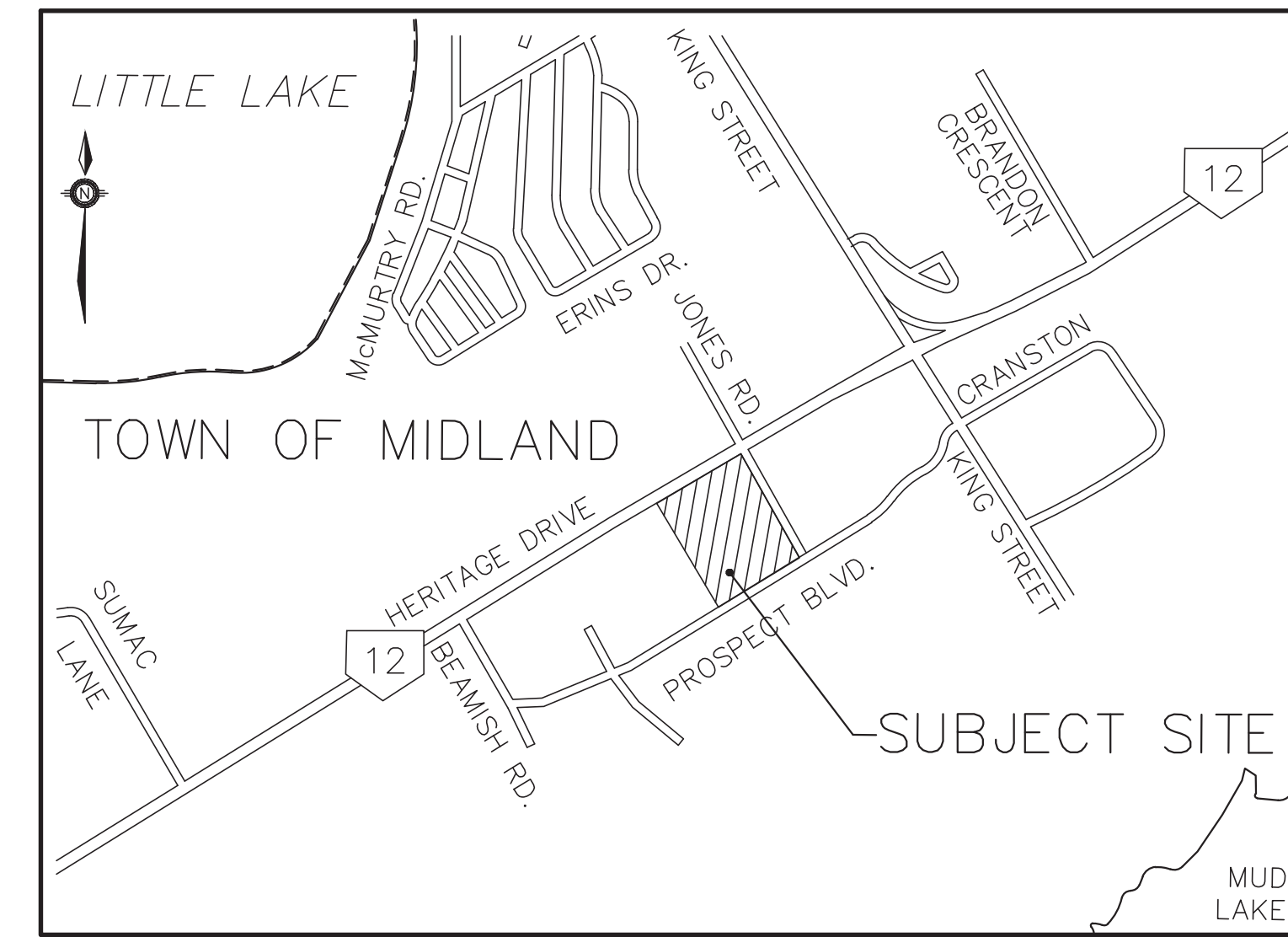


# HIGHWAY 12 DEVELOPMENTS INC. COMMERCIAL DEVELOPMENT PHASE 2 TOWN OF MIDLAND

## DRAWING LIST

ND-1	NOTES AND DETAILS
ND-2	NOTES AND DETAILS
SG-1	SITE GRADING PLAN
SS-1	SITE SERVICING PLAN
STM-1	PRE-DEVELOPMENT STORM CATCHMENT PLAN
EPR-1	ENVIRONMENTAL PROTECTION, REMOVALS AND POND DECOMMISSIONING PLAN



TOWN OF MIDLAND  
575 DOMINION AVE  
MIDLAND, ON  
L4R 1R2

HIGHWAY 12 DEVELOPMENTS INC.  
3431 YONGE STREET  
TORONTO, ON  
M4N 5N1



**PEARSON**  
**ENGINEERING**  
PEARSONENG.COM PH. 705.719.4785

1. GENERAL

- A. CONTRACTOR TO NOTIFY ENGINEER A MINIMUM OF 72 HOURS PRIOR TO THE COMMENCEMENT OF WORK.
- B. ALL WORK TO BE DONE TO THE TOWN OF MIDLAND STANDARDS AND OPSS. WHERE CONFLICT OCCURS THE TOWN OF MIDLAND STANDARDS SHALL GOVERN.
- C. THE CONTRACTOR IS RESPONSIBLE FOR LAYOUT, THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF, AND FOR THE COST OF REPLACING, LAYOUT STAKES, BENCHMARKS AND SURVEY BARS
- D. THE CONTRACTOR IS REQUIRED TO CONFIRM EXISTING GRADES AND REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE COMMENCING WORK.
- E. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING INFORMATION IN REGARD TO EXACT LOCATION OF BURIED UTILITIES. THIS SHALL INCLUDE EXCAVATION OF INSPECTION HOLES IF NECESSARY. THE CONTRACTOR MUST EXERCISE NECESSARY CONSTRUCTION OPERATIONS INCLUDING IF NECESSARY HAND DIGGING TO SAFEGUARD UTILITIES FROM DAMAGE. THE CONTRACTOR SHALL ARRANGE FOR TEMPORARY SUPPORT OF UTILITY POLES AS MAY BE REQUIRED TO COMPLETE TIES. THE CONTRACTOR IS LIABLE FOR ALL DAMAGE TO UTILITIES OCCURRING WITHIN OR OUTSIDE THE CONTRACT LIMITS CAUSE HIS OPERATIONS.
- F. THE CONTRACTOR IS TO SUBMIT SAMPLES AND A GRADATION ANALYSIS OF THE PROPOSED GRANULAR MATERIALS FOR APPROVAL BY THE ENGINEER PRIOR TO PLACING.
- G. TRAFFIC CONTROL AND SIGNAGE DURING CONSTRUCTION SHALL CONFORM TO MUNICIPAL REQUIREMENTS AND THE MOST CURRENT ONTARIO CONSTRUCTION REGULATIONS INCLUDING REGULATION NO. 213 UNDER OHSA AND REFERENCE TO MTO TEMPORARY CONDITIONS MANUAL BOOK No. 7.
- H. ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE REINSTATED TO EXISTING CONDITION OR BETTER.
- I. THE CONTRACTOR SHALL SUPPLY ALL NECESSARY WATER AND/OR CALCIUM CHLORIDE AS REQUIRED FOR COMPACTION AND/OR DUST CONTROL.
- J. CLEAR AND GRUB ALL SCRUB, BUSHES, AND TREES, AS REQUIRED TO INSTALL WORKS.
- K. TOPSOIL TO BE STRIPPED AND TEMPORARILY STOCKPILED UNTIL REAPPLIED FOR RESTORATION WORK.
- L. ALL SLOPES TO BE A MAXIMUM OF 3:1
- M. EXCESS OR UNSUITABLE MATERIALS TO BE DISPOSED OF BY THE CONTRACTOR AT AN APPROVED LOCATION AS PART OF THE WORK.
- N. FOR THE DURATION OF THE CONTRACT, MATERIAL THAT BECOMES CONTAMINATED DUE TO CONTRACTORS ACTIVITY SHALL BE REMOVED AND REPLACED AT NO EXTRA COST TO THE CONTRACT.
- O. DEWATERING TO BE CARRIED OUT IN ACCORDANCE WITH OPSS 517 AND 518 TO MAINTAIN ALL TRENCHES IN A DRY CONDITION.
- P. ALL CONNECTIONS TO SANITARY SEWERS AND WATER MAIN REQUIRE APPROVED FACTORY MADE TEES OR SADDLES.
- Q. PIPE DEFLECTIONS SHALL NOT EXCEED MANUFACTURES SPECIFICATIONS.
- R. FLEXIBLE PIPE EMBEDMENT AND BACKFILL MATERIAL TO BE COMPACTED TO A DRY DENSITY OF AT LEAST 95% OF THE MATERIAL'S STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD).
- S. MODIFIED PIPE BEDDING UNDER WET TRENCH CONDITIONS: FLEXIBLE PIPE BEDDING TO BE 100mm CLEAR STONE, RIGID PIPE TO BEDDING TO BE 200mm CLEAR STONE. ALL STONE BEDDING WRAPPED IN GEOTEXTILE FABRIC (TERRAFIX 270R OR APPROVED EQUAL)
- T. SLOPE BACKFILL TO BE SELECT NATIVE MATERIAL.
- U. JOINTS WITH EXISTING ASPHALT TO BE SAW CUT STRAIGHT AS DIRECTED BY ENGINEER PRIOR TO PLACING NEW ASPHALT.
- V. IF ASPHALT SURFACES SETTLE IN EXCESS OF 15mm OR DIFFERENTIALLY DURING THE MAINTENANCE PERIOD, THE ENGINEER SHALL ORDER THE AREA CUT OUT AND REPLACED AT NO EXTRA COST TO THE CONTRACT.

WATERMAIN

- A. CONTRACTOR SHALL INFORM THE TOWN OF MIDLAND ENGINEERING DEPARTMENT A MINIMUM OF 48 HOURS IN ADVANCE OF THEIR INTENTIONS TO WORK.
- B. MINIMUM COVER OVER WATERMAIN TO BE 1.7m. THE MINIMUM HORIZONTAL SEPARATION BETWEEN WATERMAIN AND SEWERS TO BE 2.5m. WHERE WATERMAIN CONFLICTS WITH SEWER PIPES, DEFLECT WATERMAIN HORIZONTALLY OR VERTICALLY WHILE PROVIDING A MINIMUM OF 0.5m CLEARANCE BETWEEN WATERMAIN AND SEWERS. MAINTAIN MINIMUM DEPTH OF COVER AT ALL TIMES.
- C. WATERMAIN SHALL BE CONSTRUCTED WITH BEDDINGS AS PER OPSD 802.010 (GRANULAR 'A' EMBEDMENT MATERIAL) FOR FLEXIBLE PIPES AND OPSD 802.030 OR 802.031 CLASS 'B' (GRANULAR 'A' BEDDING MATERIAL, GRANULAR 'A' OR SELECT NATIVE COVER MATERIAL) FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF ENGINEERING, OR
- ALTERNATIVE EMBEDMENT MATERIAL - SAND MEETING GRADATION REQUIREMENTS OF OPS 1004.05.05 COMPACTED TO 95% PROCTOR DENSITY, GEOTECHNICAL CERTIFICATION OF MATERIAL AND COMPACTION TESTING MUST BE PROVIDED EVERY 150 METRES. THE COMPACTION TESTING MUST INCLUDE THE ENTIRE EMBEDMENT ENVELOPE (HAUNCHES, BEDDING AND TOP OF PIPE).
- D. COPPER WATER MAINS AND SERVICES 19mm TO 50mm IN DIAMETER SHALL BE EMBEDDED IN SAND 100mm ABOVE AND BELOW TO CONFORM TO OPSS 1004.05.05.
- E. CONCRETE THRUST BLOCKS ARE TO BE INSTALLED AT ALL TEES, BENDS, HYDRANTS, END OF MAINS AND CONNECTIONS 100mm AND LARGER AS PER OPSD 1103.010 AND 1103.020. RESTRAINING DEVICES MAY BE REQUIRED IN ADDITION TO STANDARD CONCRETE THRUST BLOCKING WHERE SOIL CONDITIONS WARRANT.
- F. RESTRAINING WILL BE REQUIRED ON ALL FIRE HYDRANTS
- G. NEW WATERMAINS TO BE PVC DR18 CL150, OR DUCTILE IRON CL52
- H. TRACING WIRE (#12 TWJ STRANDED COPPER) TO BE INSTALLED ON THE TOTAL LENGTH OF ALL NON-METALLIC WATERMAIN AND BROUGHT UP AT EACH HYDRANT AND CONNECTED TO FLANGE BOLT.
- I. ALL WATER SERVICES SHALL BE MINIMUM 19mm TYPE 'K' COPPER UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF ENGINEERING, WATER SERVICE SADDLES SHALL BE USED WHEN TAPPING INTO PVC WATERMAIN.
- K. RISER PIPES ARE TO BE INSTALLED AS PER BSD-45 (REV. #1), AND REMOVED AS DIRECTED. SWABBING SCHEDULE TO BE APPROVED BY A TOWN OF MIDLAND REPRESENTATIVE.
- L. SERVICE TAPPINGS SHALL BE PLACED AT A MINIMUM SEPARATION OF 1.0m AND A MINIMUM OF 0.6m FROM JOINTS. (ENDS OF PIPE)
- M. ALL NEW CURB STOPS AND BOXES TO BE LOCATED AT PROPERTY LINE AND OUT OF DRIVEWAYS AND SIDEWALKS.

SWM POND DECOMMISSIONING

- A. DEWATER POND AS PER OPSS 517 AND OPSS 518.
- B. CLAY LINER TO BE REMOVED AND DISPOSED OFF-SITE.
- C. EXISTING SOD, AND VEGETATION TO BE REMOVED AND DISPOSED OFF-SITE.
- D. CONTRACTOR TO LOCATE AND REMOVE EXISTING STM SERVICES INCLUDING STRUCTURES, PIPING AND ALL DECOMMISSIONED RIP RAP AREAS.
- E. POND TO BE CUT TO PRE-GRADE ELEVATIONS AND INSPECTED BY GEOTECHNICAL ENGINEER PRIOR TO ENGINEERED FILL OPERATIONS.
- F. ENGINEERED FILL TO BE IMPORTED OFF SITE AND PLACED AND COMPACTED TO 100% OF MATERIAL'S STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD). MAXIMUM THICKNESS OF 150mm LIFTS AND INSPECTED BY GEOTECHNICAL ENGINEER UNTIL THE PROPOSED GRADE IS REACHED.

- A. SEWERS SHALL BE CONSTRUCTED WITH BEDDINGS AS PER OPSD-802.010, (GRAN. 'A' EMBEDMENT MATERIAL) FOR FLEXIBLE PIPES AND OPSD-802.030 OR 802.031 CLASS B (GRAN. 'A' BEDDING MATERIAL) FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY THE TOWN OF MIDLAND.
- B. MAXIMUM DEFLECTION FROM COMBINED LIVE AND DEAD LOADING SHALL NOT EXCEED ANY C.S.A., O.P.S. OR MANUFACTURERS RECOMMENDED SPECIFICATIONS.
- C. PVC, CONCRETE AND PROFILE WALL PVC SEWERS SHALL HAVE RUBBER GASKET TYPE JOINTS AND SHALL BE CERTIFIED TO CONFORM TO ALL APPLICABLE CURRENT C.S.A. SPECIFICATIONS.
- D. CONCRETE SANITARY SEWERS SHALL HAVE A MINIMUM STRENGTH OF 50 N/m<sup>2</sup> CONFORMING TO CSA STANDARD A257.2-1982, CLASS 50-D (PREVIOUSLY C.S.A. STANDARD A257.2-1974, CLASS II).
- E. MAINTENANCE HOLE TOPS (FRAMES) ARE TO BE SET TO BASE COURSE ASPHALT GRADE AND THEN ADJUSTED TO FINAL GRADE WHEN THE TOP LIFT OF ASPHALT IS PLACED. ALL ADJUSTMENT WILL BE ACCORDANCE WITH BSD-NZ.
- F. ALL CONNECTIONS TO NEW SANITARY MAINS SHALL BE PRE-MANUFACTURED, FABRICATED TEES. CONNECTIONS TO EXISTING SANITARY SEWER SHALL BE MADE WITH APPROVED FACTORY MADE TEES OR INSERTA-TES IN STRICT ACCORDANCE TO MANUFACTURES GUIDELINES.

