

Parks
Canada

Parcs
Canada

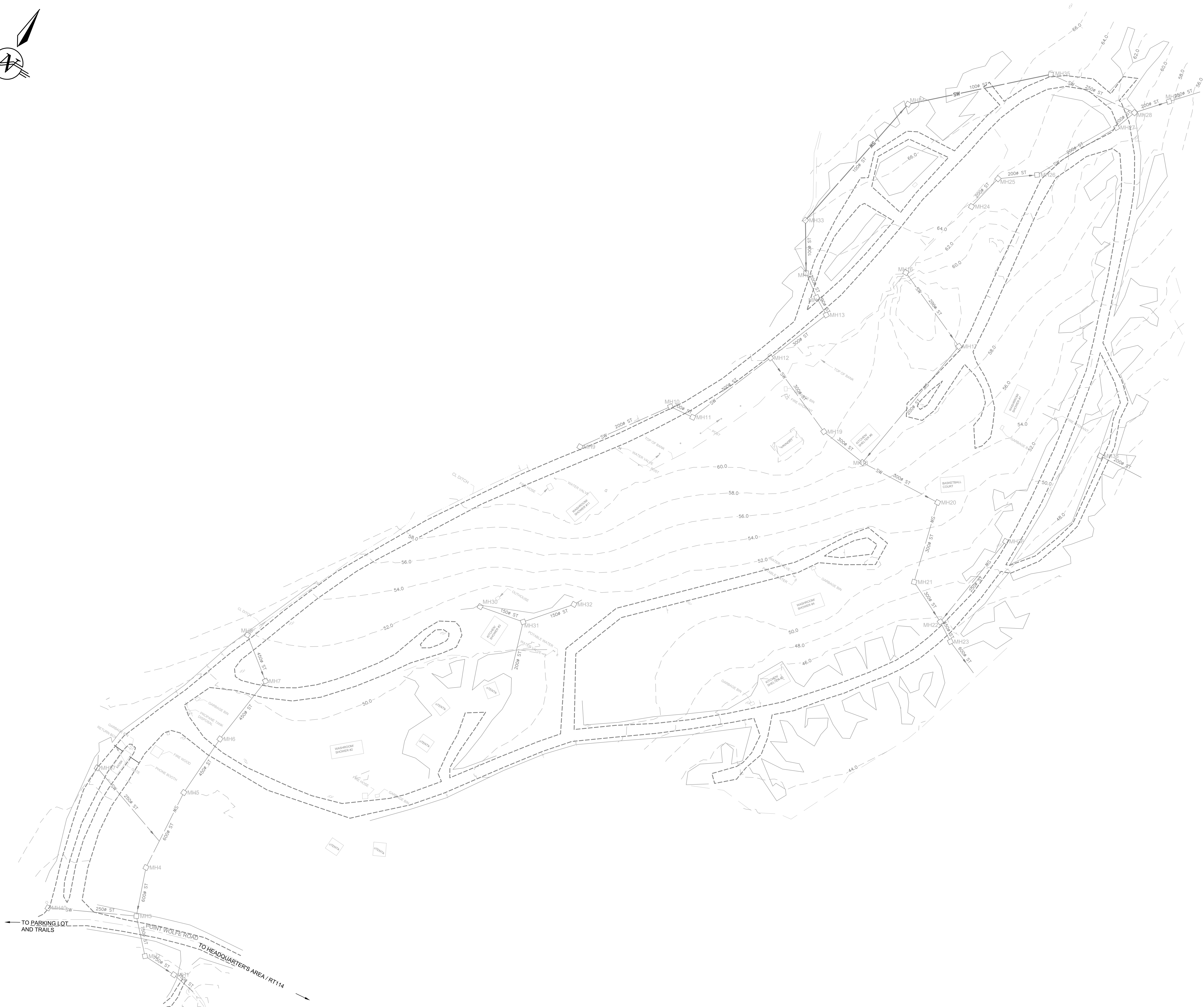
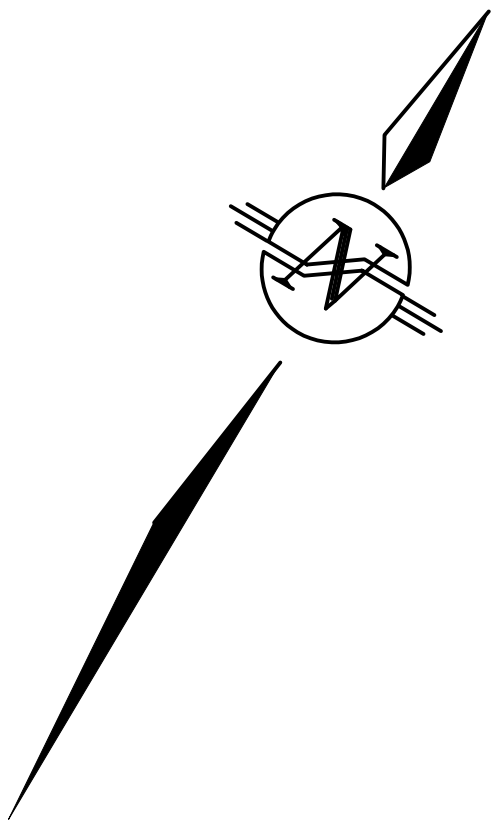
RECAPITALIZATION OF
POINT WOLFE
STORMWATER SYSTEM
AND BANK STABILIZATION
FUNDY NATIONAL PARK,NB

PROJECT NO. 1314

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Canada



LEGEND

- ELEVATION CONTOURS
- EXISTING EDGE OF GRAVEL
- EXISTING TREE LINE
- DITCH LINE
- EXISTING STORM SEWER PIPE
- EXISTING TOP OF BANK
- TOP OF SLOPE
- BOTTOM OF SLOPE
- EXISTING STORM SEWER MH / CS
- PROPOSED STORM SEWER MH / CS
- SIGN
- POLE

- NOTES:
- ALL EXISTING UNDERGROUND DRAINAGE PIPE AND UTILITY INFORMATION SHOWN IS APPROXIMATE ONLY. SANITARY SEWER, WATER MAINS AND U/G ELECTRICAL LINES ARE NOT SHOWN. CONTRACTOR TO CONFIRM EXACT LOCATIONS AND INVERTS IN THE FIELD PRIOR TO CONSTRUCTION AND REPORT ANY DISCREPANCIES TO THE ENGINEER.
 - ALL EXISTING STORMWATER PIPE IS CONCRETE UNLESS OTHERWISE NOTED.
 - GEODETIC ELEVATIONS SHOWN
 - COORDINATES BASED ON EXISTING CONSTRUCTION MONUMENT AT POINT WOLFE COVERED BRIDGE
 - EASTING: 342820.530
 - NORTHING: 5046288.402
 - ELEVATION: 14.544
 - POINT WOLFE COVERED BRIDGE HAS A LOAD RATING OF 30 TONNES.
 - BIDDERS TO BE AWARE OF A CONSTRICTED TURNING RADIUS AT SOUTH END OF BRIDGE.

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project
**RECAPITALIZATION OF
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STORMWATER SYSTEM
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FUNDY NATIONAL PARK, NB**

drawing
desain

EXISTING CONDITIONS

designed GRG	conçu
date MAR, 2017	
drawn MN	dessiné
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date MAR, 2017	
Tender ANNIE CAMPEAU	Soumission
PCA Project Manager	Administrateur de projets APC
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1314	
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C1	

SCALE : 1:750
0m 10m 20m 30m 40m 50m 60m 70m 80m 90m 100m



Source:
Canada

CONSULTING ENGINEERS
AND SCIENTISTS

0m 10m 20m 30m 40m 50m 60m 70m 80m 90m 100m

ALL EXISTING UNDERGROUND PIPE AND UTILITY INFORMATION SHOWN IS APPROXIMATE ONLY. CONTRACTOR TO CONFIRM EXACT LOCATIONS AND INVERTS IN THE FIELD PRIOR TO CONSTRUCTION AND REPORT ANY DISCREPANCIES TO THE ENGINEER. ALL EXISTING STORMWATER PIPE IS CONCRETE UNLESS OTHERWISE NOTED

GEODETIC ELEVATIONS SHOWN

- COORDINATES BASED ON EXISTING CONSTRUCTION MONUMENT AT POINT WOLF COVERED BRIDGE
- EASTING: 342802.00
- NORTHING: 5045088.02
- ELEVATION: 14.344

EXISTING STORM WATER PIPE IS CONCRETE

THE LANDSCAPE AREA HAS SANITARY SEWER, UNDERGROUND ELECTRICAL, AND POTABLE WATER PIPING. HAVE EXISTING SERVICES LOCATED BEFORE ANY EXCAVATION STARTS.

EXISTING PIPE AND MANHOLES NOT SUITABLE FOR USE TO BE DISPOSED OFF SITE AT AN APPROVED DISPOSAL SITE.

