DILLON CONSULTING

GOVERNMENT OF THE NORTHWEST TERRITORIES
DEPARTMENT OF INFRASTRUCTURE

Waste Management Plan

Bouvier Creek Culvert Rehabilitation

February 2025 – 21-1344

Table of Contents

Version History

Version	Effective Date	Prepared By (Name and Title)	Pages Revised	Description of Revisions
01	December 19, 2023	Jacob Rovere Associate – Dillon Consulting Limited	N/A	N/A
02	February 20, 2025	Jacob Rovere Associate – Dillon Consulting Limited	4	Addressing additional information requests from the MVLWB

1.0 Introduction

This Waste Management Plan (WMP) has been developed by Dillon Consulting Limited (Dillon) on behalf of the Government of the Northwest Territories (GNWT) Department of Infrastructure (INF) for use during the culvert rehabilitation activities at the existing Bouvier Creek Culvert structure to improve fish passage and address structural deficiencies at the crossing (the Project). Work will be completed under the GNWT-INF's existing Land Use Permit MV2023E0012; however, as the culvert rehabilitation will require in-water work a Water Licence is required.

This WMP will be implemented for all activities undertaken for the life of the Water Licence. The purpose of the WMP is to provide best management practices (BMPs) on the waste management goals, objectives and procedures to be used during the culvert rehabilitation. The WMP will be made available to all Contractor personnel at the start of construction, and all persons involved with the licences activities should read and be familiar with the WMP. The WMP has been developed in accordance with the Guidelines for Developing a Waste Management Plan prepared by the Mackenzie Valley Land and Water Board (MVLWB, 2011).

The Contractor will be identified through a public tender process. The Contractor will be required to adhere to the Waste Management Plan and obtain the Waste Acceptance Letter and submit to Dillon Consulting for review. The approved waste acceptance letter will be passed on to the MVLWB to assist in finalizing the requested water license. The Contractor will be responsible for providing a map with the locations of all waste management activities, this map shall be to scale with GPS coordinates.

1.1 Project/ Site Description

The existing structure was constructed in 1970, and consists of a 41.85 metre (m) long structural plate corrugated steel pipe (SPCSP) structure oriented in the north-south direction composed of two (2) 4.25 m width by 4.80 m high barrels complete with common cast-in-place (CIP) concrete inlet and outlet end treatments. At present, the culvert outlets are perched and the GNWT-INF has self-identified the structure as a potential barrier to fish passage for slower-swimming fish species (e.g., Northern pike). In light of this, the GNWT-INF is proactively seeking to improve fish passage through the structure by incorporating an additional fish passage route into the culvert rehabilitation design. Structural deficiencies observed at the crossing, which will be addressed during rehabilitation activities, include erosion and gullying on the embankments, scour and erosion downstream of the culverts, corrosion along the SPCSP bottoms, and debris buildup at the culvert inlets. In-water work is proposed to occur between late August until mid October 2025.

Culvert rehabilitation works include the following:

- Installation of a diversion weir at the upstream end of the east barrel;

- Installation of substrate retainers throughout the west barrel;
- Installation of a fish passage system at the outlet of the west barrel, to be fabricated from one meter diameter corrugated steel culvert sections with interior baffles;
- Pre-bagged cast-in-place concrete repairs to the existing inlet and outlet structures;
- Abrasive blasting/zinc metallizing of the SPCSP interiors;
- Targeted heavy rock riprap scour and erosion protection works at the outlets; and
- Repair/replacement of deteriorated guardrail.

The culvert structure is located at the following coordinates: 61.136709, -119.015068. The Project Area and 99% engineering drawing have also been provided in **Appendix A**.

2.0 Identification of Waste Types

Construction activities have the potential to result in the generation of waste. While the majority of waste generated on site will be domestic waste and the possiblity of limited cleared vegetation, there is some potential for hazardous waste to be generated. Hazardous waste types are discussed in **Sections 2.1** and **2.2**, below.

2.1 Non-Hazardous Non-Mineral Waste

Non-hazardous, non-mineral wastes generated during the Project will primarily include domestic wastes, sanitary wastes, and limited construction materials. Domestic wastes from the site will be brought back to the proposed construction camp.

Minimal vegetation clearing is expected as the proposed works are inside the current project extents.

The potential environmental effects arising from unmanaged non-hazardous, non-mineral wastes include increased wildlife attractants, potential for sanitary spills or leaks, and impacts on wildlife and fish habitat quality.

In summary, the non-hazardous non mineral wastes anticipated to be generated by the Project include:

- Domestic Waste;
- Construction Materials;
- Sanitary Waste; and
- Cleared Vegetation.

2.2 Hazardous Wastes

Potential hazardous wastes generated on-site include waste oil, fuel, lubricants, oil filters, solvents, etc., from use and maintenance of heavy equipment. Other potential hazardous wastes may include contaminated soil, snow or water should a spill occur during Project activities.
If unmanaged, the potential environmental effects arising from this wastes includes degradation of soil quality, degradation of water quality, and wildlife and fish habitat quality, and harm to on-site personnel.

3.0 Management of Waste Types

3.1 Non-Hazardous Non-Mineral Waste

Within the Project Area, the non-hazardous, non-mineral wastes will be temporarily stored within the Project Area. The Contractor will be responsible for the disposal of waste generated from the project and adhere to the approved WMP. The following BMPs may be implemented to reduce the potential for environmental effects associated with non-hazardous, non-mineral wastes:

Domestic Waste:

- Domestic wastes will be transported with site personnel in crew vehicles. These waste materials will be transported back to a community and disposed of off-site (e.g., in garbage cans).

Construction Materials:

- On-site, waste construction materials will be stored in clearly marked containers with lids. These waste materials will be transported back to a community, if/when necessary, and disposed of at an approved Solid Waste Facility. The Contractor will be responsible for obtaining approval from the community for disposal. These containers will be inspected to ensure no domestic waste is disposed of here.

Sanitary Waste:

- Portable toilets will be used on site and will be managed by the Contractor.
- Sanitary wastes collected in the portable toilets will be hauled off-site for treatment and disposal at the supplier's facility or an approved waste treatment facility.

Cleared Vegetation (from INAC 2010)

- Trees will be felled away from water sources to minimize the amount of vegetation material that could enter the aquatic environment.
- If clearing trees or packing snow with a dozer blade, the uprooting of the trees will be avoided. Small trees and shrubs will be cleared by hand, or with the dozer blade to "walk down" the vegetation,

with the blade set at a fixed height. The blade will push small trees and shrubs down and the weight of the machine will compress felled vegetation. The ground cover and surface organic layer will be left in place.

- Burning of brush may be required. If determined necessary, brush piles will be burned away from other vegetation to minimize the risk of fire spreading.

Construction Materials

- Construction material wastes (e.g., scrap wood, scrap metal, liners, etc.) will be stored in closed top containers in approved areas until they are removed from site and hauled away for disposal.
- Approval for disposal must be received by the facility operator prior to disposal.
- The Contractor will coordinate with waste facility operators to ensure the facility can accept the waste types being hauled off-site.

3.2 Hazardous Wastes

Hazardous wastes generated during the permitted operations and maintenance activities will be stored at the designated fuelling and contaminant storage area within the Project area. This area is outlined in the drawings in **Appendix A** and is greater than 100 m from a water source; this will prevent potential spills or leaks from entering the creek.

Any hazardous wastes will be stored in clearly marked containers with lids (i.e., drums). Any hazardous wastes will be removed from the designated storage area a minimum of bi-weekly, if necessary. As the contaminated soil/snow wastes will be transported to an approved waste facility for treatment. If other contaminated materials require disposal (i.e., spill pads), these will be disposed of through a licensed facility. For this transport and disposal, the Contractor or DOT will complete the appropriate waste manifest form.

4.0 Infrastructure Required for Waste Management

Upon award, the selected Contractor shall obtain an acceptance letter from an approved waste management facility indicating the acceptance of waste generated by the project. The following types of infrastructure will be required for proper waste management of the Project:

- Cleared vegetation storage area - this area for windrowing or burning will be selected within an appropriate location along the highway alignment by the Contractor and GNWT-INF site representative;
- Approved Solid Waste Facility;
- Approved Sewage Facility; and

- Approved hazardous waste disposal facility.

References

Indian and Northern Affairs Canada (INAC). 2010. Northern Land Use Guidelines Volume 5 – Access: Roads and Trails. Natural Resources and Environment Branch, INAC, Ottawa, ON. Available online: https://publications.gc.ca/site/eng/9.651855/publication.html

Mackenzie Valley Land and Water Board (MVLWB). 2011. Guidelines for Developing a Waste Management Plan. MVLWB, Yellowknife, NT. Available online: https://mvlwb.com/resources/lwb-policies-and-guidelines November 2023).

Appendix A

99% Review Drawings

BOUVIER CREEK (01C016) HIGHWAY 1 KM 277.5
BRIDGE-CULVERT REHABILITATION

DRAWING LIST	
DRAWING NO.	DRAWING TITLE
00	COVER SHEET
01	GENERAL ARRANGEMENT OF PROPOSED REHABILITATION WORKS
02	DETAILS AND ISOMETRIC OF PROPOSED FISH PASSAGE IMPROVEMENTS TO EXISTING CULVERT CONNECTION
03	EXISTING SITE PHOTOS
04	STAGING PLAN
05	FISH PASSAGE PLAN, SECTIONS AND DETAIL
06	FISH PASSAGE SECTIONS
07	EROSION & SCOUR PROTECTION
08	CONCRETE & STRUCTURAL REPAIRS
09	SPCSP SUBSTRATE RETAINER DETAILS 1 OF 2
10	SPCSP SUBSTRATE RETAINER DETAILS 2 OF 2
11	SUBSTRATE RETAINER RENDERING TYPE B
12	ROADWAY & EROSION DETAILS

DILLON PROJECT NO. 21-1344

Government of
Northwest Territories

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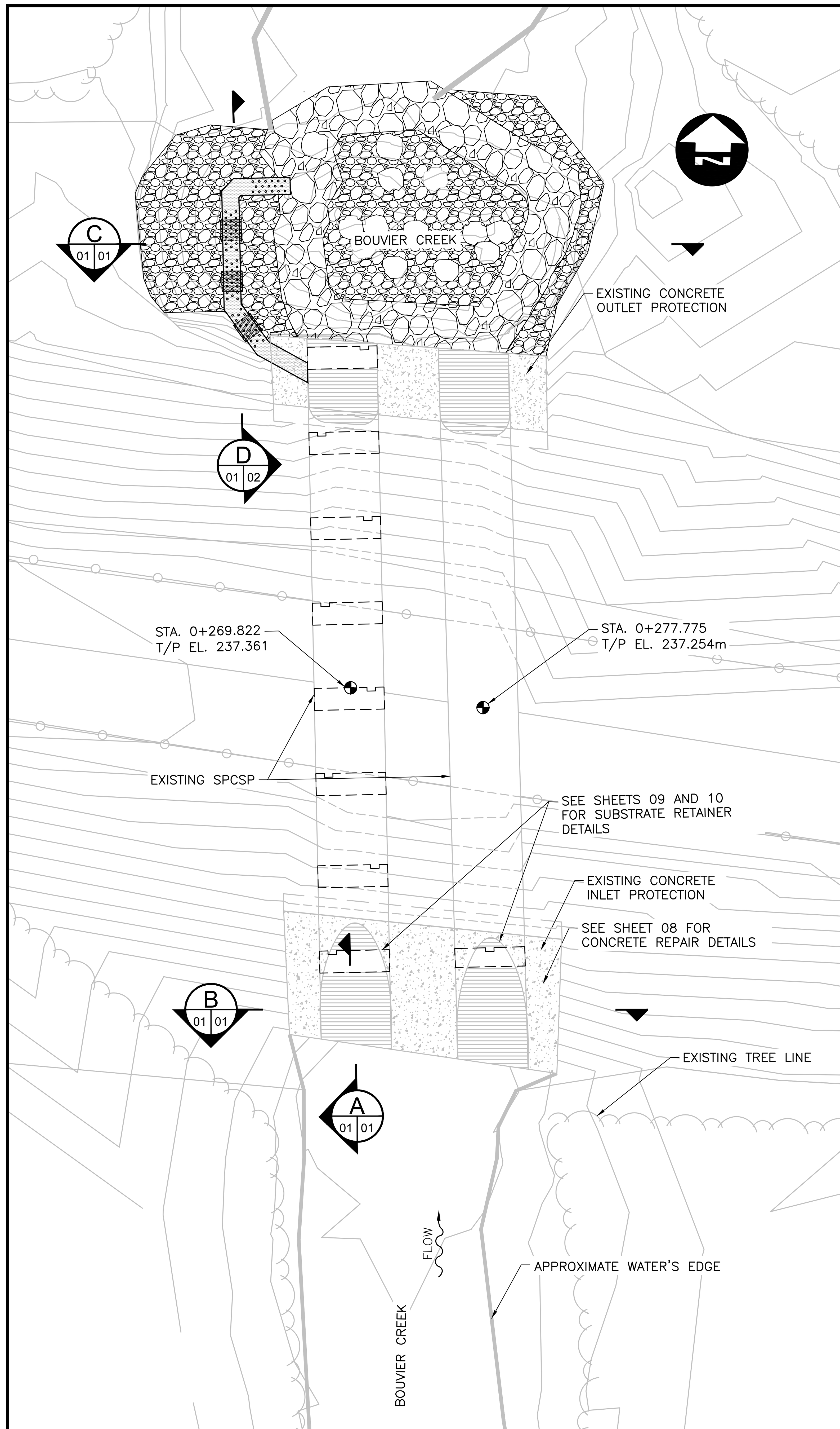

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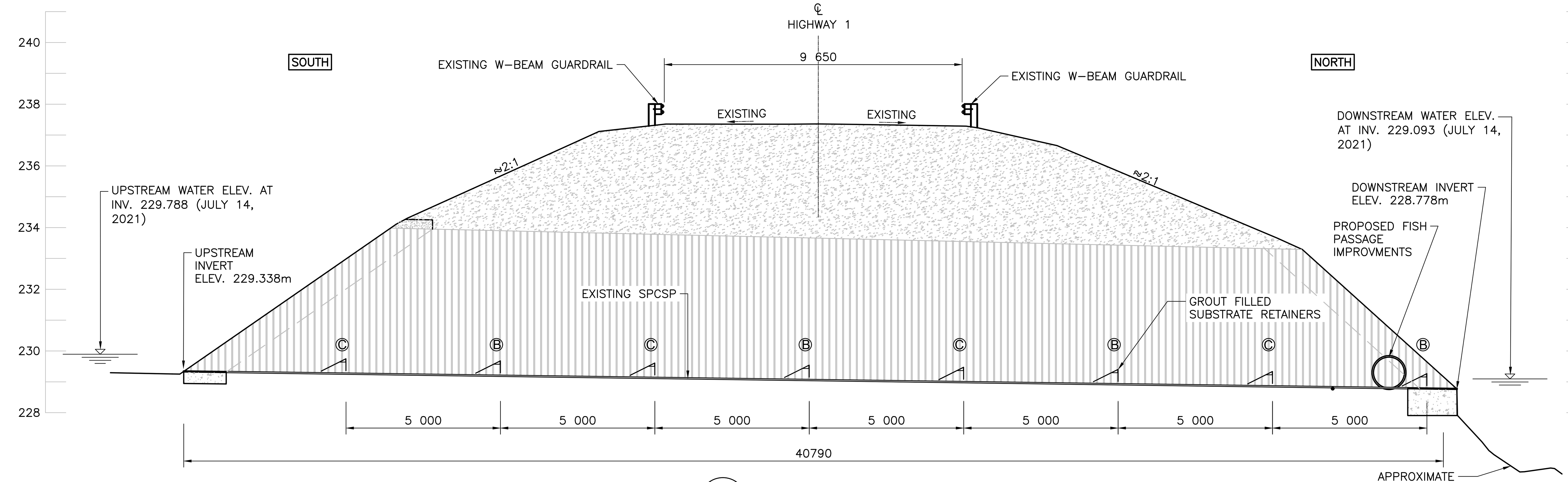

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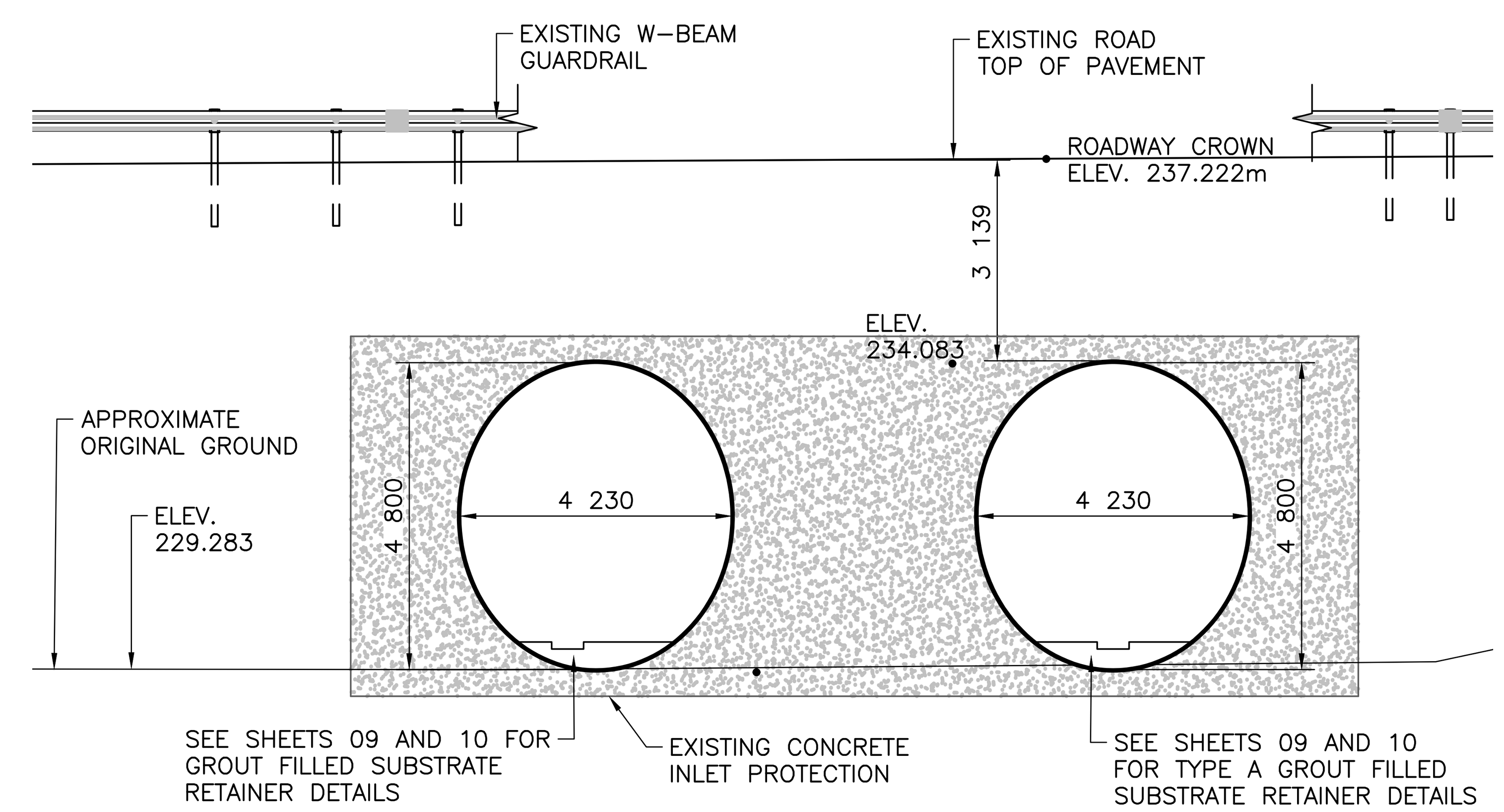