SANITARY

- A. SEWERS SHALL BE CONSTRUCTED WITH BEDDINGS AS PER OPSD-802.010, (GRAN. 'A' EMBEDMENT MATERIAL) FOR FLEXIBLE PIPES AND OPSD-802.030 OR 802.031 CLASS B (GRAN. 'A' BEDDING MATERIAL) FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF ENGINEERING.
- B. MAXIMUM DEFLECTION FROM COMBINED LIVE AND DEAD LOADING SHALL NOT EXCEED ANY C.S.A., O.P.S. OR MANUFACTURERS RECOMMENDED SPECIFICATIONS.
- C. PVC, CONCRETE AND PROFILE WALL PVC SEWERS SHALL HAVE RUBBER GASKET TYPE JOINTS AND SHALL BE CERTIFIED TO CONFORM TO ALL APPLICABLE CURRENT C.S.A. SPECIFICATIONS.
- D. CONCRETE SANITARY SEWERS SHALL HAVE A MINIMUM STRENGTH OF 50 N/m<sup>2</sup> CONFORMING TO CSA STANDARD A257.2-1982, CLASS 50-D (PREVIOUSLY C.S.A. STANDARD A257.2-1974, CLASS II).
- E. MAINTENANCE HOLE TOPS (FRAMES) ARE TO BE SET TO BASE COURSE ASPHALT GRADE AND THEN ADJUSTED TO FINAL GRADE WHEN THE TOP LIFT OF ASPHALT IS PLACED. ALL ADJUSTMENT WILL BE ACCORDANCE WITH BSD-NZ.
- F. ALL CONNECTIONS TO NEW SANITARY MAINS SHALL BE PRE-MANUFACTURED, FABRICATED TEES. CONNECTIONS TO EXISTING SANITARY SEWER SHALL BE MADE WITH APPROVED FACTORY MADE TEES OR INSERTA-TES IN STRICT ACCORDANCE TO MANUFACTURES GUIDELINES.
- G. PIPE TO BE MINIMUM 100 mm DIA. PVC SDR28, RUBBER GASKET TYPE JOINTS AND SHALL CONFORM TO C.S.A. (B-182.2.3.4) (COLOURED) FOR A RESIDENTIAL HOUSE AND 150mm MINIMUM DIA. PVC SDR28 FOR INDUSTRIAL/COMMERCIAL DEVELOPMENT.
- H. ALL CONNECTIONS TO NEW SANITARY MAINS SHALL BE PRE-MANUFACTURED, FABRICATED TEES. CONNECTIONS TO EXISTING SANITARY SEWER SHALL BE MADE WITH APPROVED FACTORY MADE TEES OR INSERTA-TES IN STRICT ACCORDANCE TO MANUFACTURES GUIDELINES.

SANITARY SERVICE LATERALS

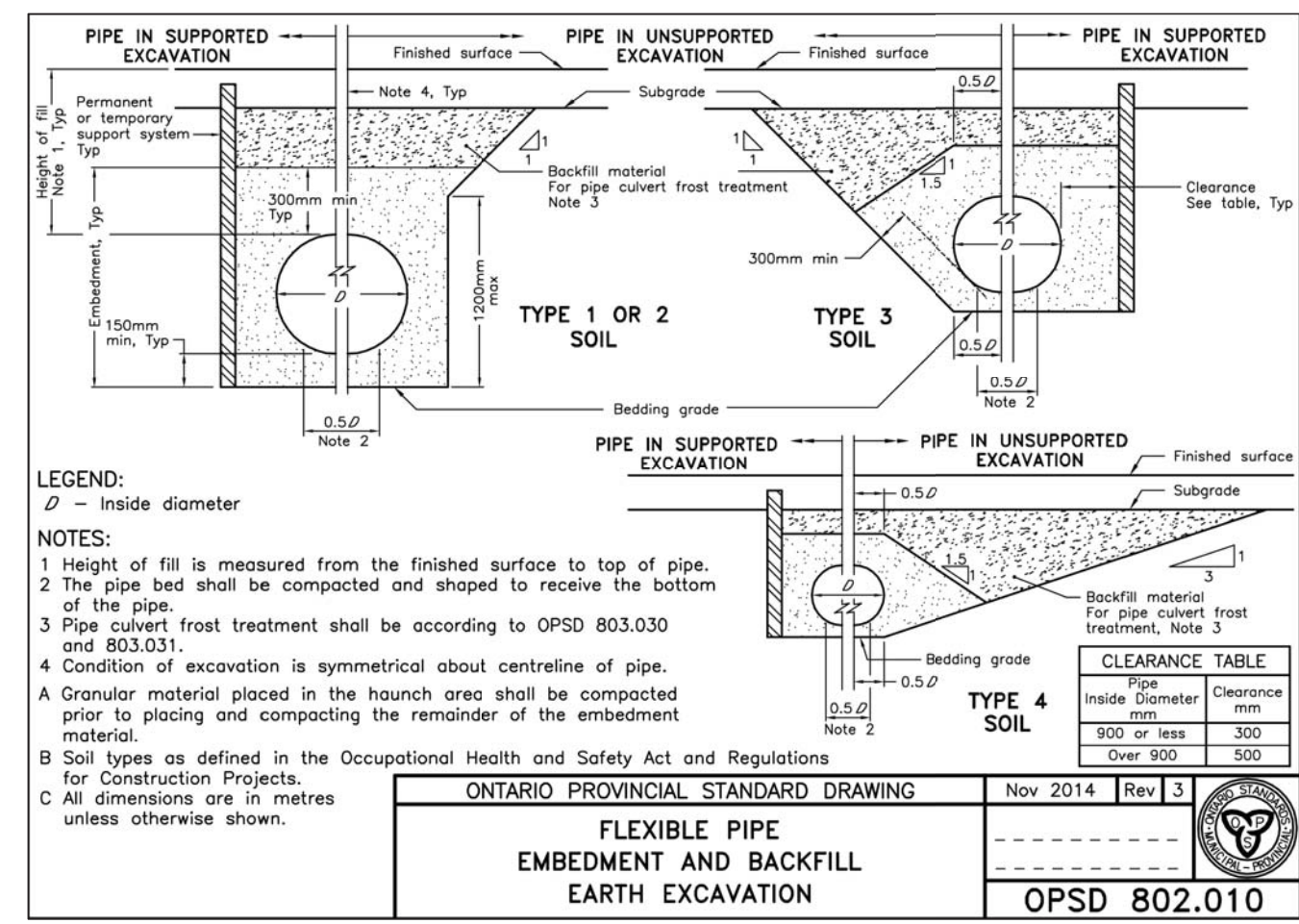
- A. LOCATION OF LATERAL TO BE MARKED WITH A 50 x 100mm WOOD MARKER, PAINTED GREEN, EXTENDING FROM SERVICE INVERT TO 300mm ABOVE GROUND LEVEL.
- B. PIPE TO BE MINIMUM 100 mm DIA. PVC SDR28, RUBBER GASKET TYPE JOINTS AND SHALL CONFORM TO C.S.A. (B-182.2.3.4) (COLOURED) FOR A RESIDENTIAL HOUSE AND 150mm MINIMUM DIA. PVC SDR28 FOR INDUSTRIAL/COMMERCIAL DEVELOPMENT.
- C. MINIMUM DEPTH OF LATERAL AT PROPERTY LINE SHALL BE 2.4m MEASURED FROM THE SEWER OVERT TO FINISHED GROUND SURFACE ELEVATION UNLESS NOTED OTHERWISE.
- D. ALL CONNECTIONS TO NEW SANITARY MAINS SHALL BE PRE-MANUFACTURED, FABRICATED TEES. CONNECTIONS TO EXISTING SANITARY SEWER SHALL BE MADE WITH APPROVED FACTORY MADE TEES OR INSERTA-TES IN STRICT ACCORDANCE TO MANUFACTURES GUIDELINES.

STORM SEWER

- A. STORM SEWER TO BE PROVIDED ON ALL ROADS WITH CURB AND GUTTER.
- B. STORM SEWERS SHALL BE CONSTRUCTED WITH BEDDING AS PER OPSD-802.010 (GRAN. 'A' EMBEDMENT MATERIAL) FOR FLEXIBLE PIPES AND OPSD-802.030 OR 802.031 CLASS B (GRAN. 'A' BEDDING MATERIAL) FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF ENGINEERING.
- C. ALL CONNECTIONS TO THE STORM MAIN SHALL BE MADE WITH A STORM MANHOLE OR APPROVED FACTORY TEE CONNECTION AS PER OPSD-708.01 OR 708.03.
- D. PIPE MATERIAL TO BE PVC CERTIFIED TO C.S.A. STANDARDS 182.2 AND 182.4, OR REINFORCED CONCRETE WITH A MINIMUM STRENGTH OF 50 N/m<sup>2</sup> CERTIFIED TO C.S.A. STANDARD A247.2-1982, CLASS 50-D (PREVIOUSLY C.S.A. STANDARD A257.2-1974, CLASS II)
- E. STORM SEWER TO BE MINIMUM 300mm DIAMETER AND CATCHBASIN LEADS A MIN. 250mm DIAMETER WITH JOINTS CONFORMING TO C.S.A. STANDARD A257.3
- F. ALL PIPE HANDLING INSTALLATIONS MUST BE IN STRICT COMPLIANCE WITH MANUFACTURES INSTALLATION GUIDES AND THE O.C.P.A. OR UNBELL GUIDELINES.

PARKING LOT AND ENTRANCE

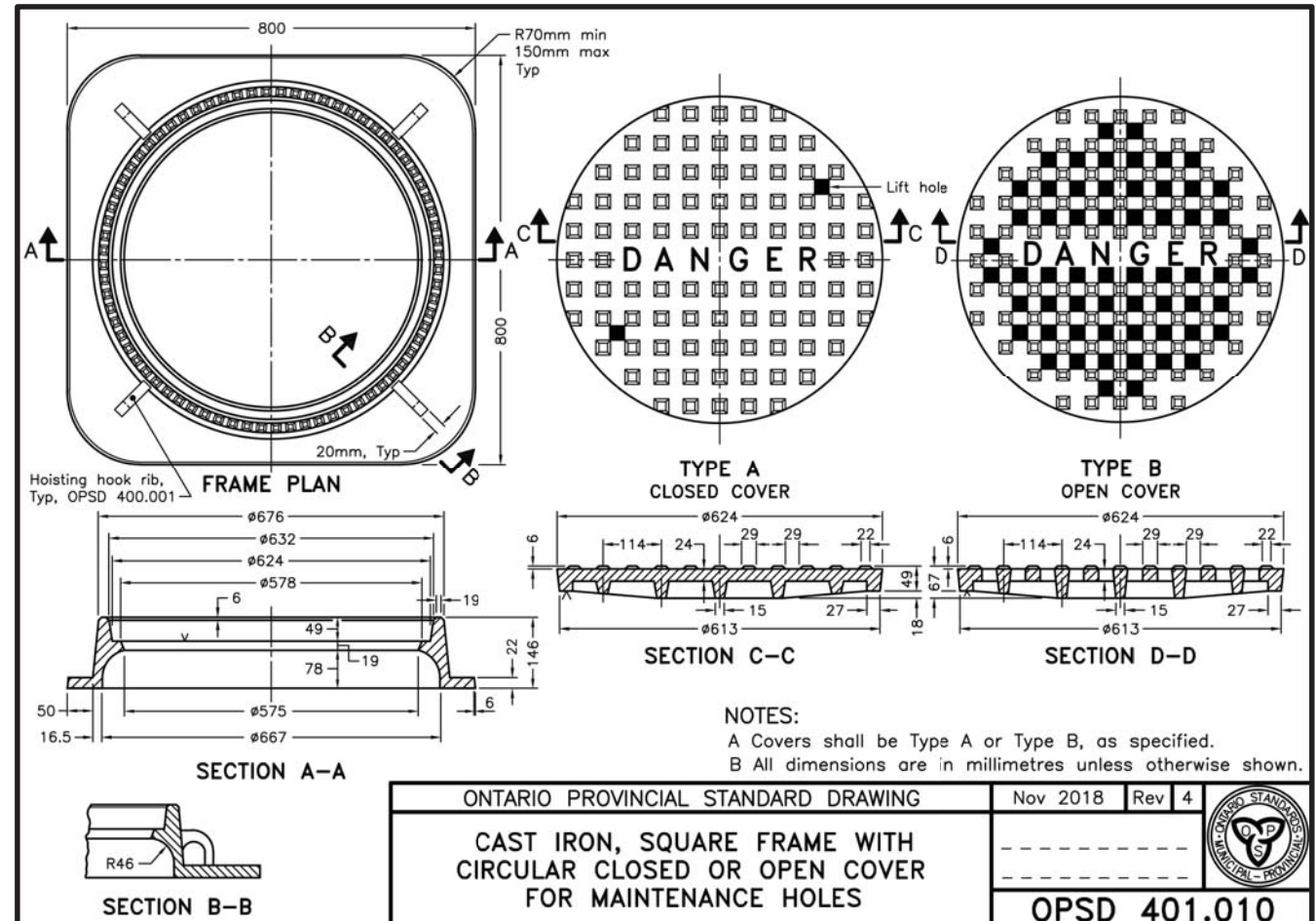
- A. SUBGRADE TO BE COMPACTED TO A MINIMUM DRY DENSITY OF 95% OF THE MATERIAL'S STANDARD PROCTOR MAXIMUM DRY DENSITY(SPMDD)
- B. GRANULAR 'A' AND GRANULAR 'B' TO BE COMPACTED TO 100% OF EACH MATERIAL'S STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD). MAXIMUM LIFT THICKNESS - 150mm
- C. LIGHT DUTY PAVEMENT STRUCTURE :
  - 300mm GRAN 'B'
  - 150mm GRAN 'A'
  - 50mm HL-4/HL-8 ASPHALT
- D. HEAVY DUTY PAVEMENT STRUCTURE :
  - 350mm GRAN 'B'
  - 150mm GRAN 'A'
  - 50mm HL-4/HL-8 ASPHALT
  - 40mm HL-3 ASPHALT
- E. 19mm AND 50mm OF CRUSHER RUN LIMESTONE MAY BE SUBSTITUTED FOR GRANULAR A AND GRANULAR B, RESPECTIVELY.



LEGEND:  
 D = Inside diameter

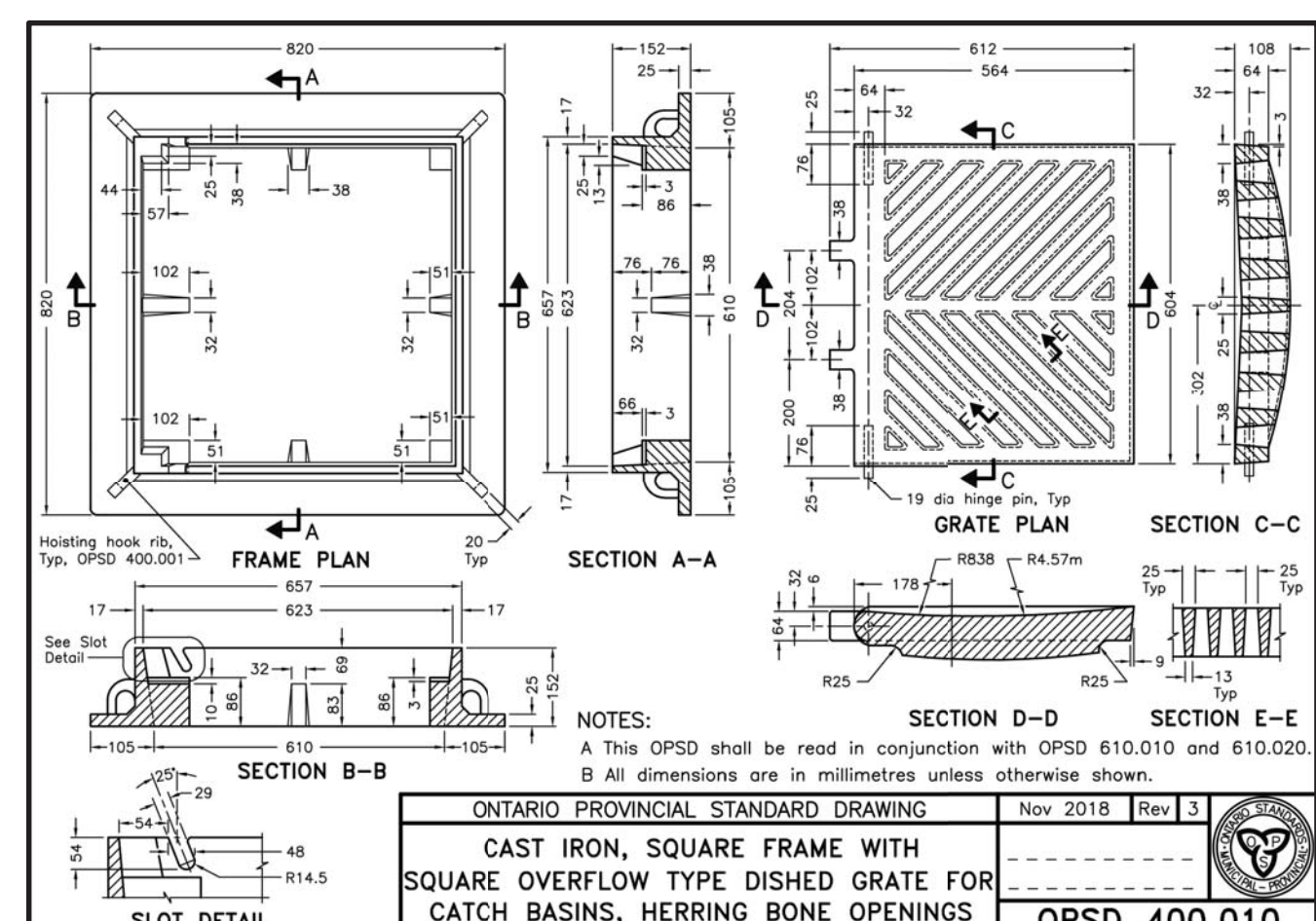
NOTES:  
 1 Height of fill is measured from the finished surface to top of pipe.  
 2 The pipe bed shall be compacted and sloped to receive the bottom of the pipe.  
 3 Pipe culvert frost treatment shall be according to OPSD 803.030 and 803.031.  
 4 Condition of excavation is symmetrical about centreline of pipe.  
 A Granular material placed in the haunch area shall be compacted prior to placing and compacting the remainder of the embedment material.  
 B Soil types as defined in the Occupational Health and Safety Act and Regulations for Construction Projects  
 C All dimensions are in metres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING  
 FLEXIBLE PIPE EMBEDMENT AND BACKFILL EARTH EXCAVATION  
 Nov 2014 Rev 3  
 OPSD 802.010



