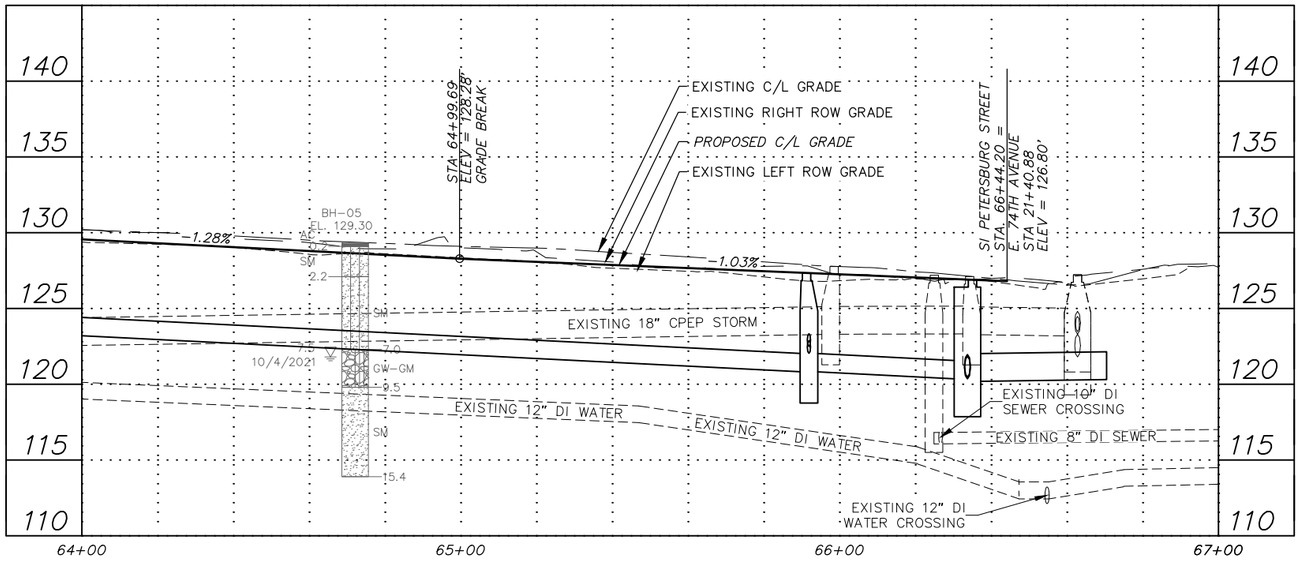
ROADWAY PLAN & PROFILE

PETERSBURG STREET STA 60+00 TO STA 64+00

SCALE HOR. 1"=20' VER. 1"=5' | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET B7 of B8

File: J:\JobsData\10158.00 74th-75th Ave Road Reconstruction\00 CADD\01 Working Set\01 Civil\10158.00 Plan & Profile - Roadway.dwg





NOTES:

1. *GRADE AREA TO DRAIN TOWARDS ROADWAY TO PROVIDE MINIMUM 1.0% POSITIVE GRADE TOWARD ROADWAY.*

RECORD DRAWING

1. DATA PROVIDED BY: _____ TITLE: _____
   THIS WILL SERVE TO CERTIFY THAT THESE RECORD DRAWINGS ARE A TRUE AND ACCURATE REPRESENTATION OF THE PROJECT AS CONSTRUCTED.
   CONTRACTOR: _____
   BY: _____ TITLE: _____ DATE: _____
2. DATA TRANSFERRED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
3. BASED ON PERIODIC FIELD OBSERVATIONS BY THE ENGINEER (OR AN INDIVIDUAL UNDER HIS/HER DIRECT SUPERVISION), THE CONTRACTOR-PROVIDED DATA APPEARS TO REPRESENT THE PROJECT AS CONSTRUCTED.
   DATA TRANSFER CHECKED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
   BY: _____

PLAN CHECK

DATA	DRAWN BY	CHECKED BY
BASE	R&M	R&M
TOPOGRAPHY	R&M	R&M
PROFILE	RB	JK
STORM SEWER	JM	JH
WATER/SANITARY SEWER	R&M	R&M
GAS	R&M	R&M
TELEPHONE	R&M	R&M
ELECTRIC	JH	TK
DESIGN	RB	JK
QUANTITIES	RB	JK
PRELIMINARY/FINAL	RB	JK
MUNICIPAL/STATE	RB	JK

CONSTRUCTION RECORD

GRAPHIC SCALE 40 20 0 20 40

FIELD BOOKS	BM NO.	LOCATION	ELEV.
DESIGN			
STAKING			
ASBUILT			
CONTRACTOR	BASIS OF THIS DATUM		
INSPECTOR			

VERTICAL DATUM

REV	DATE	DESCRIPTION	BY

REVISIONS

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK
CONSULTANT

SEAL

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE ROAD RECONSTRUCTION SCHED A

ROADWAY PLAN & PROFILE

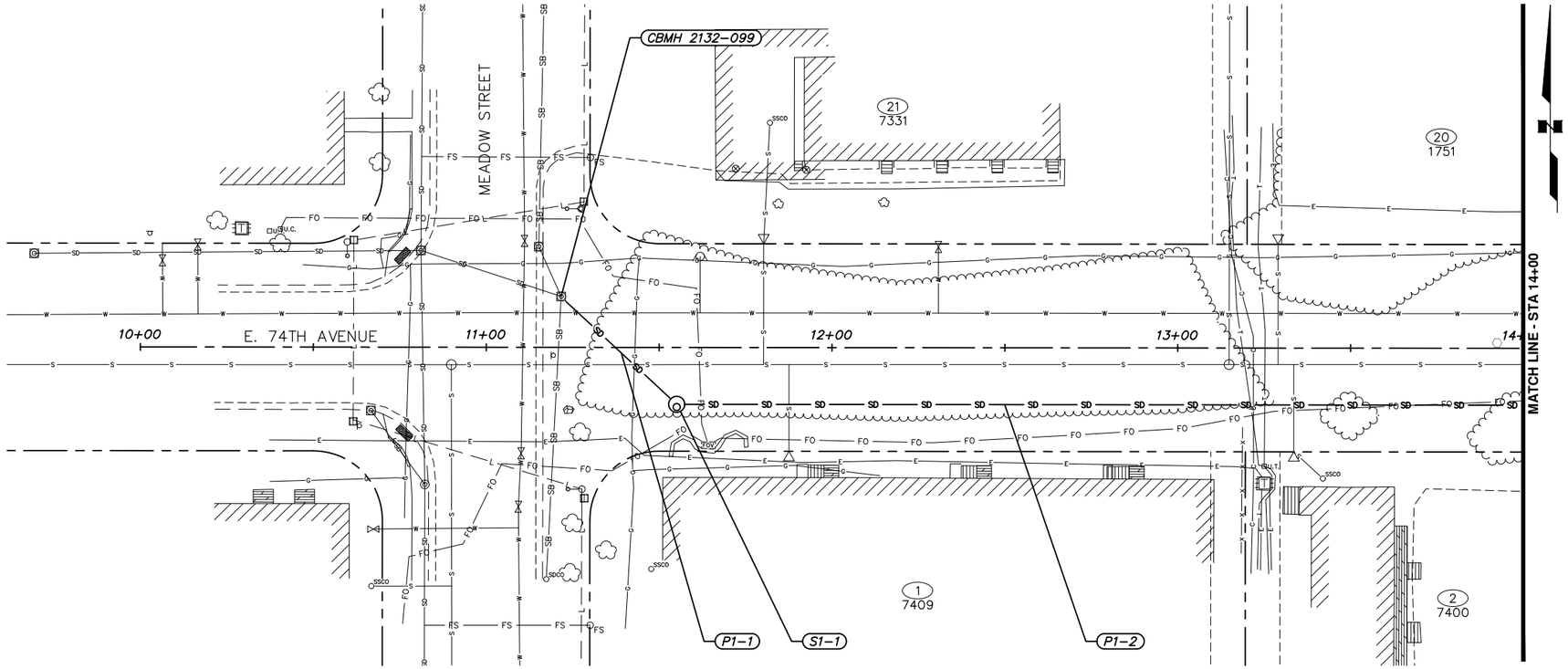
PETERSBURG STREET – STA 64+00 TO STA 67+00

SCALE HOR. 1"=20' VER. 1"=5' | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET B8 of B8

File: J:\Jobs\Data\10158.00 74th-75th Ave Road Reconstruction\00 CADD\01 Working Set\01 Civil\10158.00 Plan & Profile - Roadway.dwg

APPENDIX C

Storm Drain Plan & Profile



RECORD DRAWING

1. DATA PROVIDED BY: _____ TITLE: _____
   THIS WILL SERVE TO CERTIFY THAT THESE RECORD DRAWINGS ARE A TRUE AND ACCURATE REPRESENTATION OF THE PROJECT AS CONSTRUCTED.
   CONTRACTOR: _____
   BY: _____ TITLE: _____ DATE: _____
2. DATA TRANSFERRED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
3. BASED ON PERIODIC FIELD OBSERVATIONS BY THE ENGINEER (OR AN INDIVIDUAL UNDER HIS/HER DIRECT SUPERVISION), THE CONTRACTOR-PROVIDED DATA APPEARS TO REPRESENT THE PROJECT AS CONSTRUCTED.
   DATA TRANSFER CHECKED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
   BY: _____

DATA	DRAWN BY	CHECKED BY
BASE	R&M	R&M
TOPOGRAPHY	R&M	R&M
PROFILE	RB	JK
STORM SEWER	JM	JH
WATER/SANITARY SEWER	R&M	R&M
GAS	R&M	R&M
TELEPHONE	R&M	R&M
ELECTRIC	JH	TK
DESIGN	RB	JK
QUANTITIES	RB	JK
PRELIMINARY/FINAL	RB	JK
MUNICIPAL/STATE	RB	JK

PLAN CHECK

GRAPHIC SCALE 40 20 0 20 40

FIELD BOOKS	BM NO.	LOCATION	ELEV.
DESIGN			
STAKING			
ASBUILT			
CONTRACTOR	BASIS OF THIS DATUM		
INSPECTOR			

CONSTRUCTION RECORD | VERTICAL DATUM

REV	DATE	DESCRIPTION	BY

REVISIONS

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

CONSULTANT | SEAL

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

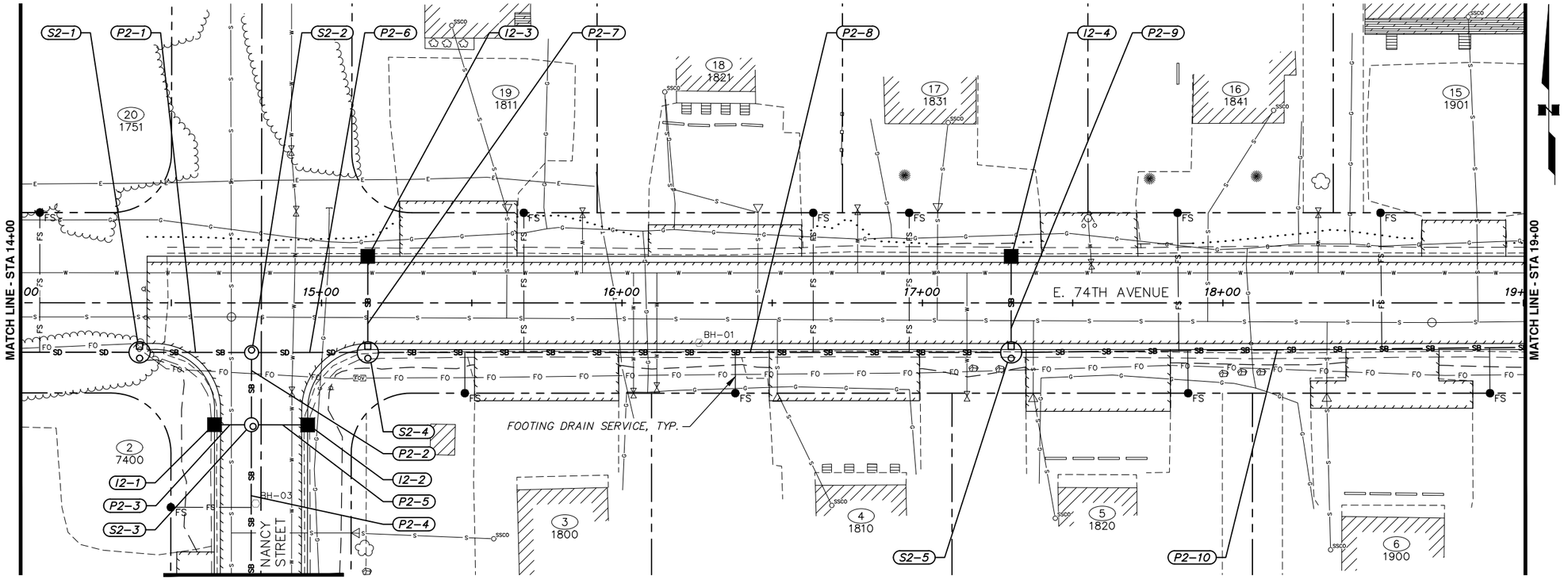
21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE ROAD RECONSTRUCTION SCHED B

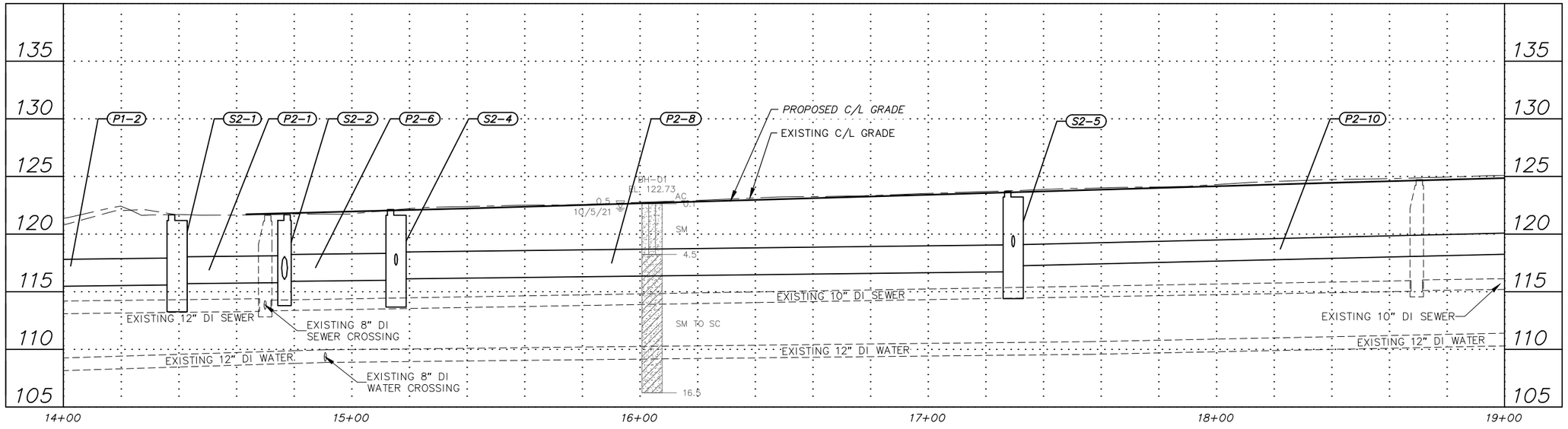
STORM DRAIN PLAN & PROFILE

E. 74TH AVENUE – STA 10+00 TO STA 14+00

SCALE HOR. 1"=20' VER. 1"=5' | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET C1 of C9

File: J:\JobsData\10158.00 74th-75th Ave Road Reconstruction\00 CADD\01 Working Set\01 Civil\10158.00 Plan & Profile - Storm Drain.dwg





RECORD DRAWING

1. DATA PROVIDED BY: _____ TITLE: _____
   THIS WILL SERVE TO CERTIFY THAT THESE RECORD DRAWINGS ARE A TRUE AND ACCURATE REPRESENTATION OF THE PROJECT AS CONSTRUCTED.
   CONTRACTOR: _____
   BY: _____ TITLE: _____ DATE: _____
2. DATA TRANSFERRED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
3. BASED ON PERIODIC FIELD OBSERVATIONS BY THE ENGINEER (OR AN INDIVIDUAL UNDER HIS/HER DIRECT SUPERVISION), THE CONTRACTOR-PROVIDED DATA APPEARS TO REPRESENT THE PROJECT AS CONSTRUCTED.
   DATA TRANSFER CHECKED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
   BY: _____

DATA	DRAWN BY	CHECKED BY
BASE	R&M	R&M
TOPOGRAPHY	R&M	R&M
PROFILE	RB	JK
STORM SEWER	JM	JH
WATER/SANITARY SEWER	R&M	R&M
GAS	R&M	R&M
TELEPHONE	R&M	R&M
ELECTRIC	JH	TK
DESIGN	RB	JK
QUANTITIES	RB	JK
PRELIMINARY/FINAL	RB	JK
MUNICIPAL/STATE	RB	JK

PLAN CHECK

GRAPHIC SCALE 40 20 0 20 40

FIELD BOOKS	BM NO.	LOCATION	ELEV.
DESIGN			
STAKING			
ASBUILT			
CONTRACTOR	BASIS OF THIS DATUM		
INSPECTOR			

CONSTRUCTION RECORD | VERTICAL DATUM

REV	DATE	DESCRIPTION	BY

REVISIONS

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

CONSULTANT | SEAL

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

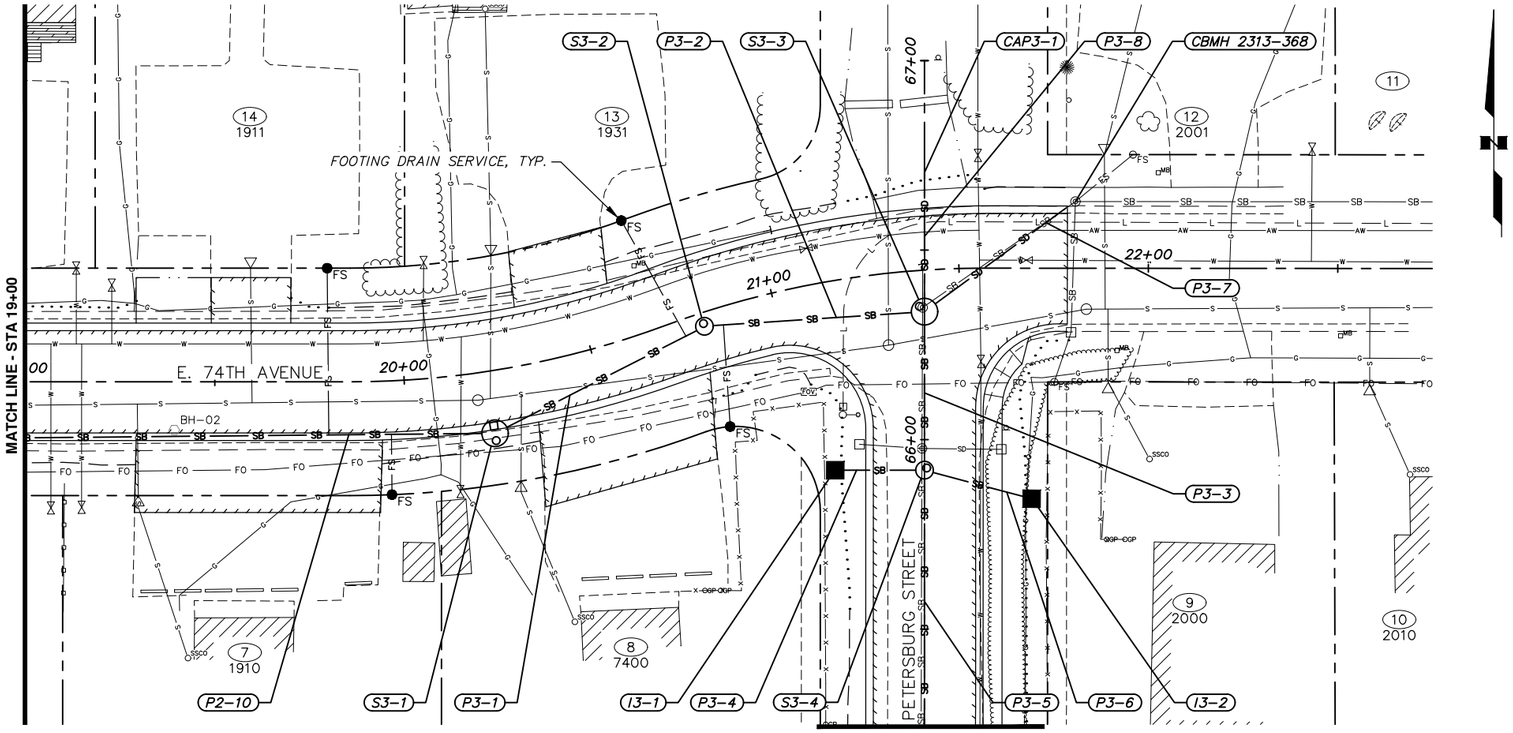
21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE ROAD RECONSTRUCTION SCHED B

