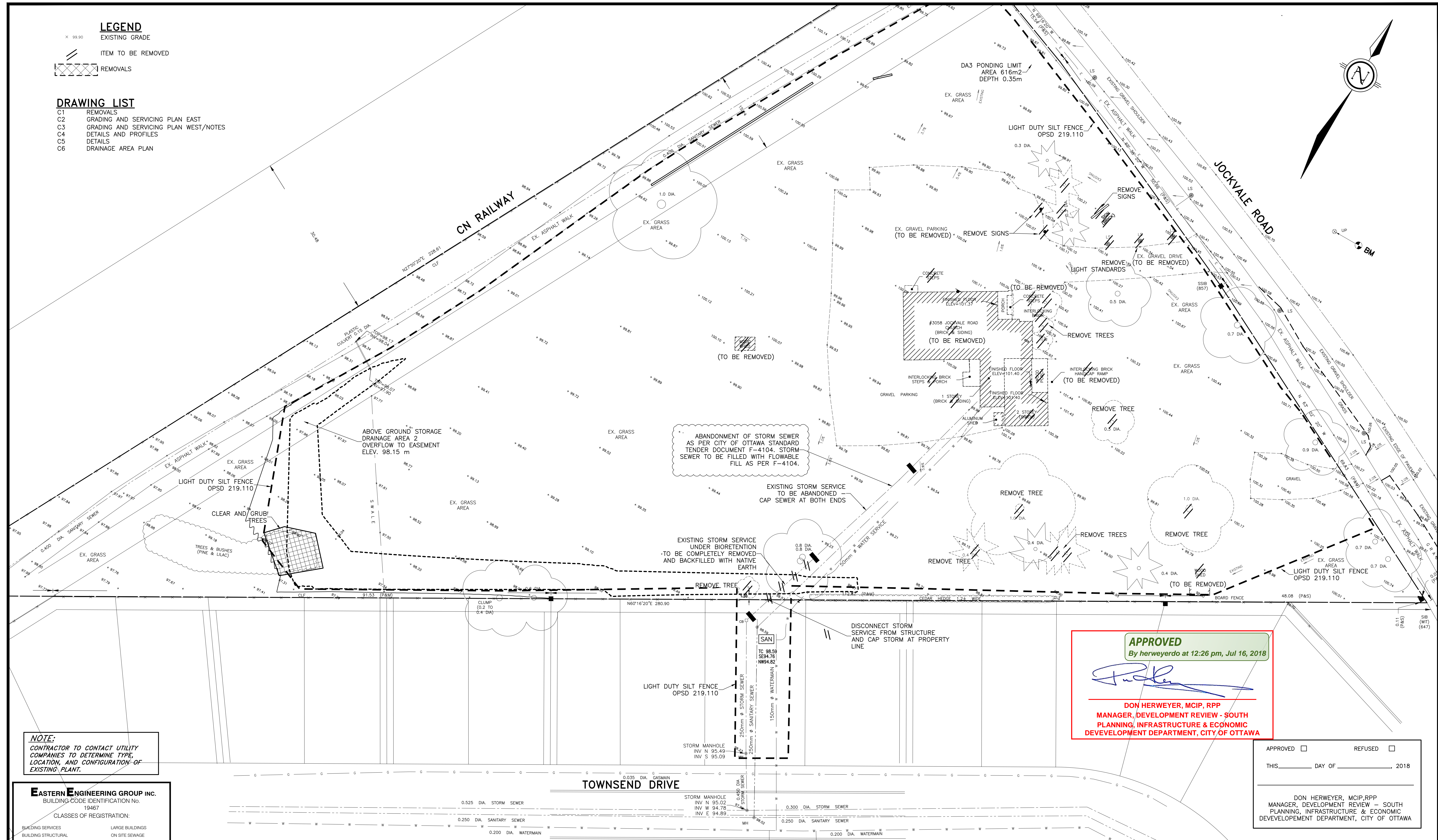
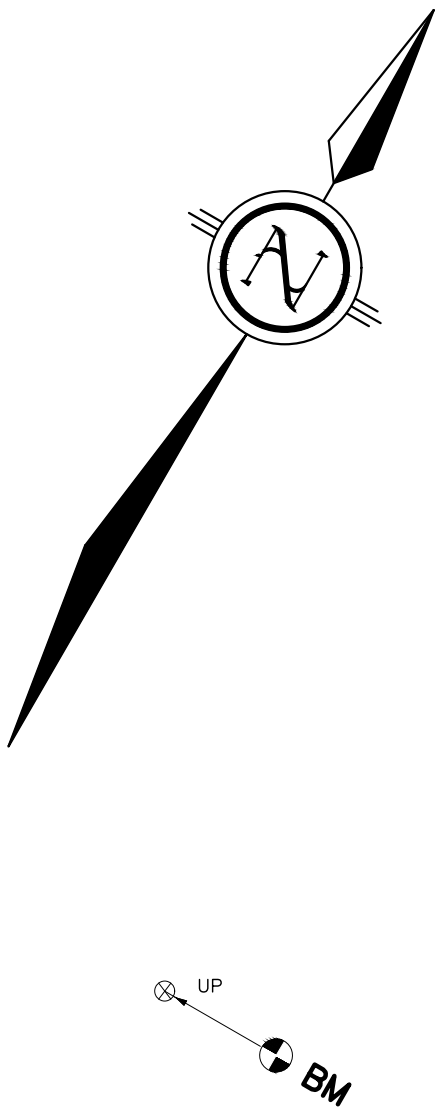


DRAWING LIST

C1	REMOVALS
C2	GRADING AND SERVICING PLAN EAST
C3	GRADING AND SERVICING PLAN WEST/NOTES
C4	DETAILS AND PROFILES
C5	DETAILS
C6	DRAINAGE AREA PLAN



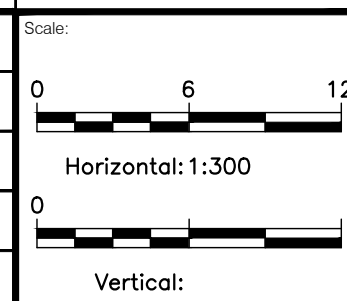
NOTE:
CONTRACTOR TO CONTACT UTILITY
COMPANIES TO DETERMINE TYPE,
LOCATION, AND CONFIGURATION OF
EXISTING PLANT.

EASTERN ENGINEERING GROUP INC.
BUILDING CODE IDENTIFICATION No.
19467
CLASSES OF REGISTRATION:

BUILDING SERVICES	LARGE BUILDINGS
BUILDING STRUCTURAL	ON SITE SEWAGE
HOUSE	SMALL BUILDINGS



3	CAJ	5/30/2018	PER COMMENTS 3
2	CAJ	4/25/2018	PER COMMENTS 2
1	AJP	3/20/2018	PER COMMENTS
0	CJ	11/30/17	FOR SITE PLAN APPROVAL
No.	By	Date	Revisions



Design:	Checked:
Drawn: AJP	Checked:
Approved:	Project No.: 7495
Date: 2017/11/17	Contract No.:

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The contractor must check and verify all dimensions on the job prior to start of construction.

Drawings are not to be scaled.

EASTERN
ENGINEERING GROUP INC.
CONSULTING ENGINEERS

Brackville Centre
125 Stewart Blvd., Suite 212
Brackville, Ont. K6V 4W4

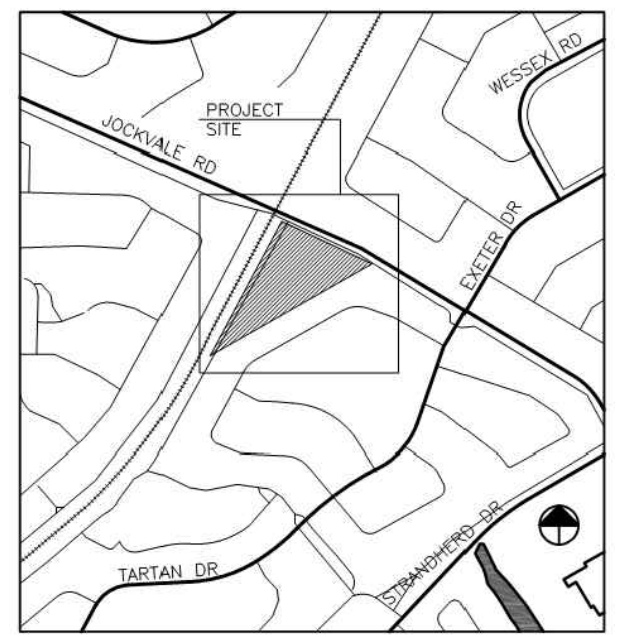
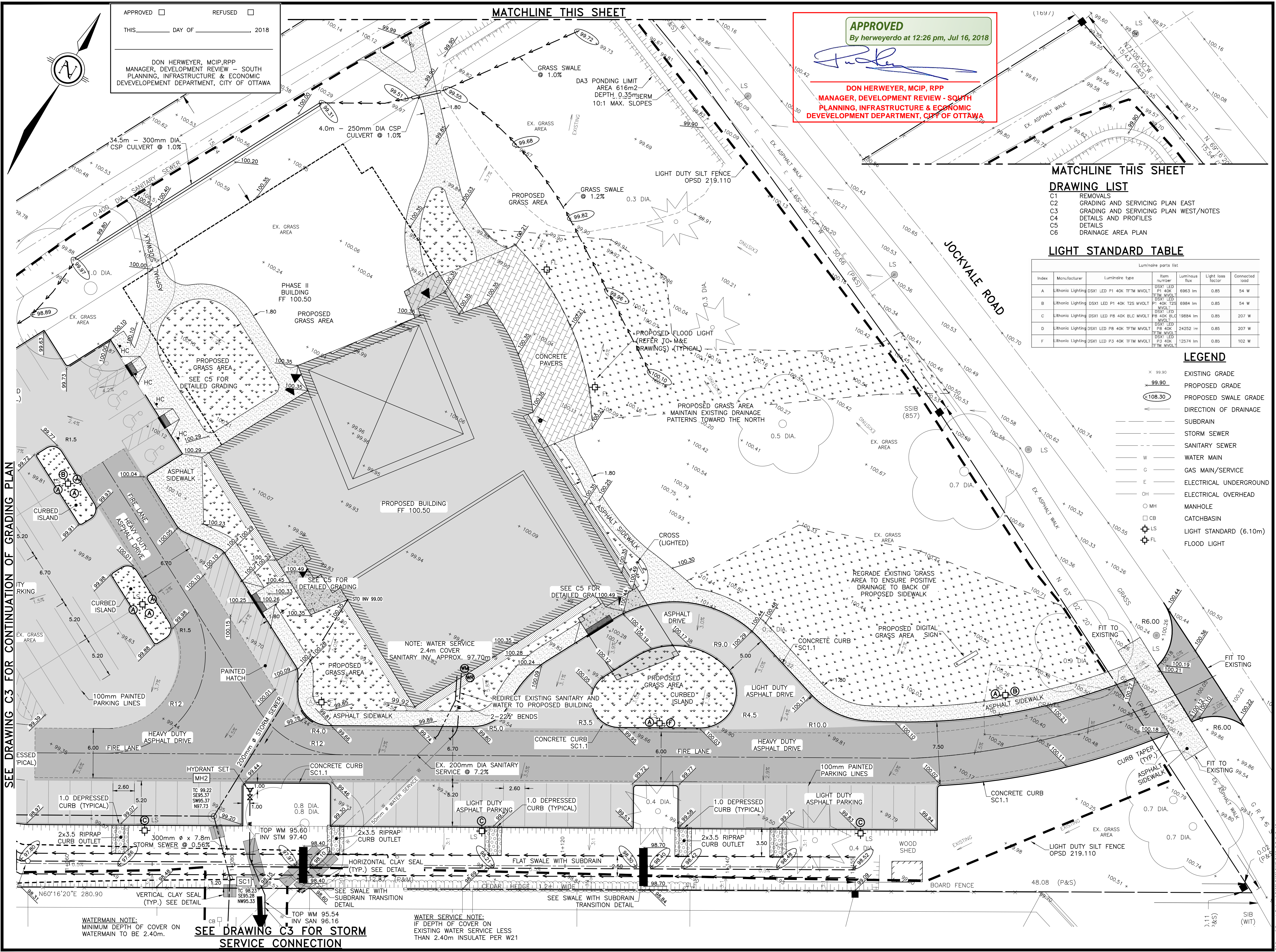
Telephone: (613) 345-0000
Facsimile: (613) 345-0000
Web Site: www.easteng.com

BARRHAVEN FELLOWSHIP CRC
3058 JOCKVALE ROAD
NEPEAN, ONTARIO K2J 4J6
GORDON WEIMA, (613-850-1559)

EXISTING CONDITIONS AND REMOVALS PLAN

C1

Drawing No.: 7495 Cr7 6-8-18.dwg



LOCATION PLAN

PROPERTY INFORMATION
(CITY OF OTTAWA)

3058 JOCKVALE RD.
PART 2, 4R-8-117
PIN 04598-0754
CITY OF OTTAWA (FORMERLY CITY OF NEPEAN)
REGIONAL MUNICIPALITY OF OTTAWA-CARLETON

BENCHMARK
MAGNAIL IN UTILITY POLE

ELEV. - 100.754m

NOTE:
CONTRACTOR TO CONTACT UTILITY
COMPANIES TO DETERMINE TYPE,
LOCATION, AND CONFIGURATION OF
EXISTING PLANT.

EASTERN ENGINEERING GROUP INC.
BUILDING CODE IDENTIFICATION No.
19467

CLASSES OF REGISTRATION:

Building Services	Large Buildings
Building Structural	On Site Sewage
House	Small Buildings

No.	By	Date	Revisions
4	CAJ	6/14/2018	100 YEAR STORM STORAGE
3	CAJ	5/30/2018	PER COMMENTS 3
2	CAJ	4/25/2018	PER COMMENTS 2
1	AJP	3/20/2018	PER COMMENTS
0	CJ	11/30/17	FOR SITE PLAN APPROVAL

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Drawings are not to be scaled.



EASTERN
ENGINEERING GROUP INC.
CONSULTING ENGINEERS

Brookville Centre
125 Stewart Blvd. Suite 212
Brookville, Ont. K6V 4W4

Telephone: (613) 345-0400
Facsimile: (613) 345-0008
Web Site: www.eastengroup.com

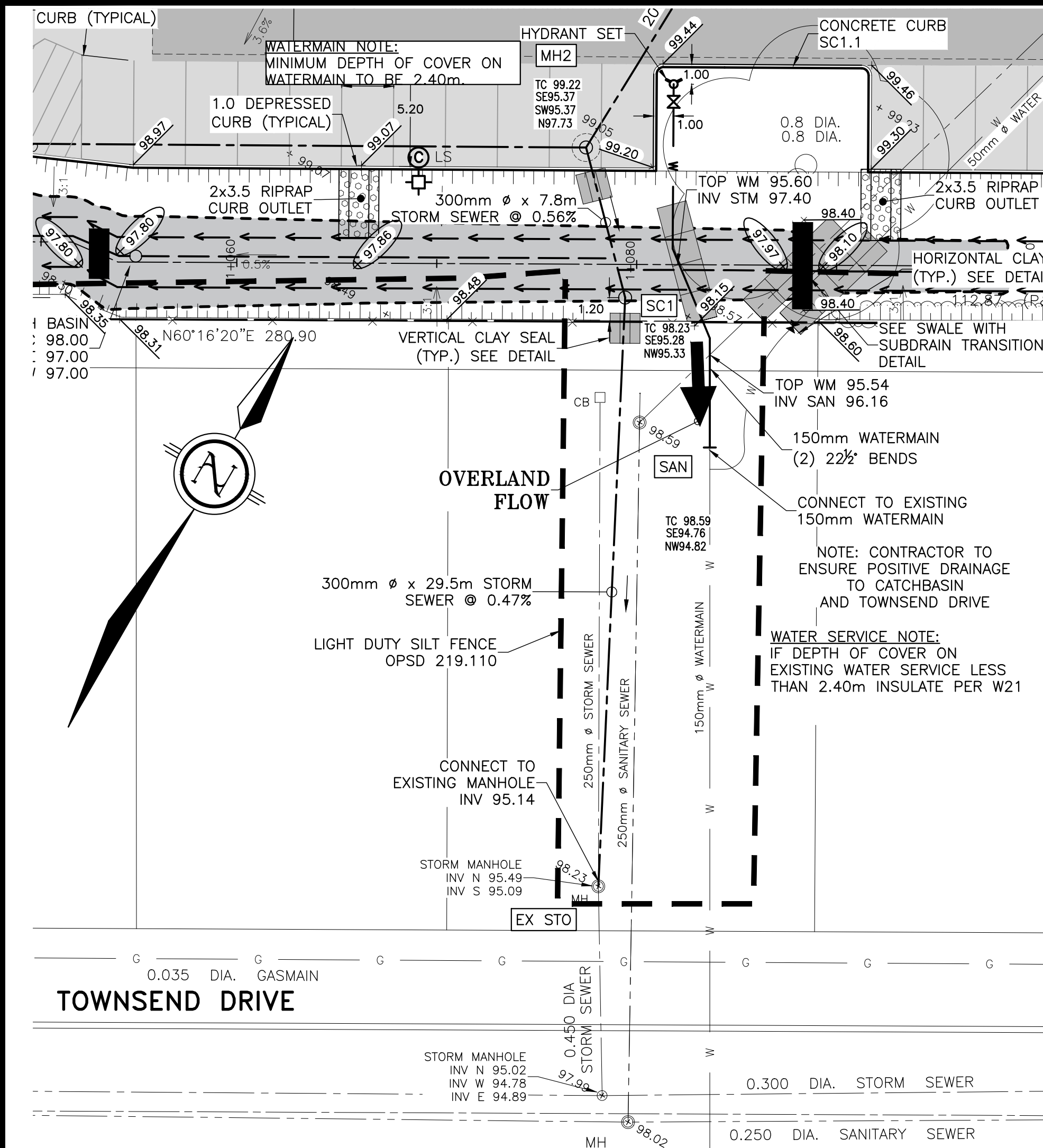
Project Title:
BARRHAVEN FELLOWSHIP CRC
3058 JOCKVALE ROAD
NEPEAN, ONTARIO K2J 4J6
GORDON WEIMA, (613-850-1559)

Drawing Title:
**GRADING AND SERVICING
PLAN EAST**

Design:	Checked:	Approved:	Project No.:
A.J.P.	C.J.		7495
Drawn:	Checked:	Date:	Contract No.:
A.J.P.	C.J.	2017/11/17	
Scale:	Drawn by:		
0 4 8			
Horizontal: 1:200			
Vertical:			

File No.: 7495 C-7 6-8-18.dwg

C2



STORM CONNECTION DETAILS

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- PROPOSED SWALE GRADE
- DIRECTION OF DRAINAGE
- SUBDRAIN
- STORM SEWER
- SANITARY SEWER
- WATER MAIN
- GAS MAIN/SERVICE
- ELECTRICAL UNDERGROUND
- ELECTRICAL OVERHEAD
- MANHOLE
- CATCHBASIN
- LIGHT STANDARD (6.10m)
- FLOOD LIGHT

STRUCTURE TABLE					
No.	OPSD	COVER	BENCHED	TOP OF GRATE	INVERTS
CB3	705.010	400.100	NO	97.74	N 95.81 NE 96.15
EX STO	EXISTING	EXISTING	EXISTING	95.52	NW 95.14
MH2	701.010	S25,S24.1	NO	99.22	SE 95.37 SW 95.37 N 97.73
MH4	701.010	S25,S24.1	NO	98.16	NE 95.77 S 95.77
SC1	STORMCEPTOR	S25,S24.1	NO	98.23	SE 95.28 NW 95.33

NOTES
1. STORMCEPTOR RELEASE RATE 99.84 L/s. HEAD ON ICD IS 2.92 m

GENERAL NOTES AND SPECIFICATIONS

- ALL MATERIALS AND CONSTRUCTION METHODS TO BE IN ACCORDANCE WITH OPS AND MUNICIPAL STANDARD SPECIFICATIONS AND DRAWINGS AND OPS SUPPLEMENT, ONTARIO PROVINCIAL STANDARDS WILL APPLY WHERE NO MUNICIPAL STANDARDS ARE AVAILABLE.
- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED AND BEAR COST OF SAME INCLUDING WATER PERMIT AND ASSOCIATED COSTS.
- SERVICE UTILITY LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING SERVICES AND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING LOCATES FROM ALL UTILITY COMPANIES TO LOCATE EXISTING UTILITIES PRIOR TO EXCAVATION. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION AND REINSTATEMENT.
- ALL DISTURBED AREAS SHALL BE REINSTATED TO EQUAL OR BETTER CONDITION TO THE SATISFACTION OF THE ENGINEER AND THE CITY. PAVEMENT REINSTATEMENT FOR SERVICE AND UTILITY CUTS SHALL BE IN ACCORDANCE WITH OPS 509.010 AND OPS 310.
- ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE "OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATION FOR CONSTRUCTION PROJECTS". THE GENERAL CONTRACTOR SHALL BE DEEMED TO BE THE CONSTRUCTOR AS DEFINED IN THE ACT.
- THE CONTRACTOR SHALL SUBMIT AN EROSION AND SEDIMENTATION CONTROL PLAN WHICH WILL IMPLEMENT BEST MANAGEMENT PRACTICES TO PROVIDE PROTECTION FOR RECEIVING STORM SEWERS OR DRAINAGE DURING CONSTRUCTION ACTIVITIES. THIS PLAN SHALL INCLUDE BUT NOT LIMITED TO FILTER CLOTH ON CATCH BASINS, STRAW BALE CHECK DAMS AND SEDIMENT CONTROLS AROUND ALL DISTURBED AREAS. DEWATERING SHALL BE PUMPED INTO SEDIMENT TRAPS.
- TOPOGRAPHIC SURVEY SUPPLIED BY "FAIRHALL, MOFFATT & WOODLAND LIMITED"
- REFER TO LANDSCAPE PLAN FOR ALL LANDSCAPING FEATURES.
- GEOTECHNICAL INVESTIGATION PREPARED BY PATERSON GROUP, REPORT: P33979-1 DEC 7, 2016
- STREET LIGHTING TO MUNICIPAL STANDARDS.
- ALL DIMENSIONS ARE METRES UNLESS OTHERWISE STATED. DIMENSIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES TO BE REPORTED IMMEDIATELY TO ENGINEER.
- THERE WILL BE NO SUBSTITUTION OF MATERIALS UNLESS PRIOR WRITTEN APPROVAL BY THE CONTRACT ADMINISTRATOR AND DIRECTOR OF ENGINEERING HAS BEEN OBTAINED.
- HERITAGE OPERATIONS UNIT OF THE ONTARIO MINISTRY OF CULTURE TO BE NOTIFIED IF DEEPLY BURIED ARCHEOLOGICAL REMAINS ARE FOUND ON THE PROPERTY DURING CONSTRUCTION ACTIVITIES
- ABANDONMENT OF THE EXISTING STORM SEWER AS PER CITY OF OTTAWA STANDARD TENDER DOCUMENT F-4104.

