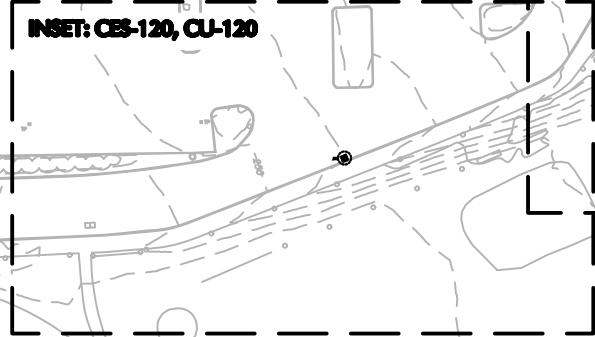
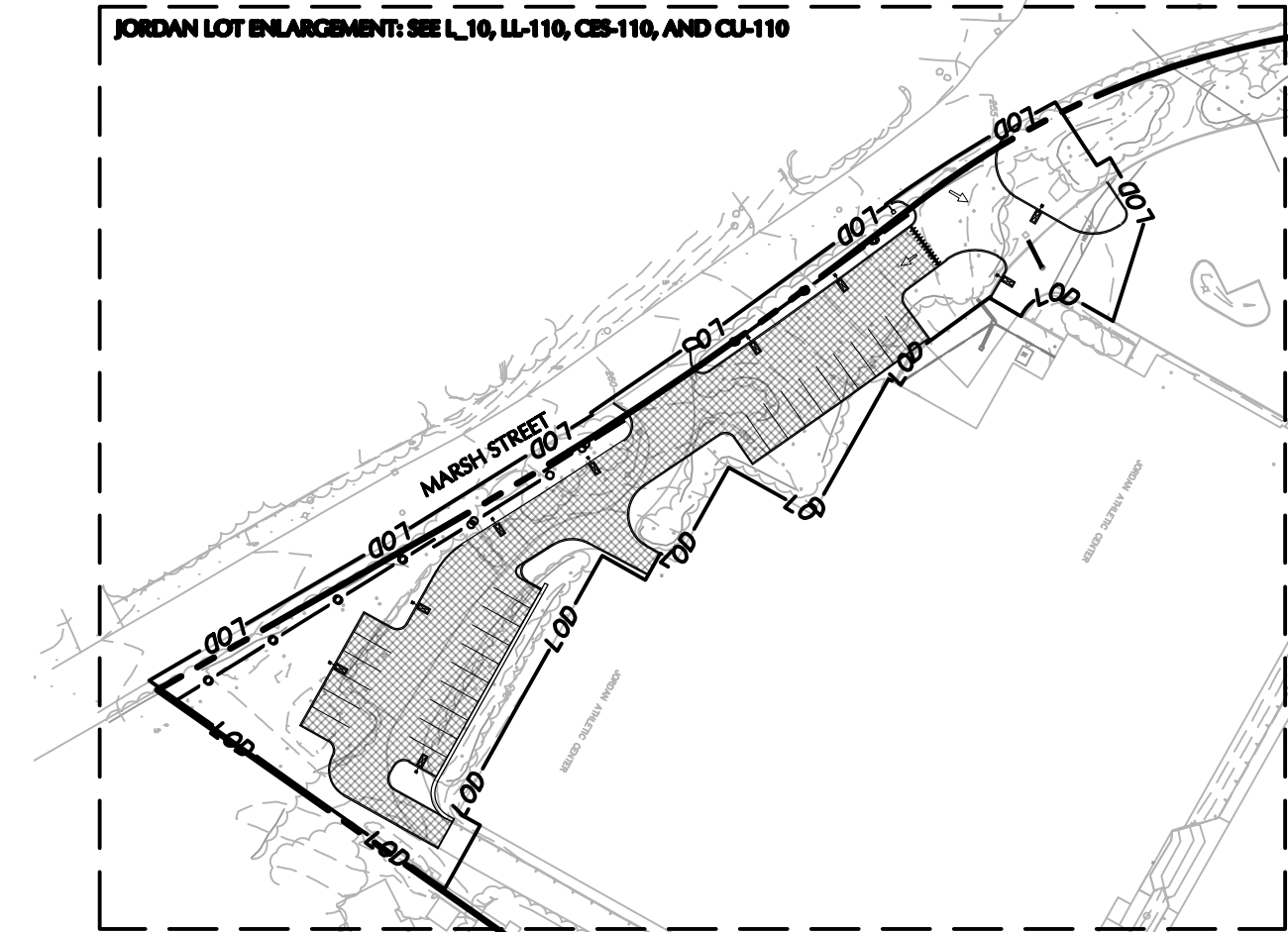


FOR PERMITTING ONLY. NOT FOR CONSTRUCTION.

ZONING REQUIREMENTS PER 4.2				
DISTRICT	SINGLE RESIDENTIAL SR – A –OTHER			
		REQUIRED	EXISTING	FUTURE PROVIDED
EAST CAMPUS				
MINIMUM LOT AREA	SQ FT	25,000	NA	307,748
MINIMUM LOT FRONTAGE	FT	125	NA	160
MAXIMUM LOT COVERAGE	% OF LOT	20%	NA	5%
MINIMUM OPEN SPACE	% OF LOT	50%	NA	66%
MINIMUM SET BACK DIMENSION	FRONT	30	NA	79
	REAR	25	NA	269
	SIDE (EAST)	15	NA	44
MAXIMUM BLDG HEIGHT	FT	36	NA	27
	STORIES	2 1/2	NA	2
MAIN CAMPUS				
MINIMUM LOT AREA	SQ FT	25,000	1,299,830	1,299,830
MINIMUM LOT FRONTAGE	FT	125	2,063	2,063
MAXIMUM LOT COVERAGE	% OF LOT	20%	12%	12%
MINIMUM OPEN SPACE	% OF LOT	50%	76%	76%
MINIMUM SET BACK DIMENSION	FRONT	30	NA – NO NEW STRUCTURES PROPOSED	
	REAR	25		
	SIDE (EAST)	15		
	SIDE (WEST)	15		
MAXIMUM BLDG HEIGHT	FT	36		
	STORIES	2 1/2		
THE SITE IS LOCATED WITHIN A ZONE OF MINIMAL FLOOD HAZARD, ZONE X AND AS SUCH IS NOT LOCATED WITH THE FLOODPLAIN DISTRICT (PANEL NUMBER 25017C0418E EFF JUNE 4, 2010)				



UPPER LOT ENLARGEMENT: SEE L-20, LL-120, CS-120, CU-120

NORTH LOT ENLARGEMENT: SEE L-30, CS-130, AND CU-130

NORTH LOT ENLARGEMENT: SEE L-30, LL-130, CS-130, AND CU-130

FACILITIES LOT ENLARGEMENT: SEE L-40, LL-140, CS-140, AND CU-140

BELMONT HILL
SCHOOL
BELMONT, MA

LANGAN

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Revisions		
Number	Date	Description
01	11/30/22	Peer Review Comments
02	03/03/23	Design Revisions

Job number 151021201
Drawn by **KH, JW** Checked by **HH, FH**
Scale **1"=80'** Date **07/27/2022**

