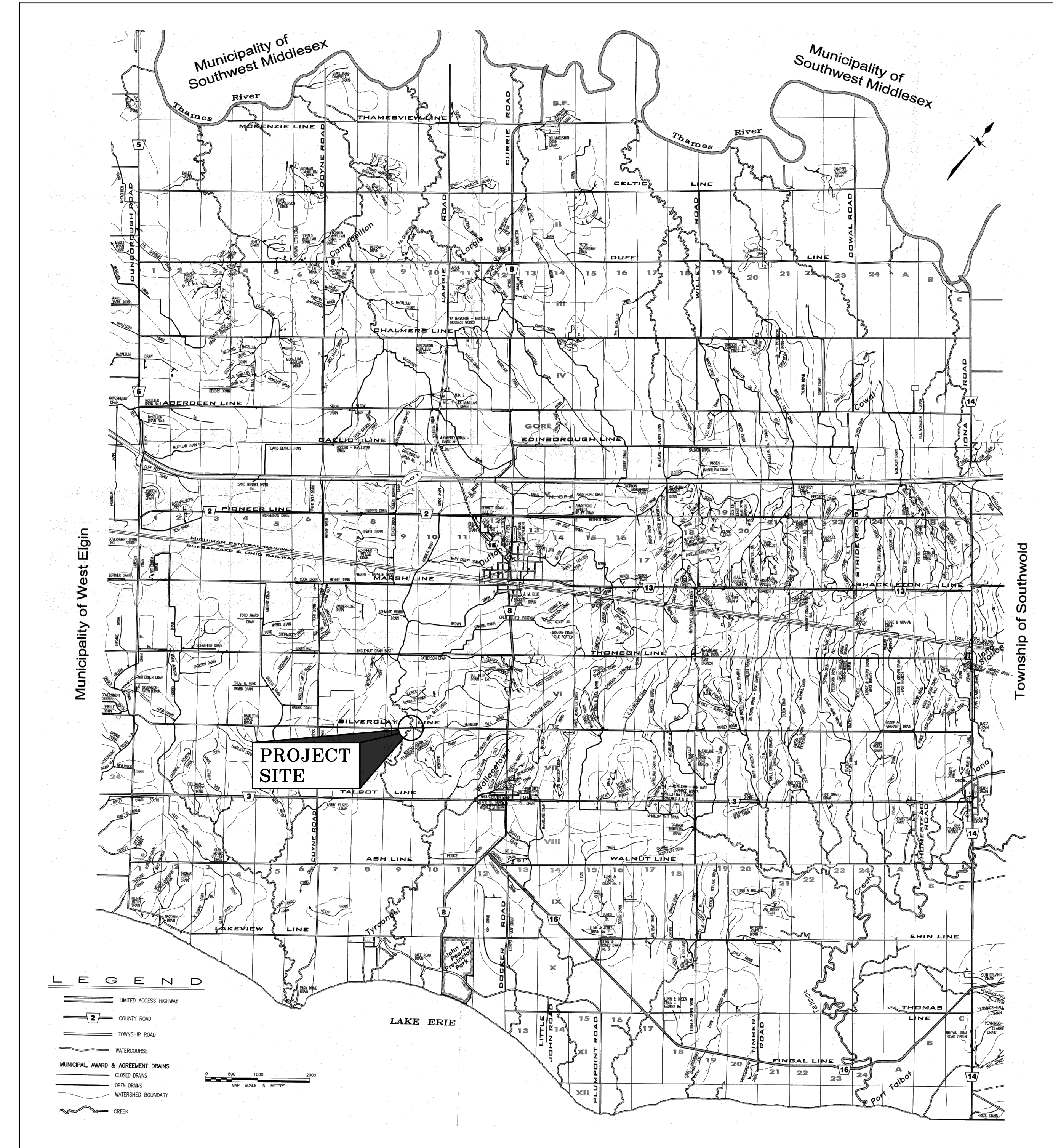


CULVERT No. 17

MUNICIPALITY OF DUTTON DUNWICH

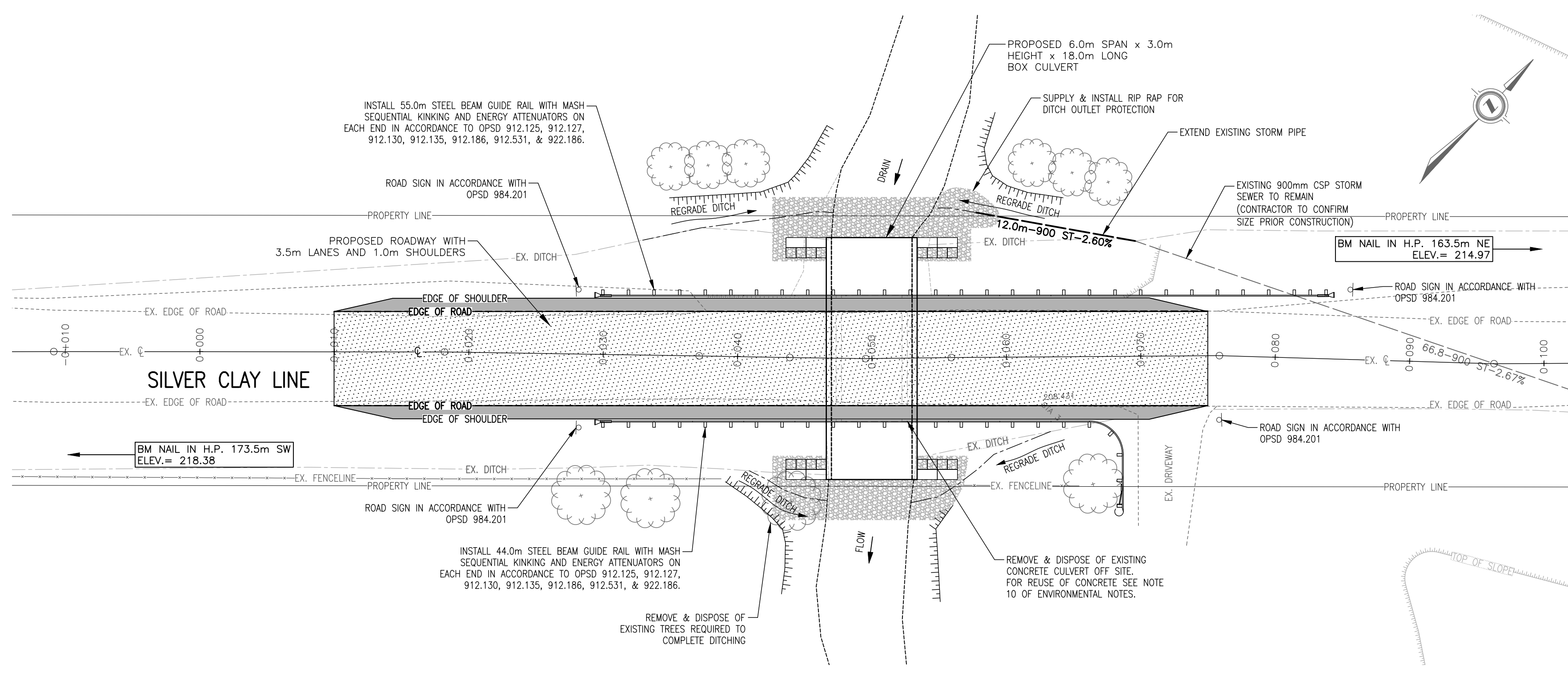
INDEX OF DRAWINGS	
DRAWING No.	DESCRIPTION
	COVER SHEET
1.	PLAN AND SECTIONS
2.	CULVERT REINFORCING AND DETAILS
3.	ENVIRONMENTAL NOTES



