

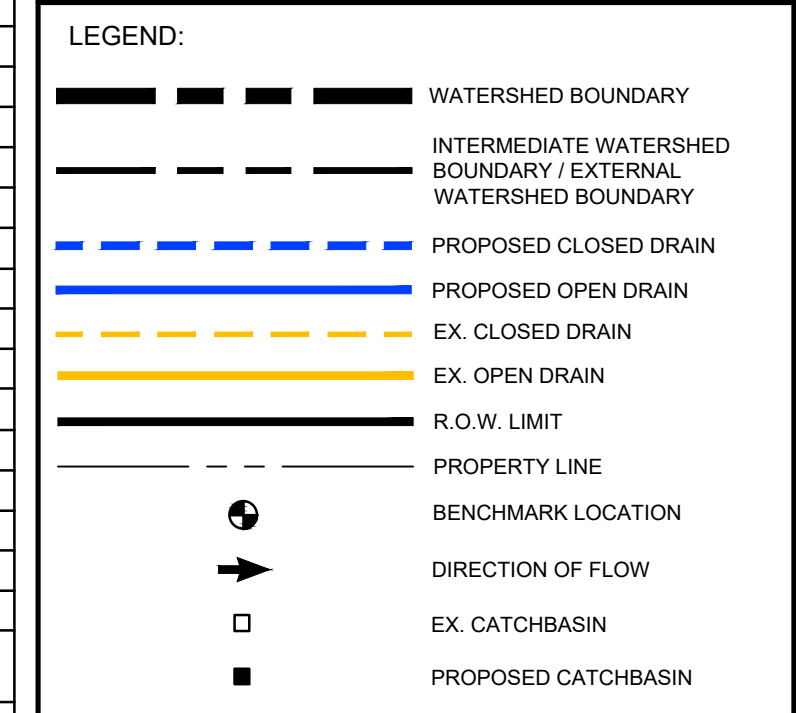


Number	Roll No.	Conc.	Lot	Legal Description	Name(s)
1	020-085-01	12	8	Con 12 N PT. Lot 8	Laura Shoebottom
2	020-085	12	8	Con 12 S PT. Lot 8	Keith & Leanne Hall
3	020-084	12	8	Con 12 S PT. Lot 8	Michael McCartney
4	020-083	12	8	Con 12 S PT. Lot 8	Scott Collins & Amy Donaldson
5	020-082	12	8	Con 12 S PT. Lot 8	Murray Tyler & Janet Minshall-Tyler
6	020-081	12	8	Con 12 S PT. Lot 8	Nigel & Mary Bartram
7	020-080	12	8	Con 12 S PT. Lot 8	Donald & Julene Riley
8	020-079	12	8	Con 12 PT. Lot 8	Jennifer Gray
9	020-078	12	8	Con 12 S PT. Lot 8	Hugh Smith & Marta Zamir
10	020-076	12	8	Con 12 S PT. Lot 8	Zupancic Holdings Inc
11	020-074	12	8	Con 12 S PT. Lot 8	Middlesex County c/o County Clerk
12	020-073	12	8	Con 12 S PT. Lot 8	Kent Hardy & Renee Vachon
13	020-072	12	8	Con 12 S PT. Lot 8	Michael & Robert Kuenzlen & Jillian Williamson
14	020-071	12	8	Con 12 S PT. Lot 8	Timothy Graham & Wendy Dumaresq-Graham
15	020-070	12	8	Con 12 S PT. Lot 8	Christopher & Tammy Duncan
16	020-069	12	8	Con 12 S PT. Lot 8	Colin Eeley
17	020-068	12	8	Con 12 S PT. Lot 8	Jonathan Spicer
18	020-067	12	8	Con 12 S PT. Lot 8	Terry Roberts
19	020-066	12	8	Con 12 S PT. Lot 8	Jack & Catherine Harding
20	020-065	12	8	Con 12 S PT. Lot 8	Peter Lamond
21	020-064	12	8	Con 12 S PT. Lot 8	Stanley & Catherine Adamski
22	020-077-02	12	8	Con 12 PT. Lot 8	Carbello Pata & Naveesha Maharaj
23	020-077-03	12	8	Con 12 PT. Lot 8	David McVittie & Paula Appleton
24	020-077-04	12	8	Con 12 PT. Lot 8	Mary Schoenewolf
25	020-087	12	9	Plan 329 Lot 9 PT. Lot 8	David & Delores Maddock
26	020-088	12	9	Plan 329 Lot 7 PT. Lot 8	Beverly & Stephen Guinness
27	020-089	12	9	Plan 329 Lot 6	Jewgenji & Rebecca Deniswitsch
28	020-090	12	9	Plan 329 Lots 4,5,15,16	Manfred Hally c/o Discovery Wood Products
29	020-092	12	9	Plan 329 Lot 3	Melissa Tiller
30	020-093	12	9	Plan 329 Lot 2	2840616 Ontario Inc
31	020-094	12	9	Plan 329 Lot 1	2840616 Ontario Inc
32	020-095	12	9	Plan 329 Lot 10	Larry & Mary-Jane Kemp
33	020-097	12	9	Plan 329 Lots 11, 12, 17	Hans & Heidi Scheib
34	020-098	12	9	Plan 329 Lots 13, 14, 18 & 19	Ronald Danner
35	020-100	12	9	Con 12 PT. Lot 9	Steven Thompson
36	020-101	12	9	Con 12 PT. Lot 9	Michael Martinek
37	020-103	12	9	Con 12 PT. Lot 9	William & Lina Addison
38	020-102-01	12	9	Con 12 PT. Lot 9	Douglas & Jessica Francis
39	020-102	12	9	Con 12 E PT. Lot 9	Iskan Khassan & Irena Krasun
40	020-101-98	12	9	Plan 12 S PT. Lot 9	Brian & Bonnie Martin
41	020-104-04	12	9	Con 12 S PT. Lot 9	Lori Lauder & Michael Barnes
42	020-104-01	12	9	Con 12 PT. Lot 9	Tana Smith
43	020-128-90	11	9	Con 11 N PT. Lot 9	David & Joan Elston
44	020-128-92	11	9	Con 11 N PT. Lot 9	Shauna & Adrian Dereniowski
45	020-128-94	11	9	Con 11 N PT. Lot 9	Antero & Jacinta Almeida
46	020-128-96	11	9	Con 11 N PT. Lot 9	Diane Bell
47	020-128-98	11	9	Con 11 N PT. Lot 9	Elizabeth Baldassarre
48	020-129-02	11	9	Con 11 N PT. Lot 9	Emma Oshana
49	020-129	11	9	Con 11 N PT. Lot 9	Laura Somerville & Shawn McLean
50	020-130	11	9	Plan 307 Lot 1	Michael Brooks & Ashley Overhold
51	020-131	11	9	Plan 307 PT. Lot 2	David Dunn
52	020-132	11	9	Plan 307 Lot 3 PT. Lot 2	Joshua Franks & Rebecca Glover
53	020-146	11	8	Con 11 PT. Lot 8	Djamel Bouazza
54	020-145-01	11	8	Con 11 N PT. Lot 8	Robert Walz & Donna Sessions
55	020-145-02	11	8	Con 11 N PT. Lot 8	Alan & Heather Elgie
56	020-145-03	11	8	Con 11 N PT. Lot 8	Carlin Riley & Channon Scott
57	020-145-05	11	8	Con 11 N PT. Lot 8	Ljubomir & Jovanka Kolundzic
58	020-145-06	11	8	Con 11 PT. Lot 8	Municipality of Middlesex Centre
59	020-145-23	11	8	Con 11 PT. Lot 8	XO Homes Inc
60	020-145-22	11	8	Con 11 PT. Lot 8	John Kocak
61	020-145-21	11	8	Con 11 PT. Lot 8	XO Homes Inc

NOTES:

- CONTRACTOR IS TO OBTAIN UTILITY LOCATES PRIOR TO CONSTRUCTION.
- CONTRACTOR IS TO CONNECT EXISTING TILES DURING CONSTRUCTION.

NOMENCLATURE:

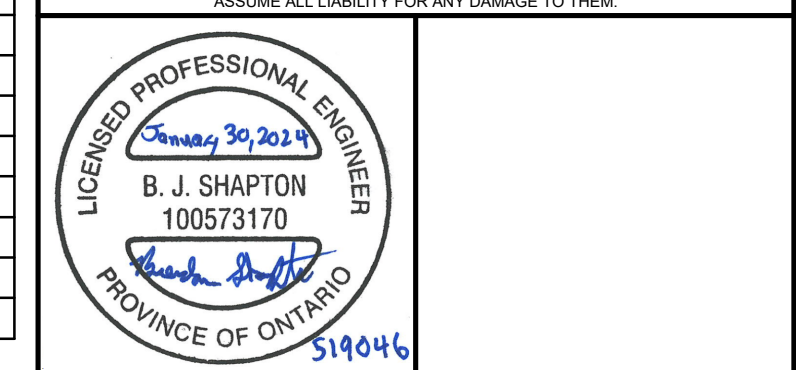


BENCH MARKS:

- BMS19046-1 - ELEV = 292.642m  
NAIL IN NORTH FACE OF HP. LOCATED SOUTH OF TWELVE MILE ROAD 1st HP WEST OF NEEDHAM DRAIN CROSSING
- BMS19046-2 - ELEV = 295.763m  
NAIL IN NORTH FACE OF HP. LOCATED WEST OF HIGHBURY AVENUE 1st HP SOUTH OF ENBRIDGE OIL CER EASEMENT
- BMS19046-3 - ELEV = 296.156m  
NAIL IN EAST FACE OF HP. NORTH OF PLOVER MILLS ROAD, BETWEEN #1548 AND #1554 PLOVER MILLS ROAD
- BMS19046-4 - ELEV = 296.081m  
NAIL IN NORTHEAST FACE OF HP. NORTH OF PLOVER MILLS ROAD, EAST OF RESIDENTIAL PROPERTIES

THE POSITION OF POLE LINES, CONDUITS, WATERMANS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED.

BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR ANY DAMAGE TO THEM.



ENVIRONMENTAL PROTECTION NOTES:

- THE CONTRACTOR IS TO CONTROL THE PLACEMENT OF STABILIZATION WORKS TO MINIMIZE EROSION AND SEDIMENT TRAVEL IMPACTS DOWNSTREAM.
- GEOTEXTILE FABRIC SHALL BE INDUSTRIAL POLYPROPYLENE.
- INSTALLATION OF SILT FENCE SHALL CONFORM TO OPSD 219.130.
- INSPECTION OF SILT FENCE SHALL BE CONDUCTED DAILY. REPAIRS TO THE FENCE MUST BE COMPLETED IMMEDIATELY AND ANY SECTION OF THE FENCE WHICH DECOMPOSES BEFORE THE END OF ITS EXPECTED USE SHALL BE REPLACED IMMEDIATELY.
- SEDIMENT TRAPPED IN THE FILTER SHOULD BE REMOVED FOLLOWING EACH STORM AND WHEN THESE DEPOSITS REACH 1/2 THE HEIGHT OF THE BARRIER.
- PERFORM WORK IN NOLLOW FLOW CONDITIONS TO MINIMIZE SEDIMENT MOVEMENT AND EROSION.
- ALL WORK SHOULD BE HALTED IF A FORECAST OF SIGNIFICANT RAINFALL IS EXPECTED.
- PLACE BRUSH, DEBRIS AND SEDIMENT IN SUCH A LOCATION AS TO MINIMIZE ENTRY INTO THE CHANNEL.
- LIMIT SOIL MOVEMENT AND EROSION; USE APPROPRIATE CONTROL MEASURES BEFORE WORK BEGINS AND INSPECT AND MAINTAIN THOSE MEASURES REGULARLY UNTIL ALL DISTURBED AREAS ARE STABILIZED.
- ANY AREAS OF DISTURBED OR BARE SOIL AROUND THE DRAIN SHOULD BE SEEDED WITH NATIVE, NON-INVASIVE HERBACEOUS MATERIAL WHILE THE GROUND IS MOIST AND CONDITIONS ARE APPROPRIATE FOR GERMINATION.
- ALL MATERIAL AND EQUIPMENT USED FOR THE PURPOSE OF SITE PREPARATION AND PROJECT COMPLETION SHOULD BE OPERATED AND STORED IN A MANNER THAT PREVENTS ANY DELETERIOUS SUBSTANCE (EG. PETROLEUM PRODUCTS, SILT, DEBRIS, ETC.) FROM ENTERING THE WATER.
- ANY STOCKPILED MATERIALS SHALL BE STORED AND STABILIZED AWAY FROM THE WATERCOURSE.
- VEHICLE AND EQUIPMENT RE-FUELING AND MAINTENANCE SHALL BE CONDUCTED AWAY FROM THE WATERCOURSE.
- ONLY APPROVED WORK IS PERMITTED IN THE WATERCOURSE AND NO MATERIAL SHALL BE RELEASED INTO THE WATERCOURSE.
- CROSSING OF THE WATERCOURSE BY CONSTRUCTION EQUIPMENT IS NOT PERMITTED.
- PLAN IN-WATER WORKS, UNDERTAKINGS AND ACTIVITIES TO RESPECT TIMING WINDOWS TO PROTECT FISH, INCLUDING THEIR EGGS, JUVENILES, SPAWNING ADULTS AND/OR THE ORGANISMS UPON WHICH THEY FEED. NO IN-WATER WORK SHALL OCCUR BETWEEN MARCH 15 AND JULY 15 (INCLUSIVE) OF ANY GIVEN YEAR.
- NO TREE, BRUSH, OR VEGETATION REMOVAL AND ASSOCIATED WORK SHALL OCCUR BETWEEN MARCH 15 AND AUGUST 31 (INCLUSIVE) OF ANY GIVEN YEAR UNLESS OTHERWISE APPROVED BY A QUALIFIED BIOLOGIST.

HYDRO ONE NOTES:

- A MINIMUM OF 30 DAYS PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE AN INITIAL SITE MEETING WITH HYDRO ONE TO REVIEW AND CONFIRM HYDRO ONE'S REQUIREMENTS AND SPECIFICATIONS (INCLUDING POLE HOLDS) FOR WORK ADJACENT TO THEIR INFRASTRUCTURE. PROPER NOTIFICATION TO HYDRO ONE PLANNING SHALL OCCUR TO ENSURE THAT RESOURCES ARE AVAILABLE.
- A HYDRO ONE REPRESENTATIVE IS TO BE IN ATTENDANCE WHEN WORK AROUND THE HYDRO POLES IS PLANNED (INCLUDING POLE HOLDS). PROPER NOTIFICATION TO HYDRO ONE PLANNING SHALL OCCUR TO ENSURE THAT RESOURCES ARE AVAILABLE.
- CONTRACTOR IS TO COMPLETE THE WORK ADJACENT AND AROUND HYDRO ONE'S INFRASTRUCTURE IN ACCORDANCE WITH DRAWINGS, AND THE REQUIREMENTS AND SPECIFICATIONS OF HYDRO ONE INCLUDING BUT NOT LIMITED TO THE '3RD PARTY EXCAVATION ZONE LIMITS' DRAWINGS DATED APRIL 26, 2021.

