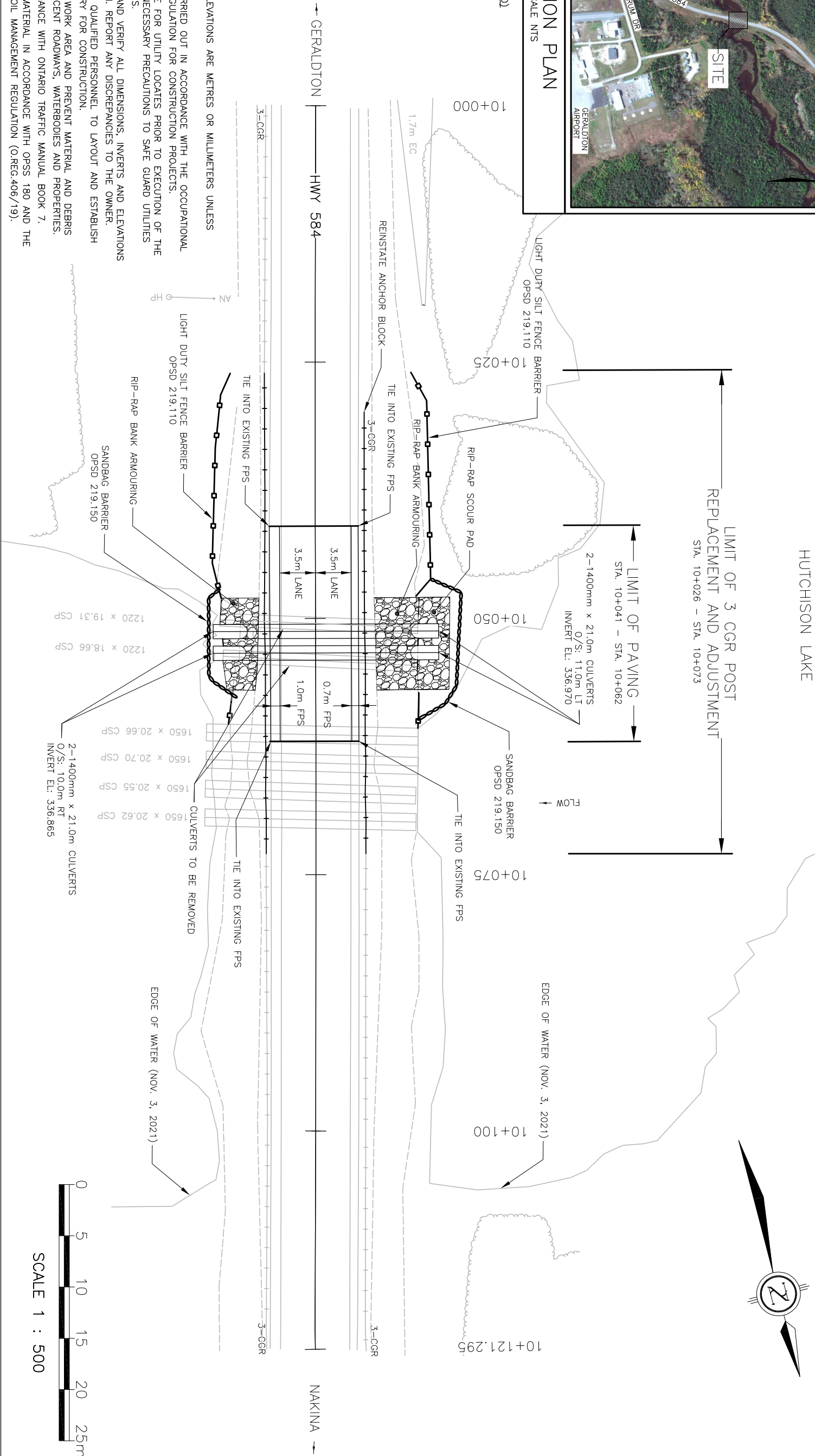


LOCATION PLAN

SCALE NTS

HORIZONTAL CONTROL POINT (HCP 100)
N: 5514951.865N
E: 504780.964E
ELEV: 339.585



GENERAL NOTES

1. ALL DRAWING DIMENSIONS AND ELEVATIONS ARE METRES OR MILLIMETERS UNLESS OTHERWISE INDICATED
2. ALL CONSTRUCTION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATION FOR CONSTRUCTION PROJECTS.
3. THE CONTRACTOR IS RESPONSIBLE FOR UTILITY LOCATES PRIOR TO EXECUTION OF THE WORK AND SHALL PROVIDE THE NECESSARY PRECAUTIONS TO SAFE GUARD UTILITIES FROM DAMAGE DURING OPERATIONS.
4. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS, INVERTS AND ELEVATIONS ON SITE PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE OWNER.
5. THE CONTRACTOR SHALL PROVIDE QUALIFIED PERSONNEL TO LAYOUT AND ESTABLISH ALL LINES AND GRADES NECESSARY FOR CONSTRUCTION.
6. CONTRACTOR TO MAINTAIN CLEAN WORK AREA AND PREVENT MATERIAL AND DEBRIS FROM BEING TRACKED ONTO ADJACENT ROADWAYS, WATERBODIES AND PROPERTIES.
7. ALL TRAFFIC CONTROL IN ACCORDANCE WITH ONTARIO TRAFFIC MANUAL BOOK 7.
8. DISPOSE AND MANAGE SURPLUS MATERIAL IN ACCORDANCE WITH OPSS 180 AND THE ONTARIO ON-SITE AND EXCESS SOIL MANAGEMENT REGULATION (O.REG.406/19).

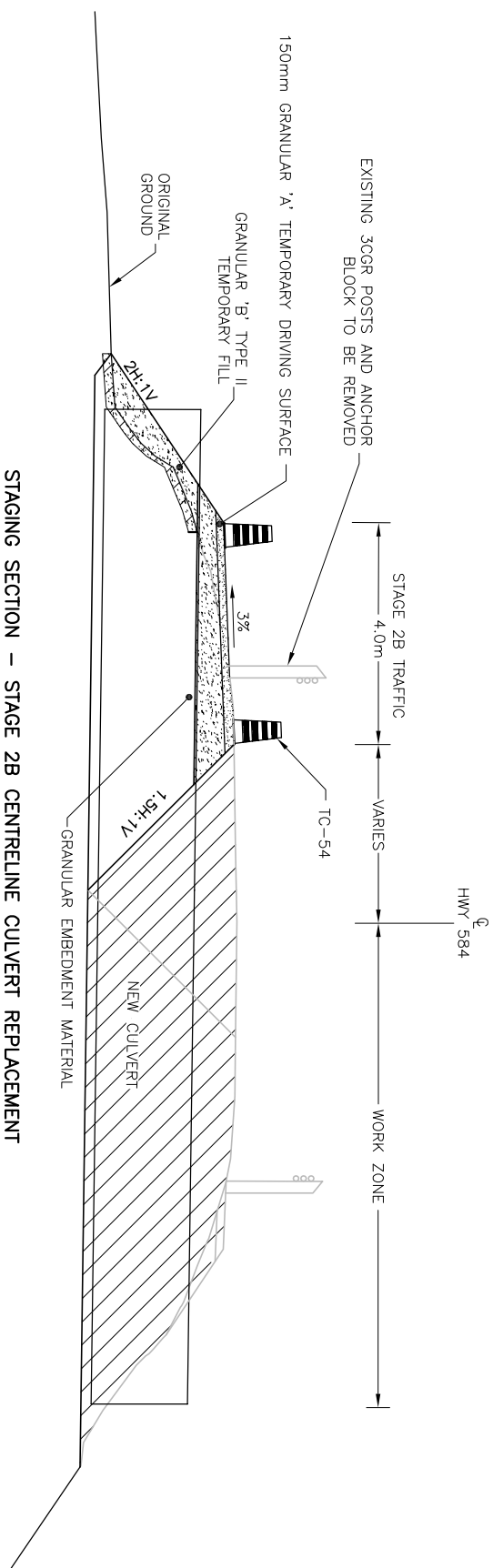
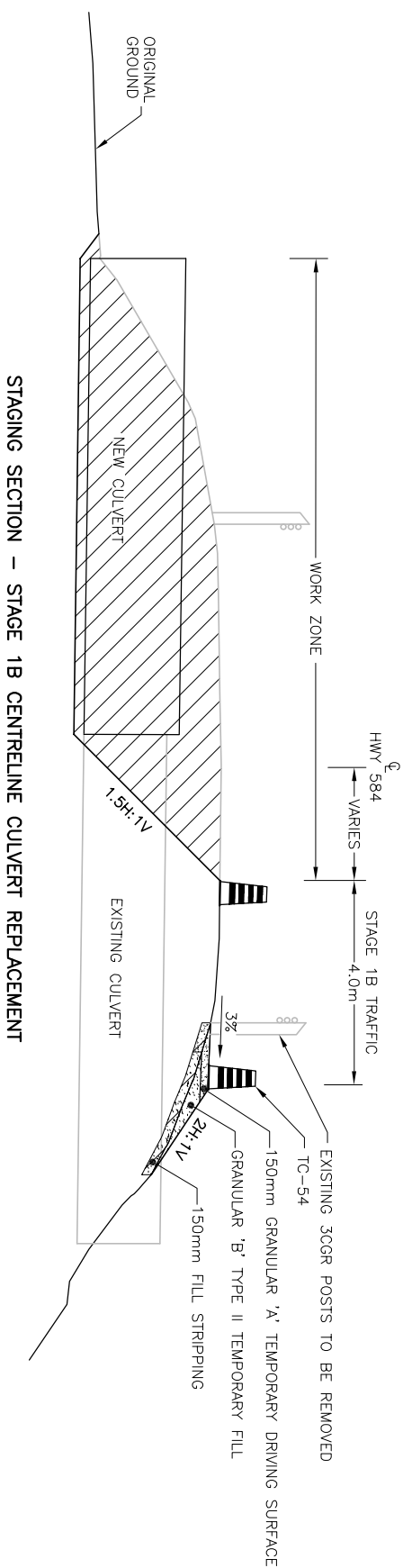
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No.	Revision	Date	Initial