LIGHT STANDARD TABLE

Luminaire parts list						
Index	Manufacturer	Luminaire type	Item number	Luminous flux	Light loss factor	Connected load
A	Lithonia Lighting	DSX1 LED P1 40K 1FTM MVGLT	DSX1 LED P1 40K 1FTM MVGLT	6963 lm	0.85	54 W
B	Lithonia Lighting	DSX1 LED P1 40K 12S MVGLT	DSX1 LED P1 40K 12S MVGLT	6984 lm	0.85	54 W
C	Lithonia Lighting	DSX1 LED P8 40K BLC MVGLT	DSX1 LED P8 40K BLC MVGLT	19884 lm	0.85	207 W
D	Lithonia Lighting	DSX1 LED P8 40K 1FTM MVGLT	DSX1 LED P8 40K 1FTM MVGLT	24252 lm	0.85	207 W
F	Lithonia Lighting	DSX1 LED P3 40K 1FTM MVGLT	DSX1 LED P3 40K 1FTM MVGLT	12574 lm	0.85	102 W

STORM AND SANITARY SEWERS

- STORM AND SANITARY MANHOLES SHALL BE IN ACCORDANCE WITH OPSD 701.010. STORM MANHOLES TO HAVE FRAME AND COVER PER OPSD 401.010. ALL CATCH BASINS TO BE PRECAST TO OPSD 705.010 c/w FRAME AND GRATE AS PER OPSD 400.100.
- SEWER TRENCH SHALL CONSIST OF CLASS 'B' BEDDING. COMPACTION SHALL BE A MINIMUM OF 98% STANDARD PROCTOR DENSITY.
- ALL STORM SEWER PIPES UP TO AND INCLUDING 375mm DIA. SHALL BE PVC SDR-35 OR APPROVED EQUIVALENT. ALL STORM SEWER PIPES 450mm DIA. AND LARGER SHALL BE CONCRETE AND EQUAL TO C.S.A. SPECIFICATIONS A257.2 REINFORCED CLASSES AS SPECIFIED (65-D, 100-D, 140-D) OR LATEST AMENDMENT UNLESS OTHERWISE NOTED.
- ALL SANITARY PVC SEWER PIPES SHALL BE SDR-35 EQUAL TO CSA SPECIFICATIONS B182.2M1990 OR LATEST AMENDMENT UNLESS OTHERWISE NOTED.
- ALL MANHOLE AND CATCHBASIN EXCAVATIONS TO BE BACKFILLED WITH GRANULAR MATERIAL COMPACTED TO 98% STANDARD PROCTOR DENSITY.
- STORM MANHOLES SHALL NOT BE BENCHED UNLESS OTHERWISE SPECIFIED. GRANULAR 'A' SHALL BE PLACED TO A MINIMUM THICKNESS OF 300mm AROUND ALL STRUCTURES. "MODULOC" OR APPROVED PRE-CAST MANHOLE AND CATCHBASIN ADJUSTERS TO BE USED IN LIEU OF BRICKING. PARGE ADJUSTING UNITS ON THE OUTSIDE ONLY.
- FOR CONSTRUCTION DETAILS NOT SHOWN ON PLANS, REFERENCE SHALL BE MADE TO THE ONTARIO PROVINCIAL STANDARDS DRAWINGS AND MUNICIPAL STANDARDS.
- SERVICES TO BUILDINGS TO BE TERMINATED 1.00m FROM THE OUTSIDE FACE OF BUILDING UNLESS OTHERWISE NOTED.
- THE CONTRACTOR IS TO PROVIDE CCTV CAMERA INSPECTIONS OF ALL SANITARY AND STORM SEWERS, INCLUDING PICTORIAL REPORT, ONE (1) CD COPY AND TWO (2) VIDEO TAPES IN A FORMAT SATISFACTORY TO THE ENGINEER. ALL SEWERS ARE TO BE FLUSHED PRIOR TO CAMERA INSPECTION. ASPHALT WEAR COURSE SHALL NOT BE PLACED UNTIL THE VIDEO INSPECTION OF SEWERS AND NECESSARY REPAIRS HAVE BEEN CARRIED OUT TO THE SATISFACTION OF THE CONSULTANT.
- LASER ALIGNMENT CONTROL TO BE UTILIZED ON ALL SEWER INSTALLATIONS.
- EXISTING MANHOLES TO BE RE-BENCHED WHERE A NEW CONNECTION IS MADE.
- FROST PROTECTION AS PER DETAILS WHERE LESS THAN 1.50m OF COVER.
- CONTRACTOR SHALL PERFORM LEAKAGE TESTING, IN THE PRESENCE OF THE CONSULTANT, FOR SANITARY SEWERS IN ACCORDANCE WITH OPS 410 AND OPS 407. A COPY OF THE INSPECTION REPORT SHALL BE SUBMITTED TO THE CONSULTANT FOR REVIEW.

GRADING NOTES

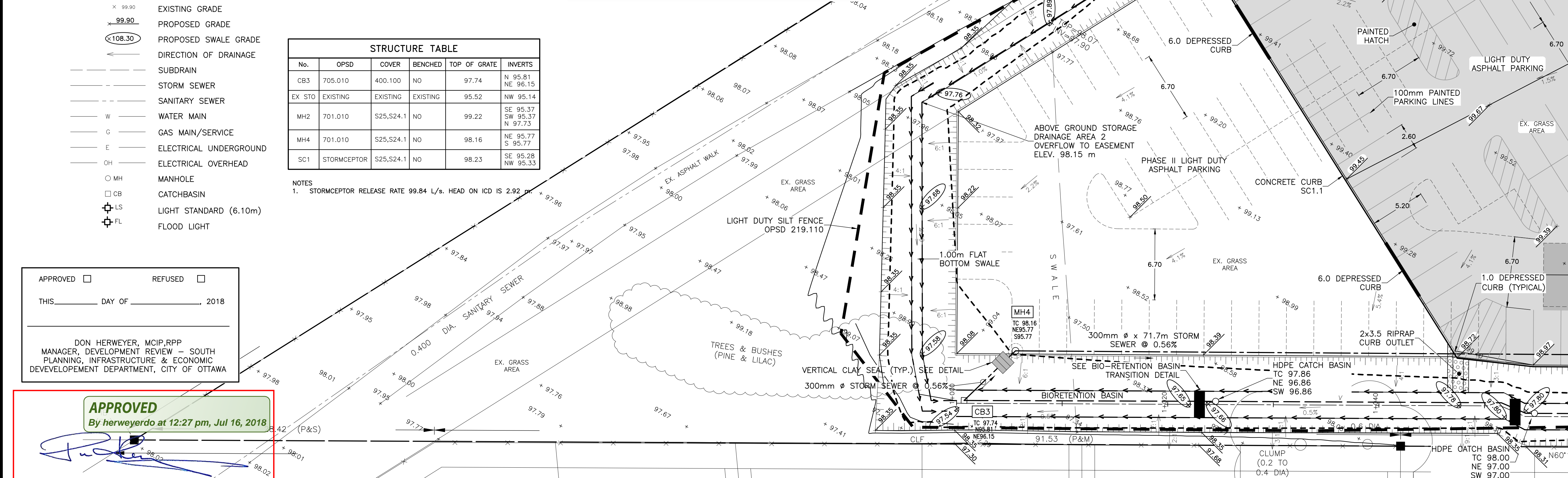
- ALL GRANULAR BASE AND SUB BASE COURSE MATERIALS SHALL BE COMPACTED TO 100% STANDARD PROCTOR MAX. DRY DENSITY.
- SUB-EXCAVATE SOFT AREAS AND FILL WITH GRANULAR 'B' COMPACTED IN 150mm LAYERS.
- ALL DISTURBED GRASSED AREAS SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER, WITH SOD ON 100mm TOPSOIL. THE RELOCATION OF TREES AND SHRUBS SHALL BE SUBJECT TO APPROVAL BY THE PROJECT LANDSCAPE ARCHITECT OR ENGINEER.
- EMBANKMENTS TO BE SLOPED AT MIN. 3:1 UNLESS OTHERWISE SPECIFIED.
- ALL SWALES TO BE CONSTRUCTED WITH MIN. 3:1 SIDE SLOPES UNLESS OTHERWISE NOTED.
- ALL ROOF DOWNSPOUTS TO BE DISCHARGED TO THE GROUND ONTO SPLASH PADS AND SHALL NOT BE DIRECTED TO THE STORM SEWER OR THE BUILDING FOUNDATION DRAIN.
- EXCESS EXCAVATED MATERIAL SHALL BE REMOVED FROM THE SITE.
- ALL NECESSARY CLEARING AND GRUBBING SHALL BE COMPLETED BY THE CONTRACTOR. REVIEW WITH CONTRACT ADMINISTRATOR AND THE MUNICIPALITY PRIOR TO TREE CUTTING.
- REFER TO DRAWING C6 FOR EROSION AND SEDIMENT CONTROL DETAILS.

DRAWING LIST

- C1 REMOVALS
- C2 GRADING AND SERVICING PLAN EAST
- C3 GRADING AND SERVICING PLAN WEST/NOTES
- C4 DETAILS AND PROFILES
- C5 DRAINAGE AREA PLAN

ROADWORKS

- SUB-EXCAVATE SOFT AREAS AND FILL WITH GRANULAR 'B' COMPACTED IN 300mm LAYERS.
- ALL GRANULAR FOR ROADS SHALL BE COMPACTED TO A MINIMUM OF 100% STANDARD PROCTOR MAXIMUM DRY DENSITY.
- ASPHALT WEAR COURSE SHALL NOT BE PLACED UNTIL THE VIDEO INSPECTION OF SEWERS AND NECESSARY REPAIRS HAVE BEEN CARRIED OUT TO THE SATISFACTION OF THE CONSULTANT.
- CONTRACTOR TO OBTAIN A ROAD OCCUPANCY PERMIT 48 HOURS PRIOR TO COMMENCING ANY WORK WITHIN THE MUNICIPAL ROAD ALLOWANCE IF REQUIRED BY THE MUNICIPALITY. ALL WORK ON THE MUNICIPAL RIGHT OF WAY AND EASEMENTS TO BE INSPECTED BY THE MUNICIPALITY PRIOR TO BACKFILLING.
- PAVEMENT REINSTATEMENT FOR SERVICE AND UTILITY CUTS SHALL BE IN ACCORDANCE WITH OPSD 509.010 AND OPS 310.
- CONCRETE CURBS SHALL BE CONSTRUCTED AS PER OPSD 600.110 (BARRIERS CURB AS SHOWN ON DRAWINGS).
- CONCRETE SIDEWALKS SHALL BE CONSTRUCTED AS PER OPSD 310.010.

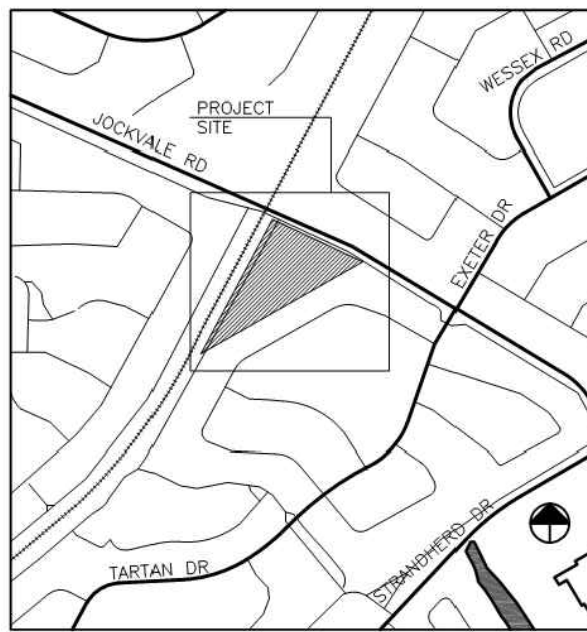


APPROVED ☐ REFUSED ☐
THIS _____ DAY OF _____, 2018

DON HERWEYER, MCIP, RPP
MANAGER, DEVELOPMENT REVIEW - SOUTH
PLANNING, INFRASTRUCTURE & ECONOMIC
DEVELOPEMENT DEPARTMENT, CITY OF OTTAWA

APPROVED
By herweyero at 12:27 pm, Jul 16, 2018

DON HERWEYER, MCIP, RPP
MANAGER, DEVELOPMENT REVIEW - SOUTH
PLANNING, INFRASTRUCTURE & ECONOMIC
DEVELOPEMENT DEPARTMENT, CITY OF OTTAWA



LOCATION PLAN

PROPERTY INFORMATION
(CITY OF OTTAWA)
3058 JOCKVALE RD.
PART OF LOT 17, CONVESSION 3 (RIDEAU FRONT)
PART 3, 48-8-917
PIN 04598-0754
CITY OF OTTAWA (FORMERLY CITY OF NEPEAN)
REGIONAL MUNICIPALITY OF OTTAWA-CARLETON

BENCHMARK

MAGNAIL IN UTILITY POLE

ELEV. - 100.754m

NOTE:

CONTRACTOR TO CONTACT UTILITY
COMPANIES TO DETERMINE TYPE,
LOCATION, AND CONFIGURATION OF
EXISTING PLANT.

EASTERN ENGINEERING GROUP INC.

BUILDING CODE IDENTIFICATION No.

19467

CLASSES OF REGISTRATION:

BUILDING SERVICES LARGE BUILDINGS
BUILDING STRUCTURAL ON SITE SEWAGE
HOUSE SMALL BUILDINGS

4 CAJ 6/14/2018 100 YEAR STORM STORAGE

3 CAJ 5/30/2018 PER COMMENTS 3

2 CAJ 4/25/2018 PER COMMENTS 2

1 AJP 3/20/2018 PER COMMENTS

0 CJ 11/30/17 FOR SITE PLAN APPROVAL

No. By Date Revisions

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ENGINEERING GROUP INC.
CONSULTING ENGINEERS

Brockville Centre Telephone: (613) 345-0400
125 Stewart Blvd. Suite 212 Facsimile: (613) 345-0008
Brockville, Ont. K6V 4W4 Web Site: www.easteng.com

Project Title:

BARRHAVEN FELLOWSHIP CRC
3058 JOCKVALE ROAD
NEPEAN, ONTARIO K2J 4J6
GORDON WEIMA, (613-850-1559)

Drawing Title:

**GRADING AND SERVICING
PLAN WEST**

Design: A.J.P. Checked: C.J. Approved: Project No.: 7495

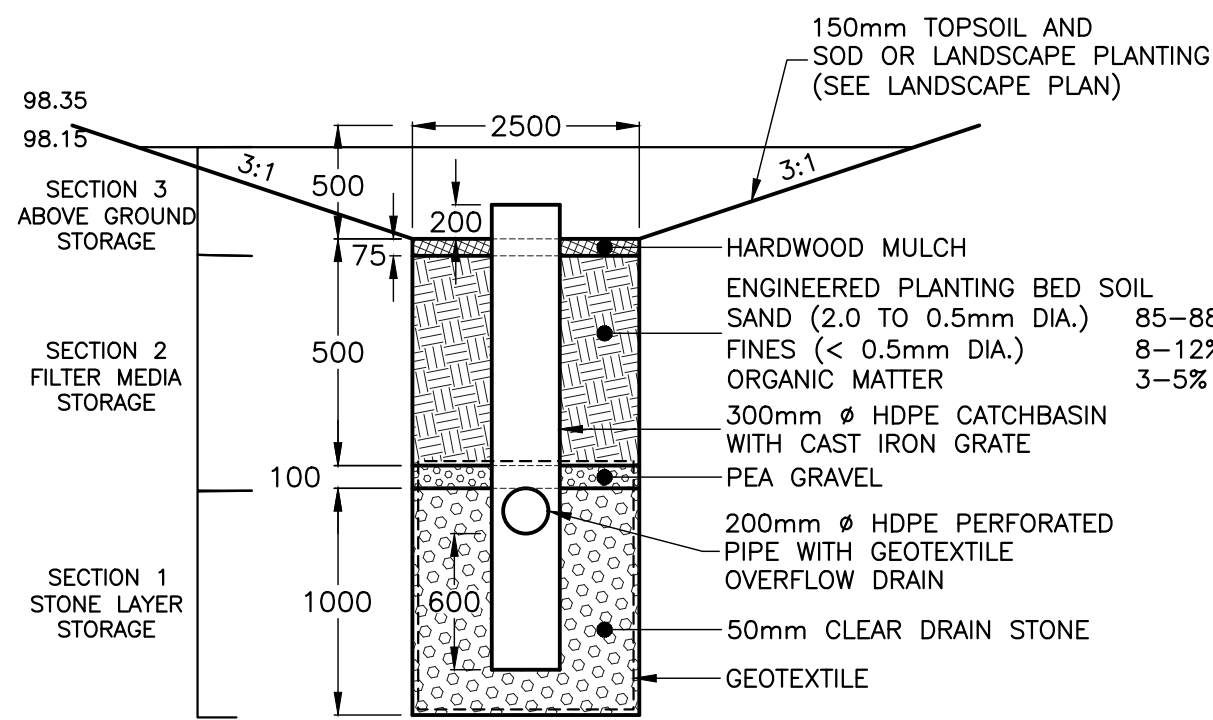
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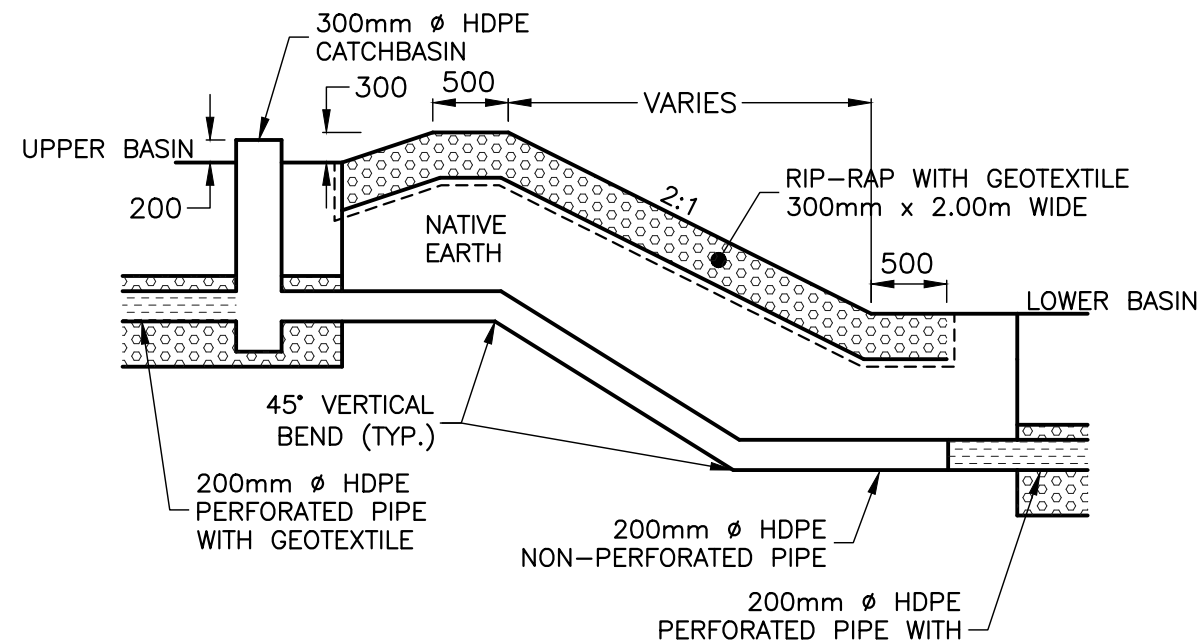
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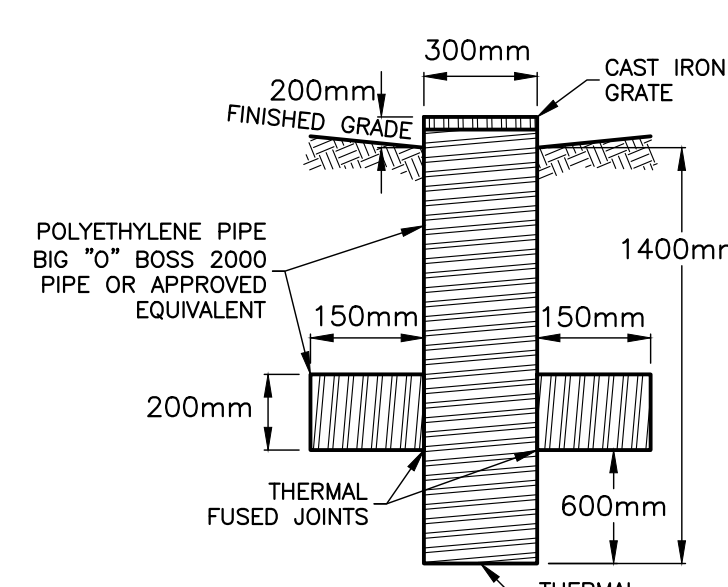
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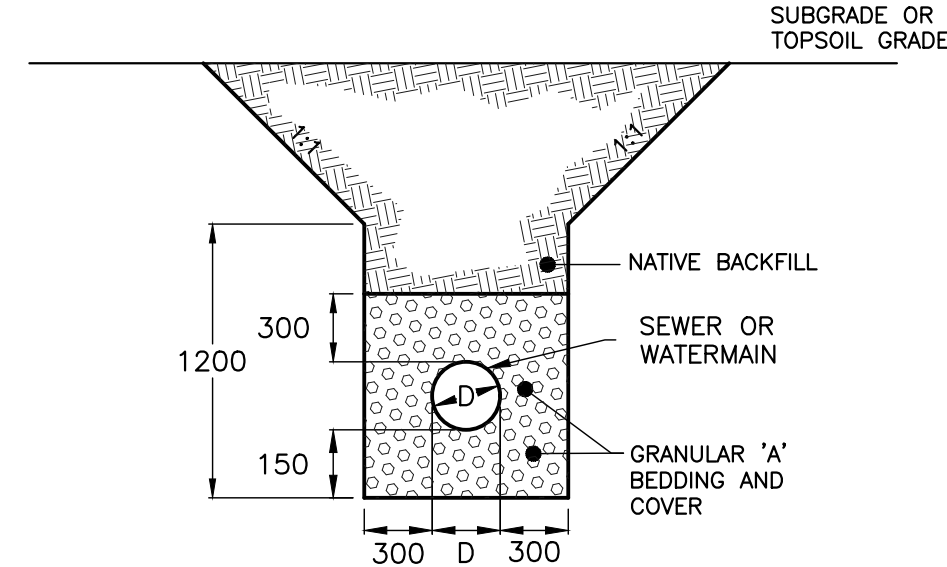
BIORETENTION CROSS SECTION
N.T.S.