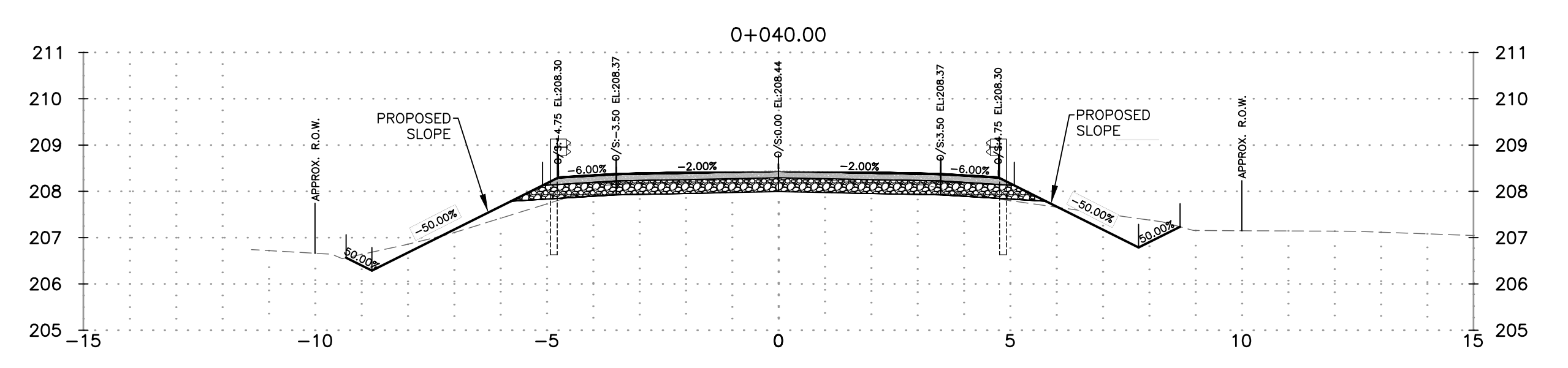
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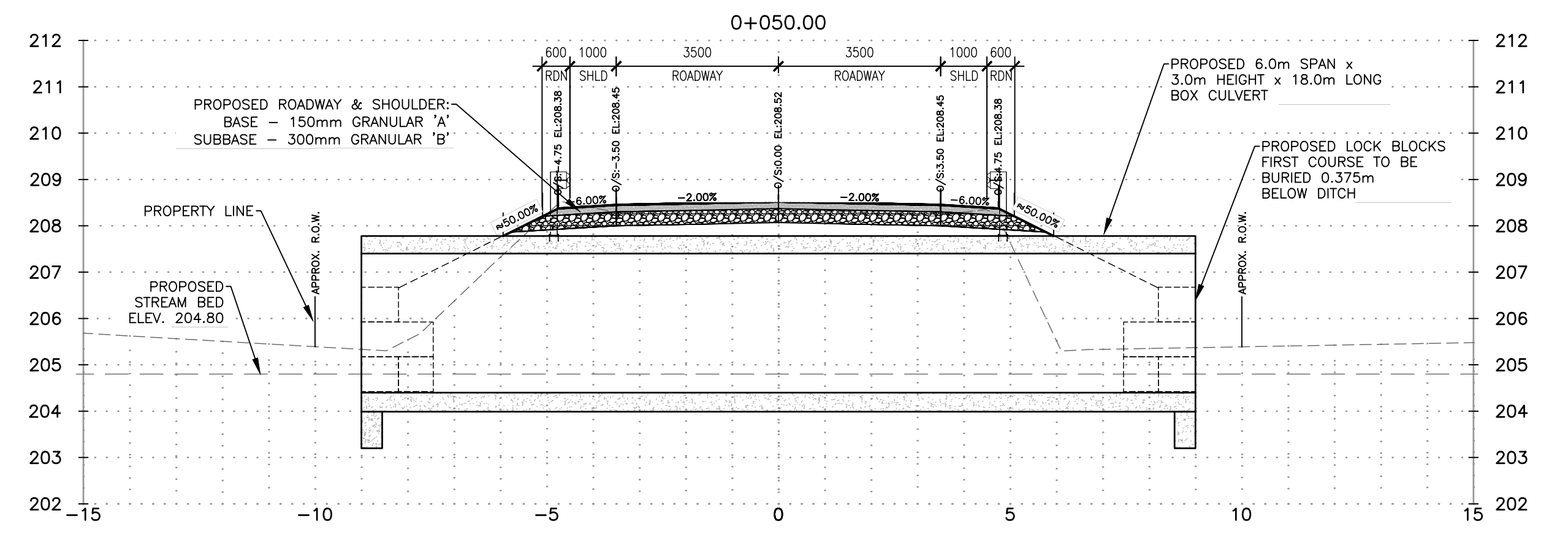
JOB No. 223146
FEBRUARY 2, 2024