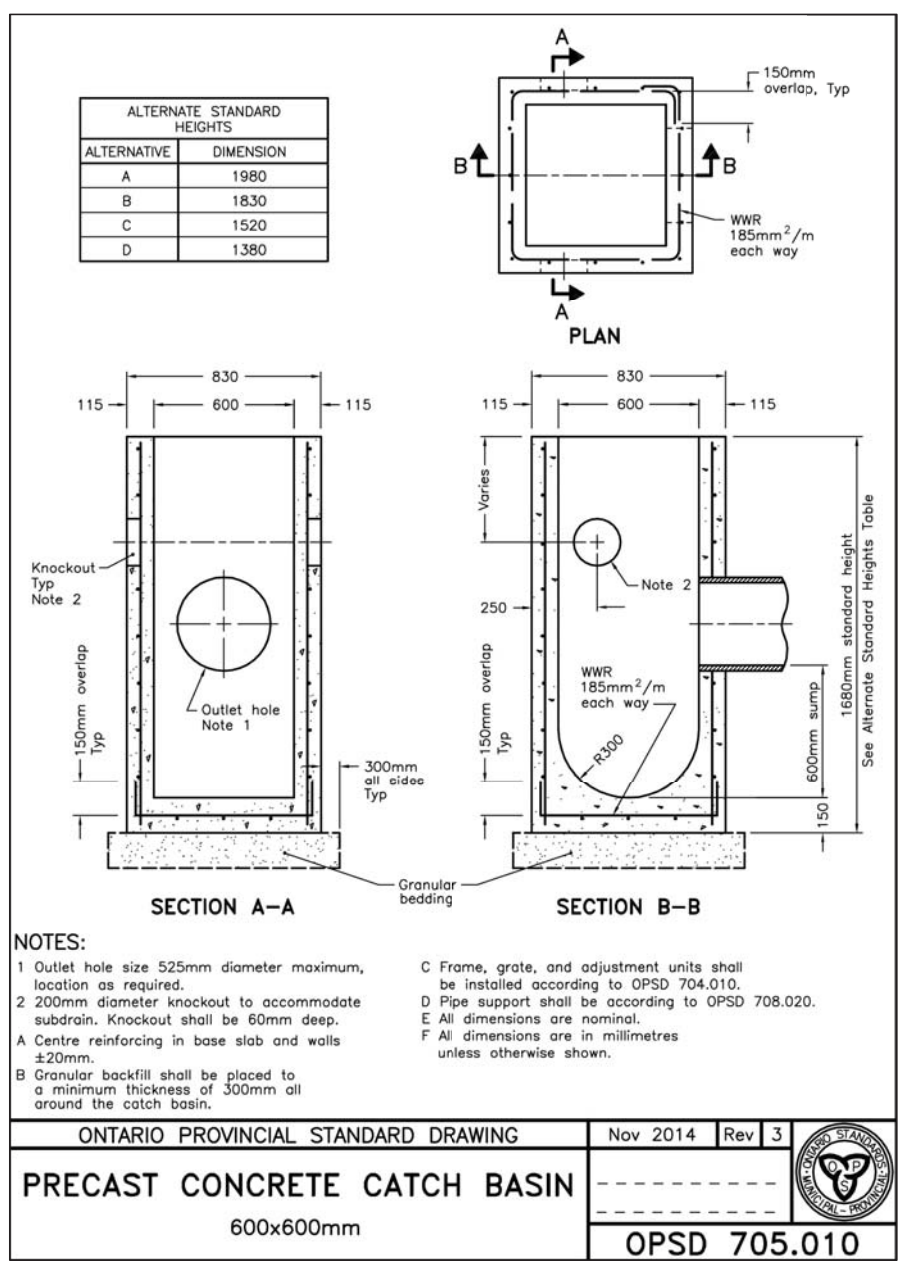
NOTES:  
 A Covers shall be Type A or Type B, as specified.  
 B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING  
 CAST IRON, SQUARE FRAME WITH CIRCULAR CLOSED OR OPEN COVER FOR MAINTENANCE HOLES  
 Nov 2018 Rev 1  
 OPSD 401.010



NOTES:  
 A This OPSD shall be read in conjunction with OPSD 610.010 and 610.020.  
 B All dimensions are in millimetres unless otherwise shown.

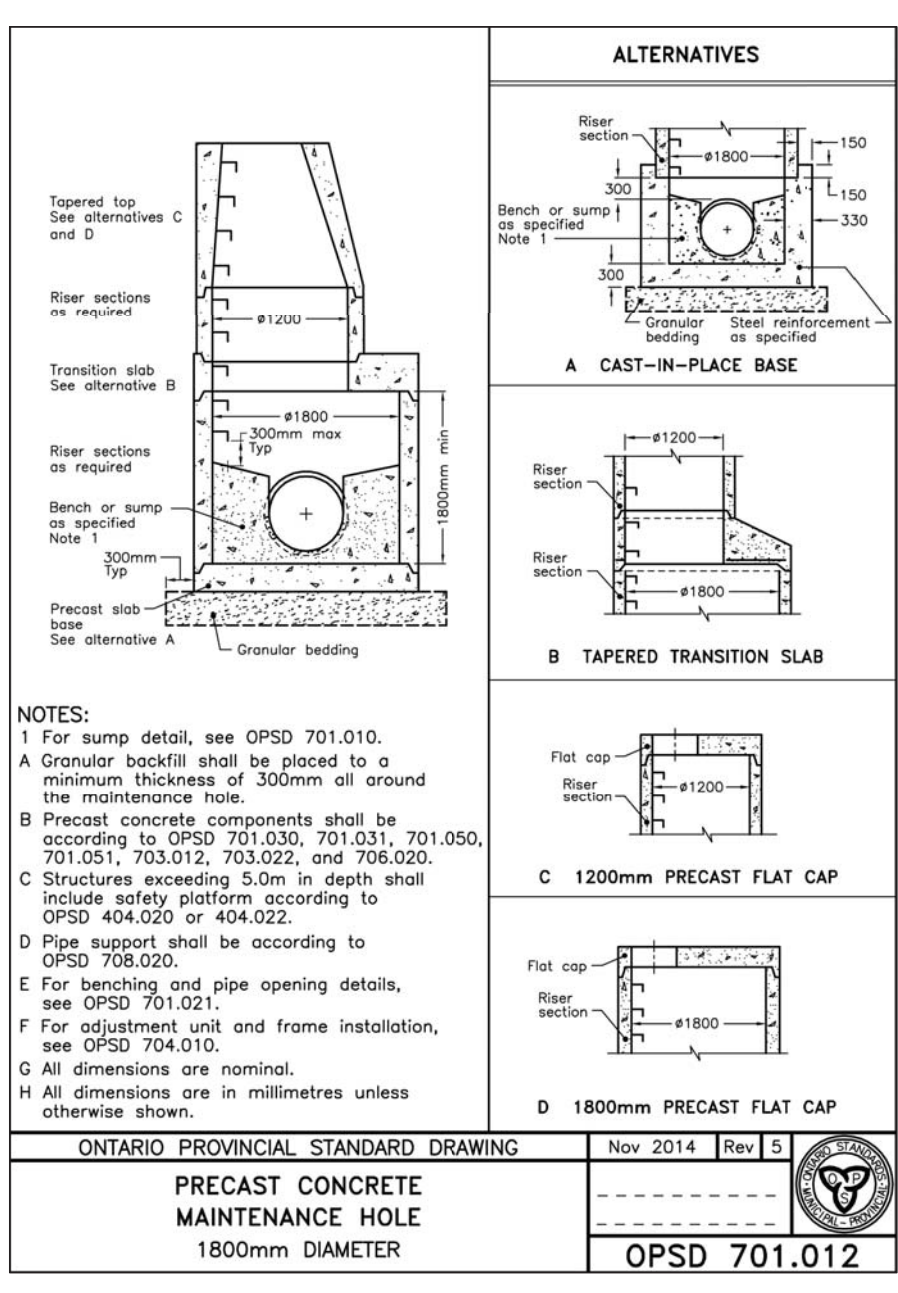
ONTARIO PROVINCIAL STANDARD DRAWING  
 CAST IRON, SQUARE FRAME WITH SQUARE OVERFLOW TYPE DISHED GRATE FOR CATCH BASINS, HERRING BONE OPENINGS  
 Nov 2018 Rev 3  
 OPSD 400.010



ALTERNATE STANDARD HEIGHTS

NOTE:  
 1 Outlet hole size 525mm diameter maximum, location as required.  
 2 200mm diameter knockout to accommodate subsoil. knockout shall be 60mm deep.  
 3 Centre reinforcing in base and walls is 820mm.  
 4 Granular backfill shall be placed to a minimum thickness of 300mm all around the catch basin.  
 C Frame, grate, and adjustment units shall be installed according to OPSD 704.010.  
 D Pipe support shall be according to OPSD 708.020.  
 E All dimensions are in millimetres unless otherwise shown.

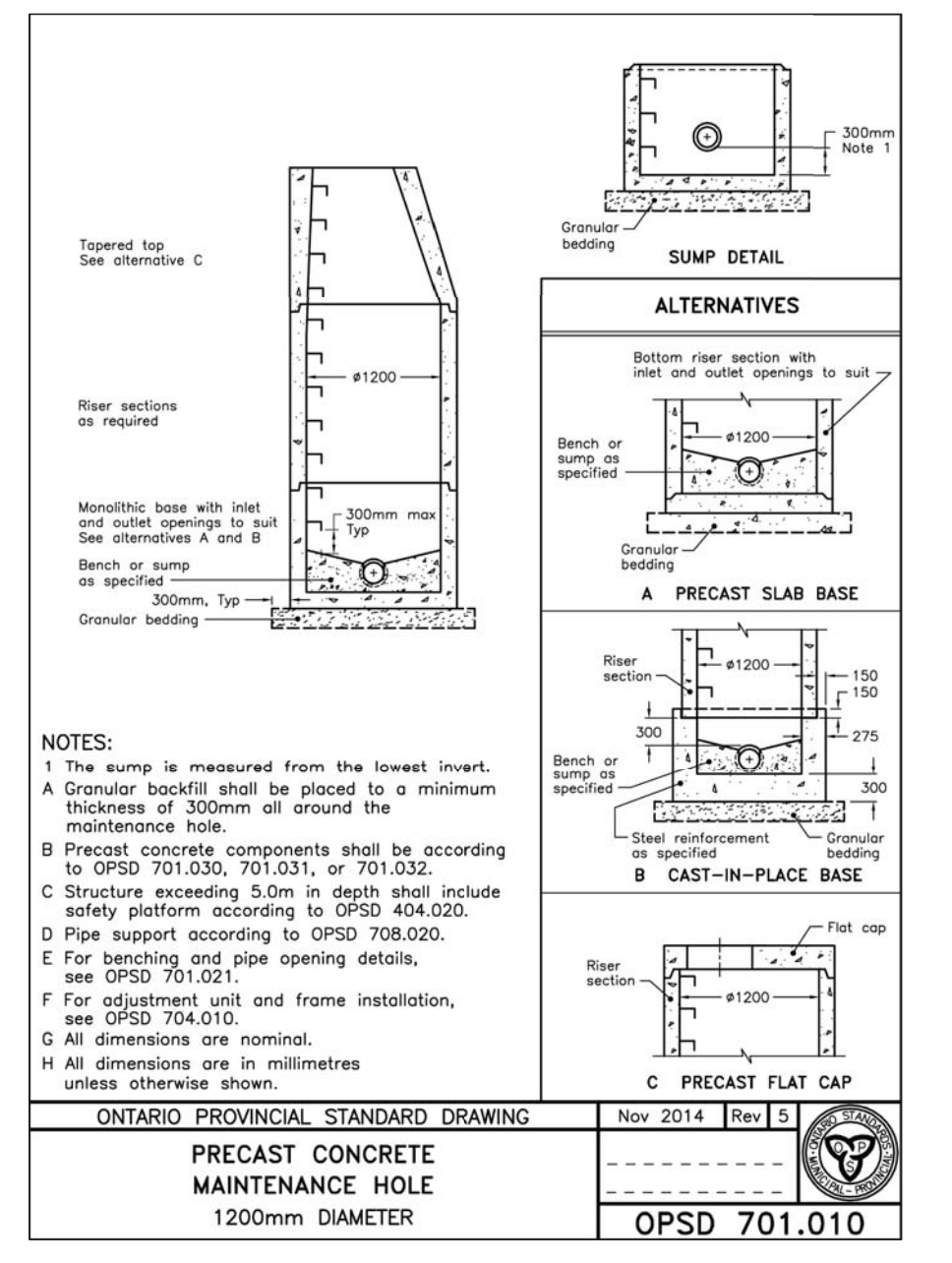
ONTARIO PROVINCIAL STANDARD DRAWING  
 PRECAST CONCRETE CATCH BASIN  
 600x600mm  
 Nov 2014 Rev 3  
 OPSD 705.010



ALTERNATIVES

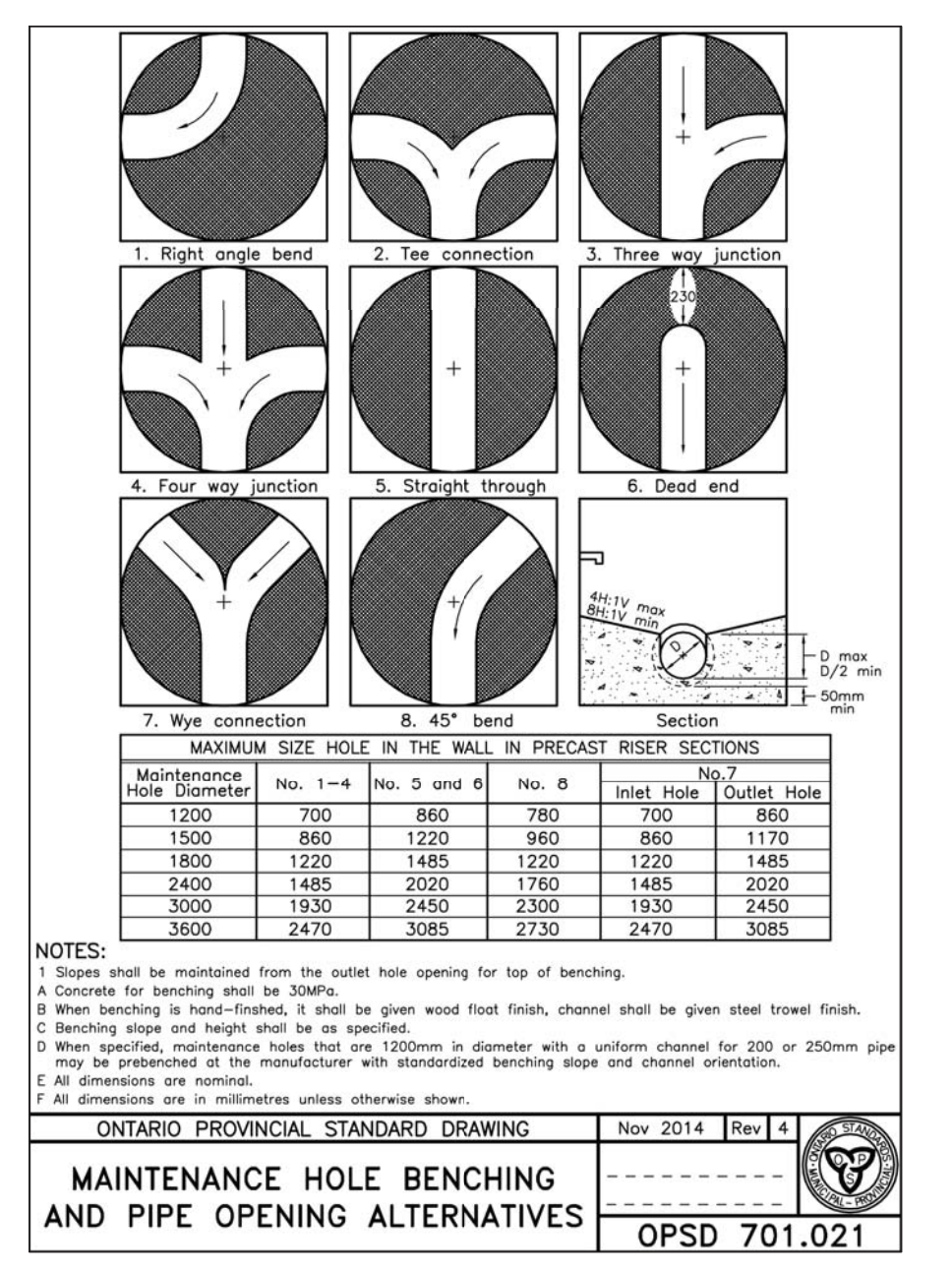
NOTE:  
 1 For sump detail, see OPSD 701.010.  
 A Granular backfill shall be placed to a minimum thickness of 300mm all around the maintenance hole.  
 B Precast concrete components shall be according to OPSD 701.030, 701.031, 701.050, 701.051, 703.012, 703.022, and 708.020.  
 C Structures exceeding 5.0m in depth shall include safety platform according to OPSD 404.020 or 404.022.  
 D Pipe support shall be according to OPSD 708.020.  
 E For benching and pipe opening details, see OPSD 701.021.  
 F For adjustment unit and frame installation, see OPSD 704.010.  
 G All dimensions are nominal.  
 H All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING  
 PRECAST CONCRETE MAINTENANCE HOLE  
 1800mm DIAMETER  
 Nov 2014 Rev 5  
 OPSD 701.012