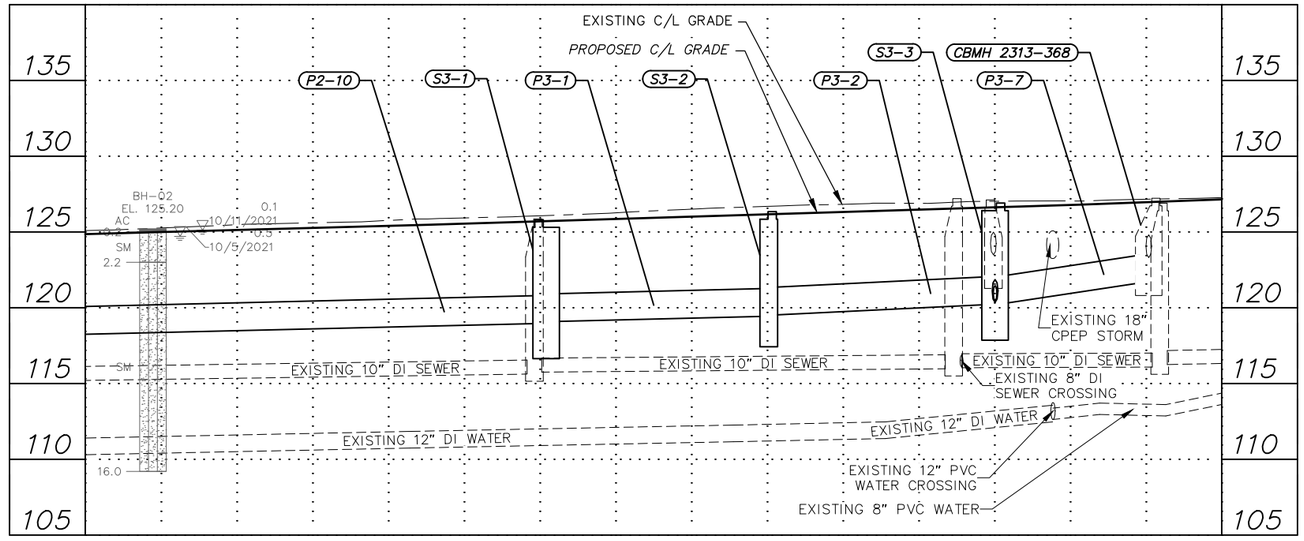
STORM DRAIN PLAN & PROFILE

E. 74TH AVENUE – STA 14+00 TO STA 19+00

SCALE HOR. 1"=20' VER. 1"=5' | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET C2 of C9

File: J:\JobsData\10158.00 74th-75th Ave Road Reconstruction\00 CADD\01 Working Set\01 Civil\10158.00 Plan & Profile – Storm Drain.dwg





RECORD DRAWING

1. DATA PROVIDED BY: _____ TITLE: _____
   THIS WILL SERVE TO CERTIFY THAT THESE RECORD DRAWINGS ARE A TRUE AND ACCURATE REPRESENTATION OF THE PROJECT AS CONSTRUCTED.
   CONTRACTOR: _____
   BY: _____ TITLE: _____ DATE: _____
2. DATA TRANSFERRED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
3. BASED ON PERIODIC FIELD OBSERVATIONS BY THE ENGINEER (OR AN INDIVIDUAL UNDER HIS/HER DIRECT SUPERVISION), THE CONTRACTOR-PROVIDED DATA APPEARS TO REPRESENT THE PROJECT AS CONSTRUCTED.
   DATA TRANSFER CHECKED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
   BY: _____

DATA	DRAWN BY	CHECKED BY
BASE	R&M	R&M
TOPOGRAPHY	R&M	R&M
PROFILE	RB	JK
STORM SEWER	JM	JH
WATER/SANITARY SEWER	R&M	R&M
GAS	R&M	R&M
TELEPHONE	R&M	R&M
ELECTRIC	JH	TK
DESIGN	RB	JK
QUANTITIES	RB	JK
PRELIMINARY/FINAL	RB	JK
MUNICIPAL/STATE	RB	JK

PLAN CHECK

GRAPHIC 40 20 0 20 40 SCALE

FIELD BOOKS	BM NO.	LOCATION	ELEV.
DESIGN			
STAKING			
ASBUILT			
CONTRACTOR	BASIS OF THIS DATUM		
INSPECTOR			

CONSTRUCTION RECORD | VERTICAL DATUM

REV	DATE	DESCRIPTION	BY

REVISIONS

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

CONSULTANT | SEAL

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

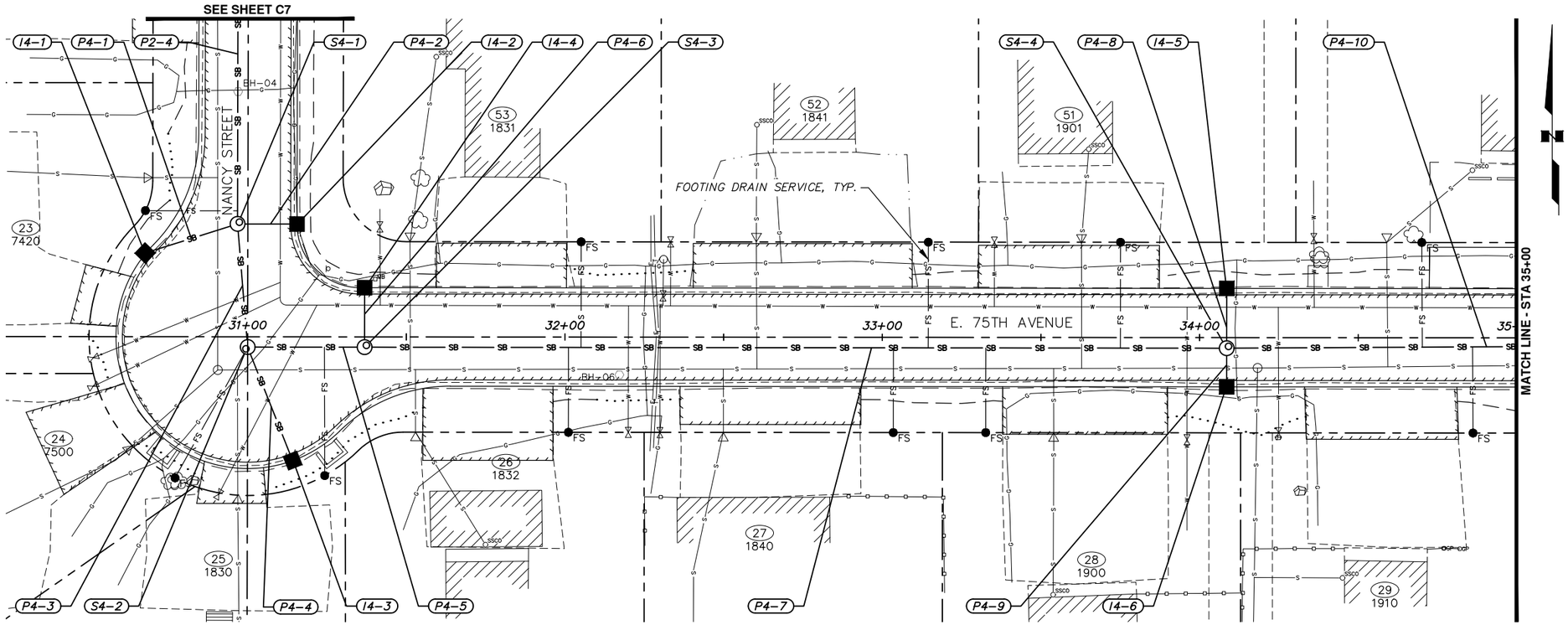
21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE ROAD RECONSTRUCTION SCHED B

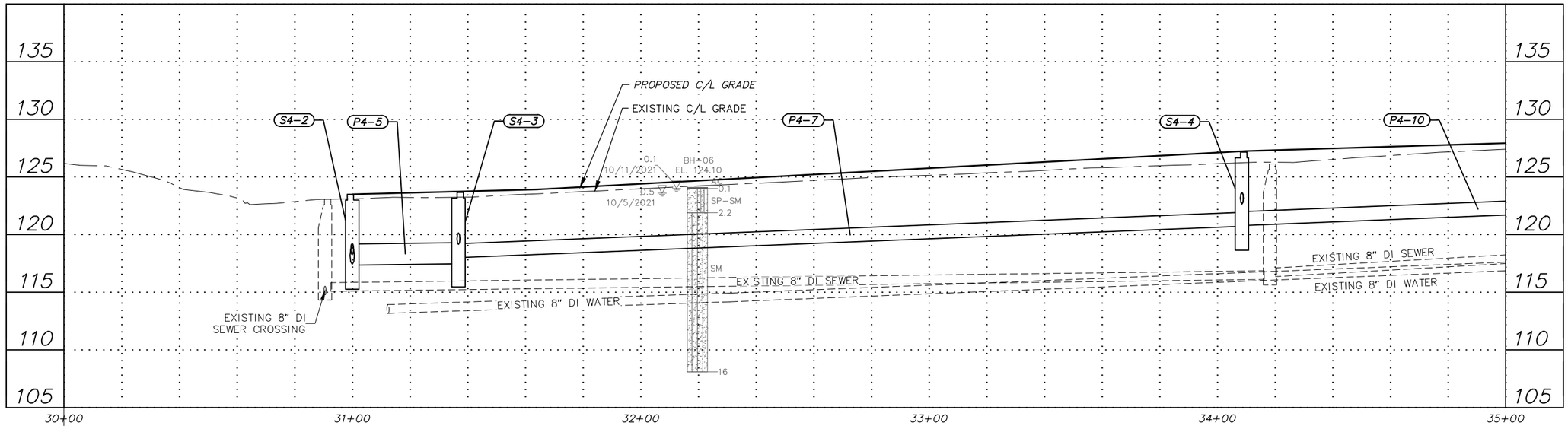
STORM DRAIN PLAN & PROFILE

E. 74TH AVENUE – STA 19+00 TO STA 22+00

SCALE HOR. 1"=20' VER. 1"=5' | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET C3 of C9

File: J:\Jobs\Data\10158.00 74th-75th Ave Road Reconstruction\00 CADD\01 Working Set\01 Civil\10158.00 Plan & Profile – Storm Drain.dwg





RECORD DRAWING

1. DATA PROVIDED BY: _____ TITLE: _____
   THIS WILL SERVE TO CERTIFY THAT THESE RECORD DRAWINGS ARE A TRUE AND ACCURATE REPRESENTATION OF THE PROJECT AS CONSTRUCTED.
   CONTRACTOR: _____
   BY: _____ TITLE: _____ DATE: _____
2. DATA TRANSFERRED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
3. BASED ON PERIODIC FIELD OBSERVATIONS BY THE ENGINEER (OR AN INDIVIDUAL UNDER HIS/HER DIRECT SUPERVISION), THE CONTRACTOR-PROVIDED DATA APPEARS TO REPRESENT THE PROJECT AS CONSTRUCTED.
   DATA TRANSFER CHECKED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
   BY: _____

DATA	DRAWN BY	CHECKED BY
BASE	R&M	R&M
TOPOGRAPHY	R&M	R&M
PROFILE	RB	JK
STORM SEWER	JM	JH
WATER/SANITARY SEWER	R&M	R&M
GAS	R&M	R&M
TELEPHONE	R&M	R&M
ELECTRIC	JH	TK
DESIGN	RB	JK
QUANTITIES	RB	JK
PRELIMINARY/FINAL	RB	JK
MUNICIPAL/STATE	RB	JK

PLAN CHECK

GRAPHIC 40 20 0 20 40 SCALE

FIELD BOOKS	BM NO.	LOCATION	ELEV.
DESIGN			
STAKING			
ASBUILT			
CONTRACTOR	BASIS OF THIS DATUM		
INSPECTOR			

CONSTRUCTION RECORD | VERTICAL DATUM

REV	DATE	DESCRIPTION	BY

REVISIONS

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

CONSULTANT | SEAL

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

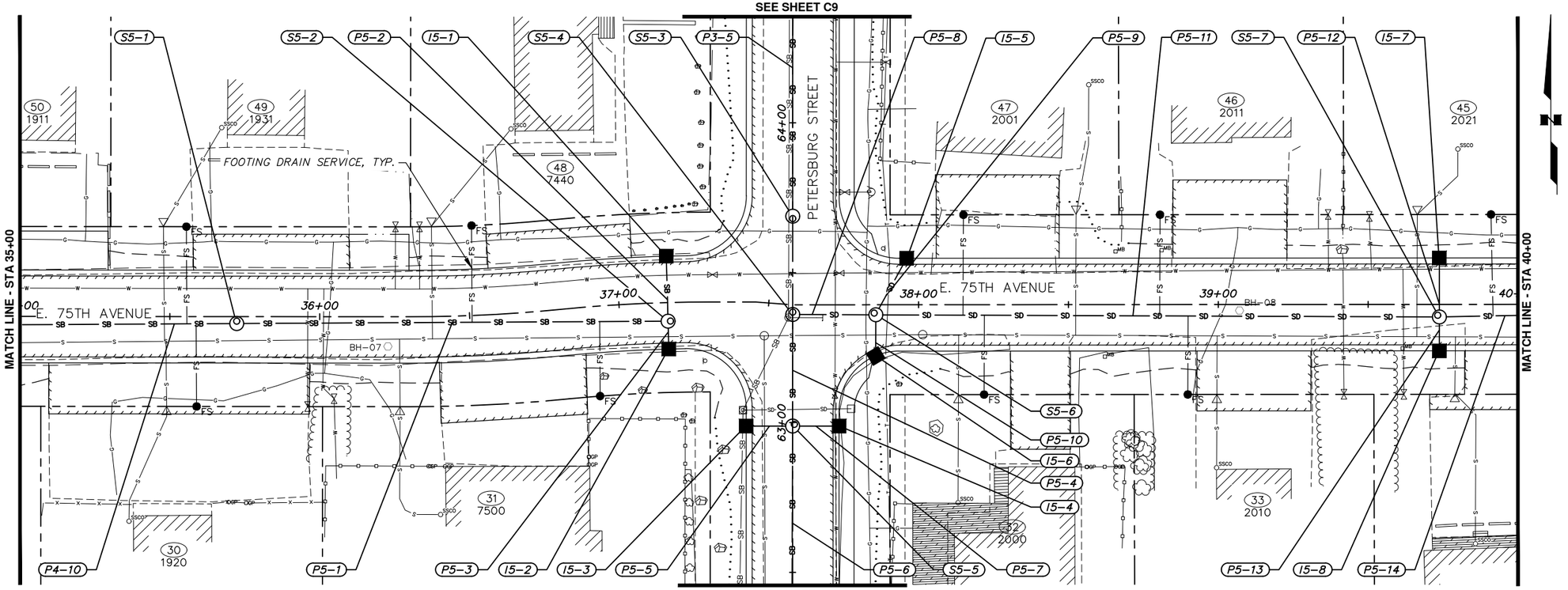
21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE ROAD RECONSTRUCTION SCHED B

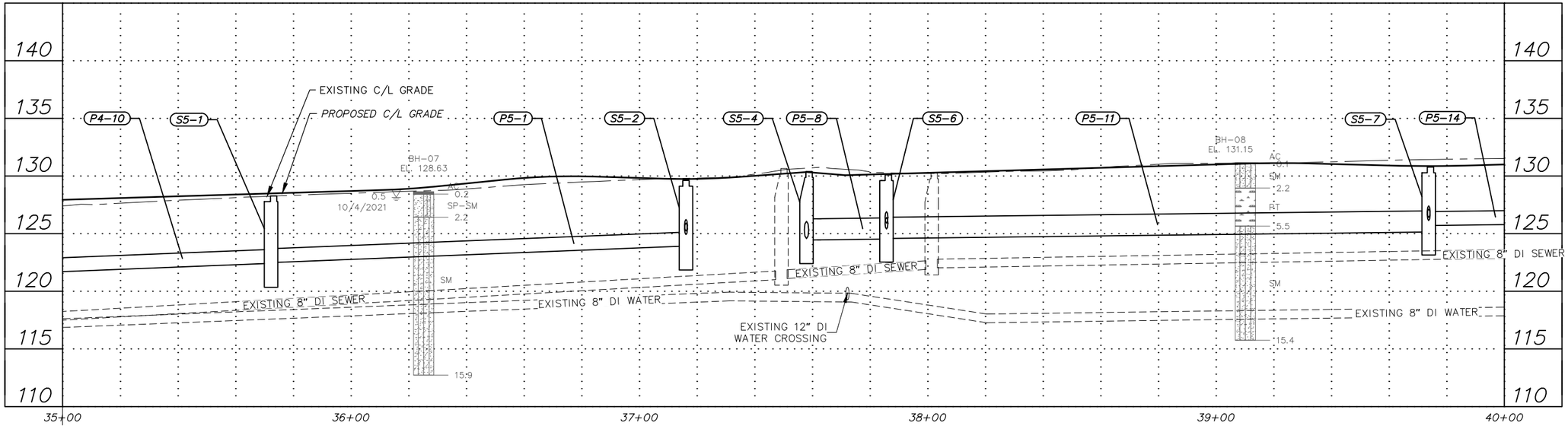
STORM DRAIN PLAN & PROFILE

E. 75TH AVENUE – STA 30+00 TO STA 35+00

SCALE HOR. 1"=20' VER. 1"=5' | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET C4 of C9

File: J:\Jobs\Data\10158.00 74th-75th Ave Road Reconstruction\00 CADD\01 Working Set\01 Civil\10158.00 Plan & Profile - Storm Drain.dwg