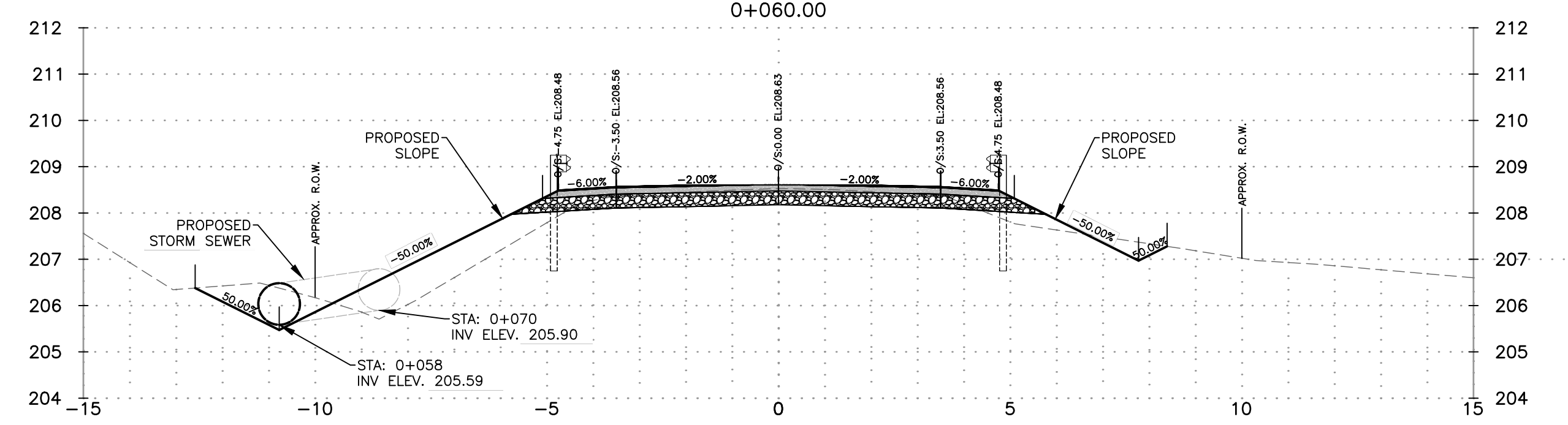
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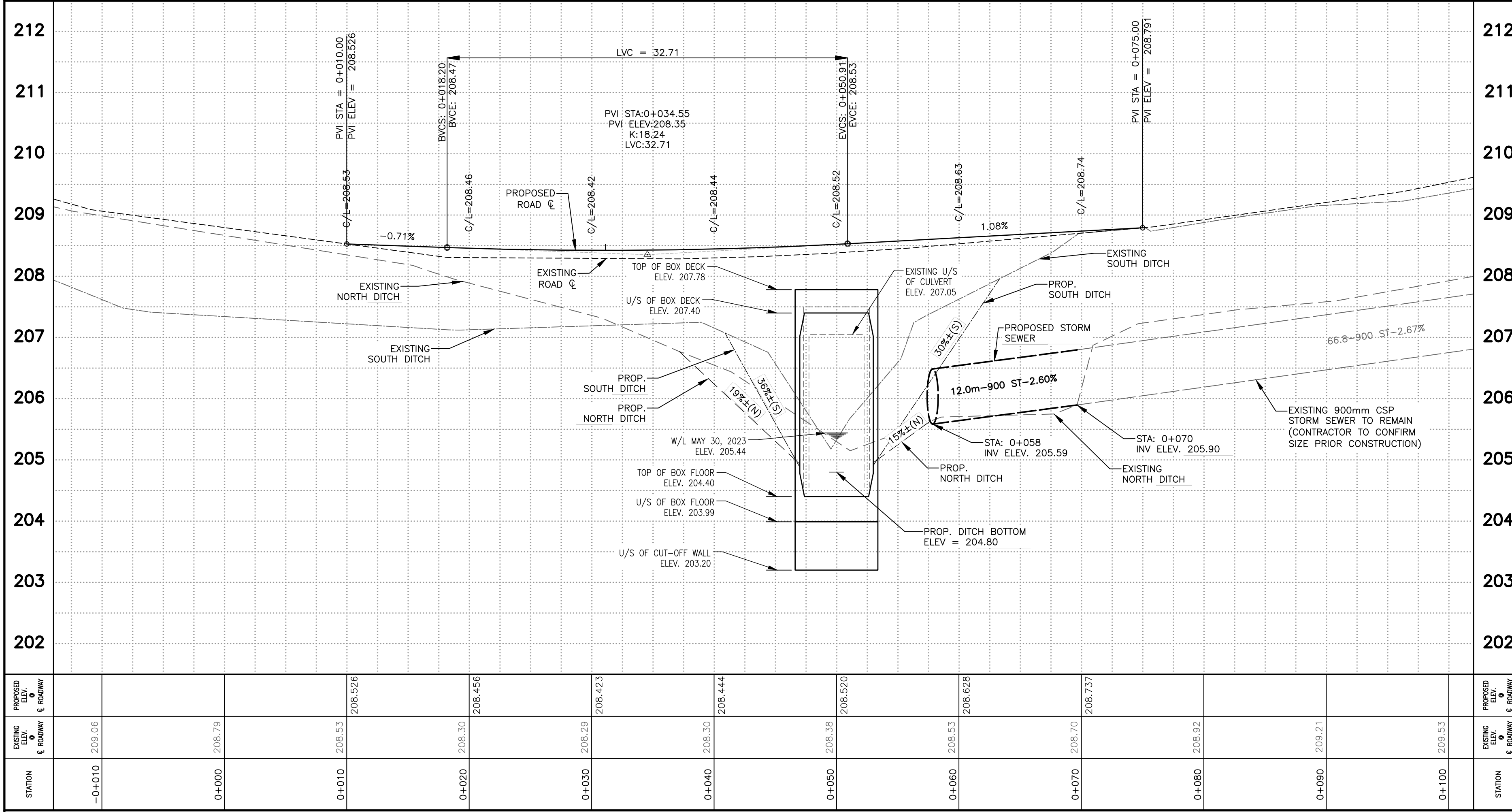
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0+050.00
SCALE: 1cm=1.0m(1:100)



0+060.00
SCALE: 1cm=1.0m(1:100)



PROFILE
SCALE: (H) 1cm=2.5m(1:250)
(V) 1cm=0.5m(1:50)

STATION	EXISTING ELEV. & ROADWAY	PROPOSED ELEV. & ROADWAY
0+010	209.06	208.526
0+000	208.79	208.456
0+010	208.53	208.423
0+020	208.30	208.444
0+030	208.29	208.520
0+040	208.30	208.628
0+050	208.38	208.737
0+060	208.53	208.92
0+070	208.70	209.21
0+080	208.92	209.53
0+090	209.21	
0+100	209.53	

COMPLETION	No.	SUBMISSIONS AND REVISIONS	DATE	BY
DESIGN: J.M.S.	01	ISSUED FOR TENDER	FEB 2/2024	SFR.
DRAWN: D.F./M.M.				
CHECKED: B.W.				
APPROVED: J.M.S.				
DATE: FEB 2 2024				

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LONDON CONSULTING ENGINEERS
155 YORK STREET -- LONDON (519) 672-4100 -- N6A 1A8

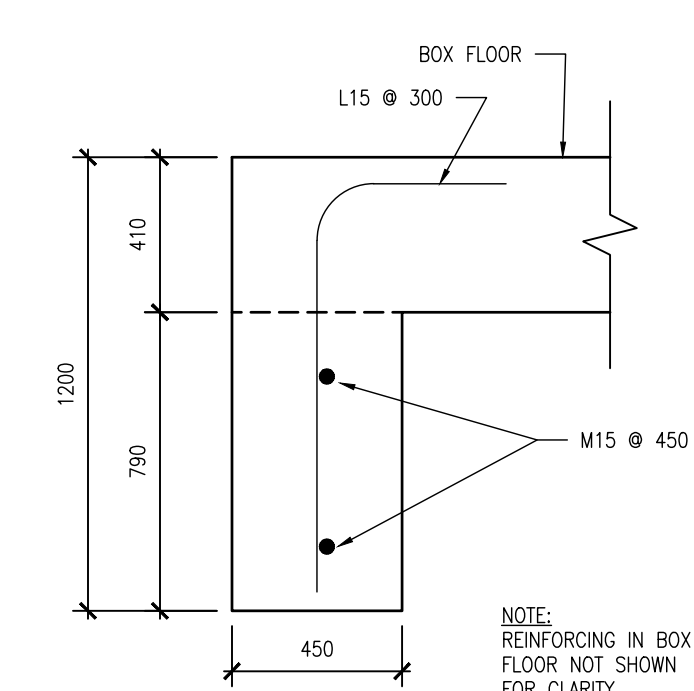
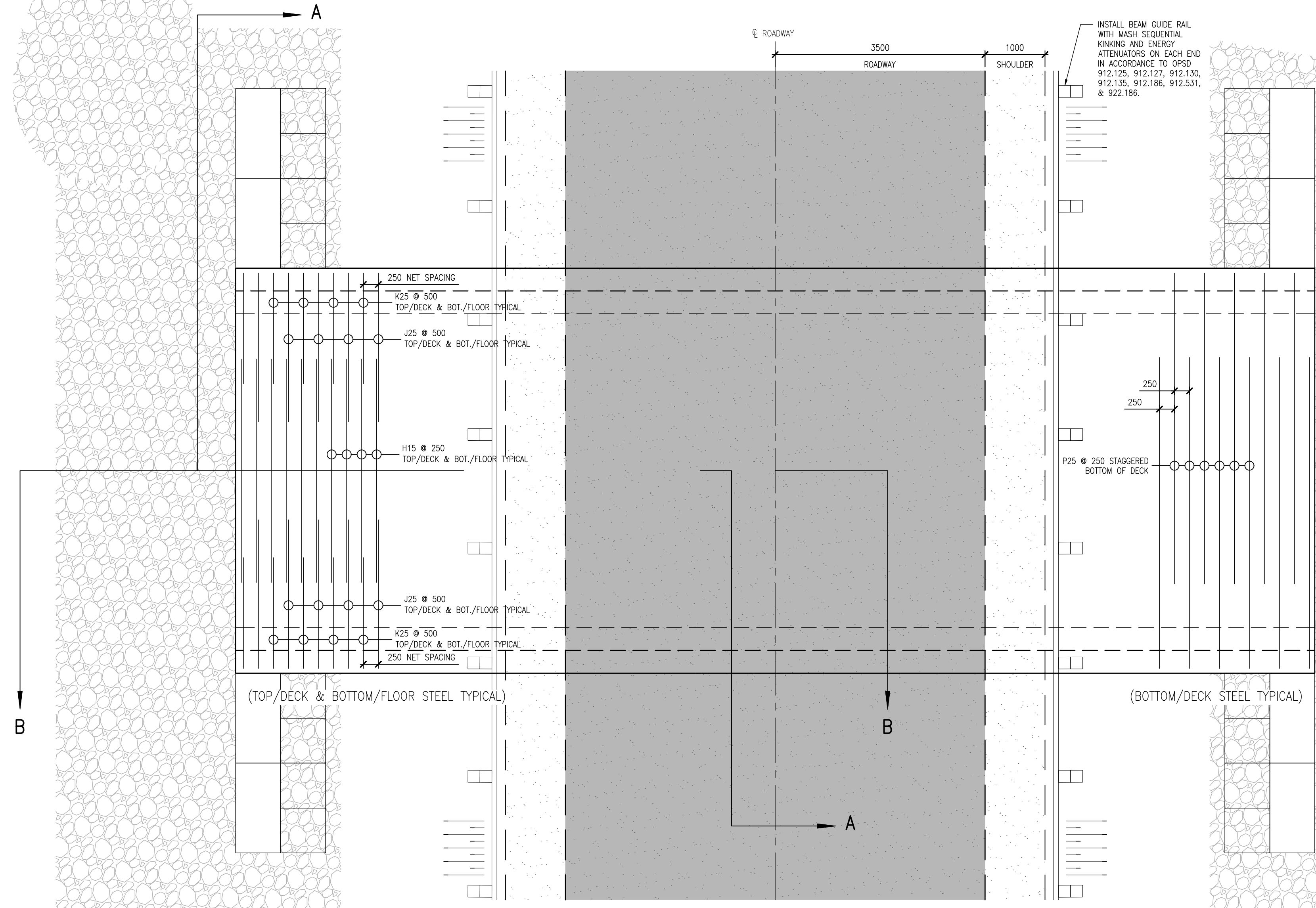
ENGINEER STAMP
LICENSED PROFESSIONAL ENGINEER
B. E. WIDNER
100213829
PROVINCE OF ONTARIO