BIORETENTION ELEVATION TRANSITION DETAIL
N.T.S.



TYPICAL HDPE CATCHBASIN DETAIL
N.T.S.



SERVICE TRENCH DETAIL
N.T.S.

NOTE:
1. MINIMUM DEPTH OF COVER:
SEWERS - 1.50m
WATERMAINS - 2.40m
WHERE MINIMUM COVER NOT PROVIDED
INSULATE AS PER DETAIL.

NOTE:
CONTRACTOR TO CONTACT UTILITY COMPANIES TO DETERMINE TYPE, LOCATION, AND CONFIGURATION OF EXISTING PLANT.

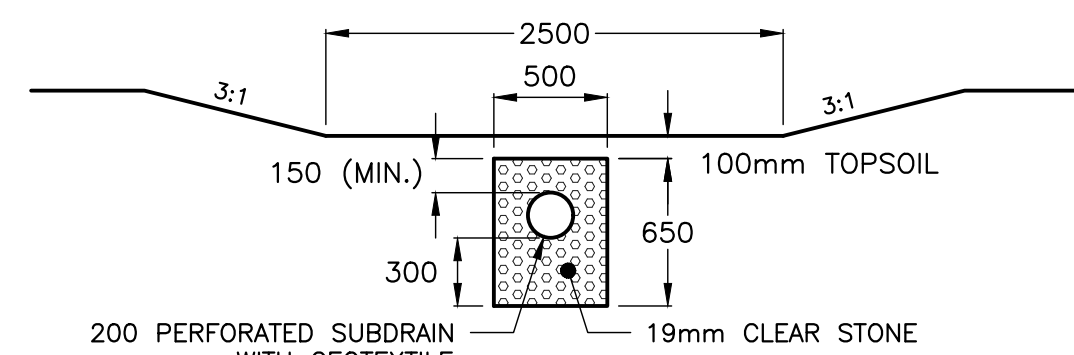
BENCHMARK
MAGNAIL IN UTILITY POLE
ELEV. - 100.754m

EASTERN ENGINEERING GROUP INC.
BUILDING CODE IDENTIFICATION No. 19467
CLASSES OF REGISTRATION:
BUILDING SERVICES LARGE BUILDINGS
BUILDING STRUCTURAL ON SITE SEWAGE
HOUSE SMALL BUILDINGS

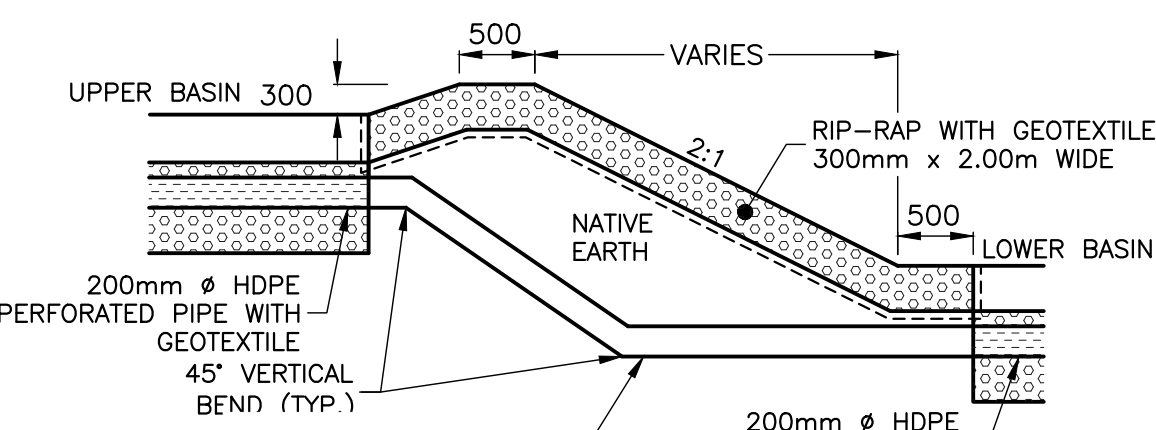
- NOTES**
1. BEDDING AND COVER MATERIAL TO BE GRANULAR 'A'.
 2. DISTURBED MATERIAL BELOW BEDDING TO BE REPLACED WITH GRANULAR B, TYPE II.
 3. BACKFILL TO BE NATIVE MATERIAL COMPACTED IN MAXIMUM 300mm LIFTS TO AT LEAST 95% STANDARD PROCTOR MAXIMUM DRY DENSITY.
 4. GRANULAR BEDDING AND COVER MATERIALS TO BE COMPACTED IN MAXIMUM 150mm LIFTS TO AT LEAST 95% OF STANDARD PROCTOR DRY DENSITY.
- BEDDING/SUBBEDDING TO BE COMPACTED IN MAXIMUM 200mm LIFTS TO AT LEAST 95% STANDARD PROCTOR DRY DENSITY.

STRUCTURE TABLE					
No.	OPSD	COVER	BENCHED	TOP OF GRADE	INVERTS
CB3	705.010	400.100	NO	97.74	N 95.81 NE 96.15
EX ST0	EXISTING	EXISTING	EXISTING	95.52	NW 95.14
MH2	701.010	\$25,524.1	NO	99.22	SE 95.37 SW 95.37 N 97.73
MH4	701.010	\$25,524.1	NO	98.16	NE 95.77 S 95.77
SC1	STORMCEPTOR	\$25,524.1	NO	98.23	SE 95.28 NW 95.33

NOTES
1. STORMCEPTOR RELEASE RATE 99.84 L/s. HEAD ON ICD IS 2.92 m.



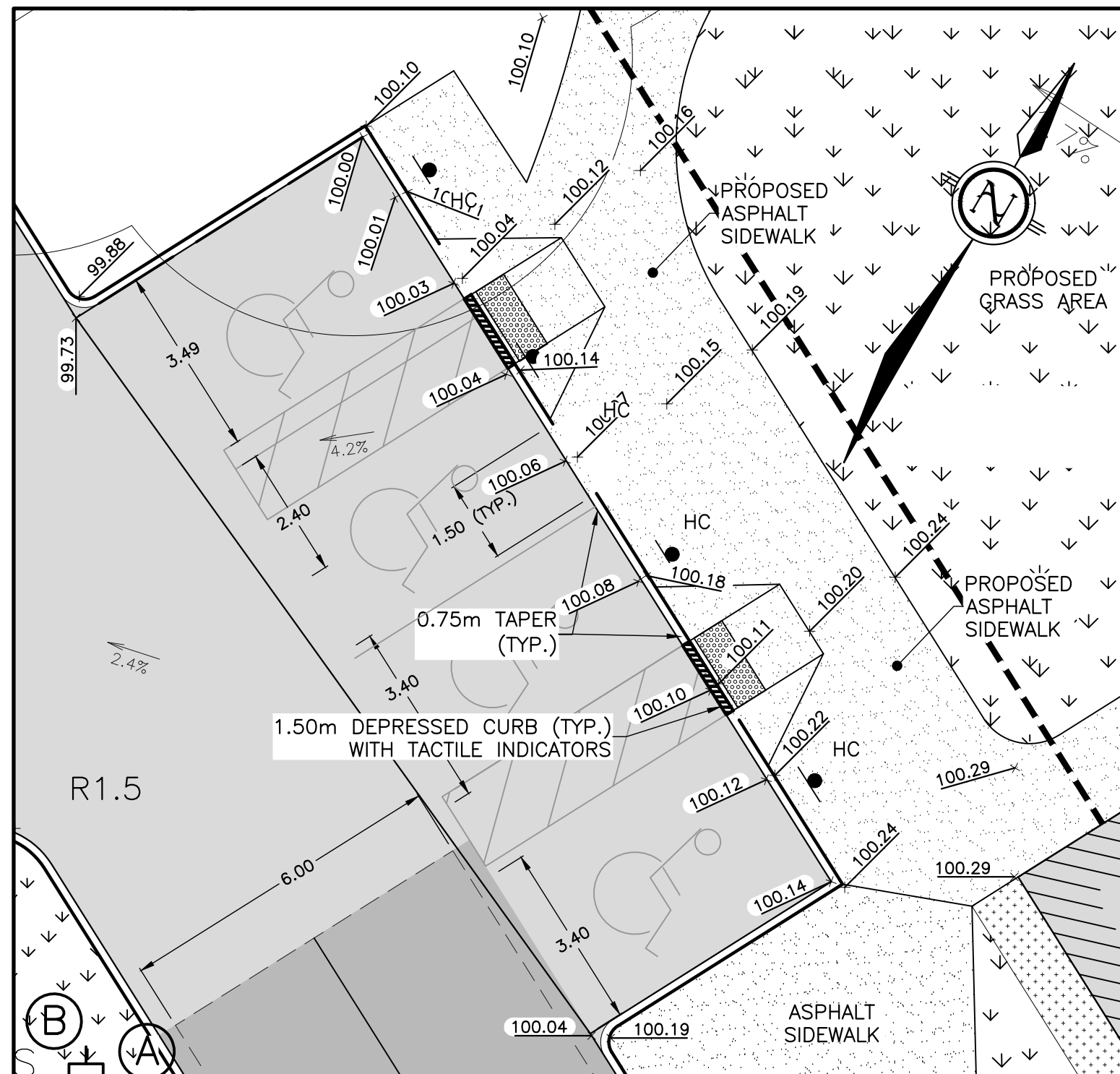
SWALE WITH SUBDRAIN SECTION
N.T.S.



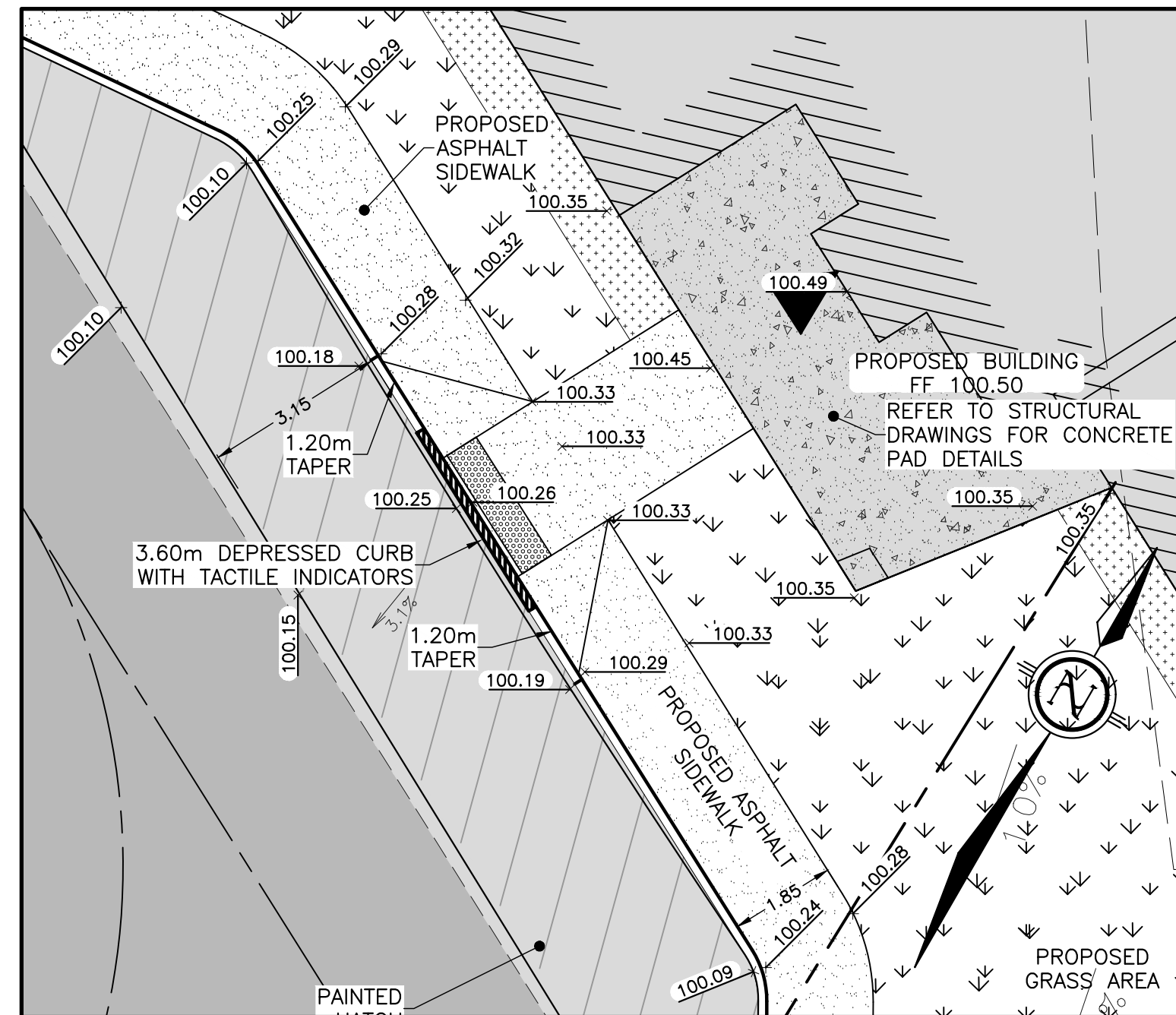
SWALE WITH SUBDRAIN ELEVATION TRANSITION DETAIL
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DRAWING LIST

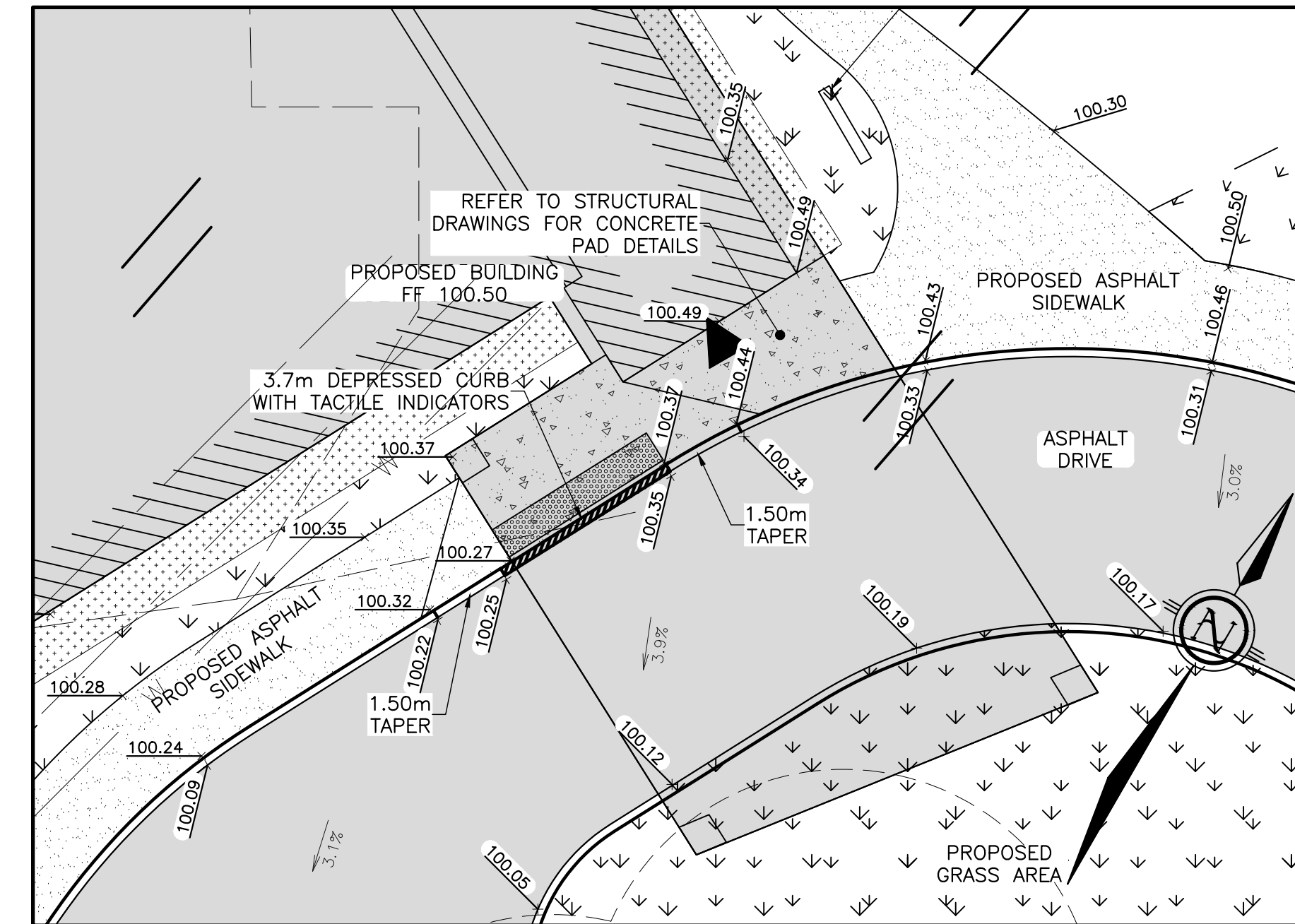
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- C2 GRADING AND SERVICING PLAN EAST
- C3 GRADING AND SERVICING PLAN WEST/NOTES
- C4 DETAILS AND PROFILES
- C5 DETAILS
- C6 DRAINAGE AREA PLAN