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project	projet
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PROPOSED UPGRADES

designed GRG conçu

date MAR, 2017

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date MAR, 2017

approx. GRG approx.

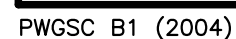
Date	11/11/17
Tender	Submission

ANNIE CAMPEAU
B.A. B. J. L. M. Administrateur de projets ABC

314

drawing no. no. du dessin

C2



EXISTING 7500 CONC

EXISTING SANITARY PIPE RUNS THROUGH EXISTING STORM PIPE

7500 CONC

MH1

12m x 7500 CONC @ 2.0%

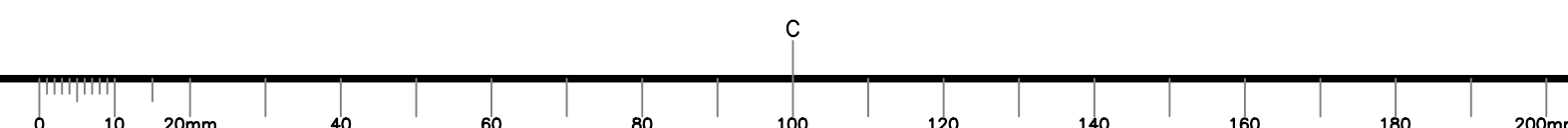
PLACE R25 RIPRAP ON SLOPE FROM END OF NEW 7500 ST. TO TOP OF BANK. CONSTRUCT A R25 RIPRAP UNED. DISCHARGE AREA TO END 5m FROM END OF NEW PIPE AND TO TOP OF ADJACENT BANK ON BOTH SIDES. THICKNESS OF RIPRAP TO BE 500mm. PLACE TYPE 2 GEOTEXTILE UNDER RIPRAP.

INSTALL AN OUTLET GRATE

0+000 0+010 0+020 0+025

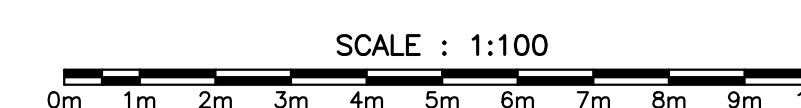
45 44 43 42 41 40 39

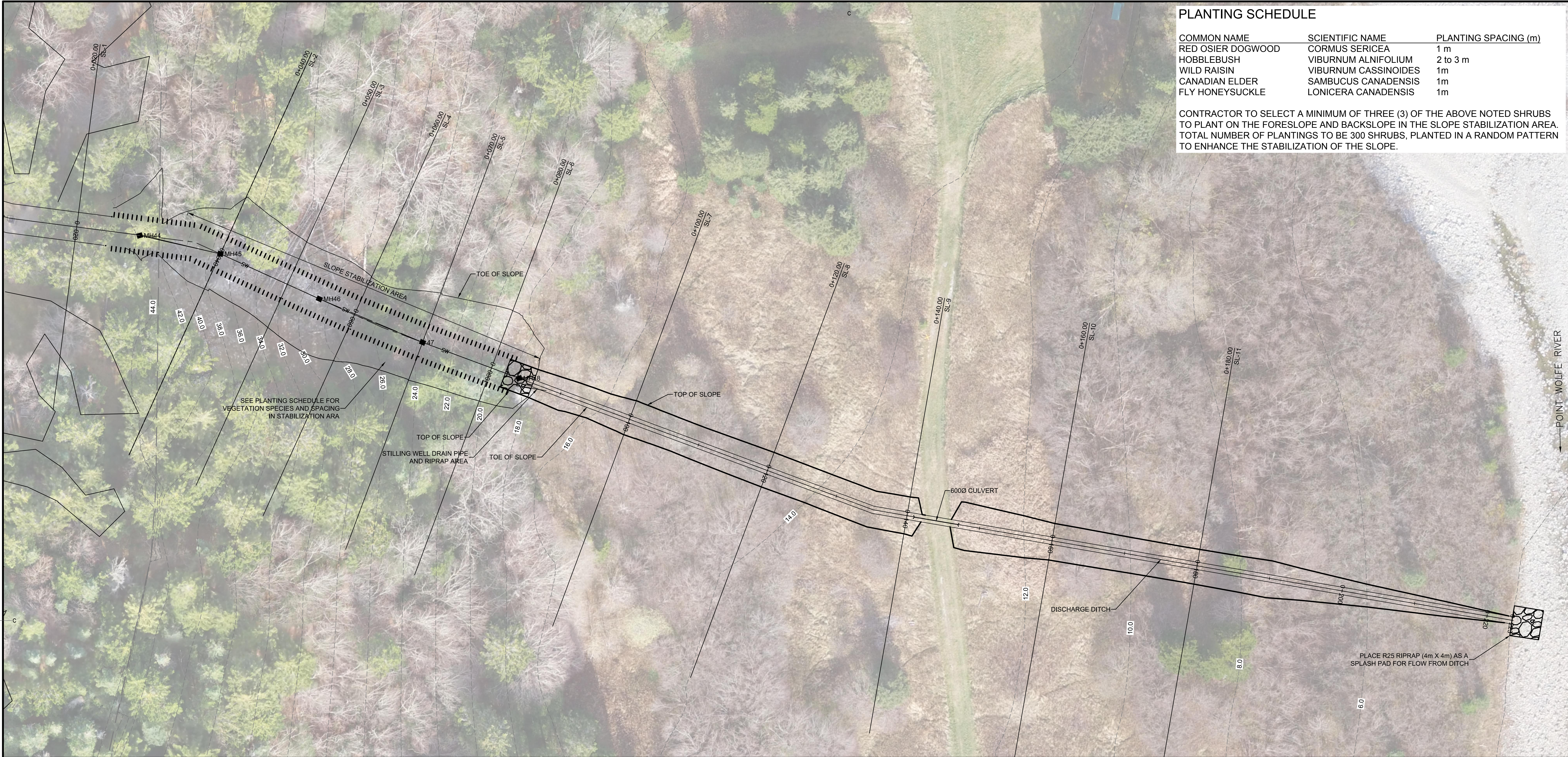
43.82 43.824 42.45 42.00 41.10 43.72 43.721 40.86 39.87 39.871 39.14 39.136



Profile view of the storm sewer system. The vertical axis shows elevation in meters (64 to 53). The horizontal axis shows stationing (0+000 to 0+030). The profile includes manholes MH28 and MH29. A section of the sewer is labeled '2000 TO BE REPLACED'. A discharge area is labeled 'UPGRADE DISCHARGE AREA TO BE A R5 RIPRAP LINED PIT, 1m WIDE BY 2m LONG; THICKNESS OF RIPRAP TO BE 300mm'. The profile shows existing grade (solid line) and proposed grade (dashed line). The sewer invert is shown as a dashed line. A note indicates '16.8m 250 @ 0.5%' for the proposed sewer section.

STATION	EXISTING GRADE PROPOSED GRADE	STORM SEWER INVERTS
0+000	60.71 60.71	58.83
0+010	59.42 59.416	
0+020	58.07 58.071	57.40 57.39
0+030	55.94 55.938	
0+040		55.17





PLANTING SCHEDULE

COMMON NAME	SCIENTIFIC NAME	PLANTING SPACING (m)
RED OSIER DOGWOOD	CORMUS SERICEA	1 m
HOBBLEBUSH	VIBURNUM ALNIFOLIUM	2 to 3 m
WILD RAISIN	VIBURNUM CASSINOIDES	1m
CANADIAN ELDER	SAMBUCUS CANADENSIS	1m
FLY HONEYSUCKLE	LONICERA CANADENSIS	1m

CONTRACTOR TO SELECT A MINIMUM OF THREE (3) OF THE ABOVE NOTED SHRUBS TO PLANT ON THE FORESLOPE AND BACKSLOPE IN THE SLOPE STABILIZATION AREA. TOTAL NUMBER OF PLANTINGS TO BE 300 SHRUBS, PLANTED IN A RANDOM PATTERN TO ENHANCE THE STABILIZATION OF THE SLOPE.