Stamp

COMMONWEALTH OF MASSACHUSETTS

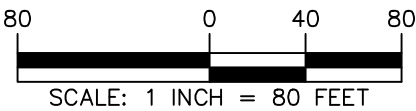
FRANK HOLMES CIVIL No. 40203 REGISTERED PROFESSIONAL ENGINEER

Sheet Title

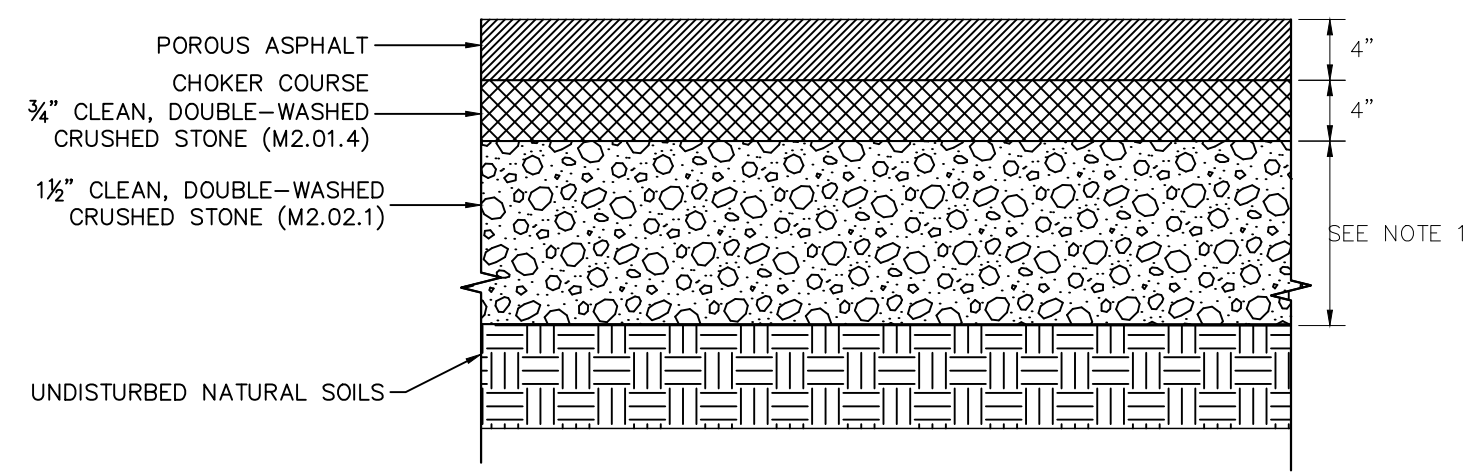
KEY PLAN

Sheet Number

CS-100



GENERAL CIVIL NOTES	SITE PREP, DEMO & EROSION NOTES	STORM DRAINAGE NOTES	UTILITIES NOTES	LEGEND	BELMONT HILL SCHOOL BELMONT, MA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
<div>1. PLANIMETRIC AND TOPOGRAPHIC INFORMATION SHOWN HEREON HAS BEEN OBTAINED FROM GROUND SURVEYS BY PRECISION LAND SURVEYING, INC. THE EXISTING CONDITIONS SHOWN HERE ARE FROM SURVEY DATA UPDATED THROUGH 03/23/2022.</div> <div>1.1. ELEVATIONS REFER TO THE TOWN OF BELMONT DATUM AS DETERMINED BY GPS OBSERVATIONS AND AN OPUS REDUCTION PERFORMED ON DECEMBER 20, 2020.</div> <div>1.2. THIS PLAN AND THE SURVEY ON WHICH IT IS BASED WERE PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND ARE SUBJECT TO THE FINDINGS SUCH A REPORT MAY DISCLOSE.</div> <div>1.3. THE AREA SHOWN HEREON IS LOCATED IN ZONE X (UN-SHADED) AS SHOWN ON FLOOD INSURANCE RATE MAP NUMBER 25017C0416E AND 25017C0418E, EFFECTIVE DATE JUNE 4, 2010.</div> <div>1.4. TOPOGRAPHY AND SITE INFORMATION HAS BEEN COMPILED FROM AERIAL PHOTOGRAPHY OBTAINED 12/23/2020.</div> <div>1.5. ONLY SELECT AREAS HAVE THE BENEFIT OF UTILITY COMPILATION. ONLY SELECT UTILITY INFORMATION HAS BEEN SHOWN.</div> <div>2. WETLANDS DELINEATED BY LEC ENVIRONMENTAL CONSULTANTS AND LOCATED BY PRECISION LAND SURVEYING, INC.</div> <div>3. PROPOSED SITE WORK IMPROVEMENTS SHALL CONFORM TO THE STANDARD DETAILS AND SPECIFICATIONS OF THE TOWN OF BELMONT. IN THE ABSENCE OF LOCAL STANDARDS, SITE WORK SHALL CONFORM TO THE REQUIREMENTS OF MASSACHUSETTS DOT STANDARD DETAILS.</div> <div>4. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING DIG SAFE (WWW.DIGSAFE.COM), EXCAVATION TEST HOLES, PERFORMING TEST BORINGS, AND PERFORMING WHATEVER ADDITIONAL INVESTIGATION NECESSARY TO PROTECT AND MAINTAIN ALL EXISTING UTILITIES TO REMAIN THROUGHOUT THE CONSTRUCTION PERIOD. ANY CONFLICTS BETWEEN EXISTING UTILITIES AND PROPOSED UTILITIES DISCOVERED DURING CONSTRUCTION SHALL BE PROMPTLY REPORTED TO THE PROJECT ENGINEER.</div> <div>5. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS, DIMENSIONS AND DETAILS OF ALL DOORS, RAMPS, SIDEWALKS AND WALLS ASSOCIATED WITH THE BUILDING.</div> <div>6. ALL IMPROVEMENTS CONSTRUCTED IN THE TOWN PUBLIC RIGHT-OF-WAY SHALL CONFORM TO TOWN OF BELMONT STANDARD DETAILS. IN THE ABSENCE OF LOCAL DETAILS & REQUIREMENTS AND WORK IN THE STATE RIGHT-OF-WAY SHALL COMPLY WITH THE STATE OF MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, THE COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS (2021 EDITION) AND THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION SUPPLEMENTAL SPECIFICATIONS (DATED SEPTEMBER 30, 2021).</div> <div>7. FOR AREAS OUTSIDE THE PROPERTY LINES, REPAIR AND/OR REPLACE ALL DAMAGE DONE TO EXISTING ELEMENTS (SIDEWALKS, PAVING, LANDSCAPING, ETC) AS REQUIRED BY OWNER AND/OR GOVERNING AUTHORITY.</div> <div>8. ALL SIGNS AND PAVEMENT MARKINGS SHALL CONFORM TO THE LATEST EDITION OF THE MUTCD AND MASSACHUSETTS DEPARTMENT OF TRANSPORTATION REGULATIONS.</div> <div>9. ABBREVIATIONS: ARCH. = ARCHITECTURAL AD = AREA DRAIN BC = BOTTOM OF CURB BW = BOTTOM OF WALL CB = CATCH BASIN CLDI = CONCRETE LINED DUCTILE IRON CO = CLEAN OUT CONC. = CONCRETE DCB = DOUBLE CATCH BASIN DMH = DRAIN MANHOLE EMH = ELECTRIC MANHOLE EX. = EXISTING FES = FLAIRED END SECTION FFE = FINISHED FLOOR ELEVATION GR = GRADE HDPE = HIGH DENSITY POLYETHYLENE PIPE HH = HANDHOLE HP = HIGHPOINT INV = INVERT LA = LANDSCAPED AREA LF = LINEAR FEET LP = LOW POINT MH = MANHOLE NTS = NOT TO SCALE OCS = OUTLET CONTROL STRUCTURE PR. = PROPOSED PVC = POLYVINYL CHLORIDE PIPE (SDR-35) RCP = REINFORCED CONCRETE PIPE RET. = RETAINING RL = ROOF LEADER R.O.W = RIGHT OF WAY R&D = REMOVE & DISPOSE R&R = REMOVE & RESET R&S = REMOVE & SALVAGE SSMH = SANITARY SEWER MANHOLE TF = TOP OF FRAME TC = TOP OF CURB TW = TOP OF WALL TYP. = TYPICAL VIF = VERIFY IN FIELD WQS = WATER QUALITY STRUCTURE</div>	<div>1. CLEAR AND GRUB ALL EXISTING PLANTED AREAS WITHIN THE LIMITS OF GRADING. STOCKPILE TOPSOIL FOR REUSE.</div> <div>2. SOIL AND SEDIMENT CONTROL PRACTICES MUST BE INSTALLED IN ACCORDANCE WITH THE LOCAL GOVERNING AUTHORITY, THE MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES AND THE MASSACHUSETTS STORMWATER STANDARDS.</div> <div>3. CONTRACTOR SHALL PREVENT DUST, SEDIMENT AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS. ADJOINING STREETS AND PROPERTIES TO BE KEPT FREE OF DEBRIS RESULTING FROM DEMOLITION AND SHALL BE CLEANED ON A DAILY BASIS OR AS NEEDED.</div> <div>4. CONTRACTOR SHALL MAINTAIN THE INFILTRATION CAPACITY OF SUBGRADE WITHIN THE FOOTPRINT OF THE INFILTRATION FACILITIES. CONTRACTOR SHALL PREVENT EXCESSIVE SILT AND SEDIMENT BUILDUP AND EXCESSIVE LOADING IN THESE AREAS. IF THE INFILTRATION CAPACITY OF THESE AREAS IS COMPROMISED, THE CONTRACTOR SHALL AMEND OR MODIFY THE SUBGRADE TO RESTORE CAPACITY.</div> <div>5. EXISTING TREES TO REMAIN WITHIN THE LIMIT OF WORK ARE TO BE PROTECTED. TREE PROTECTION FENCING TO BE 6' TALL CHAIN LINK FENCE AND TO BE SET UP AT DRIP LINE OF EXISTING TREES OR EXTENT OF CRITICAL ROOT ZONE, WHICHEVER IS GREATER. EXISTING TREES AND SHRUBS TO REMAIN SHALL NOT BE ALTERED UNDER ANY CIRCUMSTANCES UNLESS REVIEWED BY THE LANDSCAPE ARCHITECT AND MUST REMAIN IN THE SAME CONDITION AS OBSERVED PRIOR TO CONSTRUCTION.</div> <div>6. TREE AND SHRUB REMOVAL SHALL INCLUDE THE FELLING, CUTTING, GRUBBING OUT OF ROOTS, AND SATISFACTORY OFF-SITE DISPOSAL OF ALL STUMPS AND VEGETATIVE AND EXTRANEOUS DEBRIS PRODUCED THROUGH THE REMOVAL OPERATIONS.</div> <div>7. NO HEAVY MACHINERY IS TO BE USED WITHIN THE CRITICAL ROOT ZONES OF EXISTING TREES. EXCAVATION WITHIN CRITICAL ROOT ZONE IS TO BE PERFORMED BY HAND. REVIEW ALL WORK PROPOSED WITHIN THE CRITICAL ROOT ZONE WITH THE LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION.</div> <div>8. ALL EXISTING UTILITIES NOT IDENTIFIED AS TO BE REMOVED ARE TO BE PROTECTED. ALL VALVE BOXES, FRAMES, GRATES AND COVERS SHALL BE ADJUSTED TO FINISHED GRADE AS REQUIRED.</div> <div>9. DUST CONTROL TREATMENTS SHALL BE APPLIED AS NECESSARY TO CONTROL AND REDUCE THE AMOUNT OF DUST WHICH MAY CAUSE OFF-SITE DAMAGE, BE A HEALTH HAZARD TO HUMANS, WILDLIFE AND PLANT LIFE, OR POSE A HAZARD TO TRAFFIC SAFETY.</div> <div>10. EROSION AND SEDIMENT CONTROL DEVICES MUST BE INSTALLED PRIOR TO START OF DEMOLITION AND CONSTRUCTION AND DISTURBANCE OF SITE. CONTRIBUTORY DRAINAGE AREAS, THE OWNER OR ITS CONTRACTOR SHALL INSPECT, REPAIR AND REMOVE ALL SEDIMENT AND EROSION CONTROL DEVICES, AS INDICATED HEREIN. ALL EARTH CHANGES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED IN SUCH A MANNER SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST POSSIBLE PERIOD OF TIME.</div> <div>11. DISPOSAL OF COLLECTED SEDIMENT SHALL BE MADE TO AREA DESIGNATED BY THE OWNER'S SOIL ENGINEER.</div> <div>12. FILTER FABRIC/SILT FENCE WILL BE INSTALLED ALONG THE TOE OF ALL CRITICAL CUT AND FILL SLOPES.</div> <div>13. ALL TOPSOIL NOT TO BE USED FOR FINAL GRADING/LANDSCAPED AREAS SHALL BE REMOVED FROM THE SITE IMMEDIATELY, IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL LAW. ALL TOPSOIL TO BE USED IN LANDSCAPED AREAS SHALL BE STORED/STOCKPILED IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL LAW STANDARDS.</div> <div>14. ALL STORM DRAINAGE OUTLETS MUST BE STABILIZED, AS REQUIRED, BEFORE THE DISCHARGE POINTS BECOME OPERATIONAL.</div> <div>15. SILT FENCES AND BARRIERS MUST BE CLEANED OR REPLACED PERIODICALLY TO REMOVE BUILT-UP SILT.</div> <div>16. ALL EROSION AND SEDIMENT CONTROL DEVICES MUST BE INSPECTED ON A DAILY BASIS AND CLEANED IMMEDIATELY AFTER EACH STORM.</div> <div>17. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED FOR THE CONVEYANCE OF WATER AROUND, THROUGH, OR FROM THE EARTH CHANGE AREA SHALL BE DESIGNED TO LIMIT THE WATER FLOW TO A NON-EROSIVE VELOCITY.</div> <div>18. THE CONTRACTOR SHALL CORRECT ANY OMISSIONS, ERRORS, OR FIELD OPERATIONS IMMEDIATELY AND IN ACCORDANCE WITH THE GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.</div> <div>19. SEDIMENT DISPOSAL AREAS AND TOPSOIL STOCKPILES NOT SCHEDULED FOR CONSTRUCTION ACTIVITIES WITHIN THIRTY (30) DAYS OF DISTURBANCE SHALL BE STABILIZED AS FOLLOWS:<div><div>A. SOIL AMENDMENTS AS NECESSARY.</div><div>B. ANNUAL RYE GRASS SEEDING APPLIED AT A RATE OF NOT LESS THAN 1 LB. PER 1,000 SF.</div><div>C. MULCH ALL NEWLY SEEDED AREAS WITHIN 80 LBS. OF SALT HAY OR SMALL GRAIN STRAW PER 1,000 SF.</div><div>D. WHEN DISTURBED AREAS ARE SCHEDULED FOR IMMEDIATE LANDSCAPING THEY MAY BE MULCHED AND SEEDED PER ITEM C ABOVE.