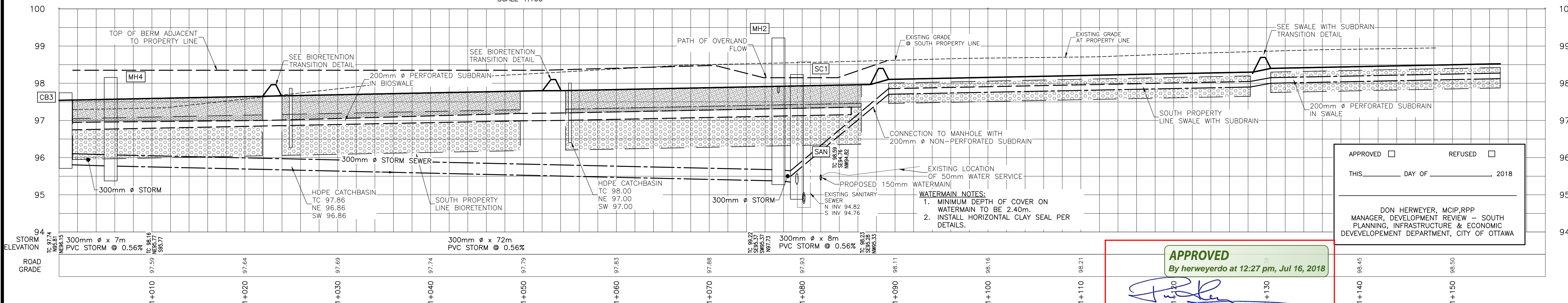
ACCESSIBLE PARKING DETAILED GRADING
SCALE 1:100



SOUTH ENTRANCE DETAILED GRADING
SCALE 1:100



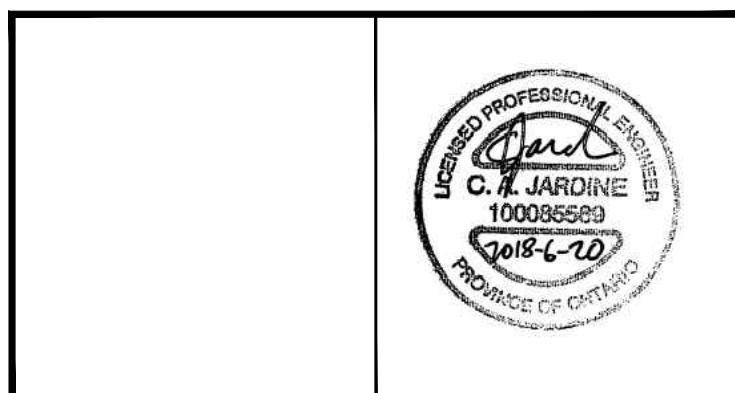
EAST ENTRANCE DETAILED GRADING
SCALE 1:100



SOUTH PROPERTY STORM PROFILES
SCALE 1:200H/1:50V

APPROVED ☐ REFUSED ☐
THIS _____ DAY OF _____, 2018
DON HERWEYER, MCIP, RPP
MANAGER, DEVELOPMENT REVIEW - SOUTH
PLANNING, INFRASTRUCTURE & ECONOMIC
DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

APPROVED
By herweydo at 12:27 pm, Jul 16, 2018
[Signature]



3	CAJ	5/30/2018	PER COMMENTS 3
2	CAJ	4/25/2018	PER COMMENTS 2
1	AJP	3/20/2018	PER COMMENTS
0	CJ	11/30/17	FOR SITE PLAN APPROVAL
No.	By	Date	Revisions

Design:	A.J.P.	Checked:	
Drawn:	A.J.P.	Checked:	C.A.J.
Approved:		Project No.:	7495
Date:	2017/11/17	Contract No.:	