RECORD DRAWING

1. DATA PROVIDED BY: _____ TITLE: _____
   THIS WILL SERVE TO CERTIFY THAT THESE RECORD DRAWINGS ARE A TRUE AND ACCURATE REPRESENTATION OF THE PROJECT AS CONSTRUCTED.
   CONTRACTOR: _____
   BY: _____ TITLE: _____ DATE: _____
2. DATA TRANSFERRED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
3. BASED ON PERIODIC FIELD OBSERVATIONS BY THE ENGINEER (OR AN INDIVIDUAL UNDER HIS/HER DIRECT SUPERVISION), THE CONTRACTOR-PROVIDED DATA APPEARS TO REPRESENT THE PROJECT AS CONSTRUCTED.
   DATA TRANSFER CHECKED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
   BY: _____

DATA	DRAWN BY	CHECKED BY
BASE	R&M	R&M
TOPOGRAPHY	R&M	R&M
PROFILE	RB	JK
STORM SEWER	JM	JH
WATER/SANITARY SEWER	R&M	R&M
GAS	R&M	R&M
TELEPHONE	R&M	R&M
ELECTRIC	JH	TK
DESIGN	RB	JK
QUANTITIES	RB	JK
PRELIMINARY/FINAL	RB	JK
MUNICIPAL/STATE	RB	JK

PLAN CHECK

GRAPHIC SCALE 40 20 0 20 40

FIELD BOOKS	BM NO.	LOCATION	ELEV.
DESIGN			
STAKING			
ASBUILT			
CONTRACTOR	BASIS OF THIS DATUM		
INSPECTOR			

CONSTRUCTION RECORD | VERTICAL DATUM

REV	DATE	DESCRIPTION	BY

REVISIONS

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

CONSULTANT | SEAL

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

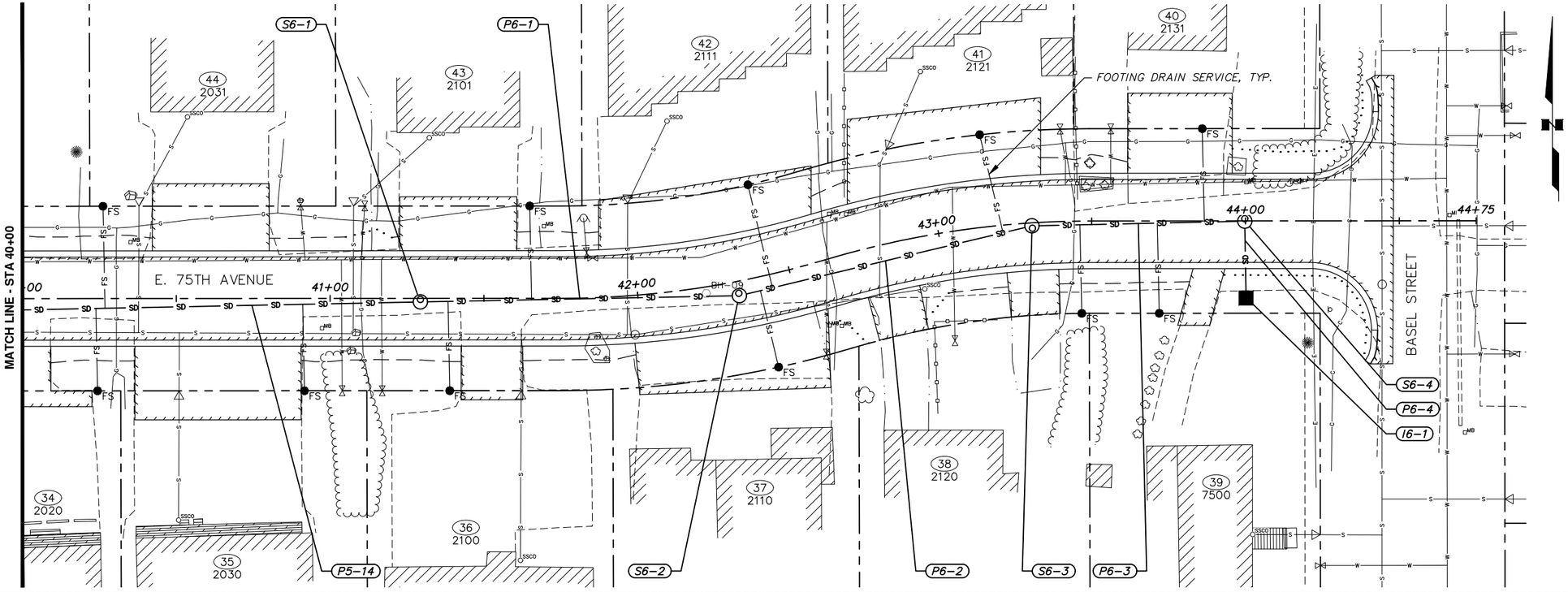
21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE ROAD RECONSTRUCTION SCHED B

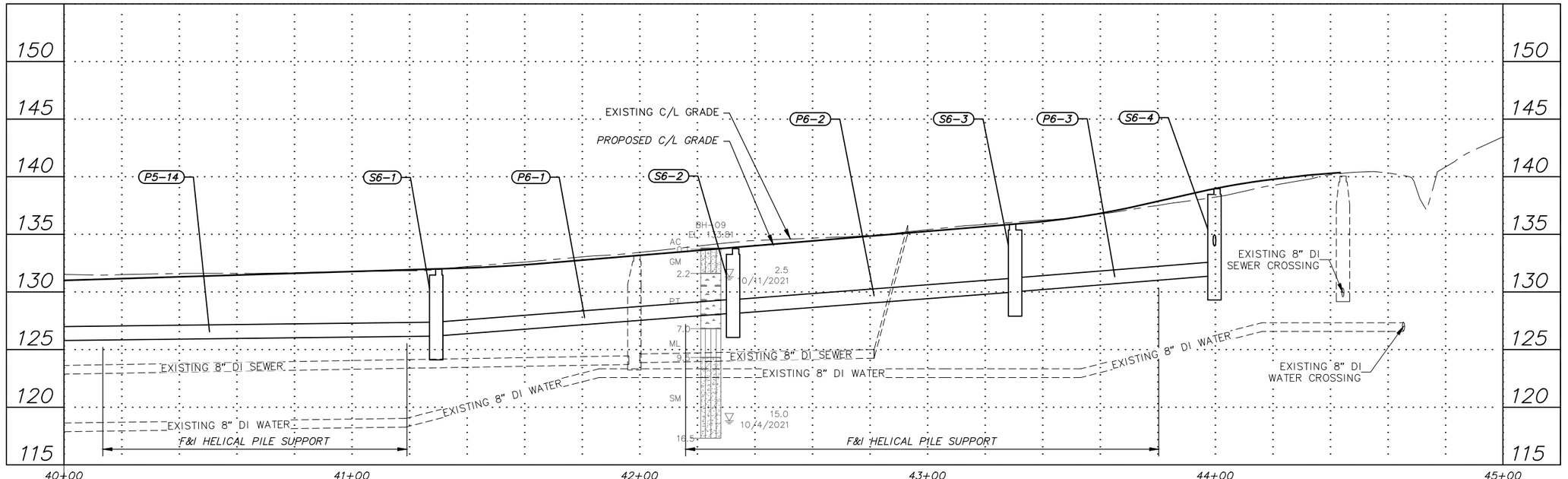
STORM DRAIN PLAN & PROFILE

E. 75TH AVENUE – STA 35+00 TO STA 40+00

SCALE HOR. 1"=20' VER. 1"=5' | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET C5 of C9

File: J:\JobsData\10158.00 74th-75th Ave Road Reconstruction\00 CADD\01 Working Set\01 Civil\10158.00 Plan & Profile – Storm Drain.dwg





RECORD DRAWING

1. DATA PROVIDED BY: _____ TITLE: _____
   THIS WILL SERVE TO CERTIFY THAT THESE RECORD DRAWINGS ARE A TRUE AND ACCURATE REPRESENTATION OF THE PROJECT AS CONSTRUCTED.
   CONTRACTOR: _____
   BY: _____ TITLE: _____ DATE: _____
2. DATA TRANSFERRED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
3. BASED ON PERIODIC FIELD OBSERVATIONS BY THE ENGINEER (OR AN INDIVIDUAL UNDER HIS/HER DIRECT SUPERVISION), THE CONTRACTOR-PROVIDED DATA APPEARS TO REPRESENT THE PROJECT AS CONSTRUCTED.
   DATA TRANSFER CHECKED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
   BY: _____

DATA	DRAWN BY	CHECKED BY
BASE	R&M	R&M
TOPOGRAPHY	R&M	R&M
PROFILE	RB	JK
STORM SEWER	JM	JH
WATER/SANITARY SEWER	R&M	R&M
GAS	R&M	R&M
TELEPHONE	R&M	R&M
ELECTRIC	JH	TK
DESIGN	RB	JK
QUANTITIES	RB	JK
PRELIMINARY/FINAL	RB	JK
MUNICIPAL/STATE	RB	JK

PLAN CHECK

GRAPHIC SCALE 40 20 0 20 40

FIELD BOOKS	BM NO.	LOCATION	ELEV.
DESIGN			
STAKING			
ASBUILT			
CONTRACTOR	BASIS OF THIS DATUM		
INSPECTOR			

CONSTRUCTION RECORD | VERTICAL DATUM

REV	DATE	DESCRIPTION	BY

REVISIONS

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK
CONSULTANT

SEAL

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

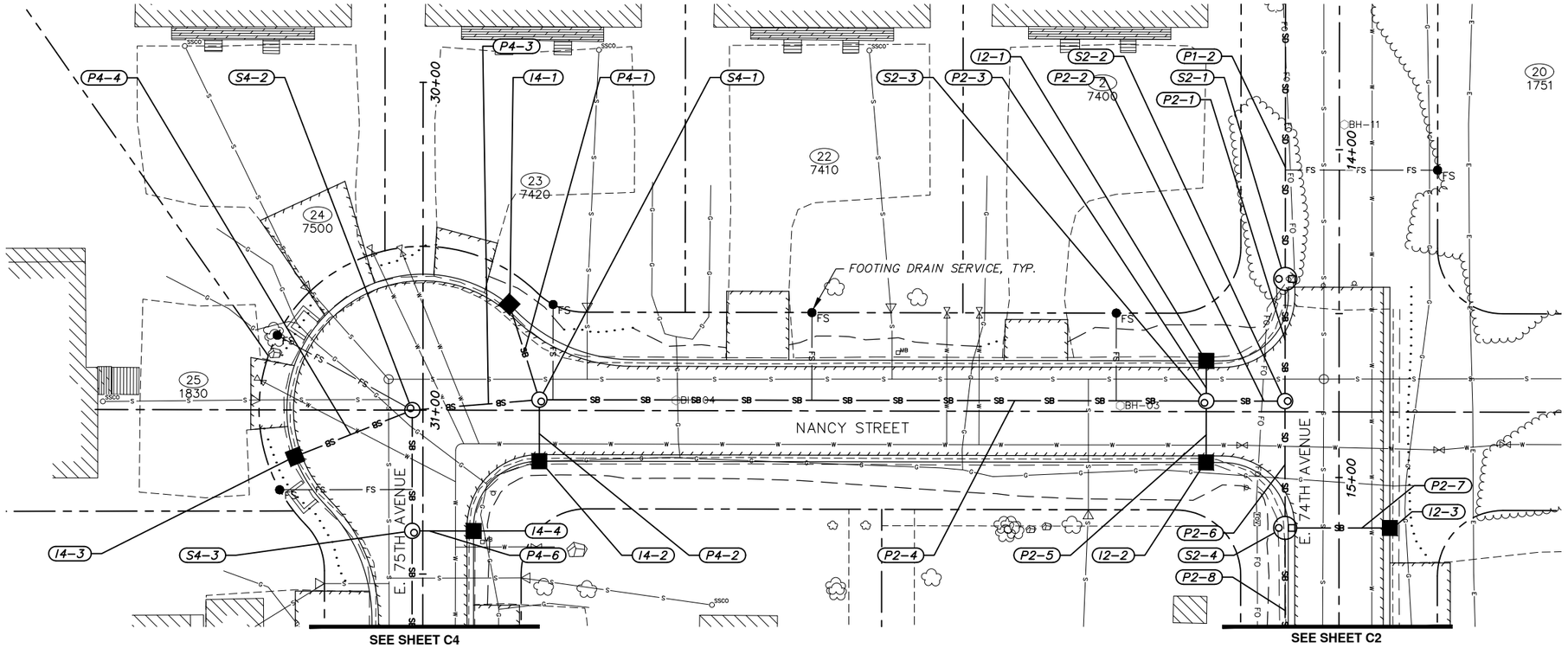
21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE ROAD RECONSTRUCTION SCHED B

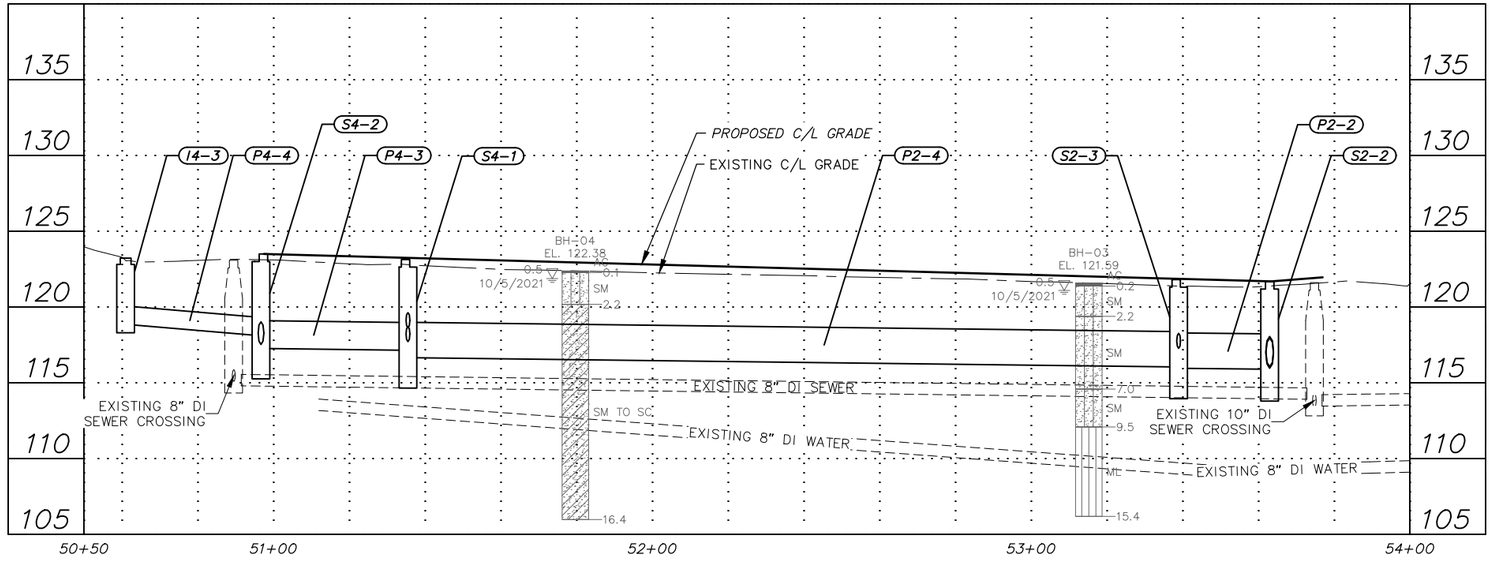
STORM DRAIN PLAN & PROFILE

E. 75TH AVENUE – STA 40+00 TO STA 45+00

SCALE HOR. 1"=20' VER. 1"=5' | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET C6 of C9

File: J:\Jobdata\10158.00 74th-75th Ave Road Reconstruction\00 CADD\01 Working Set\01 Civil\10158.00 Plan & Profile – Storm Drain.dwg





RECORD DRAWING

1. DATA PROVIDED BY: _____ TITLE: _____
   THIS WILL SERVE TO CERTIFY THAT THESE RECORD DRAWINGS ARE A TRUE AND ACCURATE REPRESENTATION OF THE PROJECT AS CONSTRUCTED.
   CONTRACTOR: _____
   BY: _____ TITLE: _____ DATE: _____
2. DATA TRANSFERRED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
3. BASED ON PERIODIC FIELD OBSERVATIONS BY THE ENGINEER (OR AN INDIVIDUAL UNDER HIS/HER DIRECT SUPERVISION), THE CONTRACTOR-PROVIDED DATA APPEARS TO REPRESENT THE PROJECT AS CONSTRUCTED.
   DATA TRANSFER CHECKED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
   BY: _____

PLAN CHECK

DATA	DRAWN BY	CHECKED BY
BASE	R&M	R&M
TOPOGRAPHY	R&M	R&M
PROFILE	RB	JK
STORM SEWER	JM	JH
WATER/SANITARY SEWER	R&M	R&M
GAS	R&M	R&M
TELEPHONE	R&M	R&M
ELECTRIC	JH	TK
DESIGN	RB	JK
QUANTITIES	RB	JK
PRELIMINARY/FINAL	RB	JK
MUNICIPAL/STATE	RB	JK

GRAPHIC SCALE 40 20 0 20 40

CONSTRUCTION RECORD

FIELD BOOKS	BM NO.	LOCATION	ELEV.
DESIGN			
STAKING			
ASBUILT			
CONTRACTOR	BASIS OF THIS DATUM		
INSPECTOR			

VERTICAL DATUM

REVISIONS

REV	DATE	DESCRIPTION	BY

CONSULTANT

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

SEAL

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

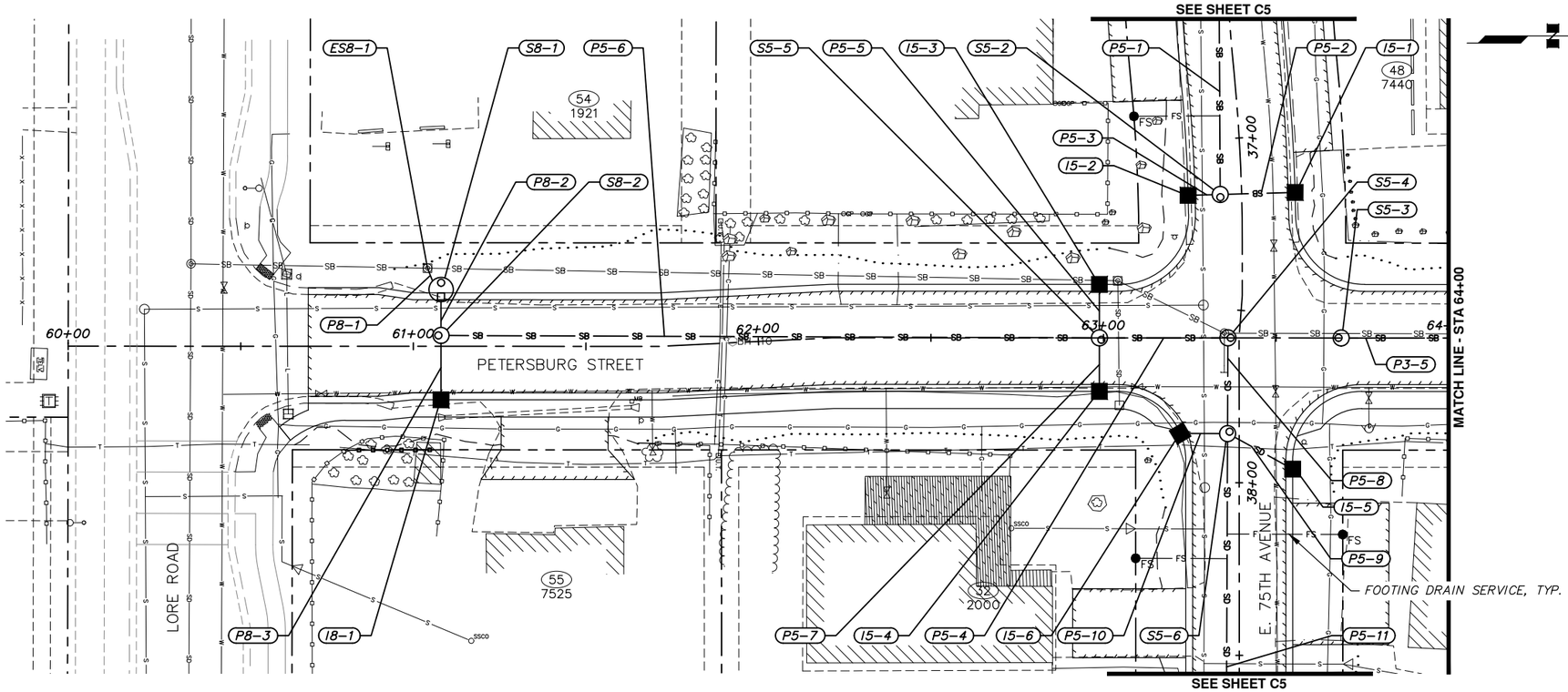
21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE ROAD RECONSTRUCTION SCHED B