</div></div></div>	<div>1. ALL STORM DRAINAGE WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS/DETAILS OF THE UTILITY COMPANY HAVING AUTHORITY OVER THE PROPOSED WORK. ALL PROPOSED UTILITY WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL ORDINANCES/REQUIREMENTS GOVERNING THE PROPOSED WORK.</div> <div>2. THE LOCATION OF EXISTING UNDERGROUND STORM DRAINAGE INFRASTRUCTURE SHOWN HEREON IS TAKEN FROM DESIGN PLANS, AS-BUILT SKETCHES, LIMITED PHYSICAL EXPLORATION AND OTHER SOURCES OF INFORMATION AND IS NOT TO BE CONSTRUED AS AN ACCURATE "AS-BUILT" SURVEY AND IS SUBJECT TO SUCH CORRECTIONS THAT A MORE ACCURATE SURVEY MAY DISCLOSE.</div> <div>3. THE EXISTING STORM DRAINAGE INDICATED HEREON MAY NOT BE LOCATED AS SHOWN. ANY DISCREPANCIES DISCOVERED DURING THE COURSE OF CONSTRUCTION SHALL BE PROMPTLY REPORTED TO THE PROJECT ENGINEER.</div> <div>4. RESET ALL EXISTING STORM DRAINAGE STRUCTURES TO MASSACHUSETTS STATE STANDARDS AND AS REQUIRED BY REPAIRING, MILLING OR OVERLAYING ALL PROPOSED STORM DRAINAGE PIPING TO UTILIZE WATER-TIGHT JOINTS.</div> <div>5. CLEANOUTS SHALL BE PROVIDED FLUSH TO GRADE AT ALL LOCATIONS OF ROOF DRAIN INTERSECTIONS, BENDS AND UPSTREAM ENDS.</div> <div>6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY SIZING ALL DRAINAGE STRUCTURES AND SUBMITTING SHOP DRAWINGS TO ENGINEER FOR REVIEW.</div> <div>7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PAVEMENT REPAIRS REQUIRED AS A RESULT OF ANY STORMWATER WORK.</div> <div>8. THE CONTRACTOR SHALL COORDINATE REQUIRED INSPECTIONS WITH THE OFFICE OF COMMUNITY DEVELOPMENT PRIOR TO BACKFILLING OF CONNECTIONS TO TOWN OF BELMONT STORM SEWERS.</div> <div>9. EXISTING BUILDING FOUNDATIONS AT 9 PARK AVENUE AND 283 PROSPECT STREET ARE TO BE REMOVED AS REQUIRED WITHIN THE LIMITS OF THE POROUS PAVEMENT AND UNDERGROUND INFILTRATION SYSTEM B3. THE PROJECT ENGINEER, A COMPETENT SOILS PROFESSIONAL AS A DEFINED BY THE MASSACHUSETTS STORMWATER HANDBOOK, SHALL INSPECT THE SUBGRADE CONDITIONS AT THESE LOCATIONS. IF MATERIAL THAT IS INCONSISTENT WITH A SANDY LOAM, LOAMY SAND, OR SAND IS ENCOUNTERED BELOW THE POROUS PAVEMENT OR INFILTRATION SYSTEM B3, THE PROJECT ENGINEER SHALL PERFORM A FALLING HEAD PERMEAMETER TEST (ASTM D5126-90 METHOD) OR COLLECT A REPRESENTATIVE SAMPLE AND SEND TO A LABORATORY FOR TESTING TO DETERMINE THE USDA TEXTURAL SOIL CLASSIFICATION. IF THE INFILTRATION RATE FROM THE FALLING HEAD PERMEAMETER TEST IS LESS THAN 0.39 IN/HR FOR THE POROUS PAVEMENT AND LESS THAN 0.80 IN/HR FOR INFILTRATION SYSTEM B3 OR THE USDA TEXTURAL SOIL CLASSIFICATION IS NOT A SANDY LOAM, LOAMY SAND, OR SAND, THE CONTRACTOR SHALL EXCAVATE AT LEAST 2 FEET BELOW THE BOTTOM OF THE SYSTEM, REMOVE MATERIAL AND PLACE MATERIAL THAT HAS BEEN LABORATORY TESTED AND CONFIRMED TO HAVE A USDA TEXTURAL SOIL CLASSIFICATION OF A SANDY LOAM, LOAMY SAND, OR SAND UP TO THE BOTTOM OF THE CRUSHED STONE FOUNDATION FOR THE POROUS PAVEMENT OR INFILTRATION SYSTEM B3.</div>	<div>1. ALL UTILITY WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS/DETAILS OF THE UTILITY COMPANY HAVING AUTHORITY OVER THE PROPOSED WORK. ALL PROPOSED UTILITY WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL ORDINANCES/REQUIREMENTS GOVERNING THE PROPOSED WORK.</div> <div>2. THE LOCATION OF EXISTING UNDERGROUND UTILITIES SHOWN HEREON IS TAKEN FROM DESIGN PLANS, AS-BUILT SKETCHES, EXISTING UTILITY COMPANY RECORDS, AND OTHER SOURCES OF INFORMATION AND IS NOT TO BE CONSTRUED AS AN ACCURATE "AS-BUILT" SURVEY AND IS SUBJECT TO SUCH CORRECTIONS THAT A MORE ACCURATE SURVEY MAY DISCLOSE.</div> <div>3. THE EXISTING UTILITIES INDICATED HEREON MAY NOT BE LOCATED AS SHOWN. IN ADDITION, OTHER UTILITIES NOT SHOWN HEREON MAY BE PRESENT. ANY DISCREPANCIES DISCOVERED DURING THE COURSE OF CONSTRUCTION SHALL BE PROMPTLY REPORTED TO THE PROJECT ENGINEER.</div> <div>4. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS. ANY DISCREPANCIES DISCOVERED DURING THE COURSE OF CONSTRUCTION SHALL BE PROMPTLY REPORTED TO THE PROJECT ENGINEER.</div> <div>5. ANY UTILITY EASEMENTS REQUIRED BY ANY OF THE VARIOUS UTILITY COMPANIES SHALL BE OBTAINED, EXECUTED, AND RECORDED PRIOR TO ANY OF THE AFFECTED UTILITY WORK BEING PERFORMED.</div> <div>6. ALL PROPOSED UTILITIES WILL BE LOCATED UNDERGROUND UNLESS OTHERWISE NOTED.</div> <div>7. RESET ALL EXISTING UTILITY INFRASTRUCTURE, INCLUDING SANITARY MANHOLE STRUCTURES, VALVE BOXES AND VAULTS, TO PROPOSED FINISHED GRADE IN ACCORDANCE WITH MASSACHUSETTS STATE STANDARDS AND AS REQUIRED BY IMPROVEMENTS, REPAIRING, MILLING OR OVERLAYING.</div> <div>8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PAVEMENT REPAIRS REQUIRED AS A RESULT OF ANY UTILITY WORK.THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF THE DOMESTIC AND FIRE SERVICE LINE CONNECTIONS TO EXISTING MAINS.</div> <div>9. TEST PITS ARE TO BE PERFORMED PRIOR TO INSTALLATION OF DOMESTIC AND FIRE SERVICE LINE CONNECTIONS TO CONFIRM THE SIZE AND MATERIAL OF THE MAIN.</div> <div>10. TAPPING SLEEVES AND GATE VALVE ASSEMBLIES SHALL BE INSTALLED AT EACH DOMESTIC AND FIRE SERVICE LINE CONNECTION AND SHALL BE MANUFACTURED BY CLOW VALVE CO., MUELLER CO., OR AMERICAN VALVE AND HYDRANT.</div> <div>11. SCHEDULING OF ALL DOMESTIC AND FIRE SERVICE LINE CONNECTION WORK SHALL BE COORDINATED WITH THE TOWN OF BELMONT WATER DIVISION TO ALLOW FOR A REPRESENTATIVE FROM THE AGENCY TO BE ONSITE TO OVERSEE THE CONNECTIONS AND PERFORM A WATER SHUTDOWN AS NEEDED.</div> <div>12. WATER METERS AND ASSOCIATED ENCODER RECEIVER TRANSMITTER EQUIPMENT SHALL BE COMPATIBLE WITH THE TOWN'S EXISTING METER READING SYSTEM.</div> <div>13. ALL WATER MAINS AND SERVICES SHALL HAVE A MINIMUM OF 5'-0" OF COVER. INSULATION SHALL BE USED FOR ANY MAINS AND SERVICES RECEIVING LESS THAN 5'-0" OF COVER. INSULATION SHALL BE 2-INCHES THICK, "FOAMGLASS" STYLE WITH JACKETING AS MANUFACTURED BY PITTSBURGH CORNING CORP IN ACCORDANCE WITH AWWA C552.</div> <div>14. ALL WATER MAINS AND SERVICES SHALL MAINTAIN A MINIMUM VERTICAL SEPARATION OF 18-INCHES FROM OTHER UTILITIES WITH STRICT ADHERENCE TO THIS SEPARATION FOR SEWER AND DRAIN LINES IN ACCORDANCE WITH MASSDEP'S GUIDELINES AND POLICIES FOR PUBLIC WATER SYSTEMS. IF ADEQUATE SEPARATION IS NOT MAINTAINED, PIPELINES SHALL BE SLEEVED OR ENCASED IN FLOWABLE AND EXCAVATABLE CONCRETE. IN ADDITION, NO WATER MAINS OR SERVICES SHALL BE INSTALLED WITHIN THE SAME TRENCH AS OTHER UTILITIES. A MINIMUM OF 10- FEET OF HORIZONTAL SEPARATION FROM SEWER OR DRAIN LINES SHALL BE MAINTAINED.</div> <div>15. VALVE BOXES SHALL BE CAST IRON, ADJUSTABLE SLIDING HEAVY PATTERN TYPE WITH FLANGE ON THE TOP OF THE SECTION, BE STAMPED "WATER" ON THE TOP COVER, BE DIRT-TIGHT, AND FULLY ENCLOSE THE VALVE OPERATING NUT AND STUFFING BOX.</div> <div>16. ALL FIRE HYDRANTS SHALL MEET TOWN OF BELMONT DESIGN STANDARDS.</div> <div>17. THE CONTRACTOR SHALL COORDINATE REQUIRED INSPECTIONS WITH THE OFFICE OF COMMUNITY DEVELOPMENT PRIOR TO BACKFILLING OF CONNECTIONS TO TOWN OF BELMONT SANITARY SEWERS.</div> <div>18. BELMONT HILL SCHOOL'S CONTRACTOR TO INSTALL CONDUIT AND STREET LIGHT FOUNDATION. BELMONT LIGHT TO INSTALL WIRING, POLE, ARM AND LIGHT FIXTURE. ALL LABOR AND MATERIALS TO BE PAID FOR BY BELMONT HILL SCHOOL.</div>	<div>EXISTING</div> <div>PROPOSED</div> <div>PROPERTY LINE</div> <div>LIMIT OF DISTURBANCE</div> <div>100' WETLAND BUFFER ZONE</div> <div>WETLANDS LIMITS</div> <div>CONSTRUCTION FENCING</div> <div>COMPOST FILTER TUBE & SILT FENCE</div> <div>R&D STRUCTURE AND FOUNDATIONS</div> <div>REMOVE EXISTING PAVEMENT</div> <div>TREE REMOVAL AREA</div> <div>STABILIZED CONSTRUCTION ENTRANCE</div> <div>SUBSURFACE INFILTRATION BASIN</div> <div>UTILITY REMOVAL</div> <div>WALL REMOVAL</div> <div>RIP RAP OUTLET PROTECTION</div> <div>PERMEABLE PAVEMENT</div> <div>MILL AND OVERLAY PAVEMENT</div> <div>UNDERGROUND ELECTRIC CONDUIT</div> <div>UNDERGROUND TELE/COM CONDUIT</div> <div>NATURAL GAS PIPING</div> <div>WATER SERVICE LINES</div> <div>SANITARY SEWER PIPE</div> <div>STORM SEWER PIPE</div> <div>TRENCH DRAIN</div> <div>STORM CATCH BASIN</div> <div>STORM AREA DRAIN</div> <div>BMP INSPECTION PORT</div> <div>STORM MANHOLE</div> <div>TELE/COMM AND ELECTRIC HAND HOLES</div> <div>SANITARY SEWER MANHOLE</div> <div>GATE VALVE</div> <div>FIRE HYDRANT</div> <div>TREE REMOVAL</div> <div>TREE REMOVAL (TREE INCLUDED IN TREE SURVEY)</div> <div>INLET PROTECTION</div> <div>R&D LIGHT POLE AND FIXTURE</div> <div>R&S LIGHT BOLLARD</div> <div>R&D DRAINAGE STRUCTURE</div>	<div>Revisions</div> <table><tr><th>Number</th><th>Date</th><th>Description</th></tr><tr><td>01</td><td>03/03/23</td><td>Design 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NOTES:

- RESERVOIR DEPTH TO BE 20" IN THE EAST CAMPUS AND 24" IN THE JORDAN LOT.
- POROUS ASPHALT FOR POROUS PAVEMENT SHALL BE PLACED IN TWO LIFTS WITH AN ASPHALT BINDER CONTENT OF 6.0% TO 6.5% BY WEIGHT OF DRY AGGREGATE. IN ACCORDANCE WITH ASTM D6390, DRAIN DOWN OF THE BINDER SHALL BE NO GREATER THAN 0.3% AGGREGATE GRAIN IN THE ASPHALT SHALL BE A MINIMUM 90% CRUSHED MATERIAL AND HAVE THE FOLLOWING GRADATION:

STANDARD SIEVE SIZE (INCH/MM)	PASSING SIEVE (%)
0.75/19	100
0.50/12.5	85-100
0.375/9.5	55-75
NO. 4/4.75	10-25
NO. 8/2.36	5-10
NO. 200/0.075	2-4
- NEAT ASPHALT BINDER MODIFIED WITH AN ELASTOMERIC POLYMER TO PRODUCE A BINDER MEETING THE REQUIREMENTS OF PG 76-22 AS SPECIFIED IN AASHTO MP-1. THE ELASTOMER POLYMER SHALL BE STYRENE-BUTADIENE (SBS), OR APPROVED EQUAL, APPLIED AT A RATE OF 1.5-3% BY WEIGHT OF THE TOTAL BINDER.
- HYDRATED LIME SHOULD BE ADDED AT A DOSAGE RATE OF 1% BY WEIGHT OF THE TOTAL DRY AGGREGATE TO MIXES CONTAINING GRANITE. HYDRATED LIME SHALL MEET THE REQUIREMENTS OF ASTM C 977. THE ADDITIVE MUST BE ABLE TO PREVENT THE SEPARATION OF THE ASPHALT BINDER FROM THE AGGREGATE AND ACHIEVE REQUIRED TENSILE STRENGTH RATIO (TSR) OF AT LEAST 80% ON THE ASPHALT MIX WHEN TESTED IN ACCORDANCE WITH AASHTO T 283. THE ASPHALTIC MIX SHALL BE TESTED FOR ITS RESISTANCE TO STRIPPING BY WATER IN ACCORDANCE WITH ASTM D-1664 AND ASTM D-3025. IF THE ESTIMATED COATING AREA IS NOT ABOVE 95% OR THE TSR FALLS BELOW 80% ADDITIONAL ANTI-STRIPPING AGENTS SHALL BE ADDED TO THE ASPHALT.
- THE DOSAGE OF FIBER ADDITIVES SHALL BE EITHER 0.3% CELLULOSE FIBERS OR 0.4% MINERAL FIBERS BY TOTAL MIXTURE MASS.
- AIR VOID CONTENT SHALL BE 16-22.0% PER ASTM D6752/AASHTO T275

3

POROUS ASPHALT PAVEMENT

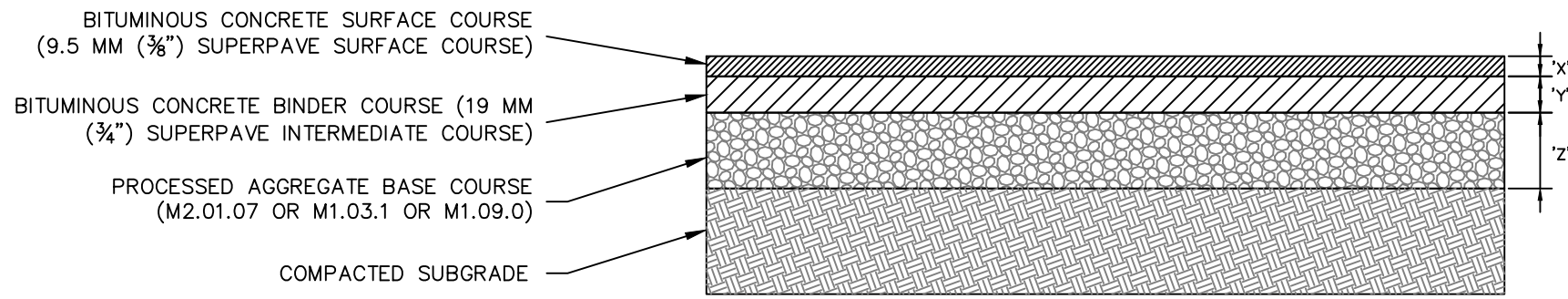
N.T.S.

ASPHALT PAVEMENT

N.T.S.