Scale: AS SHOWN
Date: 2022/09/12
Drawn By: B.F.
Checked By: B.D.

OVERFLOW CULVERT REPLACEMENT
GERALDTON ONTARIO
PLAN VIEW
Client: MUNICIPALITY OF GREENSTONE
Drawing No: 1
Project No: RFT-PS-2022-20
Rev. 0



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- NOTES:

1. DRAWING INTENDED FOR CONSTRUCTION STAGING PURPOSES ONLY. PIPE INSTALLATION AND TRENCH REINSTATEMENT SHALL BE COMPLETED IN ACCORDANCE WITH CONTRACT DOCUMENTS.

STAGE 1A

1. CONFIGURE TEMPORARY TRAFFIC CONTROL MEASURES AS PER ONTARIO TRAFFIC MANUAL BOOK 7
2. CONSTRUCT STAGE 1B PLATFORM.

STAGE 1B

1. DEPLOY TEMPORARY TRAFFIC CONTROL MEASURES AS PER TYPICAL TRAFFIC STAGING PLAN INCLUDING PROVISION FOR 24 HOUR FLAGGING, DIRECT TRAFFIC ONTO STAGE 1B PLATFORM.
2. EXCAVATE AND REMOVE STAGE 1A CULVERT. INSTALL FIRST STAGE OF NEW CULVERT AND BACKFILL TO REINSTATE ORIGINAL LAKE WIDTH, SHOULDER WIDTH AND CROSSFALL INCLUDING TEMPORARY GRANULAR DRIVING SURFACE.

STAGE 1C

1. RECONFIGURE TRAFFIC CONTROL MEASURES AS PER ONTARIO TRAFFIC MANUAL BOOK 7 TO REINSTATE ORIGINAL LANE WIDTH, SHOULDER WIDTH AND CROSSTALL. CONSTRUCT REMAINING TEMPORARY GRANULAR DRIVING SURFACE WITHIN CULVERT TRENCH REINSTATEMENT.
2. REMOVE TEMPORARY TRAFFIC CONTROL MEASURES AND REINSTATE TWO LANES OF TRAFFIC.

STAGE 2A

1. CONFIGURE TEMPORARY TRAFFIC CONTROL MEASURES AS PER ONTARIO TRAFFIC MANUAL BOOK 7.
2. CONSTRUCT PLATFORM FOR STAGE 2B TRAFFIC.

STAGE 2B

1. DEPLOY TEMPORARY TRAFFIC CONTROL MEASURES AS PER TYPICAL TRAFFIC STAGING PLAN INCLUDING PROVISION FOR 24 HOUR FLAGGING, DIRECT TRAFFIC ONTO STAGE 2B PLATFORM.
2. EXCAVATE AND REMOVE STAGE 2 CULVERT. INSTALL SECOND STAGE OF NEW CULVERT AND BACKFILL TO REINSTATE ORIGINAL LANE WIDTHS, SHOULDER WIDTHS AND CROSSFALL AS PER PAVING TYPICALS AND DETAILS PROVIDED ELSEWHERE.

STAGE 2C

1. RECONFIGURE TRAFFIC CONTROL MEASURES AS PER ONTARIO TRAFFIC MANUAL BOOK 7 TO ALLOW RECONSTRUCTION OF LEFT LANE AND SHOULDER.
2. REMOVE TEMPORARY TRAFFIC CONTROL MEASURE AND REINSTATE TWO LANES OF TRAFFIC.

STAGE 3

1. CONFIGURE TEMPORARY TRAFFIC CONTROL MEASURES AS PER ONTARIO TRAFFIC MANUAL BOOK 7, EXCAVATE TEMPORARY FILL MATERIAL AND REINSTATE ORIGINAL FORESLOPES OR 2H:1V, WHICH EVER IS FLATTER.
2. REMOVE TEMPORARY TRAFFIC CONTROL MEASURES AND REINSTATE TWO LANES OF TRAFFIC.