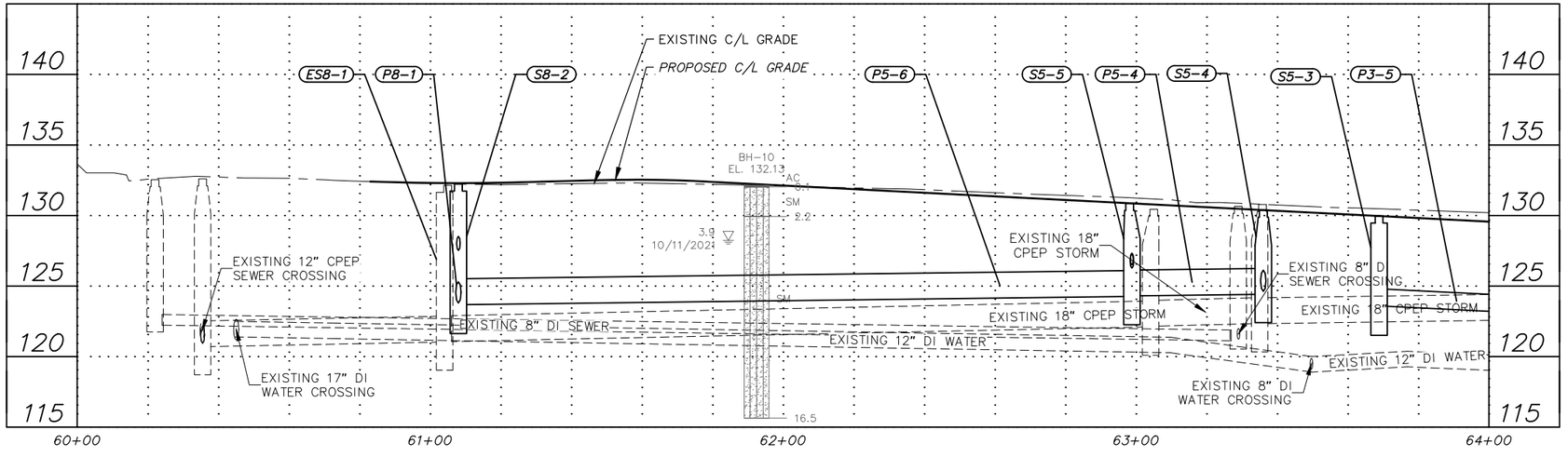
STORM DRAIN PLAN & PROFILE

NANCY STREET – STA 50+50 TO STA 54+00

SCALE HOR. 1"=20' VER. 1"=5'
GRID SW2132, SW2133
DATE DEC 2025
STATUS DSM
SHEET C7 of C9

File: J:\JobsData\10158.00 74th-75th Ave Road Reconstruction\00 CADD\01 Working Set\01 Civil\10158.00 Plan & Profile – Storm Drain.dwg





RECORD DRAWING

1. DATA PROVIDED BY: _____ TITLE: _____
   THIS WILL SERVE TO CERTIFY THAT THESE RECORD DRAWINGS ARE A TRUE AND ACCURATE REPRESENTATION OF THE PROJECT AS CONSTRUCTED.
   CONTRACTOR: _____
   BY: _____ TITLE: _____ DATE: _____
2. DATA TRANSFERRED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
3. BASED ON PERIODIC FIELD OBSERVATIONS BY THE ENGINEER (OR AN INDIVIDUAL UNDER HIS/HER DIRECT SUPERVISION), THE CONTRACTOR-PROVIDED DATA APPEARS TO REPRESENT THE PROJECT AS CONSTRUCTED.
   DATA TRANSFER CHECKED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
   BY: _____

DATA	DRAWN BY	CHECKED BY
BASE	R&M	R&M
TOPOGRAPHY	R&M	R&M
PROFILE	RB	JK
STORM SEWER	JM	JH
WATER/SANITARY SEWER	R&M	R&M
GAS	R&M	R&M
TELEPHONE	R&M	R&M
ELECTRIC	JH	TK
DESIGN	RB	JK
QUANTITIES	RB	JK
PRELIMINARY/FINAL	RB	JK
MUNICIPAL/STATE	RB	JK

PLAN CHECK

GRAPHIC 40 20 0 20 40 SCALE

FIELD BOOKS	BM NO.	LOCATION	ELEV.
DESIGN			
STAKING			
ASBUILT			
CONTRACTOR	BASIS OF THIS DATUM		
INSPECTOR			

CONSTRUCTION RECORD | VERTICAL DATUM

REV	DATE	DESCRIPTION	BY

REVISIONS

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

CONSULTANT | SEAL

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

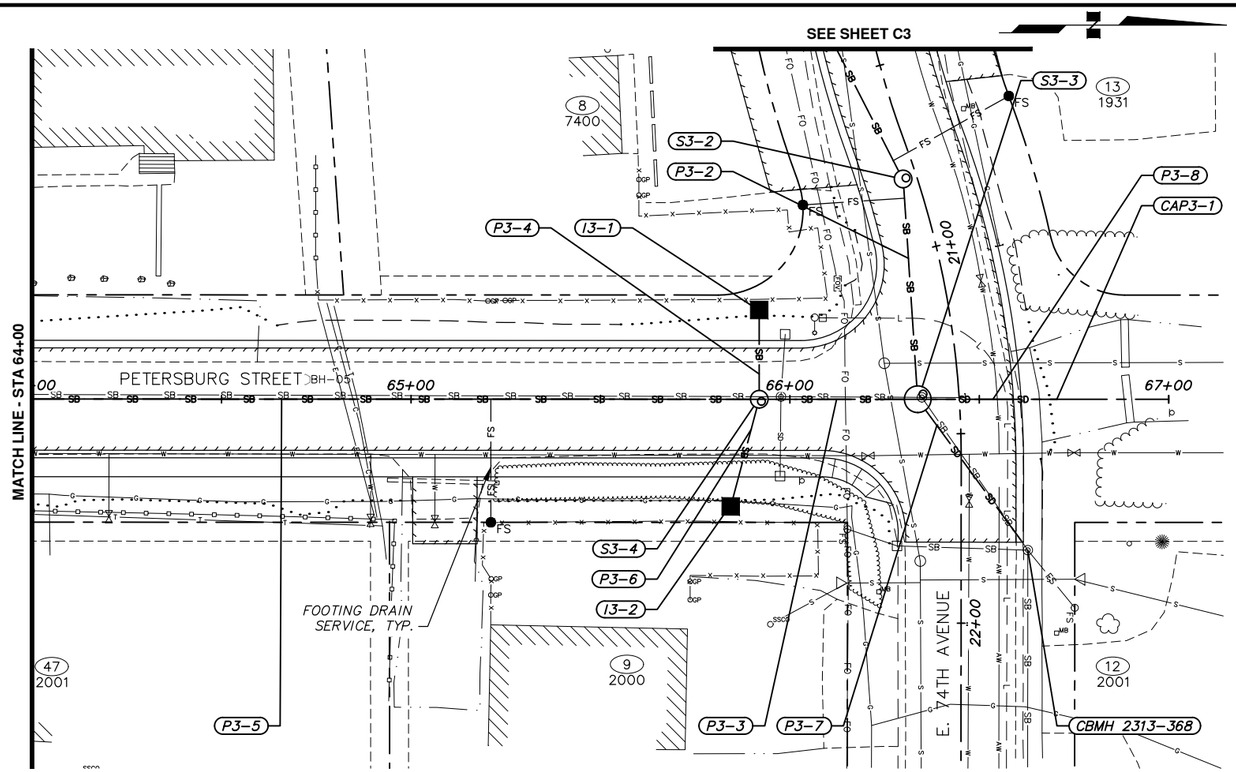
21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE ROAD RECONSTRUCTION SCHED B

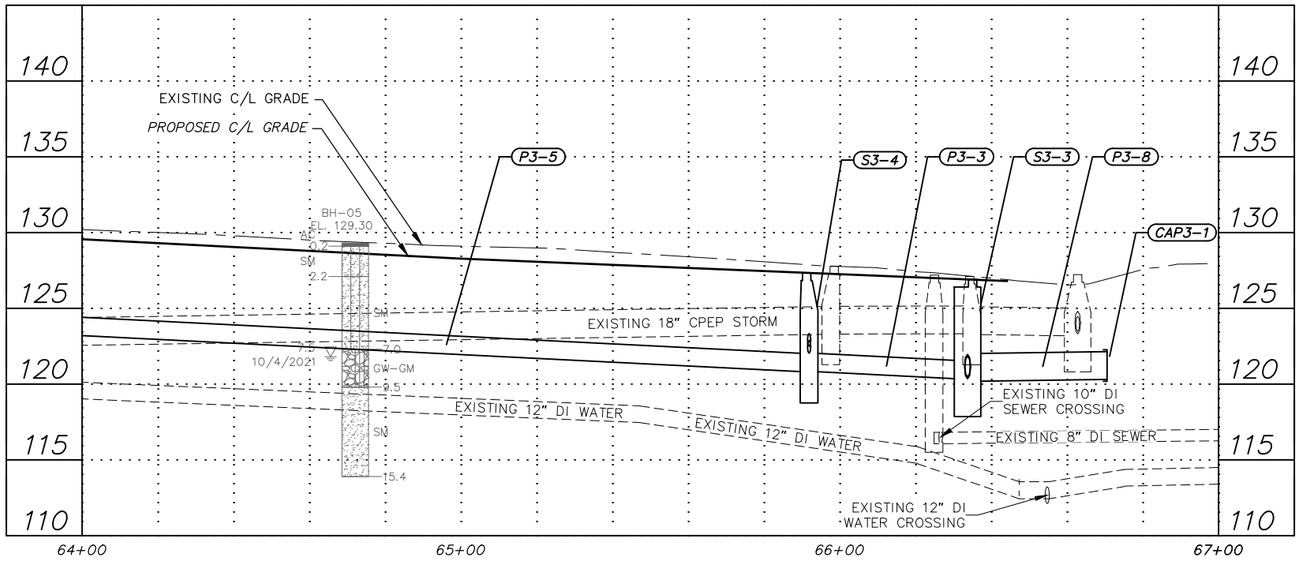
STORM DRAIN PLAN & PROFILE

PETERSBURG STREET – STA 60+00 TO STA 64+00

SCALE HOR. 1"=20' VER. 1"=5' | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET C8 of C9

File: J:\JobsData\10158.00 74th-75th Ave Road Reconstruction\00 CADD\01 Working Set\01 Civil\10158.00 Plan & Profile – Storm Drain.dwg





RECORD DRAWING

1. DATA PROVIDED BY: _____ TITLE: _____
   THIS WILL SERVE TO CERTIFY THAT THESE RECORD DRAWINGS ARE A TRUE AND ACCURATE REPRESENTATION OF THE PROJECT AS CONSTRUCTED.
   CONTRACTOR: _____
   BY: _____ TITLE: _____ DATE: _____
2. DATA TRANSFERRED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
3. BASED ON PERIODIC FIELD OBSERVATIONS BY THE ENGINEER (OR AN INDIVIDUAL UNDER HIS/HER DIRECT SUPERVISION), THE CONTRACTOR-PROVIDED DATA APPEARS TO REPRESENT THE PROJECT AS CONSTRUCTED.
   DATA TRANSFER CHECKED BY: _____ TITLE: _____
   COMPANY: _____ DATE: _____
   BY: _____

DATA	DRAWN BY	CHECKED BY
BASE	R&M	R&M
TOPOGRAPHY	R&M	R&M
PROFILE	RB	JK
STORM SEWER	JM	JH
WATER/SANITARY SEWER	R&M	R&M
GAS	R&M	R&M
TELEPHONE	R&M	R&M
ELECTRIC	JH	TK
DESIGN	RB	JK
QUANTITIES	RB	JK
PRELIMINARY/FINAL	RB	JK
MUNICIPAL/STATE	RB	JK

PLAN CHECK

GRAPHIC SCALE 40 20 0 20 40

FIELD BOOKS	BM NO.	LOCATION	ELEV.
DESIGN			
STAKING			
ASBUILT			
CONTRACTOR	BASIS OF THIS DATUM		
INSPECTOR			

CONSTRUCTION RECORD | VERTICAL DATUM

REV	DATE	DESCRIPTION	BY

REVISIONS

CRW ENGINEERING GROUP
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

CONSULTANT | SEAL

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT AND ENGINEERING DEPARTMENT

21-02 E 74TH AVE/ NANCY ST/ E 75TH AVE ROAD RECONSTRUCTION SCHED B

STORM DRAIN PLAN & PROFILE

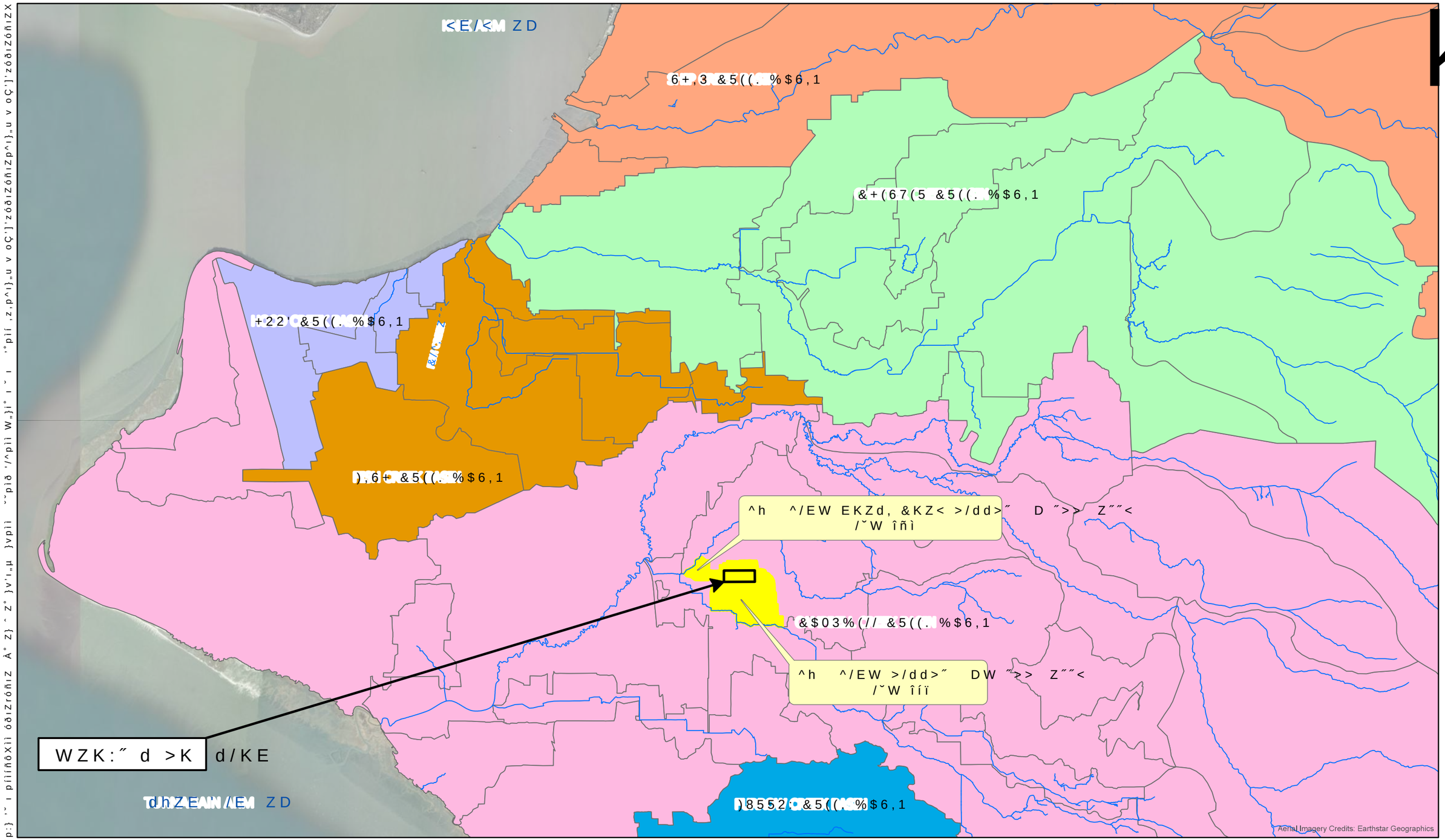
PETERSBURG STREET – STA 64+00 TO STA 67+00

SCALE HOR. 1"=20' VER. 1"=5' | GRID SW2132, SW2133 | DATE DEC 2025 | STATUS DSM | SHEET C9 of C9

File: J:\Jobs\Data\10158.00 74th-75th Ave Road Reconstruction\00 CADD\01 Working Set\01 Civil\10158.00 Plan & Profile – Storm Drain.dwg

