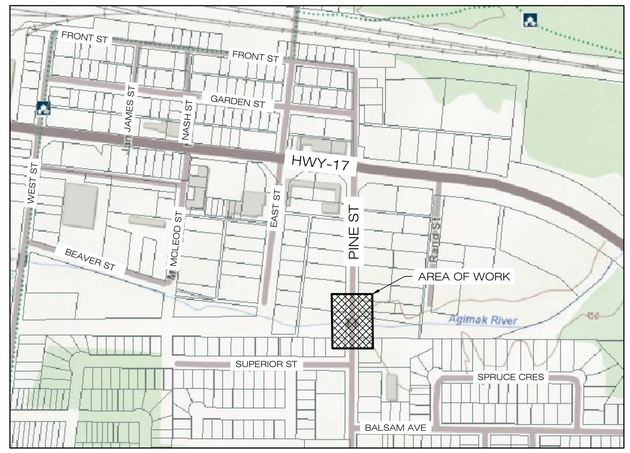
REPLACEMENT PINE STREET CULVERTS AT AGIMAK RIVER

TOWNSHIP OF IGNACE



KEY PLAN

N.T.S.

UTM COORDINATES:

ZONE	15U
NORTHING	5474340.587
EASTING	597386.464

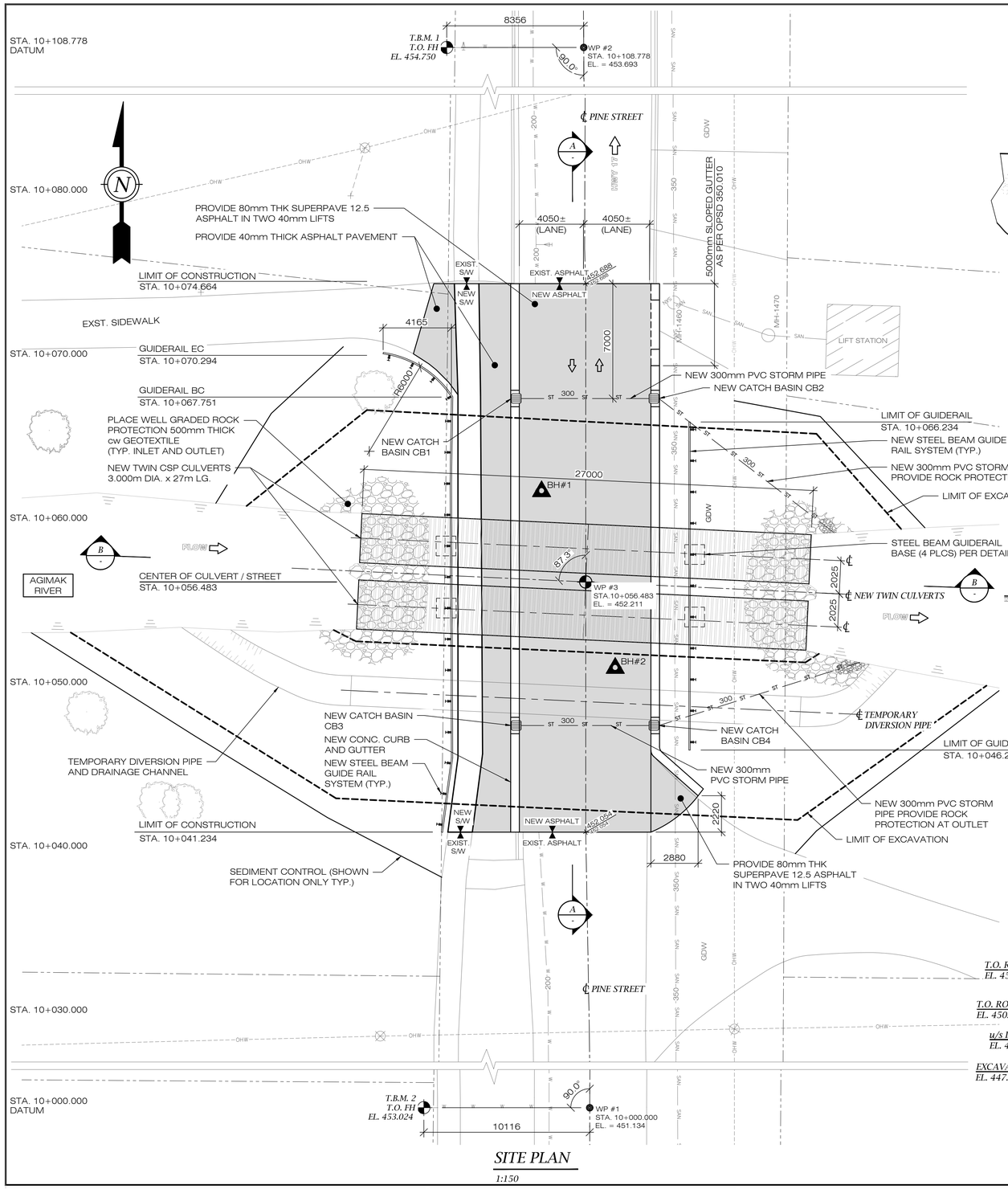
JML Engineering
Celebrating 25 Years

105 Villa Street, 2nd Floor
Thunder Bay, ON P7A 7W5
Phone: 807.345.1131
Fax: 807.345.1229
Email: info@jmleng.com

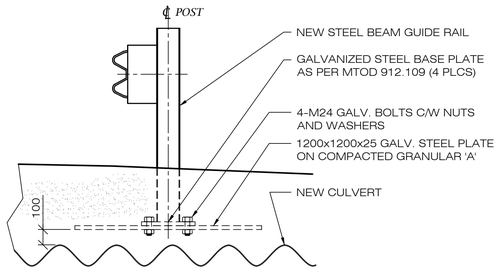
ISSUED FOR TENDER

DRAWING LIST

JML PROJECT No. 2022081



SITE PLAN
1:150



STEEL BEAM GUIDE RAIL BASE DETAIL
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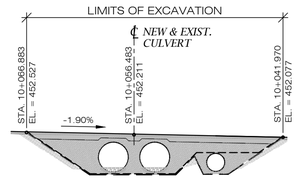


PROFILE GRADE AT PINE ST.
N.T.S.

