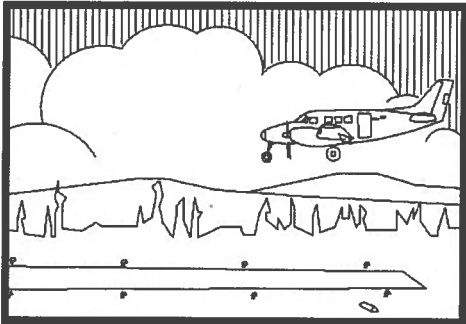


DESIGN STUDY REPORT

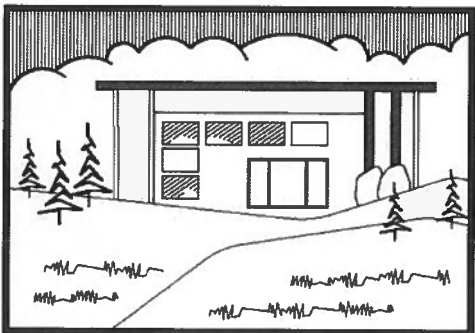
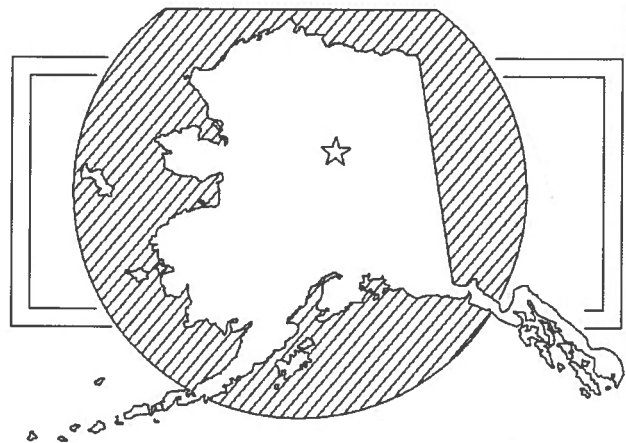
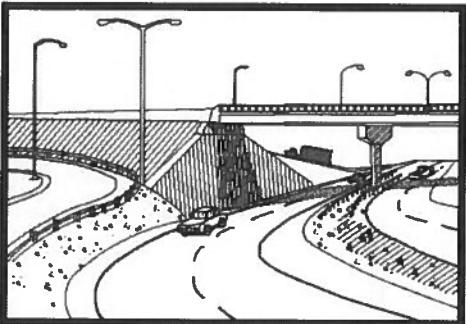
Selawik Barge Landing Access Road and Boardwalk Improvements

0002280 / Z637720000



STATE OF ALASKA

Department of Transportation
and Public Facilities



NORTHERN REGION

August 2017

DESIGN APPROVAL

SELAWIK BARGE LANDING ACCESS ROAD AND BOARDWALK IMPROVEMENTS

PROJECT NO. 0002280 / Z637720000

Requested by:

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8/16/2017

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Tillie Ticket, Mayor of City of Selawik

DESIGN STUDY REPORT
FOR

BARGE LANDING ACCESS ROAD AND BOARDWALK IMPROVEMENTS

PROJECT NO. 0002280 / Z63772000

PREPARED BY: Gary Jenkins, P.E.



ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
NORTHERN REGION DESIGN AND ENGINEERING SERVICES
AUGUST, 2017

BARGE LANDING ACCESS ROAD AND BOARDWALK IMPROVEMENTS

PROJECT NO. 0002280 / Z637720000

Table of Contents

1. INTRODUCTION/HISTORY.....	1
2. PROJECT DESCRIPTION	5
3. DESIGN STANDARDS.....	9
4. DESIGN EXCEPTIONS AND DESIGN WAIVERS.....	9
5. DESIGN ALTERNATIVES.....	9
6. PREFERRED DESIGN ALTERNATIVE	11
7. 3R ANALYSIS.....	14
8. TRAFFIC ANALYSIS	14
9. HORIZONTAL/VERTICAL ALIGNMENT	14
10. TYPICAL SECTION(S)	15
11. PAVEMENT DESIGN.....	17
12. PRELIMINARY BRIDGE LAYOUT	17
13. RIGHT-OF-WAY REQUIREMENTS.....	17
14. MAINTENANCE CONSIDERATIONS	18
15. MATERIAL SOURCES	18
16. UTILITY RELOCATION & COORDINATION	22
17. ACCESS CONTROL FEATURES.....	22
18. PEDESTRIAN/BICYCLE (ADA) PROVISIONS	22
19. SAFETY IMPROVEMENTS	22
20. INTELLIGENT TRANSPORTATION SYSTEM FEATURES	22
21. DRAINAGE	23
22. SOIL CONDITIONS.....	23
23. EROSION AND SEDIMENT CONTROL.....	23
24. ENVIRONMENTAL COMMITMENTS	25
25. WORK ZONE TRAFFIC CONTROL.....	26
26. VALUE ENGINEERING	26
27. COST ESTIMATE.....	27

List of Figures

Figure 1: Layout of Selawik	3
Figure 2: Project Limits Map	7
Figure 3: Staging Pad Layout.....	12
Figure 4: Elevated Board-road Typical Section.....	15
Figure 5: At-Grade Board-road Typical Section.....	16
Figure 6: Barge Landing Access Road Typical Section	16
Figure 7: Proposed ROW Acquisition Limits- Part 1	20
Figure 8: Proposed ROW Acquisition Limits- Part 2	21
Figure 9: Rainbow Bridge – Winter Alternate Route	26

List of Tables

Table 1: Board-Road Width Alternatives	10
Table 2: Land Ownership and Easement Acquisition Summary	18

List of Appendices

DESIGN CRITERIA	Appendix A
ENVIRONMENTAL DOCUMENT	Appendix B
PRELIMINARY PLAN AND PROFILE SHEETS	Appendix C
UTILITY CONFLICT REPORT	Appendix D

List of Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ACE	Army Corps of Engineering
ADA	Americans with Disabilities Act
AGPF	Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way
ATM	Alaska Traffic Manual
ATV	All-Terrain Vehicle
CE	Programmatic Categorical Exclusion
CFR	Code of Federal Regulations
DOT&PF	Alaska Department of Transportation and Public Facilities
DSR	Design Study Report
ESCP	Erosion and Sediment Control Plan
FHWA	Federal Highway Administration
GDVLVLR	Guidelines for Geometric Design of Very Low-Volume Local Roads
AHPM	Alaska Highway Preconstruction Manual
IP	Individual Permit
L RTP	2013 Long-Range Transportation Plan
MPH	Miles per Hour
MS	Material Site
NEPA	Federal National Environmental Policy Act
NESC	National Electric Safety Code
PGDHS	A Policy on Geometric Design of Highways and Streets
ROW	Right-of-Way
SWPPP	Storm Water Pollution Prevention Plan

1. INTRODUCTION/HISTORY

Selawik, Alaska is located 90 miles east of Kotzebue in Northwest Alaska at approximately 66°36'N, 160°00'W, at the mouth of the Selawik River. The area lies within the Kobuk-Selawik Lowland, a broad low area characterized by numerous lakes and the floodplains of the Kobuk and Selawik Rivers. Selawik is on the broad tundra floodplain on the banks of the Selawik River.

Selawik is a second class city with approximately 880 residents. The city is split by two channels of the Selawik River, resulting in three development areas (high school side, airport side, and island) linked by two bridges (Figure 1). The community is accessible by airplane year round, by barge during summer, and by snowmachine during winter. There are two gravel roads in the community; one to the barge landing area on the Selawik River just north of the community and one to a landfill located west of the community. Travel within the community is primarily by foot, all-terrain vehicle (ATV), or snowmachine on a network of wooden board-roads that range from 4 to 10 feet wide. Board-roads are at-grade in many places and elevated where needed to cross above-ground utilities. Board-roads are connected to individual buildings with wooden driveway approaches.

The Selawik Community Comprehensive Development Plan 2007-2017(Plan) noted that the deterioration of the board-roads has resulted in safety concerns, particularly for elders and children. The State of Alaska Department of Transportation and Public Facilities (DOT&PF) improved several board-roads in 2008 and the Native Village of Selawik improved others in 2011. The top capital project priority in the Plan was the rehabilitation and widening of the board-roads to improve safety and allow for ATVs to pass each other. The 2013 Long-Range Transportation Plan (LRTP) also noted the poor condition of community board-roads and the Barge Landing Access Road. Additionally, the staging area of the barge landing is insufficient for the storage needs of the community. The community has been working with the DOT&PF and others to improve the transportation infrastructure when funding is available. This project addresses many of the high and medium priority projects identified in the LRTP. The 2013 LRTP identified 2040 as the design year for replacement projects.

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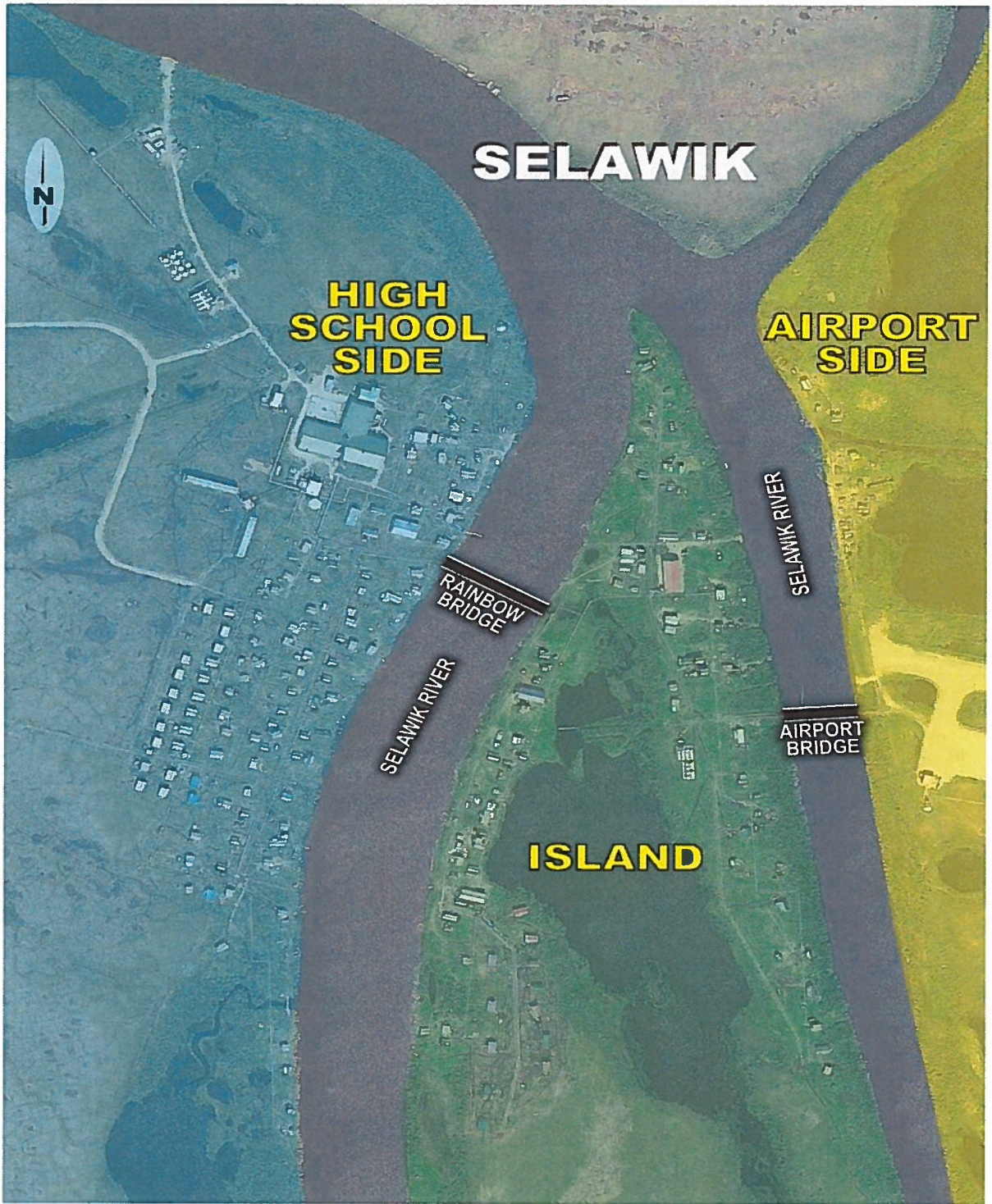


Figure 1: Layout of Selawik

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2. PROJECT DESCRIPTION

The purpose of this project is to address structural, maintenance, and safety concerns associated with the Barge Landing Access Road, barge landing staging area, and community board-roads.

The Barge Landing Access Road is uneven, rutted, and ponding in some areas. The staging area is in poor condition and is insufficiently sized for adequate storage and equipment maneuverability. This project addresses these concerns by reconstructing the Barge Landing Access Road and upgrading and expanding the staging area. Lighting and fencing around the staging area will also be provided to deter vandalism and enhance security and safety.

Many of the board-roads in Selawik are in a state of disrepair, are at or past the end of their useful life, may be contributing to crashes, and are difficult for ATVs to continue use. To improve board-road transportation, the board-road streets listed below will be replaced, or an alternative access route will be provided. If funding is an issue, further coordination with the City of Selawik will determine the highest priority board-roads that will be replaced as part of this project. The City of Selawik has on-going efforts to secure additional funding to cover any of the board-roads listed below that cannot be constructed within the available budget. The board-roads listed below are shown in Figure 2.

- Barge Landing Access Road and Staging Area
- River Street,
- Community Avenue,
- Ballot Street,
- Selawik Street,
- Skin Street,
- North Tundra Street,
- Third Avenue, and
- Fourth Avenue.

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Figure 2: Project Limits Map

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3. DESIGN STANDARDS

The barge landing access road and board-roads will be construction in accordance with the guidelines provided in the below listed design guides. A design designation waiver was approved and is included in Appendix A. Both the access road and board-roads have a functional class of “rural local road”. The design vehicle for the access road is a Class VII Rough Terrain Forklift (for moving connexes) and for the board-roads a four-wheeled all-terrain vehicle (ATV) with trailer. The full project design criteria table is included in Appendix A.

- *A Policy on Geometric Design of Highways and Streets* (PGDHS or “Green Book”). American Association of State Highway and Transportation Officials (AASHTO), 2011.
- *Guidelines for Geometric Design of Very Low-Volume Local Roads* (GDVLVLR). AASHTO, 2001.
- *Alaska Highway Preconstruction Manual* (AHPM). State of Alaska Department of Transportation and Public Facilities (including all revision through December 2013), 2005.
- *Guide for the Planning, Design, and Operation of Pedestrian Facilities*. AASHTO, 2004.
- *National Design Specification for Wood Construction*. American Forests and Paper Association, 2005 Edition.
- *National Electric Safety Code*, 2017.
- *International Building Code (IBC)*. International Code Council, 2012.

4. DESIGN EXCEPTIONS AND DESIGN WAIVERS

There are no design waivers or exceptions for this project.

5. DESIGN ALTERNATIVES

Board-Roads

Alternatives include width and running plank alignment.

Width

- Board-roads should accommodate two side by side ATVs with trailers passing each other. In previous Selawik board-road designs a 10-foot-wide board-road, with 4-inch by 6-inch curbs (9 feet, 1 inch of drivable space) accommodated typical ATVs. Based on conversations with the City of Selawik, there is a growing presence of larger ATVs (about 4 feet wide), including side by side ATVs which have a wider footprint of about 5 feet. A wider board-road of 12 feet with curbs (11 feet, 1 inch of drivable space) is needed for these larger and side by side ATVs to safely pass.

Table 1: Board-Road Width Alternatives

10' Board-Road Width	
Pros	Cons
<ul style="list-style-type: none"> • Less Expensive • Matches existing board-roads 	<ul style="list-style-type: none"> • Cannot accommodate two passing Side by Side ATVs with trailers
12' Board-Road Width	
<ul style="list-style-type: none"> • Can accommodate two passing Side by Side ATVs with trailers 	<ul style="list-style-type: none"> • More expensive • Does not match existing board-road

Running Plank Orientation

The running planks can be aligned with the flow of traffic (longitudinal), or perpendicular to the flow of traffic (transverse).

- Placing the boards longitudinally offers the following advantages:
 - Smoother ride for users;
 - As boards wear from use, single boards can be replaced significantly lowering and simplifying maintenance costs.
 - The structural support system is more efficient.
- Placing the boards transversely offers the following advantage:
 - Eliminates the need for contraction joints to account for thermal expansion.

6. PREFERRED DESIGN ALTERNATIVE

Board-road Design

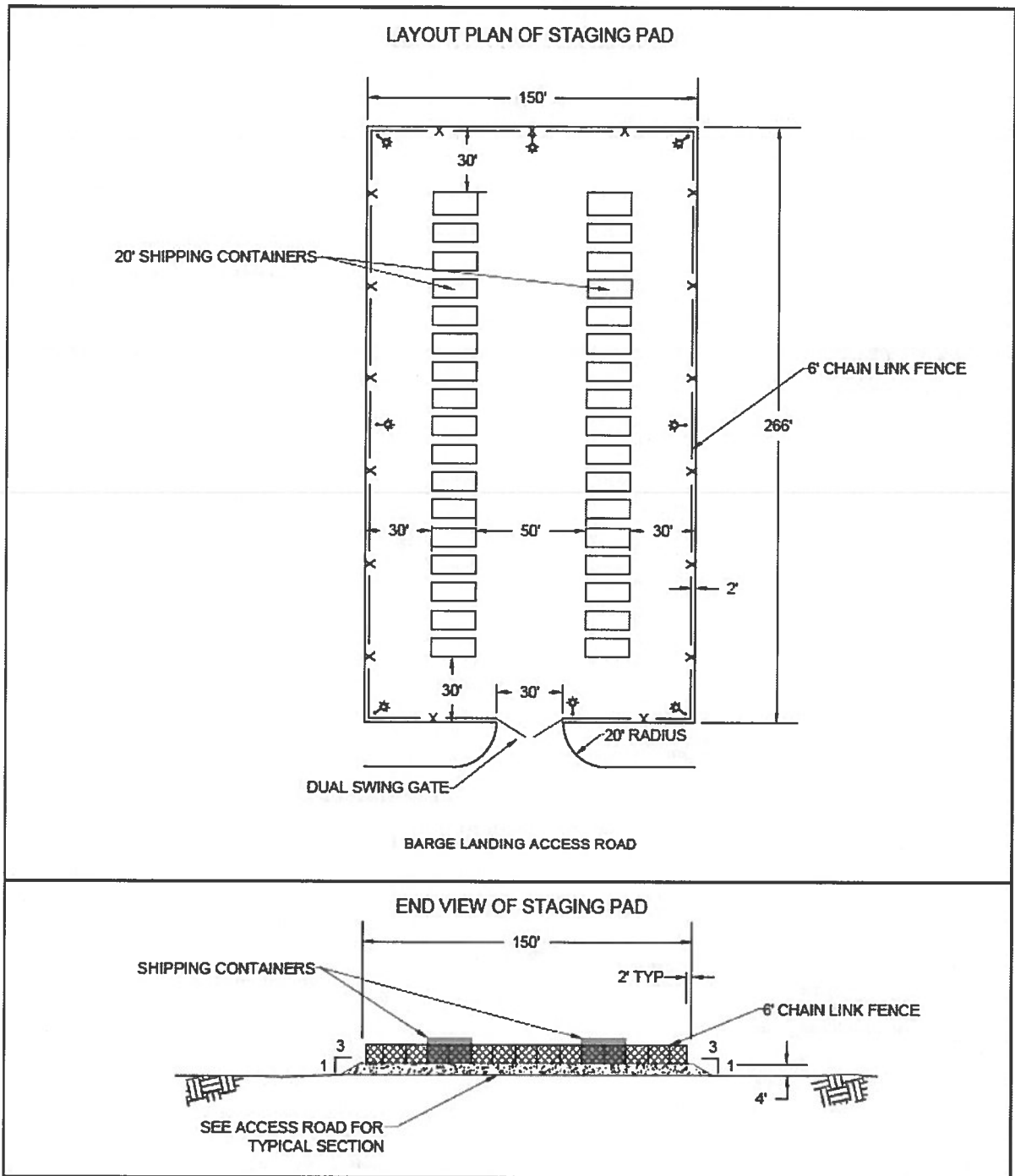
- 12 foot wide board-roads are the preferred alternative given the growing presence of larger and side by side ATVs.
- Running planks oriented parallel to the direction of travel (longitudinally) are preferred because of the improved driver experience, reduced maintenance effort, and cost in replacement of worn or damaged boards.

Barge Landing Access Road Structural Section

The design goal for the typical section is to minimize thawing of the permafrost. In order to complete a project specific thermal modeling analysis, geotechnical and soil temperature information is needed along the road alignment. No existing geotechnical data has been collected or found for the alignment. At present, collection of new geotechnical data is not believed to be necessary due to the existence of a similar roadway design to the landfill as described in Section 10 – Typical Section.

Staging Pad Layout

- Figure 5 illustrates an optimized footprint for the staging pad. Dimensions of 150' x 266' allow for the caterpillar for lift to navigate between two rows of 20' wide connexes, and allows for space for the forklift to drive around the perimeter of the staging pad. To enhance security, a 6-foot chain link fence and 20-foot luminaires are recommended. Concertina / barbed wire security fencing is believed to be an excessive measure for the community setting and requires regular locking of the fence gate, which is not expected to be maintained. The luminaires will provide a deterrent to unauthorized entry and vandalism. LED fixtures are recommended to minimize ongoing electrical costs.
- Illuminating the staging pad is being considered in an effort to reduce break-ins. It is recommended that the site be illuminated to the levels required for an outdoor parking area with enhanced security by the Illuminating Engineering Society of North America (IESNA). It should be noted that the proposed lighting level is below the recommended levels where personal security is a concern. IESNA recommends a minimum horizontal illuminance of 0.5 foot-candles (fc), a minimum vertical illuminance of 0.25 fc, and a maximum to minimum uniformity ratio of 15:1. It is recommended that the lights use an LED source with a color temperature of 4,000K. LED lamps will use less power than standard high pressure sodium (HPS) fixtures and have a longer service life. The proposed color temperature will provide better visual perception and color rendition than HPS fixtures. The design will aim to minimize the number of light poles required and minimize spillover lighting off of the site.



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7. 3R ANALYSIS

3R Analysis is not applicable to this project.

8. TRAFFIC ANALYSIS

DOT&PF does not count traffic for small communities such as Selawik. Due to the low volumes, a traffic analysis is not required for this project.

9. HORIZONTAL/VERTICAL ALIGNMENT

Barge Landing Access Road

The proposed Barge Landing Access Road is classified as a “rural industrial/commercial access road” according to the *AASHTO GDVLR*. Its primary purpose is to provide access to the barge landing site on the Selawik River and to allow transport of delivered goods to the proposed staging area. The Barge Landing Access Road also connects to the school property, where goods are distributed to the citizens of Selawik.

The design vehicle for the Barge Landing Access Road is an on-site boom forklift used for transporting connex containers from the barge landing site to the staging areas. The road will also accommodate two-way side by side ATV traffic. The design speed is 20 miles per hour (mph).

The Barge Landing Access Road generally extends south from the barge landing site and then veers slightly east, ending at the Selawik High School property. The proposed horizontal alignment will closely follow the existing alignment to remain inside available ROW. The minimum radius for horizontal curves is 107 feet (Table 3-13b of AASHTO 2011) for no superelevation and a 20 mph design speed. Two horizontal curves that meet the minimum standard will be constructed for this project.

Existing terrain near the Barge Landing Access Road is level with grades generally less than 2 percent. The vertical profile of the proposed road will be about two feet above the existing road profile as a result of a thicker proposed structural section. The design profile will be above the existing profile, except at each end where it ties into the existing grade.

Board-roads

The majority of board-roads are at grade. To cross above-ground utilities, board-roads will ramp up and down at grades less than five percent.

10. TYPICAL SECTION(S)

Barge Landing Access Road

The proposed Barge Landing Access Road is 20-foot wide with 3H:1V foreslopes, per *GDVLVLR* for a rural industrial/commercial road with a 20 mph design speed. This is an increase in width of approximately 6 feet from the existing road. The roadway will access a staging area near the southern terminus that is approximately 40,000 square feet of surface area. The staging area will also have 3H:1V foreslopes and will include perimeter lighting and security fencing. All driving surfaces are gravel.

Refer to Figure 6 for the proposed roadway typical section.

Board-roads

The proposed board-roads are 12 feet wide and constructed with 3-inch by 12-inch wood decking. All board-roads are constructed on footings and are capable of accommodating adjustable shims to provide periodic leveling over uneven ground surfaces. Elevated board-roads that are greater than 30 inches above grade are required to have guardrails for user safety. Figures 4 and 5 illustrate the proposed typical section for at-grade and elevated board-roads, respectively.

Further details of the board-road widths and construction are discussed in the Design Alternatives Section.