ENBRIDGE OIL NOTES:

- A MINIMUM OF 30 DAYS PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE AN INITIAL SITE MEETING WITH ENBRIDGE OIL PIPELINE TO REVIEW AND CONFIRM ENBRIDGE OIL PIPELINE'S REQUIREMENTS AND SPECIFICATIONS FOR WORK ADJACENT TO THEIR INFRASTRUCTURE. PROPER NOTIFICATION TO ENBRIDGE OIL PIPELINE SHALL OCCUR TO ENSURE THAT RESOURCES ARE AVAILABLE.
- AN ENBRIDGE OIL PIPELINE REPRESENTATIVE IS TO BE IN ATTENDANCE WHEN WORK IN THE OIL PIPELINE SAFETY ZONE (AND EASEMENT IF REQUIRED) IS PLANNED. PROPER NOTIFICATION TO ENBRIDGE OIL PIPELINE SHALL OCCUR TO ENSURE THAT RESOURCES ARE AVAILABLE. THE OIL PIPELINE SAFETY ZONE (AND EASEMENT) WILL BE DETERMINED BY ENBRIDGE OIL PIPELINE AT THE INITIAL SITE MEETING DISCUSSED IN THE POINT ABOVE.
- CONTRACTOR IS TO COMPLETE THE WORK WITHIN THE OIL PIPELINE SAFETY ZONE (AND EASEMENT IF REQUIRED) IN ACCORDANCE WITH THE DRAWINGS, AND REQUIREMENTS AND SPECIFICATIONS OF ENBRIDGE OIL PIPELINE.

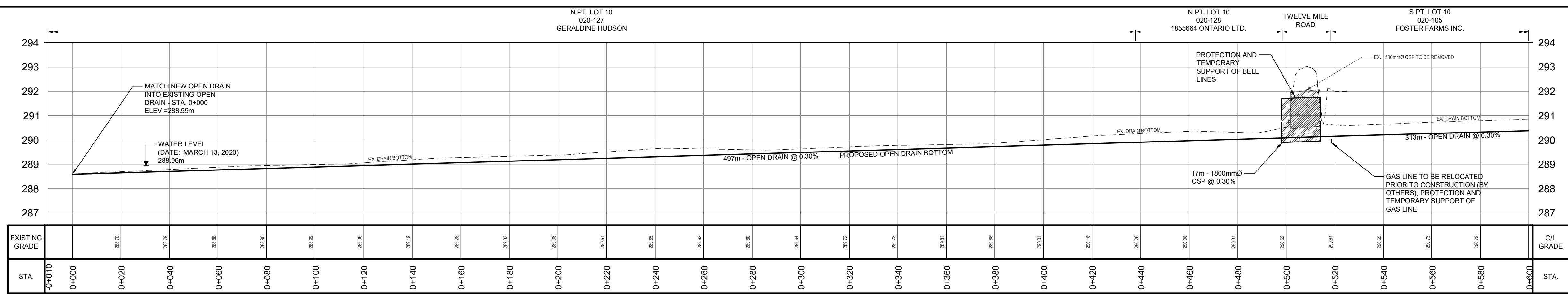
ENBRIDGE GAS NOTES:

- CONTRACTOR IS TO EXCAVATE, COMPACT AND BACKFILL MATERIAL IN ACCORDANCE WITH THE DRAWINGS AND IN ACCORDANCE WITH THE 'GUIDELINE FOR EXCAVATION IN THE VICINITY OF UTILITY LINES' MANUAL DATED DECEMBER 2008 TO ENSURE THAT UNDUCE STRAIN DOES NOT OCCUR.
- AN ENBRIDGE GAS UTILITY SERVICES REPRESENTATIVE (USR) IS TO BE IN ATTENDANCE WHEN WORK AROUND THE GAS LINE IS PLANNED. PROPER NOTIFICATION TO ENBRIDGE GAS PLANNING SHALL OCCUR TO ENSURE THAT RESOURCES ARE AVAILABLE.

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3.	2023/01/30	ENGINEER'S REPORT	B.S.
2.	2022/07/22	DESIGN REVIEW MEETING	B.B.
1.	2019/10/23	ON-SITE MEETING	B.B.

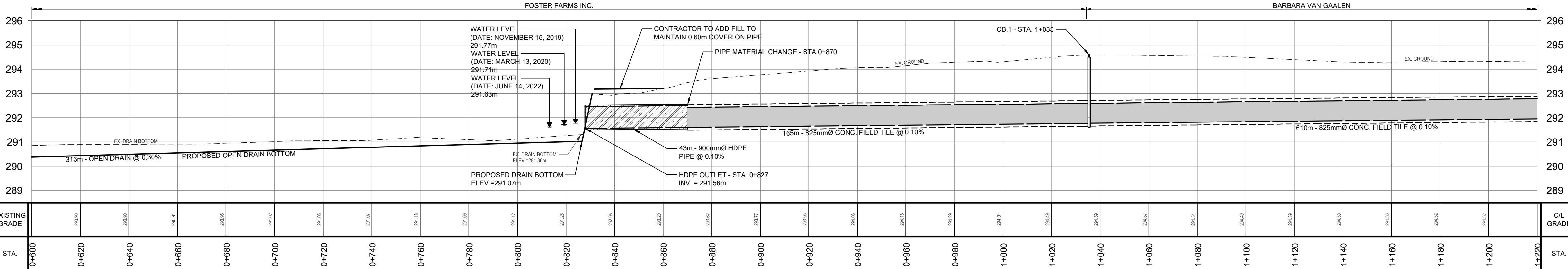
DRAWN BY:	APPROVED BY:	PROJECT NO.:	DRAWING NO.:
N.M.	B.S.	519046	1

DESIGNED BY: T.S./B.S. DATE: APRIL 2020 SCALE: 1:5000



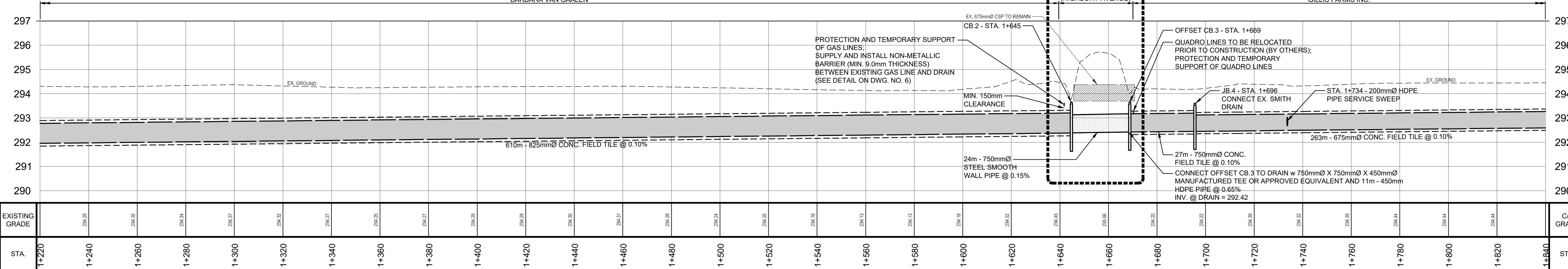
PROFILE - NEEDHAM DRAIN EXTENSION

SCALE - 1:1000 H  
1:100 V



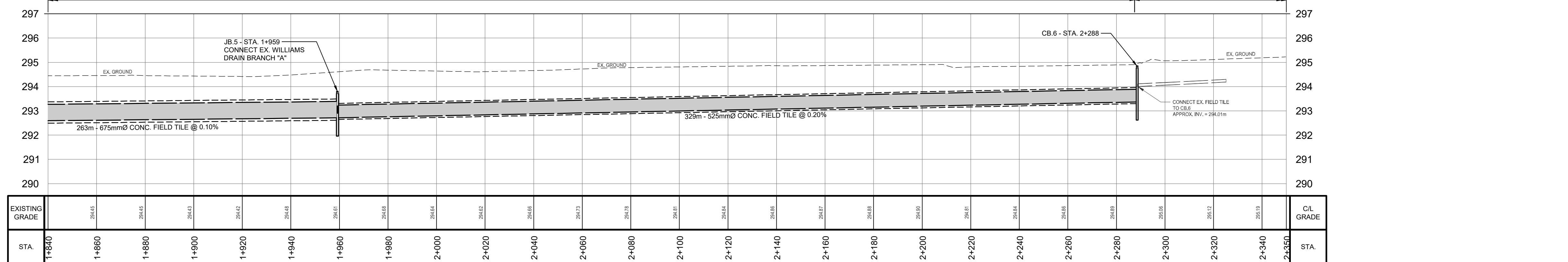
PROFILE - NEEDHAM DRAIN EXTENSION

SCALE - 1:1000 H  
1:100 V



PROFILE - NEEDHAM DRAIN EXTENSION

SCALE - 1:1000 H  
1:100 V



PROFILE - NEEDHAM DRAIN EXTENSION

SCALE - 1:1000 H  
1:100 V

- NOTES:
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  - CONTRACTOR IS TO CONNECT EXISTING TILES DURING CONSTRUCTION.

NOMENCLATURE:

LEGEND:

- EX. GROUND / EX. DRAIN BOTTOM
- PROPOSED OPEN DRAIN
- CONCRETE PIPE
- CSP PIPE
- HDPE PIPE
- STEEL SMOOTH WALL PIPE
- PROPOSED CATCHBASIN / JUNCTION BOX
- EX. FIELD TILE
- EX. CSP PIPE

BENCH MARKS:

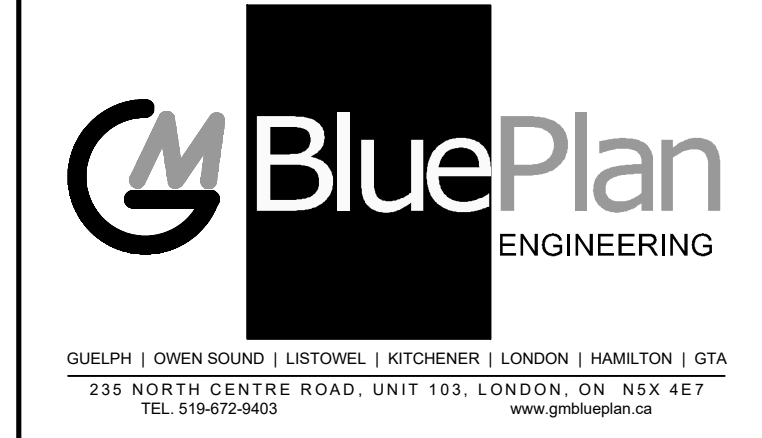
- BMS19046-1 - ELEV = 292.642m  
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- BMS19046-2 - ELEV = 295.763m  
NAIL IN NORTH FACE OF HP, LOCATED WEST OF HIGHBURY AVENUE 1st HP SOUTH OF ENBRIDGE OIL CER EASEMENT
- BMS19046-3 - ELEV = 296.156m  
NAIL IN EAST FACE OF HP, NORTH OF PLOVER MILLS ROAD, BETWEEN #1536 AND #1534 PLOVER MILLS ROAD
- BMS19046-4 - ELEV = 296.091m  
NAIL IN NORTHEAST FACE OF HP, HP NORTH OF PLOVER MILLS ROAD, EAST OF RESIDENTIAL PROPERTIES

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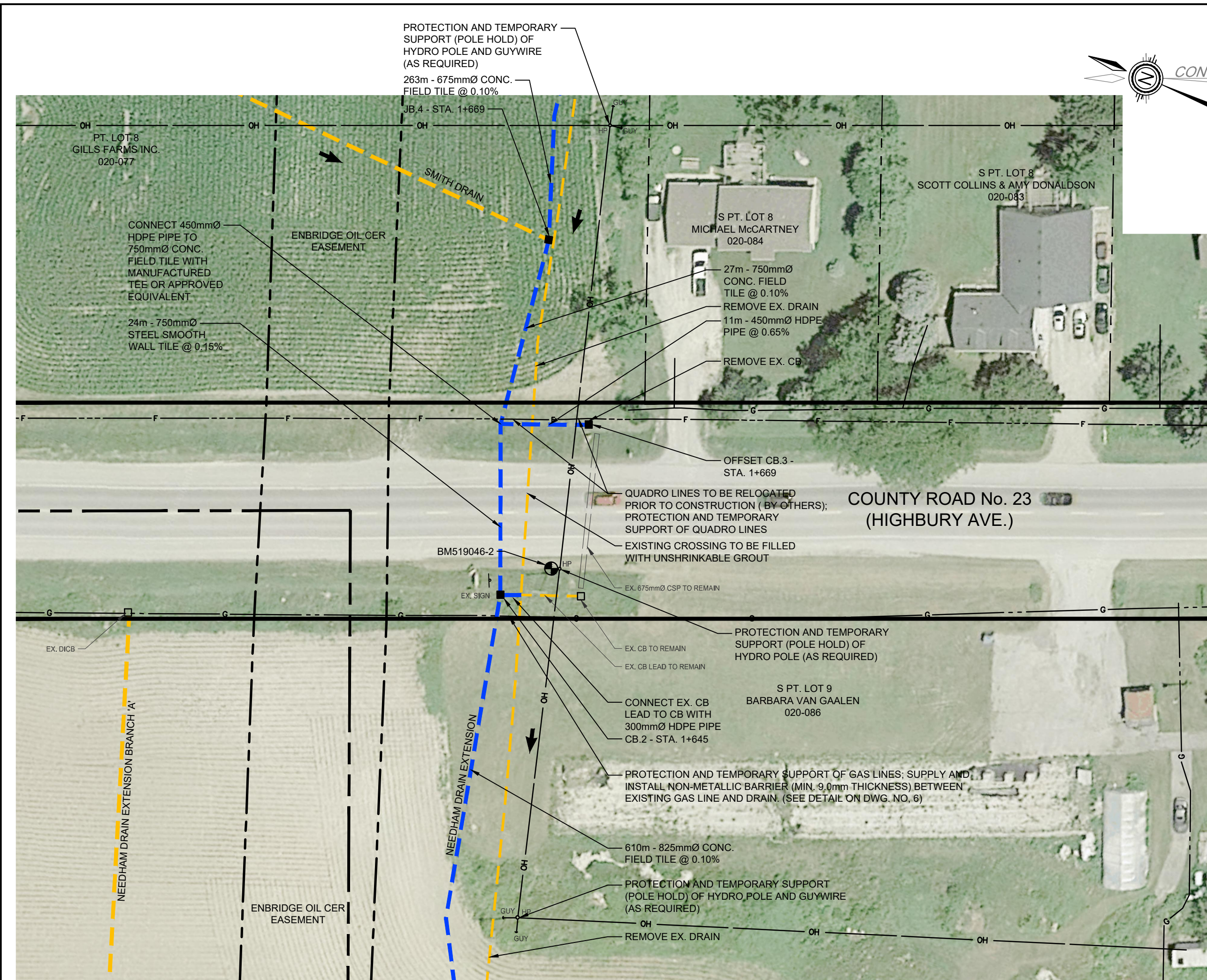