NOTES

1. FOR SCOPE OF WORK, GENERAL AND MATERIAL NOTES, SEE JML ENGINEERING DRAWING C3 AND C4.

NEW CATCH BASIN CB1 (AS PER CITY OF THUNDERBAY STANDARD S-107 SHALLOW TYPE)		
DESCRIPTION	ELEVATION (m)	PIPE DIA (mm)
TOP OF GRATE ELEVATION	452.130	
EAST INVERT ELEVATION	451.443	300

NEW CATCH BASIN CB2 (AS PER CITY OF THUNDERBAY STANDARD S-107 SHALLOW TYPE)		
DESCRIPTION	ELEVATION (m)	PIPE DIA (mm)
TOP OF GRATE ELEVATION	452.130	
WEST INVERT ELEVATION	451.343	300
EAST INVERT ELEVATION	451.243	300

NEW CATCH BASIN CB3 (AS PER CITY OF THUNDERBAY STANDARD S-107 SHALLOW TYPE)		
DESCRIPTION	ELEVATION (m)	PIPE DIA (mm)
TOP OF GRATE ELEVATION	451.750	
EAST INVERT ELEVATION	451.065	300

NEW CATCH BASIN CB4 (AS PER CITY OF THUNDERBAY STANDARD S-107 SHALLOW TYPE)		
DESCRIPTION	ELEVATION (m)	PIPE DIA (mm)
TOP OF GRATE ELEVATION	451.750	
WEST INVERT ELEVATION	450.965	300
EAST INVERT ELEVATION	450.865	300

LEGEND

NEW	EXISTING
MANHOLE	
FIRE HYDRANT	
CATCH BASIN	
CURB STOP	
MANHOLE CATCH BASIN	

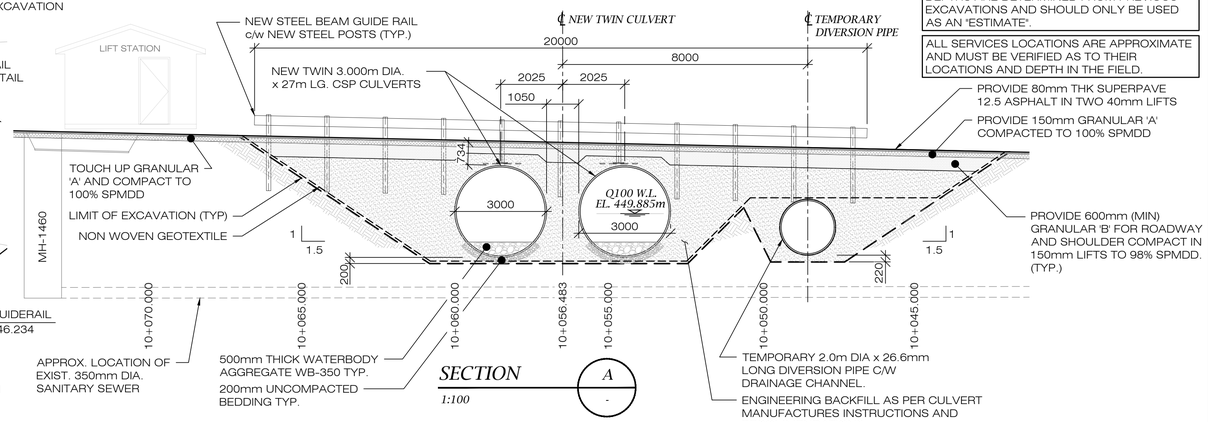
OTHER EXISTING FEATURES

- POLE WITH GUY
- LIGHT STANDARD
- HYDRO POLE
- TELE. MANHOLE
- TREES
- TEST HOLE (SOIL)
- NEW EL / EXIST. EL — ELEVATION MARKER
- ST — NEW STORM SEWER
- NEW CURB AND GUTTER
- SAN — EXIST. SANITARY SEWER
- ST — EXIST. STORM SEWER
- W — EXIST. WATERMAIN
- GAS — EXIST. GAS SERVICE CONN. OR GAS MAIN
- EXISTING SHLD. OF ROAD
- EXISTING CURB & GUTTER
- OHW — OVERHEAD WIRES
- PROPERTY LINE
- LIMIT OF EXCAVATION
- LIMIT OF CONSTRUCTION
- LIMIT OF NEW ASPHALT
- SILT CURTAIN
- CONC. S/W — CONCRETE SIDEWALK
- GDW — GRAVEL DRIVEWAY

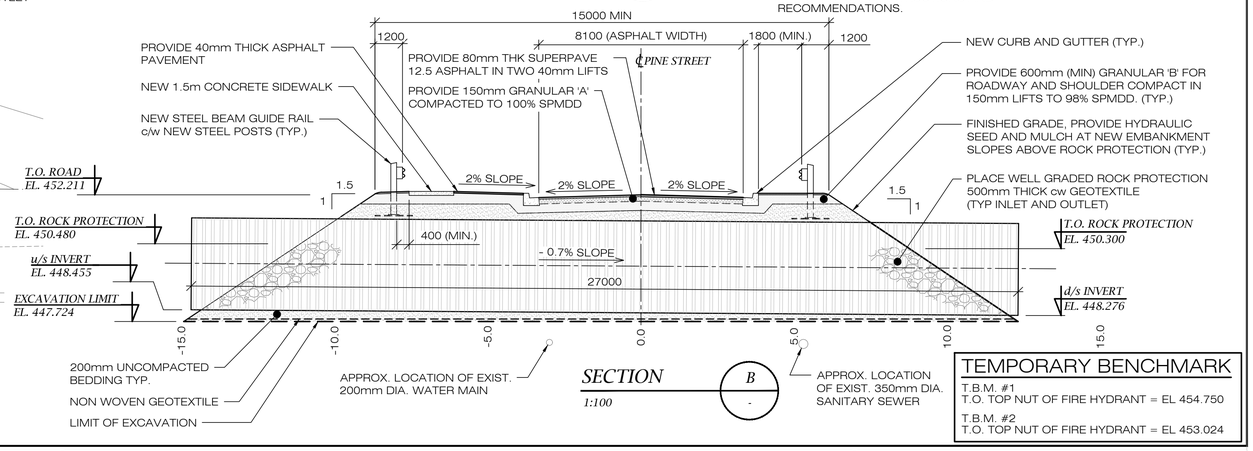
ALL ELEVATIONS ARE IN UNITS OF METRES U.N.O. ALL PIPE DIAMETERS ARE IN UNITS OF MILLIMETRES U.N.O.

EXISTING WATERMAIN, SANITARY SEWER, STORM SEWER, GAS, AND UTILITY CABLES DEPTHS ARE DETERMINED FROM PREVIOUS EXCAVATIONS AND SHOULD ONLY BE USED AS AN "ESTIMATE".

ALL SERVICES LOCATIONS ARE APPROXIMATE AND MUST BE VERIFIED AS TO THEIR LOCATIONS AND DEPTH IN THE FIELD.