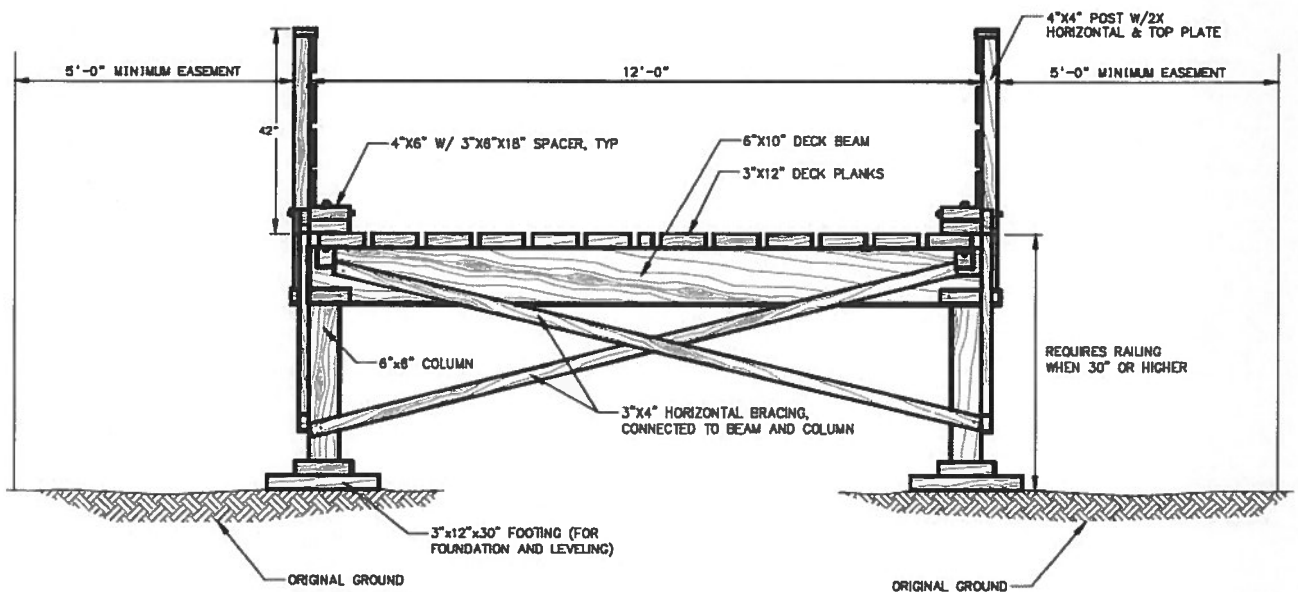


Figure 4: Elevated Board-road Typical Section

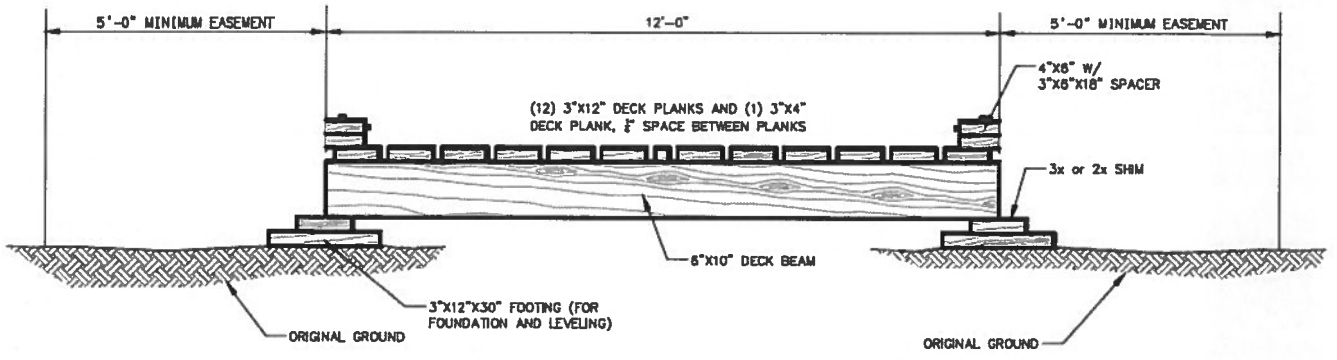


Figure 5: At-Grade Board-road Typical Section

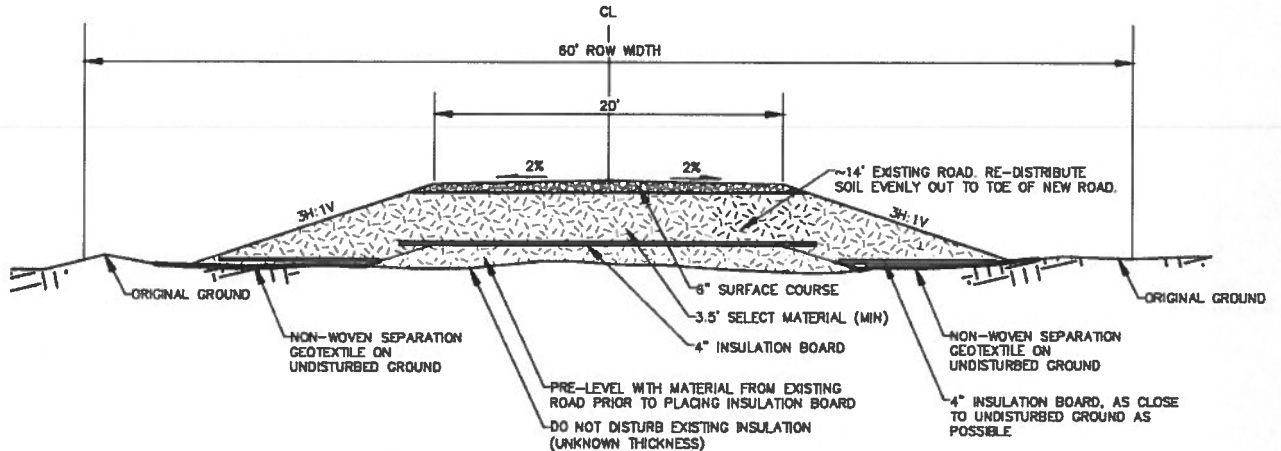


Figure 6: Barge Landing Access Road Typical Section

11. PAVEMENT DESIGN

Not applicable. This is a gravel road.

12. PRELIMINARY BRIDGE LAYOUT

No bridges are proposed as part of this project.

13. RIGHT-OF-WAY REQUIREMENTS

Many of the existing board-roads are located outside the existing ROW. In many cases, the new board-roads will follow existing routes due to significant conflicts within the ROW, or a community preference to keep the existing board-road location. Where possible, the proposed board-road was moved into the ROW. Figure 7 and 8 illustrate where additional easements will be acquired. In general, the easement widths will be about 5 feet beyond the edge of the board-road to allow for future maintenance (see Figures 4 and 5). Table 2 is a summary of easement acquisition requirements by lot. The lot numbers correspond to Figures 7 and 8.

Table 2: Land Ownership and Easement Acquisition Summary

Lot #	Land Ownership	Partial or Full Acquisition
E-1	NANA Interim Conveyance No. 522	Partial
E-2	Selawik School Lease Parcel Plat 98-6	Partial
E-3	USS 4492 Tr B- Lot 2- City of Selawik	Partial
E-4	USS 4492 Tr B- Lot 4- Lulu Foxglove- RESTRICTED	Partial
E-5	USS 4492 Tr B- Lot 6- NANA Corporation	Partial
E-6	USS 4492 Tr A- Lot 23-Jack and Ella Jones- RESTRICTED	Partial
E-7	USS 4492 Tr A- Lot 25- Irwin and Nellie Russell- RESTRICTED	Partial
E-8	USS Tr 4492 Tr A- Lot 26- City of Selawik	Partial
E-9	USS Tr 4492 Tr A- Lot 27A- City of Selawik	Partial
E-10	USS Tr 4492 Tr A- Lot 43- OWNERSHIP UNCLEAR (BLM/McCoys)	Partial
E-11	USS Tr 4492 Tr A Lot 36- Selawik IRA Fuel Project	Partial
E-12	USS Tr 4492 Tr A Lot 37- Selawik IRA Fuel Project	Partial
E-13	USS Tr 4492 Tr A Airport Tr-III, Airport Parcel A	Partial
E-14	USS 2292, Tract A, Lot 1, Block 2 – City of Selawik	Partial

14. MAINTENANCE CONSIDERATIONS

Ongoing maintenance will be required for the Barge Landing Access Road, staging area, and board-roads. Maintenance concerns include re-grading, replacement of worn board-road planking, snow/debris clearing, fence maintenance, and replacement of light fixtures in the staging area.

The City of Selawik has formed a Maintenance Agreement with the DOT&PF wherein the City of Selawik accepts ownership and maintenance responsibilities for the completed board-roads, Barge Landing Access Road, and staging area. Copies of the agreements are currently being updated.

15. MATERIAL SOURCES

All material will be contractor furnished. The closest existing material site is the Spud Farm, owned by NANA Regional Corporation, located approximately 12 miles north-northwest of Selawik along a winter trail. The Spud Farm will be permitted for contractor use, but the Contractor will not be obligated to use it if they find it not to be in their best interest. The material site is only accessible during winter months when freezing conditions prevail and a winter road can be established. Community testimony has noted that with climate change, it is not certain if the snowpack required for a winter road will be present during construction. If not, construction of an ice road is required (see the Environmental Section).

The terrain in the vicinity of the material site is relatively flat and level. Material typically consists of Poorly Graded Gravel with Sand (GP) to Silty Sand (SM) with thin layers of Silt (ML) within the deposit. Portions of the deposit have been reworked by relatively recent alluvial action. The alluvial material consists of Poorly Graded Gravel (GP) and Poorly Graded Sand (SP) composed of well-rounded quartz-rich schist and basalt. Cobbles to 1-foot diameter are present, however particles greater than 3 inches only comprise about five percent of the deposit (DOT&PF, 1988). Spud Farm is expected to provide sufficient material meeting standard specifications for this project.

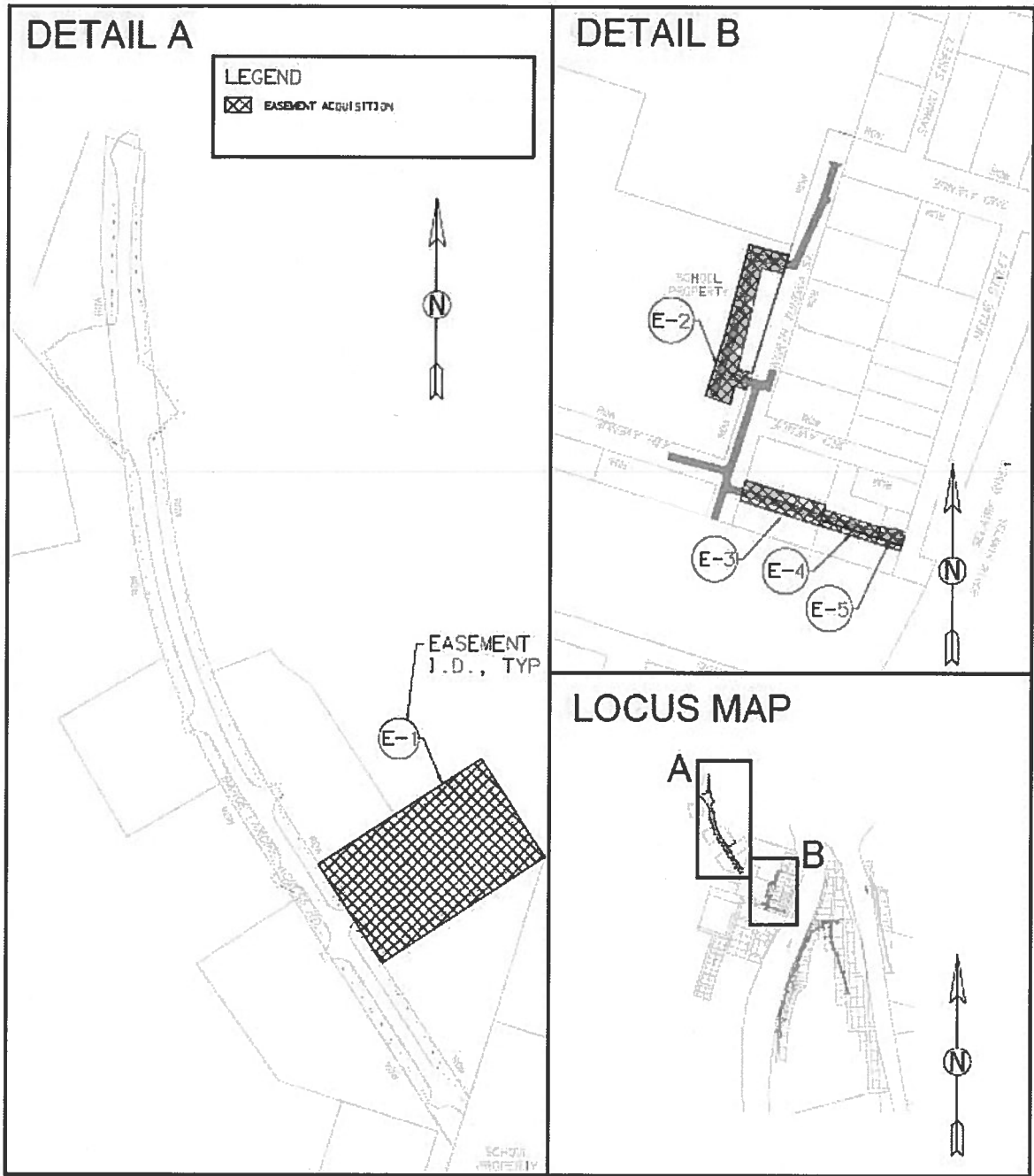


Figure 7: Proposed ROW Acquisition Limits- Part 1

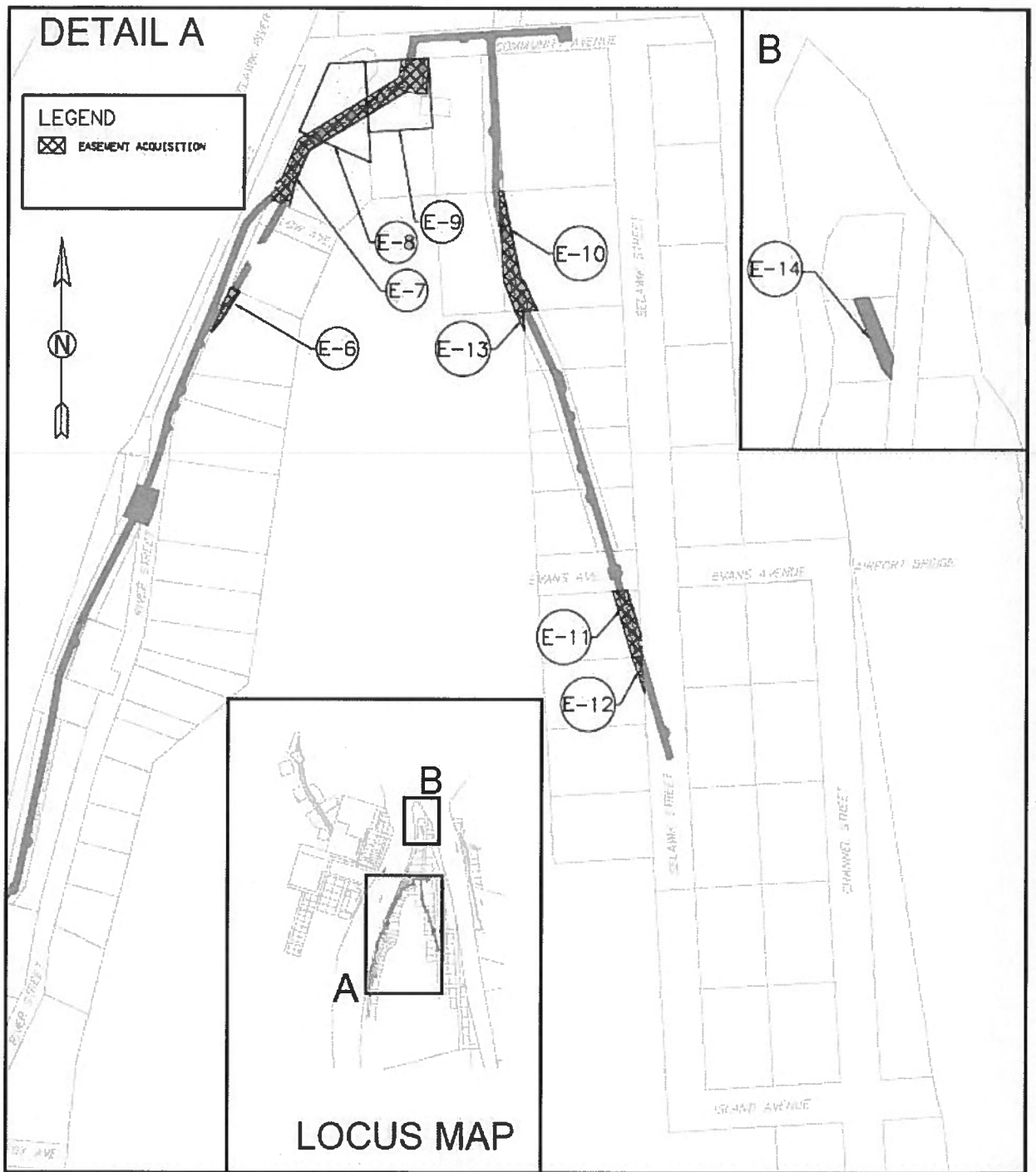


Figure 8: Proposed ROW Acquisition Limits- Part 2

16. UTILITY RELOCATION & COORDINATION

Above ground sewer, water, and fuel-oil lines run throughout the City of Selawik. The board-roads in this project will be constructed to pass over these utilities to avoid relocation whenever possible. The following is a summary of conflicts by utility. See the Utility Conflict Report for more detailed information.

Telephone (OTZ Telephone Cooperative, Inc.): Overhead crossings of the Barge Landing Access Road, entrance to the Staging Pad, and the board-roads do not meet design criteria clearance requirements at many locations and must be raised.

Barge Landing Access Road: The entire line of telephone poles on the east side of the road and each side of the Staging Pad driveway will be replaced.

Board-roads: Poles throughout the project will be replaced to raise the lines sufficiently to meet overhead clearance requirements.

Many of the poles share power and communication lines so replacing a single pole will address both telephone and power clearance deficiencies in most cases.

Power (AVEC, Inc.): Power line crossings on the Barge Landing Access Road and along the board-roads do not meet minimum clearance criteria and will need to be raised. Power lines over existing driveways may not meet clearance criteria. If they do not, the extent of driveway reconstruction will be reduced to avoid raising the power lines/poles on sides of the Barge Landing Access Road and board-roads.

Water, Sewer, and Fuel-Oil (City of Selawik): No conflicts.

17. ACCESS CONTROL FEATURES

Access Control Features are not applicable to this project.

18. PEDESTRIAN/BICYCLE (ADA) PROVISIONS

Pedestrians and bicycles share the road with ATVs. While their primary function is conveyance of vehicles, roads will be constructed to accommodate pedestrians and bicycles to the extent practicable. The board-roads in Selawik are classified as roads. A secondary function of the board-roads is to convey pedestrians.

19. SAFETY IMPROVEMENTS

Guardrails will be installed for board-roads at grades greater than five percent and/or height greater than 30 inches above adjacent grade. Lighting and fencing around the staging area will be provided to prevent vandalism and enhance security and safety.

20. INTELLIGENT TRANSPORTATION SYSTEM FEATURES

Intelligent Transportation System Features are not applicable to this project.

21. DRAINAGE

The Barge Landing Access Road will have at least a two percent cross-slope to facilitate surface drainage. Though wider than the existing road, the drainage will not be altered. Cross culverts will be placed where existing culverts exist to prevent ponding of water.

Ponding will not occur on the board-roads due to the gaps in the planks, and placement of the board-roads will not change or exacerbate current drainage conditions.

22. SOIL CONDITIONS

Selawik is located in the Kobuk-Selawik Lowland (Lowlands) section of the Western Alaska physiographic province, in a flat, poorly drained expanse of meandering rivers, numerous lakes and swampy terrain. The Lowlands are comprised of Quaternary deposits of interstratified marine and alluvial sediments. These formations were deposited in shallow near-shore shelf environments where frequent sea level changes alternately exposed and submerged portions of the gently sloping terrain. This formation is composed of alternating lenses, and mixes of sand, silt and gravel. The Baird Mountains, which reach an elevation of 4,700 feet, bound the Lowland to the north, and are part of the Brooks Range (DOT&PF, 1988; Wahrhaftig, 1965).

In the vicinity of the community, the Selawik River banks reach an elevation of 20 to 25 feet, and are about 6 to 13 feet above mean high water of the river. Flooding typically raises the river level 3 to 4 feet, and can be caused by snowmelt runoff in the spring, heavy summer rains, or persistent westerly winds driving water from Selawik Lake upstream toward the village (DOT&PF, 1988).

Selawik lies within a zone of perennially frozen ground. Based on test borings conducted throughout Selawik, permafrost can be expected below a depth of about 18 inches in undisturbed areas, or 3 to 4 feet in disturbed areas (DOT&PF, 1980; DOT&PF 1988; DOWL 2007). Ice wedges and other forms of visible ground ice are present. Vegetation consists of moss and sedge tussock, Labrador tea, blueberry bushes, and stands of willow and alder. Generally, a thin layer of surface peat covers frozen silt or sandy silt. These silt deposits can vary in thickness from a few feet to over one hundred feet (DOT&PF, 1988).

In June of 1980, the DOT&PF conducted a soil investigation near and along bridge abutments located on the West and East Fork of the Selawik River. The typical soil profile encountered was composed of 1 to 5 feet of organic silt overlying frozen silt, sandy silt, and silty sand to depths of 50 feet to 80 feet with occasional dark gray to black clay layers. A soil investigation conducted near the airport in September of 1988 by the DOT&PF encountered soils consisting of frozen silt with moss and sedge tussock cover. A subsurface exploration conducted in 2007 for the Selawik clinic, encountered frozen silt with ice contents between 10 and 50 percent by volume to depth of at least 30 feet (DOWL, 2007).

For purposes of the Barge Landing Access Road, it is assumed that the road overlays permafrost composed of ice rich silt. Geotechnical information was not collected for this project. Various bore logs and geotechnical reports have been collected in the Selawik area since 1972, and are used as references during the preliminary stages of this project. The most recent design, the Landfill Road (State Project No. 62168), was completed in 2007. This road is close to the Barge Landing Access Road, so soil characteristics and permafrost levels encountered in the Landfill

Road may be similar. The functional classification and traffic loads of the Landfill Road are also assumed to be similar.

The landfill road had geotechnical data and the Design Study Report (DSR) included a thermal modeling analysis to select a typical structural section that protected the permafrost from excessive thaw and associated settlement (see the DSR for the Selawik Boardwalk and Landfill Road, State Project Number 62168, page 4, dated April 2007). The thermal modeling evaluated three alternatives to optimize different thicknesses of imported material and insulation. In addition to the likelihood of similar soil conditions, the economic and material source factors involved in the Landfill Road remain applicable to this project. Therefore, the recommended typical section for the Landfill Road is adopted for the Barge Landing Access Road.

23. EROSION AND SEDIMENT CONTROL

An Erosion and Sediment Control Plan (ESCP) and a Storm Water Pollution and Prevention Plan (SWPPP) will be required because the project footprint is greater than one acre. The ESCP will be included in the Plans with general requirements and project specifications. The SWPPP will be provided by the contractor.

Ground Disturbance

The ground will be disturbed for construction of the Barge Landing Access Road and board-road foundation pads. Approximately 2.2 acres will be disturbed or have unstabilized soils. The access road to the Spud Farm will be either a winter road or ice road and will not disturb soils.

Sensitive Environmental Areas

The Selawik River is immediately adjacent to the project. A review of the DEC 2010 Impaired Waterbody 33[d] list confirmed there are no impaired waterbodies in Selawik. The project area is classified as wetlands and there is no option to avoid working in wetlands. Approximately 1.2 acres of wetlands will require permitting (the existing roadbed is approximately 1 acre).

There are no drainages, fish streams, or critical habitat in the project area.

Changed Drainage Patterns / Storm Water Discharge Areas

The planned staging area for materials is the existing Barge Landing area and the new Staging Area included in this project. Temporary, small staging areas for board-road materials (timbers, fasteners, and connectors) may be established at locations throughout Selawik adjacent to new board-roads by placing timbers on sill plates without disturbing the ground. There will be no impact to existing drainage patterns or storm water discharge at the project sites or the staging area.

Construction Features That May Require Temporary or Permanent ESCP Measures

New board-roads adjacent to the Selawik River will require work on or near the banks of the Selawik River that could result in temporary soil disturbance. The existing river banks have shown evidence of erosion. Bank erosion protective measures will be incorporated if determined necessary during design.

Erosion Control Environmental Commitments

Temporary perimeter protection Best Management Practice (BMPs) will be installed along the Barge Landing Access Road and around the new Staging Pad where there is the potential for offsite discharge of storm water. Similarly, board-road construction adjacent to the Selawik River may require coir logs or a silt fence as a BMP. These will be identified in the ESCP. No temporary or permanent impacts to water quality are anticipated as a result of the proposed project. The BMPs will be outlined in a SWPPP implemented by the contractor.

If the contractor decides an additional temporary staging area is necessary, additional erosion and sediment control BMPs may be required and will be the responsibility of the contractor.

24. ENVIRONMENTAL COMMITMENTS

The proposed project will require an Army Corps of Engineering (ACE) Section 404 Individual Permit (IP) for impacts to wetlands and waters of the United States. Wetland impacts were avoided to the extent practicable; however, additional ground disturbing activities will occur as a result of some of the proposed project elements. Design considerations lack sufficient detail to determine the exact acreage of impacted wetlands; however, one element of the proposed improvements (new barge landing access pad) exceeds the half-acre threshold for an ACE Nationwide Permit.

Impacts to wetlands will occur as a result of widening the Barge Landing Access Road from 15 feet to 20 feet and constructing an approximate 150 foot by 266 foot (1+ acre) staging pad, adjacent to the Barge Landing Access Road. Proposed boardwalk improvements will occur at-grade or elevated above the ground surface on small isolated bearing pads of approximately 5 square feet each (estimated in aggregate at 0.25 acre).

