



US Army Corps
of Engineers
Alaska District

Public Notice of Application for Permit

Regulatory Division (1145)
CEPOA-RD
Post Office Box 6898
JBER, Alaska 99506-0898

PUBLIC NOTICE DATE:	July 2, 2021
EXPIRATION DATE:	August 2, 2021
REFERENCE NUMBER:	POA-2003-00764
WATERWAY NAME:	Passage Canal

Interested parties are hereby notified that a Department of the Army permit application has been received for work in waters of the United States (U.S) as described below and shown on the enclosed project drawings.

All comments regarding this Public Notice (PN) should be sent to the address noted above. If you desire to submit your comments by email, you should send it to the Project Manager's email as listed below or to: regpagemaster@usace.army.mil. All comments should include the PN reference number listed above.

All comments should reach this office no later than the expiration date of this PN to become part of the record and be considered in the decision. Please contact Daniel Delgado at (907) 753-2586, toll free from within Alaska at (800) 478-2712, by fax at (907) 753-5567, or by email at: Daniel.I.Delgado@usace.army.mil if further information is desired concerning this notice.

APPLICANT: City of Whittier, POC: Mr. Scott Korbe, PO BOX 608, Whittier, AK 99693

AGENT: Solstice Alaska Consulting, Inc., POC: Ms. Carrie Connaker, 2607 Fairbanks Street, Anchorage, AK 99503

LOCATION: The project site is located within Sections 3, 8, 9, & 17, T. 8N, R. 5E, at approximately Latitude 60.797732° N., Longitude 148.596515° W; in Whittier, Alaska. From the Whittier Tunnel (Anton Anderson Memorial Tunnel), continue onto W Camp Rd towards Whittier. Turn right onto Whittier Street. Continue onto Blackstone Rd. Turn right onto Shotgun Cove Road. Project begins at existing Shotgun Cove Road terminus (mile 2.0).

PURPOSE: The applicant's stated purpose is to improve access to federal and state lands, alleviate pressure on Whittier's regional transportation system, and realize potential economic growth. Specifically, the project is focused on providing access to federal and state coastal lands and uplands along Passage Canal, on Trinity Point, and within Prince William Sound; and provide access to City land for recreation and development.

PROPOSED WORK: The proposed project would result in the permanent discharge of up to approximately 74,000 cubic yards (CY) of fill material into approximately 12.9-acres of wetland and the discharge of up to approximately 1,010 CY of fill material into approximately 1.09-acres of streambed below the ordinary high-water mark. Additionally, the proposed project would result in temporary impacts of up to approximately 220 CY of fill material into approximately 0.13-acre of wetland and streams.

The applicant proposes to extend the existing Shotgun Cove Road approximately 2.5-miles from its current terminus (mile 2.0) onto U.S. Forest Service (USFS) land at Trinity Point (mile 4.5), which includes, the construction of nine (9) new parking areas, eight (8) new spur/access roads, and minor safety improvements to two (2) portions of existing trail.

The new main road and spur roads would be composed of a layer of shot rock overlain by 20-inches of Type A selected material and 6-inches of grade E-1 aggregate surface course. The new main road would have two (2) 10-foot wide gravel travel lanes and 5-foot wide gravel shoulders on each side. The spur roads would have two (2) 9-foot wide gravel travel lanes. The new parking areas would have capacities ranging from 8 to 50 cars and would be composed of a 16-inch shot rock gravel pad, overlain by 20 inches of type A selected material, and topped by 6 inches of grade E-1 aggregate surface course. Trail safety improvements would be conducted along two (2) areas of the existing Emerald Cove Trail near proposed parking areas and would consist of adding a 12-inch layer of selected material over the trail while widening the trail to a width of 4-feet.

Due to the steep grade within portions of the project corridor, rock cut blasting and subgrade blasting techniques would be utilized. Blasted rock material would be collected and used for embankments and roadway structural sections.

Culverted crossings with rock riprap at the outlet would be installed at major creeks and various small drainage features, including wetlands, along the length of the main road and spur roads. Culvert diameters would range from 36 to 60 inches with larger culverts being installed at major crossings. Four (4) major crossings were identified along the project corridor (i.e. Station 184+50, Station 186+50, east of Station 197+00, & west of Station 197+00) which would require the installation to culverts designed for resident fish passage. A 60-inch diameter round corrugated metal pipe (CMP) culvert would be used at Stations 184+50 and 186+50, a 20-foot wide single radius arch culvert would be installed west of Station 197+00, and a 9-foot wide single radius arch culvert would be installed east of Station 197+00.

The project is estimated to commence in Spring 2022 and may take 5-10 construction seasons (i.e. years) to complete; not necessarily consecutive. All work would be performed in accordance with the enclosed plan (Figures 1-45), dated June 2021.

ADDITIONAL INFORMATION: The applicant has applied for an Alaska Department of Fish and Game (ADFG) Fish Habitat Permit and Alaska Department of Natural Resources (ADNR) Temporary Water Use Permit. Both permit applications are pending.

APPLICANT PROPOSED MITIGATION: The applicant proposes the following mitigation measures to avoid, minimize, and compensate for impacts to waters of the U.S. from activities involving discharges of dredged or fill material.

a. Avoidance: The applicant stated, “there is no practicable alternative that would avoid impacts to wetlands, and the project has included all practicable measures to minimize harm to wetlands”.

b. Minimization: The applicant stated, “the alignment was modified and shifted to minimize wetlands impacts by bisecting wetlands in the narrowest locations, avoiding undercutting or draining wetlands, avoiding impacts to wetlands associated with stream channels, and minimizing roadway crossing of existing anadromous fish streams.” Additionally, the applicant stated, “wetland surface hydrology and connectivity would be bisected by the road fill, these disconnects would be minimized through installation of cross drain culverts.” Other minimization measures include, clearly delineating fill boundaries to avoid accidental impacts from equipment operation and fill placement, retaining natural vegetation wherever possible, installing permanent erosion control measures (e.g. riprap aprons, embankment stabilization, & etc.), and protect wetland and stream water quality through the implementation of best management practices (i.e. installing temporary and permanent stabilization measures as soon as practicable or at least within 14 days on all portions where construction has temporarily or permanently ceased, installing clean shot rock or shredded wood mulch on exposed slopes, installing and maintaining sediment control measures, stabilizing constructions exits for vehicles leaving the work area, minimizing vehicle or equipment operation in flowing water, & re-introducing creek water in areas where water was temporarily rerouted in a manner designed to minimize sediment movement downstream of project area).

c. Compensatory Mitigation: The applicant proposes to compensate for unavoidable loss of wetlands by preserving, in perpetuity, approximately 6.4-acres of wetlands within the project corridor by excluding this area from public recreation, private sale, or future development. Furthermore, the applicant proposes to “create approximately 7.1 acres of setback protection “non-disturbance zones” around select watercourses on City-owned land through the adoption of code.” Additional mitigation consisting of the installation of “informational signage focused on the importance of protecting native vegetation and wetlands and preventing the spread of invasive species will be installed at key locations along the corridor such as parking areas and trailheads.”

WATER QUALITY CERTIFICATION: A permit for the described work will not be issued until a certification or waiver of certification, as required under Section 401 of the Clean Water Act (Public Law 95-217), has been received from the Alaska Department of Environmental Conservation (ADEC). The applicant submitted a request for Section 401 Water Quality Certification on June 11, 2021. The application is currently pending.

CULTURAL RESOURCES: The lead Federal agency, Federal Highways Administration (FHWA), is responsible for compliance with the requirements of Section 106 of the National

Historic Preservation Act. FHWA contracted Cultural Resource Consultants, LLC (CRC) to conduct a desktop study and an archeological field investigation of the proposed project area to identify cultural resources on or eligible for listing to the National Register of Historic Places. As a result of the investigation, FHWA determined the proposed project would have no effect to historic properties. FHWA consulted with the Alaska State Historic Preservation Officer (SHPO) requesting concurrence with their effect determination. On November 20, 2020, the SHPO concurred with FHWA's effect determination.

The Corps of Engineers (Corps) has reviewed the Section 106 documentation from the FHWA and the Alaska State Historic Preservation Office and concurs with their findings and determination.

ENDANGERED SPECIES: The lead Federal agency, FHWA, is responsible for compliance with the requirements of Section 7 of the Endangered Species Act. FHWA found that the endangered fin whale (*Balaenoptera physalus*), endangered Western North Pacific Distinct Population Segment (DPS) and threatened Mexico DPS humpback whale (*Megaptera novaeangliae*), and endangered Western DPS Steller sea lion (*Eumetopias jubatus*) have the potential to inhabit the action area within Passage Canal. Blasting techniques would be utilized during project construction which would require approximately eight (8) blasts over 30-days of blasting within 5-10 construction seasons to be conducted within 50-meters of the shoreline along Passage Canal. It is anticipated that only one (1) blast would occur per day. Blasting during project construction has the potential to be heard by marine mammals in Passage Canal. The FHWA has committed to implement various mitigation measures to minimize the risk of harm to marine mammals during blasting, which includes, no in-water work in Passage Canal, minimize spillover of blasted material outside of the designated work zone, ensure a protected species observer (PSO) is present during all blasting activities, establish an exclusion zone within 1500-meters of the sound source within Passage Canal, blasting only when waters within and adjacent to the exclusion zone are clearly visible, positioning PSOs such that the entire exclusion zone is observable, outfitting PSOs with the necessary equipment to identify, take action, and record listed species within the exclusion zone, provide the National Marine Fisheries Service (NMFS) with monthly PSO reports and a final PSO report outlining observations, re-initiate consultation should a listed species be "taken", and provide NMFS with a monthly and a final report of "take". Due to the potential of blasting being heard by marine mammals and the associated environmental commitments, the FHWA has determined the project "may affect" the aforementioned threatened and endangered species. As a result, FHWA initiated informal consultation with NMFS requesting concurrence with their effect determination. On January 20, 2021, NMFS concurred with FHWA's effect determination.

The Corps has reviewed the Section 7 documentation from FHWA and NMFS and concurs with their findings and determinations.

ESSENTIAL FISH HABITAT: The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996, requires all Federal agencies to consult with the NMFS on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH). The lead Federal agency, FHWA, is responsible for compliance with the requirements of the Magnuson-Stevens Fishery Conservation and Management Act as it relates to EFH. The FHWA contracted Solstice Alaska Consulting, Inc. (SAC) to conduct an essential fish habitat assessment. SAC

conducted a desktop review of the project area using the ADFG Anadromous Waters Catalog (AWC) and the NMFS Alaska EFH Mapper, and in collaboration with the ADFG conducted three (3) site visits to the project area surveying 16 streams. The assessment concluded that marine EFH is not present within the project area and portions of two (2) streams that bisect the project area are considered EFH for Pink salmon (*Oncorhynchus gorbuscha*; spawning). These streams include Trinity Creek (AWC code #224-10-14430) and an unnamed stream (AWC code #224-10-1426). The limits of anadromy were defined for Trinity Creek and the unnamed stream during the fish surveys. It was found that each stream has steep gradients that act as a barrier to fish passage prior to reaching the proposed project area. Although EFH is not found within the project area, the applicant has committed to implementing conservation measures to avoid and minimize impacts to downstream EFH. These measures include, obtaining a Title 16 Fish and Habitat Permit from ADFG for proposed in-water work within resident fish streams, developing a blasting plan that will adhere to the ADFG guidance document titled, "Alaska Blasting Standards for the Proper Protection of Fish", obtain a construction general permit from the ADEC, install erosion and sediment control devices, and storing fuel a minimum of 100-feet from waterbodies, which includes no fueling or servicing vehicles or equipment within the 100-foot buffer zone. As such, the lead federal agency, FHWA, has determined the project would result in "no effect" to EFH.

The Corps has reviewed the EFH documentation from the FHWA and concurs with their findings and determination.

TRIBAL CONSULTATION: The Alaska District fully supports tribal self-governance and government-to-government relations between Federally recognized Tribes and the Federal government. Tribes with protected rights or resources that could be significantly affected by a proposed Federal action (e.g., a permit decision) have the right to consult with the Alaska District on a government-to-government basis. Views of each Tribe regarding protected rights and resources will be accorded due consideration in this process. This PN serves as notification to the Tribes within the area potentially affected by the proposed work and invites their participation in the Federal decision-making process regarding the protected Tribal right or resource. Consultation may be initiated by the affected Tribe upon written request to the District Commander during the public comment period.

PUBLIC HEARING: Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, reasons for holding a public hearing.

EVALUATION: The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts of the proposed activity and its intended use on the public interest. Evaluation of the probable impacts, which the proposed activity may have on the public interest, requires a careful weighing of all the factors that become relevant in each particular case. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. The outcome of the general balancing process would determine whether to authorize a proposal, and if so, the conditions under which it will be allowed to occur. The decision should reflect the national concern for both protection and utilization of important resources. All factors, which may be relevant to the proposal, must be considered including the cumulative effects thereof. Among those are conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, floodplain values, land use, navigation,

shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people. For activities involving 404 discharges, a permit will be denied if the discharge that would be authorized by such permit would not comply with the Environmental Protection Agency's 404(b)(1) guidelines. Subject to the preceding sentence and any other applicable guidelines or criteria (see Sections 320.2 and 320.3), a permit will be granted unless the District Commander determines that it would be contrary to the public interest.

The Corps is soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

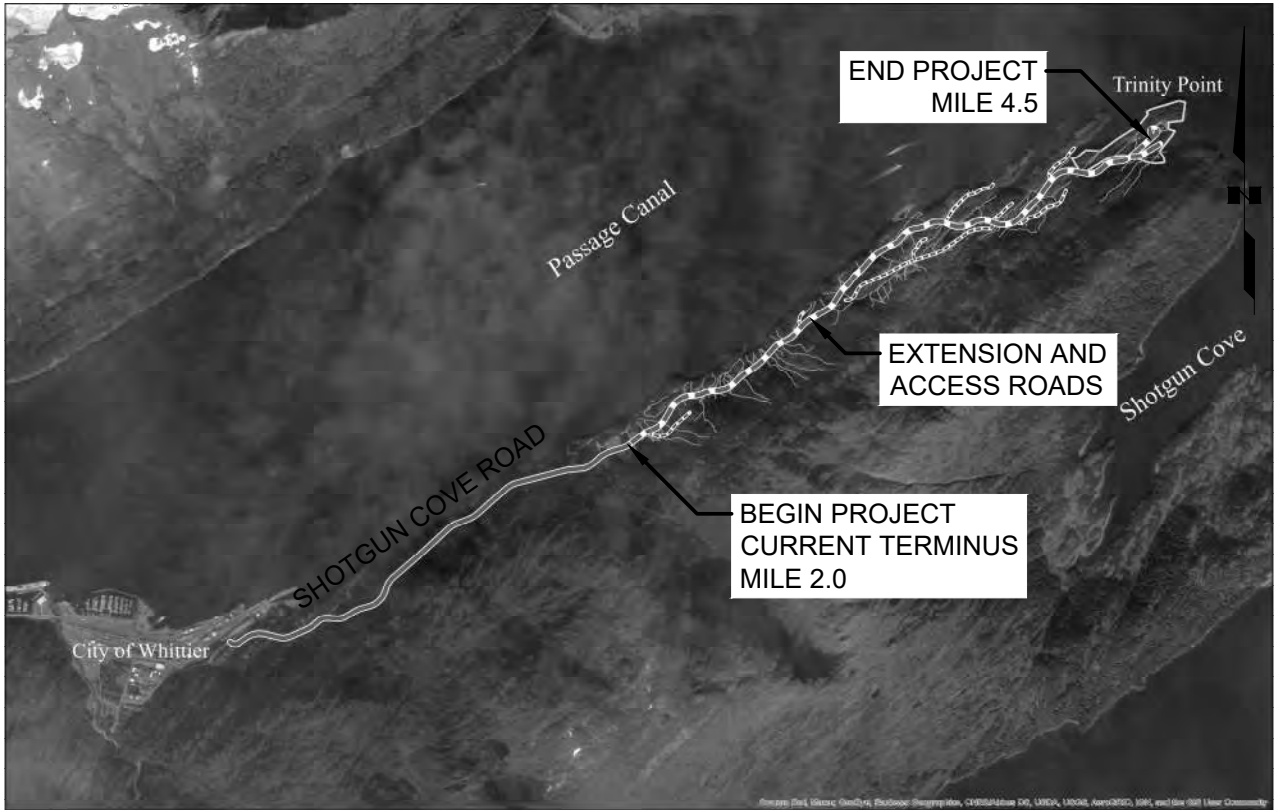
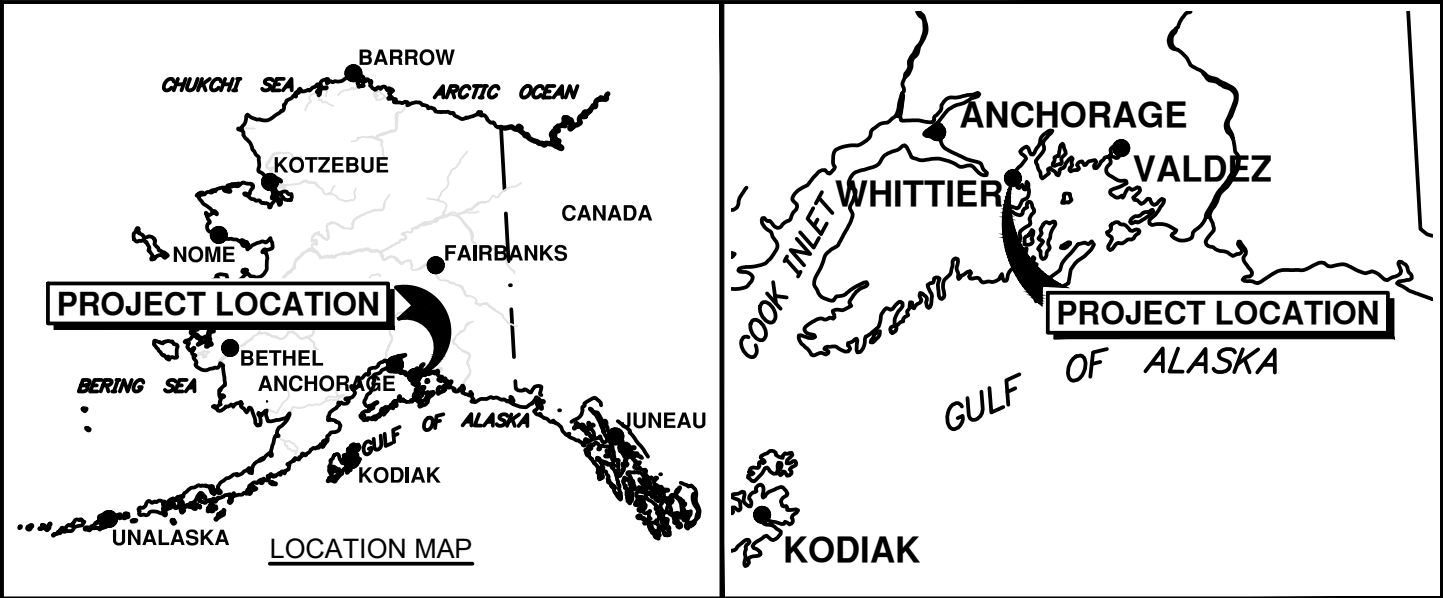
AUTHORITY: This permit will be issued or denied under the following authorities:

(X) Discharge dredged or fill material into waters of the U.S. – Section 404 Clean Water Act (33 U.S.C. 1344). Therefore, our public interest review will consider the guidelines set forth under Section 404(b) of the Clean Water Act (40 CFR 230).

Project drawings are enclosed with this Public Notice.

District Commander
U.S. Army, Corps of Engineers

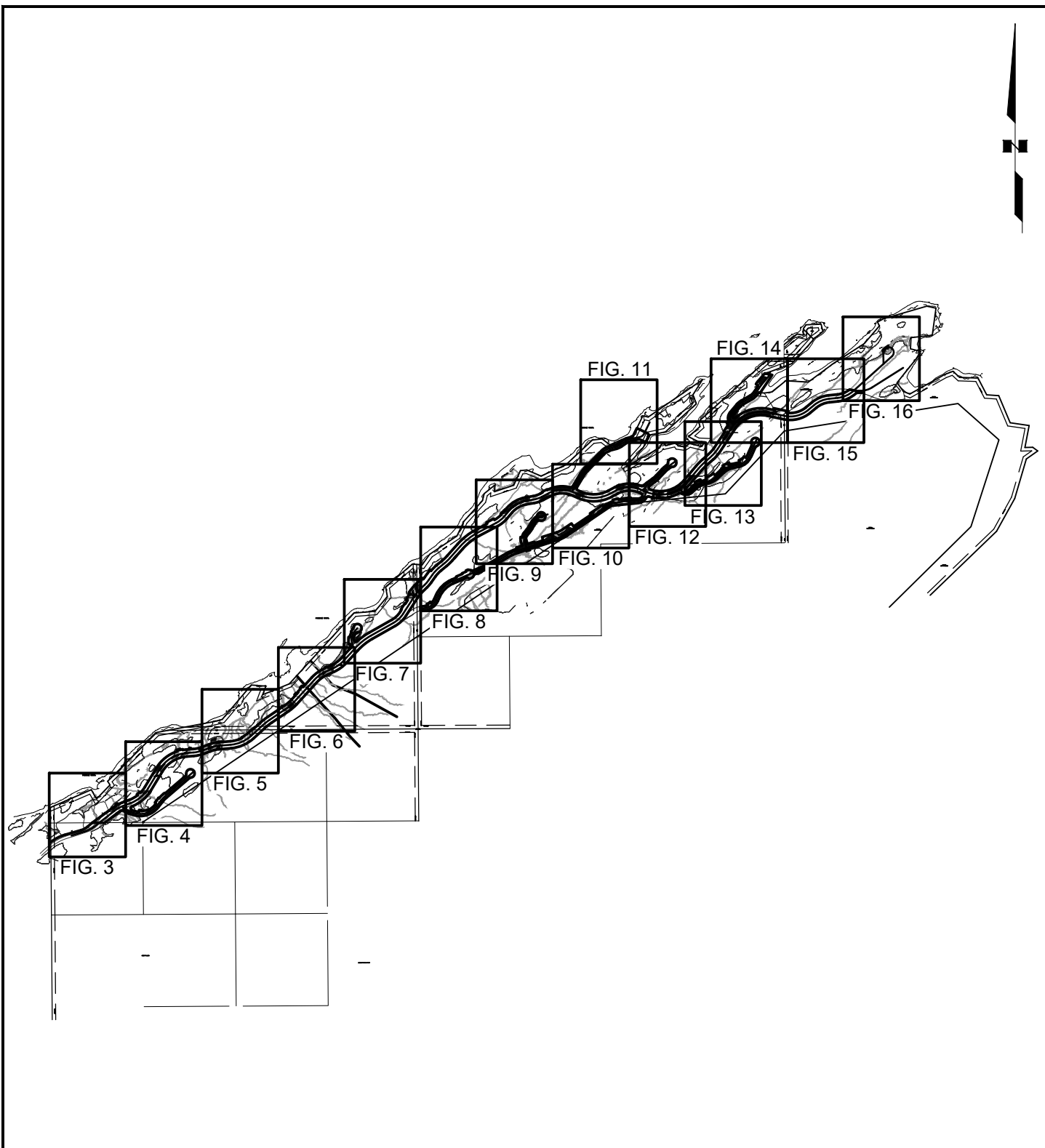
Enclosures



SHOTGUN COVE ROAD EXTENSION
MILE 2.0 TO 4.5

VICINITY MAP

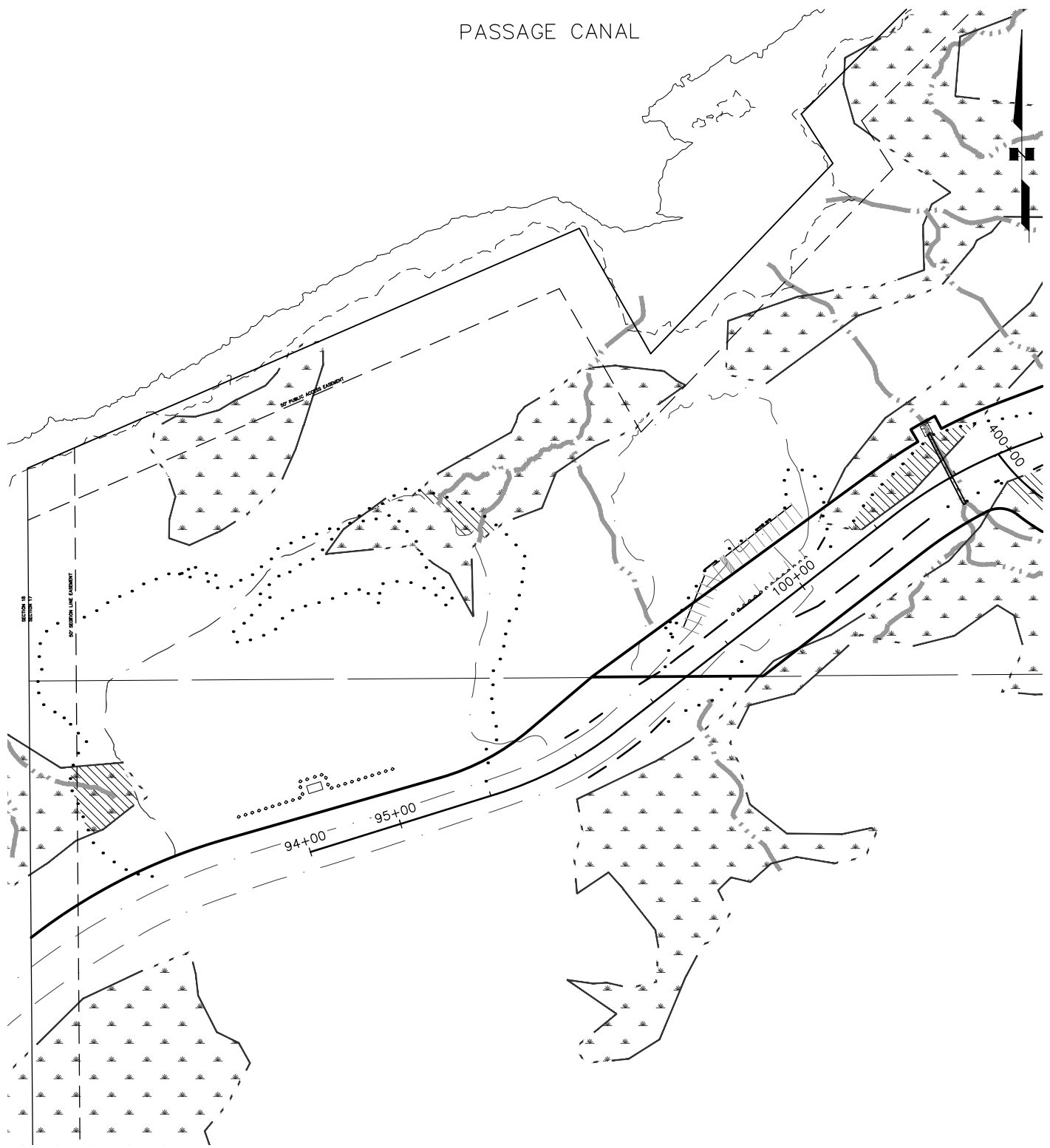
APPLICANT: CITY OF WHITTIER
FILE NO.: POA-XXXX-XXX
WATERWAY:
PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
MERIDIAN: SEWARD
LAT: 60.797732 LONG: -148.596515
SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
FIG 1 OF 45
DATE: JUNE 2021



SHOTGUN COVE ROAD EXTENSION
MILE 2.0 TO 4.5
VICINITY MAP

APPLICANT: CITY OF WHITTIER
FILE NO.: POA-XXXX-XXX
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SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
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SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
FIG 2 OF 45 DATE: JUNE 2021