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No.	Revision	Date	Initial	

OVERFLOW CULVERT REPLACEMENT
GERALDTON ONTARIO

TYPICAL SECTIONS
TEMPORARY STAGING PLATFORMS

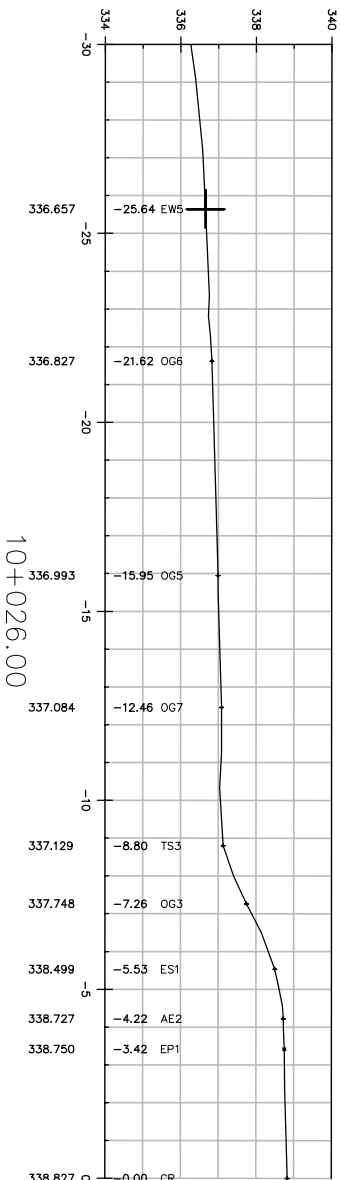
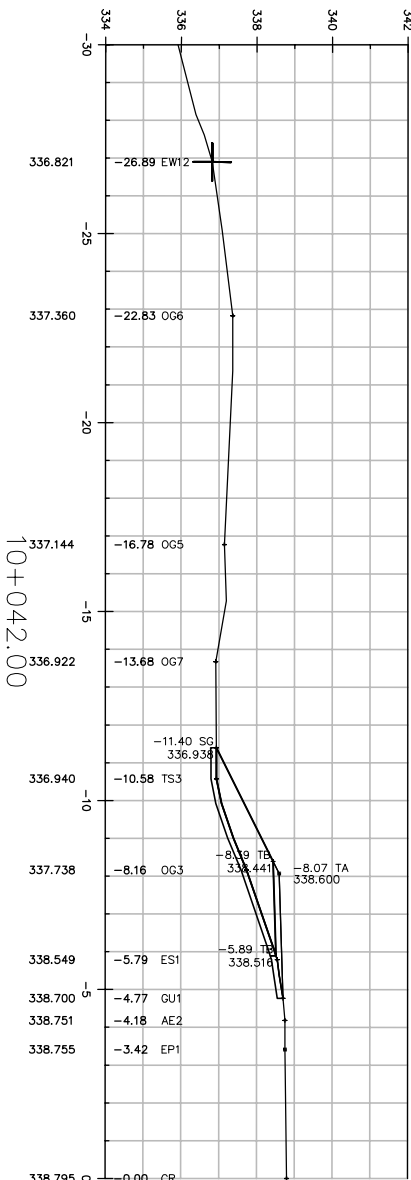
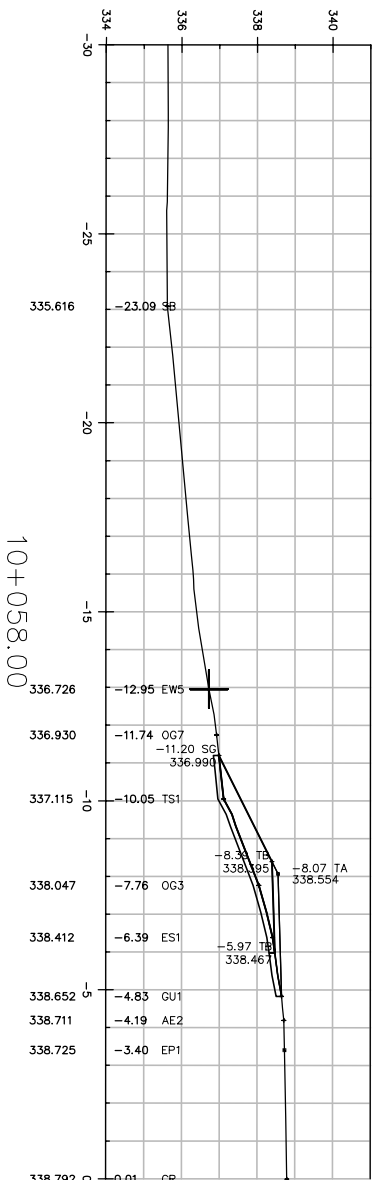
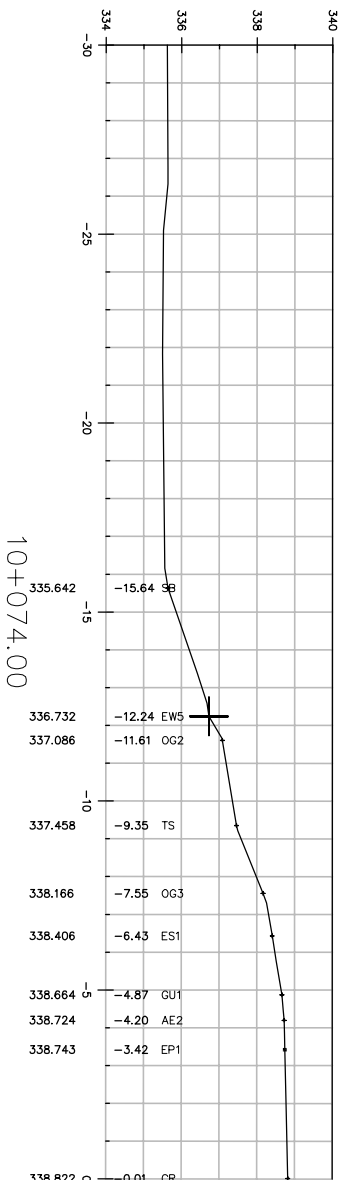
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	Rev. 0

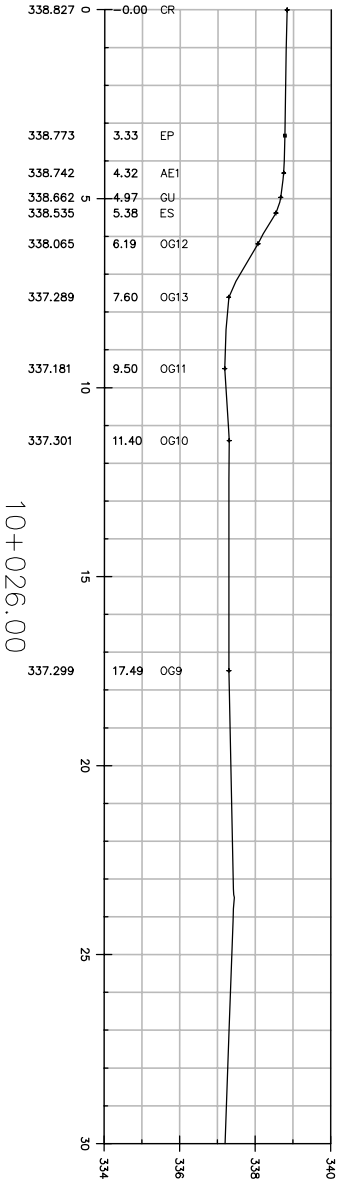
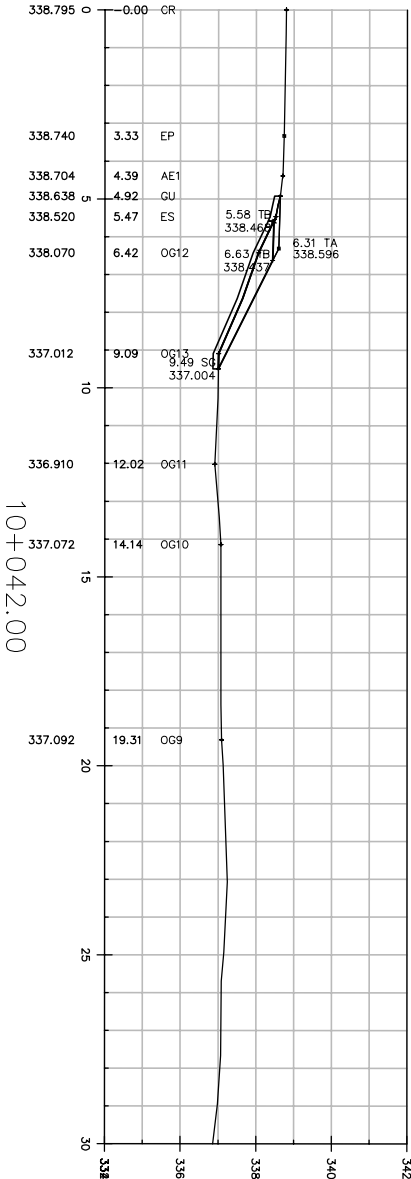
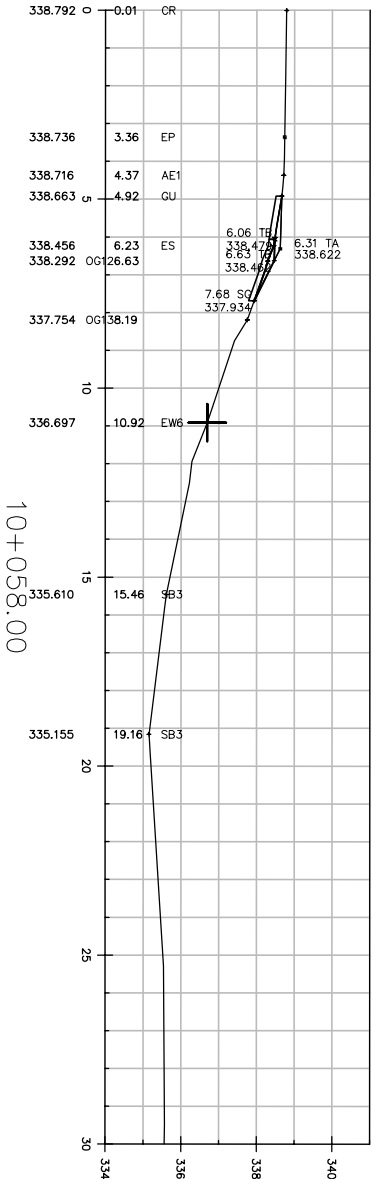
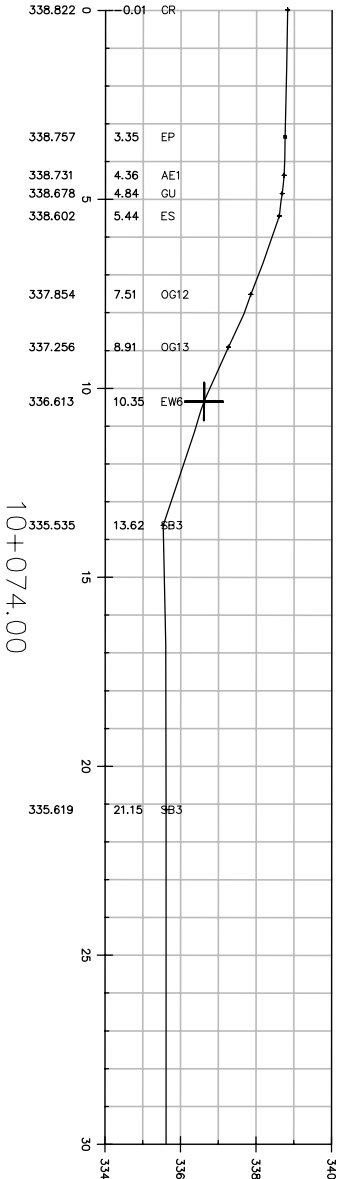