Source material may be obtained from Selawik's primary material source, the Spud Farm Material Site (MS). At this time, there is sufficient source material present to accommodate all proposed changes; however, should fill material become scarce, additional wetlands will be impacted as a result of expanding the Spud Farm MS to meet the project's needs. In such instance, the total acreage of impacted wetlands will be added to the project's Section 404 IP.

To haul material from the Spud Farm MS, a temporary winter crossing of the Selawik River and Shogvik Lake would occur and require a Title 41 Winter Stream Crossing Permit and a Title 16 Fish Habitat Permit from the Alaska Department of Fish and Game. In the event of insufficient frost depth and minimal snowpack conditions, an ice road along the same route would be constructed. If an ice road is merited, a Temporary Water Use Permit from the Alaska Department of Natural Resources will be required for all dewatering activities associated with the ice road construction. To be prepared for this scenario, the Temporary Water Use Permit will be obtained in advance. Best management practices will be implemented during construction to minimize impacts to aquatic resources as a result of the temporary winter-haul route. If impacts are unavoidable they are anticipated to be minimal and temporary.

A Title 9 permit will be required for the project as it is within the Northwest Arctic Borough.

25. WORK ZONE TRAFFIC CONTROL

The contractor will construct temporary access to destinations actively served by the access road and board-roads whose driveways become closed during construction.

Specific work zone traffic control issues are discussed below:

- The contractor will be required to provide safe passage for residents during construction. Temporary board-roads will be required where no alternate route is feasible. Occasional delays and planned closures are expected;
- Work on the River Street board-road will be phased so that access to the Rainbow Bridge is maintained from either the north or south;
- Work that could close off access to either bridge may be required to be performed during winter months when traffic and pedestrians can cross on the river (see below);
- For some locations, performing the work at night could be required. For night work, public notices will be needed to inform the community of hours when the route cannot be used.
- Measures will need to be in place for emergencies.
- A single lane for traffic will be maintained along the Barge Landing Access Road. For a portion of the roadway construction, a detour using the Landfill Road is possible.

During the winter months, an alternative to using the Rainbow Bridge is a river crossing entering from 3rd Avenue and exiting to Community Avenue (see Figure 9).



Figure 9: Rainbow Bridge – Winter Alternate Route

26. VALUE ENGINEERING

Value Engineering is not applicable to this project.

27. COST ESTIMATE

The estimated costs for this project are as follows:

Design	\$850,000
Utilities	\$600,000
Right of Way	\$20,000
Construction (Includes 15% Engineering & ICAP)	\$8,300,000
	<hr/>
Total Cost of Project	\$9,770,000

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APPENDIX A

DESIGN CRITERIA

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ALASKA DOT&PF PRECONSTRUCTION MANUAL
Chapter 11 - Design
PROJECT DESIGN CRITERIA

Project Name: Selawik Transportation Improvements - Barge Landing Access Road	
<input checked="" type="checkbox"/> New Construction/Reconstruction <input type="checkbox"/> 3R <input type="checkbox"/> PM <input type="checkbox"/> Other:	
Project Number: 0002280/Z637720000	
<input type="checkbox"/> NHS <input checked="" type="checkbox"/> Non NHS	
Functional Classification:	Industrial/commercial
Design Year:	2040
Design Year ADT:	<100
DHV:	N/A
Percent Trucks:	N/A
Pavement Design Year:	N/A
Terrain:	Level
Design Speed:	20 mph
Width of Traveled Way:	20 feet
Width of Shoulders:	Outside: N/A Inside: N/A
Cross Slope:	2% typical
Superelevation Rate:	N/A
Minimum Radius of Curvature:	107 feet
Min. K-Value for Vert. Curves:	Sag: 4 Crest: 7
Maximum Allowable Grade:	5.0%
Minimum Allowable Grade:	0.0%
Stopping Sight Distance:	90 feet
Lateral Offset to Obstruction:	N/A (very low volume road)
Vertical Clearance:	18.5 feet (Overhead Utilities)
Bridge Width:	N/A
Bridge Structural Capacity:	N/A
Passing Sight Distance:	N/A
Surface Treatment:	T/W: Gravel Shoulders: Gravel
Side Slope Ratios:	Foreslopes: 3H:1V or flatter Backslopes: N/A
Degree of Access Control:	None
Median Treatment:	N/A
Illumination:	Staging Area Only
Curb Usage and Type:	None
Bicycle Provisions:	Bicycles will share the roadway
Pedestrian Provisions:	Pedestrians will share the roadway
Misc. Criteria:	N/A

Proposed - Designer/Consultant:

[Signature]

Date: 8-15-17

Endorsed - Engineering Manager:

[Signature]

Date: 8-16-17

Approved - Preconstruction Engineer:

[Signature]

Date: 8/16/2017

Shaded criteria are commonly referred to as the *FWHA 13 controlling criteria*. For NHS routes only, these criteria must meet the minimums established in the Green Book (*AASHTO A Policy on Geometric Design of Highways and Streets*). For all other routes, these criteria must meet the minimums established in the *Alaska Highway Preconstruction Manual*. Otherwise a Design Exception must be approved.

Design Criteria marked with a "#" do not meet minimums and must have a Design Exception(s) and/or Design Waiver(s) approved. See the Design Study Report for Design Exception/Design Waiver approval(s) and approved design criteria values.

ALASKA DOT&PF PRECONSTRUCTION MANUAL
Chapter 11 - Design
PROJECT DESIGN CRITERIA

Project Name: Selawik Transportation Improvements - Boardwalk Improvements	
<input checked="" type="checkbox"/> New Construction/Reconstruction <input type="checkbox"/> 3R <input type="checkbox"/> PM <input type="checkbox"/> Other:	
Project Number: 0002280/Z637720000	
<input type="checkbox"/> NHS <input checked="" type="checkbox"/> Non NHS	
Functional Classification:	Rural Local Road (Board-road)
Design Year:	2040
Design Year ADT:	<100
DHV:	N/A
Percent Trucks:	N/A
Pavement Design Year:	N/A
Terrain:	Level
Design Speed:	5 mph
Width of Traveled Way:	11 feet 1 inch
Width of Shoulders:	Outside: N/A Inside: N/A
Cross Slope:	0%
Superelevation Rate:	N/A
Minimum Radius of Curvature:	N/A
Min. K-Value for Vert. Curves:	Sag: N/A Crest: N/A
Maximum Allowable Grade:	5.0%
Minimum Allowable Grade:	0.0%
Stopping Sight Distance:	N/A
Lateral Offset to Obstruction:	0 minimum
Vertical Clearance:	18.5 feet (Overhead Utilities)
Bridge Width:	N/A
Bridge Structural Capacity:	N/A
Passing Sight Distance:	N/A
Surface Treatment:	T/W: Treated Lumber Shoulders: N/A
Side Slope Ratios:	Foreslopes: N/A Backslopes: N/A
Degree of Access Control:	None
Median Treatment:	N/A
Illumination:	N/A
Curb Usage and Type:	4 X 6 Timber
Bicycle Provisions:	Bicycles will share the roadway
Pedestrian Provisions:	Pedestrians will share the roadway
Misc. Criteria:	N/A

*See HPCM Section 1170.4. The board-road design load is 700 pounds per wheel.

Proposed - Designer/Consultant: _____

Endorsed - Engineering Manager: _____

Approved - Preconstruction Engineer: _____

Date: 8-15-17

Date: 8-16-17

Date: 8/16/2017

Shaded criteria are commonly referred to as the *FWHA 13 controlling criteria*. For NHS routes only, these criteria must meet the minimums established in the Green Book (*AASHTO A Policy on Geometric Design of Highways and Streets*). For all other routes, these criteria must meet the minimums established in the *Alaska Highway Preconstruction Manual*. Otherwise a Design Exception must be approved.

Design Criteria marked with a " # " do not meet minimums and must have a Design Exception(s) and/or Design Waiver(s) approved. See the Design Study Report for Design Exception/Design Waiver approval(s) and approved design criteria values.

MEMORANDUM

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

TO: Ryan F. Anderson, P.E.
Preconstruction Engineer
Northern Region

DATE: May 3, 2016

FILE NO: H:\Projects\Communications\Selawik\63772_Selawik_BargeLandingRd & Boardwalk\04 PS&E\10 Design Study Report\Design Designation Waiver memo 07-14.docx

THRU: Albert M. L. Beck, P.E. *sumb*
Design Group Chief
Northern Region

PHONE NO: 451-2322

FAX NO: 451-5126

FROM: Christopher F. Johnston, P.E. *cfj*
Engineering Manager
Northern Region

SUBJECT: Selawik Barge Landing Access
Road and Boardwalk
Improvements
Z637720000/0002(280)
Design Designation Waiver

A waiver of the Highway Preconstruction Manual requirement for a Design Designation (HPM 1100.4.1) is requested.

The purpose of this project is to rehabilitate the existing barge landing access road, construct a new gravel barge staging pad, and replace sections of existing boardwalk. The road received minimal vehicle traffic and the boardwalks are used for pedestrian and ATV traffic.

The project design will not require the information from the Design Designation process.

Approved: _____

Ryan F. Anderson

Ryan F. Anderson, P.E., Preconstruction Engineer

5/4/2016

Date

cfj/mlh *WJX*

cc by e-mail: Judy Chapman, Planning Chief

APPENDIX B

ENVIRONMENTAL DOCUMENT

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MEMORANDUM

State of Alaska

Department of Transportation and Public Facilities
Central Region Design and Engineering Services
Preliminary Design and Environmental

To: Tim Haugh
Environment Program Manager

Date: July 15, 2015

From: Brett D. Nelson
Regional Environmental Manager

Project Name: Selawik Barge Landing
Access Road & Boardwalk
Improvements Project

Subject: Programmatic Categorical
Exclusion (PCE)

Project No: AKSAS 63772/STP-
0002(280)

The proposed project meets the conditions outlined in the April 13, 2012, Programmatic Categorical Approval 2.

Enclosures: PCE Documentation

cc: Chris Johnson P.E.

VII. Environmental Documentation Approval

N/A YES NO

3. For 6004 projects: The project meets the criteria of the DOT&PF Programmatic Approval 2 authorized in the November 6, 2012 "CE Directive - Delegation of Approval Authority for Certain CEs under 6004 MOU". If yes, the CE may be approved by the Regional Environmental. If no, the CE may be approved by a Statewide NEPA Manager.
4. For non-assigned projects: The project meets the criteria of the April 13, 2012 "Programmatic Categorical Exclusion for Use on Federal-Aid Highway Projects in Alaska" between FHWA and DOT&PF. If yes, the CE may be approved by the Regional Environmental Manager. If no, the CE may be approved by FHWA Area Engineer.

VIII. Environmental Documentation Approval Signatures

Prepared by: *Owen Coskey* Date: 8-21-2015
[Sign] Environmental Impact Analyst

Owen Coskey
[Print Name] Environmental Impact Analyst

Reviewed by: *[Signature]* Date: 8/21/15
[Sign] Engineering Manager

Christopher F. Johnston, P.E.
[Print Name] Engineering Manager

Approved by: *Brett Nelson* Date: 8-21-15
[Sign] Regional Environmental Manager

Brett Nelson
[Print Name] Regional Environmental Manager

Assigned CE

Approved by: _____ Date: _____
[Sign] DOT&PF Statewide NEPA Manager

[Print Name] DOT&PF Statewide NEPA Manager

Non-Assigned CE

Approved by: *[Signature]* Date: 8/27/15
[Sign] FHWA Area Engineer

Austin Armstrong
[Print Name] FHWA Area Engineer

APPENDIX C

PRELIMINARY PLAN AND PROFILE SHEETS

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STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	Z637720000	2017	2	15

	EXISTING	PROPOSED
BLM MONUMENT		
G.O. MONUMENT		
USC&GS MONUMENT		
PRIMARY MONUMENT		
CENTERLINE MONUMENT IN CASING		
PRIMARY R.O.W. MONUMENT		
BEARING OBJECT		
MISCELLANEOUS MONUMENT		
LINE OF SIGHT MONUMENT		
CONCRETE R.O.W. MONUMENT		
BENCHMARK		
REBAR AND CAP		
REBAR		
IRON PIPE		
PK NAIL		
SPIKE		
HUB AND TACK		
CONSTRUCTION CENTERLINE		
MISCELLANEOUS CENTERLINE		
STATION EQUATION		
PROJECT RIGHT-OF-WAY LINE		
EXISTING RIGHT-OF-WAY LINE		
EXISTING PROPERTY LINE		
CONTROLLED ACCESS LINE		
EXISTING EASEMENT LINE		
PROPOSED EASEMENT LINE		
PROPOSED CUT SLOPE LIMIT		
PROPOSED FILL SLOPE LIMIT		
SECTION LINE		
1/4 SECTION LINE		
1/16 SECTION LINE		
TOWNSHIP & RANGE LINE		
MEANDER LINE		
SANITARY SEWER (FLOW DIRECTION →)		
FUEL LINE		
GAS LINE		
WATER LINE		
METER, VALVE, FIRE HYDRANT		
EXISTING STORM DRAIN (FLOW DIRECTION →)		
PROPOSED STORM DRAIN		
FIBER OPTIC LINE		
DIRECT BURIAL TELEPHONE CABLE		
DIRECT BURIAL ELECTRIC CABLE		
ELECTRIC LINE (OVERHEAD)		
POWER POLE LINE		
JOINT USE POWER & TELEPHONE		
TELEPHONE POLE LINE		
POLE ANCHOR		
STUB POLE (POWER OR TELEPHONE)		
TELEPHONE DUCT		
TELEPHONE PEDestal		
BURIED CABLE MARKER		
PIPELINE MARKER OR VALVE		
CATCH BASIN OR DROP INLET		
MANHOLE		
SANITARY SEWER CLEAN OUT		
RECOVERED SET		
ROADWAY/PAVEMENT EDGE		
FENCE		
CURB AND GUTTER		
DETECTABLE WARNINGS		
CURB/RAIL		
CULVERT PIPE		
SIGN		
MAILBOX		
RAILROAD TRACKS		
RAILROAD DEVICES		
TREE LINE		
WATER BOUNDARY		
ORDINARY HIGH WATER LINE		
FLOW CENTERLINE		
FLOW DIRECTION		
WETLANDS		
EXISTING BUILDINGS		
POST OR BOLLARD		
WELL OR MONITORING WELL		
SEPTIC PIPE		
FUEL TANK FILL PIPE/VENT		
SATELLITE DISH		
TEST HOLE		
CONIFER TREE		
DECIDUOUS TREE		
GRAVE		
THERMOSPHERON		
PARKING METER		
VEHICLE PLUG-IN		
DELINEATOR/GUIDE MARKER		

EXISTING	PROPOSED

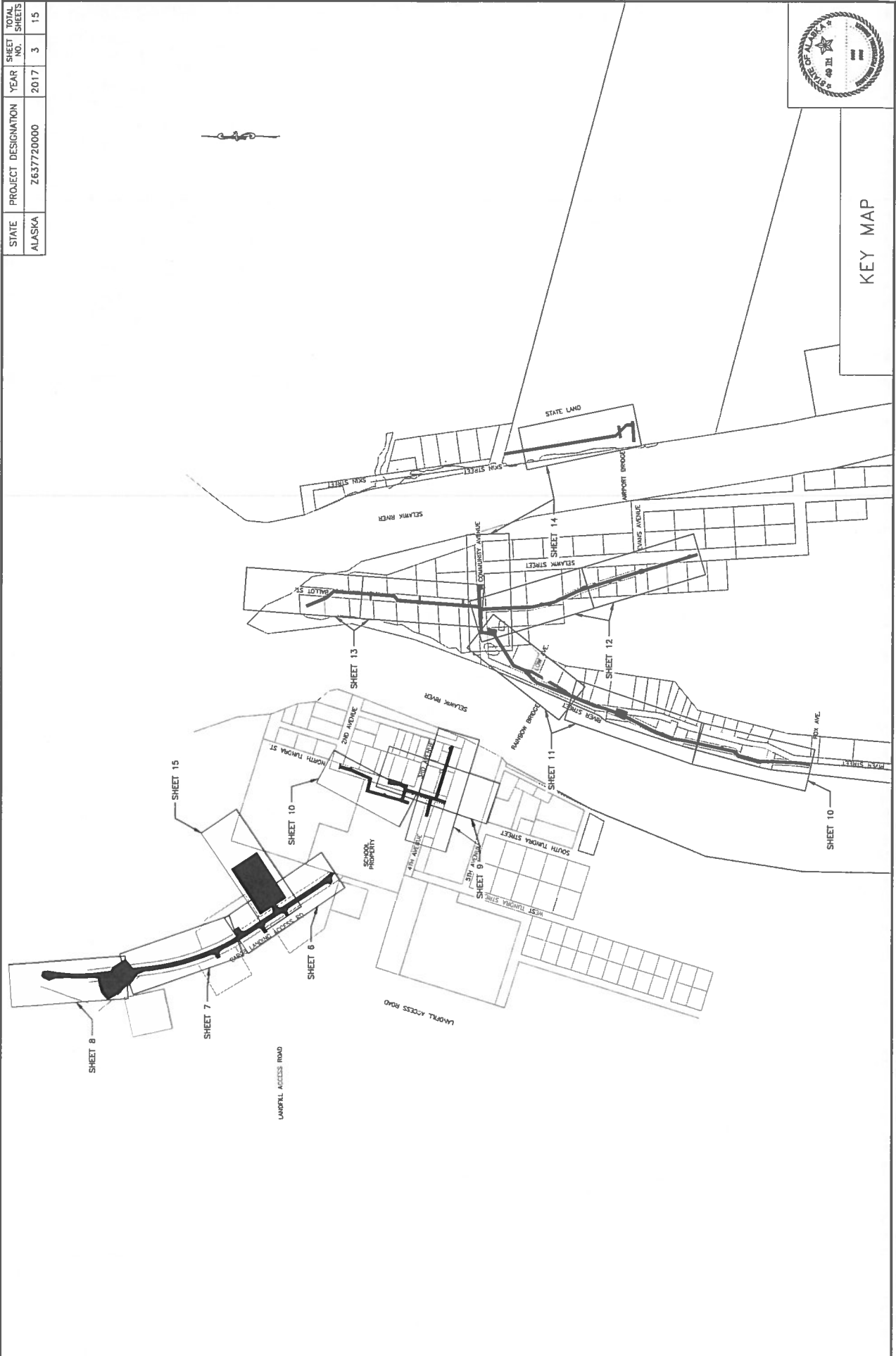


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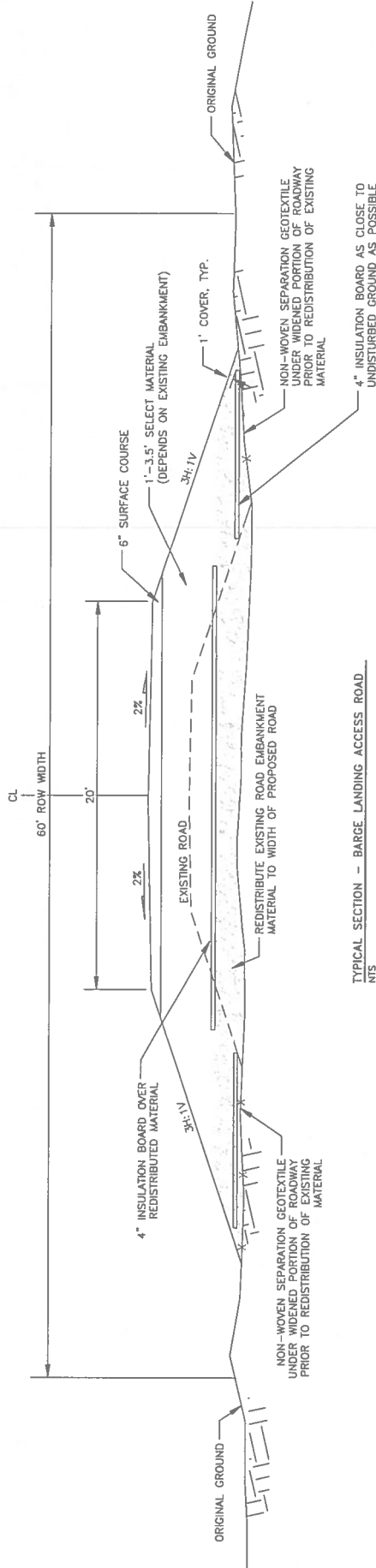
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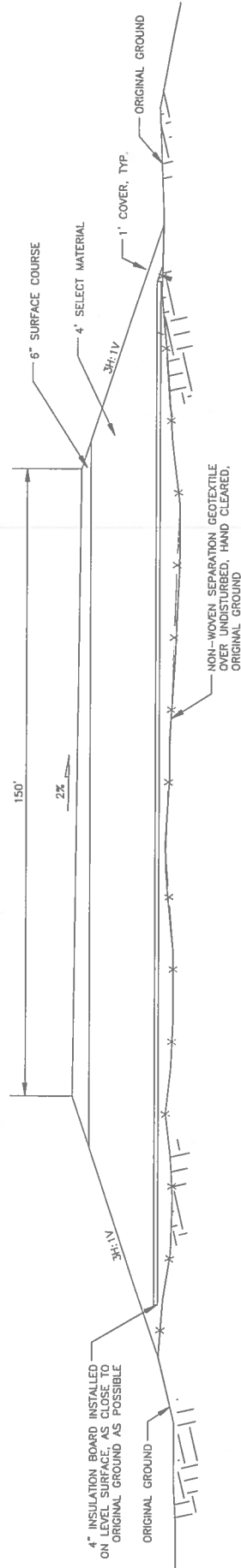
KEY MAP



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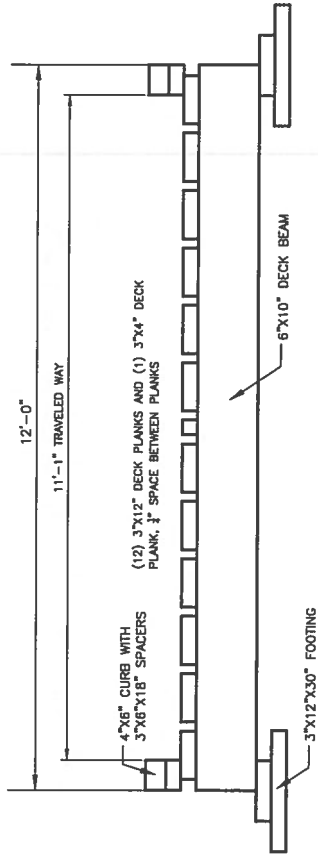
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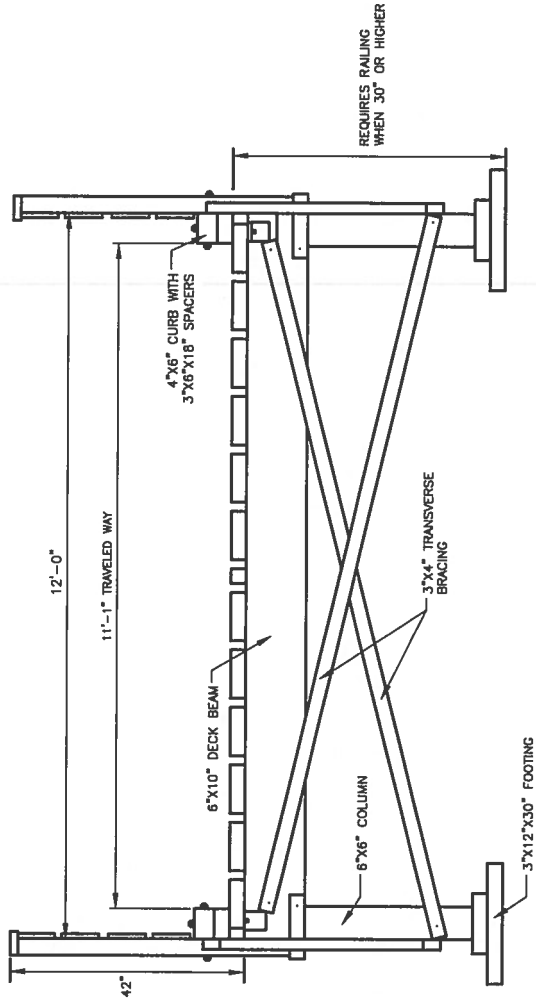
TYPICAL SECTIONS