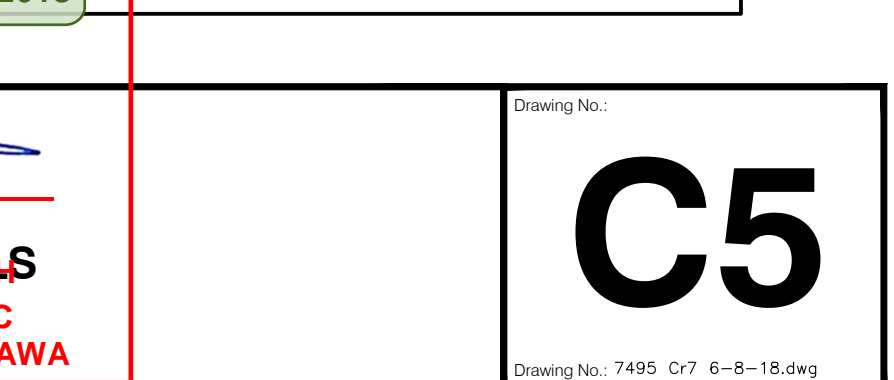
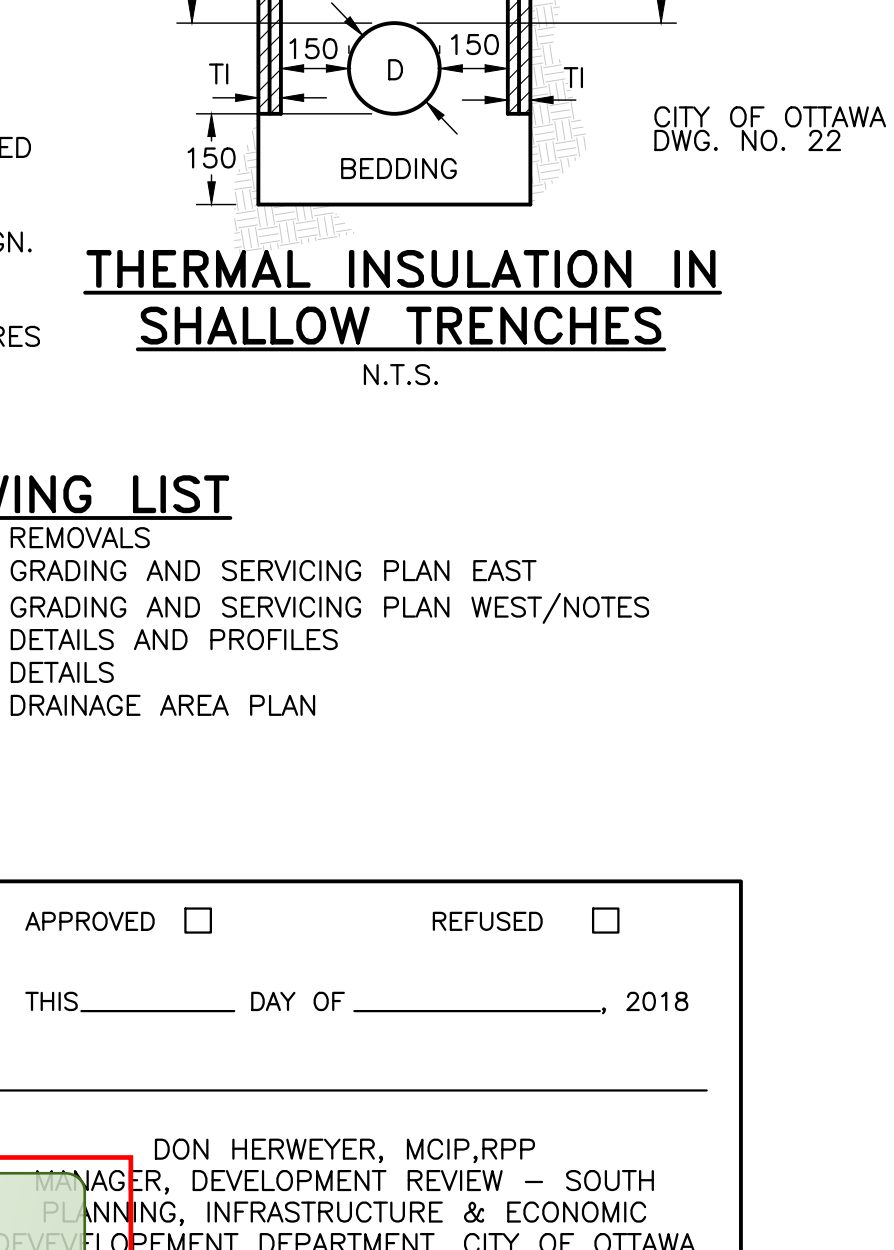
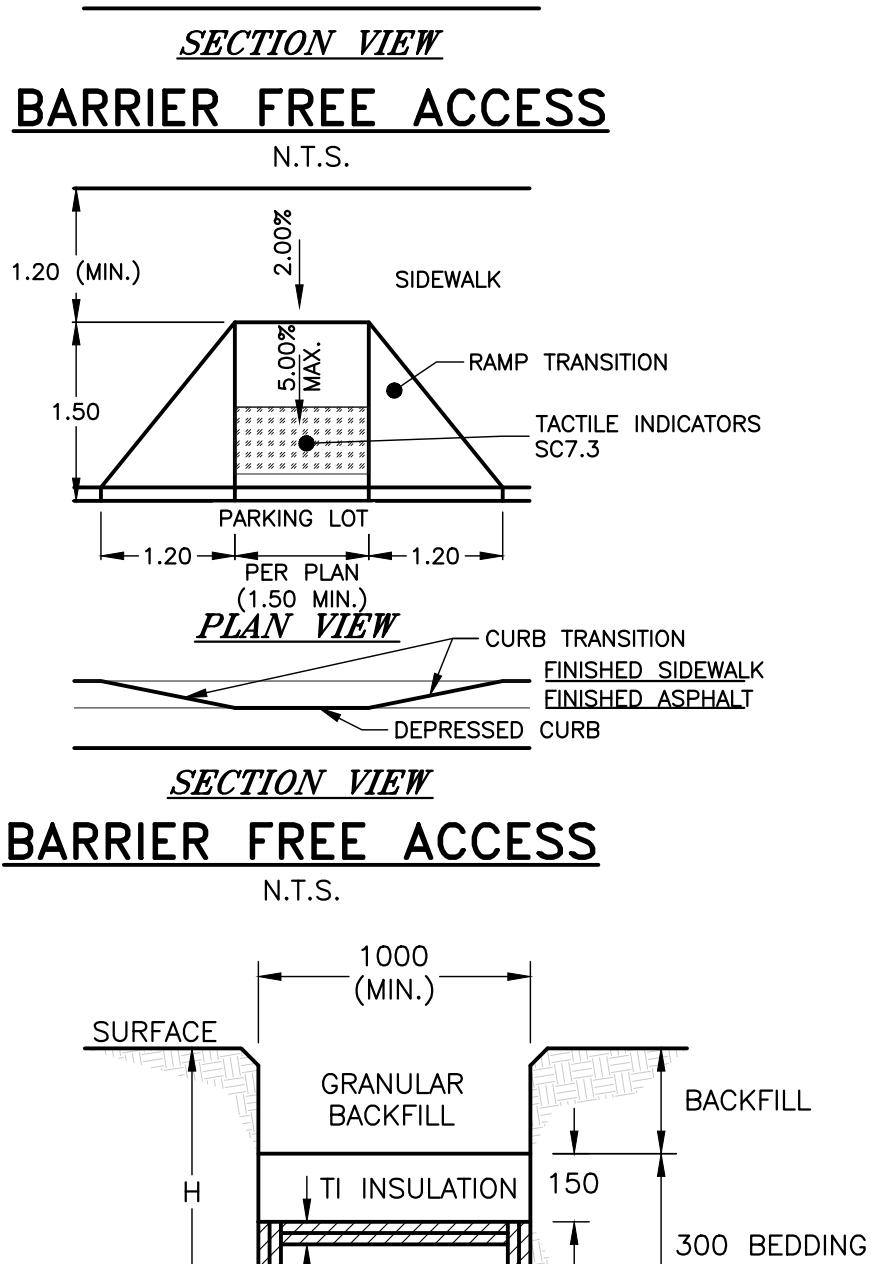
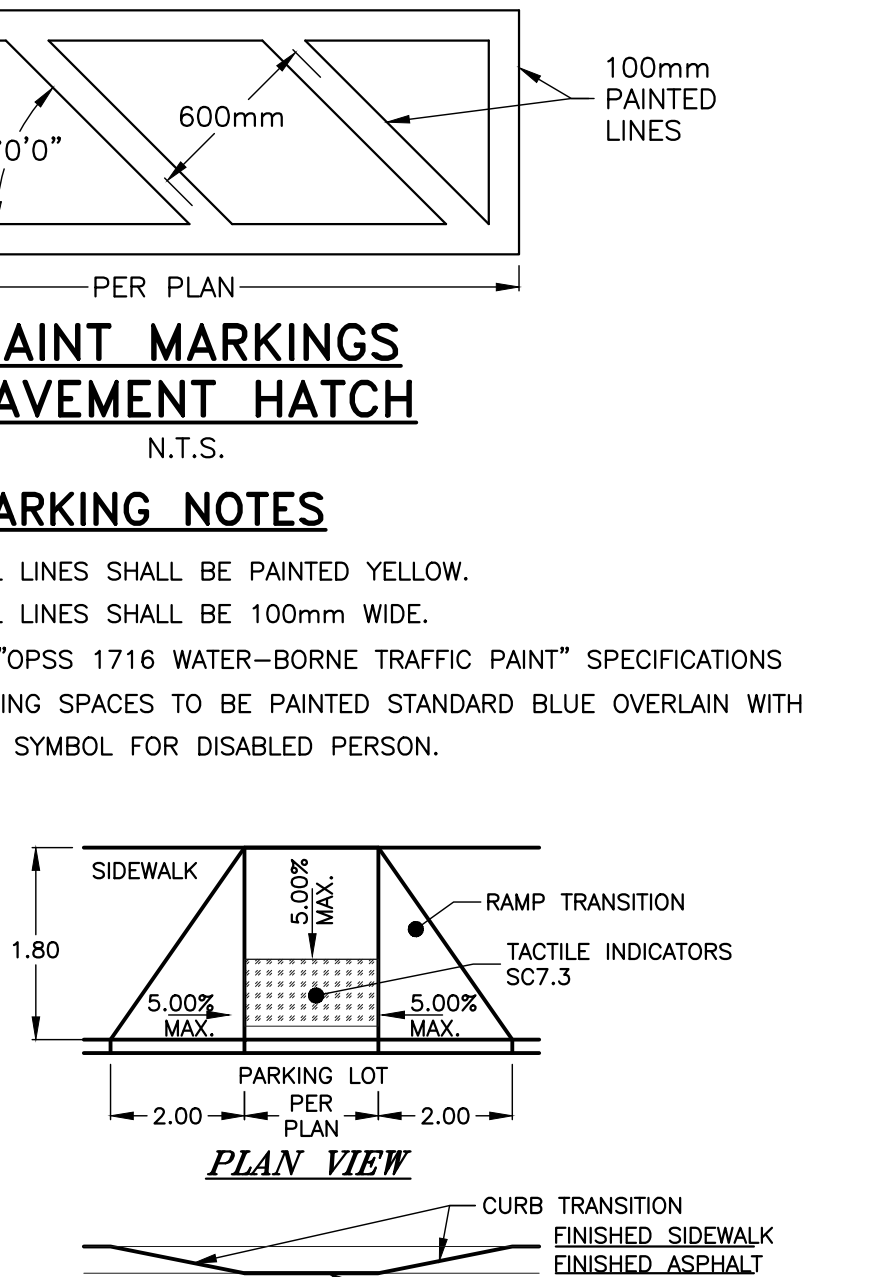
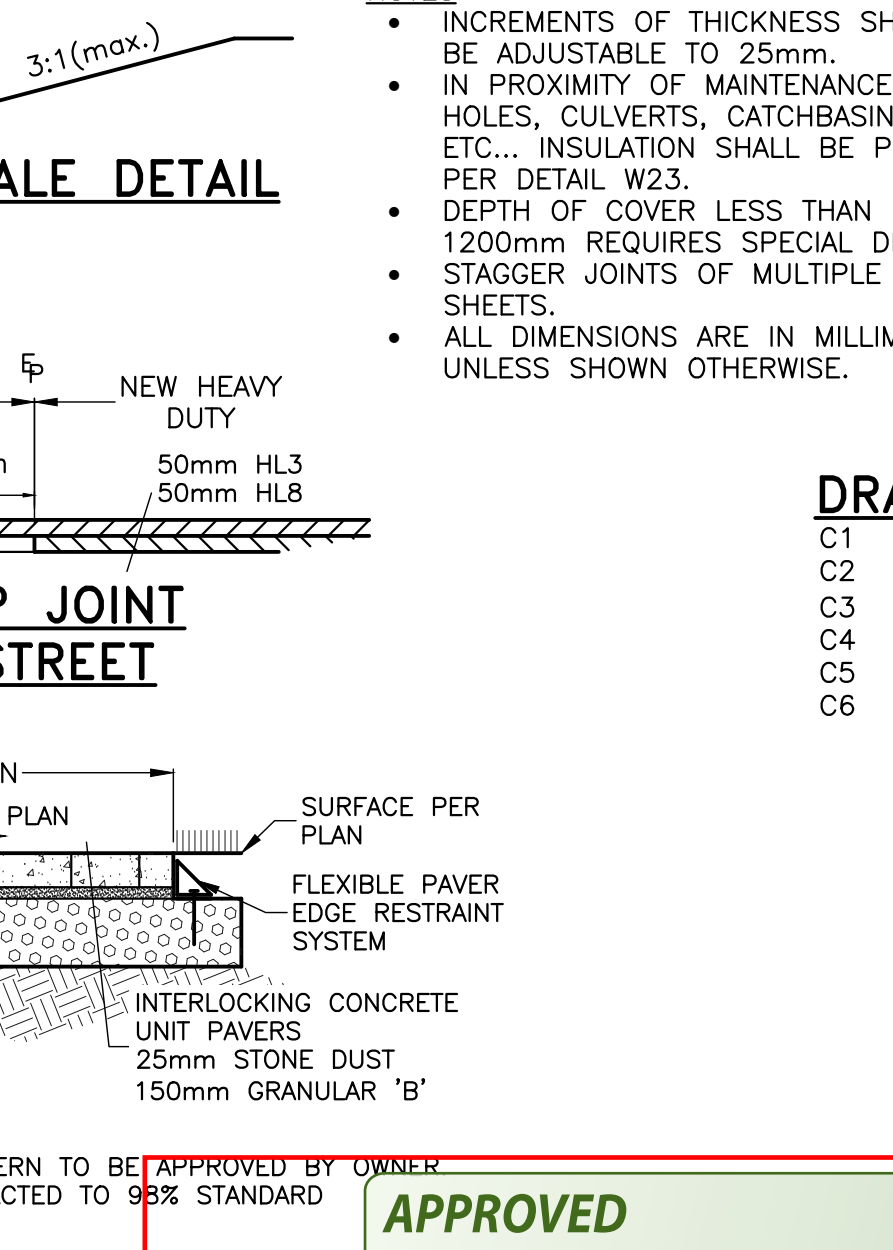
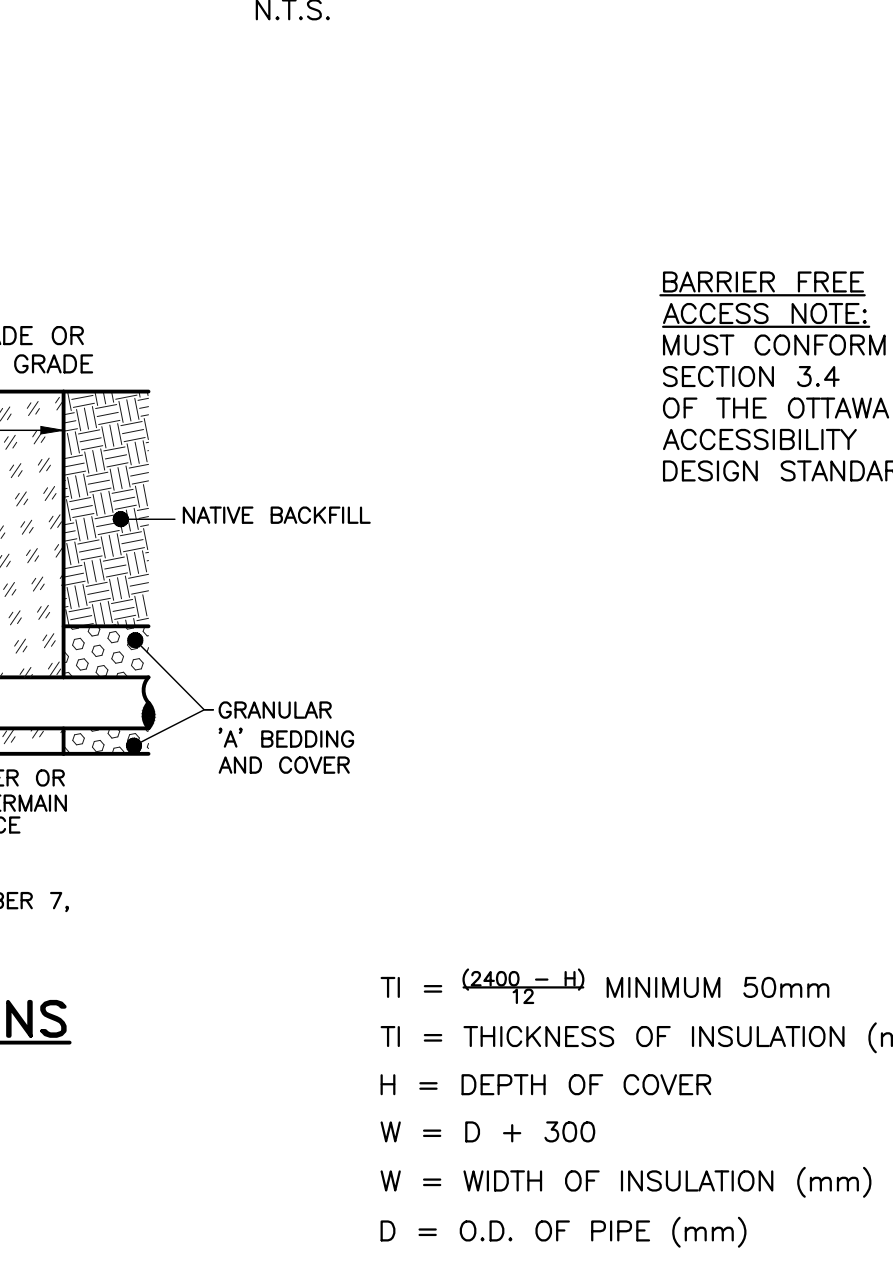
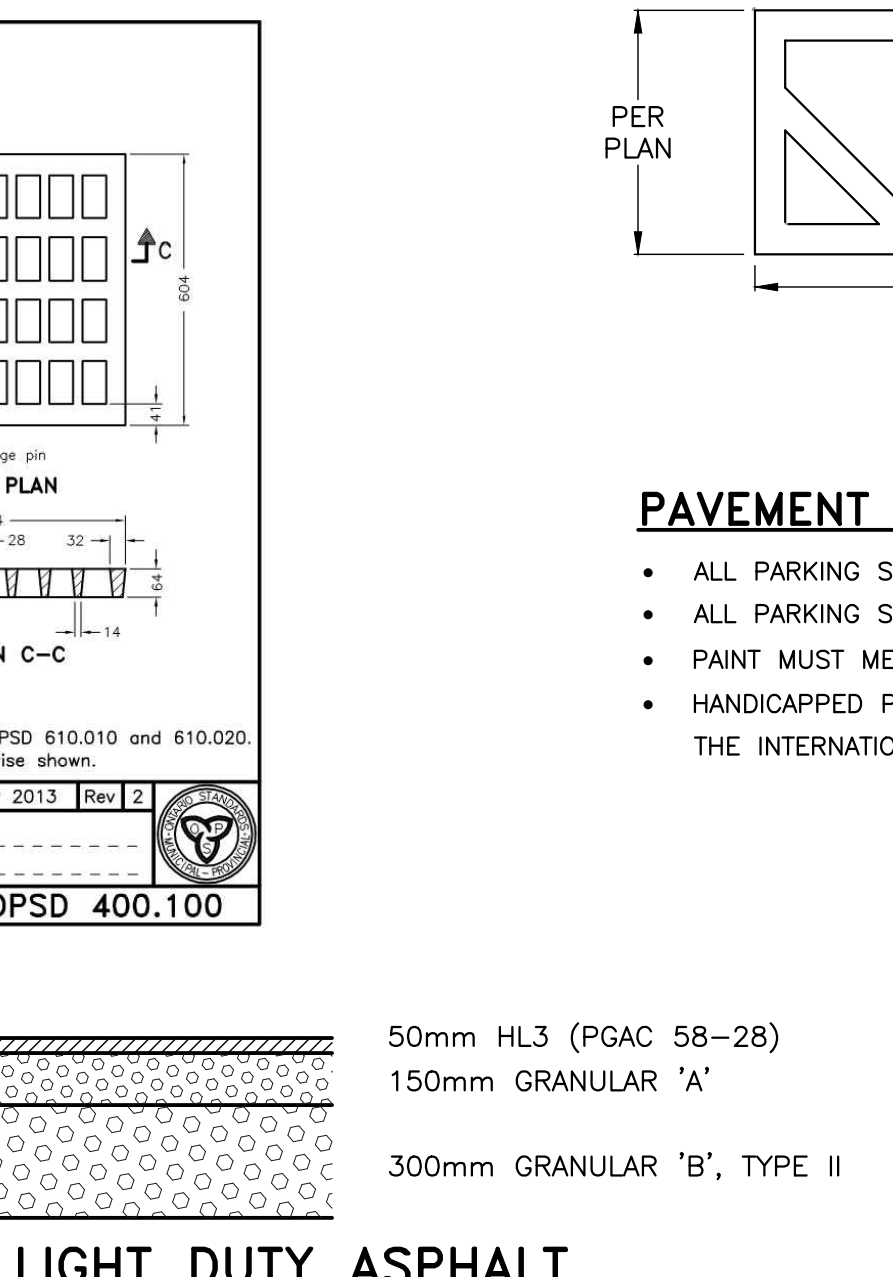
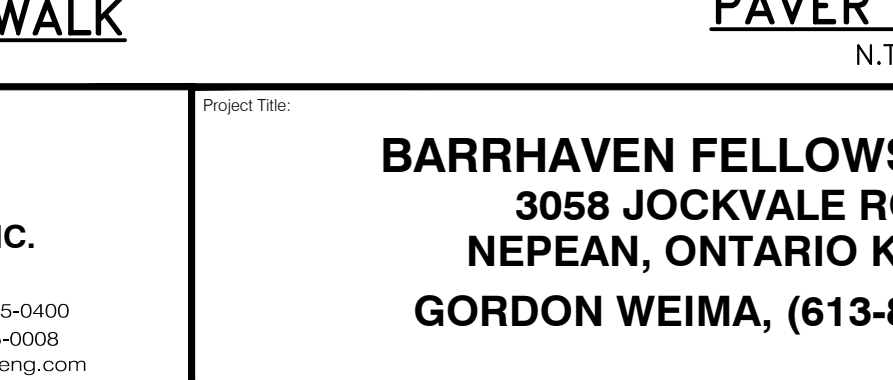
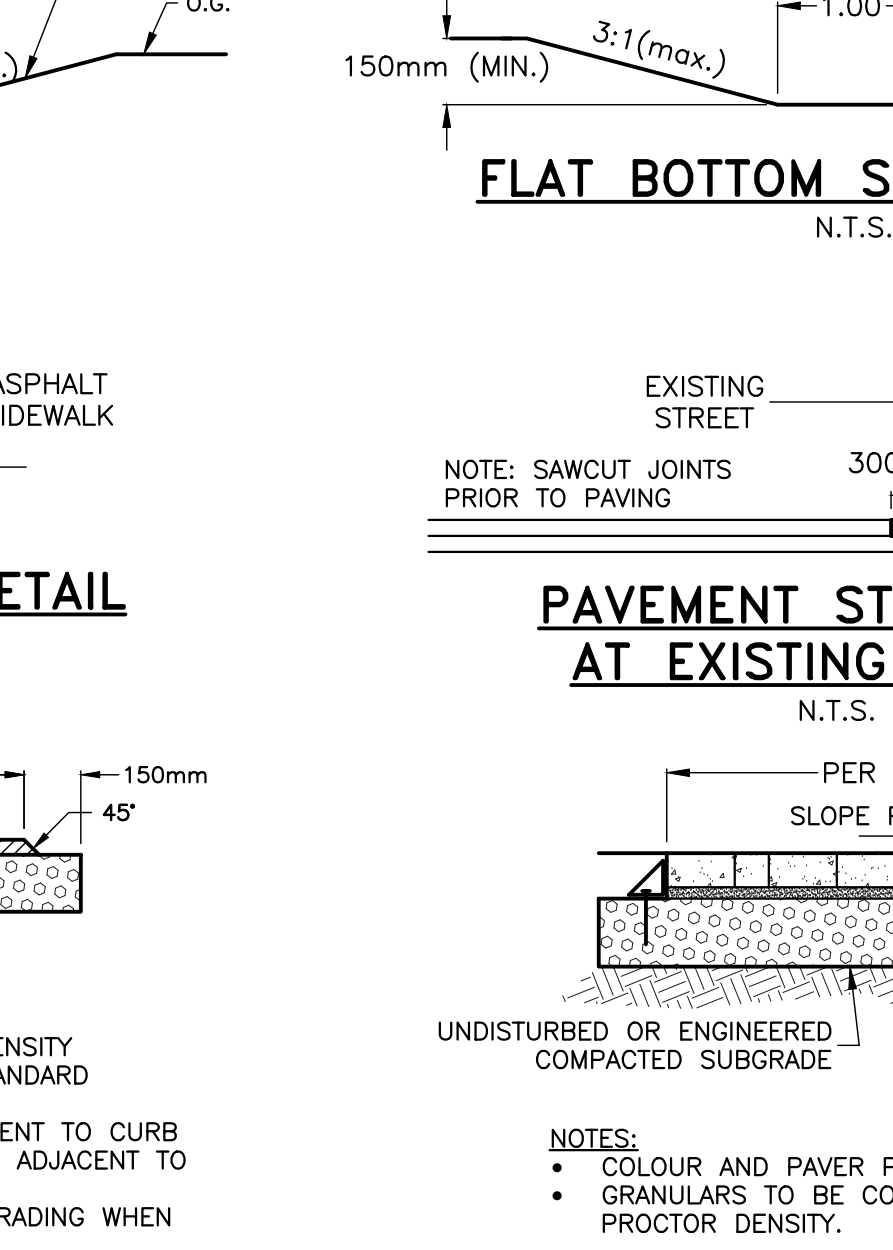
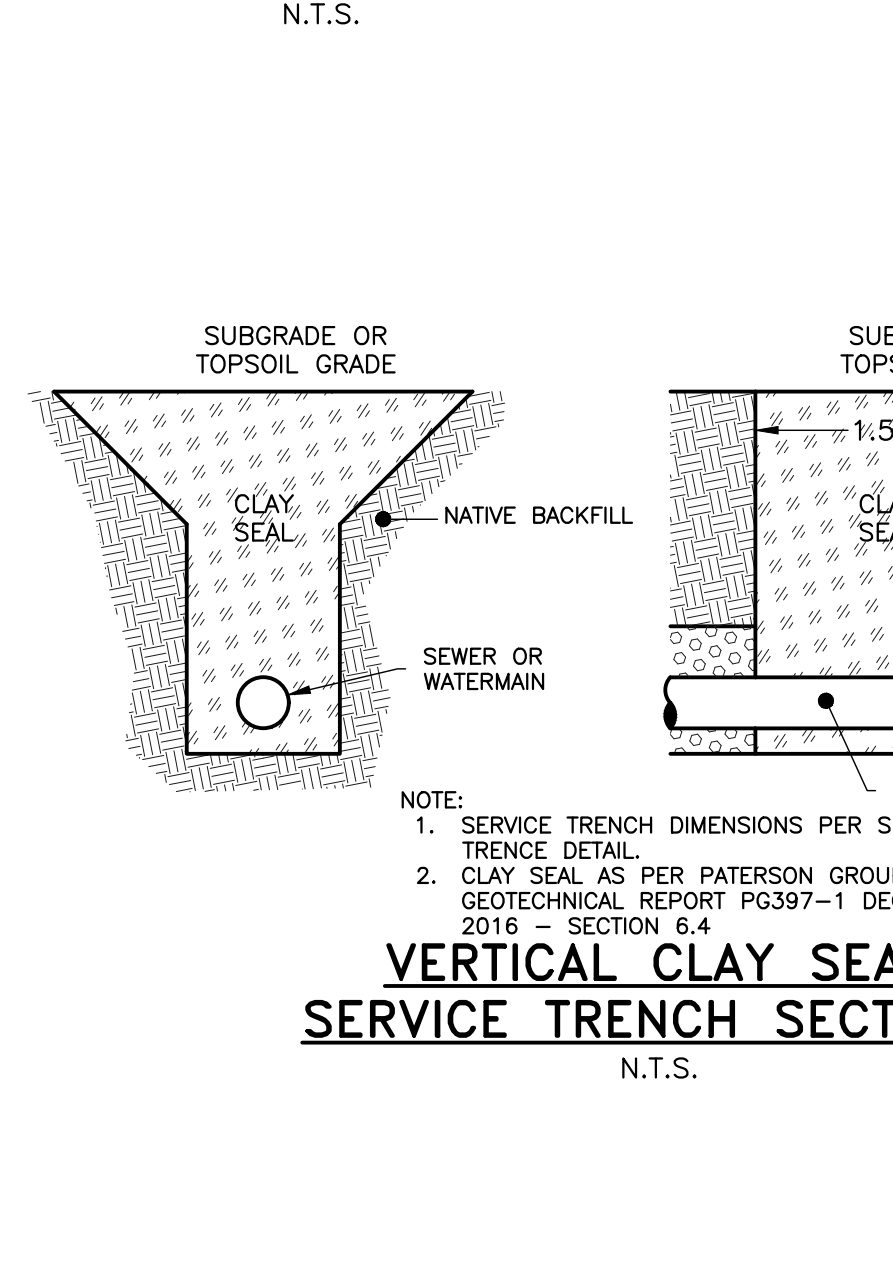
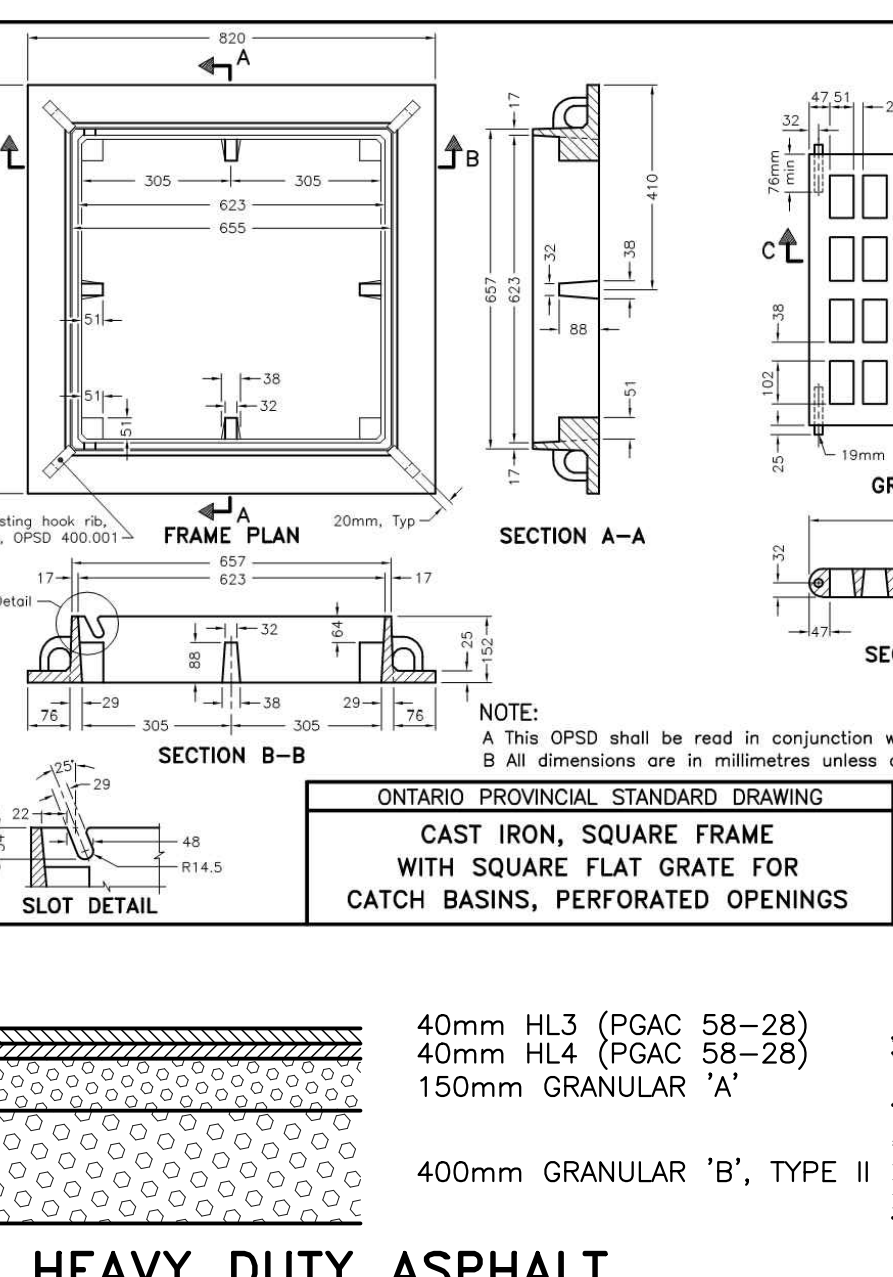
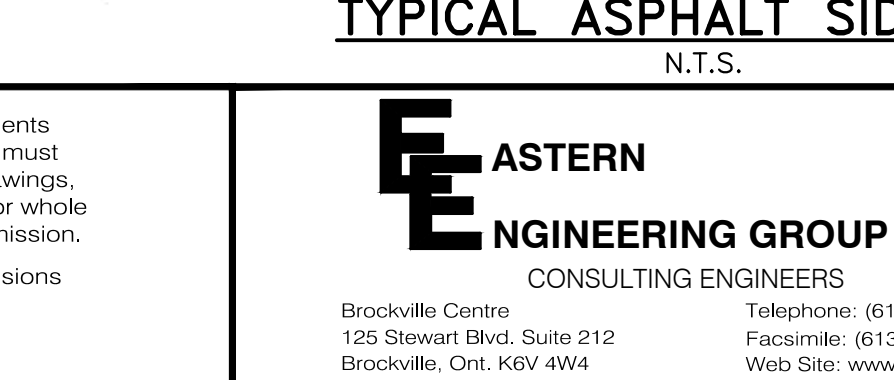
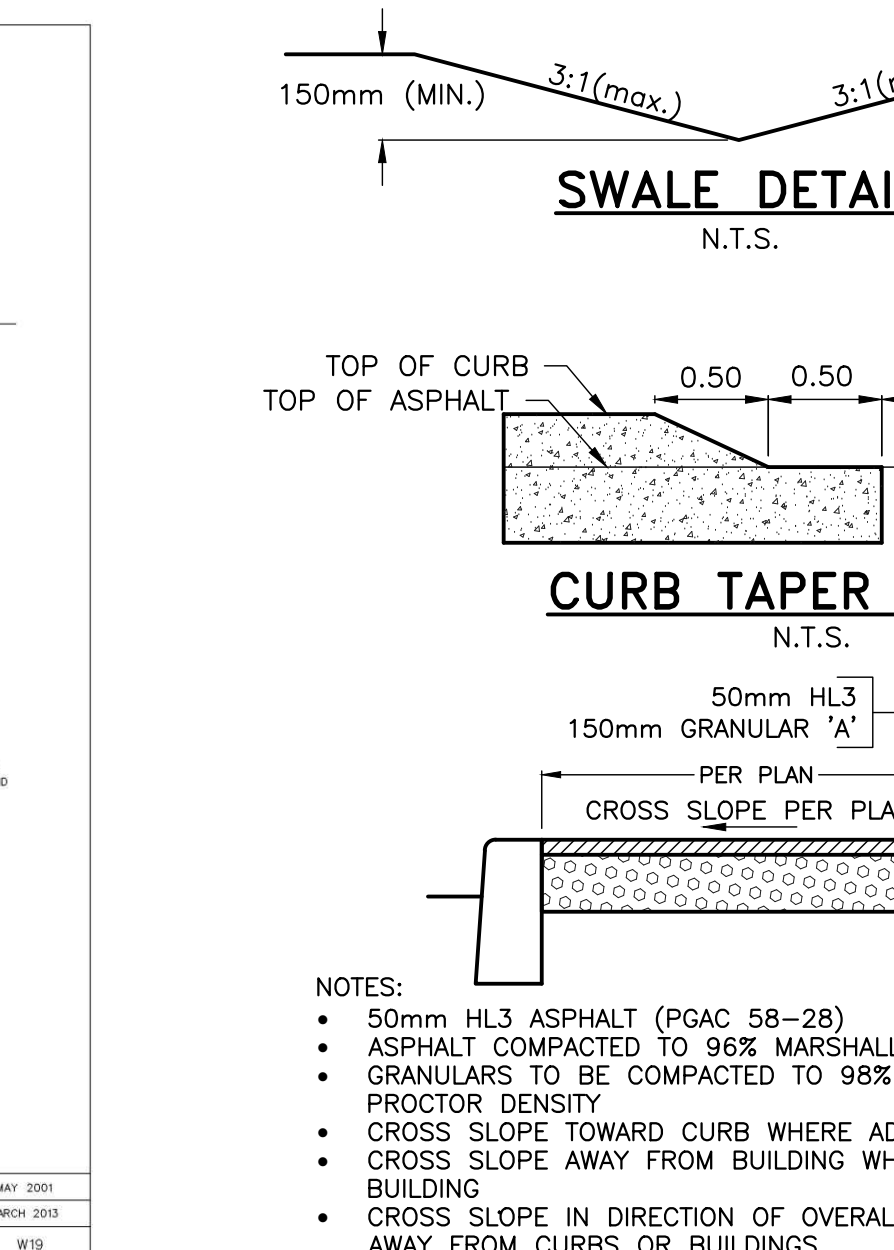
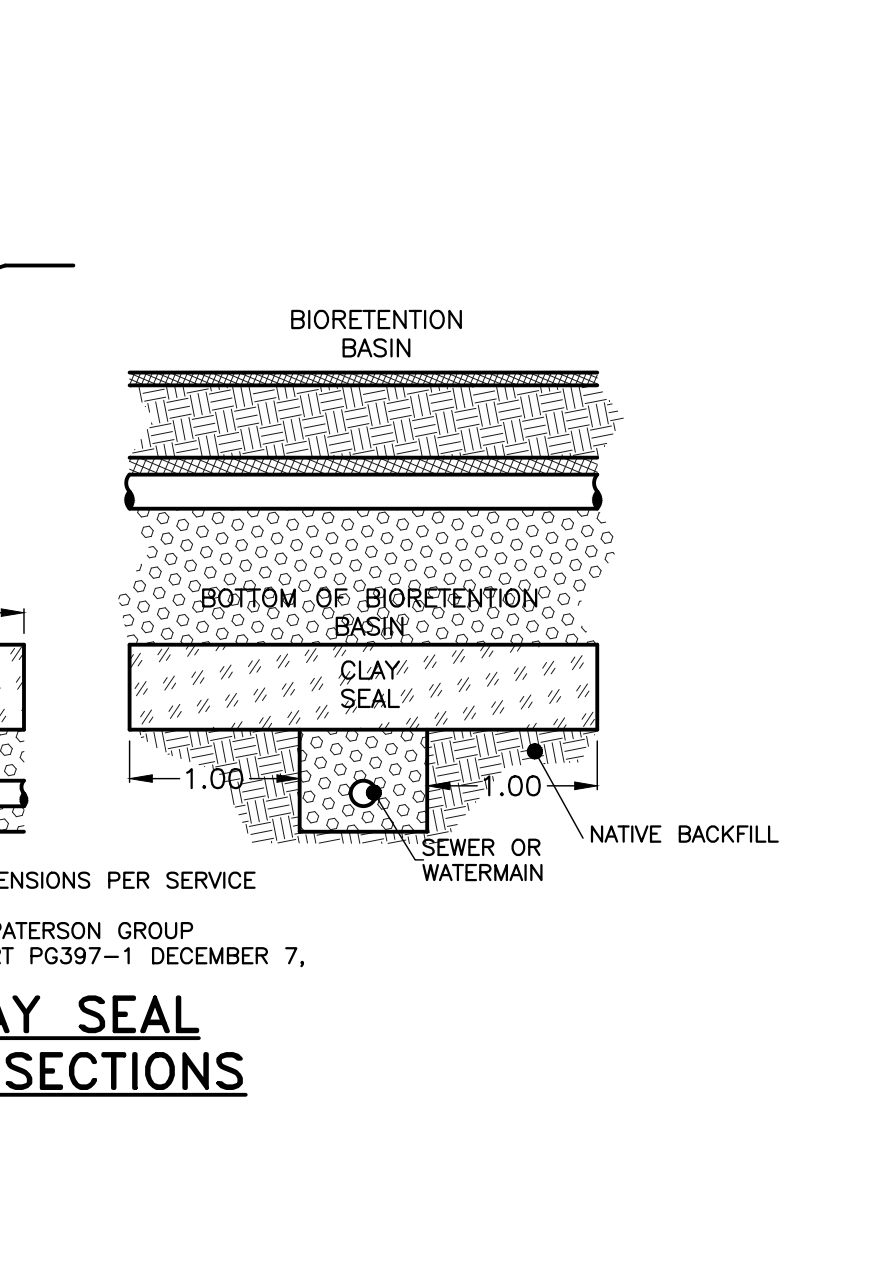
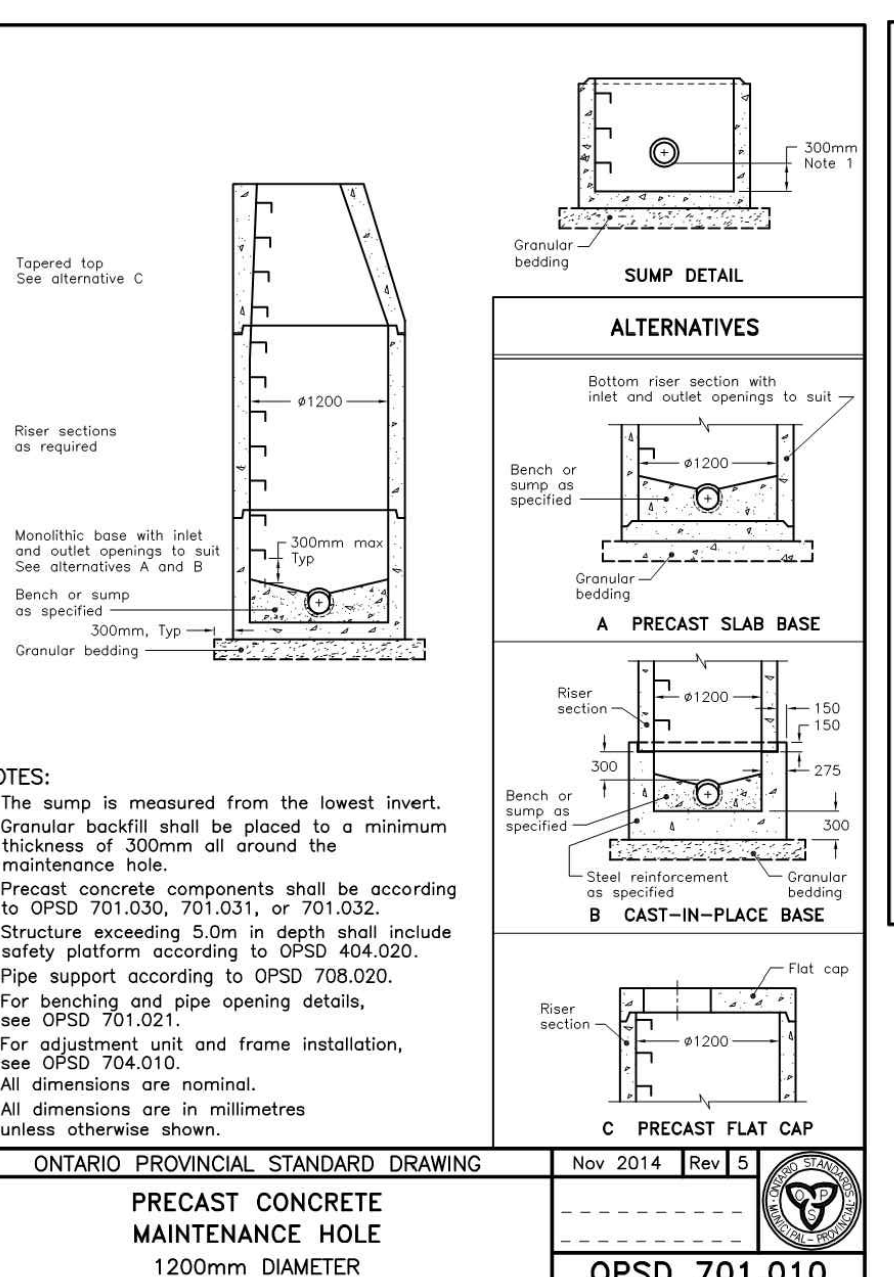