ASPHALT SECTION	SURFACE COURSE - 'X'	BINDER COURSE - 'Y'	SUBBASE - 'Z'
DRIVEWAYS AND PARKING LOTS	1.5 INCHES	2.5 INCHES	12 INCHES

NOTE: SUBJECT TO FINAL GEOTECHNICAL APPROVAL



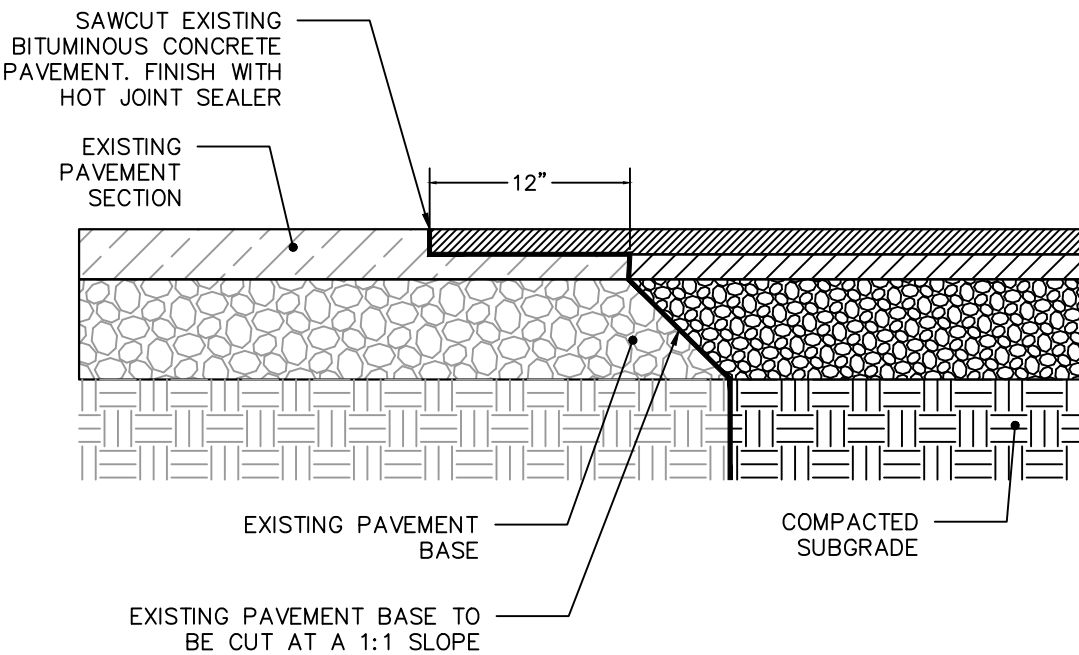
NOTES:

- PAVING COURSES SHALL BE CONSTRUCTED IN LAYERS NOT LESS THAN 1.5 INCHES THICK PER LIFT.
- ALL AREAS TO BE PAVED SHALL BE PROOFROLLED WITH AT LEAST 4 PASSES OF A SMOOTH ROLLER HAVING A MINIMUM STATIC DRUM WEIGHT OF 10 TONS. ANY SOFT AREAS SHALL BE REMOVED AND REPLACED WITH CLEAN, GRANULAR, FREE-DRAINING SOIL. FILL SHALL BE PLACED IN LOOSE LIFTS NOT TO EXCEED 12-INCHES AND SHALL BE COMPACTED TO AT LEAST 95% OF ITS MAXIMUM DRY DENSITY AS DETERMINED BY THE GEOTECHNICAL REPORT.
- PAVEMENT CLASSES REFER TO MASSACHUSETTS, DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION (MDOT SS) M3.11.03. PRESSED AGGREGATE SHALL REFER TO M2.01.07 OR M1.03.1.

2

SAWCUT PAVEMENT SECTION

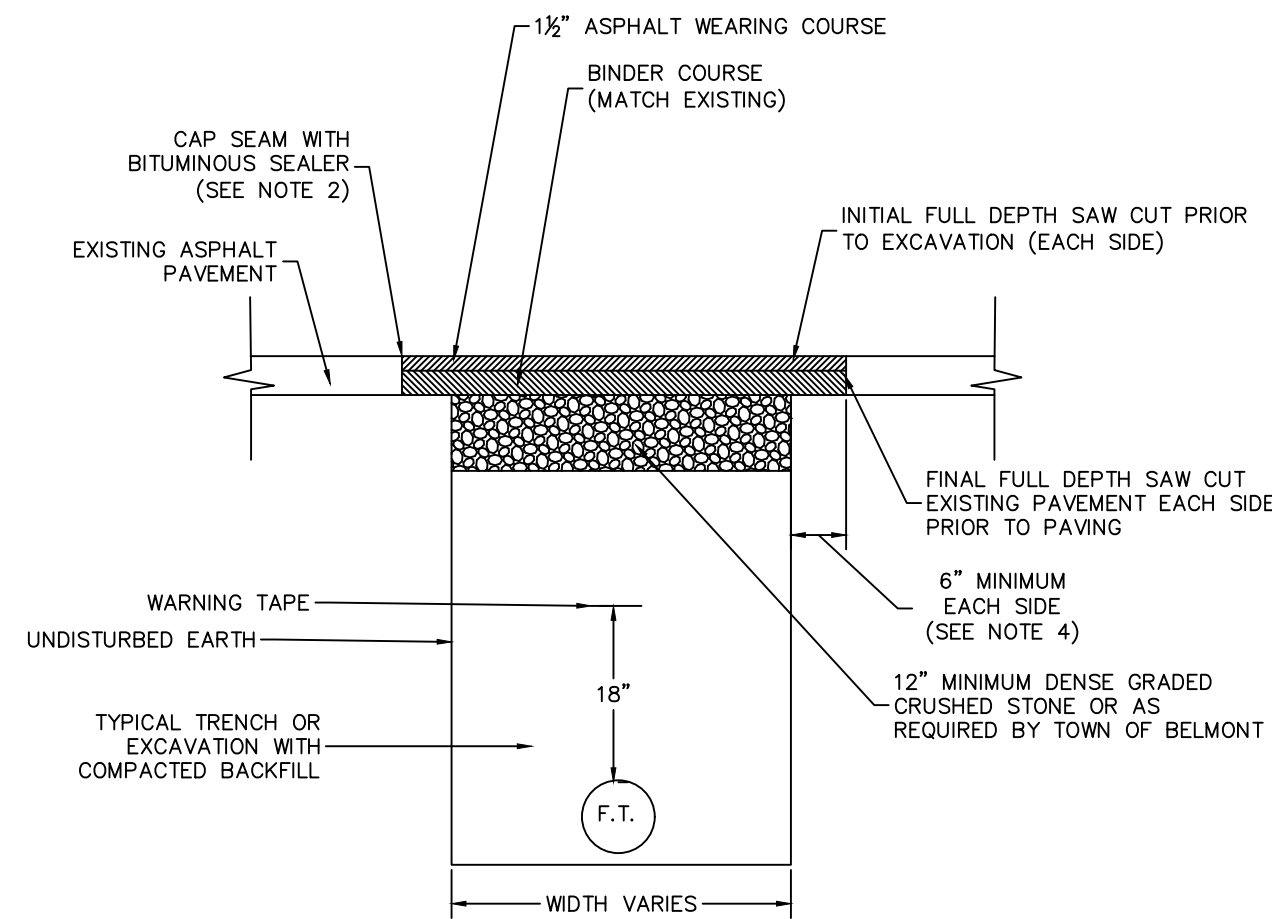
N.T.S.



NOTES:

- CONTRACTOR TO INSTALL TACK COAT ON ALL BUTT EDGES OF EXISTING PAVEMENT

1



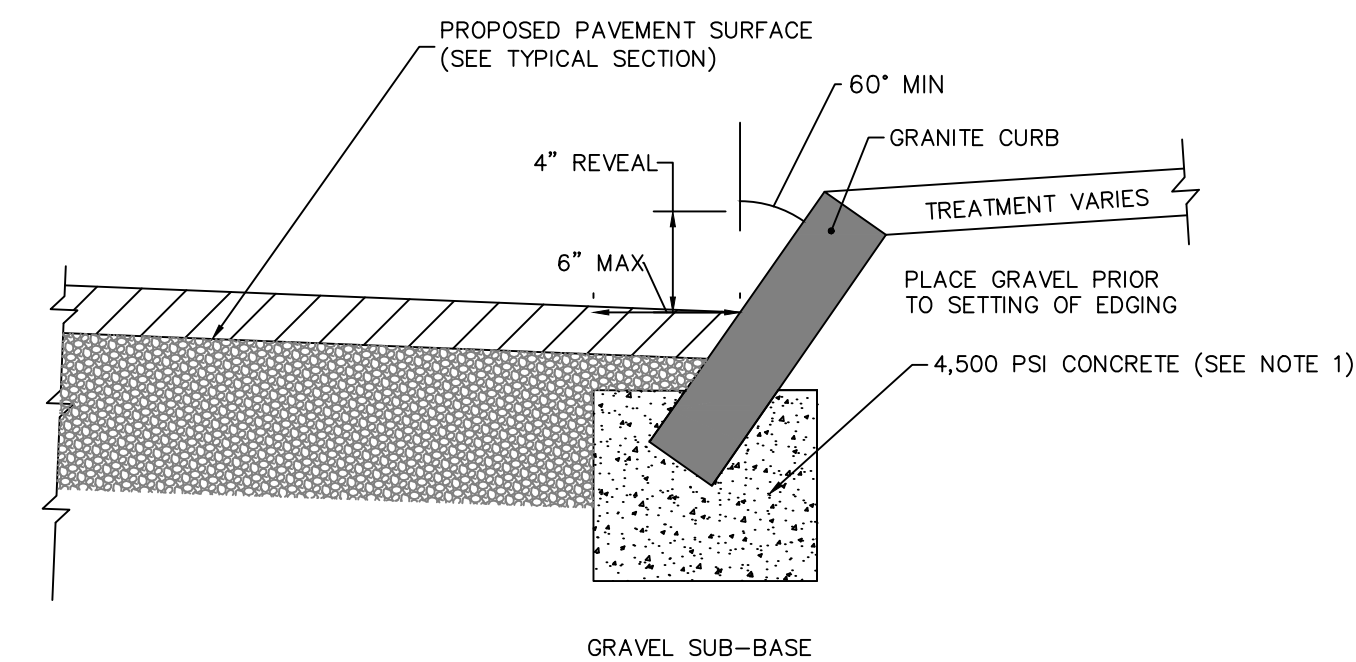
NOTES:

- EXISTING PAVEMENT IS TO BE SAW CUT FULL DEPTH TO OBTAIN A STRAIGHT AND NEAT EDGE FOR PAVING. SAW CUT IS TO BE MADE AFTER BACKFILLING THE TRENCH AT BOTTOM OF NEW PAVEMENT SECTION.
- ALL SEAMS BETWEEN EXISTING AND NEW SURFACES ARE TO BE SEALED WITH AN ASPHALT EMULSION.
- PAVEMENT SECTION TO BE CONFIRMED WITH THE TOWN OF BELMONT.
- 6 INCH MINIMUM TO BE FROM EDGE OF UNDISTURBED EARTH, EACH SIDE OF TRENCH.

4

PAVEMENT TRENCH RESTORATION

N.T.S.