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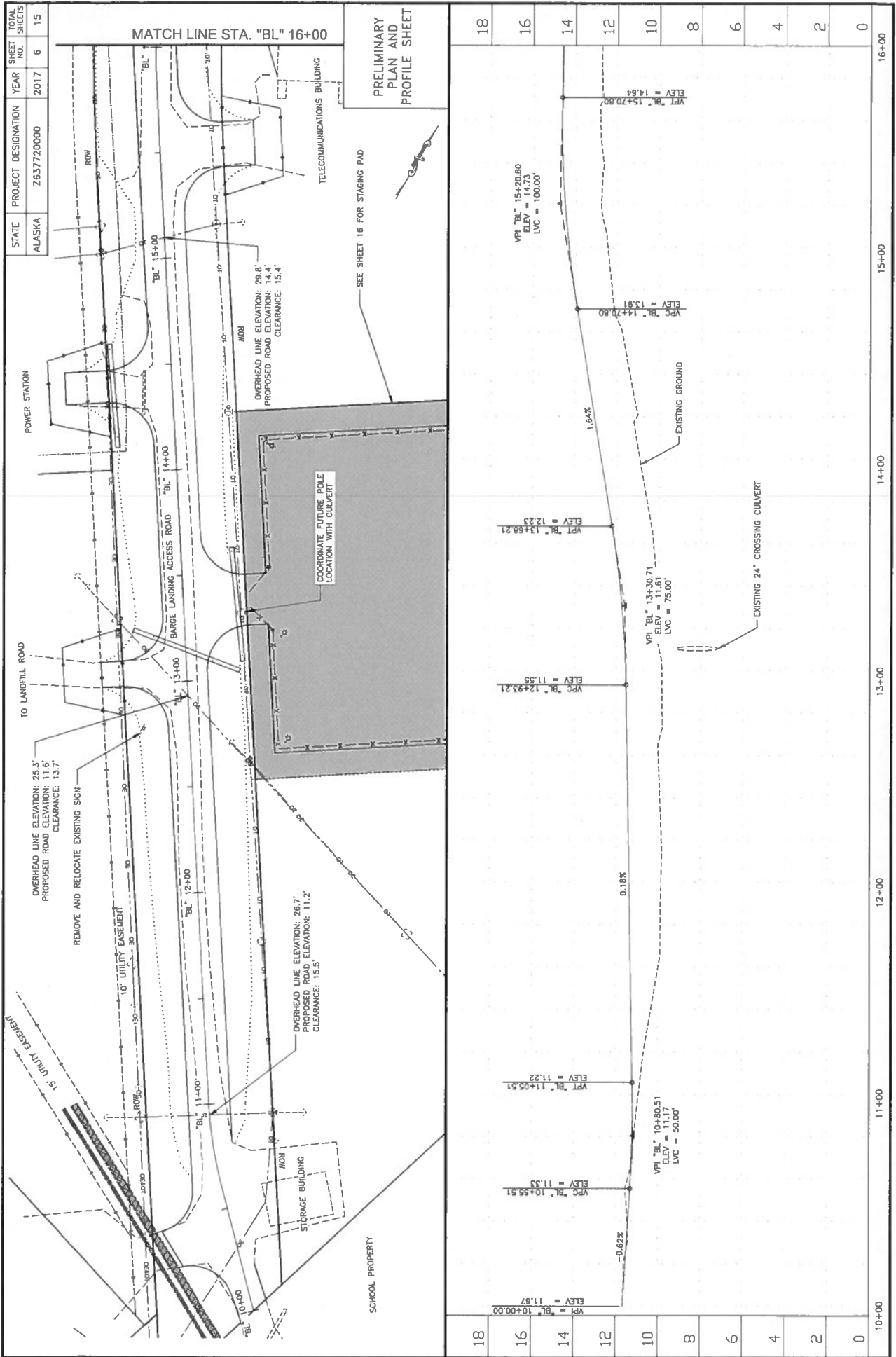
TYPICAL SECTION - AT-GRADE BOARDROAD
NTS



TYPICAL SECTION - ELEVATED BOARDROAD
NTS



TYPICAL SECTIONS



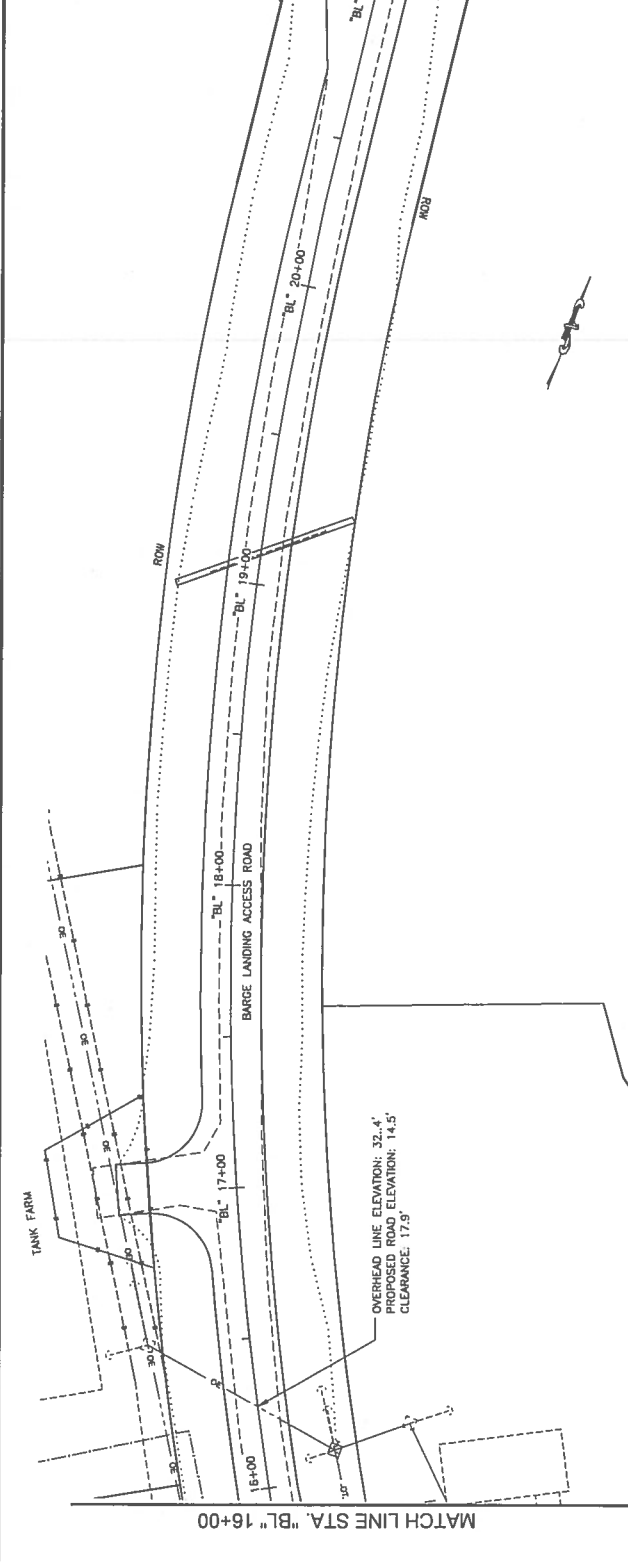
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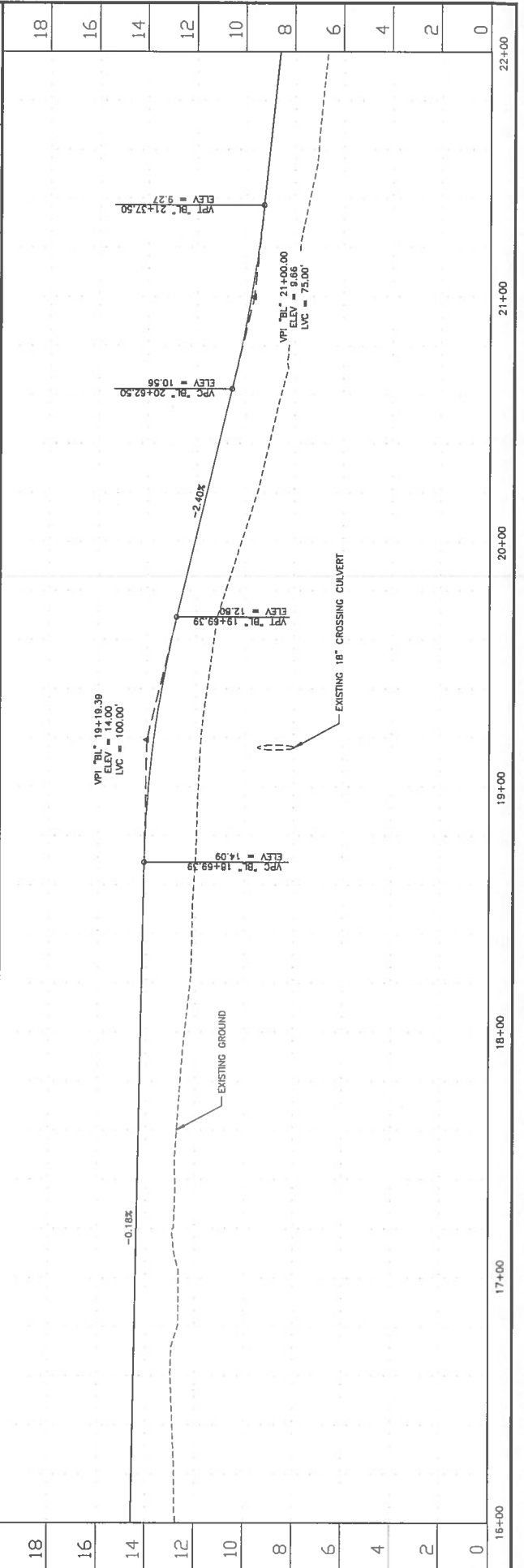
PRELIMINARY PLAN AND PROFILE SHEET

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11+00	11.35	VPC "BL" 10+55.51	11.35	0.00'	-0.62%
12+00	11.22	VPI "BL" 11+05.51	11.22	0.00'	0.18%
13+00	11.55	VPC "BL" 12+93.21	11.55	0.00'	0.18%
14+00	12.23	VPI "BL" 14+55.21	12.23	0.00'	1.64%
15+00	13.91	VPC "BL" 14+70.80	13.91	0.00'	1.64%
16+00	14.94	VPI "BL" 15+20.80	14.94	0.00'	1.64%

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
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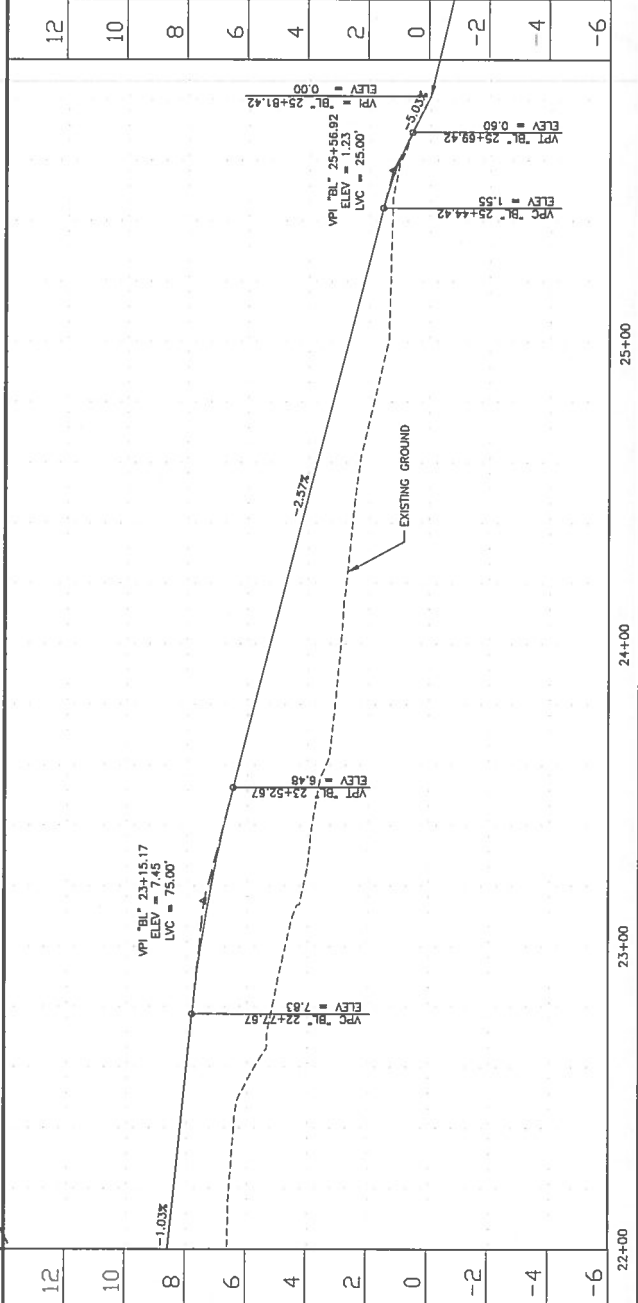
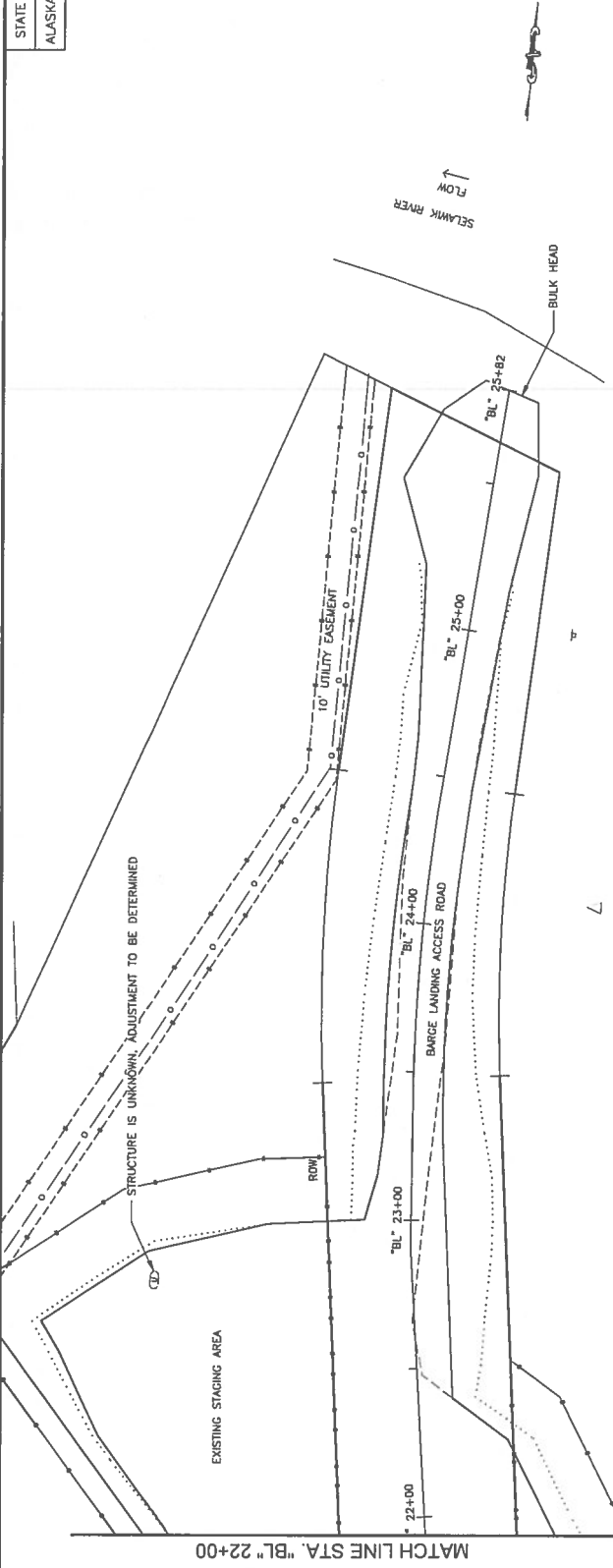


PRELIMINARY
PLAN AND
PROFILE SHEET



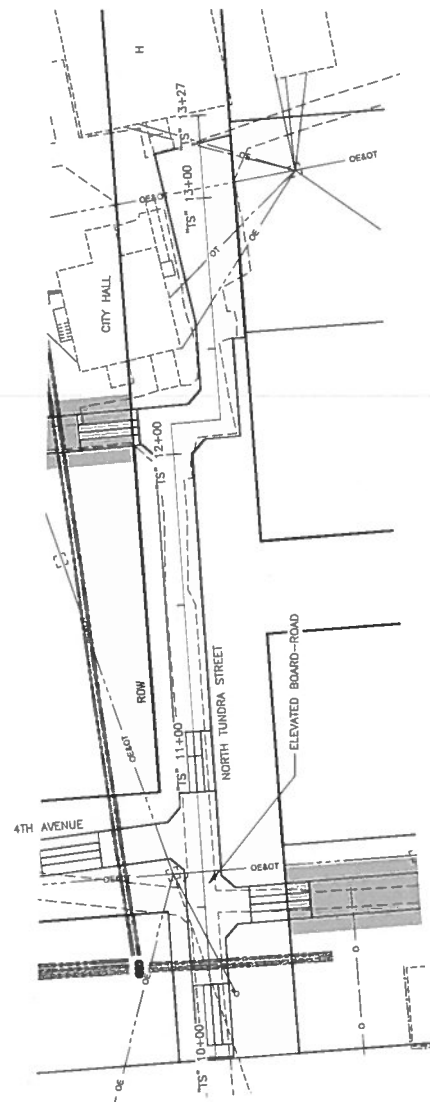
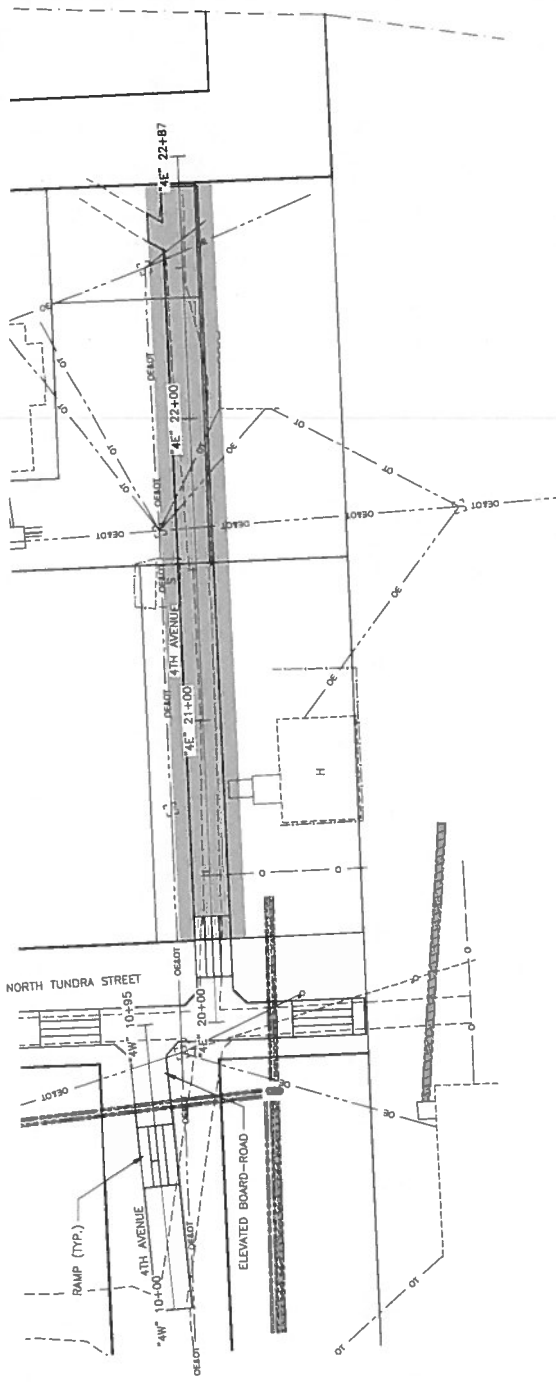
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PRELIMINARY
PLAN AND
PROFILE SHEET

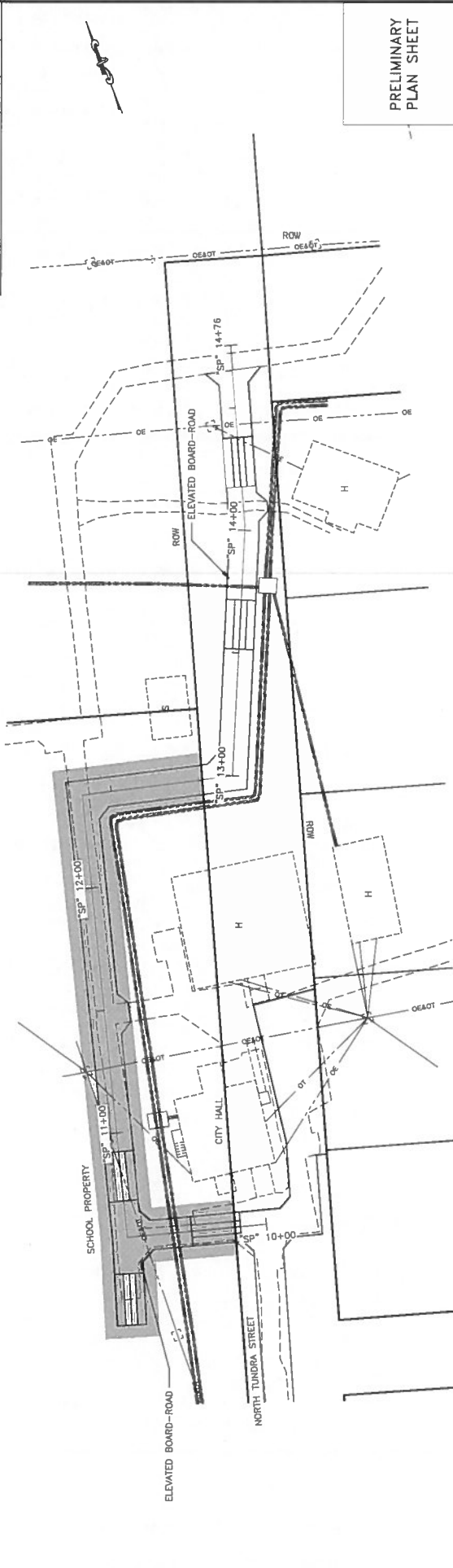


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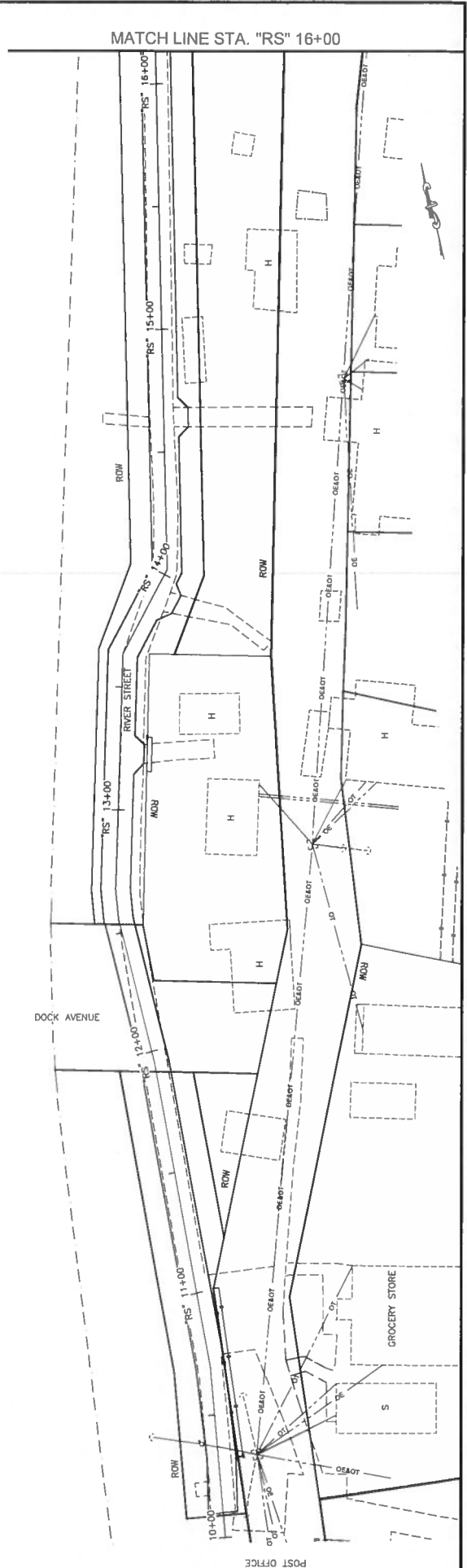
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PLAN SHEET



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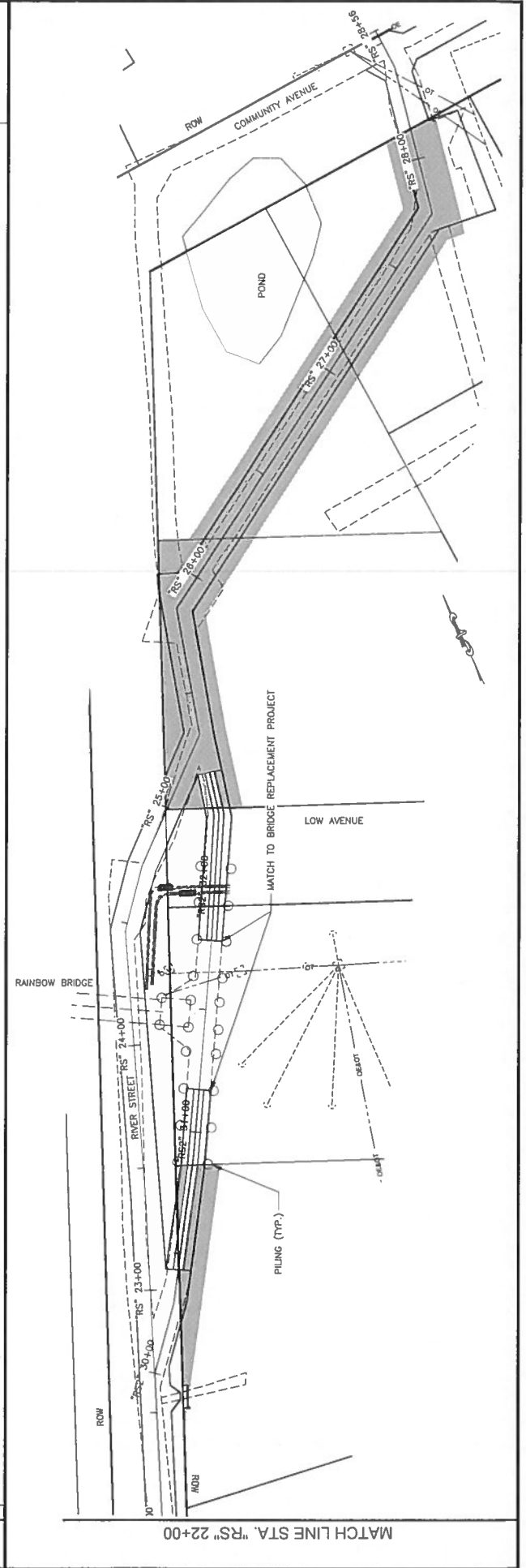
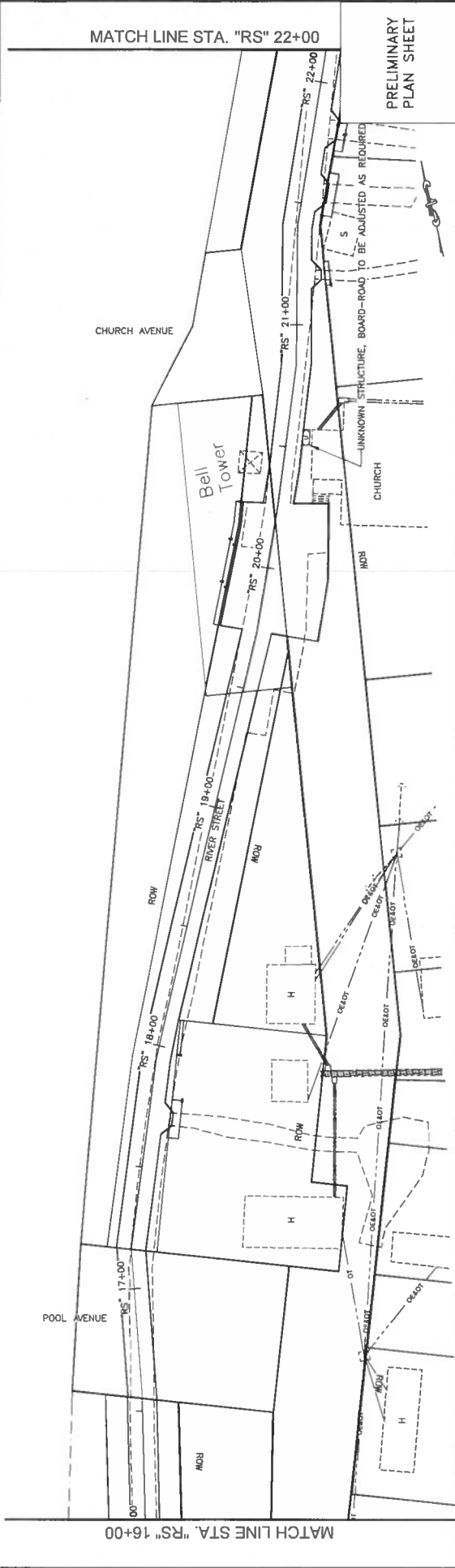