APPENDIX D

Hydrologic and Hydraulic Analysis



74th / 75th Ave Road Reconstruction

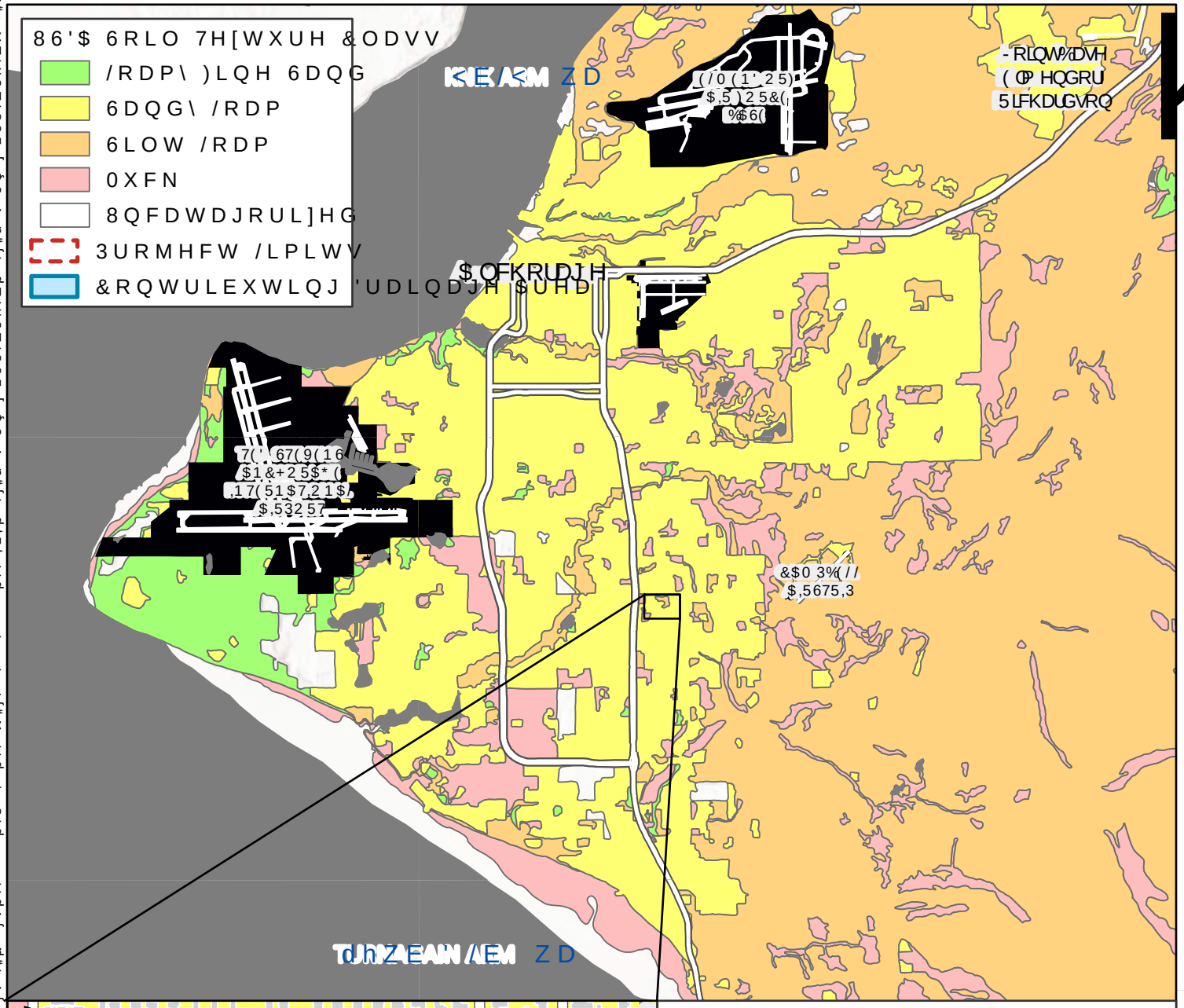
Project Location and MOA Watershed Boundaries Map

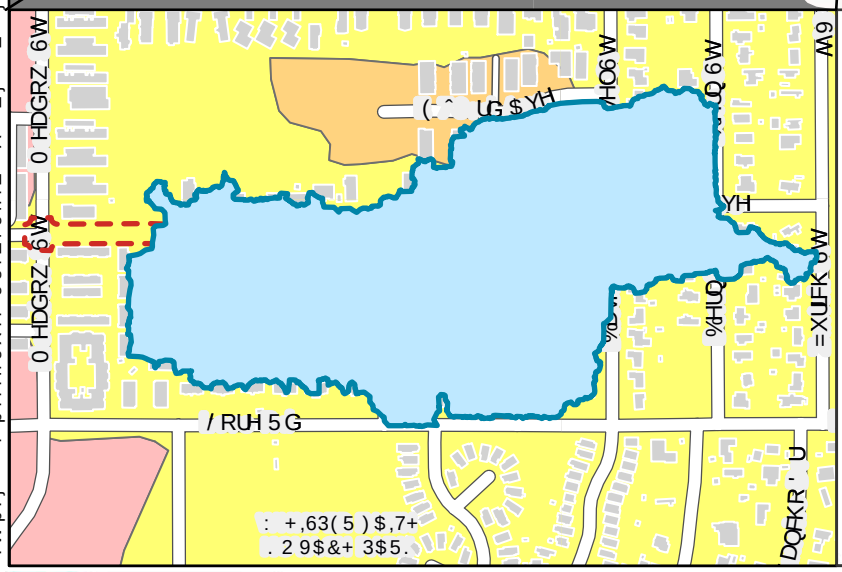
December 2025

CRW ENGINEERING GROUP

^dZ˝ D^
^h ^/E^
DW ˝>> Z˝˝<
,˝^d˝Z Z˝˝<
&/^, Z˝˝<
&hZZKt Z˝˝<
,KK˘ Z˝˝<
^,/W Z˝˝<

0LOHV





Soil Texture Class	K	Ψ	Φ	FC	WP
Sand	4.74	1.93	0.437	0.062	0.024
Loamy Sand	1.18	2.40	0.437	0.105	0.047
Sandy Loam	0.43	4.33	0.453	0.190	0.085
Loam	0.13	3.50	0.463	0.232	0.116
Silt Loam	0.26	6.69	0.501	0.284	0.135
Sandy Clay Loam	0.06	8.66	0.398	0.244	0.136
Clay Loam	0.04	8.27	0.464	0.310	0.187
Silty Clay Loam	0.04	10.63	0.471	0.342	0.210
Sandy Clay	0.02	9.45	0.430	0.321	0.221
Silty Clay	0.02	11.42	0.479	0.371	0.251
Clay	0.01	12.60	0.475	0.378	0.265

K = saturated hydraulic conductivity, in/hr
Ψ = suction head, in.
Φ = porosity, fraction
FC = field capacity, fraction
WP = wilting point, fraction

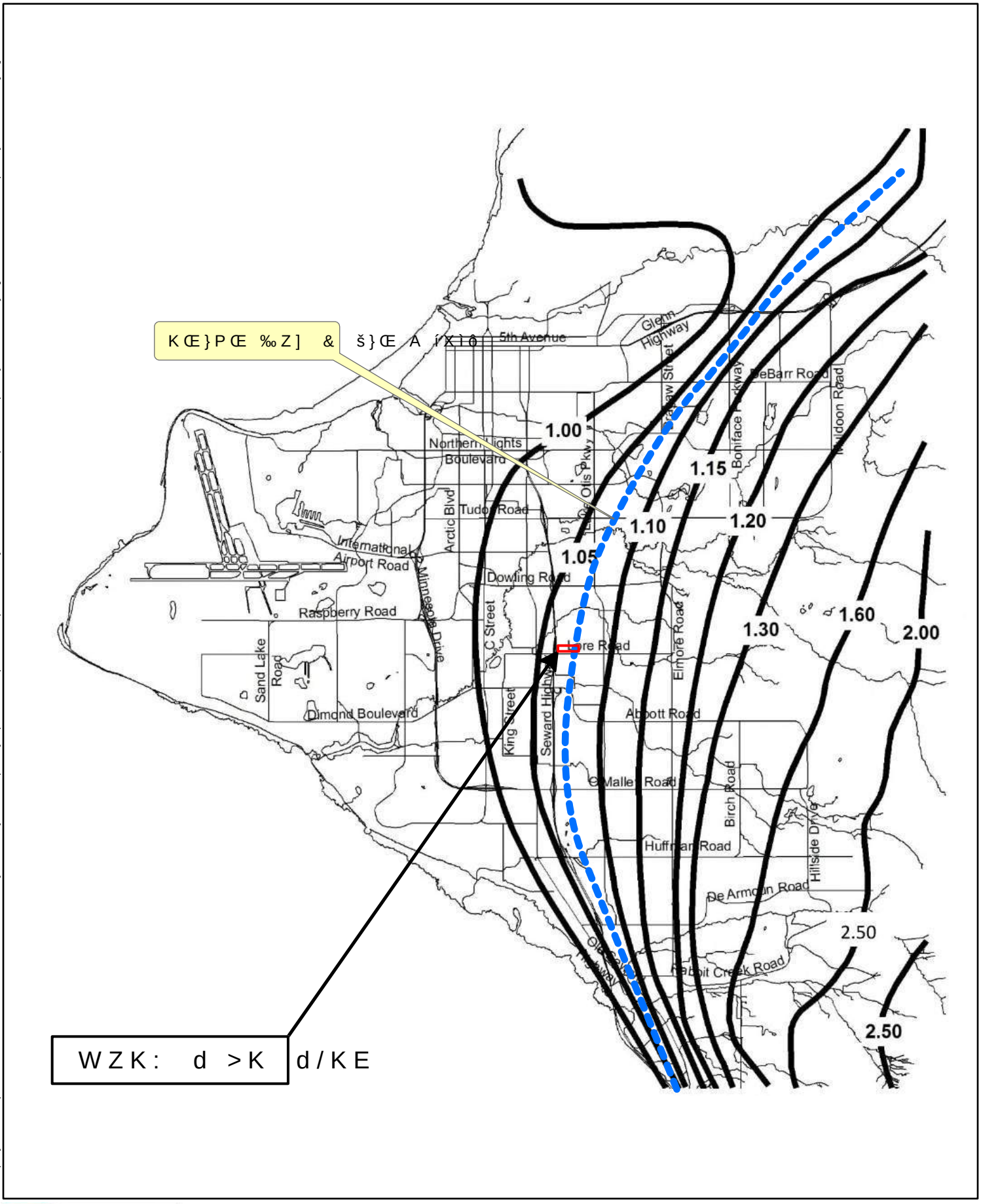
Source: Rawls, W.J. et al., (1983). J. Hyd. Engr., 109:1316.

CRW ENGINEERING GROUP

74th / 75th Ave Road Reconstruction

Soil Classifications

December 2025



K Œ } P Œ ‰ Z] & š } Œ A í X] ô

W Z K : d > K d / K E

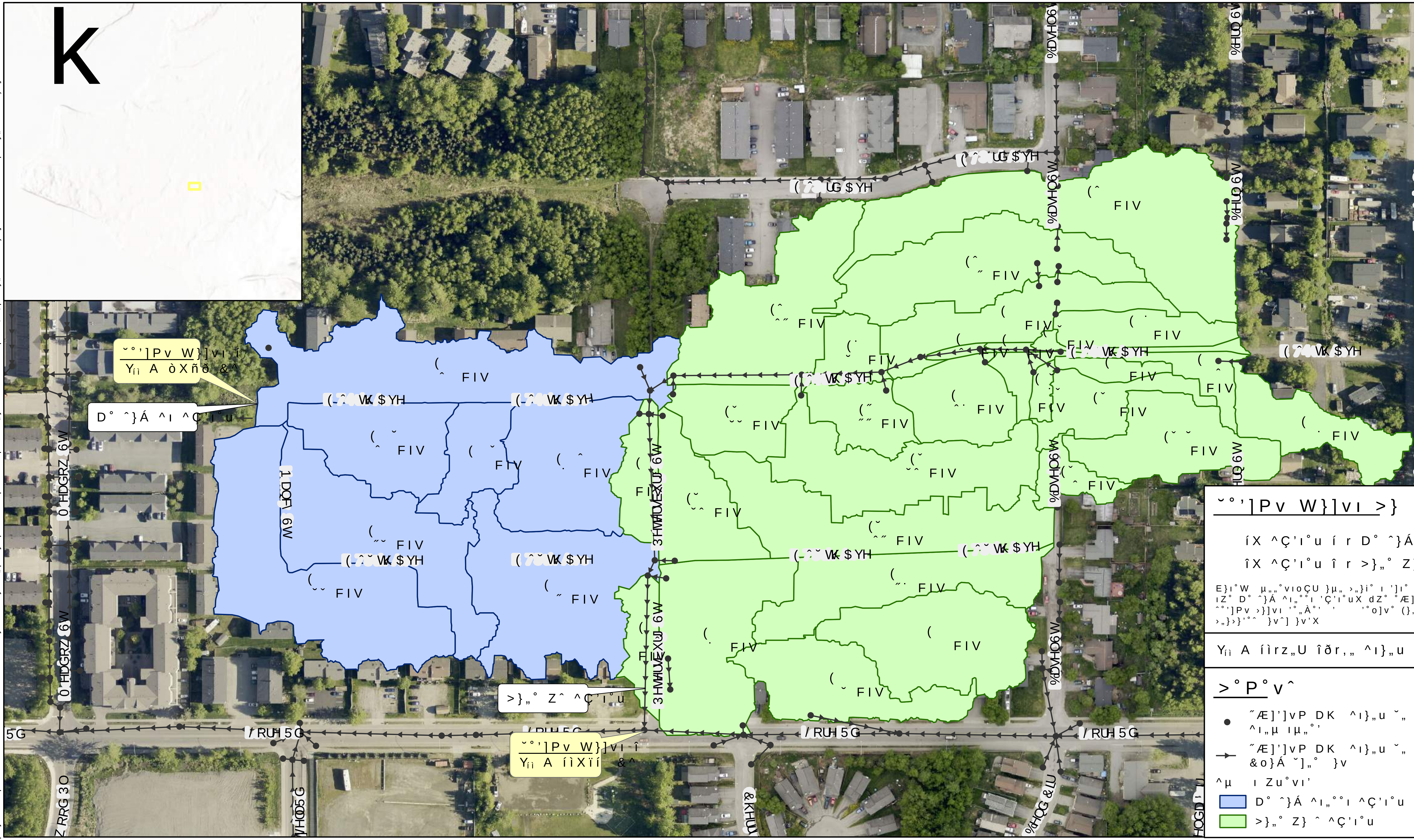
CRW ENGINEERING GROUP

74th / 75th Ave Road Reconstruction

Orographic Factor Map (Anchorage)

December 2025

1



74th / 75th Ave Road Reconstruction

Existing Stormwater Systems & Contributing Catchments

December 2025

PCSWMM Report

Existing Conditions

Model 10158_Existing.inp

CRW Engineering Group, Inc

December 2025

Table of Contents

Summary 1: Options

Name	10158_Existing
Flow Units	CFS
Infiltration method	MODIFIED_GREEN_AMPT
Flow routing method	Dynamic Wave
Link offsets defined by	Elevation
Allow ponding	No
Skip steady flow periods	No
Inertial dampening	Partial
Define supercritical flow by	Both
Force Main Equation	H-W
Variable time step	On
Adjustment factor (%)	75
Conduit lengthening (s)	0
Minimum surface area (ft²)	0
Starting date	Dec-14-2023 12:00:00 AM
Ending date	Dec-15-2023 12:00:00 AM
Duration of simulation (hours)	24
Antecedent dry days (days)	0
Rain interval (h:mm)	0:06
Report time step (h:mm:ss)	00:01:00
Wet time step (h:mm:ss)	00:05:00
Dry time step (h:mm:ss)	00:05:00
Routing time step (s)	5
Minimum time step used (s)	0.5
Average time step used (s)	4.33
Minimum conduit slope	0
Ignore rainfall/runoff	No
Ignore snow melt	No
Ignore groundwater	No
Ignore flow routing	No
Ignore water quality	No
Report average results	No

