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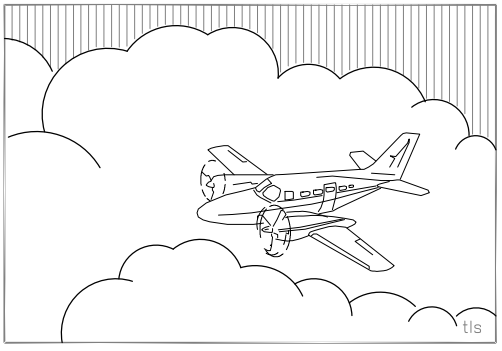
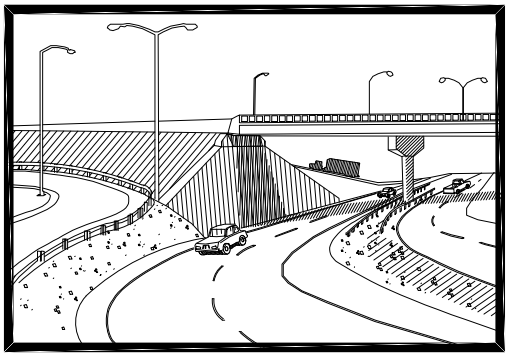
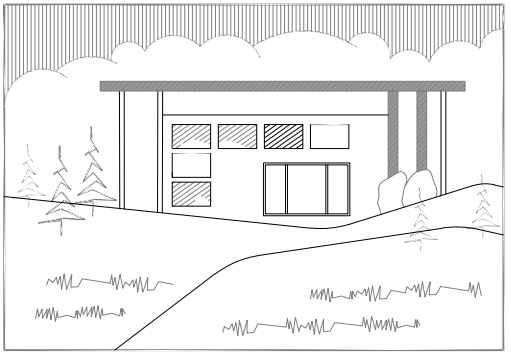
DESIGN STUDY REPORT

FAIRBANKS NOBLE STREET UPGRADE

PROJECT NO. STP-000S(413)/61725

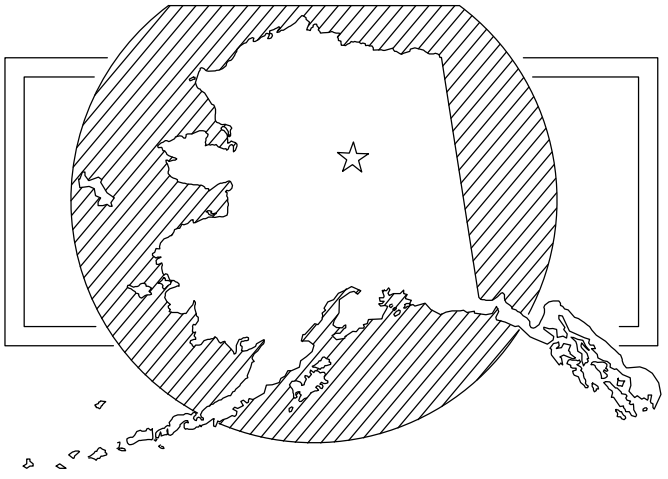






STATE OF ALASKA

Department of Transportation and Public Facilities



NORTHERN REGION

JANUARY 2012

DESIGN APPROVAL

PROJECT NO. STP-000S(413)/61725

FAIRBANKS NOBLE STREET UPGRADE

Requested by:

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Engineering Manager
Northern Region

Design Approval Granted:

Janet Brown, P.E. Date
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Northern Region

Design Exceptions Endorsed:

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Chief Engineer
Contracts Engineer (Original)
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Project Control Chief (Approval sheet only)
Regional Director
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Jerry Cleworth, City of Fairbanks Mayor
Peter Forsling, Northern Region Liaison, FHWA

DESIGN STUDY REPORT
FOR
FAIRBANKS NOBLE STREET UPGRADE

FEDERAL PROJECT NO. STP-000S(413)
STATE PROJECT NO. 61725

PREPARED BY: PDC INC. ENGINEERS

UNDER THE SUPERVISION OF:
MATTHEW T. STONE, P.E.

ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
NORTHERN REGION
January 2012

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APPENDICES

1 INTRODUCTION/HISTORY

The State of Alaska Department of Transportation & Public Facilities (ADOT&PF), in cooperation with the Federal Highway Administration (FHWA), is proposing to reconstruct Noble Street from 1st Avenue to Gaffney Road (Figure 1).

Noble Street is located in the central business district (CBD) of the city of Fairbanks. The original street grid system was established and operated as two-way streets. Over the years many of the downtown streets, including both Noble and Lacey Streets, were converted to one-way operation. For some time the intent was to extend a realigned segment of Lacey Street to Airport Way to complete a full couplet configuration with Lacey as the southbound leg and Noble the northbound leg. Roadway infrastructure improvements throughout the area, particularly the Steese Expressway corridor improvements completed in 1978, diminished the traffic pressures on Lacey and Noble Streets considerably, negating the need for the couplet improvements.

The Fairbanks Downtown Transportation Study completed for ADOT&PF and the City of Fairbanks in 2001, recognizing the area's changing traffic characteristics, recommended that both Lacey and Noble Streets be converted back to their original two-way operation. This conversion has been implemented. The study also recommended making improvements to pedestrian facilities along with landscaping and streetscaping improvements, which is the basis for this Noble Street Upgrade project.

Figure 1 – Location & Vicinity Map

2 PROJECT DESCRIPTION

2.1 Location

Located within the City of Fairbanks central business district, Noble Street is a north/south corridor between the Chena River and Airport Way. Noble Street is a three-lane, two-way

street that has a posted speed limit of 30 mph and is functionally classified as an urban collector. The adjacent land use is comprised mostly of downtown offices, small businesses, a parking garage, restaurants, health clinics, banking, a general store, apartments, hotels, and a service station.

2.2 Condition of Existing Facilities

Noble Street has the following deficiencies:

- **Deteriorated pavement:** The last major reconstruction project on the Noble Street corridor was completed in 1963, although projects centered around the courthouse, parking garage, and 3rd and 4th Avenues have upgraded small areas of Noble Street in the vicinity of these projects.
- **Aging storm drain:** Storm drain pipes are aging woodstave, prone to leaking.
- **Inadequate sidewalks:** Some areas do not have sidewalks, and in other locations existing sidewalks do not meet Americans with Disabilities Act (ADA) standards for slope and width.
- **Poor aesthetic condition of the streetscape:** Improvements are needed to match the other downtown areas experiencing revitalization.

2.3 Proposed Improvements

The purpose of the Fairbanks Noble Street Upgrade is to provide functional and aesthetic improvements to Noble Street, upgrade the storm drain, and relocate overhead utility poles that conflict with roadway geometry and ADA requirements. The project will also improve accessibility and vehicle/pedestrian safety.

DOT&PF is proposing to:

- Reconstruct the roadway from 1st Avenue to Gaffney Road. The pavement is at the end of its design life and is deteriorating.
- Replace sidewalks and widen where possible.
- Add curb extensions or "bulb-outs" to selected intersections
- Reduce the posted speed limit to 25 mph
- Replace aging wood stave storm drain
- Replace all traffic signals with pole and mast arm arrangement
- Add streetscape and landscape improvements
- Update street lighting
- Relocate conflicting utilities

See Appendix F for drawings showing these proposed improvements.

3 DESIGN ALTERNATIVES

3.1 Pavement Structure

Several different alternatives, including Alaska Renewable Pavement Sections and non-treated base pavement sections, along with varying design life expectancy, are discussed in Section 20, Pavement Design.

3.2 Raised Intersections

An alternative design to a standard intersection is one in which the entire intersection is raised approximately 6 inches to the sidewalk level. Raised intersections are designed to draw attention to the intersection and pedestrians, which helps to improve safety for both. Since raised intersections are used where pedestrian activity is encouraged, color and texture can help promote the intersection as a focal point for pedestrian crossings, while also adding an aesthetic appeal to the corridor.

Raised intersections require careful attention to the drainage design, as the ramps to the approaches of the intersection can impede drainage patterns. Also, careful attention must be paid to the intersection grading so that roadway storm water does not flood adjacent properties as there is no longer a curb to contain the water.

Bollards may be necessary to help define the edge of roadway at raised intersections. ADA accessible curb ramps are not required as there is no change in elevation that exceeds 2% from the sidewalk level, but careful consideration of defining the edge is important to consider for vision impaired pedestrians, as there is no longer a ramp to serve as a physical cue.

3.3 Location of Vehicle Signal Faces

Three of the four signalized intersections currently use span wire and wood poles to mount the vehicle signal faces over the traffic lanes. While span wire has a lower initial capital cost than mast arms, span-wire signal infrastructure has higher annual maintenance costs, is subject to wind and icing problems, and is considered aesthetically unpleasing.

3.4 Street Lighting

3.4.1 Light Source Type

The most important element of the illumination system is the light source. It is the principal determinant of the visual quality, economy, efficiency, and energy conservation aspects of the illumination system. There are three commonly used light source types in roadway lighting applications: 1) high-pressure sodium (HPS); 2) metal halide (MH); and 3) light-emitting diode (LED).

The different light source types and their use in different luminaires provide different advantages and disadvantages which make them more suitable or less suitable for a particular use. Lamp characteristics that are considered when evaluating light source types include:

- Color rendering index (CRI)
- Correlated color temperature (CCT)
- Rated lamp lumens, initial
- Luminaire energy efficiency
- Lamp life
- Lumen maintenance
- Ballast type
- Warm-up time and restrike times
- Cold weather operations

Table 1 – Light Source Types

Light Source	Advantages	Disadvantages
High-Pressure Sodium (HPS)	• Commonly used by DOT • Efficient and best light source for most roadway applications	• Poor job rendering colors (CRI<50) • High voltage surge at startup • Prone to starting problems in cold temperatures
Metal Halide (MH)	• Excellent job rendering colors (CRI≥65) • Starts well in low temperatures • Dimmable	• Low lamp life • Light color shifts as lamps age and also when they are dimmed
Light-Emitting Diodes (LED)	• Excellent job rendering colors (CRI≥70) • Long lamp life • Not affected by cold temperatures • Dimmable • High efficiency	• Higher initial purchase price. • Lumen output is lower and therefore LED lights are limited for use on narrower roadways

The City of Fairbanks prefers to use white light sources, particularly MH or LED. White light is more useful to the human eye and enhances night time visual acuity compared to HPS light sources. Recent developments in LED technology are showing them to be a more viable source of white light due to improved optics and energy savings.

3.4.2 Luminaire Type and Mounting Height

A luminaire is defined as a complete unit consisting of a light source (lamp), together with the parts designed to distribute the light, to position and protect the lamp, and to connect the lamp to the power supply. Components that make up a luminaire include reflector, refractor, and housing.

It is important that the selected luminaire minimizes light pollution. Light pollution is an unwanted consequence of outdoor lighting and includes such effects as sky glow, light trespass, and glare. To address the issue of light pollution, luminaires should have cutoff qualities and limit spill light and uplight. On city streets, in residential neighborhoods, or on roadways located within a CBD, decorative full-cutoff (preferred) and cutoff "shoebox" style and "circular" style luminaires are often used as part of the streetscape. Where luminaires are located adjacent to houses, apartments, or hotels, house-side shields or light control should be considered to minimize light trespass.

Roadway lights located along State-maintained roadways are typically "cobra head" style luminaires having full-cutoff and cutoff optics. Presently, the COF are using LED “cobra head” styled luminaires having full-cutoff optics. Since the COF will be operating and maintaining the lights, decorative LED luminaires having full-cutoff or cutoff optics may be used.

Using the Illuminance Method from ANSI/IES “Roadway Lighting” (RP-8-2000), eight commonly available LED luminaires having full-cutoff or cutoff optics that may be considered for installation along the project corridor were evaluated. See Table 2. Other common manufacturers of LED streetlight luminaires include Beta Lighting, GE Lighting, American Electric Lighting, Leotek Electronics, and Phillips Lumec.

Table 2 – Lighting Analysis Results

(Analysis results obtained using AGi32)

Manufacturer/Model	Average Illuminance	Arrangement	Uniformity Ratio E_{avg}/E_{min}	Veiling Luminance Ratio L_{vmax}/L_{avg}	Maximum Spacing
RP-8-2000 Design Requirements	> 0.9 fc		< 4.0	< 0.4	
Gardco Phillips **MA22L-1-3-160LA-CW** MAL Form Ten Round LED Arm Mount 	4.99 fc	One side	1.41	0.16	30 ft.
	3.4 fc	Opposite	1.10	0.21	88 ft.
	1.37 fc	Staggered	1.61	0.40	219 ft.
Gardco Phillips **MA22L-1-3-110LA-CW** MAL Form Ten Round LED Arm Mount 	1.16 fc	One side	1.47	0.34	89 ft.
	1.27 fc	Opposite	1.69	0.37	163 ft.
	0.99 fc	Staggered	1.62	0.40	210 ft.
Gardco Phillips **MPTR-135W80LED4KES-LE3** UrbanScape/MetroScape Post Top Mount 	1.34 fc	One side	2.00	0.32	84 ft.
	1.18 fc	Opposite	2.11	0.39	189 ft.
	1.01 fc	Staggered	1.91	0.39	221 ft.
Gardco Phillips **GL18-3-95LA-NW** LED Gullwing Arm Mount 	0.9 fc	One side	1.70	0.35	102 ft.
	1.03 fc	Opposite	4.12	0.37	178 ft.
	0.90 fc	Staggered	1.84	0.37	204 ft.
Gardco Phillips **GL18-3-130LA-NW** LED Gullwing Arm Mount 	1.01 fc	One side	1.68	0.40	110 ft.
	1.96 fc	Opposite	1.13	0.26	114 ft.
	1.01 fc	Staggered	1.68	0.40	221 ft.
Gardco Phillips **CR20L-3-85LA-CW** Circa LED Arm Mount 	0.89 fc	One side	1.56	0.34	94 ft.
	1.03 fc	Opposite	1.78	0.37	163 ft.
	0.93 fc	Staggered	1.75	0.34	180 ft.
Kim Lighting **STS2/LED-5100K** Structural LED 	0.91 fc	One side	2.17	0.24	54 ft.
	0.90 fc	Opposite	1.30	0.20	110 ft.
	0.90 fc	Staggered	1.38	0.18	110 ft.
Kim Lighting **SAR2/LED-5100K** Archetype LED 	0.91 fc	One side	2.17	0.24	54 ft.
	0.90 fc	Opposite	1.30	0.20	110 ft.
	0.90 fc	Staggered	1.38	0.18	110 ft.

* Rows highlighted in gray meet the RP-8-2000 design requirements.

Luminaire mounting height affects the illumination intensity, uniformity of brightness, area covered, and relative glare of the unit. Higher mounted units provide greater coverage, more uniformity, and a reduction of glare, but lower lumen levels. By using higher poles, fewer poles are required and they can be set back farther from the traveled roadway. Typical luminaire mounting heights are 30 feet, 40 feet, and 49 feet. Power lines, nearby airports, and nearby residential neighborhoods may limit the height of poles used for lighting. Within the COF CBD, the existing luminaires are typically mounted at 30 feet.

3.4.3 Pole Type

Where traffic speeds exceed 40 mph, any poles located within the clear zone must either be breakaway devices or must be protected by a suitable traffic barrier (such as a guardrail). A breakaway pole has a special base, such as frangible couplings, and has been tested as a complete

unit to show that the pole will "break away" when hit and will not impede a vehicle's movement more than a maximum set amount. In urban areas with speeds less than 30 mph and pedestrians present, a knocked-down pole may present a greater hazard to traffic and pedestrians than would a non-breakaway device, and in such locations non-breakaway poles should be used.

Wood pole luminaire supports do not meet breakaway requirements.

3.4.4 Placement and Spacing

Pole placement is often influenced by roadway geometry, character of the roadway, physical features, environment, available maintenance, economics, aesthetics, and overall lighting objectives.

Site considerations affecting pole placement include the presence of buildings, building access, driveways, overhead power lines, pedestrian facilities, ADA accessibility, block lengths, and traffic signals. Poles should be placed behind sidewalks and pathways if the site permits. For low speed urban roadways, poles should be placed to provide a horizontal clearance of 1.5 feet or more behind the face of curb (2001 AASHTO GB, p. 441). When street lights are installed in conjunction with traffic signals, the luminaires should be installed on the same poles as the traffic signals, if possible.

From 12th Avenue to 1st Avenue, the block lengths vary from approximately 155 feet to 195 feet (from face of curb to face of curb). The block lengths will be considered when selecting luminaires in order to achieve uniformity in appearance and illumination levels throughout the corridor. Pole placement should also consider maintenance access and should also be located to minimize potential knockdowns from errant vehicles.

4 PREFERRED ALTERNATIVES

4.1 Pavement Design

The preferred pavement design consists of 4 inches asphalt concrete surface course, 6 inches of aggregate base course grading D-1, and 20 inches of subbase Selected Material Type A. This is discussed in Section 20 - Pavement Design.

4.2 Raised Intersections

Raised intersections with patterned integrally colored concrete field are the preferred alternative at the Noble Street intersections with 2nd and 3rd Avenues. Wide sidewalks and curb extensions, adjacent apartment complexes, the parking garage, and pedestrian/tourist related activities on 2nd and 3rd Avenues create more potential pedestrian traffic at these locations. The aesthetic qualities of the colored intersections meet one of the stated project goals for the corridor. Raising the intersections eliminates the need for accessible ramps and makes pedestrians walking across the intersection easier to see. The slight grade change and change of materials and paving patterns will tend to slow drivers down as they approach the intersection. Bollards will be used at these two intersections to define pedestrian safe-haven areas behind the flush curbs.

The color range being considered for the integrally colored concrete field is shown below.

Figure 2 – Concrete Colors for Raised Intersections

4.3 Location of Vehicle Signal Faces

This project will replace the existing traffic signal infrastructure in their entirety at 10th Avenue, 3rd Avenue, 2nd Avenue, and 1st Avenue. All four signalized intersections will utilize mast arms to mount the vehicle signal faces over the traffic lanes. Signal components will include: new combination mast arm signal poles, mast arms, buried galvanized rigid metal conduits, Type II junction boxes, signal faces, LED luminaires having cut-off optical assembly, wiring, optical pre-emption detectors, and pad mounted traffic controllers and load centers.

New interconnect cable will be installed underground in new conduit and run between each new traffic signal controller cabinet. The interconnect cable will not be spliced anywhere other than in the traffic signal cabinet. This will allow for a reliable connection, enable synchronization between traffic signals, and provide ease of signal programming.

4.4 Street Lighting

The following luminaires and associated luminaire/pole arrangements shown in Section 3.4.2 will meet the illumination design objectives established for this roadway corridor. The selected luminaires have pleasing aesthetic qualities, produce white light, use LEDs to save energy and reduce maintenance, and will work very well with the existing Noble Street block lengths. Final selection will be based on input from the City of Fairbanks during the preliminary design.

Table 3 – Luminaires

Gardco Phillips **MA22L-1-3-110LA-CW** MAL Form Ten Round LED Arm Mount 	**Gardco Phillips** **MPTR-135W80LED4KES-LE3** UrbanScape/MetroScape Post Top Mount 
Gardco Phillips **GL18-3-95LA-NW** LED Gullwing Arm Mount 	**Gardco Phillips** **GL18-3-95LA-NW** LED Gullwing Arm Mount 
Gardco Phillips **CR20L-3-85LA-CW** Circa LED Arm Mount 	**Gardco Phillips Model MA22L-1-3-160LA-CW** was dropped from consideration as this luminaire uses more energy and has a shorter life span than the similar Gardco Phillips model included in the list above.

The City of Fairbanks stated that the new luminaires and electrical circuitry must be compatible with their cascading relay system so that they can continue to use their new Philips Lighting AMPLight control with master twilight clock/master photocells to obtain additional energy efficiencies. The new LED luminaires will be selected to be compatible with the City's cascading relay system and AMPLight control.

5 DESIGN STANDARDS

The project will be developed in accordance with the approved versions of the following standards:

Agency	Standard
Alaska Department of Transportation and Public Facilities	• Highway Preconstruction Manual (PCM) • Alaska Sign Design Specifications (ASDS) • Alaska Highway Flexible Pavement Design (AKFPD) • Alaska Highway Drainage Manual • Alaska Traffic Manual, 2005 (ATM) • Standard Specifications for Highway Construction, 2004
American Association of State Highway and Transportation Officials	• A Policy on Geometric Design of Highways and Streets, 2001 (GB) • Roadside Design Guide, 2002 • Informational Guide for Highway Lighting, 1984 (IGRL)[1] • Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 1994[2]
ANSI/IES	• Roadway Lighting, 2000 (RP-8-2000)
U.S. Department of Transportation Federal Highway Administration	• Manual on Uniform Traffic Control Devices, 2003 (MUTCD)

6 TYPICAL SECTIONS

The proposed typical section along Noble Street consists of 11-foot through lanes and a 12-foot center turn lane. Sidewalk widths vary from 4 to 11 feet, although most sidewalk segments along the corridor will be 6 feet wide. The 4-foot width is used on both sides of Noble Street from 5th Avenue to 6th Avenue, where physical and ROW constraints precluded widening to 6 feet. Curb and gutter will be placed along the entire project length.

The pavement structure is shown in the figure below and discussed in more detail in Section 20 – Pavement Design.

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[1] Although not yet adopted by the ADOT&PF PCM, AASHTO updated the IGRL in 2005 and renamed this guide to "Roadway Lighting Design Guide". This guide is derived from the ANSI/IES "Roadway Lighting" (RP-8-2000), which is referenced by the current edition of the PCM.

[2] New traffic signal structures will be designed to conform to the 1994 Edition of AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals" and to withstand 100 mph winds with a 1.3 gust factor.

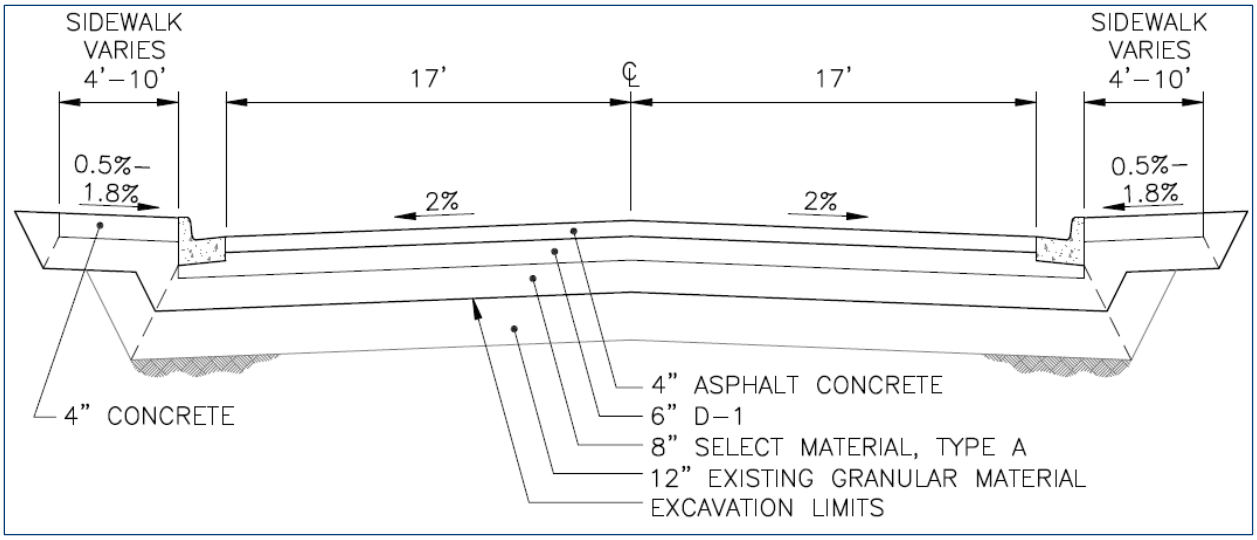


Figure 3 – Typical Pavement Structure

At the raised, concrete intersections, the typical section will be as shown below.