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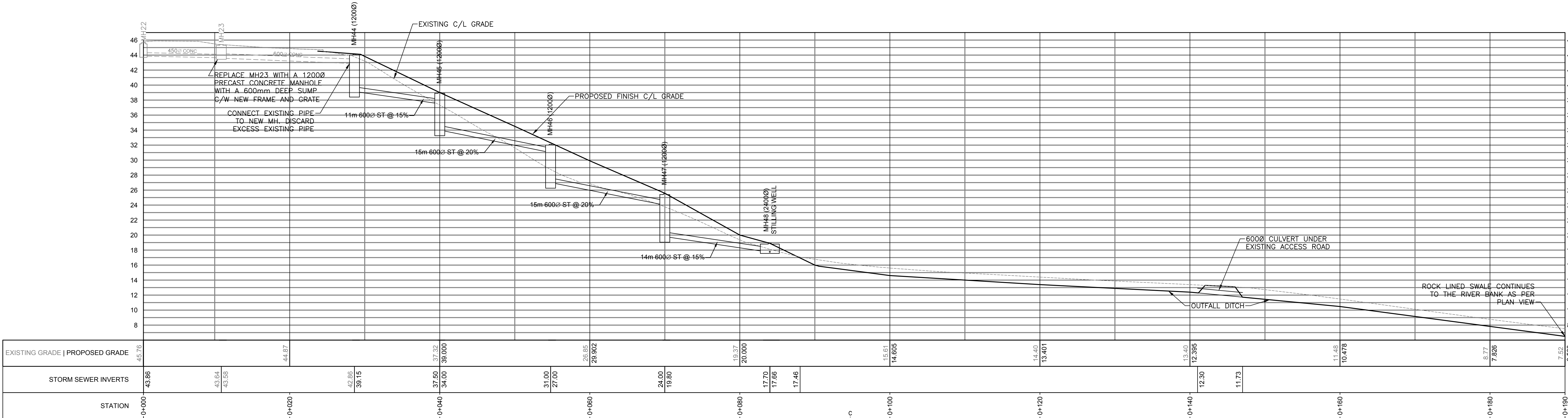
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GEMTEC
CONSULTING ENGINEERS
AND SCIENTISTS

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 - ** NORTHING: 5046588.402
 - ** ELEVATION: 14.344
- REMOVE FALLEN TREES FROM SLOPE STABILIZATION WORK AREA

MH 22 TO RIVER PROFILE



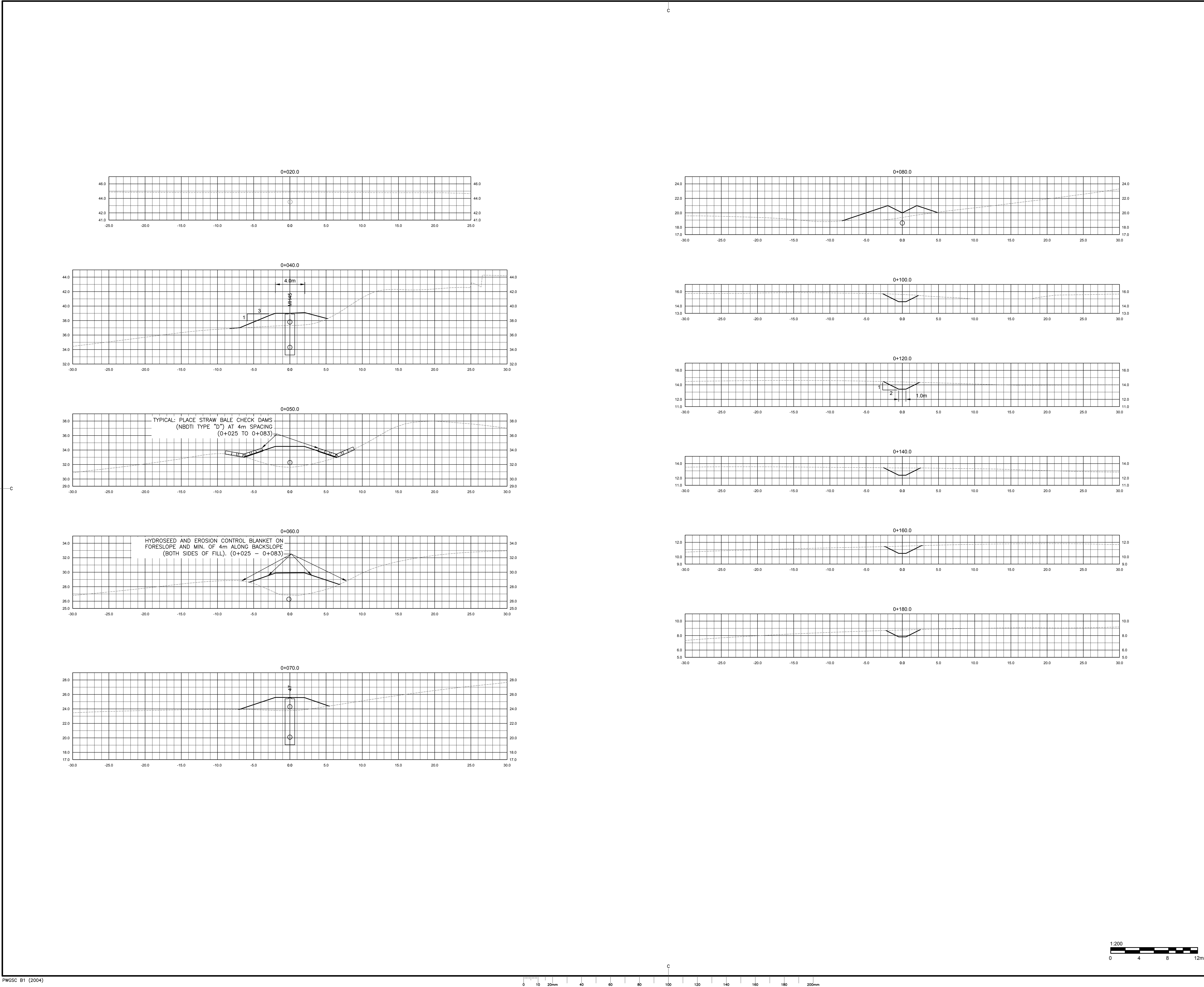
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project project
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drawing design

MH 22 OUTFALL PLAN
AND PROFILE

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C4	



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drawing dessin

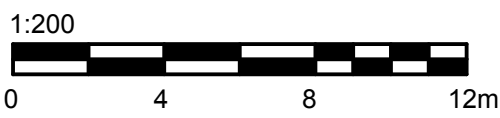
**MH 22 OUTFALL
SECTIONS**

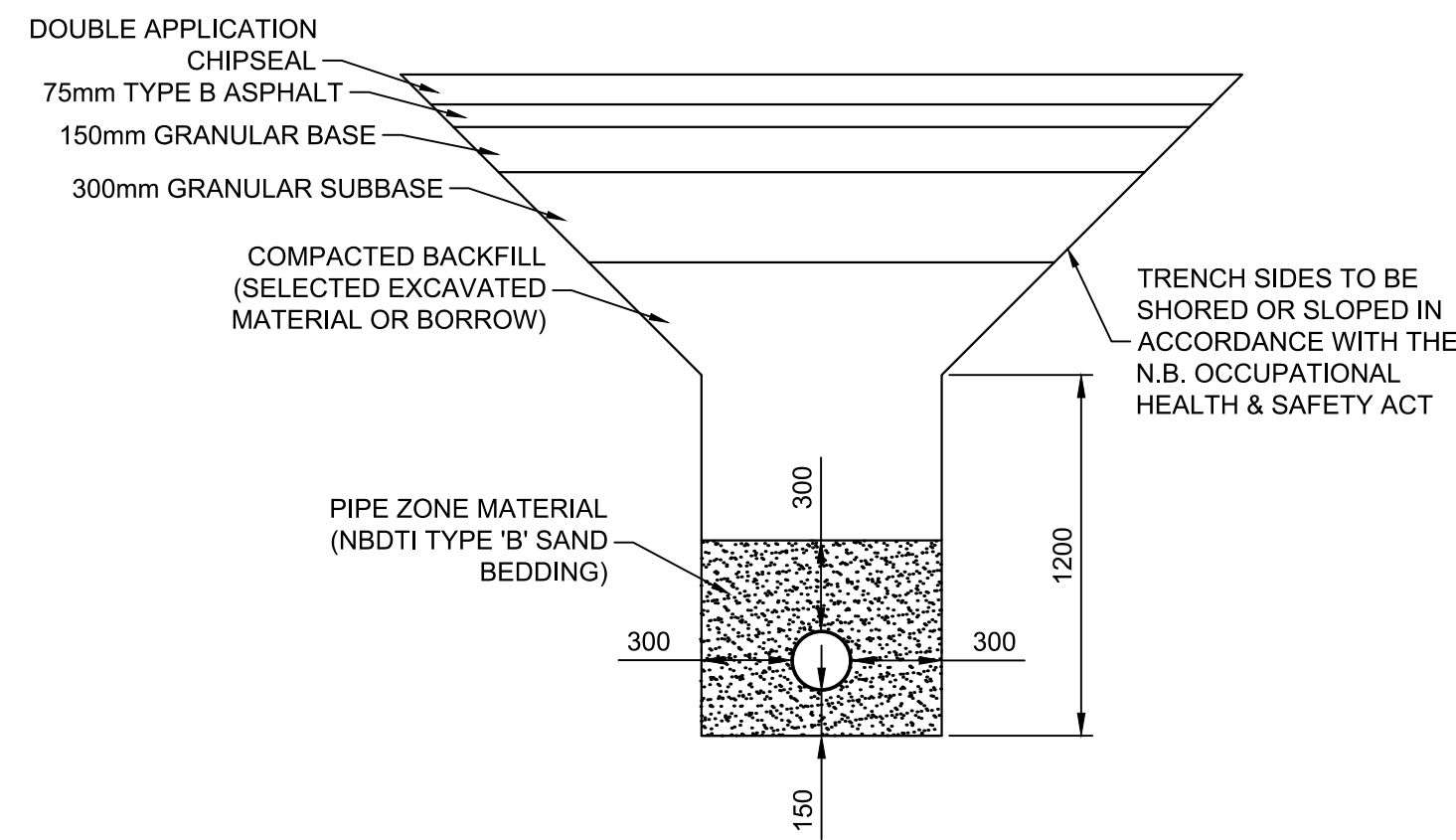
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PCA Project Manager Administrateur de projets APC
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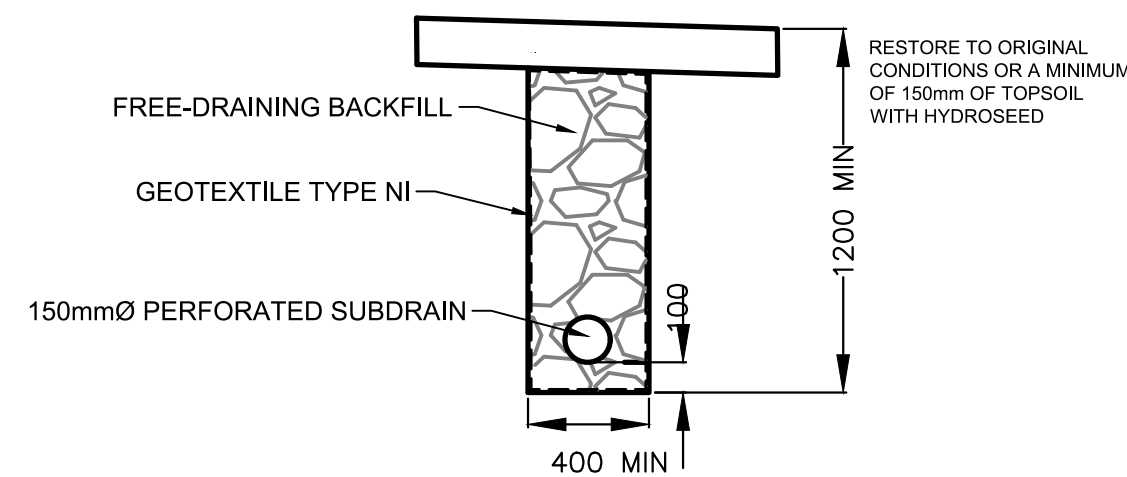
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C5