CLIENT
Municipality of Dutton Dunwich

SCALE
2.5 m @ 1:250
1.0 m @ 1:100
0.5 m @ 1:50

CULVERT No. 17
SILVER CLAY LINE
PLAN AND SECTIONS

Project No.	223146
Sheet No.	1 of 3
Plan File No.	



TYPICAL CULVERT BAR BENDS

NOTE: - C' DENOTES EPOXY COATED BARS
- ALL DIMENSIONS SHOWN TO CENTRE LINE OF BAR.
- * REPRESENTS VERTICAL DIMENSION.

MARK	DETAILS	REMARKS
P BARS	STRAIGHT	BOTTOM OF TOP SLAB STAGGERED
Q BARS	STRAIGHT	TOP OF BOTTOM SLAB STAGGERED
H BARS	STRAIGHT	15M BARS TOP OF TOP SLAB & BOTTOM OF BOTTOM SLAB
J & K BARS		J BARS ALTERNATE WITH K BARS
S BARS		15M BARS HAUNCH (AT BOTTOM)
T BARS	STRAIGHT	15M BARS INSIDE FACE OF WALL
U BARS		15M BARS HAUNCH (AT TOP)
R BARS	STRAIGHT	15M BARS LONGITUDINAL
L BARS		15M BARS DOWELS TO APRON WALL
M BARS	STRAIGHT	15M BARS APRON WALL

REBAR DIMENSIONS

BAR TYPE	MEASUREMENT	VALUE
P BARS	SIZE	25M
	C/C	250
	SIZE	5190
H BARS	SIZE	15M
	C/C	250
	LENGTH	3730
J BARS	SIZE	25M
	C/C	500
	LENGTH	4600
	B	2180
	D	1950
K BARS	SIZE	25M
	C/C	500
	LENGTH	3980
	B	1550
	D	1950
S BARS	SIZE	15M
	LENGTH	1630
	C	1270
T BARS	SIZE	15M
	C/C	300
	LENGTH	3000
U BARS	SIZE	15M
	LENGTH	1630
	C	1270
Q BARS	SIZE	25M
	C/C	250
	LENGTH	5470
R BARS	# SETS	124
L BARS	LENGTH	1580
M BARS	LENGTH	6560

