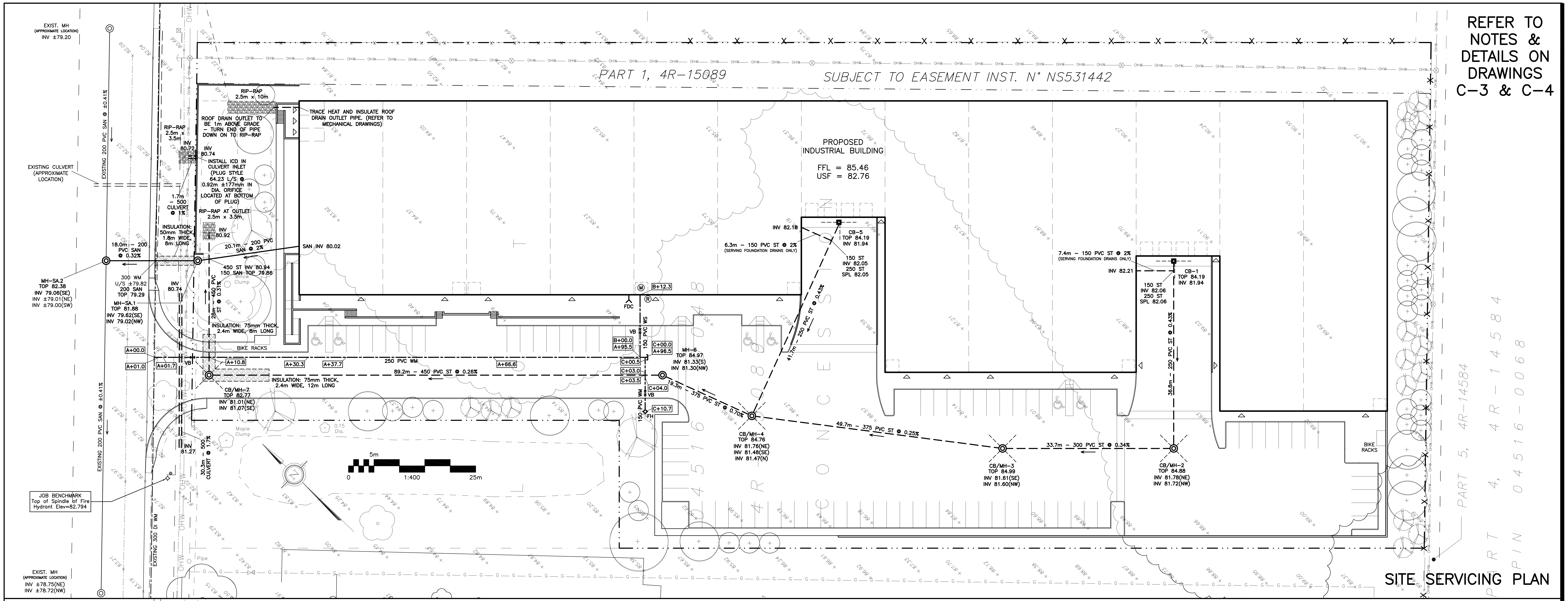
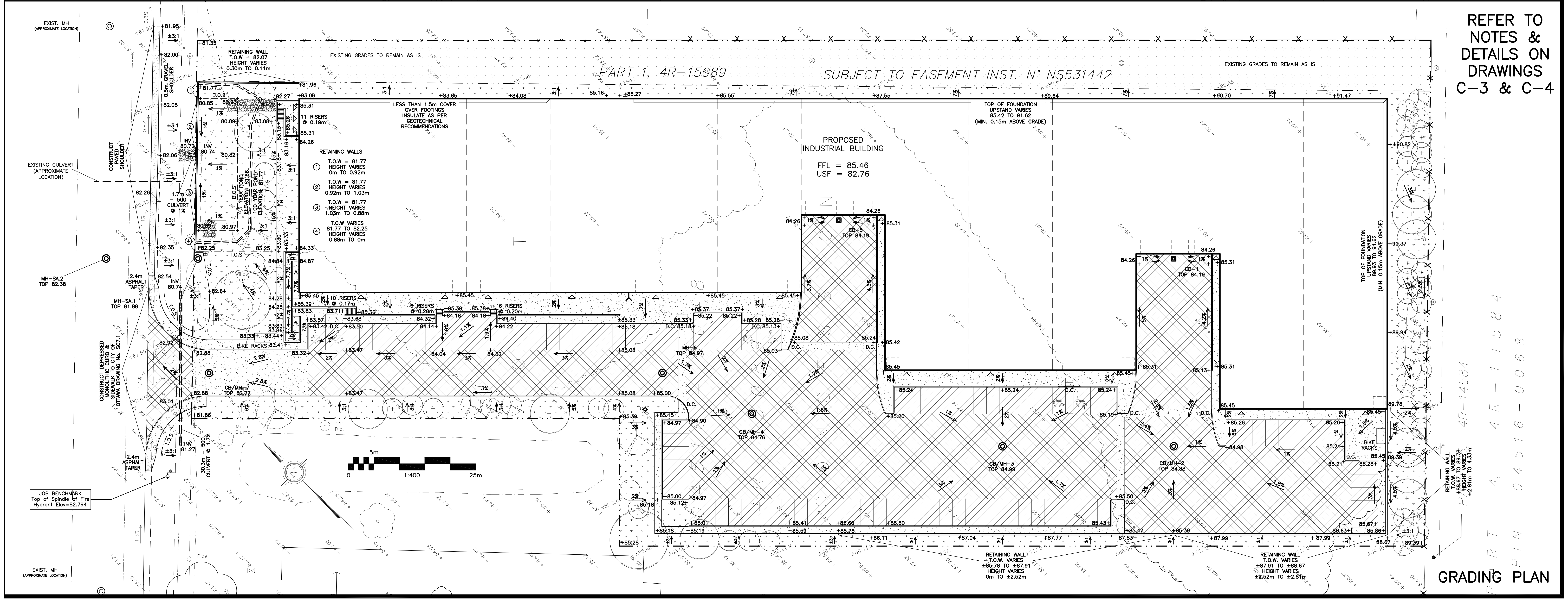
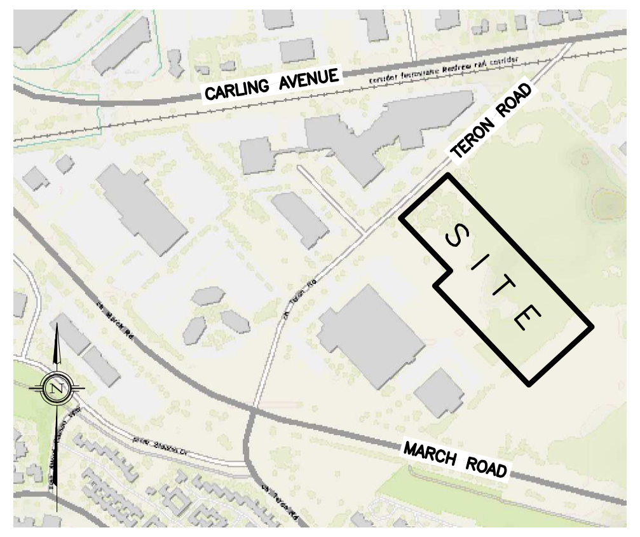




DRAWING LEGEND

CB ▣	CATCH BASIN
MH ◎	MANHOLE
CB/MH ◎	CATCH BASIN/MANHOLE
SPL	SPRINGLINE OF PIPE
INV	INVERT OF PIPE
⊠	SUBDRAINS IN CB
⊗	SUBDRAINS IN CB/MH
SAN	SANITARY SEWER
ST	STORM SEWER
WS/WM	WATER SERVICE/WATERMAIN
VB	VALVE & VALVE BOX
FH	FIRE HYDRANT
FDC	FIRE DEPARTMENT CONNECTION
Ⓜ	WATER METER
Ⓡ	REMOTE WATER METER READOUT
x 66.75	EXISTING GRADE ELEVATION
+66.75	PROPOSED GRADE ELEVATION
0.5%	EXISTING SLOPE OF GRADE
0.5%	PROPOSED SLOPE OF GRADE
T.O.S.	TOP OF SLOPE
B.O.S.	BOTTOM OF SLOPE
	PROPERTY LINE
D.C.	150mm CURB/DEPRESSED CURB
▨	ASPHALT SHOULDER
▨	LIGHT-DUTY PAVEMENT
▨	HEAVY-DUTY PAVEMENT
▨	CONCRETE
▨	LANDSCAPE
FFL	FIRST FLOOR ELEVATION
USF	UNDERSIDE OF FOOTING

KEY PLAN



No.	DATE	REVISION
2	FEB 13–20	ISSUED FOR APPROVAL
1	FEB 11–20	ISSUED FOR COORDINATION

D. B. GRAY ENGINEERING INC.
Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains
700 Long Point Circle 613-425-8044
Ottawa, Ontario d.gray@dbgrayengineering.com