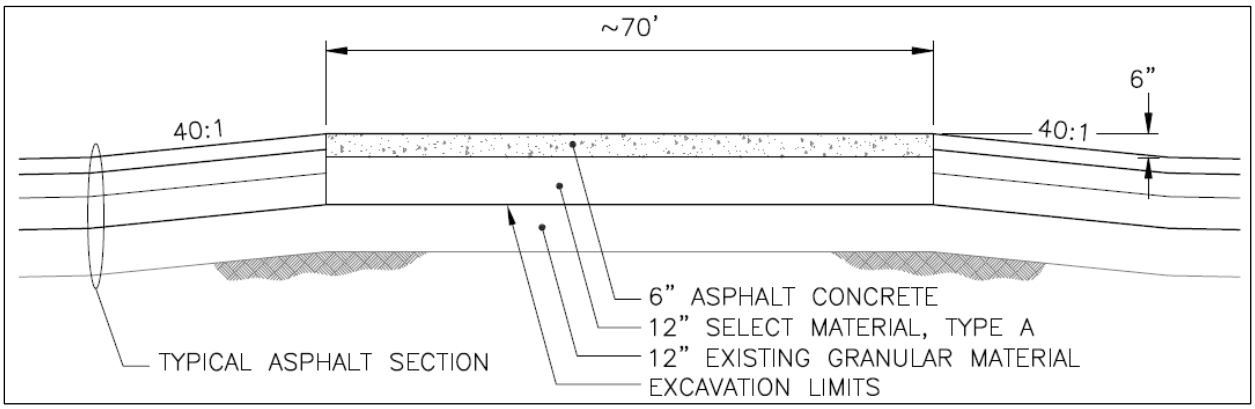


Figure 4 – Typical Section at Raised Intersections

7 VALUE ENGINEERING

A value engineering study has been considered and will not be done for this project.

8 3R ANALYSIS (Not Applicable)

9 HORIZONTAL/VERTICAL ALIGNMENT

See Appendix F for plan and profile sheets showing the proposed horizontal and vertical alignments.

The proposed horizontal alignment of Noble Street will closely match existing. There is a 286-foot-radius curve just outside the project limits that turns Noble Street toward a perpendicular intersection with Airport Way. There is one 0.91-degree angle deflection of the horizontal alignment between Gaffney Road and 12th Avenue, and then the rest of the alignment all the way to 1st Avenue maintains a constant bearing.

The vertical alignment must closely match the existing due to the narrow ROW and minimal building setback. The existing profile has a gentle roll to it (0.3% to 0.4% grades), with two low points centered on midblock between Gaffney Road and 12th Avenue and at 5th Avenue. High points are just south of the Gaffney Road intersection, 10th Avenue intersection, and midblock between 1st and 2nd Avenues. The existing profile is essentially flat between 7th and 4th Avenues.

The proposed profile maintains the same general high and low points with slopes ranging from 0.34% to 0.45%. The flat area between 4th and 7th has been carefully evaluated in order to improve the surface drainage in this area. Building finish floor elevations and close proximity to the ROW prevent major profile improvements in this area, but improvements have been made by designing a 650-foot vertical curve into the profile.

10 DRAINAGE

10.1 Existing Conditions

This project will replace all the storm drain piping and structures along Noble Street between Gaffney Road and 1st Avenue. The existing storm drain system was installed in the late 1950s to early 1960s. The main piping between 3rd and 12th Avenues is wood stave pipe that ranges in size from 10 inches to 24 inches in diameter; from 3rd Avenue to 1st Avenue it is 36-inch corrugated metal pipe (CMP). The feeders range in size and materials from 6-inch-diameter (metal or wood stave) to 12-inch (CMP) or 14-inch (wood stave). The depth to the invert of the storm drain piping ranges from 4 to 13 feet. The main trunk line is generally located 3 to 6 feet right of the ROW center line. The storm drain manhole outlet invert elevation is 3.44 feet lower than the incoming invert at the 3rd Avenue/Noble Street intersection.

10.2 Design Concept

The piping will be installed in approximately the same location as the existing. The City reviewed the basin areas outside the project limits to identify potential changes. They evaluated the trunk line capacity and sized the trunk line as 18 inch HDPE from 12th to 8th and 24 inch HDPE from 8th to 3rd. The existing 36 inch size from 3rd to 1st will be maintained. The City also requested that the trunk line profile be adjusted from 12th to 3rd Ave to eliminate the 3 feet difference between the inlet and outlet at the 3rd Ave manhole. See Appendix F for this revised trunk line profile.

Storm drain laterals will be replaced with 12-inch minimum diameter, corrugated HDPE, and the structures will be replaced to meet City standards. The inlet locations will be moved slightly to coordinate with the curb and gutter of the final street configuration as well as to provide effective drainage to the street. For lateral pipes feeding into the trunk line, the peak rainfall discharge will be calculated using the rational method as the entire drainage basin is only about 20 to 25 acres. The IDF curve for the 10-year storm in Fairbanks that is provided in the Fairbanks and North Pole Storm Water Management Program Guide will be used for design.

The combination grate/curb inlets will be analyzed using HEC-22 for capacity and spacing to provide a maximum water spread of no more than one half of the driving lane. In some cases the pipe size may be changed and/or an inlet will be added or moved to provide adequate capacity. Once this analysis is made, the results will be submitted to the City and ADOT&PF for review.

City coordination with DEC has confirmed that the structural and non-structural BMP's (outlined in Section 12 – Erosion and Sediment Control) are sufficient. Storm water treatment units (STUs) will not be installed in the Noble Street drainage system.

11 SOIL CONDITIONS

The city of Fairbanks is situated in the lowlands between the Chena and Tanana Rivers. Soils in these lowlands typically consist of interbedded alluvial sands and gravels covered by silty overbank deposits. Former slough channels are common in lowland areas between the rivers, and typically filled with organic silt and peat deposits.

Groundwater in the area fluctuates seasonally with the levels of the nearby Tanana and Chena Rivers. Highest groundwater levels typically occur in late spring and late summer; groundwater was encountered at 12 to 15 feet below the surface during exploratory drilling in late September 2011.

Geotechnical investigations in September 2011 along Noble Street discovered approximately 2 inches of asphalt concrete at the surface of each boring. Below the AC, the pavement section typically consists of relatively clean sandy gravel fill to a depth of 2.5 feet to 3.5 feet. Beneath the pavement section (to a depth of 16.5 feet), the in-situ material generally consists of sandy silts and silty sands, transitioning to gravelly sands and sandy gravels.

More information on the soil conditions can be found in the report titled *Geotechnical Study: Noble Street Upgrade, Fairbanks, Alaska,* dated December 2011.

12 EROSION AND SEDIMENT CONTROL

Currently, storm water is collected from Gaffney Road north into a storm drain system that discharges to the Chena River, which is listed as a Category 2 water body in Alaska's Final 2010 Integrated Water Quality Monitoring and Assessment Report (ADEC, 2010). The identified pollutant source is urban runoff. The quality of storm water discharged to the Chena River would not change as a result of this project.

This project would include replacement of the aging storm mains and their components within the Noble Street project limits. The proposed system would be placed in the same location and utilize the same outfall.

The proposed project may slightly increase the volume of storm water discharged from the project area due to more efficient collection and transport of the storm water across new, uncracked pavement and through positive drainage, new inlets, manholes, and piping. In addition, the storm drain system in Noble Street will be sized to provide increased capacity to accommodate the City's long-term drainage plans.

This project will disturb approximately 5 acres of ground within the project limits and a Storm Water Pollution Prevention Plan (SWPPP) will be required. Best Management Practices (BMPs) will be used to minimize storm water pollution and achieve compliance with the Construction General Permit. These BMPs will likely include: temporary stabilization of disturbed areas, diverting runoff around erodible features, perimeter control, and treating runoff before it leaves the site.

The storm drain system is and will remain owned and maintained by the City of Fairbanks. For post-construction (permanent) storm water controls, a letter of non-objection is required and in accordance with 18 AAC 72.600, the drainage plans (stamped by a Professional Engineer) must be submitted to ADEC for an Engineering Plans review. The City of Fairbanks requires no storm water submittals for this project.

Existing and proposed post-construction storm water measures would include both structural and non-structural BMPs to reduce the discharge of pollutants from the storm drain system to the Chena River, protect water quality, and satisfy water quality requirements of the Clean Water Act. These BMPs include:

- Catch basins and manholes with sumps, which are designed to retain sediment and other debris from discharging to piping laterals.
- Storm drain inlets that are factory embossed and/or stenciled with an emblem of a fish and the words "Dump No Waste, Drains to River" to educate the public about where the storm drain system outfalls and discourage illicit discharges.
- Continued good housekeeping practices year-round, as required by the MS4 NPDES Permit. Within the right-of-way, the City is responsible for snow removal during the winter and street sweeping and storm drain cleaning operations during the summer. The City aggressively performs street sweeping operations during spring break-up on all arterials, collectors, and local streets to remove aggregate. The City also cleans and maintains the storm drain system using a vacuum truck to flush and pump accumulated sediment and debris from catch basins, lateral lines, manholes, and other sediment collection devices. All snow removal, street sweeping, and storm drain cleaning operations are tracked by date of operation, equipment number, area and subarea, street location, number of loads or tonnage hauled, and storage/disposal site used.

13 TRAFFIC ANALYSIS

A capacity analysis was conducted in 2008 using the existing lane configurations for the intersections and the existing signal timings. The analysis evaluated traffic operations for the 2013, 2018, and 2035 PM peak hour periods and concluded that two-way traffic with a center turn lane will provide acceptable levels of service (C or above) on Noble Street through the design life (year 2035) of the facility. The base year used in the design designation for traffic volumes was 2006. Average Annual Daily Traffic (AADT) was 11,150. Traffic is expected to increase at a rate of 1% annually resulting in 14,880 AADT in the design year (2035).

The turn pockets on Noble Street between 1st and 4th Avenues are shorter than what is recommended. There is very little that can be done to increase the lengths of the pockets due to the close spacing of the intersections. The minimum turn pocket length will be 25 feet.

None of the intersections meet existing signal warrants, but the City of Fairbanks has requested that the existing signals at 1st, 2nd, 3rd, and 10th Avenues remain on Noble Street. Although all four types of signal phasing (permissive-only, protected-only, protected-permissive, and split) were considered at the signalized intersections, the existing phasing for the four signalized Noble Street intersections presently operates in a permissive-only mode. As a result of the 2008 capacity analysis for this project, the left-turn phasing will remain unchanged.

Roadway lighting can play an important role in enabling the roadway corridor and intersections to operate at its best efficiency and safety. The highest traffic flows of the day (typically the evening peak period) may occur during dusk or night conditions where lighting is critically important, particularly during the dark winter period. Although not specifically incorporated into the traffic analysis, the replacement and upgrade of street lighting on Noble Street will help to keep the corridor operating efficiently.

14 SAFETY IMPROVEMENTS

The intersection accident rates for Noble Street between 1st Avenue and Gaffney Road were analyzed for a 4-year period from 2003 to 2006. These rates were compared to the Statewide Average Accident Rates for similar types of intersections, and none of the intersections exceeded the Critical Accident Rate at 90 percent confidence level. 10th Avenue experienced the highest number of accidents (11) during the 4-year period, although this was still substantially lower than the statewide average or critical rates, which indicates there is not an intersection accident problem along the route.

Signalized intersections are generally the most heavily traveled intersection types and are therefore a major element of the highway fatality and crash problem nationally. The intent of a signal is to control and separate conflicts between vehicles, pedestrians, and cyclists to enable safe and efficient operations. Operation of a signal itself, however, produces conflicts (e.g., conflicts between through vehicles that could lead to rear-end crashes).

The principal purpose of roadway lighting is to produce comfortable visibility at night. As a safety tool, roadway lighting can reduce night accidents, including collisions with pedestrians, bicycles and fixed objects. Additionally, lighting can aid police protection and enhanced sense of personal security; improve night time traffic flows; and promote business and the use of public facilities during the night hours. Although Noble Street currently has street lighting, the new luminaires and pole placement will result in better visual quality at night.

Although there is a relatively low occurrence of accidents on Noble Street, the following features will increase the level of safety for both pedestrians and vehicles:

- Curb extensions to decrease the crossing distance for pedestrians and increase pedestrian visibility
- Improvements to accessibility, which make the road safer for people with disabilities
- Reduction of the speed limit from 30 mph to 25 mph
- Improvements to driving surface and new pavement markings
- Replacement of the old signal equipment and traffic signs with new mast-arm-mounted signals and signs, which will improve safety by improving driver compliance with traffic control devices
- Installation of a new street lighting system

15 ACCESS CONTROL FEATURES

Access to the roadways is managed via the City of Fairbanks approach permit process. In general there is access allowed directly onto Noble Street, but in many cases the existing curb cuts have been abandoned and access occurs via the intersecting side streets.

Only two driveway curb cuts are proposed to be removed with this project. These are both at the Golden Heart Utility Building on 6th Avenue. One curb cut on the Noble Street side and one on the 6th Avenue side will be removed as there is not adequate access to allow vehicle maneuvering and ingress/egress at this location.

16 PEDESTRIAN/BICYCLE (ADA) PROVISIONS

16.1 ADA Requirements

The existing sidewalks were constructed of portland cement concrete and did not originally include curb ramps or other ADA features. Some intersections have had ADA curb ramps installed, but there is not a continuous uninterrupted ADA accessible route along the entire length. The sidewalks vary in width, and many areas have utility poles located within them, further restricting their use.

Pedestrian access will extend the entire length of the project on both sides of the street with the proposed design. The design provides ADA-compliant portland cement concrete sidewalks and accessible curb ramps at all quadrants of each intersection within the project limits. Sidewalks vary in width along the corridor as described in Section 6 – Typical Sections. In some cases, existing sidewalk that extends beyond the right of way will need to be replaced in order to match the new road profile.

16.2 Curb Extensions

As requested by the City of Fairbanks, curb extensions will be used at intersections where practicable. Curb extensions reduce the pedestrian crossing distance on the side street intersections, make pedestrians more visible in a crosswalk, provide protection to cars parked along the side streets, and offer space for aesthetic improvements. Curb extensions were considered at locations where 1) there was existing on-street parking, 2) driveways were 30 feet or more from the intersection and would not be impacted by the extension, and 3) the extension would not affect the through traffic lanes.

16.3 Bicycle Considerations

Separate designated bicycle lanes were not considered due to DOT&PF's desire to integrate the bicyclists into the mainstream traffic. This is particularly appropriate for the commuter bike traffic prevalent on Noble Street, and it avoids the problem of snow covering up bike lane striping during the winter. The speed limit of 25 mph down Noble Street will keep the vehicle traffic at a similar speed to the bike traffic, allowing bicycles to integrate into the traffic flow.

16.4 Pedestrian Amenities and Landscaping

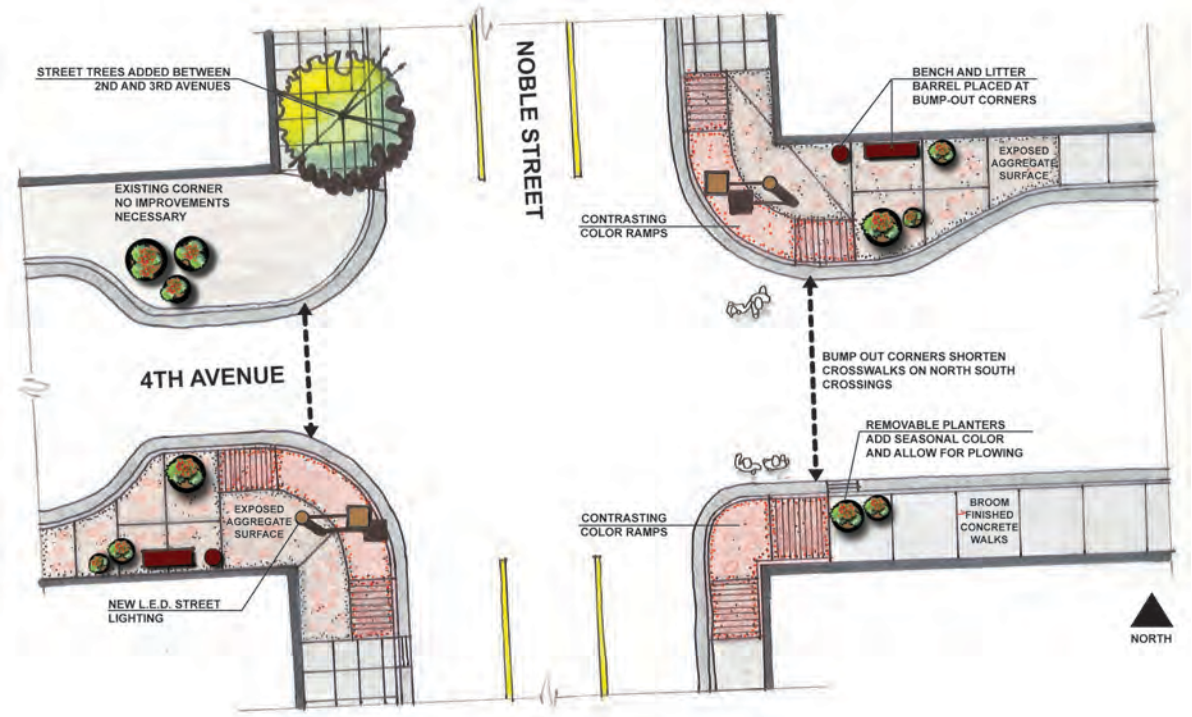


Figure 5 – Typical Pedestrian Amenities at Key Intersections

Opportunities for landscape planting beds and street trees within the Noble Street right-of-way are limited due to the three-lane cross-section and sidewalks. During the design process, several small areas have been identified as potential locations for street tree plantings and landscape buffer shrub beds and screening (see Appendix K). The planting palette selected was based on hardiness, microclimate, and safety. The following species grow successfully in Fairbanks (hardiness zone 1) and thrive in urban street environments:

- Paper birch and Weeping Birch (*Betula papyrifera* or *pendula*)
- Amur chokecherry (*Prunus maackii*)
- Bush cinquefoil (*Potentilla fruticosa*)
- Vanhoutte Spirea, Dwarf or Nana cultivars (*Spiraea x vanhouttei*)
- Creeping juniper (*Juniperus horizontalis*)

Figure 6 – Tree and Shrub Options for Landscaping

Street furniture is part of the conceptual design for upgrading Noble Street. Furniture and pedestrian amenities including bollards, benches, litter barrels, ornamental fencing tree grates and removable planters are proposed to enhance the pedestrian experience and add human scale to the sidewalk improvements. With the additional walk area provided by the corner "bump-outs," benches, litter barrels, and movable planters can be included in the streetscape design without interfering with pedestrian circulation or snow removal.

Benches and moveable planters are proposed for 22 corner bump-outs (see Appendix F and Appendix K). Benches and litter barrels will be placed at the back of the sidewalk at the widest section of the bump-outs out of the direct pedestrian routes. Moveable planters will be used to bring seasonal color and aid in delineating corners. These planters will be heavy enough that they will require a tractor or forklift to remove them to facilitate winter snow removal.

Street furniture design and style will be conservative in form and color, complementing the traditional architecture typical of downtown Fairbanks. Where the right-of-way dimensions permit sidewalks wider than 4 to 6 feet, decorative fencing and street trees will be used to define the pedestrian areas and separate them from vehicles. At 2nd Avenue and 3rd Avenue, bollards will be used in conjunction with raised pedestrian crossings to better define the pedestrian zones at these two key intersections.

Figure 7 – Street Furniture

Low decorative screen fencing, as shown below and in Appendix K, will be used in a few locations. These fences improve the aesthetics of the streetscape while serving the important function of separating parking areas from pedestrian sidewalks and enforcing the access control to those parking lots.

Figure 8 – Decorative Screen Fencing

The Noble Street frontage of Myrtle Thomas Park provides an opportunity to meet the goals of the project to improve the corridor aesthetics. Replacement of the existing chain link fence along Noble Street with a decorative fence, widened sidewalk and landscaping improvements have been coordinated with the Fairbanks North Star Borough Parks and Recreation during the environmental document preparation.

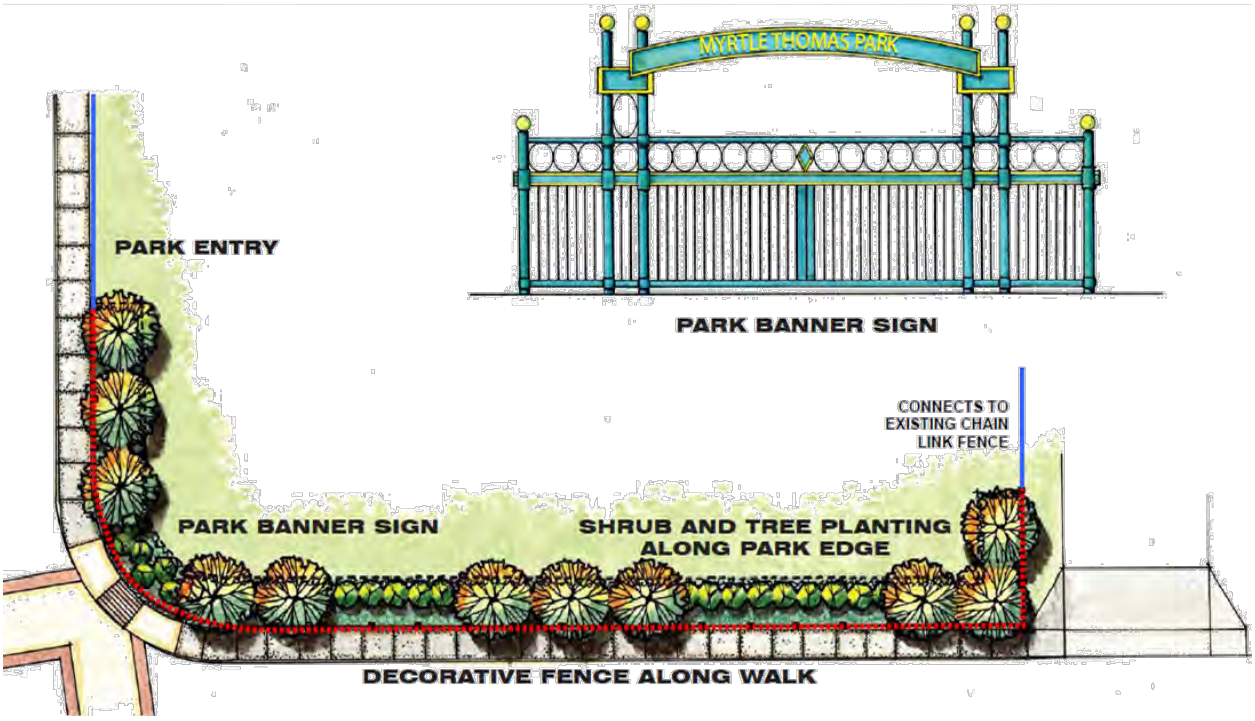


Figure 9 – Decorative Fencing for Myrtle Thomas Park

17 INTELLIGENT TRANSPORTATION SYSTEM REQUIREMENTS

The removal and replacement of four existing traffic signal systems will require new preemption detectors, signal displays, wiring, junction boxes, interconnect, signal controllers, mast arm poles, and foundations. All hardware shall be fully compatible with the ADOT&PF Northern Region (NR) traffic signalization standards.