SURVEY DATA

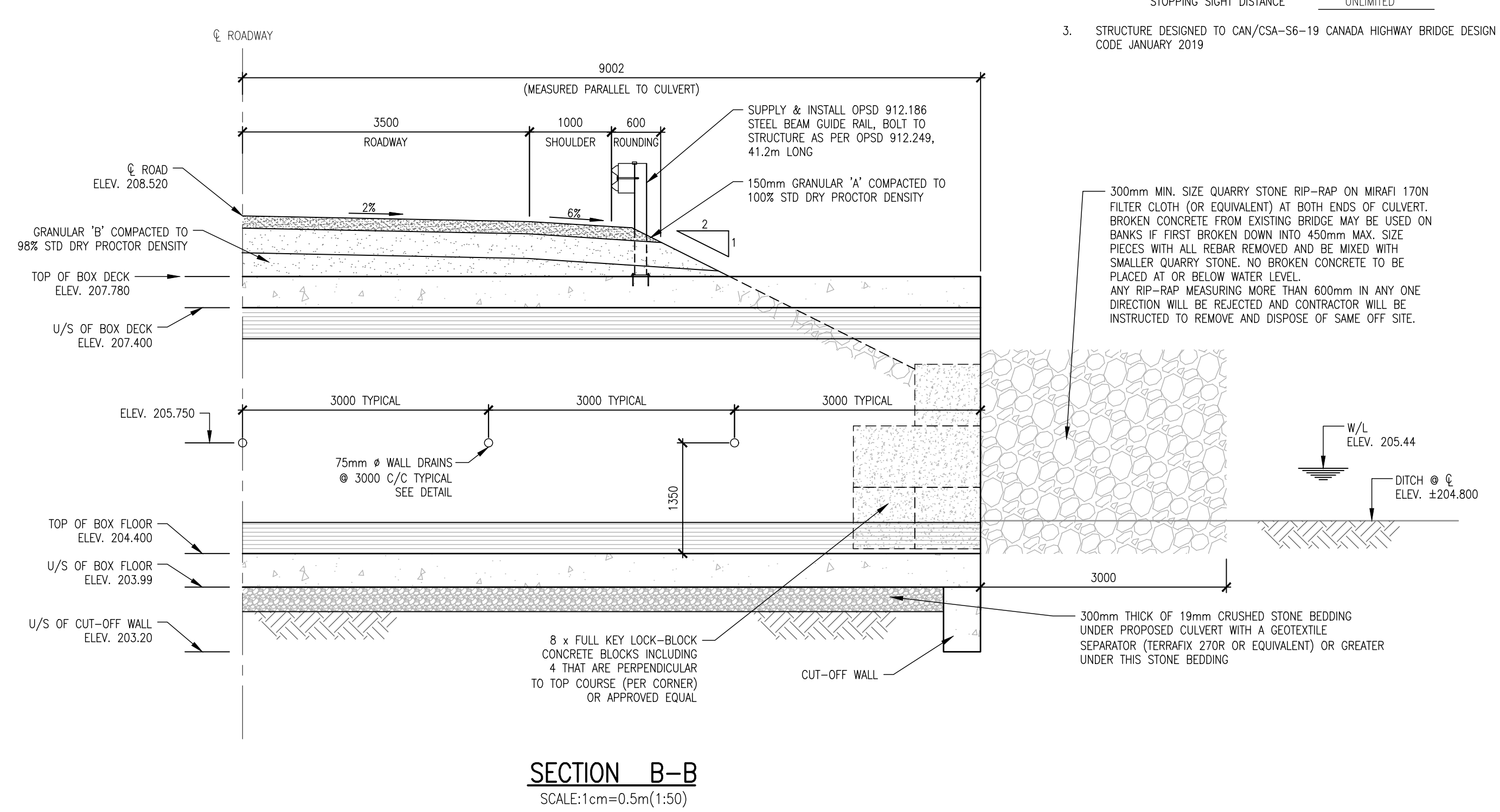
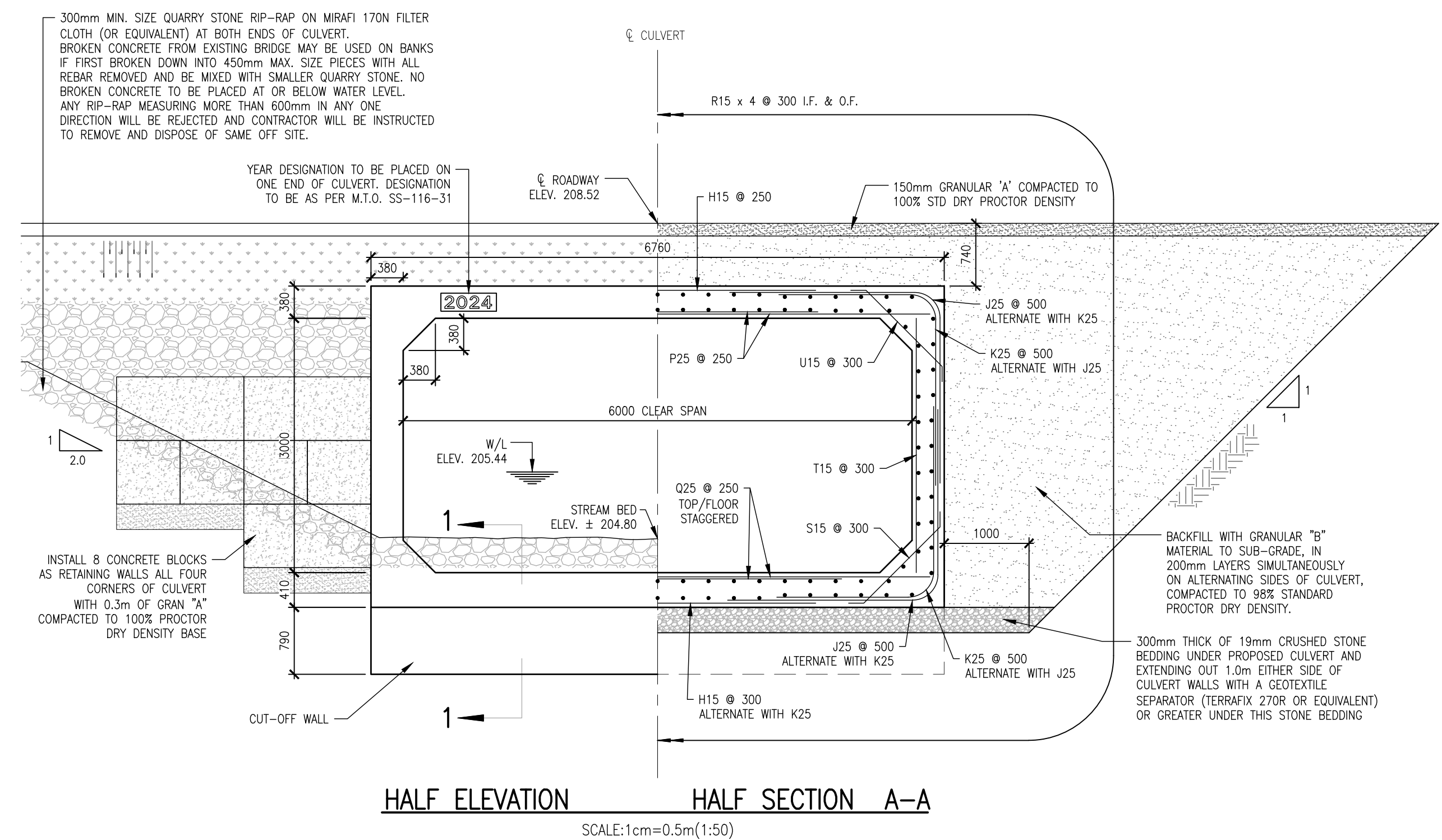
- NET SPAN LENGTH AND TYPE OF BRIDGE: 6.00m SPAN x 3.00m RIGID FRAME BOX CULVERT.
- ROADWAY WIDTH ON BRIDGE: 7.0m
- SKEW ANGLE: 0°
- DRAINAGE AREA: 26.2 SQ. KM
- DESIGN FLOOD FREQUENCY: 50 YEARS
- TYPE OF CROSSING: DRAIN

FIELD INVESTIGATION MADE: MAY 30, 2023
BY: J. M. SPRIET, P. ENG.

DESIGN NOTES

- IS A TEMPORARY DETOUR REQUIRED? No
- ROAD DESIGN INFORMATION: DESIGN PROJECT DESIGN SPEED STOPPING SIGHT DISTANCE: 60 km/h, 60 km/h, UNLIMITED
- STRUCTURE DESIGNED TO CAN/CSA-S6-19 CANADA HIGHWAY BRIDGE DESIGN CODE JANUARY 2019

- STRUCTURAL DATA**
- STRUCTURE DESIGNED TO CHBDC/CSA-S6-19 CANADIAN HIGHWAY BRIDGE DESIGN CODE JANUARY 2019.
 - WORK ON THE STRUCTURE MUST NOT COMMENCE UNTIL MONUMENTS TO FIX CONTROL POINTS HAVE BEEN ERECTED AND CHECKED BY THE ENGINEER.
 - STRUCTURE TO BE BUILT IN ACCORDANCE WITH O.P.S.S. DIVISION 9 AND THE ENGINEER'S SPECIFICATIONS.
 - CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON THE JOB AND REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
 - FOOTING DEPTHS ARE SUBJECT TO FIELD INSPECTION AND/OR REVISION BY THE SOILS ENGINEER. FOOTINGS ARE DESIGNED FOR A SOIL BEARING CAPACITY OF 225kN/m² (4500 p.s.f.) AT U.L.S. AND A BEARING PRESSURE OF 150kN/m² (3000 p.s.f.) FOR S.L.S. (UNFACTORED LOADS).
 - FOOTINGS TO BE FINISHED TO THE NEAT DIMENSIONS AND THE CONCRETE SHALL BE POURED AGAINST UNDISTURBED MATERIAL.
 - CONCRETE MIX
 - MINIMUM STRENGTH AT 28 DAYS 30 MPa (4350 p.s.i.)
 - ALL CONCRETE SHALL INCLUDE AN APPROVED AIR ENTRAINING AGENT 6%±1.5% AIR ENTRAINMENT REQUIRED. (7%±1% WHERE EXPOSED TO DE-ICING AGENTS)
 - MAXIMUM SIZE OF AGGREGATE SHALL BE 19mm.
 - CONCRETE SHALL BE M.T.O. 30 MPa STANDARD, 355kg CEMENT/m³
 - ALL EXPOSED EDGES TO BE CHAMFERED 25mm UNLESS OTHERWISE NOTED. ALL ACUTE ANGLES SHALL BE FILLETED AS INDICATED.
 - NO CONCRETE TO BE POURED BEFORE MATERIALS, FORMWORK, FALSEWORK AND REINFORCING HAVE BEEN CHECKED BY THE ENGINEER.
 - DECK FALSEWORK SHALL NOT BE STRUCK UNTIL ALL BACKFILL HAS BEEN PLACED AND COMPACTED BEHIND THE ABUTMENTS TO THE SATISFACTION OF THE ENGINEER.
 - BACKFILL BEHIND THE ABUTMENTS SHALL BE BROUGHT UP SIMULTANEOUSLY ON BOTH SIDES. DIFFERENCE IN HEIGHT OF BACKFILL NOT TO EXCEED 200mm.
 - CONSTRUCTION JOINTS NOT SHOWN ON PLANS MUST BE APPROVED BY THE ENGINEER.
 - REINFORCING STEEL TO BE GRADE 400 MIN. CLEAR COVER TO CONFORM TO CAN/CSA S16-19 CODE: 100mm±25mm in footings, 50mm±10mm IN BOTTOM OF DECK AND 70mm±20mm ELSEWHERE.
 - REINFORCING STEEL TO BE GRADE 400 UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH CAN/CSA-S30.18-H2(R1998). BARS MARKED WITH SUFFIX " C " DENOTE COATED BARS. HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH CAN/CSA-S6-19 SECTION 8.14 AND M.T.O. STRUCTURAL MANUAL SECTIONS DA 12-1 TO DA 12-7 UNLESS OTHERWISE NOTED. TENSION LAP LENGTHS TO BE CLASS "B" UNLESS OTHERWISE NOTED.