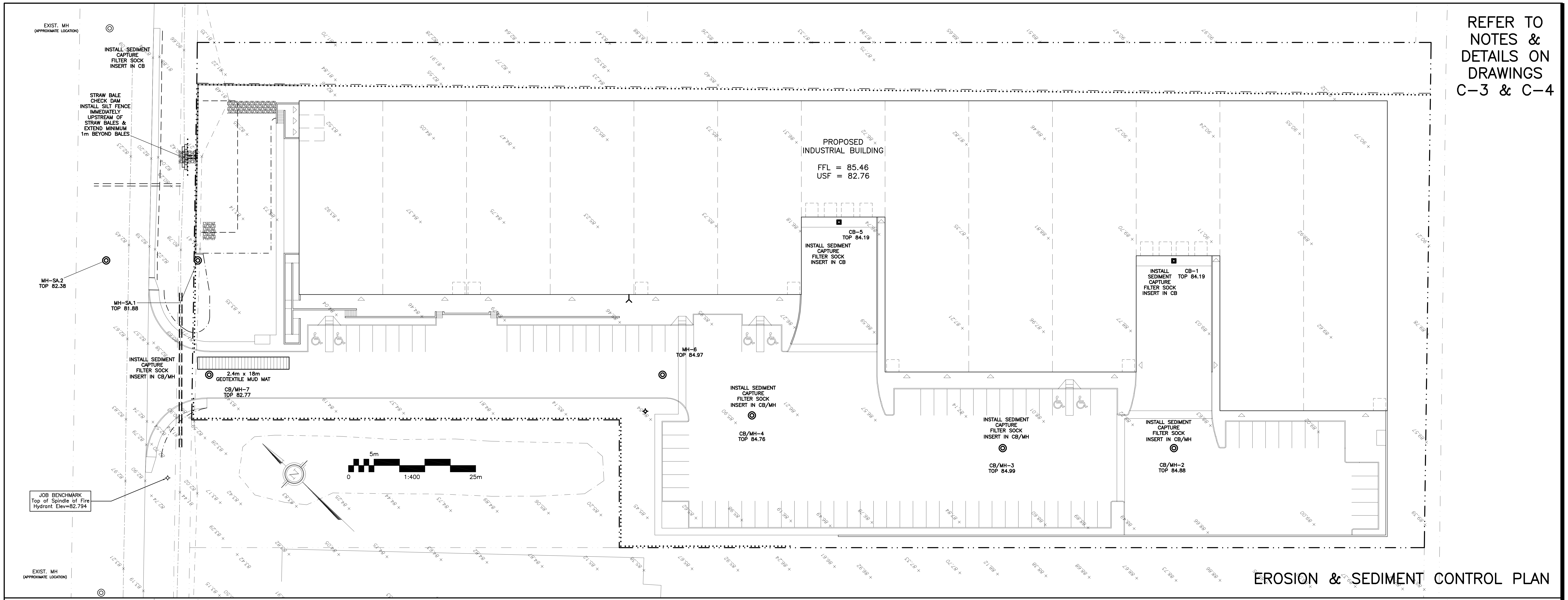
Project
PROPOSED
1 STOREY
INDUSTRIAL WAREHOUSE
1243 TERON ROAD
OTTAWA, ONTARIO

Drawing Title
SITE SERVICING PLAN & GRADING PLAN

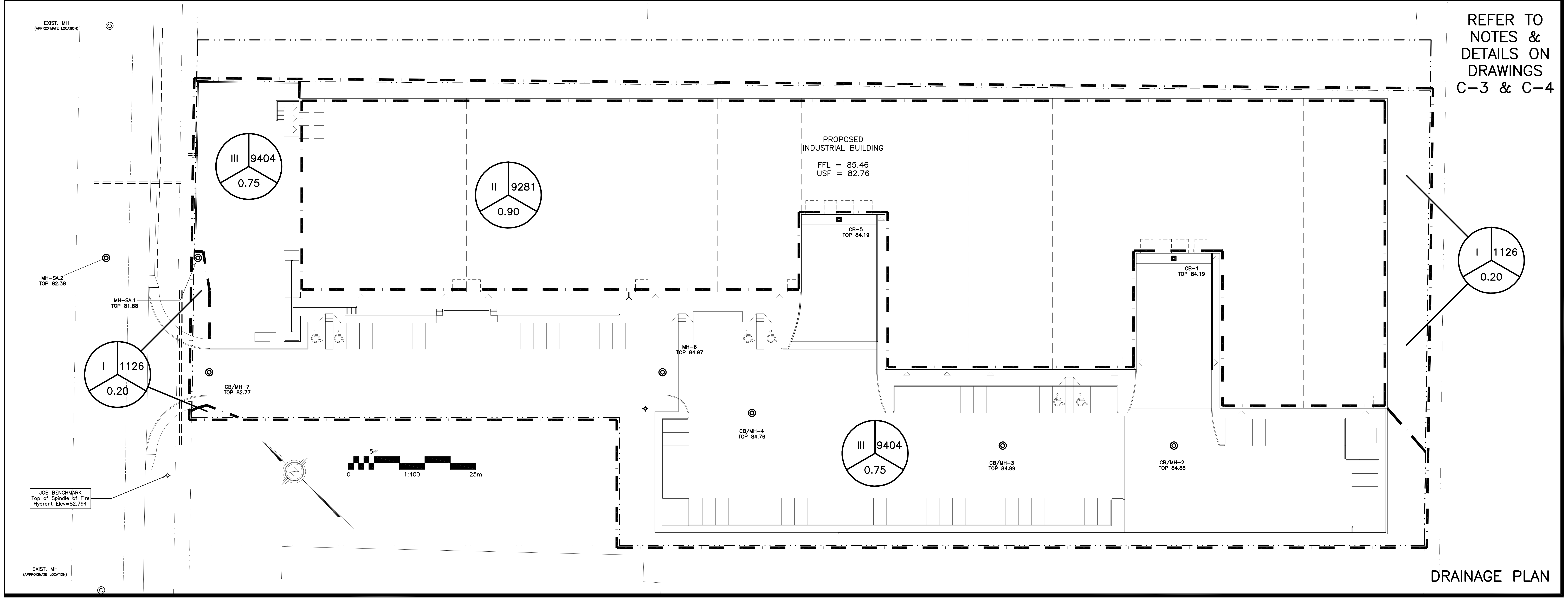
Engineer's Seal
D.B. GRAY
17016502
FEB 13–20
NOT VALID UNLESS SIGNED & DATED

Drawn	D.B.G.
Hor. Scale	1:400
Vert. Scale	
Date	OCT 18–19
Job No.	19057

Drawing No.
C–1
of 4



EROSION & SEDIMENT CONTROL PLAN



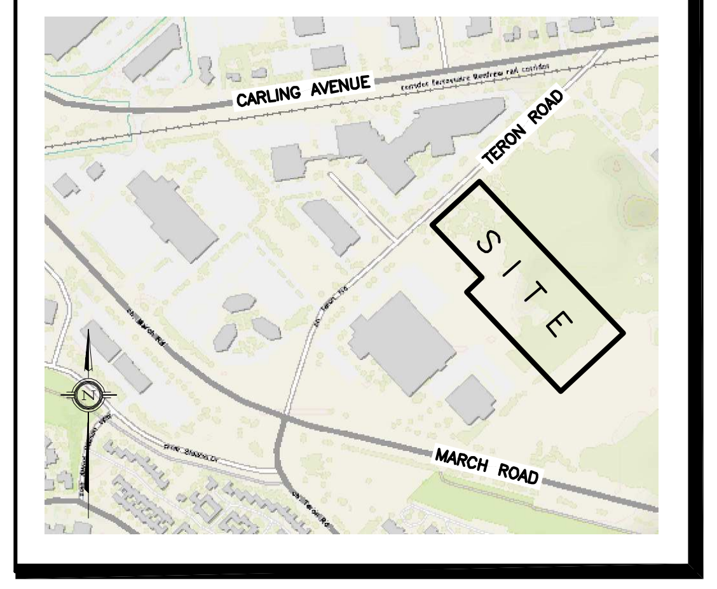
DRAINAGE PLAN

DRAWING LEGEND

CB ▣	CATCH BASIN
MH ◎	MANHOLE
CB/MH ◎	CATCH BASIN/MANHOLE
FH	FIRE HYDRANT
× 66.75	EXISTING GRADE ELEVATION
T.O.S.	TOP OF SLOPE
B.O.S.	BOTTOM OF SLOPE
— · —	PROPERTY LINE
··········	SILT FENCE BARRIER
D.C.	150mm CURB/DEPRESSED CURB
FFL	FIRST FLOOR ELEVATION
USF	UNDERSIDE OF FOOTING

DRAINAGE AREA
AREA (sq.m)
I
1234
0.56
5 YEAR RUNOFF COEFFICIENT

KEY PLAN



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Project
PROPOSED
1 STOREY
INDUSTRIAL WAREHOUSE
1243 TERON ROAD
OTTAWA, ONTARIO

Drawing Title
EROSION & SEDIMENT
CONTROL PLAN
AND DRAINAGE PLAN

Engineer's Seal
D.B. GRAY
17016502
FEB 13-20
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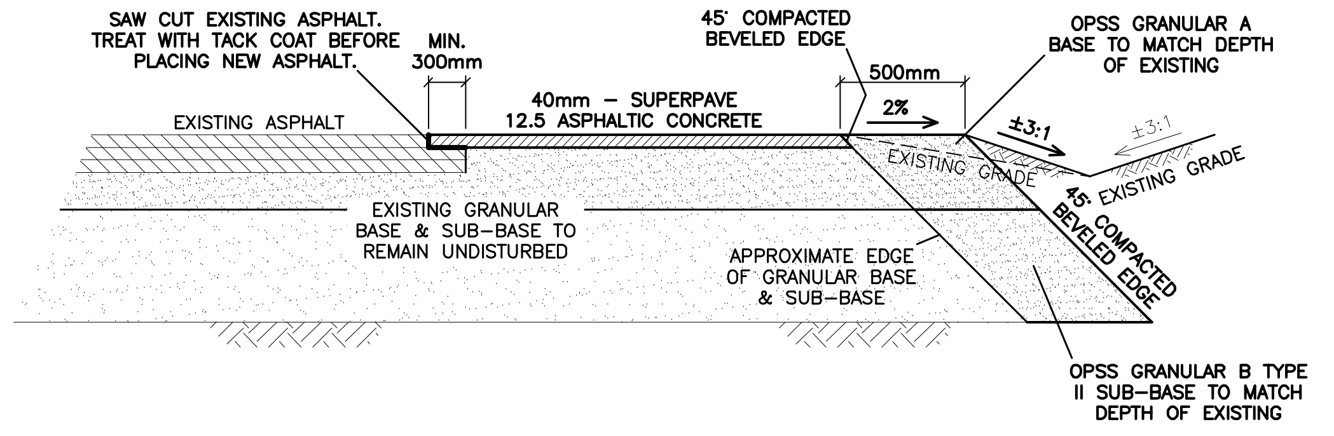
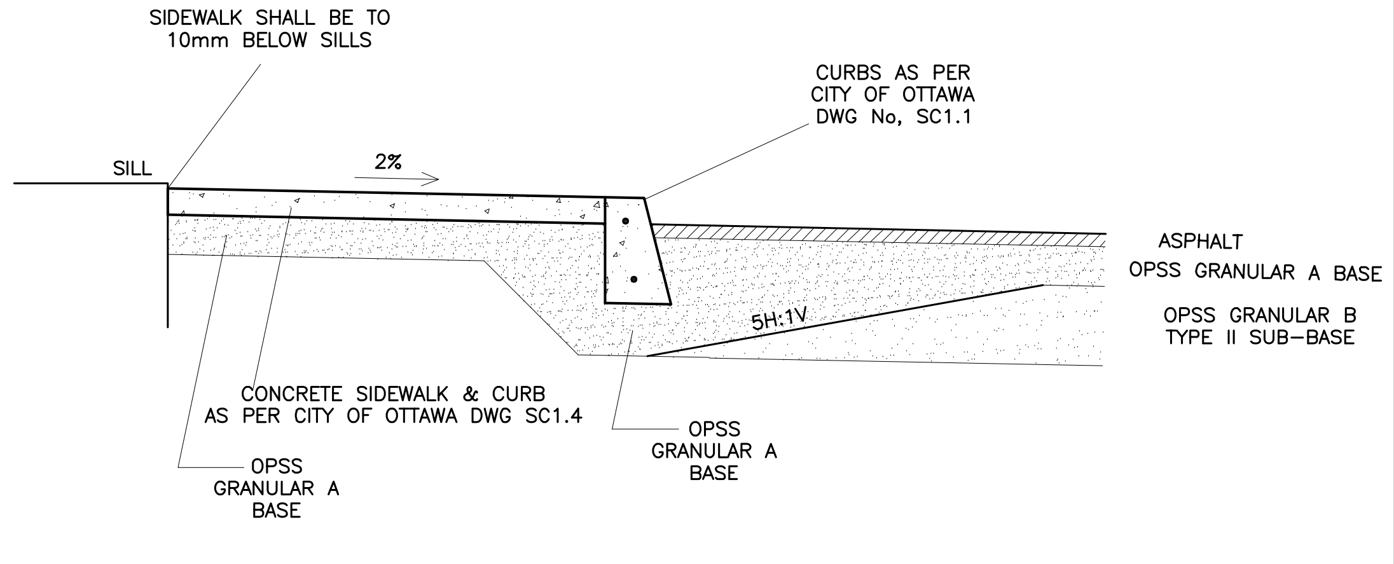
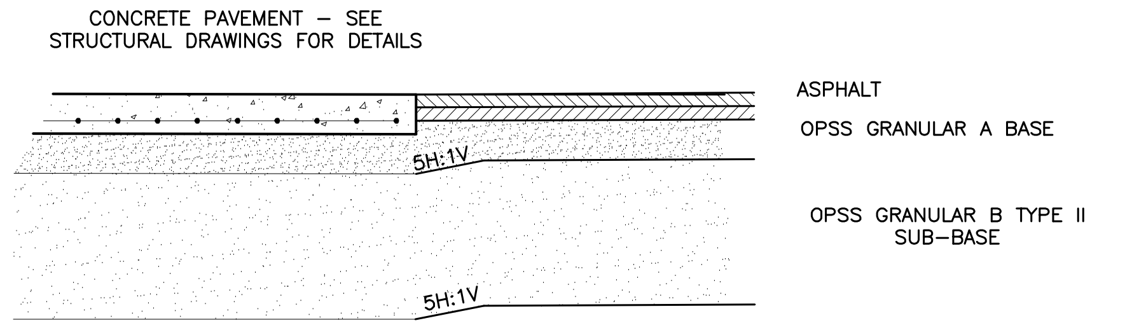


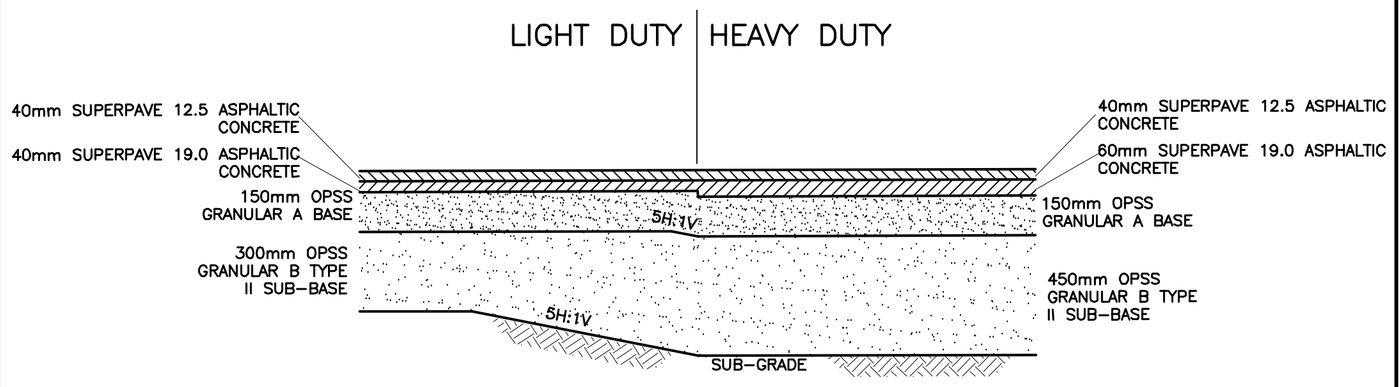
EXISTING ASPHALT / PAVED SHOULDER / GRANULAR SHOULDER
N.T.S



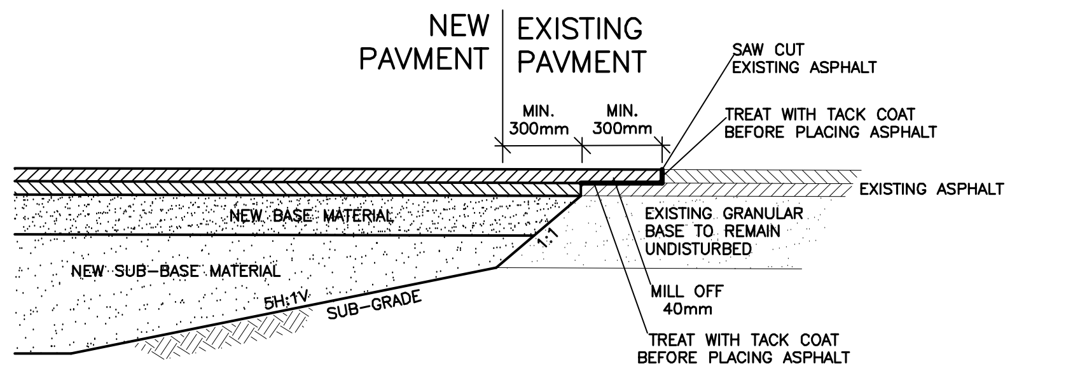
CONCRETE SIDEWALK / CURB / PAVEMENT SECTION
N.T.S.