See Appendix J for a copy of the Systems Engineering Analysis Forms (SEA Form) for the pre-timed signals at 1st, 2nd, and 3rd Avenues as well as the actuated traffic signal system at 10th Avenue.

18 RIGHT-OF-WAY REQUIREMENTS

Right-of-way (ROW) limits for the majority of this project are coincident with the back of sidewalk. This will require that Temporary Construction Easements/Permits will be obtained for the length of the corridor in order to construct the improvements. These easements will be required for 56 parcels.

This project will require approximately 750 square feet of fee-simple, partial ROW acquisition, primarily to accommodate the proposed relocation of light poles to the back of the sidewalk. There are 21 parcels impacted for the placement of 28 light poles behind the sidewalk. Each acquisition is an approximately 5 feet square, resulting in a total of approximately 700 square feet of fee-simple acquisition for light pole placement. The remainder of the acquisition is for signalization poles and associated equipment at the 1st and 10th Avenue intersections, three small acquisitions for fire hydrants, and a strip acquisition along the Northward Building to allow for continuous ADA access along the corridor. Locations are shown in the Plan and Profile sheets in Appendix F.

Most of the existing overhead utilities do not have easements as they fall under a grandfather clause. Because work is being done to the utilities, easements will need to be developed for the relocated utilities. The easement descriptions will be developed by the utility companies but will be administered by the Department.

The acquisitions and easements will not require any relocations, nor are they expected to damage any remainders or create an zoning or other issues. All ROW acquisition areas will be further refined during the plans-in-hand detailed design and with the development of the ROW base map.

19 UTILITY RELOCATION AND COORDINATION

The storm drain upgrade is a major part of the purpose and need for this project due to its deteriorated condition. It will be replaced as shown on the Plan and Profile sheets in Appendix F. Minor relocations and/or grade changes of water and sewer crossings of the new storm drain trunk line will be necessary in some locations.

Poles supporting overhead utility lines are being relocated or eliminated where necessary to provide ADA accessibility at intersections and improve roadway safety (many existing poles are directly behind the back of curb). The elimination of some poles requires that a duct bank be constructed at the south end of the project. The proposed overhead utility modifications have the added benefit of improving the corridor aesthetics as documented in the purpose and need. The modifications to the overhead utilities are shown in Figure 10.

Advance relocation of the power lines by GVEA is likely, but most of the other utility work will have the least impact to property owners if done in conjunction with the roadway construction project.

Table 4 below presents the existing infrastructure along with any modifications proposed under this project.

Figure 10 – Proposed Utility Modifications

Table 4 – Utility Infrastructure and Proposed Modifications

	Existing Infrastructure	**Proposed Modifications**
Golden Valley Electric Association (GVEA)	GVEA has an aerial 12 kV three-phase distribution **power line** paralleling the west side of Noble Street (within the corridor ROW) from 10th Avenue to Gaffney Road. Other aerial lines cross Noble at 4th, 5th, 6th, 7th, 8th, 11th, and 12th Avenues. Most of the poles are located within the sidewalk. North of 10th Avenue there are no power poles, except where needed to backfeed the properties from the adjacent parallel streets, Lacey and Dunkel.	See Figure 9. With some minor "off-corridor" aerial work, nearly all of the parallel power lines can be removed from Noble Street. These off-corridor connections include work along Log Cabin Court and between 11th and 12th Avenues next to the Steese Highway. Crossings will still occur at midblock between 12th and Gaffney, 12th, 11th, and 7th, but crossings at 6th and 8th Avenues have been eliminated. Key poles that conflict with ADA curb ramps and roadway geometry have been removed at 12th, 11th, 8th, 6th and 2nd Avenues.
Alaska Communications Systems (ACS)	There are **telephone duct bank** crossings at 4th Avenue and 12th Avenue; 2-6 inch buried HDPE conduits crossing 2nd Avenue from out of the east end of the utilidor vault; aerial crossings at 5th, 6th, 7th, and 8th Avenues; and an aerial line along the west side from 10th Avenue to Gaffney Road. There are **fiber optic** crossings at 11th Avenue and 12th Avenue. Along 11th Avenue the cable is aerial; along 12th Avenue, it is located in the duct bank.	See Figure 9. At the duct bank crossing of 12th and Noble, a new vault is proposed with a new duct bank constructed under the sidewalk heading north to mid-block between 9th and 10th, and south to the south side of Gaffney Road. This will allow the aerial line between Gaffney and 10th to be removed as there are no longer shared poles available with GVEA. The aerial crossings at 6th and 8th will transition to buried crossings as the GVEA poles and crossings have been eliminated at these two locations.

	Existing Infrastructure	**Proposed Modifications**
General Communications Inc. (GCI)	GCI does not own any copper pair **telephone** lines along the corridor. They carry telephone service on lines leased from ACS or on their own fiber optic lines. All of GCI's **fiber optic** cable along the corridor is aerial, except for a buried 48-fiber (F48) cable extending eastward from the AT&T/Alascom building along the north edge of the Airport Way ROW, then north along the west side of the Steese Expressway to 3rd Avenue, westward along 3rd Avenue, and north to 2nd Avenue. Another F48 cable exits the AT&T/Alascom building to the west and runs north parallel to the property to the east of Log Cabin Court, then to 12th Avenue and Lacey Street. The cable crosses Noble Street at 2nd and 12th Avenues. GCI's **cable television** system consists of coaxial cable ranging from 0.412 inches to 1.125 inches in diameter. Virtually all of the cable is aerial, hung from shared GVEA power poles, except the cable may be located in the city utilidor in the utilidor areas.	See Figure 9. At 2nd Avenue, existing conduit for coax and fiber will need to be extended to the new power pole location. Some aerial work and relocation of the power feed will be needed at this location as well. At 5th and 7th Avenues, the existing aerial coax will need to be attached to the new poles, or possibly new coax to eliminate the addition of splices. The aerial crossings at 6th and 8th will transition to buried crossings as the GVEA poles and crossings have been eliminated at these two locations. A new duct bank from 11th to Gaffney will be needed as there are no longer poles shared with GVEA available for the existing aerial coax.
Golden Heart Utilities (GHU)	GHU owns the **water** system in the downtown area. The water lines run within the corridor from 2nd Avenue to Gaffney Road, with crossings at 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 10th, 11th, and 12th Avenues. The water lines are approximately 5 feet deep. They range in size from 4-inch to 8-inch diameter pipe. The section from 5th to 8th Avenue has been replaced, while the remaining sections are part of the 1954 original construction. GHU also owns the downtown **sewer** lines. The sewer runs within the corridor from Wendell Street to Gaffney Road, with side street connections at 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, and 12th Avenues. The sewer lines running north/south through the corridor are primarily 8- to 10-inch-diameter wood stave. The sewer manholes are also wood stave. The sewer system was originally constructed in the mid 1960's. Both the north and south ends of Noble Street flow to 5th Avenue, and from there the sewer flows west down 5th Avenue. The trunk line at 5th is an 18-inch wood stave pipe that was installed in the late 1930's.	The water and sewer systems will not be modified under this project. One sewer lateral at 7th Ave conflicts with the new storm drain profile and will be lowered with this project. Short sections of water and sewer pipes may be replaced where they cross the storm drain trench where the aged pipe may not withstand the stress of being exposed.

	Existing Infrastructure	Proposed Modifications
City of Fairbanks	The City's **utilidor** system extends east from Lacey Street along 2nd Avenue and ends in the middle of the intersection at Noble Street and 2nd Avenue. There is an access entrance to the utilidor in the northeast corner of this intersection. The utilidor contains, among other things, the City-owned **steam heat** system. The steam heat system originates from the power plant located on 1st Avenue and terminates at the intersection of 2nd and Noble, where a district heat converter converts the steam to hot water for Aurora Energy's district heat system. The City's **storm drain** system runs along Noble Street from just south of 12th Avenue (old township limit) north to Wendell Street, then northwest through Griffin Park to the Chena River outfall. This storm drain system drains the west and east sides of Noble Street as well as the portion of Lacey Street from 7th Avenue to 12th Avenue. The storm drain system (north of 3rd Avenue) consists of varying diameter wood stave pipe in poor condition. From 3rd Avenue to 1st Avenue, it is 36" diameter CMP. In addition, the manholes at 1st, 2nd, and 3rd are CMP.	There are no proposed modifications to the utilidor or associated vault located in the 2nd Avenue intersection. The storm drain will be replaced from just south of 12th Avenue to 1st Avenue. See Appendix F. This includes the primary trunk line, manholes, catchbasins and associated lateral pipe runs. The trunk line will be sloped more steeply than the existing line to eliminate the nearly 3.5 foot elevation difference between the inlet and the outlet of the 3rd Avenue manhole. Although the manholes at 1st and 2nd Avenues will be replaced, the 36-inch CMP trunk line from 1st to 3rd is still under consideration.
Aurora Energy, LLC (AE)	Aurora Energy owns the **district heat** system. The hot water system originates at the steam converter in the vault at 2nd and Noble. The line runs within the corridor from Wendell Street to 5th Avenue, with crossings at 2nd, 8th, and 11th Avenues.	There are no proposed modifications to the district heat system.

20 PAVEMENT DESIGN

The existing pavement section along Noble Street consists of approximately 2 inches of asphalt concrete overlaying 28 to 40 inches of relatively clean, sandy gravel fill. The existing pavement section has performed well; the observed distress is typical of older pavements at the end of their design life and does not indicate unstable subgrade conditions.

The proposed pavement design for Noble Street was evaluated using the ADOT&PF Alaska Flexible Pavement Design software (AKFPD, Version 1.1.5). The analysis used soil parameters developed during the geotechnical exploration, pavement material properties commonly used by ADOT&PF, and estimates of future traffic.

The project meets the criteria for General Policy Statement 7 (GP-7) in the AKFPD, which requires an Alaska Renewable Pavement (ARP) section with a 30-year design life for fatigue and a 15-year life for functional failure. The pavement design analysis included two ARP sections—one with crushed aggregate base course and one with asphalt-stabilized base course.

Noble Street is a City-owned and -maintained street and therefore is not required to follow GP-7. Therefore, in addition to the two ARP sections, single-layer asphalt surfacing sections were analyzed for a range of design lives.

The five pavement designs analyzed are shown in the tables below.

Table 5 – Alaska Renewable Pavement Section (Granular Base)

Course	Minimum Thickness (in)	Material Recommendation
Surface (wearing)	2	Asphalt Concrete Pavement
Surface (binder)	3	Asphalt Concrete Pavement
Base	4	Aggregate base course meeting all the requirements for ADOT&PF grading D-1, compacted to 98% of the maximum dry density determined by ASTM D1557.
Subbase	21	ADOT&PF Selected Material Type A with a maximum particle size of 3 inches, compacted to 95% of the maximum dry density determined by ASTM D1557.

Table 6 – Alaska Renewable Pavement Section (Stabilized Base)

Course	Minimum Thickness (in)	Material Recommendation
Surface (wearing)	2	Asphalt Concrete Pavement
Surface (binder)	2	Asphalt Concrete Pavement
Base	3	Asphalt Stabilized Base
Subbase	23	ADOT&PF Selected Material Type A with a maximum particle size of 3 inches, compacted to 95% of the maximum dry density determined by ASTM D1557.

Table 7 – Minimum Mechanistic Pavement Section

Course	Minimum Thickness (in)	Design Life (years)	Material Recommendation
Surface	3	10-15	Asphalt Concrete Pavement
	3.5	20-25	
	4	30	
Base	6	10-30	Aggregate base course meeting all the requirements for ADOT&PF grading D-1, compacted to 98% of the maximum dry density determined by ASTM D1557.
Subbase	20-21*	10-30	ADOT&PF Selected Material Type A with a maximum particle size of 3 inches, compacted to 95% of the maximum dry density determined by ASTM D1557.

*Adjust to maintain a 30-inch pavement section.

In all options, the bottom 12 inches of the existing pavement structure will be left in place to serve as a portion of the new subbase course. Site preparation will consist of removing the existing asphalt concrete pavement and excavating to a depth of 18 inches below finish grade. If excavated material meets the requirements of Selected Material Type A, it may be re-used in the pavement section.

The City of Fairbanks elected to use the pavement section consisting of 4 inches asphalt concrete surface course, 6 inches of aggregate base course grading D-1, and 20 inches of subbase Selected Material Type A. ADOT&PF has granted a waiver to the City of GP-7 and a copy of the waiver can be found in Appendix H.

More information on the analysis and recommendations of the pavement design can be found in Appendix E and the report titled *Geotechnical Study: Noble Street Upgrade, Fairbanks, Alaska* dated December 2011.

21 BRIDGE IMPROVEMENTS

Not applicable.

22 MAINTENANCE CONSIDERATIONS

After the system has been commissioned and accepted by the City of Fairbanks, it will be turned over to the City for post construction operations and maintenance. This arrangement has been formalized through a Maintenance Agreement between the State and the City (see Appendix L).

22.1 Maintenance Reductions

Overall maintenance of Noble Street will decrease for the first few years following the reconstruction. For example, light poles, light fixtures, traffic signals, and striping will not need maintenance work for several years. Additional maintenance benefits include:

- **Snow Removal:** Moving light poles and signs to the back of the sidewalk and eliminating several power poles will result in more efficient removal of snow from the sidewalks.
- **Storm Drains:** The new storm drain system should reduce maintenance with regards to cleaning of sediment. Also, all manholes will be built to current City standards, including thaw tubes in the manholes.
- **Signals:** Reduced signal maintenance from new equipment and mast arm mounted signals will improve signal operations and reliability.
- **Luminaires and Light Poles:** Installation of poles behind the sidewalk will make snow removal easier (previously mentioned), afford easier access for maintenance, and minimize knockdowns. Using LED light sources instead of HPS should reduce energy consumption by approximately 10% to 17%. The longer life of the LED lamps will also reduce the need for maintenance.

22.2 Features Requiring Increased Maintenance

- **Additional Sidewalk:** New sidewalk will be placed in some areas where there is none at present. This will add to the amount of sidewalk that must be maintained and plowed.
- **Curb Extensions:** Curb extensions will increase the snow removal efforts along the side streets. The extended curbs may also suffer more damage from plows and thus need to be replaced sooner.
- **Raised Concrete Intersections:** While the concrete platform intersections may not require any additional maintenance, they will make it more difficult to replace or repair any buried utilities, since this will require saw-cutting through the concrete and then drilling/grouting dowels into the sides of the cut prior to placing new concrete. Concrete patches must be color matched, and it might be difficult to avoid creating "striped" intersections as the result of patching colored concrete that has begun to fade. In addition, the raised intersections may make snow removal slightly less efficient.

23 MATERIAL SOURCES

All material sources will be contractor-furnished. Materials of appropriate quality are available in sufficient quantity from private and commercial sources in the project vicinity.

24 ENVIRONMENTAL COMMITMENTS

The following environmental commitments were documented in the Categorical Exclusion:

- During the geotechnical investigation, soil taken from the borings will be tested for petroleum contamination.
- Trees to be replaced will be replaced with the same species in a non-declining condition, causing no effect to NHRP-eligible properties or districts.
- Retaining wall replacement on the Hackett Law Office property will be of the same size and configuration as the current wall, which already has concrete components.
- The hedge on the Wilton Adjustment Services property will be replaced.

25 DESIGN EXCEPTIONS

This project does not meet the Department's Stabilized Base Policy and Renewable Pavement Policy. A waiver for to these requirements is included in Appendix H.

26 COST ESTIMATE

The estimated project construction costs are shown in the table below. See Appendix A for the preliminary construction cost estimate.

Table 8 – Total Project Cost Estimate

Phase 2: Design	$ 2,225,247
Phase 3: Right-of-Way	$ 410,000
Phase 7: Utilities	$ 1,000,000
Phase 4: Construction	$ 7,067,000
Total Project Cost	**$10,702,247**

APPENDIX A

PRELIMINARY COST ESTIMATE

ENGINEERS 'S ESTIMATE State of Alaska Department of Transportation & Public Facilities Northern Region	Noble Street Upgrade Draft Construction Estimate AKSAS No.: 61725 Federal No.: STP-0004S(431) Version ID: 34698 Printed: 1/5/2012 9:29:01 AM

Basic Bid

Item Number	*Description*	*Quantity*	*Unit*	*Unit Price*	*Amount*
201 (3b)	Clearing and Grubbing	All required	Lump Sum	6,000.00	6,000.00
202 (1)	Removal of Stuctures and Obstructions	All required	Lump Sum	116,000.00	116,000.00
203 (3a)	Unclassified Excavation (Roadway-3.0' Depth to 5' beyond sidewalk)	24,000	CY	15.00	360,000.00
203 (6a)	Borrow, Type A (Roadway-1.0' Depth to 5' beyond sidewalk)	17,100	Ton	15.00	256,500.00
301 (2)	Aggregate Base Coarse, Grading D-1	5,100	Ton	26.00	132,600.00
401 (1)	Asphalt Concrete, Type II, Class A	3,500	Ton	65.00	227,500.00
401 (2)	Asphalt Cement, Grade PG 58-28 (6% of 401(1))	210	Ton	900.00	189,000.00
504 (3)	Portal Gateway	All required	Lump Sum	7,000.00	7,000.00
511 ( )	Retaining Walls	417	Square Foot	45.00	18,765.00
603 (21)	12 Inch Corrugated Polyethylene Pipe	530	Linear Foot	55.00	29,150.00
603 (21)	18 Inch Corrugated Polyethylene Pipe	920	Linear Foot	80.00	73,600.00
603 (21)	24 Inch Pipe	1,000	Linear Foot	128.00	128,000.00
604 (1)	Storm Sewer Manhole	14	Each	7,200.00	100,800.00
604 (4)	Adjust Existing Manhole	17	Each	1,000.00	17,000.00
604 (5)	Inlet, Type A	47	Each	3,500.00	164,500.00
607 (7A)	Decorative Fence (Park Area)	220	Linear Foot	175.00	38,500.00
607 (7B)	Decorative Fencing (Street Side)	320	Linear Foot	175.00	56,000.00
608 (1a)	Concrete Sidewalk, 4 inches thick	5,400	Square Yard	55.00	297,000.00
608 (6)	Curb Ramp	44	Each	2,500.00	110,000.00
608 (25)	Colored Concrete, 4 inches Thick	550	Square Yard	110.00	60,500.00
608 (28)	Colored Concrete, 6 Inches Thick	766	Square Yard	340.00	260,440.00
609 (1)	Curb, Type C	152	Linear Foot	99.00	15,048.00

ENGINEERS 'S ESTIMATE State of Alaska Department of Transportation & Public Facilities Northern Region	Noble Street Upgrade Draft Construction Estimate AKSAS No.: 61725 Federal No.: STP-0004S(431) Version ID: 34698 Printed: 1/5/2012 9:29:01 AM

Basic Bid

Item Number	*Description*	*Quantity*	*Unit*	*Unit Price*	*Amount*
609 (2a)	Curb and Gutter, Type 1	7,100	Linear Feet	32.00	227,200.00
615 (1)	Standard Sign	520	Square Foot	100.00	52,000.00
618 (2)	Seeding (1.60 lbs/ 1000 SF)	9	Pounds	210.00	1,890.00
620 (1)	Topsoil (6")	308	Square Yard	12.00	3,696.00
620 (1)	Topsoil, Planting Bed	115	Cubic Yard	99.00	11,385.00
621 (1)	Tree, Prunus Maackii, 2" CAL	17	Each	665.00	11,305.00
621 (2A)	Shrub, Potentilla Fruticosa, 24" ht.	24	Each	41.00	984.00
621 (2B)	Shrub, Spiraea 'Golmound', 18" ht.	35	Each	57.00	1,995.00
621 (2C)	Shrub, Juniperus horizontalis, 18" ht.	21	Each	62.00	1,302.00
621 (5)	Street Tree (Betula Papyrifera & tree Grate)	17	Each	3,000.00	51,000.00
622 (14)	Litter Barrel	22	Each	1,500.00	33,000.00
622 (15)	Bench	22	Each	2,500.00	55,000.00
622 (16)	Precast Concrete Planter, 42" Bowl	12	Each	325.00	3,900.00
622 (17)	Precast Concrete Planter, 14" Bell Planter	22	Each	220.00	4,840.00
622 (18)	Precast Concrete Planter, 36" Cylinder	22	Each	400.00	8,800.00
622 (19A)	Boulder, Large	2	Each	715.00	1,430.00
622 (19B)	Boulder, Medium	10	Each	605.00	6,050.00
622 (20)	Bollards	16	Each	1,600.00	25,600.00
627 (6)	Fire Hydrant Relocation	4	Each	4,200.00	16,800.00
639 (1)	Approaches	26	Each	5,000.00	130,000.00
640 (1)	Mobilization and Demobilization	All required	Lump Sum	174,000.00	174,000.00
641 (1)	Erosion and Pollution Control Administrtion	All required	Lump Sum	18,000.00	18,000.00
641 (3)	Temporary Erosion and Pollution Control	All required	Lump Sum	18,000.00	18,000.00
641 (4)	Erosion and Pollution Control Amendments	All required	Contingent Sum	5,000.00	5,000.00
642 (1)	Construction Surveying	All required	Lump Sum	145,000.00	145,000.00

ENGINEERS 'S ESTIMATE State of Alaska Department of Transportation & Public Facilities Northern Region	Noble Street Upgrade Draft Construction Estimate AKSAS No.: 61725 Federal No.: STP-0004S(431) Version ID: 34698 Printed: 1/5/2012 9:29:01 AM