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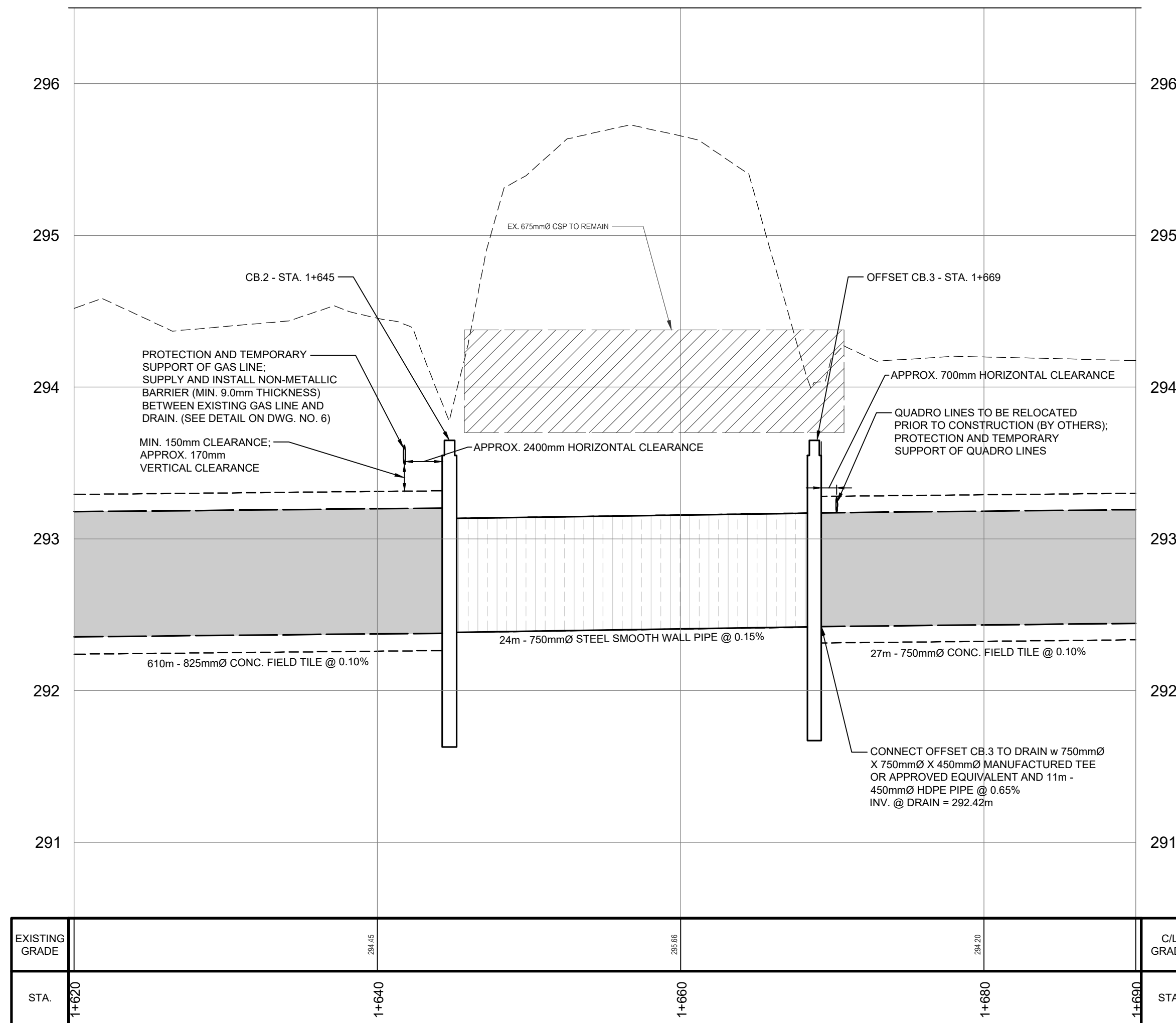


NEEDHAM DRAIN EXTENSION  
MUNICIPALITY OF MIDDLESEX  
CENTRE  
PROFILE

DRAWN BY: N.M.	APPROVED BY: B.S.	PROJECT NO.: 519046	DRAWING NO.: 2
DESIGNED BY: T.S.B.S.	DATE: APRIL 2020	SCALE: AS NOTED	



**A** ROAD CROSSING DETAIL - HIGBURY AVE.  
SCALE: 1:500



**D** ROAD CROSSING DETAIL - HIGBURY AVENUE  
SCALE: 1:250 H  
1:25 V

**NOTES:**  
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**NOMENCLATURE:**

**LEGEND:**

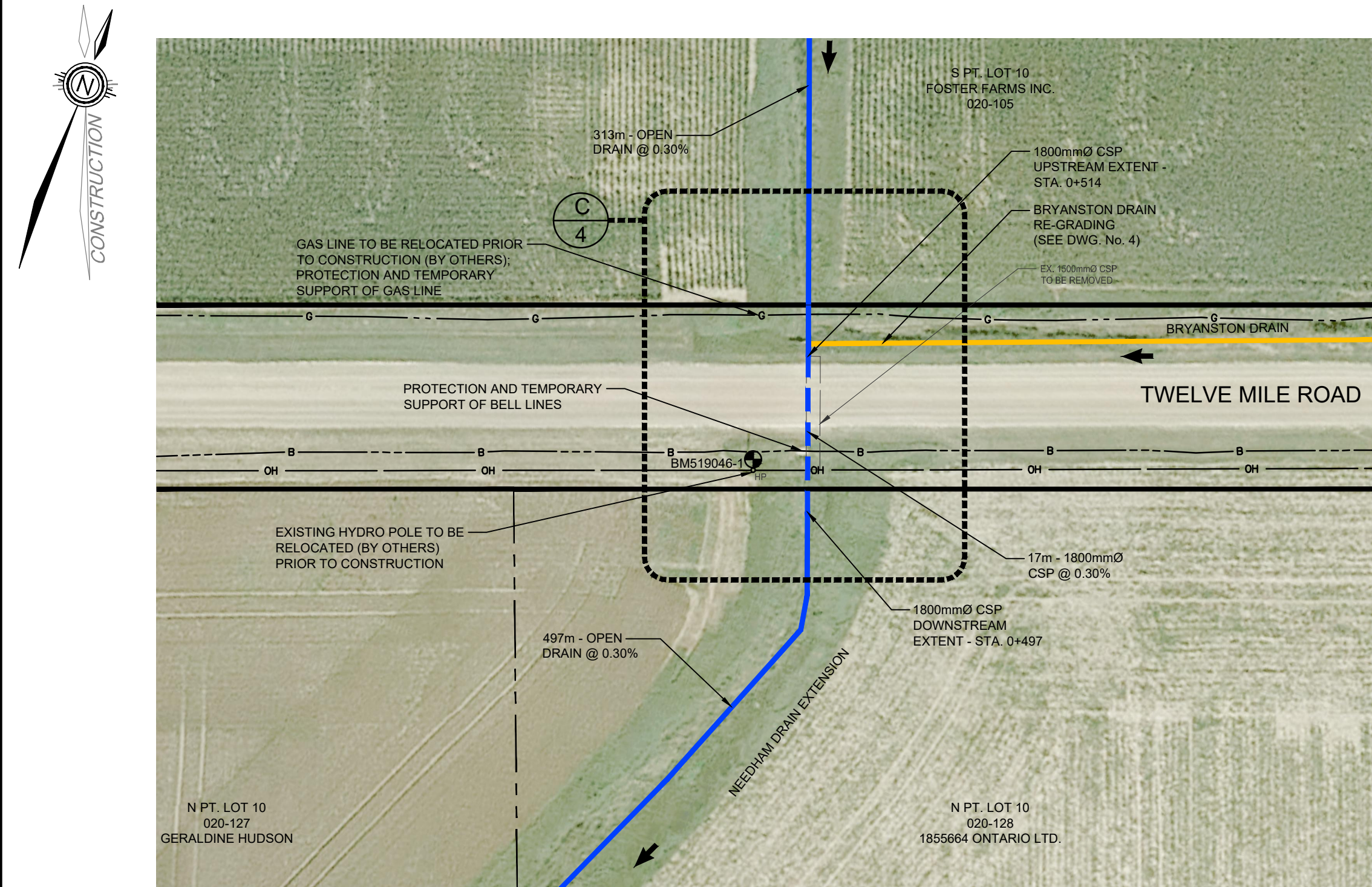
- INTERMEDIATE WATERSHED BOUNDARY
- PROPOSED CLOSED DRAIN
- PROPOSED OPEN DRAIN
- EX. OPEN DRAIN
- R.O.W. LIMIT
- PROPERTY LINE
- EX. BELL
- EX. GAS
- EX. QUADRO
- EX. OVERHEAD HYDRO
- EX. GROUND / EX. DRAIN BOTTOM
- CONCRETE PIPE
- STEEL SMOOTH WALL PIPE
- EX. CSP PIPE
- CATCHBASIN / JUNCTION BOX
- BENCHMARK LOCATION
- DIRECTION OF FLOW
- HYDRO POLE

**BENCH MARKS:**

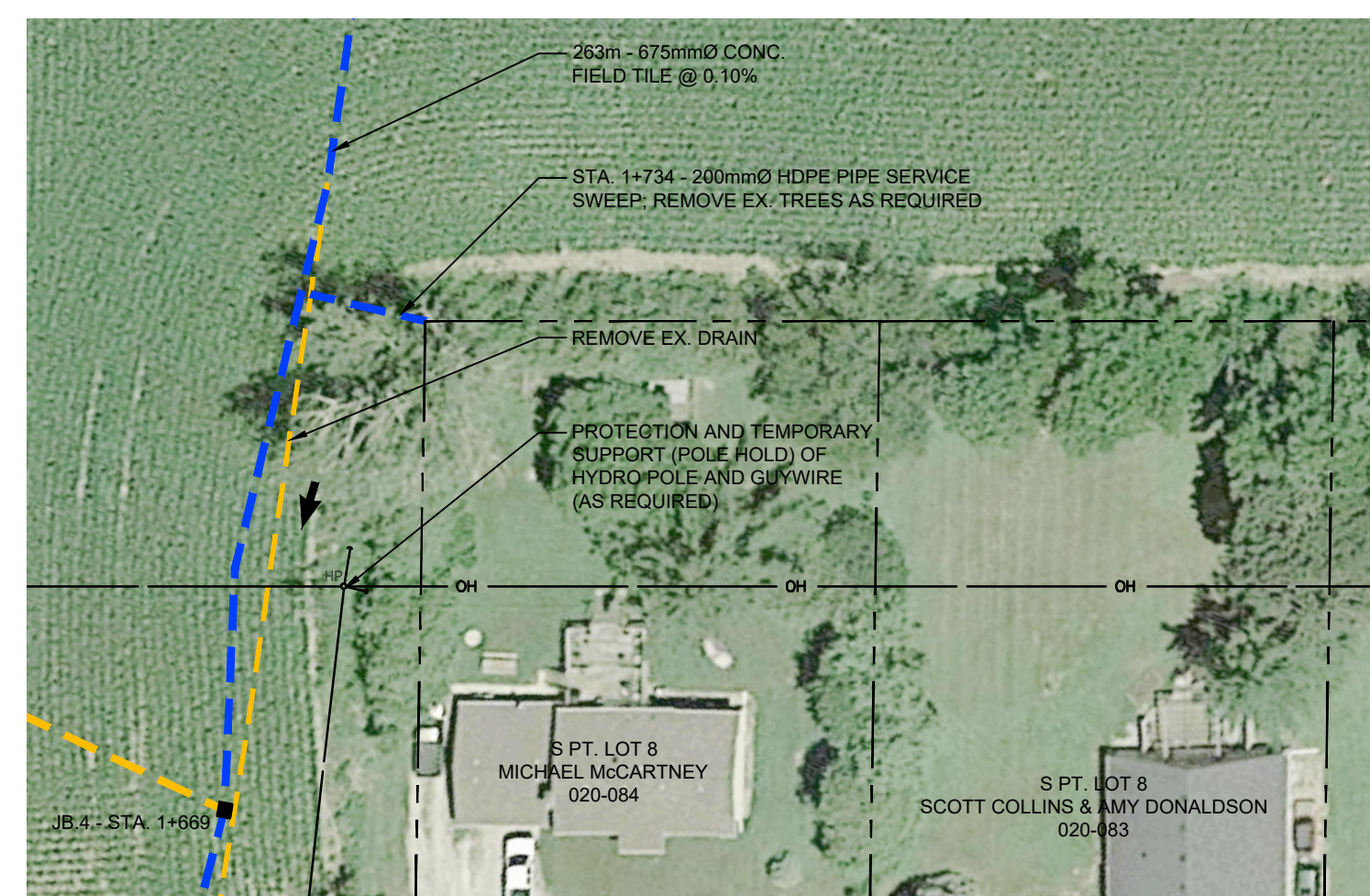
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NAIL IN NORTH FACE OF HP, LOCATED WEST OF HIGBURY AVENUE 1st HP SOUTH OF ENBRIDGE OIL CER EASEMENT
- BMS19046-3 - ELEV. = 296.150m  
NAIL IN EAST FACE OF HP, NORTH OF PLOVER MILLS ROAD, BETWEEN #16348 AND #16354 PLOVER MILLS ROAD
- BMS19046-4 - ELEV. = 296.081m  
NAIL IN NORTHEAST FACE OF HP, HP NORTH OF PLOVER MILLS ROAD, EAST OF RESIDENTIAL PROPERTIES

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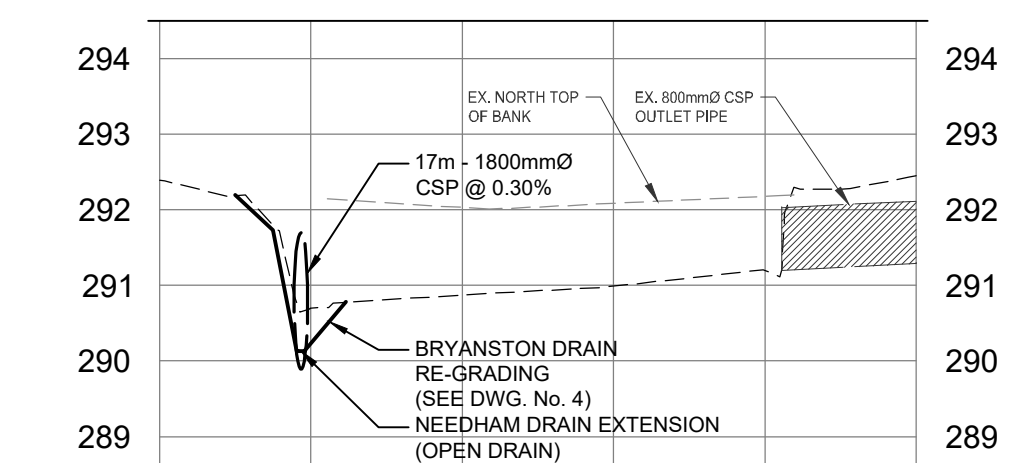
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**B** ROAD CROSSING DETAIL - TWELVE MILE ROAD  
SCALE: 1:500

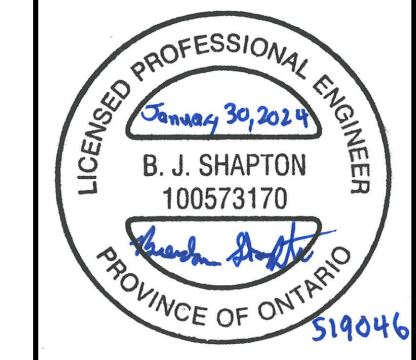


**C** SERVICE SWEEP DETAIL  
SCALE: 1:1000 H  
1:100 V



EXISTING GRADE	STA.	CL GRADE
291.05	0+000	291.05
291.05	0+020	291.05
291.05	0+040	291.05
291.05	0+060	291.05
291.05	0+080	291.05
291.05	0+100	291.05