SECTION A
1:100



SECTION B
1:100

TEMPORARY BENCHMARK

T.B.M. #1
T.O. TOP NUT OF FIRE HYDRANT = EL 454.750

T.B.M. #2
T.O. TOP NUT OF FIRE HYDRANT = EL 453.024

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A	ISSUED FOR 90% REVIEW	MMC	06/12/2023

Revisions

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105 Villa Street, 2nd Floor
Thunder Bay, ON P7A 7W5
Phone: 807.345.1131
Fax: 807.345.1229
Email: info@jmleng.com

LICENSED PROFESSIONAL ENGINEER — J. A. K. HUBER — 100515876 — PROVINCE OF ONTARIO — Dec 8/2023 — DESIGN ENGINEER

LICENSED PROFESSIONAL ENGINEER — G. A. MCKAY — 100074921 — PROVINCE OF ONTARIO — DESIGN-CHECKER ENGINEER

Client: IGNACE — Explore Our Possibilities

Project: REPLACEMENT PINE STREET CULVERTS AT AGIMAK RIVER

Drawing: GENERAL ARRANGEMENT, NEW CONSTRUCTION, PLAN AND SECTIONS

Scale	AS NOTED		
Designer	JH	Date	03/2023
Drafter	BA/MMC	Date	03/2023
Checked by	GAM	Date	06/2023
CAD File No.	2022081 .dwg	Plot Scale	1:1
Ref. No.	2022081	Drawing No.	C-1
		Rev.	1

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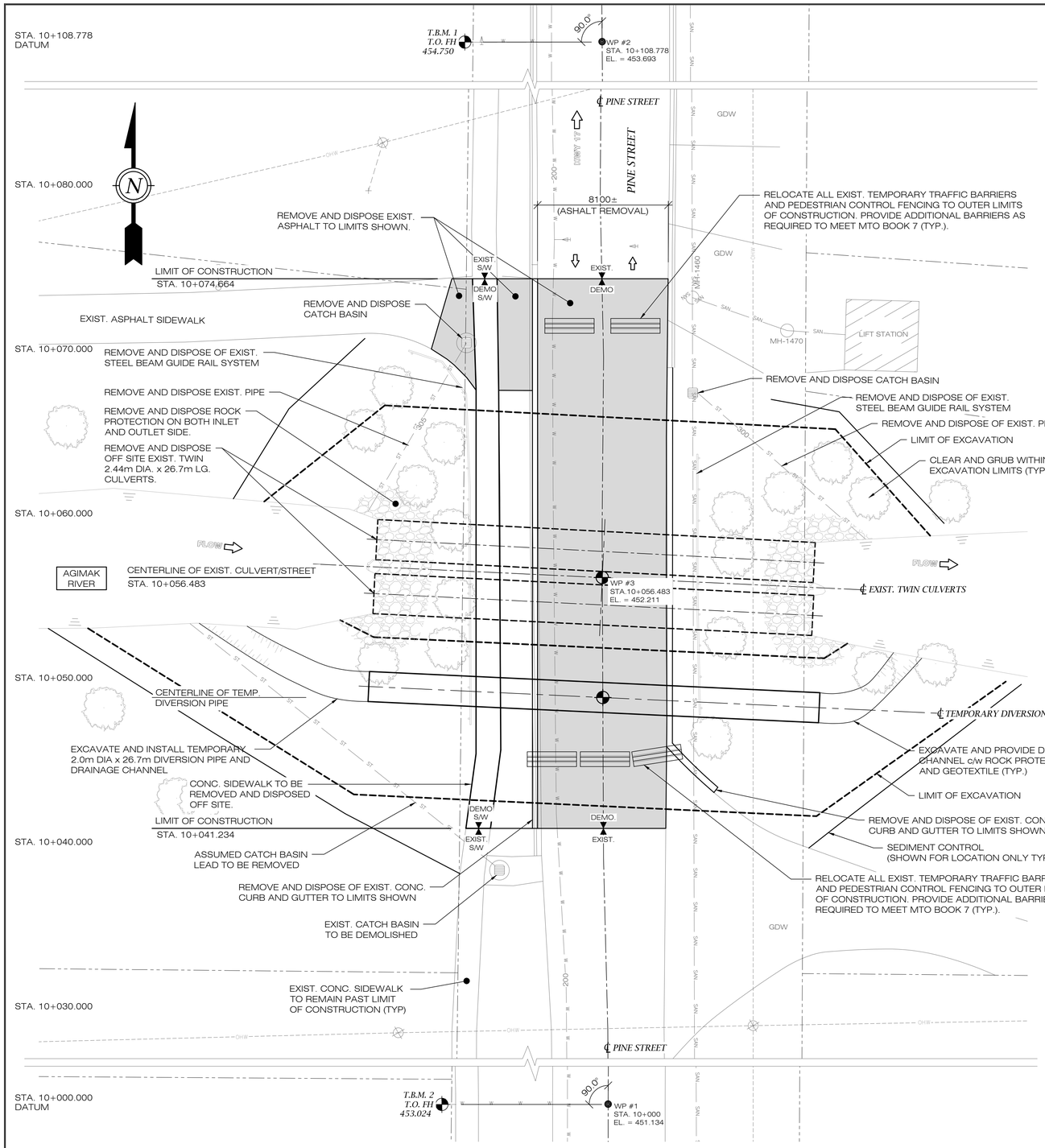

SITE PLAN

1:150

NOTES

1. FOR SCOPE OF WORK, GENERAL AND MATERIAL NOTES, SEE JML ENGINEERING DRAWING C3 AND C4 .

LEGEND

NEW	EXISTING
MANHOLE	
FIRE HYDRANT	
CATCH BASIN	
CURB STOP	
MANHOLE CATCH BASIN	

OTHER EXISTING FEATURES

- POLE WITH GUY
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- TREES
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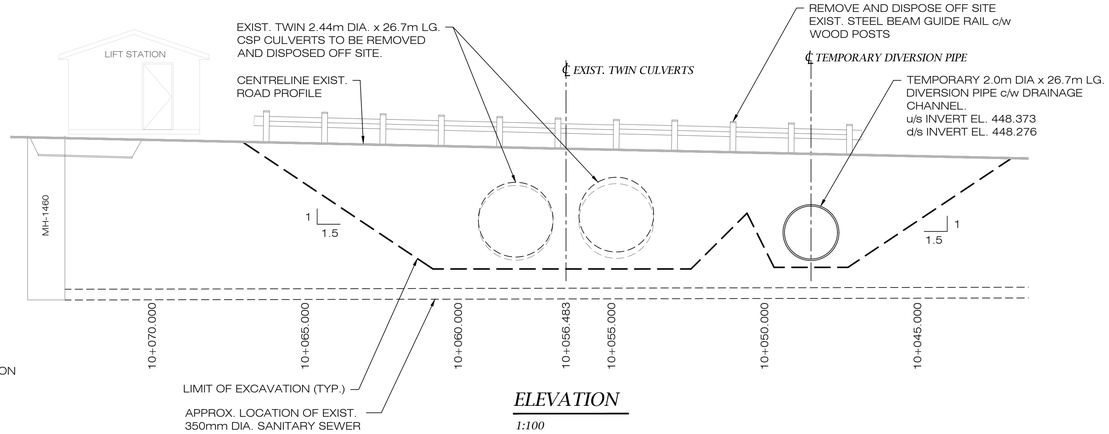

ELEVATION

1:100

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LICENSED PROFESSIONAL ENGINEER — G. A. MCKAY — 100074921 — PROVINCE OF ONTARIO — DESIGN-CHECKER ENGINEER