NOTE:  
 1 The sump is measured from the lowest invert.  
 A Granular backfill shall be placed to a minimum thickness of 300mm all around the maintenance hole.  
 B Precast concrete components shall be according to OPSD 701.030, 701.031, or 701.052.  
 C Structure exceeding 5.0m in depth shall include safety platform according to OPSD 404.020.  
 D Pipe support according to OPSD 708.020.  
 E For benching and pipe opening details, see OPSD 701.021.  
 F For adjustment unit and frame installation, see OPSD 704.010.  
 G All dimensions are nominal.  
 H All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING  
 PRECAST CONCRETE MAINTENANCE HOLE  
 1200mm DIAMETER  
 Nov 2014 Rev 5  
 OPSD 701.010



ALTERNATIVES

NOTE:  
 1 Slopes shall be maintained from the outlet hole opening for top of benching.  
 A Concrete for benching shall be 30Mpa.  
 B When benching is non-fluted, it shall be given wood form finish, channel shall be given steel travel finish.  
 C Benchng slope and height shall be as specified.  
 D When specified, maintenance holes shall be 1000mm in diameter with a uniform channel for 200 or 250mm pipe.  
 E All dimensions are nominal.  
 F All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING  
 MAINTENANCE HOLE BENCHING AND PIPE OPENING ALTERNATIVES  
 Nov 2014 Rev 4  
 OPSD 701.021

Maintenance Hole Diameter	No. 1-4			No. 5 and 6		No. 7		No. 8	
	Inlet Hole	Outlet Hole	Inlet Hole	Outlet Hole	Inlet Hole	Outlet Hole	Inlet Hole	Outlet Hole	
1200	700	860	760	760	1170	860	860	860	
1500	860	1220	960	960	1170	1170	860	1170	
1800	1220	1485	1220	1220	1485	1485	1485	1485	
2400	1485	2020	1760	1485	2020	2020	2020	2020	
3000	1930	2450	2300	1930	2450	2450	2450	2450	
3600	2470	3085	2730	2470	3085	3085	3085	3085	

9.	REVISED BUILDING PHASE 2	02/27/23	JPE	BENCHMARK:
8.	AS-CONSTRUCTED PHASE 1	11/29/22	DB	SITE BENCHMARK IS THE TOP OF THE SPINDLE OF FIRE HYDRANT AT THE NORTH SIDE OF HERITAGE DRIVE HAVING AN ELEVATION OF 223.48
7.	REVISED STORM OUTLET AND PAINT LINES	04/08/22	JPE	
6.	REVISED AS PER TOWN COMMENTS	03/28/22	JPE	ELEVATION ARE GEODETIC IN ORIGIN AND WERE DERIVED FROM OBSERVED REFERENCE POINTS (ORP) USING THE PRECISE POINT POSITIONING (PPP) SERVICE (2002 EPOCH) AND ARE REFERRED TO THE CGVD-1928:1978 DATUM.
5.	REVISED AS PER TOWN COMMENTS	03/23/22	JPE	
NO.	REVISION NOTE	DATE	BY	