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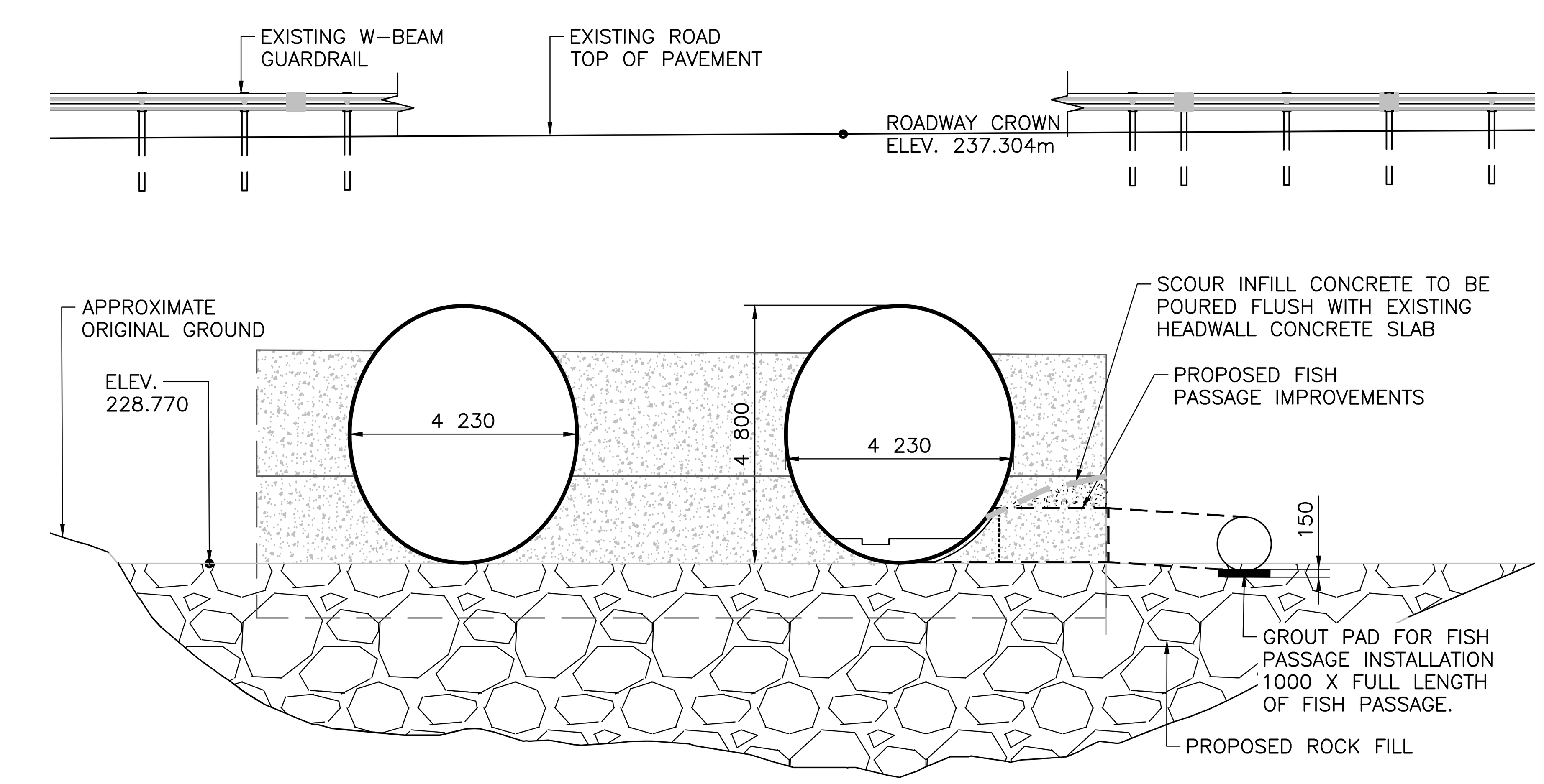

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GENERAL NOTES:

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS.
2. THE METRIC SYSTEM OF MEASUREMENT IS USED ON ALL DRAWINGS. ELEVATIONS AND STATIONS ARE SHOWN IN METERS AND ALL OTHER DIMENSIONS ARE SHOWN IN MILLIMETERS UNLESS NOTED OTHERWISE.
3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, DETAILS, AND ELEVATIONS OF THE PROPOSED WORK SHOWN ON THE DRAWINGS PRIOR TO COMMENCEMENT OF THE WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER AND THE PROPOSED ADJUSTMENT OF THE WORK REQUIRED SHALL BE SUBMITTED FOR APPROVAL.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF ALL TEMPORARY WORKS INCLUDING, BUT NOT LIMITED TO, COFFERDAMS, DEWATERING SYSTEMS, CONSTRUCTION PLATFORMS, ETC.
5. ANY DAMAGE TO ANY EXISTING UTILITIES BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR AT HIS/HER OWN COST TO THE ENGINEER'S SATISFACTION.
6. ALL WORK SHALL CONFORM TO CSA S6-19, THE CANADIAN HIGHWAY BRIDGE DESIGN CODE.
7. CONTRACTOR SHALL VERIFY PRESENCE OF ANY AND ALL EXISTING UTILITIES PRIOR TO EXCAVATION OR CONSTRUCTION.
8. STRUCTURE SHALL NOT BE BACKFILLED (BACKFILL AGAINST ANY CONCRETE COMPONENT) UNTIL CONCRETE HAS REACHED 70% OF ITS SPECIFIED STRENGTH.
9. ALL REFERENCES TO CODES, STANDARDS, SPECIFICATIONS, GUIDELINES, ETC. SHALL BE THE LATEST EDITION UNLESS OTHERWISE INDICATED.
10. ALL WORKS TO BE PERFORMED IN ACCORDANCE WITH APPLICABLE LEGISLATION AND REGULATION INCLUDING BUT NOT LIMITED TO THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS.

CULVERT STEEL:

1. ALL EDGES SHALL BE GROUND SMOOTH AND FREE OF SHARP EDGES, BURRS, ETC.
2. ALL STEEL COMPONENTS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM SPECIFICATION A123/A153 TO A MINIMUM RETENTION OF 610 g/m² UNLESS NOTED OTHERWISE.
3. THE FISH PASSAGE SHALL BE CORRUGATED STEEL PIPE WITH A MINIMUM SHEET METAL THICKNESS OF 2.8mm
4. ALL CULVERT STEEL SHALL CONFORM TO CSA G401 UNLESS NOTED OTHERWISE.
5. CORRUGATION PROFILE (125mm x 25) FOR THE FISH PASSAGE CULVERT.
6. HOLES IN CSP/SPCSP TO BE FIELD DRILLED AND COATINGS SHALL BE REPAIRED IN ACCORDANCE WITH ASTM A123.

STRUCTURAL CONCRETE:

1. ALL STRUCTURAL CONCRETE SHALL CONFORM TO CLASS C FROM SSBC: f'c = 35 MPa @ 28 DAYS.
2. ALL CONCRETE AND METHOD OF CONSTRUCTION TO CONFORM TO CSA-A23.1 AND TESTING TO CSA A23.2 .
3. COLD WEATHER REQUIREMENT TO BE CARRIED OUT IN TO THE REQUIREMENTS OF CSA-A23.1 LATEST EDITION.
4. AIR CONTENT SHALL BE 5-8%, SLUMP RANGE 100 +/- 30, EXPOSURE CLASS C-1.
5. MAXIMUM SIZE AGGREGATE - 20mm.
6. ALL EXPOSED EXTERIOR CONCRETE EDGES TO BE CHAMFERED BY 20mm.
7. ALL CONCRETE SHALL BE PLACED ON UNFROZEN GROUND ONLY.
8. CONCRETE POURS FOR THE CONCRETE REPAIRS SHALL BE COMPLETED IN ONE STAGE POUR PER REPAIR AREA.

REINFORCING STEEL:

1. ALL REINFORCING STEEL SHALL CONFORM TO CSA-G30.18 400W UNLESS NOTED OTHERWISE.
2. PROVIDE 50mm CLEAR COVER TO REINFORCING STEEL UNLESS NOTED OTHERWISE.
3. ALL REINFORCING STEEL SHALL BE SHOP FABRICATED TO INCLUDE HOOKS AND BENDS. ALL LAP SPLICES SHALL BE IN ACCORDANCE WITH CSA. A23.3, CLASS B TENSION LAP SPLICES.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL SHALL CONFORM TO CAN/CSA G40.21 GRADE 300W UNLESS NOTED OTHERWISE.
2. ALL MATERIALS, EXCEPT STAINLESS STEEL ITEMS, SHALL BE HOT DIP GALVANIZED IN ACCORDANCE OF ASTM A123 WITH NET RETENTION OF 610 g/m² UNLESS NOTED OTHERWISE.
3. SELF-FLUXING, LOW TEMPERATURE, ZINC-BASED ALLOY RODS IN ACCORDANCE WITH ASTM A780 (ACCORDING SSBC 18.2.9.1) SHALL BE USED TO TOUCH-UP DAMAGED HOT-DIP GALVANIZING ON SITE AND TO METALLIZE FIELD WELDS.
4. ALL EDGES SHALL BE GROUND SMOOTH AND FREE OF SHARP EDGES, BURRS, ETC.
5. METALLIZING OF THE EXISTING SPCSP TO BE IN ACCORDANCE WITH HE CONTRACT DOCUMENTS.

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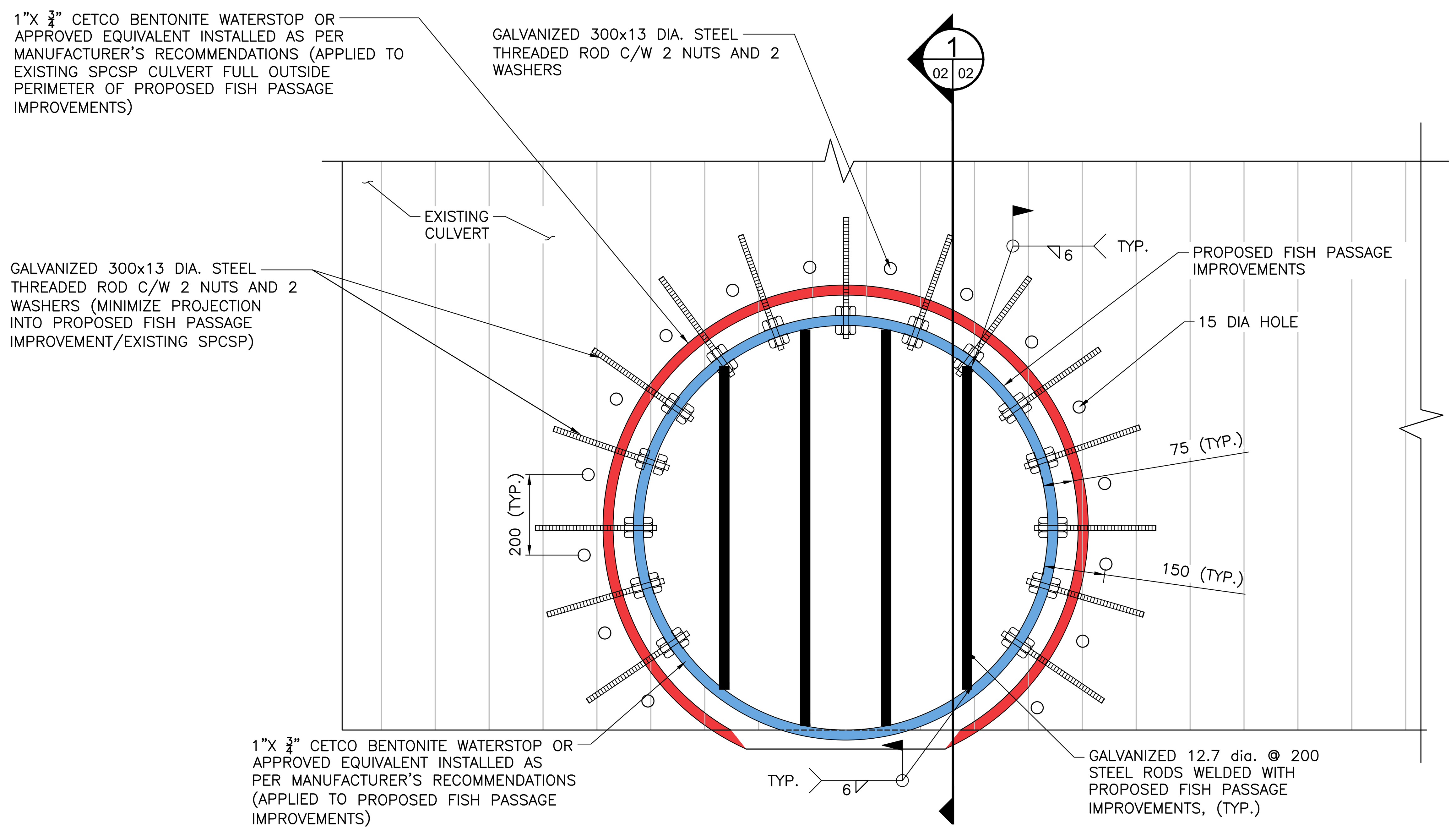
BOUVIER CREEK (01C016) HIGHWAY 1 KM 277.5
BRIDGE-CULVERT REHABILITATION

GENERAL ARRANGEMENT OF PROPOSED REHABILITATION WORKS

PROJECT NO. 211344

SHEET NO. 01



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SECTION VIEW
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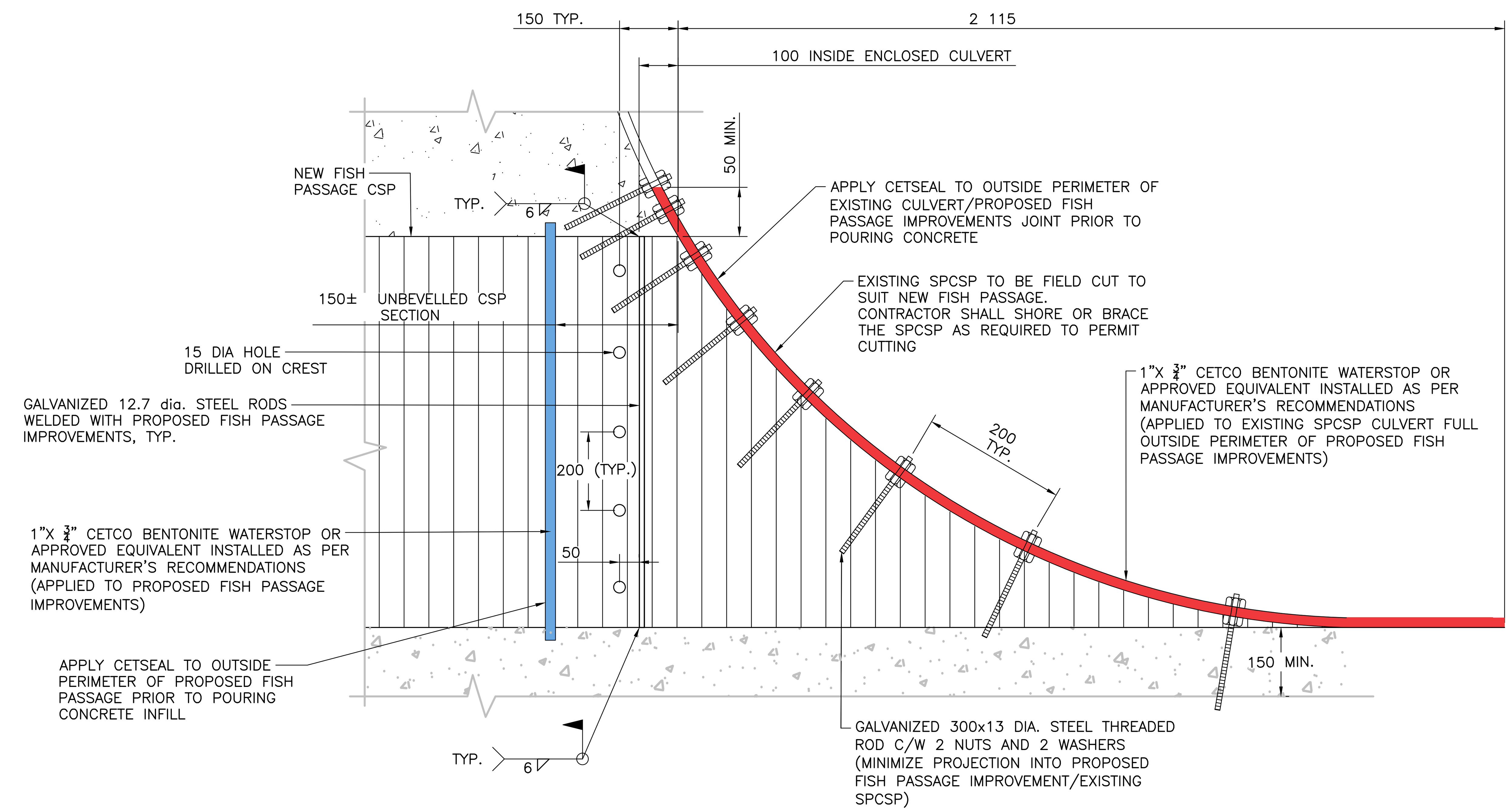