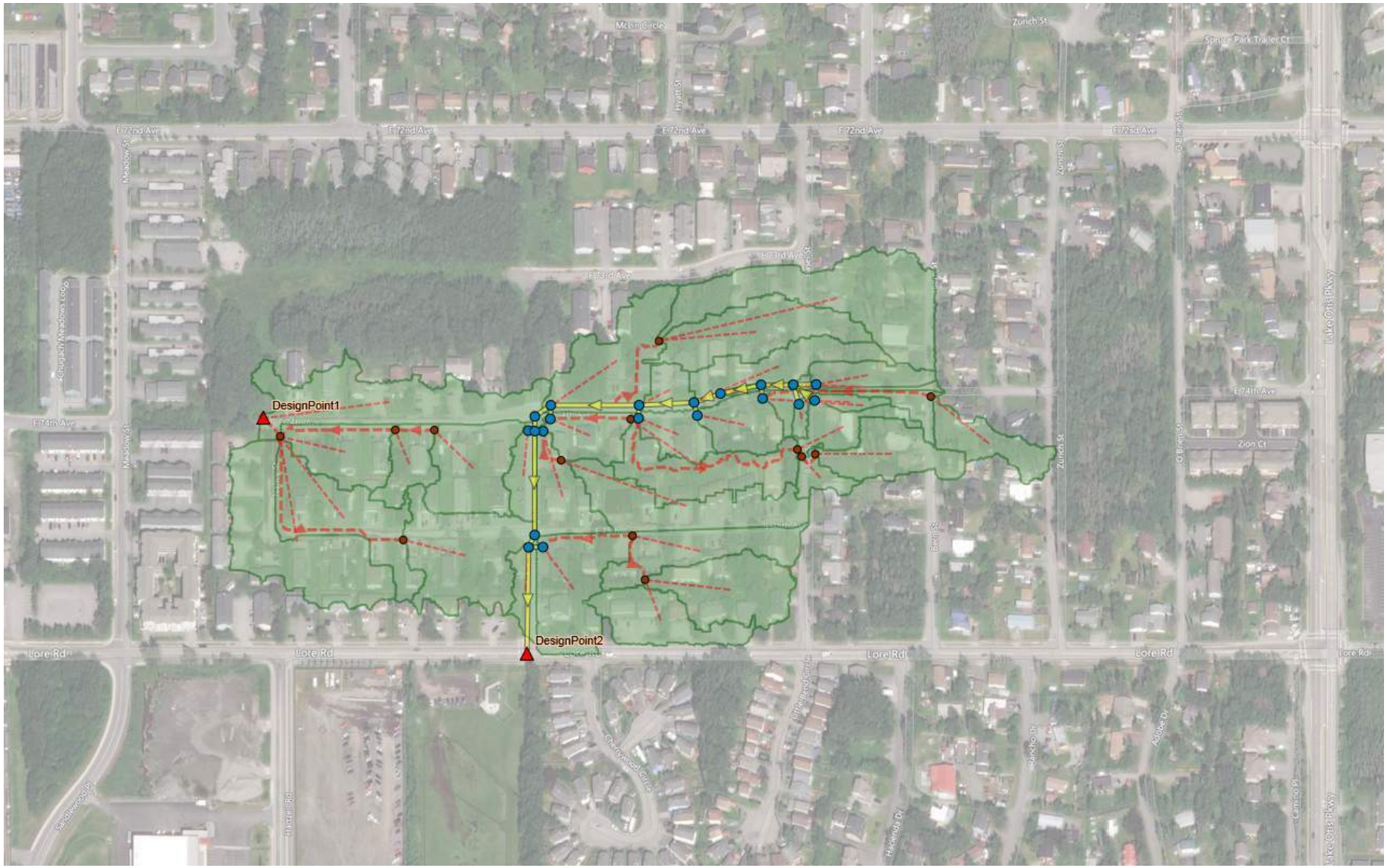


Figure 1: Contributing Catchments_74th-75th

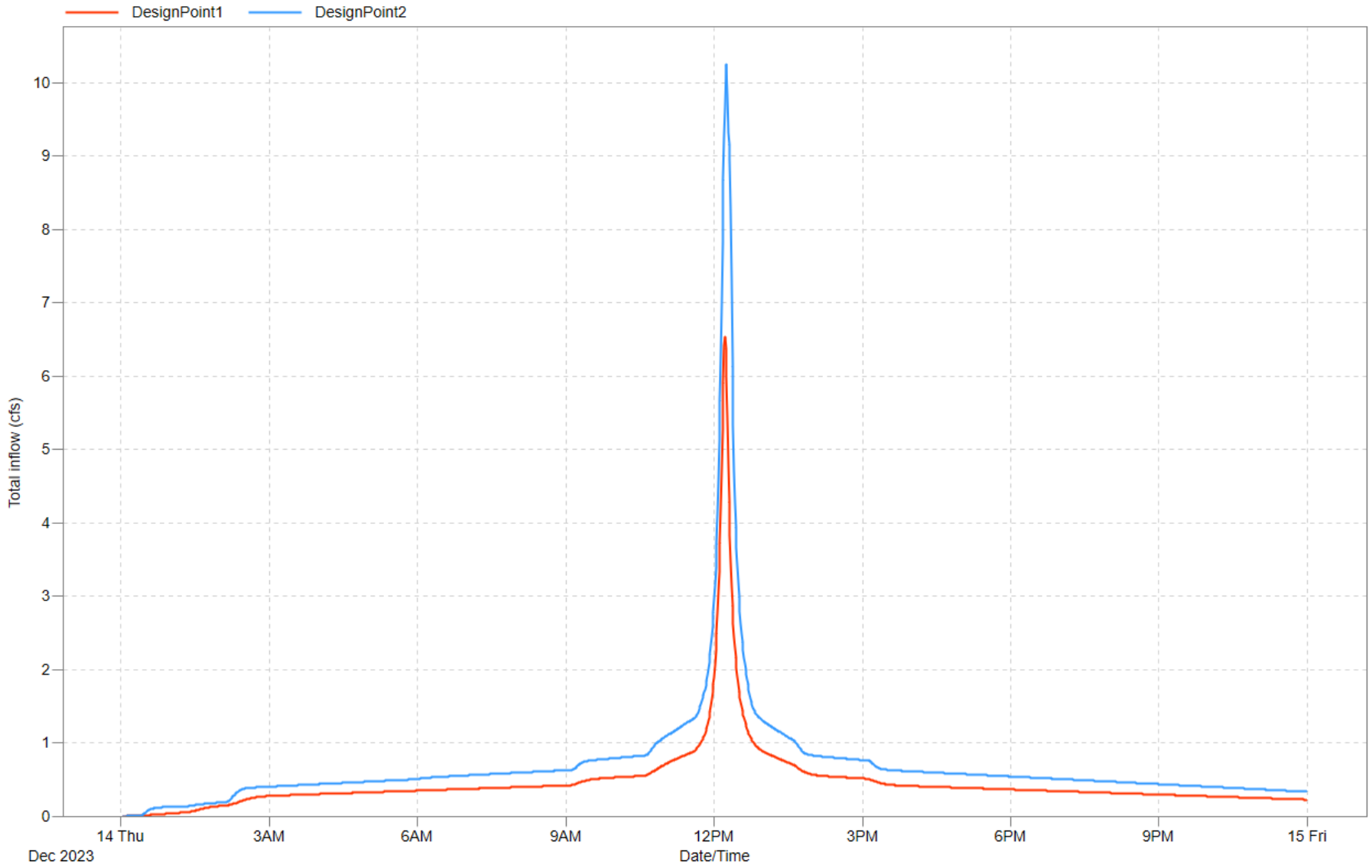


Figure 2: Design Point Hydrograph

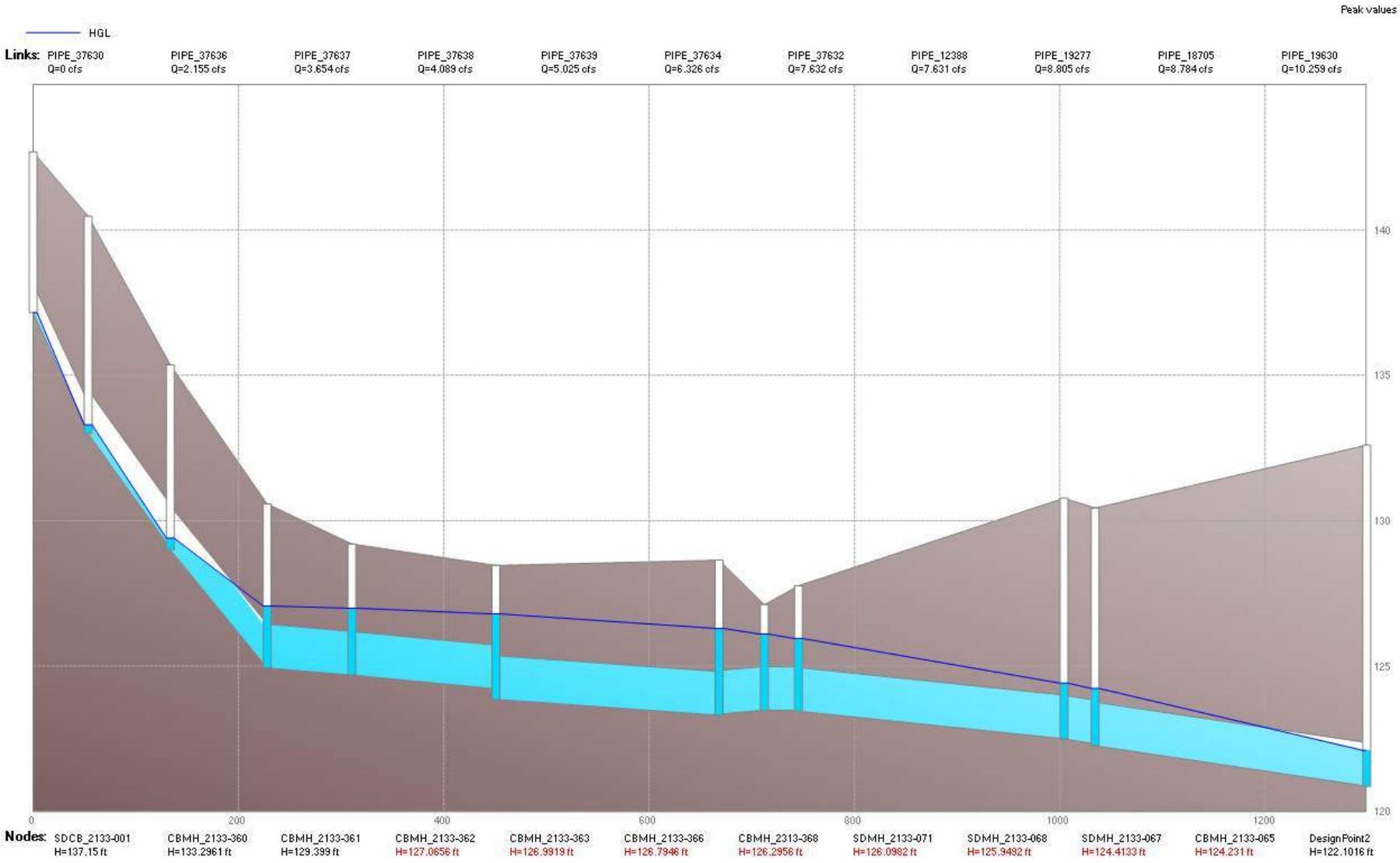


Figure 3: 74th Ave. to Lore Rd.

Table 1: Conduit Summary Table

Name	Inlet Node	Outlet Node	Length (ft)	Inlet Elev. (ft)	Outlet Elev. (ft)	Slope (%)	Diameter (in)	Roughness	Max. |Velocity| (ft/s)	Max. |Flow| (cfs)	Design Flow Capacity (cfs)
PIPE_12388	SDMH_2133-071	SDMH_2133-068	33.207	123.49	123.47	0.06	18	0.012	4.36	7.71	2.79
PIPE_17407	SDCB_2133-066	CBMH_2133-065	32.105	124.38	123.45	2.9	10	0.012	7.1	1.71	4.04
PIPE_18705	SDMH_2133-067	CBMH_2133-065	30.416	122.5	122.32	0.59	18	0.012	4.99	8.8	8.76
PIPE_19277	SDMH_2133-068	SDMH_2133-067	258.63	123.45	122.5	0.37	18	0.012	4.99	8.82	6.89
PIPE_19630	CBMH_2133-065	DesignPoint2	264.578	122.26	120.87	0.52	18	0.012	6.1	10.31	8.25
PIPE_25202	SDCB_2133-070	SDMH_2133-068	16.964	123.64	123.45	1.12	10	0.012	2.02	1.1	2.51
PIPE_29254	SDCB_2133-069	SDMH_2133-068	12.519	123.67	123.49	1.44	10	0.012	1.32	0.31	2.84
PIPE_37629	SDCB_2133-359	CBMH_2133-360	49.84	135.22	133.05	4.36	12	0.012	6.32	0.86	8.06
PIPE_37630	SDCB_2133-001	CBMH_2133-360	53.53	137.15	133.05	7.68	12	0.012	0	0	10.7
PIPE_37631	SDCB_2133-002	CBMH_2133-360	64.09	137.01	133.05	6.19	12	0.012	0.39	0.01	9.6
PIPE_37632	CBMH_2313-368	SDMH_2133-071	44.08	123.35	123.44	-0.204	18	0.012	4.39	7.75	0
PIPE_37633	SDCB_2133-369	CBMH_2313-368	29.539	123.87	123.48	1.32	12	0.012	1.79	1.4	4.43
PIPE_37634	CBMH_2133-366	CBMH_2313-368	217.479	123.86	123.31	0.25	18	0.012	3.93	6.94	5.72
PIPE_37635	SDCB_2133-367	CBMH_2133-366	33	124.55	124.22	1	12	0.012	2.83	0.99	3.86
PIPE_37636	CBMH_2133-360	CBMH_2133-361	80	133	129.05	4.94	18	0.012	7.74	2.17	25.3
PIPE_37637	CBMH_2133-361	CBMH_2133-362	94.32	129	124.94	4.31	18	0.012	4.63	3.68	23.62
PIPE_37638	CBMH_2133-362	CBMH_2133-363	82.56	124.94	124.69	0.3	18	0.012	3.33	4.26	6.26
PIPE_37639	CBMH_2133-363	CBMH_2133-366	140.25	124.69	124.22	0.34	18	0.012	3.75	5.46	6.59
PIPE_37640	SDCB_2133-365	CBMH_2133-361	30.505	130.96	129.05	6.27	12	0.012	5.06	0.83	9.67
PIPE_37641	SDCB_2133-364	CBMH_2133-363	33	125	124.69	0.94	12	0.012	1.28	0.81	3.74

Table 2: Junctions Summary Table

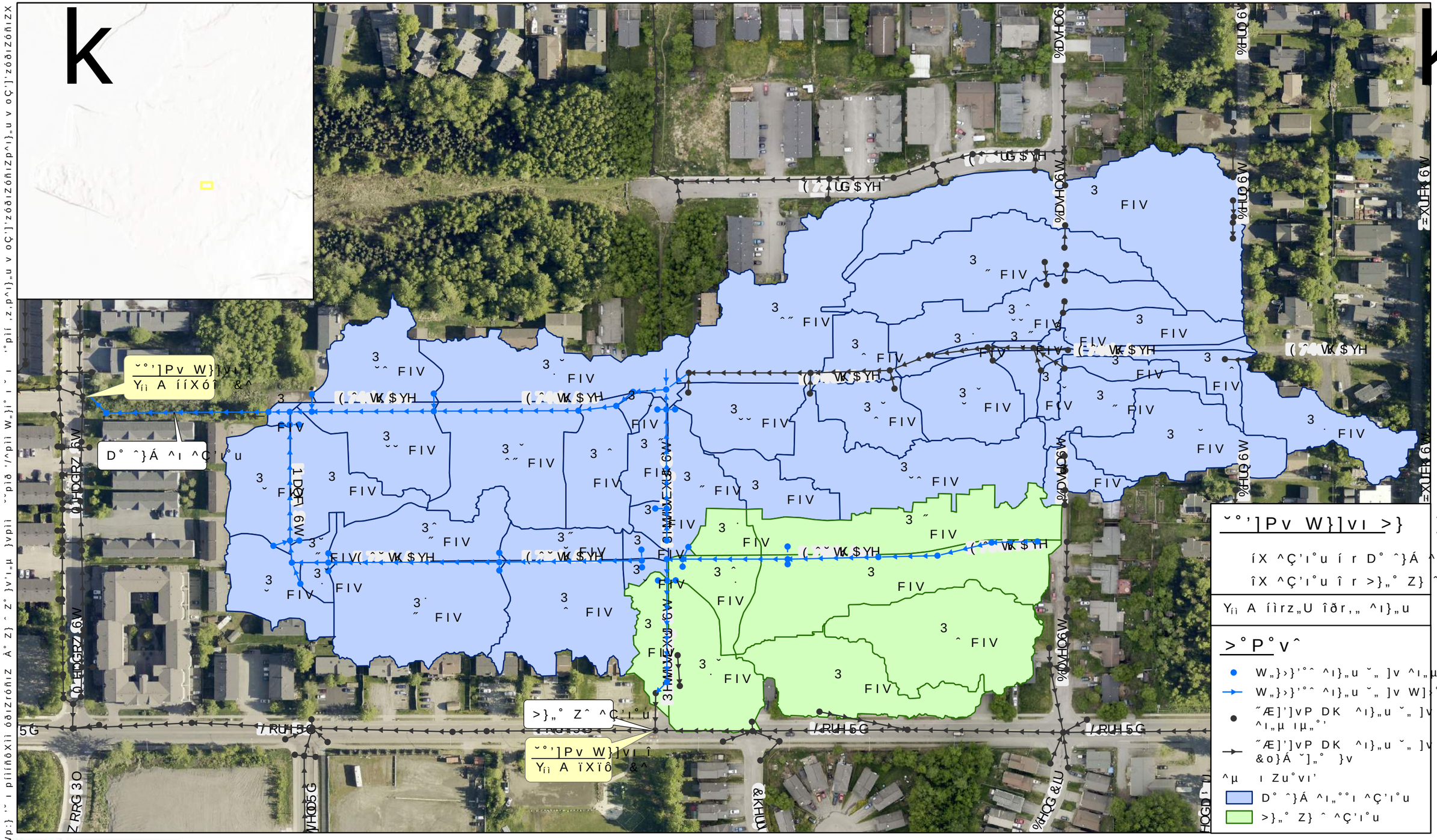
Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Surcharge Depth (ft)	Ponded Area (ft^2)	Max. Depth (ft)	Max. HGL (ft)	Max. Surcharge (ft)	Min. Freeboard (ft)	Hours Flooded (h)	Total Flood Vol. (MG)
CBMH_2133-065	122.26	130.435	8.175	0	10	1.99	124.25	0	6.185	0	0
CBMH_2133-360	133	140.47	7.47	0	10	0.3	133.3	0	7.17	0	0
CBMH_2133-361	129	135.36	6.36	0	10	0.4	129.4	0	5.96	0	0
CBMH_2133-362	124.94	130.58	5.64	0	10	2.68	127.62	1.18	2.96	0	0
CBMH_2133-363	124.69	129.2	4.51	0	10	2.79	127.48	1.287	1.723	0	0
CBMH_2133-366	123.86	128.46	4.6	0	10	3.11	126.97	1.25	1.49	0	0
CBMH_2313-368	123.31	127.183	3.873	0	10	2.99	126.3	0	2.343	0	0
SDCB_2133-001	137.15	142.68	5.53	0	10	0	137.15	0	5.53	0	0
SDCB_2133-002	137.01	141.75	4.74	0	10	0.03	137.04	0	4.71	0	0
SDCB_2133-066	124.38	129.335	4.955	0	10	0.38	124.76	0	5.86	0	0
SDCB_2133-069	123.67	126.809	3.139	0	10	2.29	125.96	1.454	0.852	0	0
SDCB_2133-070	123.64	127.019	3.379	0	10	2.34	125.98	0	2.721	0	0
SDCB_2133-359	135.22	139.75	4.53	0	10	0.22	135.44	0	4.31	0	0
SDCB_2133-364	125	128.95	3.95	0	10	2.52	127.52	1.523	1.427	0	0
SDCB_2133-365	130.96	134.86	3.9	0	10	0.2	131.16	0	3.7	0	0
SDCB_2133-367	124.05	127.94	3.89	0	10	2.98	127.03	1.477	0.913	0	0
SDCB_2133-369	123.87	127.242	3.372	0	10	2.46	126.33	0	2.809	0	0
SDMH_2133-067	122.5	130.776	8.276	0	10	1.93	124.43	0.434	6.342	0	0
SDMH_2133-068	123.45	127.765	4.315	0	10	2.5	125.95	0.983	1.812	0	0
SDMH_2133-071	123.49	127.114	3.624	0	10	2.61	126.1	1.11	1.014	0	0

Table 3: Subbasin Summary Table

Name	Outlet	Area (ac)	Precipitation (in)	Infiltration (in)	Imperv Runoff (in)	Perv Runoff (in)	Runoff Volume (MG)	Peak Runoff (cfs)
E10	SDCB_2133-364	0.8679	2.45	1.13	1.27	0	0.03	0.78
E11	CBMH_2133-363	0.4289	2.45	1.31	1.1	0	0.01	0.33
E1-1	J1	1.8723	2.45	1.16	1.24	0	0.06	1.56
E12	CBMH_2133-362	0.4289	2.45	0	2.37	0	0.03	0.72
E1-2	J1	1.3709	2.45	1.41	1.01	0	0.04	0.95
E13	CBMH_2133-361	0.4289	2.45	0.02	2.35	0	0.03	0.72
E1-3	J4	1.5507	2.45	1.12	1.3	0	0.05	1.39
E1-4	DesignPoint1	1.8464	2.45	1.02	1.39	0	0.07	1.74
E14-1	SDCB_2133-365	0.7895	2.45	1.1	1.35	0	0.03	0.73
E14-2	J13	0.6071	2.45	2.01	0.43	0	0.01	0.18
E15	SDCB_2133-359	0.7895	2.45	2.26	1.22	0.19	0	0.86
E1-5	J1	0.8266	2.45	1.12	1.28	0	0.03	0.74
E16	CBMH_2133-360	0.7895	2.45	0.01	2.44	0	0.05	1.32
E1-6	J2	0.4823	2.45	1.42	1.01	0	0.01	0.34
E17	SDCB_2133-002	0.5817	2.45	2.43	0.64	0	0	0.01
E1-7	J3	1.0589	2.45	1.31	1.1	0	0.03	0.81
E18	SDCB_2133-001	0.4289	2.45	2.43	0.55	0	0	0
E2	CBMH_2133-065	0.2985	2.45	1.64	0.78	0	0.01	0.17
E3-1	SDCB_2133-066	1.2421	2.45	1.5	0.93	0	0.03	0.81
E3-2	J6	0.8497	2.45	2.33	1.27	0.08	0	0.25
E3-3	J5	0.991	2.45	0.98	1.42	0	0.04	0.98
E3-4	J6	1.1362	2.45	2.42	0.85	0	0	0
E4	SDCB_2133-069	0.3412	2.45	1.39	1.02	0	0.01	0.25
E5-1	SDCB_2133-070	0.6646	2.45	1.18	1.22	0	0.02	0.57
E5-2	J7	1.2857	2.45	2.27	1.29	0.15	0.01	0.79
E6-1	SDCB_2133-369	0.539	2.45	0.95	1.45	0	0.02	0.55
E6-2	J8	1.1707	2.45	1.74	0.69	0	0.02	0.57
E6-3	J9	0.5817	2.45	1.45	0.98	0	0.02	0.4
E6-4	J10	0.2278	2.45	1.33	1.09	0	0.01	0.17
E6-5	J11	0.8366	2.45	2.4	0.69	0.05	0	0.2
E7-1	CBMH_2313-368	1.3411	2.45	1.58	0.84	0	0.03	0.79
E7-2	J12	1.2684	2.45	2.42	0.76	0.01	0	0.09
E7-3	J12	2.1538	2.45	2.43	0.56	0	0	0
E8	CBMH_2133-366	0.4289	2.45	0.62	1.77	0	0.02	0.53
E9	SDCB_2133-367	0.8679	2.45	0.77	1.62	0	0.04	0.99