**PROFILE - EXISTING BRYANSTON DRAIN - OPEN SECTION**  
SCALE: 1:1000 H  
1:100 V

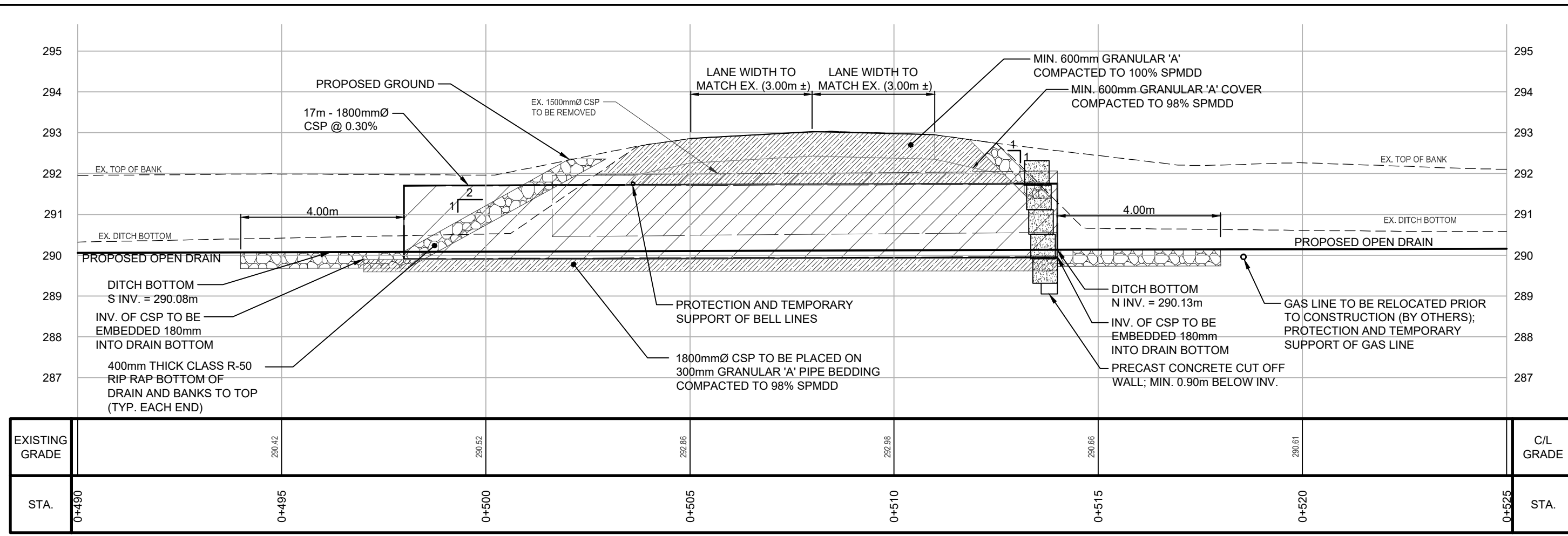
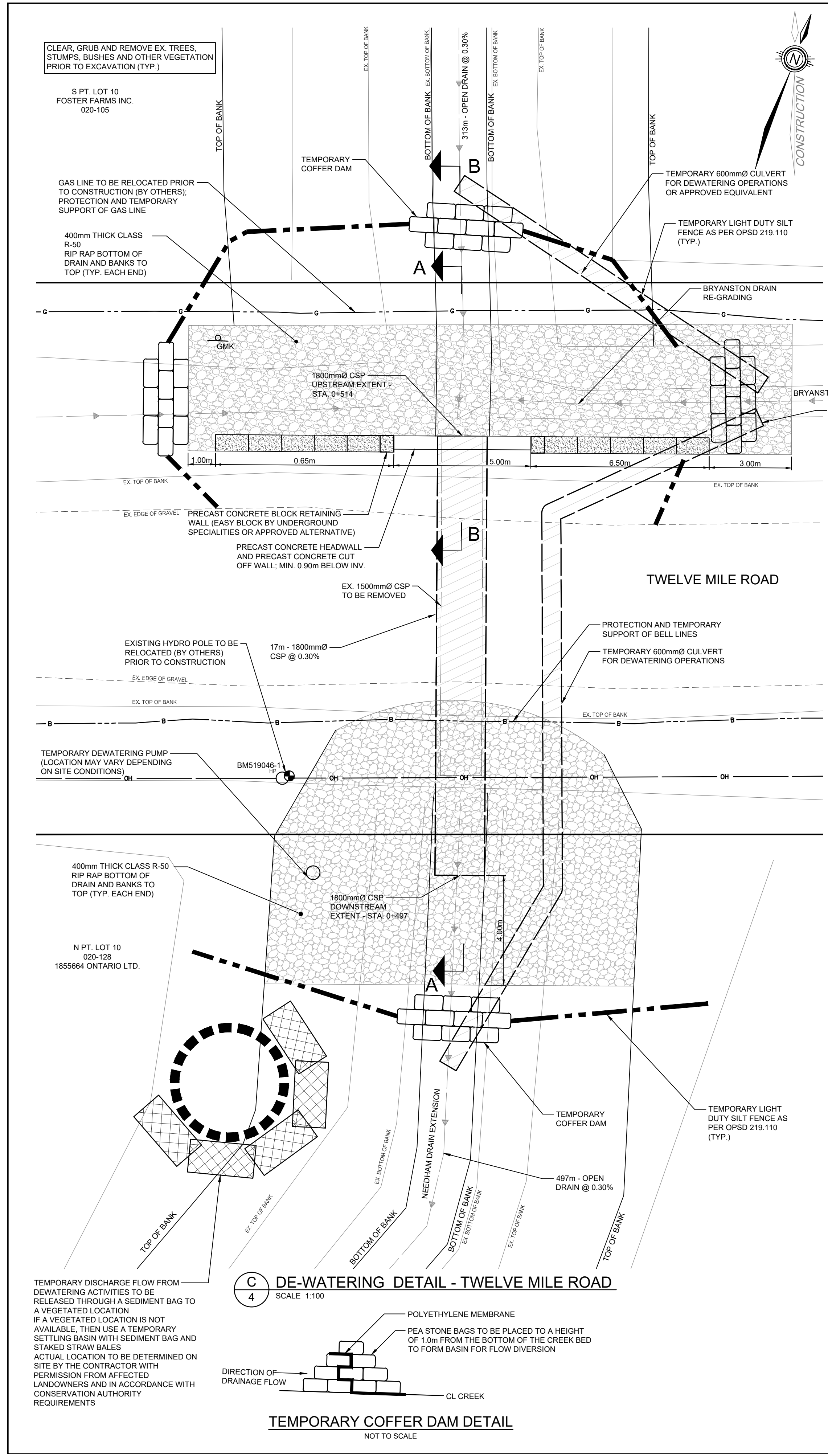


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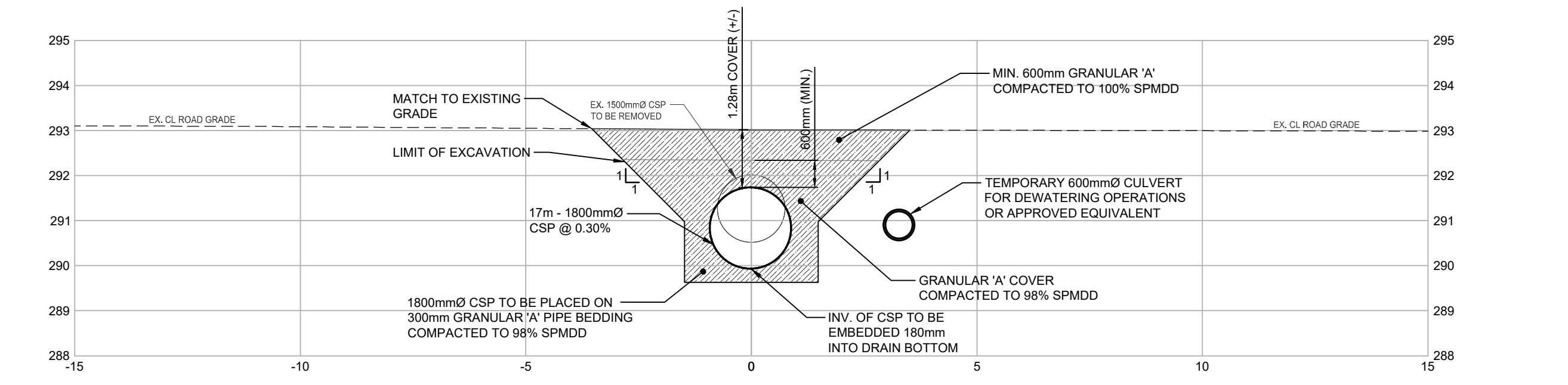


**NEEDHAM DRAIN EXTENSION**  
**MUNICIPALITY OF MIDDLESEX CENTRE**  
**ROAD CROSSING DETAILS**

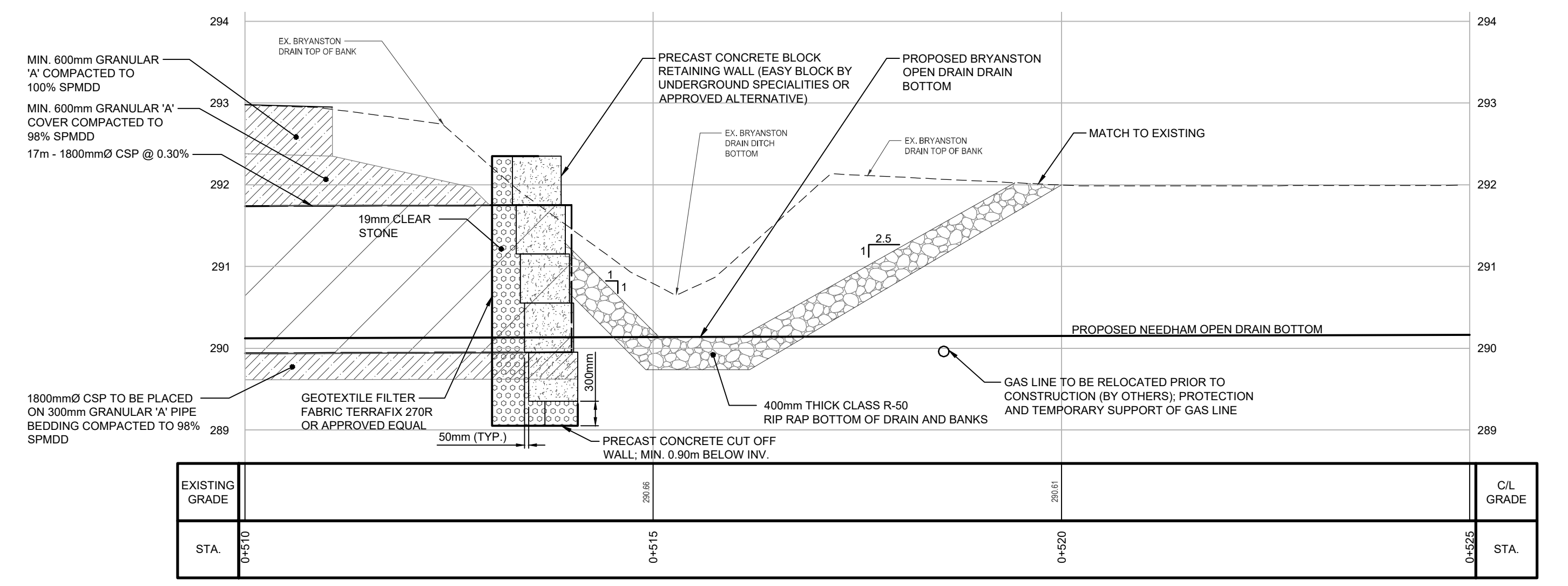
DRAWN BY: N.M.	APPROVED BY: B.S.	PROJECT NO.: 519046	DRAWING NO.: 3
DESIGNED BY: T.S./B.S.	DATE: APRIL 2020	SCALE: AS NOTED	



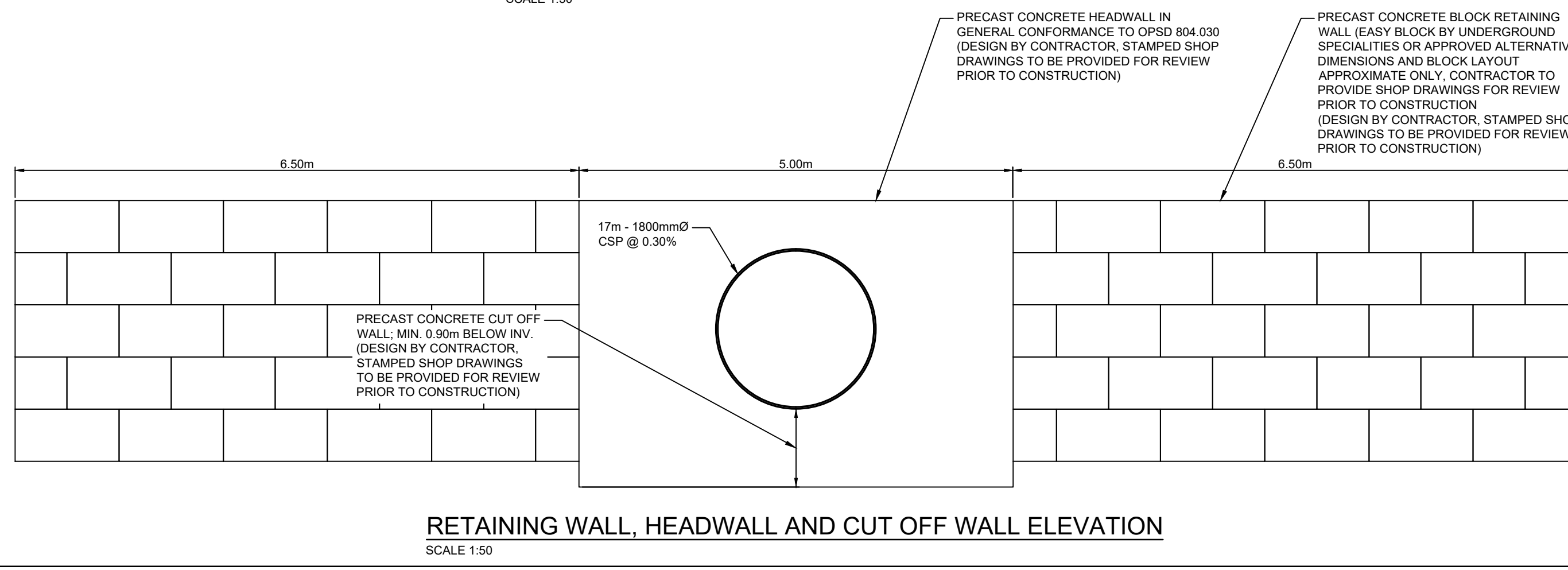
**SECTION A-A TWELVE MILE ROAD CULVERT**  
SCALE 1:100



**TWELVE MILE ROAD CULVERT - TYP. SECTION (STA. 0+508)**  
SCALE 1:100



**SECTION B-B TWELVE MILE ROAD RETAINING WALL**  
SCALE 1:50



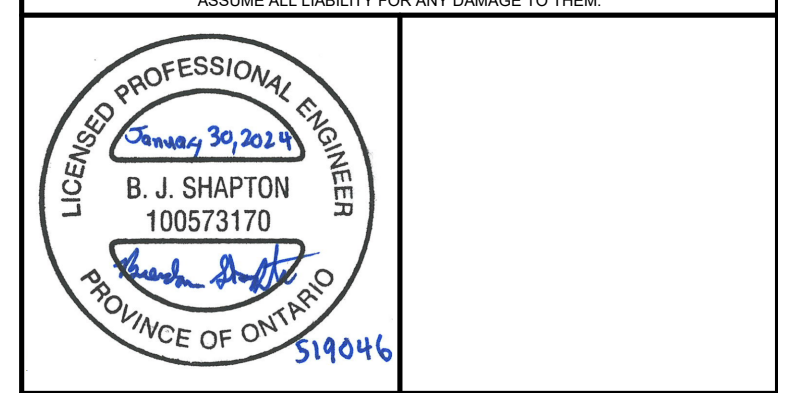
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  - PROPOSED OPEN DRAIN
  - R.O.W. LIMIT
  - EX. BELL
  - EX. GAS
  - EX. OVERHEAD HYDRO
  - SILT FENCE
  - CSP PIPE
  - STEEL SMOOTH WALL PIPE
  - EX. CSP PIPE
  - BENCHMARK LOCATION
  - HYDRO POLE

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  - B.M.519046-3 - ELEV. = 296.150m  
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1.	2019/10/23	ON-SITE MEETING	B.B.