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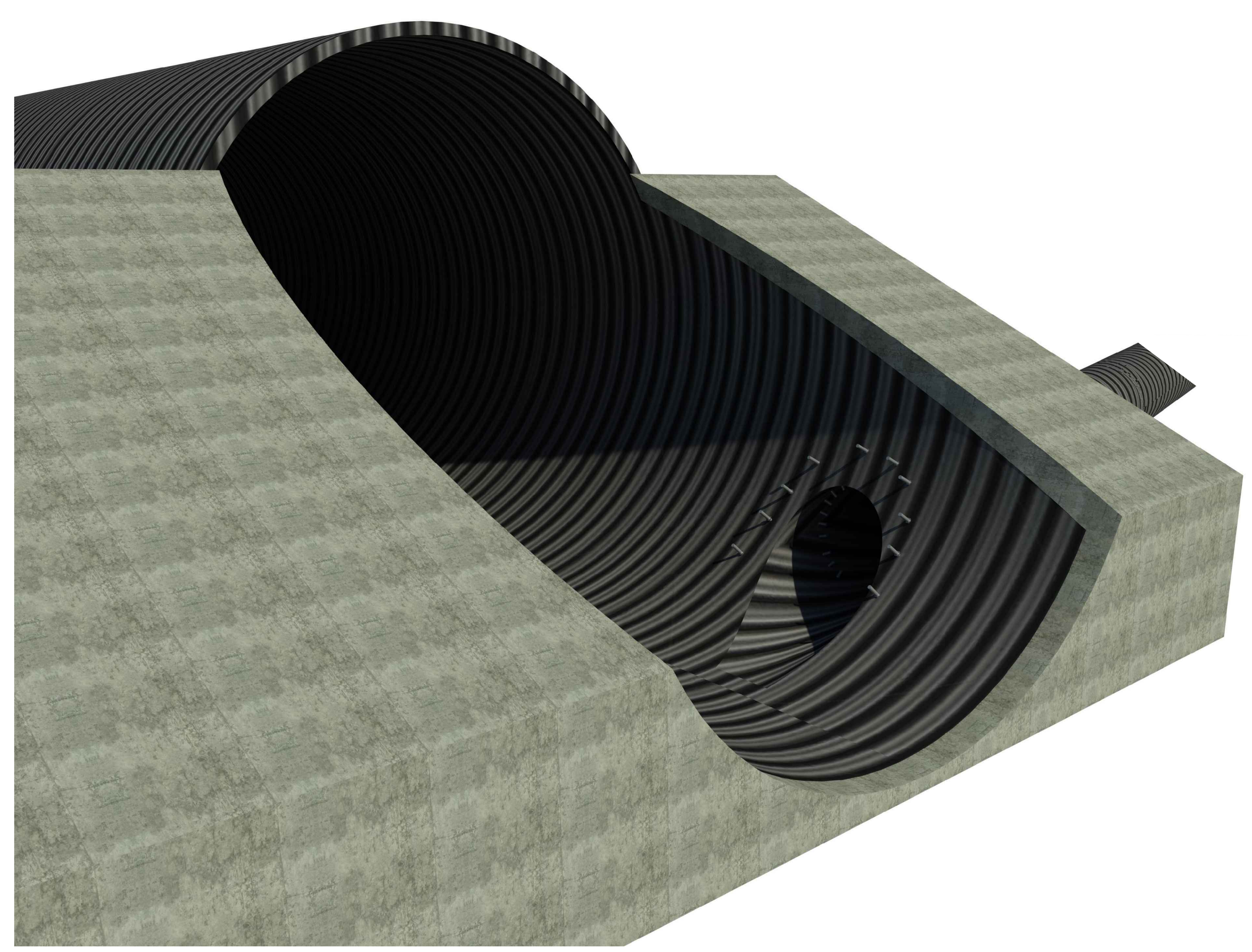

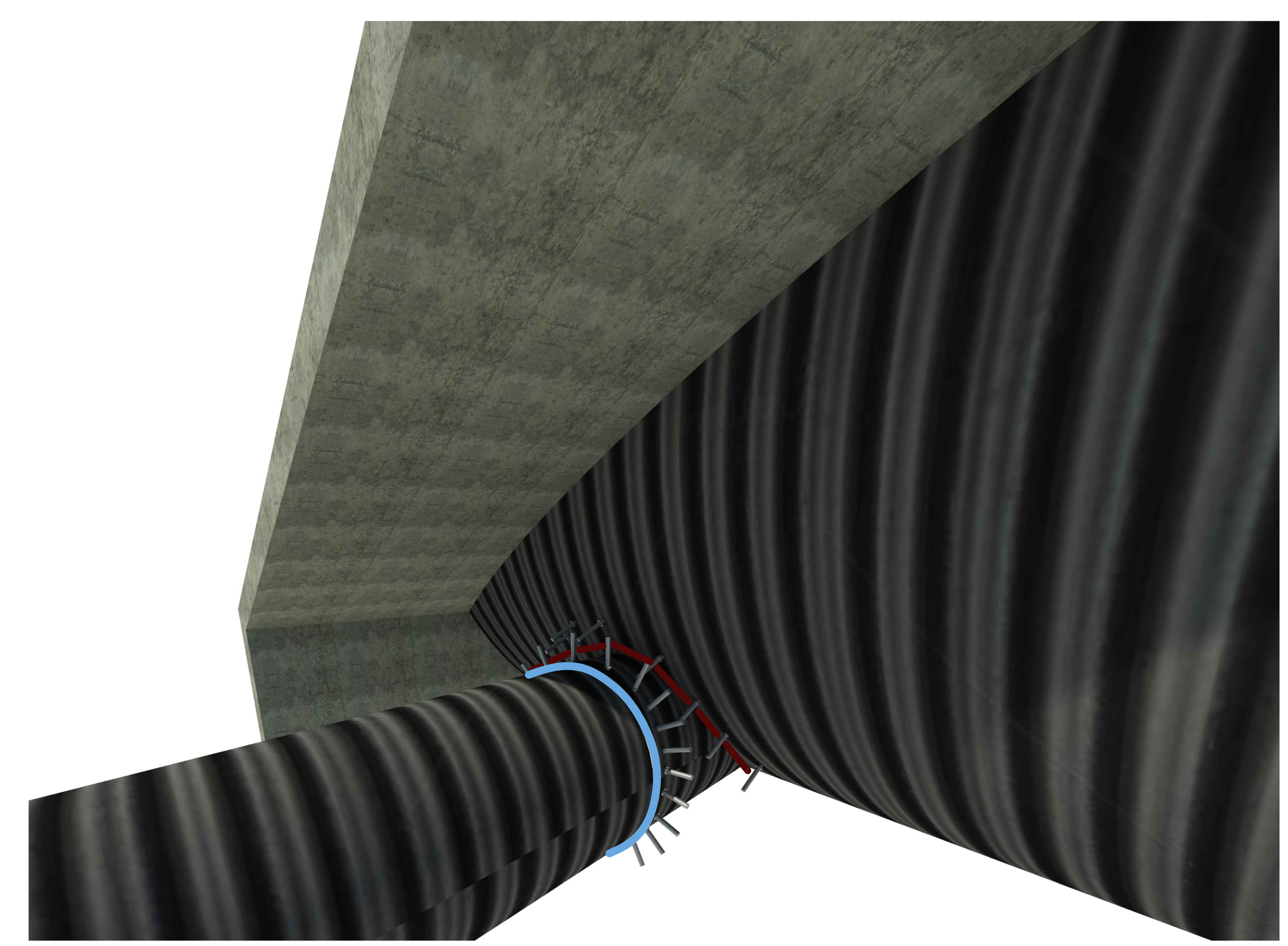

SPCSP - PROPOSED FISH PASSAGE IMPROVEMENTS
N.T.S
NOTE: SUBSTRATE RESTRAINERS NOT SHOWN FOR CLARITY

Conditions of Use

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BOUVIER CREEK (01C016) HIGHWAY 1 KM 277.5
BRIDGE-CULVERT REHABILITATION

DETAILS AND ISOMETRIC OF PROPOSED FISH PASSAGE IMPROVEMENTS TO EXISTING CULVERT CONNECTION

PROJECT NO. 211344

SHEET NO. 02

NOTE: PHOTOGRAPHS WERE CAPTURED JULY 12, 2022.

GENERAL SITE LOOKING DOWNSTREAM (NORTH)
N.T.S

TYPICAL CULVERT INTERIOR CONDITION
N.T.S

TYPICAL INLET PROTECTION CONCRETE SPALL
N.T.S

SCOUR BEHIND WEST BARREL OUTLET PROTECTION
N.T.S

CULVERT OUTLET
N.T.S

CULVERT INLET
N.T.S

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BOUVIER CREEK (01C016) HIGHWAY 1 KM 277.5
BRIDGE-CULVERT REHABILITATION

EXISTING SITE PHOTOS

PROJECT NO. 211344

SHEET NO. 03

STAGE 1 - WEST BARREL

SCALE: 1:100

STAGE 2 - EAST BARREL

SCALE: 1:100

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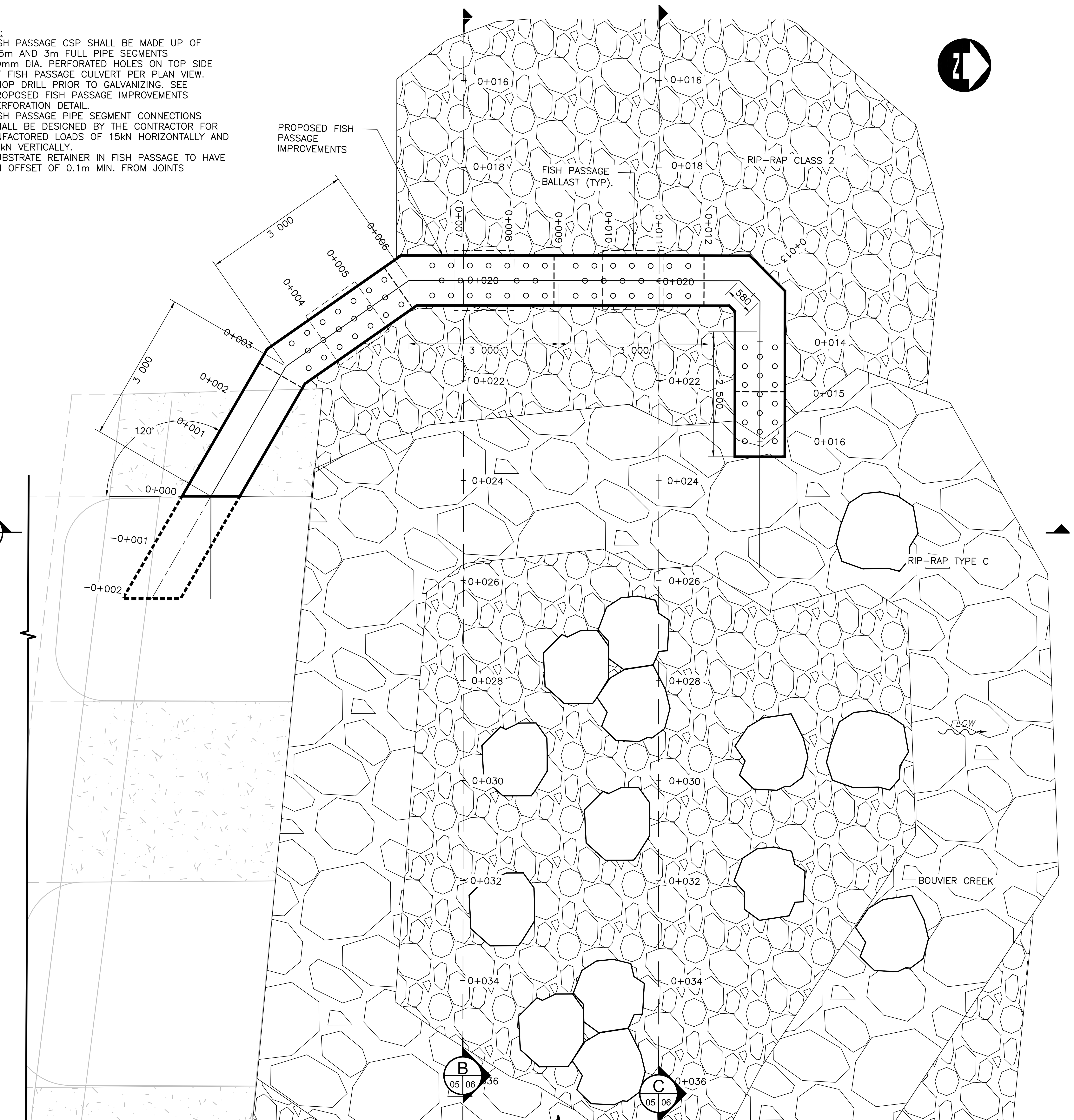
BOUVIER CREEK (01C016) HIGHWAY 1 KM 277.5
BRIDGE-CULVERT REHABILITATION

STAGING PLAN

PROJECT NO. 211344

SHEET NO. **04**

NOTES:
1. FISH PASSAGE CSP SHALL BE MADE UP OF 2.5m AND 3m FULL PIPE SEGMENTS
2. 50mm DIA. PERFORATED HOLES ON TOP SIDE OF FISH PASSAGE CULVERT PER PLAN VIEW. SHOP DRILL PRIOR TO GALVANIZING. SEE PROPOSED FISH PASSAGE IMPROVEMENTS PERFORATION DETAIL.
3. FISH PASSAGE PIPE SEGMENT CONNECTIONS SHALL BE DESIGNED BY THE CONTRACTOR FOR UNFACTORED LOADS OF 15kN HORIZONTALLY AND 12kN VERTICALLY.
4. SUBSTRATE RETAINER IN FISH PASSAGE TO HAVE AN OFFSET OF 0.1m MIN. FROM JOINTS



FISH PASSAGE PLAN VIEW

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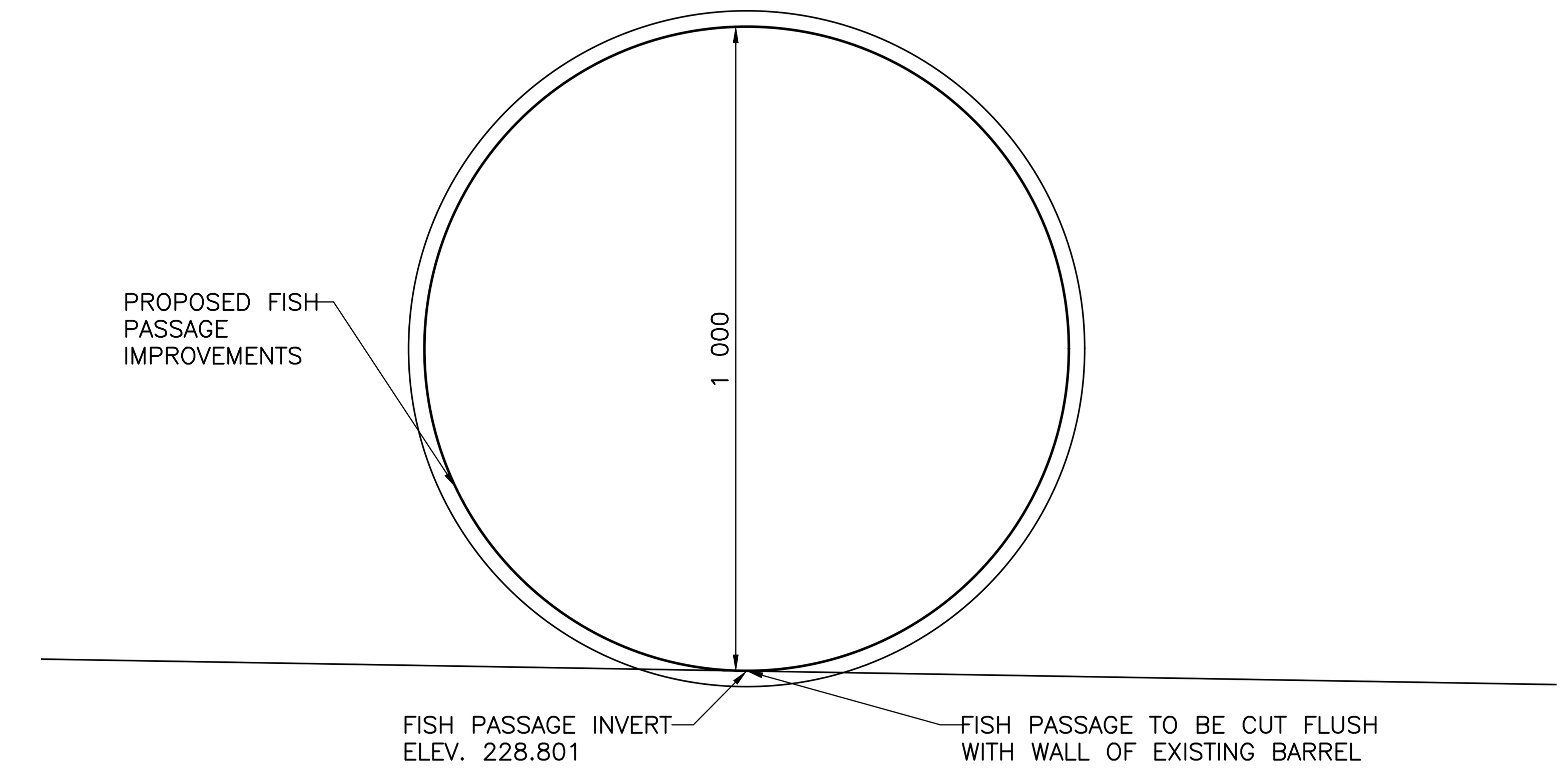