Client: IGNACE — Explore Our Possibilities

Project: REPLACEMENT PINE STREET CULVERTS AT AGIMAK RIVER

Drawing: DEMOLITION PLAN AND ELEVATION

Scale	AS NOTED		
Designer	JH	Date	03/2023
Drafter	BA/MMC	Date	03/2023
Checked by	GAM	Date	06/2023
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Ref. No.	2022081	Drawing No.	C-2
		Rev.	1

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SCOPE OF WORK

1. RELOCATE EXISTING TEMPORARY TRAFFIC BARRIERS AND PEDESTRIAN CONTROL AS SHOWN ON DWGS.
2. ESTABLISH ENVIRONMENTAL PROTECTION, EROSION AND SEDIMENT CONTROL MEASURES.
3. REMOVE GUIDE RAIL SYSTEM. DISPOSE TIMBER GUIDE RAIL POSTS AND STEEL BEAMS AS DIRECTED BY TOWNSHIP OF IGNACE (TYP. BOTH SIDES)
4. CLEAR AND GRUB WITHIN EXCAVATION LIMIT.
5. REMOVE EXISTING CATCH BASINS (CB1 AND CB2) AND DISPOSE OFF SITE.
6. REMOVE AND DISPOSE CONCRETE SIDEWALK, CURB AND GUTTER, AND ASPHALT TO LIMITS SHOWN ON DWGS.
7. EXCAVATE TO LIMITS SHOWN FOR NEW DIVERSION PIPE. PROVIDE TEMPORARY SUPPORT FOR EXISTING WATERMAIN.
8. INSTALL TEMPORARY FLOW DIVERSION PIPE.
9. CONSTRUCT UPSTREAM COFFER DAM AND DEWATERING SYSTEM. DEWATER SITE.
10. EXCAVATE AS REQUIRED TO REMOVE EXISTING TWIN 2.44m DIA. CSP CULVERTS. DISPOSE OFF SITE.
11. INSTALL NEW 3.000m DIA. x 27m LONG CSP CULVERTS.
12. PROVIDE ENGINEERED BACKFILL GRANULAR 'A' MATERIAL ADJACENT AND ON TOP OF TWIN CULVERTS AS SPECIFIED.
13. PROVIDE NEW CATCH BASINS AND LEADS.
14. BACKFILL WITH SELECT SUBGRADE UP TO ROADWAY SUBBASE.
15. REMOVE UPSTREAM COFFER DAM AND DIVERSION PIPE.
16. PROVIDE ROCK PROTECTION COMPLETE WITH GEOTEXTILE AT SLOPES AND STORM SEWER OUTLET AS INDICATED.
17. TOUCH-UP EMBANKMENT SLOPES.
18. CONSTRUCT NEW ROADWAY BASE AND SUBBASE.
19. CONSTRUCT NEW CONCRETE SIDEWALKS, CURB AND GUTTERS.
20. CONSTRUCT NEW STEEL POSTS AND INSTALL NEW STEEL BEAM GUIDE RAIL SYSTEM.
21. CONSTRUCT 80mm THICK SUPERPAVE 12.5 ASPHALT ROADWAY IN TWO 40mm LIFTS.
22. PROVIDE HYDRAULIC MULCH AND SEED AT ALL NEW EMBANKMENT SLOPES WHERE ROCK PROTECTION IS NOT PROVIDED.
23. REMOVE TEMPORARY TRAFFIC AND PEDESTRIAN CONTROL, ENVIRONMENTAL PROTECTION, AND SEDIMENT CONTROL MEASURES.

GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED TO APPLICABLE CODES, BYLAWS AND STANDARDS GOVERNING THIS PROJECT.
2. DO NOT SCALE DRAWINGS.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
4. ALL ELEVATIONS ARE IN METRES UNLESS NOTED OTHERWISE.
5. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS ON SITE, PRIOR TO CONSTRUCTION.
6. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN ANY ADDITIONAL PERMITS THAT MAY BE REQUIRED.
7. ALL WASTE MATERIALS TO BE REMOVED FROM SITE AND DISPOSED.
8. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW BY THE CONSULTANT PRIOR TO FABRICATION.
9. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING SURVEY MONUMENTS, EQUIPMENT AND SERVICES FROM DAMAGE DURING CONSTRUCTION OPERATIONS.
10. THE CONTRACTOR SHALL TAKE STEPS AS MAY BE REQUIRED TO PREVENT DUST NUISANCE RESULTING FROM ITS OPERATION, OR BY PUBLIC TRAFFIC, WITHIN THE LIMITS OF THE WORK. WATER SHALL BE USED AS A DUST CONTROL MEASURE.
11. AGIMAK RIVER IS A NAVIGABLE, NON-SCHEDULED WATERWAY UNDER THE NAVIGATION PROTECTION ACT.
12. ALL IN-WATER WORK SHALL BE DONE AS PER MNRF'S "IN-WATER WORK TIMING WINDOW GUIDELINES".
13. CULVERT CONSTRUCTION IS TO BE CARRIED OUT BY A COMPETENT CULVERT CONSTRUCTOR. ANY PROBLEMS OR DEVIATIONS FROM THE DRAWINGS ARE TO BE BROUGHT TO THE ATTENTION OF THE DESIGN ENGINEER.
14. PRIOR TO COMMENCING WORK ON SITE, THE CONTRACTOR SHALL PROVIDE ENVIRONMENTAL PROTECTION BY INSTALLING SILT BARRIER AS INDICATED AND ACCORDING TO THE EROSION AND SEDIMENT CONTROL PLAN ON DRAWING C-4.
15. GRANULAR 'A' MATERIAL SHALL CONFORM TO OPSS 1010 AND SHALL BE PLACED IN LIFTS NOT EXCEEDING 150mm THICK AND COMPACTED TO 100% SPMDD.
16. GRANULAR 'B' TYPE I MATERIAL SHALL CONFORM TO OPSS 1010 AND SHALL BE PLACED IN 300mm LIFTS COMPACTED TO 98% SPMDD AT APPROACH.
17. ROCK PROTECTION SHALL BE WELL GRADED IN SIZES RANGING FROM 100mm TO 500mm, CONFORMING TO OPSS 1004.
18. GEOTEXTILE BELOW ROCK PROTECTION SHALL BE 'AMOCO' NON-WOVEN FILTER FABRIC, OR APPROVED EQUAL, CONFORMING TO OPSS 1860 CLASS II.
19. BACKFILL AND COMPACTION AT CULVERT SHALL BE AS PER MANUFACTURER'S SPECIFICATIONS.
20. CONTRACTOR TO SHALL PROVIDE TEMPORARY TRAFFIC BARRIERS AT LIMITS OF CONSTRUCTION AS PER MTO BOOK 7.
21. CONTRACTOR TO CONFIRM LOCATION OF ALL UTILITIES ON AND NEAR THE SITE PRIOR TO START OF CONSTRUCTION. KNOWN SERVICES HAVE BEEN INDICATED ON THESE DRAWINGS BUT OTHER SERVICES MAY EXIST.
22. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING BUILDINGS, FIXTURES, EQUIPMENT AND SERVICES FROM DAMAGE DURING CONSTRUCTION OPERATIONS.
23. EXCAVATE TO DEPTH AND EXTENTS SHOWN ON DRAWING, REMOVE ALL DELETERIOUS MATERIAL BELOW LIMITS OF EXCAVATION AND REPLACE WITH GRANULAR 'B' COMPACTED TO 98% SPMDD.
24. SUITABLE EXCAVATED MATERIAL TO BE FREE OF ORGANICS, BOULDERS, FROZEN LUMPS OR OTHER DELETERIOUS MATERIALS.
25. DO NOT ALLOW WATER TO ACCUMULATE IN THE EXCAVATION. HAVE PUMPS RUNNING CONTINUOUSLY IF NECESSARY. KEEP EXCAVATION FROM FREEZING.
26. GRANULAR MATERIAL TO MEET REQUIREMENTS OF OPSS 1010.
27. ALL CONSTRUCTION WITHIN 1.0m OF UNDERGROUND EXISTING UTILITIES SHALL BE HAND EXCAVATED.
28. CONTRACTOR TO REPAIR ALL DISTURBED GRASS AREAS WITH HYDRO SEED AND MULCH.
29. STEEL BEAM GUIDE RAIL SYSTEM WITH STEEL POSTS SHALL CONFORM WITH OPSD 912.101, 912.103, 912.109, 912.127, 912.130 AND 912.235.
30. HYDRAULIC MULCH AND SEED SHALL CONFORM TO OPSS 804. SEED SHALL BE NORTHERN ONTARIO MIX.
31. TEMPORARY CONSTRUCTION DEBRIS NETTING SHALL BE A CLASS II NON-WOVEN, 75-150 MICRON GEOTEXTILE AS PER OPSS 1860.
32. DEWATERING SYSTEM SHALL BE DESIGNED FOR THE TWO YEAR STORM EVENT AND TO KEEP WORK AREA DRY. CONTRACTOR SHALL OBTAIN APPROVAL WITH ENVIRONMENTAL ACTIVITY AND SECTOR REGISTRY FOR CONSTRUCTION DEWATERING OF 100,000 L/DAY