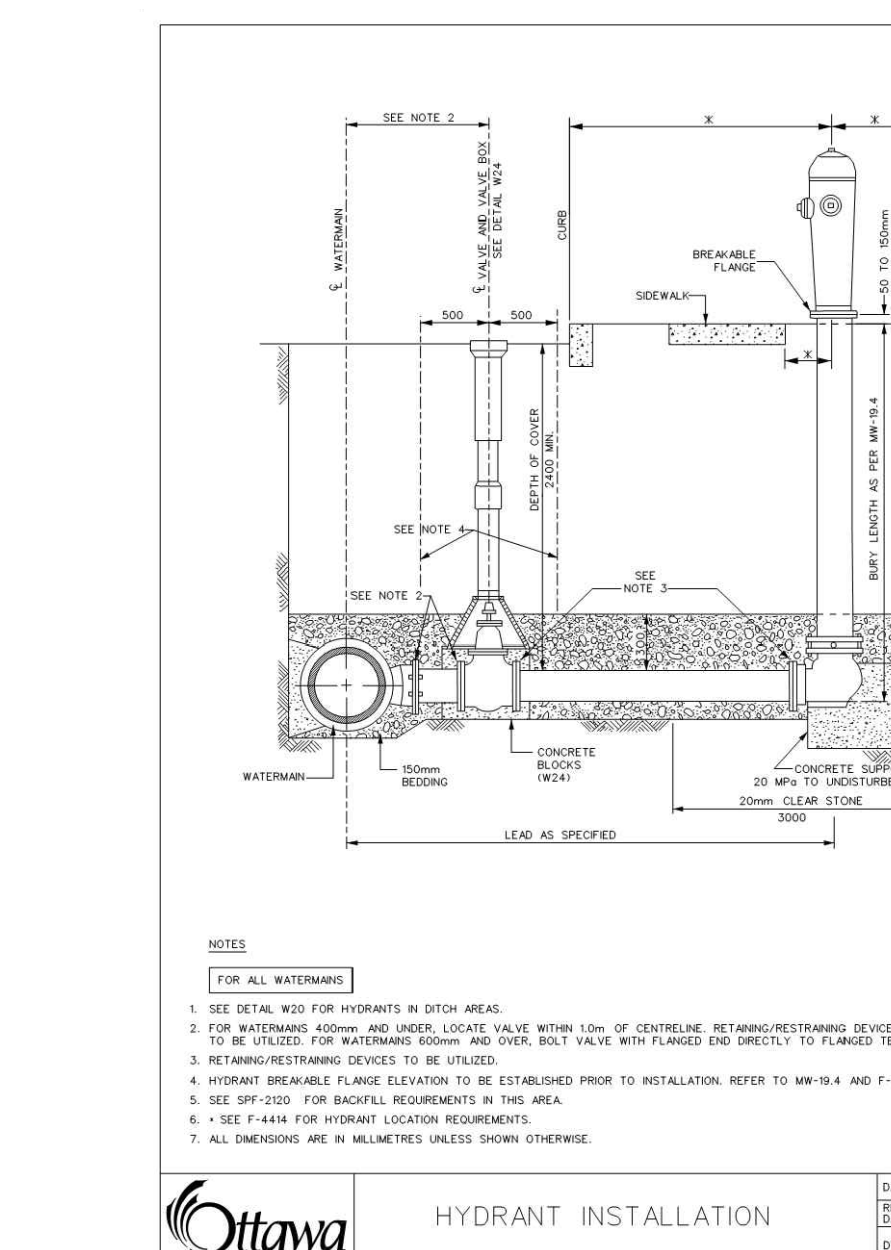
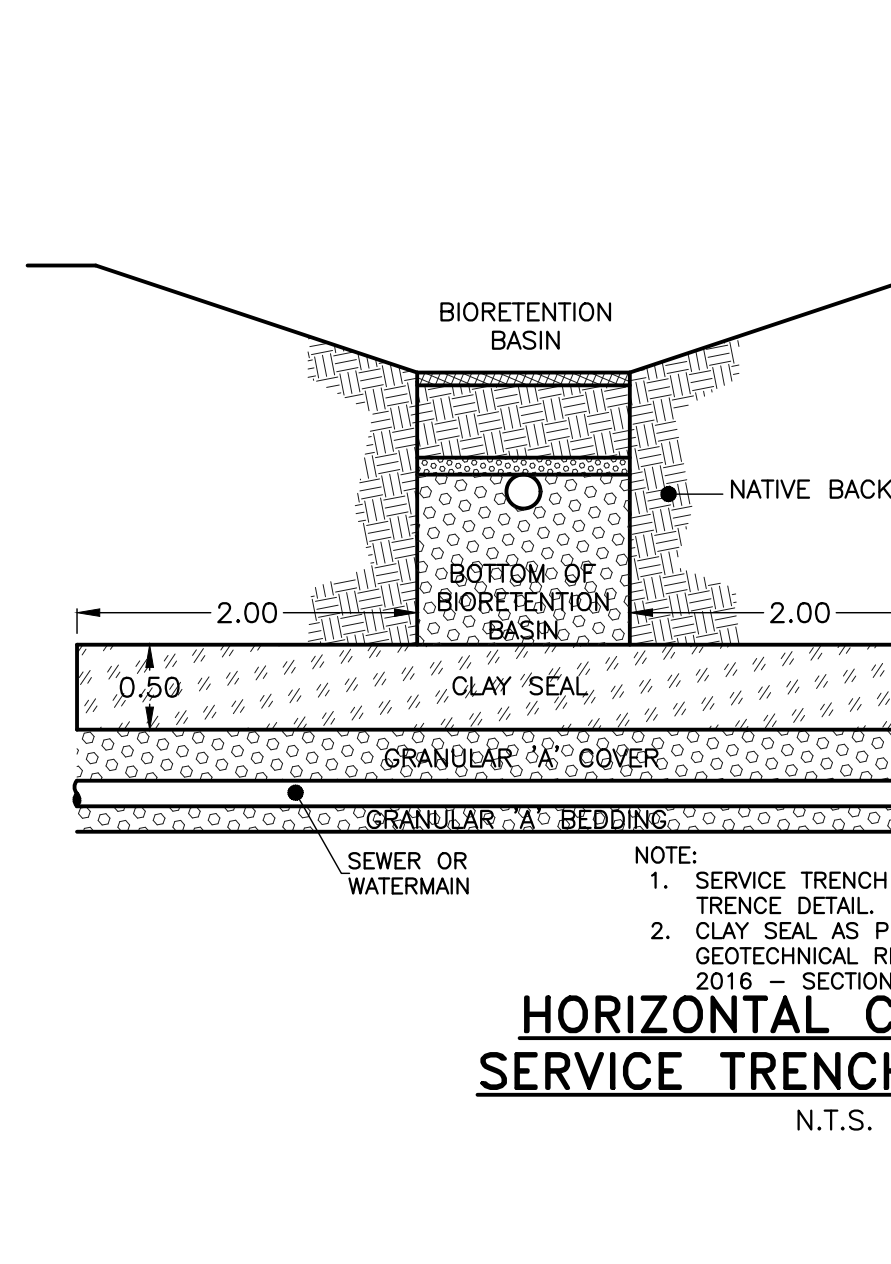
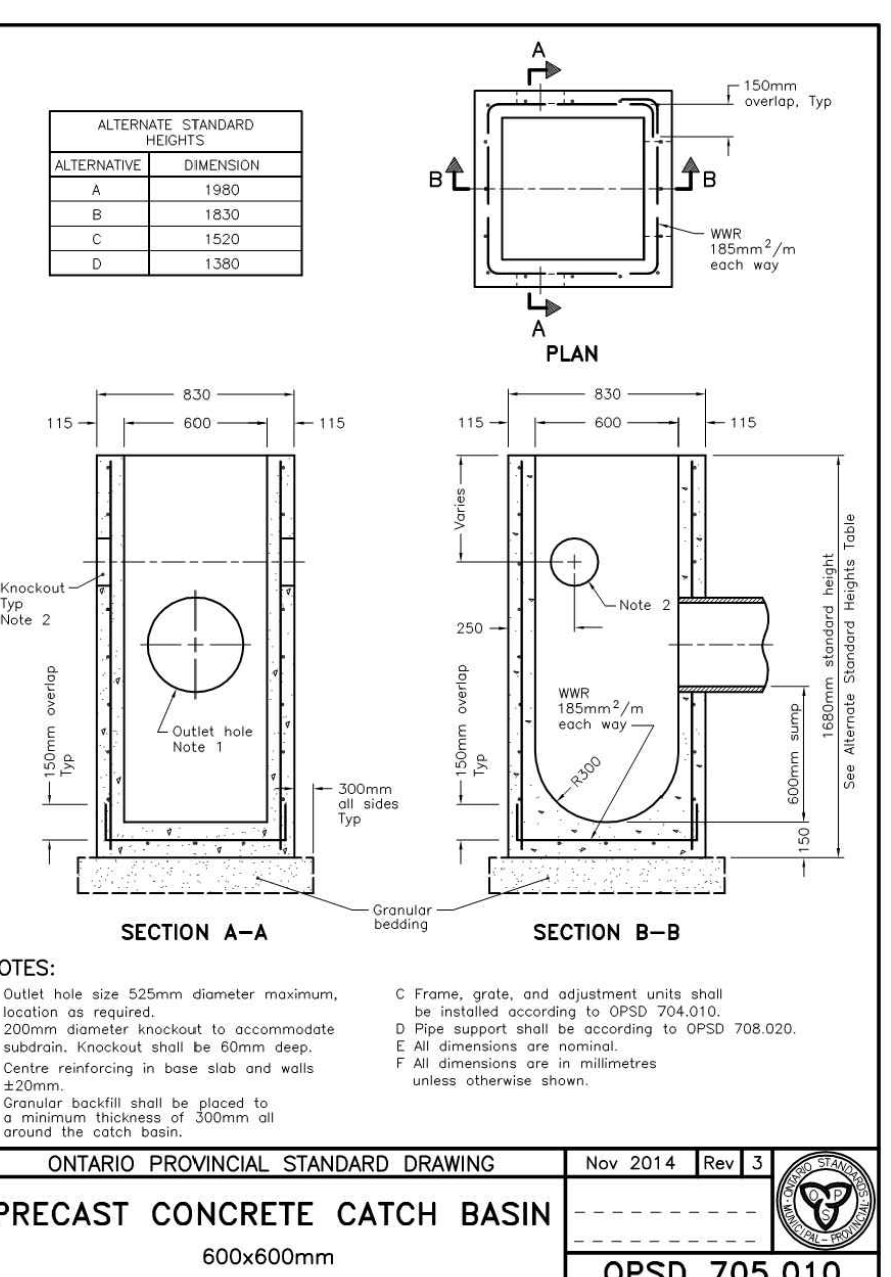
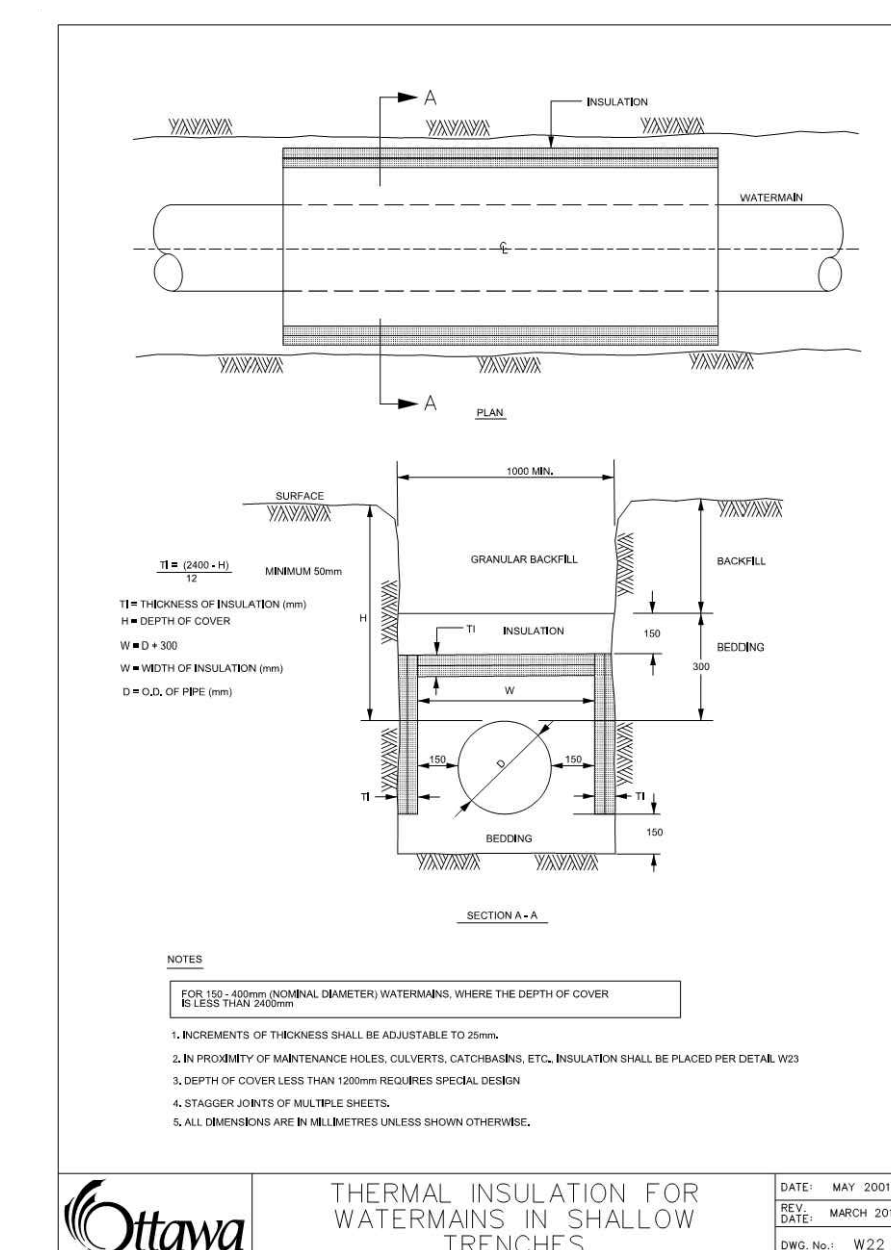
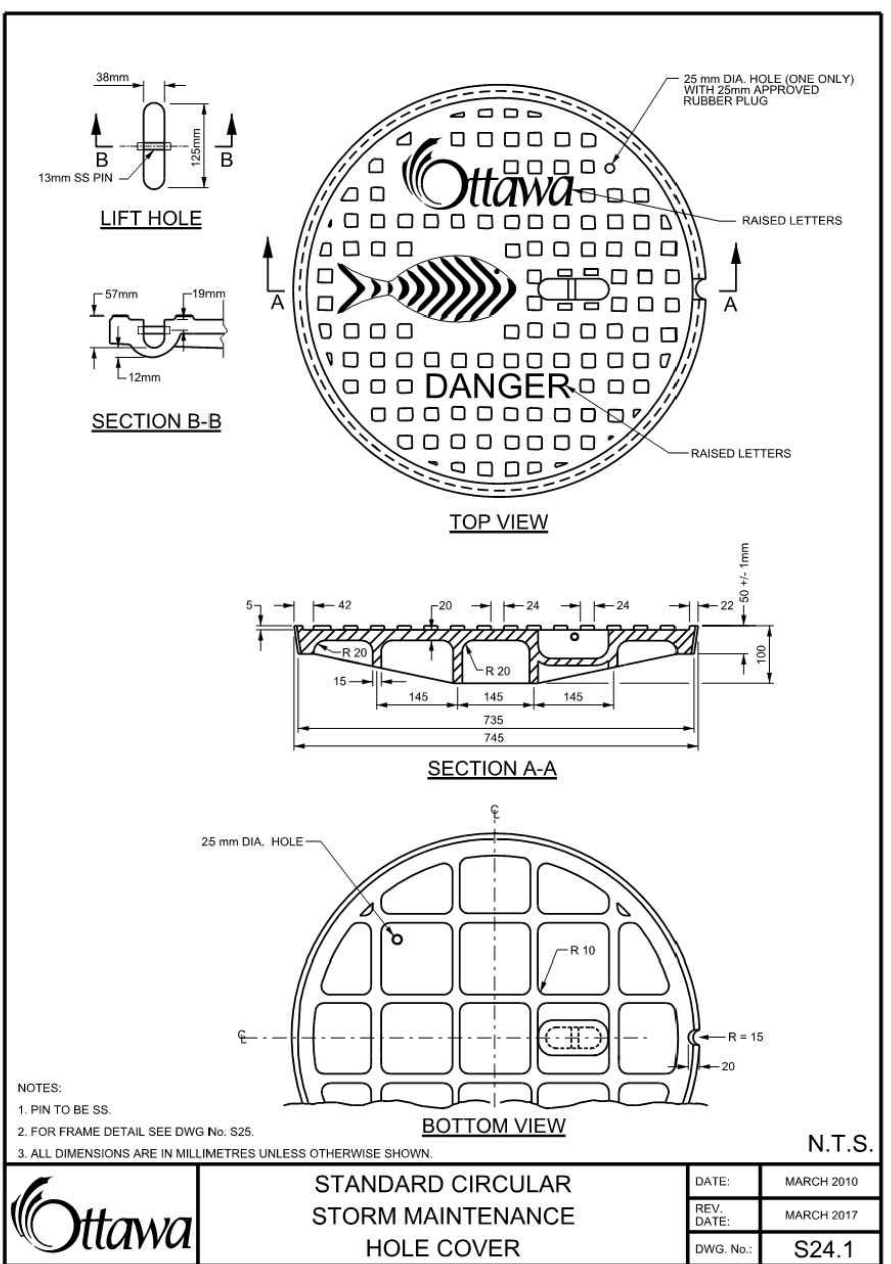
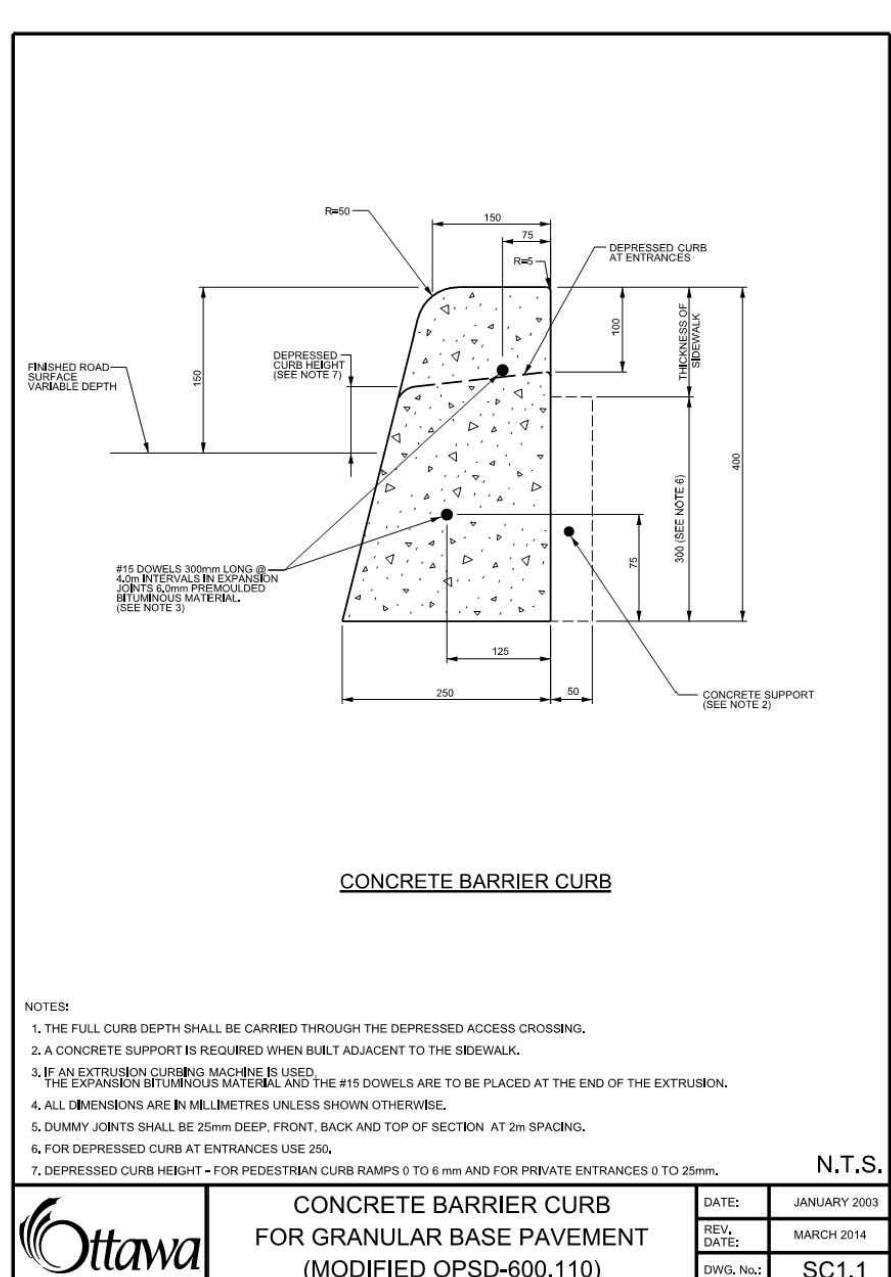
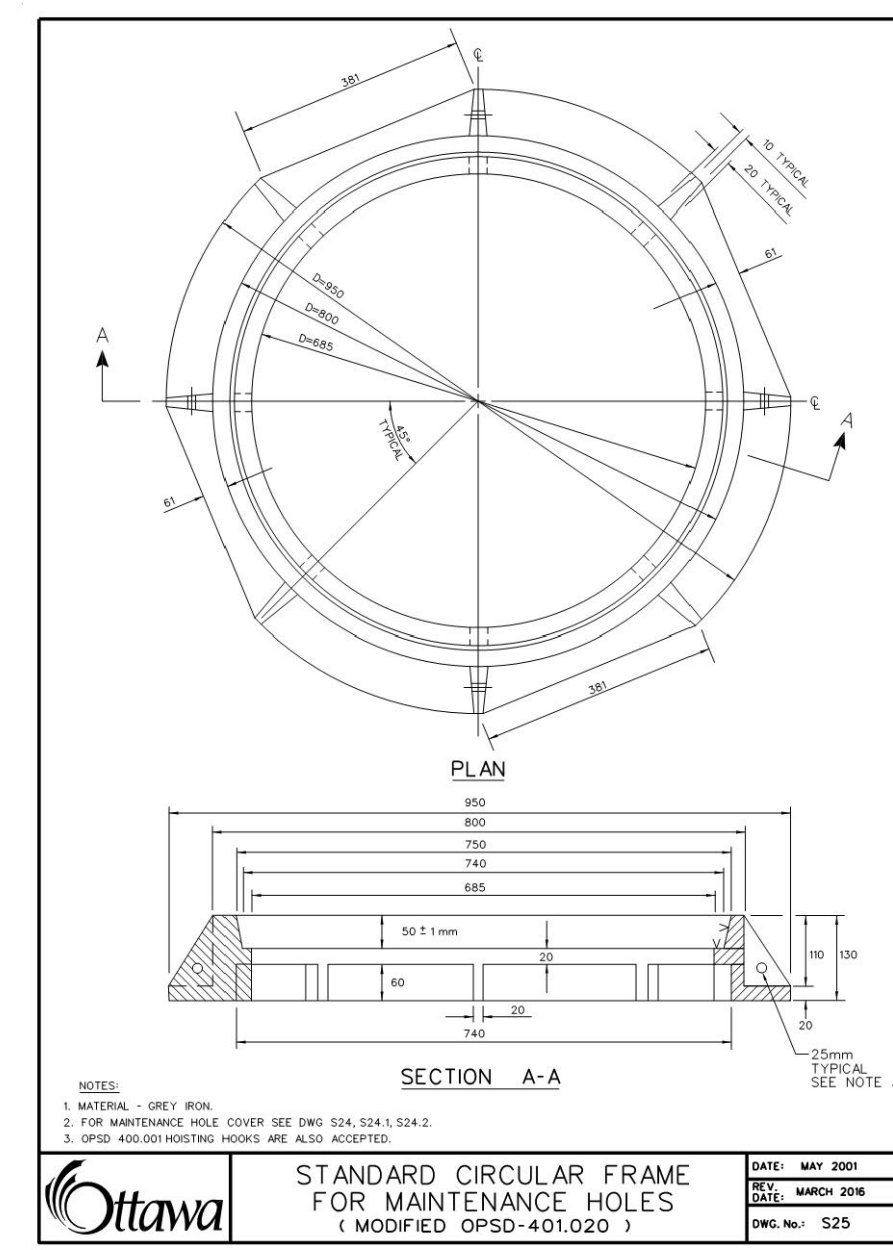
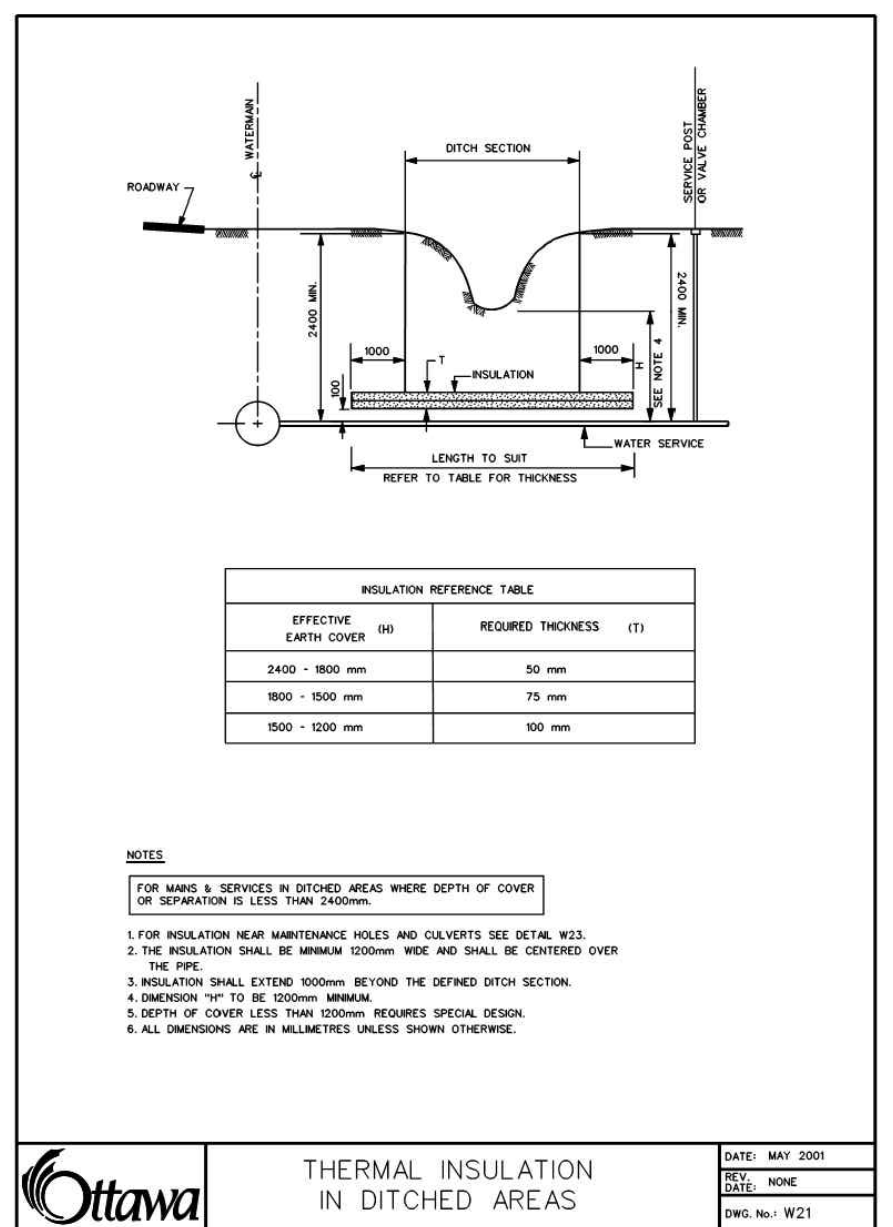
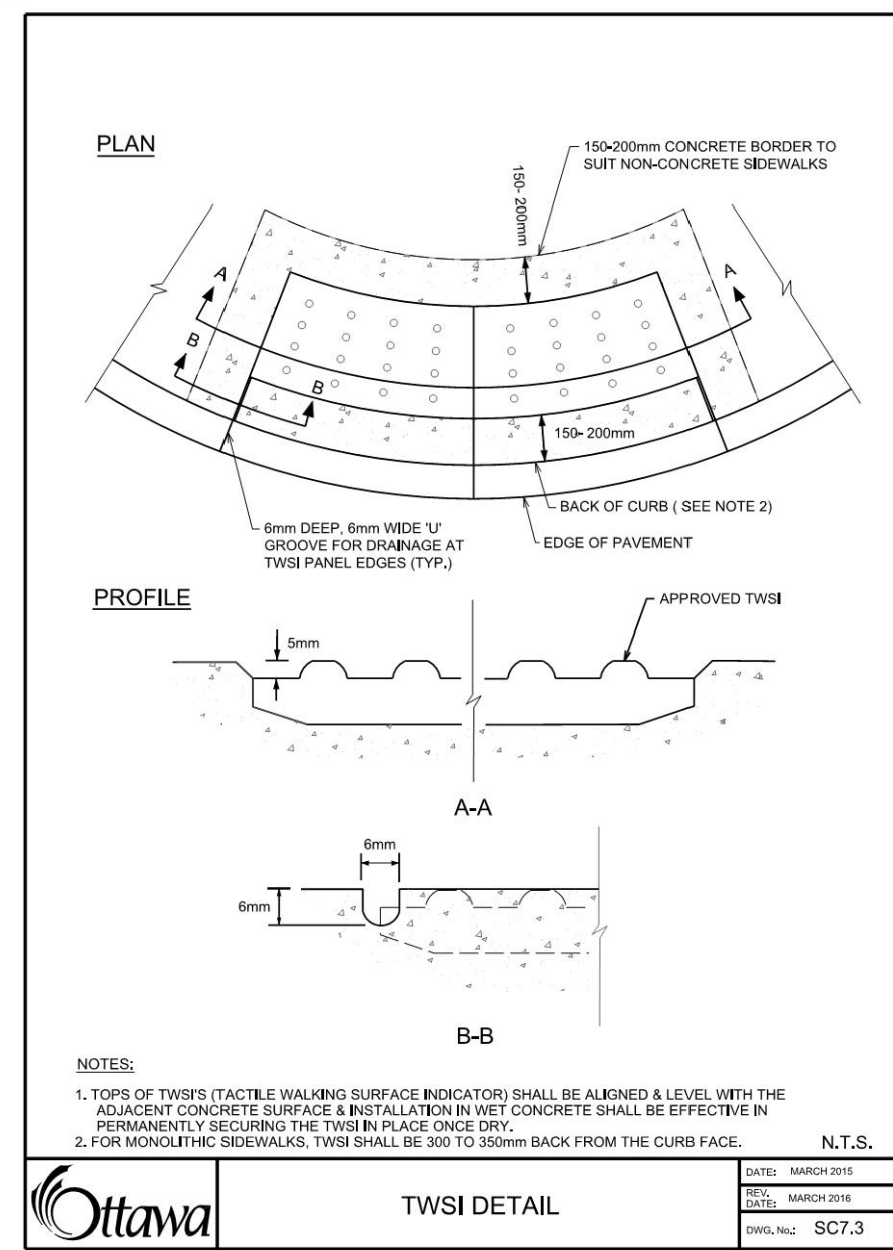
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EASTERN ENGINEERING GROUP INC.
CONSULTING ENGINEERS
Brockville Centre
125 Stewart Blvd, Suite 212
Brockville, Ont, K6V 4W4
Telephone: (613) 345-0400
Facsimile: (613) 345-0008
Web Site: www.easteng.com