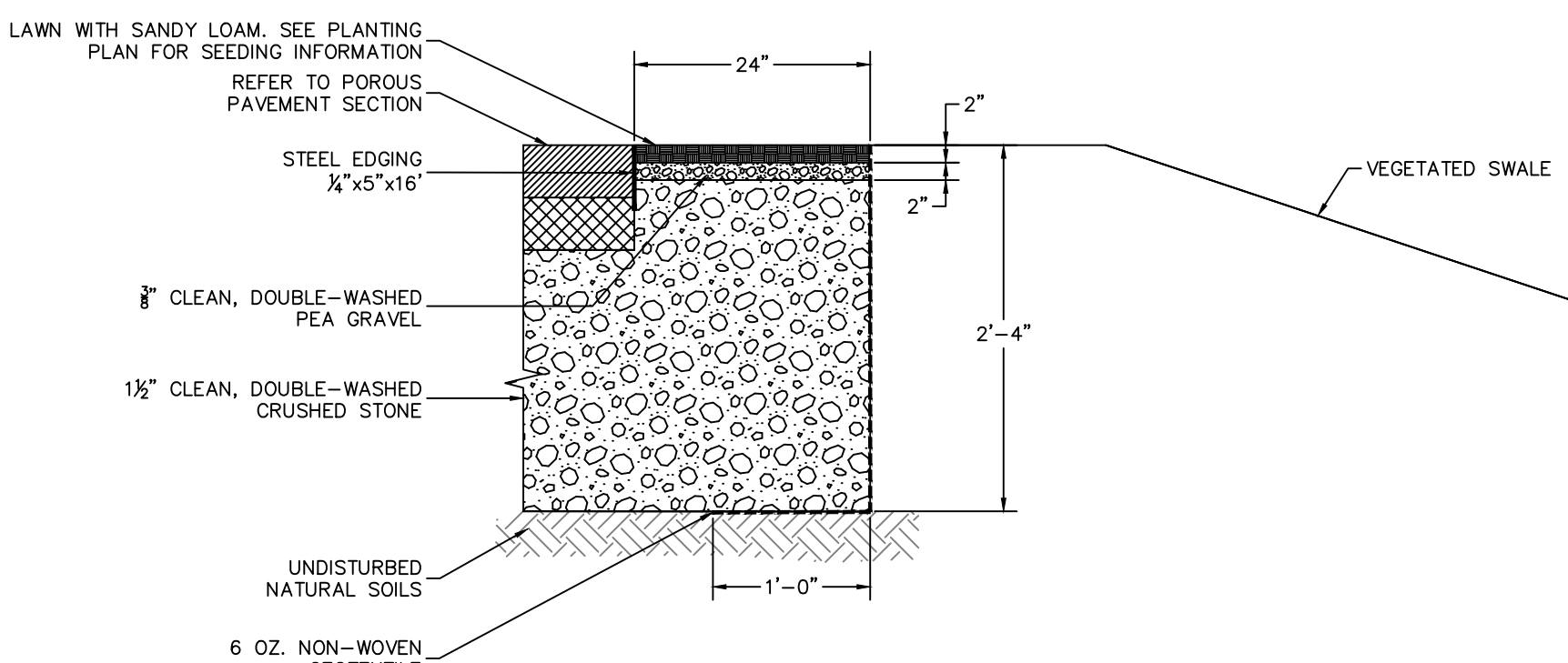
NOTES:

- ANY DESIGNATED CEMENT CONCRETE THAT IS ACCEPTABLE TO THE DEPARTMENT UNDER SECTION M4 OF THE STANDARD SPECIFICATIONS; ALL TEST REQUIREMENTS ARE WAIVED. HOT MIX ASPHALT SHALL NOT BE USED AS A SUBSTITUTE.
- THE ANGLE IS TO BE A MINIMUM OF 60° FROM VERTICAL UNDER ALL CONDITIONS.
- GROUT ALL JOINTS.

7

SLOPED GRANITE CURB

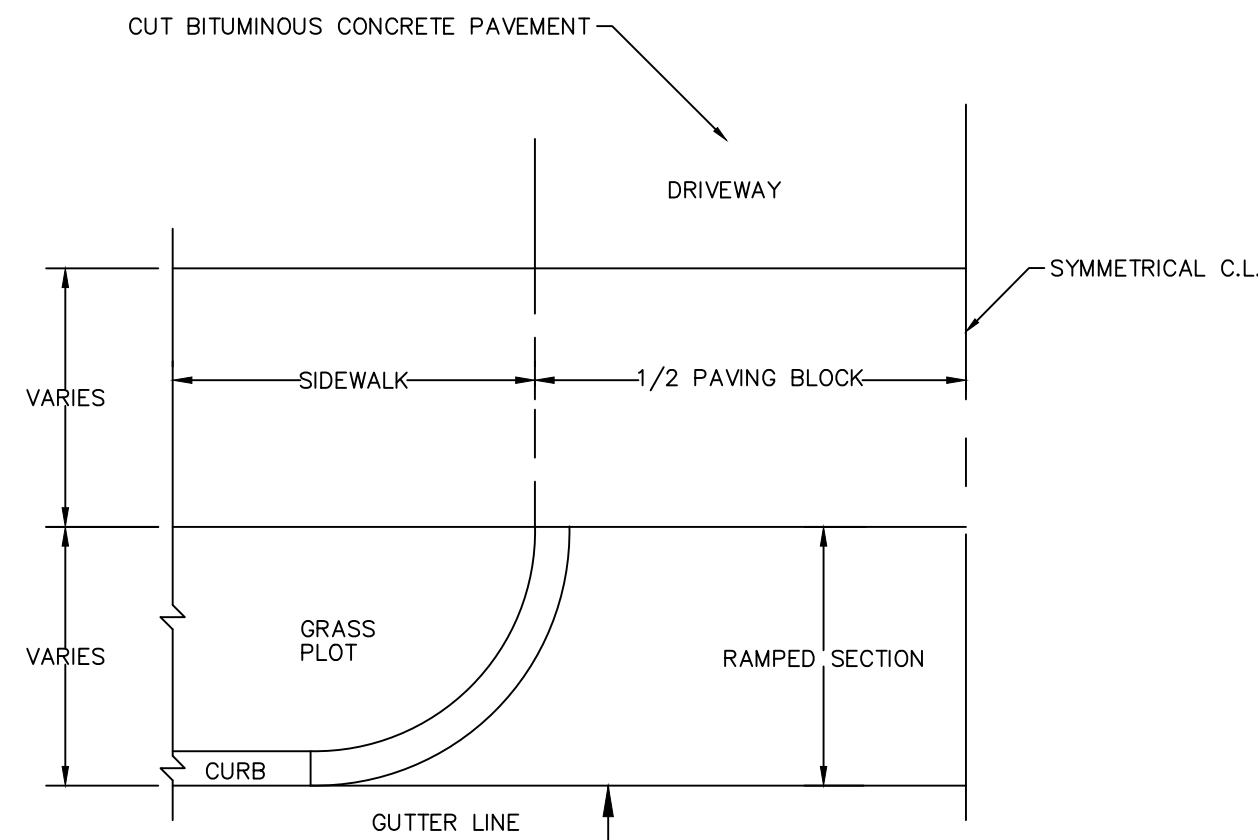
N.T.S.



5

LAWN EDGE (AT POROUS PAVEMENT AND VEGETATED SWALE)

N.T.S.

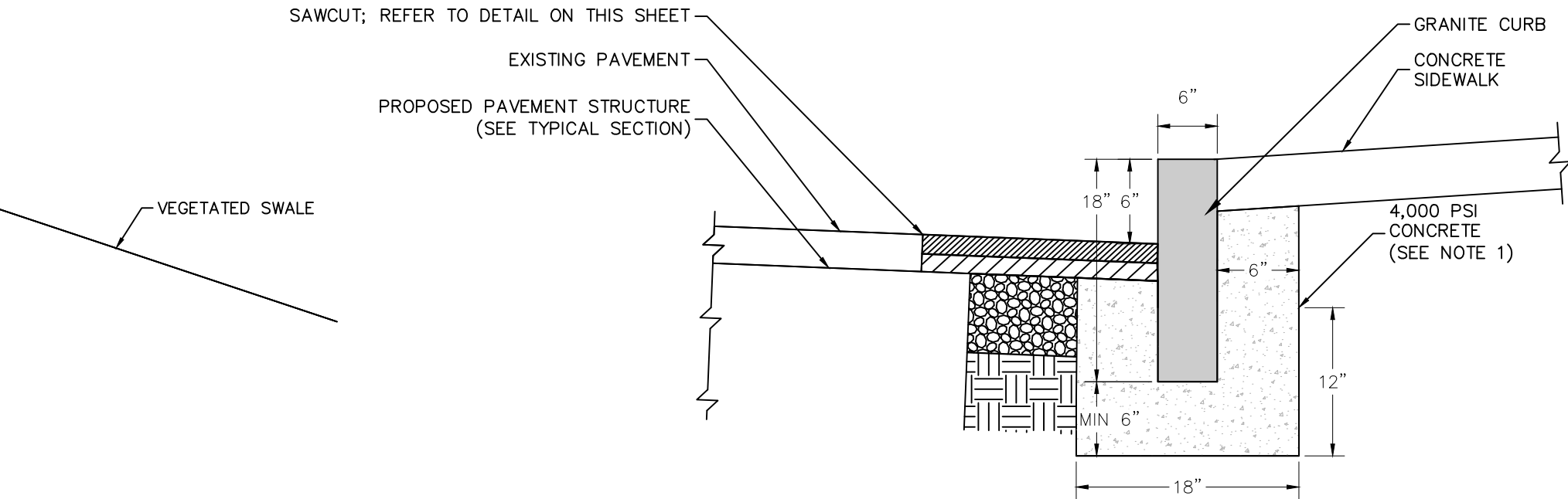


HALF PLAN

8

CONCRETE DRIVEWAY APRON

N.T.S.