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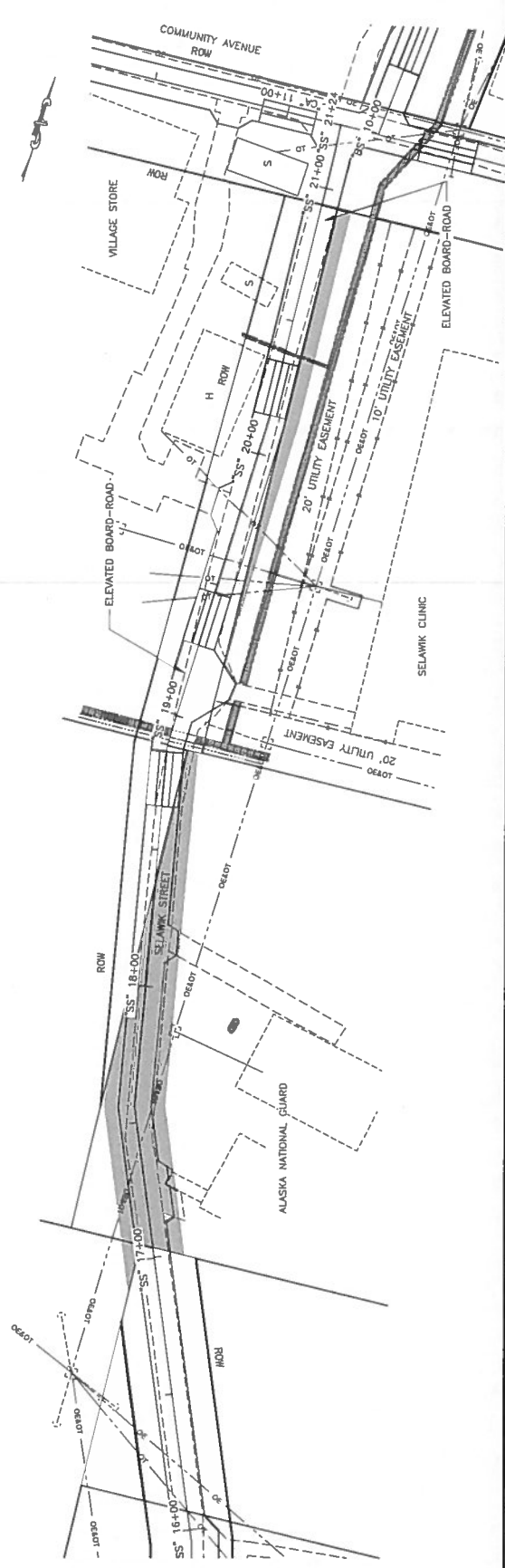
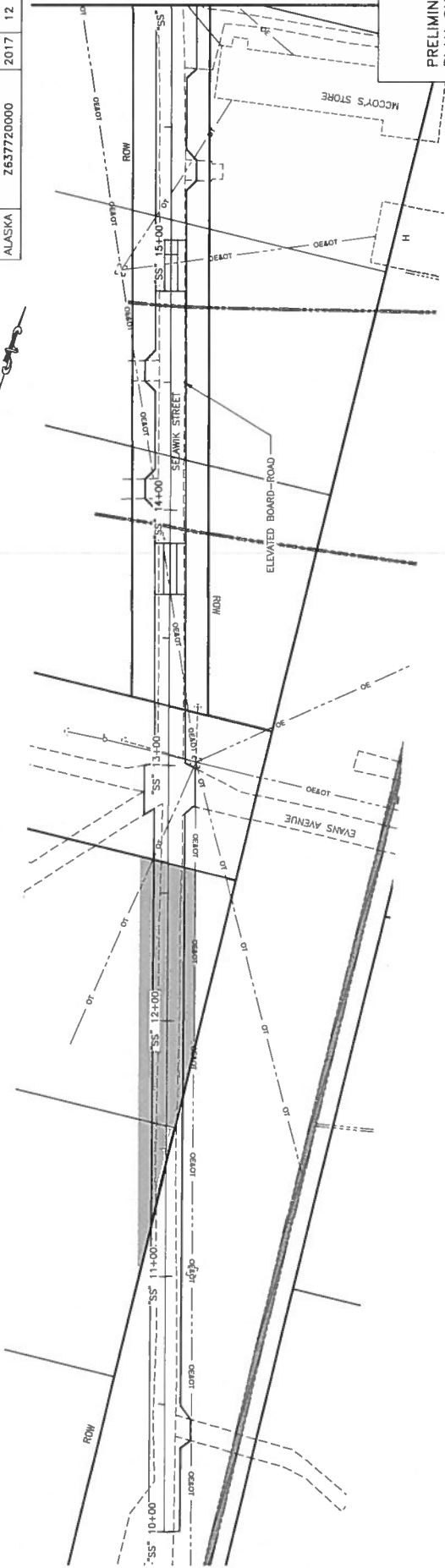
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PRELIMINARY
PLAN SHEET

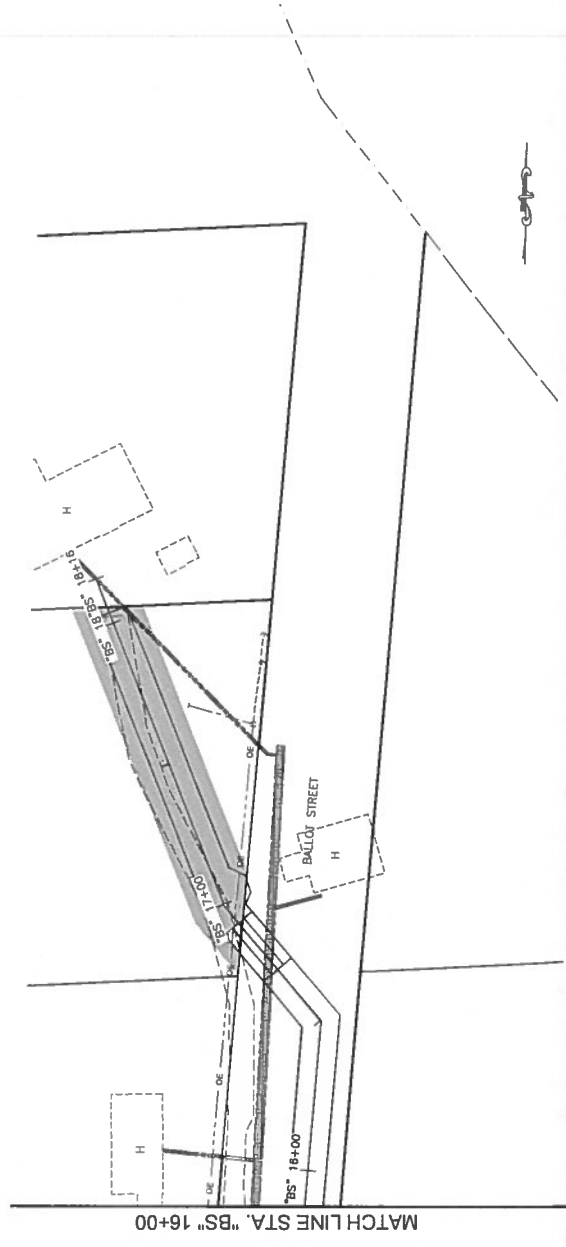
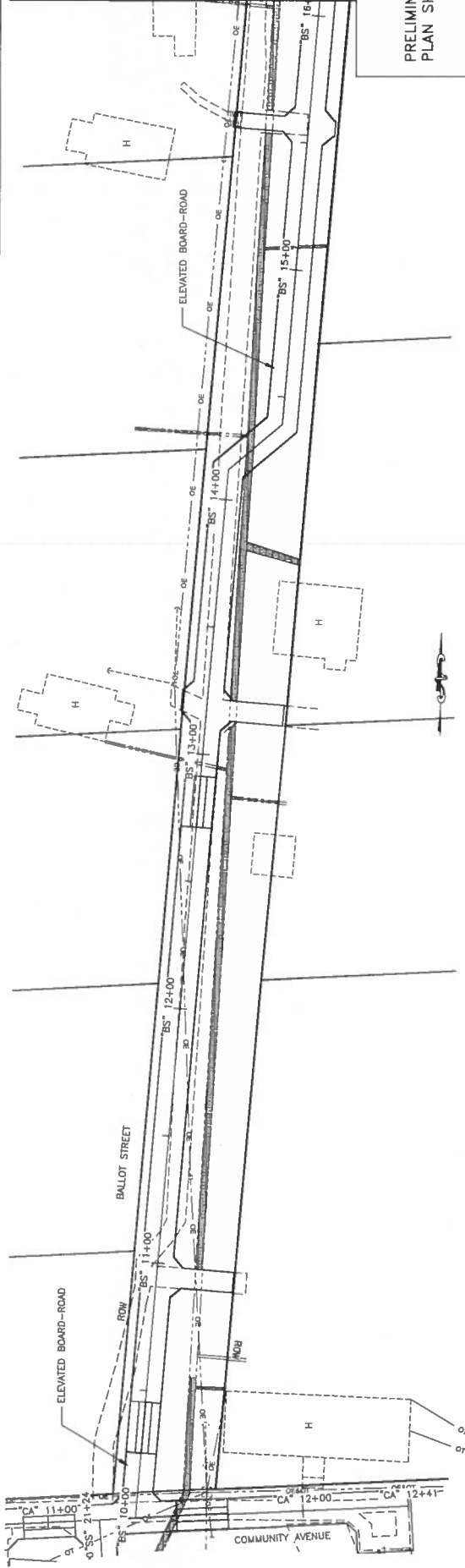


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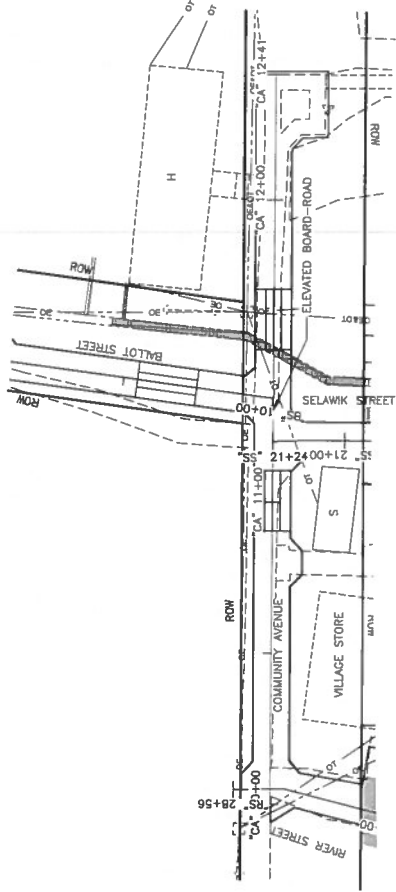
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PLAN SHEET

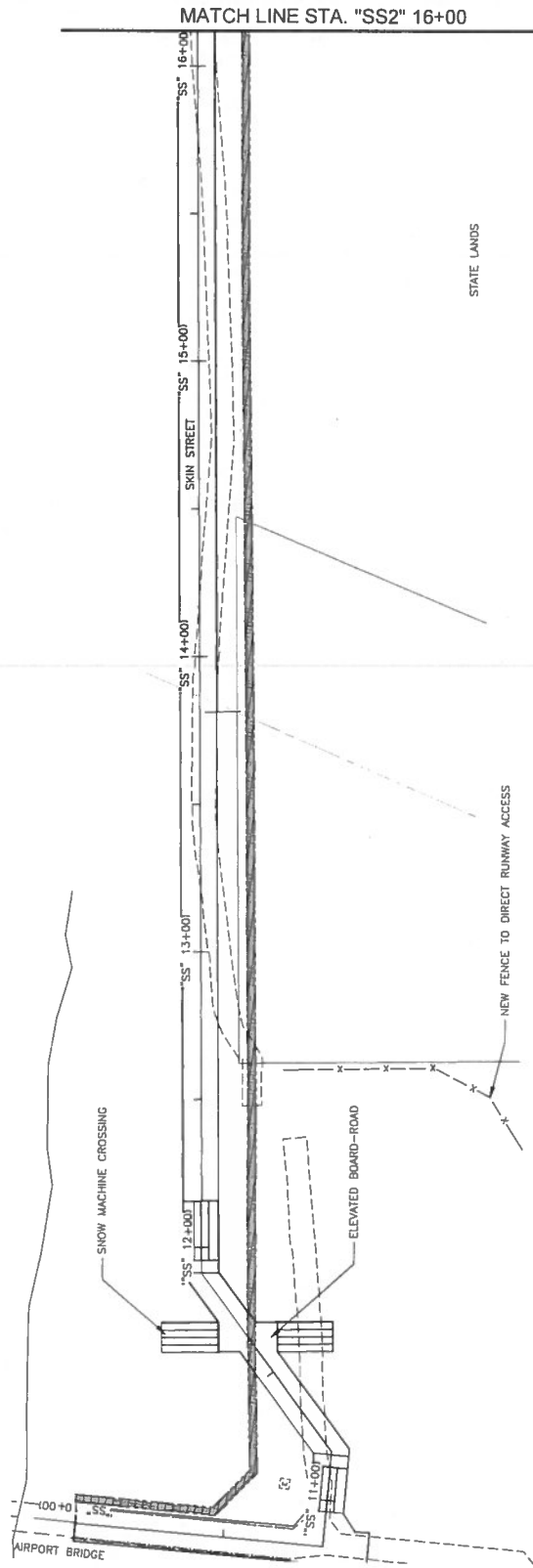


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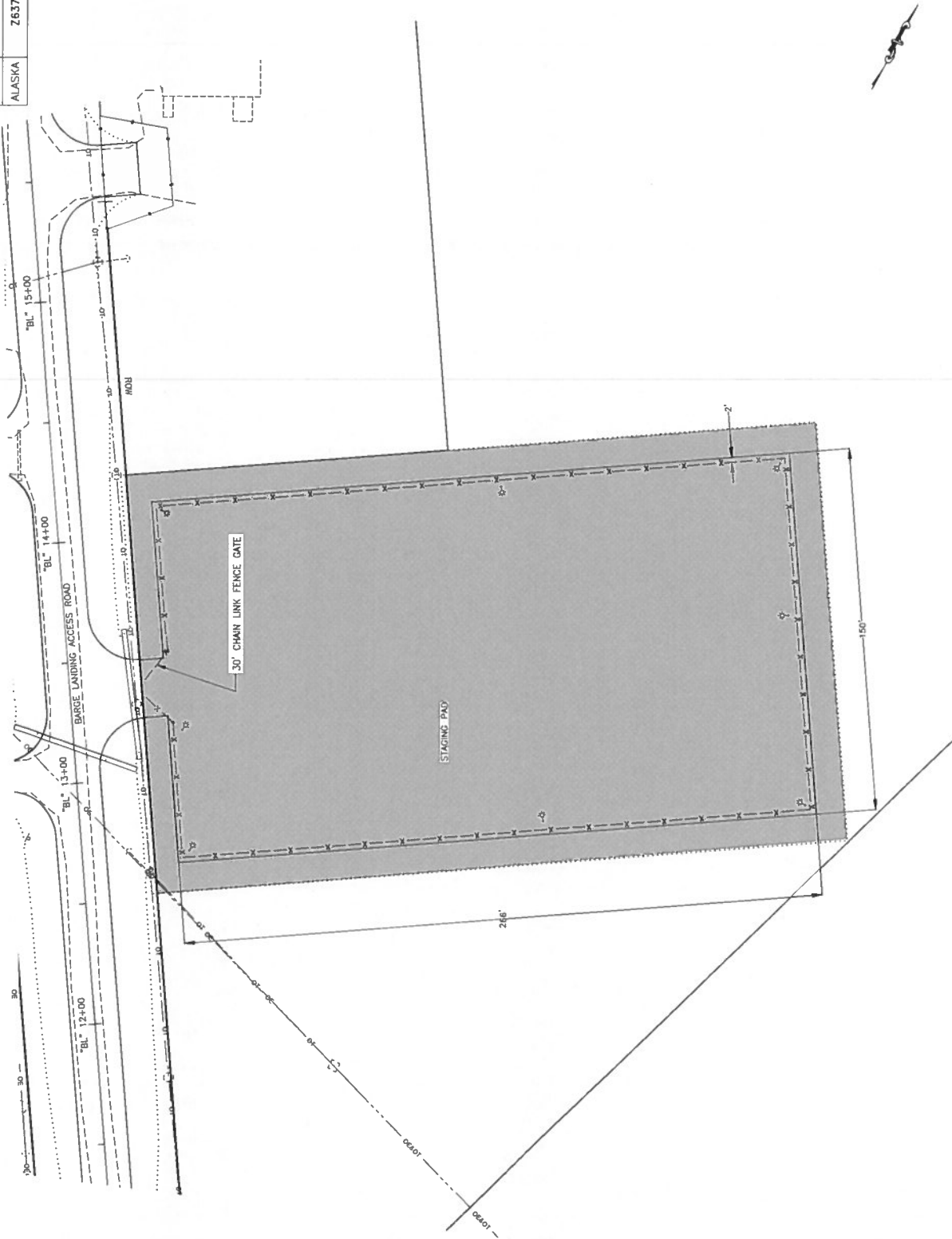


PRELIMINARY
PLAN SHEET



STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	Z637720000	2017	15	15

PRELIMINARY
PLAN SHEET



APPENDIX D

UTILITY CONFLICT REPORT

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UTILITY CONFLICT REPORT
SELAWIK BARGE LANDING ACCESS ROAD AND BOARDWALK
IMPROVEMENTS

PROJECT NO. 0002280 / Z637720000

SELAWIK, ALASKA

Prepared for:

State of Alaska
Department of Transportation and Public Facilities Northern Region
2301 Peger Road
Fairbanks, Alaska 99709

Prepared by:

DOWL
3535 College Road, Suite 100
Fairbanks, Alaska 99709
(907) 374-0275

June 2016

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
1.1 Purpose.....	3
1.2 Project Utilities and Owner Contacts.....	3
1.3 Proposed Improvements.....	4
2.0 FINDINGS BY UTILITY.....	5
2.1 OTZ Telephone Cooperative, Inc. (OTZ Telephone).....	5
2.2 AVEC, INC. Lines.....	5
2.3 City of Selawik Utilities.....	6
3.0 COST ESTIMATE.....	12

LIST OF FIGURES

Figure 1: Project Layout Plan	2
-------------------------------------	---

LIST OF TABLES

Table 1: City of Selawik Utility Conflicts	7
Table 2: Utility Relocation – Preliminary Cost Estimate	12

LIST OF APPENDICES

Appendix A.....	Utility Plan Sheets
Appendix B	Barge Landing Access Road Photos

LIST OF ACRONYMS

AVEC.....Alaska Village Electric Cooperative, Inc.
DOT&PF.....State of Alaska Department of Transportation and Public Facilities
OH Overhead
O&M..... Operations & Maintenance
PO Post Office
ROW right-of-way
UCR Utility Conflict Report

1.0 INTRODUCTION

This Utility Conflict Report (UCR) was prepared for the Selawik Barge Landing Access Road and Boardwalks Improvement project. The State of Alaska Department of Transportation and Public Facilities (DOT&PF) is proposing this project to widen the existing Barge Landing Access Road to 20 feet and improve some of the existing board-roads located throughout the City of Selawik. The board-roads are being replaced predominantly in the same location and therefore new operation and maintenance (O&M) and foundation supports issues are not expected. A proposed 150 foot by 266 foot by 4 foot thick staging pad is also included in this project as shown in Figure 1. The staging pad will function as storage for connexes and supplies. Project limits are shown in Figure 1 and include the following:

- Barge Landing Access Road and Staging Pad Area (2,400 feet)
- Skin Street (1,500 feet),
- River Street (1,500 feet),
- Selawik Street (1,000 feet),
- Community Avenue (500 feet),
- North Tundra St (East of High School - 600 feet),
- Third Avenue Extension (200 feet), and
- Fourth Avenue Extension (200 feet).

Selawik is a rural northern arctic community and typically its utilities are above-ground. Impacts to existing utilities are anticipated to be a minimal as most of the board-roads are being reconstructed in place. The widening of the barge landing road will impact the electric and telecommunication lines in order to attain vertical clearance for the staging pad. Utiliducts exist throughout Selawik containing a mix of utilities (typically water and sanitary sewer).

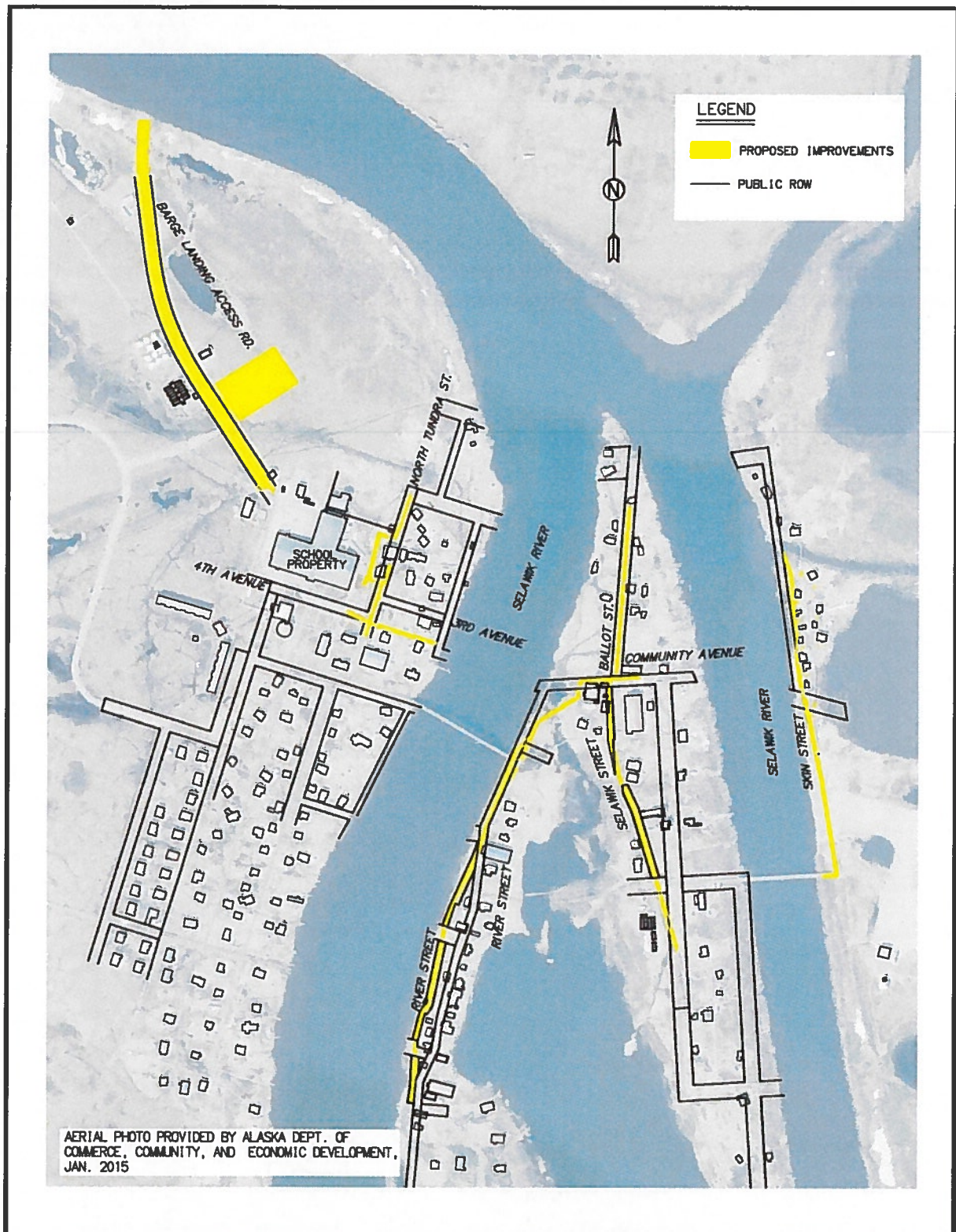


Figure 1: Project Layout Plan

1.1 Purpose

This report identifies existing utilities that are in conflict with the proposed improvements known at the time of the Draft UCR and 35% design level. The existing basemap currently does not include elevation information for the above-grade arctic water or sewer lines, or for the utilidors and will be verified. Board-roads will be constructed over utilidor, water, and sewer lines.