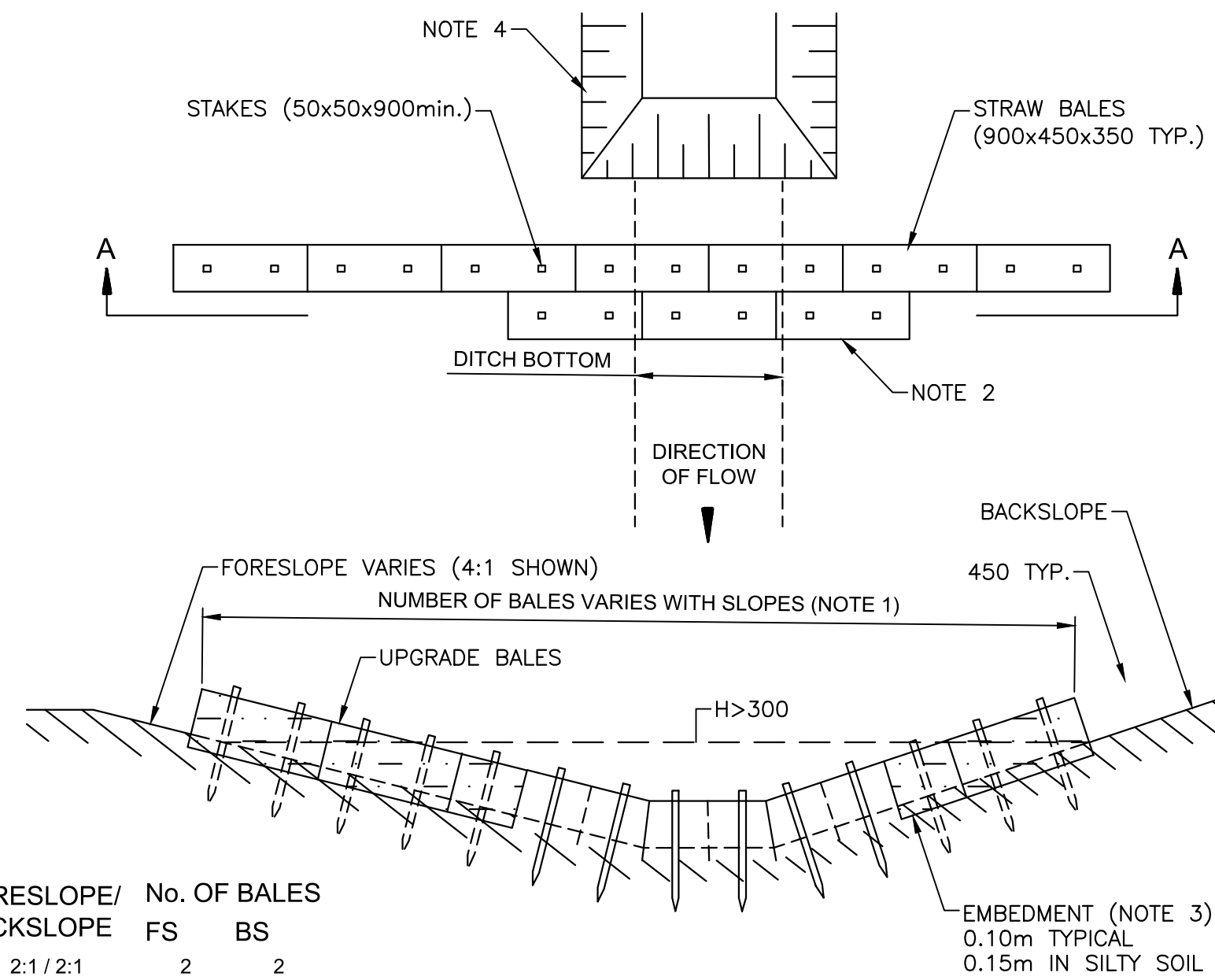




RESTORATION OF TRENCH (PAVED AREA)
N.T.S.



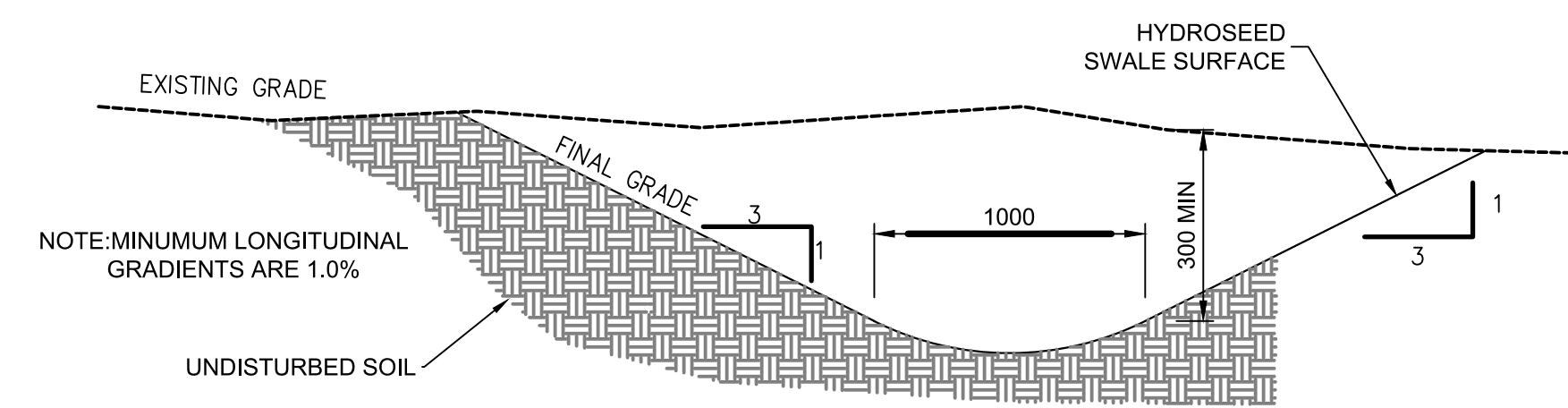
TYPICAL SUBDRAIN INSTALLATION
N.T.S.