COMPLETION	DESIGN: J.M.S.	No.	SUBMISSIONS AND REVISIONS	DATE	BY
	DRAWN: D.F.	01	ISSUED FOR TENDER	FEB 2, 2024	SPR.
	CHECKED: A.A.				
	APPROVED: J.M.S.				
	DATE: FEB 2, 2024				

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ENGINEER STAMP
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100093920
FEB 2, 2024
PROVINCE OF ONTARIO

ENGINEER STAMP
J. M. C. SPRIET
FEB 2, 2024
PROVINCE OF ONTARIO

CLIENT
Municipality of Dutton Dunwich

SCALE
0.5 m 1.0
1:50
0.2 m 0.4
1:20

CULVERT No. 17
SILVER CLAY LINE
CULVERT REINFORCING AND DETAILS

Project No. 223146
Sheet No. 2 of 3
Plan File No.

STREAM RESTORATION AND EROSION CONTROL

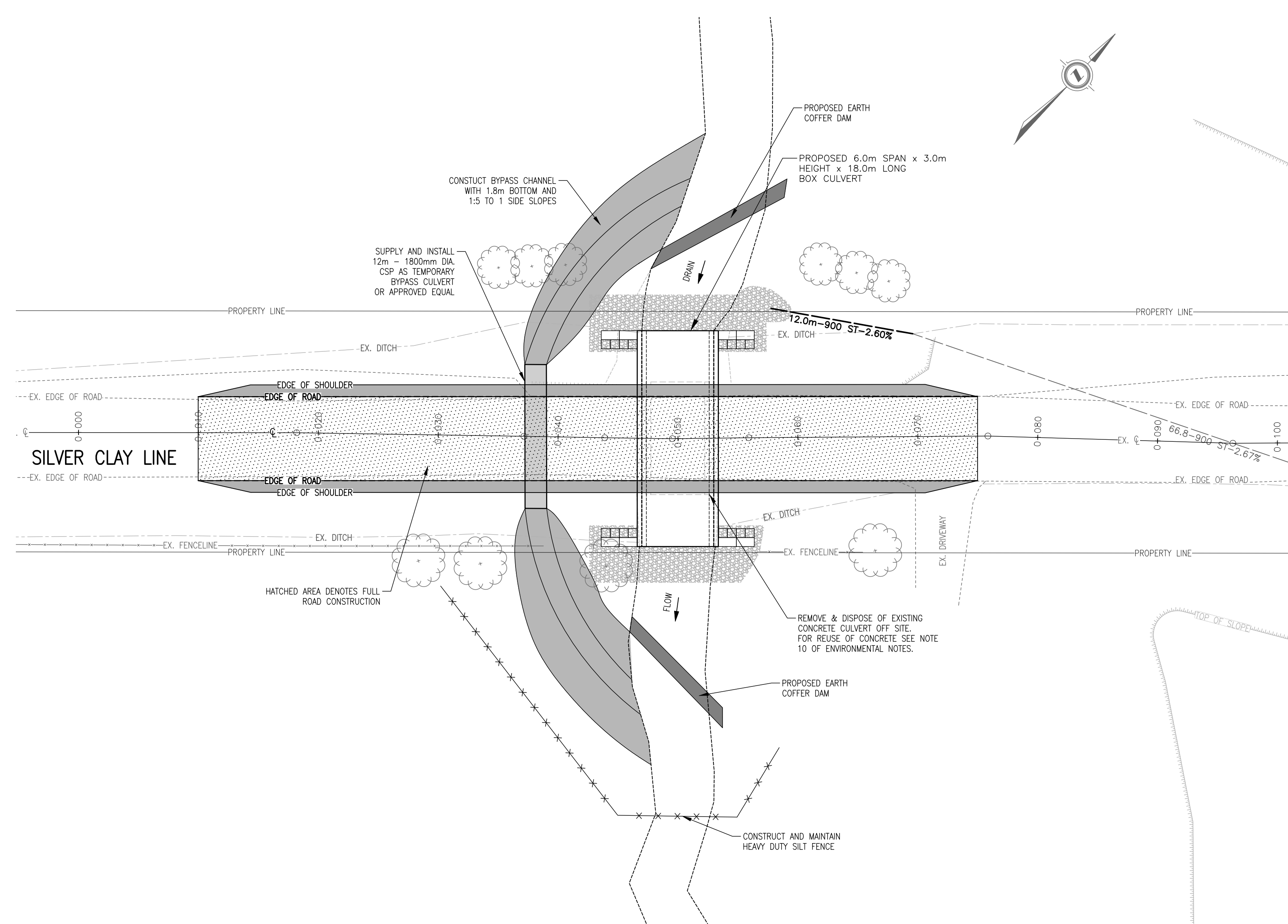
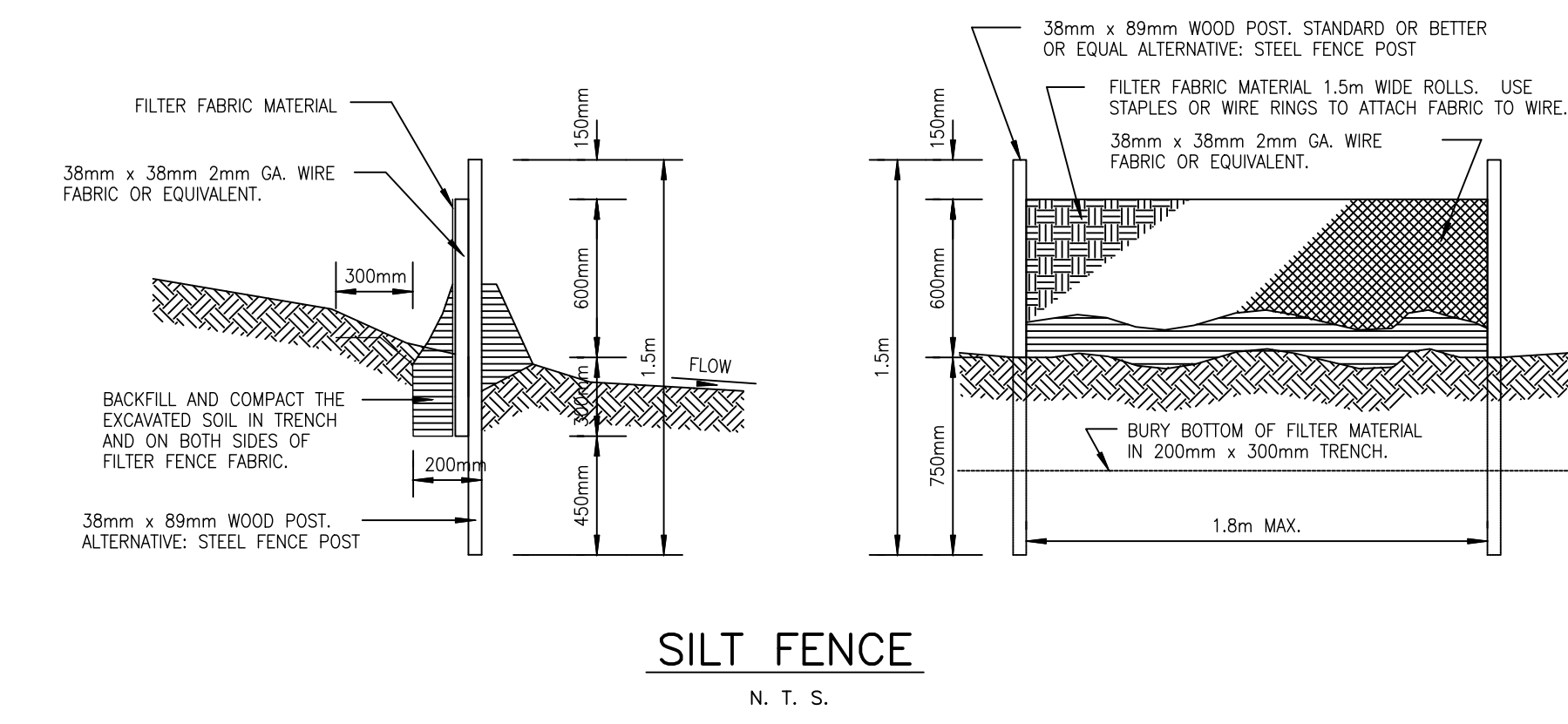
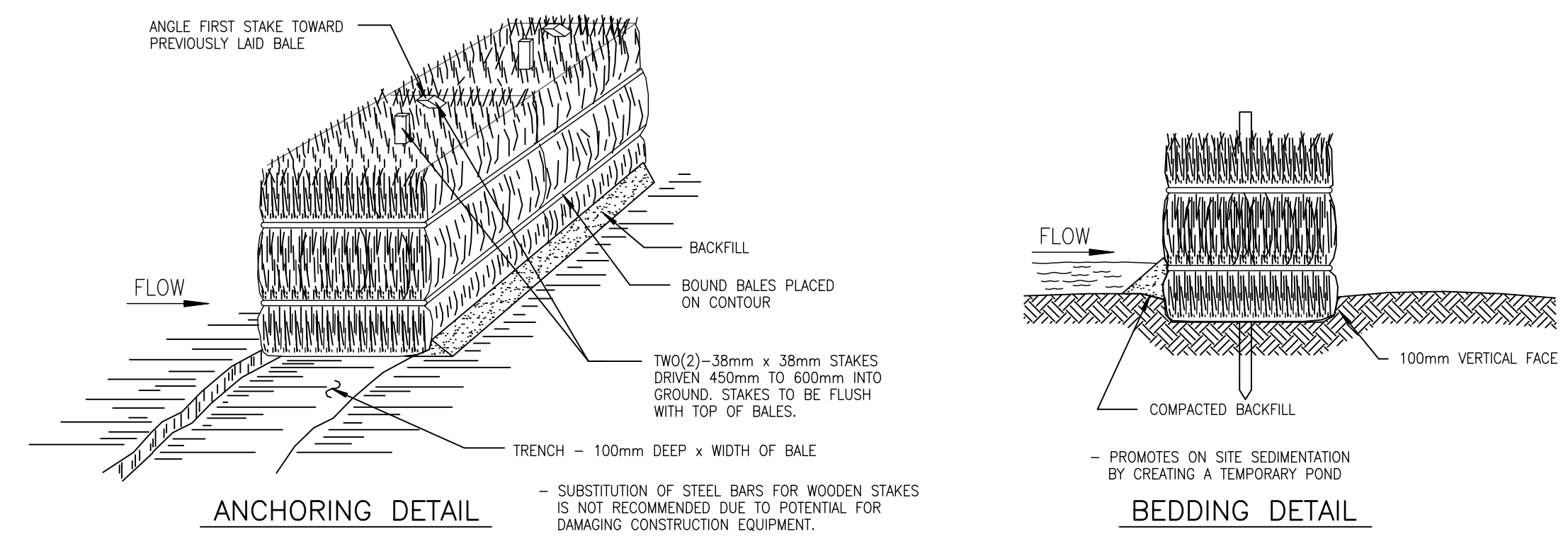
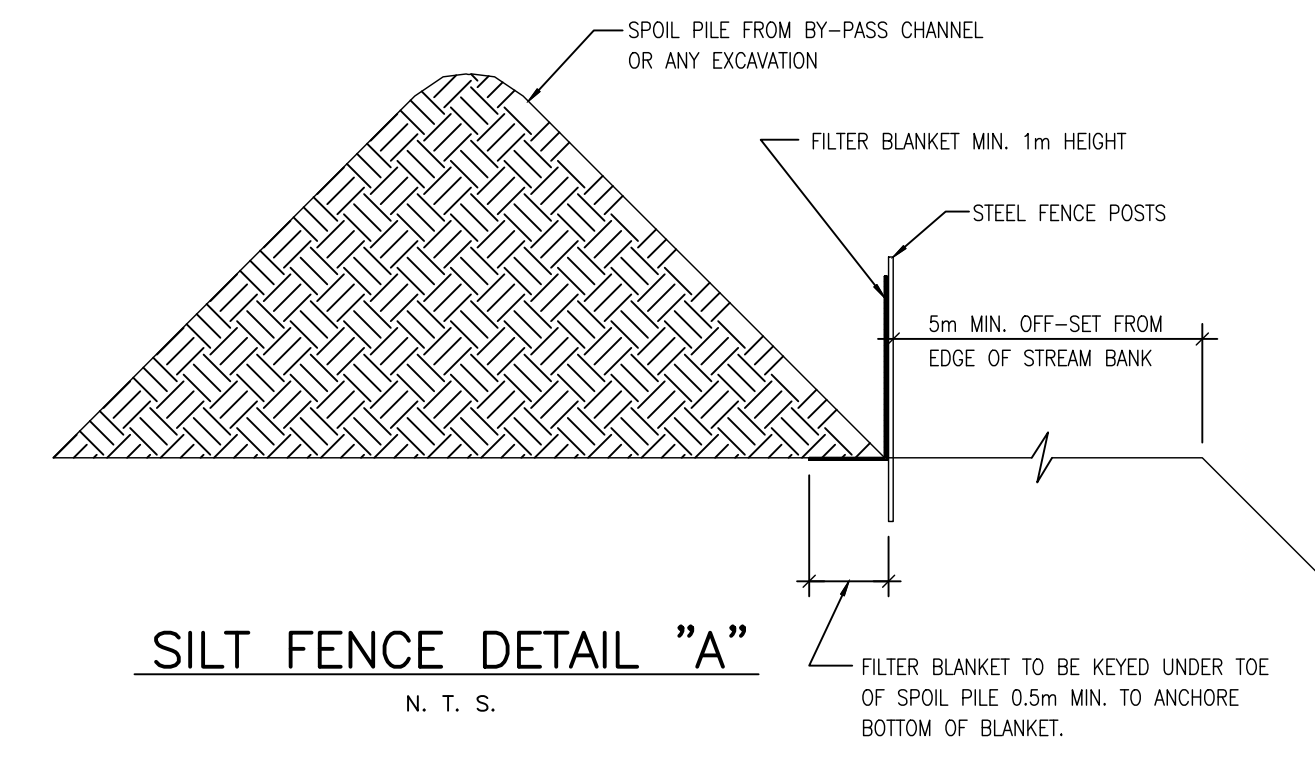
- SILT BASIN TO BE MAINTAINED UNTIL AFTER RESTORATION IS COMPLETED AND THEN LEFT IN PLACE TO TRAP ANY REMAINING SILT UNTIL SLOPES AND SEEDING ARE ESTABLISHED.
- ANY DISTURBED STREAM BANKS OR SIDE SLOPES NOT COVERED WITH RIP-RAP ARE TO BE SEEDED WITH AN APPROVED BANK STABILIZATION MIXTURE AND COVERED WITH NORTH AMERICAN GREEN C350.
- ALL NEW ROAD SIDE SLOPES NOT PROTECTED BY RIP-RAP TO BE HYDROSEEDED WITH FLEX-TERRA HP-FGM OR EQUIVALENT BFM.