1.2 Project Utilities and Owner Contacts

The Utilities serving the City of Selawik within the project area include:

- OTZ Telephone Cooperative, Inc. – telecommunications lines,
- Alaska Village Electric Cooperative, Inc. (AVEC) – electric and fuel lines, and
- City of Selawik utilities –water, sewer, cable TV, and utilidors.

Appendix A provides plan and profile drawings, and Appendix B provides project typical sections and cross-section drawings (*to be provided in the second draft*). The existing utility information is based on field survey and record drawings.

Telecommunication:

OTZ Telephone Cooperative, Inc.
Contact: Gerald Gardner
PO Box 324
Kotzebue, Alaska 99752
Phone: (907) 442-3114
Phone: (888) 449-2411
Email: ggardner@mscon.com

Electric Power and Fuel:

AVEC
Contact: Bill Stamm
4831 Eagle St.
Anchorage, Alaska 99503
Phone: (907) 561-1818
Email: bstamm@avec.org

City of Selawik:

Wastewater Collection and Treatment System
PO Box 99
Selawik, Alaska 99770
Phone: (907) 484-2132
Email: city_of_selawik@hotmail.com

Water Distribution and Treatment System
PO Box 99
Selawik, Alaska 99770
Phone: (907) 484-2132
Email: city_of_selawik@hotmail.com

Cable Television
PO Box 99
Selawik, Alaska 99770
Phone: (907) 484-2132
Email: city_of_selawik@hotmail.com

1.3 Proposed Improvements

The Barge Landing Access Road will be widened from 14 feet to 20 feet with 3:1 side slopes. A staging pad is provided at 266 feet by 150 feet with security fencing and lighting. The existing road is approximately 2-3 feet above grade. The proposed road profile and staging pad is approximately 4 feet above the surrounding original ground.

Board-roads are proposed to be 12 feet wide in general, narrowed to 8 feet along a portion of Skin Street due to limited space. Both at-grade and elevated board-roads will be constructed.

2.0 FINDINGS BY UTILITY

This section describes existing utility facilities within the project corridor and lists conflicts for each utility expected to result from proposed project improvements. AVEC and OTZ telephone Cooperative have been contacted to discuss the project and possible conflicts.

2.1 OTZ Telephone Cooperative, Inc. (OTZ Telephone)

OTZ Telephone Cooperative Inc. owns and operates above ground telecommunication lines running north/south along the east side of the Barge Landing Access Road. Telecommunication lines are also found along or crossing the board-roads.

Conflicts with the telephone utility will occur along the Barge Landing Access Road and at the proposed staging pad. Elevations on the lines were surveyed over the access road, but not on the line running parallel (east side) of the road. The required vertical clearance is 20 feet, 6 inches. The existing vertical clearance is approximately 15-feet. Eight poles will need to be replaced and three lines raised in order to achieve the required vertical clearance from Station 10+10 to beyond 15+20 on the Barge Landing Access Road and entrance to the Staging Pad (see Appendix A and photos in Appendix C). The OTZ telephone line elevation along Barge Landing Access Road will be collected for design.

The National Electric Safety Code requires 18 feet, six inches of vertical clearance. There are a number of vertical clearance conflicts, identified in Table 1, where adjustment will be required.

2.2 AVEC, INC. Lines

AVEC owns and operates above ground electric and fuel lines near the project area. Overhead electric lines run parallel to (on the west side) and cross the access road. They also cross board-roads numerous times, but do not have any conflicts. There are no anticipated conflicts with the fuel lines owned by AVEC.

Overhead electric lines running north to south along the west side of Barge Landing Access Road have vertical clearance conflicts. It is assumed three power poles will need to be replaced.

A design exception will be required for the vertical clearance to overhead utilities above existing driveways along the west side of the Barge Landing Access Road. The existing clearance height

at each driveway is currently unknown, but the vertical clearance is questionable based on nearby field measurements. The design vehicle for the Barge Landing Access Road and Staging pad is a Class VII Rough Terrain Forklift, and the design vehicle for the other driveways will be a side by side ATV with a trailer.

If a design exception is not granted, the elevation of the AVEC power lines at driveways along the Barge Landing Access Road will be collected for vertical clearance design.

The National Electric Safety Code requires 18 feet, six inches of vertical clearance. There are a number of vertical clearance conflicts, identified in Table 1, where adjustment will be required.

2.3 City of Selawik Utilities

The City of Selawik owns and operates water, sewer, and cable TV. Utiliducts and insulated piping is a combination of 6-inch water, 6-inch vacuum sewer, and 4-inch pressure sewer based on record drawings. There are no conflicts along the Barge Landing Access Road and the board-roads will be elevated over the existing utiliducts. Proper precautions during construction will avoid water, sewer, and cable TV conflicts.

Table 1: City of Selawik Utility Conflicts

Utility Owner and/or Contact Name	Conflict ID	Drawing or Sheet No.	Utility Type	Size and/or Material	Utility Conflict Description	Start Station	Start Offset	End Station	End Offset	Utility Investigation Level Needed	Test Hole	Recommended Action or Resolution	Estimated Resolution Date	Resolution Status
OTZ Telephone Cooperative, Inc.	1	3 & 4	Communications	Unknown	The telephone lines runs parallel to the road, crosses the road at two locations, and the future staging pad driveway. Due to the amount the lines need to be raised, all poles are identified for replacement.	"BL" 10+50	19' RT	"BL" 16+29	22' RT	Confirm with OTZ that all poles should be replaced.	N/A	Install 6 taller poles to raise the lines.	TBD	Conflict identified
OTZ Telephone Cooperative, Inc.	2	3	Communications	Unknown	Overhead crossing of the access road with insufficient vertical clearance.	"BL" 10+95	10' LT	Crossing	11' RT	Investigate conflict with overhead electric lines running north / south.	N/A	Install one taller pole on the west side of the access road.	TBD	Conflict identified
AVEC	3	3	Electric	Unknown	The overhead electric bottom wires are cable guy wires.	"BL" 12+61	29' RT	"BL" 13+31	32' LT	Discuss guy options with AVEC.	N/A	Raise the existing guy wires or re-guy the poles by other means. Confirm the next higher up utility line has sufficient clearance.	TBD	Conflict identified
AVEC	4	3	Electric	Unknown	The guy wire over the road must be adjusted for clearance. This angle pole must be re-guyed.	"BL" 13+35	33' LT	--	--	Discuss pole guy options with AVEC.	N/A	Re-guy the power pole.	TBD	Conflict identified
AVEC	5	3	Electric	Unknown	The overhead power to the storage building is assumed to be too low based on other crossing elevations. No survey data was collected.	"BL" 10+30	--	--	--	Field measure elevation of wire. Investigate options to raise the line.	N/A	Raise the power mast on the building if possible. Replace the adjacent pole if necessary.	TBD	Conflict identified
OTZ Telephone Cooperative, Inc.	6	3	Communications	Unknown	Overhead crossing of the access road with insufficient vertical clearance.	"BL" 15+04	30' LT	"BL" 15+04	26' RT	Confirm with OTZ that poles on both sides of the access road must be replaced.	N/A	Install taller pole on the west side of the access road.	TBD	Conflict identified
AVEC	7	4	Electric	Unknown	Overhead crossing of the access road with insufficient vertical clearance.	"BL" 16+10	24' RT	"BL" 16+52	34' LT	Confirm only the pole on the east side needs to be replaced.	N/A	Install taller pole on east side of access road.	TBD	Conflict identified
AVEC/OTZ Telephone Cooperative, Inc	8	6	Electric/Telephone	Unknown	Overhead crossing of the access road.	"4W" 10+1 2	6' LT	"AW" 10+1 1	6' RT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict identified

Utility Owner and/or Contact Name	Conflict ID	Drawing or Sheet No.	Utility Type	Size and/or Material	Utility Conflict Description	Start Station	Start Offset	End Station	End Offset	Utility Investigation Level Needed	Test Hole	Recommended Action or Resolution	Estimated Resolution Date	Resolution Status
AVEC/ OTZ Telephone Cooperative, Inc	9	6	Electric/Telephone	Unknown	Overhead crossing of the access road.	"4W"10+07	10' RT	"4E"20+05	14' LT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified
AVEC	10	6	Electric	Unknown	Overhead crossing of the access road.	"4W"10+07	25' RT	"4E"20+06	46' RT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified
AVEC	11	6	Electric	Unknown	Overhead crossing of the access road.	"4W"10+07	20' RT	"4E"20+06	23' RT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified
AVEC/ OTZ Telephone Cooperative, Inc.	12	6	Electric/Telephone	ELV=27.3'	Overhead crossing of the access road.	"4E"21+65	5' LT	"4E"21+65	5' RT	Discuss options with owners	N/A	Raise the Telecommunication and Power Lines.	TBD	Conflict Identified
AVEC	13	6	Electric	ELV=29.2'	Overhead crossing of the access road.	"4E"21+66	5' LT	"4E"21+86	5' RT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified
OT OTZ Telephone Cooperative, Inc.	14	6	Telephone	Unknown	Overhead crossing of the access road.	"TS"10+64	10'L	"TS"10+80	12' LT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified
OT OTZ Telephone Cooperative, Inc.	15	6	Telephone	ELV=23.6'	Overhead crossing of the access road.	"4E"21+74	5' LT	"4E"21+92	5' RT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified
AVEC	16	6	Electric	ELV=25'	Overhead crossing of the access road.	"4E"22+54	5' LT	"4E22+60	5' RT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified
AVEC	17	6	Electric	Unknown	Guy wire crossing of the access road.	"TS"10+06	6' RT	"TS"10+48	6' LT	Discuss options with owners	N/A	Raise the Power Line..	TBD	Conflict Identified
AVEC	18	6	Electric	Unknown	Guy wire crossing of the access road.	"TS"10+25	6' RT	"TS"10+52	6' LT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified
AVEC/ OTZ Telephone Cooperative, Inc.	19	6	Electric/Telephone	ELV=30.0'	Overhead crossing of the board road.	"TS"10+61	6' LT	"TS"10+61	6' RT	Discuss options with owners	N/A	Raise the Telecommunication and Power Line.	TBD	Conflict Identified
AVEC	20	6	Electric	Unknown	Overhead crossing of the board road.	"TS"12+57	6' LT	"TS"12+78	10' RT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified
OT OTZ Telephone Cooperative, Inc.	21	6	Telephone	Unknown	Overhead crossing of the board road.	"TS"12+74	8' LT	"TS"12+88	10' RT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified
AVEC/ OTZ Telephone Cooperative, Inc.	22	6	Electric/Telephone	Unknown	Overhead crossing of the board road.	"TS"13+03	13' LT	"TS"13+06	10' RT	Discuss options with owners	N/A	Raise the Telecommunication and Power Lines.	TBD	Conflict Identified
OT OTZ Telephone Cooperative, Inc.	23	6	Telephone	Unknown	Overhead crossing of the board road.	"TS"13+15	10' RT	"TS"13+18	0' LT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified
AVEC	24	6	Electric	Unknown	Overhead crossing of the board road.	"TS"13+16	10' RT	"TS"13+18	0' LT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified

Utility Owner and/or Contact Name	Conflict ID	Drawing or Sheet No.	Utility Type	Size and/or Material	Utility Conflict Description	Start Station	Start Offset	End Station	End Offset	Utility Investigation Level Needed	Test Hole	Recommended Action or Resolution	Estimated Resolution Date	Resolution Status
AVEC/ OTZ Telephone Cooperative, Inc. AVEC	25	7	Electric/Telephone	Unknown	Overhead crossing of the board road.	"SP"10+50	8' LT	"SP"11+00	6' LT	Discuss options with owners	N/A	Raise the Telecommunication and Power Lines.	TBD	Conflict Identified
AVEC/ OTZ Telephone Cooperative, Inc. AVEC	26	7	Electric	Unknown	Overhead crossing of the board road.	"SP"11+07	6' RT	"SP"11+16	6' LT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified
AVEC/ OTZ Telephone Cooperative, Inc. AVEC	27	7	Electric/Telephone	Unknown	Overhead crossing of the board road.	"SP"11+26	6' LT	"SP"11+26	6' RT	Discuss options with owners	N/A	Raise the Telecommunication and Power Lines.	TBD	Conflict Identified
AVEC/ OTZ Telephone Cooperative, Inc. AVEC	28	7	Electric	Unknown	Overhead crossing of the board road.	"SP"10+90	60' RT	"SP"11+05	80' RT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified
OTZ Telephone Cooperative, Inc.	29	7	Telephone	Unknown	Overhead crossing of the board road.	"SP"11+00	63' RT	"SP"11+13	80' RT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified
AVEC/ OTZ Telephone Cooperative, Inc.	30	7	Electric/Telephone	Unknown	Overhead crossing of the board road.	"SP"11+28	64' LT	"SP"11+30	84' RT	Discuss options with owners	N/A	Raise the Telecommunication and Power Lines.	TBD	Conflict Identified
AVEC/ OTZ Telephone Cooperative, Inc. AVEC	31	7	Electric/Telephone	Unknown	Overhead crossing of the board road.	"SP"11+40	84' RT	"SP"11+45	75' RT	Discuss options with owners	N/A	Raise the Telecommunication and Power Lines.	TBD	Conflict Identified
AVEC	32	7	Electric	Unknown	Overhead crossing of the board road.	"SP"14+32	6' RT	"SP"14+35	6' LT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified
AVEC	33	7	Electric	Unknown	Overhead crossing of the board road.	"SP"14+42	6' RT	"SP"14+42	6' LT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified
AVEC	34	7	Electric	Unknown	Overhead crossing of the board road.	"RS"10+34	8' RT	"RS"10+37	8' LT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified
AVEC	35	8	Electric	Unknown	Overhead crossing of the board road.	"RS"28+10	6' RT	"RS"28+31	8' LT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified
AVEC OTZ Telephone Cooperative, Inc. OTZ Telephone Cooperative, Inc. AVEC	36	8	Telephone	Unknown	Overhead crossing of the board road.	"RS"28+15	6' RT	"RS"28+31	6' LT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified
AVEC	37	9	Telephone	ELV=25.9	Overhead crossing of the board road.	"SS"12+64	6' LT	"SS"12+99	10' RT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified
AVEC/ OTZ Telephone Cooperative, Inc. AVEC	38	9	Electric	ELV=27.1	Overhead & guy wire crossing of the board road.	"SS"13+02	6' RT	"SS"13+04	6' RT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified
AVEC/ OTZ Telephone Cooperative, Inc. AVEC/ OTZ Telephone Cooperative, Inc.	39	9	Electric/Telephone	ELV=23.8'	Overhead crossing of the board road.	"SS"13+29	6' RT	"SS"14+10	7' LT	Discuss options with owners	N/A	Raise the Telecommunication and Power Lines.	TBD	Conflict Identified
AVEC/ OTZ Telephone Cooperative, Inc.	40	9	Electric/Telephone	Unknown	Overhead crossing of the board road.	"SS"14+95	6' LT	"SS"14+96	6' RT	Discuss options with owners	N/A	Raise the Telecommunication and Power Lines.	TBD	Conflict Identified

Utility Owner and/or Contact Name	Conflict ID	Drawing or Sheet No.	Utility Type	Size and/or Material	Utility Conflict Description	Start Station	Start Offset	End Station	End Offset	Utility Investigation Level Needed	Test Hole	Recommended Action or Resolution	Estimated Resolution Date	Resolution Status
OTZ Telephone Cooperative, Inc.	41	9	Telephone	ELV=24.2'	Overhead crossing of the board road.	"SS"15+14	6' LT	"SS"15+34	10' RT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified
OTZ Telephone Cooperative, Inc.	42	9	Telephone	ELV=18.1'	Overhead crossing of the board road.	"SS"15+95	10' RT	"SS"16+18	6' LT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified
AVEC	43	9	Electric	ELV'27.2'	Overhead crossing of the board road.	"SS"16+20	6' RT	"SS"16+30	6' LT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified
AVEC/OTZ Telephone Cooperative, Inc.	44	9	Electric/Telephone	ELV=24.5'	Overhead crossing of the board road.	"SS"17+29	6' LT	"SS"17+52	6' RT	Discuss options with owners	N/A	Raise the Telecommunication and Power Lines.	TBD	Conflict Identified
OTZ Telephone Cooperative, Inc.	45	9	Telephone	ELV=21.0'	Overhead crossing of the board road.	"SS"19+45	6' LT	"SS"19+45	6' RT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified
OTZ Telephone Cooperative, Inc.	46	9	Telephone	ELV=19.5'	Overhead crossing of the board road.	"SS"19+50	6' LT	"SS"19+52	6' RT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified
AVEC/OTZ Telephone Cooperative, Inc.	47	9	Electric/Telephone	ELV=23.1'	Overhead crossing of the board road.	"SS"19+60	6' LT	"SS"19+60	6' RT	Discuss options with owners	N/A	Raise the Telecommunication and Power Lines.	TBD	Conflict Identified
OTZ Telephone Cooperative, Inc.	48	9	Telephone	ELV=20.2	Overhead crossing of the board road.	"SS"19+73	6' RT	"SS"19+76	10' LT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified
OTZ Telephone Cooperative, Inc.	49	9	Telephone	ELV=20.4	Overhead crossing of the board road.	"SS"21+28	6' LT	"SS"21+29	30' RT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified
AVEC	50	9	Electric	Unknown	Overhead crossing of the board road.	"SS"21+30	6' RT	"SS"21+30	20' RT	Discuss options with AVEC	N/A	Raise the Power Line.	TBD	Conflict Identified
AVEC	51	10	Electric	Unknown	Overhead crossing of the board road.	"BS"11+68	5' RT	"BS"12+66	5' LT	Discuss options with AVEC	N/A	Raise the Power Line.	TBD	Conflict Identified
AVEC	52	10	Electric	Unknown	Overhead crossing of the board road..	"BS"16+90	5' LT	"BS"17+10	5' RT	Discuss options with AVEC	N/A	Raise the Power Line.	TBD	Conflict Identified
AVEC	53	11	Electric	Unknown	Overhead crossing of the board road.	"CA"10+00	6' RT	"CA"10+08	22' RT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified
OTZ Telephone Cooperative, Inc.	54	11	Telephone	Unknown	Overhead crossing of the board road.	"CA"10+00	2' RT	"CA"10+09	16' RT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified
OTZ Telephone Cooperative, Inc.	55	11	Telephone	Unknown	Overhead crossing of the board road.	"CA"11+14	10' RT	"CA"11+56	6' LT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified
AVEC	56	11	Electric	Unknown	Overhead crossing of the board road.	"CA"11+29	9' LT	"CA"11+42	9' LT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified

Utility Owner and/or Contact Name	Conflict ID	Drawing or Sheet No.	Utility Type	Size and/or Material	Utility Conflict Description	Start Station	Start Offset	End Station	End Offset	Utility Investigation Level Needed	Test Hole	Recommended Action or Resolution	Estimated Resolution Date	Resolution Status
AVEC	57	11	Electric	Unknown	Overhead crossing of the board road.	"CA"11+62	6' RT	"CA"11+62	6' RT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified
AVEC	58	13	Electric	Unknown	Overhead crossing of the board road.	"BL"12+81	10' RT	"BL"13+15	18' LT	Discuss options with owners	N/A	Raise the Power Line.	TBD	Conflict Identified
OTZ Telephone Cooperative, Inc.	59	13	Telephone	Unknown	Overhead crossing of the board road.	"BL"13+25	28' RT	"BL"13+49	27' RT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified
OTZ Telephone Cooperative, Inc.	60	13	Telephone	Unknown	Overhead crossing of the board road.	"BL"15+07	10' LT	"BL"15+11	10' RT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified
OTZ Telephone Cooperative, Inc.	61	13	Telephone	Unknown	Overhead crossing of the board road.	"BL"15+41	25' RT	"BL"15+64	25' RT	Discuss options with owners	N/A	Raise the Telecommunication Line.	TBD	Conflict Identified

3.0 COST ESTIMATE

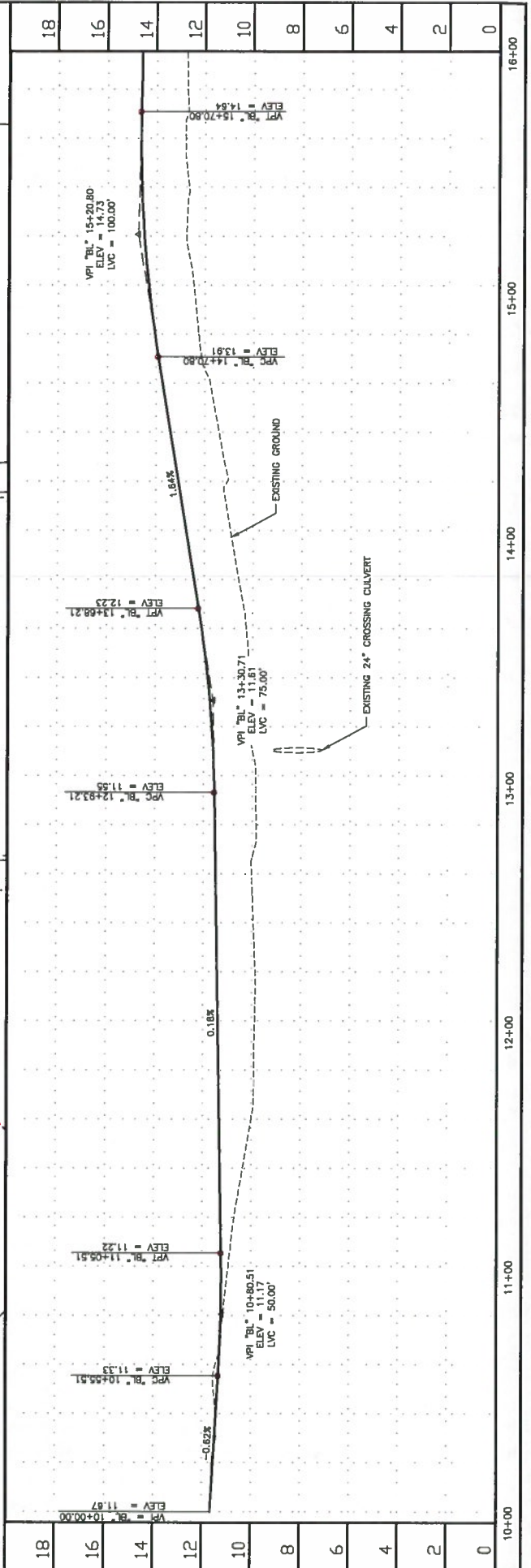
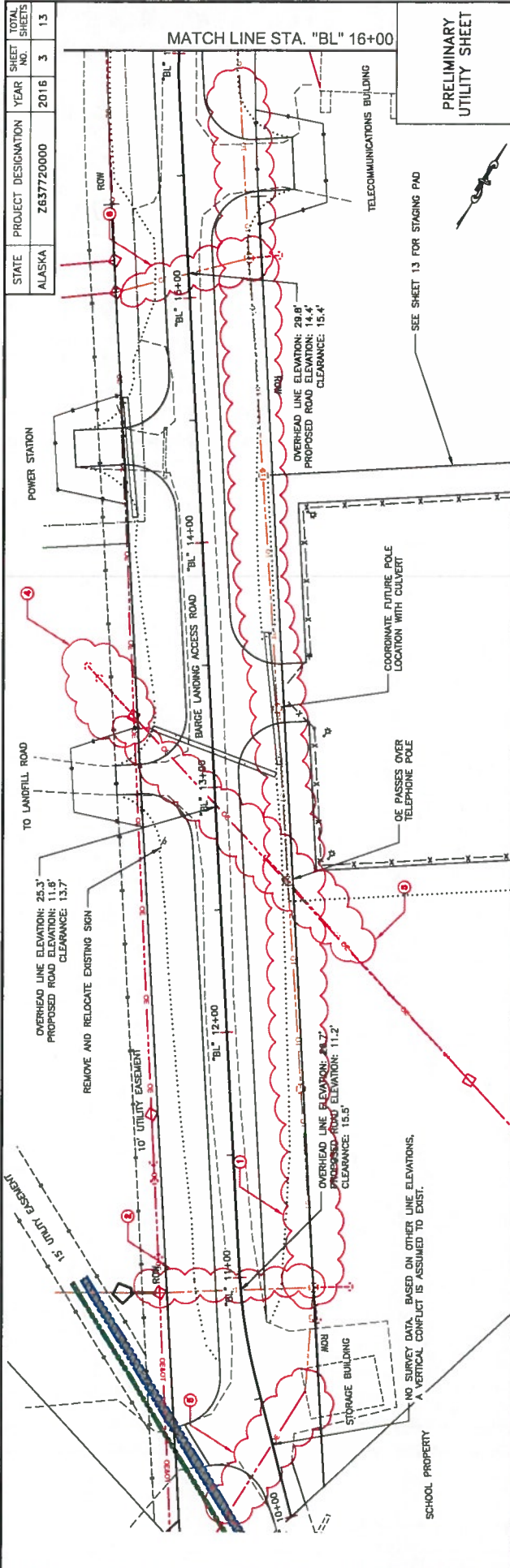
The utility companies will be notified of potential conflicts, and each utility will develop conceptual plans and estimates that address the identified conflicts. Preliminary cost estimates for the utility relocations are shown in Table 2 and include a 30% contingency.