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TEMPORARY STAGING PLATFORM LEFT



TEMPORARY STAGING PLATFORM RIGHT



OVERFLOW CULVERT REPLACEMENT
GERALDTON ONTARIO

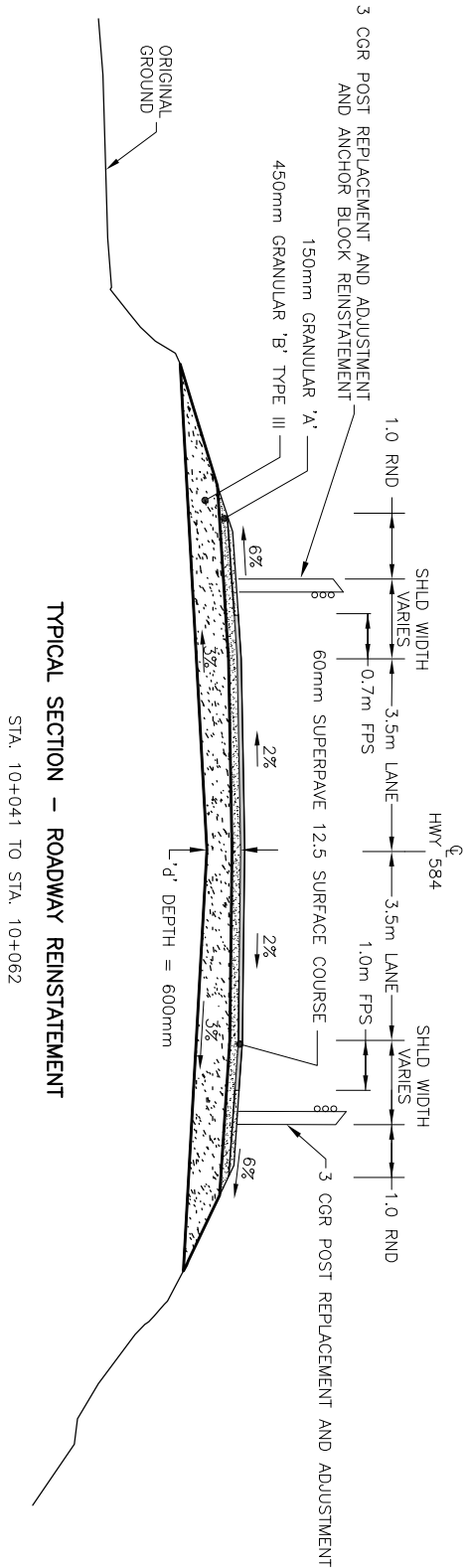
CROSS SECTIONS
TEMPORARY STAGING PLATFORMS

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Drawing No: 3
Project No: RFT-PS-2022-20
Rev. 0



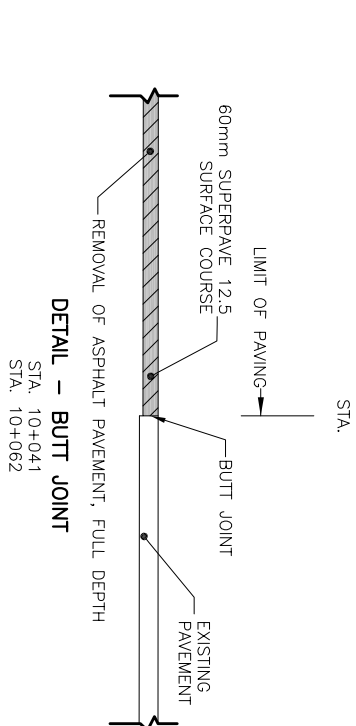
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TYPICAL SECTION – ROADWAY REINSTATEMENT

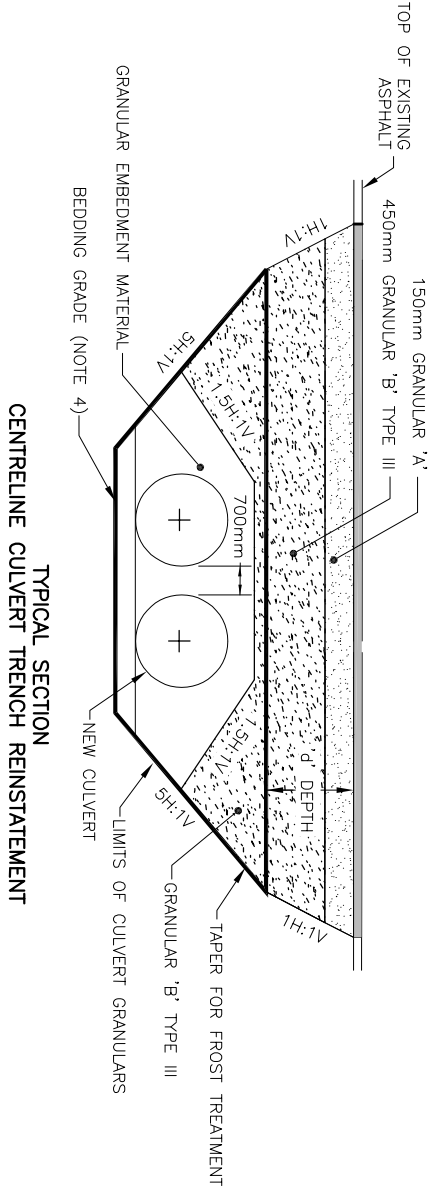
STA. 10+041 TO STA. 10+062



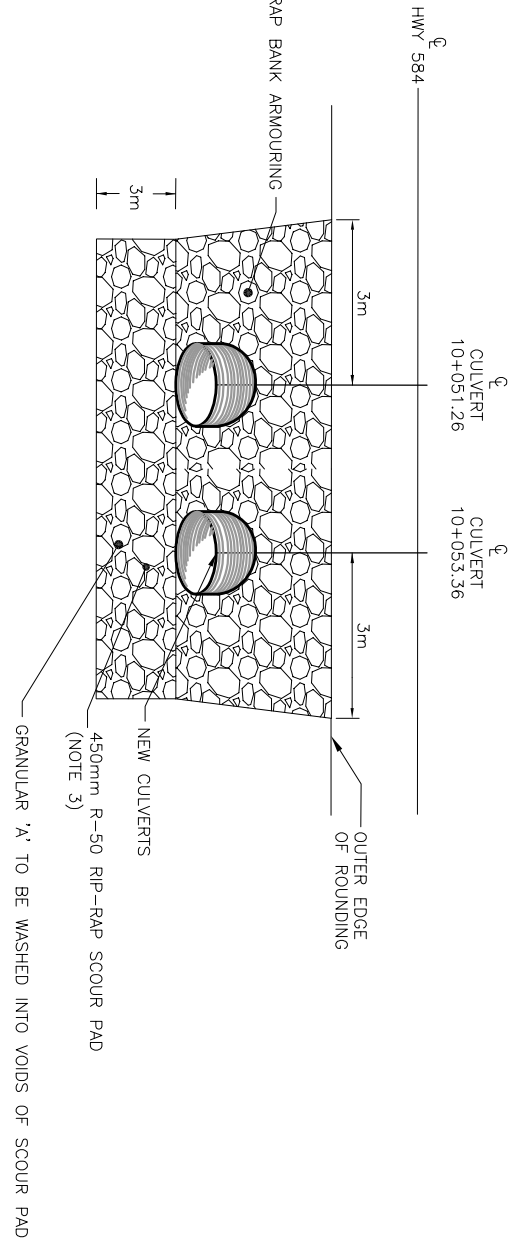
DETAIL – BUTT JOINT

STA. 10+041
STA. 10+062

CULVERT 10+051.26
CULVERT 10+053.36



TYPICAL SECTION
CENTRELINE CULVERT TRENCH REINSTATEMENT




TYPICAL – CULVERT EROSION PROTECTION

- NOTES:
- CULVERT TRENCH REINSTATEMENT AND NEW ALIGNMENT TYPICAL TO BE READ IN CONJUNCTION WITH OPSD 800 & 802 SERIES.
 - ROADWAY REINSTATEMENT TYPICAL TO BE READ IN CONJUNCTION WITH OPSD 210.010 TYPE 2 FULLY PAVED SHOULDER.
 - SCOUR PAD ONLY REQUIRED ON LEFT SIDE.
 - GRANULAR EMBEDMENT MATERIAL TO BE USED TO ACHIEVE BEDDING GRADE AS REQUIRED.