Table 4: Outfall Summary Table

Name	Max. Flow (cfs)	Total Flow (MG)
DesignPoint1	6.54	0.297
DesignPoint2	10.31	0.457



74th / 75th Ave Road Reconstruction

Proposed Stormwater Systems & Contributing Catchments

December 2025

CRW ENGINEERING GROUP

PCSWMM Report

Proposed Conditions

Model 10158_Proposed.inp

CRW Engineering Group, Inc

December 2025

Table of Contents

Summary 1: Options

Name	10158_Proposed
Flow Units	CFS
Infiltration method	MODIFIED_GREEN_AMPT
Flow routing method	Dynamic Wave
Link offsets defined by	Elevation
Allow ponding	No
Skip steady flow periods	No
Inertial dampening	Partial
Define supercritical flow by	Both
Force Main Equation	H-W
Variable time step	On
Adjustment factor (%)	75
Conduit lengthening (s)	0
Minimum surface area (ft²)	0
Starting date	Dec-14-2023 12:00:00 AM
Ending date	Dec-15-2023 12:00:00 AM
Duration of simulation (hours)	24
Antecedent dry days (days)	0
Rain interval (h:mm)	0:06
Report time step (h:mm:ss)	00:01:00
Wet time step (h:mm:ss)	00:05:00
Dry time step (h:mm:ss)	00:05:00
Routing time step (s)	5
Minimum time step used (s)	0.5
Average time step used (s)	0.94
Minimum conduit slope	0
Ignore rainfall/runoff	No
Ignore snow melt	No
Ignore groundwater	No
Ignore flow routing	No
Ignore water quality	No
Report average results	No

Figure 1: Contributing Catchments_74th-75th

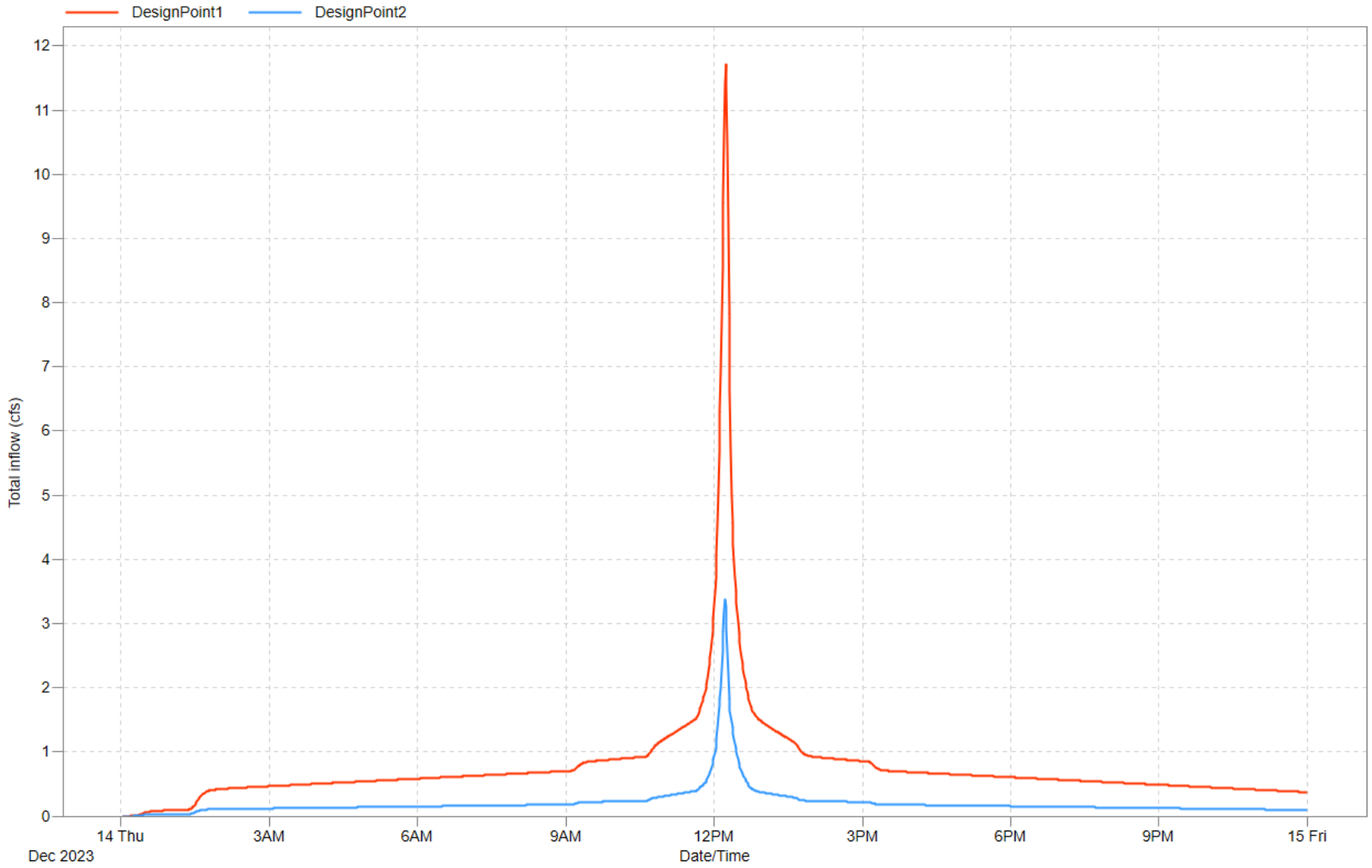


Figure 2: Design Point Hydrograph

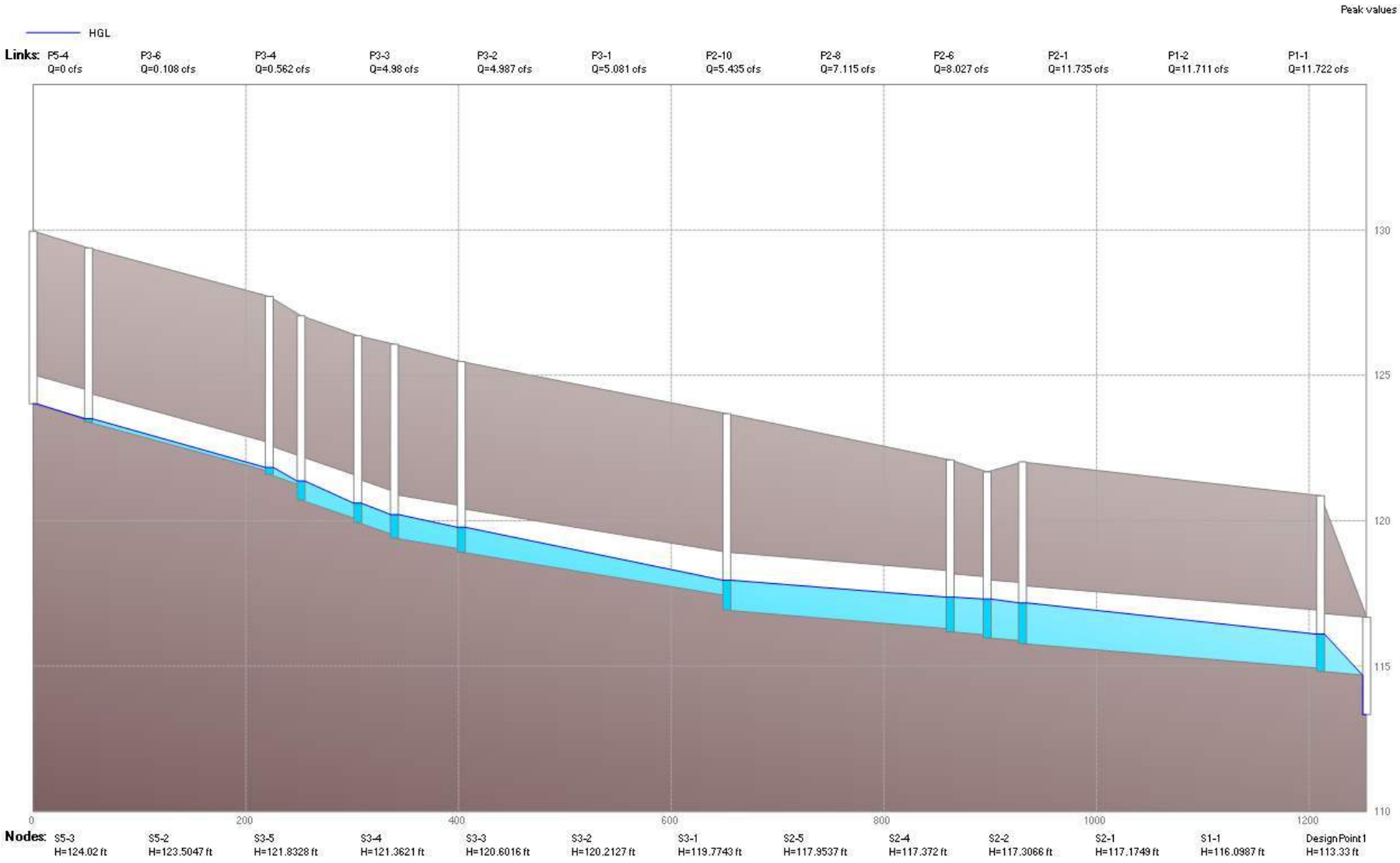


Figure 3: Petersburgh St. to 74th Ave.

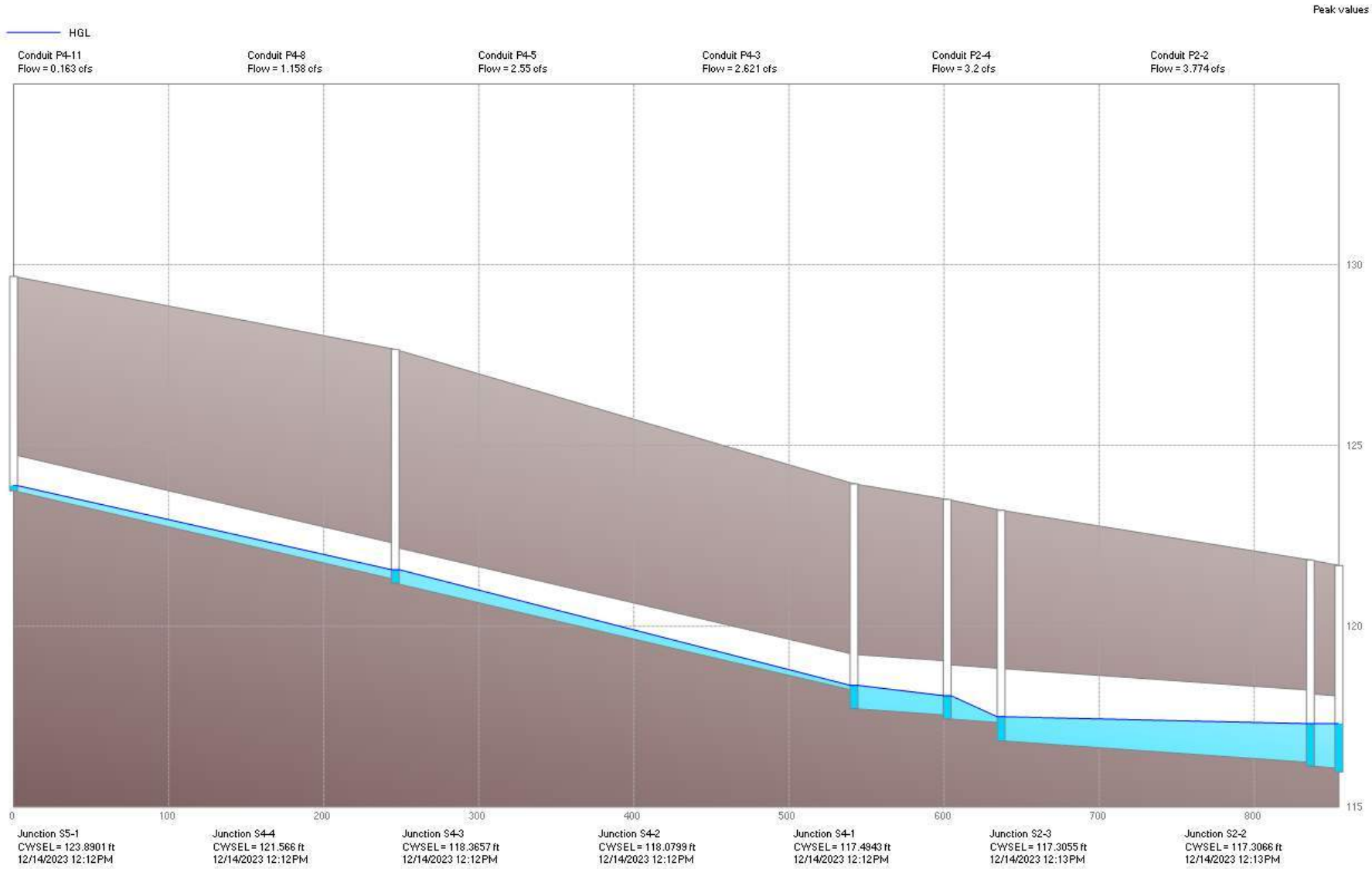


Figure 4: 75th Ave. to Nancy St.

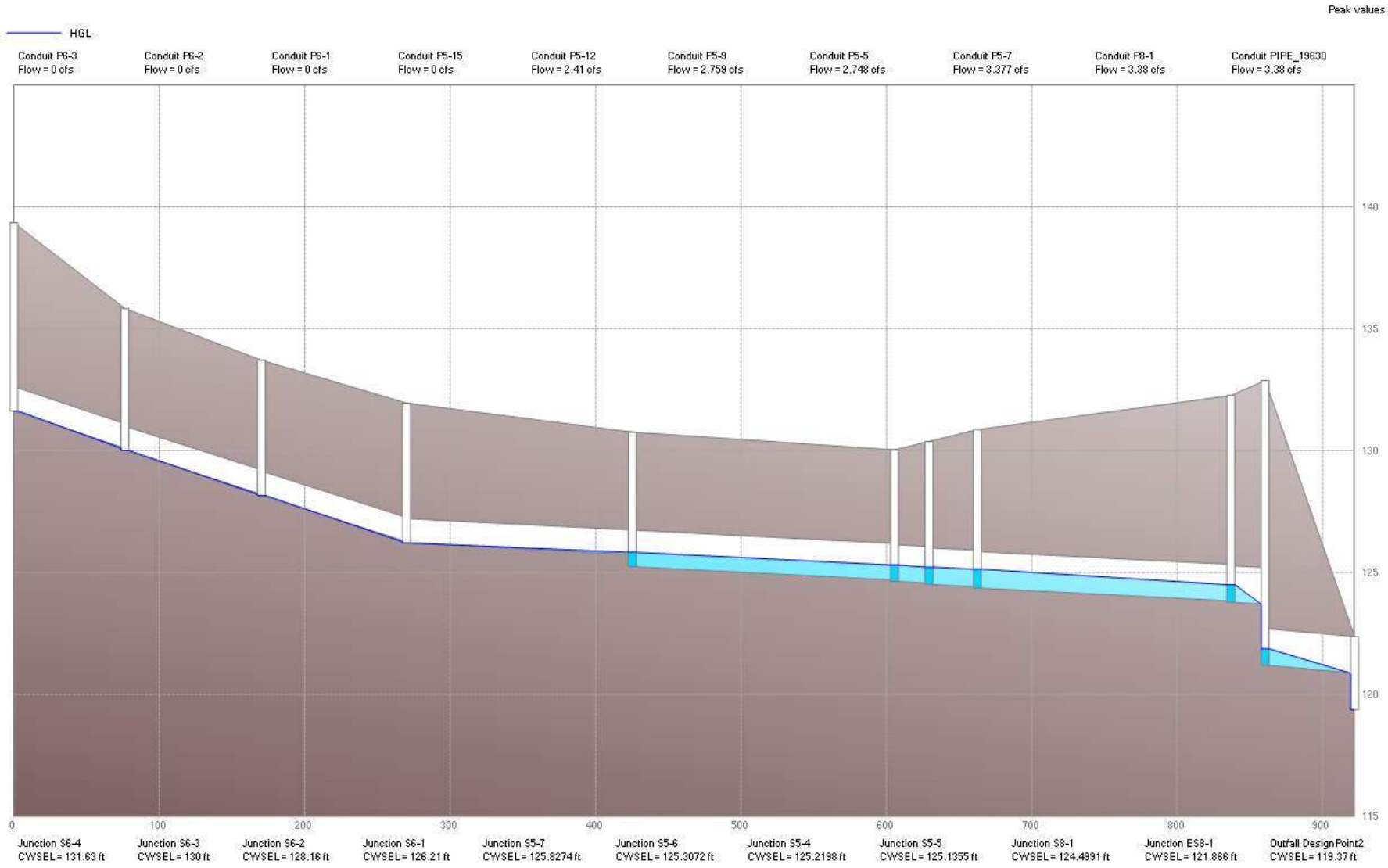


Figure 5: 75th Ave. to Lore Rd.