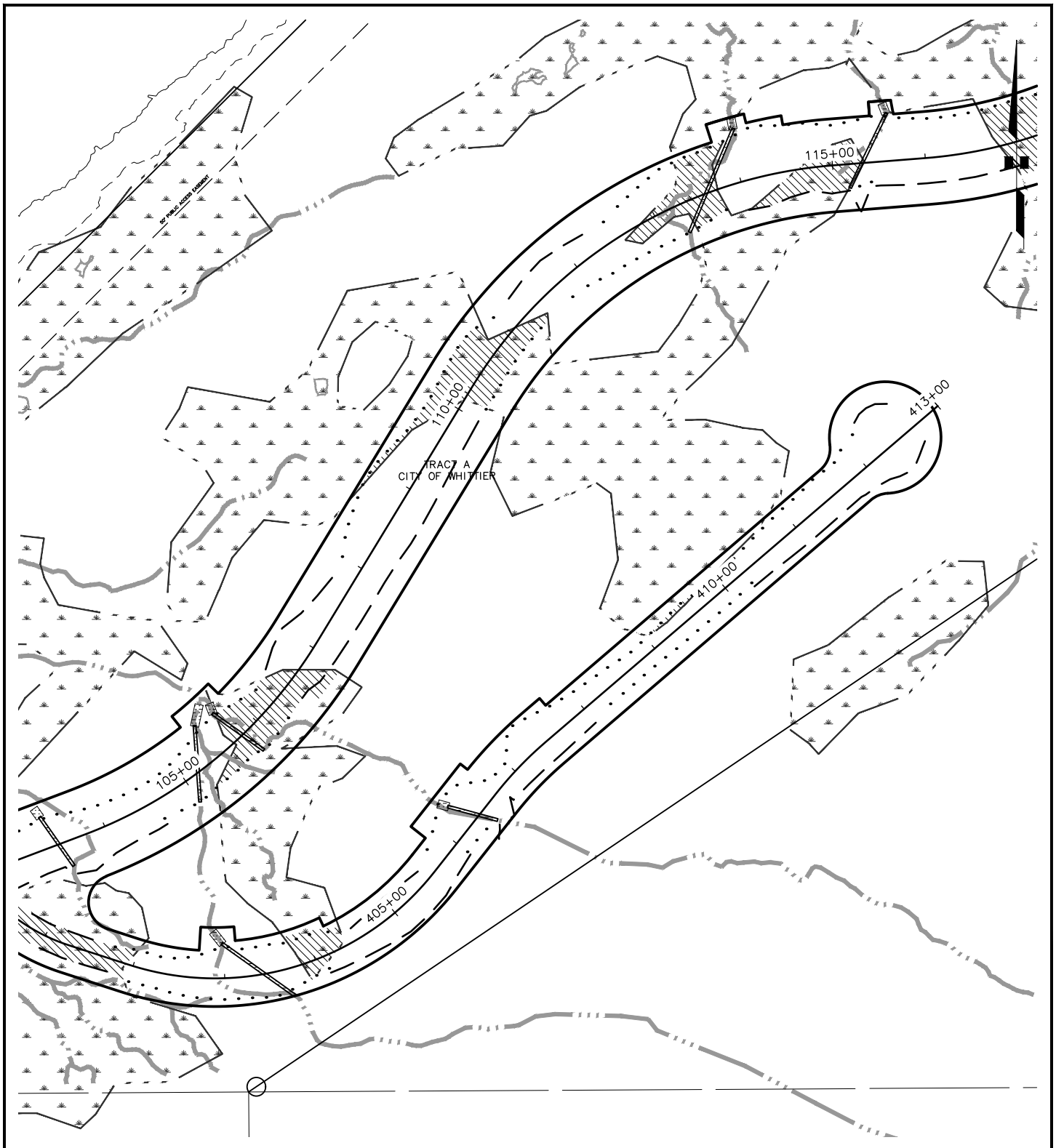
PASSAGE CANAL



KEY:

- | | |
|-------------------------|----------------|
| EXISTING WETLAND | PROPOSED CUT |
| EXISTING STREAM | PROPOSED FILL |
| EXISTING EDGE OF GRAVEL | WETLAND IMPACT |
| PROPOSED CULVERT | STREAM IMPACT |
| PROPOSED ROW | |

APPLICANT: CITY OF WHITTIER
FILE NO.: POA-XXXX-XXX
WATERWAY:
PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
MERIDIAN: SEWARD
LAT: 60.797732 LONG: -148.596515
SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
FIG 3 OF 45
DATE: JUNE 2021



KEY:

- | | | | |
|--|-------------------------|--|----------------|
| | EXISTING WETLAND | | PROPOSED CUT |
| | EXISTING STREAM | | PROPOSED FILL |
| | EXISTING EDGE OF GRAVEL | | WETLAND IMPACT |
| | PROPOSED CULVERT | | STREAM IMPACT |
| | PROPOSED ROW | | |

APPLICANT: CITY OF WHITTIER

FILE NO.: POA-XXXX-XXX

WATERWAY:

PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT

SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E

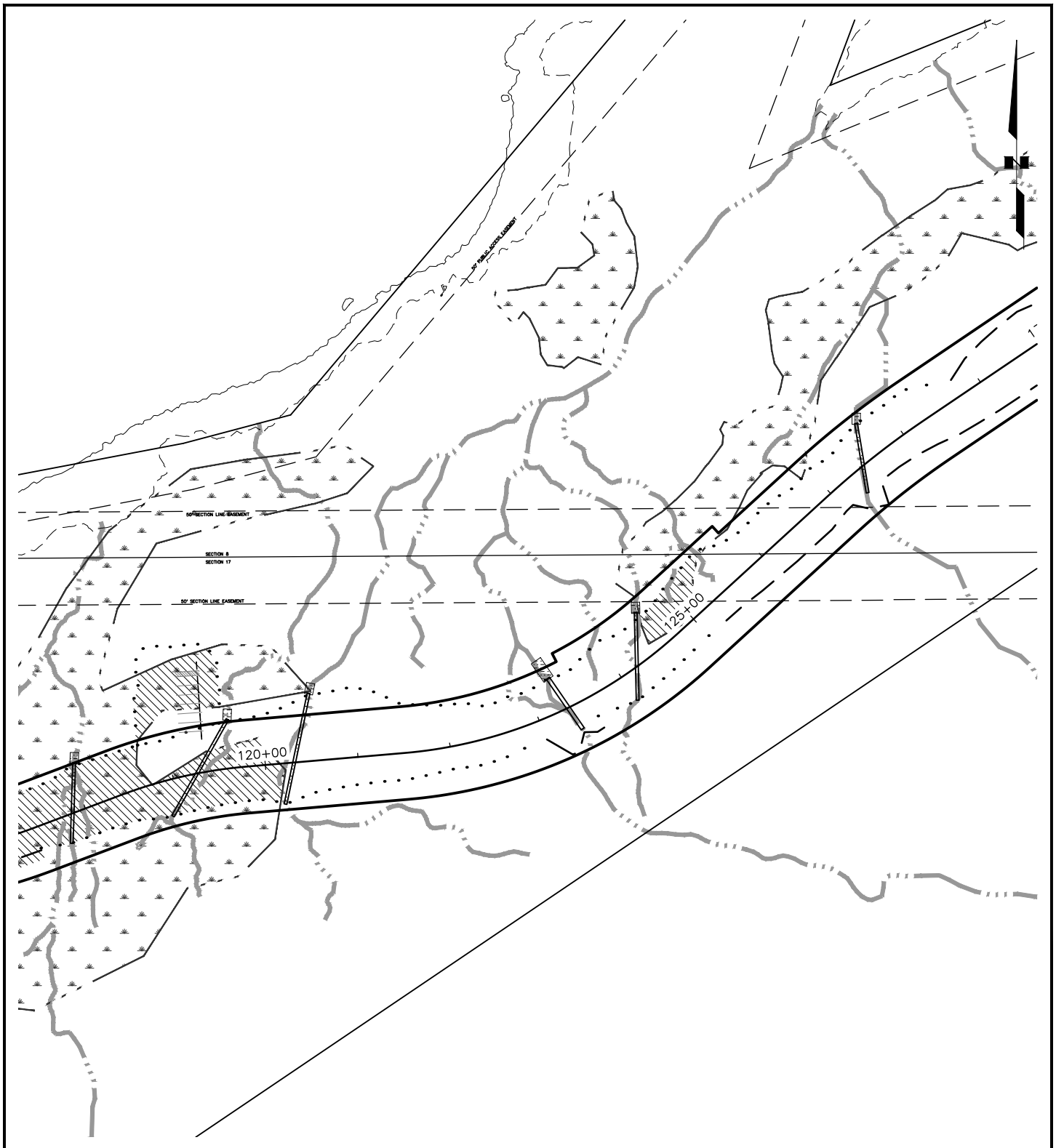
MERIDIAN: SEWARD

LAT: 60.797732 LONG: -148.596515

SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5

FIG 4 OF 45

DATE: JUNE 2021



KEY:

	EXISTING WETLAND		PROPOSED CUT
	EXISTING STREAM		PROPOSED FILL
	EXISTING EDGE OF GRAVEL		WETLAND IMPACT
	PROPOSED CULVERT		STREAM IMPACT
	PROPOSED ROW		

APPLICANT: CITY OF WHITTIER

FILE NO.: POA-XXXX-XXX

WATERWAY:

PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT

SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E

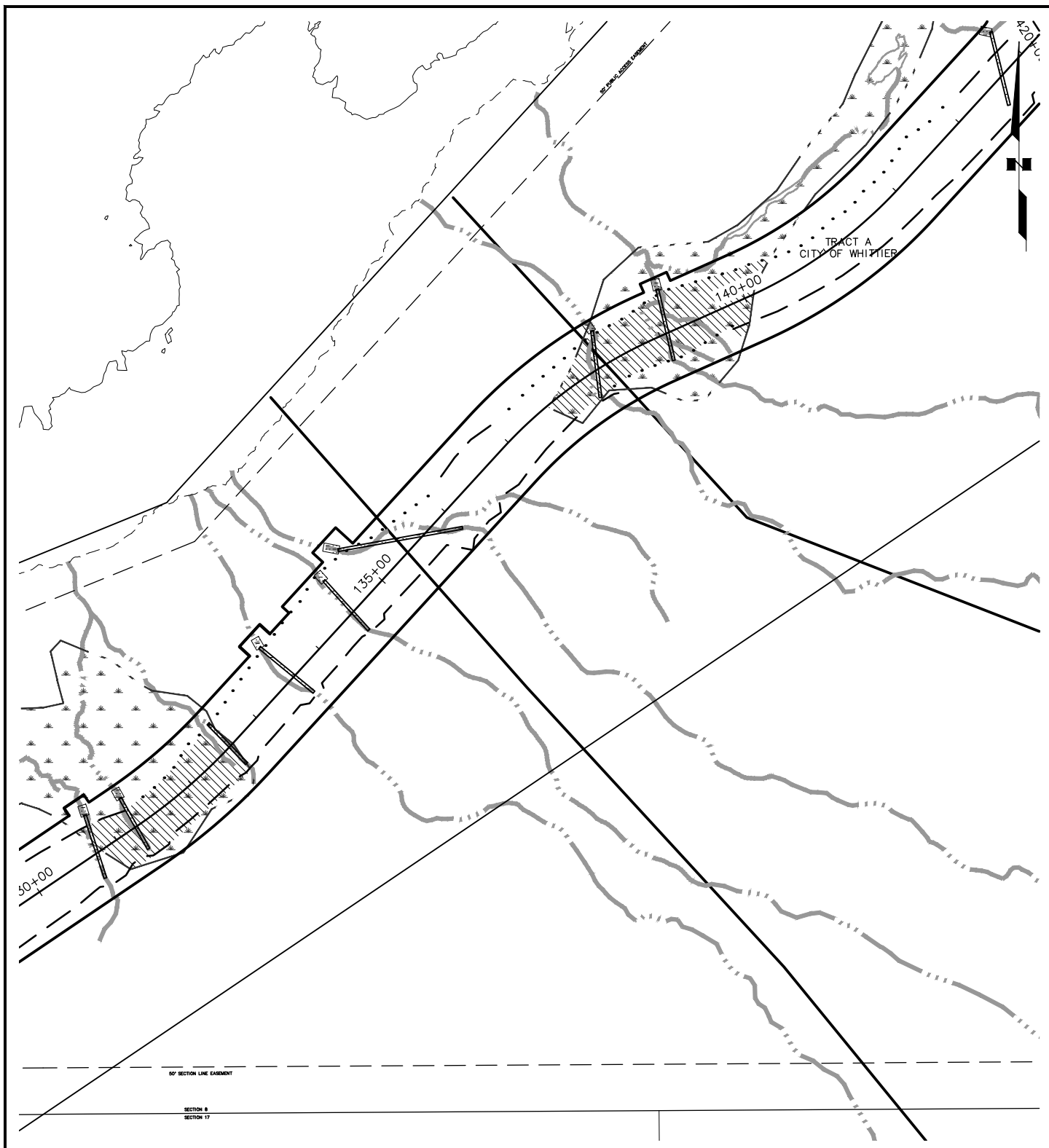
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








SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5

FIG 5 OF 45

DATE: JUNE 2021



KEY:

 EXISTING WETLAND	 PROPOSED CUT
 EXISTING STREAM	 PROPOSED FILL
 EXISTING EDGE OF GRAVEL	 WETLAND IMPACT
 PROPOSED CULVERT	 STREAM IMPACT
 PROPOSED ROW	

APPLICANT: CITY OF WHITTIER

FILE NO.: POA-XXXX-XXX

WATERWAY:

PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT

SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E

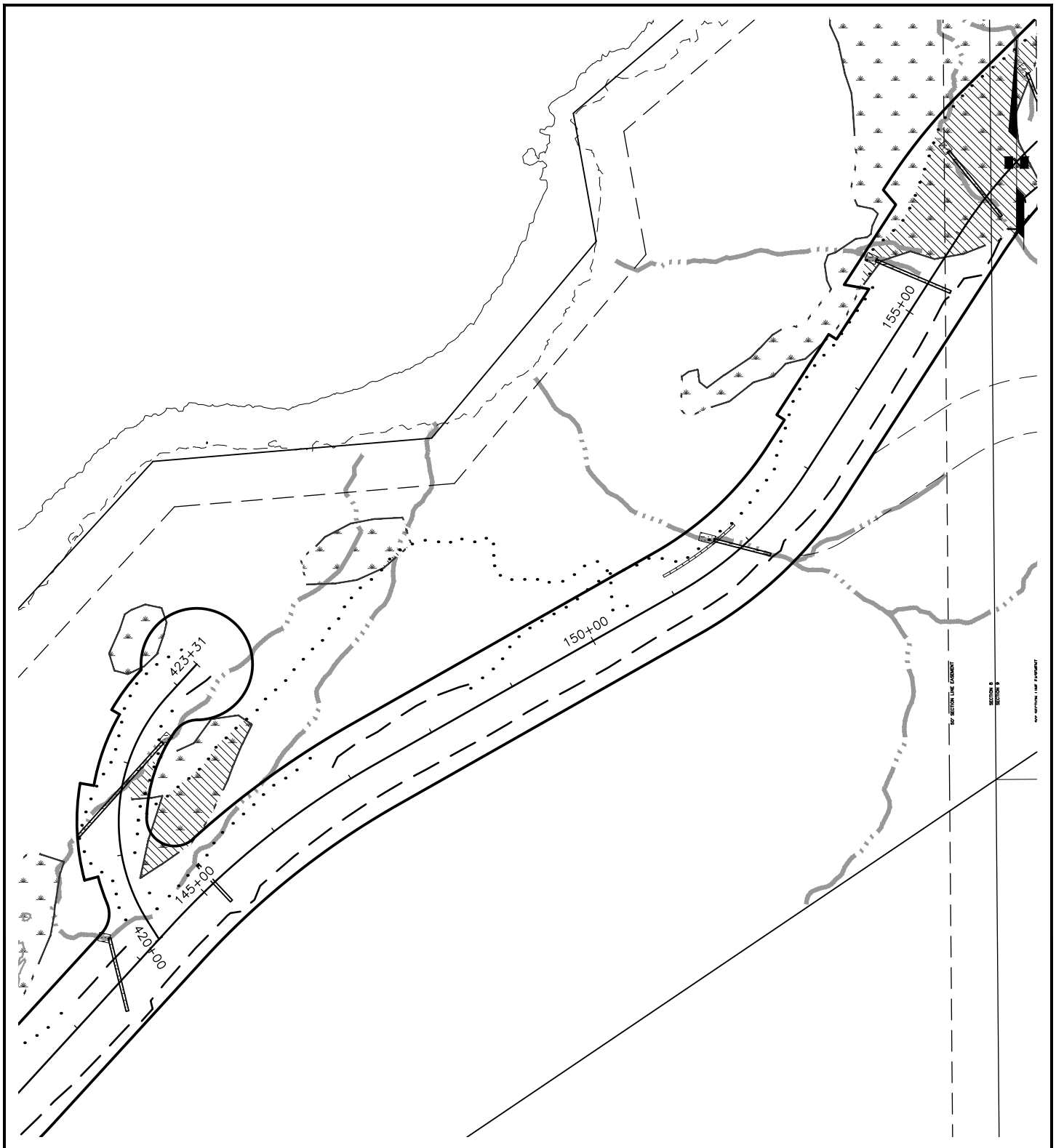
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








SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5

FIG 6 OF 45

DATE: JUNE 2021



KEY:

- | | |
|---|--|
|  EXISTING WETLAND |  PROPOSED CUT |
|  EXISTING STREAM |  PROPOSED FILL |
|  EXISTING EDGE OF GRAVEL |  WETLAND IMPACT |
|  PROPOSED CULVERT |  STREAM IMPACT |
|  PROPOSED ROW | |

APPLICANT: CITY OF WHITTIER

FILE NO.: POA-XXXX-XXX

WATERWAY:

PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT

SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E

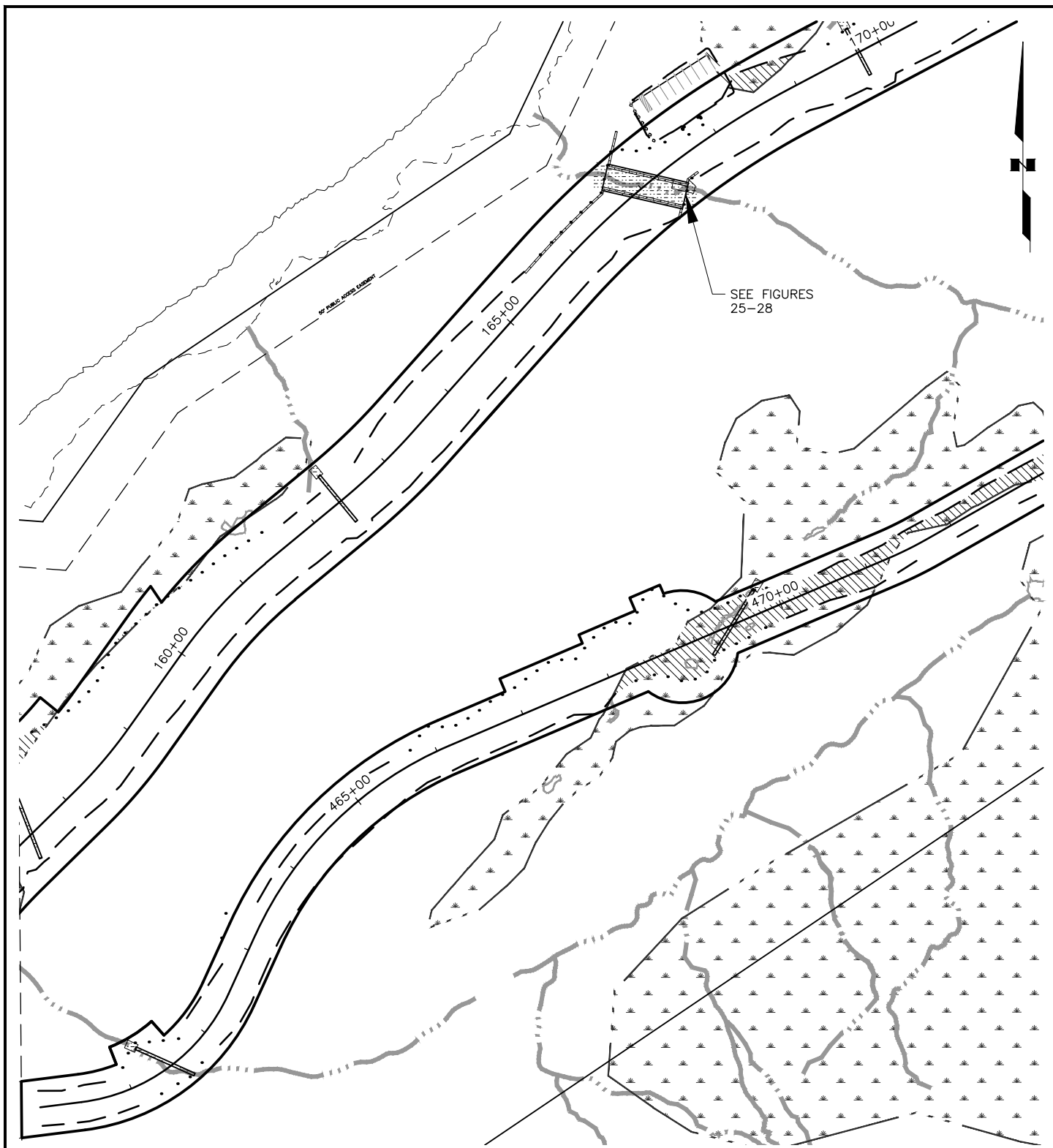
MERIDIAN: SEWARD

LAT: 60.797732 LONG: -148.596515

SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5

FIG 7 OF 45

DATE: JUNE 2021



KEY:

	EXISTING WETLAND		PROPOSED CUT
	EXISTING STREAM		PROPOSED FILL
	EXISTING EDGE OF GRAVEL		WETLAND IMPACT
	PROPOSED CULVERT		STREAM IMPACT
	PROPOSED ROW		

APPLICANT: CITY OF WHITTIER

FILE NO.: POA-XXXX-XXX

WATERWAY:

PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT

SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E

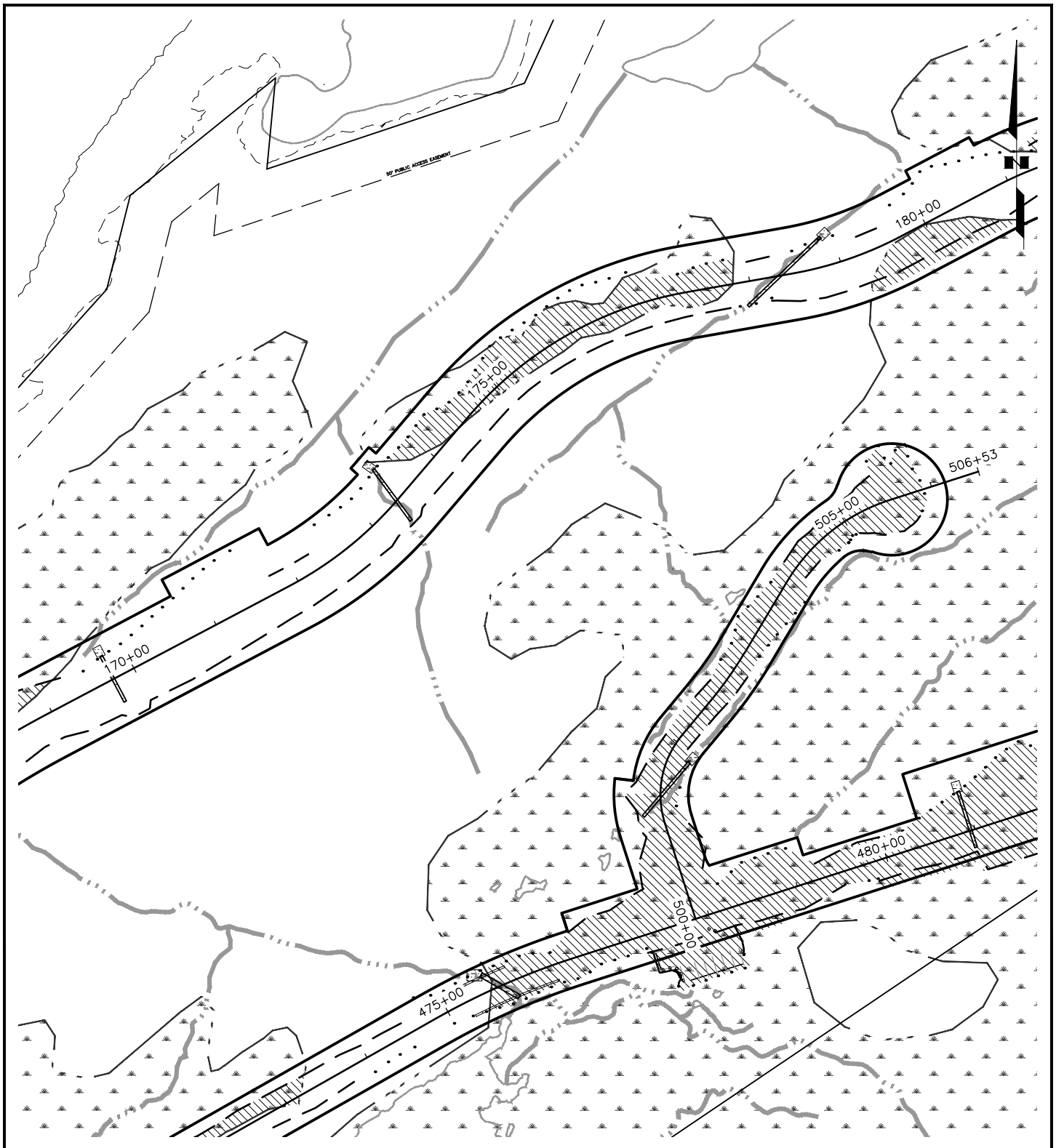
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LAT: 60.797732 LONG: -148.596515

SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5

FIG 8 OF 45

DATE: JUNE 2021



KEY:

- | | |
|-------------------------|----------------|
| EXISTING WETLAND | PROPOSED CUT |
| EXISTING STREAM | PROPOSED FILL |
| EXISTING EDGE OF GRAVEL | WETLAND IMPACT |
| PROPOSED CULVERT | STREAM IMPACT |
| PROPOSED ROW | |

APPLICANT: CITY OF WHITTIER

FILE NO.: POA-XXXX-XXX

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PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT

SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E

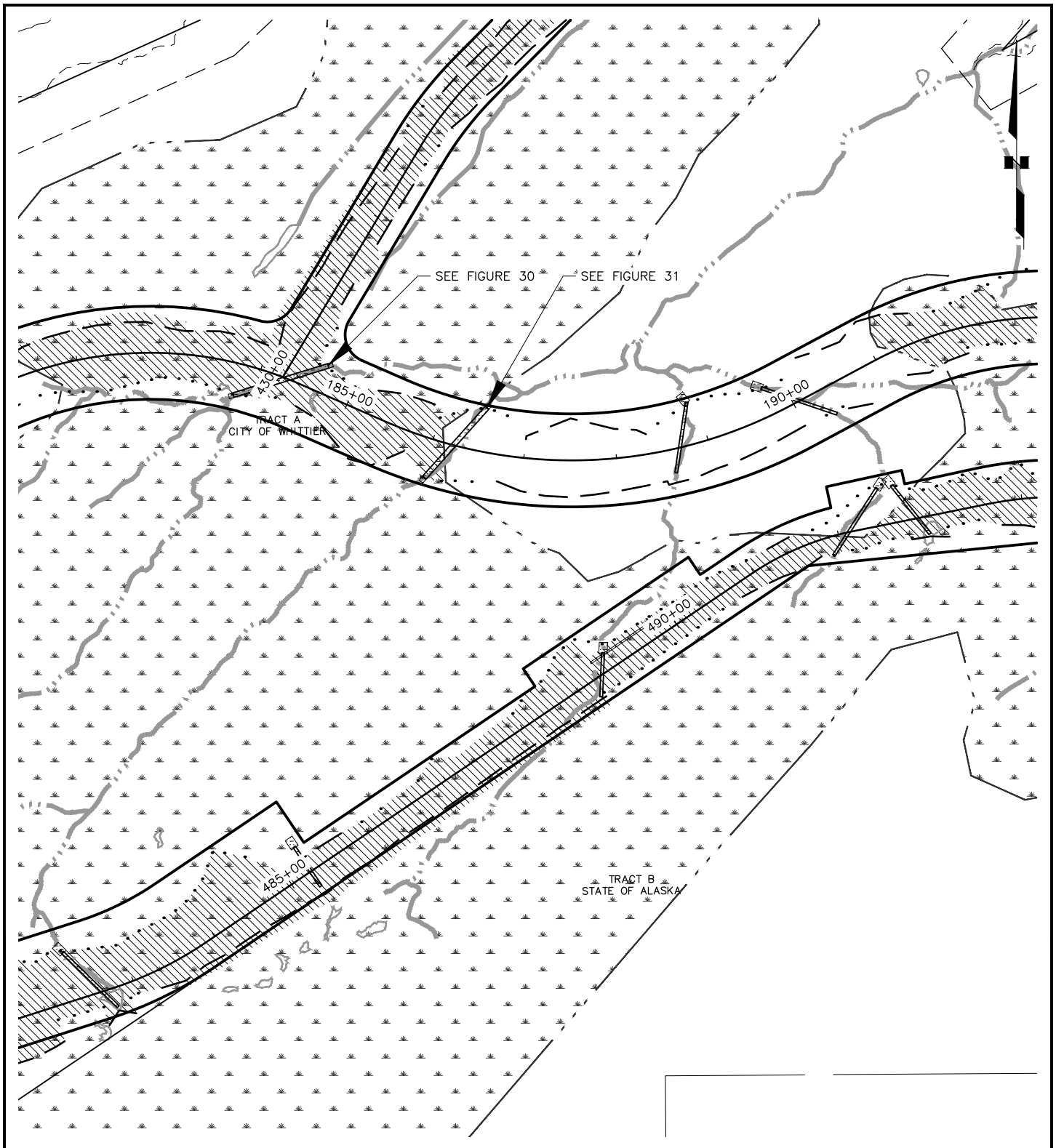
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SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5