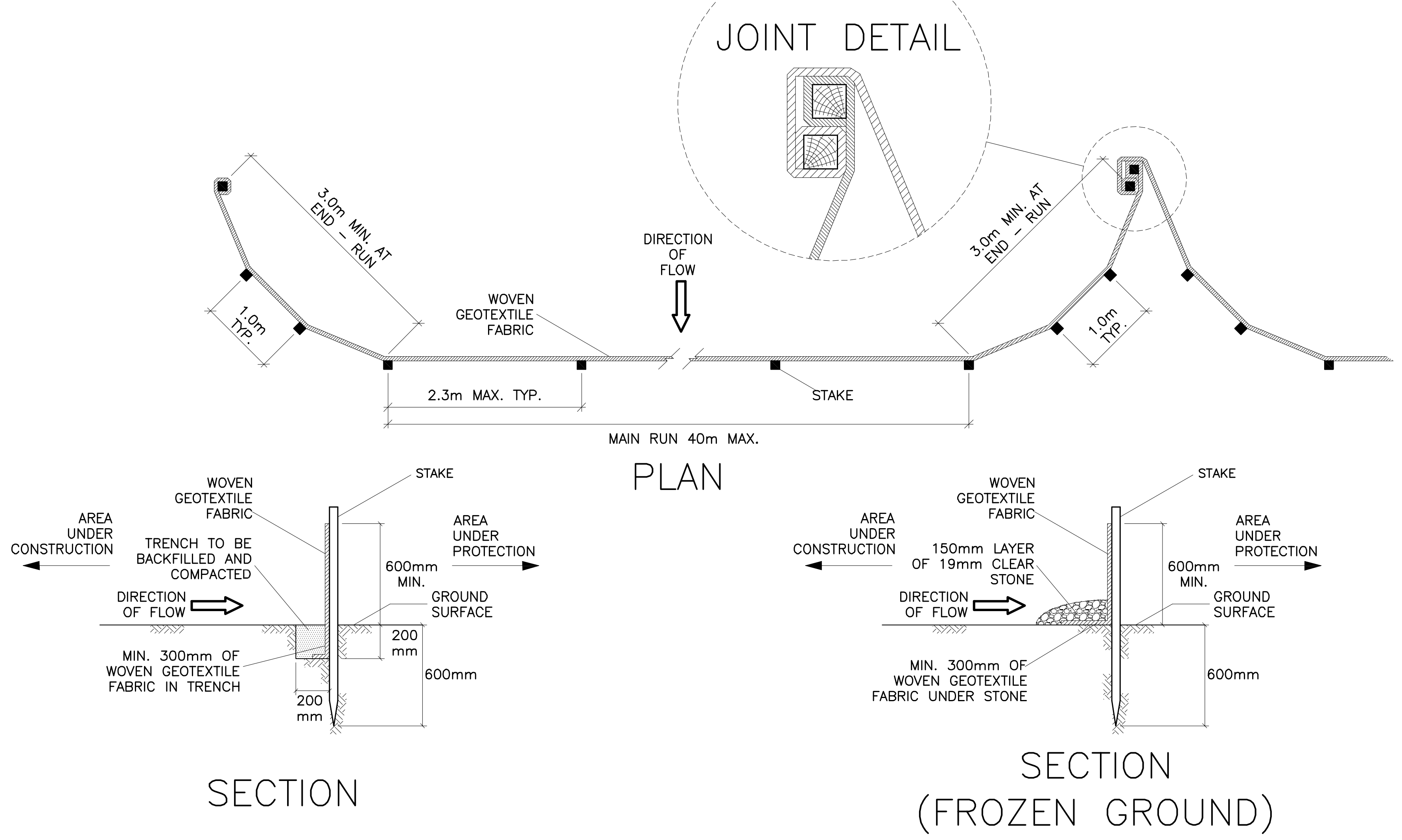
CONCRETE / ASPHALT PAVEMENT TRANSITION
N.T.S.



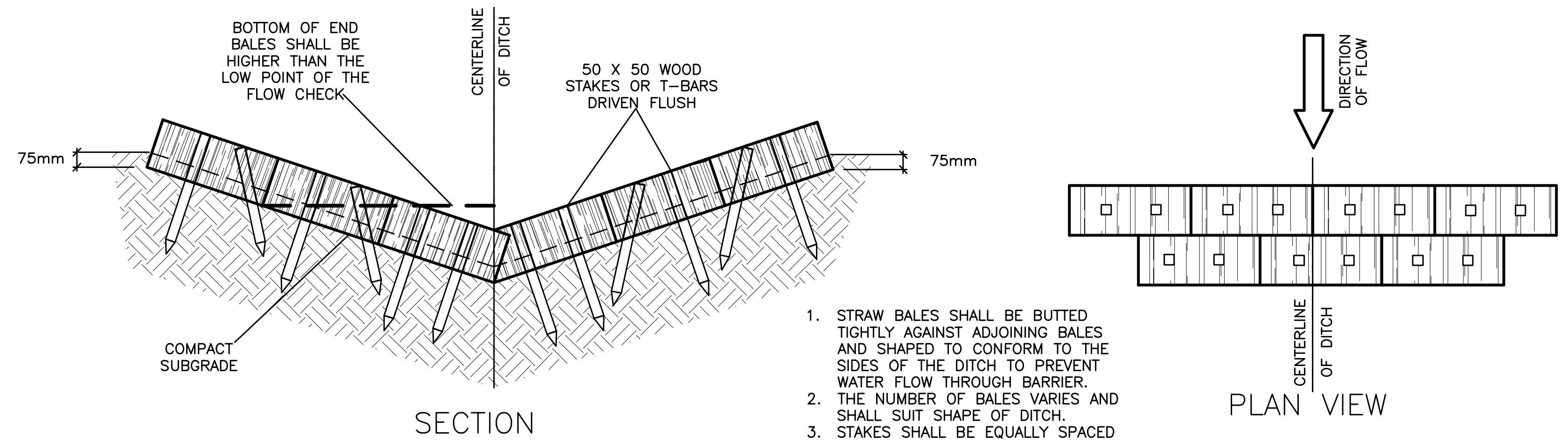
PAVEMENT STRUCTURE
N.T.S.



PAVEMENT TRANSITION AT ENTRANCE
N.T.S.

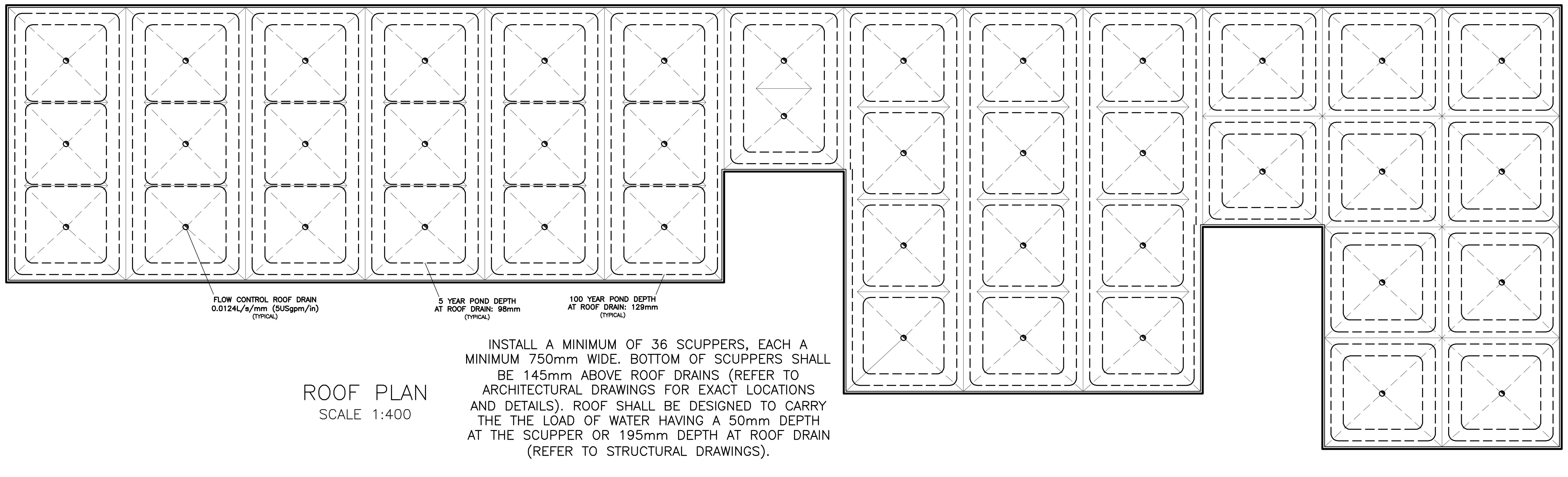


SILT FENCE BARRIER
AS PER OPSD 219.110
(MODIFIED FOR FROZEN GROUND)
N.T.S.



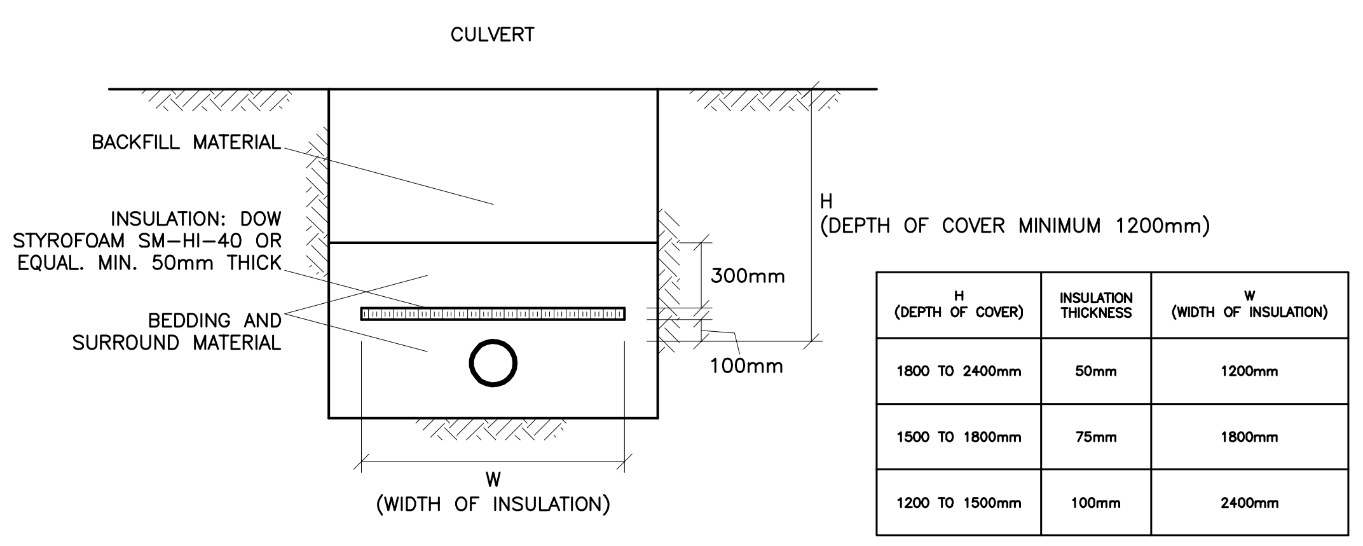
1. STRAW BALES SHALL BE BUTTED TIGHTLY AGAINST ADJOINING BALES AND SHAPED TO CONFORM TO THE SIDES OF THE DITCH TO PREVENT WATER FLOW THROUGH BARRIER.
2. THE NUMBER OF BALES VARIES AND SHALL SUIT SHAPE OF DITCH.
3. STAKES SHALL BE EQUALLY SPACED
4. BALE TIES SHALL NOT BE IN CONTACT WITH GROUND.