PROFESSIONAL ENGINEER  
 M.W. DEJEAN  
 FEB 27, 2023  
 PROVINCE OF ONTARIO

HIGHWAY 12 DEVELOPMENTS INC.  
 HWY. 12 COMMERCIAL DEV PH.2  
 TOWN OF MIDLAND

NOTES AND DETAILS

DESIGNED BY T/JCA  
 DRAWN BY J/PE  
 CHECKED BY M/WD

HORIZ SCALE  
 VERT SCALE

DATE DECEMBER 2018

PROJECT #13031.01  
 DRAWING # ND-1  
 REVISION # 9

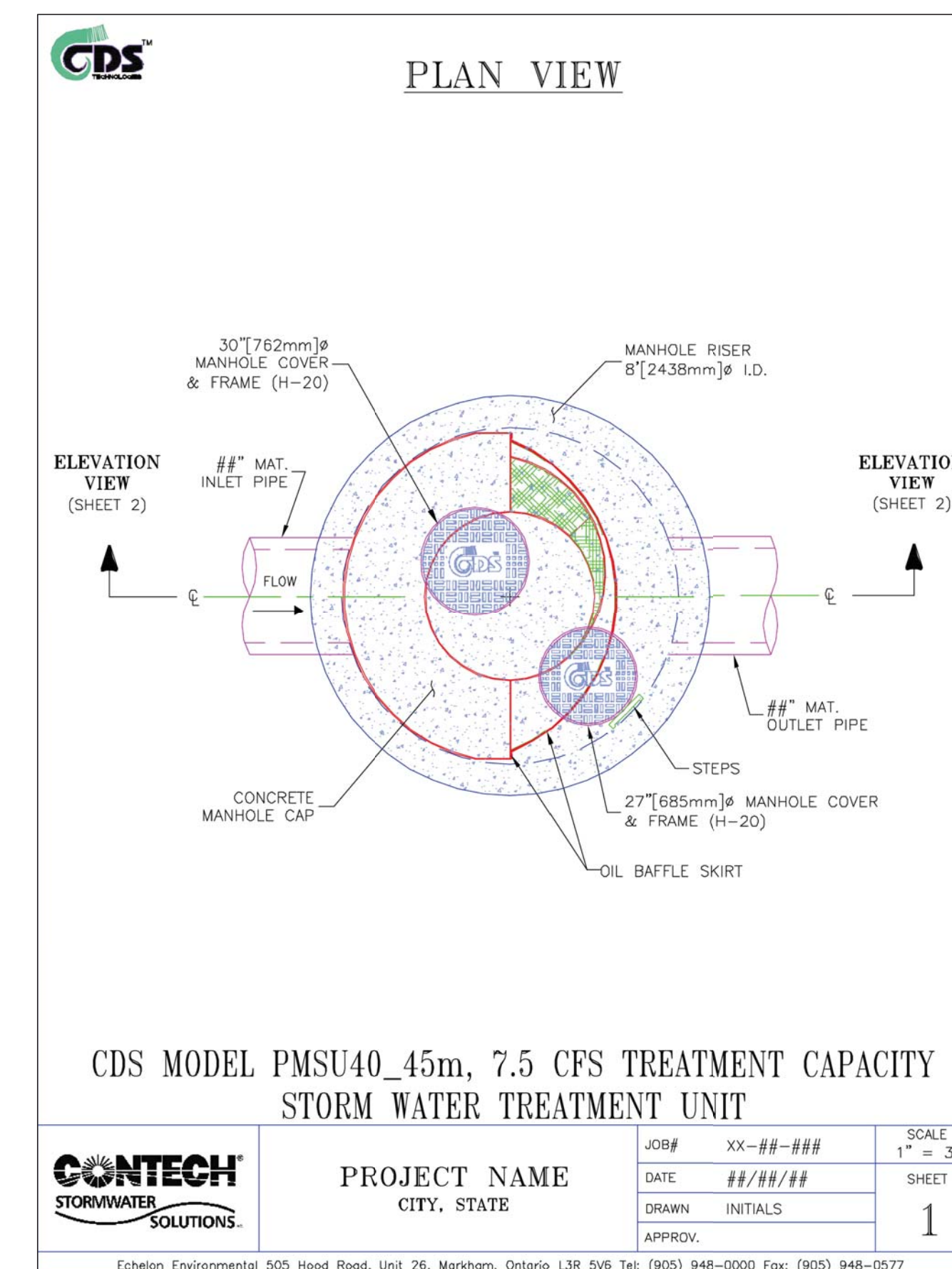
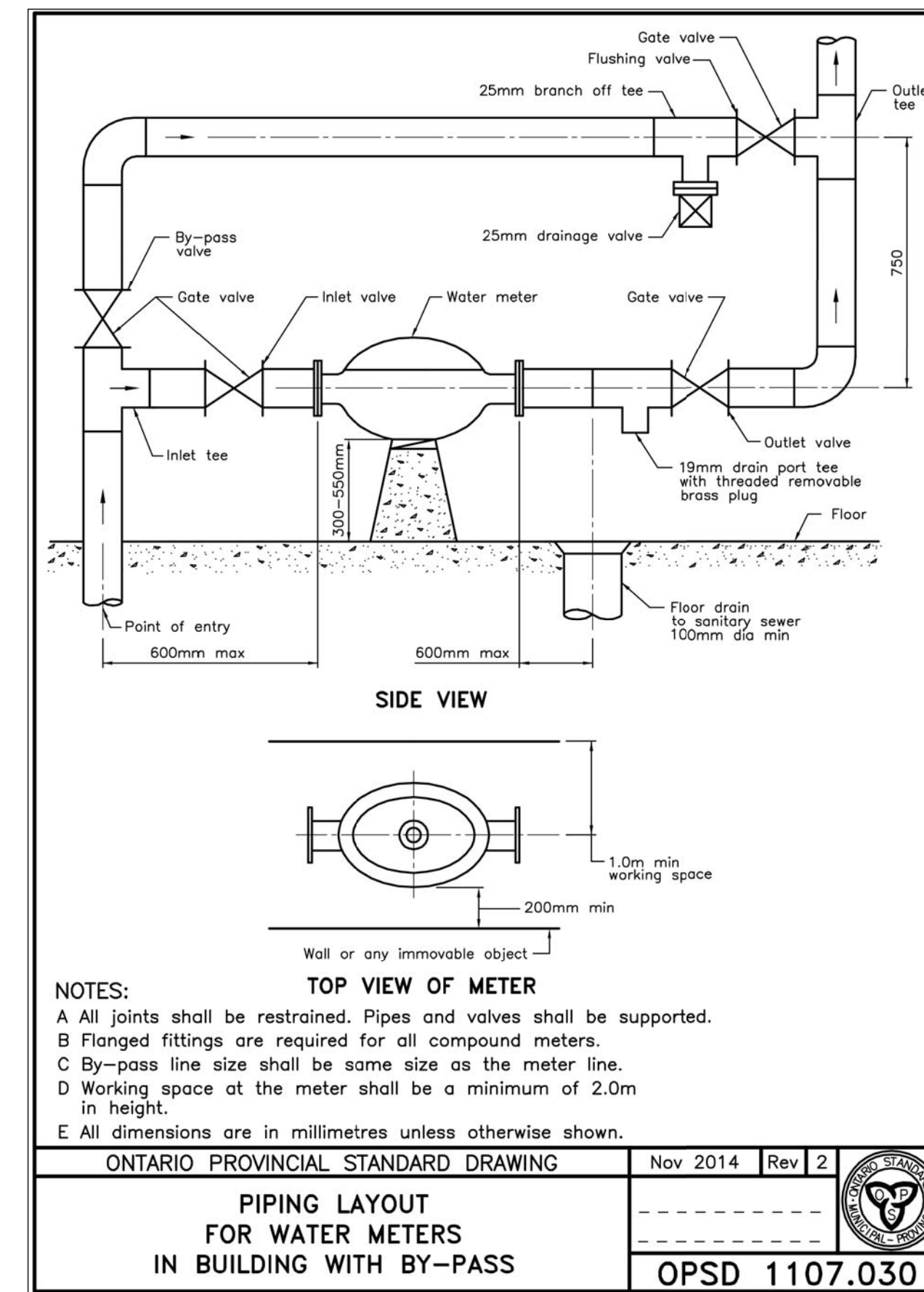
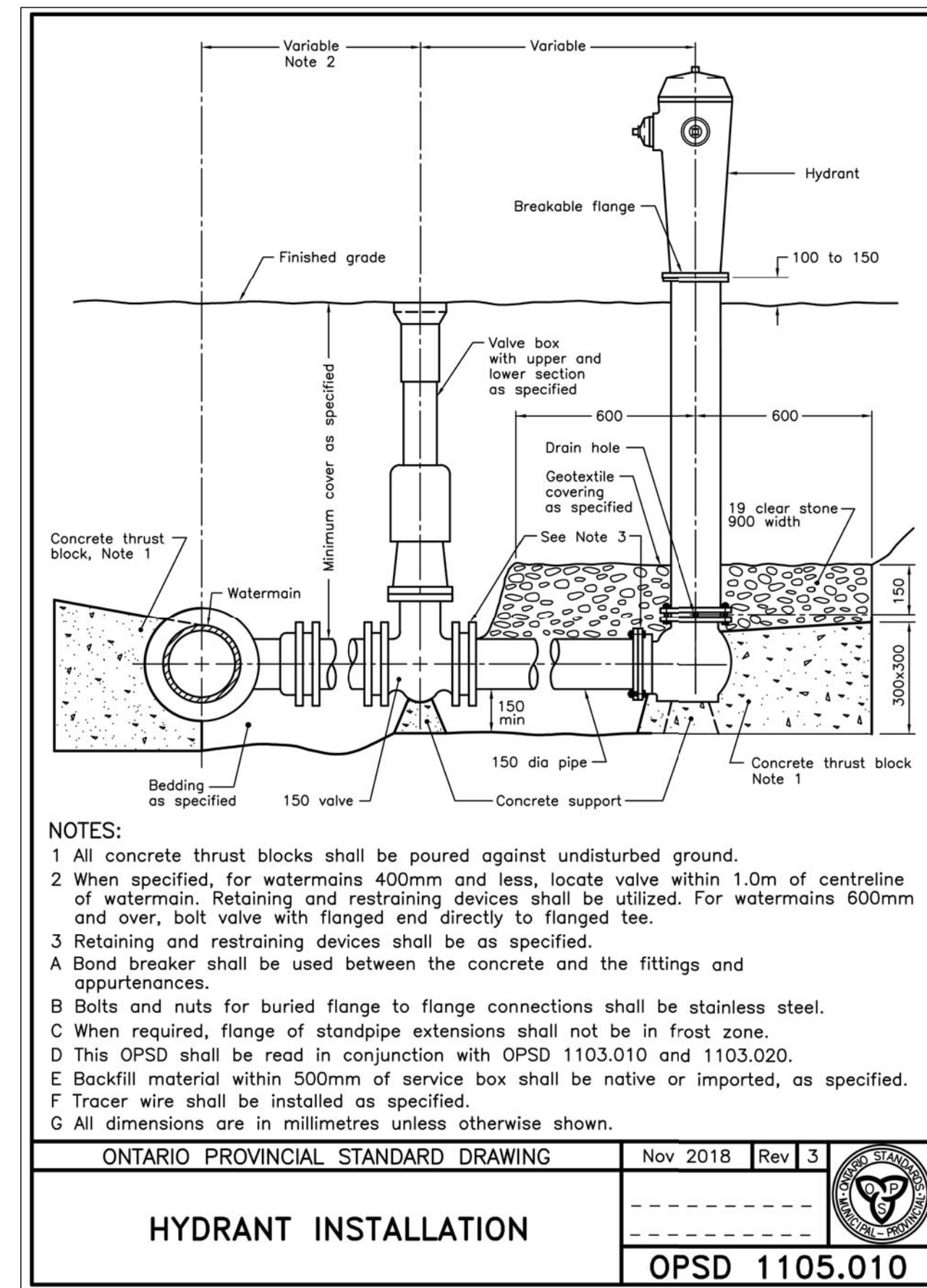
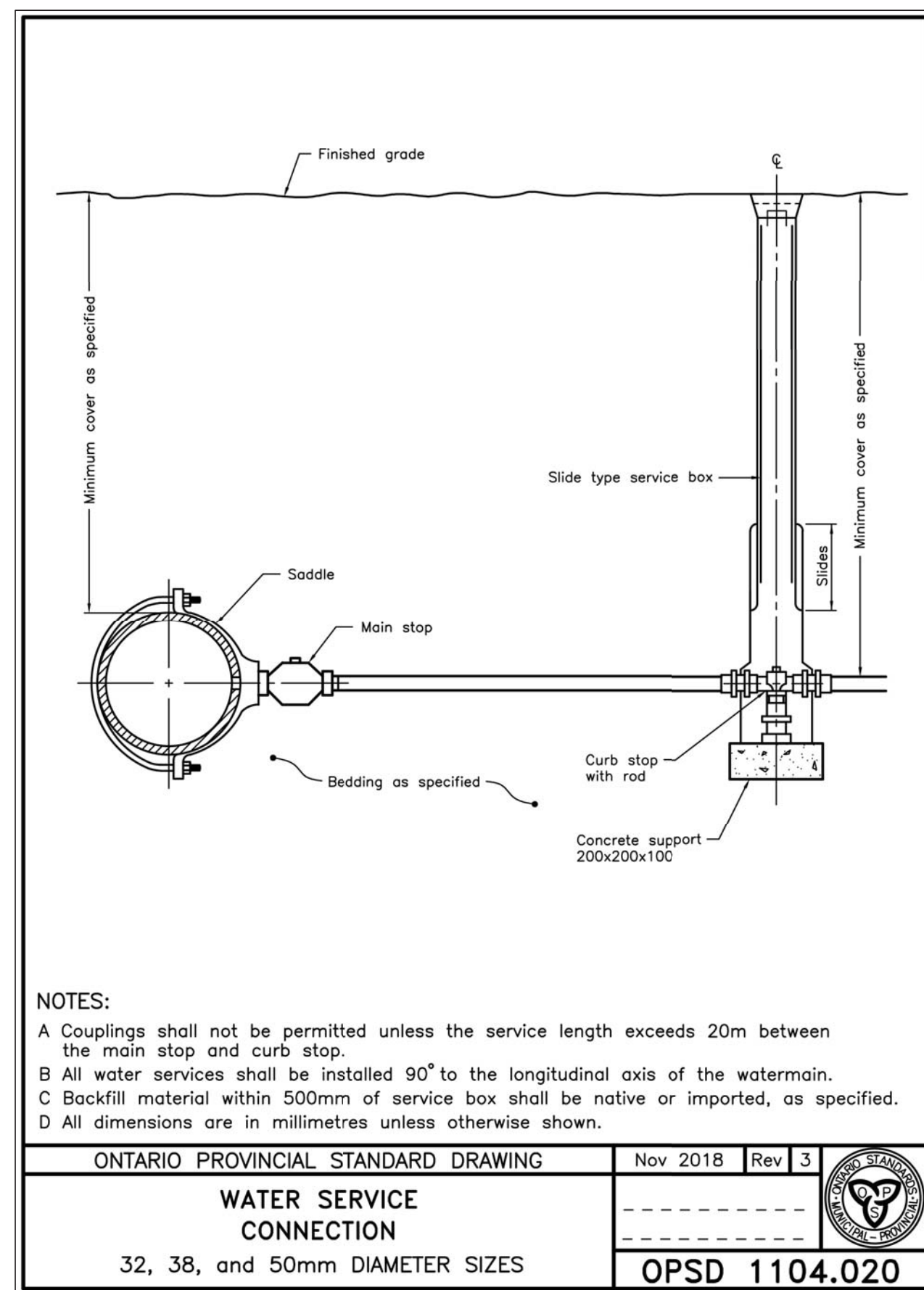
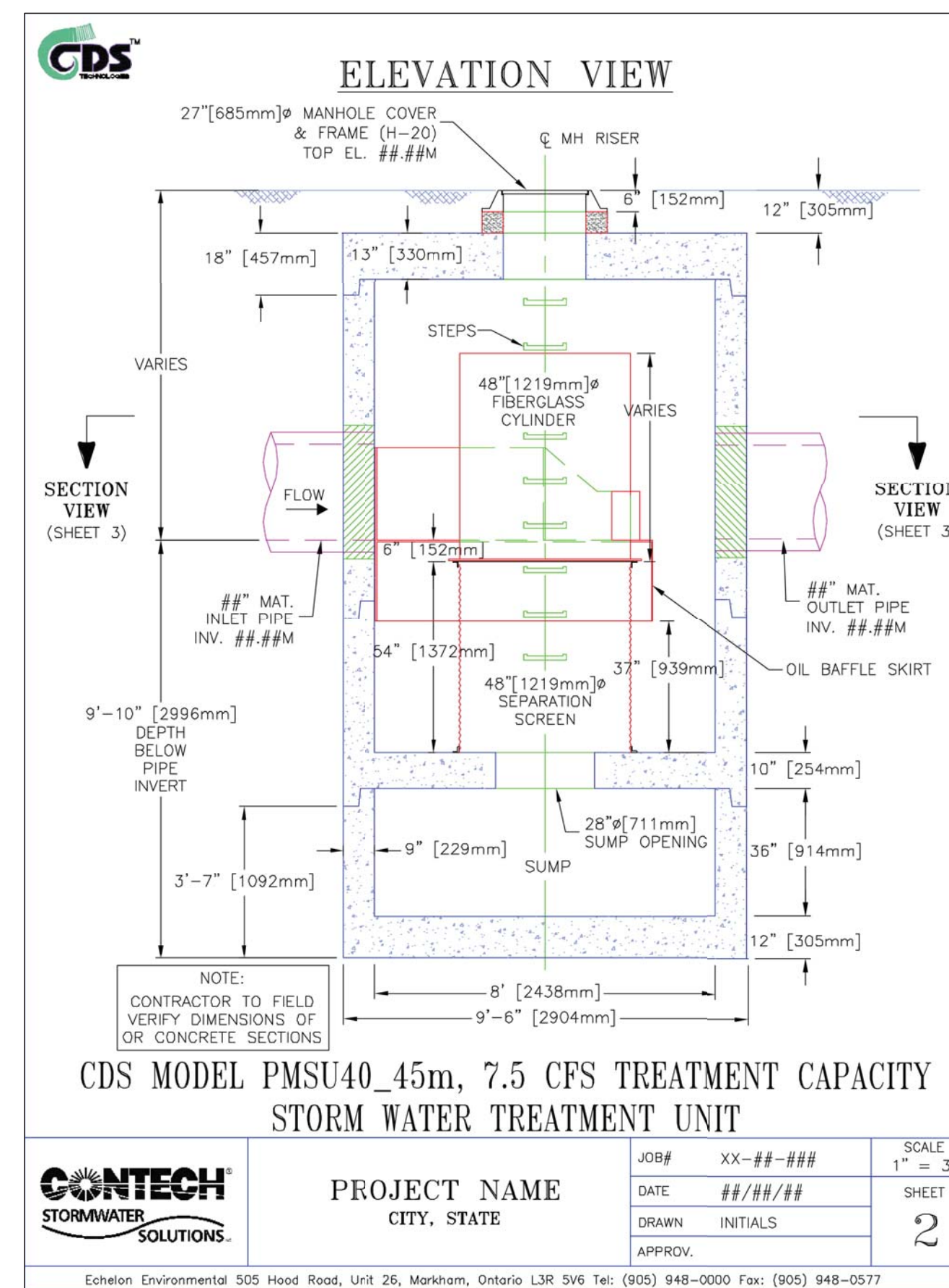
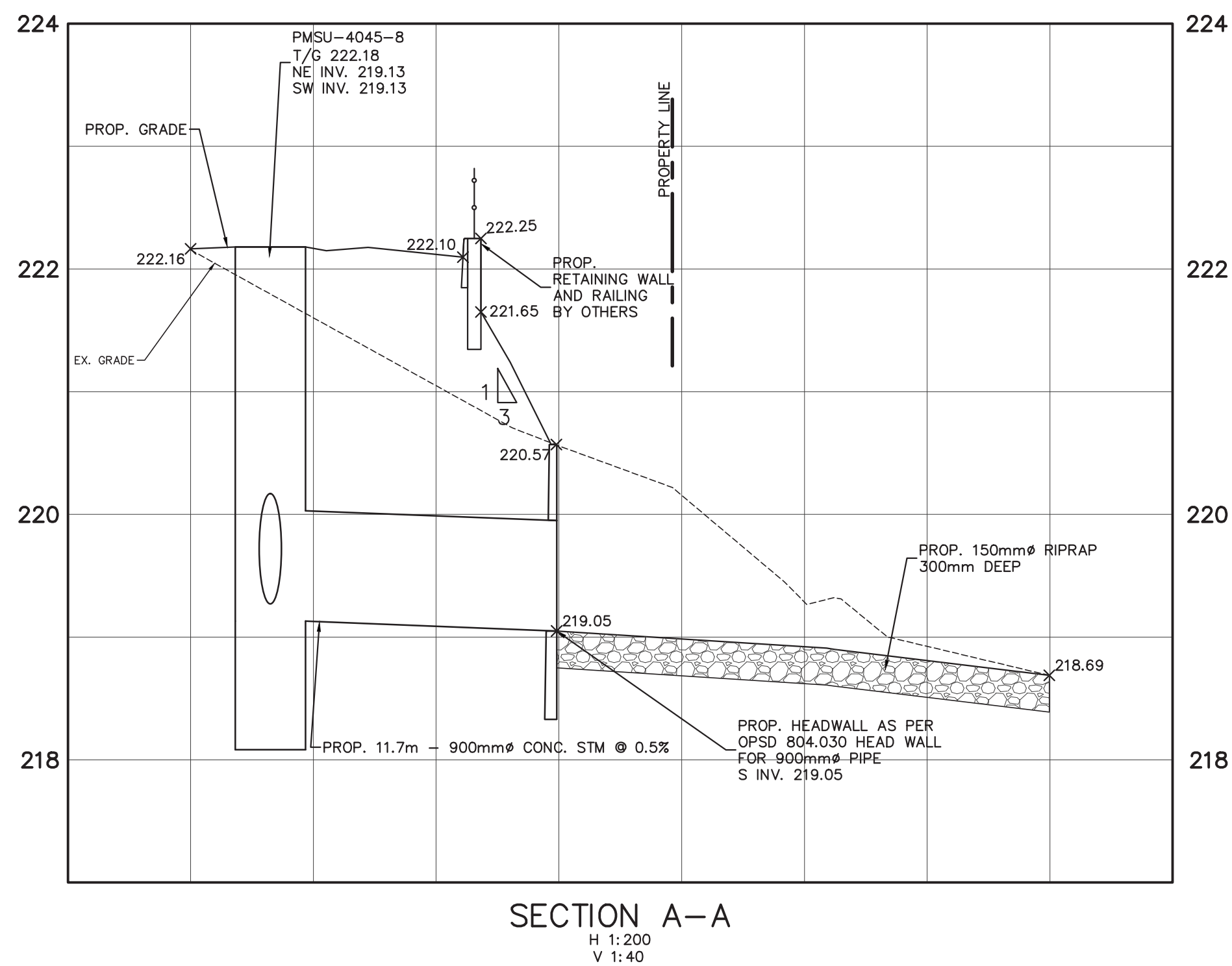
PEARSON ENGINEERING  
 PEARSONENG.COM PH. 705.719.4785

DESIGNED BY T/JCA  
 DRAWN BY J/PE  
 CHECKED BY M/WD

HORIZ SCALE  
 VERT SCALE

DATE DECEMBER 2018

PROJECT #13031.01  
 DRAWING # ND-1  
 REVISION # 9



C:\Users\JEVANS-1\PEV\pdpData\Local\Temp\pdpublish\_12052\13031.01 - BASE - As-Built\_Rev1.dwg Layout:ND-2 Plotted Mar 01, 2023 @ 2:58pm by jvans @ PEARSON ENGINEERING LTD.

NO.	REVISION NOTE	DATE	BY
9.	REVISED BUILDING PHASE 2	02/27/23	JPE
8.	AS-CONSTRUCTED PHASE 1	11/29/22	DB
7.	REVISED STORM OUTLET AND PAINT LINES	04/08/22	JPE
6.	REVISED AS PER TOWN COMMENTS	03/28/22	JPE
5.	REVISED AS PER TOWN COMMENTS	03/23/22	JPE

**BENCHMARK:**  
SITE BENCHMARK IS THE TOP OF THE SPINDLE OF FIRE HYDRANT AT THE NORTH SIDE OF HERITAGE DRIVE HAVING AN ELEVATION OF 223.48

ELEVATION ARE GEODETIC IN ORIGIN AND WERE DERIVED FROM OBSERVED REFERENCE POINTS (ORP) USING THE PRECISE POINT POSITIONING (PPP) SERVICE (2002 EPOCH) AND ARE REFERRED TO THE CGVD-1928:1978 DATUM.