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OVERFLOW CULVERT REPLACEMENT	GERALDTON
DETAILS	ONTARIO
CULVERT TRENCH REINSTATEMENT	
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Drawing No: 4	Project No: RFT-PS-2022-20
	Rev. 0



TBT ENGINEERING
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SCOPE OF WORK:
1.REMOVAL, SUPPLY AND INSTALLATION OF TWO REPLACEMENT OVERFLOW CULVERTS, INCLUDING GRADING, DRAINAGE, GRANULAR BASE AND HOT MIX PAVING WORK ARE PART OF THE SCOPE FOR THIS CONTRACT.

EROSION AND SEDIMENT CONTROL

- 1.PROVIDE TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES TO PREVENT SOIL EROSION AND DISCHARGE OF SOIL-BEARING WATER RUNOFF OR AIRBORNE DUST TO ADJACENT PROPERTIES.
- 2.AN EROSION AND SEDIMENT CONTROL PLAN SHALL BE PREPARED. THE PLAN SHALL PROVIDE DESCRIPTIONS AND SCHEDULES, AS WELL AS SKETCHES AND/OR PLANS AND/OR DRAWINGS AND SHALL INCLUDE ALL REQUIRED MATERIALS.
- 3.IMPLEMENTATION, INSPECTION, MAINTENANCE AND REMOVAL OF EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH OPSS 805.07. ALTERNATIVE MATERIALS OR METHODS ARE ACCEPTABLE PROVIDED THEY MEET INDUSTRY STANDARDS AND PROTECT THE ENVIRONMENT FROM THE IMPACTS OF EROSION AND SEDIMENT.
- 4.ALL MATERIAL SHALL IN ACCORDANCE WITH OPSS 808.05.
- 5.INSPECT, REPAIR, AND MAINTAIN EROSION AND SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION UNTIL PERMANENT VEGETATION HAS BEEN ESTABLISHED.
- 6.REMOVE EROSION AND SEDIMENTATION CONTROLS AND RESTORE AND STABILIZE AREAS DISTURBED DURING REMOVAL.

SEED AND COVER

- 1.THE WORK SHALL INCLUDE THE APPLICATION OF SEED AND COVER TO ALL EXPOSED EARTH SURFACES.
- 2.LATEST 24 HOURS PRIOR TO SEEDING THE CONTRACTOR SHALL SUBMIT TO THE OWNER A VALID CERTIFICATE OF SEED ANALYSIS FROM A SEED TESTING LABORATORY APPROVED BY THE CANADIAN FOOD INSPECTION AGENCY FOR ALL SEED MIXTURES TO BE USED ON THE CONTRACT.
- 3.ALL MATERIALS SHALL BE IN ACCORDANCE WITH OPSS 804.05.
- 4.EQUIPMENT AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH OPSS 804.06 AND 804.07.
- 5.PERMANENT SEED MIX SHALL BE STANDARD ROADSIDE MIX OR APPROVED EQUIVALENT.
- 6.SEED AND COVER APPLICATION OR RE-APPLICATION SHALL NOT BE CARRIED OUT UNDER ADVERSE WEATHER CONDITIONS SUCH AS HIGH WINDS OR HEAVY RAIN OR WHEN FIELD CONDITIONS ARE NOT CONDUCE TO SEED GERMINATION SUCH AS FROZEN SOIL OR SOIL COVERED WITH SNOW, ICE OR STANDING WATER. IF WEATHER CONDITIONS DO NOT ALLOW FOR THE INSTALLATION THE CONTRACTOR SHALL BE REQUIRED TO RETURN IN THE SPRING WHEN WEATHER PERMITS TO COMPLETE THE APPLICATION.

EARTH EXCAVATION

- 1.THE WORK SHALL INCLUDE EXCAVATING, HAULING, SHAPING, COMPACTING, STRIPPING AND TRIMMING OF EARTH MATERIAL AND THE MANAGEMENT OF EXCAVATED MATERIAL FOR NEW CONSTRUCTION AREAS.
- 2.STRIP TOPSOIL OVER AREAS TO BE COVERED BY GRANULAR BASE. OVER AREAS WHERE GRADE CHANGES ARE REQUIRED, AND SO THAT EXCAVATED MATERIAL MAY BE STOCKPILED WITHOUT COVERING TOPSOIL.
- 3.EXCAVATE TO LINES, GRADES, ELEVATIONS AND DIMENSIONS AS INDICATED FOR DITCHING AND SUBGRADE FOR GRANULAR BASE.
- 4.EXCAVATION SHALL BE COMPLETED USING AN EXCAVATOR WITH A SMOOTH BLADED BUCKET AND OPERATING FROM THE EDGE OF THE EXCAVATION TO MINIMIZE DISTURBANCE TO THE EXPOSED SUBGRADE.
- 5.WHERE OVER EXCAVATION OCCURS, IT SHALL BE BACKFILLED WITH GRANULAR B TYPE III AND COMPACTED. WITH THE EXCEPTION OF WHERE BOULDERS ARE ENCOUNTERED IN THE EXCAVATED SLOPES, BACKFILLING SHALL NOT BE PERMITTED TO OBTAIN REQUIRED SLOPES FOR EXCAVATIONS. WHEN BOULDERS ARE ENCOUNTERED IN THE EXCAVATED SLOPES, THE BOULDERS SHALL BE REMOVED WHEN DIRECTED BY THE OWNER AND THE BULKY BACKFILL WITH APPROVED MATERIAL AND COMPACTED.
- 6.THE CONTRACTOR SHALL BE RESPONSIBLE FOR CARRYING OUT ALL QUALITY CONTROL GRADE CHECKS TO ENSURE HORIZONTAL AND VERTICAL GRADING TOLERANCES ARE MET:
 - a. VERTICAL GRADING TOLERANCE FOR TOP OF EARTH SUBGRADE: +/- 30 mm
 - b. HORIZONTAL GRADING TOLERANCE FOR VERTICAL FACES OF EXCAVATIONS TO BE BACKFILLED: + 100 mm, - 0 mm
 - c. VERTICAL GRADING TOLERANCE FOR DITCHING: +/- 30 mm
 - d. HORIZONTAL GRADING TOLERANCE FOR DITCH INVERTS AND BACK SLOPES: +/- 300mm