FIG 9 OF 45

DATE: JUNE 2021



KEY:

	EXISTING WETLAND		PROPOSED CUT
	EXISTING STREAM		PROPOSED FILL
	EXISTING EDGE OF GRAVEL		WETLAND IMPACT
	PROPOSED CULVERT		STREAM IMPACT
	PROPOSED ROW		

APPLICANT: CITY OF WHITTIER

FILE NO.: POA-XXXX-XXX

WATERWAY:

PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT

SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E

MERIDIAN: SEWARD

LAT: 60.797732 LONG: -148.596515

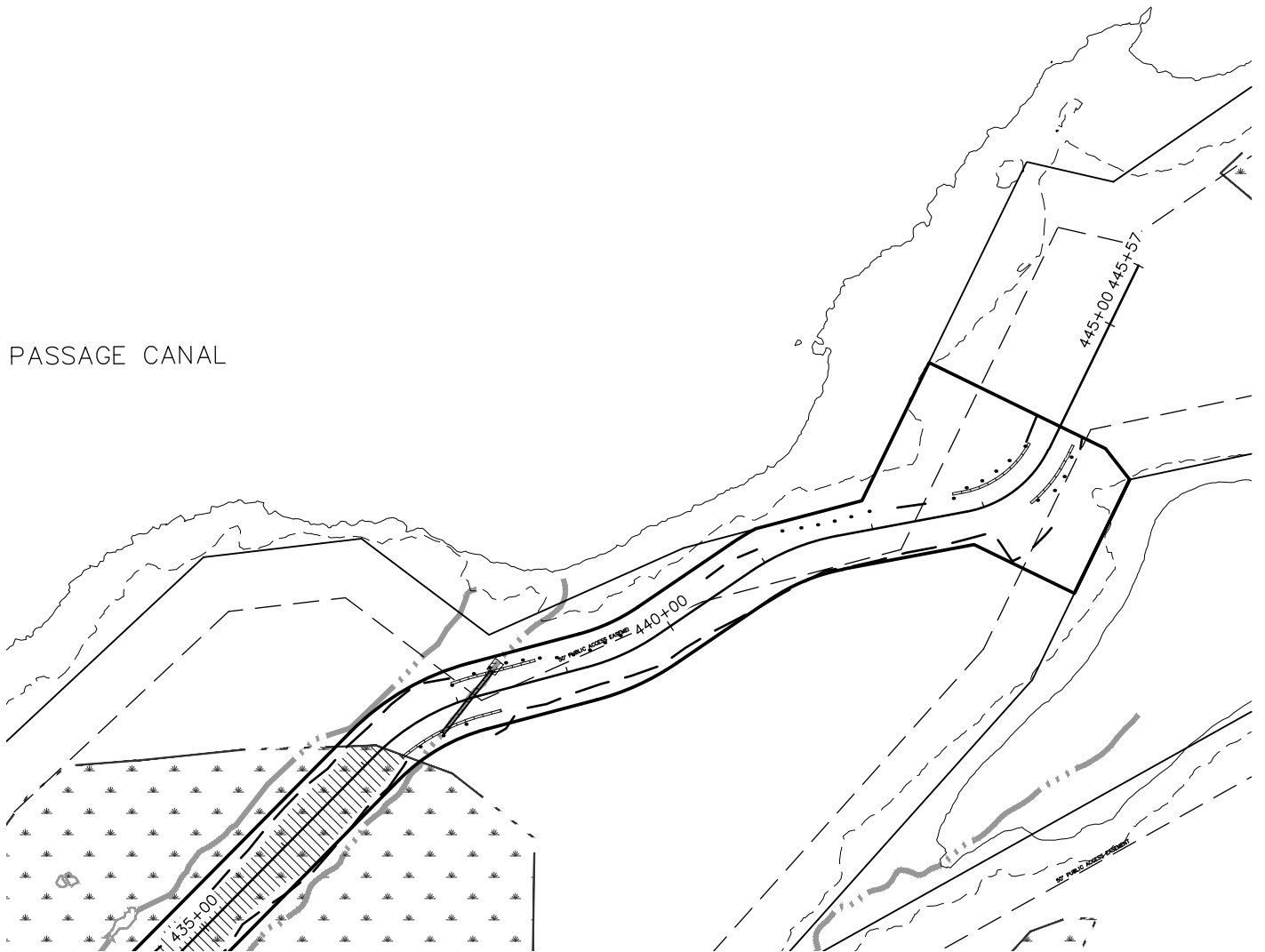
SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5

FIG 10 OF 45










DATE: JUNE 2021



PASSAGE CANAL



KEY:

 EXISTING WETLAND	 PROPOSED CUT
 EXISTING STREAM	 PROPOSED FILL
 EXISTING EDGE OF GRAVEL	 WETLAND IMPACT
 PROPOSED CULVERT	 STREAM IMPACT
 PROPOSED ROW	

APPLICANT: CITY OF WHITTIER

FILE NO.: POA-XXXX-XXX

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SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E

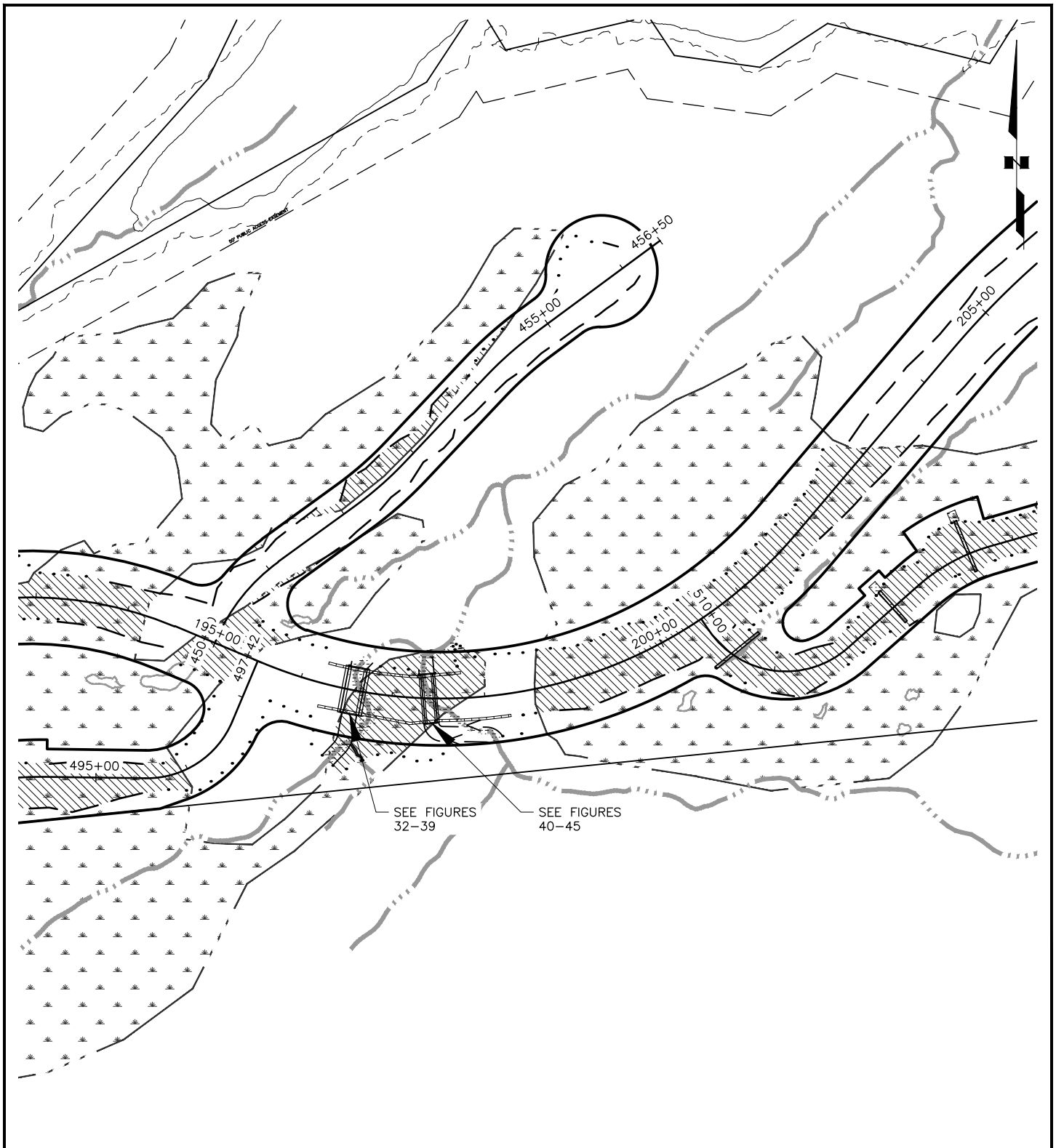
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LAT: 60.797732 LONG: -148.596515










SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5

FIG 11 OF 45

DATE: JUNE 2021



KEY:

- | | |
|---|--|
|  EXISTING WETLAND |  PROPOSED CUT |
|  EXISTING STREAM |  PROPOSED FILL |
|  EXISTING EDGE OF GRAVEL |  WETLAND IMPACT |
|  PROPOSED CULVERT |  STREAM IMPACT |
|  PROPOSED ROW | |

APPLICANT: CITY OF WHITTIER

FILE NO.: POA-XXXX-XXX

WATERWAY:

PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT

SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E

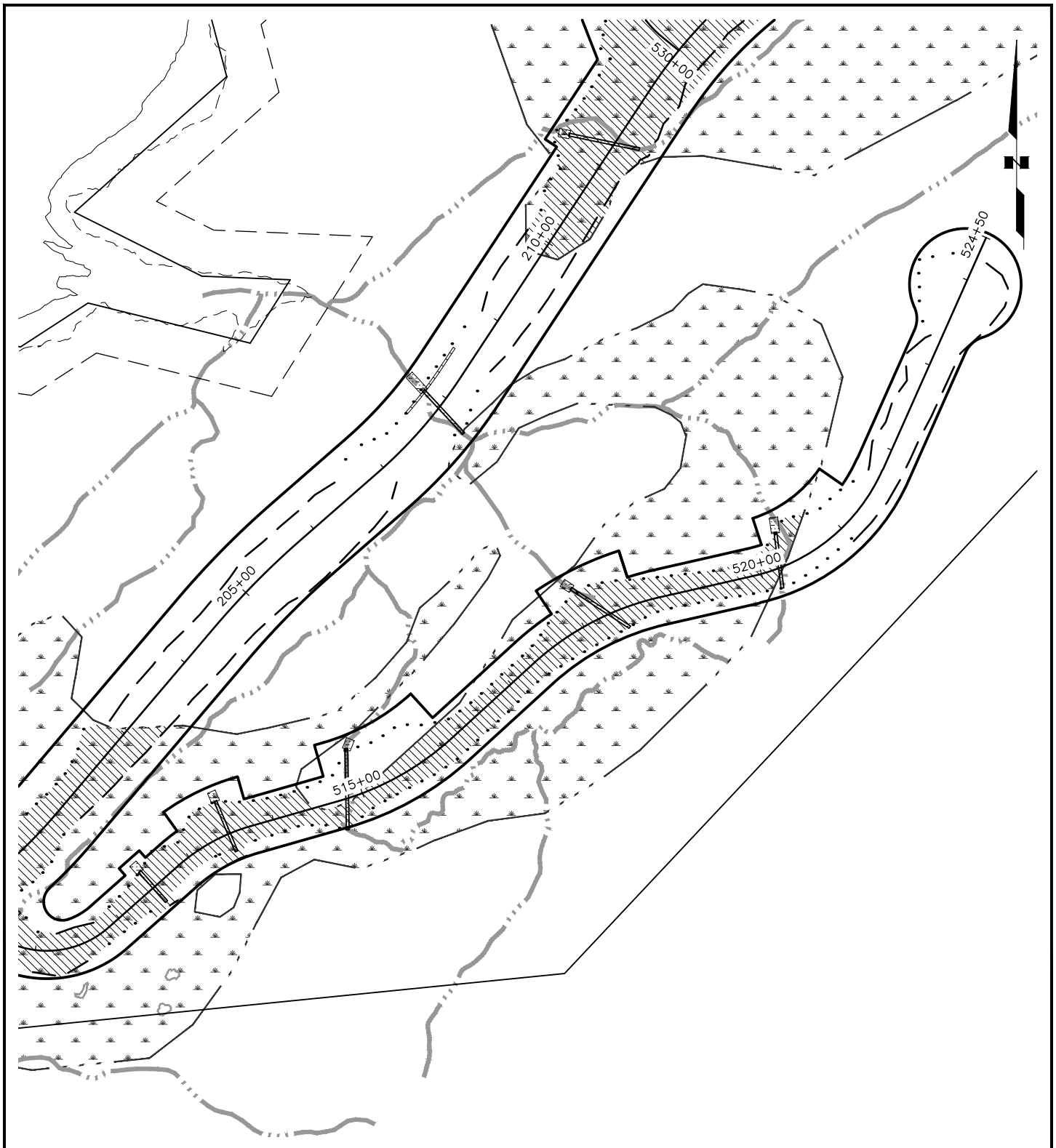
MERIDIAN: SEWARD

LAT: 60.797732 LONG: -148.596515










SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5

FIG 12 OF 45

DATE: JUNE 2021



KEY:

 EXISTING WETLAND	 PROPOSED CUT
 EXISTING STREAM	 PROPOSED FILL
 EXISTING EDGE OF GRAVEL	 WETLAND IMPACT
 PROPOSED CULVERT	 STREAM IMPACT
 PROPOSED ROW	

APPLICANT: CITY OF WHITTIER

FILE NO.: POA-XXXX-XXX

WATERWAY:

PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT

SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E

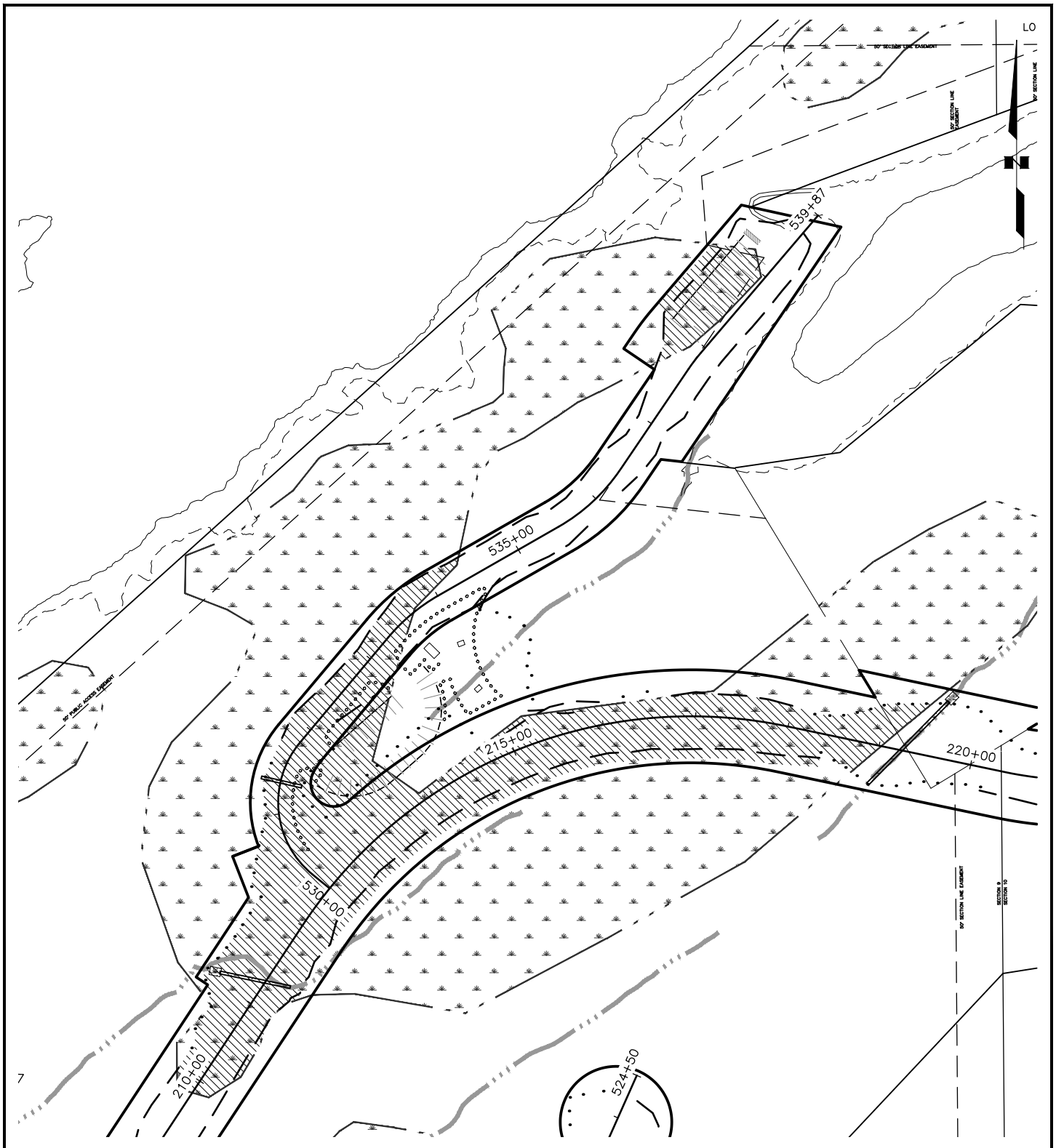
MERIDIAN: SEWARD

LAT: 60.797732 LONG: -148.596515

SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5

FIG 13 OF 45

DATE: JUNE 2021



KEY:

- | | |
|-------------------------|----------------|
| EXISTING WETLAND | PROPOSED CUT |
| EXISTING STREAM | PROPOSED FILL |
| EXISTING EDGE OF GRAVEL | WETLAND IMPACT |
| PROPOSED CULVERT | STREAM IMPACT |
| PROPOSED ROW | |

APPLICANT: CITY OF WHITTIER

FILE NO.: POA-XXXX-XXX

WATERWAY:

PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT

SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E

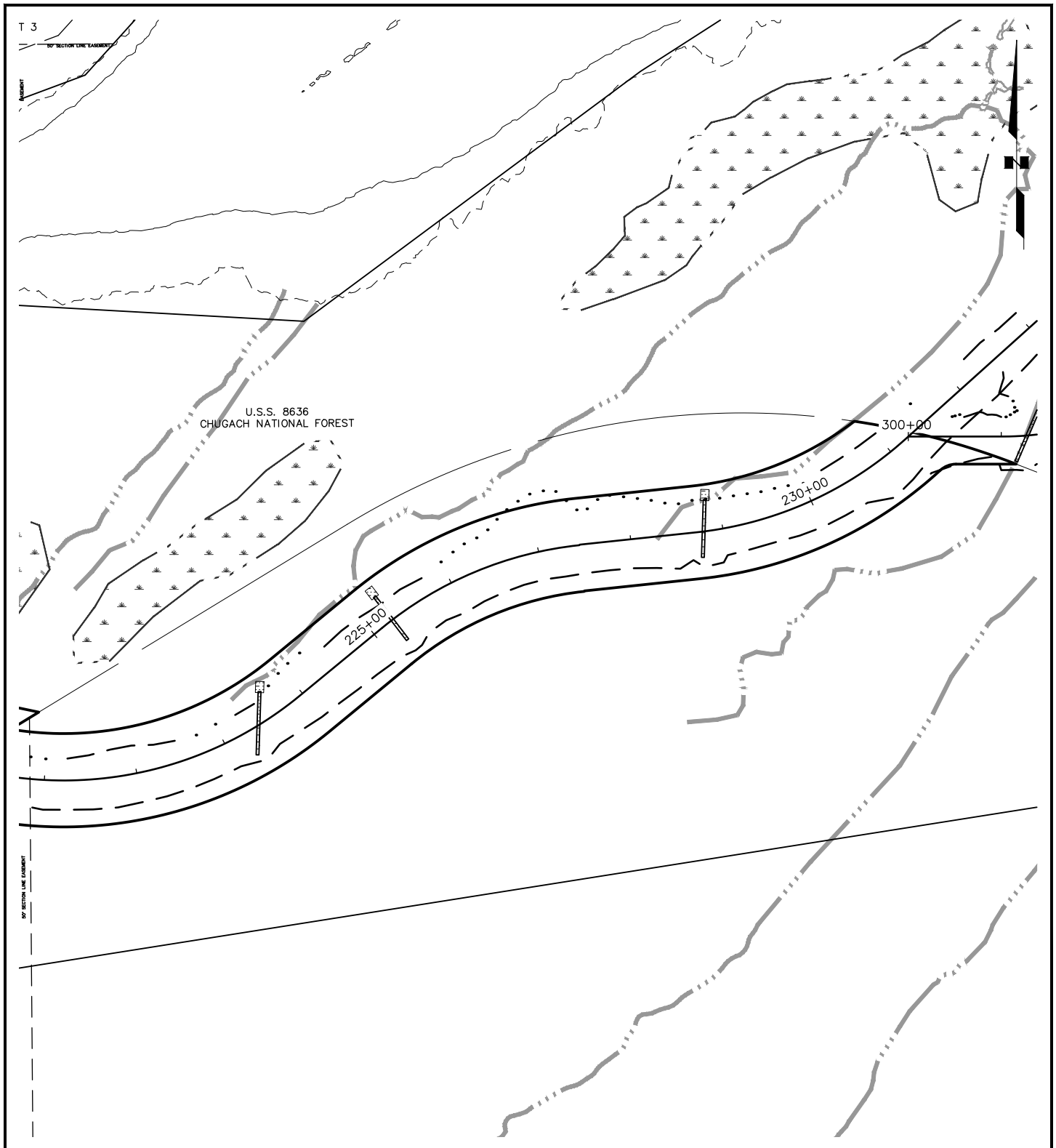
MERIDIAN: SEWARD

LAT: 60.797732 LONG: -148.596515










SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5

FIG 14 OF 45

DATE: JUNE 2021



KEY:

- | | |
|---|--|
|  EXISTING WETLAND |  PROPOSED CUT |
|  EXISTING STREAM |  PROPOSED FILL |
|  EXISTING EDGE OF GRAVEL |  WETLAND IMPACT |
|  PROPOSED CULVERT |  STREAM IMPACT |
|  PROPOSED ROW | |

APPLICANT: CITY OF WHITTIER

FILE NO.: POA-XXXX-XXX

WATERWAY:

PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT

SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E

MERIDIAN: SEWARD

LAT: 60.797732 LONG: -148.596515

SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5

FIG 15 OF 45

DATE: JUNE 2021



KEY:

- | | |
|-------------------------|----------------|
| EXISTING WETLAND | PROPOSED CUT |
| EXISTING STREAM | PROPOSED FILL |
| EXISTING EDGE OF GRAVEL | WETLAND IMPACT |
| PROPOSED CULVERT | STREAM IMPACT |
| PROPOSED ROW | |

APPLICANT: CITY OF WHITTIER

FILE NO.: POA-XXXX-XXX

WATERWAY:

PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT

SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E

MERIDIAN: SEWARD

LAT: 60.797732 LONG: -148.596515

SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5

FIG 16 OF 45

DATE: JUNE 2021

DRAWING LOCATION
J:\ALASKA\2040.02 SHOTGUN COVE ROAD\01 WORKING SET\01 CIVIL\02 DESIGN\2040.02 TYPICAL SECTIONS.DWG

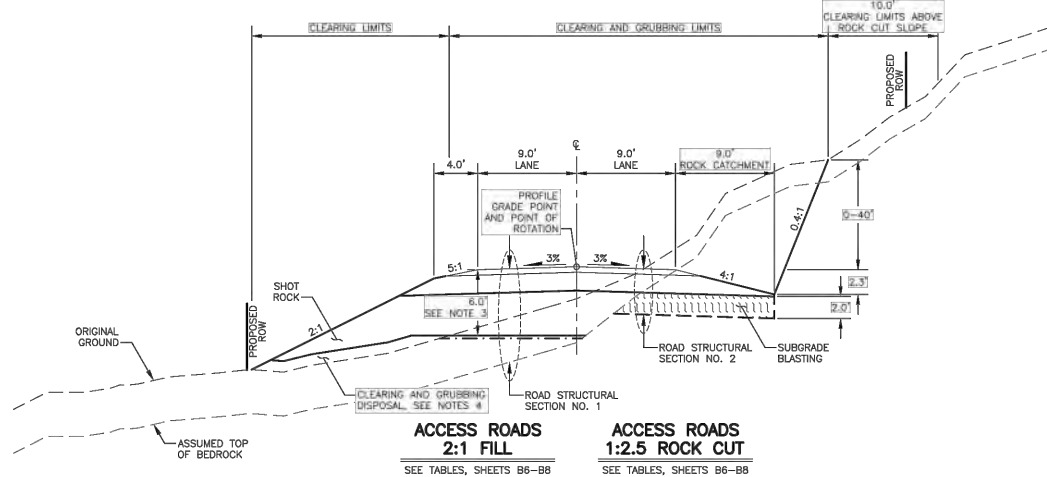
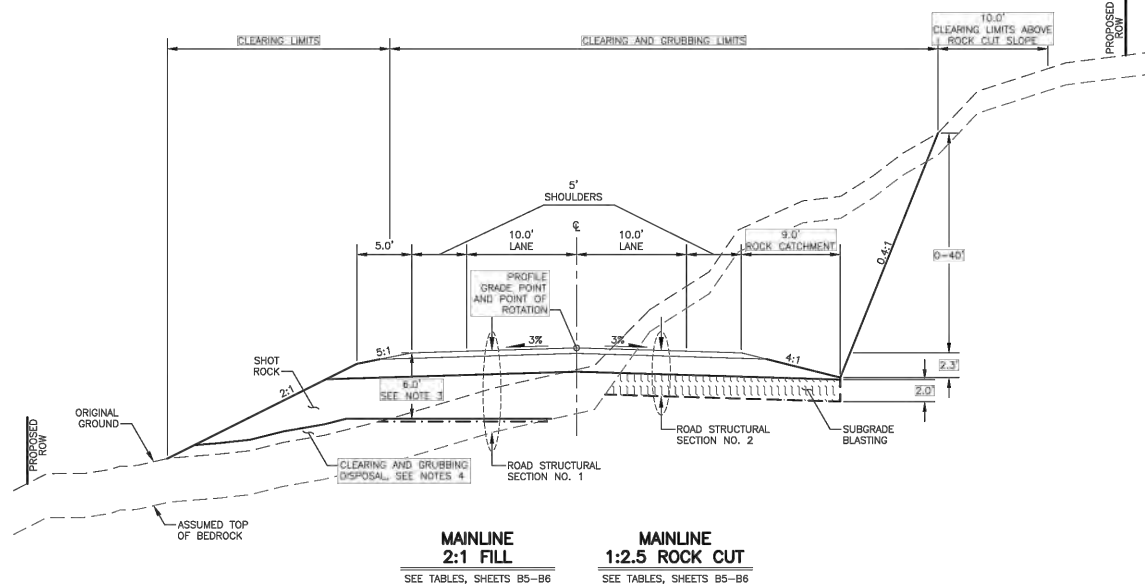
DRAWING BY
C. HARRIS JR.