**BluePlan ENGINEERING**

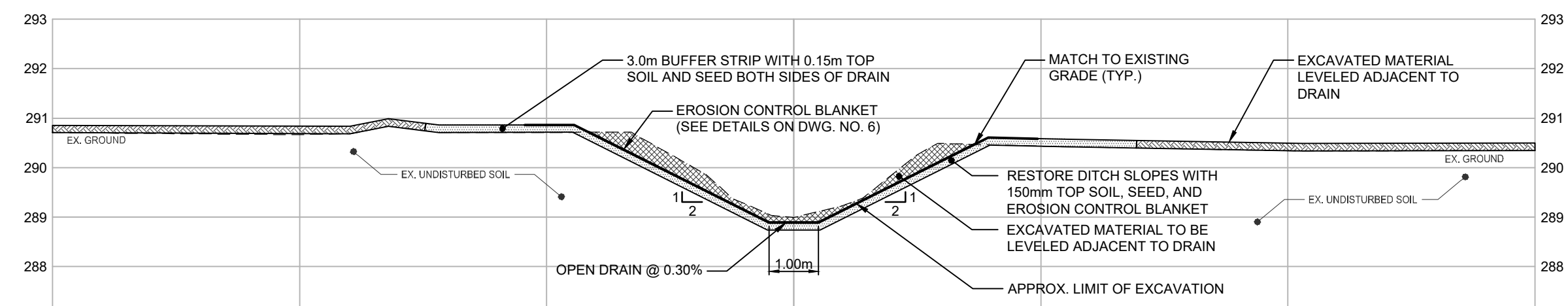
GUELPH | OWEN SOUND | LISTONEL | KITCHENER | LONDON | HAMILTON | GTA  
235 NORTH CENTRE ROAD, UNIT 103, LONDON, ON N6K 4E7  
TEL 519-672-8403 www.gmbplan.ca

**NEEDHAM DRAIN EXTENSION**

**MUNICIPALITY OF MIDDLESEX CENTRE**

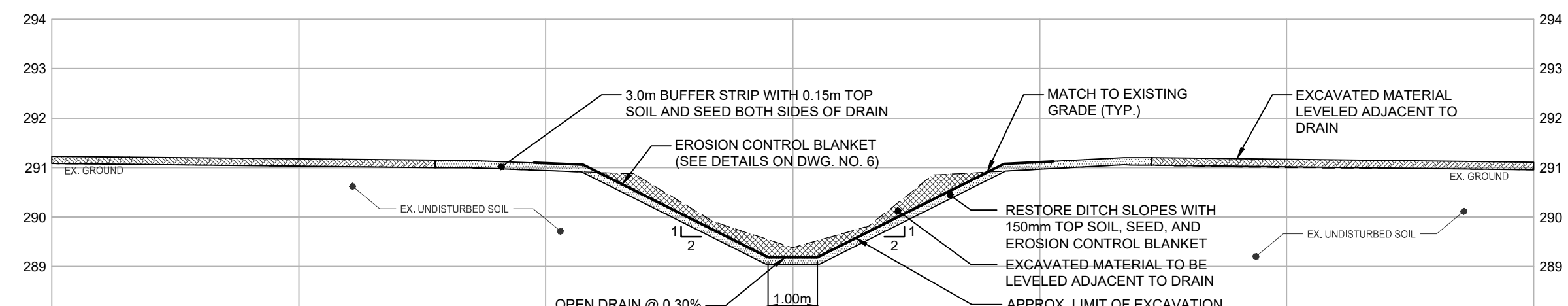
**TWELVE MILE ROAD CROSSING**

DRAWN BY: N.M.	APPROVED BY: B.S.	PROJECT NO.: 519046	DRAWING NO.:
DESIGNED BY: T.S./B.S.	DATE: APRIL 2020	SCALE: AS NOTED	<b>4</b>



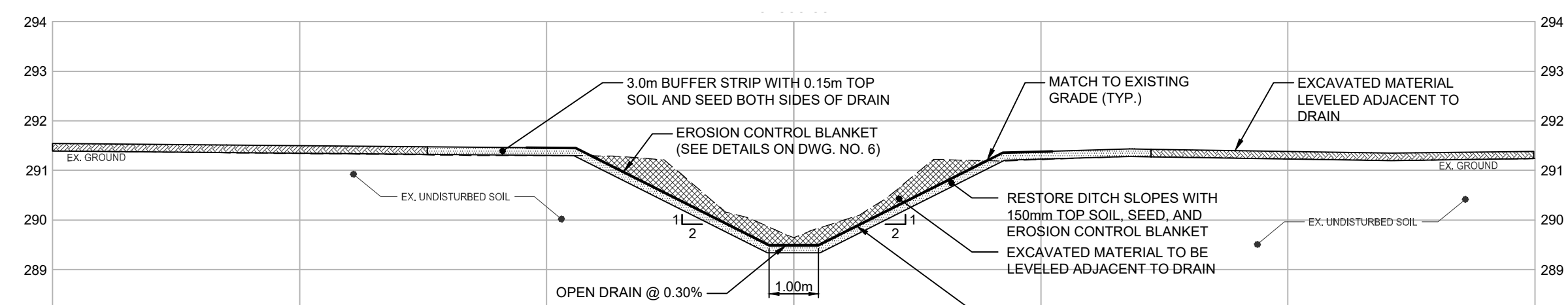
OPEN DRAIN SECTION - STA. 0+100

SCALE - 1:100



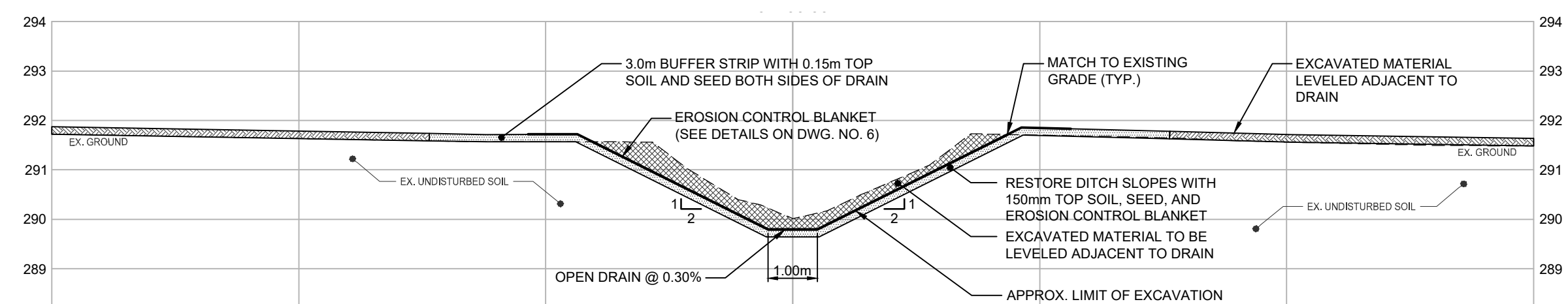
OPEN DRAIN SECTION - STA. 0+200

SCALE - 1:100



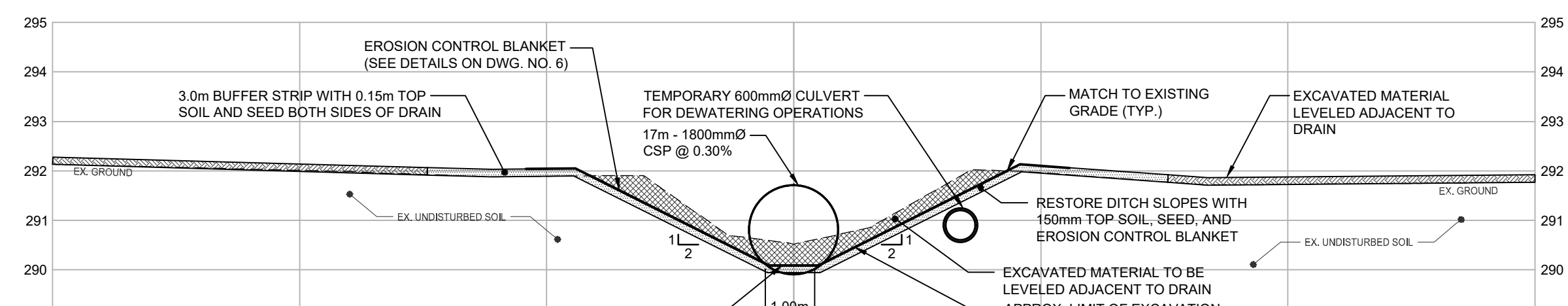
OPEN DRAIN SECTION - STA. 0+300

SCALE - 1:100



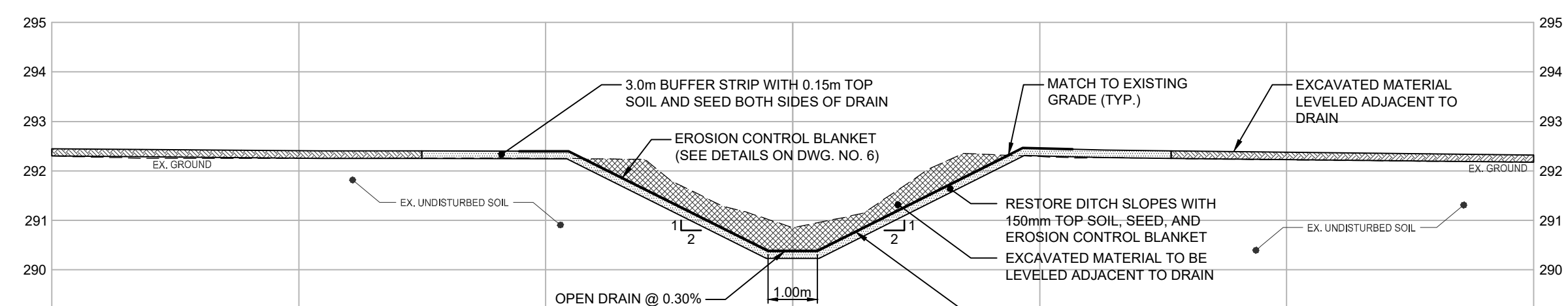
OPEN DRAIN SECTION - STA. 0+400

SCALE - 1:100



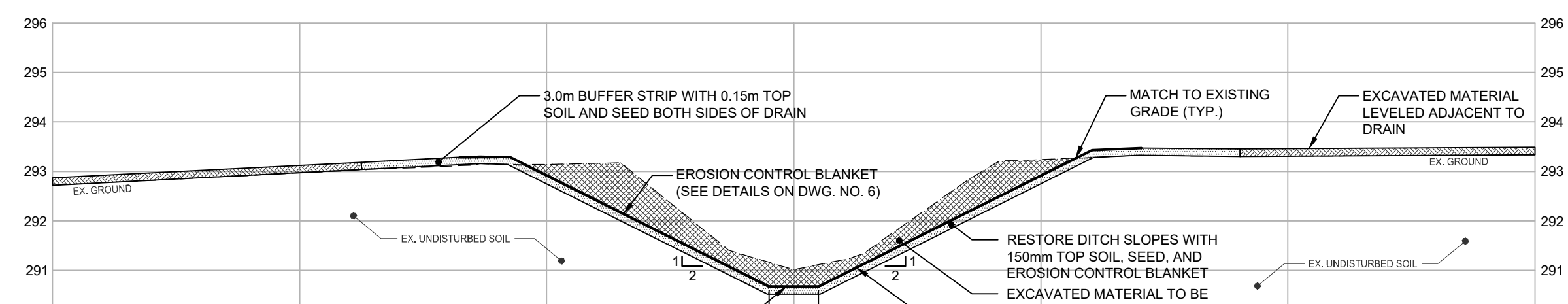
OPEN DRAIN SECTION - STA. 0+500

SCALE - 1:100



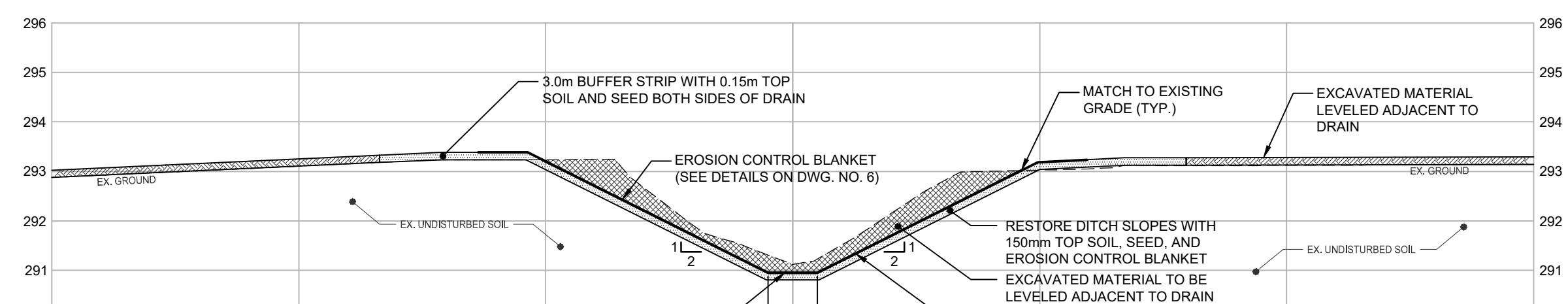
OPEN DRAIN SECTION - STA. 0+600

SCALE - 1:100



OPEN DRAIN SECTION - STA. 0+700

SCALE - 1:100



OPEN DRAIN SECTION - STA. 0+800

SCALE - 1:100

- NOTES:
- CONTRACTOR IS TO OBTAIN UTILITY LOCATES PRIOR TO CONSTRUCTION.
  - CONTRACTOR IS TO CONNECT EXISTING TILES DURING CONSTRUCTION.