HOT MIX PAVING

- 1.THE MATERIALS USED IN THE PRODUCTION OF THE HMA SHALL BE ACCORDING TO OPSS 1151.
- 2.ASPHALT PAVING SHALL CONSIST OF SUPERPAVE 12.5 COURSE AS SPECIFIED. ASPHALT CEMENT SHALL BE AT 5% BY WEIGHT, PG4C 58-40.
- 3.CONTRACTOR TO SUBMIT MIX DESIGN MINIMUM 7 DAYS PRIOR TO PAVING.
- 4.EQUIPMENT IN ACCORDANCE TO OPSS 310.06.
- 5.PRIOR TO PAVING ANY COURSE OF HMA ON A GRANULAR GRADE, A CLASS 5 ROLLER OF 7 TONNES OR AN EQUIVALENT CLASS V ROLLER WITH A DRUM WIDTH OF AT LEAST 1.2 METRES SHALL BE USED TO FINISH ROLL THE GRADE AHEAD OF THE PAYER TO ENSURE A COMPACTED, SMOOTH, AND FLAT-FREE SURFACE. ANY DISTORTION THAT WILL IMPACT THE SPECIFIED THICKNESS OF THE PAVEMENT TO BE PLACED SHALL BE REPAIRED.
- 6.THE TEMPERATURE OF THE HMA PRIOR TO PLACEMENT SHALL BE WITHIN THE TEMPERATURE RANGE THAT CORRESPONDS TO THE PGAC SPECIFICATION SUPERPAVE MIX TEMPERATURE. THE TEMPERATURE OF THE HMA IMMEDIATELY AFTER SPREADING AND PRIOR TO INITIAL ROLLING SHALL NOT BE LESS THAN 120 °C.
- 7.PLACING OF HOT MIX ASPHALT IN ACCORDANCE TO OPSS 310.07.06.02.
- 8.USE OF PAVING EQUIPMENT IN ACCORDANCE TO OPSS 310.07.07.
- 9.LONGITUDINAL AND TRANSVERSE JOINTS IN ACCORDANCE TO OPSS 310.07.11.
- 10.COMPACTION IN ACCORDANCE TO OPSS 310.07.12
- 11.EACH COURSE AFTER FINAL COMPACTION SHALL BE OF UNIFORM TEXTURE AND SHALL BE FREE OF DEFECTS SUCH AS SEGREGATION, FAT SPOTS, OIL SPILLS, AND ROLLER MARKS. DEFECTIVE AREAS SHALL BE REMOVED AND REPLACED WITH ASPHALT OF THE SAME TYPE AND TO NO COST TO THE OWNER.
- 12.FINISHED GRADES SHALL BE WITHIN 25 MM OF SPECIFIED GRADES BUT NOT UNIFORMLY HIGH OR LOW.
- 13.SEE QUALITY CONTROL SECTION FOR TESTING REQUIREMENTS.

GUIDE RAIL

- 1.THE WORK SHALL INCLUDE REMOVAL OF EXISTING POSTS, SUPPLY OF NEW POSTS, REMOVAL AND REINSTATEMENT OF THE EXISTING ANCHOR BLOCK AND INSTALLATION/ADJUSTMENT OF 30GR. WORK AS PER OPSS 721.07.02.04 AND 721.07.02.05
- 2.MATERIAL SHALL BE ACCORDING TO OPSS 1503.05, GUIDE RAIL POSTS AS PER OPSS 721.05.01 AND OPSS 1601.

RIP-RAP

- 1.THE WORK SHALL INCLUDE EXCAVATING, SUPPLY, TRANSPORTATION, HAULING, PLACING AND GRADING ACCORDING TO OPSS 511.07.02.02, 511.07.2.0, AND 511.07.01.
- 2.RIP-RAP BANK ARMORING AND SCOUR PAD SHALL BE CONSTRUCTED OF OF R-50 ACCORDING TO OPSS 1004.03.03. MATERIAL SHALL BE KEPT FREE FROM COYR AND OTHER TYPES OF DELETERIOUS MATERIAL.
- 3.GRANULAR X SHALL BE WASHED INTO THE VOIDS OF THE SCOUR PAD. CONTRACTOR TO ENSURE THAT VOIDS WITHIN THE ENTIRE DEPTH ARE FILLED.

GRANULAR SUBBASE AND GRANULAR BASE

- 1.THE WORK SHALL INCLUDE THE SUPPLY, TRANSPORTATION, HAULING, PLACING, GRADING AND COMPACTION OF GRANULAR SUBBASE AND GRANULAR BASE.
- 2.GRANULAR A, GRANULAR B TYPE II AND III ACCORDING TO OPSS 1010.06.02, 1010.06.03.01, 1010.06.03.02 AND TABLE 14.2 OF OPSS 1010. MATERIAL SHALL BE KEPT FREE FROM CLAY AND OTHER TYPES OF DELETERIOUS MATERIAL. CONTRACTORS SHALL PROVIDE DETAILED UNDERLYING WORK. CONTRACTOR SHALL PROVIDE QUALITY CONTROL TEST RESULTS OF PRODUCTION PROPERTIES TO THE OWNER IN ADVANCE OF PLACING GRANULAR MATERIAL.
- 3.BACKFILLING AND CONSTRUCTION OF GRANULAR BASE SHALL NOT COMMENCE UNTIL GRANULAR MATERIAL AS BEEN APPROVED BY THE OWNER.
- 4.CONTRACTING AND CONSTRUCTION OF GRANULAR BASE SHALL NOT COMMENCE UNTIL SUBGRADE IS CONSTRUCTED, INSPECTED AND APPROVED BY THE OWNER.
- 5.CONSTRUCT GRANULAR BASE TO DEPTH AND GRADE IN AREAS INDICATED. ENSURE NO FROZEN MATERIAL IS PLACED. PLACE MATERIAL ONLY ON CLEAN UNFROZEN SURFACE. FREE FROM SNOW AND ICE. PLACE MATERIAL USING METHODS WHICH DO NOT LEAD TO SEGREGATION OR DEGRADATION OF AGGREGATE.
- 6.SHAPE EACH LAYER TO SMOOTH CONTOUR AND COMPACT TO SPECIFIED DENSITY BEFORE SUCCEEDING LAYER IS PLACED.
- 7.REMOVE AND REPLACE THAT PORTION OF LAYER IN WHICH MATERIAL BECOMES SEGREGATED DURING SPREADING.
- 8.PLACE MATERIAL IN UNIFORM LAYERS NOT EXCEEDING 300 mm COMPACTED THICKNESS.
- 9.FINISHED BASE SURFACE TO BE WITHIN PLUS OR MINUS 25 mm OF ESTABLISHED GRADE AND CROSS SECTION BUT NOT UNIFORMLY HIGH OR LOW. HORIZONTAL GRADING TOLERANCE FOR EXTENTS OF GRANULAR BASE: + 100 mm, - 0 mm.

PIPE CULVERTS

- 1.CORRUGATED STEEL PIPE (CSP) PRODUCTS SHALL BE ACCORDING TO CSA G401. COATING SHALL BE GALVANIZED. MINIMUM WALL THICKNESS 2.8 mm. CERTIFIED CORRUGATED STEEL PIPE SHALL BE MARKED ACCORDING TO CSA G401, ALONG WITH THE LOGO OF THE CERTIFICATION BODY AND NAME OF THE PIPE MANUFACTURER.
- 2.MANUFACTURER'S RECOMMENDATIONS FOR TRANSPORTING, UNLOADING, STORING, AND HANDLING OF PIPE, SHALL BE FOLLOWED.
- 3.GRANULAR BEDDING, EMBEDEMMENT SHALL BE GRANULAR A OR GRANULAR B WITH 100% PASSING THE 26.5MM SIEVE ACCORDING TO OPSS 1010. GRANULAR TO BE PLACED IN UNFROZEN CONDITION.
- 4.DENMTER THE EXCAVATION, AS NECESSARY, TO ALLOW PLACEMENT OF CULVERT BEDDING IN DRY CONDITION. WATER SHALL BE DISCHARGED TO EITHER A SEDIMENT TRAP, SEDIMENT BAG, OR LOW LYING AREA OF VEGETATION A MINIMUM OF 30m FROM THE WATER COURSE. PLACE MINIMUM THICKNESS OF 150 mm OF GRANULAR A MATERIAL ON BOTTOM OF EXCAVATION AND COMPACT. SHAPE BEDDING TO FIT LOWER SEGMENT OF PIPE EXTERIOR SO THAT WIDTH OF AT LEAST 50% OF PIPE DIAMETER IS IN CLOSE CONTACT WITH BEDDING.
- 5.ENSURE BOTTOM OF PIPE IS IN CONTACT WITH SHAPE BED OR COMPACTED FILL THROUGHOUT ITS LENGTH. LAY PIPE WITH OUTSIDE CIRCUMFERENTIAL LAPS FACING UPSTREAM AND LONGITUDINAL LAPS OR SEAMS AT SIDE OR QUARTER POINTS. DO NOT ALLOW WATER TO FLOW THROUGH PIPES DURING CONSTRUCTION EXCEPT AS PERMITTED BY THE OWNER.
- 6.CORRUGATED STEEL PIPE SECTIONS SHALL BE JOINED BY MEANS OF STEEL COULVERTS. THE COULVERTS SHALL BE INSTALLED TO LAP APPROXIMATELY EQUAL PORTIONS OF EACH PIPE. THE JOINTS SHALL BE TIGHTENED TO THE MANUFACTURER'S SPECIFICATIONS. THE JOINTS SHALL BE TIGHTENED TO THE MANUFACTURER'S SPECIFICATIONS. THE JOINTS SHALL BE TIGHTENED. IT SHALL BE TAPPED WITH A MALLET TO TAKE UP THE SLACK. REPAIR SPOTS WHERE DAMAGE HAS OCCURRED TO GALVANIZED COATING BY APPLYING TWO COATS OF ZINC RICH PAINT.
- 7.PLACE AND COMPACT GRANULAR A EMBEDEMMENT AND COVER IN 150 mm LAYERS TO FILL WIDTH, ALTERNATELY ON EACH SIDE OF CULVERT, SO AS NOT TO DISPLACE IT LATERALLY OR VERTICALLY.
- 8.GRANULAR BACKFILL SHALL BE PLACED AND COMPACTED IN UNIFORM LAYERS NOT EXCEEDING 300 mm IN THICKNESS. LOOSE MEASUREMENT, FOR THE FULL WIDTH OF THE TRENCH.
- 9.PROTECT INSTALLED CULVERT WITH MINIMUM 300 mm COVER OF COMPACTED FILL BEFORE HEAVY EQUIPMENT IS PERMITTED TO CROSS.