STRAW BALE FLOW
CHECK DAM
AS PER OPSD 219.180
N.T.S.



ROOF PLAN
SCALE 1:400

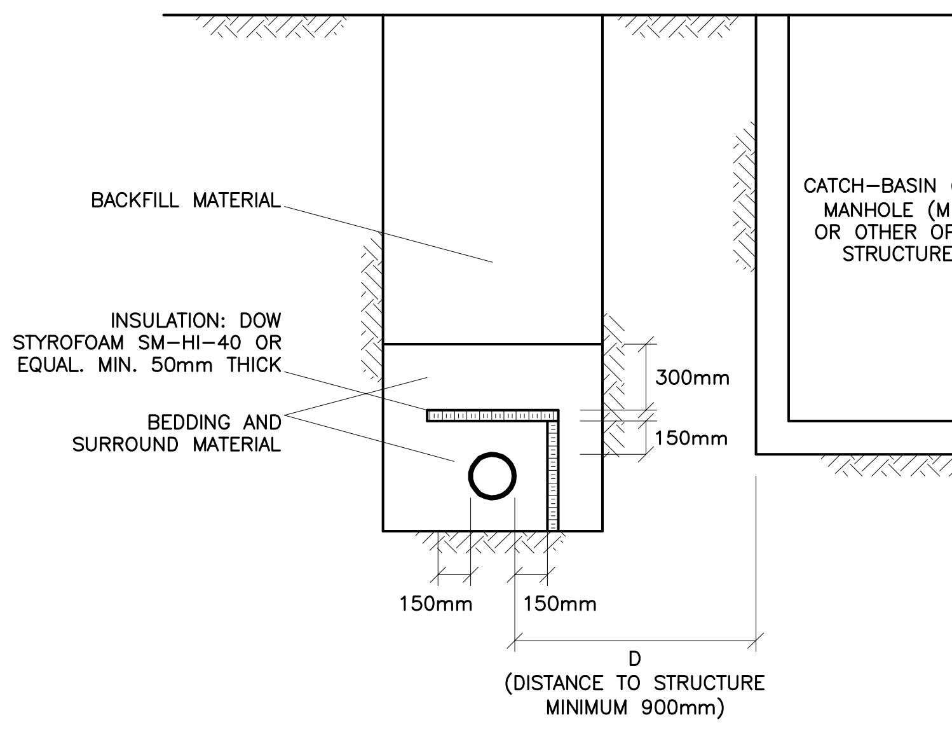
INSTALL A MINIMUM OF 36 SCUPPERS, EACH A MINIMUM 750mm WIDE. BOTTOM OF SCUPPERS SHALL BE 145mm ABOVE ROOF DRAINS (REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS AND DETAILS). ROOF SHALL BE DESIGNED TO CARRY THE THE LOAD OF WATER HAVING A 50mm DEPTH AT THE SCUPPER OR 195mm DEPTH AT ROOF DRAIN (REFER TO STRUCTURAL DRAWINGS).



H (DEPTH OF COVER)	INSULATION THICKNESS	W (WIDTH OF INSULATION)
1800 TO 2400mm	50mm	1200mm
1500 TO 1800mm	75mm	1800mm
1200 TO 1500mm	100mm	2400mm

INSULATE WATERMAIN AS INDICATED AND WHERE DEPTH OF COVER IS LESS THAN 2400mm. PROVIDE A MINIMUM 1200mm COVER
CENTER INSULATION OVER PIPE.
JOINTS BETWEEN SHEETS OF INSULATION SHALL BE STAGGERED.

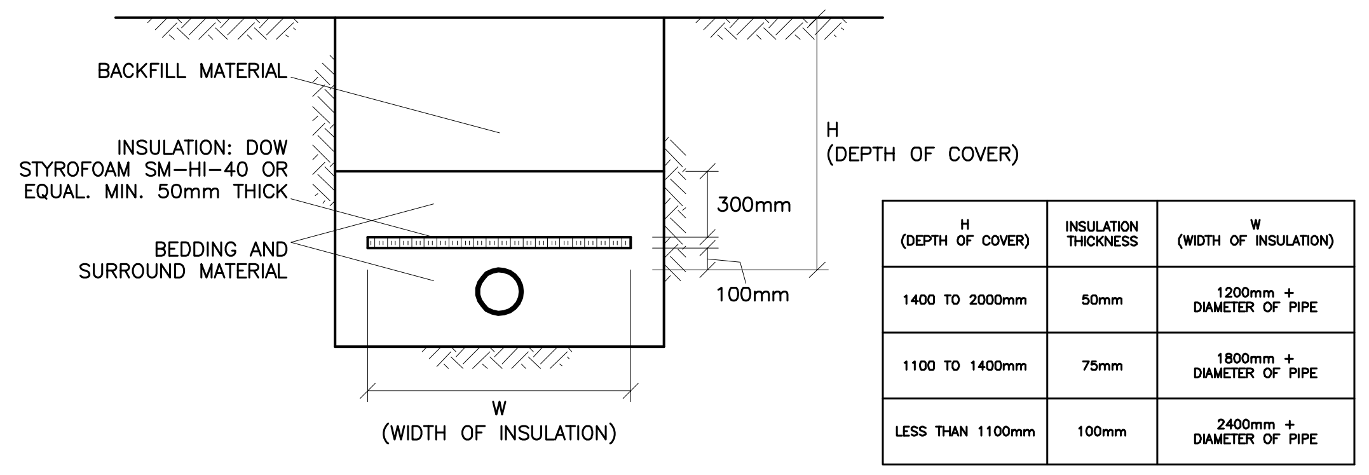
INSULATION OF WATERMAINS & WATER SERVICE CONNECTIONS CROSSING CULVERTS (& 450 STORM SEWER)
N.T.S.



D (DISTANCE TO OPEN STRUCTURE)	INSULATION THICKNESS
1800 TO 2400mm	50mm
1500 TO 1800mm	75mm
1200 TO 1500mm	100mm
900 TO 1200mm	125mm

INSULATE SEWER AS INDICATED.
CENTER INSULATION OVER PIPE.
JOINTS BETWEEN SHEETS OF INSULATION SHALL BE STAGGERED.

INSULATION OF WATERMAINS & WATER SERVICE CONNECTIONS AT OPEN STRUCTURES
AS PER CITY OF OTTAWA DRAWING NO. W23
N.T.S.

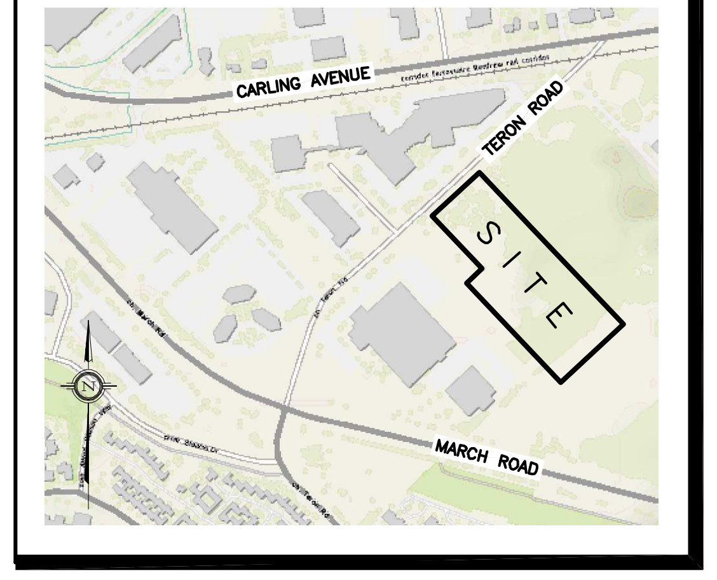


H (DEPTH OF COVER)	INSULATION THICKNESS	W (WIDTH OF INSULATION)
1400 TO 2000mm	50mm	1200mm + DIAMETER OF PIPE
1100 TO 1400mm	75mm	1800mm + DIAMETER OF PIPE
LESS THAN 1100mm	100mm	2400mm + DIAMETER OF PIPE

INSULATE SEWER AS INDICATED AND WHERE DEPTH OF COVER IS LESS THAN 2000mm.
CENTER INSULATION OVER PIPE.
JOINTS BETWEEN SHEETS OF INSULATION SHALL BE STAGGERED.

INSULATION OF SEWERS IN SHALLOW TRENCHES
N.T.S.

KEY PLAN



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OTTAWA, ONTARIO

Drawing Title
DETAILS

Engineer's Seal
D.B. GRAY
17016502
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Hor. Scale	
Vert. Scale	
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Drawing No.
C–3
of 4

1. GENERAL

1.1 USE BAR SCALE TO CONFIRM ACTUAL PLOT SCALE. EXISTING AND NEW ELEVATIONS AND INVERTS SHOWN ARE GEODETIC AND ARE IN METERS. ALL PIPE DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

1.2 UNLESS OTHERWISE STATED "ENGINEER" REFERS TO D. B. GRAY ENGINEERING INC.

1.3 EXISTING ELEVATIONS AND LOCATIONS, INVERTS AND SIZES OF EXISTING SERVICES & UTILITIES ARE NOT NECESSARILY SHOWN ON PLAN AND THOSE SHOWN ARE DERIVED FROM AVAILABLE INFORMATION AND MUST BE CONFIRMED ON SITE BEFORE COMMENCING CONSTRUCTION. REPORT ANY DIFFERENCES TO ENGINEER. UNDERGROUND LOCATES (INCLUDING ONTARIO ONE CALL: 1-800-400-2255) SHALL BE CONDUCTED PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION.

1.4 SITE BOUNDARIES AND EXISTING GRADES AND OTHER FEATURES DERIVED FROM TOPOGRAPHIC SURVEY PREPARED BY FAIRHALL MOFFATT & WOODLAND LIMITED JOB No. Z24800. EXISTING AND NEW GRADE ELEVATIONS AND INVERT ELEVATIONS ON THE THE SURVEY PLAN AND THESE DRAWINGS ARE IN METRES AND ARE GEODETIC AND ARE DERIVED FROM BEARINGS ARE GRID, DERIVED FROM NCC HORIZONTAL CONTROLMONUMENTS 019680013 (N 5022696.543, E 352904.084) AND 01970014 (N 5022197.569, E 352075.573) AND ARE REFERRED TO THE CENTRAL MERIDIAN 76° 30'W LONGITUDE, ZONE 9 OF THE 3° MTM ONTARIO COORDINATE SYSTEM (NAD 83). IT IS THE RESPONSIBILITY OF THE USER OF THE SURVEY PLAN AND THESE DRAWINGS TO VERIFY THAT THE JOB BENCHMARK HAS NOT BEEN ALTERED OR DISTURBED AND THAT ITS RELATIVE ELEVATION AND DESCRIPTION AGREE WITH THE INFORMATION SHOWN ON SURVEY PLAN AND THESE DRAWINGS.

1.5 REFER TO ARCHITECTURAL AND LANDSCAPE SITE PLANS FOR EXACT LOCATIONS OF BUILDINGS, PAVED AREAS, SIDEWALKS, PLANTERS ETC.

1.6 REFERENCE THE LATEST REVISION AND ALL ADDENDUMS OF THE GEOTECHNICAL INVESTIGATION BY GEMTEC PROJECT; 64742.02. SITE PREPARATION INCLUDING BUILDING SUB-GRADE PREPARATION AND PAVEMENT SUB-GRADE PREPARATION AND CONSTRUCTION OF THE PAVEMENT STRUCTURE AND EXCAVATION AND BACKFILLING, INCLUDING COMPACTION OF MATERIALS, SHALL CONFORM TO THE GEOTECHNICAL INVESTIGATION TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER.