SCALE
N/A

DATE
6/7/2021 9:33 AM

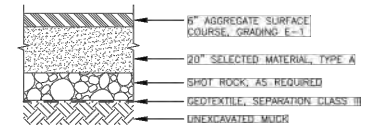
TIME

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	XXXX(XXX)/XXXXXXXXXX	2020	B1	B9

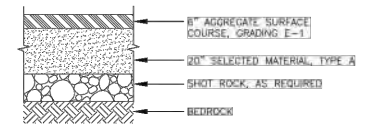


NOTES:

1. SEE SHEET B9 FOR SUPERELEVATION SLOPES AND TRANSITIONS.
2. AVERAGE DEPTH OF OVERBURDEN/MUCK IS APPROXIMATELY 2' IN FORESTED AREAS AND 4' IN WETLAND AREAS.
3. GRUB AND EXCAVATE MUCK WITHIN CUT FILL LIMITS ON SLOPES STEEPER THAN 2.5:1. GRUB AND EXCAVATE MUCK LESS THAN 6' BELOW THE FINISH GRADE ELEVATION AS SHOWN ON SLOPES 2.5:1 AND FLATTER. THE ENGINEER SHALL MAKE ALL FINAL DETERMINATIONS REGARDING MUCK EXCAVATION AND DISPOSAL. MUCK EXCAVATION TO BE PAID AS UNCLASSIFIED EXCAVATION.
4. DISPOSE OF CLEARING AND GRUBBING DEBRIS WITH WOOD PARTICLES LESS THAN 4" IN DIAMETER IN FILL EMBANKMENTS ON SLOPES 2.5:1 AND FLATTER, AT LEAST 6' BELOW THE FINISH GRADE ELEVATION THOROUGHLY MIX AND SPREAD IN AN EVEN LAYER PRIOR TO PLACING SHOT ROCK.
5. BENCH EXISTING SLOPES STEEPER THAN 4:1 PRIOR TO CONSTRUCTING EMBANKMENTS AS REQUIRED PER ADOT&PF SHSC, SECTION 203-3.03.
6. CUT AND FILL SLOPES CONSISTING OF OVERBURDEN, MUCK DISPOSAL, OR MINERAL SOILS SHALL BE LINED WITH 6" MIN SHOT ROCK.



ROADWAY STRUCTURAL SECTION NO. 1



ROADWAY STRUCTURAL SECTION NO. 2



CITY OF WHITTIER

**SHOTGUN COVE ROAD EXTENSION
MILE 2.0 TO 4.5**

TYPICAL SECTIONS

CSW ENGINEERING GROUP, LLC
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
(907) 562-3326
#4502882-14

APPLICANT: CITY OF WHITTIER
FILE NO.: POA-XXXX-XXX
WATERWAY:
PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
MERIDIAN: SEWARD
LAT: 60.797732 LONG: -148.596515
SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
FIG 17 OF 45 DATE: JUNE 2021

DRAWING LOCATION
J:\PROJECTS\20403.02 SHOTGUN COVE ROAD\00 CAD\01 WORKING SET\01 CIVIL\02 DESIGN\20403.02 TYPICAL SECTIONS.DWG

DRAWING NO.
N/A

DATE
6/17/2021 9:33 AM

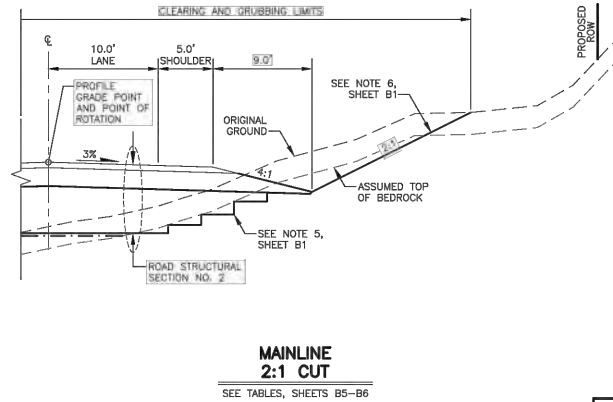
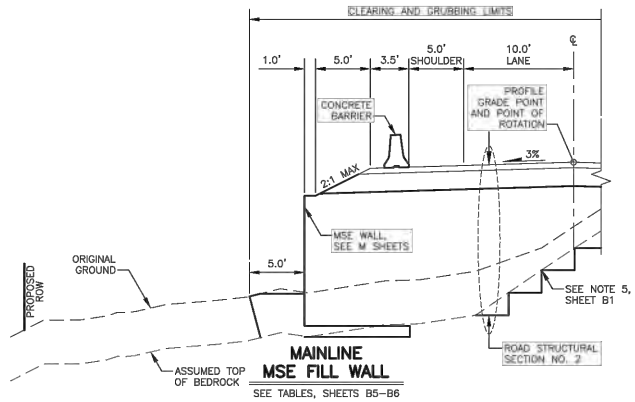
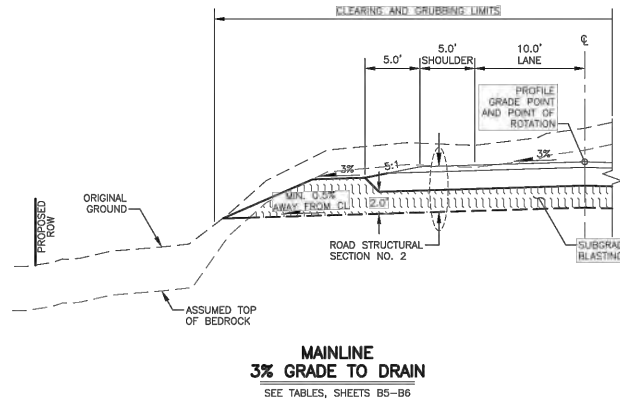
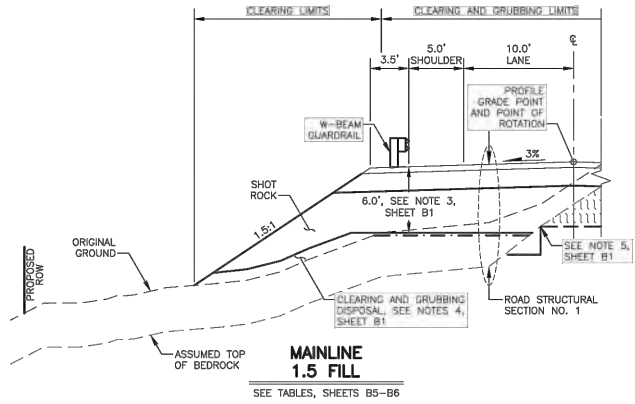
TIME
N/A

SCALE
N/A

DESIGNED BY
N/A

CHECKED BY
N/A

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	XXXX(XXX)/ XXXXXXXXXXXX	2020	B2	B9



CITY OF WHITTIER

**SHOTGUN COVE ROAD EXTENSION
MILE 2.0 TO 4.5**

TYPICAL SECTIONS

APPLICANT: CITY OF WHITTIER
 FILE NO.: POA-XXXX-XXX
 WATERWAY:
 PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
 SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
 MERIDIAN: SEWARD
 LAT: 60.797732 LONG: -148.596515
 SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 FIG 18 OF 45 DATE: JUNE 2021

DRAWING LOCATION
J:\PROJECTS\20403.02 SHOTGUN COVE ROAD\00 CAD\01 WORKING SET\01 CIVIL\02 DESIGN\20403.02 TYPICAL SECTIONS.DWG

DRAWING NO.
20403.02

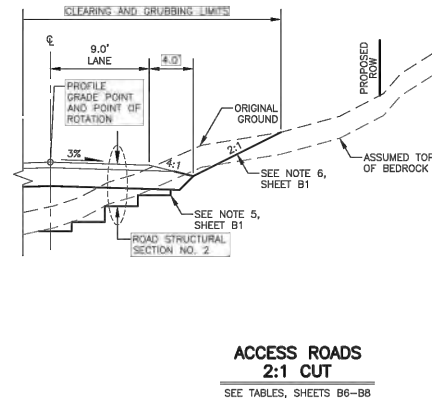
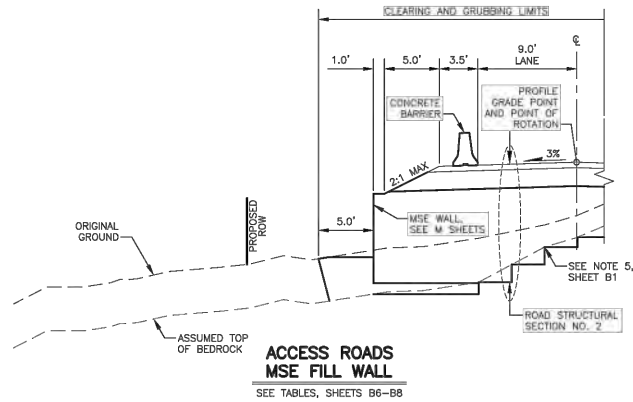
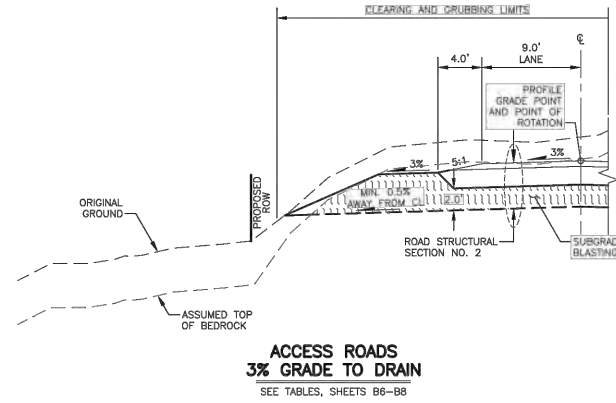
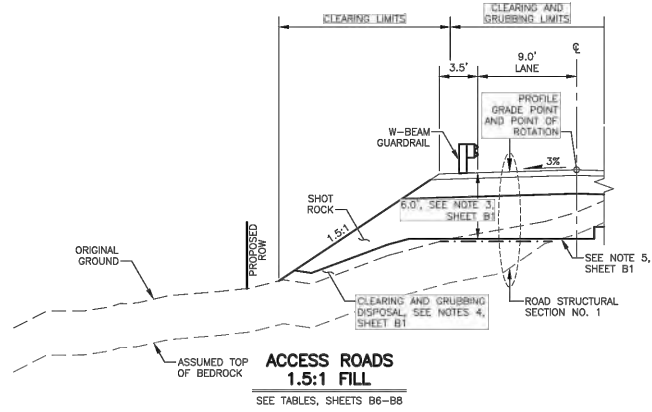
DATE
6/17/2021 9:33 AM

TIME
N/A

SCALE
N/A

DESIGNED BY
R. BROWN JR.

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	XXXX(XXX)/ XXXXXXXXXXXX	2020	B3	B9



CITY OF WHITTIER

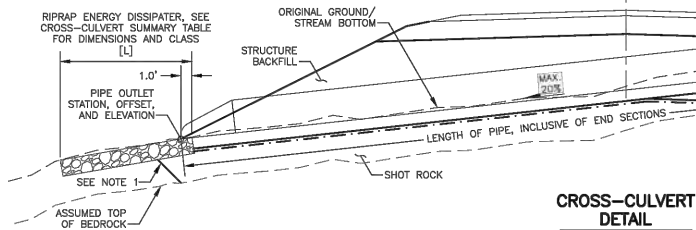
**SHOTGUN COVE ROAD EXTENSION
MILE 2.0 TO 4.5**

TYPICAL SECTIONS

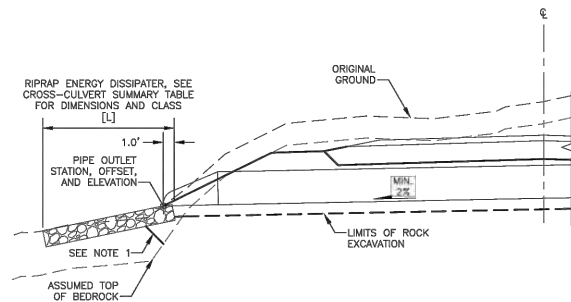
APPLICANT: CITY OF WHITTIER
 FILE NO.: POA-XXXX-XXX
 WATERWAY:
 PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
 SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
 MERIDIAN: SEWARD
 LAT: 60.797732 LONG: -148.596515
 SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 FIG 19 OF 45 DATE: JUNE 2021

DRAWING LOCATION
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DATE 1/6/2021 5:11 PM
SCALE N/A
DESIGNED BY
DRAWN BY

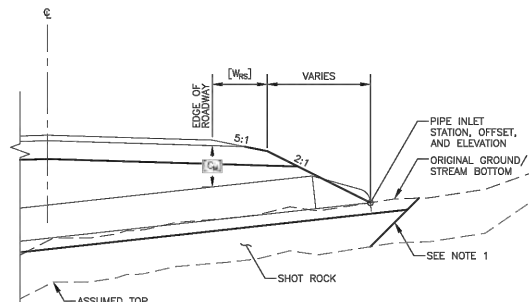
DITCH DIMENSIONS TABLE				
DITCH SECTION	MIN. COVER [C _u]	SLOPE WIDTH [W _{es}]	DITCH WIDTH [W _b]	DITCH DEPTH [D _b]
MAINLINE, 3.50' DITCH	1.50'	5.00'	7.00'	3.50'
MAINLINE, 2.75' DITCH	1.50'	5.00'	5.50'	2.75'
ACCESS ROAD, 3.75' DITCH	1.50'	4.00'	7.50'	3.75'
ACCESS ROAD, 3.00' DITCH	1.50'	4.00'	6.00'	3.00'



**CROSS-CULVERT
DETAIL**



**CROSS-CULVERT
MIN. GRADE TO DRAIN**

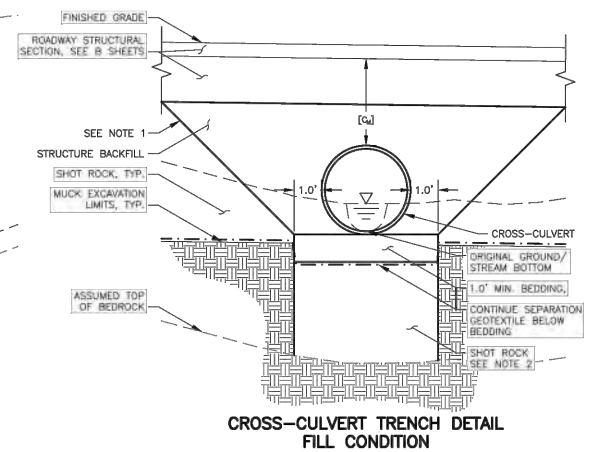


**CROSS-CULVERT
2:1 FILL**

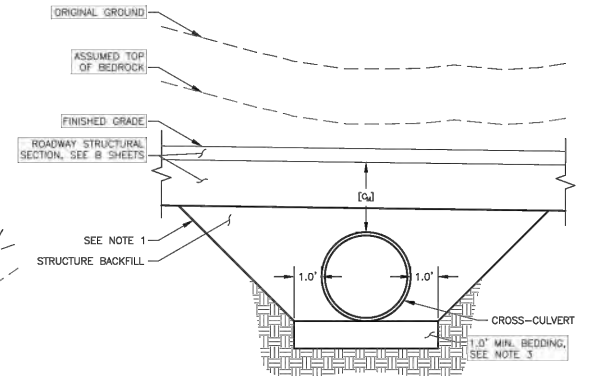
CROSS-CULVERT NOTES:

1. SLOPE TRENCH WALLS ACCORDING TO SOIL CONDITIONS AND OSHA SAFETY STANDARDS.
2. EXCAVATE ALL UNSUITABLE FOUNDATION MATERIAL BELOW CULVERT INCLUDING MUCK AND ORGANIC MATTER. REPLACE WITH SHOT ROCK AND COMPACT AS NECESSARY TO CREATE UNIFORM TRENCH BOTTOM WITH CONSTANT SLOPE PRIOR TO PLACEMENT OF GEOTEXTILE AND 1.0' BEDDING.
3. EXCAVATE ROCK AS NECESSARY TO CREATE UNIFORM TRENCH BOTTOM WITH CONSTANT SLOPE PRIOR TO PLACEMENT OF 1.0' BEDDING.

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	XXXX(XXX)/XXXXXXXXXX	2020	B4	B9



**CROSS-CULVERT TRENCH DETAIL
FILL CONDITION**



**CROSS-CULVERT TRENCH DETAIL
CUT CONDITION**

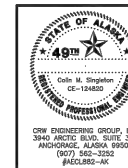


CITY OF WHITTIER
**SHOTGUN COVE ROAD EXTENSION
MILE 2.0 TO 4.5**
TYPICAL SECTIONS

APPLICANT: CITY OF WHITTIER
FILE NO.: POA-XXXX-XXX
WATERWAY:
PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
MERIDIAN: SEWARD
LAT: 60.797732 LONG: -148.596515
SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
FIG 20 OF 45
DATE: JUNE 2021

TYPICAL SECTION SUMMARY - MAINLINE													
START STATION	END STATION	LEFT						RIGHT					
		2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	0.4:1 CUT	2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	0.4:1 CUT
97+00.0	98+00.0	X						X					
98+00.0	99+75.0	X						X					
99+75.0	100+37.0	X											
100+37.0	100+85.0		X										
100+85.0	101+75.0			X									
101+75.0	102+35.0			X				X					
102+35.0	103+00.0			X									
103+00.0	103+45.0	X											
103+45.0	103+75.0	X											
103+75.0	104+60.0	X						X					
104+60.0	106+60.0	X						X					
106+60.0	110+15.0	X											
110+15.0	113+75.0	X						X					
113+75.0	114+97.0	X											
114+97.0	115+27.0	X											
115+27.0	115+40.0	X						X					
115+40.0	117+40.0	X											
117+40.0	122+50.0	X						X					
122+50.0	123+18.0			X				X					
123+18.0	123+50.0			X									
123+50.0	123+58.0	X											
123+58.0	125+00.0	X						X					
125+00.0	126+50.0	X											
126+50.0	127+10.0			X									
127+10.0	127+40.0			X									
127+40.0	128+75.0			X									
128+75.0	130+57.0		X										
130+57.0	130+87.0		X										
130+87.0	131+13.0		X										
131+13.0	131+25.0		X										
131+25.0	131+43.0	X											
131+43.0	132+25.0	X											
132+25.0	132+37.0			X									
132+37.0	132+67.0			X									
132+67.0	133+42.0			X									
133+42.0	133+72.0			X									
133+72.0	134+41.0			X									
134+41.0	134+71.0			X									
134+71.0	135+90.0			X									
135+90.0	136+00.0			X									
136+00.0	136+40.0					X							
136+40.0	137+25.0					X							
137+25.0	138+00.0	X											
138+00.0	138+30.0	X											
138+30.0	139+75.0	X						X					
139+75.0	143+40.0	X											
143+40.0	143+70.0	X											
143+70.0	144+50.0	X											
144+50.0	145+05.0			X									
145+05.0	145+35.0			X									
145+35.0	146+90.0			X									
146+90.0	148+60.0					X							
148+60.0	151+00.0			X									

TYPICAL SECTION SUMMARY - MAINLINE													
START STATION	END STATION	LEFT						RIGHT					
		2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	0.4:1 CUT	2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	0.4:1 CUT
151+00.0	151+96.0				X								
151+96.0	152+00.0				X								
152+00.0	152+16.0			X									
152+16.0	155+00.0			X									
155+00.0	155+32.0	X											
155+32.0	155+62.0	X											
155+62.0	156+32.0	X											
156+32.0	156+62.0	X											
156+62.0	157+00.0												
157+00.0	157+17.0	X											
157+17.0	157+47.0	X											
157+47.0	162+16.0	X											
162+16.0	162+46.0	X											
162+46.0	162+75.0	X											
162+75.0	165+50.0					X							
165+50.0	166+55.0				X								
166+55.0	167+50.0				X								
167+50.0	167+55.0					X							
167+55.0	168+25.0					X							
168+25.0	169+25.0					X							
169+25.0	169+65.0					X							
169+65.0	169+95.0					X							
169+95.0	173+12.0					X							
173+12.0	173+42.0					X							
173+42.0	177+85.0					X							
177+85.0	178+20.0					X							
178+20.0	181+35.0					X							
181+35.0	181+50.0					X							
181+50.0	183+15.0					X							
183+15.0	183+50.0					X							
183+50.0	184+25.0					X							
184+25.0	185+75.0	X											
185+75.0	185+90.0	X											
185+90.0	186+50.0												
186+50.0	187+00.0												
187+00.0	188+35.0												
188+35.0	188+49.0												
188+49.0	188+79.0												
188+79.0	190+00.0												
190+00.0	190+30.0												
190+30.0	190+45.0												
190+45.0	191+00.0												
191+00.0	191+75.0												
191+75.0	192+00.0	X											



CITY OF WHITTIER
**SHOTGUN COVE ROAD EXTENSION
MILE 2.0 TO 4.5**

TYPICAL SECTIONS

APPLICANT: CITY OF WHITTIER
FILE NO.: POA-XXXX-XXX
WATERWAY:
PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
MERIDIAN: SEWARD
LAT: 60.797732 LONG: -148.596515
SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
FIG 21 OF 45 DATE: JUNE 2021

TYPICAL SECTION SUMMARY - MAINLINE													
START STATION	END STATION	LEFT					RIGHT						
		2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	0.4:1 CUT	2:1 FILL	1.5:1 FILL	MSE FILL	2:1 CUT	2:1 CUT, 3.50' DITCH	2:1 CUT, 2.75' DITCH
192+00.0	193+25.0	X						X					
193+25.0	193+50.0	X									X		
193+50.0	194+75.0					X					X		
194+75.0	195+00.0					X							
195+00.0	196+25.0	X						X					
196+25.0	197+75.0			X						X			
197+75.0	198+25.0	X								X			
198+25.0	200+90.0	X									X		
200+90.0	201+75.0	X						X					
201+75.0	207+60.0	X						X					
207+60.0	208+50.0			X									
208+50.0	209+00.0			X									
209+00.0	210+25.0	X										X	
210+25.0	211+00.0			X								X	
211+00.0	211+28.0			X							X		
211+28.0	211+58.0			X								X	
211+58.0	212+00.0			X							X		
212+00.0	218+40.0			X								X	
218+40.0	220+15.0			X				X					
220+15.0	220+50.0			X								X	
220+50.0	223+05.0	X										X	
223+05.0	223+35.0	X										X	
223+35.0	225+00.0	X										X	
225+00.0	225+05.0		X										X
225+05.0	225+35.0		X										X
225+35.0	228+50.0		X									X	
228+50.0	228+65.0	X										X	
228+65.0	228+95.0	X										X	
228+95.0	230+00.0	X										X	
230+00.0	230+50.0					X							X
230+50.0	231+00.0					X		X					
231+00.0	231+02.5	X						X					
231+02.5	233+18.2	X											
233+18.2	236+70.2	X						X					
236+70.2	237+32.7							X					
237+32.7	237+59.0							X					
237+59.0	242+68.0	X											
242+68.0	242+94.5	X						X					
242+94.5	242+97.4							X					
242+97.4	243+14.3							X					
243+14.3	243+27.2							X					

TYPICAL SECTION SUMMARY - TRINITY POINT ADDITION													
START STATION	END STATION	LEFT					RIGHT						
		2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	0.4:1 CUT	2:1 FILL	1.5:1 FILL	MSE FILL	2:1 CUT	2:1 CUT, 3.50' DITCH	2:1 CUT, 2.75' DITCH
300+00.0	300+24.2							X					
300+24.2	300+47.0							X					
300+47.0	300+95.0							X					
300+95.0	301+18.0	X									X		
301+18.0	301+25.0										X		
301+25.0	301+40.4							X					
301+40.4	302+13.0												
302+13.0	302+75.0	X						X					
302+75.0	306+25.0	X								X			
306+25.0	307+50.0	X								X			

TYPICAL SECTION SUMMARY - 102+50 ACCESS ROAD													
START STATION	END STATION	LEFT					RIGHT						
		2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	0.4:1 CUT	2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	2:1 CUT, 3.75' DITCH
400+15.0	402+25.0					X						X	
402+25.0	404+10.0	X						X					
404+10.0	404+25.0	X											X
404+25.0	405+75.0					X							X
405+75.0	406+00.0		X										
406+00.0	406+32.0		X								X		
406+32.0	406+82.0		X									X	
406+82.0	406+75.0	X								X			
406+75.0	408+00.0					X							X
408+00.0	410+25.0					X				X			
410+25.0	411+41.5					X						X	

TYPICAL SECTION SUMMARY - 144+40 ACCESS ROAD													
START STATION	END STATION	LEFT					RIGHT						
		2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	0.4:1 CUT	2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	2:1 CUT, 3.75' DITCH
420+15.0	423+31.0	X						X					



CITY OF WHITTIER
**SHOTGUN COVE ROAD EXTENSION
MILE 2.0 TO 4.5**

TYPICAL SECTIONS

APPLICANT: CITY OF WHITTIER
FILE NO.: POA-XXXX-XXX
WATERWAY:
PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
MERIDIAN: SEWARD
LAT: 60.797732 LONG: -148.596515
SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
FIG 22 OF 45 DATE: JUNE 2021

TYPICAL SECTION SUMMARY - 184+25 ACCESS ROAD												
START STATION	END STATION	LEFT					RIGHT					REMARKS
		2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	
430+15.0	430+24.0	X					X					
430+24.0	432+75.0					X	X					
432+75.0	433+25.0	X					X					
433+25.0	435+00.0	X						X				
435+00.0	437+30.0				X			X				
437+30.0	438+00.0				X							
438+00.0	438+35.0			X			X					
438+35.0	438+75.0			X				X				
438+75.0	439+25.0		X				X					
439+25.0	442+75.0		X								X	
442+75.0	443+25.0			X							X	
443+25.0	443+75.0			X			X					
443+75.0	443+90.0				X			X				
443+90.0	444+00.0			X							X	

TYPICAL SECTION SUMMARY - 190+50 ACCESS ROAD												
START STATION	END STATION	LEFT					RIGHT					REMARKS
		2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	
450+00.0	450+60.0					X	X					
450+60.0	451+00.0					X		X				
451+00.0	451+80.0		X					X				
451+80.0	452+05.0	X						X				
452+05.0	453+10.0		X					X				
453+10.0	453+40.0				X			X				
453+40.0	453+75.0		X					X				
453+75.0	456+00.0			X				X				

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	XXXX(XXX)/ XXXXXXXXXXXX	2020	B7	B9

TYPICAL SECTION SUMMARY - 195+50 ACCESS ROAD												
START STATION	END STATION	LEFT					RIGHT					REMARKS
		2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	
456+50.0	456+75.0	X										
456+75.0	457+75.0		X									
457+75.0	460+00.0	X										
460+00.0	462+75.0	X										
462+75.0	467+50.0			X								
467+50.0	469+00.0			X								
469+00.0	474+75.0	X					X					
474+75.0	475+25.0				X							
475+25.0	475+75.0				X							
475+75.0	476+25.0	X										
476+25.0	477+25.0					X						
477+25.0	478+75.0	X										
478+75.0	479+85.0	X								X		
479+85.0	480+95.0	X										
480+95.0	482+10.0	X										
482+10.0	482+61.0	X					X					
482+61.0	482+91.0	X										
482+91.0	483+50.0	X					X					
483+50.0	485+05.0	X										
485+05.0	485+40.0	X										
485+40.0	488+30.0	X										
488+30.0	488+94.0	X										
488+94.0	489+00.0	X					X					
489+00.0	490+25.0			X								
490+25.0	492+76.0			X								
492+76.0	492+80.0		X									
492+80.0	493+16.0	X										
493+16.0	497+26.8	X					X					