BY-PASS CONSTRUCTION

- CONTRACTOR TO GIVE A MINIMUM OF 48 HOURS NOTICE TO L.T.V.C.A. (519-354-7310) AND ENGINEER (519-672-4100) PRIOR TO CONSTRUCTION OF BY-PASS CHANNEL.
- BY-PASS CHANNEL CONSTRUCTION TO BEGIN AT DOWNSTREAM END, LEAVING A PLUG AT EDGE OF EXISTING STREAM CHANNEL AT BOTH DOWNSTREAM AND UPSTREAM ENDS.
- IF SANDY OR CORROSIVE SOIL TYPE IS ENCOUNTERED THE BOTTOM OF THE CHANNEL AND FOR 500mm UP BANKS IS TO BE LINED WITH QUARRY STONE ON FILTER BLANKET AT THE DIRECTION OF THE M.V.C.A. OR ENGINEER. PAYMENT FOR THIS ITEM WILL BE AS QUOTED ON THE TENDER FORM FOR ADDITIONAL UNIT PRICES.
- CONSTRUCTION OF SILT BASIN TO THEN PROCEED FOLLOWED WITH THE REMOVAL OF THE DOWNSTREAM PLUG.
- UPSTREAM PLUG TO THEN BE REMOVED AND QUARRY STONE DIVERSION DAM TO BE INSTALLED FOLLOWED BY INSTALLATION OF DOWNSTREAM DIVERSION DAM WITH RIP-RAP AND FILTER BLANKET OR APPROVED ALTERNATIVES.
- SILT BASIN TO BE MAINTAINED AS REQUIRED FOR DURATION OF CONSTRUCTION PERIOD.
- ANY PUMPING NECESSARY FOR DEWATERING TO BE DISCHARGED IN GRASSY AREAS TO ALLOW SILT TO SETTLE OUT BEFORE ENTERING STREAM CHANNEL. NO PUMPING DIRECTLY INTO CHANNEL WILL BE PERMITTED. IF QUANTITY OF WATER TO BE DISCHARGED CANNOT SETTLE OUT SILT IN GRASS IT WILL BE REQUIRED TO CONSTRUCT A SILT FENCE AROUND THE LOWER SIDE OF DISCHARGE AREA TO FILTER OUT SILT BEFORE PUMPED WATER ENTERS STREAM CHANNEL. DISCHARGE LOCATION MUST BE A MINIMUM OF 20m FROM POINT OF ENTRY INTO STREAM CHANNEL.
- DURING CONSTRUCTION OPERATIONS, NO CROSSING OF STREAM CHANNEL WITH EQUIPMENT (BACKHOE ETC.) WILL BE PERMITTED. NO REFUELING OF EQUIPMENT IS TO TAKE PLACE NEAR DAM.
- CONTRACTOR TO DIVERT ROADWAY DITCHES AND WATER RUNS AWAY FROM CONSTRUCTION AREA AND INSTALL STAKED STRAW BALES IN WATERRUNS TO PREVENT SILT FROM ENTERING STREAM.

ENVIRONMENTAL NOTES

- CONTRACTOR TO INSTALL SILT FENCE ACROSS DITCH BOTTOM DOWNSTREAM OF CONSTRUCTION SITE PRIOR TO ANY COMMENCEMENT OF WORK.
- SEDIMENT & EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED PRIOR TO, AND MAINTAINED THROUGHOUT CONSTRUCTION, TO PREVENT ENTRY OF SEDIMENT INTO THE WATER AND ARE TO BE LEFT IN PLACE UNTIL ALL DISTURBED AREAS HAVE STABILIZED. ACCUMULATED SEDIMENT IS TO BE REMOVED FROM THE SILT FENCE PRIOR TO ITS REMOVAL.
- CONTRACTOR TO INSTALL TEMPORARY COFFER DAM ON UPSTREAM & DOWNSTREAM SIDE OF CULVERT. WORK TO BE DONE IN THE DRY. IF ANY WATER FLOWS ARE ENCOUNTERED DURING CONSTRUCTION OF DAMS, WATER IS TO BE PUMPED AROUND SITE. THE CONTRACTOR MAY ALTERNATIVELY INSTALL A TEMPORARY CULVERT THROUGH THE SITE.
- AFTER CONSTRUCTION ANY STREAM DISTURBED BY ITS REMOVAL TO BE RESTORED TO REPRESENT CONDITION OF STREAM BEFORE CONSTRUCTION.
- QUARRY STONE RIP-RAP ON BOTH END SIDE SLOPES OF CULVERT TO BE PLACED ON FILTER BLANKET TO PREVENT FILL FROM MIGRATING INTO STREAM.
- WATER FROM DE-WATERING PROCESS TO BE DIRECTED AWAY FROM STREAM AND MANAGED WITH FILTER BASS, SETTLING PONDS, CHECK DAMS, GEOTEXTILE ETC. TO PREVENT SILT FROM ENTERING STREAM.
- NO REFUELING OF VEHICLES, EQUIPMENT, PUMPS ETC. ARE TO TAKE PLACE WITHIN 30m OF WATERCOURSE.
- INSTALL SILT FENCE ALONG ANY SPOIL PILES AND STRAW BALES FOR ROADWAY DITCH RUNOFF INCLUDING DIRECTING DITCHES AWAY FROM CONSTRUCTION.
- ALL DISTURBED AREAS NOT COVERED BY RIP-RAP TO BE SEEDED WITH AN APPROVED BANK STABILIZATION SEED MIXTURE BY CONTRACTOR.
- THE EXISTING CONCRETE STRUCTURE TO BE REMOVED INCLUDING FOOTINGS AND EXCESS MATERIAL TO BE DISPOSED OF OFF-SITE. CONCRETE MAY BE BROKEN DOWN INTO 450mm MAX. SIZE WITH ALL EXPOSED RE-BAR REMOVED AND USED FOR RIP-RAP IN ACCORDANCE WITH THE SPECIFICATIONS.
- CONTRACTOR TO BE GIVEN COPIES OF THE CONSERVATION AUTHORITY'S PERMIT AS SOON AS IT IS RECEIVED. A COPY OF THESE PERMITS MUST REMAIN ON SITE AT ALL TIMES AND THE CONDITIONS ADHERED TO.



DESIGN: J.M.S.	01	ISSUED FOR TENDER	FEB 2/2024	SFR.
DRAWN: D.F.				
CHECKED: B.W.				
APPROVED: J.M.S.				
DATE: FEB 2 2024				

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ENGINEER STAMP
LICENSED PROFESSIONAL ENGINEER
B. E. WIDNER
100219929
PROVINCE OF ONTARIO

ENGINEER STAMP
LICENSED PROFESSIONAL ENGINEER
J. M. C. SPRIET
100219929
PROVINCE OF ONTARIO

CLIENT
Municipality of Dutton Dunwich

SCALE
2.5 m 5.0
1:250

CULVERT No. 17
SILVER CLAY LINE
ENVIRONMENTAL NOTES

Project No.	223146
Sheet No.	3 of 3
Plan File No.	