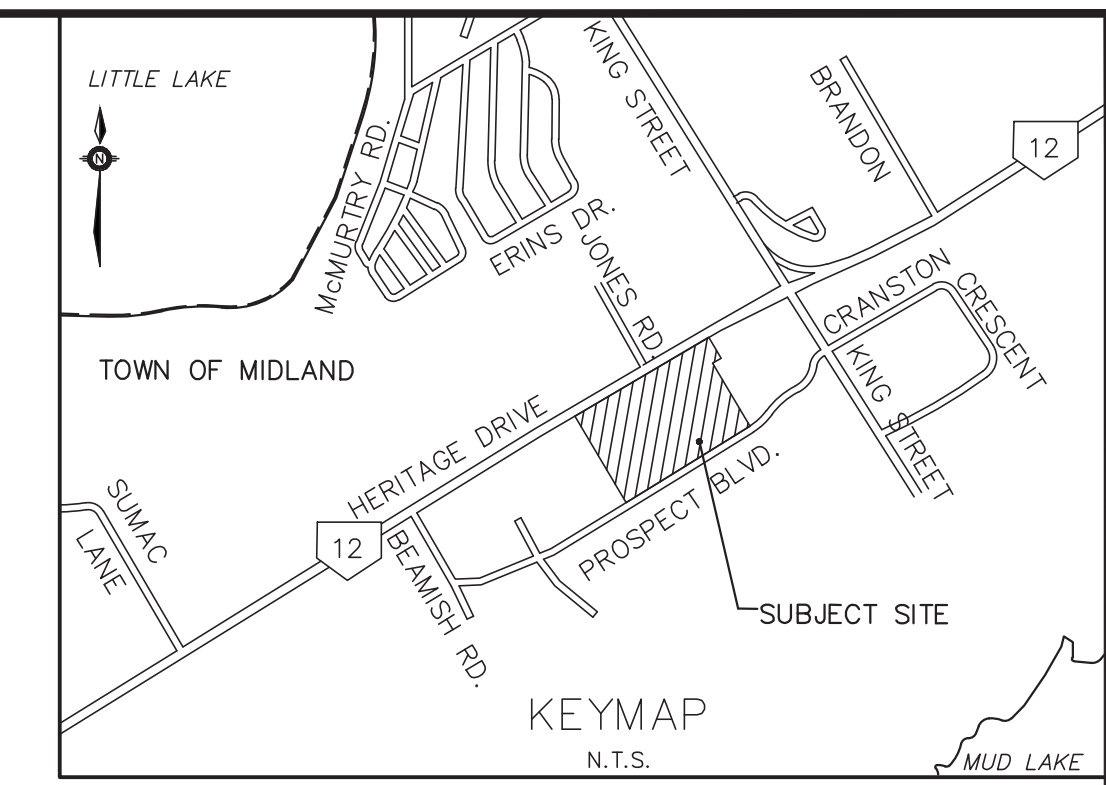


HIGHWAY 12 DEVELOPMENTS INC.  
HWY. 12 COMMERCIAL DEV PH.2  
TOWN OF MIDLAND

**NOTES AND DETAILS**

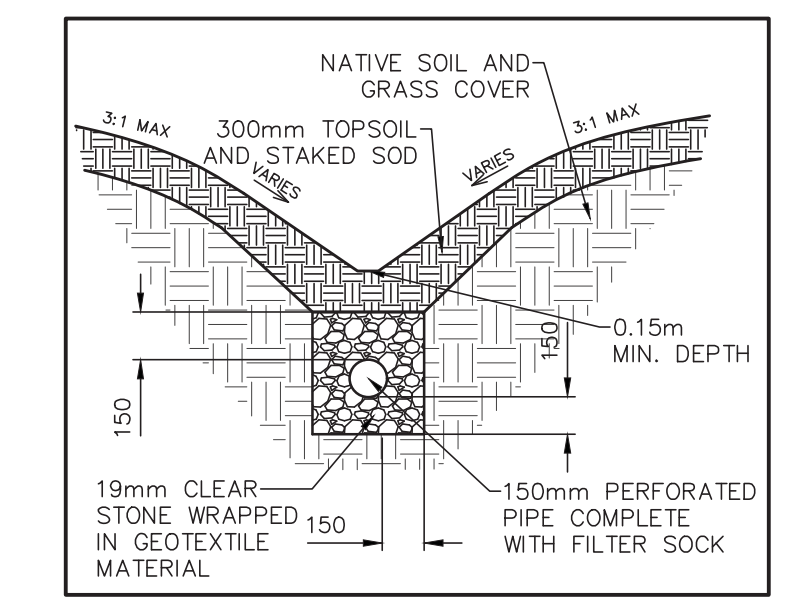


DESIGNED BY	TJCA	HORIZ SCALE	PROJECT #	13031.01
DRAWN BY	JPE	VERT SCALE	DRAWING #	ND-2
CHECKED BY	MWD	DATE	REVISION #	9

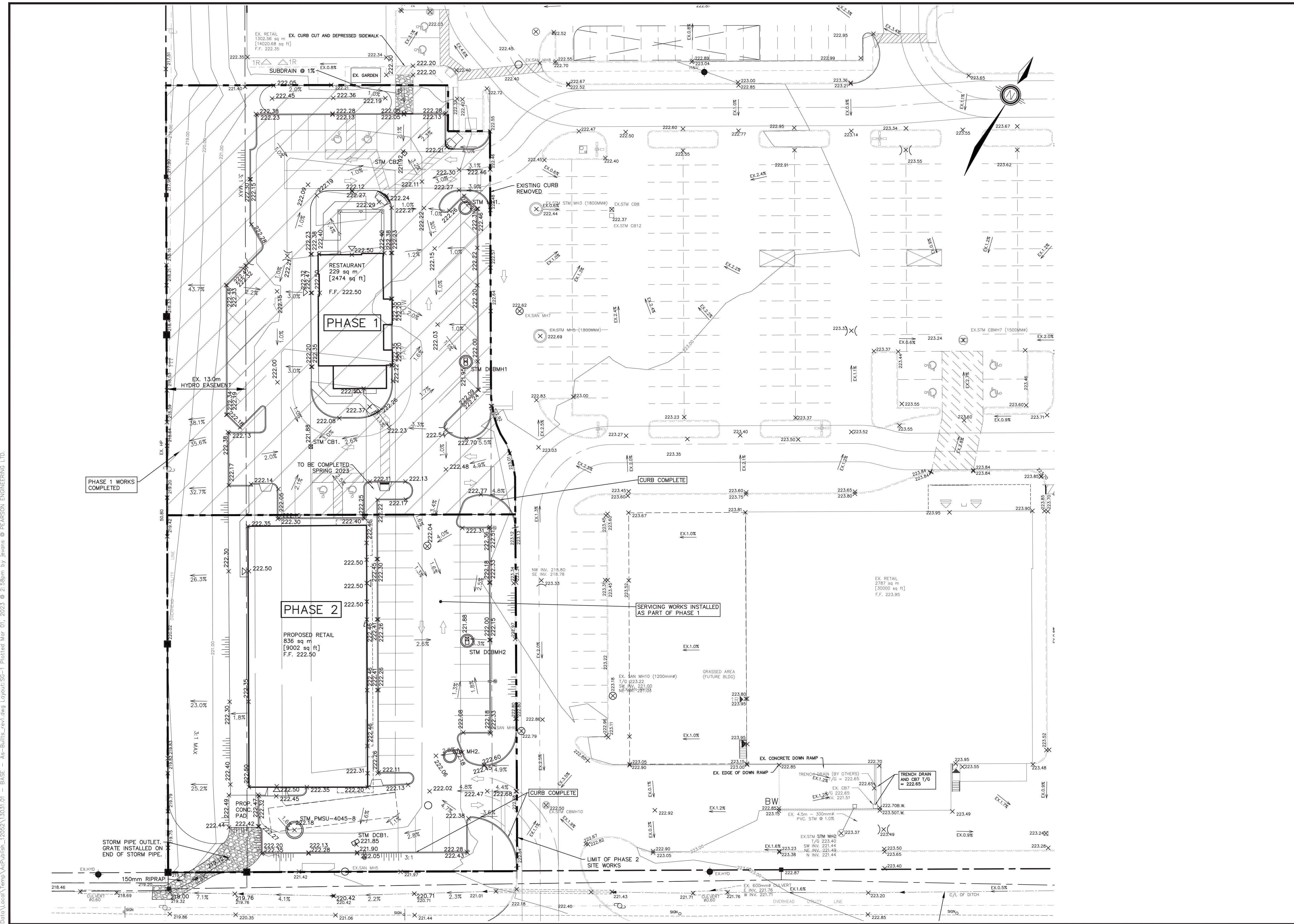


**LEGEND**

- CB CATCH BASIN
- CBMH CATCH BASIN
- MH STORM MANHOLE
- MH SANITARY MANHOLE
- SERVICE CAP
- ◆ HYD. FIRE HYDRANT
- ▼ VB WATER VALVE
- CS CURB STOP W/ SERVICE
- × 254.63 PROPOSED ELEVATION
- 254.09 EXISTING ELEVATION
- 1.5% PROPOSED DIRECTION AND GRADE
- BACK OF CURB
- EDGE OF PAVEMENT
- CURB CUT LOCATION
- HIGH POINT
- ||| 3:1 MAX SLOPE
- T/W ELEV = 314.80 TOP OF WALL ELEVATION
- B/W ELEV = 314.70 BOTTOM OF WALL ELEVATION
- ▨ SNOW STORAGE AREA



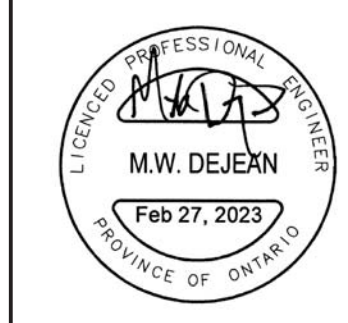
**SWALE SUBDRAIN DETAIL**  
N.T.S.



NO.	REVISION NOTE	DATE	BY
9.	REVISED BUILDING PHASE 2	02/27/23	JPE
8.	AS-CONSTRUCTED PHASE 1	11/29/22	DB
7.	REVISED STORM OUTLET AND PAINT LINES	04/08/22	JPE
6.	REVISED AS PER TOWN COMMENTS	03/28/22	JPE
5.	REVISED AS PER TOWN COMMENTS	03/23/22	JPE

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HIGHWAY 12 DEVELOPMENTS INC.  
HWY. 12 COMMERCIAL DEV PH.2  
TOWN OF MIDLAND

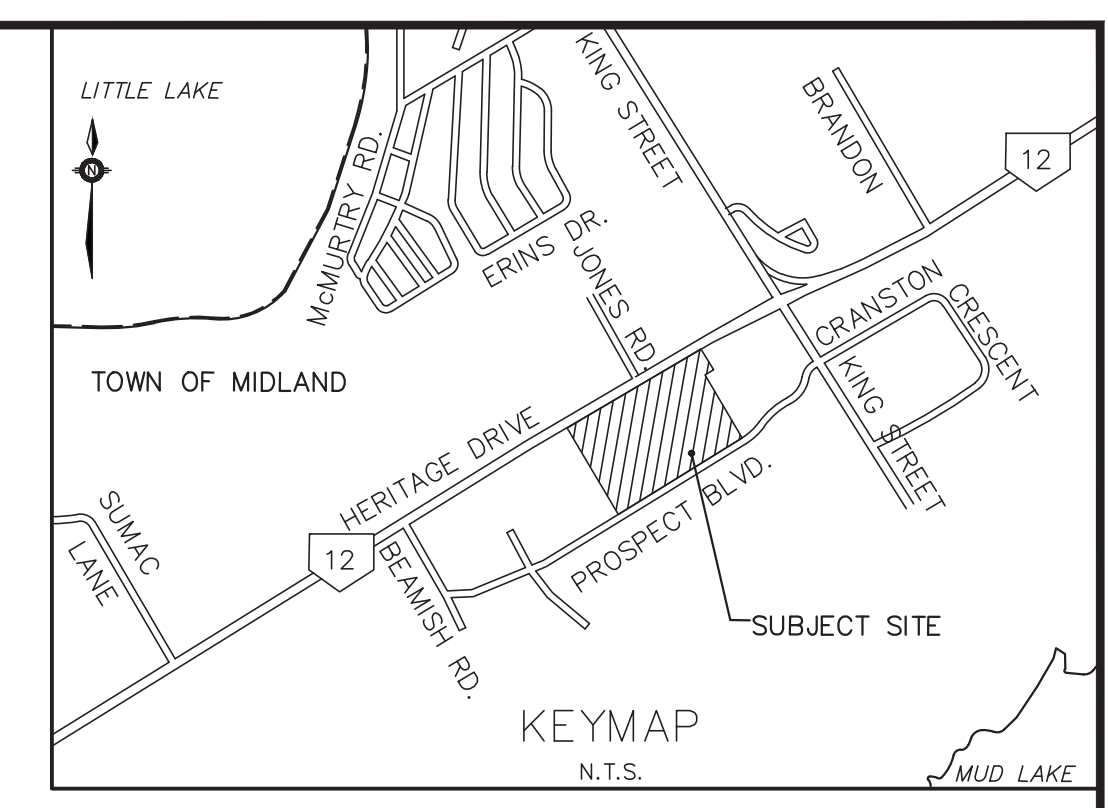
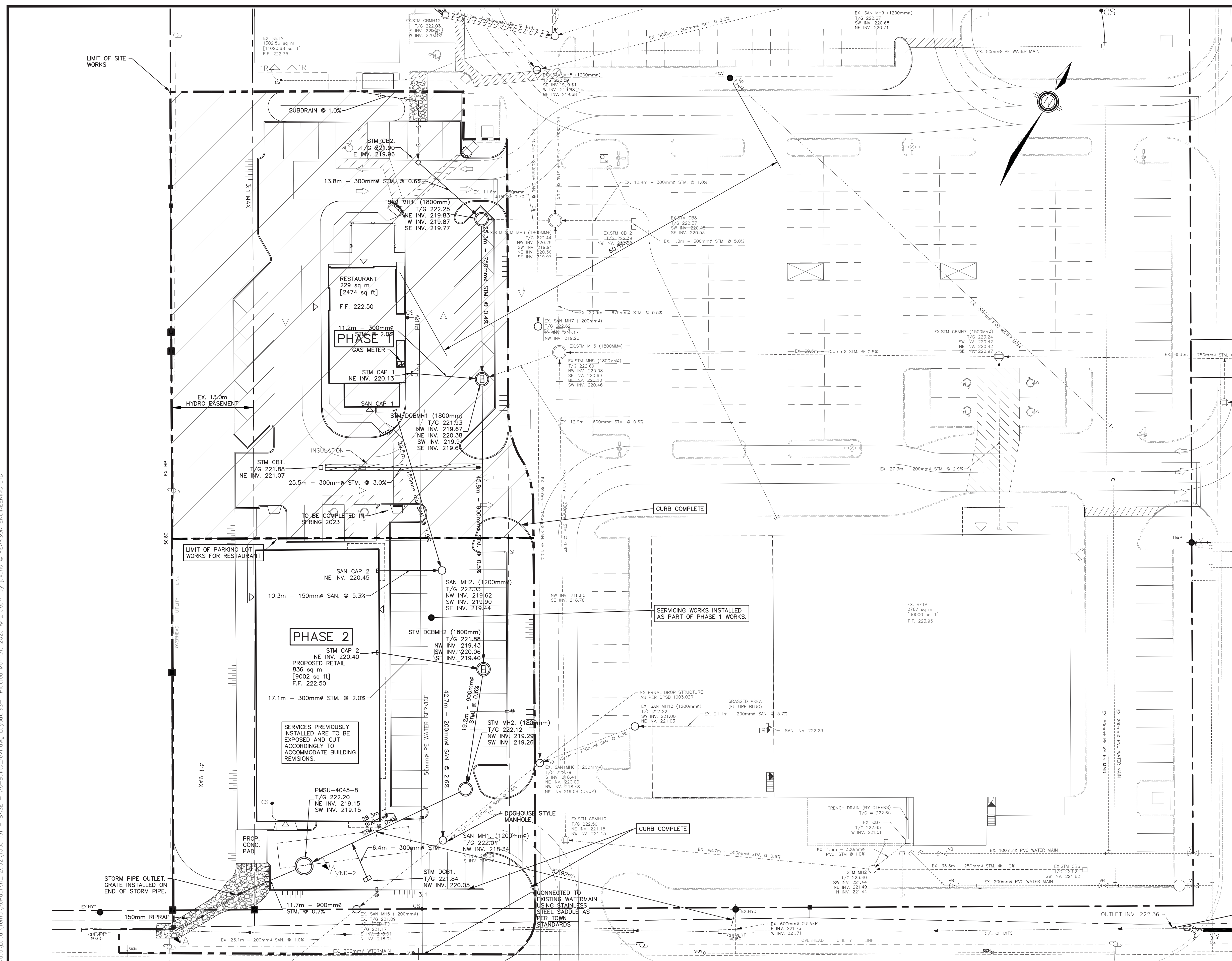
**SITE GRADING PLAN**

**PEARSON ENGINEERING**  
PEARSONENG.COM PH. 705.719.4785

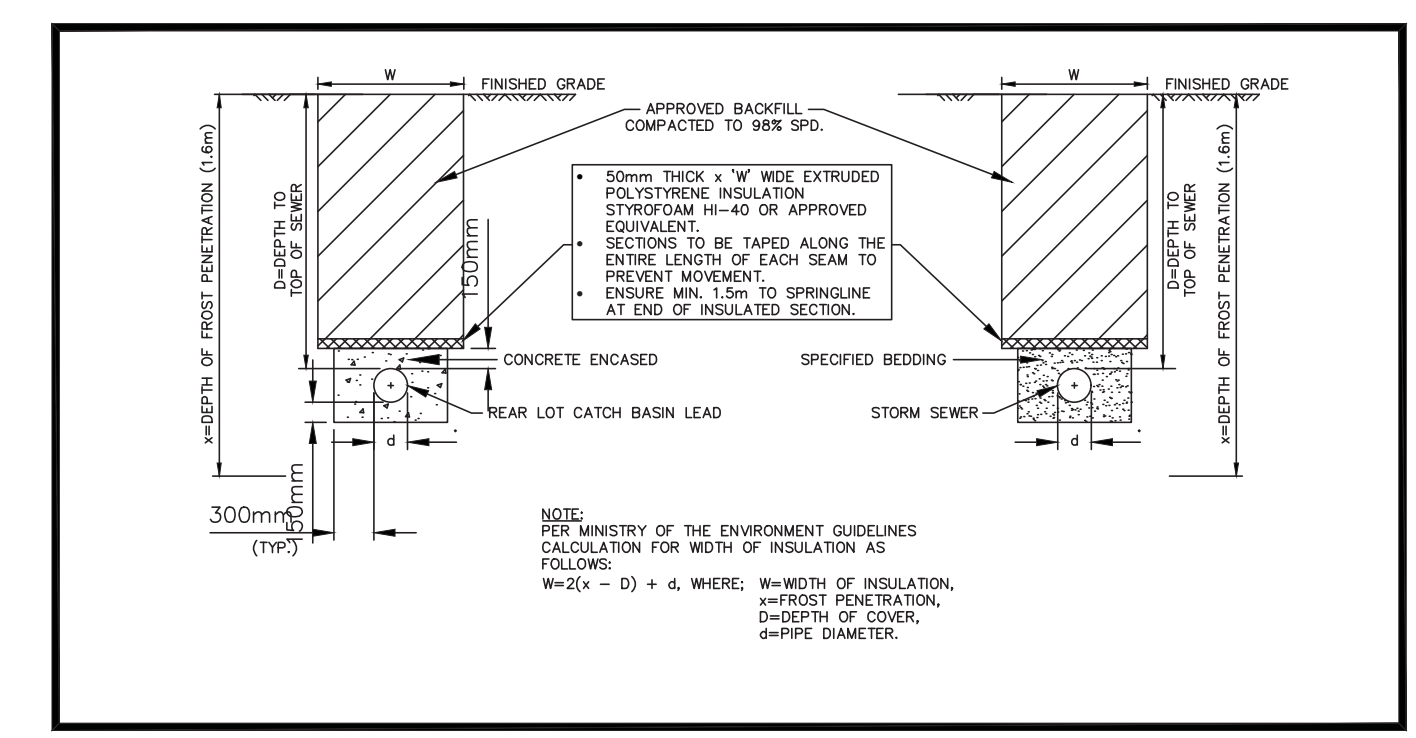
DESIGNED BY	TJCA	HORIZ SCALE	1:300	PROJECT #	13031.01
DRAWN BY	JPE	VERT SCALE		DRAWING #	SG-1
CHECKED BY	MWD	DATE	DECEMBER 2018	REVISION #	9