1.7 DRAWINGS ARE TO BE READ IN CONJUNCTION WITH SERVICING BRIEF & STORM WATER MANAGEMENT REPORT No. 19057 PREPARED BY D. B. GRAY ENGINEERING INC.

1.8 REINSTATE ADJACENT PROPERTIES TO PRE-CONSTRUCTION CONDITIONS.

1.9 REINSTATE CITY PROPERTIES TO CITY STANDARDS AND TO CITY OF OTTAWA'S SATISFACTION.

1.10 ALL RELEVANT WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT CITY STANDARDS AND SPECIFICATIONS.

1.11 ONTARIO PROVINCIAL STANDARDS & SPECIFICATIONS WILL APPLY WHERE NO CITY STANDARDS ARE AVAILABLE.

1.12 ALL PROPOSED RETAINING WALLS SHALL BE SETBACK A MINIMUM 0.15m FROM PROPERTY LINE. ALL PROPOSED RETAINING WALLS GREATER THAN 1.0m IN HEIGHT SHALL BE DESIGN BY A PROFESSIONAL ENGINEER REGISTERED IN ONTARIO.

2. EROSION AND SEDIMENT CONTROL PLAN

2.1 THE EROSION AND SEDIMENT CONTROL PLAN IS A "LIVING DOCUMENT" AND SHALL BE REVISED IN THE EVENT THE SPECIFIED CONTROL MEASURES ARE NOT SUFFICIENT. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES TO PROVIDE PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATER COURSE DURING CONSTRUCTION ACTIVITIES. THIS INCLUDES LIMITING THE AMOUNT OF EXPOSED SOIL, USING SEDIMENT CAPTURE FILTER SOCK INSERTS IN CATCH BASINS AND MANHOLES AND INSTALLING SILT FENCES AND OTHER EFFECTIVE SEDIMENT TRAPS. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.

2.2 AT ANY MANHOLES OR CATCH BASINS THAT WILL RECEIVE DISCHARGE FROM DE-WATERING OPERATIONS AND ALL NEW CATCH BASINS AS THEY ARE INSTALLED: INSTALL SEDIMENT CAPTURE FILTER SOCK INSERTS (TERRAFIX GEOSYNTHETICS INC SILTSACK OR APPROVED EQUAL). INSPECT AT THE END OF EACH DAY AND AFTER EACH RAINFALL. REMOVE SEDIMENT AS RECOMMENDED BY THE MANUFACTURER. IMMEDIATELY REPAIR OR REPLACE ANY DAMAGED FILTER SOCK INSERTS. DO NOT REMOVE UNTIL CONSTRUCTION IS COMPLETE.

2.3 INSTALL A SILT FENCE BARRIER AROUND STOCKPILED SEDIMENT OR SOIL. PRIOR TO COMMENCEMENT OF CONSTRUCTION INSTALL A SILT FENCE BARRIER AS SHOWN ON PLANS. INSPECT ALL SILT FENCES AT THE END OF EACH DAY AND AFTER EACH RAINFALL. REMOVE SEDIMENT DEPOSITS WHEN THE LEVEL OF DEPOSITS REACHES ONE THIRD THE HEIGHT OF THE FENCE. IMMEDIATELY REPAIR OR REPLACE ANY DAMAGED SECTIONS OF FENCE. DO NOT REMOVE ANY SILT FENCES IN ANY PHASE UNTIL CONSTRUCTION IS COMPLETE.

2.4 PRIOR TO COMMENCEMENT OF CONSTRUCTION INSTALL STRAW BALE FLOW CHECK DAMS AS INDICATED ON DRAWINGS. INSPECT ALL STRAW BALE FLOW CHECK DAMS AT THE END OF EACH DAY AND AFTER EVERY RAINFALL. REMOVE SEDIMENT DEPOSITS WHEN THE LEVEL OF DEPOSITS REACHES ONE THIRD THE HEIGHT OF THE DAM. IMMEDIATELY REPAIR OR REPLACE ANY DAMAGED BALES. STRAW BALES SHALL BE EMBEDDED INTO SOIL A MINIMUM 150MM AND SHALL BE SECURELY ANCHORED BY TWO STAKES. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARDS THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER. DO NOT REMOVE ANY STRAW BALES CONSTRUCTION IS COMPLETE.

2.5 CONTROL AND LIMIT VEHICLE ACCESS TO AND AROUND THE CONSTRUCTION SITE TO MINIMIZE THE DISTURBANCE OF SOIL AND VEGETATION. PRIOR TO COMMENCEMENT OF CONSTRUCTION INSTALL AT ALL POINTS OF EGRESS TO PUBLIC ROADS GEOTEXTILE FABRIC MUD MATS (TERRAFIX GEOSYNTHETICS INC. OR APPROVED EQUAL). MUD MATS SHALL BE THE FULL WIDTH OF THE EGRESS POINT AND AT LEAST 20m IN LENGTH. MUD MATS SHALL BE WASHED AS REQUIRED TO PREVENT MATERIAL FROM BEING TRACKED ONTO THE PUBLIC ROAD. DO NOT REMOVE MUD MATS UNTIL CONSTRUCTION IS COMPLETE. IN ADDITION, IF REQUIRED TO PREVENT MATERIAL FROM BEING TRACKED ONTO THE PUBLIC ROAD, WASH VEHICLE TIRES AT THE EGRESS POINT.

2.6 ANY MATERIAL DEPOSITED ON PUBLIC ROAD SHALL BE REMOVED AT THE END OF EACH DAY BY SWEEPING AND SHOVELING OR VACUUMING AND DISPOSING SEDIMENT IN A CONTROLLED AREA. DO NOT SWEEP OR HOSE MATERIAL INTO ANY STORMWATER CONVEYANCE SYSTEM.

2.7 CONSTRUCTION IS CONSIDERED COMPLETE WHEN THE FOLLOWING CONDITIONS HAVE BEEN MET:

a. ALL STRUCTURES HAVE BEEN BUILT.

b. ALL HARD SURFACES HAVE BEEN CONSTRUCTED.

c. ALL PROPOSED GRASSED AREAS ARE EITHER SODDED OR HAVE A FULL COVERAGE OF WELL ESTABLISHED TURF AND HAVE HAD A MINIMUM OF ONE FULL GROWING SEASON (MAY 15TH TO SEPTEMBER 15TH).

d. THERE ARE NO AREAS OF EXPOSED EARTH.

e. ALL STOCKPILED MATERIALS HAVE BEEN REMOVED.

2.8 REMOVE EROSION AND SEDIMENT CONTROL MEASURES WHEN CONSTRUCTION IS COMPLETE.

3. GRADING & DRAINAGE

3.1 NEW GRADES TO MATCH EXISTING AT PROPERTY LINE. NO EXCESS DRAINAGE WILL BE DIRECTED TOWARDS THE ADJACENT PROPERTIES DURING AND AFTER CONSTRUCTION. THERE WILL BE NO ALTERATION TO EXISTING GRADE AND DRAINAGE PATTERNS ON PROPERTY LINE.

3.2 ALL AREAS SHALL BE GRADED TO ENSURE ADEQUATE DRAINAGE AWAY FROM BUILDINGS TO CATCH BASINS, SWALES, DITCHES AND OTHER APPROVED DISPOSAL AREAS. GRADING SHALL BE GRADUAL BETWEEN FINISHED SPOT ELEVATIONS SHOWN ON DRAWINGS TO PREVENT PONDING (OTHER THAN PONDING REQUIRED FOR STORMWATER MANAGEMENT).

3.3 CULVERTS SHALL BE HDPE TO CITY OF OTTAWA STANDARDS AND SPECIFICATIONS AND TO OPSS 1840 AND CSA B182.8 OR 182.6. MINIMUM 320 kPa STIFFNESS AT 5% DEFLECTION. JOINTS SHALL BE SOIL-TIGHT OR BETTER. BOSS 2000 OR APPROVED EQUAL.

3.4 RIP RAP: PLACE RIP-RAP 300mm THICK AS INDICATED. USE QUARRIED STONE 200mm TO 300mm IN DIAMETER. AREA TO BE RIP RAPPED SHALL BE EXCAVATED AND FINE GRADED TO A UNIFORM AND EVEN SURFACE TO PROVIDE ADEQUATE FOUNDATION. FILL AND THOROUGHLY COMPACT DEPRESSIONS. WHERE RIP RAP IS TO BE PLACED ON SLOPES, EXCAVATE TRENCH AT TOE OF SLOPE. PLACE GEOTEXTILE FABRIC ON PREPARED SURFACE. PLACE RIP RAP ON FABRIC CAREFULLY, TO AVOID PUNCTURING FABRIC. PLACE RIP RAP IN A SET AND STABLE MANNER. ROCK SHALL BE PLACED, STARTING AT THE LOWER END OF THE SLOPE. THE LARGEST ROCKS OBTAINABLE SHALL BE USED AND PLACED IN THE BOTTOM COURSES AND FOR USE AS HEADERS THROUGH SUBSEQUENT COURSES. THEY SHALL BE LAID CLOSELY AND SUCH THAT THEY WILL PROVIDE A REASONABLE SEMBLANCE OF COURSES. FILL VOIDS WITH ROCK SPALLS OR COBBLES. FINNISH SURFACE EVEN, FREE OF LARGE OPENINGS AND NEAT IN APPEARANCE.

3.5 GEOTEXTILE FABRIC: TO OPSS 1860. WOVEN SYNTHETIC FIBRE FABRIC SHALL BE USED IN SILT FENCE BARRIER. NON-WOVEN SYNTHETIC FIBRE FABRIC 1.75mm THICK, 200g/sq.m. SHALL BE USED FOR MATERIAL SEPARATION. GEOTEXTILE (FILTER) FABRIC SHALL BE FREE OF TEARS AND RESISTANT TO DETERIORATION BY ULTRA VIOLET AND HEAT EXPOSURE. PLACE GEOTEXTILE MATERIAL BY UNROLLING ONTO GRADED SURFACE, SMOOTH AND FREE OF TENSION STRESS, FOLDS, WRINKLES AND CREASES. PLACE GEOTEXTILE MATERIAL ON SLOPING SURFACES IN ONE CONTINUOUS LENGTH FROM TOE OF SLOPE TO UPPER EXTENT OF GEOTEXTILE. OVERLAP EACH SUCCESSIVE STRIP OF GEOTEXTILE 600mm OVER PREVIOUSLY LAID STRIP IN DIRECTION OF FLOW. ALTERNATIVELY THE FABRIC MAY BE LAPPED A MINIMUM OF 300mm AND PINNED TOGETHER. PROTECT INSTALLED GEOTEXTILE MATERIAL FROM DISPLACEMENT, DAMAGE OR DETERIORATION BEFORE, DURING AND AFTER PLACEMENT OF MATERIAL LAYERS AFTER INSTALLATION, COVER WITH OVERLYING LAYER WITHIN 4 HOURS OF PLACEMENT. DURING DELIVERY AND STORAGE, PROTECT GEOTEXTILES FROM DIRECT SUNLIGHT, ULTRAVIOLET RAYS, EXCESSIVE HEAT, MUD, DIRT, DUST, DEBRIS AND RODENTS. VEHICULAR TRAFFIC NOT PERMITTED DIRECTLY ON GEOTEXTILE. AVOID PUNCTURING GEOTEXTILE. REPLACE DAMAGED OR DETERIORATED GEOTEXTILE.

4. SITE SERVICES

4.1 CONNECTION TO WATERMAIN BY CITY OF OTTAWA FORCES, CONTRACTOR SHALL PROVIDE EXCAVATION, BACKFILL AND REINSTATEMENT.

4.2 WATER METER SHALL BE INSTALLED AS PER CITY OF OTTAWA DWG. No. W31.

4.3 ALL WATER SERVICE MATERIALS AND CONSTRUCTION METHODS TO CITY OF OTTAWA STANDARDS AND ONTARIO PROVINCIAL STANDARDS SPECIFICATIONS (OPSS & OPSD). WATERMAIN / WATER SERVICE MATERIALS SHALL BE PVC PRESSURE CLASS 150 DR18.

4.4 PROVIDE THRUST BLOCKS AS PER CITY OF OTTAWA DWG. No. W25.3 & W25.4 AT ALL VALVES, TEES, CAPS, BENDS, REDUCERS AND HYDRANTS OR OTHER FITTINGS WHERE CHANGES OCCUR IN PIPE DIAMETER OR DIRECTION. RESTRAINING AS PER AS PER CITY OF OTTAWA DWG. No 25.5 & 25.6.ALL CONNECTIONS, RESTRAINT RODS AND VALVE BOLTS TO BE STAINLESS STEEL. CATHODIC PROTECTION & ANODE INSTALLATION AS PER CITY OF OTTAWA DWG. No 40, 42, 44 & 47.