TYPICAL SECTION SUMMARY - 195+50 SUB ACCESS ROAD												
START STATION	END STATION	LEFT					RIGHT					REMARKS
		2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	
500+09.0	501+10.0	X					X					
501+10.0	501+25.0						X					
501+25.0	501+40.0								X			
501+40.0	501+75.0	X							X			
501+75.0	503+25.0	X					X					
503+25.0	504+00.0	X						X				
504+00.0	505+83.0	X					X					



CITY OF WHITTIER
SHOTGUN COVE ROAD EXTENSION
MILE 2.0 TO 4.5

TYPICAL SECTIONS

APPLICANT: CITY OF WHITTIER
FILE NO.: POA-XXXX-XXX
WATERWAY:
PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
MERIDIAN: SEWARD
LAT: 60.797732 LONG: -148.596515
SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
FIG 23 OF 45 DATE: JUNE 2021

DRAWING LOCATION
C:\PROJECTS\20403.02 SHOTGUN COVE ROAD\00 CAD\01 WORKING SET\01 CIVIL\02 DESIGN\20403.02 TYPICAL SECTIONS.DWG
DATE 1/6/2021 TIME 5:11 PM SCALE 1/4" = 1' - 0" DESIGNED BY J. JORDAN
CHECKED BY J. JORDAN

TYPICAL SECTION SUMMARY - 200+50 ACCESS ROAD																
START STATION	END STATION	LEFT						RIGHT						REMARKS		
		2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	0.4:1 CUT	2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	2:1 CUT, 3.75' DITCH		2:1 CUT, 3.00' DITCH	0.4:1 CUT
510+15.0	512+30.0	X						X								
512+30.0	512+60.0	X											X			
512+60.0	513+30.0	X						X								
513+30.0	513+60.0	X											X			
513+60.0	520+00.0	X						X								
520+00.0	521+00.0			X				X								
521+00.0	521+70.0	X													X	
521+70.0	523+25.0		X												X	
523+25.0	523+94.3	X													X	

		TYPICAL SECTION SUMMARY - 212+65 ACCESS ROAD												REMARKS		
START STATION	END STATION	LEFT						RIGHT								
		2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	0.4:1 CUT	2:1 FILL	3% FILL	1.5:1 FILL	MSE FILL	2:1 CUT	2:1 CUT, 3.75' DITCH		2:1 CUT, 3.00' DITCH	0.4:1 CUT
530+15.0	531+50.0	X						X								
531+50.0	532+25.0					X		X								
532+25.0	532+75.0					X			X							
532+75.0	536+25.0					X		X								
536+25.0	536+75.0					X			X							
536+75.0	536+96.8					X		X								
536+96.8	537+29.4					X		X								
537+29.4	541+03.5					X		X								

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	XXXX(XXX)/ XXXXXXXXXXX	2020	B8	B9



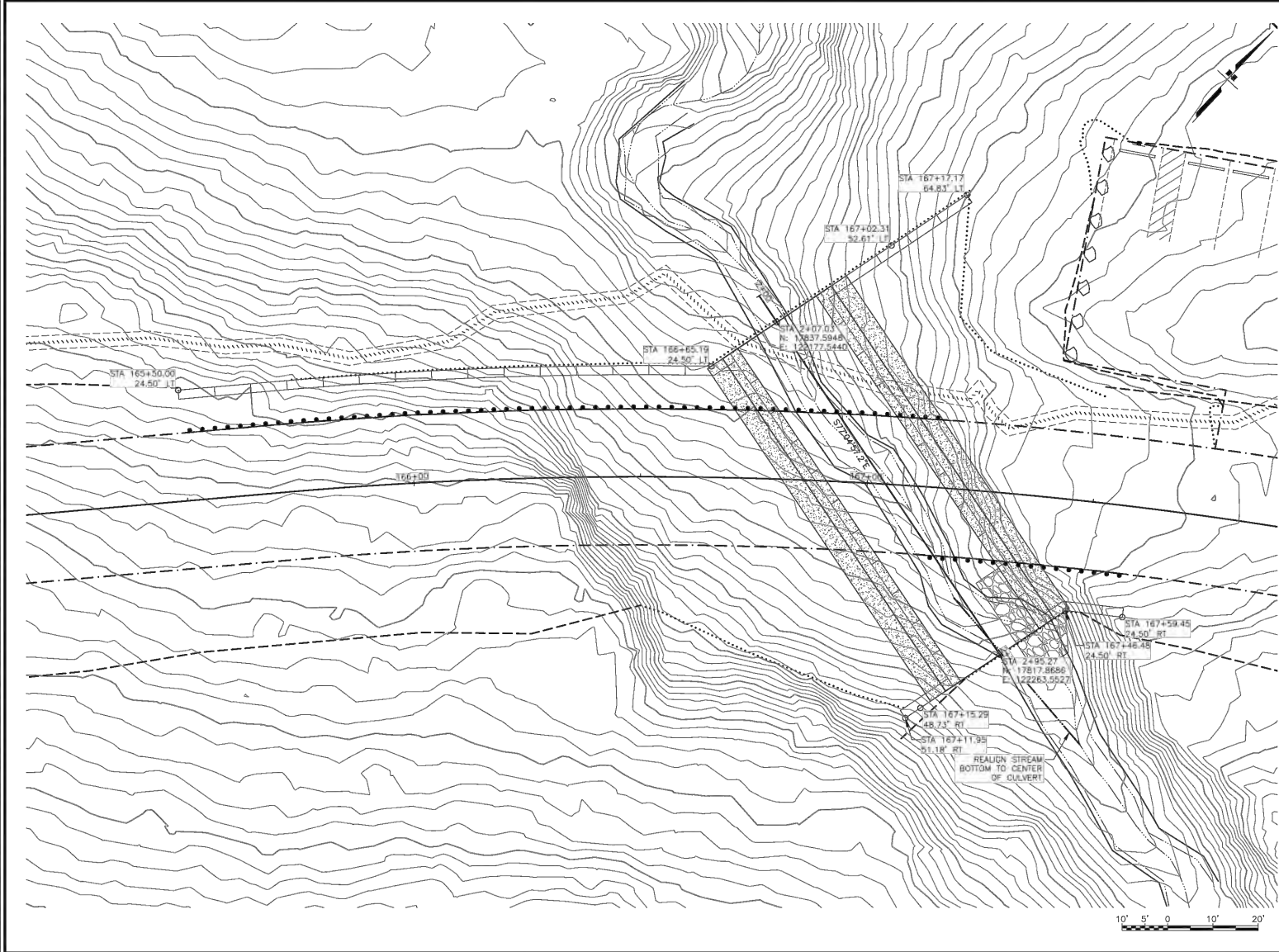
CITY OF WHITTIER
**SHOTGUN COVE ROAD EXTENSION
MILE 2.0 TO 4.5**

TYPICAL SECTIONS

APPLICANT: CITY OF WHITTIER
FILE NO.: POA-XXXX-XXX
WATERWAY:
PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
MERIDIAN: SEWARD
LAT: 60.797732 LONG: -148.596515
SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
FIG 24 OF 45
DATE: JUNE 2021

DRAWING LOCATION
 C:\V\05\DATA\20403.02 SHOTGUN COVE ROAD\0402\01 WORKING SET\01 CIVIL\02 DESIGN\20403.02 PLAN AND PROFILE - STA 167 STRUCTURAL PLATING

DATE 6/7/2021 TIME 8:21 AM
 SCALE 1"=40'

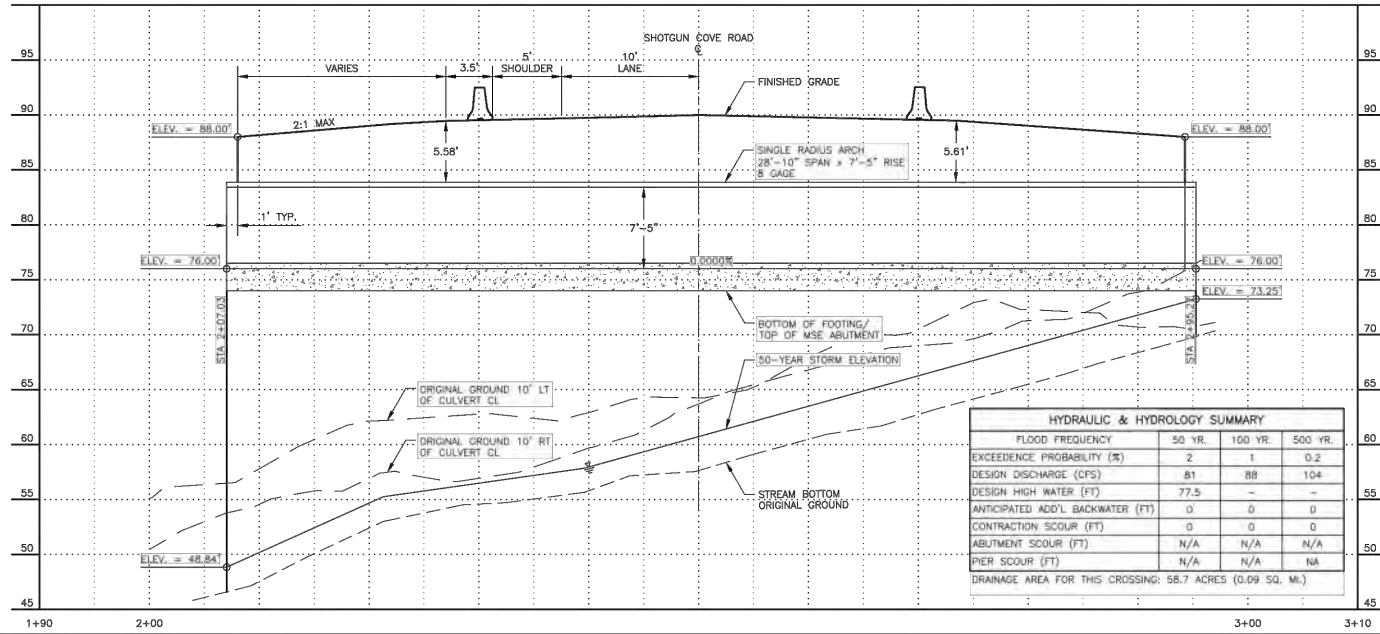
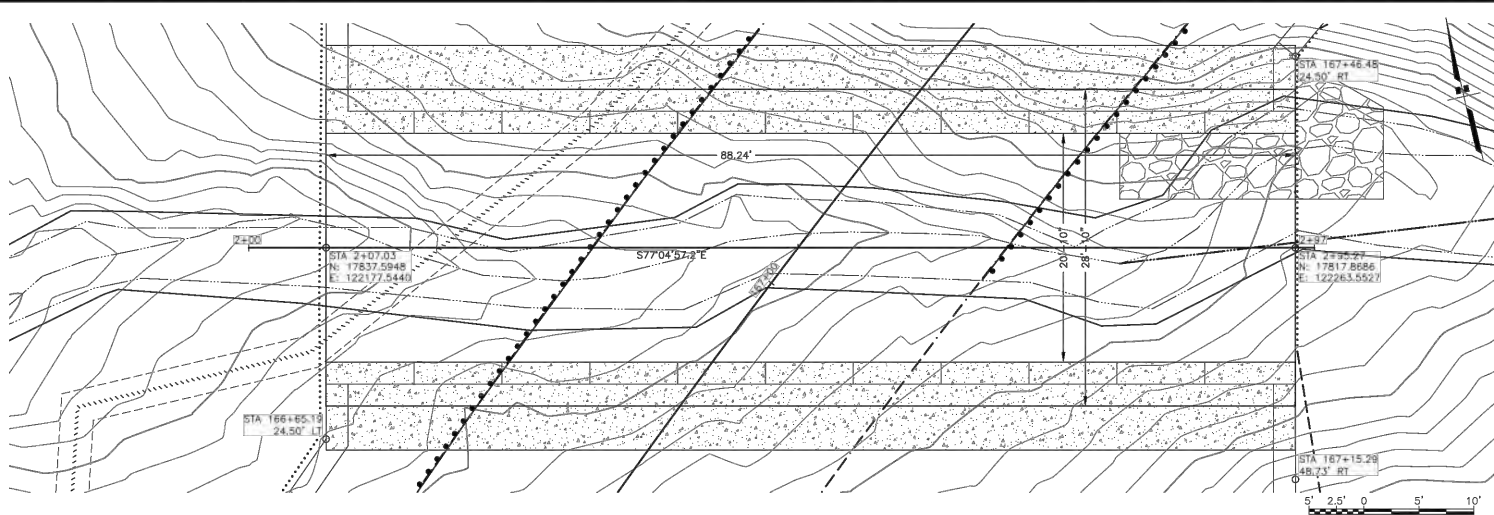


SHEET NO.	TOTAL SHEETS
N1	N17
STATE	YEAR
ALASKA	2020
PROJECT DESIGNATION	
XXXX(XXX)/XXXXXXXXXX	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
CITY OF WHITTIER SHOTGUN COVE ROAD EXTENSION MILE 2.0 TO 4.5 STA 167+00 STRUCTURAL PLATE SITE PLAN	

APPLICANT: CITY OF WHITTIER
 FILE NO.: POA-XXXX-XXX
 WATERWAY:
 PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
 SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
 MERIDIAN: SEWARD
 LAT: 60.797732 LONG: -148.596515
 SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 FIG 25 OF 45 DATE: JUNE 2021

DRAWING LOCATION
 C:\DATA\2040.02 SHOTGUN COVE ROAD\02 CIVIL\2040.02 PLAN AND PROFILE - STA 167 STRUCTURAL PLATING

DATE 6/7/2021 TIME 8:21 AM
 SCALE 1"=40' 1"=40'



HYDRAULIC & HYDROLOGY SUMMARY			
FLOOD FREQUENCY	50 YR.	100 YR.	500 YR.
EXCEEDENCE PROBABILITY (%)	2	1	0.2
DESIGN DISCHARGE (CFS)	81	88	104
DESIGN HIGH WATER (FT)	77.5	-	-
ANTICIPATED ADD'L BACKWATER (FT)	0	0	0
CONTRACTION SCOUR (FT)	0	0	0
ABUTMENT SCOUR (FT)	N/A	N/A	N/A
PIER SCOUR (FT)	N/A	N/A	NA
DRAINAGE AREA FOR THIS CROSSING: 58.7 ACRES (0.09 SQ. MI.)			

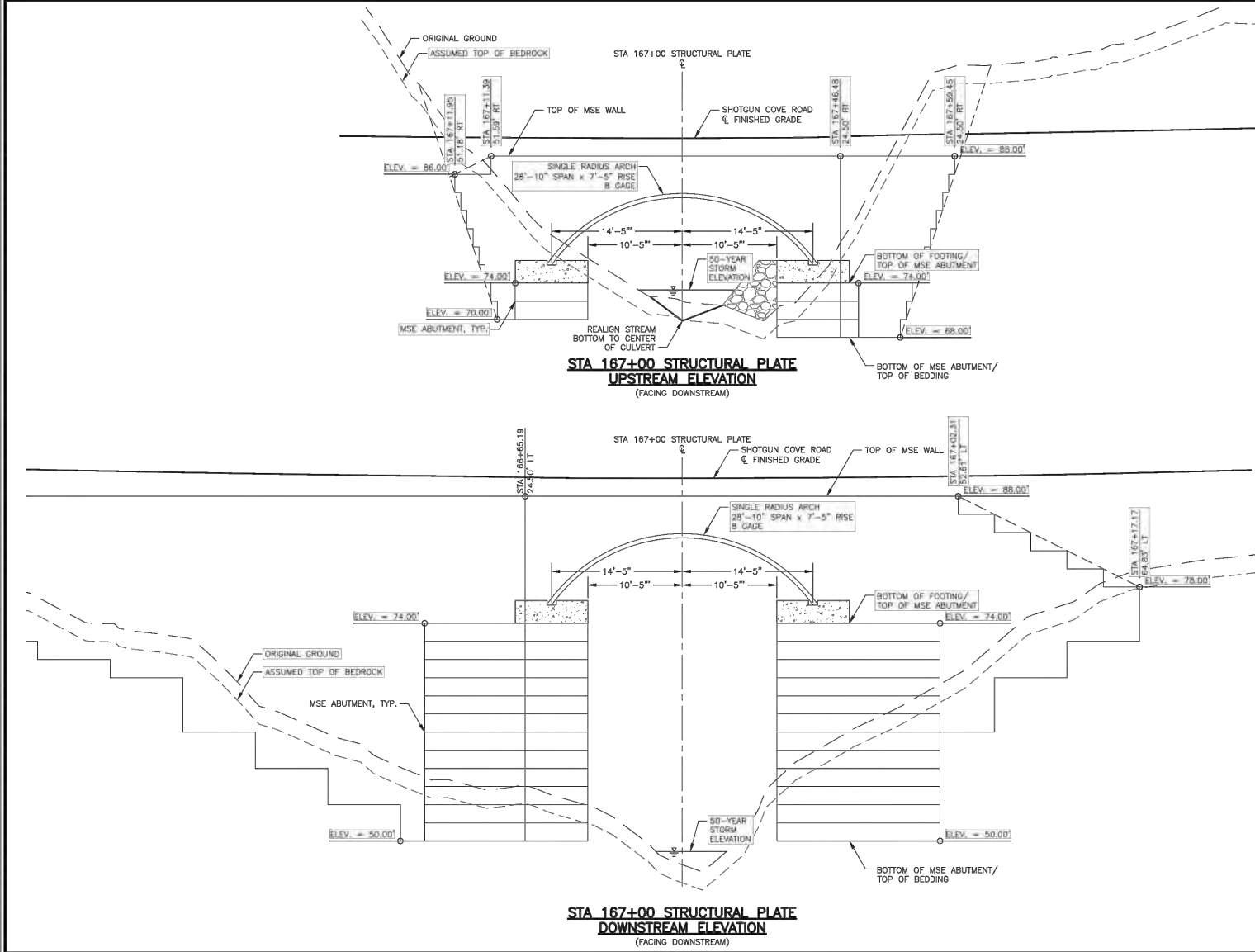
SHEET NO.	TOTAL SHEETS
N2	N17
STATE	YEAR
ALASKA	2020
PROJECT DESIGNATION	
XXXX(XXX)/XXXXXXXXXX	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	

STATE OF ALASKA
 49th
 CIVIL & STRUCTURAL
 ENGINEERING BOARD

CITY OF WHITTIER
 SHOTGUN COVE ROAD
 EXTENSION
 MILE 2.0 TO 4.5
 STA 167+00 STRUCTURAL
 PLATE
 PLAN & PROFILE

APPLICANT: CITY OF WHITTIER
 FILE NO.: POA-XXXX-XXX
 WATERWAY:
 PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
 SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
 MERIDIAN: SEWARD
 LAT: 60.797732 LONG: -148.596515
 SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 FIG 26 OF 45 DATE: JUNE 2021

DRAWING LOCATION: C:\PROJECTS\2043.02 SHOTGUN COVE ROAD\2043.02 STRUCTURAL PLATING
 DATE: 6/1/2021 8:21 AM
 SCALE: 1"=10'-0"



SHEET NO.	TOTAL SHEETS
N3	N17
STATE	YEAR
ALASKA	2020
PROJECT DESIGNATION	
XXXX(XXX)/XXXXXXXXXX	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	

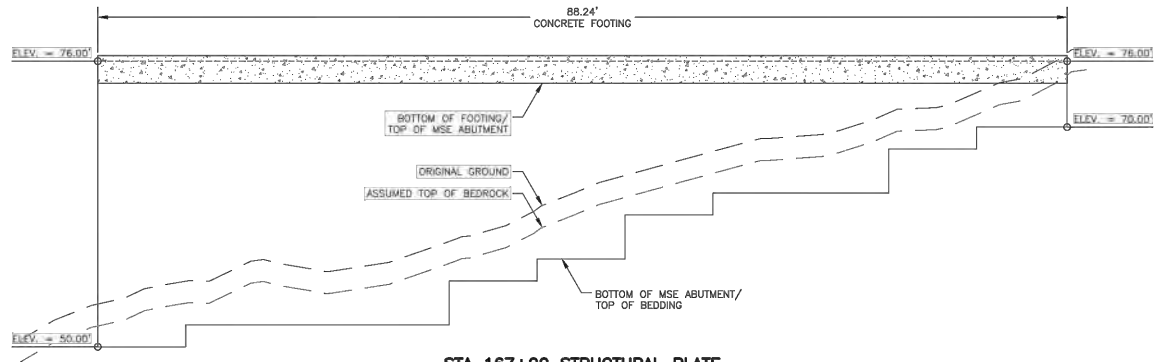


STATE OF ALASKA
 49th
 CE-124820
 COW ENGINEERING GROUP, LLC
 3040 ARCTIC BLVD., SUITE 300
 ANCHORAGE, ALASKA 99503
 (907) 562-3032
 EAGLE.BIRD-AK

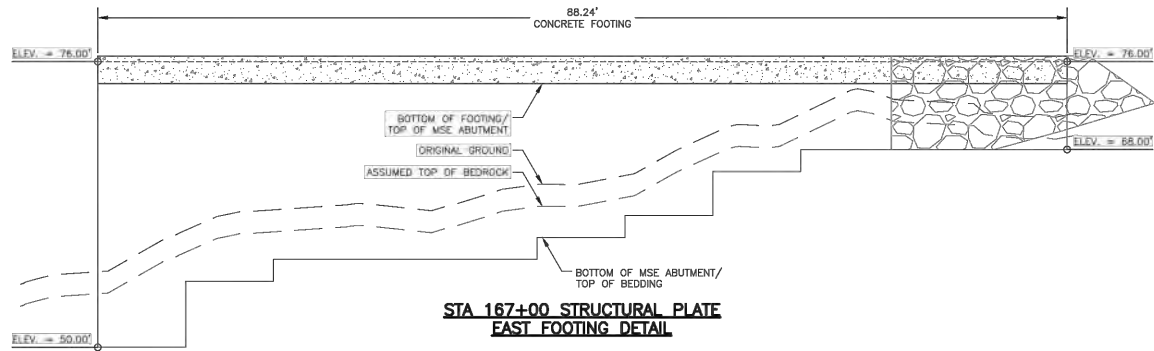
CITY OF WHITTIER
 SHOTGUN COVE ROAD
 EXTENSION
 MILE 2.0 TO 4.5
 STA 167+00 STRUCTURAL
 PLATE
 MSE FACING

APPLICANT: CITY OF WHITTIER
 FILE NO.: POA-XXXX-XXX
 WATERWAY:
 PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
 SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
 MERIDIAN: SEWARD
 LAT: 60.797732 LONG: -148.596515
 SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 FIG 27 OF 45
 DATE: JUNE 2021

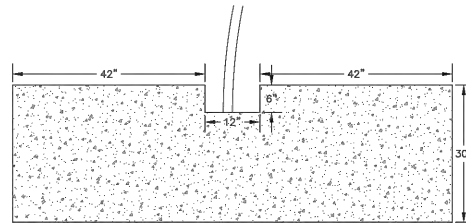
DRAWING LOCATION
 C:\V\DATA\20403.02 SHOTGUN COVE ROAD\04 CIVIL\01 WORKING SET\01 CIVIL\02 DESIGN\20403.02 PLAN AND PROFILE - STA 167 STRUCTURAL PLATING.DWG
 DATE 6/7/2021 8:21 AM
 SCALE
 DESIGNED BY
 DRAWN BY




**STA 167+00 STRUCTURAL PLATE
 WEST ABUTMENT DETAIL**



**STA 167+00 STRUCTURAL PLATE
 EAST FOOTING DETAIL**

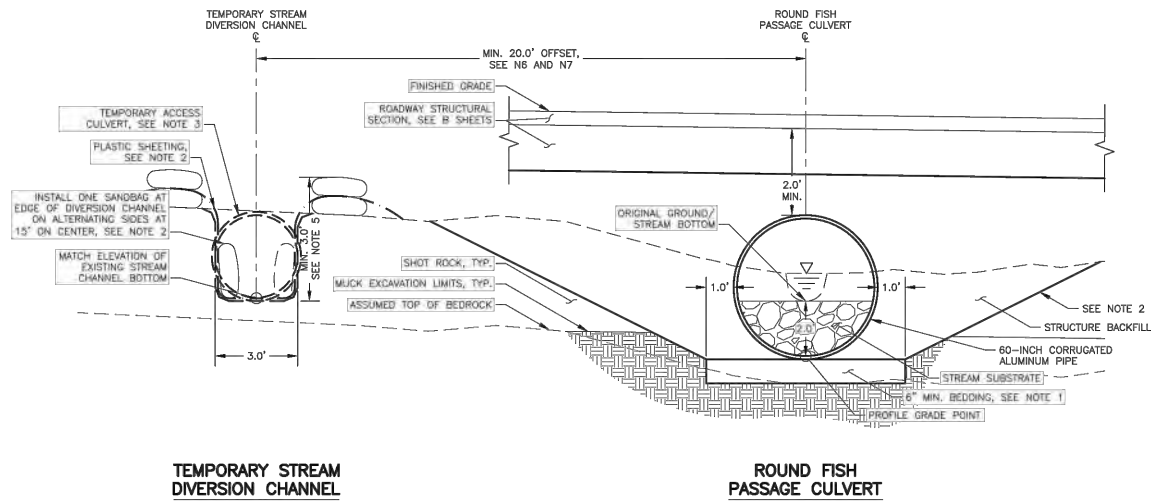


**STA 167+00 STRUCTURAL PLATE
 ASSUMED FOOTING DETAIL**

SHEET NO.	TOTAL SHEETS
N4	N17
STATE	YEAR
ALASKA	2020
PROJECT DESIGNATION	
XXXX(XXX)/XXXXXXXXXX	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
	
CITY OF WHITTIER SHOTGUN COVE ROAD EXTENSION MILE 2.0 TO 4.5 STA 167+00 STRUCTURAL PLATE FOOTING DETAILS	

APPLICANT: CITY OF WHITTIER
 FILE NO.: POA-XXXX-XXX
 WATERWAY:
 PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
 SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
 MERIDIAN: SEWARD
 LAT: 60.797732 LONG: -148.596515
 SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 FIG 28 OF 45 DATE: JUNE 2021

DRAWING LOCATION	DATE	TIME	SCALE	REVISION BY
SHOTGUN COVE ROAD\00 CAD\01 WORKING SET\01 CHIL\02 DESIGN\20100302 PLAN AND PROFILE - STA	6/1/2021	8:21 AM		REVISION BY
AL. CHIL. PASSAGE P.W.C.				REVISION BY



STREAM DIVERSION NOTES:

1. EXCAVATE ORGANIC MAT ALONG TEMPORARY STREAM DIVERSION CHANNEL AND STAGE FOR REUSE DURING CHANNEL RESTORATION.
2. LINE TEMPORARY STREAM DIVERSION CHANNEL WITH 10 MIL REINFORCED POLYETHYLENE PLASTIC SHEETING AND COVER WITH GROUND STAPLES OR 10 TO 15 MEANS NECESSARY TO PREVENT EROSION, ENSURE WATER CANNOT SEEP BELOW SHEETING.
3. CONSTRUCT ACCESS ROUTE ACROSS TEMPORARY STREAM DIVERSION CHANNEL BY PLACING 3" DIA. CORRUGATED CULVERT IN LINED DIVERSION CHANNEL, COVER TEMPORARY CULVERT WITH 10 MIL REINFORCED POLYETHYLENE PLASTIC SHEETING PRIOR TO PLACING FILL.
4. SANDBAGS SHALL BE A MINIMUM OF 14" WIDE X 24" LONG AND WEIGH A MINIMUM OF 50 POUNDS.
5. WHERE REQUIRED STACK SANDBAGS ALONG TEMPORARY STREAM DIVERSION CHANNEL TO FACILITATE A MINIMUM CHANNEL DEPTH OF 3.0' TYP.
6. AFTER CULVERT AND STREAM SUBSTRATE HAS BEEN INSTALLED AND APPROVED BY THE ENGINEER, REMOVE ALL EXCESS LINE PLASTIC FROM DIVERSION CHANNEL, AND SANDBAGS, BACKFILL PORTIONS OF TEMPORARY CREEK DIVERSION CHANNEL UNDER ROADWAY PER PERMANENT STRUCTURE SECTION, BACKFILL TEMPORARY STREAM DIVERSION CHANNEL WITH STREAM SUBSTRATE WITHIN 5 FEET OF BEGINNING AND END OF DIVERSION, RESTORE REMAINING CHANNEL WITH STAGED ORGANIC MAT.