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- LEGEND**
- CB CATCH BASIN
  - ◉ CBMH CATCH BASIN
  - MH STORM MANHOLE
  - MH SANITARY MANHOLE
  - SCAP SERVICE CAP
  - ◆ HYD. FIRE HYDRANT
  - ▼ VB WATER VALVE
  - CS CURB STOP W/ SERVICE
  - × 254.63 PROPOSED ELEVATION
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  - CURB CUT LOCATION
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  - 3:1 MAX SLOPE
  - T/W ELEV = 314.80 TOP OF WALL ELEVATION
  - B/W ELEV = 314.70 BOTTOM OF WALL ELEVATION
  - - - - - PROP. SUBDRAIN



NO.	REVISION NOTE	DATE	BY
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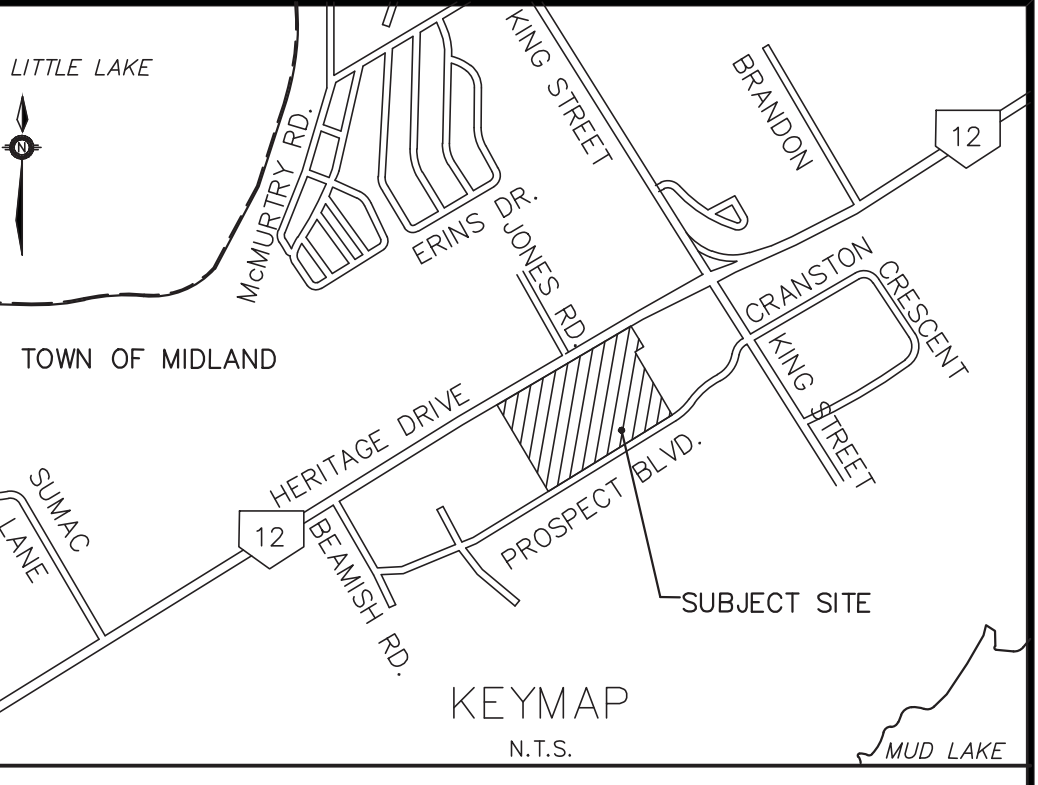
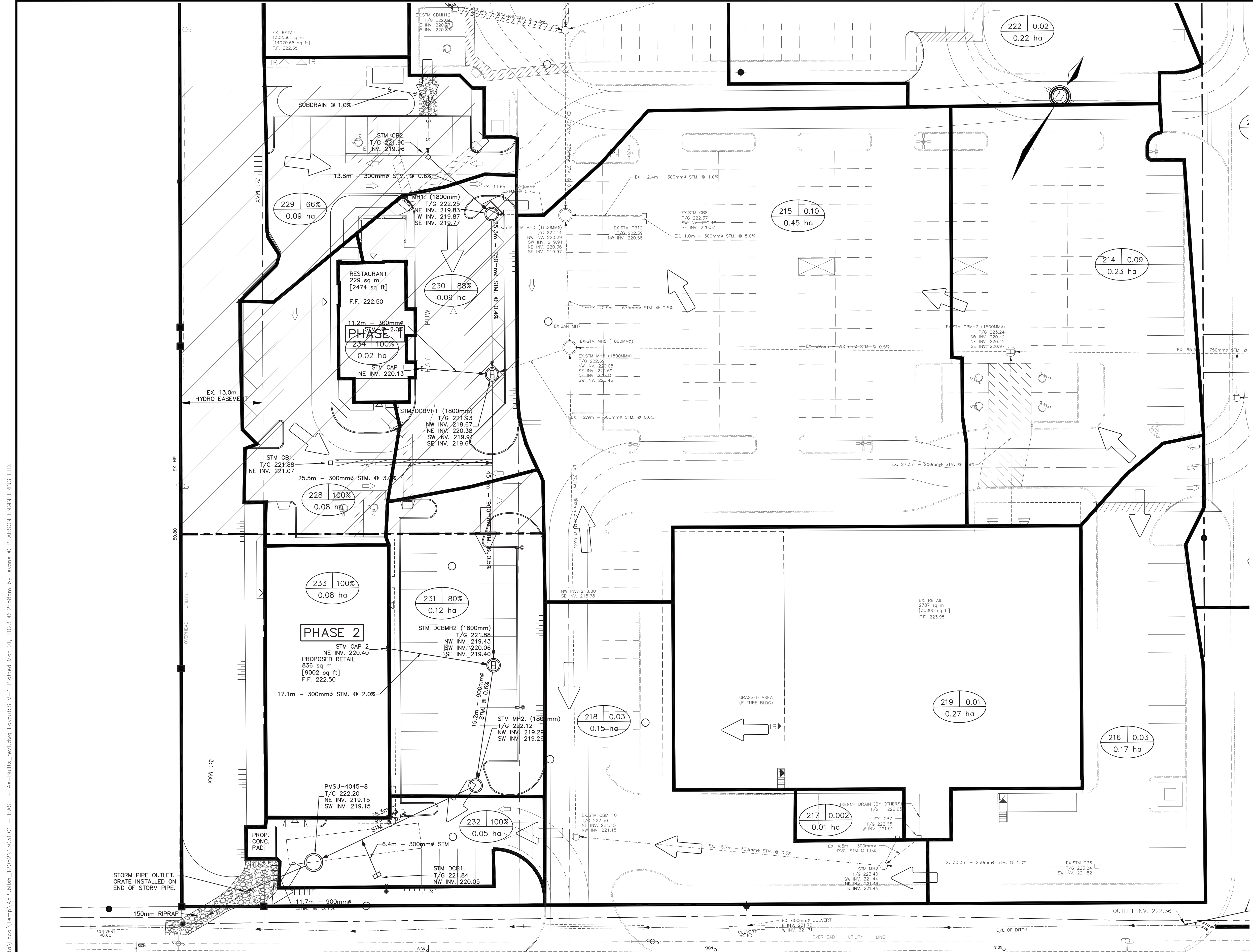
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HIGHWAY 12 DEVELOPMENTS INC.  
 HWY. 12 COMMERCIAL DEV PH.2  
 TOWN OF MIDLAND



SITE SERVICING PLAN

DESIGNED BY	TJCA	HORIZ SCALE	1:300	PROJECT #	13031.01
DRAWN BY	JPE	VERT SCALE		DRAWING #	SS-1
CHECKED BY	MWD	DATE	DECEMBER 2018	REVISION #	9



**LEGEND**

- CB CATCH BASIN
- CBMH CATCH BASIN
- MH STORM MANHOLE
- SMH SANITARY MANHOLE
- SC SERVICE CAP
- HYD. FIRE HYDRANT
- WB WATER VALVE
- CS CURB STOP W/ SERVICE
- 254.63 PROPOSED ELEVATION
- 254.09 EXISTING ELEVATION
- 1.5% PROPOSED DIRECTION AND GRADE
- BACK OF CURB
- EDGE OF PAVEMENT
- CURB CUT LOCATION
- HIGH POINT
- 3:1 MAX SLOPE
- |                   |                          |
|-------------------|--------------------------|
| T/W ELEV = 314.80 | TOP OF WALL ELEVATION    |
| B/W ELEV = 314.70 | BOTTOM OF WALL ELEVATION |
- PROPOSED ASPHALT SWALE
- PROPOSED PERFORATED SUBDRAIN
- OVERLAND FLOW DIRECTION
- |                |   |      |                    |
|----------------|---|------|--------------------|
| CATCHMENT AREA | 1 | 0.75 | RUNOFF COEFFICIENT |
|                |   | 1.00 | ha                 |
- CATCHMENT BOUNDARY

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9.	REVISED BUILDING PHASE 2	02/27/23	JPE
8.	AS-CONSTRUCTED PHASE 1	11/29/22	DB
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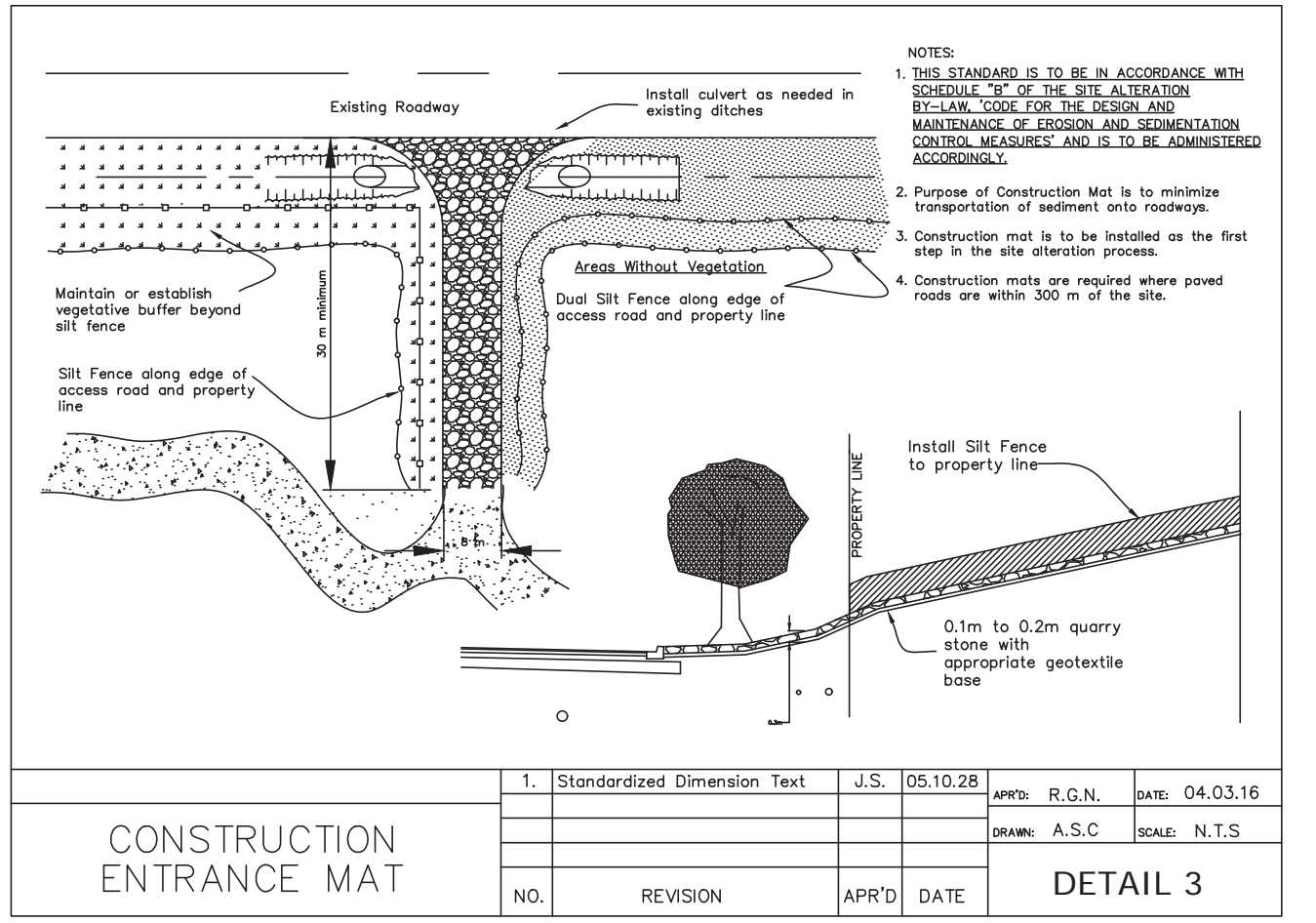
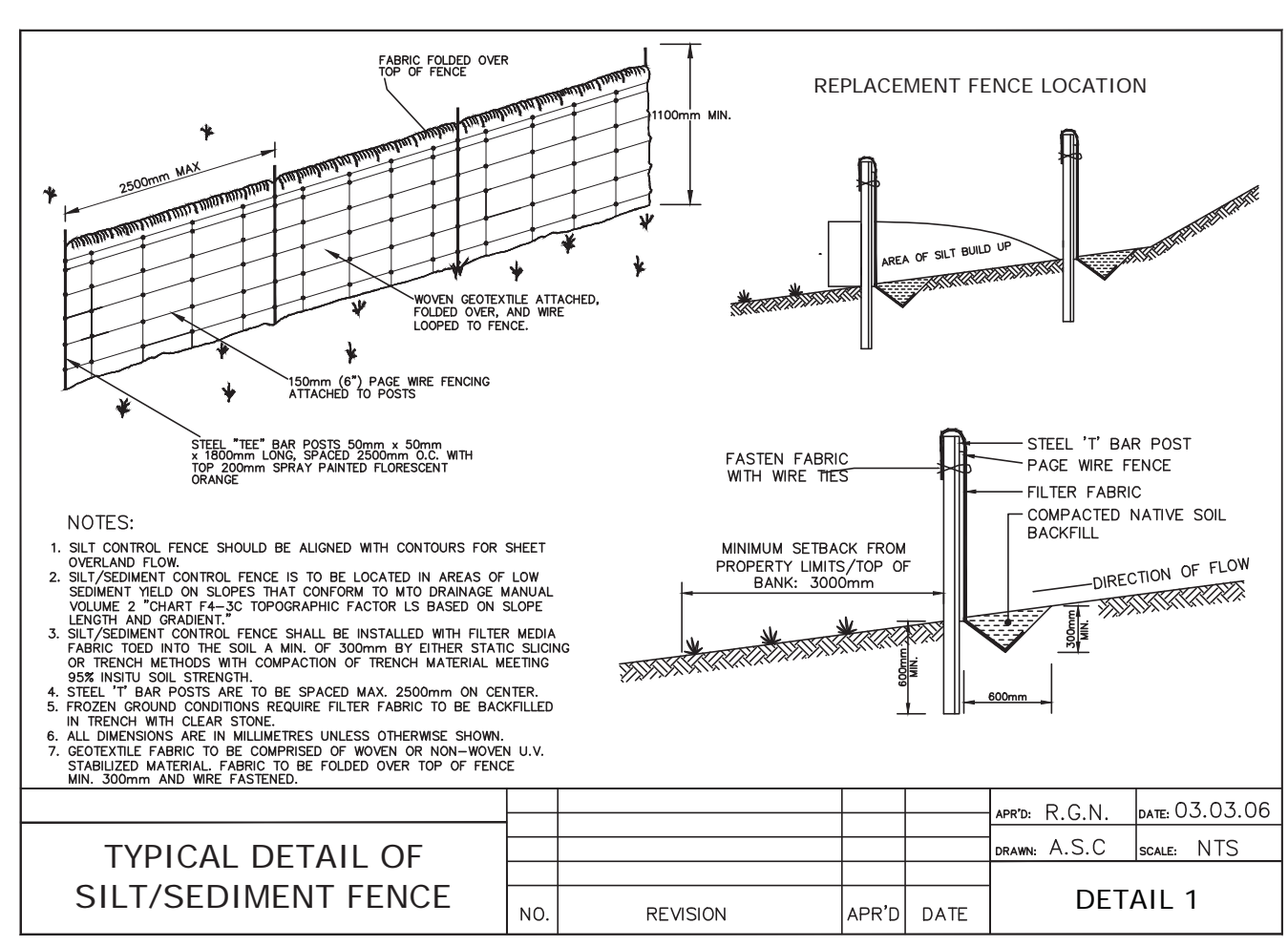
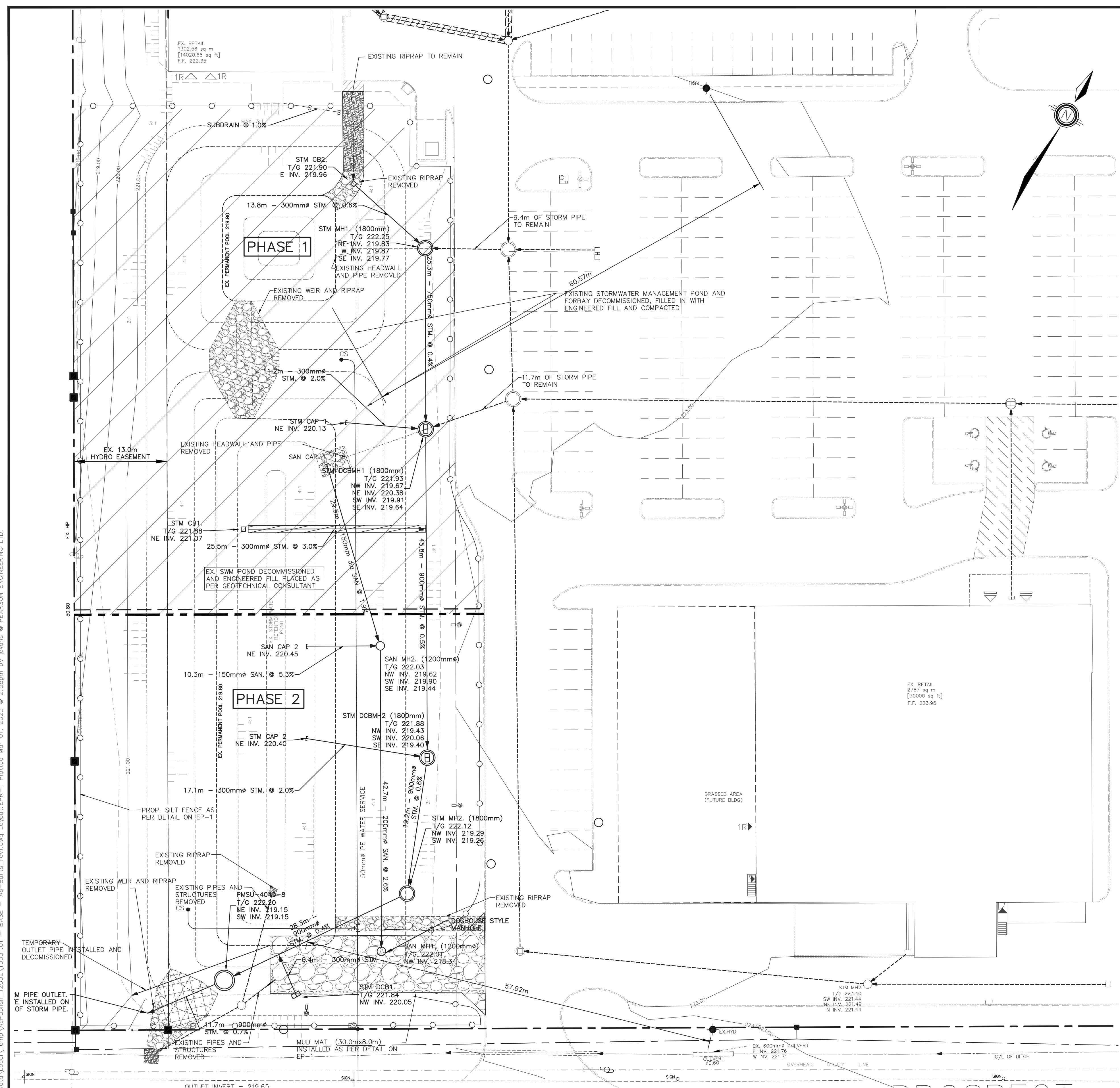
HIGHWAY 12 DEVELOPMENTS INC.  
 HWY. 12 COMMERCIAL DEV PH.2  
 TOWN OF MIDLAND