COMPACTION

- 1.THE TYPE OF COMPACTION EQUIPMENT USED SHALL BE SUITED TO THE MATERIAL TO BE COMPACTED, DEGREE OF COMPACTION REQUIRED, AND SPACE AVAILABLE.
- 2.GRANULAR BASE AND SUBBASE MATERIAL SHALL BE COMPACTED TO A MINIMUM OF 98% STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMD). THE SPMD SHALL BE DETERMINED USING LS-706 OR ASTM D 698.
- 3.WATER SHALL BE APPLIED, AS NECESSARY, TO ACHIEVE THE DEGREE OF COMPACTION REQUIRED.
- 4.CONTRACTOR SHALL CONDUCT QUALITY CONTROL (QC) DENSITY TESTING TO ENSURE GRANULAR MATERIALS ARE COMPACTED ACCORDING TO THE REQUIREMENTS. CONTRACTOR SHALL SUBMIT QC DENSITY TEST RECORDS TO THE OWNER USING THE FIELD COMPACTION REPORT PROVIDED IN OPSS 501 APPENDIX B OR OTHER APPROVED FORM.
- 5.ONLY QUALIFIED OPERATORS USING PROPERLY CALIBRATED GAUGES SHALL CONDUCT QC COMPACTION TESTING. TEST EQUIPMENT AND OPERATOR TRAINING AND GAUGE VERIFICATION SHALL BE IN ACCORDANCE WITH OPSS 501.07.04.03.03 AND 501.08.03.02.

QUALITY CONTROL

- 1.ALL MATERIALS AND WORKMANSHIP SUBJECT TO THE INSPECTION AND APPROVAL OF THE OWNER.
- 2.CONTRACTOR TO REMAIN A QUALITY CONTROL LAB FOR QC TESTING. QC MATERIAL TESTS SHALL BE USED FOR THE PURPOSE OF ACCEPTANCE.
- 3.CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH MATERIAL TESTING FOR QC PURPOSES. CONTRACTOR IS RESPONSIBLE FOR COSTS ASSOCIATED WITH ADDITIONAL TESTING DUE TO FAILED RESULTS. MATERIAL REPRESENTED BY FAILED TESTS MAY BE REJECTED AND REMOVED FROM SITE AT NO COST TO THE OWNER.
- 4.GRANULAR MATERIAL SAMPLING AND TESTING FREQUENCY SHALL BE IN ACCORDANCE WITH OPSS 1010, APPENDIX B TABLE B-1 AND B-2. ONE QUALITY ASSURANCE SAMPLE OF EACH GRANULAR MATERIAL TYPE SHALL BE TAKEN AND PROVIDED TO THE OWNER.
- 5.QUALITY CONTROL (QC) DENSITY TESTING TO ENSURE GRANULAR MATERIALS ARE COMPACTED ACCORDING TO THE COMPACTION SECTION.
- 6.ONE LOOSE MIX ASPHALT SAMPLE (QC & REF) TO BE TAKEN FOR EACH DAY OF PAVING FOR TESTING ASPHALT CEMENT CONTENT AND GRADATION. ONE ASPHALT CEMENT SAMPLE SHALL BE TAKEN AND PROVIDED TO THE OWNER FOR POSSIBLE TESTING.
- 7.CONTRACTOR SHALL SUBMIT ALL MATERIAL AND COMPACTION TESTING RECORDS TO THE OWNER WITHIN 24 HOURS OF RECEIVING RESULTS.

OPSS REFERENCES

- OPSS.MUNI 180 GENERAL SPECIFICATION FOR THE MANAGEMENT OF EXCESS MATERIALS, NOV 2021
- OPSS.MUNI 186 GENERAL SPECIFICATION FOR ENVIRONMENTAL PROTECTION FOR CONSTRUCTION IN WATERBODIES AND ON WATERBODY BAWKS, NOV 2021
- OPSS.MUNI 202 CONSTRUCTION SPECIFICATION FOR GRADING, APR 2019
- OPSS.MUNI 310 CONSTRUCTION SPECIFICATION FOR HOT MIX ASPHALT, NOV 2017
- OPSS.MUNI 501 CONSTRUCTION SPECIFICATION FOR COMPACTING, NOV 2017
- OPSS.MUNI 511 CONSTRUCTION SPECIFICATION FOR RIP-RAP, NOV 2019
- OPSS.MUNI 721 CONSTRUCTION SPECIFICATION FOR ADJUSTMENT OF CABLE GUIDE RAIL, NOV 2018
- OPSS.MUNI 804 CONSTRUCTION SPECIFICATION FOR SEED AND COVER, NOV 2014
- OPSS.MUNI 805 CONSTRUCTION SPECIFICATION FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES, NOV 2021
- OPSS.MUNI 1004 MATERIAL SPECIFICATIONS FOR AGGREGATES BASE, SUBBASE, SELECT SUBGRADE, AND BACKFILL MATERIAL, NOV 2013
- OPSS.MUNI 1151 MATERIAL SPECIFICATION FOR SUPERPAVE MIXTURES, NOV 2018
- OPSS.MUNI 1503 MATERIAL SPECIFICATION FOR CABLE GUIDE RAIL, NOV 2021
- OPSS.MUNI 1601 MATERIAL SPECIFICATIONS FOR WOOD, PRESERVATIVE TREATMENT, AND SHOP FABRICATION, NOV 2021

OPSS REFERENCES

- OPSS 210.010 TANGENT SHOULDERS – RURAL , NOV 2018
- OPSS 219.110 LIGHT-DUTY SILT FENCE BARRIER, NOV 20121
- OPSS 219.150 SANDBAG BARRIER, NOV 2015
- OPSS 913.135 GUIDE RAIL SYSTEM, CABLE ADJUSTMENT – SHOULDER, NOV 2013

			Scale: NTS
			Date: 2022/09/12
			Drawn By: B.F.
0	ISSUED FOR TENDER	09/12	B.D.
	Revision	Date	Initial
			B.D.
OVERFLOW CULVERT REPLACEMENT ONTARIO			
NOTES			
Client: MUNICIPALITY OF GREENSTONE		Project No: RFT-PS-2022-20	Rev. 0
Drawing No: 5			

Thunder Bay Phone: (807) 624-5160
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MUNICIPALITY OF GREENSTONE
McQUESTEEN TOWNSHIP
HIGHWAY 584

Station 10+035 4.5 Lt	
21-PA-010	UTM 16 5515012 N 504797 E
0	- 70 Asph
70	- 200 Gry Cr Gr & Sa Tr Si (Moist & Comp)
200	- 900 Br Gr(y) Sa W Si (Moist & Comp)
900	- 16 Br Si(y) Sa Tr Gr (Wet & Comp)
1.6	- 2.2 Br Wd(y) Org (Wet & L)
2.2	- 2.5 Gry Si(y) Sa Tr Gr (Wet & L)
2.5	- 3.3 Br Wd(y) Org (Wet & L)
3.3	- 3.6 Gry Si W F-Med Sa Tr Gr (Wet & Comp)
450	NFP Prob Cob

Station 10+006 4.5 Lt	
21-PA-013	UTM 16 5514984 N 504790 E
0	- 70 Asph
70	- 200 Gry Gr(y) Sa Tr Si
200	- 700 Br Gr(y) Sa W Si
700	- 1.0 Br Si(y) Sa Tr Gr (Moist & Comp)
1.0	- 2.0 Br Sa Tr Si & Gr (Moist & Comp)
2.0	EOH