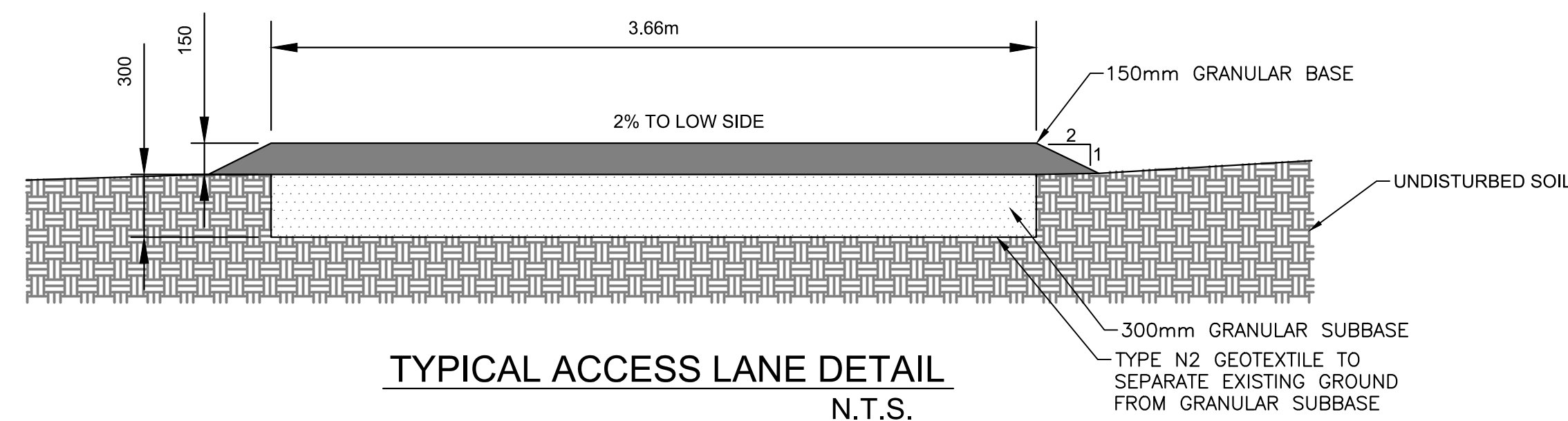
FORESLOPE/BACKSLOPE	No. OF BALES	FS	BS
2:1 / 2:1	2	2	2
3:1 / 2:1	3	2	2
3:1 / 3:1	3	3	3
4:1 / 3:1	4	3	3
6:1 / 3:1	5	3	3
WIDE SWALES	AS REQUIRED		

- NOTES:
- SEE TABLE FOR TYPICAL NUMBER OF UPSTREAM BALES WHICH ARE REQUIRED TO ENSURE MIN. 300mm FOR HEIGHT 'H' (FROM TOP OF BALES AT DITCH CENTER TO POINT WHERE HIGHEST BALES INTERCEPT SLOPES.)
 - INSTALL MINIMUM OF 3 BALES DOWNGRADE AS REINFORCEMENT. JOINTS OF DOWNGRADE BALES SHOULD BE STAGGERED FROM UPSTREAM BALES.
 - IF TRENCH FOR BALE EMBEDMENT IS EXCAVATED WIDER THAN BALES, BACKFILL WITH EXCAVATED MATERIAL.
 - THE SEDIMENT PIT OF STANDARD DWGS 605-50AND 605-6 IS REQUIRED FOR TYPE 'D' STRUCTURE.

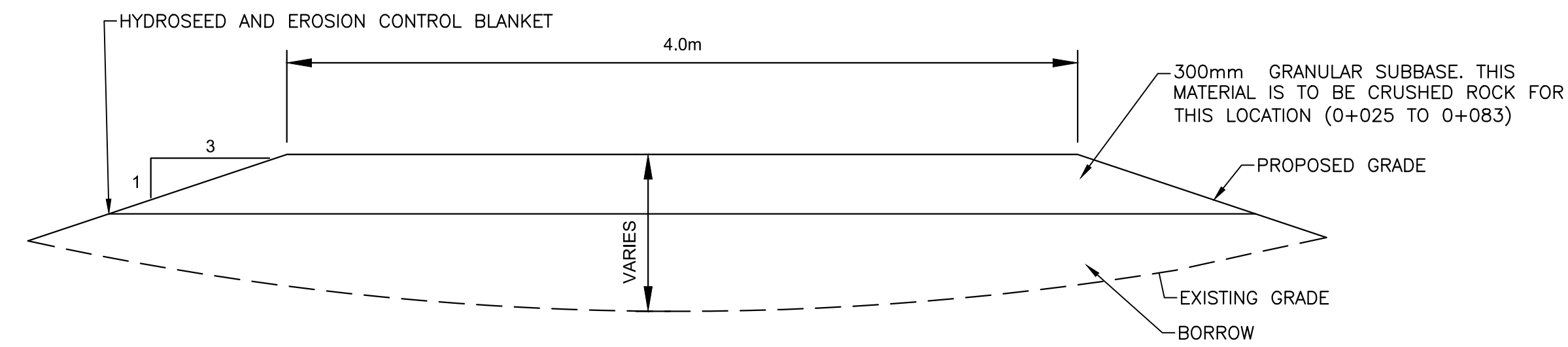
NBDTI TYPE 'D' EROSION CONTROL STRUCTURE
N.T.S.



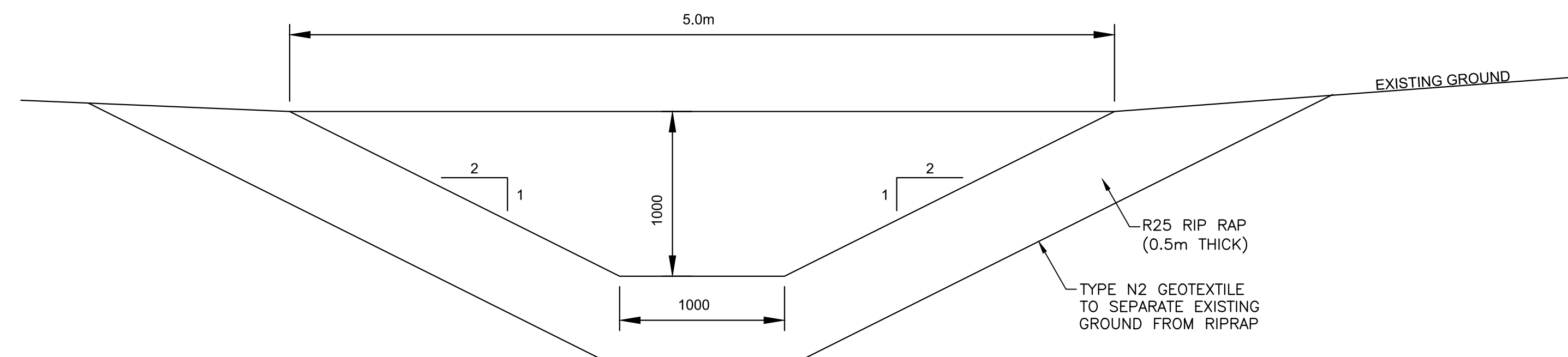
TYPICAL SWALE SECTION
N.T.S.



TYPICAL ACCESS LANE DETAIL
N.T.S.



TYPICAL SECTION FOR STABILIZATION OF ERODED SLOPE
(0+025 TO 0+083)
N.T.S.



OUTFALL DITCH DETAIL (0+090 - 0+220)
N.T.S.