EXCAVATION AND BACKFILL NOTES

1. EXCAVATE TO DEPTH AND EXTENTS SHOWN ON DRAWINGS.
2. REMOVE ALL DELETERIOUS MATERIAL BELOW LIMITS OF EXCAVATION, AND REPLACE WITH GRANULAR 'B' TYPE I. COMPACT IN LIFTS NOT EXCEEDING 300mm TO 95% SPMDD.
3. GEOTEXTILE FABRIC SHALL BE NON-WOVEN FILTER FABRIC, CONFORMING TO OPSS.MUNI 1860 CLASS II.
4. GRANULAR 'B' TYPE I FOR BACKFILL OR SUB-BASE SHALL BE COMPACTED IN LIFTS NOT EXCEEDING 300mm TO 98% SPMDD.
5. GRANULAR 'A' BASE MATERIAL SHALL BE COMPACTED IN LIFTS NOT EXCEEDING 150mm TO 100% SPMDD.
6. SUITABLE SALVAGED EXCAVATED MATERIAL TO BE FREE OF ORGANICS, BOULDERS, FROZEN LUMPS, OR OTHER DELETERIOUS MATERIALS.
7. DO NOT ALLOW WATER TO ACCUMULATE IN THE EXCAVATION. HAVE PUMPS RUNNING CONTINUOUSLY, IF NECESSARY. DEWATERING SHALL BE AS PER OPSS.MUNI 517. KEEP EXCAVATION FROM FREEZING.
8. GRANULAR MATERIAL TO MEET REQUIREMENTS OF OPSS.PROV 1010.
9. ALL EXCAVATION WITHIN ONE (1) METRE OF EXISTING UNDERGROUND UTILITIES SHALL BE HAND EXCAVATED.
10. STOCKPILE EXCAVATED SOIL ON SITE AND TEST IN ACCORDANCE WITH O.REG.406/19. ALL EXCAVATED SOIL SHALL BE ASSUMED TO BE CONTAMINATED UNTIL TESTED. DISPOSE OF EXCAVATED SOIL AS PER O.REG.406/19.

ASPHALT NOTES

1. HL-4 HOT MIX ASPHALT TO MEET REQUIREMENTS OF OPSS.MUNI 1150, AND PLACED AS PER OPSS.MUNI 310.
2. SUPER PAVE HOT MIX ASPHALT TO MEET REQUIREMENTS OF OPSS.MUNI 1151, AND PLACED AS PER OPSS.PROV 313.

CONCRETE NOTES:

1. NEW CONCRETE CURB AND GUTTER TO BE CONSTRUCTED AS SHOWN ON DRAWING 2022081 C-1 AND AS PER OPSD STANDARD DRAWINGS 600.070 AND 350.010. NEW CURB AND GUTTER TO BE BLENDED IN WITH OLD CURBS WHICH MAY BE BROKEN BACK, IF NECESSARY.
2. NEW 1.5m WIDE SIDEWALK TO BE CONSTRUCTED AS SHOWN ON DRAWING 2022081 C-1 AND AS PER OPSD STANDARD DRAWING 310.010.
3. TOWN AND PRIVATE SIDEWALKS, DRIVEWAYS AND CURBS THAT MUST BE BROKEN BACK TO PERMIT NEW CONSTRUCTION ARE TO BE REPLACED TO MATCH ORIGINAL CONSTRUCTION AS DIRECTED BY THE CONSULTANT.
4. CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 30 MPa AT 28 DAYS WITH 7% ± 1.5% AIR ENTRAINMENT. NORMAL COARSE AGGREGATE SIZE TO BE 3/4" (20mm) . CONCRETE TO OPSS MUNI 1350.
5. REINFORCING STEEL SHALL BE DEFORMED BARS GRADE 400.
6. REMOVE DETERIORATED CONCRETE FROM REPAIR AREAS AS INDICATED. CONFIRM LIMITS OF REMOVAL WITH CONSULTANT.

SANITARY AND STORM SEWER NOTES:

1. ALL CATCH BASIN FRAMES AND GRATES SHALL BE ADJUSTED TO NEW GRADES WHERE AFFECTED BY THE CONTRACTOR.
2. EXISTING CATCH BASINS CB1 AND CB2 TO BE REPLACED AS SHOWN ON CITY OF THUNDER BAY STANDARD S-107 (SHALLOW TYPE). ALL FRAMES AND COVERS TO CONFORM TO THE CITY OF THUNDER BAY STANDARD 13-0569B. ALL NON-CONFORMING FRAMES AND COVERS SHALL BE REPLACED.
3. STORM WATER CATCH BASINS INLET CONNECTIONS ARE TO MADE WITH (300mm) DIAMETER SMOOTH WALL P.V.C. PIPE (S.D.R. 35) UNLESS OTHERWISE NOTED. RESTORE TRENCH AS PER CITY OF THUNDER BAY STANDARD R-108.
4. NEW CATCH BASIN LOCATIONS AS SHOWN ARE ONLY APPROXIMATE, FINAL LOCATIONS TO BE DETERMINED IN THE FIELD.