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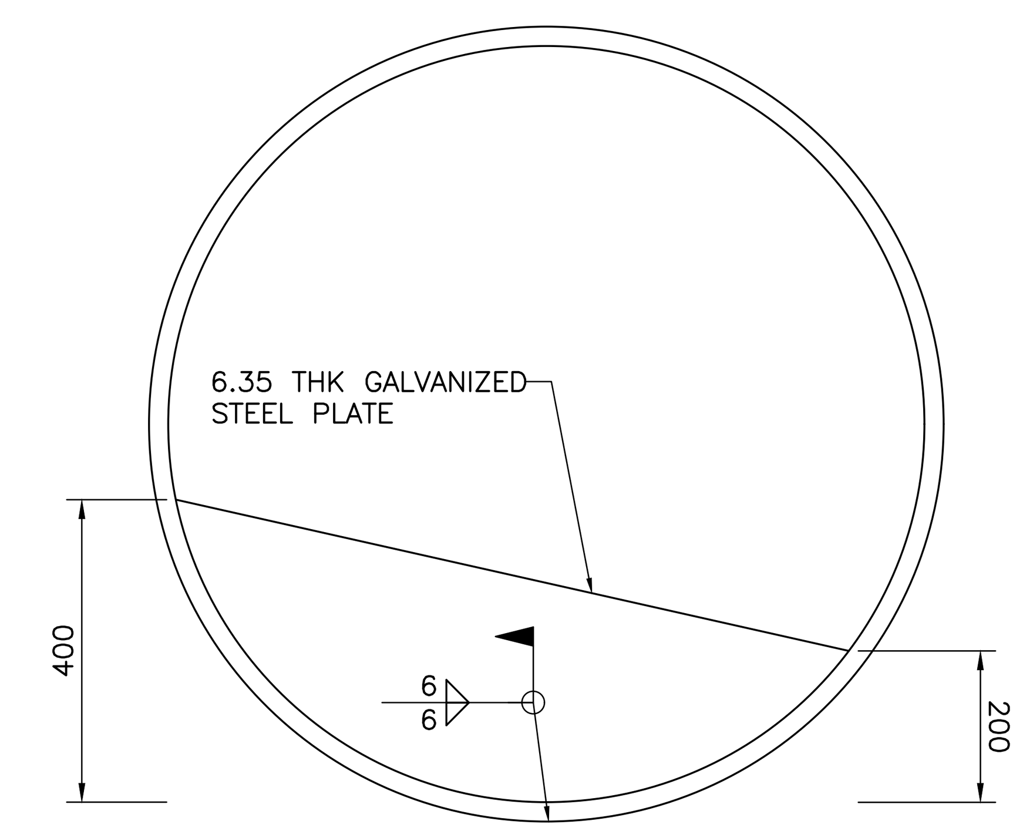

BAFFLE TYPE A DETAIL

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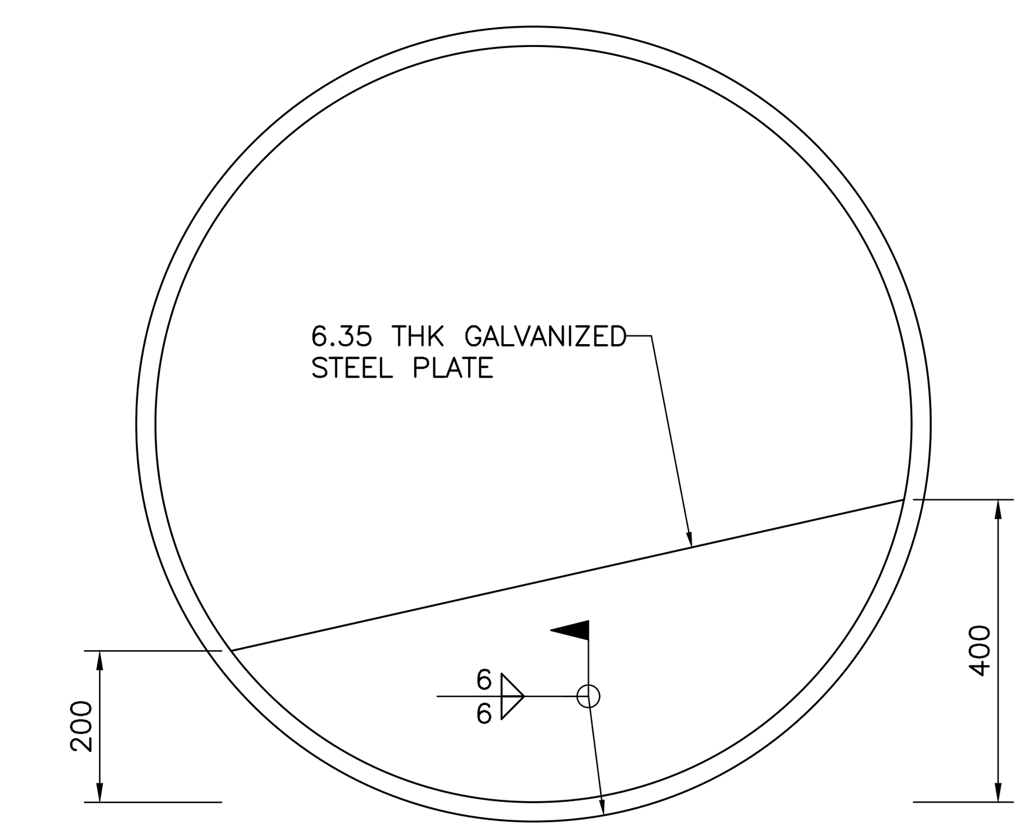

BAFFLE TYPE B DETAIL

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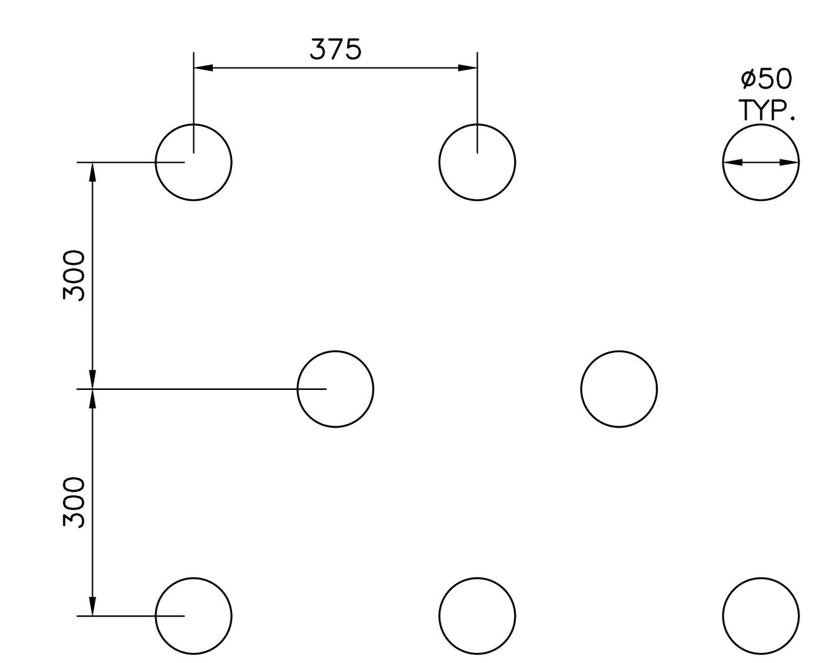

PROPOSED FISH PASSAGE IMPROVEMENTS PERFORATION DETAILS

SCALE: 1:10

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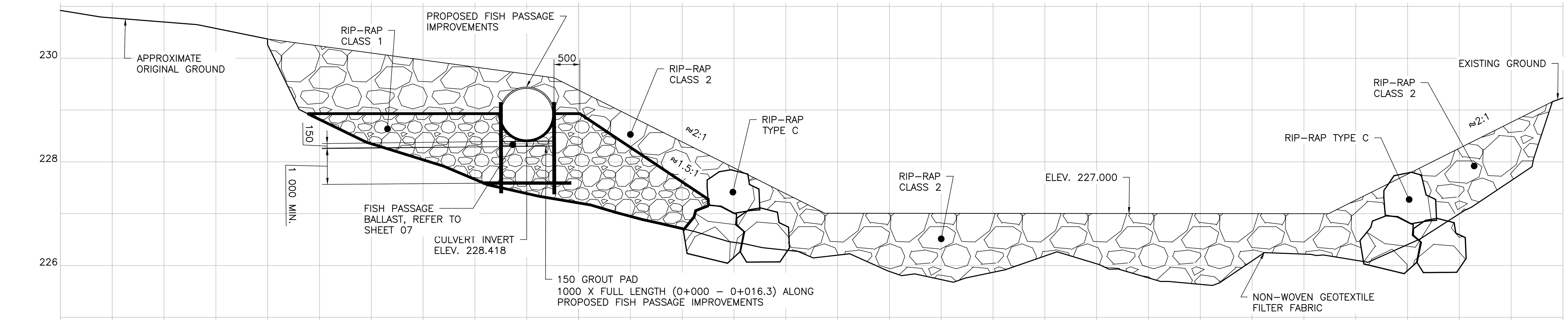
BOUVIER CREEK (01C016) HIGHWAY 1 KM 277.5
BRIDGE-CULVERT REHABILITATION

FISH PASSAGE PLAN, SECTIONS AND DETAIL

PROJECT NO. 211344

SHEET NO. 05



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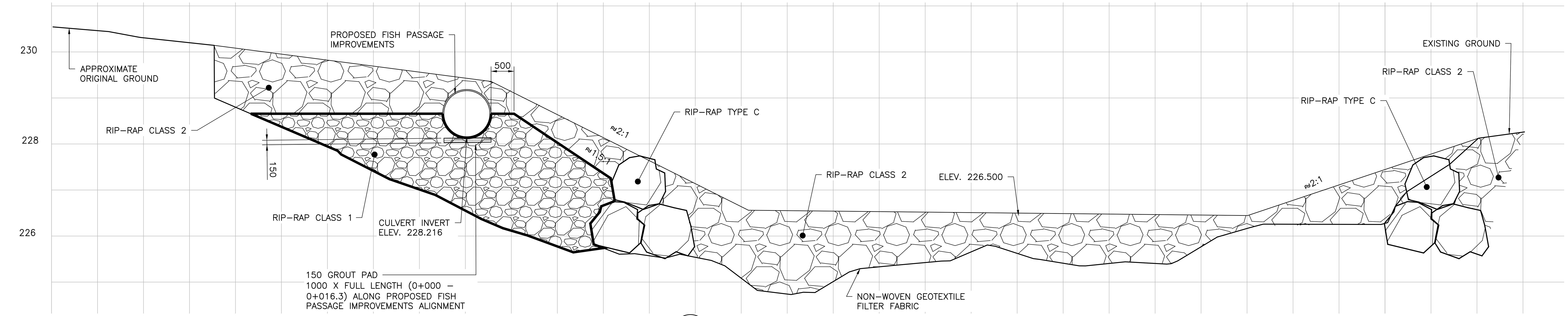

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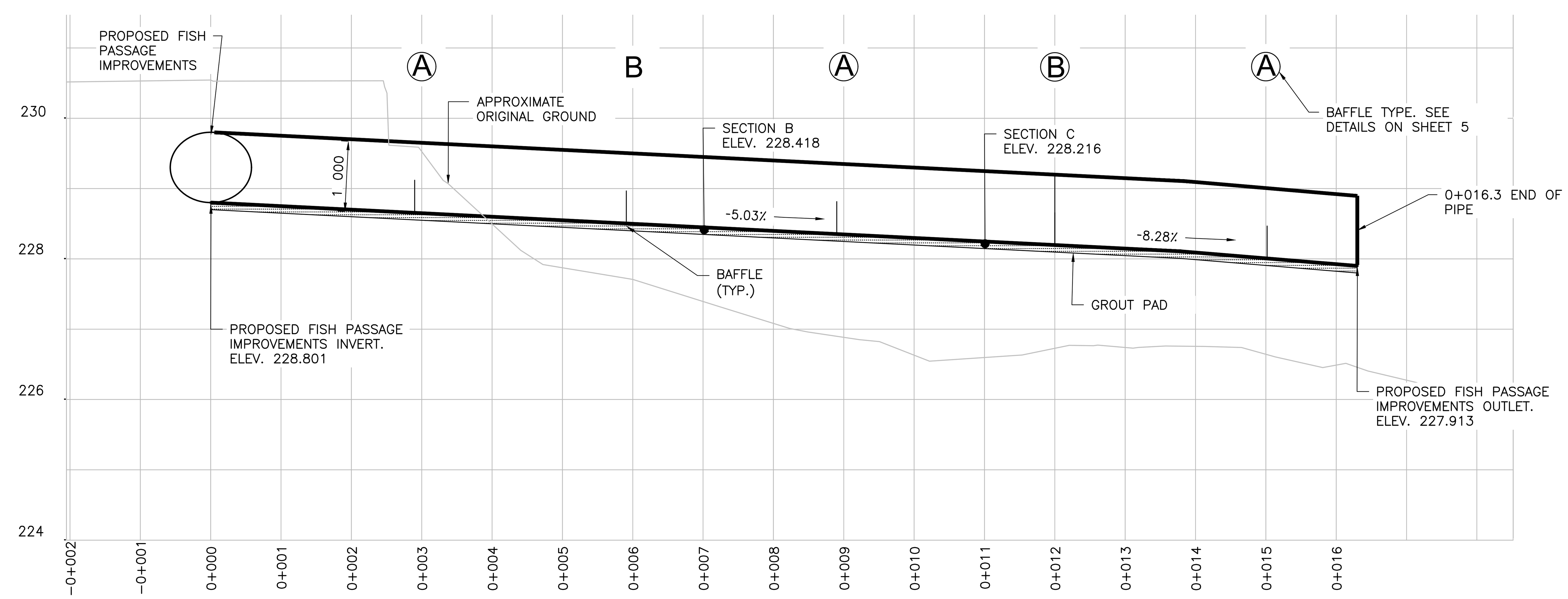

PROPOSED FISH PASSAGE IMPROVEMENTS PROFILE VIEW
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BOUVIER CREEK (01C016) HIGHWAY 1 KM 277.5
BRIDGE-CULVERT REHABILITATION

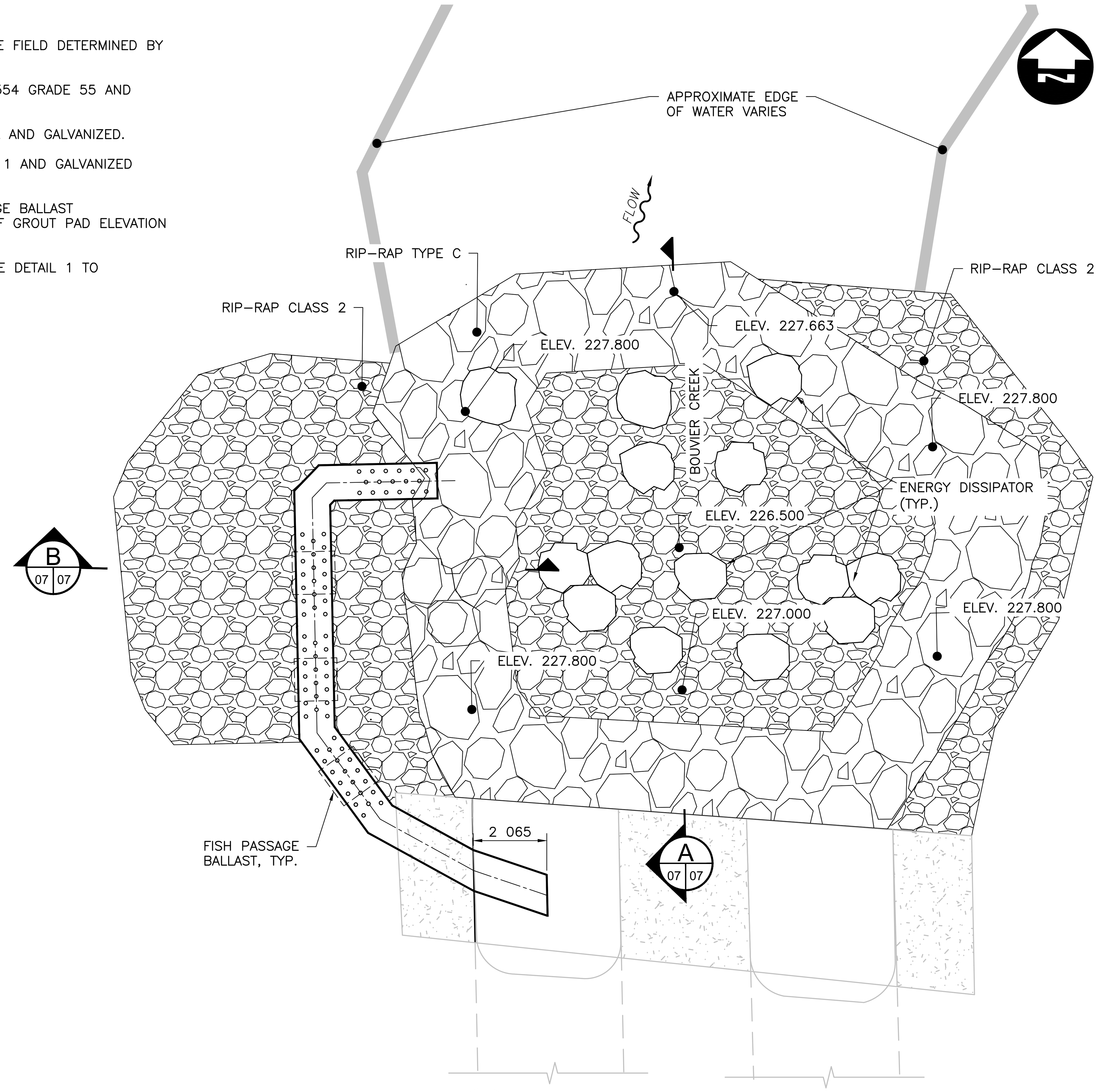
FISH PASSAGE SECTIONS

PROJECT NO. 211344

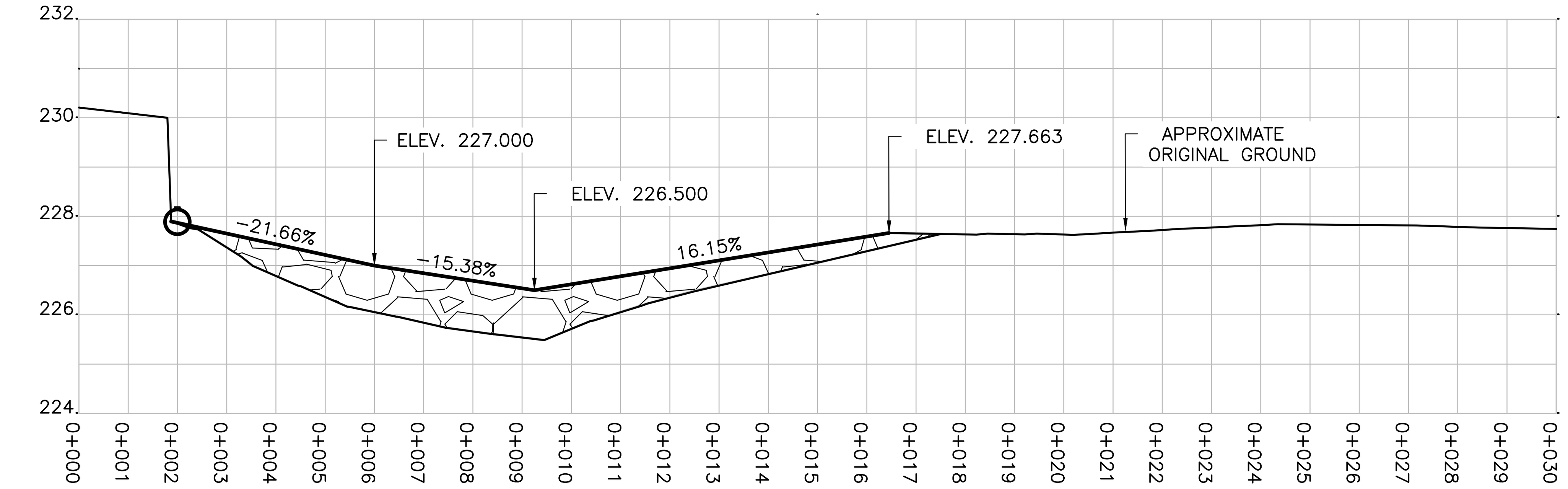
SHEET NO. 06

DILLON CONSULTING LIMITED Winnipeg, Manitoba, 1558 Willson Place, R3T 0Y4 204-453-2301