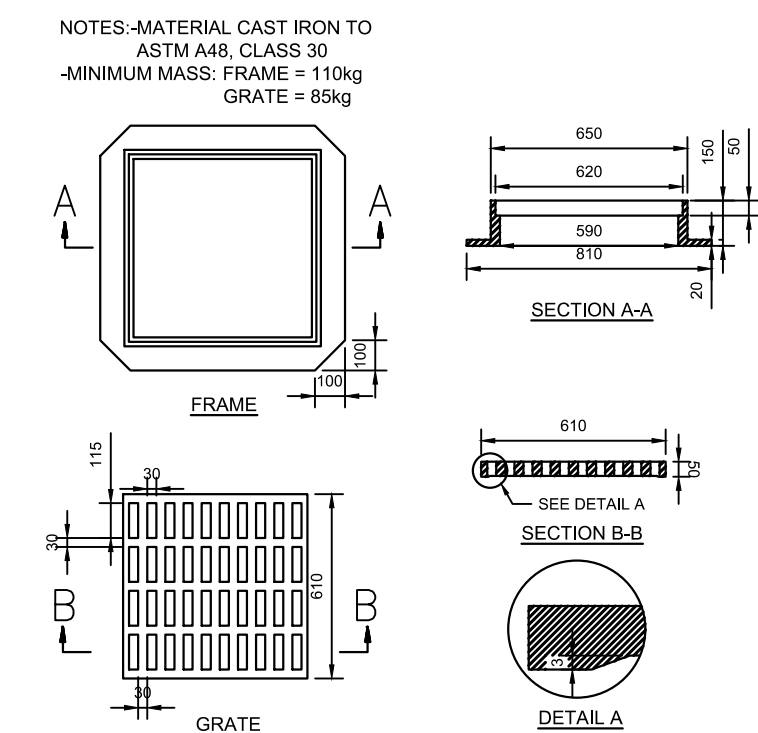
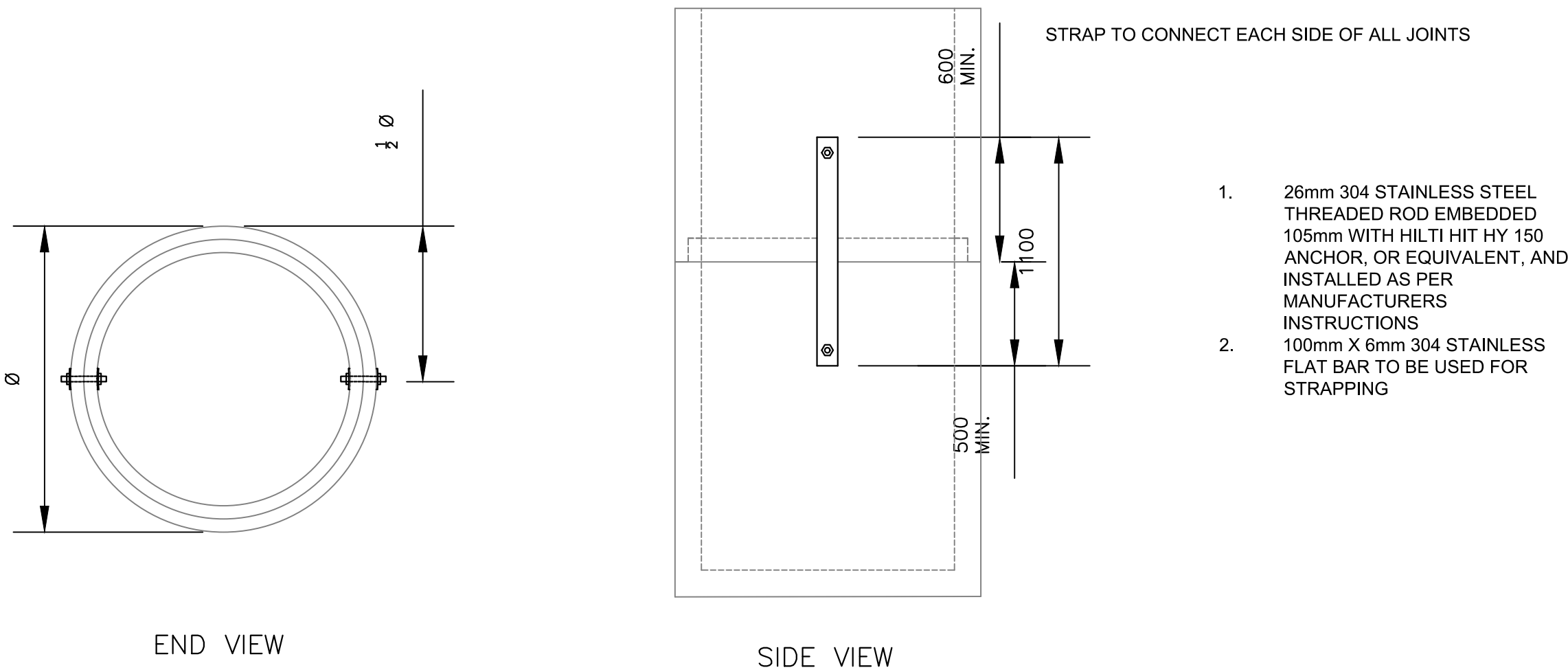
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 - EASTING: 342820.530
 - NORTHING: 5046588.402
 - ELEVATION: 14.344

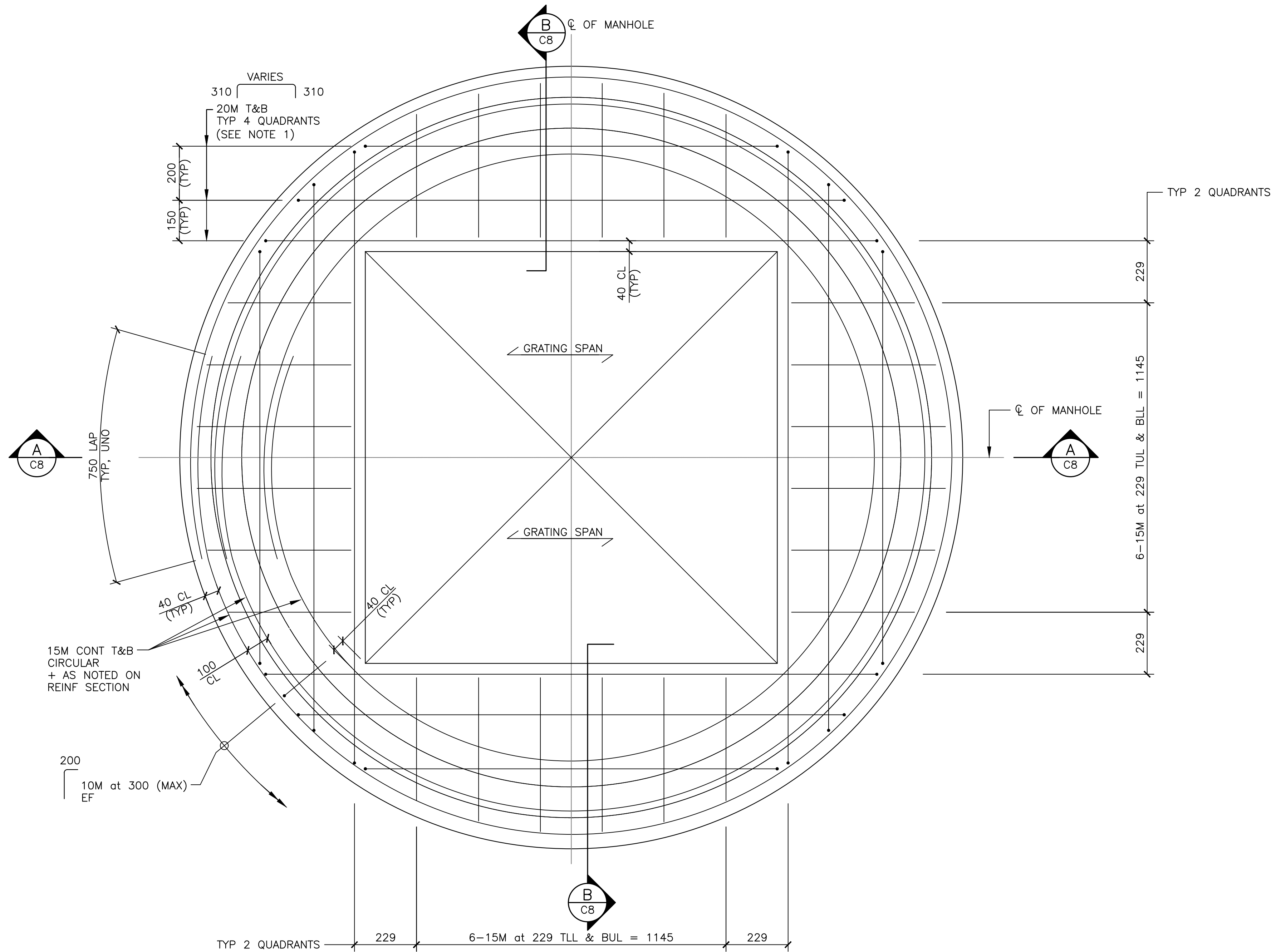
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project RECAPITALIZATION OF POINT WOLFE STORMWATER SYSTEM AND BANK STABILIZATION FUNDY NATIONAL PARK,NB