TEMPORARY FLOW PASSAGE / DEWATERING SYSTEM

1. THE CONTRACTOR SHALL DESIGN AND CONSTRUCT A TEMPORARY FLOW PASSAGE SYSTEM TO ISOLATE THE WORK AREA FROM THE AQUATIC ENVIRONMENT AND ENSURE ALL WORK IS CARRIED OUT IN DRY CONDITIONS. CONTRACTOR TO SUBMIT DETAILS OF THE SYSTEM TO THE CONTRACT ADMINISTRATOR FOR INFORMATION PURPOSES.
2. CONTRACTOR RESPONSIBLE FOR MAINTAINING CREEK FLOW THROUGH THE WORK AREA. TEMPORARY FLOW PASSAGE SYSTEM SHALL BE CAPABLE OF PASSING THE TWO YEAR STORM EVENT OF 9.5 m^3/s.
3. DEWATERING SYSTEM SHALL BE DESIGNED FOR THE TWO YEAR STORM EVENT AND TO KEEP WORK AREA DRY.
4. TEMPORARY FLOW PASSAGE AND DEWATERING PLAN AS PER OPSS.MUNI 517.

EMERGENCY RESPONSE

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT THERE IS A HAZARDOUS MATERIALS SPILL EMERGENCY RESPONSE PLAN IN PLACE AND ON SITE. THIS SHALL INCLUDE HAVING AVAILABLE AT THE CONSTRUCTION SITE, AND PRIOR TO THE COMMENCEMENT OF OPERATIONS AND THROUGHOUT THE DURATION OF THE CONTRACT, A SPILL KIT ON SITE OF PROPER SIZE AND TYPE SELECTED BY THE CONTRACTOR AND APPROVED BY THE MNRF CONTRACT MANAGER.
2. EXISTING SPILL REPORTING PROCEDURES ESTABLISHED BY THE MINISTRY OF THE ENVIRONMENT (MOE) SHALL BE USED TO REPORT ANY UNEXPECTED HAZARDOUS SUBSTANCE INTO WATERWAYS. THE SPILL SHALL ALSO BE REPORTED TO THE MNRF AS SOON AS POSSIBLE.
3. STORAGE OF GASOLINE, DIESEL FUEL, OILS, OR OTHER HAZARDOUS MATERIALS SHALL BE KEPT A MINIMUM OF 100m FROM WATERWAYS.

CULVERT NOTES

1. CSP CULVERTS TO BE OWNER SUPPLIED.
2. SHOP DRAWINGS SHALL BE SUPPLIED BY OWNER AND ARE TO BE SEALED BY A DESIGN ENGINEER AND DESIGN CHECKING ENGINEER.
3. CULVERTS SHALL HAVE ALUMINIZED TYPE 2 COATING WITH A MINIMUM DESIGN LIFE OF 75 YEARS.
4. CORRUGATED STEEL CULVERTS SHALL BE AS FOLLOWS:
   - 3.000m DIA., 2.8mm THICK, 27.0m LONG.
   CORRUGATION DEPTH/PITCH:
   -DEPTH 25 mm
   -PITCH 125 mm
5. CORRUGATED STEEL CULVERT SHALL BE DESIGNED IN ACCORDANCE WITH CHBDC-CL625 TRUCK LOAD.
6. BACKFILL SHALL BE GRANULAR 'B' TYPE II WITH 100% PASSING 37.5mm SIEVE AND SHALL BE PLACED IN LIFTS NOT EXCEEDING 150mm, COMPACTED TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY.
7. CULVERT DESIGN IN ACCORDANCE WITH MTO DIRECTIVE B-100 REQUIRED DESIGN FLOW - 100 YEAR STORM (Q100).
8. ROCK PROTECTION SHALL BE WELL GRADED IN SIZES RANGING FROM 100mm TO 500mm, CONFORMING TO OPSS.MUNI 1004.
9. GEOTEXTILE SHALL BE NON-WOVEN FILTER FABRIC, OR APPROVED EQUAL, CONFORMING TO OPSS.MUNI 1860 CLASS II.

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Drawing: SCOPE OF WORK
GENERAL AND MATERIALS NOTES

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EROSION AND SEDIMENT CONTROL

1. GENERAL

1.1. THIS SPECIAL PROVISION COVERS THE REQUIREMENTS FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES NECESSARY TO MINIMIZE THE IMPACT OF CONSTRUCTION ON THE NATURAL ENVIRONMENT INCLUDING WATERCOURSES, RIVERS, LAKES AND WETLANDS.

1.2. THESE REQUIREMENTS ARE IN ADDITION TO THOSE THAT MAY BE SPECIFIED ELSEWHERE IN THE CONTRACT AND DO NOT RELIEVE THE CONTRACTOR OF OBLIGATIONS IMPOSED BY STATUTE.

1.3. EROSION AND SEDIMENT CONTROL MEASURES SHALL MEET THE MINIMUM STANDARDS AS OUTLINED IN THE MTO DRAINAGE MANUAL, CHAPTER F - EROSION AND SEDIMENT CONTROL, THE MINISTRY OF NATURAL RESOURCES (MNRF) PUBLICATION "ENVIRONMENTAL GUIDELINES FOR ACCESS ROADS AND WATER CROSSINGS" AND THIS SPECIAL PROVISION.

1.4. PRIOR TO COMMENCING WORK ONSITE, THE CONTRACTOR SHALL PROVIDE ENVIRONMENTAL PROTECTION BY INSTALLING SILT BARRIER AS INDICATED AND ACCORDING TO THIS EROSION AND SEDIMENT CONTROL PLAN. SILT BARRIER SHALL BE WOVEN GEOTEXTILE CURTAIN LINED WITH FENCING AND FASTENED TO 'TEES' DRIVEN TO DEPTH 1200mm AND POSITIONED ALONG THE RIVER'S EDGE AT 1500mm CENTRES. ALL COMPONENTS SHALL BE TIED TOGETHER WITH WIRE. SECURE THE BASE WITH SANDBAGS OR OTHER APPROVED WEIGHTS.

2. PLAN OBJECTIVES

2.1. THE OBJECTIVE OF THIS PLAN IS TO REPLACE AGIMAK RIVER TWIN CULVERTS YET KEEP THE INTRODUCTION OF SHORT TERM SEDIMENT AND IMPACTS ON FISH HABITAT TO THE LOWEST LEVELS PRACTICALLY ACHIEVABLE. THE SITE WILL BE STABILIZED ON COMPLETION TO ENSURE NO SEDIMENT ENTERS THE WATER IN THE LONG-TERM AS A RESULT OF THE CONSTRUCTION.

3. PROJECT DESCRIPTION

3.1. THE EXISTING TWIN CULVERTS AT AGIMAK RIVER HAVE DETERIORATED OVER THE YEARS. REHABILITATION IS REQUIRED TO PROVIDE A SAFE AND RELIABLE CROSSING.