4.5 PROVIDE A MINIMUM 2.4 m COVER OVER WATER SERVICE CONNECTION AND WATERMAIN. WHERE THE MINIMUM COVER IS NOT POSSIBLE INSULATE AS PER CITY OF OTTAWA DWG. No. W22.

4.6 WHERE LESS THAN 2.4 m CLEARANCE FROM AN OPEN STRUCTURE (EG. MANHOLES & CATCH BASINS) PLACE INSULATION AROUND WATERMAIN AND WATER SERVICE CONNECTIONS AS PER CITY OF OTTAWA DWG. No. W23.

4.7 WATERMAIN INSTALLED PARALLEL TO A SEWER SHALL BE LAID WITH A MINIMUM 2.5m BARREL TO BARREL HORIZONTAL SEPARATION FROM SEWERS AND SEWER MANHOLES.

4.8 THE WATERMAIN AND WATER SERVICE CONNECTIONS SHALL CROSS ABOVE THE SEWER: PROVIDE A MINIMUM 250mm BARRELL TO BARRELL VERTICAL SEPARATION. IF IT IS NOT POSSIBLE FOR THE WATERMAIN TO CROSS ABOVE A SEWER THE WATERMAIN SHALL CROSS BELOW THE SEWER: PROVIDE A MINIMUM 500m BARREL TO BARREL VERTICAL SEPARATION AND ENSURE THAT THE WATER PIPE IS CENTERED AT THE POINT OF CROSSING SO JOINTS ARE AS FAR AS POSSIBLE FROM THE SEWER.

4.9 LOCATE FIRE HYDRANT AS PER CITY OF OTTAWA DWG. No. W18. INSTALL FIRE HYDRANT AS PER CITY OF OTTAWA DWG. No. W19. LOCATE FIRE HYDRANT 2.5m FROM FACE OF CURB. LOCATE FIRE HYDRANT A MINIMUM 0.6m FROM EDGE OF SIDEWALK. LOCATE FIRE HYDRANT LEAD 2.0m FROM OUTSIDE EDGE OF CATCH BASINS AND MANHOLES. THERE SHALL BE NO VEGETATION OR OTHER OBSTRUCTIONS WITHIN 1.5m OF FIRE HYDRANT. THE FIRE HYDRANT SHALL BE RED WITH WHITE BONNETS AND CAPS TO CITY STANDARDS. AT THE END OF CONSTRUCTION PERFORM A FIRE FLOW TEST AND SUBMIT REPORT TO THE ENGINEER AND COLOUR CODE THE BONNETS AND CAPS AS PER CITY OF OTTAWA AND NFPA STANDARDS.

4.10 SEWERS SHALL HAVE A MINIMUM 2.0m OF COVER OR SHALL BE INSULATED AS PER DETAIL.

INSTALL CLEANOUTS ON THE STORM BUILDING DRAIN AND SANITARY BUILDING DRAIN AS CLOSE AS PRACTICAL TO THE WHERE THE SANITARY AND STORM DRAINS LEAVE THE BUILDING.

4.11 CONNECT PROPOSED SANITARY SEWER SERVICE CONNECTION TO EXISTING MUNICIPAL SANITARY SEWER AS PER CITY OF OTTAWA DWG No. S11.1.

4.12 ALL SEWER MATERIALS AND CONSTRUCTION METHODS TO CITY OF OTTAWA STANDARDS AND ONTARIO PROVINCIAL STANDARDS SPECIFICATIONS (OPSS & OPSD). SEWER MATERIAL SHALL BE PVC OR REINFORCED CONCRETE. PVC SEWERS SHALL BE SDR-35 (SDR-28 FOR DIAMETERS 150mm OR LESS) AND SHALL CONFORM TO CSA B182.2 AND SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS. REINFORCED CONCRETE SEWERS SHALL CONFORM TO CSA 257.2 CL 65-D WITH RUBBER GASKETS TO CSA A-257.3.

4.13 MANHOLES & CATCH BASINS:

A. PRECAST MANHOLE UNITS: TO OPSS 1351 AND OPSD 701.010 WITH BASE SLAB OR MONOLITHIC BASE. TOP SECTIONS ECCENTRIC CONE OR FLAT LAB TOP TYPE WITH OPENING OFFSET FOR VERTICAL LADDER INSTALLATION.

B. MANHOLE STEPS: TO OPSD 405.01

C. ADJUSTING RINGS: TO ASTM C 478M.

ALUMINUM SURFACES IN CONTACT WITH OR CAST INTO CONCRETE SHALL HAVE POLYETHYLENE ANCHOR INSULATING SLEEVES.

D. PRECAST CATCH BASIN SECTIONS: TO OPSS 1351.

E. JOINTS: SHALL BE MADE WATERTIGHT USING BUTYL BASED, FLEXIBLE WATERSTOP/JOINT SEALANT MATERIAL.

F. SANITARY SEWERS: BENCH TO PROVIDE A SMOOTH U-SHAPED CHANNEL PER OPSD 701.021. SLOPE INVERT TO ESTABLISH SEWER GRADE.

G. STORM SEWERS: MANHOLES SHALL HAVE A 300mm SUMP AND CATCH BASINS AND DITCH INLETS SHALL HAVE A 600mm SUMP.

H. FRAMES, GRATES AND COVERS TO CITY OF OTTAWA DRAWINGS OR OPSD 401.010

GRATES AND COVERS TO BEAR EVENLY ON FRAMES. PAINTED WITH ONE SHOP COAT OF ASPHALT OR TAR BASE BLACK, ALL JOINTS AND CREVICES SHALL BE THOROUGHLY COATED.

I. GRANULAR BEDDING AND BACKFILL: OPSS GRANULAR A. RE-CYLCLED GRANULAR MATERIALS ARE NOT PERMITTED.

4.14 PROVIDE MINIMUM 3m LONG, 150mm DIAMETER, PERFORATED SUB-DRAINS C/W FILTER FABRIC SOCK & END PLUG AT ALL CATCH BASINS AND CATCH BASIN MANHOLES AS INDICATED ON PLANS.

4.15 ROOF DRAINS SHALL BE FLOW CONTROL TYPE EACH INSTALLED WITH A WEIR WITH A PARABOLIC SLOT, EACH SLOT SHALL RELEASE 5 USgpm/inch: WATTS ROOF DRAIN WITH WATTS ACCUTROL WEIR RD-100-A1 OR EQUAL.

4.16 THE INLET CONTROL DEVICE (ICD) LOCATED IN THE INLET OF THE CULVERT AT THE STORMWATER DETENTION AREA OSHALL BE PLUG STYLE WITH A ROUND ORIFICE (WITH THE ORIFICE LOCATED AT THE BOTTOM OF THE PLUG) MANUFACTURED BY PEDRO PLASTICS (OR APPROVED EQUAL BY IPEX) AND SIZED BY THE MANUFACTURER FOR A DISCHARGE RATE AS INDICATED ON PLAN. PRIOR TO INSTALLATION SUBMIT SHOP DRAWING TO ENGINEER FOR APPROVAL.

5. CONSTRUCTION:

5.1 PRIOR TO COMMENCING WORK:

A. OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE AUTHORITIES.

B. SIZE, DEPTH AND LOCATION OF EXISTING SERVICES, UTILITIES AND STRUCTURES AS INDICATED ON THE DRAWINGS ARE FOR GUIDANCE ONLY. ALL EXISTING SERVICES, UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE DRAWINGS. COMPLETENESS AND ACCURACY ARE NOT GUARANTEED. NOTIFY ALL APPLICABLE OWNERS, UTILITY COMPANIES AND AUTHORITIES HAVING JURISDICTION OF PROPOSED WORK AND LOCATE AND CLEARLY IDENTIFY ALL EXISTING SERVICES, UTILITIES AND STRUCTURES ON AND ADJACENT TO THE SITE. UNDERGROUND LOCATES (INCLUDING ONTARIO ONE CALL: 1-800-400-2255) SHALL BE CONDUCTED PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION. CONFIRM LOCATIONS OF BURIED SERVICES AND UTILITIES BY CAREFUL TEST EXCAVATIONS AND REPORT ANY DIFFERENCES TO THE ENGINEER.

C. EXISTING GRADE ELEVATIONS INDICATED ON THE DRAWINGS ARE FOR GUIDANCE ONLY. COMPLETENESS AND ACCURACY ARE NOT GUARANTEED. CONFIRM EXISTING GRADE ELEVATIONS AND REPORT ANY DIFFERENCES TO THE ENGINEER.

D. COORDINATE AND SCHEDULE WORK WITH THE AUTHORITIES AND OTHER TRADES.

E. SCHEDULE WORK TO PROVIDE THE MINIMUM DISRUPTION TO SERVICES.

5.2 MAINTAIN AND PROTECT FROM DAMAGE, SERVICES, UTILITIES AND STRUCTURES ENCOUNTERED.

5.3 PROTECT EXISTING BUILDINGS, TREES AND OTHER PLANTS, LAWNS, FENCING, SERVICE POLES, WIRES, PAVEMENT, SURVEY BENCH MARKS AND MONUMENTS AND OTHER SURFACE FEATURES FROM DAMAGE WHILE WORK IS IN PROGRESS. DO NOT DISTURB SOIL WITHIN BRANCH SPREAD OF TREES OR SHRUBS THAT ARE TO REMAIN.

5.4 PROVIDE TRAFFIC CONTROL AND SAFETY MEASURES INCLUDING ANY NECESSARY PERSONNEL AND THE SUPPLY, INSTALLATION, REMOVAL AND REPLACEMENT OF ALL NECESSARY SIGNAGE AND BARRIERS, AS REQUIRED BY THE AUTHORITIES. IF APPLICABLE, PROVIDE TRAFFIC MANAGEMENT PLAN AS PER CITY OF OTTAWA REQUIREMENTS.

5.6 REMOVE OBSTRUCTIONS, ICE AND SNOW, FROM SURFACES TO BE EXCAVATED.

5.7 CUT PAVEMENT AND / OR SIDEWALK NEATLY ALONG LIMITS OF PROPOSED EXCAVATION IN ORDER THAT SURFACE MAY BREAK EVENLY AND CLEANLY.

5.8 COORDINATE AND PAY FOR GEOTECHNICAL INSPECTIONS AND COMPACTION TESTS OF SUB-GRADE, PIPE BEDDING AND EACH LAYER OF SURROUND MATERIAL, BACKFILL, SUB-BASE, BASE AND ASPHALT TO THE SATISFACTION OF THE GEOTECHNICAL CONSULTANT AND ENGINEER. SUBMIT GEOTECHNICAL INSPECTIONS AND COMPACTION REPORTS TO ENGINEER.

5.9 CUT AND FILL AS NECESSARY TO ACHIEVE THE REQUIRED SUB-GRADE ELEVATION. DISPOSE OF SURPLUS AND UNSUITABLE EXCAVATED MATERIAL OFF SITE. FILL MATERIAL AND THE PLACEMENT AND COMPACTION OF THE FILL MATERIAL AS PER THE GEOTECHNICAL REPORT AND TO THE SATISFACTION OF THE GEOTECHNICAL CONSULTANT. STOCKPILE GRANULAR AND FILL MATERIALS IN MANNER TO PREVENT SEGREGATION AND PROTECT FROM CONTAMINATION.

5.10 EXCAVATION, TRENCHING & BACKFILL:

A. SHORE AND BRACE EXCAVATIONS, PROTECT SLOPES AND BANKS AND PERFORM ALL WORK IN ACCORDANCE WITH ONTARIO REGULATION $\frac{213}{91}$ UNDER THE ONTARIO OCCUPATIONAL HEALTH AND SAFETY ACT AND OTHER AUTHORITIES HAVING JURISDICTION.

B. KEEP EXCAVATIONS FREE OF WATER WHILE WORK IS IN PROGRESS. PROTECT OPEN EXCAVATIONS AGAINST FLOODING AND DAMAGE DUE TO SURFACE RUN-OFF.