Table 2: Utility Relocation – Preliminary Cost Estimate

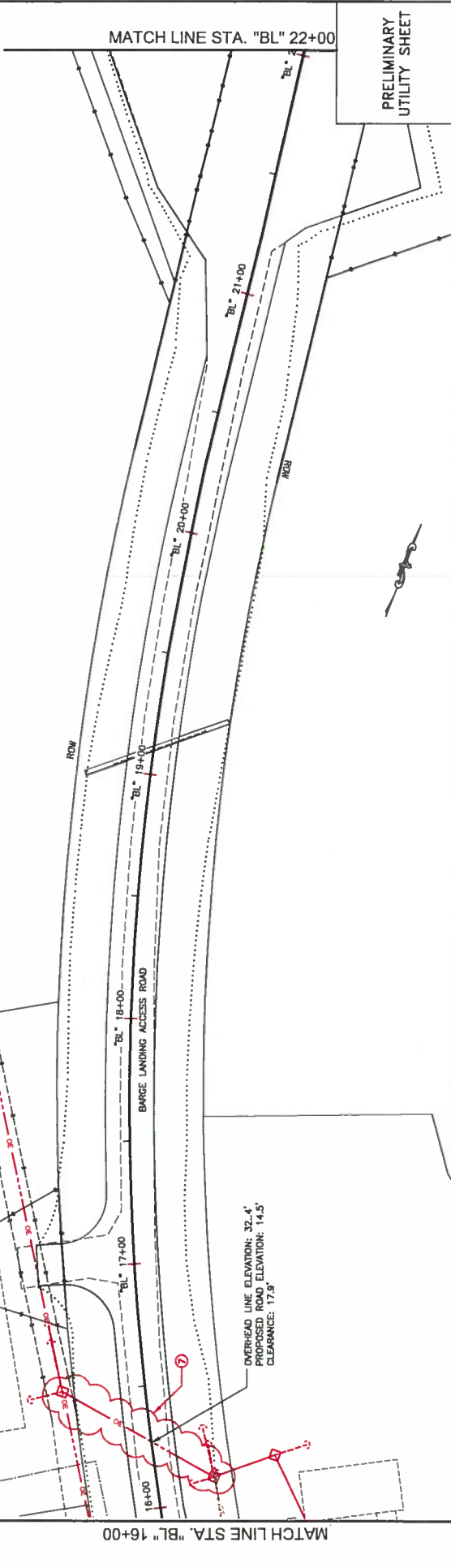
Description	Estimated Cost
OTZ Telephone	\$375,000
AVEC	\$225,000
City of Selawik	\$0
Total:	\$600,000

APPENDIX A

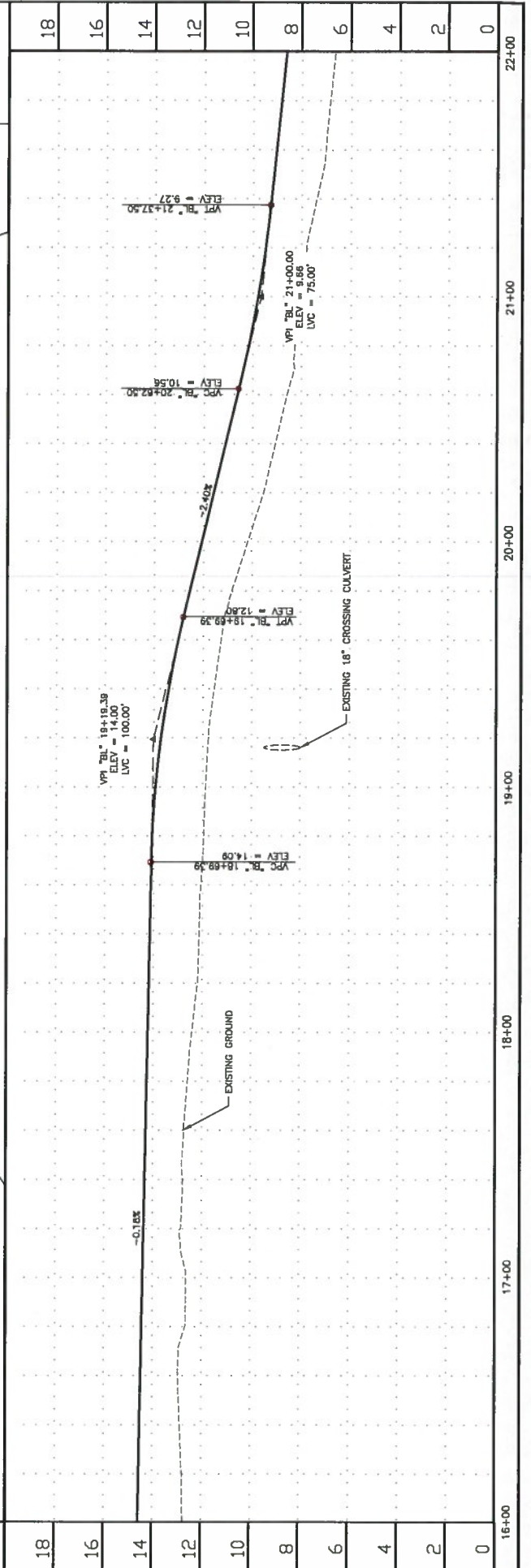
Utility Plan Sheets



STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
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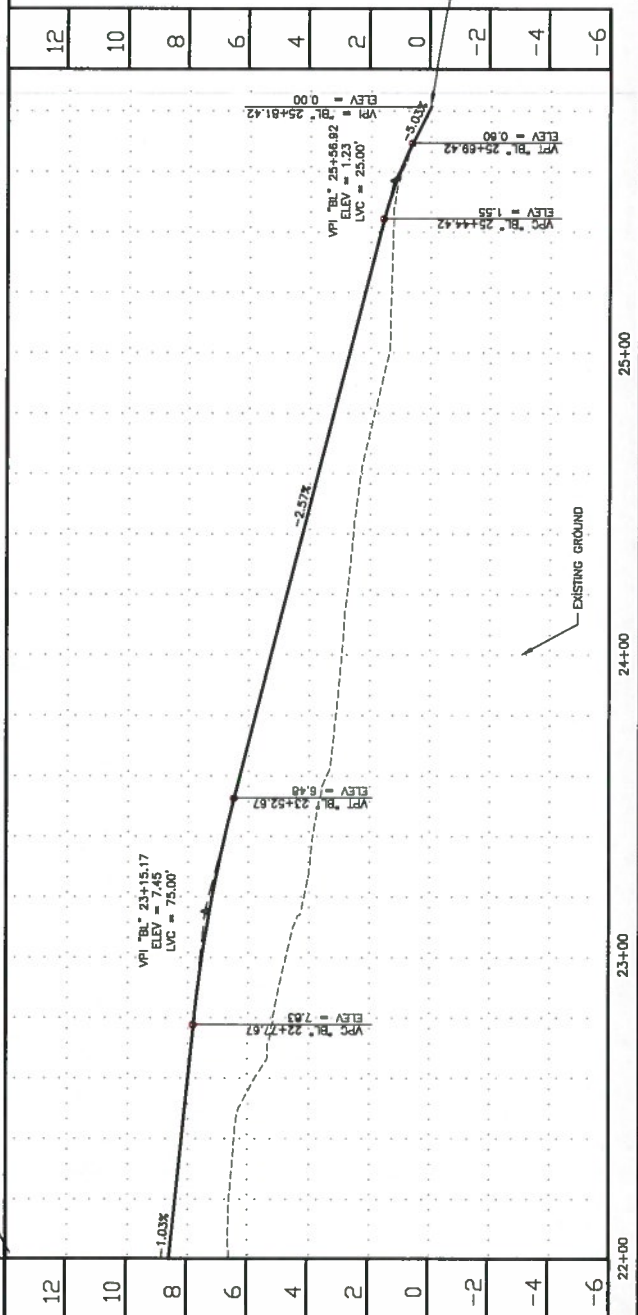
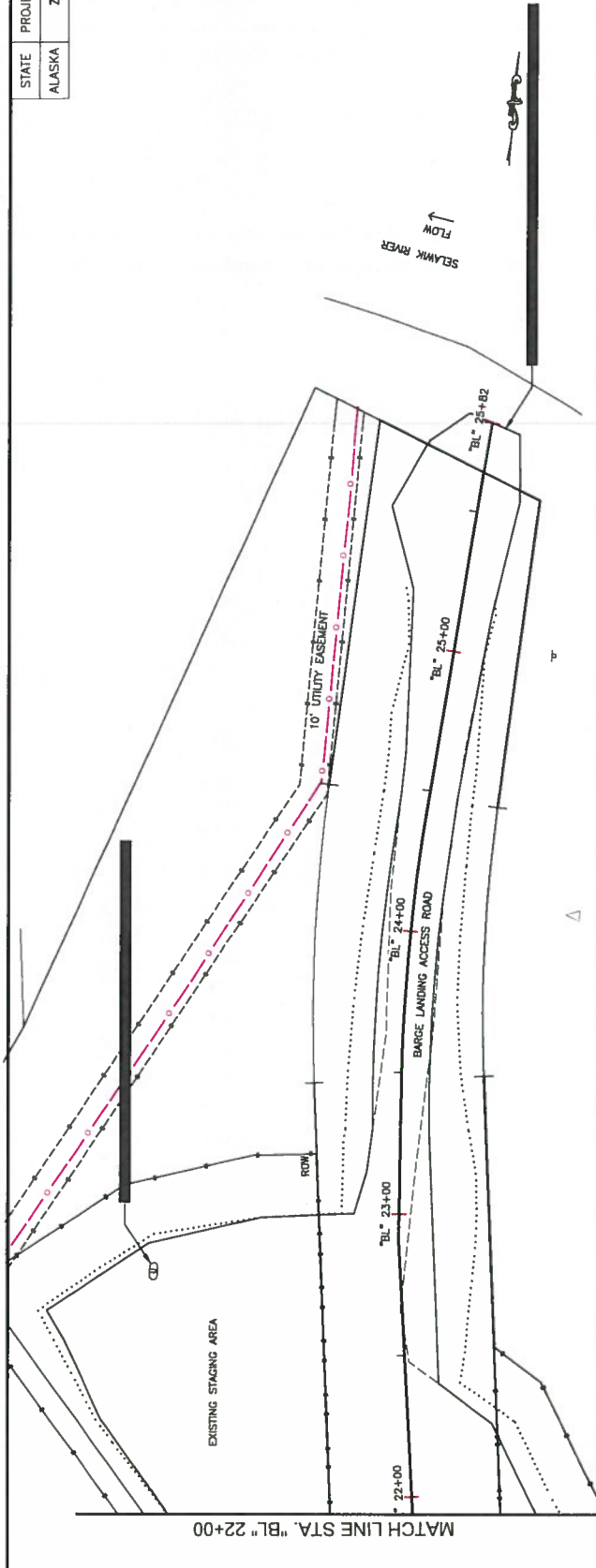


PRELIMINARY
UTILITY SHEET

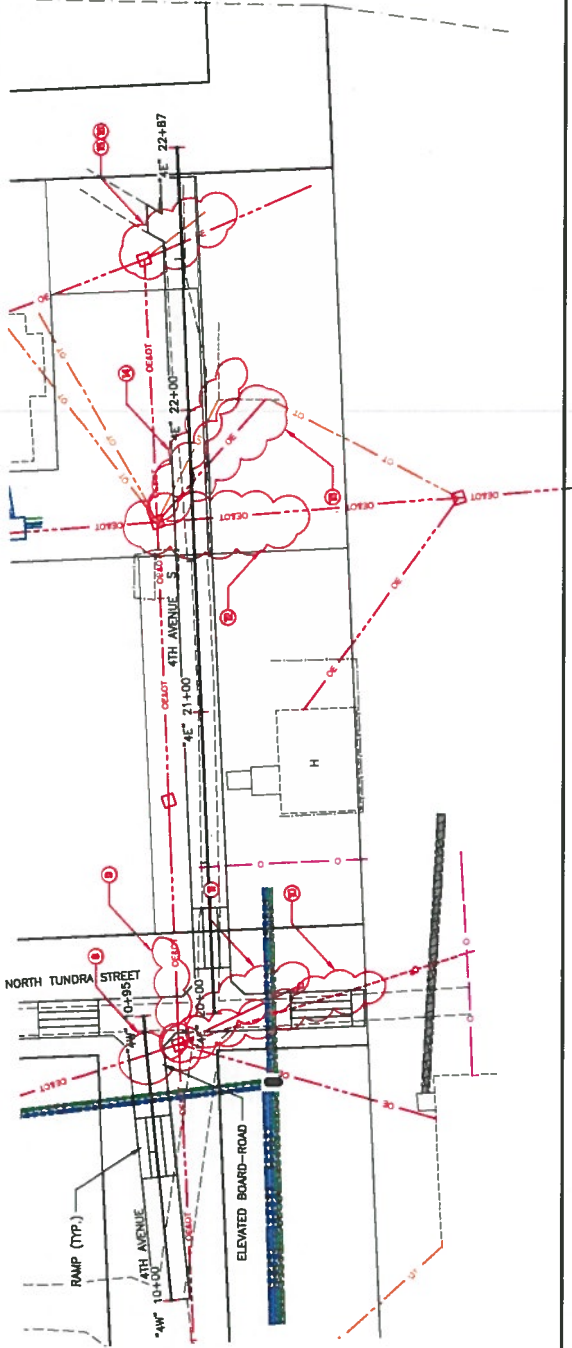


STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
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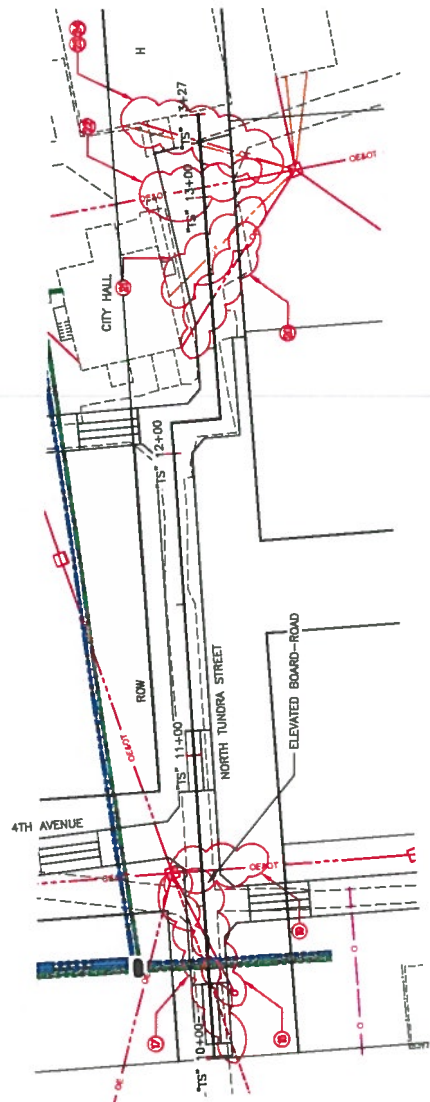
PRELIMINARY UTILITY SHEET



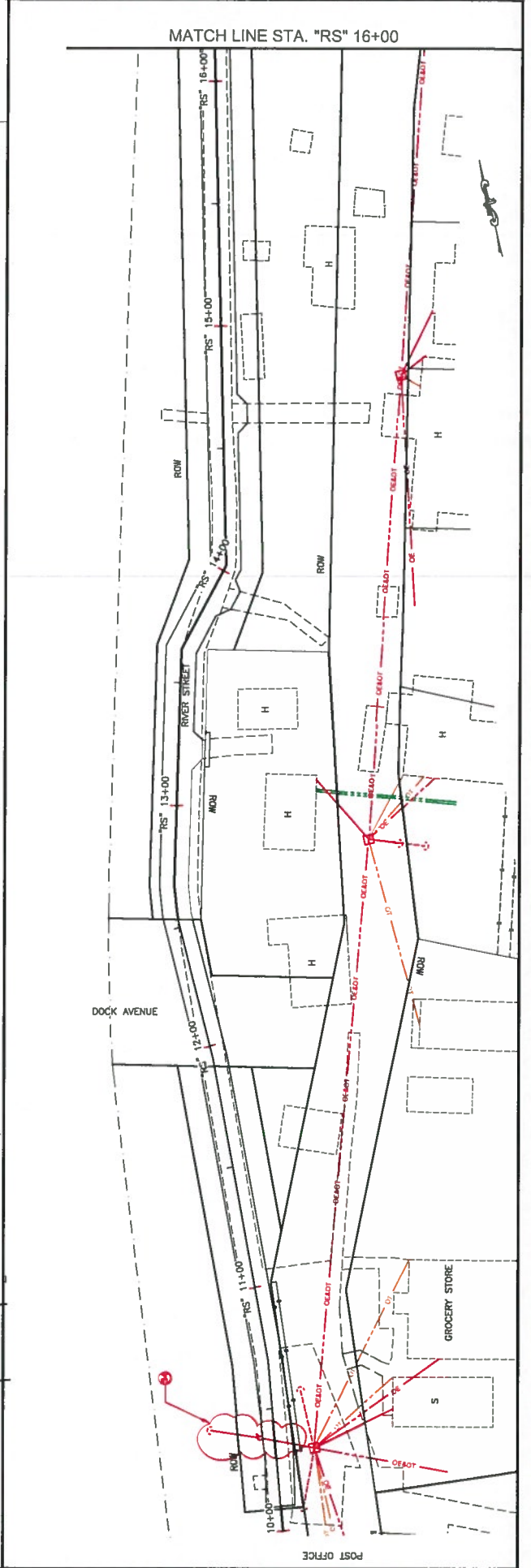
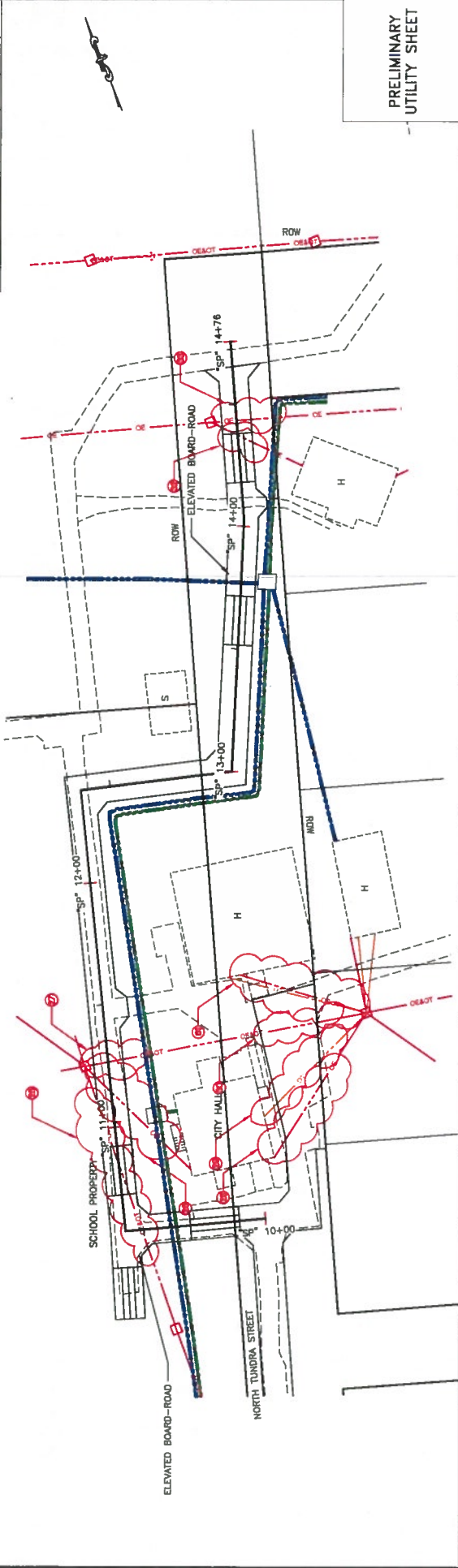
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	Z637720000	2016	6	13



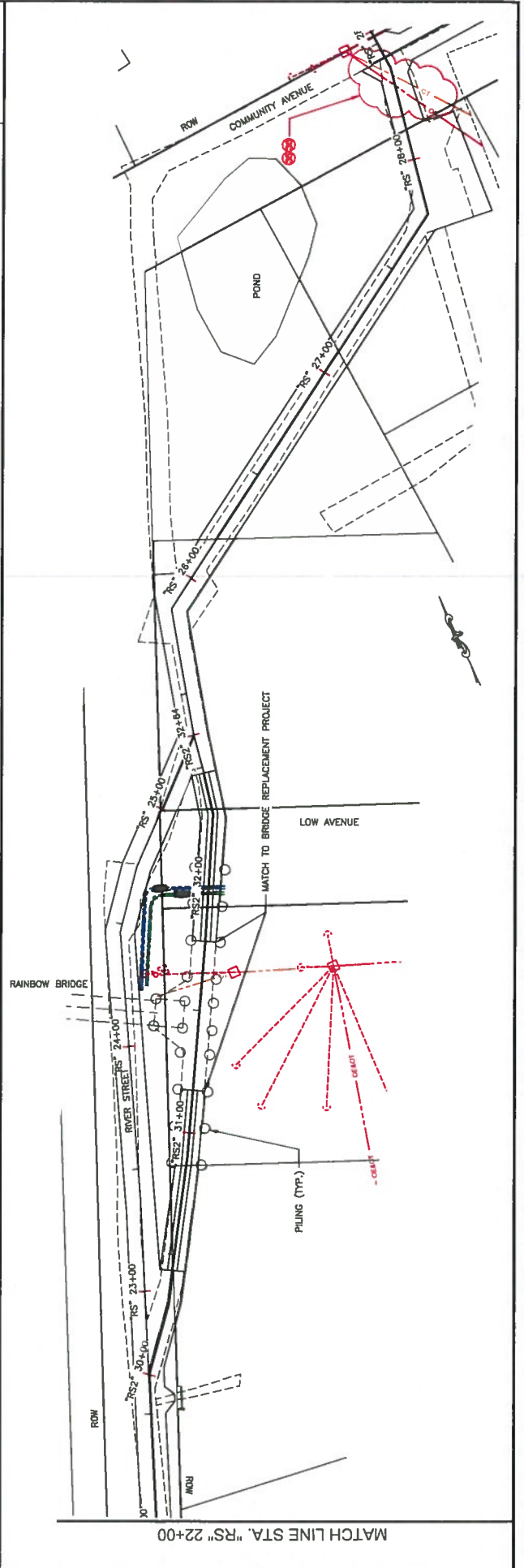
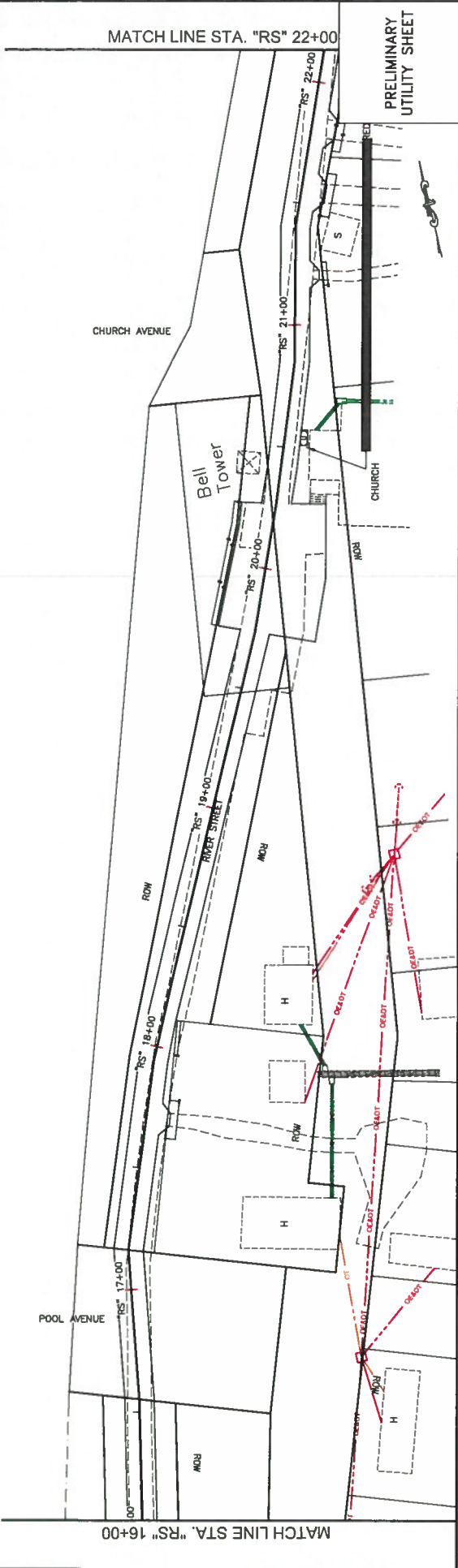
PRELIMINARY
UTILITY SHEET