NOTES:
1. ENERGY DISSIPATOR LOCATIONS TO BE FIELD DETERMINED BY CONTRACT ADMINISTRATOR
2. THREADED RODS SHALL BE ASTM F1554 GRADE 55 AND GALVANIZED.
3. NUTS SHALL BE ASTM A563 GRADE A AND GALVANIZED.
4. WASHER SHALL BE ASTM F436 TYPW 1 AND GALVANIZED
5. POTENTIAL CONSTRUCTION SEQUENCE:
   - INSTALL DETAIL 2 ON FISH PASSAGE BALLAST
   - BACKFILL CLASS 2 TO BOTTOM OF GROUT PAD ELEVATION
   - FORM AND POUR GROUT PAD
   - INSTALL CSP WITH DETAIL 1
   - INSTALL WASHER, NUT AND SECURE DETAIL 1 TO THREADED ROD OF DETAIL 2
   - BACKFILL CLASS 1

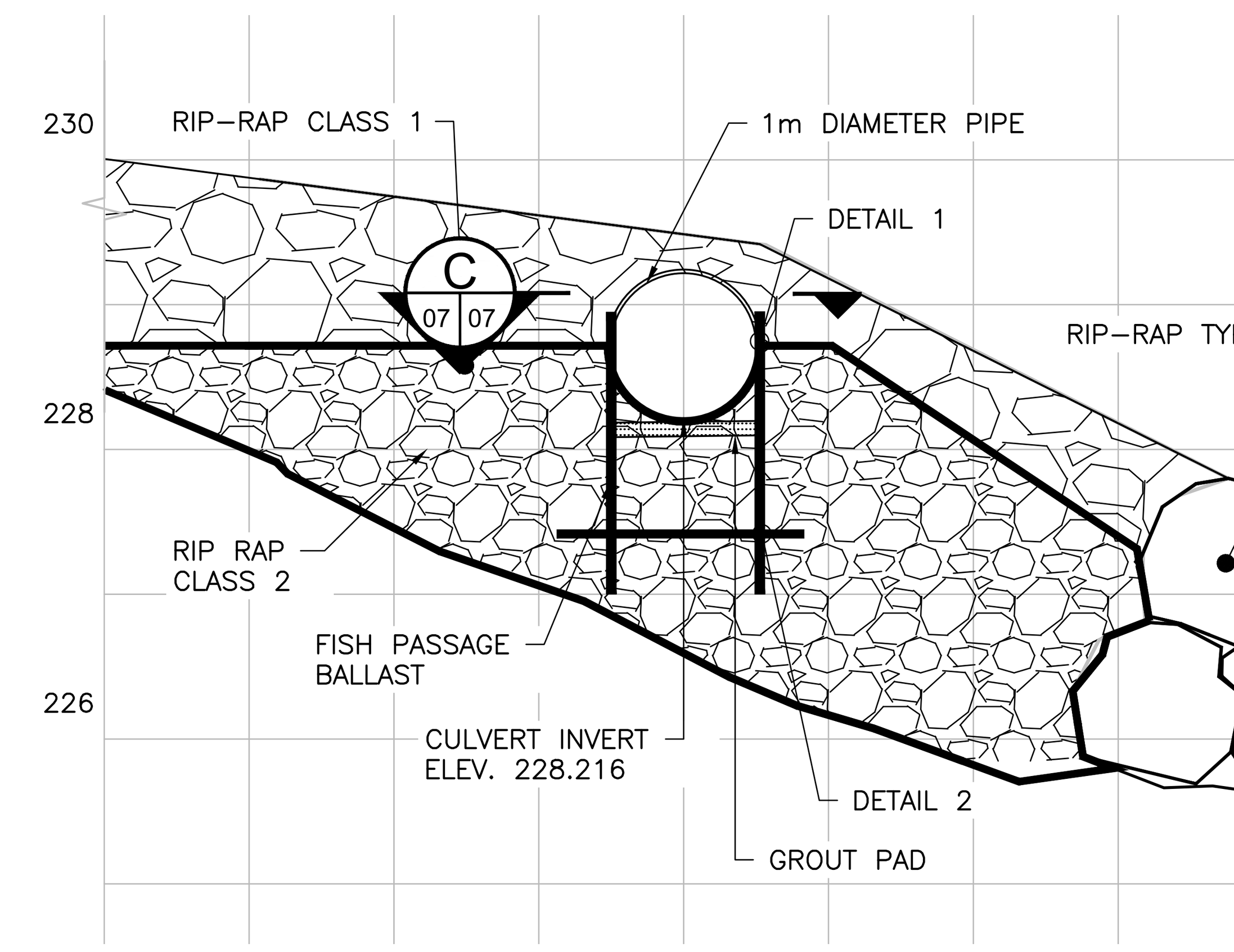


OUTLET PLAN VIEW
SCALE: 1:100



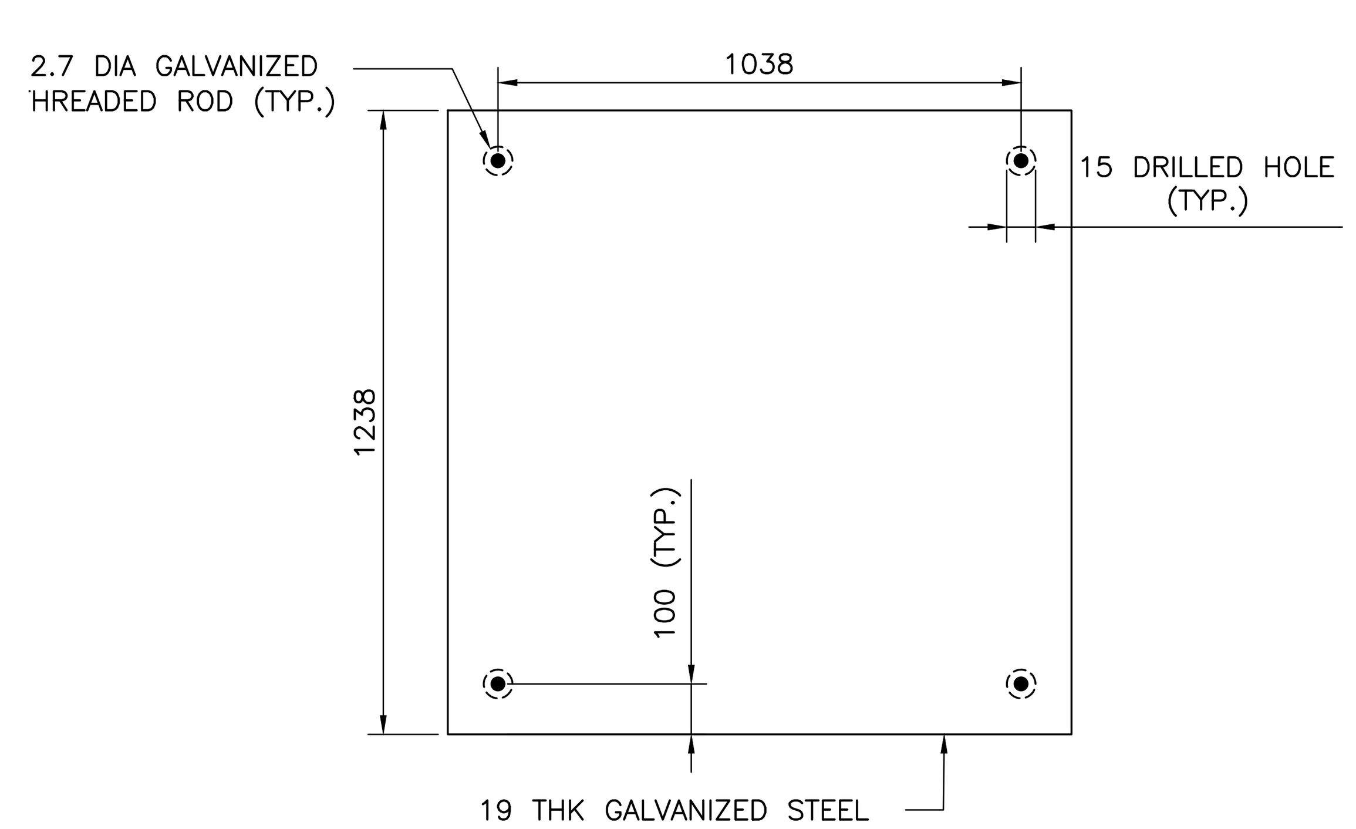
A 07 07 SECTION VIEW
SCALE: 1:100

NOTE: ENERGY DISSIPATORS NOT SHOWN, LOCATIONS ARE TBD IN FIELD

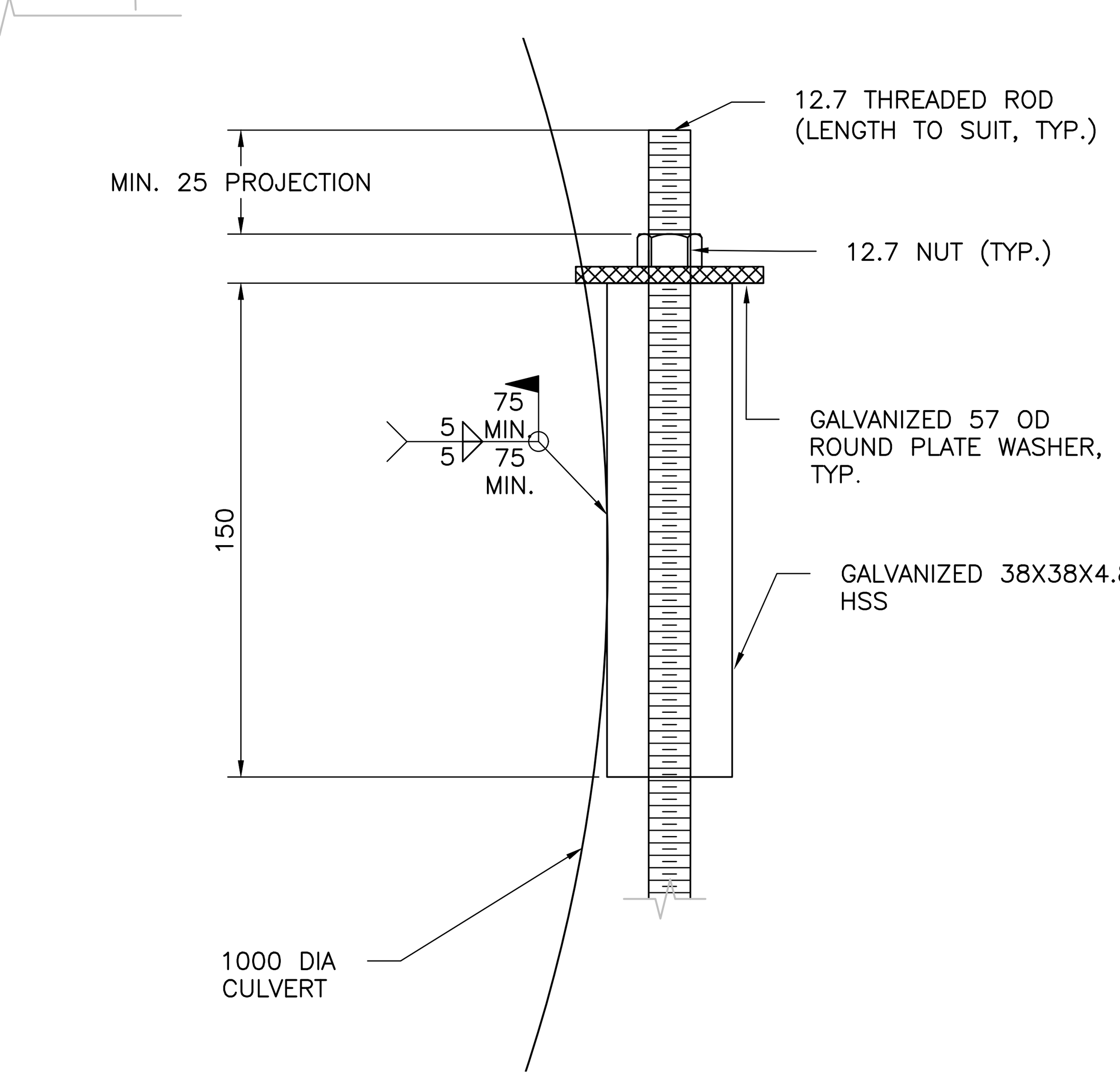


B 07 07 SECTION VIEW
SCALE: 1:50

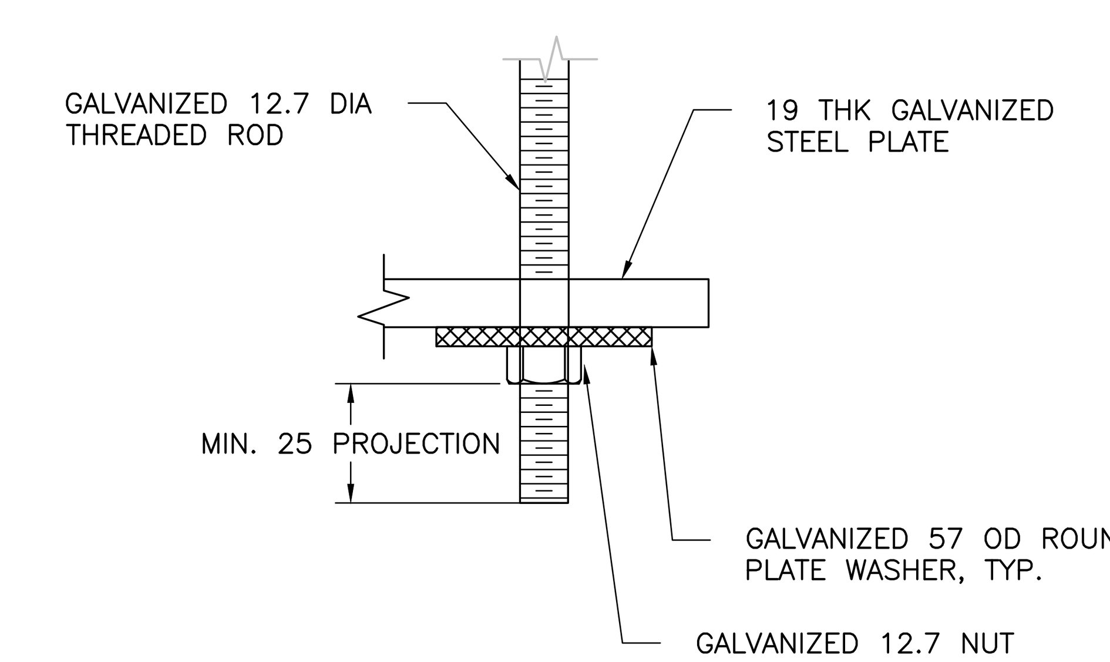
NOTE: ENERGY DISSIPATORS NOT SHOWN, LOCATIONS ARE TBD IN FIELD



C 07 07 FISH PASSAGE BALLAST - PLAN VIEW
SCALE: 1:15



FISH PASSAGE BALLAST - DETAIL 1
SCALE: 1:2



FISH PASSAGE BALLAST - DETAIL 2
SCALE: 1:2

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DATE: JAN 14, 2025	
SCALE: AS SHOWN	