NOMENCLATURE:

- LEGEND:
- EX. GROUND
  - EROSION CONTROL BLANKET
  - EX. MATERIAL TO BE REMOVED
  - EX. MATERIAL TO BE LEVELED
  - TOPSOIL AND SEED

- BENCH MARKS:
- BM519046-1 - ELEV. = 292.642m  
NAIL IN NORTH FACE OF HP, LOCATED SOUTH OF TWELVE MILE ROAD 1st HP WEST OF NEEDHAM DRAIN CROSSING
  - BM519046-2 - ELEV. = 295.763m  
NAIL IN NORTH FACE OF HP, LOCATED WEST OF HIGHBURY AVENUE 1st HP SOUTH OF ENBRIDGE OIL CER EASEMENT
  - BM519046-3 - ELEV. = 296.150m  
NAIL IN EAST FACE OF HP, NORTH OF PLOVER MILLS ROAD, BETWEEN #16348 AND #16354 PLOVER MILLS ROAD
  - BM519046-4 - ELEV. = 296.081m  
NAIL IN NORTHEAST FACE OF HP, HP NORTH OF PLOVER MILLS ROAD, EAST OF RESIDENTIAL PROPERTIES

THE POSITION OF POLE LINES, CONDUITS, WATERMANS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED.

BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR ANY DAMAGE TO THEM.



3.	2023/01/30	ENGINEER'S REPORT	B.S.
2.	2022/07/22	DESIGN REVIEW MEETING	B.B.
1.	2019/10/23	ON-SITE MEETING	B.B.
NO.	DATE	REVISION DESCRIPTION	CHKD

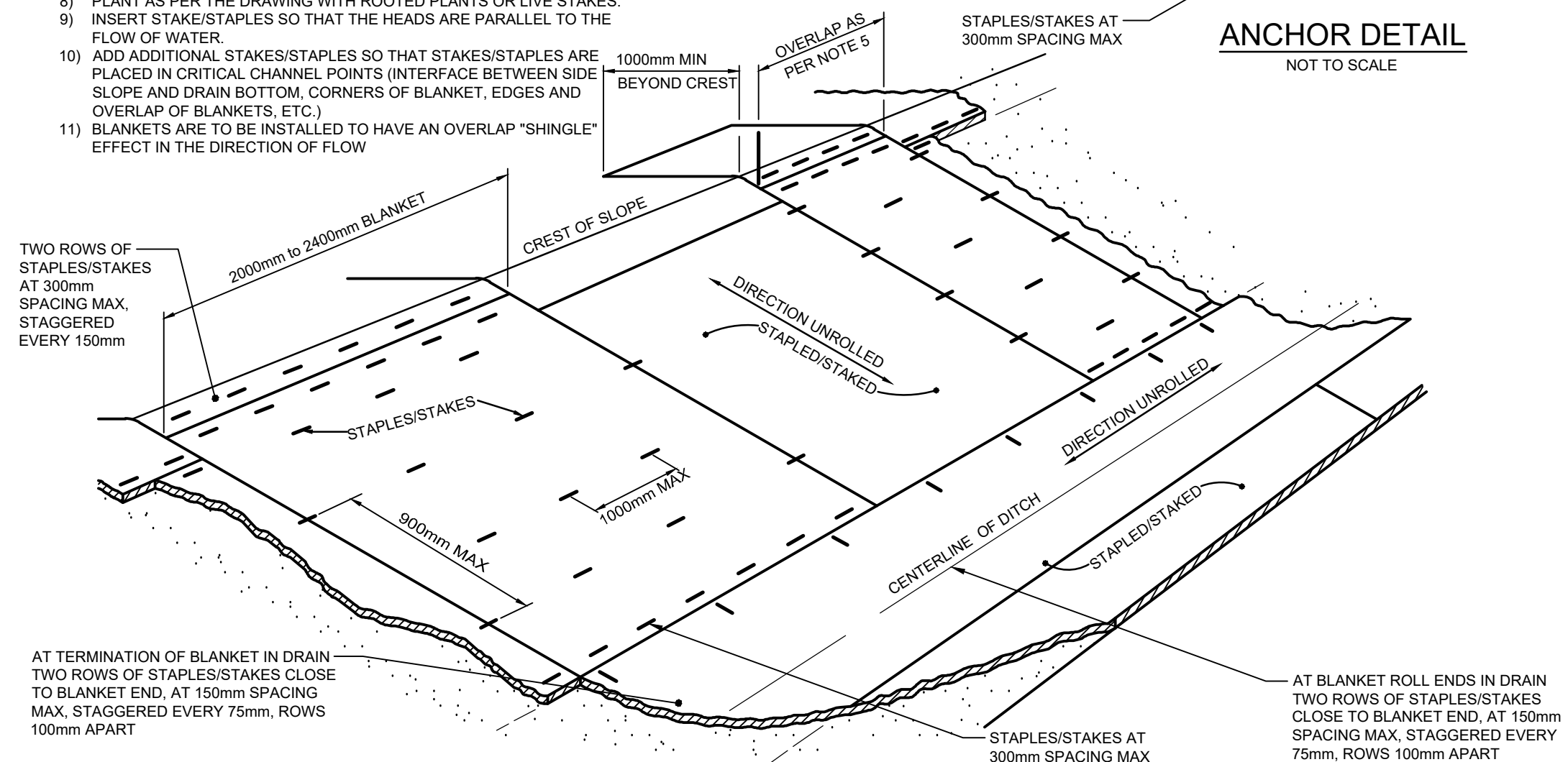
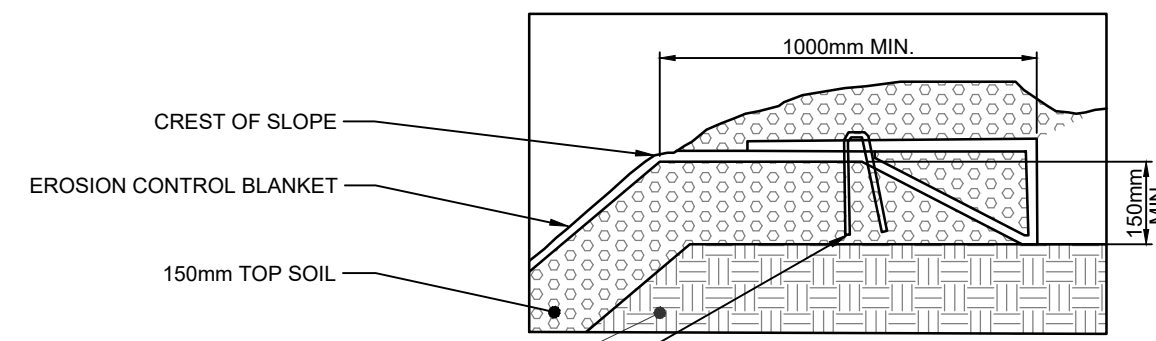


NEEDHAM DRAIN EXTENSION  
MUNICIPALITY OF MIDDLESEX CENTRE  
OPEN DRAIN SECTIONS

DRAWN BY: N.M.	APPROVED BY: B.S.	PROJECT NO.: 519046	DRAWING NO.:
DESIGNED BY: T.S./B.S.	DATE: APRIL 2020	SCALE: AS NOTED	5

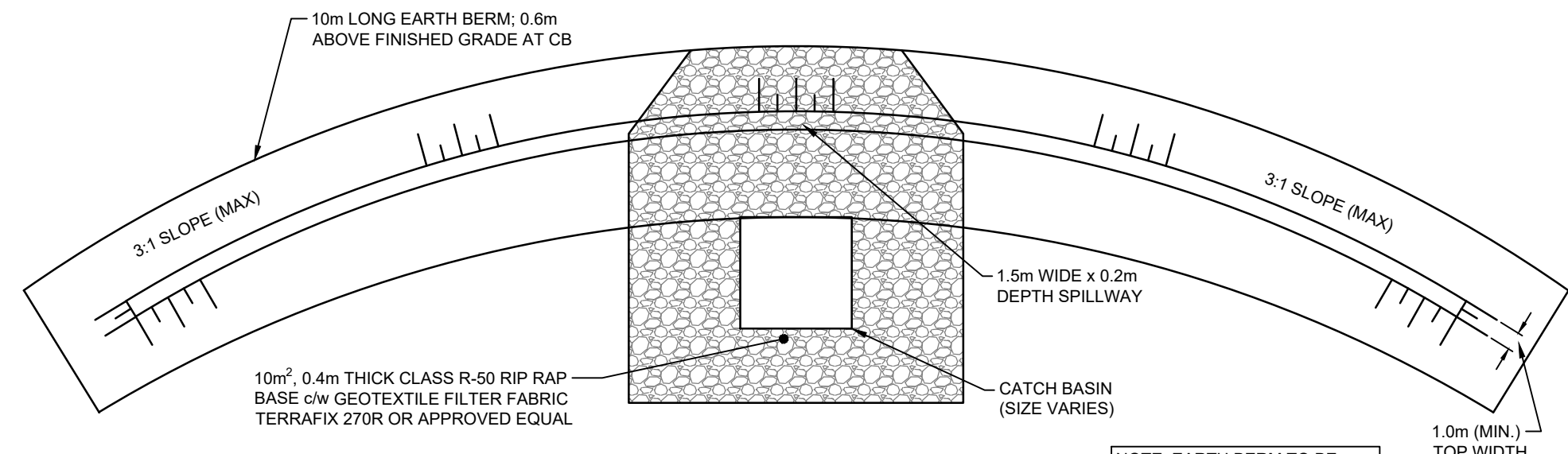
**INSTALLATION GUIDELINES:**

- 1) REGRADE THE SITE AS PER THE DESIGN.
- 2) PREPARE THE SITE BY REMOVING LARGE ROCKS, OBSTRUCTIONS OR MATERIALS THAT MAY PREVENT THE EROSION CONTROL BLANKET FROM MAKING DIRECT FIRM CONTACT WITH THE SOIL.
- 3) APPLY THE SEED AND LIGHTLY RAKE IN.
- 4) ANCHOR THE BLANKET AT THE TOP OF THE SLOPE IN A 150mm DEEP TRENCH (SEE ANCHOR DETAIL).
- 5) OVERLAP PARALLEL ROLLS 100mm AND END 300mm MINIMUM.
- 6) ANCHOR BIOMAC C OR APPROVED EQUIVALENT WITH WOODEN OR STEEL STAKES. THE EROSION CONTROL BLANKET DETAIL SHOWS THE CONFIGURATION AND SPACING OF THE ANCHORS. ENSURE THAT THE BLANKET IS WELL SECURE AND PROTECTED FROM OVERLAND FLOW, FLOODWATERS AND WIND.
- 7) DO NOT STRETCH THE BLANKETS.
- 8) PLANT AS PER THE DRAWING WITH ROOTED PLANTS OR LIVE STAKES.
- 9) INSERT STAKE/STAPLES SO THAT THE HEADS ARE PARALLEL TO THE FLOW OF WATER.
- 10) ADD ADDITIONAL STAKES/STAPLES SO THAT STAKES/STAPLES ARE PLACED IN CRITICAL CHANNEL POINTS (INTERFACE BETWEEN SIDE SLOPE AND DRAIN BOTTOM, CORNERS OF BLANKET, EDGES AND OVERLAP OF BLANKETS, ETC.)
- 11) BLANKETS ARE TO BE INSTALLED TO HAVE AN OVERLAP "SHINGLE" EFFECT IN THE DIRECTION OF FLOW



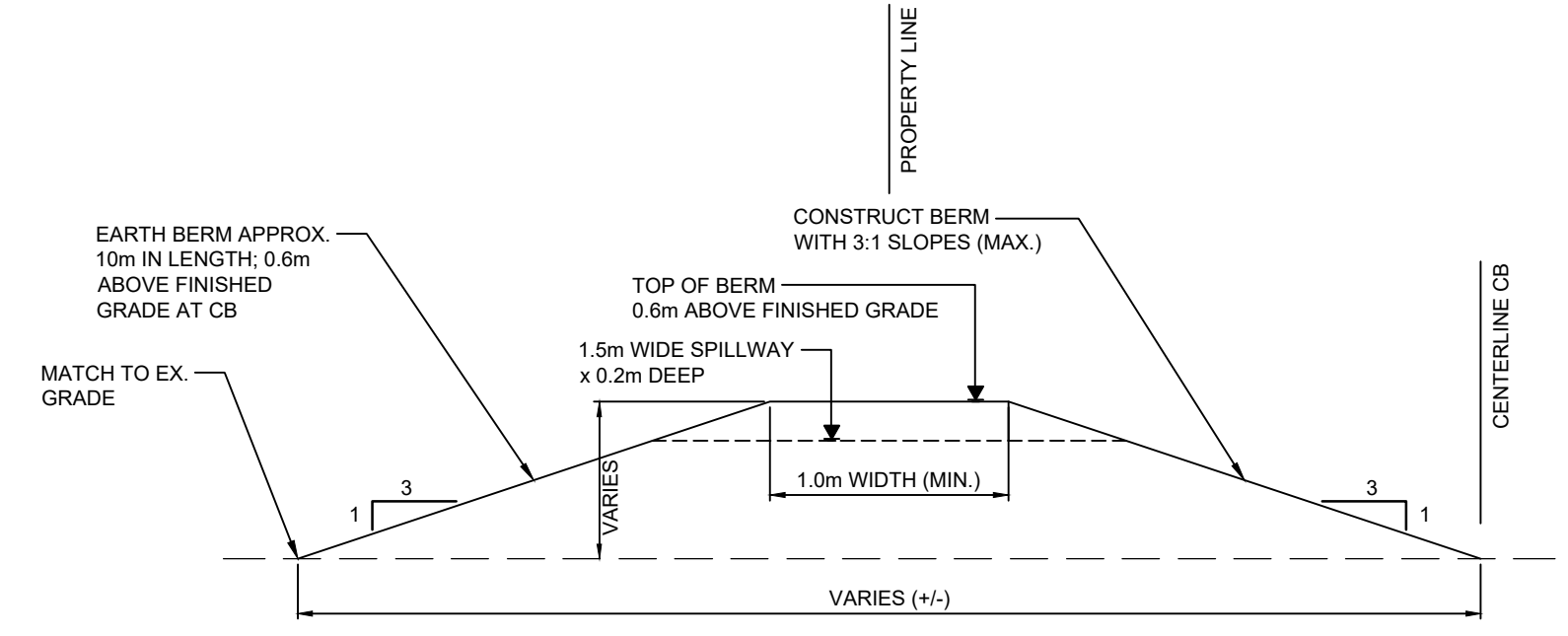
**SUGGESTED MANUFACTURER INSTALLATION SPECIFICATIONS: EROSION CONTROL BLANKET \*\***