Station 10+015 4.5 Lt	
21-PA-012	UTM 16 5514993 N 504793 E
0	- 70 Asph
70	- 200 Gry Gr(y) Sa Tr Si (Moist & Comp)
200	- 600 Br Gr(y) Sa W Si (Moist & Comp)
600	- 1.6 Br Si(y) Sa Tr Gr (Moist & Comp)
1.6	- 2.0 Br Sa(y) Si Tr Gr (Moist & Comp)
2.0	EOH

Station 10+024 4.5 Lt	
21-PA-011	UTM 16 5515002 N 504794 E
0	- 70 Asph
70	- 200 Gry Gr(y) Sa Tr Si (Moist & Comp)
200	- 600 Br Gr(y) Sa W Si (Moist & Comp)
600	- 1.4 Br Si(y) Sa Tr Gr (Moist & Comp)
	(Wet @ 1.4)
1.4	- 2.3 Br Wd(y) Org (Wet & L)
2.3	- 2.6 Gry Si(y) F Sa Tr Gr (Wet & L)
2.6	EOH

Station 10+029 10.6 Lt	
21-HA-001	UTM 16 5515008 N 504791 E
0	- 1.0 Br Wd(y) Org
1.0	- 1.3 Br F-Med Sa Tr Gr (Moist & Comp)
1.3	EOH

Station 10+037 11.6 Lt	
21-HA-002	UTM 16 5515016 N 504792 E
0	- 700 Br Wd(y) Org
700	- 1.2 Br F-Med Sa Tr Gr (Moist & Comp)
1.2	EOH

Station 10+048 4.4 Lt	
21-PA-008	Sample No. 21-MM-0751 (1.0 - 1.3)
% Passing 4.75 mm	90.4 %
% Passing 75 um	17.8 %
FMC @ 1.3	14.4 %
Group Symbol	SM
NAGM Gran 'B' Type III - Due to excess fines & fineness of gradation	
ACGM SSM	

Station 10+048 4.4 Lt	
21-PA-008	Sample No. 21-MM-0752 (1.6 - 1.9)
% Passing 4.75 mm	91.1 %
% Passing 75 um	15.9 %
FMC @ 1.9	18.5 %
Group Symbol	SM
NAGM Gran 'B' Type III - Due to excess fines & fineness of gradation	
ACGM SSM	

Station 10+048 4.4 Lt	
21-PA-008	Sample No. 21-MM-0753 (2.0 - 2.3)
FMC @ 2.3	109.9 %

Station 10+058 2.1 Rt	
21-PA-001	UTM 16 5515033 N 504810 E
0	- 70 Asph
70	- 200 Gry Cr Gr & Sa Tr Si (Moist & Comp)
200	- 1.3 Br Gr(y) Sa W Si (Moist & Comp)
1.3	NFP Prob Blds

Station 10+058 2.1 Rt	
21-PA-001	Sample No. 21-MM-0733 (100 - 200)
% Passing 4.75 mm	51.0 %
% Passing 75 um	9.2 %
% Crushed	97.8 %
FMC @ 200	8.5 %
Group Symbol	GW-GM
BLAGM Gran 'A' - Due to excess fines & fineness of gradation	

Station 10+058 2.1 Rt	
21-PA-001	Sample No. 21-MM-0734 (400 - 1.0)
% Passing 4.75 mm	72.4 %
% Passing 75 um	13.2 %
FMC @ 1.0	4.7 %
Group Symbol	SM
BLAGM Gran 'B' Type III - Due to excess fines	

Station 10+072 4.5 Rt	
21-PA-002	UTM 16 5515046 N 504815 E
0	- 70 Asph
70	- 200 Gry Cr Gr & Sa Tr Si (Moist & Comp)
200	- 2.0 Br Gr(y) Sa W Si (Moist & Comp)
2.0	- 2.7 Br Sa & Gr Tr Si (Wet & Comp)
2.7	- 3.1 Br Si W Sa Tr Gr & Org (Wet & L)
3.1	- 3.5 Br Si W Sa Tr Gr (Wet & L)
3.5	EOH

Station 10+078 4.5 Rt	
21-PA-003	UTM 16 5515052 N 504815 E
0	- 70 Asph
70	- 200 Gry Cr Gr & Sa Tr Si (Wet & Comp)
200	- 800 Br Gr(y) Sa W Si (Wet & Comp)
800	- 1.8 Br Sa & Gr Tr Si (Wet & Comp)
1.8	- 2.9 Br Wd(y) Org Tr Gr (Wet & L)
2.9	- 3.5 Gry Si(y) Sa Tr Gr (Wet & Comp)
3.5	EOH

Station 10+078 4.5 Rt	
21-PA-003	Sample No. 21-MM-0740 (900 - 1.3)
% Passing 4.75 mm	63.2 %
% Passing 75 um	5.3 %
FMC @ 1.3	3.7 %
Group Symbol	SP-SM
ACGM Gran 'B' Type III	

Station 10+089 4.5 Rt	
21-P-004	UTM 16 5515062 N 504820 E
0	- 70 Asph
70	- 200 Gry Cr Gr & Sa Tr Si (Moist & Comp)
200	- 1.0 Br Gr(y) Sa W Si (Moist & Comp)
1.0	- 1.7 Br Sa & Gr Tr Si (Wet & Comp)
1.7	- 2.6 Br Wd(y) Org Tr Gr (Wet & L)
2.6	- 3.0 Gry Si(y) F-Med Sa Tr Gr (Wet & Comp)
3.0	EOH

Station 10+097 4.5 Rt	
21-PA-005	UTM 16 5515070 N 504823 E
0	- 70 Asph
70	- 200 Gry Cr Gr & Sa Tr Si (Moist & Comp)
200	- 1.7 Br Gr(y) Sa W Si (Moist & Comp)
	(Num Cob @ 800 to EOH)
1.7	- 2.3 Br Sa & Gr Tr Si (Wet & Comp)
2.3	NFP Bid

Station 10+107 4.5 Rt	
21-PA-006	UTM 16 5515079 N 504825 E
0	- 70 Asph
70	- 200 Gry Cr Gr & Sa Tr Si (Moist & Comp)
200	- 1.7 Br Gr(y) Sa W Si (Moist & Comp)
	(Occ Cob @ 200 - 1.4)
1.7	- 2.5 Br Sa & Gr Tr Si (Wet & Comp)
2.5	EOH

Station 10+113 9.1 Rt	
21-HA-006	UTM 16 5515084 N 504831 E
0	- 200 Br Wd(y) Org
200	- 700 Gry Si(y) F Sa Tr Gr (Wet & Comp)
700	EOH

Station 10+113 -10.6 Lt	
21-HA-007	UTM 16 5515089 N 504812 E
0	- 200 Br Wd(y) Org
200	- 300 Br Si(y) F-Med Sa Tr Gr (Moist & Comp)
300	- 550 Br Si(y) F Sa Tr Gr (Wet & Comp)
550	EOH

Station 10+116 4.5 Rt	
21-PA-007	UTM 16 5515088 N 504827 E
0	- 70 Asph
70	- 200 Gry Cr Gr & Sa Tr Si (Moist & Comp)
200	- 800 Br Gr(y) Sa W Si (Moist & Comp)
800	- 1.0 Br Gr(y) Sa Tr Si (Moist & Comp)
1.0	- 2.0 Blk Wd(y) Org (Wet & L)
2.0	- 2.5 Gry Si(y) F-Med Sa Tr Gr (Wet & Comp)
2.5	EOH

Station 10+135 7.6 Rt	
21-HA-005	UTM 16 5515105 N 504835 E
0	- 200 Br Si(y) F-Med Sa Tr Gr (Moist & Comp)
200	- 600 Gry Si(y) F Sa Tr Gr (Moist & Comp)
600	EOH

Station 10+221 7.4 Lt	
21-HA-008	UTM 16 5515153 N 504832 E
0	- 50 Br Org (F Fib)
50	- 300 Br Si(y) F-Med Sa Tr Gr (Moist & Comp)
300	- 500 Gry Si(y) F Sa Tr Gr (Wet & Comp)
500	EOH

OVERFLOW CULVERT REPLACEMENT
GERALDTON ONTARIO

BOREHOLES

Client: MUNICIPALITY OF GREENSTONE
Drawing No: 6
Project No: RFT-PS-2022-20
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