Basic Bid

Item Number	*Description*	*Quantity*	*Unit*	*Unit Price*	*Amount*
642 (3)	Three Person Survey Party	4	Hour	455.00	1,820.00
643 (2)	Traffic Maintenance	All required	Lump Sum	116,000.00	116,000.00
643 (25)	Traffic Control	All required	Lump Sum	10,000.00	10,000.00
644 (1)	Field Office	All required	Lump Sum	20,000.00	20,000.00
645 (1)	Training Program, 2 Trainees/Apprentices (500 Hours Per Trainee)	1,000	Hour	2.80	2,800.00
660(1A)	Traffic Signal System Complete at 10th Avenue	All required	LUMP SUM	311,000.00	311,000.00
660(1B)	Traffic Signal System Complete at 3rd Avenue	All required	LUMP SUM	294,000.00	294,000.00
660(1C)	Traffic Signal System Complete at 2nd Avenue	All required	LUMP SUM	305,000.00	305,000.00
660(1D)	Traffic Signal System Complete at 1st Avenue	All required	LUMP SUM	302,000.00	302,000.00
660(3)	Highway Lighting System Complete	All required	LUMP SUM	460,850.00	460,850.00
660(7A)	Temporary Signal System Complete at 10th Avenue	All required	LUMP SUM	40,000.00	40,000.00
660(7B)	Temporary Signal System Complete at 3rd Avenue	All required	LUMP SUM	40,000.00	40,000.00
660(7C)	Temporary Signal System Complete at 2nd Avenue	All required	LUMP SUM	40,000.00	40,000.00
660(7D)	Temporary Signal System Complete at 1st Avenue	All required	LUMP SUM	40,000.00	40,000.00
661 (1)	Load Center, Type 1	4	Each	14,000.00	56,000.00
662(3)	Signal Interconnect System Complete	All required	LUMP SUM	157,000.00	157,000.00
670 (10)	Methyl Methacrylate Pavement Markings	All required	Lump Sum	11,400.00	11,400.00
670 (12)	Methyl Methacrylate Transverse Markings, Words, Symbols	61	Each	200.00	12,200.00
PROJECT Summary	Pay Items:	65 Items		Subtotal:	5,892,150.00
	Construction Engineering (Percentage)	15%		CENG	883,822.50
				Subtotal	6,775,972.50
	Indirect Cost Allocation Plan (ICAP)	4.3%			291,366.82
	TOTAL PARTICIPATING				7,067,339.32
	ADDED COSTS (Not part of the Contract)				
	PROJECT TOTAL				7,067,339.32

APPENDIX B

DESIGN CRITERIA

ALASKA DOT&PF
PROJECT DESIGN CRITERIA

Noble St.- 1st Ave to 12th Ave

Project Name: Fairbanks Noble Street Upgrade

☑ New Construction/ Reconstruction	☐ Rehabilitation (3R)	☐ Other	
Project Number:	STP-000S(413)/61725		
Design Functional Classification:	Urban Collector		**Terrain:** Level
Design Year:	2035		
Present ADT (& Year):	11,150 (Yr: 2006)		
Design Year ADT (& Year):	14,880 (Yr: 2035)		
Mid Design Period ADT (& Year):	12,820(Yr 2020)		
DHV (%):	11%		
Direction Split (D (%)):	40-60		
Trucks (PTT):	2%		
Equivalent Single Axle Load (ESAL):	881,050 (Functional- 15 years), 1,903,850 (Fatigue-30 years)		
Pavement Design Year (Construction Year + n*):	Functional Failure (15 years) 2029	Fatigue Failure (30 years) 2044	
Design Vehicle:	P (Passenger Car)		
Design Speed:	25 mph		
Stopping Sight Distance:	155'		
Passing Sight Distance:	900'		
Maximum Allowable Grade:	5% **		
Minimum Allowable Grade:	0.3%		
Maximum Allowable Degree of Curvature:	30.75		
Minimum K-Value for Vertical Curves:	**Sag:** 26	**Crest:** 12	
Number of Roadways:	1		
Width of Traveled Way:	11' (Through Lanes) , 12'- Center Turn Lane		
Width of Shoulders:	**Outside:** None	**Inside:** None	
Surface Treatment:	**T/W:** Asphalt Concrete / PCC select locations	**Shoulders:** N/A	
Side Slope Ratios:	**Foreslopes:** C&G with sidewalks	**Backslopes:** C&G with sidewalks	
Degree of Access Control:	Driveway Permit Process		
Median Treatment (If Applicable):	N/A		
Illumination:	Continuous		
Curb Usage and Type:	Standard		
Bicycle Provisions:	Shared Roadway		
Pedestrian Provisions:	Sidewalk		
Miscellaneous Criteria:	Design Vehicle Loading: HS25		

Proposed by (Designer) (Consultant or Staff) :	Matthew Stone, P.E.	**Date:**	12/29/2011
Endorsed By (Engineering Manager) :		**Date:**	
Approved By (Regional Preconstruction Engineer) :		**Date:**	

* n is the number of years of expected pavement design life.
** 7% grade allowed by Preconstruction Manual, but will hold to 5% max to meet ADA accessible route criteria

APPENDIX C

CATEGORICAL EXCLUSION

State of Alaska
Department of Transportation & Public Facilities

CATEGORICAL EXCLUSION DOCUMENTATION FORM FOR HIGHWAY PROJECTS

Project Name: Fairbanks Noble Street Upgrade
Project Number (state/federal): 61725/STP-000S(413)
Date: February 10, 2011
CE Designation: 23 CFR 771.117(D)(1)
List of Attachments: Figures
4(f) De Minimis Impact Finding
Appendix A: Agency & Public Coordination
Appendix B: Hazardous Materials Initial Site Assessment
Appendix C: Air Quality Analysis
Appendix D: Land Acquisition

I. Project Purpose and Need

The Alaska Department of Transportation and Public Facilities (DOT&PF), in cooperation with the Federal Highway Administration (FHWA), is proposing to improve Noble Street from 1st Avenue to Gaffney Road in downtown Fairbanks, Alaska (Figure 1).

Many organizations are combining efforts to revitalize the Fairbanks downtown area. The Fairbanks Noble Street Upgrade project has evolved out of the August 2001 Fairbanks Downtown Transportation Study's recommendations for Noble Street, which included bicycle, pedestrian, and streetscape improvements.

The purpose of this project is to provide functional and aesthetic improvements to Noble Street and update the storm drains. Replacement and relocation of utilities would take place in conjunction with the street work. Construction of the project would also improve accessibility and vehicle/pedestrian safety. Noble Street has the following deficiencies:

- Deteriorated pavement: The last major reconstruction project on the Noble Street corridor was completed in 1963, although projects centered around the courthouse, parking garage, and 3rd and 4th Avenues have upgraded small areas of Noble Street in the vicinity of these projects.
- Aging storm drain: Storm drain pipes are aging woodstave, prone to leaking.
- Inadequate sidewalks: Some areas do not have sidewalks, and in other locations existing sidewalks do not meet Americans with Disabilities Act (ADA) standards for slope and width.
- Poor aesthetic condition of the streetscape: Improvements are needed to match the other downtown areas experiencing revitalization.

II. Project Description

In order to address these deficiencies, DOT&PF proposes to make the following improvements to Noble Street:

- Reconstruct sections of pavement, curb, and gutters
- Reduce posted speed limit
- Provide ADA-compliant sidewalks throughout the corridor, widening sidewalks where possible, relocating power poles and streetlights to the back side of sidewalks, and relocating fire hydrants to the backside of the sidewalks
- Add curb extensions (bulb-outs) to selected intersections, add textured and colored pavement to selected curbs and intersections, and add landscaping elements and pedestrian furniture (such as benches, retaining walls, planting areas, replacement trees and shrubs) to the streetscape

- Replace buried utilities such as storm drain pipes, manholes, catch basins, and selected water and sewer lines
- Replace wire-hung traffic signals with mast arms
- Replace streetlights

Noble Street would be reconstructed from 1st Avenue to Gaffney Road (Figure 2). The lane configuration would remain a typical three-lane urban roadway with sidewalks on both sides (Figure 3), and the speed limit would be reduced to 25 mph along the entire corridor.

Sidewalks meeting ADA standards, with curb ramps at intersections, would be incorporated in the new construction. The project may also extend the sidewalks to building faces where appropriate, provided the landowners grant permission. Wherever possible, sidewalks would be widened to provide more room for pedestrians and bicyclists.

Curb extensions on side streets would be considered at intersections. Curb extensions are consistent with recent and planned downtown core area street improvements. They promote a safe, pedestrian-friendly environment by decreasing street crossing widths and providing more area for pedestrian refuge and streetscape opportunities. Aesthetic improvements at strategic locations along the corridor would include streetscape additions such as colored or textured concrete, benches, low decorative fences, stylized light poles, and landscaping. In addition, the project may replace the chain link fence at Myrtle Park, a 4(f) property, with a decorative fence and arched banner sign. Landscaping along the sidewalk within the park is also under consideration.

Golden Heart Utilities (GHU) may replace sections of their wood stave sanitary sewer pipe under the roadway from 1st to 3rd Avenues and from 4th to 12th Avenues. The sewer lines from 3rd to 4th Avenues and 12th Avenue to Gaffney Road have recently been U-lined and do not need to be replaced. Since the proposed project would not otherwise impact the sewer lines, GHU would pay for the work and handle any and all coordination. Environmental impacts would be addressed by GHU separately at a later date if they choose to pursue this betterment.

Reconstruction would also include replacement of the aging storm drain system, including pipes, manholes, and catch basins within and immediately adjacent to Noble Street.

Excavation from 1 to 4 feet deep is expected for road improvements, while replacement of storm drain components may require excavation down to 10 feet and a potential storm drain tie-in at 3rd Avenue may require as much as 14 feet of excavation.

The project would relocate some water lines between 2nd and 5th Avenues and between 8th Avenue and Gaffney Road. The 4 inch water line in these areas is in very poor condition, with thin (10 gauge) steel pipe walls that are heavily corroded. Since up to 4 feet of excavation is expected for road reconstruction, the water line, which is only about 5 feet deep on average, would not likely hold up to construction equipment working so closely above it. Relocating the line as proposed would create minimal additional impacts. No water lines currently exist from 1st to 2nd Avenues, and the water line from 5th to 8th Avenues has been replaced recently and is in good condition.

The existing wire-hung traffic signals along the corridor would be replaced with mast arms. Where power line geometry allows, the project would move some power and light poles to the back sides of sidewalks.

III. Environmental Consequences

Complete the following. For each yes, summarize the activity evaluated, the magnitude of the impact and the potential for significant impact based on context and intensity. An alternatives analysis (e.g. Avoidance and Minimization Checklist) is required for any consequence category with an asterisk (*). Attach analysis as appropriate.

A. **Right-of-Way Impacts**	N/A	YES	NO
1. Additional right-of-way required.	☐	☒	☐
a. Permanent easements required. Estimated number of parcels: 23	☐	☒	☐
b. Full or partial property acquisition required. Estimated number of full parcels: 0 Estimated number of partial parcels: 7	☐	☒	☐
c. Property transfer from state or federal agency required. *If yes, list agency in No. 4 below.*	☐	☐	☒
d. Business or residential relocations required. *If yes, summarize the findings of the conceptual stage relocation study in No. 4 below and attach the conceptual stage relocation study.* No. of relocations: _____ Type of relocation: Residential: ☐ Business: ☐ Residential (Indicate number: _____) Business (Indicate number: _____)	☐	☐*	☒
e. Last-resort housing required.	☒	☐	☐
2. Will the project or activity adversely affect any low-income or minority populations as defined in E.O. 12898 (DOT Order 6640.23, December 1998).	☐	☐	☒
3. The project will require the use of land from the Alaska National Interest Lands Conservation Act (ANILCA). *If yes, the project is not assigned to the State per SAFETEA-LU Section 6004 and the CE must be sent to FHWA for approval.*	☐	☐	☒

4. Summarize the impacts.

Temporary construction easements would be needed along the corridor. An estimated 23 lots may require permanent easements for power and light pole relocation to provide ADA-compliant sidewalk widths. If permanent easements cannot be acquired for these relocations, DOT&PF may have to acquire some small areas of land (less than 10 square feet) in localized spots to provide pedestrian access meeting ADA standards. Some trees may need to be removed. Trees to be replaced would be replaced with the same species in a non-declining condition.

Partial acquisition of an additional 7 parcels (a total of about 170 square feet) may be required to accommodate ADA-compliant sidewalks and ramps (Appendix D). Whether these acquisitions will be in fee or by permanent easements will be determined during the ROW process. Land acquisition is not expected to affect available parking or building access for any location within the project area. Many businesses have on-site parking, but parking is also available on most side streets. Business parking is accessed from either Noble Street or side streets. No residential or business relocations would be required.

The project is in an area with a higher percentage of minority, elderly, disabled, and low income populations than the Fairbanks North Star Borough (FNSB) as a whole (see table below). No relocation will occur for any occupant. Since the project would improve conditions for these populations, no adverse effect is expected.

According to the U.S. Census Bureau's (website search May 2008) 2000 census data:

	Population (residents)	Minority (non-white)	Elderly (66+)	Disabled	Below Poverty Level
Project Area	1,732	35.1%	19.0%	31.1%	19.5%
FNSB	82,727	23.6%	5.9%	15.2%	9.1%

B. Social Impacts	N/A	YES	NO
1. The project will affect neighborhoods or community cohesion.	☐	☒	☐
2. The project will affect travel patterns and accessibility (e.g. vehicular, commuter, bicycle, or pedestrian).	☐	☒	☐
3. The project will affect school boundaries, recreation areas, churches, businesses, police and fire protection, etc. Include the direct and indirect impacts from the displacement of businesses in the analysis.	☐	☒	☐
4. The project will adversely affect the elderly, handicapped, nondrivers, transit-dependent, minority and ethnic groups, or the economically disadvantaged.	☐	☐	☒
5. There are unresolved project issues or concerns of a local Indian tribe [as defined in 36 CFR 800.16(m)]. *If yes, the project is not assigned to the State per SAFETEA-LU Section 6004 and the CE must be sent to FHWA for approval.*	☐	☐	☒

6. Summarize impacts, if any.

The project does not propose any realignments or new roads that could affect community cohesion. However, pedestrian and bicyclist access and safety would improve with the reconstruction of Noble Street and its sidewalks. This would improve community cohesion by allowing people better access to their neighbors and to downtown meeting places, shopping, and dining. Access for pedestrians, the elderly, and disabled persons would improve. The project would add sidewalks and curb ramps where they are missing and bring the corridor into compliance with ADA standards.

The only recreational property in the project area is Myrtle Thomas Park, which is located at the southeast corner of Noble Street and 12th Avenue. Improvements on the park property that would complement the park and the proposed streetscape, such as new fencing, signs, or planters, are under consideration. Temporary access for construction would be needed. Maintenance and ownership of the improvements would be the responsibility of the FNSB after construction. The FNSB has expressed support for these plans for the park by signing a Temporary Non-Adverse Occupancy Agreement (see Appendix A, pages 109-110 and 4(f) discussion in Section Q).

C. Economic Impacts	N/A	YES	NO
1. The project will have economic impacts on the regional and/or local economy, such as effects on development, tax revenues and public expenditures, employment opportunities, accessibility, and retail sales.	☐	☒	☐
2. The project will affect established businesses or business districts.	☐	☒	☐

3. Summarize impacts, if any.

According to the Fairbanks Downtown Transportation Study (August 2000), "The couplet (Lacey/Noble Streets) offers an excellent opportunity to improve circulation from hotels and residential areas to downtown shops and riverfront activities. Improvement of pedestrian amenities would facilitate movement along these corridors for residents and visitors and could entice more pedestrian travel."

C. Economic Impacts N/A YES NO

A meeting was held with downtown organizations to discuss the needs for Noble Street on November 13, 2007. The group supported all of the urban design suggestions and felt they were good for downtown. They believe the improvements would direct growth to downtown and make it a place where people want to be and live. A summary of the meeting and comments is included in Appendix A.

Based on the Fairbanks Downtown Transportation Study and impressions received at the above mentioned meeting, the accessibility improvements of this project are likely to improve downtown economic conditions.

D. Local Land Use and Transportation Plans	N/A	YES	NO
1. Project is consistent with local land use plan.	☐	☒	☐
2. Project is consistent with local transportation plan.	☐	☒	☐
3. Project would induce adverse indirect and cumulative effects.	☐	☐	☒

4. Summarize any adverse effect on the local transportation and land use plan, including indirect and cumulative effects.

The area surrounding the project corridor is zoned general commercial and central business district. A variety of uses from residential to commercial are permitted within these zones, although residences on the ground floor are not permitted in the central business district. Griffin Park is located some 300 feet north of the project area, and Myrtle Thomas Park is located east of Noble Street at 12th Avenue.

The proposed project is included in the Statewide Transportation Improvement Plan (STIP) and listed as a FY2011-2015 construction project in the Fairbanks Metropolitan Area Transportation System (FMATS) Long-Range Transportation Plan (Appendix A, and phone conversation with Donna Gardino).

Additional planned local improvement projects are in the vicinity of the project and may contribute to the cumulative impacts on the downtown area. Further information can also be found in Appendix A - Agency Correspondence.

- Cushman Street Reconstruction – 10th Avenue to Gaffney Road (fire station traffic revisions completed at a later date): This project has been put on hold.
- Wendell Avenue ADA Improvements: This project is in construction. Utility work was finished in Fall 2010, and road work will start in Spring 2011.
- Wickersham Street Improvements: Authority to proceed to construction March, 2011.
- Gaffney Road Storm Drain Work: This project has been put on hold.
- FMATS LED Street Light Conversion: Authority to proceed to construction by September, 2012.
- City of Fairbanks Curb Corner Upgrades: Authority to proceed to construction April, 2011.
- FMATS Sign Replacement: As of November 2010, the project has bid; construction will begin soon.
- Illinois Street Reconstruction (2010-2012) – College Road to 1st Avenue:
  - Barnette Bridge built in 2010
  - Remainder of project scheduled for 2011-2012: utilities in 2011 and road work in 2012.
- Cushman Street Reconstruction – Gaffney Road to 17th Avenue: This project is on hold.
- Cushman, Barnette, and Gaffney Two-Way Conversion: This project has been put on hold.
- Wendell Street Bridge Rehabilitation/Replacement: This project is in pre-design.

Cumulative impacts may be experienced in economic, hazardous waste, and construction categories but are not expected to be individually or cumulatively substantial.

Economic impacts may be positive throughout the Fairbanks North Star Borough, as the projects would create temporary employment within construction and support industries such as freight, material supply, food, and lodging. The projects' cumulative improvements would bring better access to the downtown area and the businesses there.

Hazardous waste could be encountered during any of the projects. Over the years, the downtown area has had multiple uses involving gas stations, laundromats, and underground heating oil tanks. Cumulative hazardous waste impacts to consider would include costs to the State. On the other hand, removal and remediation of contaminated soils could provide work for local remediation companies and would result in an overall positive impact to the project areas and the environment as a whole.

The primary cumulative impact would be from construction activity. The potential for cumulative construction impacts is greatest at the tie-in areas where projects meet. These areas include the south end of the project, where Noble Street meets Gaffney Road, and the north end of the project, where Wendell Avenue is one block to the north. Residents of these areas could be impacted by multiple construction seasons. Careful coordination between the projects could reduce the cumulative impacts at the tie-in areas.

E. Impacts to Historic Properties

	N/A	YES	NO
1. This project would have no potential to affect historic properties. *This project meets the criteria for no formal review under Section 106 of the National Historic Preservation Act [36 CFR 800.3(a)(1)] per the May 2, 2006 determination by the Alaska Division of FHWA. If yes, attach concurrence from the FHWA Area Engineer (non-assigned projects) or Statewide NEPA Manager for 6004 (assigned-projects) and proceed to next section.*	☐	☒	☐
2. Is a National Register listed or eligible property in the Area of Potential Effect?	☐	☒	☐
3. Date Consultation/Initiation Letters sent May and June 2008 *Attach copies to this form. If no letters sent explain why not.*			
4. Date "Finding of Effect" Letters sent July 22, 2010 *Attach copies to this form.*			
5. Date SHPO concurred with "Finding of Effect" August 13, 2010 *Attach letter or email from SHPO to this form.*			
6. Will there be an adverse effect on a historic property? *If yes, attach correspondence and signed MOA. If yes, Programmatic Agreements (PCE) do not apply.*	☐	☐	☒

7. Summarize affects to historic properties.

CONSULTATION

Initial Consultation letters were sent to the following consulting parties in May and June 2008: State Historic Preservation Officer (SHPO), Doyon, Limited; Tanana Chiefs Conference (TCC); Denakkanaaga; the City of Fairbanks; the Fairbanks North Star Borough; the Fairbanks Historic Preservation Foundation; and the Tanana-Yukon Historical Society. (All letters and responses provided in Appendix A – Agency Correspondence). On July 18, 2008, Tanana Chiefs Conference responded that TCC has no direct tribal concerns arising from National Historic Preservation Act compliance actions for this project. On August 1, 2008, SHPO responded that that the Area of Potential Effect (APE) was too narrowly defined and DOT&PF should consider indirect effects to nearby properties to define the APE. SHPO also requested that properties under 45 years of age be evaluated in case any had achieved exceptional significance. DOT&PF expanded the APE to include properties of all ages that were adjacent to Noble Street from Wendell Street to Gaffney Road, and properties within the project's viewshed.

IDENTIFICATION AND EVALUATION

Northern Land Use Research (NLUR) conducted a cultural resource survey of the project APE in 2008. NLUR identified 9 properties in the APE that are individually eligible for the National Register of Historic Places (NRHP): the Polaris Building (FAI-1871), Northward Building (FAI-1856), Port Authority (FAI-1872), Music Mart

E. Impacts to Historic Properties N/A YES NO

(FAI-1860), Craft Market (FAI-0279), Wilton Adjustment Services (FAI-1864), Hackett Law Office (FAI-1865), Wilbur Brothers (FAI-1868), and the Foodland Building (FAI-1875). NLUR identified 2 eligible historic districts that overlap the APE, the Eastside Residential Historic District (FAI-1917) and the Downtown Commercial Historic District (FAI-1871). NLUR also identified 3 properties that are NRHP-eligible for contributing to these two districts: the Gronewald House and Garage (FAI-1861 and FAI-331) and the Wilton Adjustment Services building (FAI-1864) for contributing to the Eastside Residential Historic District and the Polaris Building (FAI-1871), for contributing to the Downtown Commercial Historic District. A project walkthrough was conducted on May 12 to familiarize the SHPO with the project area. Attendees included: Judith Bittner from SHPO; Kathy Price, Amy Russell, Bruce Campbell, Missy Jensen, and Nils Degerlund from DOT&PF; and Mike Storey from PDC Inc. Engineers.

EFFECTS
NLUR and DOT&PF analyzed potential effects of the project on these historic properties. Effects to integrity of setting were evaluated for the Gronewald House and Garage (FAI-1861 and FAI-331, the Hackett Law Office (FAI-1865), the Craft Market (FAI-0279), and by extension, the Eastside Residential Historic District (FAI-1917) due to introduction of sidewalk, retaining walls, bulb-outs, landscaping, backing curbs, new streetlamps and light fixtures, relocation of utilities, small ROW acquisitions, and/or removal of trees along reconstructed portions of Noble Street. Due to the very minimal impact these activities could have on any properties' integrity of setting, DOT&PF determined these activities would not adversely affect any historic properties.

One adverse effect to the Wilton Adjustment Services property (FAI-1864) was identified for avoidance. Removal of the property's peripheral hedge prior to construction would be necessary to prevent root damage during curb reconstruction. The hedge is considered important to the property's integrity of setting, and eliminating the hedge was identified as a potential adverse effect. DOT&PF plans to replant the hedge in-kind and in the same location once the curb has been reconstructed. Therefore the project would not adversely affect this property.