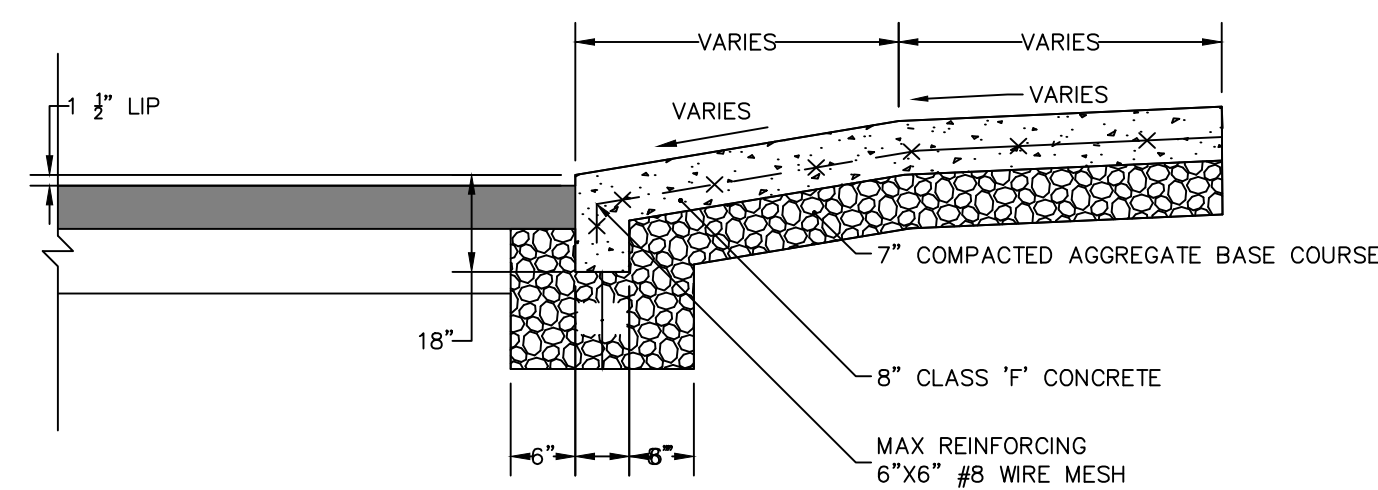
NOTES:

- ALL RADII AND JOINTS ARE TO BE SET IN 12" DEEP 18" WIDE 4,000 PSI CONCRETE. STRAIGHT SECTIONS BETWEEN JOINTS CAN BE SET ON PROCESSED AGGREGATE.
- GROUT ALL JOINTS

6

VERTICAL GRANITE CURB

N.T.S.



CROSS SECTION

Revisions		
Number	Date	Description
01	11/30/22	Peer Review Comments

Job number	151021201
Drawn by	KH, JW
Checked by	HH, FH
Scale	N/A
Date	07/27/2022



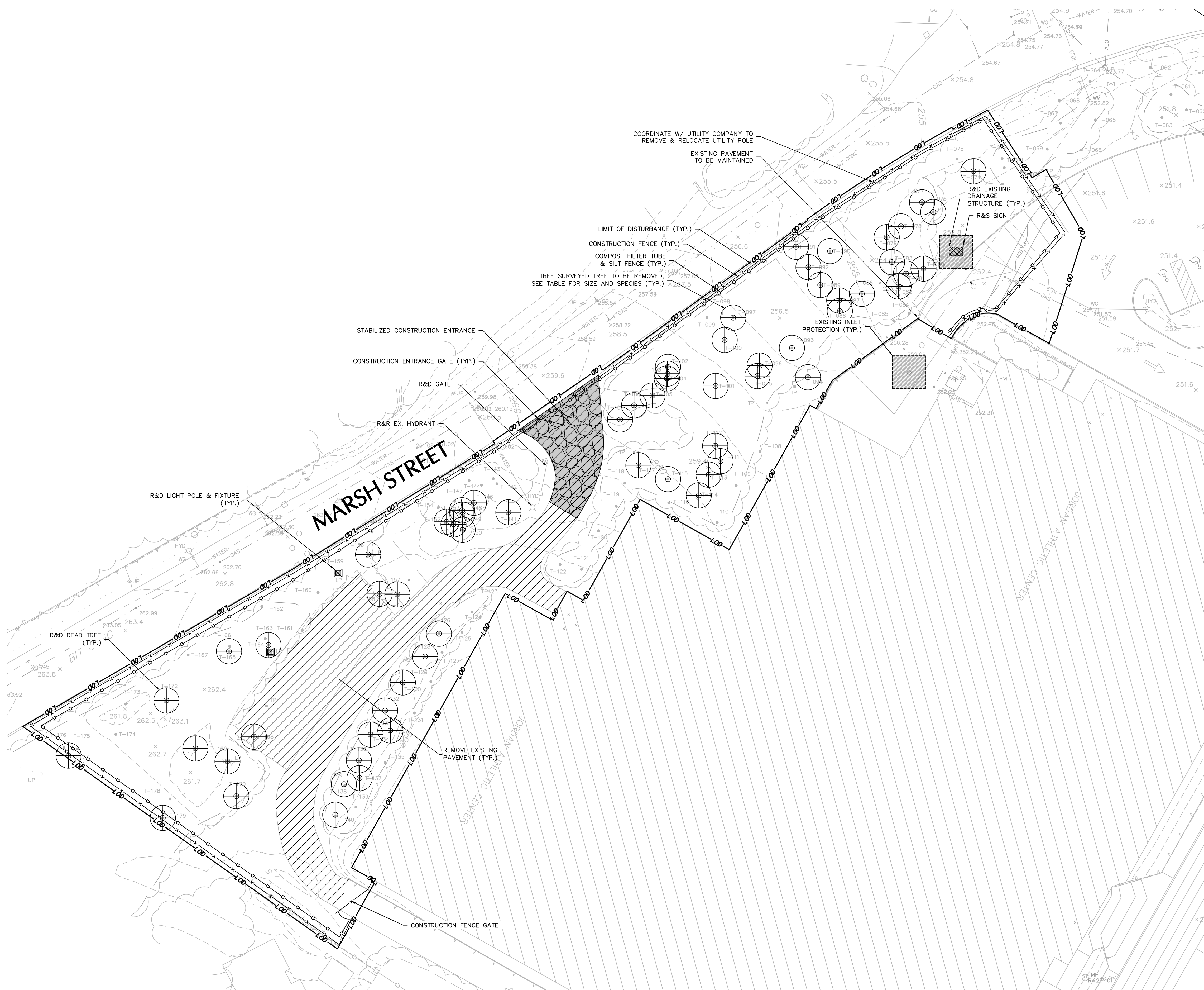
Sheet Title

SITE DETAILS

Sheet Number

CS-511

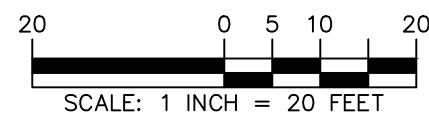
FOR PERMITTING ONLY. NOT FOR CONSTRUCTION.



TREES TO BE REMOVED – MAIN CAMPUS				
Tree ID	Common Name	Genus	Diameter at Breast Height (DBH), Number of Stems	Reason for Removal
74	Pine-Eastern White	Pinus strobus	4	Poor Condition
76	Oak-Black	Quercus velutina	20	New Driveway Construction
77	Pine-Eastern White	Pinus strobus	7	New Driveway Construction
78	Juniper-Eastern Redcedar	Juniperus virginiana	4	New Driveway Construction
79	Cherry-Black	Prunus serotina	17	New Driveway Construction
80	Maple-Norway	Acer platanoides	9	New Driveway Construction
81	Locust-Black	Robinia pseudoacacia	11	New Driveway Construction
82	Pine-Eastern White	Pinus strobus	9	New Driveway Construction
83	Locust-Black	Robinia pseudoacacia	8	New Driveway Construction
86	Pine-Eastern White	Pinus strobus	9	Poor Condition
87	Cherry-Black	Prunus serotina	14	Poor Condition
88	Locust-Black	Robinia pseudoacacia	23	New Driveway Construction
89	Maple-Norway	Acer platanoides	12	New Driveway Construction
90	Cherry-Black	Prunus serotina	12	Poor Condition
91	Locust-Black	Robinia pseudoacacia	31	Poor Condition
92	Cherry-Black	Prunus serotina	13	New Driveway Construction
93	Maple-Norway	Acer platanoides	11 (2 stems)	New Driveway Construction
94	Arborvitae-Western Redcedar	Thuja plicata	4	New Driveway Construction
95	Maple-Norway	Acer platanoides	15	New Driveway Construction
96	Locust-Black	Robinia pseudoacacia	18	Poor Condition
97	Maple-Norway	Acer platanoides	10	New Driveway Construction
100	Locust-Black	Robinia pseudoacacia	15	Poor Condition
101	Locust-Black	Robinia pseudoacacia	6	New Driveway Construction
102	Cherry-Black	Prunus serotina	20	Poor Condition
104	Sumac	Rhus sp	17	New Driveway Construction
105	Locust-Black	Robinia pseudoacacia	16	New Driveway Construction
106	Pine-Eastern White	Pinus strobus	6	Poor Condition
107	Spruce-Colorado Blue	Picea pungens	8	New Driveway Construction
111	Arborvitae-Western Redcedar	Thuja plicata	4	New Driveway Construction
112	Arborvitae-Western Redcedar	Thuja plicata	5	New Driveway Construction
113	Pine-Eastern White	Pinus strobus	11	New Driveway Construction
114	Pine-Eastern White	Pinus strobus	6	Poor Condition
115	Pine-Eastern White	Pinus strobus	10	New Driveway Construction
117	Juniper-Common	Juniperus communis	5	New Driveway Construction
126	Birch-Paper	Betula papyrifera	5 (3 stems)	New Wall/ New Driveway
128	Birch-Paper	Betula papyrifera	6 (4 stems)	New Wall/ New Driveway
130	Birch-Paper	Betula papyrifera	5 (3 stems)	New Wall/ New Driveway
132	Birch-Paper	Betula papyrifera	4 (3 stems)	New Wall/ New Driveway
134	Birch-Paper	Betula papyrifera	5 (3 stems)	New Wall/ New Driveway
136	Birch-Paper	Betula papyrifera	6 (2 stems)	New Wall/ New Driveway
137	Maple-Norway	Acer platanoides	6	New Wall/ New Driveway
138	Birch-Paper	Betula papyrifera	6 (3 stems)	New Wall/ New Driveway
140	Birch-Paper	Betula papyrifera	6 (2 stems)	New Wall/ New Driveway
141	Cherry-Black	Prunus serotina	10 (2 stems)	New Driveway Construction
146	Locust-Black	Robinia pseudoacacia	18	New Driveway Construction
148	Maple-Norway	Acer platanoides	8	New Driveway Construction
149	Maple-Norway	Acer platanoides	6	New Driveway Construction
150	Maple-Norway	Acer platanoides	11	New Driveway Construction
151	Cherry-Black	Prunus serotina	14 (2 stems)	Poor Condition
152	Maple-Norway	Acer platanoides	9	New Driveway Construction
153	Maple-Norway	Acer platanoides	8	New Driveway Construction
156	Locust-Black	Robinia pseudoacacia	23	Poor Condition
157	Pine-Austrian	Pinus nigra	7	New Driveway Construction
158	Cherry-Black	Prunus serotina	12	New Driveway Construction
164	Cherry-Black	Prunus serotina	20 (2 stems)	Poor Condition
165	Cherry-Black	Prunus serotina	15	Poor Condition
168	Maple-Red	Acer rubrum	11	New Driveway Construction
169	Oak-Pin	Quercus palustris	35	Poor Condition
170	Maple-Norway	Acer platanoides	15	New Driveway Construction
171	Maple-Norway	Acer platanoides	7	Poor Condition
172	Cherry-Black	Prunus serotina	15	Poor Condition
177	Arborvitae-Western Redcedar	Thuja plicata	7	Poor Condition
179	Hickory-Mockernut	Carya tomentosa	15	Poor Condition