3.2. THE WORK WILL INVOLVE THE DEMOLITION OF THE EXISTING TWIN CULVERTS, AND RE-CONSTRUCTION OF A NEW 3.000m DIA x 27m LONG TWIN CULVERTS CULVERTS WITH ROCK PROTECTION AT THE EMBANKMENTS.

3.3. SITE INSPECTION WILL BE PERFORMED BY AN EXPERIENCED CONSTRUCTION INSPECTOR.

3.4. THE CONSTRUCTION TECHNIQUES AND MITIGATION MEASURES SET OUT IN THIS PLAN WILL BE USED TO CONTROL EROSION AND REDUCE SEDIMENT.

4. CRITICAL AREAS, IDENTIFIED VALUES AND CONCERNS

4.1. CARE MUST BE EXERCISED DURING CONSTRUCTION ALONG THE SHORELINE TO ENSURE THAT SUSPENDED SOLIDS DO NOT ENTER THE CREEK OUTSIDE THE CONTROL AREA.

4.2. RIVER FLOW MUST BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD SO AS NOT TO INTERFERE WITH FISH MIGRATION AND SPAWNING OR OTHER RIVER USERS EVEN AT LOWEST WATER LEVELS.

5. PREVENTIVE MEASURES

5.1. THE CONTRACTOR WILL BE EXPERIENCED IN CULVERT CONSTRUCTION AND IN-WATER CONSTRUCTION AND WILL HAVE KNOWLEDGE OF WATERCOURSE AND SEDIMENT CONTROL AND SITE DE-WATERING. THE CONTRACTOR WILL FOLLOW ESTABLISHED INDUSTRY STANDARD PRACTICES, THE CONTRACT DOCUMENTS AND THE SEDIMENT CONTROL PLAN.

5.2. CONSTRUCTION OPERATIONS SHALL BE DISCUSSED AT AN ON-SITE MEETING BETWEEN THE CONTRACTOR, AND THE MINISTRY CONTRACT MANAGER, SO EVERYONE UNDERSTANDS THE CONTROL MEASURES PRIOR TO CONSTRUCTION. THE CONTRACTOR WILL INSTRUCT WORKERS AND EQUIPMENT OPERATORS WORKING ON THIS PROJECT TO ENSURE COMPLIANCE WITH THIS SEDIMENT CONTROL PLAN, AND OTHER, ADDITIONAL CONTRACTUAL OBLIGATIONS.

5.3. DETAILS OF MITIGATION TECHNIQUES ARE EXPLAINED IN THE "ENVIRONMENTAL GUIDELINES FOR ACCESS ROADS AND WATER CROSSINGS" PUBLISHED BY THE MINISTRY. THIS DOCUMENT WILL BE A REFERENCE FOR THE SEDIMENT CONTROL PLAN.

5.4. THE CONTRACTOR SHALL PROVIDE EROSION AND SEDIMENT CONTROL MEASURES TO CONTROL EROSION AND PREVENT SEDIMENT FROM ENTERING THE WATERCOURSE ON THE CONSTRUCTION SITE. EROSION AND SEDIMENT CONTROL SHALL BE INTEGRATED WITH A CONSTRUCTION OPERATION SCHEDULE AS DETERMINED BY THE CONTRACTOR AND THIS SPECIAL PROVISION.

5.5. OPERATIONS IN ANY CONTROL AREAS SHALL NOT BE COMMENCED UNTIL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED AND APPROVED BY THE MINISTRY CONTRACT MANAGER.

5.6. TEMPORARY CONTROL MEASURES SHALL BE MAINTAINED AND KEPT IN PLACE UNTIL 100% OF ALL WORK WITHIN THE CONTROL AREA HAS BEEN COMPLETED AND STABILIZED OR AS DIRECTED BY THE MINISTRY CONTRACT MANAGER AND AS OUTLINED IN THE SCOPE OF WORK.

5.7. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AT THE COMPLETION OF THE WORK.

6. OPERATIONAL CONSTRAINTS

6.1. ALL ACTIVITIES INCLUDING EQUIPMENT MAINTENANCE AND RE-FUELLING, SHALL BE CONTROLLED TO PREVENT ENTRY INTO THE WATERCOURSE OR RIVER OF PETROLEUM PRODUCTS OR ANY OTHER DELETERIOUS SUBSTANCES, INCLUDING DEBRIS, WASTE OR RUBBLE.

6.2. THE CONTRACTOR SHALL BE AT LEAST 100m AWAY FROM ANY WATERCOURSE TO WASH, REFILL, SERVICE MACHINERY, AND STORE ANY DELETERIOUS MATERIALS.

6.3. INTERCEPTOR DITCHES, SILT FENCES, STRAW BALES, OR MODIFICATIONS THEREOF MAY BE REQUIRED AT THE LAY-DOWN AREA. THEY SHALL BE PROVIDED BEFORE COMMENCEMENT OF CONSTRUCTION.

6.4. ALL VEGETATION COVER NOT SPECIFIED FOR REMOVAL SHALL BE PRESERVED IN ORDER TO MINIMIZE EROSION AND SEDIMENTATION.

6.5. EROSION AND SEDIMENTATION CONTROL SHALL ACCOMMODATE OTHER ASPECTS OF THE WORK INCLUDING, BUT NOT RESTRICTED TO, THE FOLLOWING:
- a. WORK AREA REQUIREMENTS, INCLUDING ACCESS, OPERATION AND STORAGE, AND MATERIAL SUPPLY, UTILIZATION AND STORAGE;
- b. SURFACE DRAINAGE FROM OUTSIDE, THROUGH OR AROUND THE WORK;
- c. AREAS OF DISTURBED SOILS AND SOILS STOCKPILES;
- d. MEANS OF ACCESS TO EROSION AND SEDIMENT CONTROL DEVICES REQUIRING MAINTENANCE;
- e. ENVIRONMENTAL REQUIREMENTS AND CONSTRAINTS, THAT MAY BE SPECIFIED ELSEWHERE IN THE CONTRACT;
- f. PROTECTION OF COMPLETED PORTION OF WORK.

7. CONSTRUCTION OPERATIONS AND SEDIMENT CONTROL MEASURES

7.1. THE CONSTRUCTION OPERATIONS BELOW ARE EXPECTED TO OCCUR ON THE PROJECT. EROSION AND SEDIMENT CONTROL MEASURES ARE EXPLAINED FOR EACH OPERATION. IT IS RECOGNIZED THAT SOME SEDIMENT WILL ENTER THE WATERCOURSE DURING CONSTRUCTION, HOWEVER, IT WILL BE KEPT TO THE MINIMUM LEVEL POSSIBLE BY ADHERENCE TO THIS SEDIMENT CONTROL PLAN, OTHER CONTRACTUAL OBLIGATIONS FROM THE MINISTRY CONTRACT MANAGER.