DOT&PF sent a finding of No Adverse Effect to Historic Properties to consulting parties on July 22, 2010. SHPO concurred with this determination on August 13, 2010 (Appendix A – Agency Correspondence, pg. 128). No other consulting parties submitted comments regarding this finding.

Although it was found that the project would not adversely affect or impair the features and attributes that contribute to the NRHP eligibility of any historic properties, small ROW easements or acquisition of portions of a number of the properties will constitute a 4(f) use. See Section Q and related 4(f) De Minimis Impact Finding documentation for additional detail about the project's 4(f) de minimis impacts.

F. **Wetland Impacts**	N/A	YES	NO
1. Project involves wetlands as defined by the U.S. Army Corps of Engineers (USACE). *If yes, document public and agency coordination required per E.O. 11990, Protection of Wetlands.*	☐	☐*	☒
2. Wetlands delineated in accordance with the "*Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region (Version 2.0) Sept. 2007*".	☐	☐	☒
3. Estimated area of involvement (i.e. acres): N/A			
4. Estimated fill quantities (cubic yards): N/A			
5. Estimated dredge quantities (cubic yards): N/A			
6. USACE authorization anticipated? *If yes, type*: NWP ☐ Individual ☐ GP ☐ Other ☐		☐	☒

7. Summarize wetlands impacts and attach following supporting documentation as appropriate:
   - Avoidance and Minimization Checklist.
   - Wetlands Delineation.
   - Jurisdictional Determination.
   - Copies of public and resource agency letters received in response to the request for comments.

Wetlands impacts are as follows: The project area is in a highly developed urban setting with no documented wetlands (per National Wetland Inventory maps). The USACE was consulted during scoping and determined that the subject property does not contain waters of the U.S. under USACE jurisdiction. Therefore, no Department of the Army permit is required. (See Appendix A - Agency Correspondence.)

8. Wetlands Finding:			
a. Are there practicable alternatives to the proposed construction in wetlands? *If yes, the project cannot be approved as proposed.*	☒	☐	☐
b. Does the project include all practicable measures to minimize harm to wetlands? *If no, the project cannot be approved as proposed.* List any commitments and mitigative measures in Section VIII.	☒	☐	☐
c. Only practicable alternative: Based on the evaluation of avoidance and minimization alternatives, there are no practicable alternatives that would avoid the project's impacts on wetlands. The project includes all practicable measures to minimize harm to the affected wetlands as a result of construction. *If no, the project cannot be approved as proposed.*	☒	☐	☐

G. **Fish and Wildlife**	N/A	YES	NO
1. Anadromous or resident fish habitat.			
a. Adverse effect on spawning habitat.	☐	☐*	☒
b. Adverse effect on rearing habitat.	☐	☐*	☒
c. Adverse effect on migration corridors.	☐	☐*	☒
d. Adverse effect on subsistence species.	☐	☐*	☒
2. Essential Fish Habitat (EFH).			
a. EFH present in project area.	☐	☐	☒
b. Project proposes construction in EFH. *If yes describe EFH impacts in No. 5.*	☒	☐	☐
c. Project may adversely affect EFH. *If yes, attach EFH Assessment.*	☒	☐*	☐

d.	Project includes conservation recommendations proposed by NOAA Fisheries. *If no, formal notification must be made to NOAA Fisheries. (Summarize the final conservation measures in No. 5 and list in Section VI).*	☒	☐	☐
3.	Wildlife Resources (game/subsistence species):			
a.	Project is in area of high wildlife/vehicle accidents.	☐	☐	☒
b.	Project would bisect migration corridors.	☐	☐	☒
c.	Project would segment habitat.	☐	☐	☒
d.	Project would adversely affect species of concern to Alaska Department of Fish and Game (ADF&G). *If yes, attach appropriate documentation from ADF&G that demonstrates the project would not result in significant adverse impacts.*	☐	☐*	☒
4.	Bald and Golden Eagle Protection Act			
a.	Project visible from an eagle nesting tree? *If yes, consult with USFWS National Bald Eagle Management Guidelines and attach documentation of consultation.*	☐	☐*	☒
b.	Project within 330 feet of an eagle nesting tree? *If yes, consult USFWS National Bald Eagle Management Guidelines and attach documentation of consultation.*	☐	☐*	☒
c.	Project within 660 feet of an eagle nesting tree? *If yes, consult with USFWS National Bald Eagle Management Guidelines and attach documentation of consultation.*	☐	☐*	☒
d.	Will the project require blasting or other activities that produce extreme loud noises within 1/2 a mile from an active nest? *If yes, consult USFWS National Bald Eagle Management Guidelines and attach documentation of consultation.*	☐	☐*	☒

5. Summarize adverse fish and wildlife impacts.

The project area does not contain any waters that support resident or anadromous fish, nor does it contain areas of essential fish habitat (EFH). The nearest river that does support fish is the Chena River, which is over 500 feet northwest of the project area at the closest point. The storm drains that collect water along the Noble Street corridor currently outfall into the Chena River and would continue to do so (see Section O, Water Quality).

The downtown area is highly developed, with minimal wildlife beyond birds and an occasional transient moose. No wildlife/vehicle accidents were reported from 2002 to 2006. No known golden or bald eagle nests are in the project area. The U.S. Fish and Wildlife Service (USFWS) was included in the scoping effort and did not submit any comments.

H. Threatened and Endangered Species (T&E)		N/A	YES	NO
1.	Listed threatened or endangered species present.	☐	☐	☒
2.	Threatened or endangered species migrate through the project area.	☐	☐	☒
3.	Proposed species present in project area.	☐	☐	☒
4.	Candidate species present in project area.	☐	☐	☒
5.	Project is likely to adversely affect a listed T&E species or critical habitat. *If yes, formal Section 7 consultation is required, and the project may not be assigned to the State per SAFETEA-LU Section 6004 and the CE must be sent to FHWA for approval.*	☐	☐	☒

H. **Threatened and Endangered Species (T&E)**	N/A	YES	NO
6. Summarize the findings of the biological assessment and the biological opinion of the agency with jurisdiction.	☒	☐	☐

A search of the USFWS Threatened and Endangered Species System (TESS) database on June 17, 2008, indicated that the project area is not within the identified range of any species currently listed as Threatened, Endangered, Candidate, or Proposed under the Endangered Species Act (ESA). According to the Alaska Department of Fish and Game (ADFG) website (accessed June 17, 2008), no State-listed endangered species are located in the project area. The project area lies within the range of six State-listed Species of Special Concern, but habitat for these species is not found in the project area. The tribal and local governments in the Fairbanks area have not designated any species of tribal or local importance. USFWS was included in the scoping effort and did not submit any comments.

I. **Water Body Involvement**	N/A	YES	NO
1. Project affects a water body.	☐	☐*	☒
2. Project affects a navigable water body as defined by USCG, (i.e. Section 9).	☐	☐*	☒
3. Project affects Waters of the U.S. as defined by the USACE, Section 404.	☐	☐*	☒
4. Project affects Navigable Waters of the U.S. as defined by the USACE, Section 10.	☐	☐*	☒
5. Project affects a resident fish stream (i.e. A.S. 16.14.841)	☐	☐	☒
6. Project affects a cataloged anadromous fish stream (i.e. A.S. 16.14.871).	☐	☐*	☒
7. Project affects a designated Wild and Scenic River or land adjacent to a Wild and Scenic River. *If yes, the Regional Environmental Manager should consult with the Statewide NEPA Manager for 6004 (assigned CEs) or FHWA Area Engineer (non-assigned CEs) to determine applicability of Section 4(f).*	☐	☐	☒

8. Proposed river or stream involvement: Bridge ☐ Culvert ☐ Embankment Fill ☐ Relocation ☐ Diversion ☐ Temporary ☐ Permanent ☐ N/A ☒
9. Type of stream or river habitat impacted: Spawning ☐ Rearing ☐ Pool ☐ Riffle ☐ Undercut bank ☐ N/A ☒
10. Amount of fill below: OHW _____ MHW _____ HTL _____
11. Summarize impacts:

The project area does not contain navigable water bodies under the jurisdiction of the U.S. Army Corps of Engineers or the U.S. Coast Guard. The closest water body is the Chena River, over 500 feet northwest of the project area at its closest point. The Chena River is considered navigable by the USACE and USCG. The storm water system for the project area outfalls into the Chena River at Griffin Park, approximately 500 feet northwest of the project's boundary (also see Section O, Water Quality Impacts).

J. **Alaska Coastal Management Program (ACMP)**	N/A	YES	NO
1. Project is within the Alaska Coastal Management Program boundary.	☐	☐	☒
2. Project is within a local coastal management district. *If yes, consult with the local coastal management official and attach correspondence.*	☐	☐	☒
3. Project is consistent with local and state coastal management plans. *If no, the project cannot be approved as proposed.*	☒	☐	☐

4. Finding:

The project area is not located within a coastal zone or coastal district boundary.

K. **Hazardous Waste (HW)**	N/A	YES	NO
1. There are known or potentially contaminated sites along the corridor.	☐	☒	☐
2. The existing and/or proposed ROW is contaminated.	☒	☐	☐
3. Extensive excavation is proposed adjacent to, or within, a known HW site.	☐	☐*	☒

K. Hazardous Waste (HW)

	N/A	YES	NO
4. Potential for encountering hazardous waste during construction is high.	☐	☐	☒

5. Summarize impacts of any 'yes' marked in 1-4 and attach appropriate HW investigation report.

A review was conducted of a 2008 Environmental Data Resources Inc. DataMap™ report, the Alaska Department of Environmental Conservation (ADEC) CS and LUST Databases, and individual site files at the ADEC office. ADEC site managers were also consulted.

Because of the relatively long history of commercial and public use of the Noble Street area, there are numerous records of environmental contamination within a mile of the proposed project boundaries, and several sites are adjacent to the project. Although there is a chance that contamination from leaking underground storage tanks (LUST) and contaminated sites (CS) directly adjacent to or near the proposed project may be encountered during construction, volumes are not expected to be beyond normal levels found at downtown construction sites or to make a substantial impact on the project.

Below is a list of nine contaminated sites that were identified during the records review. These sites are believed most likely to affect the proposed project. Detailed information on these sites can be found in Appendix B.

- Rabinowitz Courthouse
- Westmark Fairbanks Hotel
- Ron's Towing Service
- Federal Building Motor Pool Equipment Building
- Texaco- 1200 Noble Street, Former
- Carrs Foodland Heating Oil Tanks
- Tesoro Northstore # 105
- Wilbur Bros. Mechanical
- Gaffney Area-Wide Investigation

Although contamination might be present, it is anticipated to be a minor impact for the general pavement work proposed due to the shallow excavation depth.

As the design details are finalized, quantity estimates can be made. The construction documents should include provisions for field monitoring, laboratory testing, and soil handling and disposal. Depending upon the ROW interests based on the detailed design and relative to the location of known potential contaminated areas, a pre-acquisition subsurface investigation may be warranted.

L. Air Quality (Conformity)

	N/A	YES	NO
1. The project is located in an air quality maintenance area or nonattainment area (CO or PM-10). *If yes, indicate CO* ☒ *or PM-10* ☒ *and complete the remainder of this section. If no, continue to Section M.* Not PM-10, but PM-2.5	☐	☒	☐
2. If applicable, the project is included in a conforming Long Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP) (state dates of FHWA/FTA conformity determination). Date: Fiscal Year 2010	☐	☒	☐
3. The project is exempt from an air quality analysis per 40 CFR 93.126 (Table 2 and Exempt Projects). *If yes, continue to next section. If no, complete the remainder of this section. Note: A project-level air quality conformity analysis is required for CO nonattainment and maintenance areas and a qualitative project-level analysis is required for PM-10 nonattainment and maintenance areas.*	☐	☒	☐

L. **Air Quality (Conformity)**	N/A	YES	NO
4. Have there been any significant changes in the design, concept, and/or scope as discussed in the most recent conforming TIP and LRTP? *If yes, describe changes in No. 7. In addition, the project must satisfy the conformity rule's requirements for projects not from a plan and TIP, or the plan and TIP must be modified to incorporate the revised project (including a new conformity analysis).*	☒	☐	☐
5. If required, a CO project-level analysis was completed meeting the requirements of Section 93.123 of the conformity rule. The results satisfy the requirements of Section 93.116(a) for all areas or 93.116(b) for nonattainment areas. *Attach a copy of the analysis.*	☒	☐	☐
6. If required, a PM-10 project-level air quality analysis was completed meeting the requirements of Section 93.123 of the conformity rule. The results satisfy the requirements of Section 93.116(a). (The thresholds are different for PM-10 than they are for CO). *Attach a copy of the analysis.*	☒	☐	☐

7. Summarize air quality impacts:

Due to topographical and meteorological factors, the Fairbanks area is subject to strong and persistent temperature inversions during the winter. These inversions create a stagnant air pool, resulting in an accumulation of high concentrations of pollutants for the duration of the inversion. Three pollutants are of primary importance: carbon monoxide (CO); particulate matter less than 2.5 micrometers in diameter (PM2.5); and water vapor.

The Fairbanks area is currently designated as an attainment area for all of the criteria pollutants for which the National Ambient Air Quality Standards (NAAQS) apply except PM 2.5 and CO. Fairbanks has a prior history of violations of the NAAQS for carbon monoxide (CO), but none have occurred since 1999. Fairbanks is designated as a maintenance area for CO. An air quality analysis was conducted by Sierra Research, Inc. in April 2006. The analysis indicates that the project would not result in any violations of the CO NAAQS (Appendix C).

Effective December 18, 2006, EPA strengthened the 24-hour ambient PM2.5 standard from 65 µg/m3 to 35 µg/m3 and indicated that area redesignations for the revised standards would be completed within two years of that effective date. Fairbanks has recorded 24-hour PM2.5 concentrations above the new standard. This led ADEC to recommend that Fairbanks be redesignated to non-attainment for PM2.5. Fairbanks was designated by the EPA as a non-attainment area for PM2.5 in December 2008. The effective date of this designation was December 2009. The Noble Street project is exempt from both regional and project level conformity analysis per 40 CFR 93.126 (Appendix A - Agency Correspondence, Donna Gardino, pg. 134).

Intersection congestion that could result in reduced air quality due to vehicle emmissions is not anticipated. All intersections are expected to operate at Level of Service (LOS) C or better.

M. **Floodplain Impacts (23 CFR Part 650, Subpart A)**	N/A	YES	NO
1. Project encroaches longitudinally into the 100-year floodplain (i.e. base floodplain in fresh or marine waters). *If yes, public comments on the action must be requested and comments received attached. Summarize the findings and attach the "Location Hydraulic Study" developed per 23 CFR 650.111.*	☐	☐	☒
2. Project encroaches into a regulatory floodway. *If yes, attach the location hydraulic study.*	☐	☐*	☒
3. The proposed action would increase the base flood elevation one-foot or greater. *If yes, attach the "Location Hydraulic Study".*	☐	☐	☒
4. The encroachment is significant as defined by 23 CFR 650.105. *If yes, the project cannot be approved as proposed without a finding that the proposed action is the "Only Practicable Alternative" as defined in 23 CFR 650.113. Attach the finding for approval.*	☒	☐	☐
5. Project conforms to local flood hazard ordinances.	☐	☒	☐

M. Floodplain Impacts (23 CFR Part 650, Subpart A)

	N/A	YES	NO
6. Project is consistent with E.O. 11988 (Floodplain Protection). *If no, the project cannot be approved as proposed.*	☐	☒	☐

7. Summarize risk and adverse floodplain impacts:

The Federal Emergency Management Agency (FEMA) Flood Rate Insurance Map (Community Panel No. 025009 0182G) indicates the project area lies within the 500-year floodplain, but outside of the 100-year floodplain. The project is not expected to make changes to the base flood elevation, since the road elevation may only change by a negligible amount to provide positive drainage in some areas. According to the FNSB, a flood permit would not be required for the project (Appendix A – Telephone Log).

N. Noise Impacts (23 CFR Part 772)

	N/A	YES	NO
1. There are noise-sensitive receivers/land uses adjacent to the proposed project. *If yes, attach the noise analysis, if applicable (see 2). If no, go to section O.*	☐	☒	☐
Category A: There are adjacent lands where serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.	☐	☐	☒
Category B: There are adjacent picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, hotels, motels, schools, churches, libraries, or hospitals.	☐	☒	☐
Category C: There are adjacent developed lands, properties, or activities not included in categories A or B above. *This would include commercial properties.*	☐	☒	☐
2. The project is located on new location and would result in substantial changes in vertical or horizontal alignment, or would increase the number of through lanes. *If yes, a noise analysis is required. If not, go to Section O.*	☐	☐	☒
3. There is an existing noise impact.	☒	☐	☐
4. The project would create a noise impact.	☒	☐	☐
5. Noise analysis demonstrates potential noise impacts.	☒	☐	☐
6. There are feasible and reasonable measures that can reduce noise impacts (attach analysis).	☒	☐	☐
7. The noise abatement measures listed in 23 CFR 772.13(c)(1-5) have been considered for those receivers where a noise impact would occur.	☒	☐	☐

8. Summarize noise impact and abatement measures considered, if applicable.

The proposed project does not meet the definition of a Type I project as described in 23 CFR 772.5(h); therefore, according to the DOT&PF Noise Abatement Policy, March 1996, no noise analysis is required.

The project is adjacent to residences, businesses, clinics, and a park. However, it would not result in a highway on a new location, and it would result in no substantial change in horizontal or vertical alignment. There would be no change of traffic mix, vehicle capacity, or the number of through traffic lanes. No change in traffic noise is expected as a result of the project.

O. Water Quality Impacts

	N/A	YES	NO
1. Project would involve a public or private drinking source. *If yes, explain in no. 7.*	☐	☐	☒
2. Project would result in a discharge of storm water to a Waters of the U.S.	☐	☒	☐
3. Project would discharge storm water into or affect an ADEC designated impaired water body. *If yes, list in no. 4 and describe in no. 7.*	☐	☒	☐

4. List name(s) and location(s).
Chena River – located approximately 500 feet northwest of the project (Figure 1).

5. Estimate the acreage of ground-disturbing activities that will result from the project?
   4.8 acres
6. Is there a municipal separate storm sewer system (MS4) NPDES permit, or will runoff ☐ ☒ ☐
   be mixed with discharges from an NPDES permitted industrial facility? *If yes,*
   NPDES permit #: No. AKS-053406
7. Summarize the impacts of any "yes" marked in Section O.
   Drinking water in the project area comes from piped water systems operated by Utility Services of Alaska, Inc., d/b/a Golden Heart Utilities.

   The quality of storm water discharged to the Chena River would not change as a result of this project.

   Currently, storm water is collected from Gaffney Road north into a storm drain system that discharges to the Chena River, which is an impaired river (see Figure 1). This project would include replacement of the aging storm mains and their components within Noble Street and for approximately half a block up the side streets. The proposed system would be placed in the same location and utilize the same outfall. The reconstructed storm drains would connect with the existing system at 3rd Avenue.

   The proposed project may slightly increase the volume of storm water discharged from the project area due to more efficient collection and transport of the storm water across new, uncracked pavement and through positive drainage, new inlets, manholes, and piping. In addition, the storm drain system in Noble Street may be enlarged to provide increased capacity to accommodate the City's long-term drainage plans.

   The nearest impaired water body is the Chena River, which is listed as a Category 2 water body in Alaska's Final 2010 Integrated Water Quality Monitoring and Assessment Report (ADEC, 2010). The Chena River was Section 303(d) listed in 1990 for turbidity; petroleum hydrocarbons, oils and grease, and sediment. The identified pollutant source is urban runoff. DEC conducted sampling in 2005, 2007, and 2009 for hydrocarbons and sediment. Data have shown that the Chena River met water quality standards for the petroleum hydrocarbon standard and remains impaired for sediment. Data is currently being reviewed for the sediment standard. The Total Maximum Daily Load (TMDL) has not yet been determined for the Chena River, but this is scheduled for completion in 2010 (ADEC website, November 10, 2010).

   The EPA's Storm Water Phase II Final Rule extended coverage of the National Pollutant Discharge Elimination System (NPDES) program to cover certain small municipal separate storm sewer systems (MS4s) in urbanized areas. The EPA issued a Storm Water Management NPDES Permit No. AKS-053406, which is held collectively by the City of Fairbanks, City of North Pole, UAF, and the DOT&PF Northern Region.

   The storm drain system is and would remain owned and maintained by the City of Fairbanks. For post-construction (permanent) storm water controls, a letter of non objection is required and in accordance with 18 AAC 72.600, the drainage plans (stamped by a Professional Engineer) is required to be submitted to ADEC for an Engineering Plans review. For this project there are no storm water submittals required by the city.

   Existing and proposed post-construction storm water measures would include both structural and non-structural BMPs to reduce the discharge of pollutants from the storm drain system to the Chena River, protect water quality, and satisfy water quality requirements of the Clean Water Act, as follows (see Appendix A – Agency Correspondence, City of Fairbanks, pp. 86-88, 132, and 136-138):

   - All catch basins and manholes would utilize sumps, which are designed to retain sediment and other debris from discharging to piping laterals.
   - All storm drain inlets would be factory embossed and/or stenciled with an emblem of a fish and the words "Dump No Waste, Drains to River" to educate the public about where the storm drain system outfalls and discourage illicit discharges.
   - The City of Fairbanks, who will continue to operate and maintain the storm drain system, will also implement good housekeeping practices year-round, as required by their MS4 NPDES Permit. Within the right-of-way, the City is responsible for snow removal during the winter and street sweeping and storm drain cleaning operations during the summer. The City aggressively performs street sweeping

operations during spring break-up on all arterials, collectors, and local streets to remove aggregate. The City also cleans and maintains the storm drain system using a vacuum truck to flush and pump accumulated sediment and debris from catch basins, lateral lines, manholes, and other sediment collection devices. All snow removal, street sweeping, and storm drain cleaning operations are tracked by date of operation, equipment number, area and subarea, street location, number of loads or tonnage hauled, and storage/disposal site used.

For construction-related water quality impacts, see Section P.

P. Construction Impacts	N/A	YES	NO
1. There will be temporary degradation of water quality.	☐	☒	☐
2. There will be temporary stream diversion.	☐	☐	☒
3. There will be temporary degradation of air quality.	☐	☒	☐
4. There will be temporary delays and detours of traffic.	☐	☒	☐
5. There will be temporary impact on businesses.	☐	☒	☐
6. There will be other construction impacts, including noise.	☐	☒	☐

7. Summarize construction impacts associated with any "yes".

Impacts associated with normal construction activities (e.g., storm water runoff, dust, noise, traffic detours, and socio-economic impacts related to the influx of economic stimulation) are generally short in duration, but can be of high intensity and can result in substantial impacts if mitigation measures are not taken. Appropriate practices to mitigate construction impacts would be incorporated into the construction specifications.