\*\* CONTRACTOR TO CONFIRM WITH EROSION CONTROL BLANKET MANUFACTURER

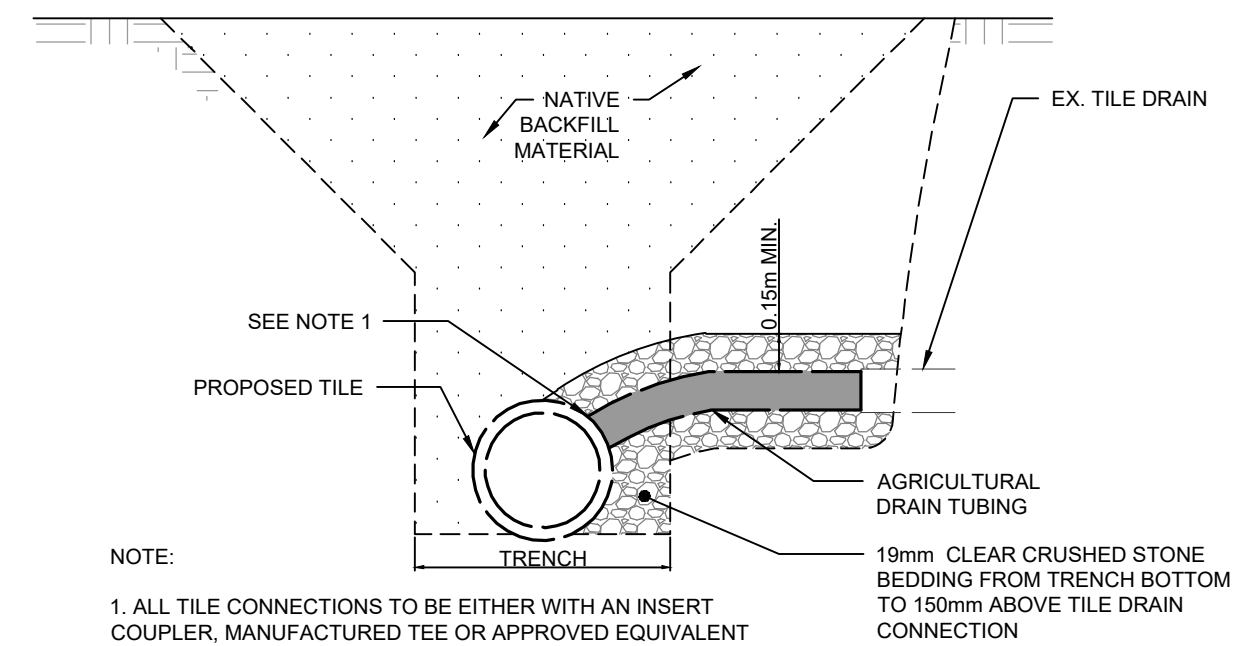


**TYPICAL BERM DETAIL - PLAN**

NOTE: EARTH BERM TO BE CONSTRUCTED FROM NATIVE MATERIALS EXCAVATED FROM DRAIN CONSTRUCTION. COMPLETE WITH GRASS SEED.



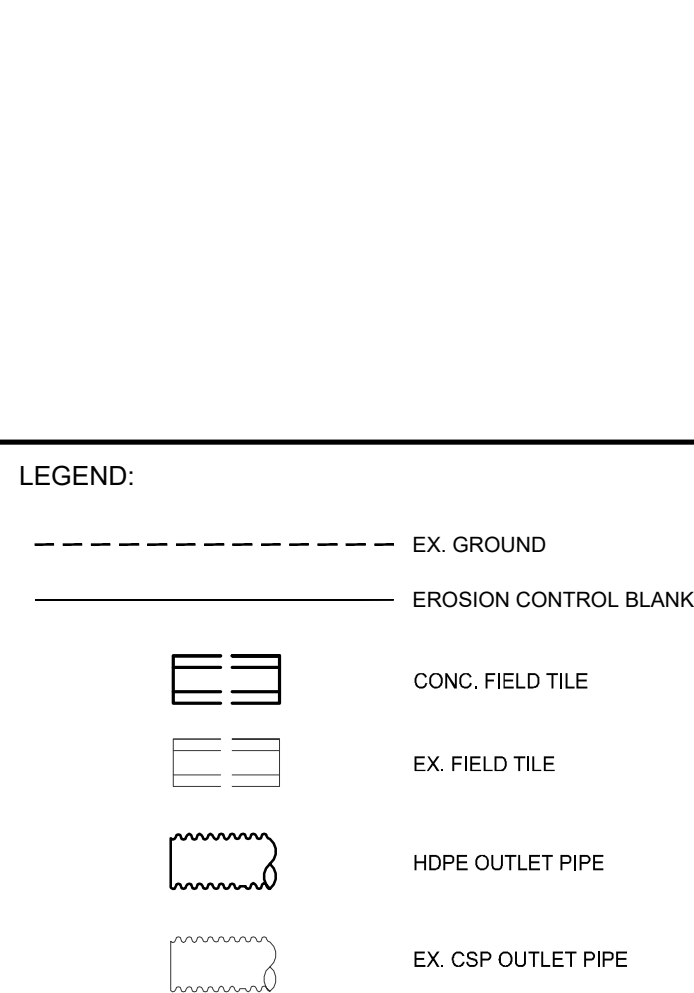
**TYPICAL BERM DETAIL - SECTION**



**TYPICAL TILE CONNECTION DETAIL - SECTION**

- NOTES:**
1. CONTRACTOR IS TO OBTAIN UTILITY LOCATES PRIOR TO CONSTRUCTION.
  2. CONTRACTOR IS TO CONNECT EXISTING TILES DURING CONSTRUCTION.

**NOMENCLATURE:**



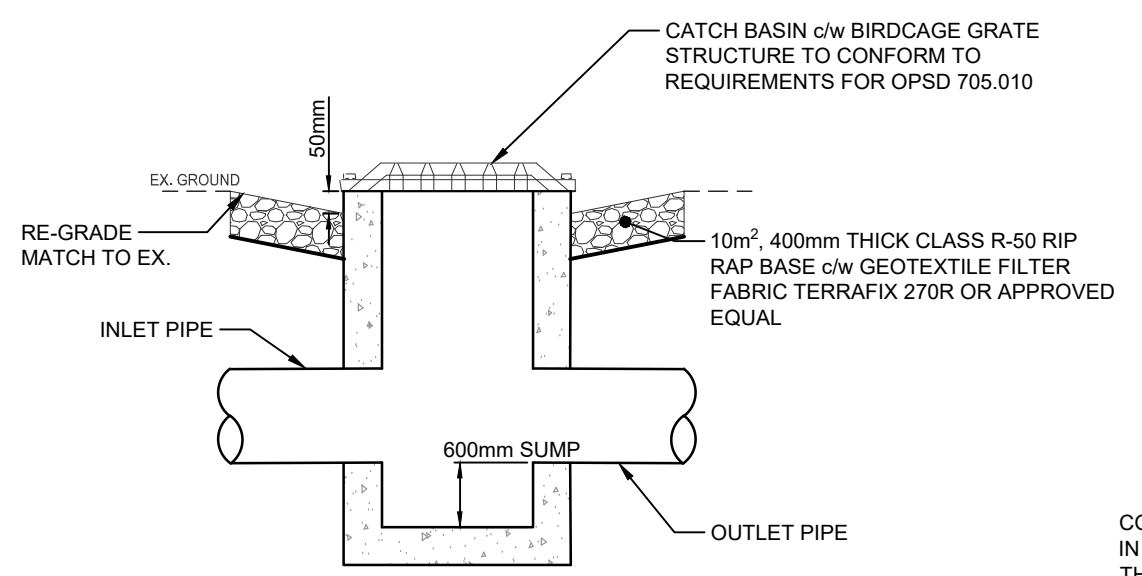
**LEGEND:**

**BENCH MARKS:**

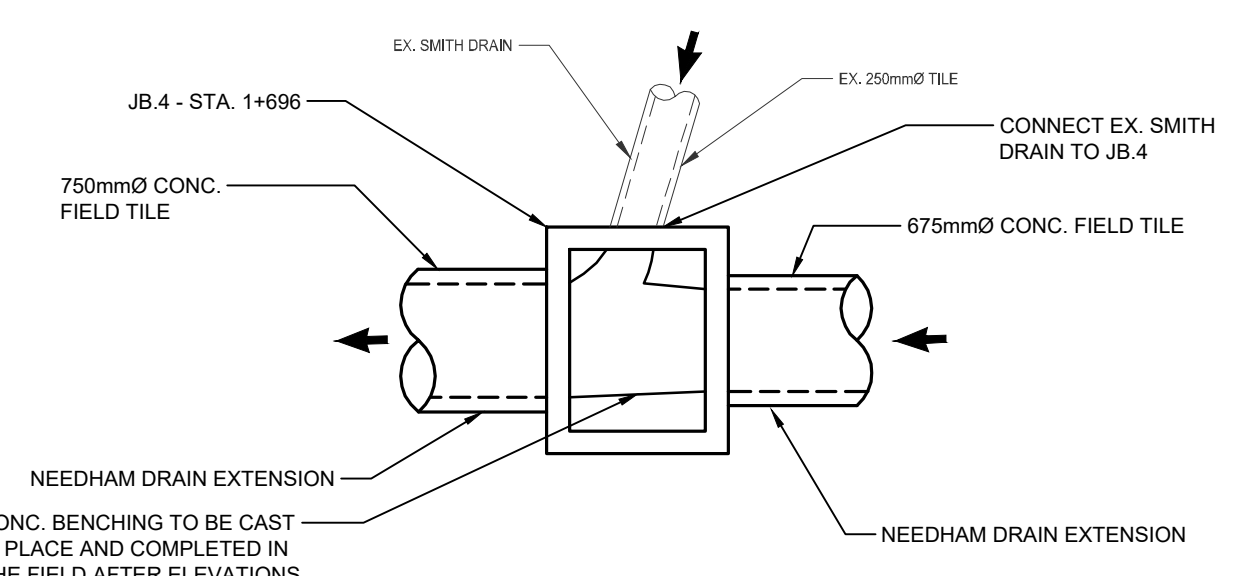
- BM519046-1 - ELEV. = 292.642m  
NAIL IN NORTH FACE OF HP, LOCATED SOUTH OF TWELVE MILE ROAD 1st HP WEST OF NEEDHAM DRAIN CROSSING
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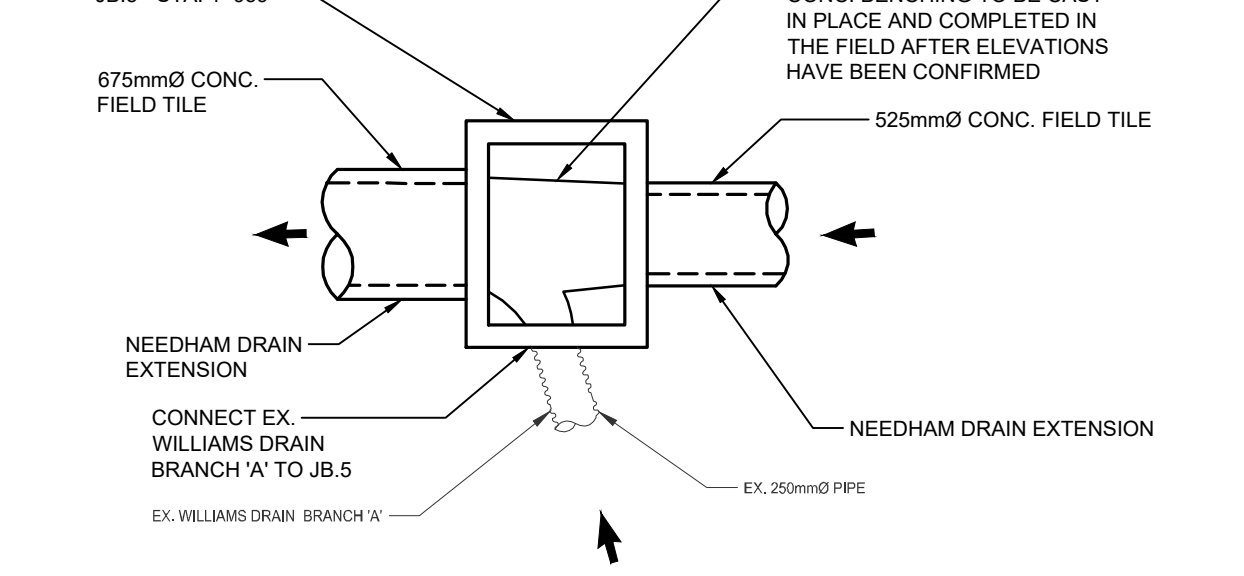
BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR ANY DAMAGE TO THEM.