FISH PASSAGE NOTES:

1. EXCAVATE ALL UNSUITABLE FOUNDATION MATERIAL BELOW CULVERT INCLUDING MUCK AND ORGANIC MATTER.
2. SLOPE TRENCH WALLS ACCORDING TO SOIL CONDITIONS AND OSHA SAFETY STANDARDS.
3. FILL BOTTOM OF 60-INCH FISH PASSAGE CULVERT WITH STREAM SUBSTRATE, 24 INCHES DEEP. EXTEND STREAM SUBSTRATE 5 FEET BEYOND CULVERT ENDS.
4. GRADE STREAM TO MATCH TOP OF STREAM SUBSTRATE WITHIN 5 FEET OF CULVERT.

SHEET NO.		TOTAL SHEETS	
N5		N17	
STATE		YEAR	
ALASKA		2020	
PROJECT DESIGNATION			
XXXX(XXX)/ XXXXXXXXXXXX			
NO.		REVISION	
DATE			
NO.		REVISION	
DATE			
NO.		REVISION	
DATE			



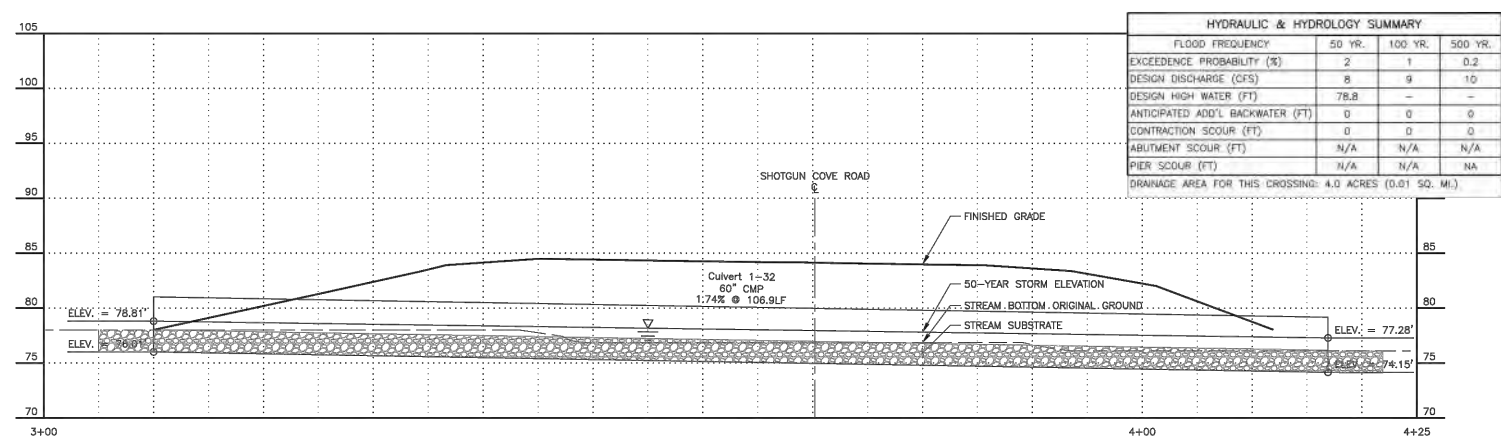
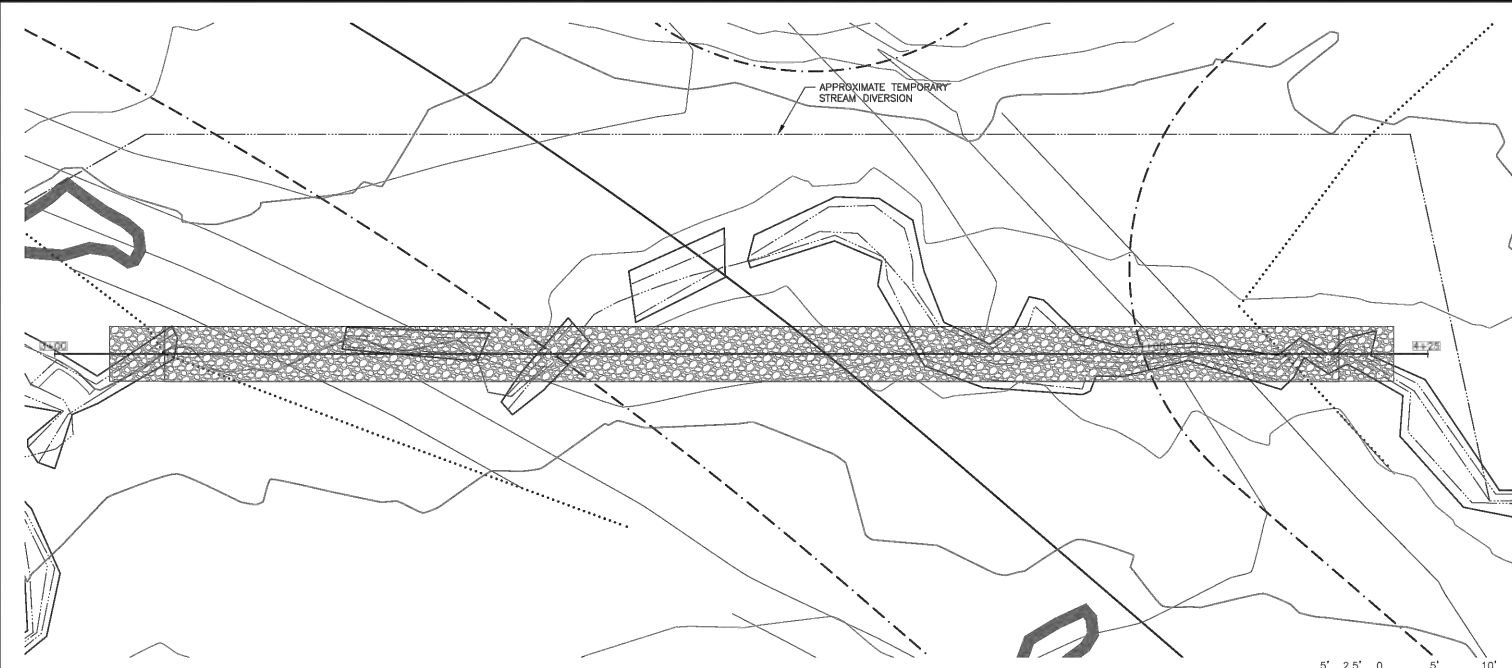
CITY OF WHITTIER
SHOTGUN COVE ROAD
EXTENSION
MILE 2.0 TO 4.5

TEMPORARY STREAM
DIVERSION AND ROUND
FISH PASSAGE CULVERT

APPLICANT: CITY OF WHITTIER
FILE NO.: POA-XXXX-XXX
WATERWAY:
PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
MERIDIAN: SEWARD
LAT: 60.797732 LONG: -148.596515
SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
FIG 29 OF 45 DATE: JUNE 2021

DRAWING LOCATION: SHOTGUN COVE ROAD/COVADOT WORKING SET/NOT FOR CONSTRUCTION/DESIGN/PROPOSED PLAN AND PROFILE - STA. 184+50 FISH PASSAGE

DATE: 6/1/2021 TIME: 8:21 AM SCALE: 1"=30'



HYDRAULIC & HYDROLOGY SUMMARY			
FLOOD FREQUENCY	50 YR.	100 YR.	500 YR.
EXCEEDENCE PROBABILITY (%)	2	1	0.2
DESIGN DISCHARGE (CFS)	8	9	10
DESIGN HIGH WATER (FT)	78.8	-	-
ANTICIPATED ADD'L BACKWATER (FT)	0	0	0
CONTRACTION SCOUR (FT)	0	0	0
ABUTMENT SCOUR (FT)	N/A	N/A	N/A
PIER SCOUR (FT)	N/A	N/A	NA
DRAINAGE AREA FOR THIS CROSSING: 4.0 ACRES (0.01 SQ. MI.)			

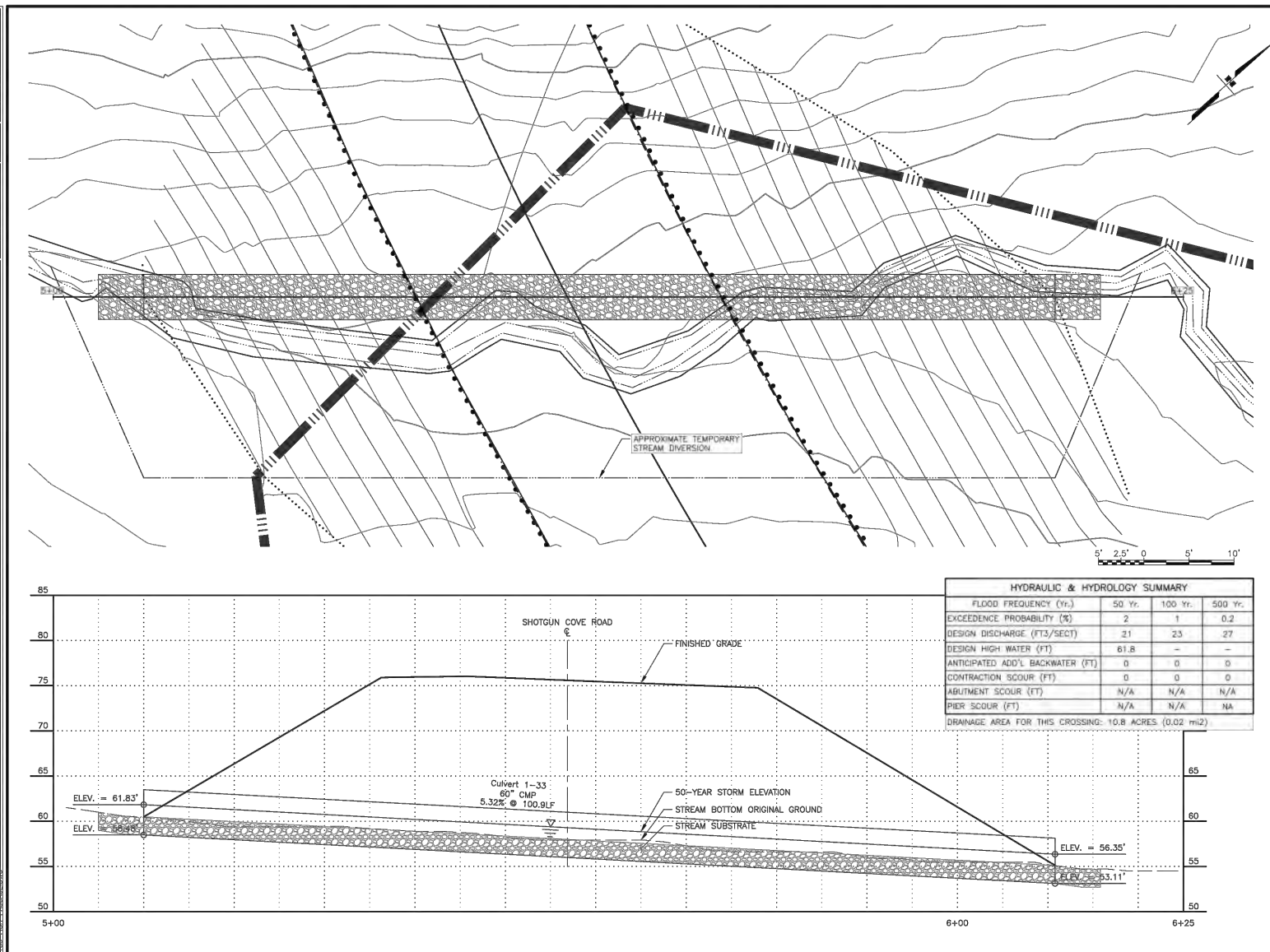
SHEET NO.	TOTAL SHEETS
N6	N17
STATE	YEAR
ALASKA	2020
PROJECT DESIGNATION	
XXXX(XXX)/XXXXXXXXXX	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	

STATE OF ALASKA
49th
Cathy M. Siegel
CE-134820

COW ENGINEERING GROUP, LLC
3945 ARCTIC BLVD., SUITE 300
ANCHORAGE, ALASKA 99503
(907) 562-3352
BACLB03-AK

CITY OF WHITTIER
SHOTGUN COVE ROAD
EXTENSION
MILE 2.0 TO 4.5
STA 184+50 FISH
PASSAGE
FISH PASSAGE

APPLICANT: CITY OF WHITTIER
FILE NO.: POA-XXXX-XXX
WATERWAY:
PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
MERIDIAN: SEWARD
LAT: 60.797732 LONG: -148.596515
SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
FIG 30 OF 45 DATE: JUNE 2021

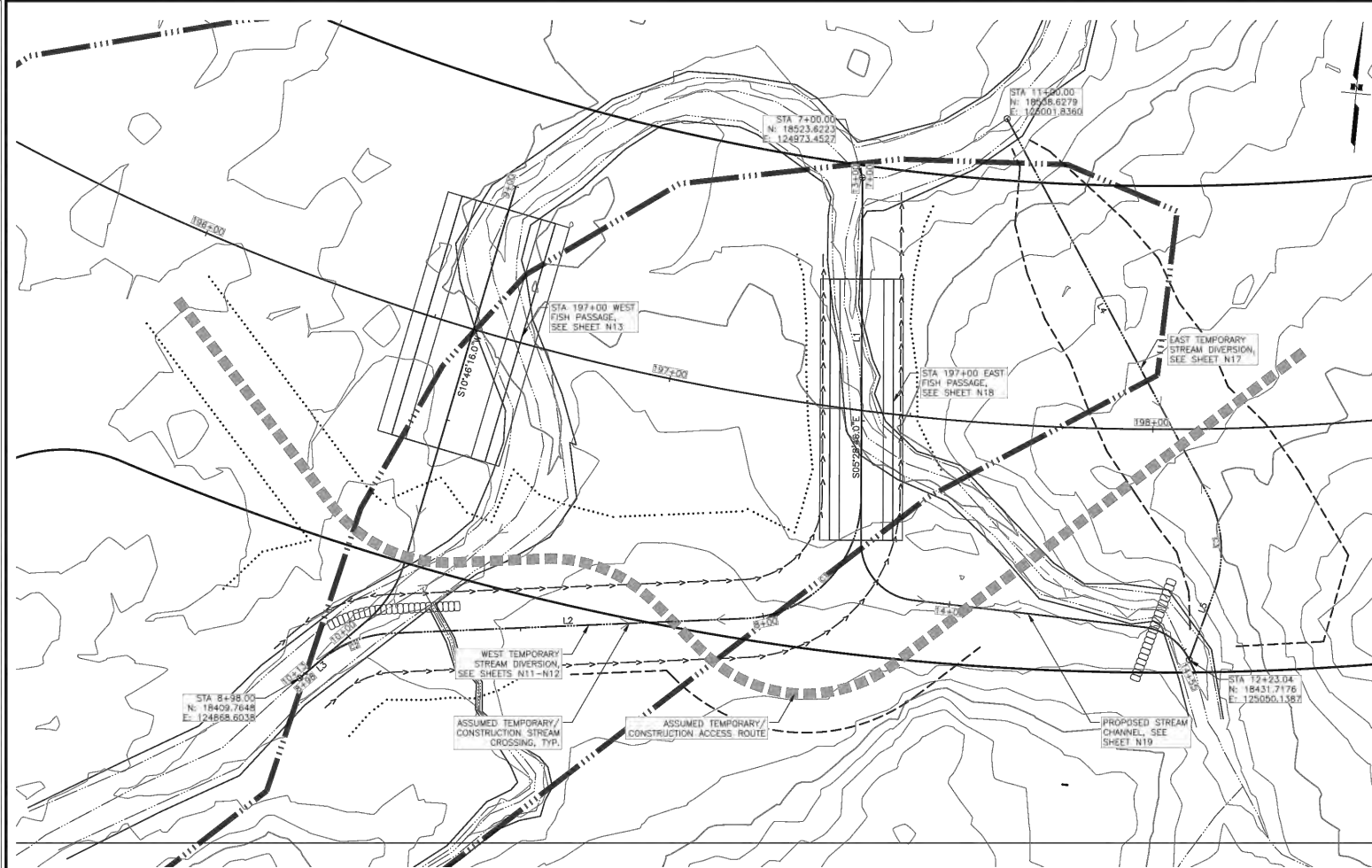


STATE OF ALASKA
49TH
COLIN M. SINGLETON
CE-124820
SINCE 1900
SLEDGE ENGINEERING GROUP, LLC
3040 RHTY BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
(907) 562-3282
RAC@SEGEAC.COM

CITY OF WHITTIER
SHOTGUN COVE ROAD
EXTENSION
MILE 2.0 TO 4.5
STA 186+50 FISH
PASSAGE
FISH PASSAGE

APPLICANT: CITY OF WHITTIER
FILE NO.: POA-XXXX-XXX
WATERWAY:
PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
MERIDIAN: SEWARD
LAT: 60.797732 LONG: -148.596515
SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
FIG 31 OF 45 DATE: JUNE 2021

DRAWING LOCATION: SHOTGUN COVE ROAD EXTENSION MILE 2.0 TO 4.5
DATE: 6/1/2021
TIME: 8:22 AM
SCALE: 1"=50'
SHEET NO.: N8
TOTAL SHEETS: N17



STREAM DIVERSION NARRATIVE:

1. CONSTRUCT TEMPORARY/CONSTRUCTION ACCESS ROUTE WITH TEMPORARY STREAM CROSSINGS AT OR UPSTREAM OF PROPOSED STA 197 WEST AND EAST CULVERTS.
2. CONSTRUCT EAST TEMPORARY STREAM DIVERSION AND DIVERT STREAM.
3. CONSTRUCT WEST TEMPORARY STREAM DIVERSION AND DIVERT STREAM.
4. CONSTRUCT STA 197+00 WEST FISH PASSAGE FOOTINGS, CHANNEL, STRUCTURAL PLATE, BACKFILL AND MSE WALL. RESTORE WEST STREAM. BACKFILL WEST TEMPORARY STREAM DIVERSION AND LINE WEST CHANNEL.
5. CONSTRUCT STA 197+00 EAST FISH PASSAGE FOOTINGS, CHANNEL, STRUCTURAL PLATE, BACKFILL AND MSE WALL. RESTORE EAST STREAM. BACKFILL EAST TEMPORARY STREAM DIVERSION AND LINE EAST CHANNEL.

LINE TABLE		
LINE NO.	LENGTH	DIRECTION
L1	65.74'	S05° 28' 46.00"E
L2	72.51'	S81° 53' 47.26"W
L3	4.99'	S43° 46' 40.01"W
L4	87.28'	S33° 48' 06.53"E
L5	14.68'	S14° 30' 41.28"W

CURVE TABLE					
CURVE NO.	DELTA ANGLE	RADIUS	LENGTH	CHORD BEARING	CHORD LENGTH
C1	87°22'33"	25.00'	38.12'	S38° 12' 31"W	34.54'
C2	38°07'07"	25.00'	16.63'	S62° 50' 14"W	16.33'
C3	48°18'48"	25.00'	21.08'	S09° 38' 43"E	20.46'

10' 5' 0 10' 20'

SHEET NO.	TOTAL SHEETS
N8	N17
STATE	YEAR
ALASKA	2020
PROJECT DESIGNATION	
XXXX(XXX)/XXXXXXXXXX	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	

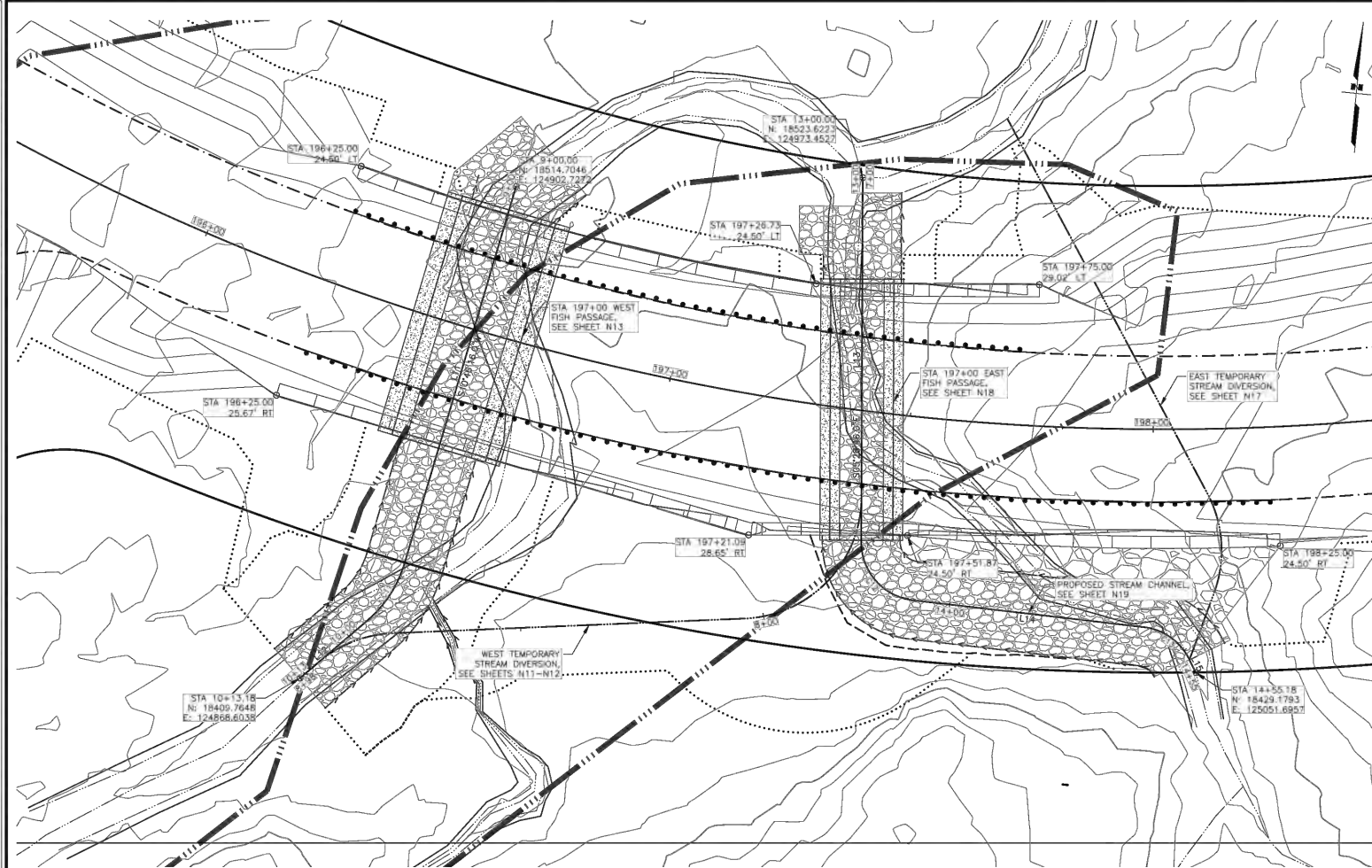


COW ENGINEERING GROUP, LLC
3545 ARCTIC BLVD, SUITE 300
ANCHORAGE, ALASKA 99503
(907) 562-3032
BAC0.883-AK

CITY OF WHITTIER
SHOTGUN COVE ROAD
EXTENSION
MILE 2.0 TO 4.5
STA 197+00 WEST &
EAST FISH PASSAGE
DIVERSION SITE PLAN

APPLICANT: CITY OF WHITTIER
FILE NO.: POA-XXXX-XXX
WATERWAY:
PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
MERIDIAN: SEWARD
LAT: 60.797732 LONG: -148.596515
SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
FIG 32 OF 45
DATE: JUNE 2021

DRAWING LOCATION: SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 DATE: 6/1/2021 8:22 AM
 SCALE: 1"=40'
 TIME: 8:22 AM
 PROJECT: SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 SHEET: N9



LINE TABLE		
LINE NO.	LENGTH	DIRECTION
L11	80.65'	S10° 46' 15.98"W
L12	18.13'	S43° 46' 40.01"W
L13	74.89'	S05° 28' 46.00"E
L14	47.76'	S89° 03' 34.11"E
L15	2.98'	S31° 31' 29.90"E

CURVE TABLE					
CURVE NO.	DELTA ANGLE	RADIUS	LENGTH	CHORD BEARING	CHORD LENGTH
C11	33°00'24"	25.00'	14.40'	S27° 16' 28"W	14.20'
C12	83°34'48"	12.00'	17.50'	S47° 16' 10"E	15.99'
C13	57°32'04"	12.00'	12.05'	S60° 17' 32"E	11.65'



SHEET NO.	TOTAL SHEETS
N9	N17
STATE	YEAR
ALASKA	2020
PROJECT DESIGNATION	
XXXX(XXX)/XXXXXXXXXX	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	

CITY OF WHITTIER
 SHOTGUN COVE ROAD
 EXTENSION
 MILE 2.0 TO 4.5
 STA 197+00 WEST &
 EAST FISH PASSAGE
 SITE PLAN

APPLICANT: CITY OF WHITTIER
 FILE NO.: POA-XXXX-XXX
 WATERWAY:
 PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
 SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
 MERIDIAN: SEWARD
 LAT: 60.797732 LONG: -148.596515
 SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 FIG 33 OF 45 DATE: JUNE 2021

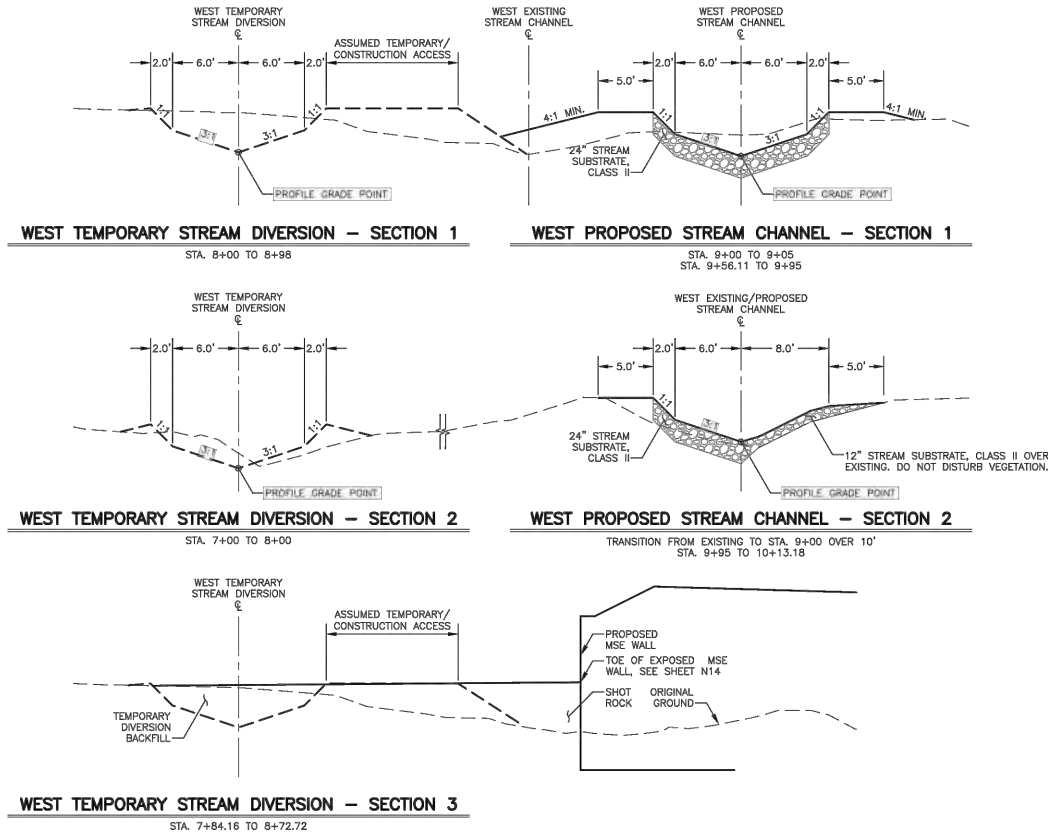
DRAWING LOCATION: SHOTGUN COVE ROAD/COVE ROAD/WORKING SET/OT ONLY/DESIGN/PROPOSED PLAN AND PROFILE - STA. 197+00 TO 197+00