Pursuant to the requirements of the EPA-issued Storm Water Management NPDES Permit No. AKS 053406, in July 2007 the City of Fairbanks adopted a Construction Site Storm Water Runoff Ordinance (No. 07-5702), which was amended in May 2008 (No. 08-5751) to clarify that it only applies to ground disturbances on private property funded by the private sector within the Urbanized Area of Fairbanks. Since the Fairbanks Noble Street Upgrade project would disturb ground on public property and is funded by the public sector, the project does not fall within the purview of the Construction Site Storm Water Runoff Ordinance.

The Contractor will be required to prepare a Storm Water Pollution Prevention Plan (SWPPP) and file a Notice of Intent to Discharge (NOI) to apply for coverage under the Alaska Pollutant Discharge Elimination System (APDES) Construction General Permit (CGP). Pursuant to Section 5.13.4.3 of the CGP a copy of the SWPPP must also be submitted to Alaska Department of Environmental Conservation (ADEC) for review before commencing construction activities. Owners or operators of publically-funded projects disturbing one or more acres of land shall submit a copy of the SWPPP to ADEC for review (ADEC website November 10, 2010).

The Contractor will develop and obtain DOT&PF approval of a Traffic Control Plan (TCP) to address detours and altered traffic controls and maintain access to businesses. The TCP would include public notices. The Contractor would be required to keep his equipment's sound control devices in good condition and comply with the City of Fairbanks Code of Ordinance, Article II Offenses Against Public Peace and Order, Sec. 46-42, Disturbing the Peace.

The project would provide temporary employment opportunities during construction and possibly some temporary business opportunities to support the construction workers.

Q. Section 4(f)/6(f) - (23 CFR 774)	N/A	YES	NO
1. Section 4(f) properties would be affected by the proposed action.	☐	☒	☐
2. There would be a "use" of land from these 4(f) properties.	☐	☒	☐
3. The project will require an Individual Section 4(f) Evaluation. *If yes, the project is excluded from State assignment and the CE and Section 4(f) Evaluation must be approved by FHWA.*	☐	☐	☒

Q. Section 4(f)/6(f) - (23 CFR 774)	N/A	YES	NO
4. The project would affect Section 6(f) properties.	☐	☐	☒
5. Funds from the Land and Water Conservation Fund Act (LWCFA) were used for improvement to the 4(f) property.	☐	☐	☒
6. Is the use of the property receiving LWCFA funds a "conversion of use" per Section 6(f) of the LWCFA? *Attach the correspondence received from the ADNR 6(f) Grants Administrator.*	☒	☐	☐
7. Project is adjacent to a Section 4(f) resource. *If yes, consult with the Statewide NEPA Manager for 6004 (assigned CEs) or FHWA Environmental Program Manager (non-assigned CEs) to determine applicability of "constructive use".*	☐	☒	☐

8. Summarize the type of involvement. Coordinate with the land manager and attach appropriate documentation (i.e. Section 4(f) or Section 6(f) Evaluation).

DOT&PF's NEPA Manager determined that minor easements or ROW acquisitions along five historic properties constituted a 4(f) impact and a 4(f) Assessment was completed. See 4(f) De Minimis Impact Finding report for information on the five properties.

A temporary non-adverse occupancy agreement was reached with the Fairbanks North Star Borough, land manager of Myrtle Park, for improvements to the park. See Appendix A, pages 109-110.

No Section 6(f) properties are located within the project area (National Park Service website, June 2008).

IV. Permits and Authorizations	N/A	YES	NO
1. USACE, Section 404/10 (includes APP, NWP & GP)	☐	☐	☒
2. Coast Guard, Section 9	☐	☐	☒
3. Department of Fish and Game (ADF&G) Fish Habitat Permit (T16.871 and 16.841)	☐	☐	☒
4. Flood Hazard	☐	☐	☒
5. Department of Environmental Conservation (ADEC) Non-domestic Wastewater Plan Approval.	☐	☐	☒
6. ADEC 401	☐	☐	☒
7. DNR, ACMP consistency	☐	☐	☒
8. Other. *If yes, list.*	☐	☒	☐

- APDES General Permit for discharges from large and small construction activities review may be needed.

V. Comments and Coordination	N/A	YES	NO
1. Public/agency involvement for project *(required if protected resources are involved).*	☐	☒	☐
2. Public Meetings. Date: April 29, 2008	☐	☒	☐
3. Newspaper ads Name of newspaper: Fairbanks Daily News Miner	☐	☒	☐
4. Agency scoping letters. Date sent: January 4, 2008	☐	☒	☐
5. Agency scoping meeting. Date of meeting: _____	☐	☐	☒
6. Field review	☒	☐	☐

7. Summarize comments and coordination efforts for this project. Discuss pertinent issues raised. *Attach correspondence that demonstrates coordination and that there are no unresolved issues.*

Agency e-scoping letters were sent out and a project website was available for agencies to get information and submit comments. An agency meeting was offered in the email, but no requests were received (Appendix A).

A meeting to discuss the aesthetic improvements was held with the agencies and associations involved with the downtown revitalization. Improvements to the street and sidewalks were discussed and aesthetic options were provided for consideration. A summary of the meeting is included in Appendix A (also see Section III.C).

Landscaping opportunities were identified on five lots. Project staff met with the landowners to discuss the project to see if they were interested in participating (Appendix A). Additional discussion regarding the City's lot was conducted in a telephone call between DOT&PF and the City of Fairbanks. Three of the landowners approved of improvements on their lots, one was not interested, and the other was undecided but was not opposed to having the property shown with landscaping during the public process. An additional landscaping opportunity was identified during the public open house, and further coordination with this landowner would take place during the detailed design.

Two newsletters have been sent to the public. The first (June 2005) was issued when the project included improvements to Lacey and Noble Streets. The second (April 2008) reflected the current scope of proposed improvements and announced a public meeting which was also advertised in the Fairbanks Daily News Miner. The public meeting was held on April 29, 2008. A summary is included in Appendix A.

Summaries of the agency and public comments are included in Appendix A along with copies of the correspondence. No substantial comment was received.

VI. Environmental Commitments and Mitigation Measures

List the environmental commitments or mitigation measures included in the project.

Hazardous Materials Mitigation Measures:

- During geotechnical investigation, DOT&PF would test extracted soil for contamination.

Other Mitigation Measures:

- Trees to be replaced would be replaced with the same species in a non-declining condition, causing no effect to NHRP-eligible properties or districts (Appendix A page 118).
- Retaining wall replacement on the Hackett Law Office property would be of the same size and configuration as the current wall, which already has concrete components (Appendix A page 117).
- Hedge on Wilton Adjustment Services property would be replaced. Refer to Section E for details (Section E, Historic Properties).

VII. Environmental Documentation Approval

	YES	NO
1. The project meets the criteria of a Department or FHWA programmatic agreement. *If yes, the CE may be approved by the Regional Environmental Manager but needs a QA/QC check (see shaded block).*	☐*	☒
2. The State has determined that the project has no significant impacts on the environment and that the project is categorically excluded from the requirements to prepare an EA or EIS under NEPA. The State has been assigned, and hereby certifies that it has carried out the responsibility to make this determination pursuant to Chapter 3 of title 23, United States Code, Section 326 and the MOU dated September 22, 2009 executed between the FHWA and the State. *If yes, the CE may be approved by a Statewide NEPA Manager for 6004. If no, the CE must be approved by FHWA.*	☒	☐

VII. Environmental Documentation Approval

YES NO

Prepared by: Mehgan Y Jensen Date: 2-10-11
Environmental Impact Analyst

Reviewed by: [signature] Date: 2/10/2011
Engineering Manager

Approved by: [signature] Date: 2-10-11
Regional Environmental Manager

If Assigned CE

Approved by: Benjamin M. White Date: 2-15-11
[Print] DOT&PF Statewide NEPA Manager for 6004

Benjamin M. White
[Signature] DOT&PF Statewide NEPA Manager for 6004

If Non-Assigned CE

Approved by: _____ Date: _____
FHWA Area Engineer

* If the CE meets the conditions of either the Internal Programmatic Agreement (DOT&PF Statewide NEPA Manager for 6004 verifies) or one of the Programmatic Agreements with FHWA (FHWA Area Engineer verifies) then:

Concurrence by: _____ Date: _____
DOT&PF Statewide NEPA Manager or FHWA Area Engineer

APPENDIX D

3R ANALYSIS

(Not Used)

APPENDIX E

PAVEMENT DESIGN

Our analyses and recommendations are described in the following sections.

4.1 Pavement Design

We evaluated section requirements for Noble Street using the ADOT&PF Alaska Flexible Pavement Design (AKFPD) software Version 1.1.5 mechanistic analysis. We conducted the analyses using soil parameters developed from the characterization of subsurface conditions along the alignment, pavement material properties commonly used by the ADOT&PF, estimates of future traffic, and our experience.

4.1.1 Traffic Data

We obtained traffic data from an ADOT&PF memorandum which provided backup for the Design Designation of Noble Street as an urban collector. The memo includes Traffic Data Request (TDR) Forms, computations, summary data tables of Average Daily Traffic (ADT), and turning movement diagrams and data. The AADT data for four blocks was recorded in 2006: 1st Avenue to Wendell Avenue, 7th Avenue to 8th Avenue, 11th Avenue to 12th Avenue, and 12th Avenue to Gaffney Road. A maximum AADT of 11,150 was recorded between 1st Avenue and Wendell Avenue, selected for the basis of our traffic calculations (see table below). A historic annual growth rate of 1 percent per year has been calculated from data recorded at the Wendell Avenue Bridge Permanent Traffic Recorder (PTR) station. The computations show the percent of AADT for each of the two lanes is 40 percent and 60 percent. The computations also show 3 percent of the AADT consists of truck traffic, with 2 percent consisting of two-axle trucks with a load factor of 0.28 and 1 percent consisting of three-axle trucks with a load factor of 1.51.

2006 TRAFFIC FOR NOBLE STREET

Block	AADT
1st Avenue to Wendell Avenue	11,150
7th Avenue to 8th Avenue	7,282
11th Avenue to 12th Avenue	10,411
12th Avenue to Gaffney Road	10,514

Using this data in conjunction with the ADOT&PF *ESAL_Calculator.xls* excel workbook, we calculated the following total design equivalent single-axle loads (ESALs) for the given design life periods assuming a 2014 design construction year:

ESTIMATED TRAFFIC LOADING

Design Life (years)	Total Design Loading (ESALs)
10	572,618
15	881,015
20	1,205,144
25	1,545,807
30	1,903,847

For our analyses, we conservatively chose an ESAL tire pressure of 110 pounds per square inch (psi).

4.1.2 Mechanistic Pavement Analysis

In the mechanistic approach, the structural response is calculated in terms of elastic stress and strains within the layered pavement structure. Structural distress to flexible pavements caused by traffic loading normally consists of cracking of the asphalt concrete surface (flexural) and development of ruts in the subgrade (functional). The approach to mechanistic pavement design is to control both modes of distress by limiting the cumulative damage caused by horizontal strain repetitions at the base of the asphalt concrete and vertical strain repetitions at the top of the underlying unbound pavement layers. AKFPD uses ELSYM5 to calculate the stresses and strains in the layered system; the cyclic stresses and strains are then compared to load repetitions that will cause the pavement to fail.

We selected the following presumptive elastic material properties given in AKFPD for use in our analyses:

ASSUMED MATERIAL PROPERTIES

Course	Material	Resilient Modulus (ksi)/Poisson's Ratio		
		Spring	Summer/Fall	Winter
Surface	Plant Mix Asphalt-Concrete Pavement	755/0.30	510/0.30	1,500/0.30
Base	3% to 4% Asphalt-Treated Base	200/0.35	200/0.35	200/0.35
Base	Aggregate base, D-1 (P200 < 6%)	45/0.35	50/0.35	100/0.35
Subbase	Selected Material Type A (P200 < 6%)	25/0.40	35/0.40	90/0.40
Subgrade	Frost-susceptible *In Situ* and Fill Soils (P200 < 30%)	50/0.45	10/0.45	10/0.45

These values are based on the ADOT&PF's experience with existing pavements and falling-weight deflectometer studies. Reduced moduli values were selected for the spring, when the pavement section is thawing and in a weakened condition.

The elasticity of the pavement structure and therefore, the damage resulting by a given number of loadings, varies with season. We assumed 10 percent, 50 percent, and 40 percent of the traffic load will be applied to each season: spring, summer/fall, and winter, respectively.

The load capacity of a layer is exceeded when the total damage calculated by AKFPD is greater than 100 percent. In order to provide a "factor of safety" it is standard practice to limit flexural damage to bound surface courses to less than 80 percent and functional damage to the underlying unbound layers to less than 90 percent.

We tabulated the results of our pavement analyses including the percent damage to each layer in Appendix D. Our recommended pavement sections are discussed below.

4.2 ARP Pavement Section

The results of our analysis indicate the minimum ARP surface and base course layers, using either granular or stabilized base, in a 30-inch section are structurally sufficient to support the design-traffic loads.

The pavement sections are designed for a 30-year design life based on at least one mill-and-fill replacement of the surface wearing course. Damage not accounted for in this analysis, such as thermal-cracking, wear, and weathering, may occur within the design-life of the pavement, requiring additional maintenance and repairs.

Our recommendations for ARP pavement sections are as follows:

ALASKA RENEWABLE PAVEMENT SECTION (GRANULAR BASE)

Course	Minimum Thickness (in)	Material Recommendation
Surface (wearing)	2	Asphalt Concrete Pavement
Surface (binder)	3	Asphalt Concrete Pavement
Base	4	Aggregate base course meeting all the requirements for ADOT&PF grading D-1, compacted to 98% of the maximum dry density determined by ASTM D1557.
Subbase	21	ADOT&PF Selected Material Type A with a maximum particle size of 3 inches, compacted to 95% of the maximum dry density determined by ASTM D1557.

ALASKA RENEWABLE PAVEMENT SECTION (STABILIZED BASE)

Course	Minimum Thickness (in)	Material Recommendation
Surface (wearing)	2	Asphalt Concrete Pavement
Surface (binder)	2	Asphalt Concrete Pavement
Base	3	Asphalt Stabilized Base
Subbase	23	ADOT&PF Selected Material Type A with a maximum particle size of 3 inches, compacted to 95% of the maximum dry density determined by ASTM D1557.

4.3 Minimum Mechanistic Pavement Section

The results of our analysis indicate a 30-inch pavement section, composed of 3 inches to 4 inches of AC pavement, 6 inches of granular base, and 20 inches to 21 inches of granular subbase, is structurally sufficient to support the design-traffic loads.

The pavement sections are designed for a 10- to 30-year design life. Damage not accounted for in this analysis, such as thermal-cracking, wear, and weathering, may occur within the design-life of the pavement, requiring additional maintenance and repairs.

Our recommendations for minimum mechanistic pavement sections are as follows:

MINIMUM MECHANISTIC PAVEMENT SECTION

Course	Design Life (years)	Minimum Thickness (in)	Material Recommendation
Surface	10-15	3	Asphalt Concrete Pavement
	20-25	3.5	
	30	4	
Base	10-30	6	Aggregate base course meeting all the requirements for ADOT&PF grading D-1, compacted to 98% of the maximum dry density determined by ASTM D1557.
Subbase	10-30	20-21*	ADOT&PF Selected Material Type A with a maximum particle size of 3 inches, compacted to 95% of the maximum dry density determined by ASTM D1557.

*Adjust to maintain a 30-inch pavement section.

MINIMUM MECHANISTIC PAVEMENT SECTION ANALYSES

Design Life (years)	Loadings	Layer	Material	Thickness (in)	Damage	
					Flexural (%)	Functional (%)
10	572,618	Surface	AC	2.5	30	---
		Base	D-1	6	---	98
		Subbase	Selected Type A	21.5	---	10
		Subgrade	Varies	---	---	1
10	572,618	Surface	AC	3	22	---
		Base	D-1	6	---	51
		Subbase	Selected Type A	21	---	7
		Subgrade	Varies	---	---	1
15	881,015	Surface	AC	2.5	46	---
		Base	D-1	6	---	150
		Subbase	Selected Type A	21.5	---	15
		Subgrade	Varies	---	---	1
15	881,015	Surface	AC	3	34	---
		Base	D-1	6	---	78
		Subbase	Selected Type A	21	---	10
		Subgrade	Varies	---	---	1
20	1,205,144	Surface	AC	3	47	---
		Base	D-1	6	---	107
		Subbase	Selected Type A	21	---	14
		Subgrade	Varies	---	---	1
20	1,205,144	Surface	AC	3.5	34	---
		Base	D-1	6	---	59
		Subbase	Selected Type A	20.5	---	9
		Subgrade	Varies	---	---	1
25	1,545,807	Surface	AC	3	60	---
		Base	D-1	6	---	137
		Subbase	Selected Type A	21	---	17
		Subgrade	Varies	---	---	2
25	1,545,807	Surface	AC	3.5	43	---
		Base	D-1	6	---	76
		Subbase	Selected Type A	20.5	---	12
		Subgrade	Varies	---	---	2
30	1,903,847	Surface	AC	3	74	---
		Base	D-1	6	---	169
		Subbase	Selected Type A	21	---	21
		Subgrade	Varies	---	---	2
30	1,903,847	Surface	AC	3.5	53	---
		Base	D-1	6	---	94
		Subbase	Selected Type A	20.5	---	15
		Subgrade	Varies	---	---	2
30	1,903,847	Surface	AC	4	38	---
		Base	D-1	6	---	55
		Subbase	Selected Type A	20	---	10
		Subgrade	Varies	---	---	2

Red text indicates greater than 80% flexural damage or 90% functional damage.

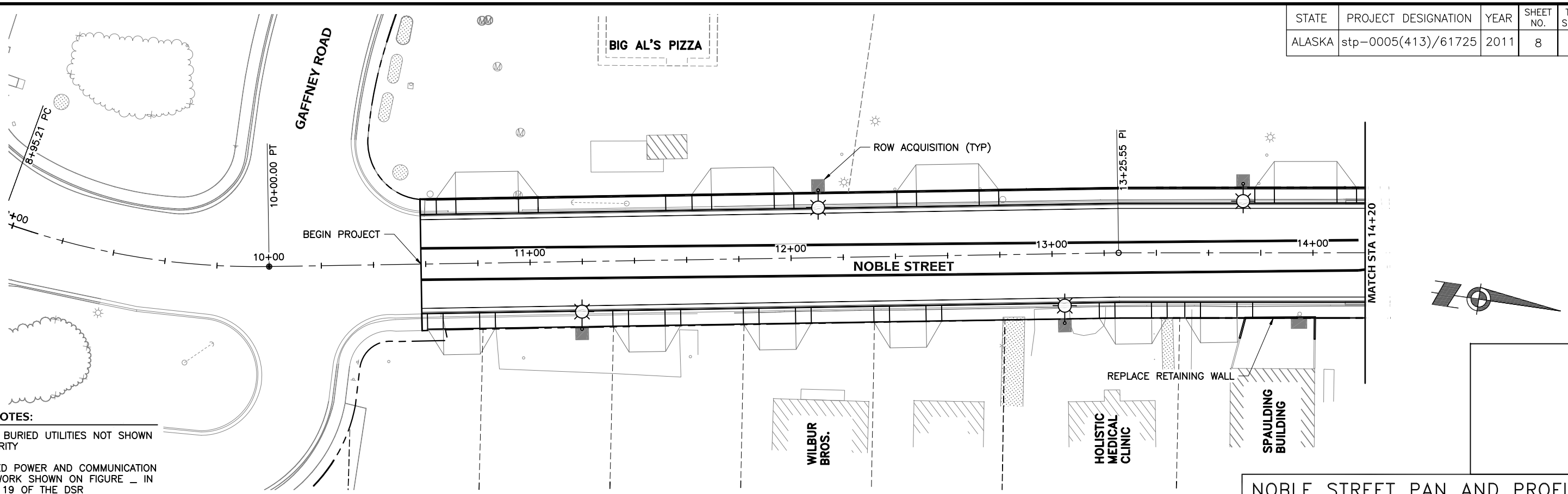
ALASKA RENEWABLE PAVEMENT SECTION ANALYSES

Design Life (years)	Loadings	Layer	Material	Thickness (in)	Damage	
					Flexural (%)	Functional (%)
30	1,903,847	Surface (Wearing)	AC	2	42	---
		Surface (Binder)	AC	3		
15 (30)	881,015	Base	D-1	4	---	24 (51)
		Subbase	Selected Type A	21	---	10 (21)
		Subgrade	Varies	---	---	1 (2)
30	1,903,847	Surface (Wearing)	AC	2	6	---
		Surface (Binder)	AC	2		
15 (30)	881,015	Base	ATB (3%-4%)	3	---	1 (2)
		Subbase	Selected Type A	23	---	9 (20)
		Subgrade	Varies	---	---	1 (2)

APPENDIX F

PLAN AND PROFILE SHEETS

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	stp-0005(413)/61725	2011	8	X

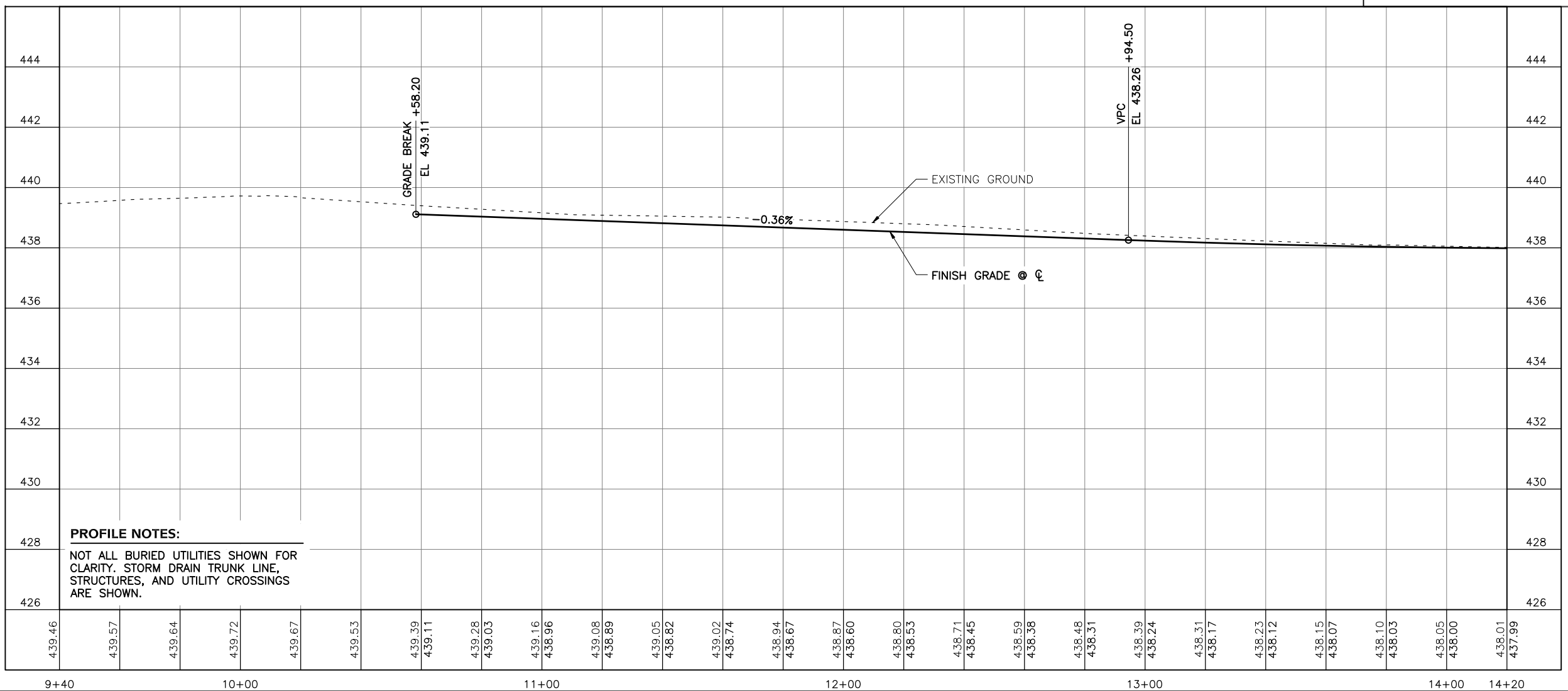


PLAN NOTES:

EXISTING BURIED UTILITIES NOT SHOWN FOR CLARITY

PROPOSED POWER AND COMMUNICATION UTILITY WORK SHOWN ON FIGURE _ IN SECTION 19 OF THE DSR

NOBLE STREET PAN AND PROFILE



PROFILE NOTES:

NOT ALL BURIED UTILITIES SHOWN FOR CLARITY. STORM DRAIN TRUNK LINE, STRUCTURES, AND UTILITY CROSSINGS ARE SHOWN.