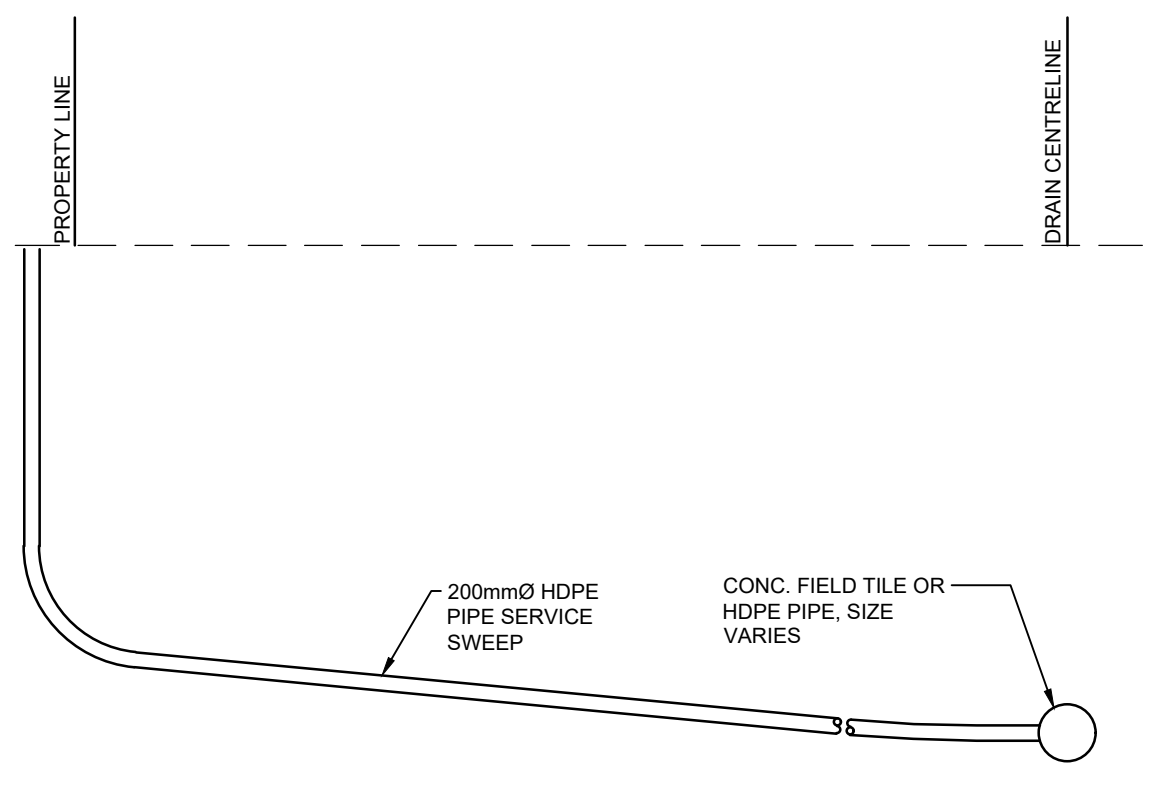
**TYPICAL CATCHBASIN DETAIL**



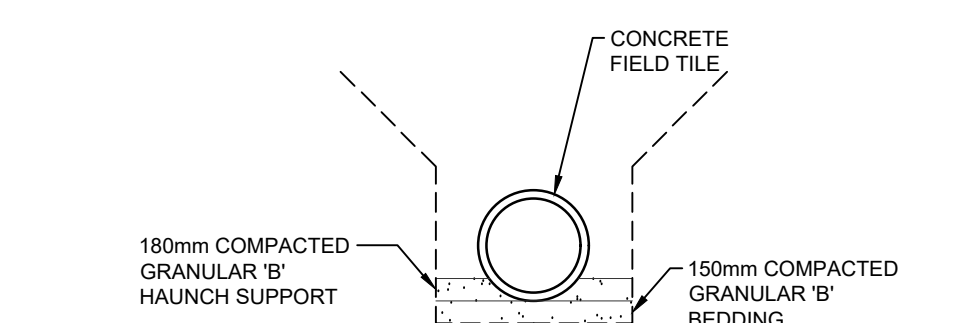
**JB.4 BENCHING DETAIL - STA. 1+696**



**JB.5 BENCHING DETAIL - STA. 1+959**

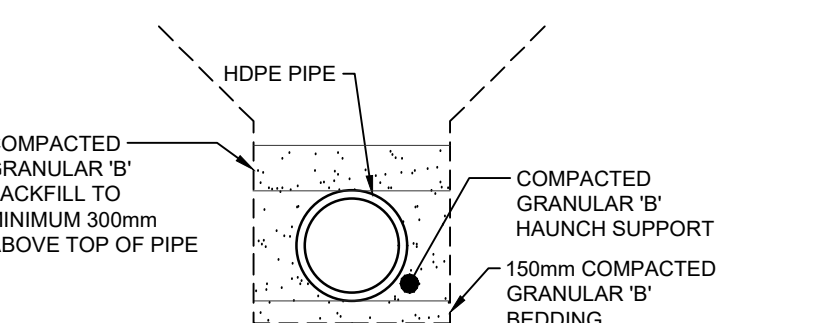


**TYPICAL SERVICE SWEEP DETAIL**

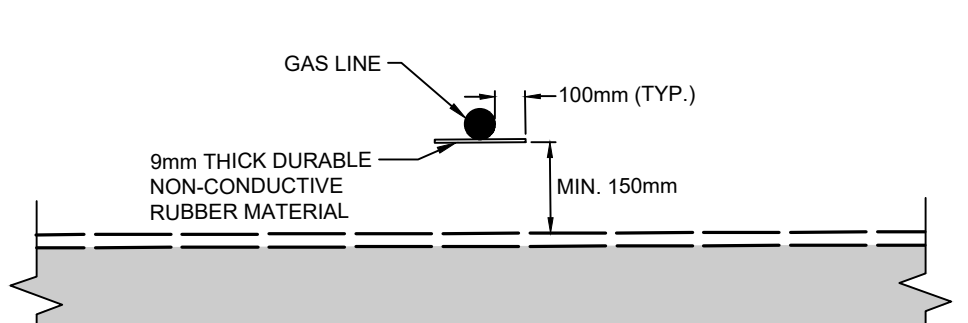


**CONC. FIELD TILE BEDDING DETAIL EXCAVATOR INSTALLATION\***

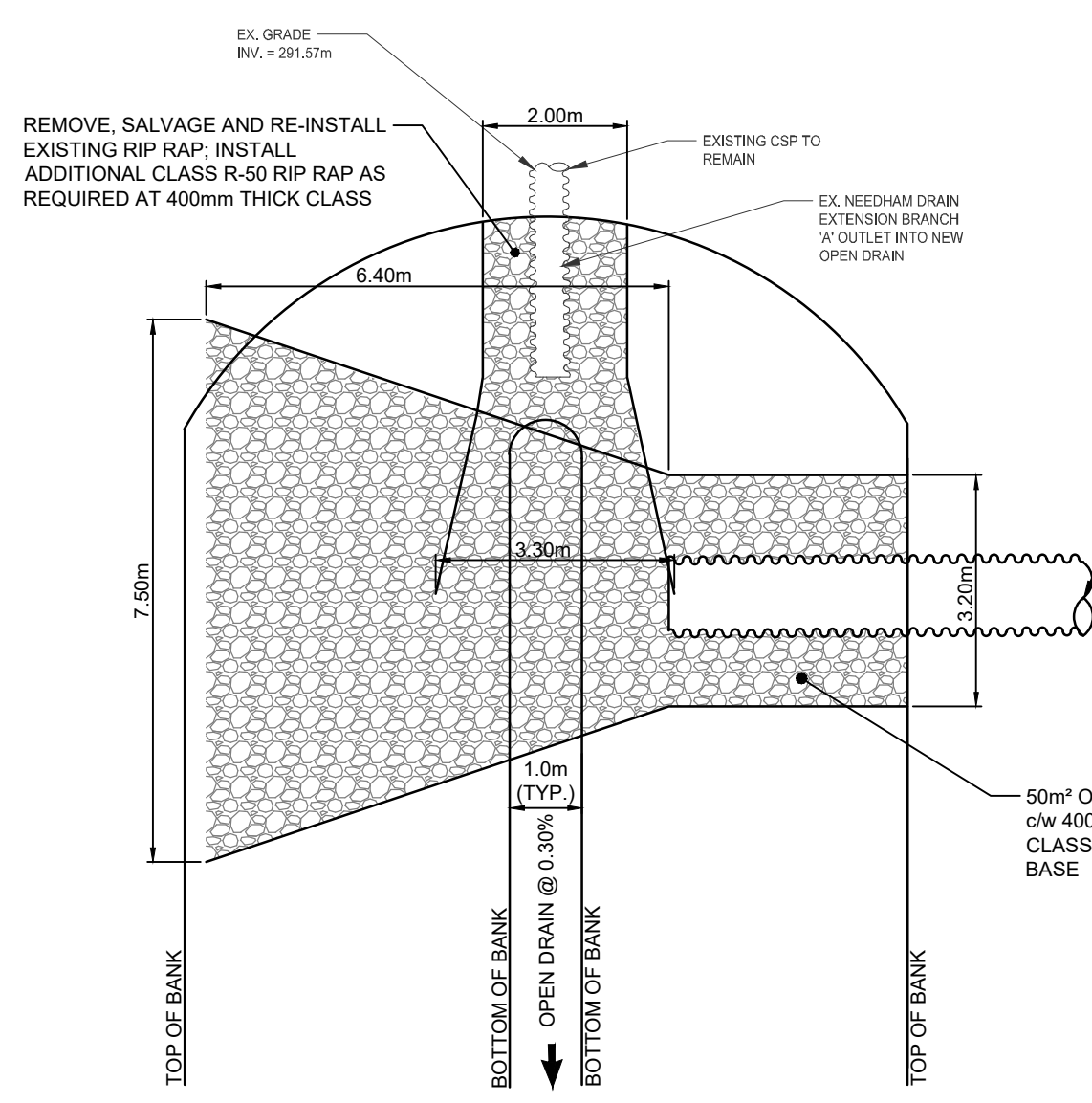
\*NOTE: ONLY IF REQUIRED - SEE SPECIAL PROVISIONS OF ENGINEER'S REPORT FOR DETAILS



**TYPICAL HDPE PIPE BEDDING DETAIL**

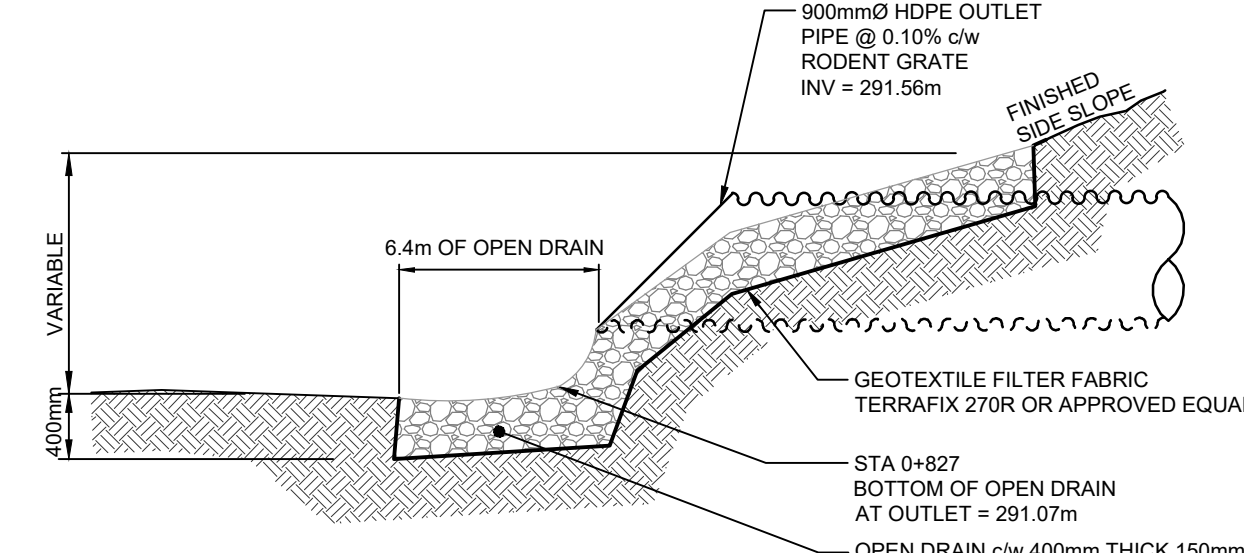


**TYPICAL RUBBER PAD PROTECTION DETAIL**



**OUTLET PIPE DETAIL - PLAN**

SCALE 1:100



**MAIN DRAIN OUTLET PIPE DETAIL - PROFILE**

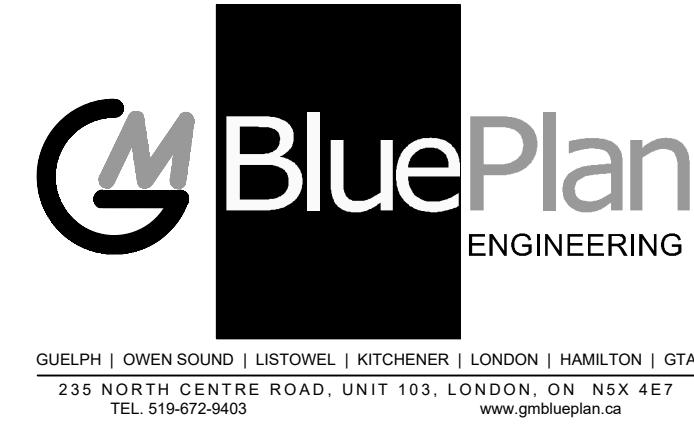
NOT TO SCALE

STRUCTURE DETAIL SCHEDULE - NEEDHAM DRAIN EXTENSION			
ITEM NO.	STA.	STRUCTURE DESCRIPTION	LENGTH
N1	STA. 0+000 - STA. 0+497	OPEN DITCH @ 0.30%	497m
N2	STA. 0+497 - STA. 0+514	1800mm CSP CULVERT PIPE @ 0.30%	17m
N3	STA. 0+514 - STA. 0+827	OPEN DITCH @ 0.30%	313m
N4	STA. 0+827	900mm HDPE OUTLET PIPE c/w RODENT GRATE	43m
N5	STA. 0+827 - STA. 0+870	900mm HDPE PIPE @ 0.10%	43m
N6	STA. 0+870 - STA. 1+035	825mm CONC. FIELD TILE @ 0.10%	163m
N7	STA. 1+035	CB.1 1500mm x 1200mm CB c/w BIRD CAGE GRATE	610m
N8	STA. 1+035 - STA. 1+645	825mm CONC. FIELD TILE @ 0.10%	610m
N9	STA. 1+645	CB.2 1500mm x 1200mm CB c/w BIRD CAGE GRATE AND 300mm HDPE PIPE TO CONNECT EX. CB	
N10	STA. 1+645 - STA. 1+669	750mm STEEL SMOOTH WALL PIPE @ 0.15%	24m
N11	STA. 1+669	750mm x 750mm x 450mm MANUFACTURED TEE	11m
N12	STA. 1+669 OFFSET	450mm HDPE PIPE @ 0.65%	11m
N13	STA. 1+669 OFFSET	OFFSET CB.3 1200mm x 900mm CB c/w BIRD CAGE GRATE	
N14	STA. 1+669 - STA. 1+696	750mm CONC. FIELD TILE @ 0.10%	27m
N15	STA. 1+696	JB.4 1200mm x 900mm JB	
N16	STA. 1+696 - STA. 1+959	675mm CONC. FIELD TILE @ 0.10%	263m
N17	STA. 1+734	OFFSET 900mm HDPE PIPE SERVICE SWEEP	10m
N18	STA. 1+959	JB.5 1200mm x 900mm JB	
N19	STA. 1+959 - STA. 2+288	525mm CONC. FIELD TILE @ 0.20%	329m
N20	STA. 2+288	CB.6 1200mm x 900mm CB c/w BIRD CAGE GRATE	

**STRUCTURE INFORMATION - NEEDHAM DRAIN EXTENSION**

STRUCTURE	DATA
CB.1	CB.1 - STA. 1+035 1500mm x 1200mm CB c/w BIRD CAGE GRATE AND BERM T/C CONC = 294.60m E INV. = 291.77m W INV. = 291.77m
CB.2	CB.2 - STA. 1+645 1500mm x 1200mm CB c/w BIRD CAGE GRATE AND BERM, 300mm HDPE PIPE TO CONNECT EX. CB T/C CONC = 293.65m E INV. = 292.38m W INV. = 292.38m S INV. = MATCH EX. (300mm HDPE PIPE)
OFFSET CB.3	CB.3 - OFFSET STA. 1+669 1200mm x 900mm CB c/w BIRD CAGE GRATE, 450mm HDPE PIPE CB LEAD AND MANUFACTURED TEE T/C CONC = 293.65m E INV. = 292.49m W INV. = 292.49m
JB.4	JB.4 - STA. 1+696 1200mm x 900mm JB BURIED APPROX. 600mm T/C CONC = 293.55m N INV. = 292.45m E INV. = 292.45m W INV. = 292.45m
JB.5	JB.5 - STA. 1+959 1200mm x 900mm JB BURIED APPROX. 750mm T/C CONC = 293.80m S INV. = MATCH EX. 250mm HDPE PIPE E INV. = 292.71m W INV. = 292.71m
CB.6	CB.6 - STA. 2+288 1200mm x 900mm CB c/w BIRD CAGE GRATE AND BERM T/C CONC = 294.85m E INV. = 293.37m W INV. = APPROX. 294.01m (MATCH EX.)

NO.	DATE	REVISION DESCRIPTION	CHKD
3.	2023/01/30	ENGINEER'S REPORT	B.S.
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**NEEDHAM DRAIN EXTENSION**

**MUNICIPALITY OF MIDDLESEX CENTRE**

**ROAD CROSSING DETAILS**

DRAWN BY: N.M.	APPROVED BY: B.S.	PROJECT NO.: 519046	DRAWING NO.: 6
DESIGNED BY: T.S./B.S.	DATE: APRIL 2020	SCALE: AS NOTED	