POST DEVELOPMENT STORMWATER  
 MANAGEMENT PLAN

PEARSON ENGINEERING  
 PEARSONENG.COM PH. 705.719.4785

DESIGNED BY	TJCA	HORIZ. SCALE	1:300	PROJECT #	13031.01
DRAWN BY	JPE	VERT. SCALE		DRAWING #	STM-1
CHECKED BY	MWD	DATE	DECEMBER 2018	REVISION #	9

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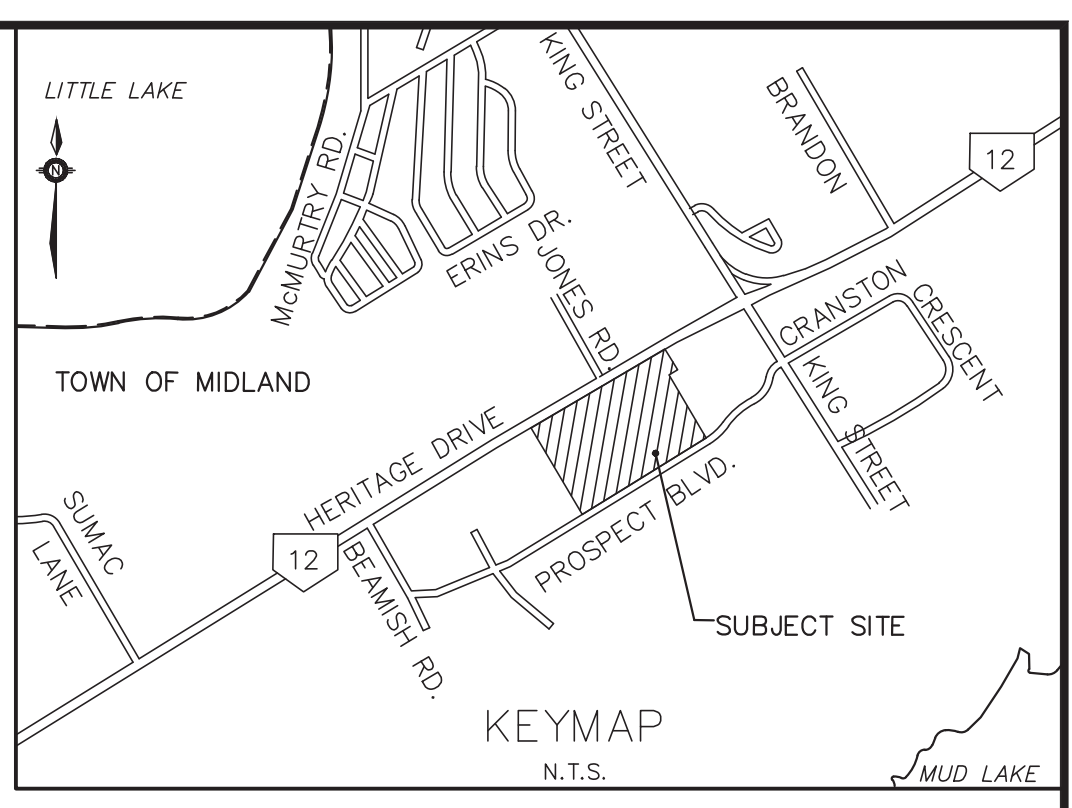


**SEQUENCE OF CONSTRUCTION AND POND DECOMMISSIONING**

- CONSULTANT AND TOWN ENGINEERING STAFF TO BE NOTIFIED PRIOR TO INITIATION OF ANY ON SITE WORKS.
- SILT FENCE TO BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY WORKS ONSITE AND APPROVED BY THE ENGINEER.
- PROPOSED HEADWALL, OUTLET PIPE AND OGS TO BE INSTALLED.
- TEMPORARY OUTLET PIPE TO BE INSTALLED.
- EXISTING POND OUTLET TO BE REMOVED.
- SOUTH EAST CORNER POND TO BE FILLED AS NECESSARY FOR INSTALLATION OF MH2 TO CBMH2.
- VEGETATION REMOVAL MAY COMMENCE
- AZIMUTH ENVIRONMENTAL TO BE ONSITE DURING START OF DECOMMISSIONING TO ASSESS POTENTIAL BIRD NESTING IN VEGETATION AND DIRECT CONTRACTOR AS NECESSARY WITH TIMING OR AVOIDANCE.
- AZIMUTH ENVIRONMENTAL TO BE ON SITE DURING POND DEWATERING TO RESCUE AND TRANSLOCATE WILDLIFE IN ACCORDANCE WITH WILDLIFE SCIENTIFIC COLLECTORS AUTHORIZATION.
- ANY FISH ENCOUNTERED ARE TO BE EUTHANIZED BY AZIMUTH ENVIRONMENTAL IN ACCORDANCE WITH THE LICENCE TO COLLECT FISH.
- POND TO BE DEWATERED.
- ALL SOFT COMPRESSIBLE MATERIAL TO BE EXCAVATED AND REMOVED OFF SITE TO A DISPOSAL SITE APPROVED BY THE GEOTECHNICAL ENGINEER. BASE OF THE POND TO BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO FILLING.
- ALL FILL MATERIAL TO BE APPROVED GRANULAR AND COMPACTED TO 98% MSPDD IN MAXIMUM 300mm LIFTS. ALL FILL MATERIAL WITHIN THE INFLUENCE LINE OF THE BUILDING FOUNDATIONS TO BE PLACED AS ENGINEERED FILL WITH THE COMPACTION TESTED ON EACH LIFT BY THE GEOTECHNICAL ENGINEER.
- PROPOSED SANITARY SERVING TO BE INSTALLED.
- PROPOSED WATERMAIN TO BE INSTALLED.
- EROSION CONTROL MEASURES TO BE MAINTAINED AS DIRECTED BY THE ENGINEER DURING THE CONSTRUCTION PERIOD. ADDITIONAL CONTROL MEASURES MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER.
- ALL DISTURBED GROUND LEFT INACTIVE FOR MORE THAN 30 DAYS SHALL BE STABILIZED WITH SEED, SOD, MULCH OR OTHER ADEQUATE COVERING, AS INSTRUCTED BY THE ENGINEER.

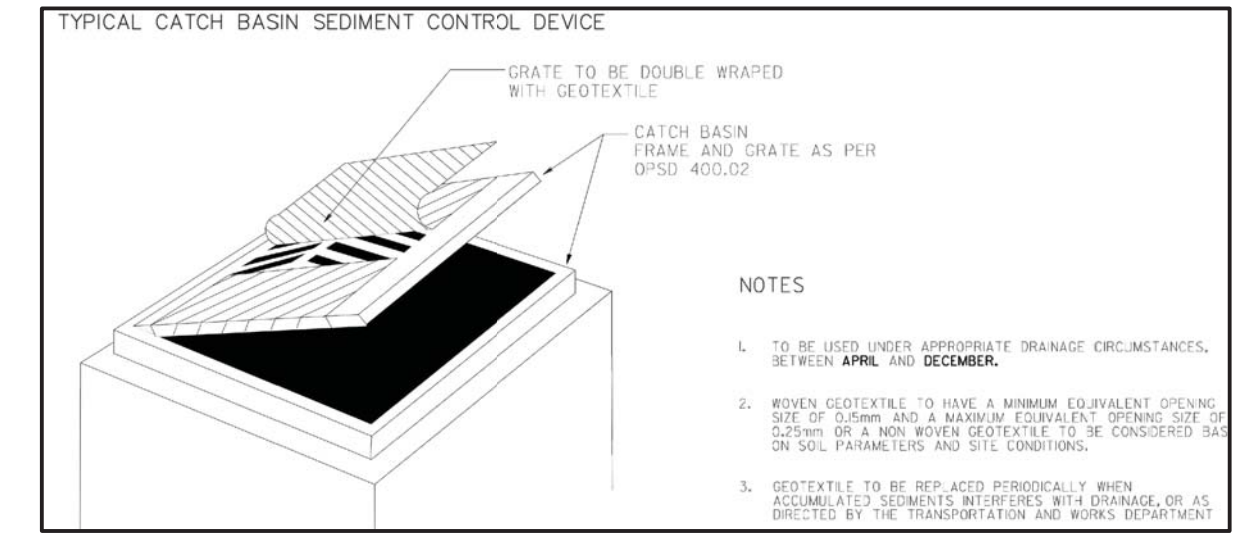
**NOTES FOR SEDIMENT & EROSION CONTROL**

- DISTURBED AREAS THAT HAVE FAILED TO HAVE STABLE GROUND COVER ESTABLISHED BY OCTOBER 30TH SHALL BE PROTECTED WITH A SILTATION CONTROL FENCE OR STRAW MULCH ETC. AND MAINTAINED BY THE CONTRACTOR UNTIL VEGETATION BECOMES ESTABLISHED IN THE SUBSEQUENT GROWING SEASON.
- ANY DEWATERING WASTE SHALL BE DISCHARGED TO A VEGETATED AREA AT LEAST 30m FROM ANY WATERCOURSE AND FILTERED. FILTERING METHODS MUST BE APPROVED BY THE SITE ADMINISTRATOR. DISCHARGE TO MUNICIPAL SERVICES MUST BE APPROVED BY THE CITY OF BARRIE PRIOR TO STARTING WORK AND ADHERE TO CITY OF BARRIE STANDARDS.
- SILT FENCE SHALL BE PUT IN PLACE PRIOR TO AND MAINTAINED DURING ALL GRADING. SILT FENCE TO BE INSPECTED PRIOR TO COMMENCEMENT OF EARTH GRADING ACTIVITIES. SILT FENCE TO BE INSPECTED AND REPAIRED OR REPLACED IF DAMAGED AS DIRECTED BY THE SITE ADMINISTRATOR. SILT CONTROLS TO BE INSPECTED ON A REGULAR BASIS AND AFTER EVERY RAIN EVENT. INSTALLATION SHALL BE TO THE MANUFACTURER'S SUGGESTED SPECIFICATIONS.
- THE CONTRACTOR SHALL BE PREPARED FOR UNEXPECTED CONDITIONS AND ACCORDINGLY HAVE STOCKPILED MATERIALS ON SITE FOR NECESSARY REPAIRS AS A RESULT OF FAILED OR INADEQUATE CONTROL MEASURES. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE A WEEK, AND AFTER EVERY RAINFALL EVENT.
- CONTRACTOR SHALL OBTAIN A CURRENT COPY AND BECOME FAMILIAR WITH OPSS 577, CONSTRUCTION SPECIFICATION FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS WELL AS ALL APPLICABLE MUNICIPAL STANDARDS.
- THE CONTRACTOR MAY CONSIDER ALTERNATIVE SEDIMENT AND EROSION CONTROL MEASURES. SUCH MEASURES SHOULD BE PRESENTED IN WRITING FOR APPROVAL OF THE SITE ADMINISTRATOR AND MUST BE APPROVED IN WRITING BY THE MUNICIPALITY AND CONSERVATION AUTHORITY.
- THE TOPS OF ALL FILTER FABRIC MUST BE A MINIMUM OF 1.0 METRES ABOVE THE GROUND LEVEL AND ATTACHED TO THE FENCE WITH A CONTINUOUS STEEL WIRE. ALTERNATIVELY, THE FILTER FABRIC MUST BE FOLDED OVER THE TOP OF THE FENCE AND ATTACHED TO THE FENCE WITH WIRE LOOPED THROUGH THE FABRIC ON BOTH SIDES OF THE FENCE. FILTER FABRIC IS TO BE TERRAFIX 270R OR EQUIVALENT.
- ALL DISTURBED GROUND LEFT INACTIVE SHALL BE STABILIZED BY SEEDING, SODDING, MULCHING, OR COVERING OR OTHER EQUIVALENT CONTROL MEASURES. THIS PERIOD OF INACTIVITY SHALL BE AT THE DISCRETION OF THE CITY OF BARRIE MANAGER OF ENGINEERING BUT SHALL NOT EXCEED THIRTY DAYS.
- CONTRACTOR SHALL INSTALL AND MAINTAIN CATCHBASIN SEDIMENT BARRIERS THROUGHOUT THE SITE DURING ALL CONSTRUCTION ACTIVITIES IN ORDER TO TRAP SEDIMENT. REFER TO DETAIL.



**LEGEND**

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- CBMH CATCH BASIN
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HIGHWAY 12 DEVELOPMENTS INC.  
 HWY. 12 COMMERCIAL DEV PH.2  
 TOWN OF MIDLAND

EROSION PROTECTION, REMOVALS  
 AND POND DECOMMISSIONING PLAN

**PEARSON ENGINEERING**  
 PEARSONENG.COM PH. 705.719.4785

DESIGNED BY	TJCA	HORIZ SCALE	1:300	PROJECT #	13031.01
DRAWN BY	JPE	VERT SCALE		DRAWING #	EPR-1
CHECKED BY	MWD	DATE	DECEMBER 2018	REVISION #	9