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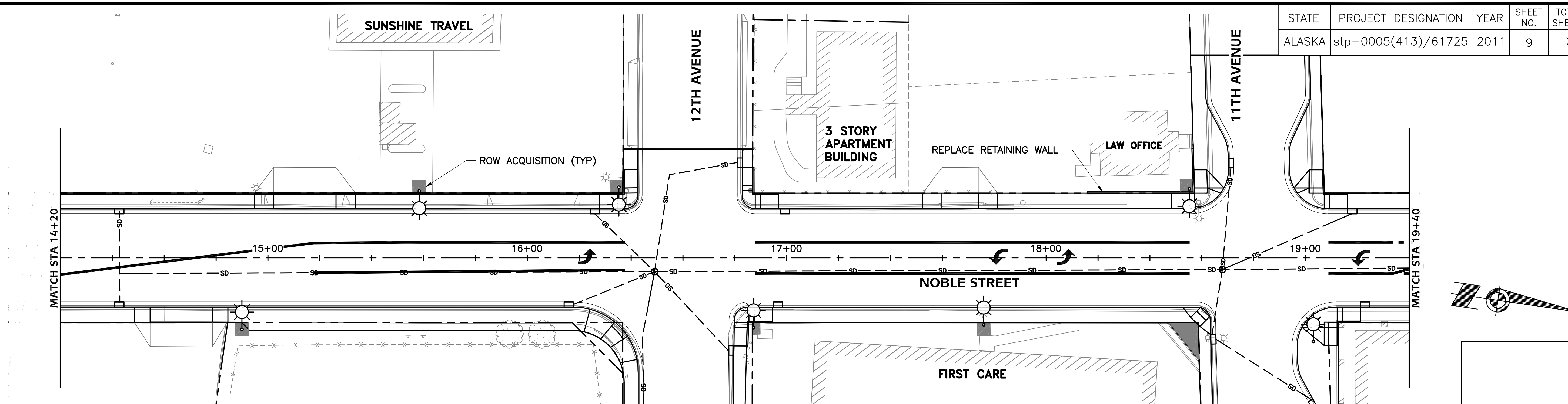
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	stp-0005(413)/61725	2011	9	X

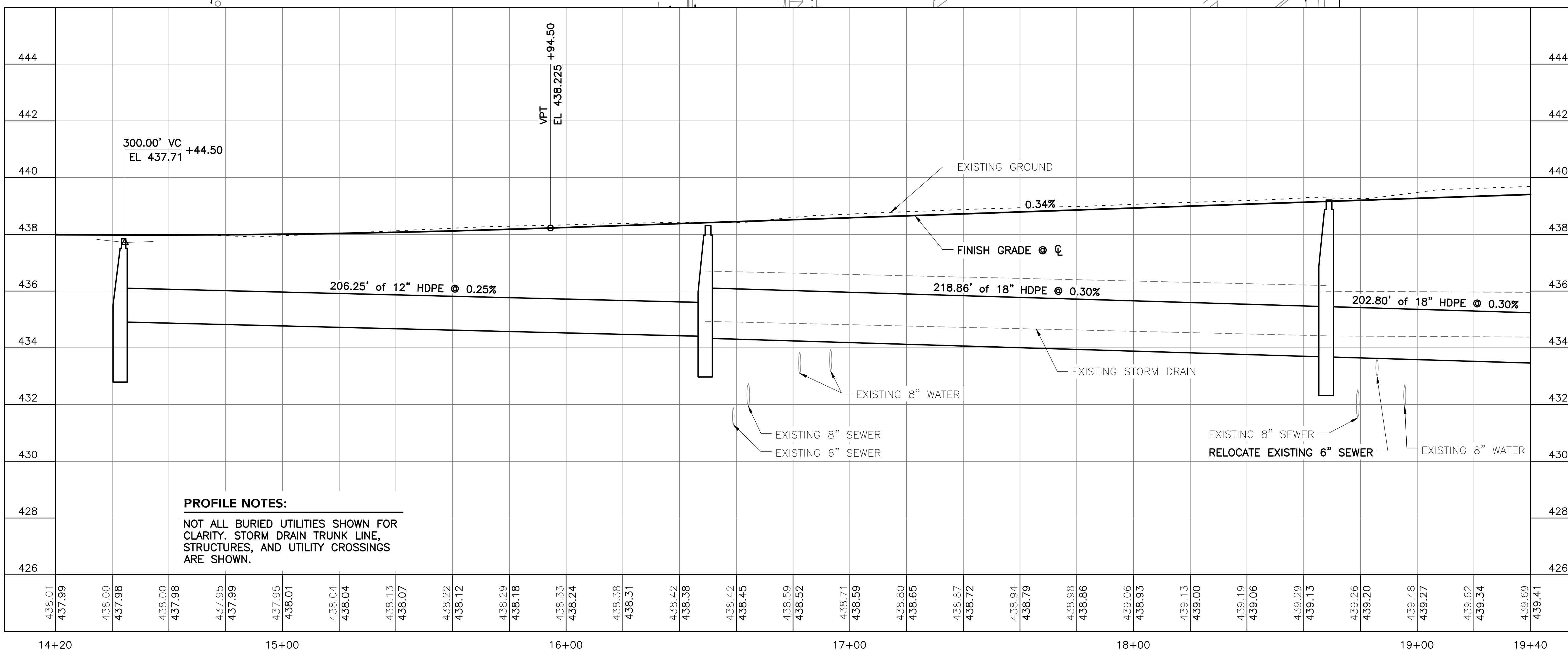


PLAN NOTES:

EXISTING BURIED UTILITIES NOT SHOWN FOR CLARITY

PROPOSED POWER AND COMMUNICATION UTILITY WORK SHOWN ON FIGURE _ IN SECTION 19 OF THE DSR

NOBLE STREET PAN AND PROFILE



PROFILE NOTES:

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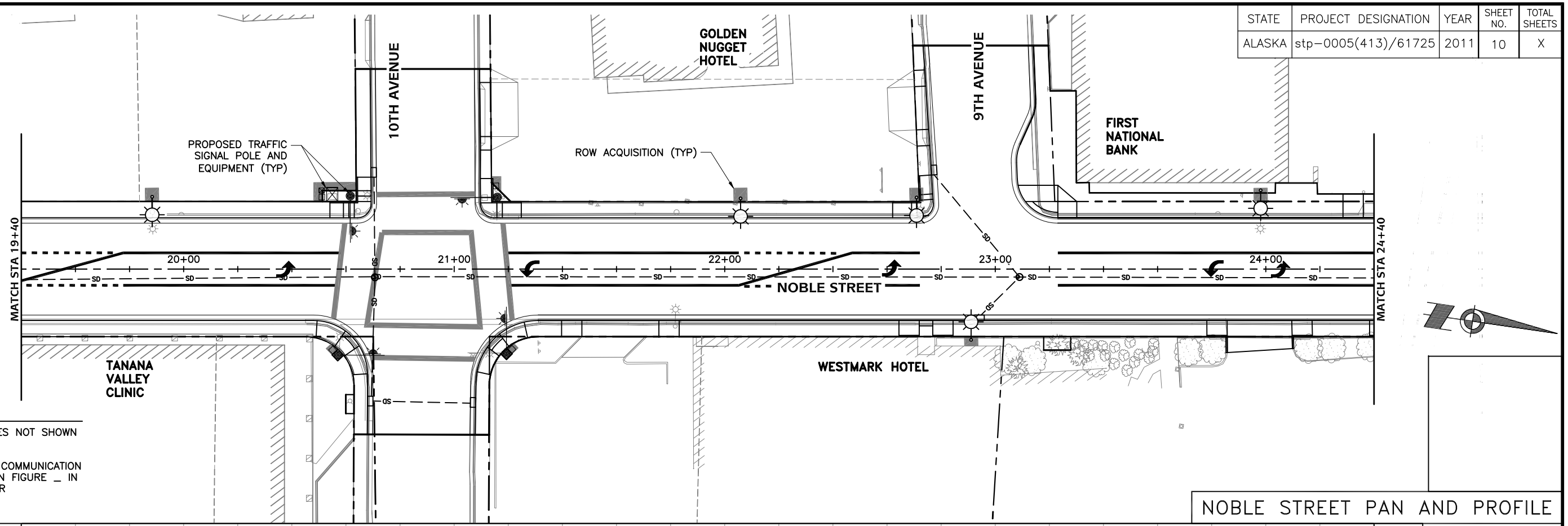
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	stp-0005(413)/61725	2011	10	X

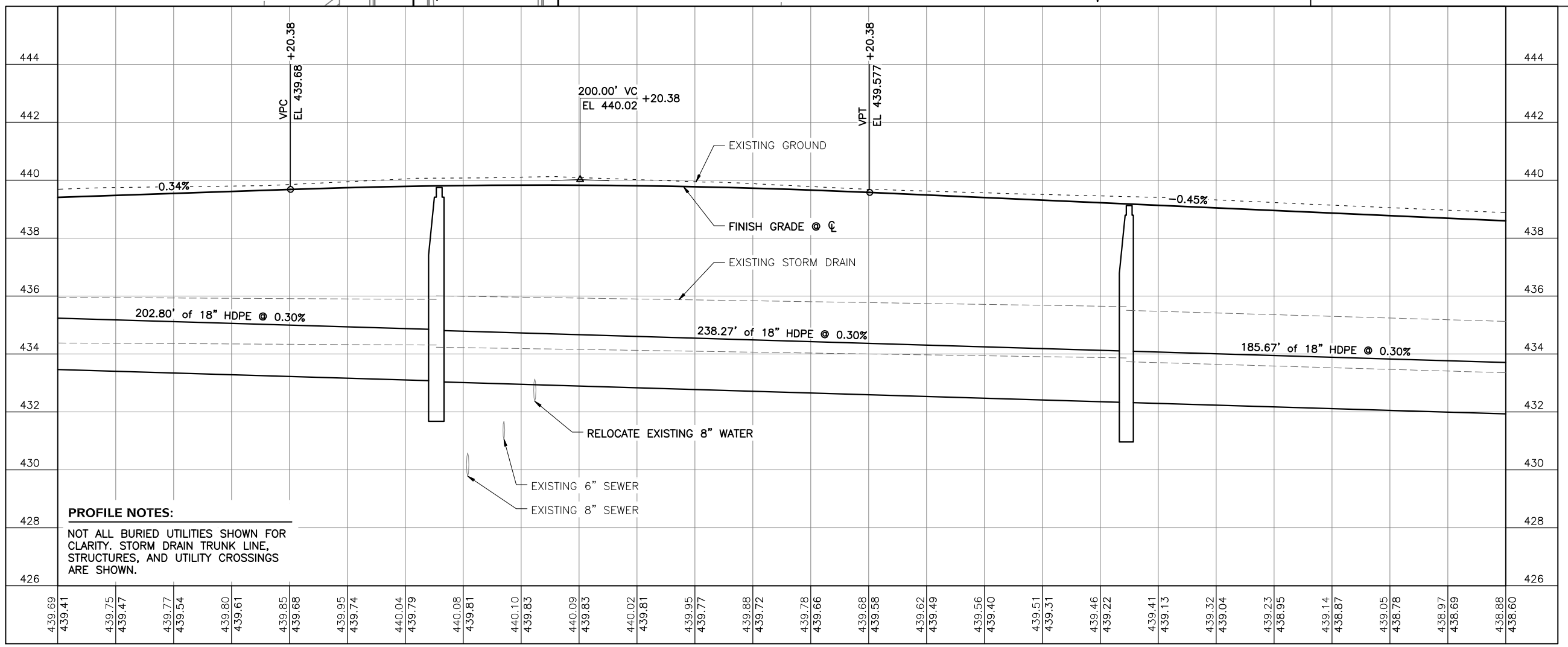


PLAN NOTES:

EXISTING BURIED UTILITIES NOT SHOWN FOR CLARITY

PROPOSED POWER AND COMMUNICATION UTILITY WORK SHOWN ON FIGURE _ IN SECTION 19 OF THE DSR

NOBLE STREET PAN AND PROFILE



PROFILE NOTES:

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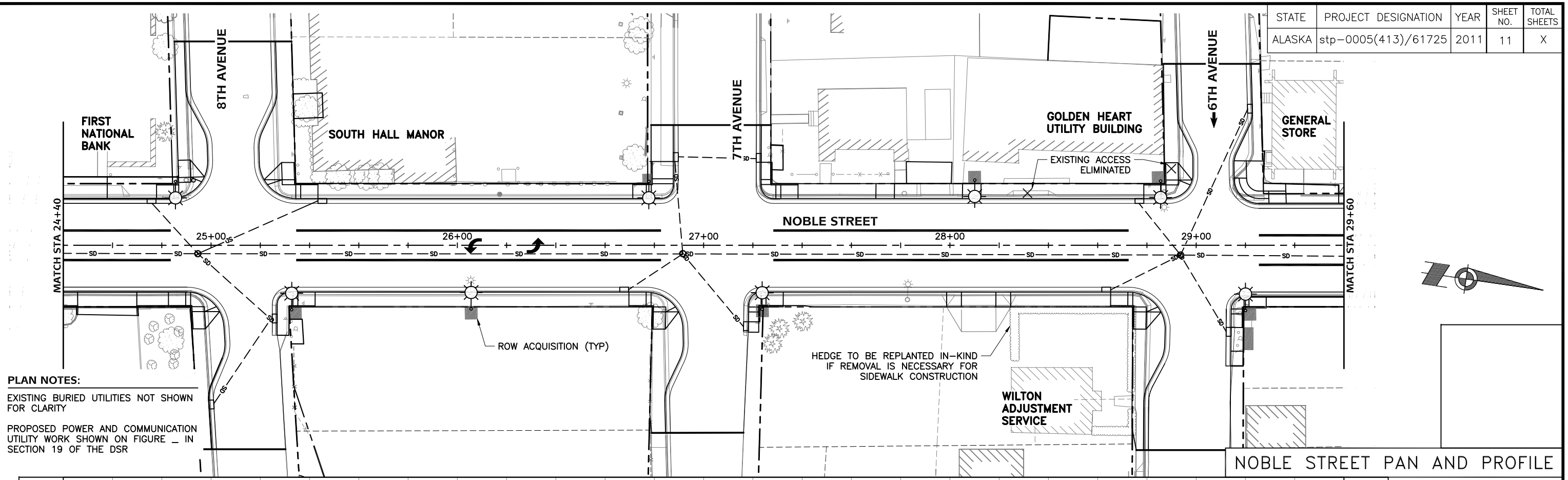
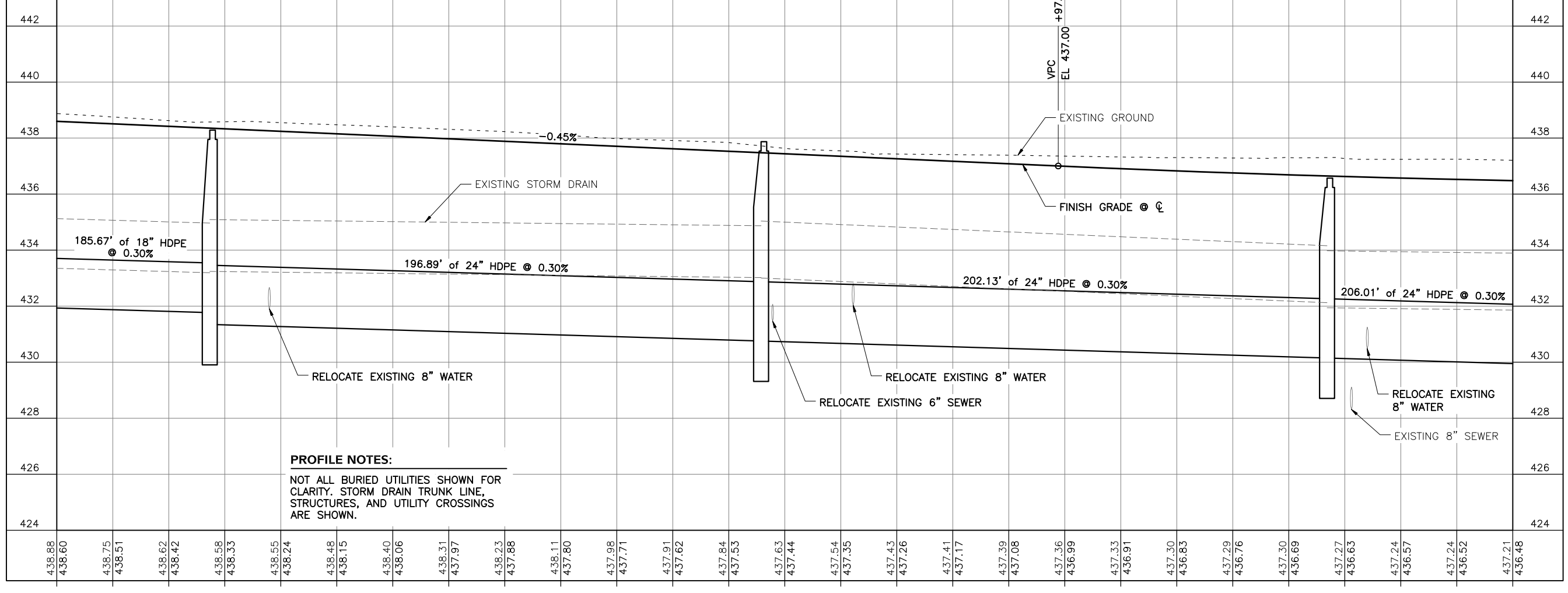


PLAN NOTES:

EXISTING BURIED UTILITIES NOT SHOWN FOR CLARITY

PROPOSED POWER AND COMMUNICATION UTILITY WORK SHOWN ON FIGURE _ IN SECTION 19 OF THE DSR

NOBLE STREET PAN AND PROFILE



PROFILE NOTES:

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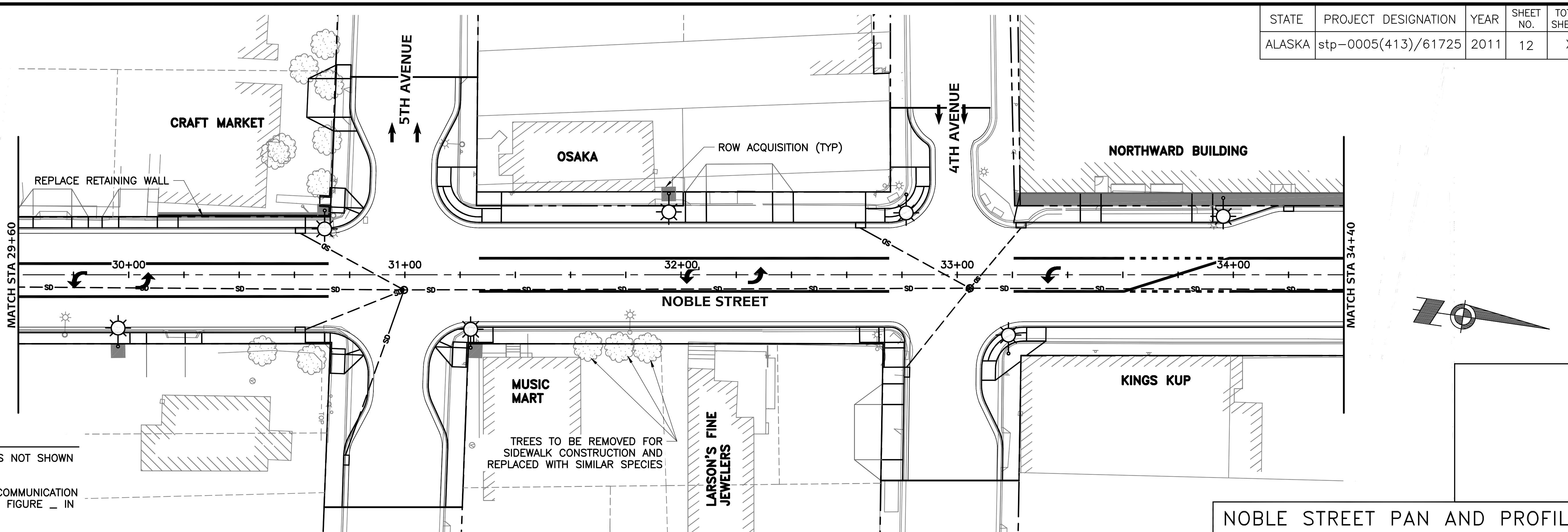
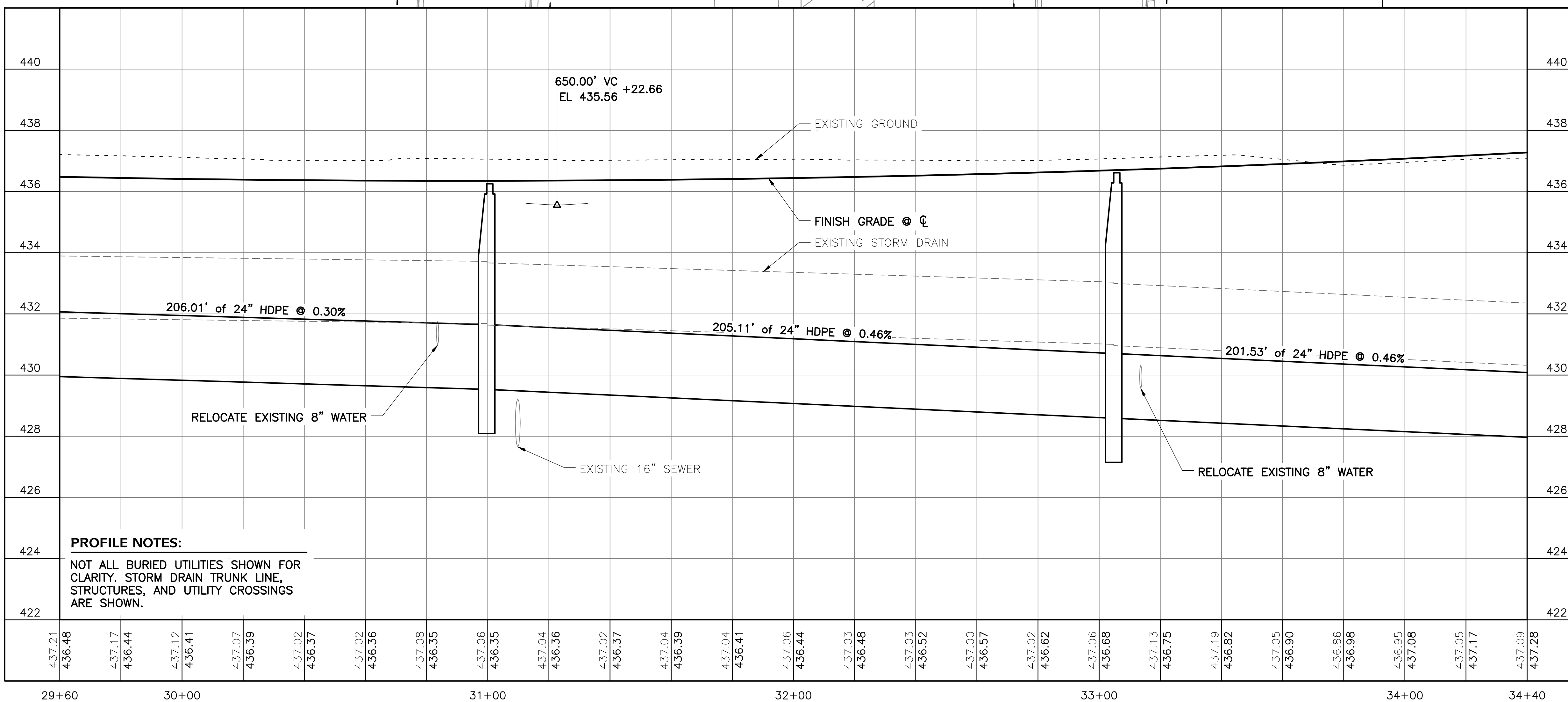


PLAN NOTES:

EXISTING BURIED UTILITIES NOT SHOWN FOR CLARITY

PROPOSED POWER AND COMMUNICATION UTILITY WORK SHOWN ON FIGURE _ IN SECTION 19 OF THE DSR

NOBLE STREET PAN AND PROFILE



PROFILE NOTES:

NOT ALL BURIED UTILITIES SHOWN FOR CLARITY. STORM DRAIN TRUNK LINE, STRUCTURES, AND UTILITY CROSSINGS ARE SHOWN.