7.2. CONTROL OF SURFACE WATER RUNOFF MUST BE MAINTAINED AT ALL TIMES.

7.3 THE CONSTRUCTION PROCESS SHALL BE FOLLOWED IN THIS SEDIMENT CONTROL PLAN .

8. INSPECTION AND MAINTENANCE

8.1. CONSTRUCTION OPERATIONS WILL BE UNDER THE DIRECTION OF THE CONTRACTOR, THE CONTRACT MANAGER WILL COMPLETE INSPECTION TO ENSURE COMPLIANCE WITH THIS SEDIMENT CONTROL PLAN AND THE CONTRACT.

8.2. COMMENTS RESULTING FROM INSPECTIONS BY THE CONTRACT MANAGER WILL BE MADE TO THE CONTRACTOR IN WRITING OR VERBALLY INCASES WHERE THERE ARE IMMEDIATE RISKS TO THE ENVIRONMENT.

8.3. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED EACH WORKING DAY AND AFTER EACH STORM EVENT AND SHALL BE MAINTAINED AND CLEANED OUT BY THE CONTRACTOR AS WARRANTED. MAINTENANCE SHALL INCLUDE THE REPAIR OF ANY DEFICIENCY IN AN EROSION AND SEDIMENT CONTROL MEASURE OR CAUSED BY THE CONTRACTORS OPERATION. REPAIR AND MAINTENANCE SHALL BE AT THE CONTRACTOR'S EXPENSE.

8.4. SEDIMENT THAT HAS ACCUMULATED SHALL BE REMOVED IN A MANNER THAT MINIMIZES IMPACT IN ENVIRONMENTALLY SENSITIVE AREAS. ACCUMULATED SEDIMENT SHALL BE MANAGED AS EXCESS EARTH MATERIAL AS SPECIFIED ELSEWHERE IN THE CONTRACT, OR AS INSTRUCTED BY THE CONTRACT MANAGER.

9. EMERGENCY RESPONSE

9.1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT THEY ARE ADEQUATELY PREPARED FOR AN EMERGENCY RESPONSE. THIS MAY INCLUDE HAVING AVAILABLE AT THE CONSTRUCTION SITE, PRIOR TO THE COMMENCEMENT OF OPERATIONS AND THROUGHOUT THE DURATION OF THE CONTRACT, ADDITIONAL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES.

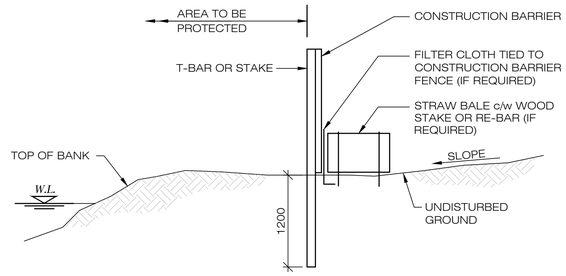
9.2. IN THE EVENT THAT UNFORESEEN EVENTS CAUSE THE STRATEGIES SET OUT IN THIS PLAN TO BE INSUFFICIENT OR INAPPROPRIATE TO MEET THE OBJECTIVE, THE CONTRACTOR IS TO RESPOND IN A TIMELY MANNER WITH ALL REASONABLE MEASURES CONSISTENT WITH SAFETY, TO PREVENT, COUNTERACT OR REMEDY ANY EFFECTS ON FISH OR FISH HABITAT THAT MAY RESULT.

9.3. EXISTING SPILL REPORTING PROCEDURES ESTABLISHED BY THE MINISTRY OF THE ENVIRONMENT (MOE) SHALL BE USED TO REPORT ANY UNEXPECTED DISCHARGE OF SILT OR SEDIMENT OR OTHER DELETERIOUS SUBSTANCE INTO THE RIVER. THE SPILL SHALL ALSO BE REPORTED TO THE MINISTRY AS SOON AS POSSIBLE.

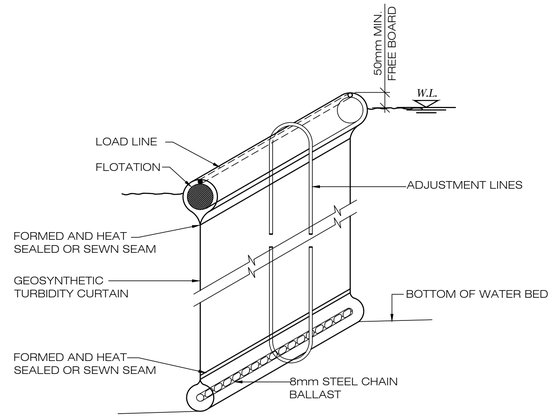
10. TECHNICAL

10.1. DETAILS OF THE MITIGATION TECHNIQUES ARE EXPLAINED IN THE "ENVIRONMENTAL GUIDELINES FOR ACCESS ROADS AND WATER CROSSINGS", PUBLISHED BY THE MINISTRY AND THE MTO DRAINAGE MANUAL, CHAPTER F-EROSION AND SEDIMENT CONTROL. ADDITIONAL SPECIFICATIONS ARE AS FOLLOWS:

- a. SILT FENCES AND STRAW BALES - SEE DETAIL FOR CONSTRUCTION.
- b. WOVEN GEOTEXTILE FOR THE SILT FENCES SHALL BE TERRATRACK 24-11 OR AN APPROVED ALTERNATE.
- c. IF REQUIRED BY AUTHORITIES HAVING JURISDICTION, INSTALL WATER DIVERSION METHODS TO CHANNEL OUTFLOW FROM THE STRUCTURE TO ENSURE FLOW IN AREAS OF FISH HABITAT. CREATE SEDIMENT CONTROL MEASURES AS REQUIRED BY DFO REGULATIONS.



SEDIMENT CONTROL DETAIL
N.T.S.



OBLIQUE VIEW

TURBIDITY CURTAIN SEAM DETAIL
N.T.S.

No.	Description	By	Date (mm/dd/yyyy)
0	ISSUED FOR TENDER	MMC	08/08/2023
A	ISSUED FOR 90% REVIEW	MMC	06/12/2023

Revisions

JML Engineering
Celebrating 25 Years
105 Villa Street, 2nd Floor
Thunder Bay, ON P7A 7W5
Phone: 807.345.1131
Fax: 807.345.1229
Email: info@jmleng.com

LICENSED PROFESSIONAL ENGINEER J. A. K. HUBER 100515876 PROVINCE OF ONTARIO — DESIGN ENGINEER

LICENSED PROFESSIONAL ENGINEER G. A. MCKAY 100074921 PROVINCE OF ONTARIO — DESIGN-CHECKER ENGINEER

Client: IGNACE — Explore Our Possibilities

Project: REPLACEMENT PINE STREET CULVERTS AT AGIMAK RIVER

Drawing: EROSION AND SEDIMENT CONTROL PLAN AND DETAILS

Scale	AS NOTED		
Designer	JH	Date	03/2023
Drafter	BA/MMC	Date	03/2023
Checked by	GAM	Date	06/2023
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Ref. No.	2022081	Drawing No.	C-4
		Rev.	1

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