Table 1: Conduit Summary Table

Name	Inlet Node	Outlet Node	Length (ft)	Inlet Elev. (ft)	Outlet Elev. (ft)	Slope (%)	Diameter (in)	Roughness	Max. |Velocity| (ft/s)	Max. |Flow| (cfs)	Design Flow Capacity (cfs)
P1-1	S1-1	DesignPoint1	43.416	114.82	114.68	0.32	24	0.012	5.66	11.72	13.91
P1-2	S2-1	S1-1	280.366	115.77	114.92	0.3	24	0.012	5.34	11.72	13.49
P2-1	S2-2	S2-1	33.27	115.97	115.87	0.3	24	0.012	5.42	11.76	13.45
P2-10	S3-1	S2-5	249.688	118.92	117.42	0.6	18	0.012	5.26	5.45	8.82
P2-2	S2-3	S2-2	18.406	116.13	116.07	0.33	24	0.012	2	3.81	13.99
P2-3	I2-1	S2-3	10.775	117.49	117.27	2.04	12	0.012	4.24	0.45	5.52
P2-4	S4-1	S2-3	199.436	116.83	116.23	0.3	24	0.012	2.56	3.23	13.45
P2-5	I2-2	S2-3	12.275	117.24	116.99	2.04	12	0.012	3.74	0.31	5.51
P2-6	S2-4	S2-2	34.719	116.18	116.07	0.32	24	0.012	4.06	8.03	13.8
P2-7	I2-3	S2-4	27.025	117.59	117.04	2.04	12	0.012	4.48	0.57	5.51
P2-8	S2-5	S2-4	210.136	116.92	116.28	0.3	24	0.012	4.2	7.11	13.53
P2-9	I2-4	S2-5	27.025	119.17	118.62	2.04	12	0.012	5.45	1.08	5.51
P3-1	S3-2	S3-1	62.94	119.4	119.02	0.6	18	0.012	5.19	5.11	8.84
P3-2	S3-3	S3-2	34.464	119.94	119.5	1.28	18	0.012	6.33	5.05	12.86
P3-3	S3-4	S3-3	53.271	120.71	120.04	1.26	18	0.012	6.8	5.05	12.76
P3-4	S3-5	S3-4	29.916	121.59	121.21	1.27	12	0.012	3.82	0.56	4.35
P3-5	I3-1	S3-5	11.518	123.36	123.13	2	10	0.012	3.22	0.17	3.35
P3-6	S5-2	S3-5	169.927	123.39	121.69	1	12	0.012	1.9	0.11	3.86
P3-7	I3-2	S3-5	11.519	123.2	122.97	2	10	0.012	3.76	0.29	3.35
P3-8	CBMH_2313-368	S3-4	43.322	121.25	120.81	1.02	18	0.012	6.09	4.48	11.47
P3-9	CAP3-1	S3-4	33.743	120.92	120.81	0.33	18	0.01	0	0	7.8
P4-1	I4-1	S4-1	26.558	118.26	117.72	2.03	12	0.012	4.43	0.53	5.5
P4-10	I4-7	S4-4	10.662	123.33	123.11	2.06	12	0.012	4.85	0.7	5.55
P4-11	S5-1	S4-4	245.983	123.75	121.29	1	12	0.012	1.48	0.16	3.86
P4-2	I4-2	S4-1	12.275	118.63	118.38	2.04	12	0.012	2.65	0.09	5.51
P4-3	S4-2	S4-1	34.926	117.44	117.33	0.32	18	0.012	3.76	2.64	6.39

Table 1: Conduit Summary Table (continued...)

Name	Inlet Node	Outlet Node	Length (ft)	Inlet Elev. (ft)	Outlet Elev. (ft)	Slope (%)	Diameter (in)	Roughness	Max. |Velocity| (ft/s)	Max. |Flow| (cfs)	Design Flow Capacity (cfs)
P4-4	I4-3	S4-2	35.854	118.97	118.25	2.01	12	0.012	2.49	0.08	5.47
P4-5	S4-3	S4-2	59.96	117.72	117.54	0.3	18	0.012	3.67	2.56	6.23
P4-6	I4-4	S4-3	12.275	119.35	119.1	2.04	12	0.012	4.35	0.49	5.51
P4-7	I4-5	S4-3	10.775	119.59	119.37	2.04	12	0.012	5.2	0.91	5.52
P4-8	S4-4	S4-3	296.012	121.19	118.22	1	12	0.012	4.32	1.17	3.87
P4-9	I4-6	S4-4	12.388	123.08	122.83	2.02	12	0.012	3.91	0.35	5.48
P5-1	I5-1	S5-1	15.162	125.14	124.83	2.04	12	0.012	2.77	0.11	5.52
P5-10	I5-6	S5-6	19.733	125.8	125.4	2.03	12	0.012	3.37	0.21	5.5
P5-11	I5-7	S5-6	9.179	126.1	125.91	2.07	12	0.012	0	0	5.55
P5-12	S5-7	S5-6	180.34	125.24	124.69	0.3	18	0.01	3.64	2.42	7.54
P5-13	I5-8	S5-7	18.213	126.53	126.16	2.03	12	0.01	6.15	1.04	6.6
P5-14	I5-9	S5-7	4.836	126.28	126.18	2.07	12	0.01	6.71	1.39	6.66
P5-15	S6-1	S5-7	155.269	126.21	125.74	0.3	12	0.01	0	0	2.55
P5-2	I5-2	S5-1	7.888	125.39	125.23	2.03	12	0.012	2.29	0.06	5.5
P5-3	I5-3	S5-2	15.885	124.99	124.67	2.02	12	0.012	2.77	0.11	5.48
P5-4	S5-3	S5-2	52.087	124.02	123.49	1.02	12	0.012	0	0	3.89
P5-5	S5-4	S5-5	33.234	124.51	124.41	0.3	18	0.012	3.31	2.79	6.24
P5-6	I5-4	S5-5	11.524	126.5	126.27	2	12	0.012	3.11	0.16	5.45
P5-7	S5-5	S8-1	174.289	124.36	123.83	0.3	18	0.012	3.91	3.38	6.27
P5-8	I5-5	S5-5	11.519	126.48	126.25	2	10	0.012	4.36	0.48	3.35
P5-9	S5-6	S5-4	23.755	124.64	124.56	0.34	18	0.012	3.66	2.79	6.61
P6-1	S6-2	S6-1	99.766	128.16	126.26	1.9	12	0.012	0	0	5.33
P6-2	S6-3	S6-2	93.8	130	128.21	1.91	12	0.012	0	0	5.33
P6-3	S6-4	S6-3	76.433	131.63	130.1	2	12	0.012	0	0	5.46
P8-1	S8-1	ES8-1	23.574	123.78	123.7	0.34	18	0.012	4.11	3.38	6.63
PIPE_19630	ES8-1	DesignPoint2	61.537	121.2	120.87	0.54	18	0.012	4.47	3.38	8.33

Table 1: Conduit Summary Table (continued...)

Name	Inlet Node	Outlet Node	Length (ft)	Inlet Elev. (ft)	Outlet Elev. (ft)	Slope (%)	Diameter (in)	Roughness	Max. |Velocity| (ft/s)	Max. |Flow| (cfs)	Design Flow Capacity (cfs)
PIPE_37629	SDCB_2133-359	CBMH_2133-360	49.84	135.22	133.05	4.36	12	0.012	3.07	0.06	8.06
PIPE_37630	SDCB_2133-001	CBMH_2133-360	53.53	137.15	133.05	7.68	12	0.012	0	0	10.7
PIPE_37631	SDCB_2133-002	CBMH_2133-360	64.09	137.01	133.05	6.19	12	0.012	1.18	0	9.6
PIPE_37633	SDCB_2133-369	CBMH_2313-368	29.555	123.87	123.48	1.32	12	0.012	4.5	0.95	4.43
PIPE_37634	CBMH_2133-366	CBMH_2313-368	217.484	123.86	123.31	0.25	18	0.012	3.56	2.82	5.72
PIPE_37635	SDCB_2133-367	CBMH_2133-366	32.753	124.55	124.22	1.01	12	0.012	2.88	0.46	3.88
PIPE_37636	CBMH_2133-360	CBMH_2133-361	80	133	129.05	4.94	18	0.012	3.54	0.24	25.3
PIPE_37637	CBMH_2133-361	CBMH_2133-362	94.32	129	124.94	4.31	18	0.012	3.51	0.83	23.62
PIPE_37638	CBMH_2133-362	CBMH_2133-363	82.56	124.94	124.69	0.3	18	0.012	1.85	0.89	6.26
PIPE_37639	CBMH_2133-363	CBMH_2133-366	139.216	124.69	124.22	0.34	18	0.012	3.45	2.05	6.62
PIPE_37640	SDCB_2133-365	CBMH_2133-361	30.505	130.96	129.05	6.27	12	0.012	6.64	0.54	9.67
PIPE_37641	SDCB_2133-364	CBMH_2133-363	33	125	124.69	0.94	12	0.012	1.77	0.53	3.74

Table 2: Junctions Summary Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Surcharge Depth (ft)	Ponded Area (ft²)	Max. Depth (ft)	Max. HGL (ft)	Max. Surcharge (ft)	Min. Freeboard (ft)	Hours Flooded (h)	Total Flood Vol. (MG)
CAP3-1	121.76	121.76	0	0	0	0	121.76	0	1.5	0	0
CBMH_2133-360	133	140.47	7.47	0	10	0.1	133.1	0	7.37	0	0
CBMH_2133-361	129	135.36	6.36	0	10	0.19	129.19	0	6.17	0	0
CBMH_2133-362	124.94	130.58	5.64	0	10	0.38	125.32	0	5.26	0	0
CBMH_2133-363	124.69	129.2	4.51	0	10	0.57	125.26	0	3.94	0	0
CBMH_2133-366	123.86	128.46	4.6	0	10	0.74	124.6	0	3.86	0	0
CBMH_2313-368	121.25	127.22	5.97	0	10	0.65	121.9	0	7.297	0	0
ES8-1	121.2	132.88	11.68	0	10	0.67	121.87	0	11.01	0	0
I2-1	117.49	121.74	4.25	0	10	0.19	117.68	0	4.06	0	0
I2-2	117.24	121.74	4.5	0	10	0.17	117.41	0	4.33	0	0
I2-3	117.59	122.09	4.5	0	10	0.22	117.81	0	4.28	0	0
I2-4	119.17	123.68	4.51	0	10	0.3	119.47	0	4.21	0	0
I3-1	123.36	127.61	4.25	0	10	0.13	123.49	0	4.12	0	0
I3-2	123.2	127.71	4.51	0	10	0.16	123.36	0	4.657	0	0
I4-1	118.26	122.52	4.26	0	10	0.21	118.47	0	4.05	0	0
I4-2	118.63	123.14	4.51	0	10	0.09	118.72	0	4.42	0	0
I4-3	118.97	123.23	4.26	0	10	0.08	119.05	0	4.18	0	0
I4-4	119.35	123.85	4.5	0	10	0.2	119.55	0	4.3	0	0
I4-5	119.59	123.85	4.26	0	10	0.28	119.87	0	3.98	0	0
I4-6	123.08	127.58	4.5	0	10	0.17	123.25	0	4.33	0	0
I4-7	123.33	127.58	4.25	0	10	0.24	123.57	0	4.01	0	0
I5-1	125.14	129.65	4.51	0	10	0.1	125.24	0	4.41	0	0
I5-2	125.39	129.65	4.26	0	10	0.07	125.46	0	4.19	0	0
I5-3	124.99	129.24	4.25	0	10	0.1	125.09	0	4.15	0	0
I5-4	126.5	130.76	4.26	0	10	0.12	126.62	0	4.14	0	0
I5-5	126.48	130.99	4.51	0	10	0.21	126.69	0	4.3	0	0
I5-6	125.8	130.05	4.25	0	10	0.13	125.93	0	4.12	0	0
I5-7	126.1	130.35	4.25	0	0	0	126.1	0	4.25	0	0
I5-8	126.53	130.79	4.26	0	0	0.27	126.8	0	3.99	0	0
I5-9	126.28	130.79	4.51	0	0	0.31	126.59	0	4.802	0	0
S1-1	114.82	120.86	6.04	0	10	1.28	116.1	0	4.76	0	0
S2-1	115.77	122.02	6.25	0	10	1.41	117.18	0	4.84	0	0
S2-2	115.97	121.68	5.71	0	10	1.34	117.31	0	4.37	0	0
S2-3	116.13	121.83	5.7	0	10	1.18	117.31	0	4.52	0	0
S2-4	116.18	122.09	5.91	0	10	1.19	117.37	0	4.72	0	0
S2-5	116.92	123.68	6.76	0	10	1.04	117.96	0	5.72	0	0
S3-1	118.92	125.47	6.55	0	10	0.85	119.77	0	5.7	0	0

Table 2: Junctions Summary Table (continued...)

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Surcharge Depth (ft)	Ponded Area (ft²)	Max. Depth (ft)	Max. HGL (ft)	Max. Surcharge (ft)	Min. Freeboard (ft)	Hours Flooded (h)	Total Flood Vol. (MG)
S3-2	119.4	126.07	6.67	0	10	0.82	120.22	0	5.85	0	0
S3-3	119.94	126.36	6.42	0	10	0.67	120.61	0	5.75	0	0
S3-4	120.71	127.05	6.34	0	10	0.66	121.37	0	5.68	0	0
S3-5	121.59	127.71	6.12	0	10	0.24	121.83	0	5.88	0	0
S4-1	116.83	123.21	6.38	0	10	0.67	117.5	0	5.71	0	0
S4-2	117.44	123.51	6.07	0	10	0.64	118.08	0	5.43	0	0
S4-3	117.72	123.94	6.22	0	10	0.65	118.37	0	5.57	0	0
S4-4	121.19	127.66	6.47	0	10	0.38	121.57	0	6.09	0	0
S5-1	123.75	129.68	5.93	0	10	0.14	123.89	0	5.79	0	0
S5-2	123.39	129.38	5.99	0	10	0.11	123.5	0	5.88	0	0
S5-3	124.02	129.96	5.94	0	10	0	124.02	0	5.94	0	0
S5-4	124.51	130.38	5.87	0	10	0.72	125.23	0	5.15	0	0
S5-5	124.36	130.86	6.5	0	10	0.78	125.14	0	5.72	0	0
S5-6	124.64	130.03	5.39	0	10	0.67	125.31	0	4.72	0	0
S5-7	125.24	130.76	5.52	0	0	0.59	125.83	0	4.93	0	0
S6-1	126.21	131.95	5.74	0	10	0	126.21	0	5.74	0	0
S6-2	128.16	133.71	5.55	0	10	0	128.16	0	5.55	0	0
S6-3	130	135.83	5.83	0	10	0	130	0	5.83	0	0
S6-4	131.63	139.35	7.72	0	10	0	131.63	0	7.72	0	0
S8-1	123.78	132.26	8.48	0	10	0.72	124.5	0	7.76	0	0
SDCB_2133-001	137.15	142.68	5.53	0	10	0	137.15	0	5.53	0	0
SDCB_2133-002	137.01	141.75	4.74	0	10	0.02	137.03	0	4.72	0	0
SDCB_2133-359	135.22	139.75	4.53	0	10	0.06	135.28	0	4.47	0	0
SDCB_2133-364	125	128.95	3.95	0	10	0.25	125.25	0	3.7	0	0
SDCB_2133-365	130.96	134.86	3.9	0	10	0.16	131.12	0	4.63	0	0
SDCB_2133-367	124.05	127.94	3.89	0	10	0.73	124.78	0	3.16	0	0
SDCB_2133-369	123.87	127.24	3.37	0	10	0.31	124.18	0	3.244	0	0

Table 3: Subbasin Summary Table

Name	Outlet	Area (ac)	Precipitation (in)	Infiltration (in)	Imperv Runoff (in)	Perv Runoff (in)	Runoff Volume (MG)	Peak Runoff (cfs)
P1	S2-1	0.0381	2.45	0.79	1.63	0	0	0.04
P10	I4-7	0.9432	2.45	1.35	1.07	0	0.03	0.7
P11	I5-1	0.0672	2.45	0.14	2.27	0	0	0.11
P12	I5-2	0.0661	2.45	1.15	1.27	0	0	0.06
P13	I2-3	0.594	2.45	1.06	1.36	0	0.02	0.57
P14	S2-4	0.6731	2.45	1.26	1.17	0	0.02	0.55
P15	I2-4	0.9693	2.45	0.8	1.61	0	0.04	1.08
P16	S2-5	1.0128	2.45	1.3	1.12	0	0.03	0.79
P17	S3-1	0.5326	2.45	1.33	1.09	0	0.02	0.41
P18	S3-2	0.0573	2.45	0.88	1.54	0	0	0.06
P19	I3-1	0.2627	2.45	1.51	0.92	0	0.01	0.17
P2	I2-1	0.4929	2.45	1.11	1.31	0	0.02	0.45
P20	I5-3	0.0983	2.45	0.84	1.58	0	0	0.11
P21-1	I3-2	0.4373	2.45	1.49	0.94	0	0.01	0.29
P21-2	J2	0.3521	2.45	2.44	0.38	0	0	0
P22-1	SDCB_2133-369	0.539	2.45	0.95	1.47	0	0.02	0.55
P22-2	J3	1.1707	2.45	1.74	0.69	0	0.02	0.57
P22-3	J4	0.4435	2.45	2.36	0.98	0.06	0	0.19
P22-4	J4	0.2278	2.45	2.34	1.09	0.09	0	0.11
P22-5	J5	0.8366	2.45	2.43	0.68	0	0	0.03
P23-1	CBMH_2313-368	1.3411	2.45	1.58	0.85	0	0.03	0.79
P23-2	J7	1.2684	2.45	2.42	0.76	0.01	0	0.09
P23-3	J7	2.1538	2.45	2.43	0.56	0	0	0
P24	CBMH_2133-366	0.2964	2.45	0.62	1.79	0	0.01	0.37
P25	SDCB_2133-367	0.4112	2.45	0.77	1.64	0	0.02	0.47
P26	SDCB_2133-364	0.5878	2.45	1.13	1.29	0	0.02	0.53
P27	CBMH_2133-363	0.8453	2.45	1.31	1.12	0	0.03	0.66
P28	CBMH_2133-362	0.0437	2.45	0	2.4	0	0	0.07
P29	CBMH_2133-361	0.0306	2.45	0.02	2.38	0	0	0.05
P3	I2-2	0.5977	2.45	1.69	0.75	0	0.01	0.31
P30-1	SDCB_2133-365	0.4014	2.45	1.1	1.32	0	0.01	0.37
P30-2	J6	0.6071	2.45	2.01	0.43	0	0.01	0.18
P31	SDCB_2133-359	0.0817	2.45	2.3	1.2	0.14	0	0.06
P32	CBMH_2133-360	0.1089	2.45	0.01	2.39	0	0.01	0.18
P33	SDCB_2133-002	0.1382	2.45	2.43	0.64	0	0	0
P34	SDCB_2133-001	0.419	2.45	2.44	0.56	0	0	0
P35	I5-4	0.2965	2.45	1.65	0.78	0	0.01	0.16

Table 3: Subbasin Summary Table (continued...)

Name	Outlet	Area (ac)	Precipitation (in)	Infiltration (in)	Imperv Runoff (in)	Perv Runoff (in)	Runoff Volume (MG)	Peak Runoff (cfs)
P36	I5-5	0.7056	2.45	1.45	0.97	0	0.02	0.48
P37	S5-6	0.3326	2.45	1.67	0.76	0	0.01	0.18
P38	I5-6	0.1804	2.45	0.73	1.68	0	0.01	0.21
P39	I5-8	0.9278	2.45	0.79	1.62	0	0.04	1.04
P4	I4-1	0.4717	2.45	0.82	1.6	0	0.02	0.53
P40-1	I5-9	1.2508	2.45	1	1.42	0	0.05	1.24
P40-2	J1	0.8497	2.45	2.29	1.28	0.13	0	0.44
P40-3	J1	1.1362	2.45	2.42	0.86	0.01	0	0.07
P5	I4-2	0.0812	2.45	0.77	1.65	0	0	0.09
P6	I4-3	0.0775	2.45	0.98	1.44	0	0	0.08
P7	I4-4	0.6149	2.45	1.27	1.15	0	0.02	0.49
P8	I4-5	1.173	2.45	1.31	1.12	0	0.04	0.91
P9	I4-6	0.2676	2.45	0.53	1.88	0	0.01	0.35

Table 4: Outfall Summary Table

Name	Max. Flow (cfs)	Total Flow (MG)
DesignPoint1	11.72	0.504
DesignPoint2	3.38	0.132