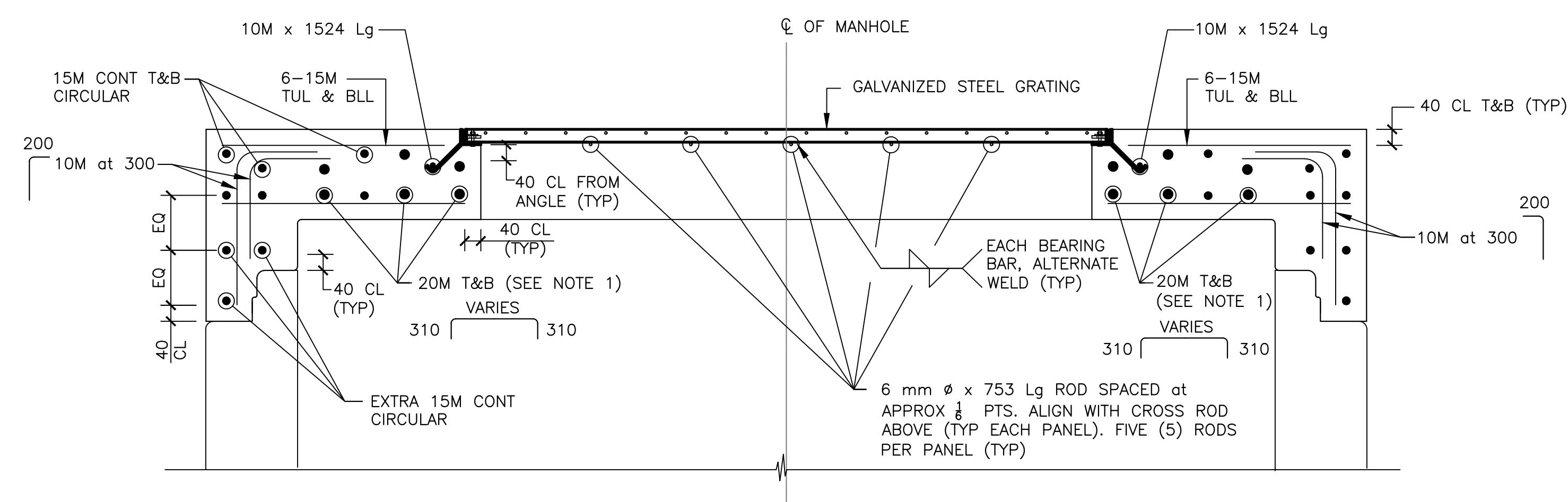
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Tender	ANNE CAMPEAU	Soumission
PCA Project Manager	Administrateur de projets APC	
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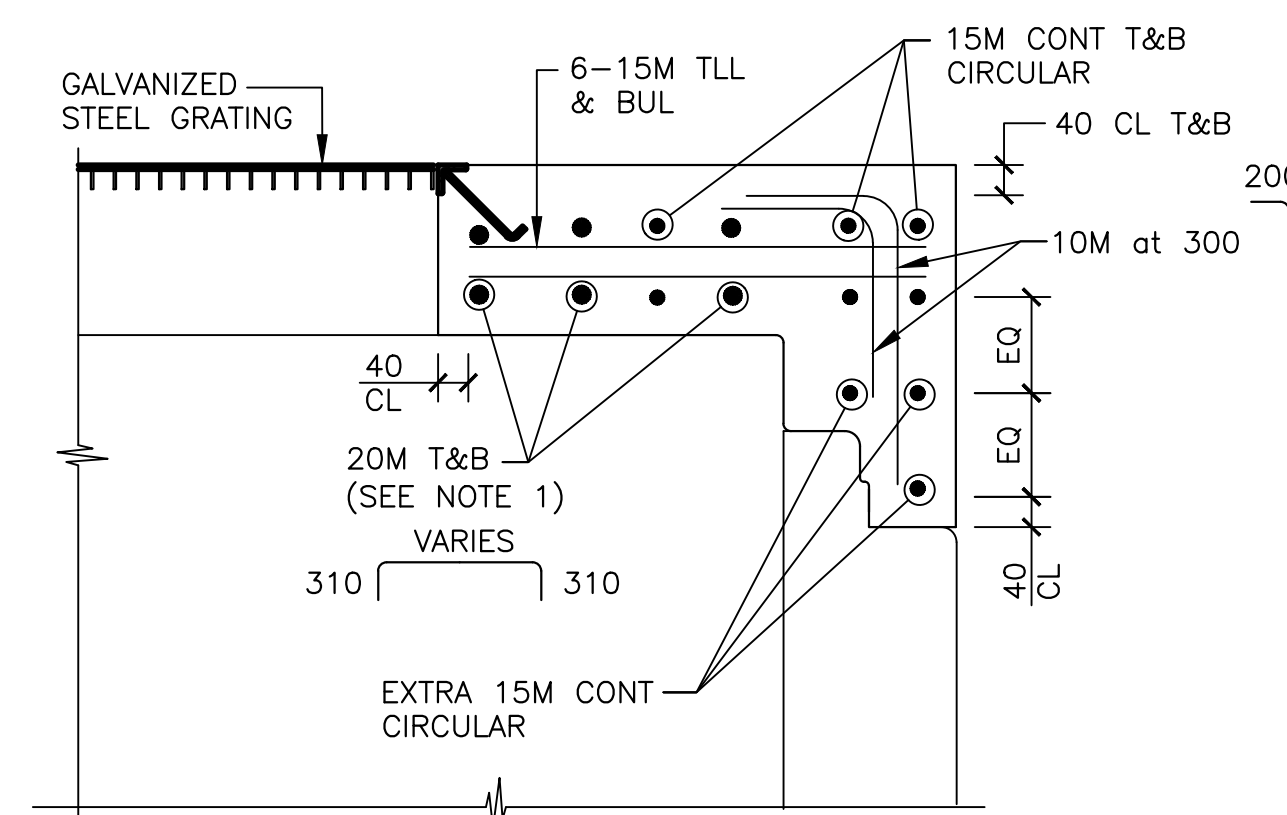




PLAN OF COVER — REINFORCING
1:10



SECTION THROUGH COVER — REINFORCING (A)
1:10



SECTION THROUGH COVER — REINFORCING (B)
1:10

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project RECAPITALIZATION OF
project POINT WOLFE
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drawing STILLING WELL COVER
dessin

designed GRG	conçu
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C8	

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drawing DETAILS
desain STILLING WELL COVER

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CONCRETE NOTES

- GENERAL – THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
- ALL CONCRETE WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF CSA A23.1-09 AND THE NATIONAL BUILDING CODE OF CANADA, 2010 EDITION.
- ALL CONCRETE MATERIALS SHALL CONFORM TO:
CEMENT CAN/CSA A3001, TYPE GU
AGGREGATES CSA A23.1-09
AIR ENTRAINING ASTM C260-06
CHEMICAL ADMIXTURES ASTM C494/C494M-08a
DESIGN MIX CSA A23.1-09
REINF. BAR CAN/CSA-G30.18-M92 – GRADE 400W
- CONCRETE SHALL BE PROPORTIONED IN ACCORDANCE WITH CSA A23.1-09 TO GIVE THE FOLLOWING MIX DESIGNS:

MIX 1 – MANHOLE COVER
STRENGTH CLASS 30 MPa
EXPOSURE F1
SLUMP 80 mm
AIR CONTENT 5-8%
- CONCRETE MIX DESIGNS SHALL BE SUBMITTED FOR REVIEW BY THE ENGINEER 48 HOURS PRIOR TO USE. OBTAIN ENGINEER'S APPROVAL BEFORE USING CONCRETE ADMIXTURES. USE OF CALCIUM CHLORIDE WILL NOT BE PERMITTED.
- CONCRETE TESTING SHALL CONFORM TO CSA A23.2-09. TESTING TO BE CARRIED OUT BY THE OWNER TO VERIFY CONCRETE WITH THE SPECIFIED REQUIREMENTS. MINIMUM TESTING SHALL INCLUDE 3 STRENGTH TESTS FOR EVERY CONCRETE POUR. SLUMP AND AIR TESTS TO ACCOMPANY CYLINDER TESTING. THE CONTRACTOR SHALL COOPERATE FULLY WITH TESTING PERSONNEL AND PROVIDE 48 HOURS NOTICE PRIOR TO PLACING ANY CONCRETE. CONCRETE NOT MEETING THE SPECIFIED REQUIREMENTS WILL BE REJECTED AND MUST BE REMOVED FROM THE SITE AT THE CONTRACTOR EXPENSE.
- REINFORCING – BILLET STEEL, GRADE 400W, DEFORMED BARS TO CAN/CSA-G30.18-M92. ALL DEFORMED CONCRETE REINFORCING BARS ARE TO BE SUPPLIED AND INSTALLED BY THE CONTRACTOR.
- CONCRETE COVER FOR REINFORCING STEEL UNO:
40 mm BOTTOM
40 mm TOP & SIDES
- USE SPACERS AND CHAIRS TO ACCURATELY LOCATE AND SUPPORT REINFORCING STEEL AND SECURE IN POSITION TO PREVENT DISPLACEMENT DURING CONCRETE PLACEMENT. CONTINUOUS SUPERVISION BY THE CONTRACTOR SHALL BE PROVIDED TO ENSURE THAT REINFORCING BARS ARE MAINTAINED IN POSITION.
- SHOP DRAWINGS – SUBMIT SHOP DRAWINGS FOR REVIEW BY ENGINEER PRIOR TO FABRICATING REINFORCING STEEL. CLEARLY INDICATE BAR SIZES, SPACINGS, LOCATION AND QUANTITIES OF REINFORCEMENT, MESH, CHAIRS, SPACERS AND HANGERS WITH IDENTIFYING CODE MARKS TO PERMIT CORRECT PLACEMENT WITHOUT REFERENCE TO STRUCTURAL DRAWINGS. TO CSA A23.3-09, TO REINFORCING STEEL MANUAL OF STANDARD PRACTICE – 2004 BY REINFORCING STEEL INSTITUTE OF CANADA. DETAIL PLACEMENT OF REINFORCING WHERE SPECIAL CONDITIONS OCCUR.
- CONCRETE FORMWORK SHALL BE CONSTRUCTED FROM PLYWOOD SHEETS MEETING THE REQUIREMENTS OF CSA 0121-M1976. PLYWOOD SHEETS OF NEW MATERIAL TO BE CLEAN, SOUND, FREE FROM DEFECTS DETRIMENTAL TO THE QUALITY OF FINISHED CONCRETE SURFACES. ARRANGE PLYWOOD SHEETS TO A UNIFORM JOINT PATTERN. CONSTRUCT FORMWORK TO RESIST FLUID PRESSURE FROM WET CONCRETE AND ALL OTHER CONSTRUCTION LOADINGS WITHOUT BULGING, MOVEMENT OR DISTORTION. REUSE OF FORMWORK SUBJECT TO THE REQUIREMENTS OF CSA A23.1-09.
- MINIMUM TIME FOR FORMWORK REMOVAL TO BE AS FOLLOWS:
– 72 HOURS AND ADEQUATE STRENGTH.
- THE LOCATION OF ALL OPENINGS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER.
- ALL CONCRETE SHALL BE VIBRATED USING HIGH FREQUENCY VIBRATORS. VIBRATION PRACTICES TO BE IN ACCORDANCE WITH ACI 309R-96.
- EMBEDMENTS – SET ANCHOR RODS, ANGLES, INSERT PLATES, SLEEVES AND OTHER ITEMS EMBEDDED IN CONCRETE ACCURATELY TO EXACT GRADE AND LOCATION SHOWN ON PROJECT DRAWINGS OR AS DIRECTED BY OWNER'S SITE REPRESENTATIVES. SECURE TO PREVENT DISPLACEMENT DURING CONCRETE PLACEMENT. DO NOT CUT OR RELOCATE REINFORCING STEEL FOR PLACEMENT OF EMBEDDED PARTS. IF INSERTS CANNOT BE LOCATED AS SPECIFIED, OBTAIN APPROVAL OF ALL MODIFICATIONS FROM ENGINEER BEFORE PLACING.
- CONCRETE CURING AND PROTECTION SHALL CONFORM TO CSA A23.1-09.
- COLD WEATHER CONCRETE SHALL BE PLACED AND PROTECTED IN ACCORDANCE WITH THE REQUIREMENTS OF CSA A23.1-09. COLD WEATHER PROTECTION AND CURING SHALL BE APPLIED IN ORDER TO MAINTAIN THE TEMPERATURE AT OR ABOVE 10°C FOR THE TIME OF CURING PERIODS SPECIFIED IN TABLE 20 OF CSA A23.1-09. PROVIDE CONTROLLED COOL DOWN PERIOD TO PREVENT SURFACE CRACKING AT END OF PROTECTION PERIOD. ENSURE THAT NO CONCRETE IS PLACED ON OR AGAINST FROZEN SUBGRADE, FORMWORK, OR REINFORCING STEEL.
- FORMED CONCRETE SURFACES SHALL BE SURFACE FINISHED AS SOON AS PRACTICAL AND NOT LATER THAN 8 HOURS FOLLOWING FORMWORK REMOVAL. REMOVE ALL FORM TIES, FINS AND PROJECTIONS. PATCH THE HOLES, INDENTATIONS AND OTHER SURFACE IRREGULARITIES WITH SAND CEMENT PATCHING MORTAR $f_c = 30$ MPa. FILL AND REPAIR HONEYCOMB AND HOLES.
- USE WIND BREAKS/SUN SCREENS, ETC., AS REQUIRED TO PREVENT PREMATURE DRYING OF CONCRETE SLABS PRIOR TO FINISHING. SCREENS TO BE USED WHEN AIR TEMPERATURE, RELATIVE HUMIDITY, CONCRETE TEMPERATURE AND WIND VELOCITIES ARE SUCH TO CREATE SURFACE MOISTURE EVAPORATION RATES IN EXCESS OF 0.75 kg/(sq.m-h). PROTECTION OF CONCRETE TO BE IN ACCORDANCE WITH CSA A23.1-09.

STRUCTURAL STEEL NOTES

- PRIOR TO FABRICATION, THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD TO ENSURE NEW MATERIAL IS DETAILED AND FABRICATED TO SUIT PRECAST STRUCTURE DIMENSIONS AND ELEVATIONS.
- GENERAL – THE STRUCTURAL STEEL CONTRACTOR TO SUPPLY FOR PLACING AND VERIFY LOCATIONS AND ELEVATIONS OF ANCHOR RODS AND EMBEDDED ANGLES, PLATES, ETC. IN PLACE, PRIOR TO DELIVERY OF STRUCTURAL STEEL TO THE SITE AND REPORT ANY DISCREPANCIES TO THE ENGINEER/CONSULTANT.
- COMPANY CERTIFICATION TO MEET THE REQUIREMENTS OF THE NATIONAL BUILDING CODE OF CANADA. ALL WELDING ON THIS PROJECT TO BE DONE ONLY BY COMPANIES CERTIFIED TO DIVISION 1 OR 2 OF CSA W47.1-09 (R2014). CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL.
- FABRICATION AND ERECTION – ALL STEEL WORK SHALL CONFORM TO THE REQUIREMENTS OF CAN/CSA-S16-09, S136-07 AND TO THE NATIONAL BUILDING CODE OF CANADA, 2010 EDITION.
- STRUCTURAL STEEL WORK SHALL CONFORM TO THE REQUIREMENTS OF CAN/CSA-G40.21/G40.21-04 AND CSA S136-07.
- MATERIAL PROPERTIES, (UNO):

GRATING AND ANGLE FRAME

STEEL ANGLE, PLATE AND ROD CAN/CSA-G40.21-04-300W
HIGH STRENGTH BOLTS ASTM A307
c/w WASHER & NUT

SEAL WELD ALL LOCATIONS.
- SHOP DRAWINGS – SUBMIT SHOP DRAWINGS FOR REVIEW BY ENGINEER PRIOR TO FABRICATING STRUCTURAL STEEL. EACH DRAWING SUBMITTED SHALL BEAR THE SIGNATURE AND STAMP OF A QUALIFIED PROFESSIONAL ENGINEER REGISTERED IN NEW BRUNSWICK. CLEARLY INDICATE SHOP AND ERECTION DETAILS INCLUDING CUTS, COPEES, CONNECTIONS, HOLES, THREADED FASTENERS AND WELDS. INDICATE WELDS BY AWS WELDING SYMBOLS AS DEFINED IN CSA W59-13.
- CONNECTIONS – ALL WELDED CONNECTIONS SHALL CONFORM TO CSA W59-13. ALL WELDING TO CONFORM TO CSA W59-13 AND AWS USING E490X ELECTRODES FOR CARBON STEEL. ROD CONNECTIONS TO BE BEARING TYPE. ONLY QUALIFIED WELDING MECHANICS CERTIFIED TO CSA W47.1-09 (R2014) SHALL BE EMPLOYED TO PERFORM WELDING.
- LOADS DURING CONSTRUCTION – ALL STRUCTURAL MEMBERS SHALL BE PROTECTED AGAINST LOADS EXCEEDING THE DESIGN CAPACITY DURING CONSTRUCTION.
- GALVANIZED STEEL GRATING TO BE:
32mm DEEP x 3.2mm, CARBON STEEL WELDED BAR GRATING,
BEARING BARS at 30mm c/c AND CROSS BARS at 100mm c/c BANDED ALL AROUND.
MAXIMUM ALLOWABLE FIBRE STRESS OF 124 MPa.
- SHOP GALVANIZING – HOT DIP GALVANIZED WHERE NOTED WITH A MINIMUM COATING OF 0.6 kg/sq.m TO CAN/CSA-G164-M92, UNLESS NOTED OTHERWISE. ALL STEEL WORK TO BE CLEARED OF LOOSE MILL SCALE, RUST, DIRT AND ALL FOREIGN MATTER TO SSPC-SP10, NEAR-WHITE BLAST CLEANING. FIELD REPAIR DAMAGED AREAS USE AN INORGANIC ZINC-RICH PAINT WITH MATCHING COLOUR. DO NOT HOT DIP GALVANIZE STEEL EMBEDDED INTO CONCRETE.
- ERECT STRUCTURAL STEELWORK TRUE AND PLUMB TO LINES AND GRADES INDICATED AND TO TOLERANCES SPECIFIED BY CISC HANDBOOK OF STEEL CONSTRUCTION, 2010 EDITION.