DATE: 6/1/2021 8:22 AM

SCALE: 1"=20'

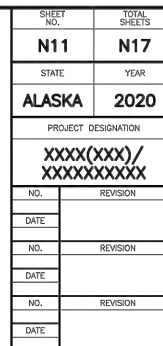
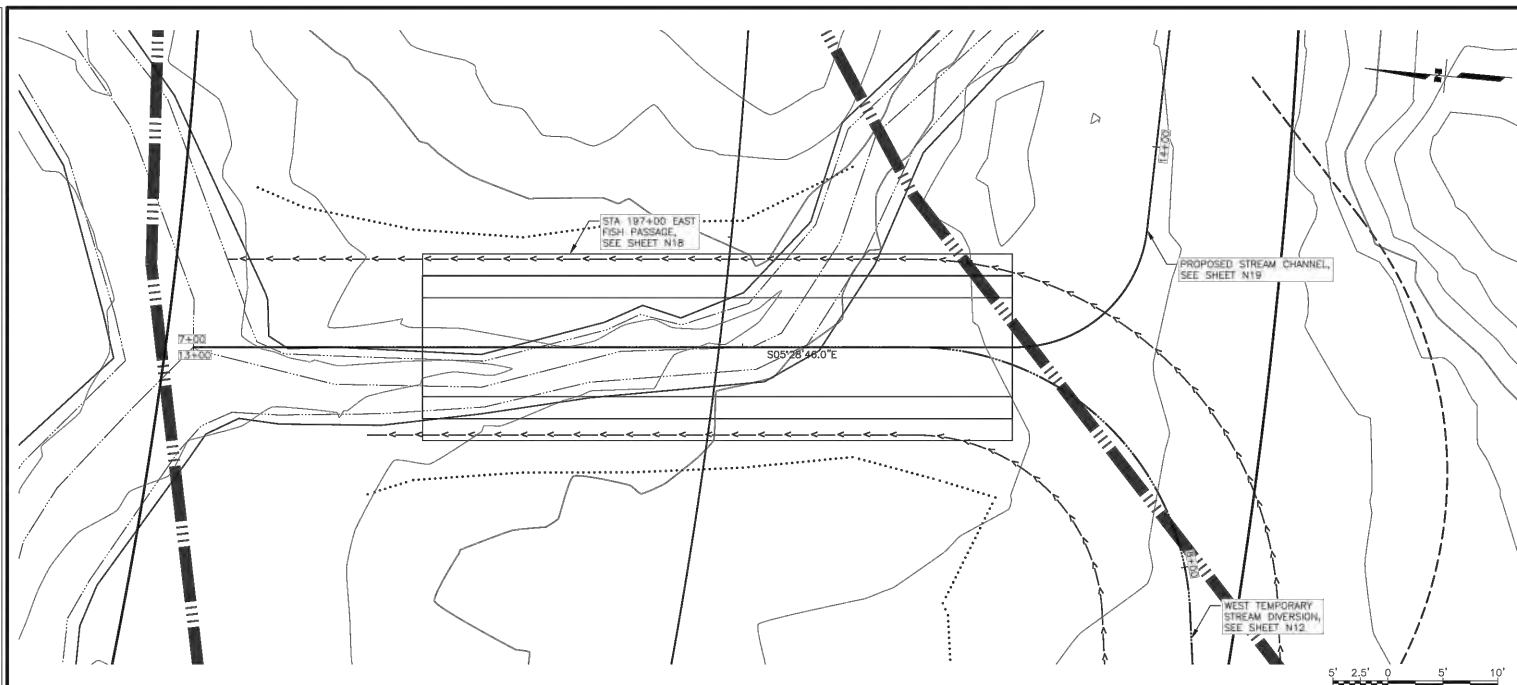
DESIGNED BY: J. H. HARRIS

CHECKED BY: J. H. HARRIS



SHEET NO.	TOTAL SHEETS
N10	N17
STATE	YEAR
ALASKA	2020
PROJECT DESIGNATION	
XXXX(XXX)/XXXXXXXXXX	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
	
CITY OF WHITTIER SHOTGUN COVE ROAD EXTENSION MILE 2.0 TO 4.5 STA 197+00 WEST FISH PASSAGE STREAM SECTIONS	

APPLICANT: CITY OF WHITTIER
 FILE NO.: POA-XXXX-XXX
 WATERWAY:
 PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
 SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
 MERIDIAN: SEWARD
 LAT: 60.797732 LONG: -148.596515
 SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 FIG 34 OF 45 DATE: JUNE 2021

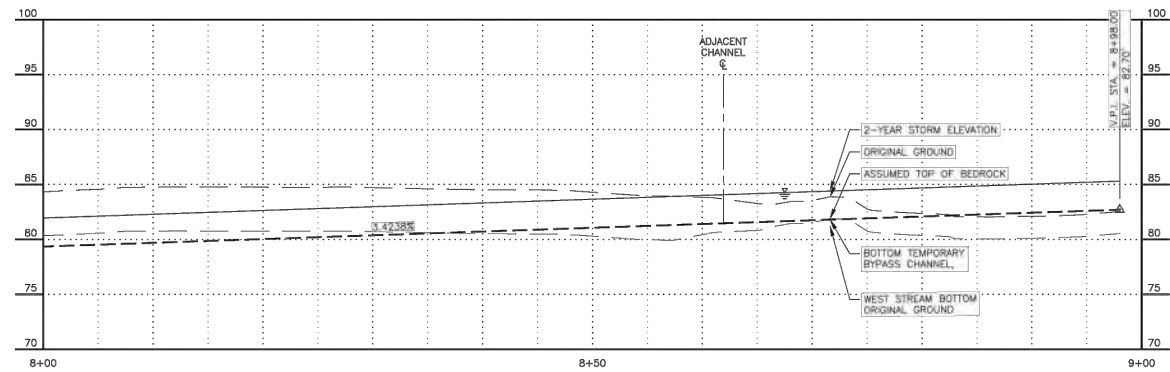
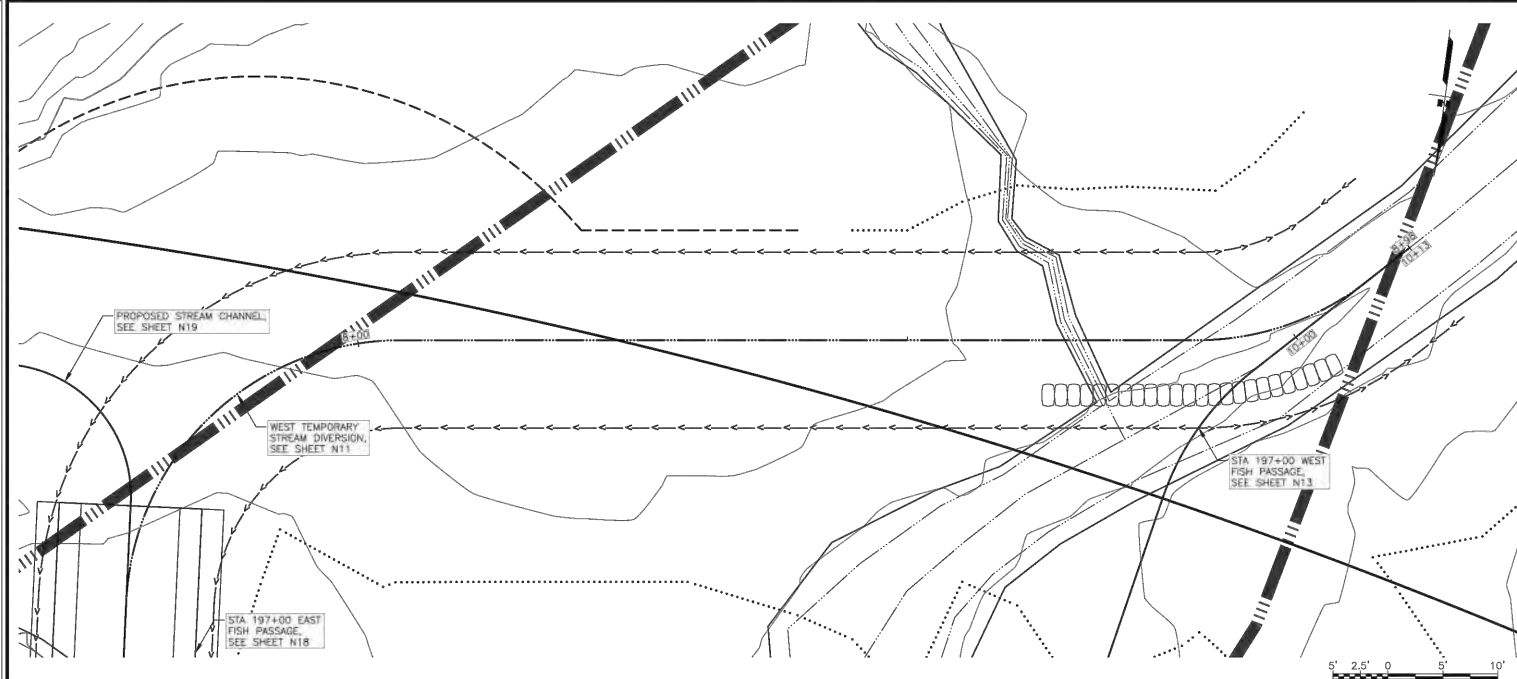


CITY OF WHITTIER
SHOTGUN COVE ROAD
EXTENSION
MILE 2.0 TO 4.5
STA 197+00 WEST FISH
PASSAGE
TEMPORARY STREAM
DIVERSION

APPLICANT: CITY OF WHITTIER
FILE NO.: POA-XXXX-XXX
WATERWAY:
PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
MERIDIAN: SEWARD
LAT: 60.797732 LONG: -148.596515
SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
FIG 35 OF 45 DATE: JUNE 2021

DRAWING LOCATION: SHOTGUN COVE ROAD/COVE ROAD/COVE ROAD/WORKING SET/ONLY FOR DESIGN/PROPOSED PLAN AND PROFILE - STA. 197+00 WEST FISH PASSAGE

DATE: 6/1/2021 TIME: 8:23 AM SCALE: 1"=100' (PLAN) 1"=10' (PROFILE)



SHEET NO.	TOTAL SHEETS
N12	N17
STATE	YEAR
ALASKA	2020
PROJECT DESIGNATION	
XXXX(XXX)/XXXXXXXXXX	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	

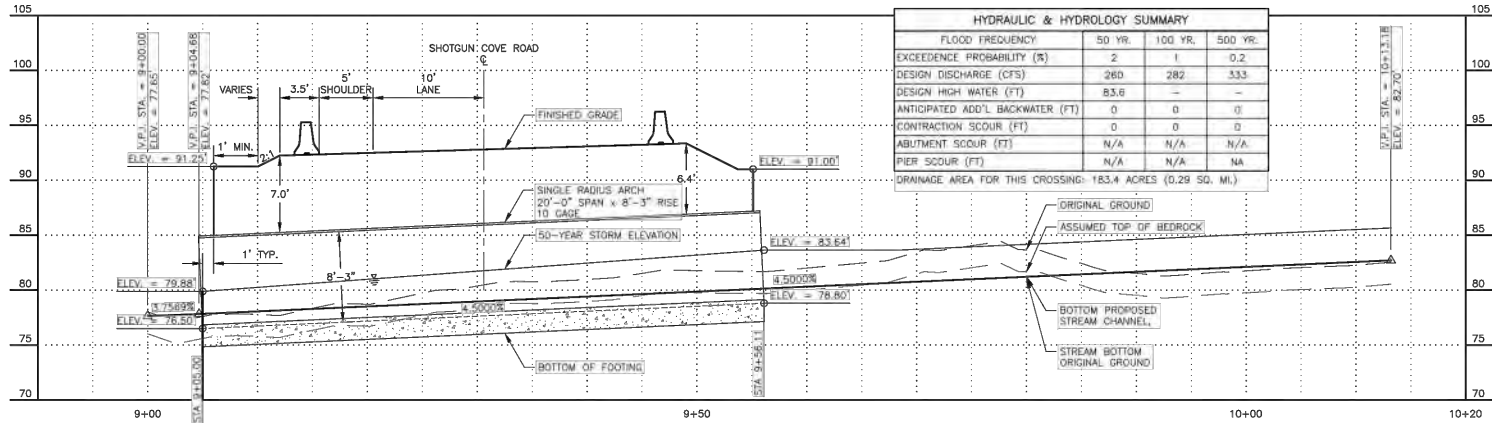
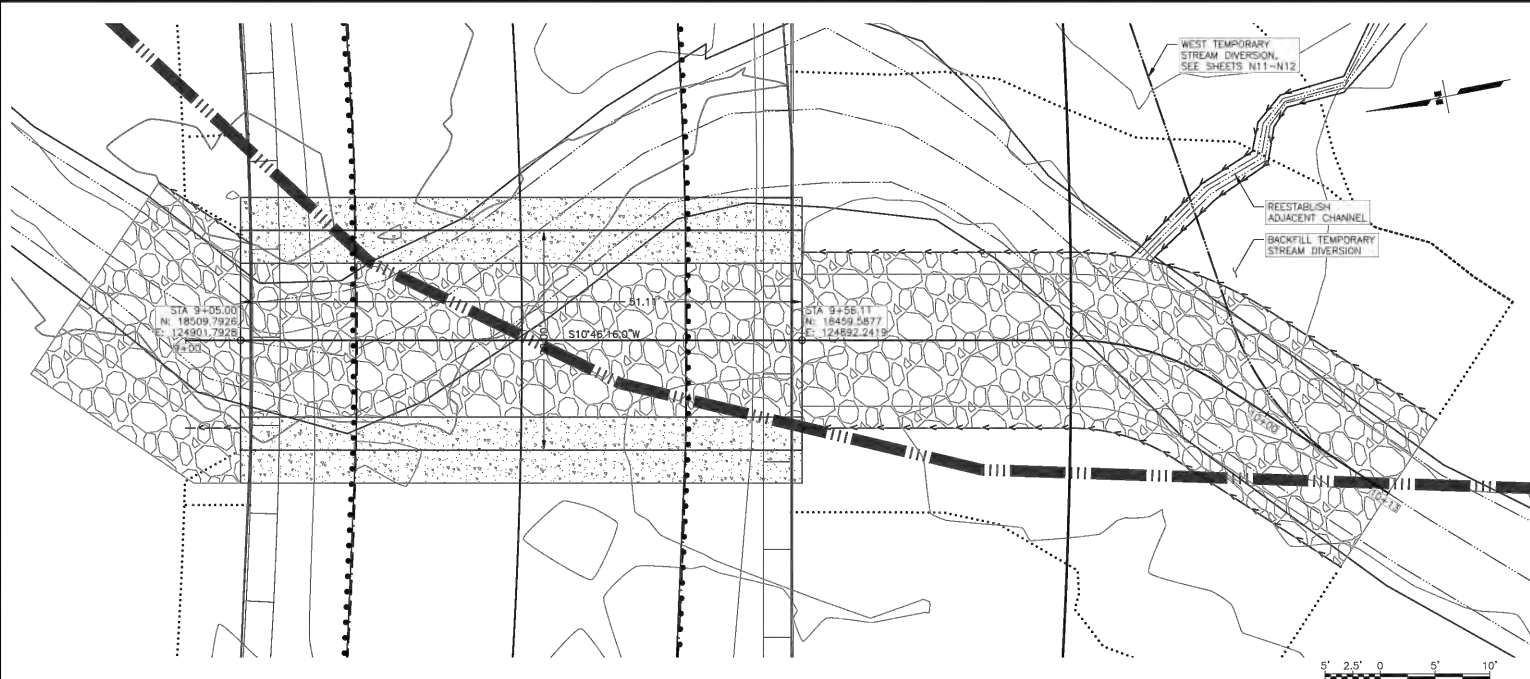
STATE OF ALASKA
49th
CITY OF WHITTIER
CE-124820

COW ENGINEERING GROUP, LLC
3840 ARCTIC BLVD, SUITE 300
ANCHORAGE, ALASKA 99503
(907) 562-3030
BAC0082-AK

CITY OF WHITTIER
SHOTGUN COVE ROAD
EXTENSION
MILE 2.0 TO 4.5
STA 197+00 WEST FISH
PASSAGE
TEMPORARY STREAM
DIVERSION

APPLICANT: CITY OF WHITTIER
 FILE NO.: POA-XXXX-XXX
 WATERWAY:
 PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
 SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
 MERIDIAN: SEWARD
 LAT: 60.797732 LONG: -148.596515
 SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 FIG 36 OF 45 DATE: JUNE 2021

DRAWING LOCATION: SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 DATE: 6/1/2021 TIME: 8:23 AM
 SCALE: 1" = 20' HORIZONTAL, 1" = 10' VERTICAL
 DESIGNED BY: J. B. BROWN
 CHECKED BY: J. B. BROWN
 PROJECT NO.: 197+00 WEST FISH PASSAGE



HYDRAULIC & HYDROLOGY SUMMARY			
FLOOD FREQUENCY	50 YR.	100 YR.	500 YR.
EXCEEDENCE PROBABILITY (%)	2	1	0.2
DESIGN DISCHARGE (CFS)	260	282	333
DESIGN HIGH WATER (FT)	83.6	-	-
ANTICIPATED ADD'L BACKWATER (FT)	0	0	0
CONTRACTION SCOUR (FT)	0	0	0
ABUTMENT SCOUR (FT)	N/A	N/A	N/A
PIER SCOUR (FT)	N/A	N/A	NA
DRAINAGE AREA FOR THIS CROSSING: 183.4 ACRES (0.29 SQ. MI.)			

SHEET NO.	TOTAL SHEETS
N13	N17
STATE	YEAR
ALASKA	2020
PROJECT DESIGNATION	
XXXX(XXX)/XXXXXXX	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	

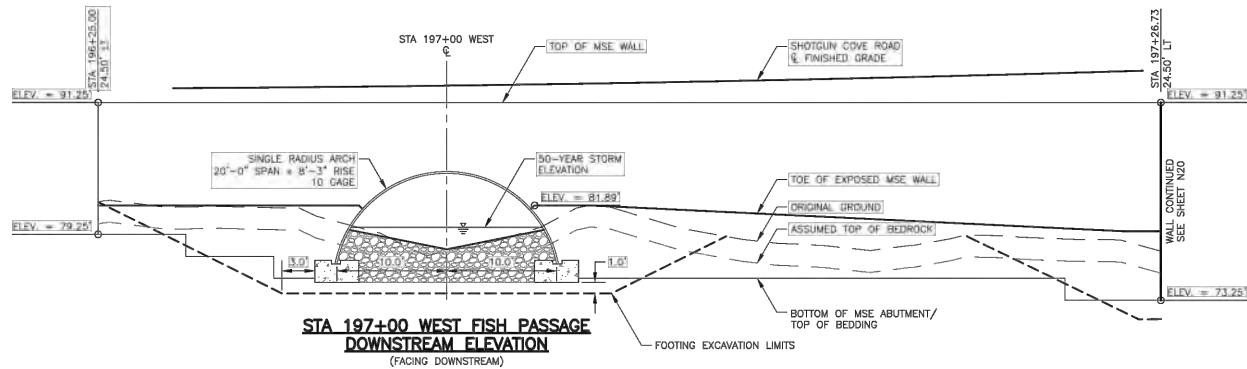
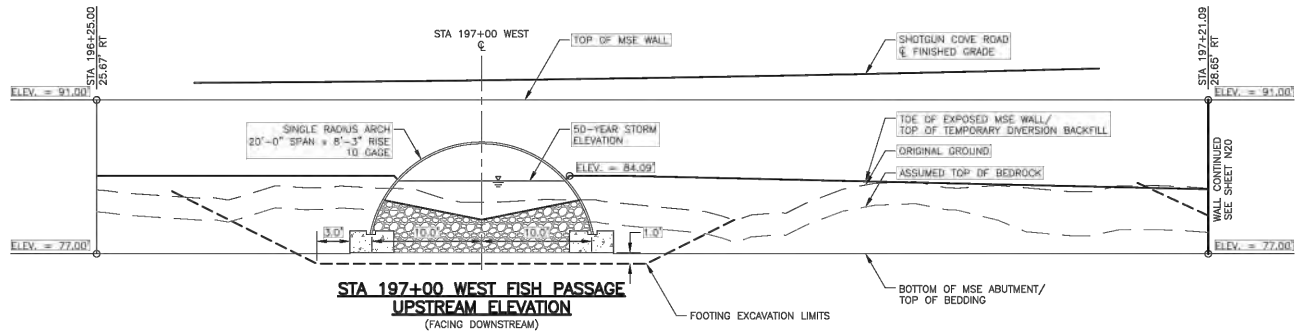
STATE OF ALASKA
 49th
 C. M. Shapovalov
 GE-164839

CORW ENGINEERING GROUP, LLC
 3440 ARCTIC BLVD, SUITE 300
 ANCHORAGE, ALASKA 99503
 (907) 562-3032
 (907) 562-3032

CITY OF WHITTIER
 SHOTGUN COVE ROAD
 EXTENSION
 MILE 2.0 TO 4.5
 STA 197+00 WEST FISH
 PASSAGE
 PLAN & PROFILE

APPLICANT: CITY OF WHITTIER
 FILE NO.: POA-XXXX-XXX
 WATERWAY:
 PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
 SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
 MERIDIAN: SEWARD
 LAT: 60.797732 LONG: -148.596515
 SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 FIG 37 OF 45 DATE: JUNE 2021

DRAWING LOCATION: STA 196+25.00 TO STA 197+21.09
 DATE: 6/1/2021 8:23 AM
 SCALE: 1" = 10'-0"
 TIME: 1:00 PM
 DESIGNED BY: J. SINGH
 CHECKED BY: J. SINGH
 PROJECT: STA 197+00 WEST FISH PASSAGE
 SHEET: N14



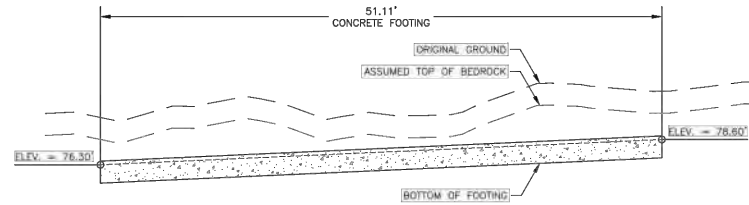
SHEET NO.	TOTAL SHEETS
N14	N17
STATE	YEAR
ALASKA	2020
PROJECT DESIGNATION	
XXXX(XXX)/XXXXXXXXXX	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	



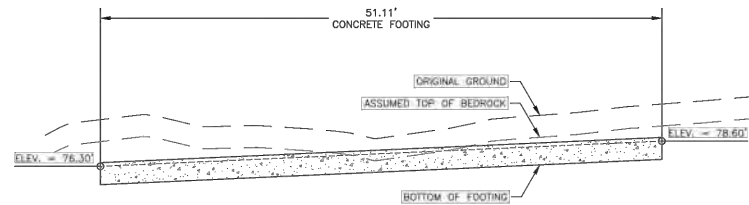
CITY OF WHITTIER
 SHOTGUN COVE ROAD
 EXTENSION
 MILE 2.0 TO 4.5
 STA 197+00 WEST FISH
 PASSAGE
 MSE FACING

APPLICANT: CITY OF WHITTIER
 FILE NO.: POA-XXXX-XXX
 WATERWAY:
 PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
 SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
 MERIDIAN: SEWARD
 LAT: 60.797732 LONG: -148.596515
 SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 FIG 38 OF 45 DATE: JUNE 2021

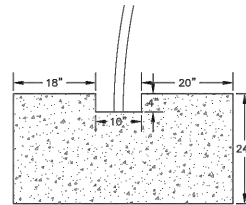
DRAWING LOCATION: SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 DATE: 6/1/2021 8:23 AM
 SCALE: 1" = 10'-0"
 DESIGNED BY: J. B. BROWN
 CHECKED BY: J. B. BROWN
 PROJECT NO.: 197+00 WEST FISH PASSAGE




STA 197+00 WEST FISH PASSAGE
 WEST FOOTING DETAIL



STA 197+00 WEST FISH PASSAGE
 EAST FOOTING DETAIL

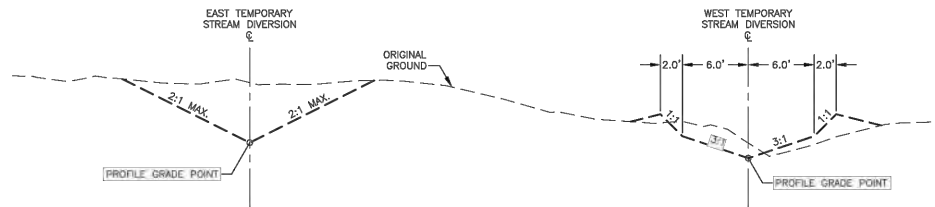


STA 197+00 WEST FISH PASSAGE
 ASSUMED FOOTING DETAIL

SHEET NO.	TOTAL SHEETS
N15	N17
STATE	YEAR
ALASKA	2020
PROJECT DESIGNATION	
XXXX(XXX)/XXXXXXXXXX	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
	
CITY OF WHITTIER SHOTGUN COVE ROAD EXTENSION MILE 2.0 TO 4.5 STA 197+00 WEST FISH PASSAGE FOOTING DETAILS	

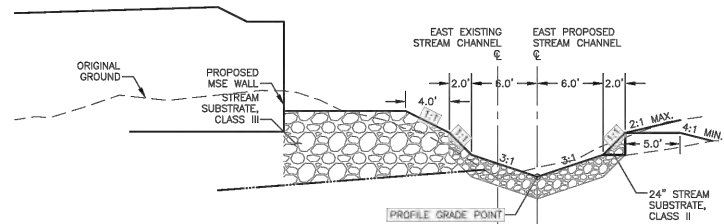
APPLICANT: CITY OF WHITTIER
 FILE NO.: POA-XXXX-XXX
 WATERWAY:
 PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
 SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
 MERIDIAN: SEWARD
 LAT: 60.797732 LONG: -148.596515
 SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 FIG 39 OF 45 DATE: JUNE 2021

DRAWING LOCATION C:\WORKSPACE\204003\02 SHOTGUN COVE ROAD\00 CAD\01 WORKING SET\01 CIVE\02 DESIGN\204003.02 PLAN AND PROFILE - STA	DATE 6/1/2021 8:23 AM	TIME SCALE	DESIGNED BY CHECKED BY DRAWN BY PROJECT NO.
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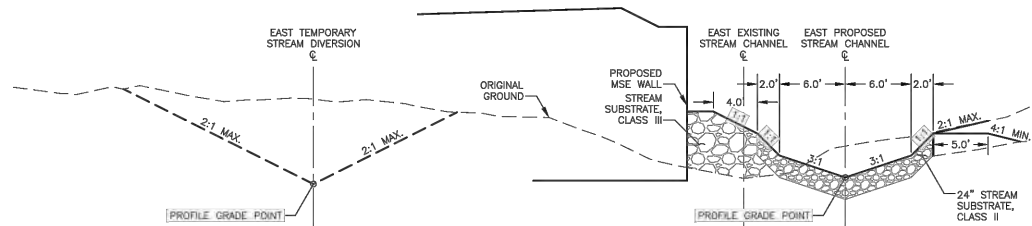
EAST TEMPORARY STREAM DIVERSION – SECTION 1

STA. 11+00 TO 12+19.47



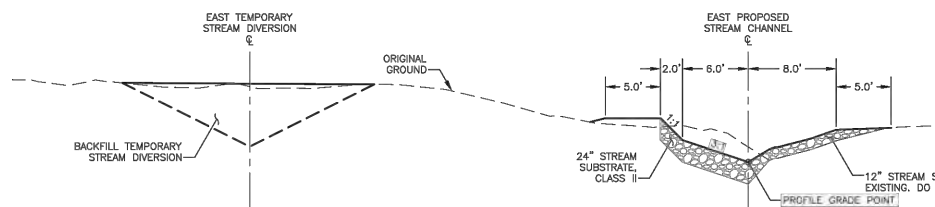
EAST PROPOSED STREAM CHANNEL – SECTION 1