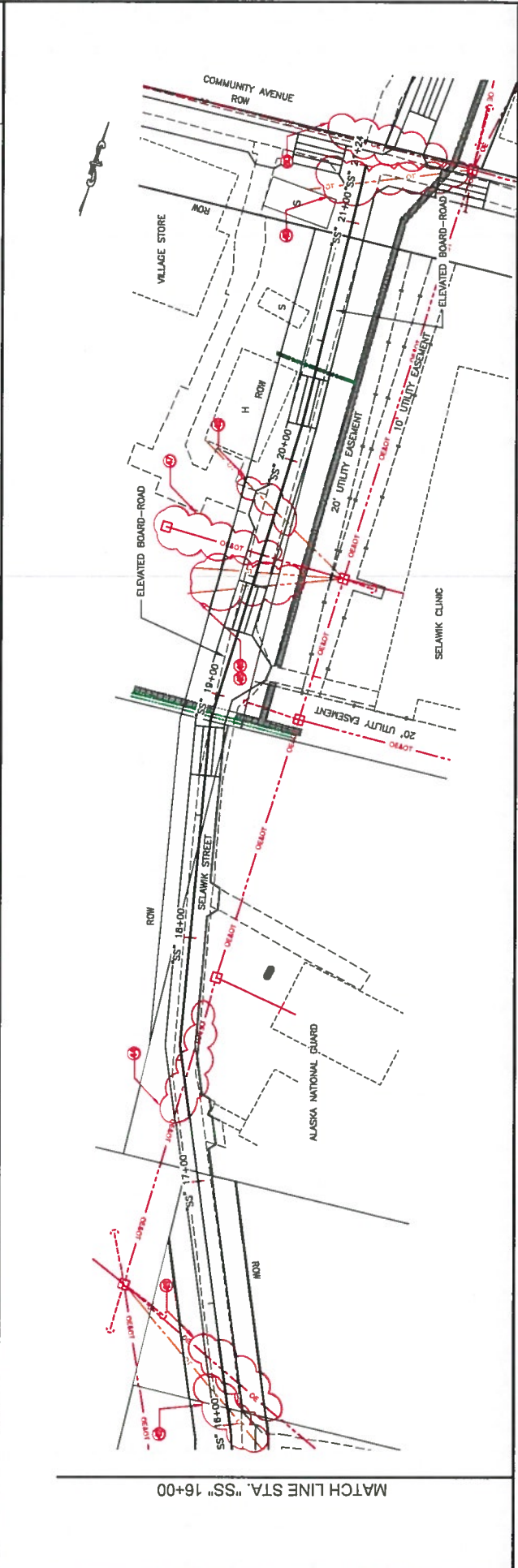
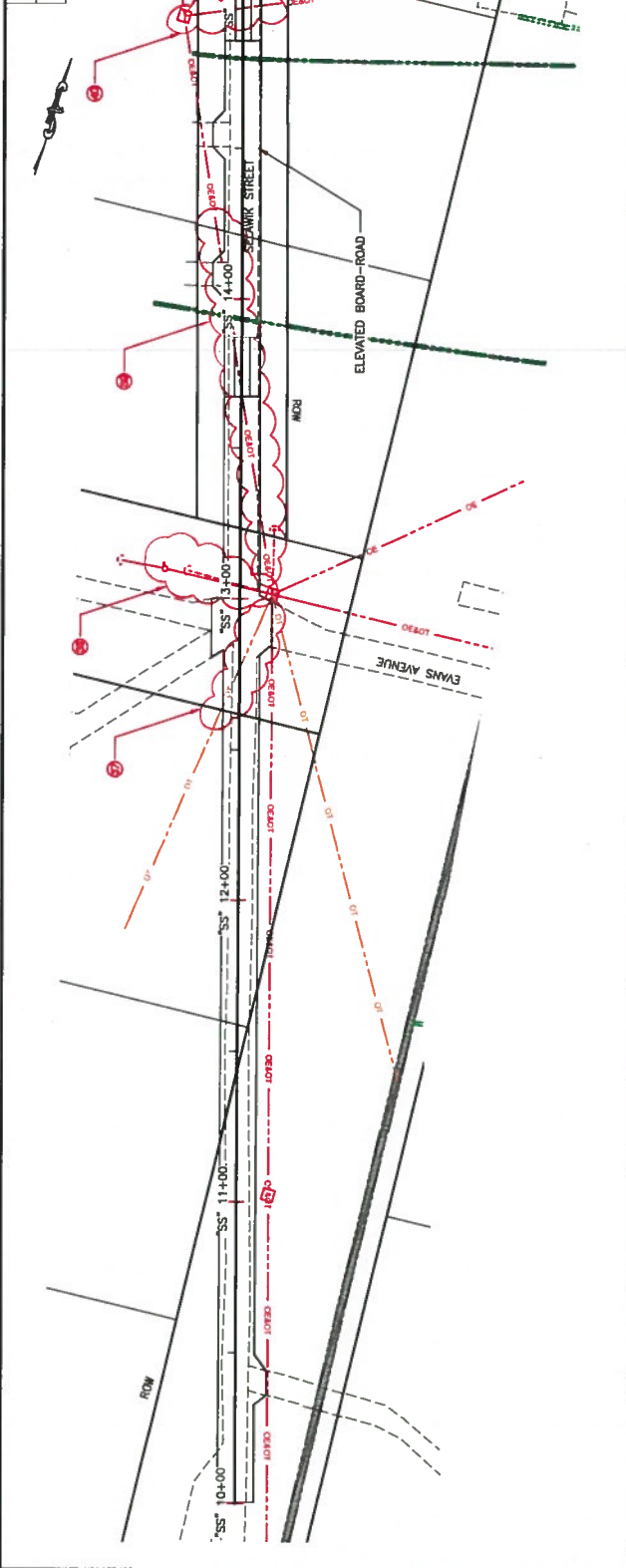
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	Z637720000	2016	7	13



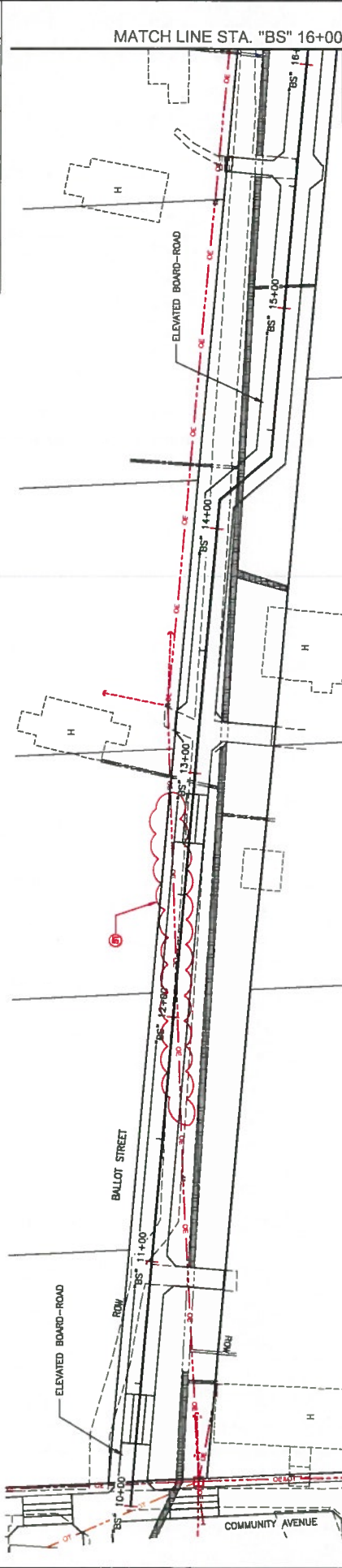
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	Z637720000	2016	B	13



STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	Z637720000	2016	9	13

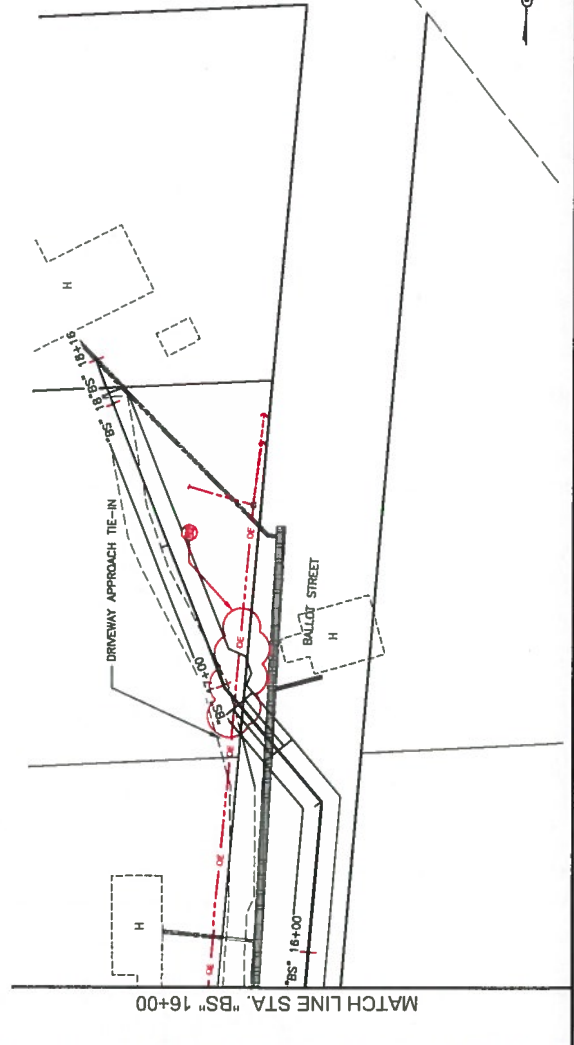


STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	Z637720000	2016	10	13

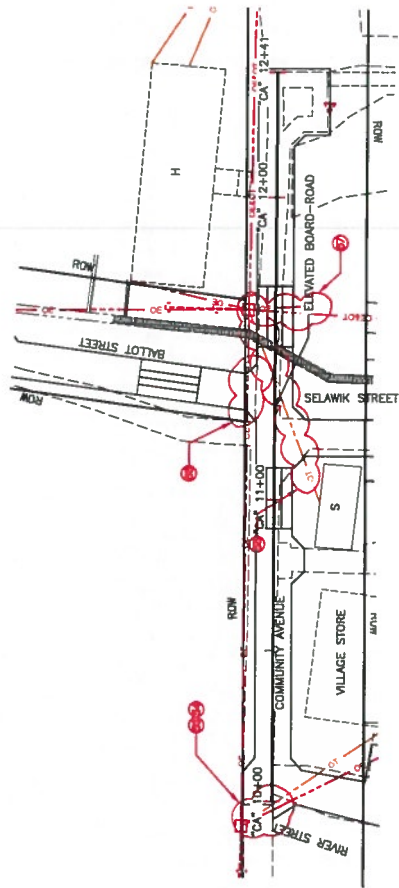


MATCH LINE STA. "BS" 16+00

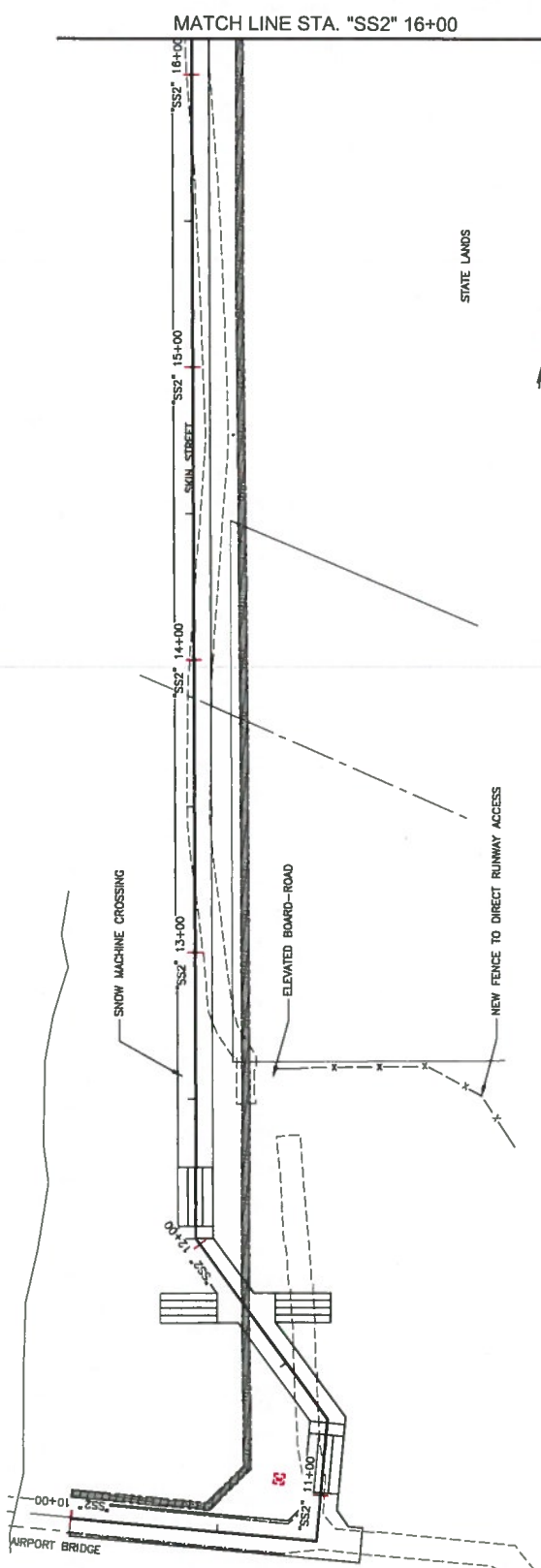
PRELIMINARY UTILITY SHEET



STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	Z637720000	2016	11	13



PRELIMINARY UTILITY SHEET

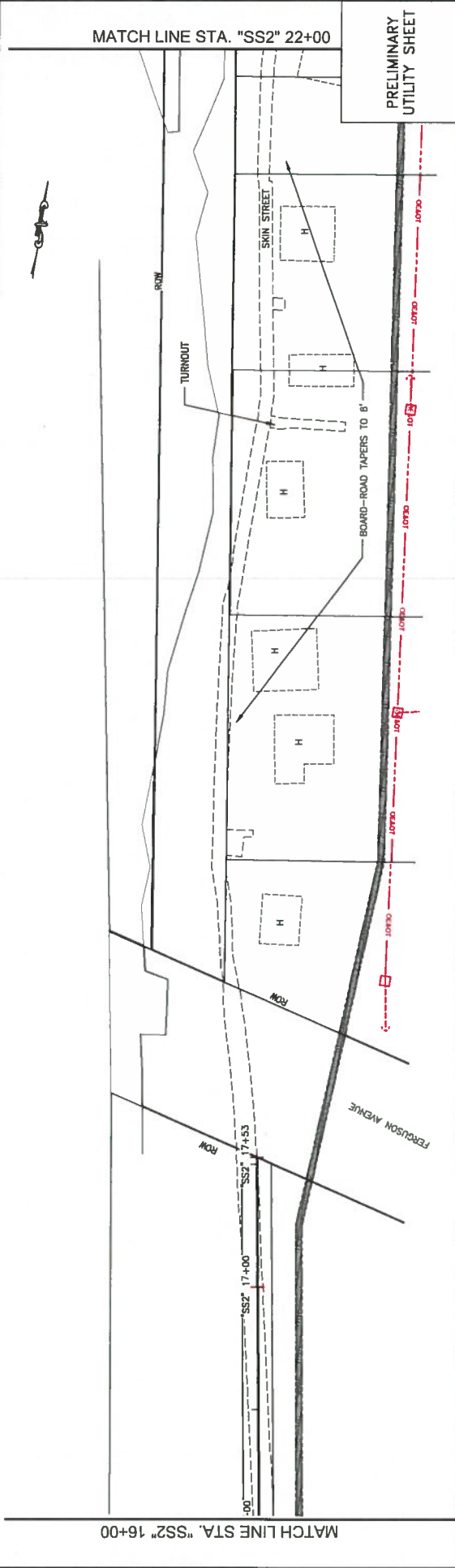


STATE LANDS

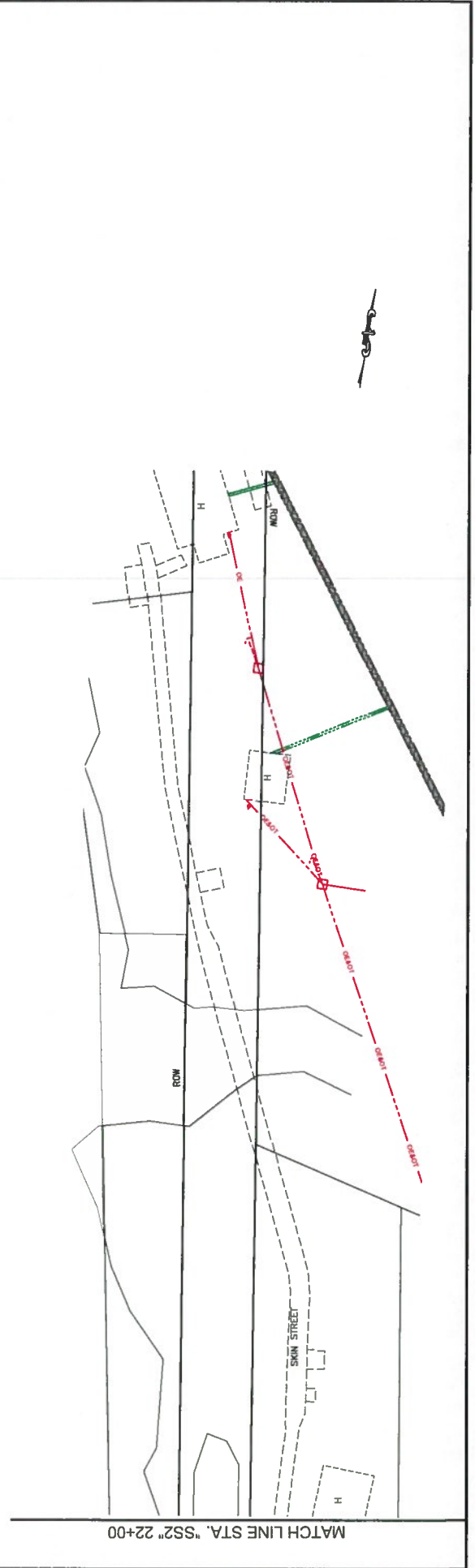
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	Z637720000	2016	12	13

MATCH LINE STA. "SS2" 22+00

PRELIMINARY UTILITY SHEET



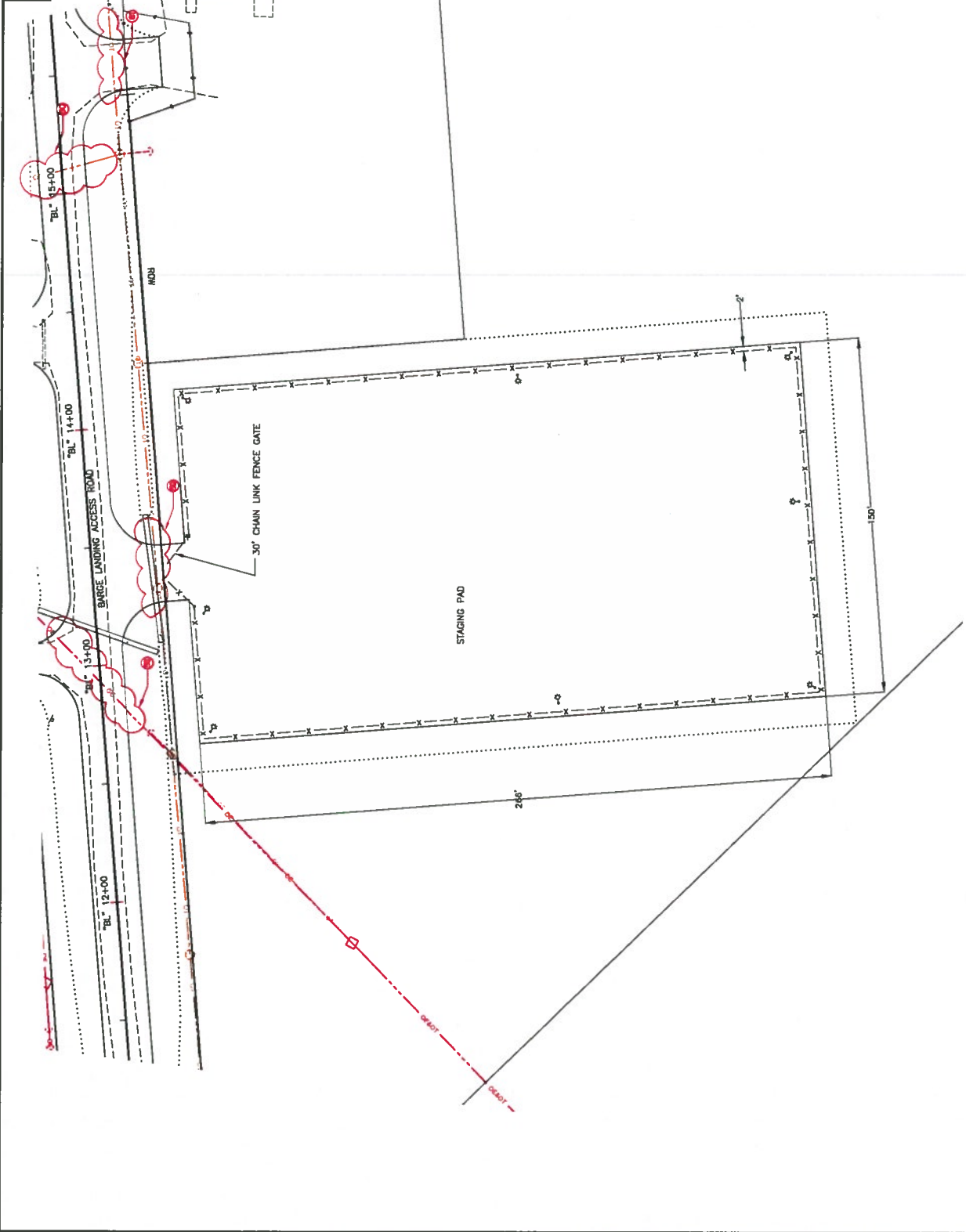
MATCH LINE STA. "SS2" 16+00



MATCH LINE STA. "SS2" 22+00

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	Z637720000	2016	13	13

PRELIMINARY
UTILITY SHEET



APPENDIX B

Barge Landing Access Road Photos

Selawik, Alaska Barge Landing Access Road Photos (April 2016)



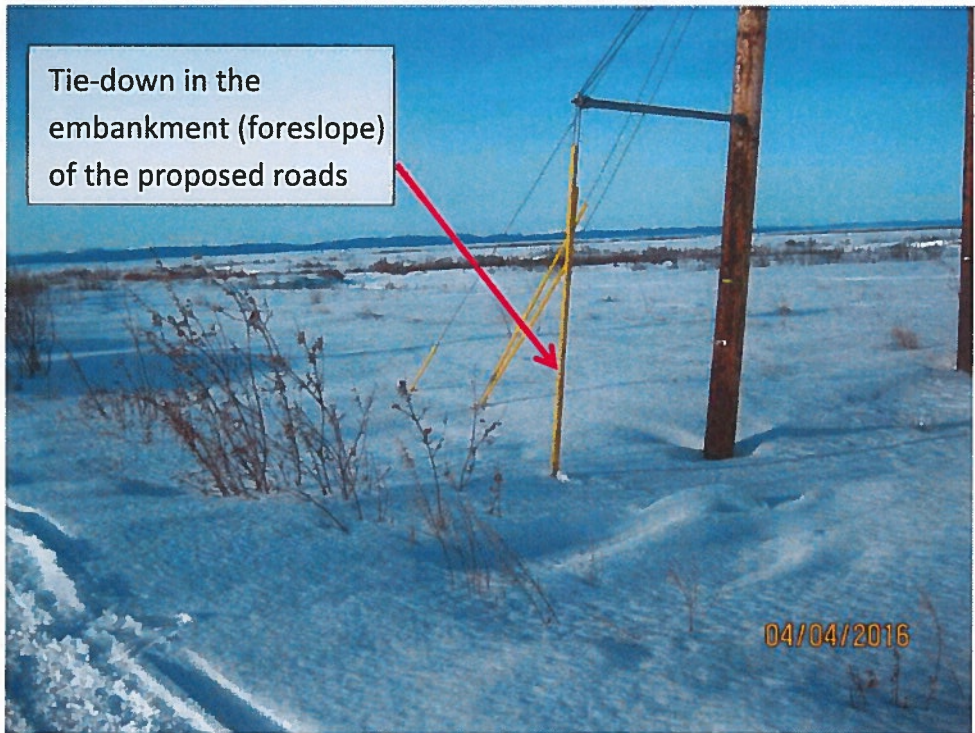
Near "BL" 10+40 looking north on Barge Landing Access Road. Clearance is existing.



Near "BL" 14+40 looking north on Barge Landing Access Road




Near "BL" 12+75 looking north on Barge Landing Access Road. Clearance is existing.



Near "BL" 16+00 looking north on Barge Landing Access Road



Exhibit 1 / 1
 Page 1 / 1

 ALASKA RAILROAD CORPORATION REAL ESTATE, LAND SERVICES <small>P.O. BOX 107660, ANCHORAGE, ALASKA 99510-7660</small>			
PEGLER ROAD Chena Landings Access Base Map			
<small>Feet/Inches: 3000'</small>			
<small>DRAWN BY</small> <small>CHECKED BY</small> <small>APPROVED BY</small>	<small>DATE</small> <small>SCALE</small> <small>FILE</small> <small>PROJECT</small>	<small>DATE</small> <small>SCALE</small> <small>FILE</small> <small>PROJECT</small>	<small>DATE</small> <small>SCALE</small> <small>FILE</small> <small>PROJECT</small>