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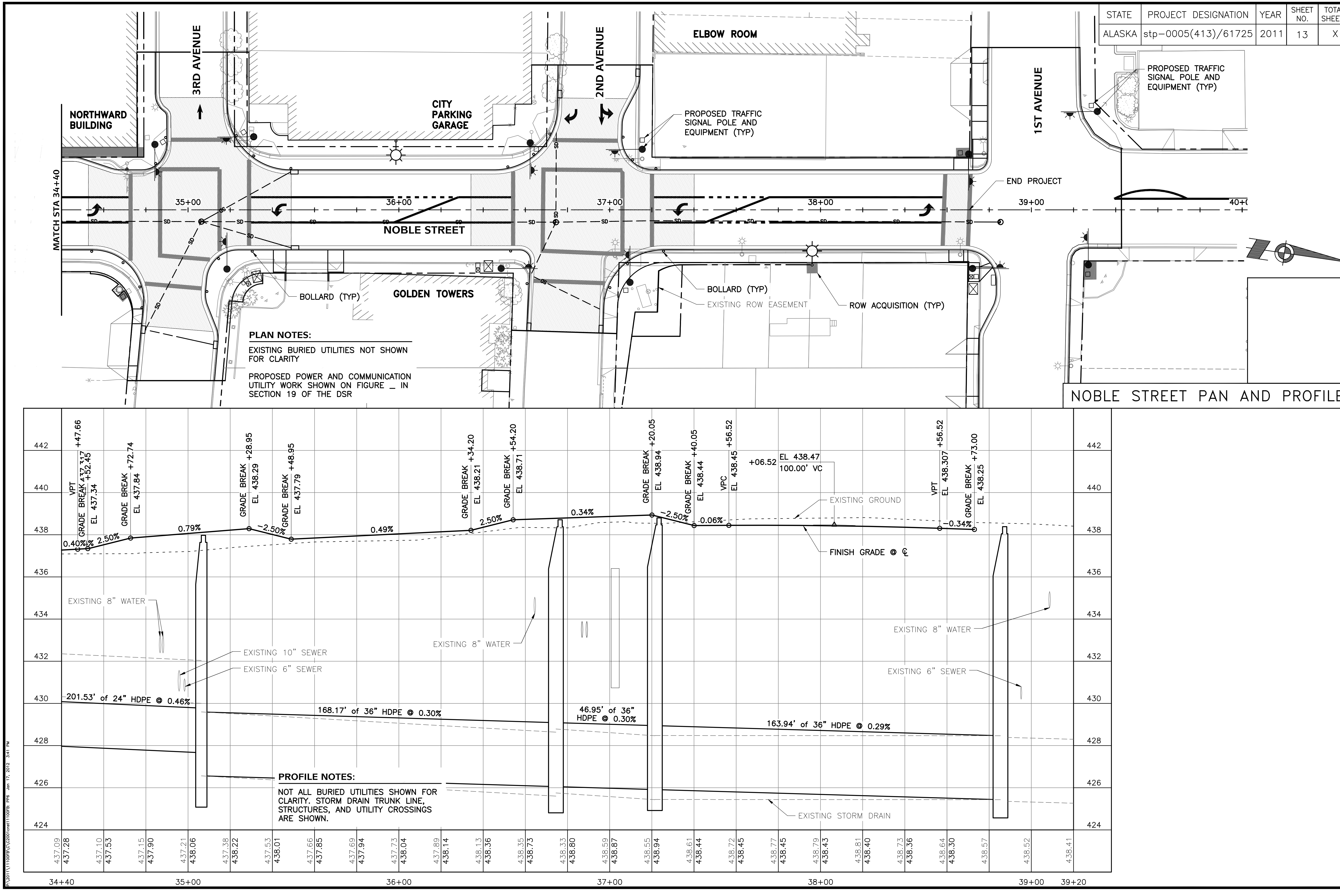


STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	stp-0005(413)/61725	2011	13	X

NOBLE STREET PAN AND PROFILE

APPENDIX G

PRELIMINARY BRIDGE PLANS

(Not Used)

APPENDIX H

WAIVERS TO DESIGN STANDARDS

MEMORANDUM

State of Alaska
Department of Transportation & Public Facilities
Northern Region Design & Engineering Services

TO: Janet L. Brown, P.E.
Preconstruction Engineer
Northern Region

DATE: 11-26-2011

FILE NO:
TELEPHONE NO: 907-451-2040
FAX NO: 907-451-2353
jeff.currey@alaska.gov

FROM: Jeff L. Currey, P.E.
Materials Engineer
Northern Region

SUBJECT: **Waiver Request – Stabilized Base Policy & Renewable Pavement Policy: Fairbanks Noble Street Upgrade/61725**

The project consists of city streets, which will be maintained by the City in the future. The City has requested a waiver from the Stabilized Base Policy and Renewable Pavement Policy.

Streets not maintained by the Department customarily are waived from the Stabilized Base Policy and Renewable Pavement Policy.

Based on these factors I recommend we waive the Stabilized Base Policy and Renewable Pavement Policy for all the streets included in this project.

Recommended: _____ Date: 11-29-11
Jeff L. Currey, P.E.
Materials Engineer

Approved: _____ Date: 11/30/11
Janet Brown, P.E.
Preconstruction Engineer

JLC/lb

cc: Russ Johnson, P.E., Engineering Manager, Northern Region

APPENDIX I

DESIGN EXCEPTIONS

(Not Used)

APPENDIX J

SYSTEMS ENGINEERING ANALYSIS (SEA)

Alaska Iways Architecture	**Date:**	January 11, 2011
Systems Engineering Checklist	**Project Name:**	Fairbanks Noble Street Upgrade
	Project No.:	61725 / STP-000S(413)
	Project Manager:	Russ Johnson
(Pre-timed traffic signal system)	**ITS Systems Manager/SEA Preparer:**	Colleen Ackiss

Systems Engineering Element	**How Element is Met/Fulfilled**	**Date Completed**
1. Portions of the Regional ITS or Statewide Iways Architecture being implemented. Must identify the Program Area(s) and a brief description of the functional needs to meet that Program Area(s).	ITS Program Area : Traveler Safety and Infrastructure Security ITS Elements: Signal Control System Signal Preemption System Interconnecting Traffic Signals This project will replace the existing pre-timed traffic signals at the following intersections: • Noble Street/1st Ave • Noble Street/2nd Ave • Noble Street/3rd Ave The existing signal control systems will be upgraded. The existing signal preemption systems will be included as well so that emergency vehicles with emitter units can preempt the signals when necessary. The existing traffic signal interconnect system will be replaced as well so that the existing coordinated signal systems can be re-established following construction of the project improvements.	
2. Participating agencies roles and responsibilities.	The Fairbanks Noble Street Upgrade project is funded by	

	FHWA in the FMATS portion of the Statewide Transportation Improvement Program. Alaska DOT will design, competitively bid and provide construction oversight for the project. Following construction Alaska DOT and the City of Fairbanks will maintain and operate the signal control systems, traffic detectors/sensors and signal preemption systems.			
3. Requirements definitions.	The signal control system shall provide signal indications to the travelling public for the purpose of assigning right of way at the signalized intersection. The signal control system will also be interconnected with nearby signals in order to provide a smooth flow of traffic progression along the roadway system. The signal preemption systems will allow emergency vehicles to override or hold the current signal displays as they travel through the intersections on route to handle an emergency. All installation of hardware and software will be included in project construction. Requirements for training Alaska DOT Maintenance personnel on new(er) signal equipment will be included as a requirement in the construction contract.			
4. Analysis of alternative system configurations and technology options to meet requirements.	No alternatives were analyzed. Signal control systems and signal preemption systems from different manufacturers are currently not interchangeable. The Northern Region has a Public Interest Finding in-place for procuring Econolite signal control system hardware and software and 3M Opticom signal preemption system hardware. Local emergency vehicles are equipped with emitters which interface with 3M Opticom signal preemption hardware.			
5. Procurement option(s).	ITS elements will be included in the larger reconstruction			

	project which will be competitively bid following all state and federal procurement regulations.			
6. Applicable ITS standards that are being implemented and testing procedures that will be used upon project implementation.	Field/Traffic Signal Controllers: NTCIP C2F Center-to-Field Standards Group NTCIP 1201 Global Object Definitions NTCIP 1202 Object Definitions for Actuated Traffic Signal Controller (ASC) Units NTCIP 1210 Field Management Stations (FMS) – Part 1: Object Definitions for Signal System Masters			
7. Procedures and resources necessary for operations and management of the system.	The signal control systems, traffic detectors/sensors and signal preemption systems will require periodic maintenance and software upgrades. Procedures to perform the on-going operations and management of the systems will comply with all local, state, and federal regulations. All necessary resources, both funding and man-power, will be provided by Alaska DOT&PF and the City of Fairbanks.			

	Date:	January 11, 2011
Alaska Iways Architecture	**Project Name:**	Fairbanks Noble Street Upgrade
Systems Engineering Checklist	**Project No.:**	61725/STP-000S(413)
	Project Manager:	Russ Johnson
(Actuated traffic signal systems)	**ITS Systems Manager/SEA Preparer:**	Colleen Ackiss

Systems Engineering Element	**How Element is Met/Fulfilled**	**Date Completed**
1. Portions of the Regional ITS or Statewide Iways Architecture being implemented. Must identify the Program Area(s) and a brief description of the functional needs to meet that Program Area(s).	ITS Program Area : Traveler Safety and Infrastructure Security ITS Elements: Signal Control System Traffic Detectors/Sensors Signal Preemption System Interconnecting Traffic Signals This project will incorporate the noted ITS elements at the Noble Street/10th Ave traffic actuated signalized intersection. The existing signal control system is interconnected with adjacent traffic actuated signal control systems. Above ground traffic detectors/sensors will be included in order to provide a traffic actuated signal system. In addition, a signal preemption system will be included as well so that emergency vehicles with emitter units can preempt the signal when necessary.	
2. Participating agencies roles and responsibilities.	The Fairbanks Noble Street Upgrade project is funded by FHWA in the FMATS portion of the Statewide Transportation Improvement Program. Alaska DOT will design, competitively bid and provide	

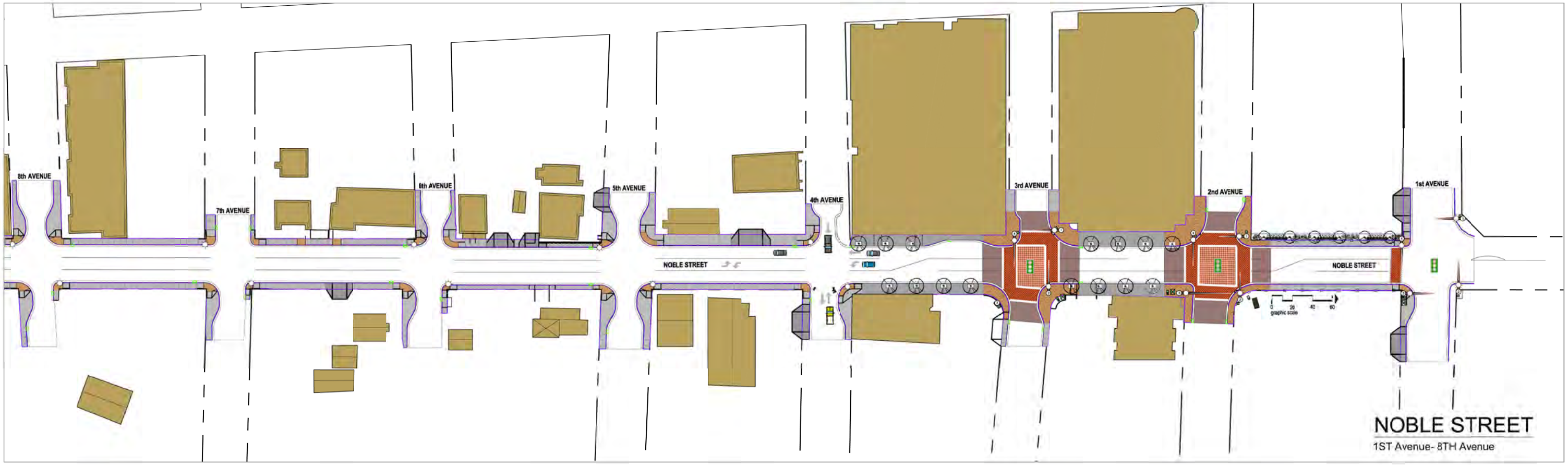
	construction oversight for the project. Following construction Alaska DOT and the City of Fairbanks will maintain and operate the signal control systems, traffic detectors/sensors, signal preemption systems, and the system for interconnecting the traffic signals.			
3. Requirements definitions.	The signal control systems shall provide signal indications to the traveling public for the purpose of assigning right of way at each signalized intersection. The signal control system shall also be capable of coordinating with nearby signals in order to provide a smooth flow of traffic progression along the roadway system. The traffic detectors/sensors will provide information to the signal control systems so that the duration of signal indications can be adjusted based on actual traffic demand. The signal preemption systems will allow emergency vehicles to override or hold the current signal displays as they travel through the intersections on route to handle an emergency. All installation of hardware and software will be included in project construction. Requirements for training Alaska DOT Maintenance personnel on new(er) signal equipment will be included as a requirement in the construction contract.			
4. Analysis of alternative system configurations and technology options to meet requirements.	No alternatives were analyzed. Signal control systems and signal preemption systems from different manufacturers are currently not interchangeable. The Northern Region has a Public Interest finding in-place for procuring Econolite signal control system hardware and software and 3M Opticom signal preemption system hardware. Local emergency vehicles are equipped with emitters which interface with 3M Opticom signal preemption hardware.			

	Due to environmental conditions which prohibit the repair/replacement of below pavement traffic detectors/sensors during winter conditions the region has opted to specify above ground systems only. Northern Region experiences frozen ground conditions from October through April.			
5. Procurement option(s).	ITS elements will be included in the larger reconstruction project which will be competitively bid following all state and federal procurement regulations.			
6. Applicable ITS standards that are being implemented and testing procedures that will be used upon project implementation.	<u>Field/Traffic Signal Controllers</u>: NTCIP C2F Center-to-Field Standards Group NTCIP 1201 Global Object Definitions NTCIP 1202 Object Definitions for Actuated Traffic Signal Controller (ASC) Units NTCIP 1210 Field Management Stations (FMS) – Part 1: Object Definitions for Signal System Masters <u>Field/Traffic Detectors:</u> NTCIP C2C Center-to-Center Standards Group NTCIP 1202 Object Definitions for Actuated Traffic Signal Controller (ASC) Units NTCIP 1210 Field Management Stations (FMS) – Part 1: Object Definitions for Signal System Masters			
7. Procedures and resources necessary for operations and management of the system.	The signal control systems, traffic detectors/sensors, signal preemption systems and system to interconnect traffic signals will require periodic maintenance and software upgrades. Procedures to perform the on-going operations and management of the systems will comply with all local, state,			

	and federal regulations. All necessary resources, both funding and man-power, will be provided by Alaska DOT&PF and the City of Fairbanks.			

APPENDIX K

LANDSCAPING AND STREETSCAPE CONCEPTS

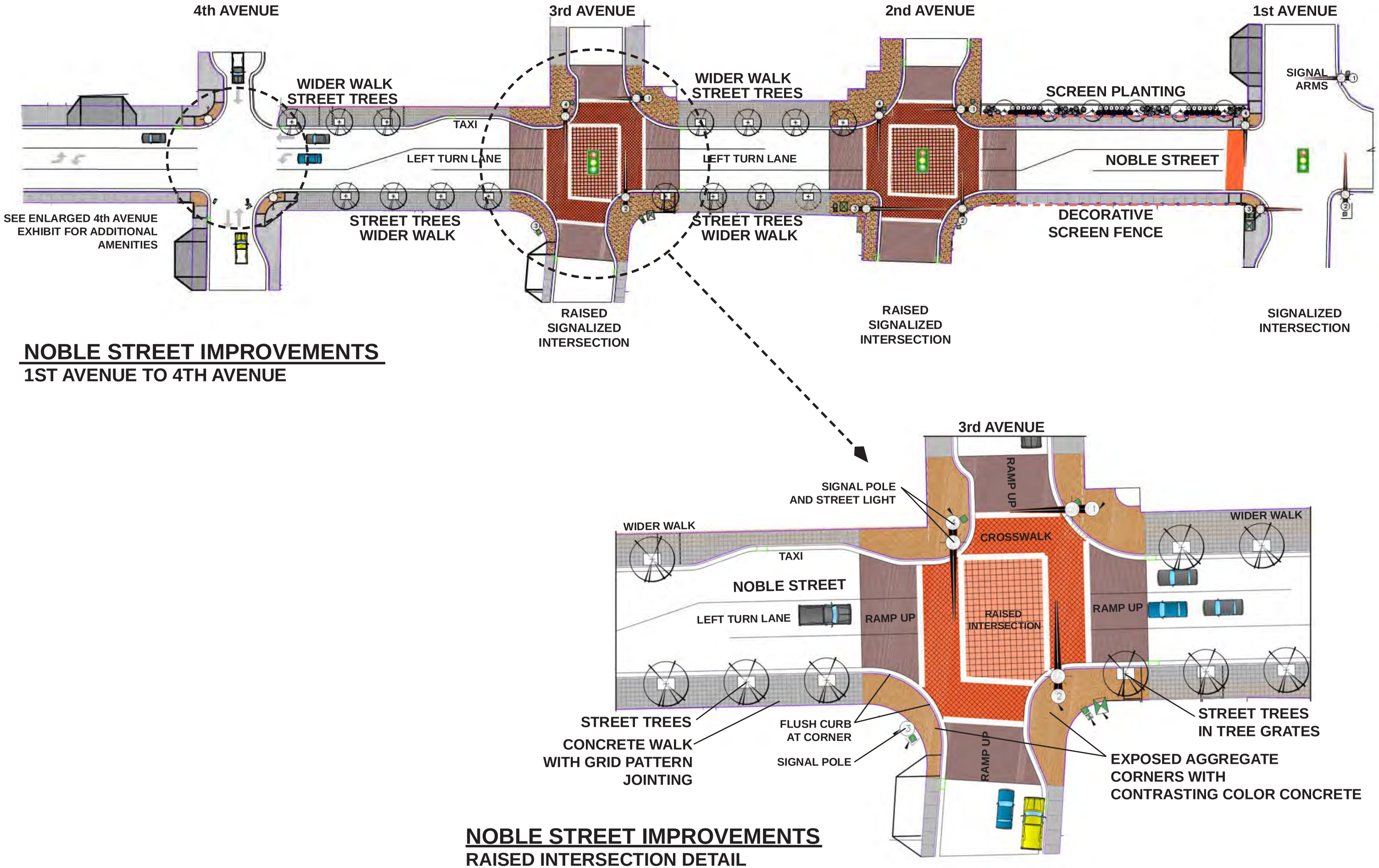


NOBLE STREET

1ST Avenue- 8TH Avenue

NOBLE STREET

8th Avenue - Gaffney Road



NOBLE STREET IMPROVEMENTS
1ST AVENUE TO 4TH AVENUE

NOBLE STREET IMPROVEMENTS
RAISED INTERSECTION DETAIL

APPENDIX L

MAINTENANCE AGREEMENT

Maintenance Agreement

Between

The State of Alaska Department of Transportation and Public Facilities (DOT&PF)

and

The City of Fairbanks (CITY)

For

The Fairbanks Noble Street Upgrade Project (AKSAS# 61725)

The above parties have cooperated to provide for the continued maintenance of Noble Street.

I. THE DOT&PF AGREES TO THE FOLLOWING:

- Provide overall project design and construction services.
- Coordinate all funding for design and construction through the Fairbanks Metropolitan Area Transportation System (FMATS) Transportation Improvement Program (TIP).

II. THE CITY AGREES TO THE FOLLOWING:

- The CITY owns and maintains Noble Street. After completion of this project, the CITY will continue to own and maintain Noble Street.

III. IT IS MUTUALLY AGREED THAT:

- The above parties will coordinate and participate in the review of the final design plans prior to construction.
- The above parties will coordinate and participate in the Final Inspection of the construction project.

Steve Titus — 11/14/11

Signed — Date

Steve Titus, P.E., Regional Director
Department of Transportation & Public Facilities

[signature] — 11-10-11

Signed — Date

Jerry Cleworth, Mayor
City of Fairbanks