BOUVIER CREEK (01C016) HIGHWAY 1 KM 277.5
BRIDGE-CULVERT REHABILITATION

EROSION & SCOUR PROTECTION

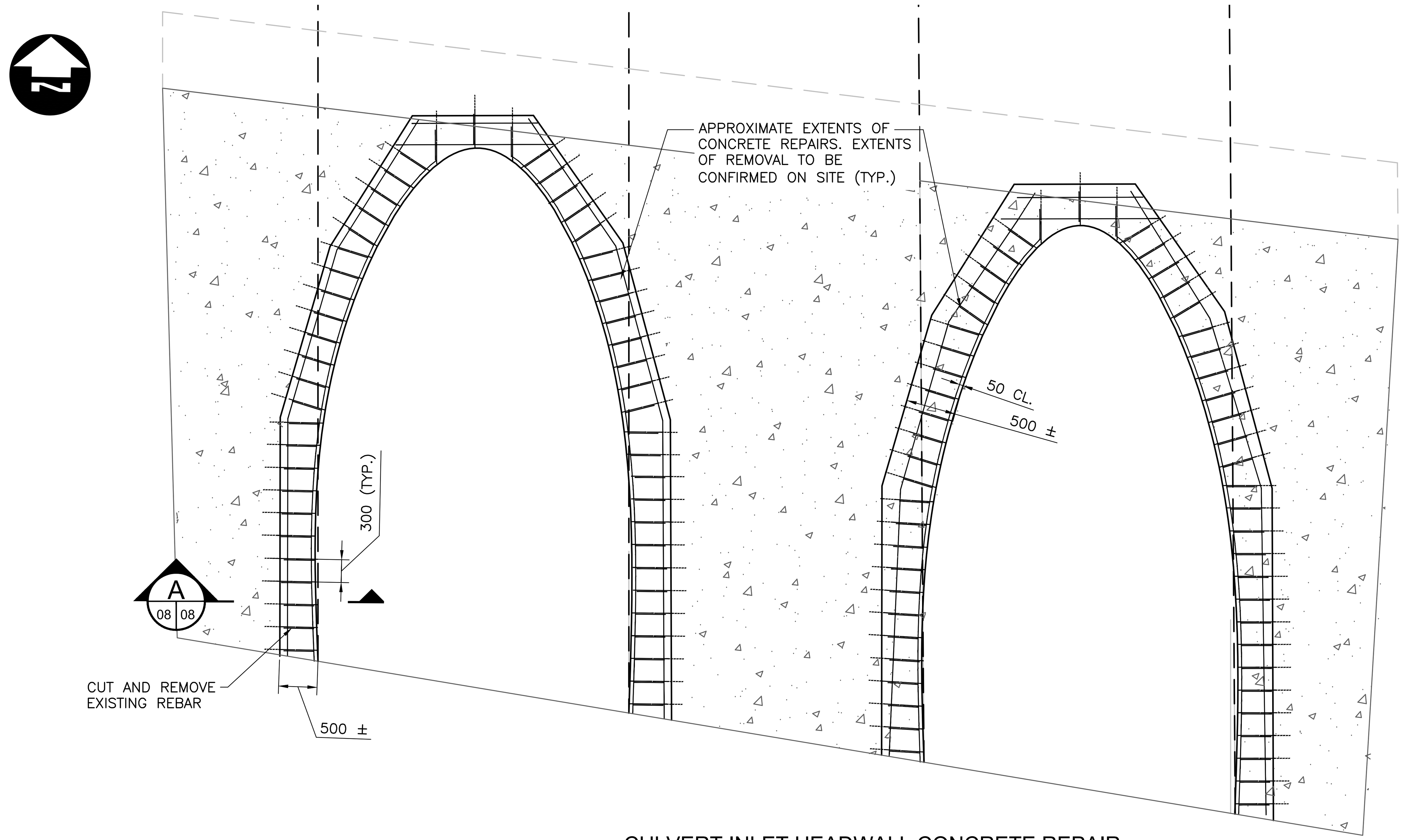
PROJECT NO. 211344

SHEET NO. 07

DILLON CONSULTING LIMITED Winnipeg, Manitoba, 1558 Willson Place, R3T 0Y4 204-453-2301

GENERAL INLET CONCRETE HEADWALL SCOPE OF WORK:

1. SAW CUT AND REMOVE CONCRETE AND EXISTING REBAR TO EXISTING AS SHOWN AND VERIFIED ON SITE WITH THE ENGINEER.
2. INSTALL REINFORCING STEEL
3. APPLY SIKADUR-32 HI-MOD EPOXY BONDING AGENT OR APPROVED EQUIVALENT TO FACE OF CULVERTS AND THE ADJACENT CONCRETE FACE PRIOR TO POURING NEW CONCRETE.
4. POUR CONCRETE.

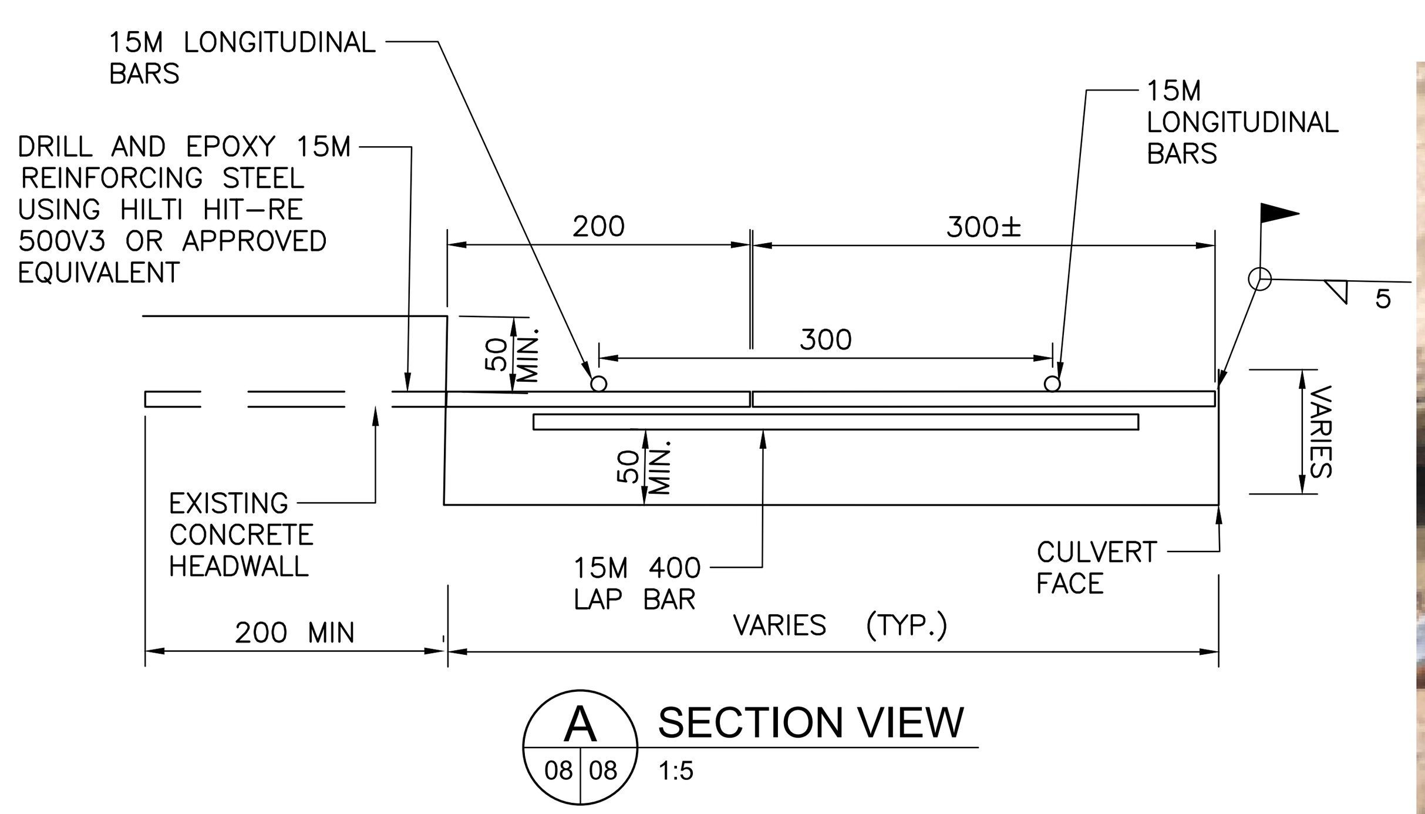


CULVERT INLET HEADWALL CONCRETE REPAIR

SCALE: 1:50

CULVERT INLET HEADWALL CURRENT CONDITION

N.T.S



A 08 08 SECTION VIEW

1:5

EXTENTS OF CULVERT COATING REPAIRS

N.T.S

WEST CULVERT OUTLET SCOUR CURRENT CONDITION

N.T.S

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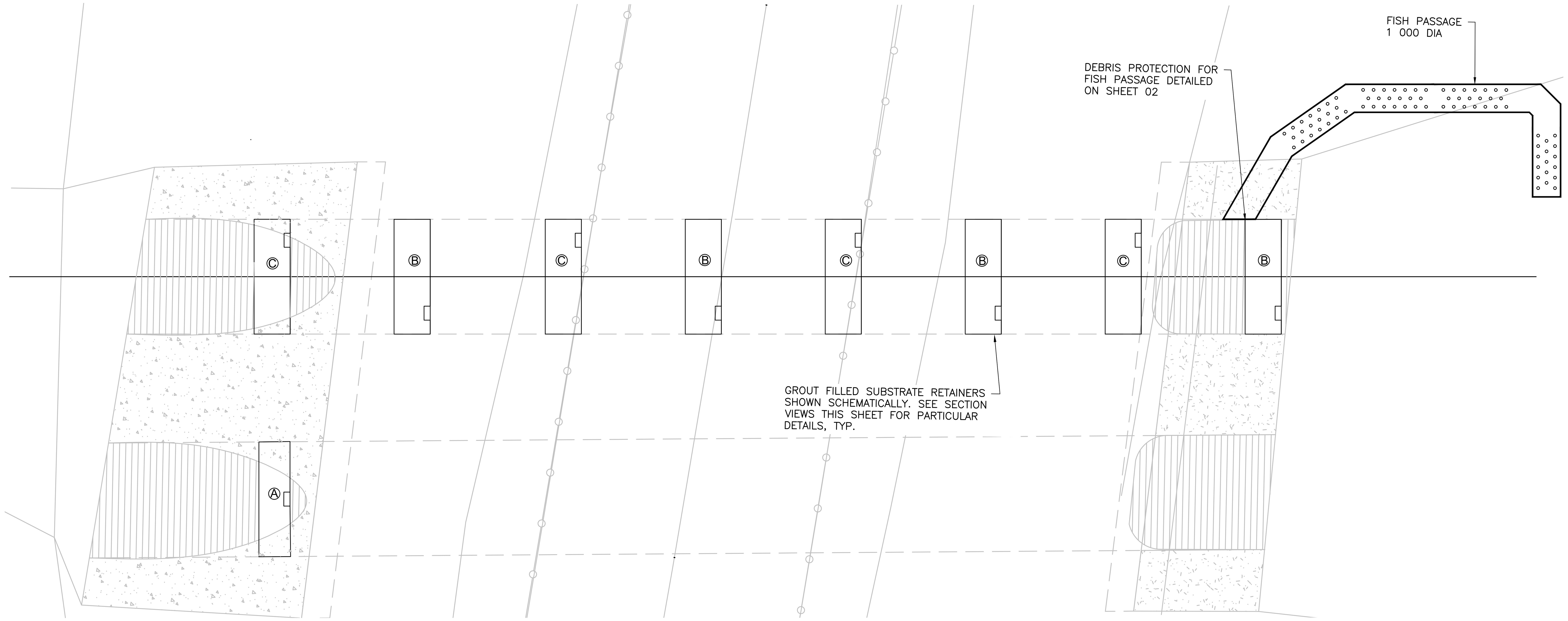
BOUVIER CREEK (01C016) HIGHWAY 1 KM 277.5
BRIDGE-CULVERT REHABILITATION