C. EXCAVATION MUST NOT INTERFERE WITH BEARING CAPACITY OF ADJACENT FOUNDATIONS.

D. DO NOT OBSTRUCT FLOW OF SURFACE DRAINAGE OR NATURAL WATERCOURSES.

E. EXCAVATE TO LINES, GRADES, ELEVATIONS AND DIMENSIONS AS INDICATED.

F. EARTH BOTTOMS OF EXCAVATIONS TO BE UNDISTURBED SOIL, LEVEL, FREE FROM LOOSE, SOFT OR ORGANIC MATTER.

G. ALL STRUCTURES WITHIN PAVED AREAS SHALL HAVE 4:1 FROST TAPERS FROM FROST LINE TO SUB-GRADE.

H. CORRECT OVER-EXCAVATION WITH GRANULAR A COMPACTED TO NOT LESS THAN 95% OF CORRECTED MAXIMUM DRY DENSITY.

I. SUB-GRADE AND AREAS TO BE BACKFILLED TO BE FREE FROM DEBRIS, SNOW, ICE, WATER AND FROZEN GROUND.

J. DO NOT USE BACKFILL MATERIAL WHICH IS FROZEN OR CONTAINS ICE, SNOW OR DEBRIS.

K. BEDDING AND SURROUND MATERIAL FOR SEWERS SHALL BE OPSS GRANULAR A. SURROUND MATERIAL FOR CONCRETE PIPE MAY BE CLEAN WELL GRADED SAND. BEDDING AND SURROUND MATERIAL FOR WATERMAIN AND WATER SERVICE CONNECTIONS SHALL BE OPSS GRANULAR A OR OPSS GRANULAR M. RE-CYLCLED GRANULAR MATERIALS ARE NOT PERMITTED.

L. DO NOT USE BEDDING, SURROUND OR BACKFILL MATERIAL WHICH IS FROZEN OR CONTAINS ICE, SNOW OR DEBRIS.

M. PIPE BEDDING SHALL BE 150mm THICK. SHAPE BED TRUE TO GRADE AND TO PROVIDE CONTINUOUS, UNIFORM BEARING SURFACE FOR PIPE.

N. PLACE SURROUND MATERIAL AROUND PIPES TO FULL WIDTH OF TRENCH AND TO 300mm ABOVE PIPES.

O. PLACE BEDDING AND SURROUND MATERIAL IN UNIFORM LAYERS NOT EXCEEDING 150mm COMPACTED THICKNESS. PLACE FILL AND BACKFILL MATERIAL IN UNIFORM LAYERS NOT EXCEEDING 300mm COMPACTED THICKNESS.

P. COMPACT EACH LAYER TO 95% OF CORRECTED DRY DENSITY BEFORE PLACING SUCCEEDING LAYER.

Q. DO NOT BACKFILL AROUND OR OVER CAST-IN-PLACE CONCRETE WITHIN 24 HOURS AFTER PLACING OF CONCRETE.

R BACKFILL MATERIALS WITHIN 1.8m OF PROPOSED GRADE SHALL MATCH THE MATERIALS EXPOSED ON THE TRENCH WALLS. BACKFILL BELOW 1.8m OF THE PROPOSED CAN CONSIST OF EITHER ACCEPTABLE NATIVE MATERIAL; ROCK; OR IMPORTED GRANULAR MATERIAL CONFORMING TO OPSS GRANULAR B TYPE I OR II. ANY ORGANIC SOILS OR TOPSOIL, IF ENCOUNTERED, SHALL BE REMOVED FROM THE EXCAVATION. IF ROCK IS USED AS BACKFILL IT SHALL BE WELL SHATTERED AND GRADED AND 200mm OR SMALLER IN DIAMETER. TO PREVENT INGRESS OF FINE MATERIAL INTO VOIDS IN THE ROCK FILL, THE UPPER SURFACE OF THE ROCK FILL SHALL BE COVERED WITH 150mm LAYER OF COMPACTED, WELL GRADED CRUSHED STONE PLACED ON GEOTEXTILE FABRIC.

5.11 PIPES:

A. HANDLE PIPE USING METHODS APPROVED BY MANUFACTURER.

B. LAY, CUT AND JOIN PIPES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

C. USE ONLY FITTINGS AS RECOMMENDED BY PIPE MANUFACTURER.

D. LAY PIPES ON PREPARED BED, TRUE TO LINE AND GRADE AND ENSURE BARREL OF EACH PIPE IS IN CONTACT WITH SHAPED BED THROUGHOUT ITS FULL LENGTH, FREE OF SAGS OR HIGH POINTS.

E. DO NOT EXCEED MAXIMUM JOINT DEFLECTION RECOMMENDED BY PIPE MANUFACTURER.

F. WHENEVER WORK IS SUSPENDED, INSTALL REMOVABLE WATERTIGHT BULKHEAD AT OPEN END OF LAST PIPE LAID TO PREVENT ENTRY OF FOREIGN MATERIALS.

G. WHEN STOPPAGE OF WORK OCCURS, BLOCK PIPES TO PREVENT CREEP DURING DOWN TIME. MAKE WATERTIGHT CONNECTIONS TO MANHOLES.

H. JOINTS SHALL BE STRUCTURALLY SOUND AND WATERTIGHT.

I. REPAIR OR REPLACE PIPE, PIPE JOINT OR BEDDING FOUND DEFECTIVE.

5.12 SEWERS AND SEWER SERVICES:

A. CONSTRUCT SEWER TRENCHES AS PER CITY DWG S6 & S7.

B. RIGID STRUCTURES, INSTALL PIPE JOINTS NOT MORE THAN 1.2M FROM SIDE OF STRUCTURE.

C. MAINTAIN EXISTING SEWAGE FLOWS DURING CONSTRUCTION.

D. PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. SPECIFICALLY, THE LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410. REPAIR AND RETEST SEWER LINE AS REQUIRED. REPAIR VISIBLE LEAKS REGARDLESS OF TEST RESULTS.

E. CONDUCT TWO CCTV INSPECTIONS OF SEWERS. FIRST INSPECTION AFTER COMPLETION OF CONSTRUCTION. SECOND INSPECTION IMMEDIATELY PRIOR TO END OF WARRANTY PERIOD. A PAN AND TILT CAMERA SHALL BE USED. REPAIR SEWER LINE AS REQUIRED. SUBMIT REPORTS AND DVDS TO ENGINEER.

F. CONDUCT DYE TEST OF SANITARY SEWERS AND COORDINATE WITH ENGINEER. DYE TEST SHALL BE WITNESSED BY ENGINEER.

5.13 WATERMAIN AND WATER SERVICE:

A. INSTALL AND TEST TRACER WIRE ON THE WATER SERVICE CONNECTION AS PER 4.3.12 OF THE CITY OF OTTAWA WATER DISTRIBUTION DESIGN GUIDELINES AND DRAWING W36.

B. PRESSURE TESTING AS PER AWWA C-605-5 AND CITY OF OTTAWA DESIGN GUIDELINES – WATER DISTRIBUTION SECTION 4.6.13.

C. CHLORINATION AS PER AWWA C-651-05 AND CITY OF OTTAWA DESIGN GUIDELINES – WATER DISTRIBUTION SECTION 4.6.13 & CITY DWG. W46.

5.14 MANHOLES & CATCH BASINS:

A. JOINTS: SHALL BE MADE WATERTIGHT.

B. SET PRECAST CONCRETE BASE ON 150mm MINIMUM OF GRANULAR BEDDING COMPACTED TO 100% CORRECTED MAXIMUM DRY DENSITY.

C. MAKE EACH JOINT WATERTIGHT WITH RUBBER RING GASKETS.

D. PLACE GRANULAR BACKFILL MATERIALS IN A UNIFORM LAYERS TO COMPACTED THICKNESS OF 150mm, COMPACT TO 95% CORRECTED MAXIMUM DRY DENSITY.

E. PLACE FRAME AND COVER ON TOP SECTION TO ELEVATION AS INDICATED. IF ADJUSTMENT REQUIRED USE CONCRETE RINGS TO A MAXIMUM OF 300mm.

F. CLEAN UNITS OF DEBRIS, FOREIGN AND SURPLUS MATERIALS. REMOVE FINS AND SHARP PROJECTIONS. PREVENT DEBRIS FROM ENTERING SYSTEM.

G. PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. SPECIFICALLY, THE LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 407.

5.15 MAINTAIN RECORD DRAWINGS AND RECORD ACCURATELY DEVIATIONS FROM THE ORIGINAL CONTRACT DOCUMENTS CAUSED BY SITE CONDITIONS AND CHANGES MADE BY CHANGE ORDER OR ADDITIONAL INSTRUCTIONS. UPDATE DAILY AND MAKE AVAILABLE ON-SITE FOR REVIEW THROUGHOUT THE CONSTRUCTION PERIOD. MARK CHANGES IN RED INK. RECORD DRAWINGS SHALL INCLUDE BUT NOT NECESSARILY LIMITED TO CHANGES OF DIMENSION AND DETAIL; CHANGES TO GRADE ELEVATIONS; AND HORIZONTAL AND VERTICAL LOCATIONS OF UNDERGROUND SERVICES, UTILITIES AND APPURTENANCES REFERENCED TO A PERMANENT SURFACE STRUCTURE. SUBMIT DRAWINGS TO ENGINEER AT THE END OF CONSTRUCTION.

5.16 CONCRETE CURBS TO CITY OF OTTAWA DRAWING No. SC1.1. CONCRETE SIDEWALK TO CITY OF OTTAWA DRAWING No. SC4.

5.17 REINSTATE PAVEMENTS AND SIDEWALKS DISTURBED BY EXCAVATION TO THICKNESS, STRUCTURE AND ELEVATION WHICH EXISTED BEFORE EXCAVATION.

5.18 CLEAN AND REINSTATE AREAS AFFECTED BY THE WORK.

6. PAVEMENT

6.1 PAVEMENT STRUCTURE:

LIGHT DUTY PAVEMENT:

40mm	SUPERPAVE 12.5 ASPHALTIC CONCRETE
40mm	SUPERPAVE 19.0 ASPHALTIC CONCRETE
150mm	OPSS GRANULAR A BASE
300mm	OPSS GRANULAR B TYPE II SUB-BASE

HEAVY DUTY PAVEMENT:

40mm	SUPERPAVE 12.5 ASPHALTIC CONCRETE
60mm	SUPERPAVE 19.0 ASPHALTIC CONCRETE
150mm	OPSS GRANULAR A BASE
450mm	OPSS GRANULAR B TYPE II SUB-BASE

RE-CYLCLED GRANULAR MATERIALS ARE NOT PERMITTED.

ASPHALTIC CONCRETE SHALL BE PERFORMANCE GRADE PG58-34.

HOT MIX ASPHALT MATERIALS SHALL BE ACCORDING TO OPSS 1150 OR 1151.

PAVEMENT SUB-GRADE PREPARATION AND CONSTRUCTION OF THE PAVEMENT STRUCTURE SHALL CONFORM TO THE GEOTECHNICAL INVESTIGATION TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER.

6.3 ANY EXISTING ASPHALT TO BE REMOVED SHALL BE HAULED TO A FACILITY APPROVED FOR ACCEPTING SUCH MATERIALS. REMOVE ALL MATERIALS TO THE SUB-GRADE LEVEL. REMOVE ORGANIC OR UNSUITABLE MATERIAL FROM SUB-GRADE WHERE ENCOUNTERED TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER. SUB-GRADE TO BE FREE FROM DEBRIS, SNOW, ICE, WATER AND FROZEN GROUND. COMPACT SUB-GRADE TO 95%.

6.4 CONSTRUCT GRANULAR BASE AND SUB-BASE TO DEPTH AND GRADE IN AREAS INDICATED.CONSTRUCT A 5H:1V FROST TAPER IN SUB-GRADE SURFACE AS A TRANSITION BETWEEN DIFFERING PAVEMENT STRUCTURES AND BETWEEN PAVEMENT AND CURBS AND SIDEWALKS.

6.5 ENSURE NO FROZEN MATERIAL IS PLACED. PLACE MATERIAL ONLY ON CLEAN UNFROZEN SURFACE, FREE FROM SNOW OR ICE.

6.6 PLACE MATERIAL TO FULL WIDTH IN UNIFORM LAYERS NOT EXCEEDING 300mm COMPACTED THICKNESS. SHAPE EACH LAYER TO SMOOTH CONTOUR AND COMPACT TO SPECIFIED DENSITY BEFORE SUCCEEDING LAYER IS PLACED.

6.7 COMPACT SUB-BASE MATERIAL TO DENSITY OF NOT LESS THAN 98% CORRECTED MAXIMUM DRY DENSITY. FILL OVER-EXCAVATED SUB-GRADE WITH SUB-BASE MATERIAL, COMPACT TO 98%. COMPACT BASE MATERIAL TO DENSITY NOT LESS THAN 100% CORRECTED MAXIMUM DRY DENSITY.