STA. 14+45 TO 14+52.20



EAST PROPOSED STREAM CHANNEL – SECTION 2

STA. 13+74.54 TO 14+45



EAST TEMPORARY STREAM DIVERSION – SECTION 3

STA. 11+00 TO 12+19.47

EAST PROPOSED STREAM CHANNEL - SECTION 2

STA. 13+05.86 TO 13+15.86

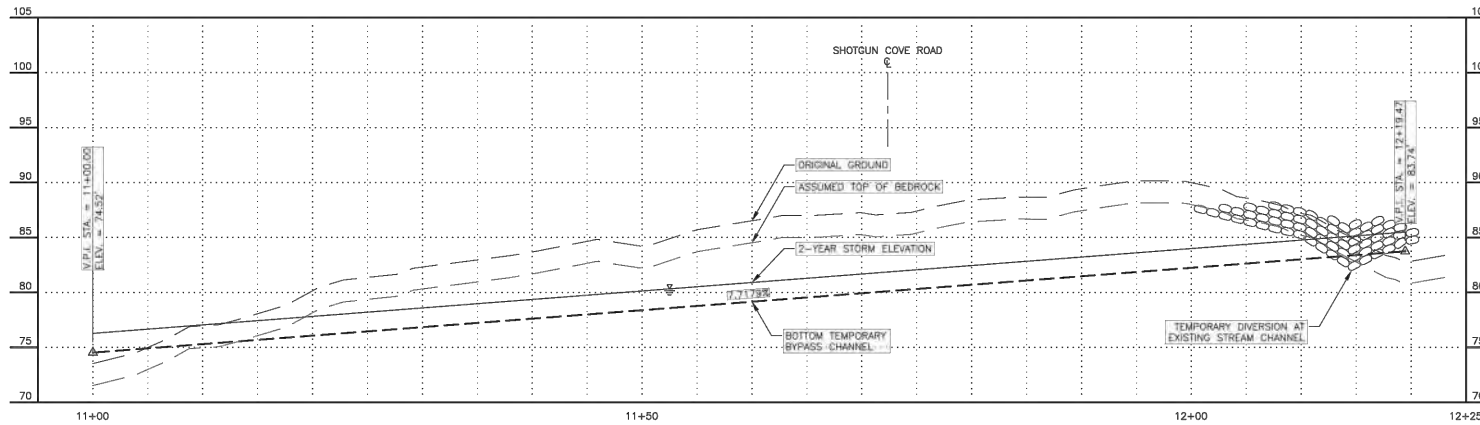
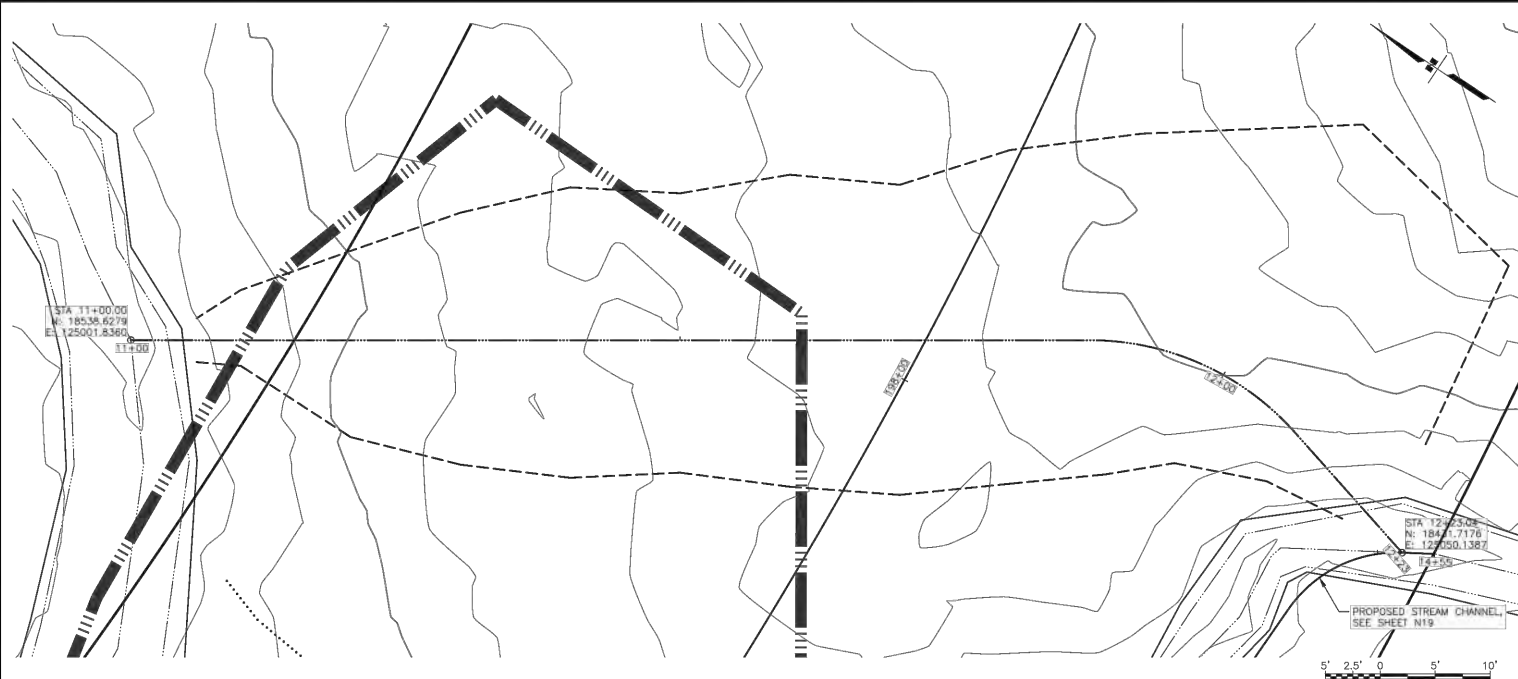
SHEET NO.	TOTAL SHEETS
N16	N17
STATE	YEAR
ALASKA	2020
PROJECT DESIGNATION	
XXXX(XXX)/ XXXXXXXXXXXX	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	



CITY OF WHITTIER
SHOTGUN COVE ROAD
EXTENSION
MILE 2.0 TO 4.5
STA 197+00 EAST FISH
PASSAGE
STREAM SECTIONS

APPLICANT: CITY OF WHITTIER
FILE NO.: POA-XXXX-XXX
WATERWAY:
PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
MERIDIAN: SEWARD
LAT: 60.797732 LONG: -148.596515
SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
FIG 40 OF 45 DATE: JUNE 2021

DRAWING LOCATION: SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 DATE: 6/1/2021 TIME: 8:23 AM SCALE: 1"=40' DESIGNER: J. M. SINGLET
 CHECKER: J. M. SINGLET



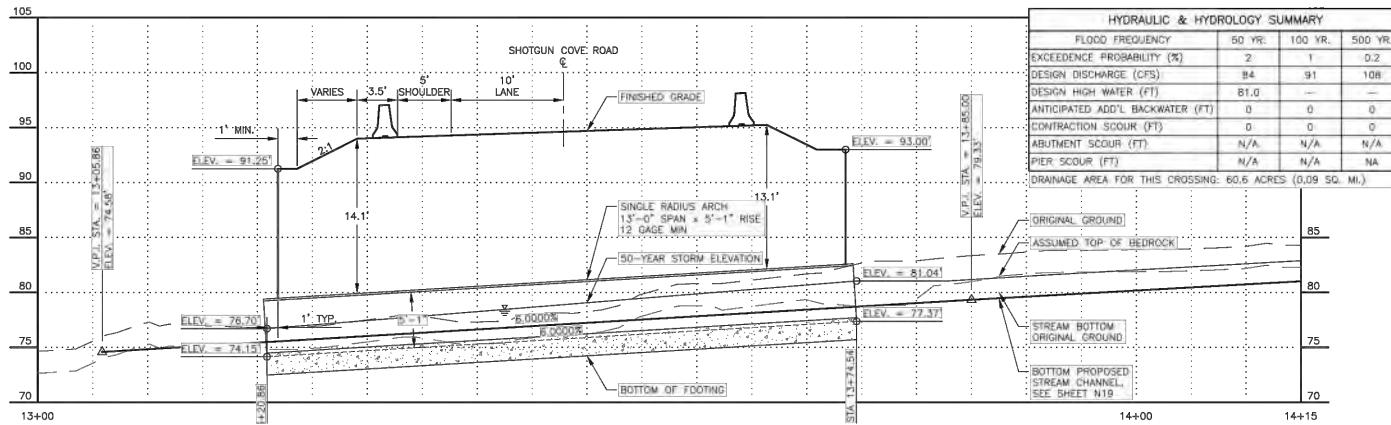
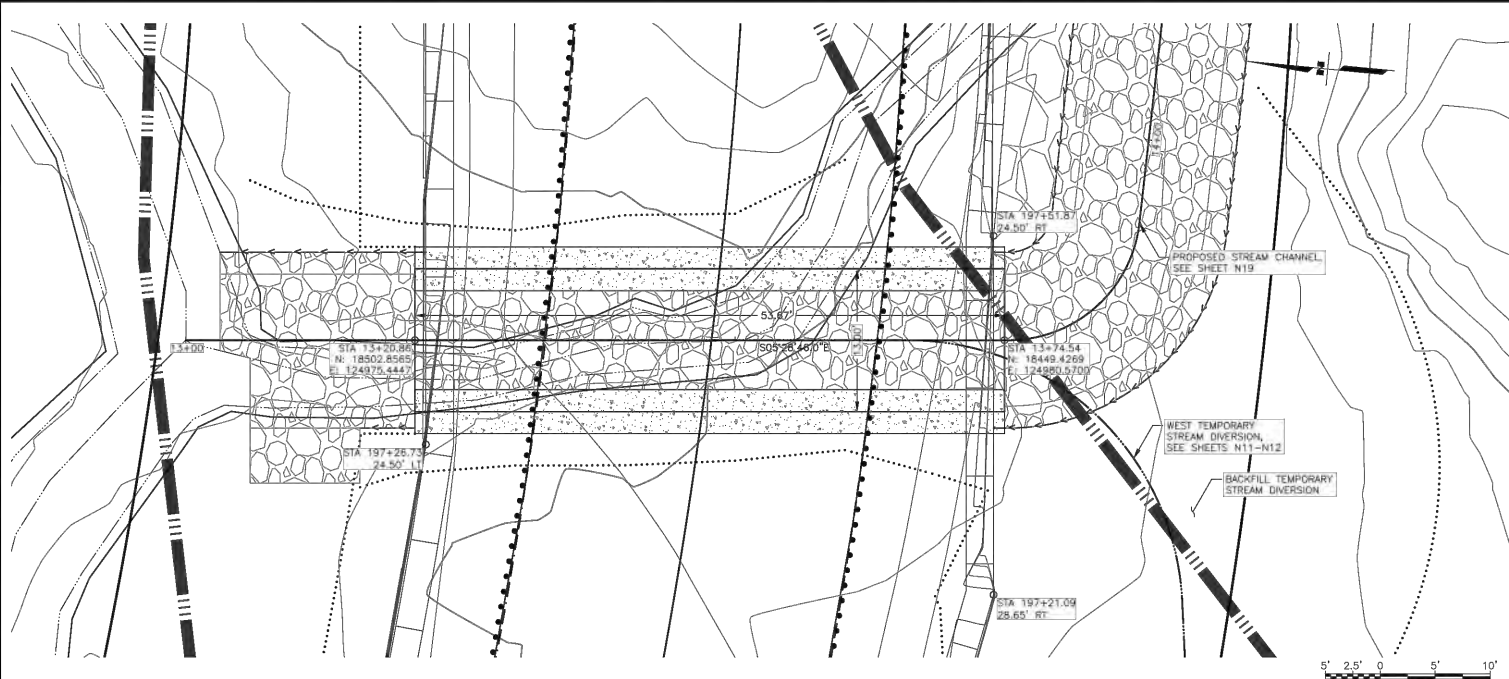
SHEET NO.	TOTAL SHEETS
N17	N17
STATE	YEAR
ALASKA	2020
PROJECT DESIGNATION	
XXXX(XXX)/XXXXXXX	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	

STATE OF ALASKA
 49th
 C. M. SINGLET
 GE-10409
 COW ENGINEERING GROUP, LLC
 3040 ARCTIC BLVD., SUITE 300
 ANCHORAGE, ALASKA 99503
 (907) 562-3332
 #AEC0802-KK

CITY OF WHITTIER
 SHOTGUN COVE ROAD
 EXTENSION
 MILE 2.0 TO 4.5
 STA 197+00 EAST FISH
 PASSAGE
 TEMPORARY STREAM
 DIVERSION

APPLICANT: CITY OF WHITTIER
 FILE NO.: POA-XXXX-XXX
 WATERWAY:
 PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
 SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
 MERIDIAN: SEWARD
 LAT: 60.797732 LONG: -148.596515
 SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 FIG 41 OF 45 DATE: JUNE 2021

DRAWING LOCATION: SHOTGUN COVE ROAD EXTENSION, SECTION 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E MERIDIAN: SEWARD
 DATE: 6/1/2021 TIME: 8:23 AM SCALE: 1"=40' DESIGNER: J. J. JENSEN
 CHECKED: J. J. JENSEN
 APPROVED: J. J. JENSEN



HYDRAULIC & HYDROLOGY SUMMARY			
FLOOD FREQUENCY	50 YR.	100 YR.	500 YR.
EXCEEDENCE PROBABILITY (%)	2	1	0.2
DESIGN DISCHARGE (CFS)	84	91	108
DESIGN HIGH WATER (FT)	81.0	—	—
ANTICIPATED ADD'L. BACKWATER (FT)	0	0	0
CONTRACTION SCOUR (FT)	0	0	0
ABUTMENT SCOUR (FT)	N/A	N/A	N/A
PIER SCOUR (FT)	N/A	N/A	NA
DRAINAGE AREA FOR THIS CROSSING: 60.6 ACRES (0.09 SQ. MI.)			

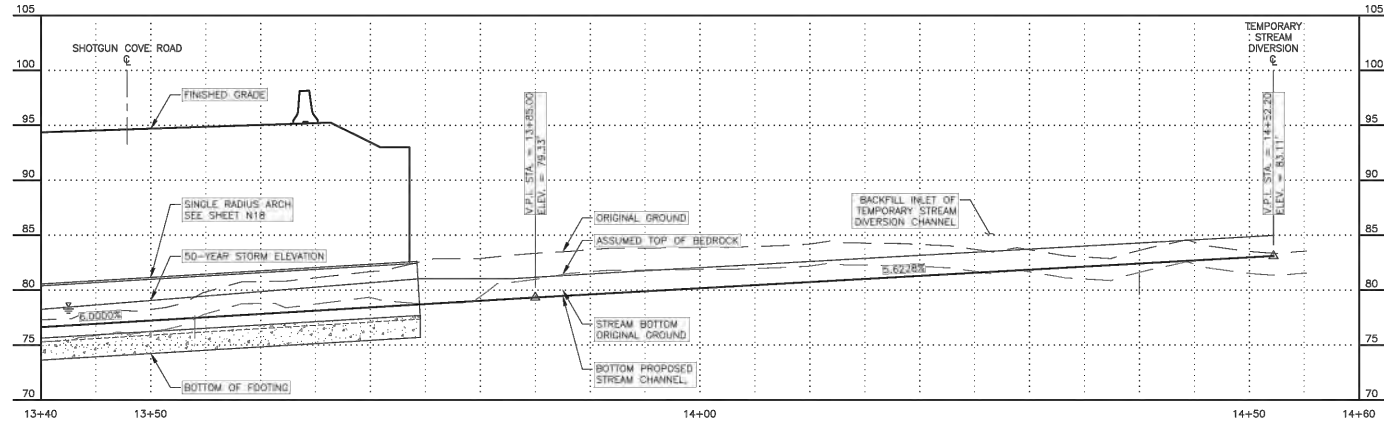
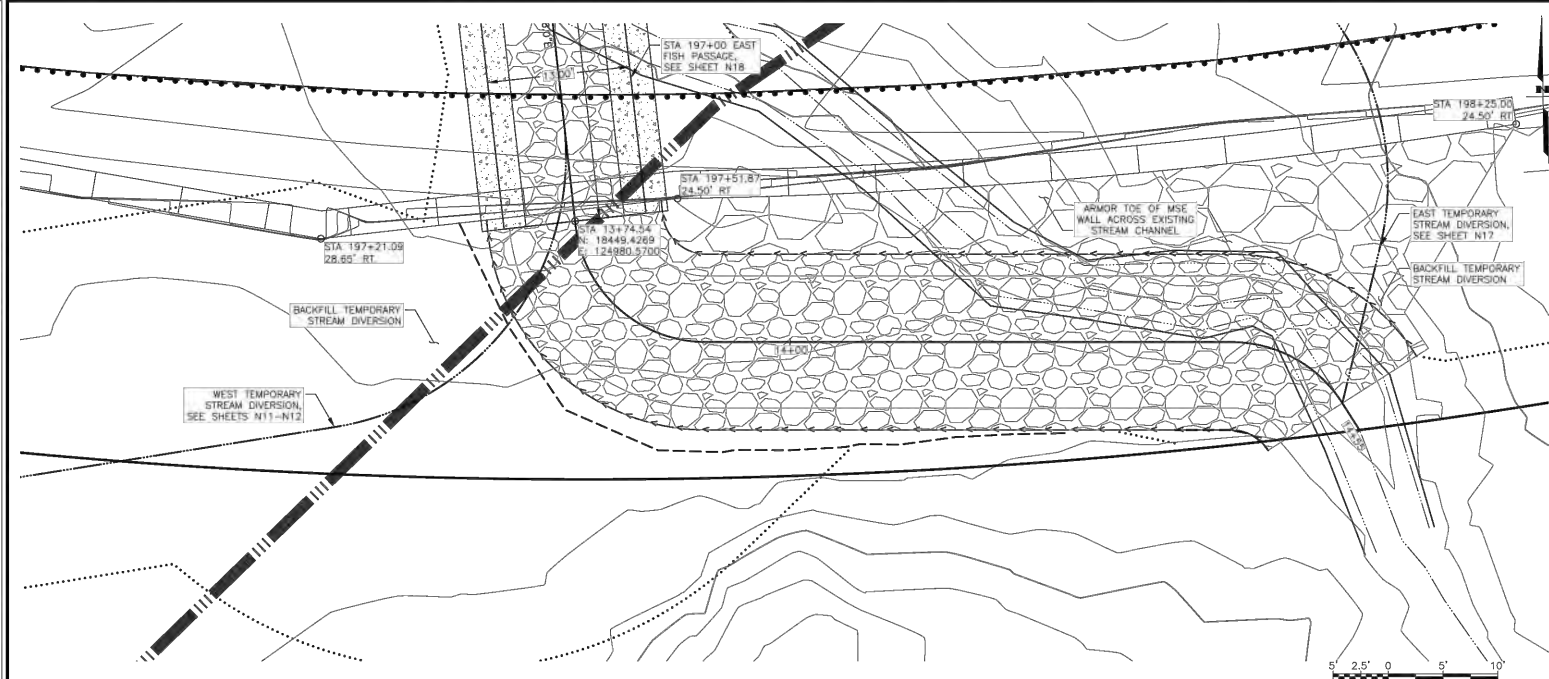
SHEET NO.	TOTAL SHEETS
N18	N17
STATE	YEAR
ALASKA	2020
PROJECT DESIGNATION	
XXXX(XXX)/XXXXXXX	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	



CITY OF WHITTIER
 SHOTGUN COVE ROAD
 EXTENSION
 MILE 2.0 TO 4.5
 STA 197+00 EAST FISH
 PASSAGE
 PLAN & PROFILE

APPLICANT: CITY OF WHITTIER
 FILE NO.: POA-XXXX-XXX
 WATERWAY:
 PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
 SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
 MERIDIAN: SEWARD
 LAT: 60.797732 LONG: -148.596515
 SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 FIG 42 OF 45 DATE: JUNE 2021

DESIGNER: J. J. JENSEN
 DATE: 6/1/2021 8:23 AM
 SCALE: 1"=20'
 TIME: 1:00
 DRAWING LOCATION: SHOTGUN COVE ROAD EXTENSION
 SHEET: N19
 PROJECT: SHOTGUN COVE ROAD EXTENSION
 WORKING SET: CIVIL DESIGN/PROPOSED PLAN AND PROFILE - STA. 13+00 TO 14+50



SHEET NO.	TOTAL SHEETS
N19	N17
STATE	YEAR
ALASKA	2020
PROJECT DESIGNATION	
XXXX(XXX)/XXXXXXX	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	



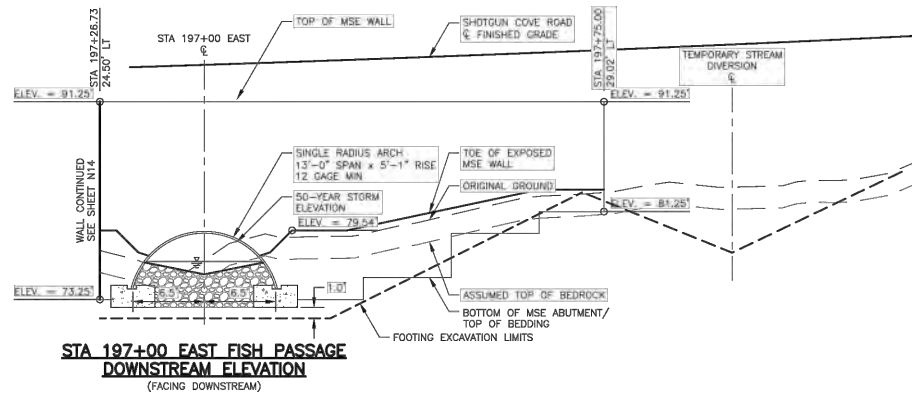
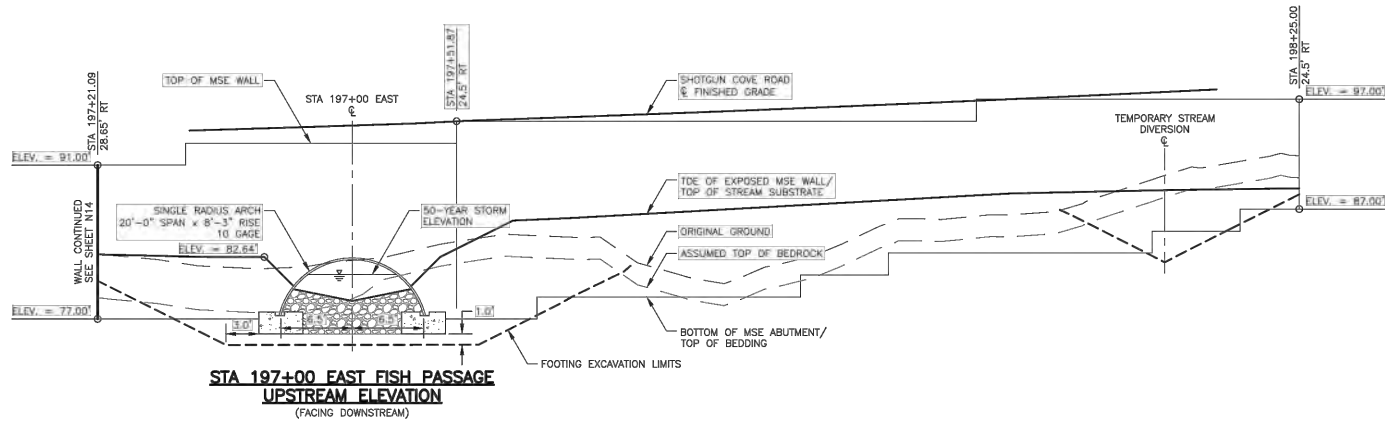
STATE OF ALASKA
 49th
 C. M. St. Stephen
 GE-164839


CORW ENGINEERING GROUP, LLC
 3445 ARCTIC BLVD, SUITE 300
 ANCHORAGE, ALASKA 99503
 (907) 562-3032
 (907) 562-3032

CITY OF WHITTIER
 SHOTGUN COVE ROAD
 EXTENSION
 MILE 2.0 TO 4.5
 STA 197+00 EAST FISH
 PASSAGE
 PROPOSED STREAM
 CHANNEL

APPLICANT: CITY OF WHITTIER
 FILE NO.: POA-XXXX-XXX
 WATERWAY:
 PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
 SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
 MERIDIAN: SEWARD
 LAT: 60.797732 LONG: -148.596515
 SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 FIG 43 OF 45 DATE: JUNE 2021

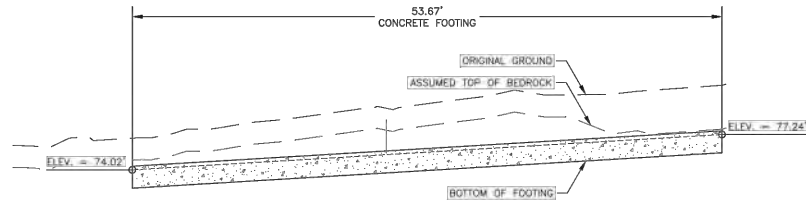
DRAWING LOCATION: SHOTGUN COVE ROAD EXTENSION, SECTION 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E MERIDIAN: SEWARD
 DATE: 6/1/2021 8:23 AM SCALE: 1"=20'-0" TIME: 1:00 PM
 DESIGNED BY: J. J. JENSEN
 CHECKED BY: J. J. JENSEN
 PROJECT DESIGNATION: XXXX(XXX)/XXXXXXXXXX



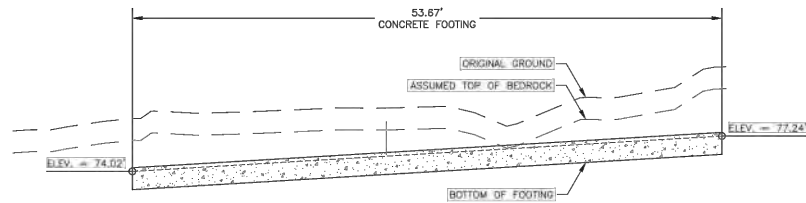
SHEET NO.	TOTAL SHEETS
N20	N17
STATE	YEAR
ALASKA	2020
PROJECT DESIGNATION	
XXXX(XXX)/XXXXXXXXXX	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
	
CITY OF WHITTIER SHOTGUN COVE ROAD EXTENSION MILE 2.0 TO 4.5 STA 197+00 EAST FISH PASSAGE MSE FACING	

APPLICANT: CITY OF WHITTIER
 FILE NO.: POA-XXXX-XXX
 WATERWAY:
 PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
 SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
 MERIDIAN: SEWARD
 LAT: 60.797732 LONG: -148.596515
 SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 FIG 44 OF 45 DATE: JUNE 2021

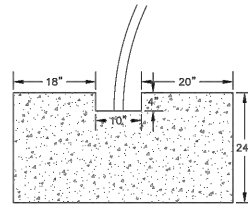
DRAWING LOCATION: SHOTGUN COVE ROAD EXTENSION
 DATE: 6/1/2021 8:23 AM
 SCALE: 1"=10'-0"
 DESIGNED BY: [REDACTED]
 CHECKED BY: [REDACTED]
 PROJECT NO.: 197+00 EAST FISH PASSAGE
 SHEET NO.: N21




STA 197+00 EAST FISH PASSAGE
WEST FOOTING DETAIL



STA 197+00 EAST FISH PASSAGE
EAST FOOTING DETAIL



STA 197+00 EAST FISH PASSAGE
ASSUMED FOOTING DETAIL

SHEET NO.	TOTAL SHEETS
N21	N17
STATE	YEAR
ALASKA	2020
PROJECT DESIGNATION	
XXXX(XXX)/XXXXXXXXXX	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	
 CITY OF WHITTIER SHOTGUN COVE ROAD EXTENSION MILE 2.0 TO 4.5 STA 197+00 EAST FISH PASSAGE FOOTING DETAILS	

APPLICANT: CITY OF WHITTIER
 FILE NO.: POA-XXXX-XXX
 WATERWAY:
 PROPOSED ACTIVITY: LINEAR TRANSPORTATION PROJECT
 SECTION: 3, 8, 9, 17 TOWNSHIP: 8N RANGE: 5E
 MERIDIAN: SEWARD
 LAT: 60.797732 LONG: -148.596515
 SHOTGUN COVE ROAD EXTENSION - MILE 2.0 TO 4.5
 FIG 45 OF 45 DATE: JUNE 2021