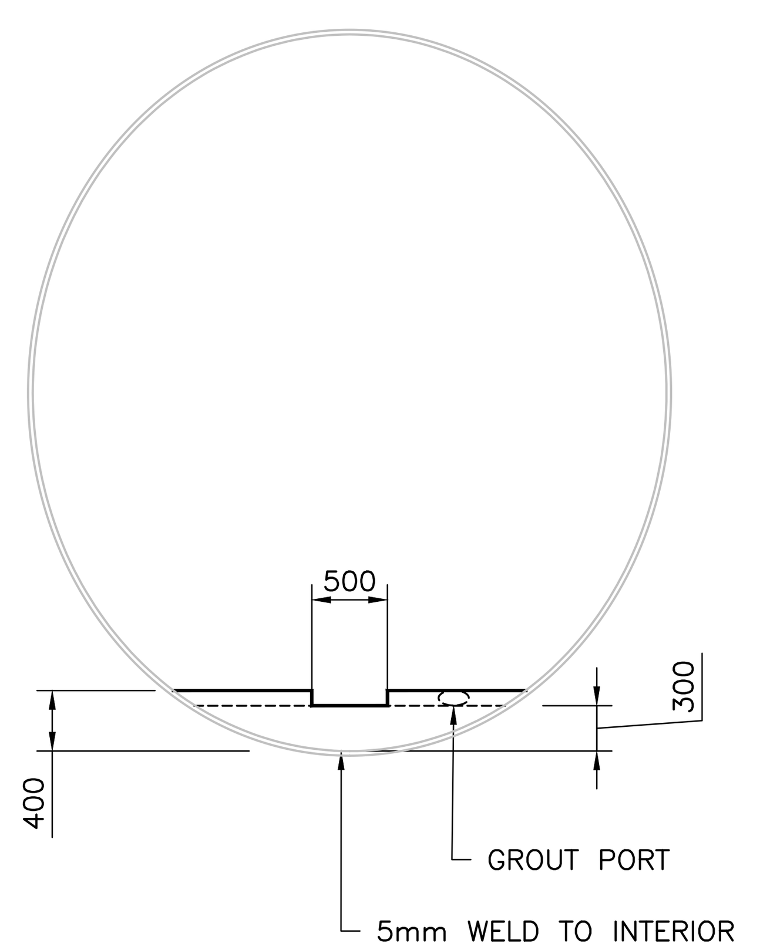
CONCRETE & STRUCTURAL REPAIRS

PROJECT NO. 211344

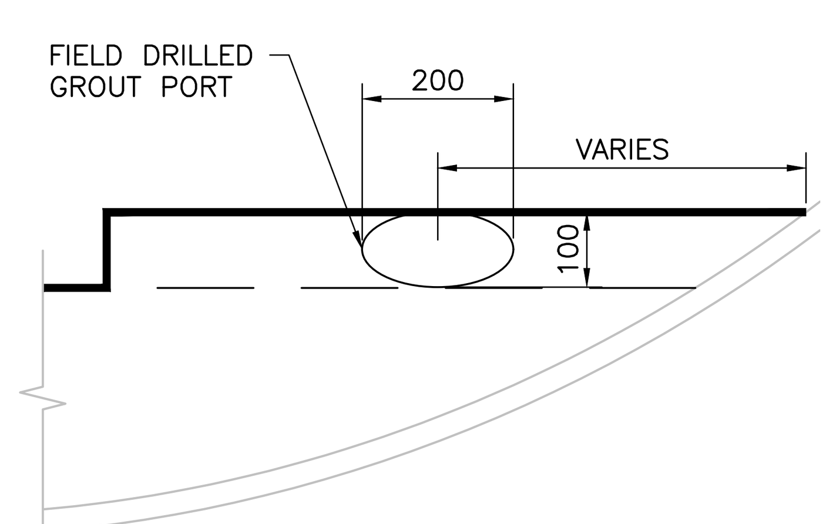
SHEET NO. 08



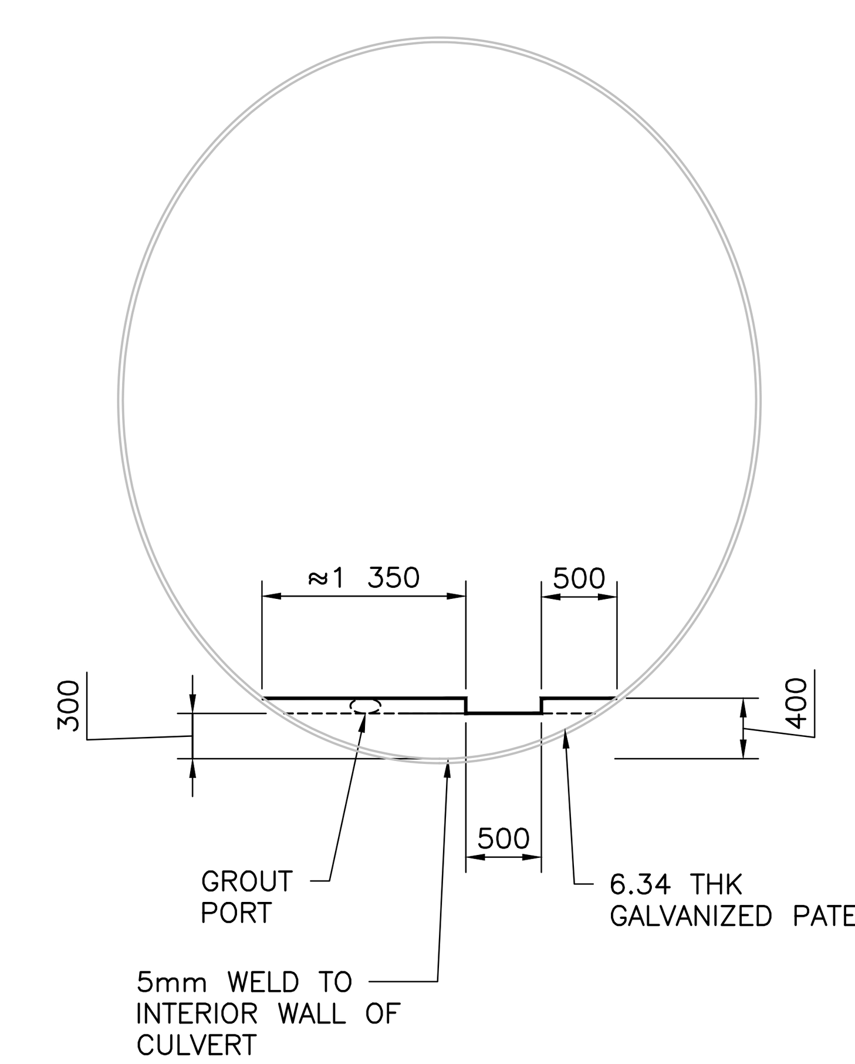
SPCSP CULVERT PLAN VIEW
SCALE: 1:100



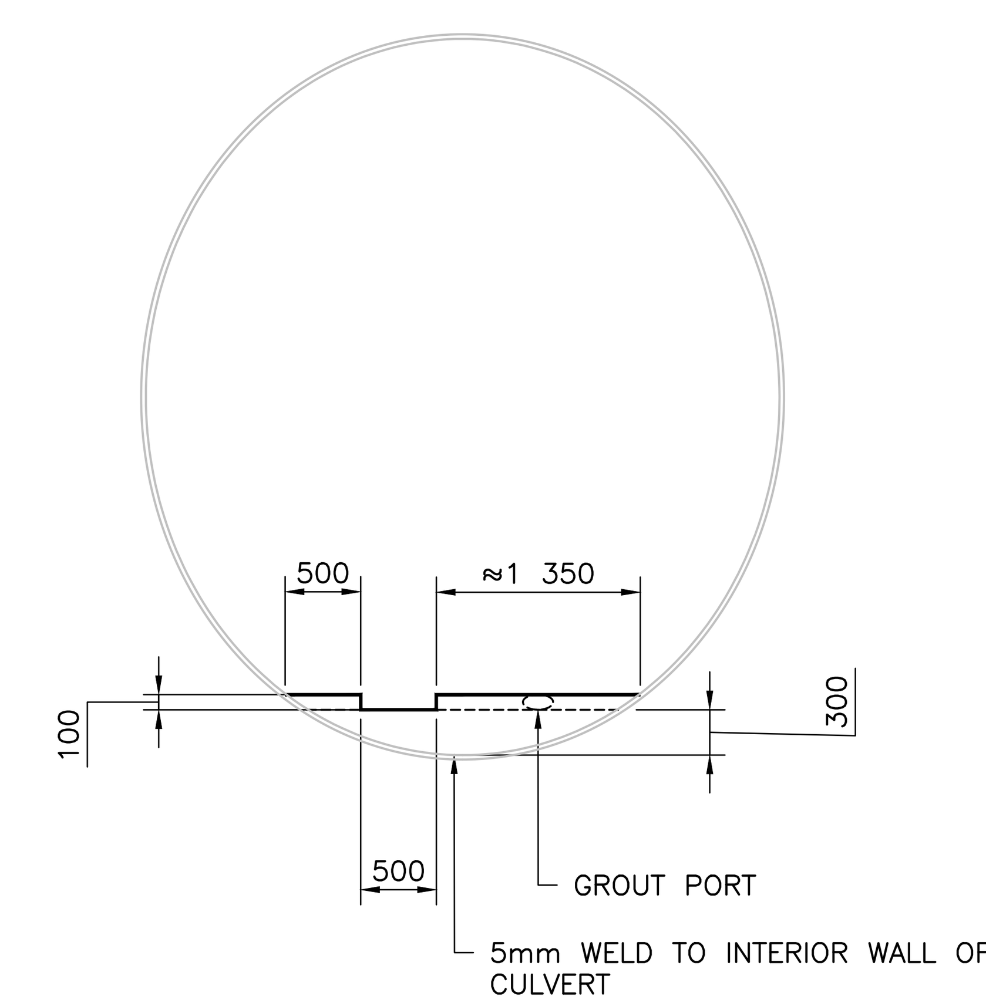
GROUT FILLED SUBSTRATE RETAINER TYPE A FRONT VIEW
SCALE: 1:25 U/S TO D/S



GROUT PORT DETAIL
SCALE: 1:10



GROUT FILLED SUBSTRATE RETAINER TYPE B FRONT VIEW
SCALE: 1:25 U/S TO D/S



GROUT FILLED SUBSTRATE RETAINER TYPE C FRONT VIEW
SCALE: 1:25 U/S TO D/S

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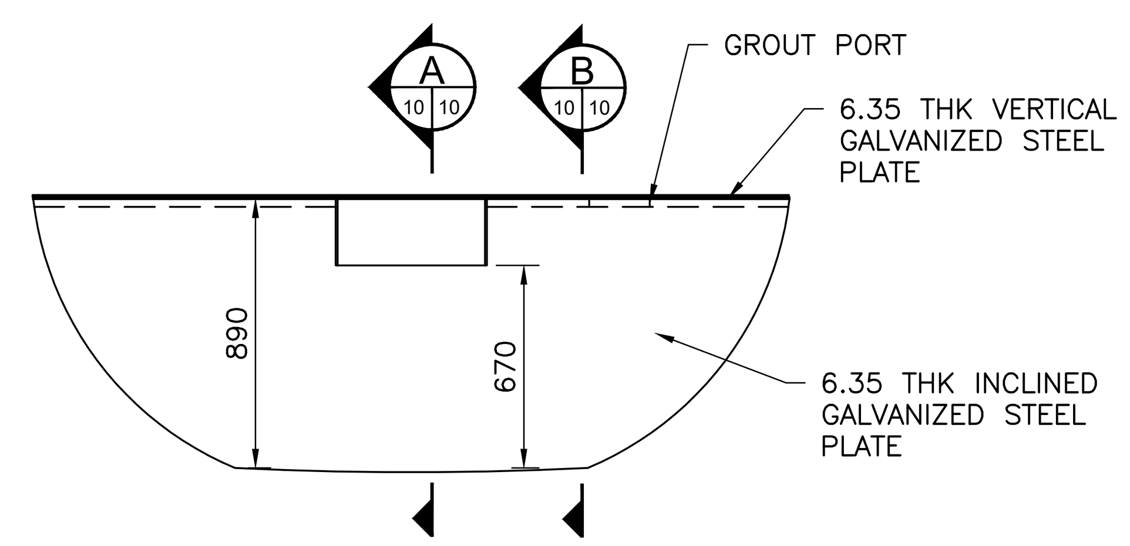
BOUVIER CREEK (01C016) HIGHWAY 1 KM 277.5
BRIDGE-CULVERT REHABILITATION

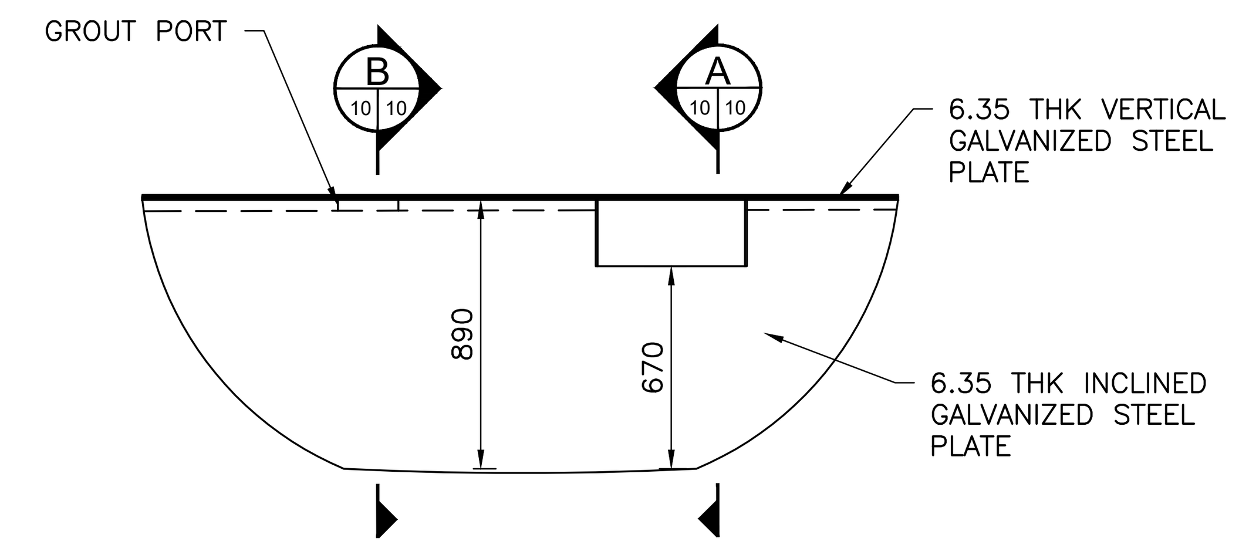
SPCSP SUBSTRATE RETAINER DETAILS 1 OF 2

PROJECT NO. 211344

SHEET NO. 09



GROUT FILLED SUBSTRATE RETAINER TYPE A PLAN VIEW
SCALE: 1:25



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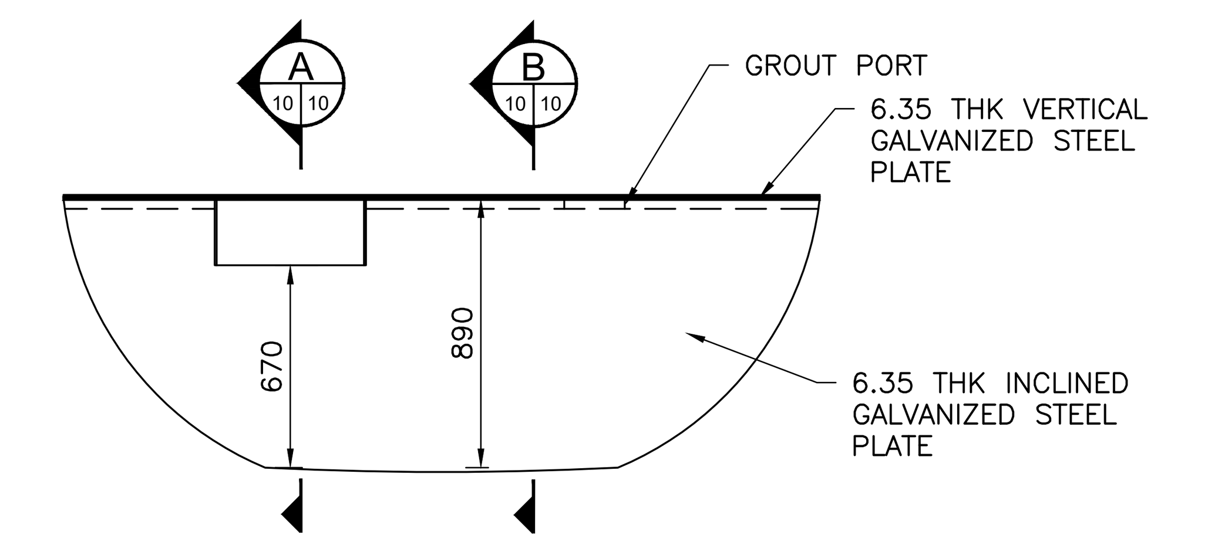
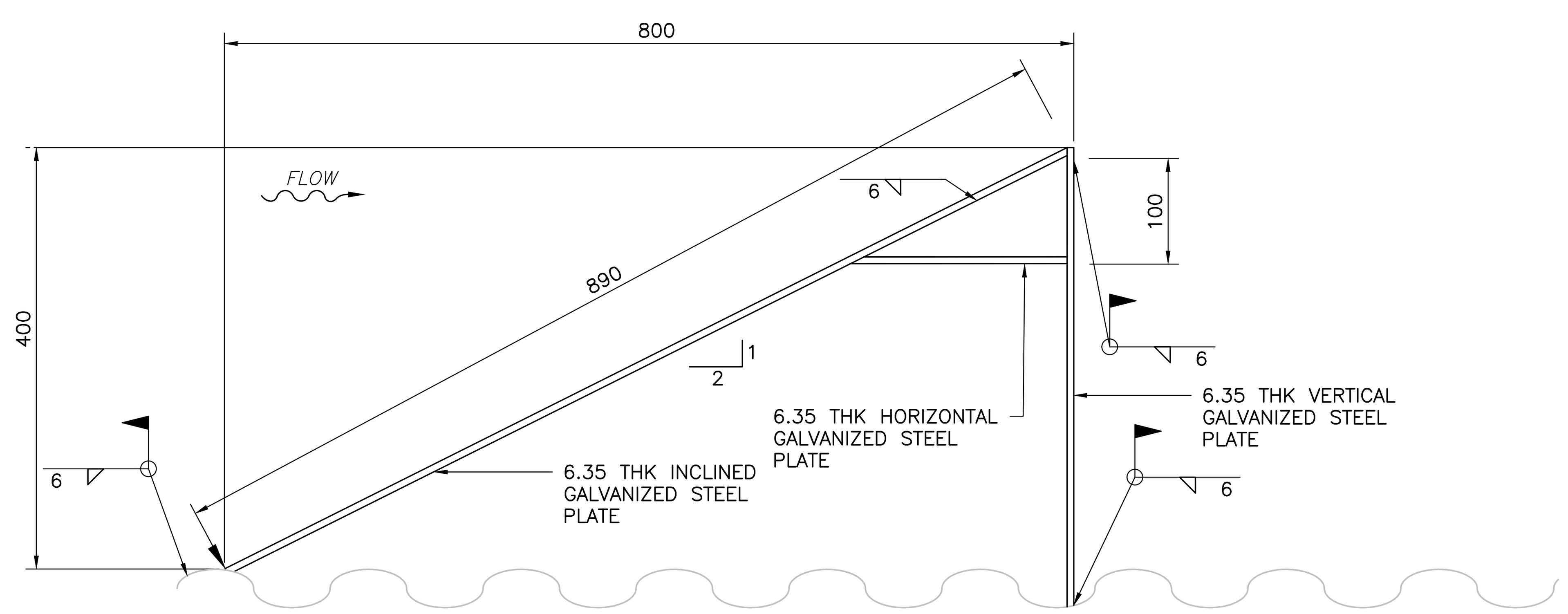
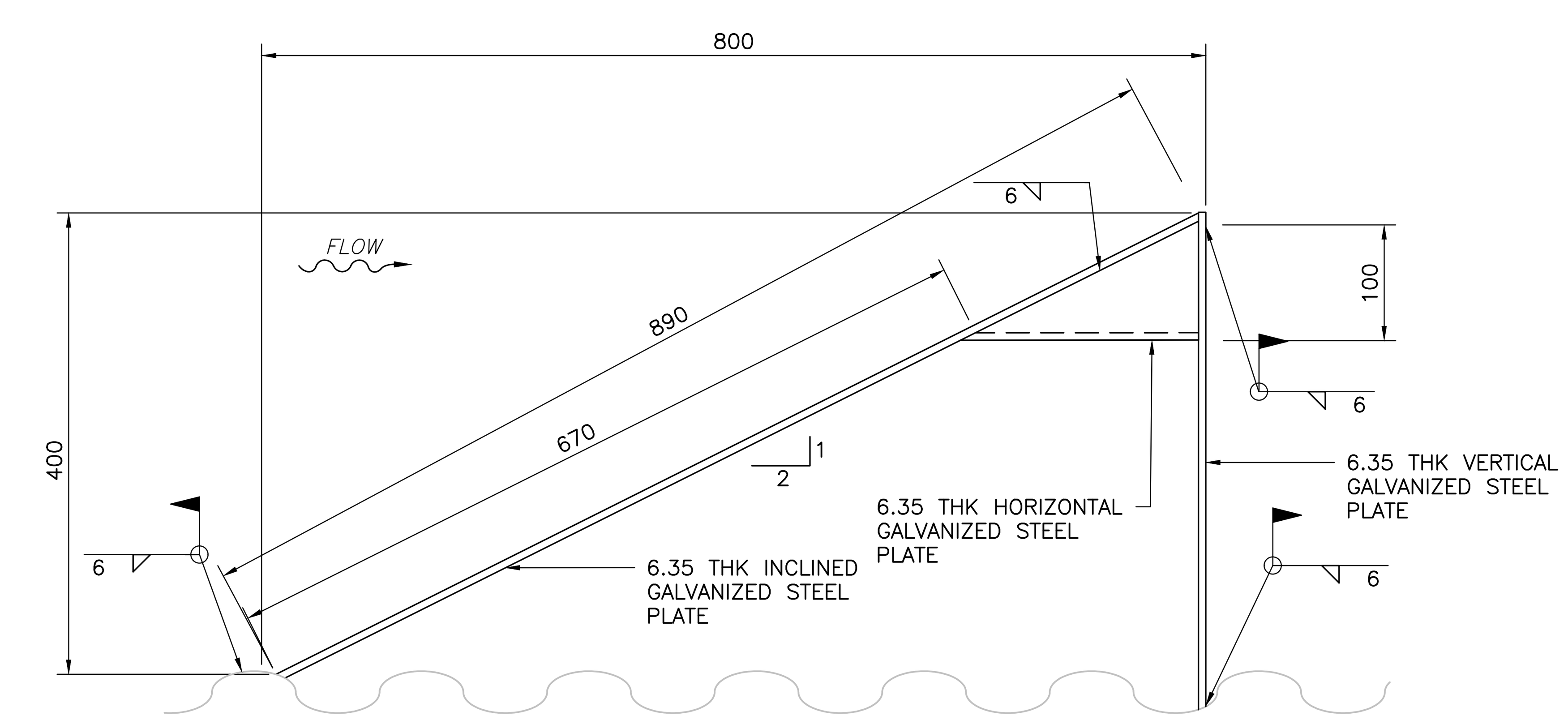
SCALE: 1:25