BARRHAVEN FELD
3058 JOCKVALE ROAD
NEPEAN, ONTARIO K2J 4J6
GORDON WEIMA, (613-850-1559)

PROFILES, SECTIONS AND DETAILS

C4
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SEDIMENT AND EROSION CONTROL
GENERAL NOTES

THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE, DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.

1. EROSION AND SEDIMENT CONTROL (ESC) MEASURES WILL BE IMPLEMENTED PRIOR TO, AND MAINTAINED DURING THE CONSTRUCTION PHASES, TO PREVENT ENTRY OF SEDIMENT INTO THE WATER. ALL DAMAGED EROSION AND SEDIMENT CONTROL MEASURES SHOULD BE REPAIRED AND/OR REPLACED WITHIN 48 HOURS OF THE INSPECTION.
2. BEFORE PROCEEDING WITH ANY AREA GRADING THE FOLLOWING MUST BE CONSTRUCTED:
 - A) TEMPORARY SWALES.
 - B) SILT FENCE WHERE INDICATED.
 - C) TREE PRESERVATION. INSPECTION IS REQUIRED.
3. SILT CONTROL FENCE SHALL BE INSTALLED WHERE SHOWN AND MAINTAINED UNTIL THE COMPLETION OF THE LANDSCAPING.
4. CATCHBASIN SILT TRAPS ARE TO BE INSTALLED AT ALL CATCHBASINS AND CATCHBASINS MANHOLE LOCATIONS UPON COMPLETION OF SERVING.
5. ACCUMULATED SILT TO BE REMOVED OFF SITE PRIOR TO REMOVAL OF THE SILT CONTROL FENCE.
6. CONTRACTOR TO CLEAN ADJACENT ROADS ON A REGULAR BASIS TO THE SATISFACTION OF THE CITY OF OTTAWA. THE ROAD SHALL BE AT A MINIMUM SCRAPED DAILY AND FLUSHED ON FRIDAY EVENING OR SATURDAY MORNING, OR AS DIRECTED BY THE CITY.
7. THE HEAVY DUTY SILT FENCE SILT/SOXX MUST BE INSPECTED WEEKLY AND IMMEDIATELY AFTER RAINFALL EVENTS FOR RIPS OR TEARS, BROKEN STAKES, BLOW OUTS (STRUCTURAL FAILURE) AND ACCUMULATION OF SEDIMENT. THE SILT FENCE MUST BE FIXED AND/OR REPLACED IMMEDIATELY WHEN DAMAGED. SEDIMENT MUST BE REMOVED FROM SILT FENCE WHEN ACCUMULATION REACHES 50% OF THE HEIGHT OF THE FENCE.
8. ALL TOPSOIL STOCKPILES SHALL BE SURROUNDED WITH A SEDIMENT CONTROL FENCE.
9. DISTURBED AREAS WILL BE MINIMIZED TO THE EXTENT POSSIBLE AND TEMPORARILY OR PERMANENTLY STABILIZED OR RESTORED AS THE WORK PROGRESSES.
10. ALL NEAR WATER WORKS WILL BE CONDUCTED IN THE DRY WITH APPROPRIATE EROSION AND SEDIMENT CONTROLS.
11. THE EROSION AND SEDIMENT CONTROL STRATEGIES OUTLINED ON THE PLANS ARE NOT STATIC AND MAY NEED TO BE UPGRADED/AMENDED AS SITE CONDITIONS CHANGE TO MINIMIZE SEDIMENT LADEN RUNOFF FROM LEAVING THE WORK AREAS. IF THE PRESCRIBED MEASURES ON THE PLANS ARE NOT EFFECTIVE IN PREVENTING THE RELEASE OF A DELETERIOUS SUBSTANCE, INCLUDING SEDIMENT, THEN ALTERNATIVE MEASURES MUST BE IMPLEMENTED IMMEDIATELY TO MINIMIZE POTENTIAL ECOLOGICAL IMPACTS. RVCA ENFORCEMENT OFFICER SHOULD BE IMMEDIATELY CONTACTED. ADDITIONAL ESC MEASURES TO BE KEPT ON SITE AND USED AS NECESSARY.
12. AN ENVIRONMENTAL MONITOR WILL ATTEND THE SITE TO INSPECT ALL NEW CONTROLS, AS WELL AS ON A REGULAR BASIS, OR FOLLOWING RAIN/SNOWMELT EVENT, TO MONITOR ALL WORKS, AND IN PARTICULAR WORKS RELATED TO EROSION AND SEDIMENT CONTROLS, DEWATERING OR UNWATERING, RESTORATION AND IN-OR NEAR - WATER WORKS. SHOULD CONCERNS ARISE ON SITE THE ENVIRONMENTAL MONITOR WILL CONTACT THE RVCA AS WELL AS THE PROPONENT.
13. NO CONSTRUCTION ACTIVITY OR MACHINERY SHALL BE BEYOND THE SILT FENCE.
14. UPON COMPLETION OF LANDSCAPING ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED.
15. PLEASE NOTIFY RVCA ENFORCEMENT OFFICER AND RVCA PROJECT MANAGER 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.
16. AN ENVIRONMENTAL MONITOR WILL BE ON SITE, AND PROVIDE ADVICE, TO ENSURE THAT ACTIVITIES THAT COULD HAVE A NEGATIVE IMPACT TO THE NATURAL ENVIRONMENT ARE EFFECTIVELY MITIGATED AS CONSTRUCTION PROCEEDS. THE ENVIRONMENTAL MONITOR SHALL NOTIFY THE RVCA ENFORCEMENT OFFICER AND PROJECT MANAGER IF AN ISSUE ARISES.