6.8 IN AREAS NOT ACCESSIBLE TO ROLLING EQUIPMENT, COMPACT TO SPECIFIED DENSITY WITH MECHANICAL TAMPERS.

6.9 REPLACE PAVEMENT DISTURBED BY CONSTRUCTION AND REPLACE WITH PAVEMENT STRUCTURE ABOVE.

6.10 WHERE NEW ASPHALT COMES IN CONTACT WITH EXISTING PAVEMENT: SAWCUT EXISTING ASPHALT LAYER TO CREATE A CLEAN STRAIGHT EDGE AND CONSTRUCT AS PER DETAIL. TACK COAT SHALL BE APPLIED TO ASPHALT SURFACES AT WHICH JOINTS ARE TO BE MADE INCLUDING EXISTING PAVEMENT SURFACES THAT HAVE BEEN CUT, GROUND OR MILLED. TACK COAT THE SURFACE OF ALL BINDER COURSES AND BUTTING CONCRETE SURFACES. SURFACES TO BE TACK COATED SHALL BE FREE OF STANDING WATER AND CONTAMINATION, SUCH AS MUD, LOOSE AGGREGATE OR DEBRIS AND SHALL BE DRY AND CLEAN WHEN THE TACK COAT IS APPLIED. TACK COAT SHALL BE PLACED SUFFICIENTLY AHEAD OF THE PAVING OPERATION TO ALLOW FOR CURING. PAVING AND CONSTRUCTION EQUIPMENT SHALL NOT BE PERMITTED ONTO THE TACK COAT UNTIL IT HAS SET. TACK COAT MATERIAL SHALL CONSIST OF SS-1 EMULSIFIED ASPHALT DILUTED WITH AN EQUAL VOLUME OF WATER. THE UNDILUTED MATERIAL SHALL BE ACCORDING TO OPSS 1103.

6.11 SHAPE BASE TO SMOOTH CONTOUR AND COMPACT TO NOT LESS THAN 100% CORRECTED MAXIMUM DRY DENSITY BEFORE BEGINNING PAVING OPERATIONS.

6.12 APPLY ASPHALTIC CONCRETE ONLY WHEN BASE OR PREVIOUS COURSE IS DRY AND AIR TEMPERATURE IS ABOVE 5 DEG.C

6.13 ROLL UNTIL ROLLER MARKS ARE ELIMINATED AND COMPACTED TO NOT LESS THAN 95% OF DENSITY. COMPACT WITH HOT TAMPERS IN AREAS INACCESSIBLE TO A ROLLER. BEVEL EDGES ADJACENT TO GRANULAR SURFACES.

6.14 FINISH SURFACE SMOOTH, TRUE TO GRADE.

6.15 KEEP VEHICULAR TRAFFIC AND OTHER LOADS OFF NEWLY PAVED AREAS UNTIL 24 HOURS AFTER PAVING.

6.16 DIVERT UNUSED AND WASTE ASPHALT TO A FACILITY APPROVED FOR ACCEPTING SUCH MATERIALS.

6.17 APPLY TRAFFIC PAINT AS IDENTIFIED ON PLAN. TRAFFIC PAINT: NON-DARKENING, HOMOGENEOUS, UNIFORM AND SMOOTH, FREE FROM SKIN, DIRT AND OTHER FOREIGN PARTICLES. APPLY TO DRY PAVEMENT SURFACE FREE FROM FROST, ICE, DUST, OIL, GREASE AND OTHER FOREIGN MATERIALS. PROTECT PAVEMENT MARKINGS UNTIL DRY.

CATCH BASIN & MANHOLE SCHEDULE

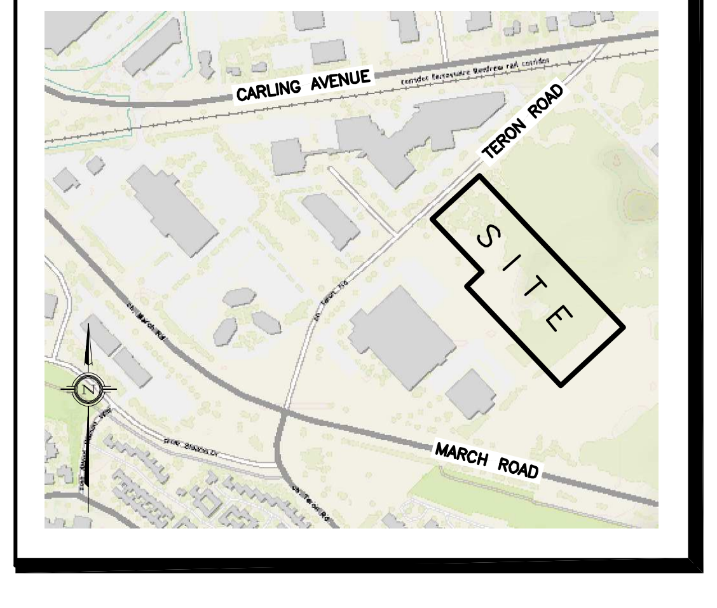
REF	TOP	SIZE	TYPE	INVERT AT INLET	INVERT AT OUTLET	NOTES
STORM SEWER						
CB-1	84.19	600 x 600mm	PRE-CAST CONCRETE CATCH-BASIN	–	81.94	TO OPSD 705.010 & CITY OF OTTAWA STANDARDS – FRAMES & COVERS CITY DWG No. S22 & S23 OR OPSD 400.020
CB/MH-2	84.88	1200mm	PRE-CAST CONCRETE CATCH-BASIN/ MANHOLE	81.78(NE)	81.72(NW)	TO OPSD 701.010 & CITY OF OTTAWA STANDARDS – FRAMES & COVERS CITY DWG No. S25 & S28.1 OR OPSD 401.010
CB/MH-3	84.99	1200mm	PRE-CAST CONCRETE CATCH-BASIN/ MANHOLE	81.61(SE)	81.60(NW)	TO OPSD 701.010 & CITY OF OTTAWA STANDARDS – FRAMES & COVERS CITY DWG No. S25 & S28.1 OR OPSD 401.010
CB/MH-4	84.76	1200mm	PRE-CAST CONCRETE CATCH-BASIN/ MANHOLE	81.76(NE) 81.48(SE)	81.47(N)	TO OPSD 701.010 & CITY OF OTTAWA STANDARDS – FRAMES & COVERS CITY DWG No. S25 & S28.1 OR OPSD 401.010
CB-5	84.19	600 x 600mm	PRE-CAST CONCRETE CATCH-BASIN	–	81.94	TO OPSD 705.010 & CITY OF OTTAWA STANDARDS – FRAMES & COVERS CITY DWG No. S22 & S23 OR OPSD 400.020
MH-6	84.97	1200mm	PRE-CAST CONCRETE MANHOLE	81.33(S)	81.30(NW)	TO OPSD 701.010 & CITY OF OTTAWA STANDARDS – FRAMES & COVERS CITY DWG No. S25 & S28.1 OR OPSD 401.010
CB/MH-7	82.77	1200mm	PRE-CAST CONCRETE CATCH-BASIN/ MANHOLE	81.07(SE)	81.01(NE)	TO OPSD 701.010 & CITY OF OTTAWA STANDARDS – FRAMES & COVERS CITY DWG No. S25 & S28.1 OR OPSD 401.010
SANITARY SEWER						
MH-SA.1	81.88	1200mm	PRE-CAST CONCRETE MANHOLE	79.62(SE)	79.02(NW)	TO OPSD 701.010 & CITY OF OTTAWA STANDARDS – FRAMES & COVERS CITY DWG No. S25 & S24 OR OPSD 401.010
MH-SA.2	82.38	1200mm	PRE-CAST CONCRETE MANHOLE	79.06(SE) 79.01(NE)	79.00(SW)	TO OPSD 701.010 & CITY OF OTTAWA STANDARDS – FRAMES & COVERS CITY DWG No. S25 & S24 OR OPSD 401.010

WATER SERVICE PROFILE TABLE

MATERIAL:
250mm PVC PRESSURE CLASS 150 DR18

STATION	DESCRIPTION	GRADE ELEV.	TOP OF PIPE	DEPTH OF COVER	COMMENTS
A+00.0	250x300mm TEE CONNECTION IN 300mm MUNICIPAL WATERMAIN TO CITY OF OTTAWA STANDARDS	82.61 (PROPOSED) ±82.41 (EXISTING)	±80.31	2.30 (PROPOSED) ±2.10 (EXISTING)	–
A+01.0	45 DEG VERTICAL BEND DOWN TO CITY OF OTTAWA STANDARDS	82.64	80.31	2.33	–
A+01.7	45 DEG VERTICAL BEND ACROSS TO CITY OF OTTAWA STANDARDS	82.70	79.62	3.08	–
A+05.2	–	82.80	79.62	3.18	CROSSING 500 CULVERT INV 80.82 TOP WM 79.62 1200mm CLEARANCE INSULATE FROM A+03.7 TO A+06.7 100mm THICK 3.0m WIDE CENTERED OVER WATER SERVICE (DOW STYROFOAM SM-H1-40)
A+07.5	250mm VALVE & VALVE BOX TO CITY OF OTTAWA STANDARDS AND AS PER CITY OF OTTAWA DRAWING No. W24	82.87	79.62	3.25	ON PROPERTY LINE
A+10.8	–	82.86	79.70	3.16	CROSSING 450 ST INV 81.00 TOP WM 79.80 1300mm CLEARANCE INSULATE FROM A+09.3 TO A+12.3 100mm THICK 3.0m WIDE CENTERED OVER WATER SERVICE (DOW STYROFOAM SM-H1-40)
A+30.3	–	83.32	80.92	2.40	–
A+37.7	–	83.47	81.07	2.40	–
A+66.6	–	84.34	81.94	2.40	–
A+95.5 (B+00.0)	250mm x 150mm TEE TO CITY OF OTTAWA STANDARDS	85.04	82.64	2.40	–
A+96.5 (C+00.0)	250mm x 150mm TEE TO CITY OF OTTAWA STANDARDS	85.04	82.64	2.40	–
A+97.0	150mm END CAP TO CITY OF OTTAWA STANDARDS	85.04	82.64	2.40	–
MATERIAL: 150mm PVC PRESSURE CLASS 150 DR18					
B+00.0 (A+95.5)	250mm x 150mm TEE TO CITY OF OTTAWA STANDARDS	85.04	82.64	2.40	–
B+05.2	150mm VALVE & VALVE BOX TO CITY OF OTTAWA STANDARDS AND AS PER CITY OF OTTAWA DRAWING No. W24	85.16	82.76	2.40	–
B+12.3	–	85.45	83.05	2.40	ENTRY INTO BUILDING
MATERIAL: 150mm PVC PRESSURE CLASS 150 DR18					
C+00.0 (A+96.5)	250mm x 150mm TEE TO CITY OF OTTAWA STANDARDS	85.04	82.64	2.40	–
C+00.5	45 DEG VERTICAL BEND DOWN TO CITY OF OTTAWA STANDARDS	85.03	82.63	2.40	–
C+03.0	45 DEG VERTICAL BEND ACROSS TO CITY OF OTTAWA STANDARDS	85.01	80.09	4.92	–
C+03.5	–	85.02	80.09	4.93	CROSSING 450 ST INV 81.29 TOP WM 80.09 1200mm CLEARANCE INSULATE FROM C+01.5 TO C+04.5 100mm THICK 3.0m WIDE CENTERED OVER WATER SERVICE (DOW STYROFOAM SM-H1-40)
C+04.0	45 DEG VERTICAL BEND UP TO CITY OF OTTAWA STANDARDS	85.02	80.09	4.93	–
C+06.5	45 DEG VERTICAL BEND ACROSS TO CITY OF OTTAWA STANDARDS	85.02	82.62	2.40	–
C+07.0	150mm VALVE & VALVE BOX TO CITY OF OTTAWA STANDARDS AND AS PER CITY OF OTTAWA DRAWING No. W24	85.02	82.62	2.40	–
C+10.7	FIRE HYDRANT TO CITY OF OTTAWA STANDARDS	85.21	82.62	2.59	–

KEY PLAN



No.	DATE	REVISION
2	FEB 13-20	ISSUED FOR APPROVAL
1	FEB 11-20	ISSUED FOR COORDINATION

D. B. GRAY ENGINEERING INC.
Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains
700 Long Point Circle 613-425-8044
Ottawa, Ontario d.gray@dbgrayengineering.com

Project
PROPOSED
1 STOREY
INDUSTRIAL WAREHOUSE
1243 TERON ROAD
OTTAWA, ONTARIO

Drawing Title
NOTES & SCHEDULES

Engineer's Seal
D.B. GRAY
17016502
FEB 13-20
NOT VALID UNLESS SIGNED & DATED

Drawn	D.B.G.
Hor. Scale	
Vert. Scale	
Date	OCT 18-19
Job No.	19057

Drawing No.
C-4
of 4