GROUT FILLED SUBSTRATE RETAINER TYPE C PLAN VIEW
SCALE: 1:25



A 10 10 RETAINER TYPE A,B & C SECTION VIEW DETAILS
SCALE: 1:5



B 10 10 RETAINER TYPE A,B & C SECTION VIEW DETAILS
SCALE: 1:5

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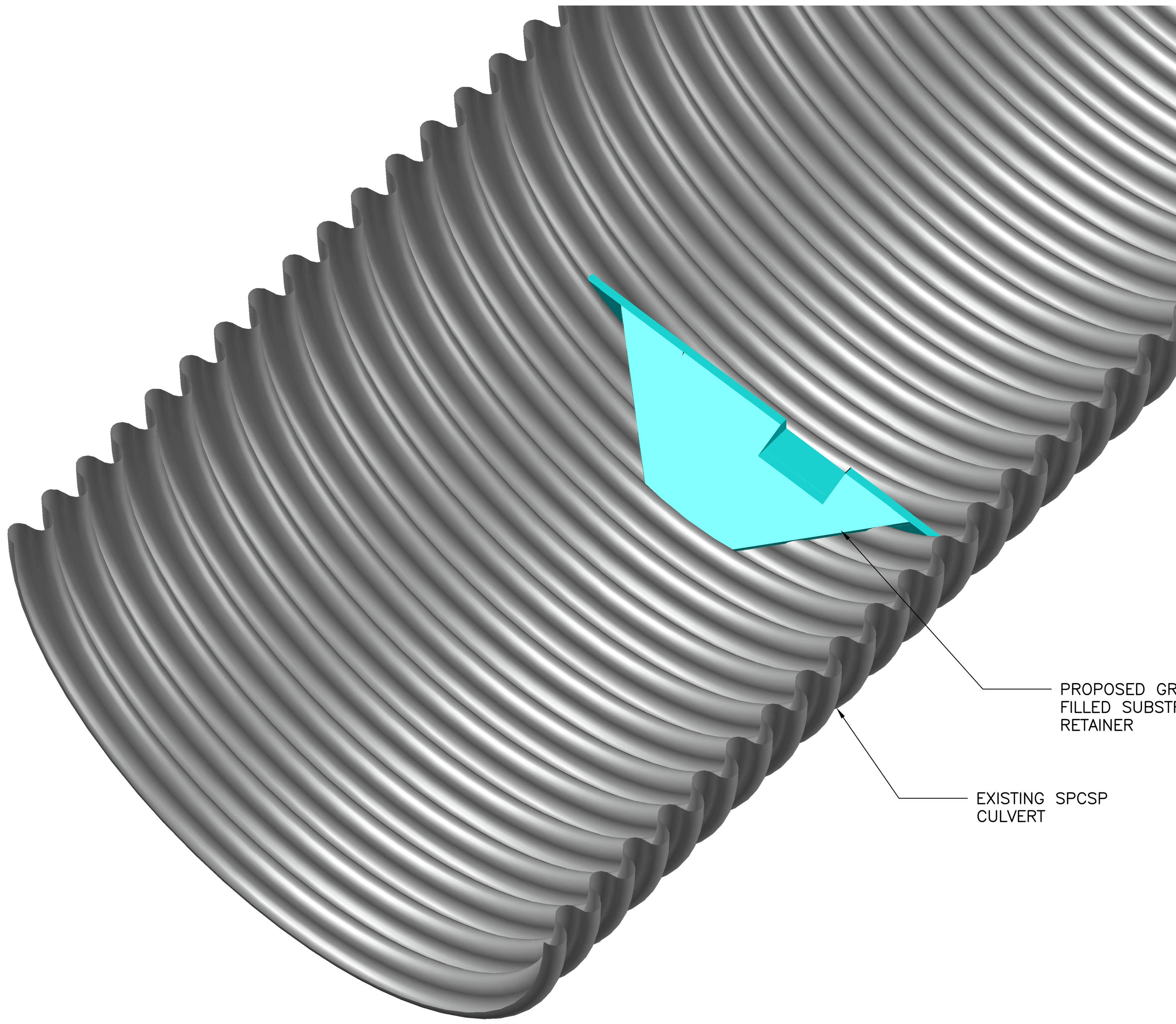
BOUVIER CREEK (01C016) HIGHWAY 1 KM 277.5
BRIDGE-CULVERT REHABILITATION

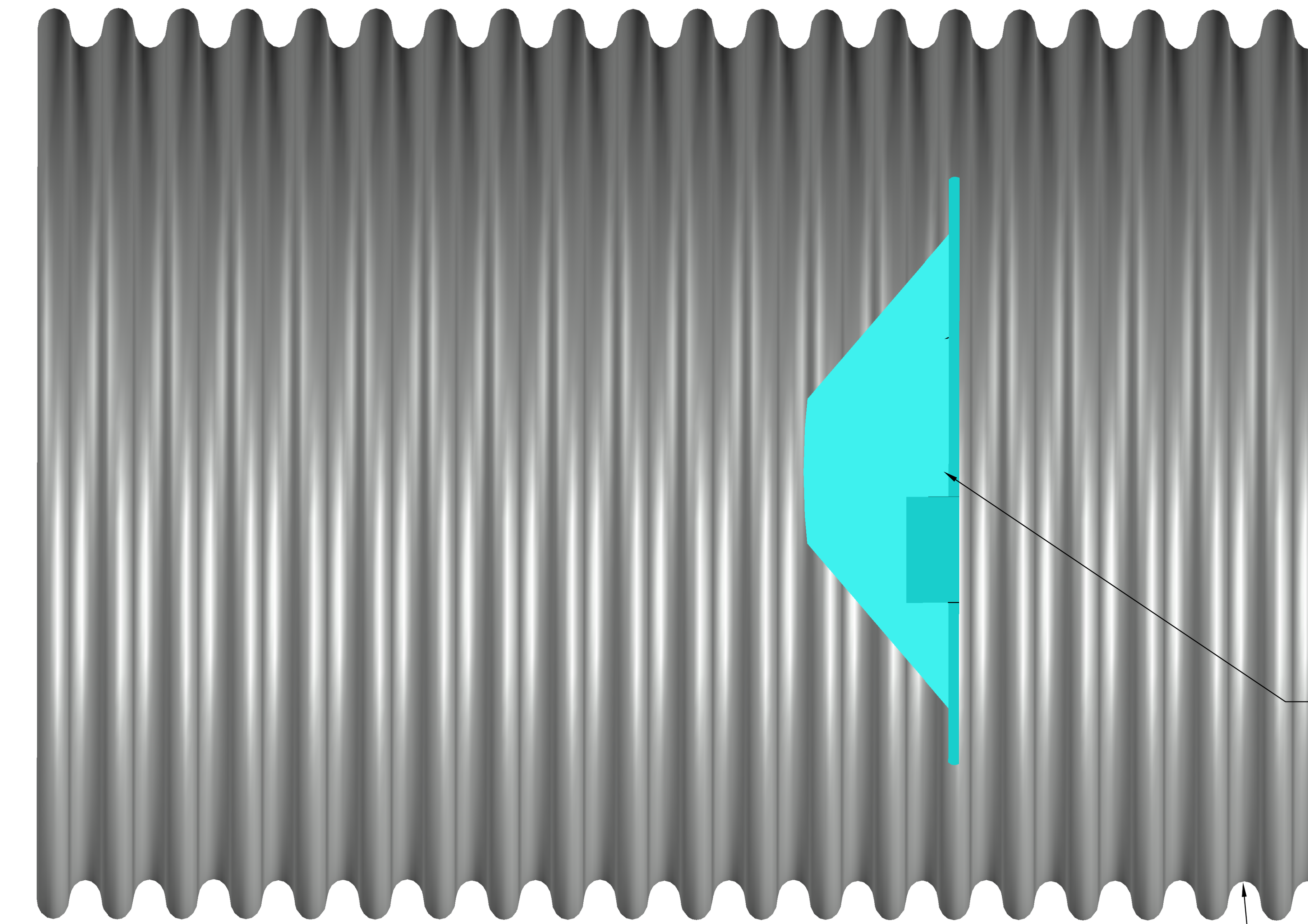
SPCSP SUBSTRATE RETAINER DETAILS 2 OF 2

PROJECT NO. 211344

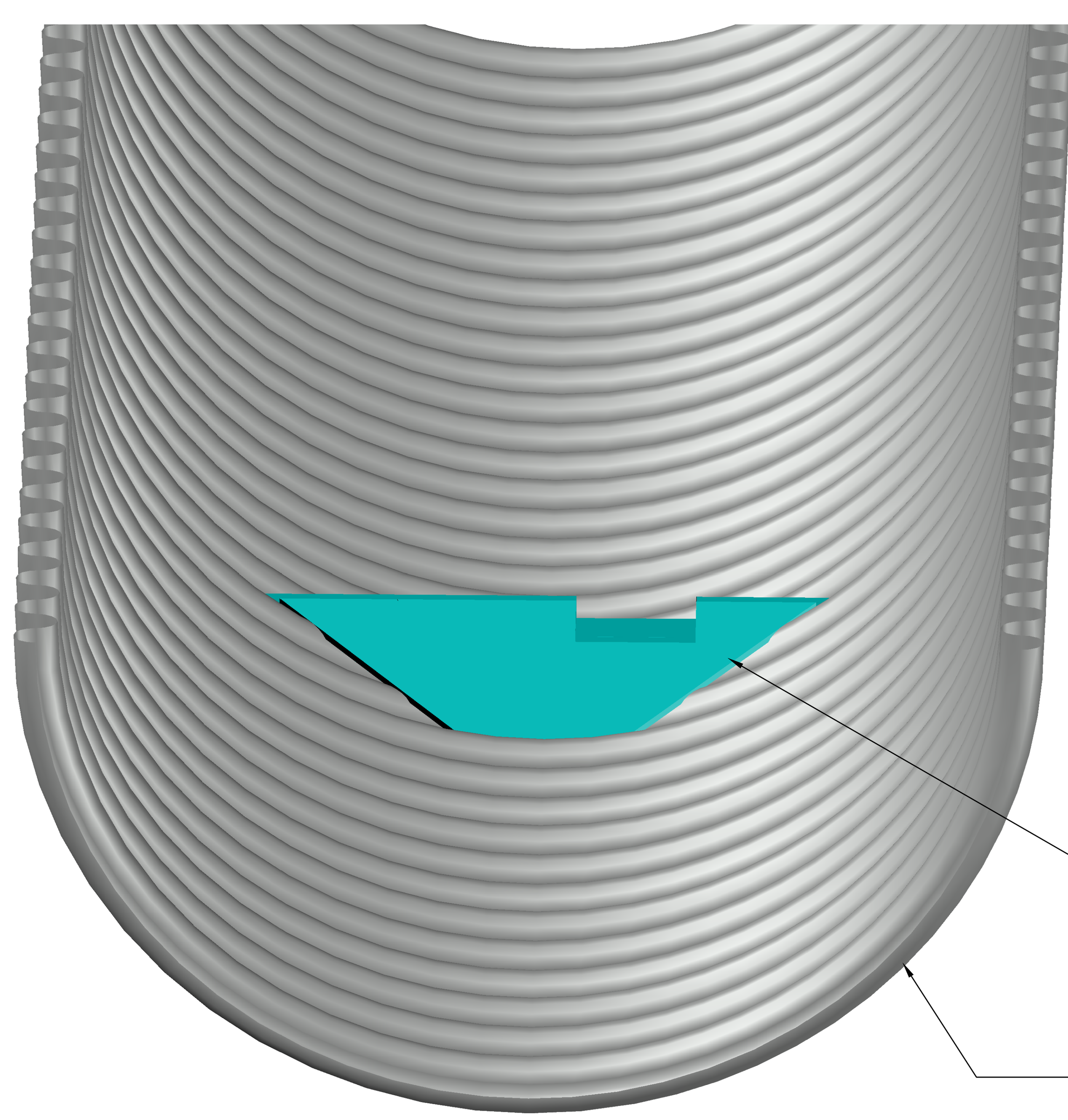
SHEET NO. 10



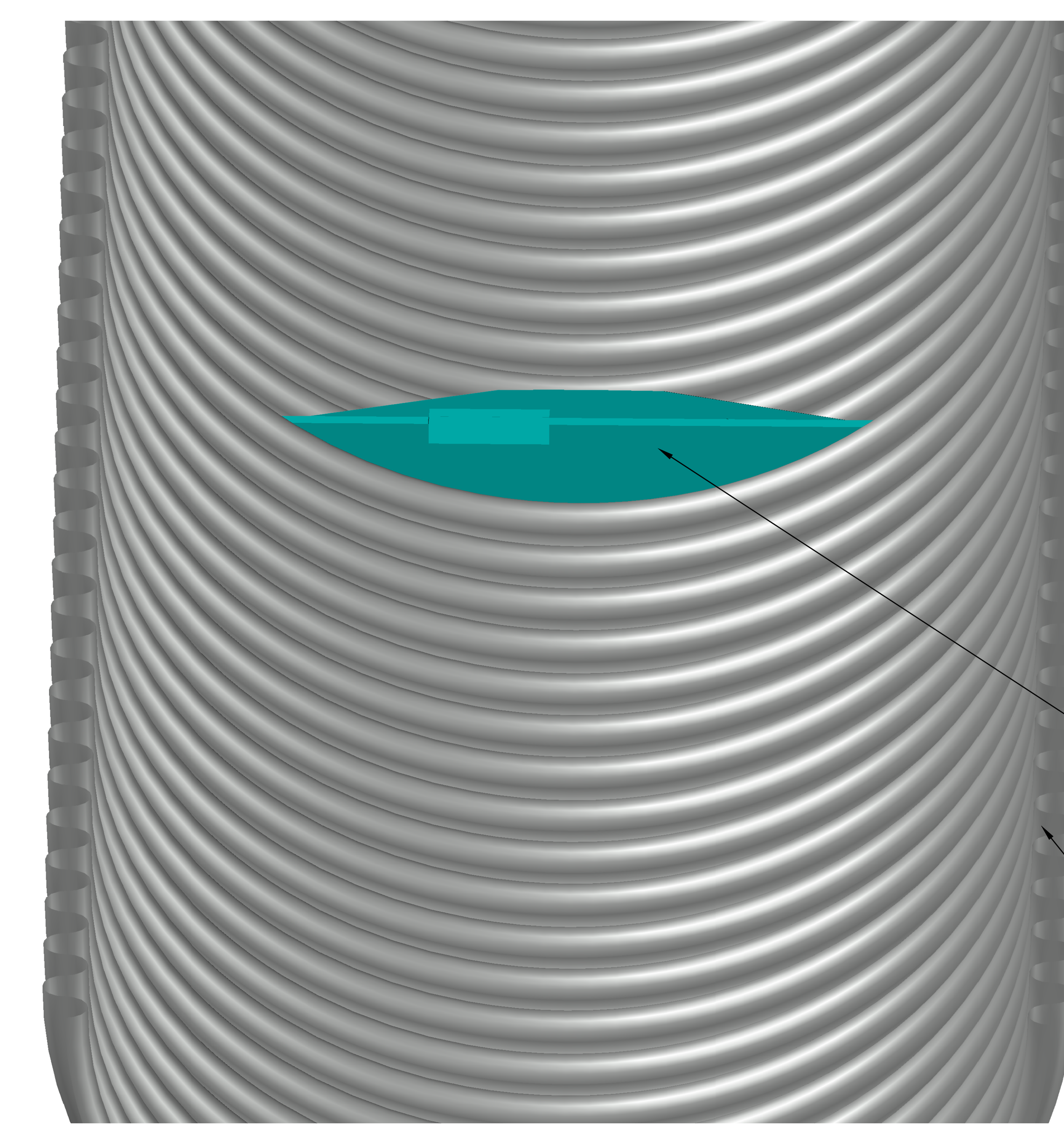
SE ISOMETRIC VIEW VIEW
SCALE: 1:25



TOP VIEW
SCALE: 1:25



FRONT VIEW
SCALE: 1:25



BACK VIEW
SCALE: 1:25

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BOUVIER CREEK (01C016) HIGHWAY 1 KM 277.5
BRIDGE-CULVERT REHABILITATION

SUBSTRATE RETAINER RENDERING

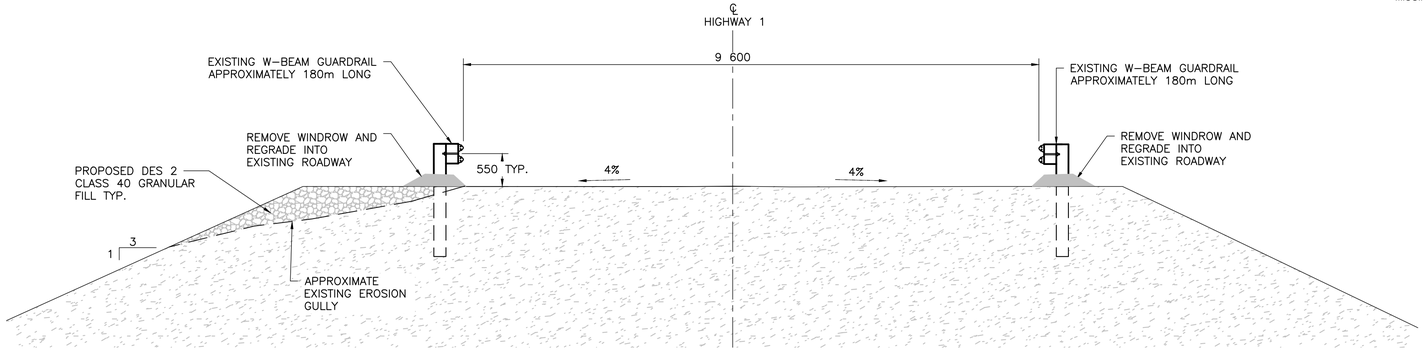
PROJECT NO. 211344

SHEET NO. 11

NOTES:

1. CONTRACTOR TO REPLACE DEFORMED GUARDRAIL PANELS TO REPLACE DEFORMED GUARDRAIL PANELS, ROTATE SPACER BLOCKS, AND INSTALL MISSING HARDWARE AS DETERMINED BY THE ENGINEER AND MISSING HARDWARE AS DETERMINED BY THE ENGINEER. REMOVAL OF EXISTING PANELS AND INSTALLATION OF NEW PANELS TO BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2021) SECTION 7.2 AND SECTION 7.3.
2. EROSION GULLYING IN EMBANKMENTS TO BE FILLED WITH DES 2 CLASS 40 GRANULAR AND COMPACTED AS DETERMINED BY THE CONTRACT ADMINISTRATOR.
3. GRANULAR WINDROW UNDER GUARDRAIL TO BE REMOVED AND PLACED ON EXISTING ROADWAY SURFACE AND GRADED. MATERIAL PLACED SHALL MAINTAIN POSITIVE DRAINAGE.

ROAD & EROSION PLAN
1:250

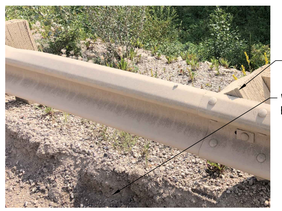


A 12 12 SECTION VIEW HIGHWAY 1
1:50

TYPICAL MISSING HARDWARE DETAIL

TYPICAL SOUTH EROSION GULLY DETAIL

TYPICAL SOUTH EROSION GULLY DETAIL



TYPICAL ROTATED SPACER BLOCK DETAIL

TYPICAL GRANULAR WINDROW DETAIL

TYPICAL NORTH EROSION GULLY DETAIL

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CHECKED BY	MP
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SCALE	AS SHOWN

BOUVIER CREEK (01C016) HIGHWAY 1 KM 277.5 BRIDGE-CULVERT REHABILITATION

ROADWAY & EROSION DETAILS

PROJECT NO. 211344

SHEET NO. 12

DILLON CONSULTING LIMITED Winnipeg Manitoba 1558 Willson Place, R3T 0Y4 204-453-2301