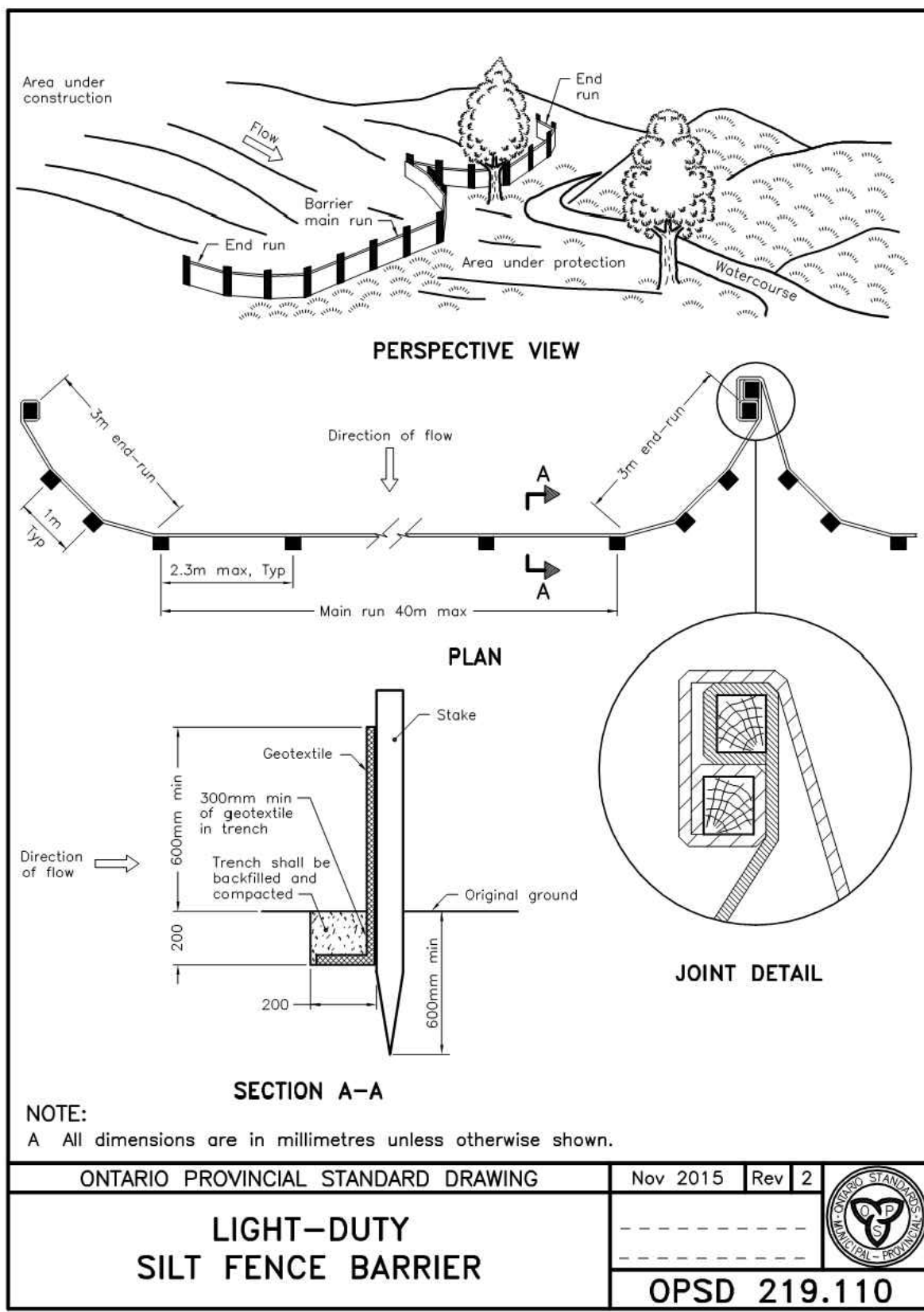


TABLE 4.5.6 SUGGESTED ROUTINE INSPECTION AND MAINTENANCE ACTIVITIES FOR BIORETENTION

ACTIVITY	SCHEDULE
INSPECT FOR VEGETATION DENSITY (AT LEAST 80% COVERAGE), DAMAGE BY FOOT OR VEHICULAR TRAFFIC, CHANNELIZATION, ACCUMULATION OF DEBRIS, TRASH AND SEDIMENT, AND STRUCTURAL DAMAGE TO PRETREATMENT DEVICES	AFTER EVERY MAJOR STORM EVENT (>25 MM), QUARTERLY FOR THE FIRST TWO YEARS, AND TWICE ANNUALLY THEREAFTER.
REGULAR WATERING MAY BE REQUIRED DURING THE FIRST TWO YEARS UNTIL VEGETATION IS ESTABLISHED:	AS NEEDED FOR FIRST TWO YEARS OF OPERATION.
REMOVE TRASH AND DEBRIS FROM PRETREATMENT DEVICES, THE BIORETENTION AREA SURFACE AND INLET AND OUTLETS.	AT LEAST TWICE ANNUALLY. MORE FREQUENTLY IF DESIRED FOR AESTHETIC REASONS.
REMOVE ACCUMULATED SEDIMENT FROM PRETREATMENT DEVICES, INLETS AND OUTLETS;	ANNUALLY OR AS NEEDED
TRIM TREES AND SHRUBS;	
REPLACE DEAD VEGETATION, REMOVE INVASIVE GROWTH;	
REPAIR ERODED OR SPARSELY VEGETATED AREAS;	
REMOVE ACCUMULATED SEDIMENT ON THE BIORETENTION AREA SURFACE WHEN DRY AND EXCEEDS 25 MM DEPTH (PDEP, 2006);	
IF GULLIES ARE OBSERVED ALONG THE SURFACE, REGRADING AND REVEGETATING MAY BE REQUIRED.	

- GRASS SHOULD BE ALLOWED TO GROW HIGHER THAN 75mm TO ENHANCE THE FILTRATION OF SUSPENDED SOLIDS.

DRAWING LIST

- C1 REMOVALS
- C2 GRADING AND SERVICING PLAN EAST
- C3 GRADING AND SERVICING PLAN WEST/NOTES
- C4 DETAILS AND PROFILES
- C5 DETAILS
- C6 DRAINAGE AREA PLAN

BIORETENTION INSTALLATION AND MAINTENANCE

THE FOLLOWING IS A TYPICAL CONSTRUCTION SEQUENCE TO PROPERLY INSTALL A BIORETENTION PRACTICE. THE STEPS MAY BE MODIFIED TO REFLECT DIFFERENT BIORETENTION APPLICATIONS OR EXPECTED SITE CONDITIONS.

1. BIORETENTION AREAS SHOULD BE FULLY PROTECTED BY SILT FENCE OR CONSTRUCTION FENCING TO PREVENT COMPACTION BY CONSTRUCTION TRAFFIC AND EQUIPMENT.
2. INSTALLATION MAY ONLY BEGIN AFTER ENTIRE CONTRIBUTING DRAINAGE AREA HAS BEEN EITHER STABILIZED OR FLOWS HAVE BEEN SAFELY ROUTED AROUND THE AREA. THE DESIGNER SHOULD CHECK THE BOUNDARIES OF THE CONTRIBUTING DRAINAGE AREA TO ENSURE IT CONFORMS TO ORIGINAL DESIGN.
3. THE PRETREATMENT COMPLEX SHOULD BE EXCAVATED FIRST AND SEALED UNTIL FULL CONSTRUCTION IS COMPLETED.
4. EXCAVATORS OR BACKHOES WORKING ADJACENT TO THE PROPOSED BIORETENTION AREA SHOULD EXCAVATE THE CELL TO THE APPROPRIATE DESIGN DEPTH.
5. IT MAY BE NECESSARY TO RIP THE BOTTOM SOILS TO PROMOTE GREATER INFILTRATION OR EXCAVATE ANY SEDIMENT THAT MAY HAVE BUILT UP DURING CONSTRUCTION.
6. THERE ARE THREE OPTIONS AT THIS STEP DEPENDING ON THE DESIGN:
 - A. INFILTRATION: PLACE AN IMPERMEABLE LINER ON THE BED OF THE BIORETENTION AREA WITH 150 MM OVERLAY ON SIDES. LAY THE PERFORATED UNDERDRAIN, AN OPTIONAL 75 MM CHOKING COARSE OF PEA GRAVEL, AND THEN LAY THE NON-WOVEN GEOTEXTILE DRAINAGE FABRIC OVER THE STONE AND UNDERDRAIN.
 - B. PARTIAL INFILTRATION: PLACE DESIRED DEPTH OF STONE FOR THE INFILTRATION VOLUME ON BED AND THEN LAY THE PERFORATED UNDERDRAIN PIPE OVER IT. PACK 50 MM DIAMETER CLEAR STONE TO 75 MM ABOVE THE TOP OF THE UNDERDRAIN, AN OPTIONAL 75 MM CHOKING COARSE OF PEA GRAVEL, AND THEN LAY THE NON-WOVEN GEOTEXTILE DRAINAGE FABRIC OVER THE STONE AND UNDERDRAIN.
 - C. FULL INFILTRATION: STONE CAN BE PLACED TO PROVIDE ADDED STORMWATER VOLUME STORAGE, OR THE BIORETENTION MEDIA CAN BE ADDED DIRECTLY TO THE BOTTOM OF THE EXCAVATION.
7. BIORETENTION FILTER MEDIA SHOULD BE OBTAINED PREMIXED FROM A VENDOR. APPLY IN 300 MM LIFTS UNTIL DESIRED TOP ELEVATION OF BIORETENTION AREA IS ACHIEVED. THOROUGHLY WET EACH LIFT BEFORE ADDING THE NEXT LIFT. WAIT A FEW DAYS TO CHECK FOR SETTLEMENT, AND ADD ADDITIONAL MEDIA AS NEEDED.
8. PREPARE PLANTING HOLES FOR ANY TREES AND SHRUBS. INSTALL VEGETATION AND WATER ACCORDINGLY. INSTALL ANY TEMPORARY IRRIGATION.
9. PLANT LANDSCAPING MATERIALS AS SHOWN IN THE LANDSCAPING PLAN, AND WATER THEM WEEKLY IN THE FIRST TWO MONTHS.
10. LAY DOWN SURFACE COVER IN ACCORDANCE WITH THE DESIGN (MULCH, RIVERSTONE, OR TURF).
11. CONDUCT FINAL CONSTRUCTION INSPECTION, CHECKING INLET, PRETREATMENT CELL, BIORETENTION CELL AND OUTLET ELEVATIONS.

MATERIALS
GRAVEL FOR THE UNDERDRAIN SHOULD BE CLEAN AND WASHED; NO FINES SHOULD BE PRESENT IN THE MATERIAL.
UNDERDRAIN PIPE MATERIAL SHOULD BE PERFORMED AND OF THE CORRECT SIZE. A CAP SHOULD BE PLACED ON THE UPSTREAM (BUT NOT THE DOWNSTREAM) END OF THE UNDERDRAIN.
FILTER MEDIA SHOULD BE TESTED TO CONFIRM THAT IT MEETS SPECIFICATIONS. MULCH COMPOSITION SHOULD BE CORRECT.
ELEVATIONS OF THE FOLLOWING ITEMS SHOULD BE CHECKED FOR ACCURACY:
DEPTH OF THE GRAVEL AND INVERT OF THE UNDERDRAIN
INVERTS FOR INFLOW AND OUTFLOW POINTS
FILTER DEPTH AFTER MEDIA IS PLACED
POUNDING PROVIDED BETWEEN THE SURFACE OF THE FILTER BED AND THE OVERFLOW STRUCTURE
MULCH DEPTH
LANDSCAPING AND STABILIZATION
CORRECT VEGETATION SHOULD BE PLANTED.
PRETREATMENT AREA SHOULD BE STABILIZED.
DRAINAGE AREA SHOULD BE STABILIZED PRIOR TO DIRECTING WATER TO THE BIORETENTION.

PERIODIC INSPECTIONS AFTER MAJOR STORM EVENTS WILL DETERMINE WHETHER CORRECTIVE ACTION IS NECESSARY TO ADDRESS GRADUAL DETERIORATION OR ABNORMAL CONDITIONS. FOR THE FIRST TWO YEARS FOLLOWING CONSTRUCTION THE FACILITY SHOULD BE INSPECTED AT LEAST QUARTERLY AND AFTER EVERY MAJOR STORM EVENT (> 25 MM). SUBSEQUENTLY, INSPECTIONS SHOULD BE CONDUCTED IN THE SPRING AND FALL OF EACH YEAR AND AFTER MAJOR STORM EVENTS.

WHILE MAINTENANCE CAN BE PERFORMED BY LANDSCAPING CONTRACTORS WHO ARE ALREADY PROVIDING SIMILAR LANDSCAPE MAINTENANCE SERVICES ON THE PROPERTY, THEY WILL NEED SOME ADDITIONAL TRAINING ON BIORETENTION NEEDS. THIS TRAINING SHOULD FOCUS ON ELEVATION DIFFERENCES NEEDED FOR PONDING, MULCHING REQUIREMENTS, ACCEPTABILITY OF PONDING AFTER A WASTEWATER, AND FERTILIZER REQUIREMENTS. THE PLANTING PLAN SHOULD BE KEPT FOR MAINTENANCE RECORDS AND USED TO HELP MAINTENANCE STAFF IDENTIFY WHICH PLANTS ARE WEEDS OR INVASIVE.

ASIDE FROM HOMEOWNER INITIATED RAIN GARDEN PROJECTS, LEGALLY BINDING MAINTENANCE AGREEMENTS ARE A NECESSITY FOR BIORETENTION FACILITIES ON PRIVATE PROPERTY. AGREEMENTS SHOULD SPECIFY THE PROPERTY OWNER'S RESPONSIBILITIES AND THE MUNICIPALITY'S RIGHT TO ENTER THE PROPERTY FOR INSPECTION OR CORRECTIVE ACTION. AGREEMENTS MUST REQUIRE REGULAR INSPECTION AND MAINTENANCE AND SHOULD REFER TO AN INSPECTION CHECKLIST. THE CONSTRUCTION CONTRACT SHOULD INCLUDE A CARE AND REPLACEMENT WARRANTY TO ENSURE VEGETATION IS PROPERLY ESTABLISHED AND SURVIVES DURING THE FIRST GROWING SEASON FOLLOWING CONSTRUCTION.

THE EXPECTED LIFESPAN OF INFILTRATION PRACTICES IS NOT WELL UNDERSTOOD, HOWEVER, IT CAN BE EXPECTED THAT IT WILL VARY DEPENDING ON PRETREATMENT PRACTICE MAINTENANCE FREQUENCY, AND THE SEDIMENT TEXTURE AND LOAD COMING FROM THE CATCHMENT.

ROUTINE MAINTENANCE AND OPERATION
ROUTINE INSPECTION AND MAINTENANCE ACTIVITIES AS SHOWN IN TABLE 4.5.6 ARE NECESSARY FOR THE CONTINUED OPERATION OF BIORETENTION AREAS.

DRAINAGE AREA 3
AREA - 0.47 ha
RUNOFF COEF. PRE 5 Y 0.54
RUNOFF COEF. POST 5 Y 0.50
RUNOFF COEF. PRE 100 Y 0.675
RUNOFF COEF. POST 100 Y 0.625
ALLOWABLE RELEASE RATE 5 Y 58.96 L/s
5 YEAR STORAGE REQ'D 10.10 m³
100 YEAR STORAGE REQ'D 52.11 m³
STORAGE PROVIDED 44 m³
(EXCESS IN DA2)

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- PROPOSED SWALE GRADE
- DIRECTION OF DRAINAGE
- SUBDRAIN
- STORM SEWER
- SANITARY SEWER
- WATER MAIN
- DRAINAGE BOUNDARY
- SILT FENCE

INSPECTION ITEM	CORRECTIVE ACTIONS
VEGETATION HEALTH, DIVERSITY AND DENSITY	<ul style="list-style-type: none">REMOVE DEAD AND DISEASED PLANTS.ADD REINFORCEMENT PLANTING TO MAINTAIN DESIRED VEGETATION DENSITY.PRUNE WOODY MATTER.CHECK SOIL PH FOR SPECIFIC VEGETATION.ADD MULCH TO MAINTAIN 75 MM LAYER.
SEDIMENT BUILD UP AND CLOGGING AT INLETS	<ul style="list-style-type: none">REMOVE SAND THAT MAY ACCUMULATE AT THE INLETS OR ON THE FILTER BED SURFACE FOLLOWING SNOW MELT.EXAMINE DRAINAGE AREA FOR BARE SOIL AND STABILIZE. APPLY EROSION CONTROL SUCH AS SILT FENCE UNTIL THE AREA IS STABILIZED.CHECK THAT PRETREATMENT IS PROPERLY FUNCTIONING. FOR EXAMPLE, INSPECT GRASS FILTER STRIPS FOR EROSION OR GULLIES. RESEED AS NECESSARY.
PONDING FOR MORE THAN 48 HOURS	<ul style="list-style-type: none">CHECK UNDERDRAIN FOR CLOGGING AND FLUSH OUT.APPLY CORE AERATION OR DEEP TILLINGMIX AMENDMENTS INTO THE SOILREMOVE THE TOP 75 MM OF BIORETENTION SOILREPLACE BIORETENTION SOIL

NOTE:

CONTRACTOR TO CONTACT UTILITY COMPANIES TO DETERMINE TYPE, LOCATION, AND CONFIGURATION OF EXISTING PLANT.

EASTERN ENGINEERING GROUP INC.

BUILDING CODE IDENTIFICATION No. 19467

CLASSES OF REGISTRATION:

BUILDING SERVICES	LARGE BUILDINGS
BUILDING STRUCTURAL	ON SITE SEWAGE
HOUSE	SMALL BUILDINGS



No.	By	Date	Revisions
4	CAJ	6/14/2018	100 YEAR STORM STORAGE
3	CAJ	5/30/2018	PER COMMENTS 3
2	CAJ	4/25/2018	PER COMMENTS 2
1	AJP	3/20/2018	PER COMMENTS
0	CJ	11/30/17	FOR SITE PLAN APPROVAL

Scale	Design	Checked
0 8 16 Horizontal: 1:400 0 10 20 Vertical:	C.A.J.	C.A.J.
	Approved:	Project No. 7495
	Date: 2017/11/17	Contract No.

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EASTERN ENGINEERING GROUP INC.
CONSULTING ENGINEERS
Brockville Centre
125 Stewart Blvd. Suite 212
Brockville, Ont. K6V 4W4
Telephone: (613) 345-0400
Facsimile: (613) 345-0008
Web Site: www.easteng.com

BARRHAVEN FELLOWSHIP CRC
3058 JOCKVALE ROAD
NEPEAN, ONTARIO K2J 4J6
GORDON WEIMA, (613-850-1559)

DRAINAGE AREAS AND EROSION CONTROL PLAN

C6

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