NOTES:

1. SEE SHEET C-002 FOR NOTES AND LEGEND
2. EXISTING TREES TO REMAIN WITHIN THE LIMIT OF WORK ARE TO BE PROTECTED.
3. TREE PROTECTION FENCING TO BE 4' TALL CHAIN LINK FENCE AND TO BE SET UP AT DRIP LINE OF EXISTING TREES OR EXTENT OF CRITICAL ROOT ZONE, WHICHEVER IS GREATER. EXISTING TREES AND SHRUBS TO REMAIN SHALL NOT BE ALTERED OR REMOVED. CRITICAL ROOT ZONES OF EXISTING TREES TO REMAIN SHALL BE MAINTAINED AND MUST REMAIN IN THE SAME CONDITION AS OBSERVED PRIOR TO CONSTRUCTION.
4. TREE AND SHRUB REMOVAL SHALL INCLUDE THE FELLING, CUTTING, GRUBBING OUT OF ROOTS AND SATISFACTORY OFF-SITE DISPOSAL OF ALL STUMPS AND VEGETATIVE MATERIALS. CONCURRENTLY, TREE REMOVAL SHALL INCLUDE THE REMOVAL OF ALL ON-NO HEAVY MACHINERY IS TO BE USED WITHIN THE CRITICAL ROOT ZONES OF EXISTING TREES. EXCAVATION WITHIN CRITICAL ROOT ZONE IS TO BE PERFORMED BY HAND. NEW ALLY WORK SHALL BE SET BACK FROM CRITICAL ROOT ZONE WITH THE LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION.
5. ALL UTILITY FRAMES, COVERS AND VALVE BOXES NOT INDICATED TO BE REMOVED SHALL BE PROTECTED AND ADJUSTED TO FINISH GRADE.
6. EXISTING ROCKPILE AND REUSE DISPOSAL WITHIN LIMIT OF DISTURBANCE WHERE APPLICABLE AND WHERE REGRADING IS TO OCCUR.




**BELMONT HILL
SCHOOL
BELMONT, MA**

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Revisions		
Number	Date	Description
01	11/30/22	Peer Review Comments
02	03/03/23	Design Revisions
Job number 151021201		
Drawn by	KH, JW	Checked by HH, FH
Scale	1"=20'	Date 07/27/2022

Stamp



FRANK HOLMES
CIVIL
No. 40203
REGISTERED
PROFESSIONAL ENGINEER

Frank Holmes

Sheet Title

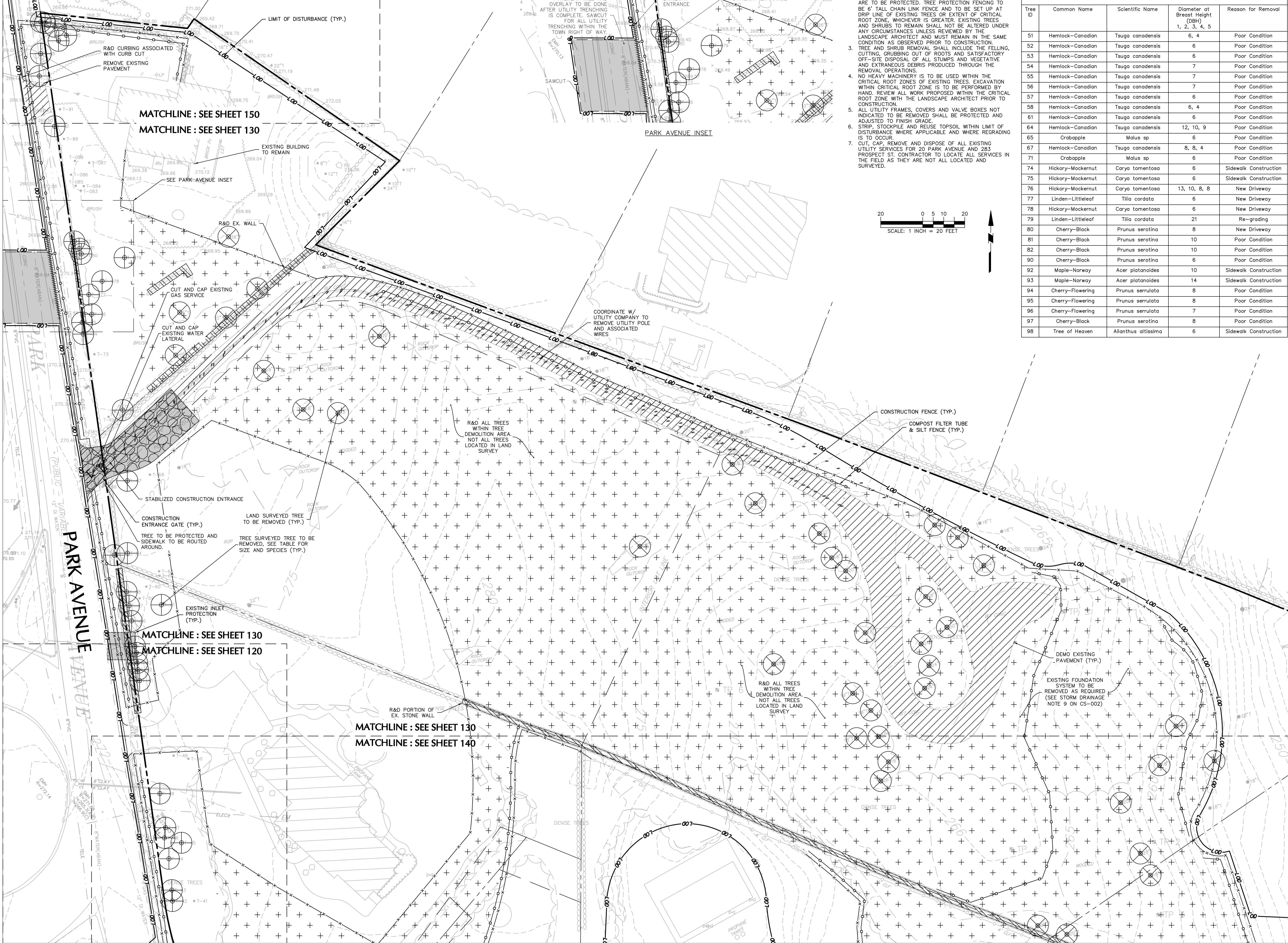
**SITE PREP &
EROSION
CONTROL
PLAN I**

Sheet Number

CES-110

FOR PERMITTING ONLY. NOT FOR CONSTRUCTION.

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TREES TO BE REMOVED – EAST CAMPUS

Tree ID	Common Name	Scientific Name	Diameter at Breast Height (DBH) 1, 2, 3, 4, 5	Reason for Removal
51	Hemlock-Canadian	Tsuga canadensis	6, 4	Poor Condition
52	Hemlock-Canadian	Tsuga canadensis	6	Poor Condition
53	Hemlock-Canadian	Tsuga canadensis	6	Poor Condition
54	Hemlock-Canadian	Tsuga canadensis	7	Poor Condition
55	Hemlock-Canadian	Tsuga canadensis	7	Poor Condition
56	Hemlock-Canadian	Tsuga canadensis	7	Poor Condition
57	Hemlock-Canadian	Tsuga canadensis	6	Poor Condition
58	Hemlock-Canadian	Tsuga canadensis	6, 4	Poor Condition
61	Hemlock-Canadian	Tsuga canadensis	6	Poor Condition
64	Hemlock-Canadian	Tsuga canadensis	12, 10, 9	Poor Condition
65	Crabapple	Malus sp	6	Poor Condition
67	Hemlock-Canadian	Tsuga canadensis	8, 8, 4	Poor Condition
71	Crabapple	Malus sp	6	Poor Condition
74	Hickory-Mockernut	Carya tomentosa	6	Sidewalk Construction
75	Hickory-Mockernut	Carya tomentosa	6	Sidewalk Construction
76	Hickory-Mockernut	Carya tomentosa	13, 10, 8, 8	New Driveway
77	Linden-Littleleaf	Tilia cordata	6	New Driveway
78	Hickory-Mockernut	Carya tomentosa	6	New Driveway
79	Linden-Littleleaf	Tilia cordata	21	Re-grading
80	Cherry-Black	Prunus serotina	8	New Driveway
81	Cherry-Black	Prunus serotina	10	Poor Condition
82	Cherry-Black	Prunus serotina	10	Poor Condition
90	Cherry-Black	Prunus serotina	6	Poor Condition
92	Maple-Norway	Acer platanoides	10	Sidewalk Construction
93	Maple-Norway	Acer platanoides	14	Sidewalk Construction
94	Cherry-Flowering	Prunus serrulata	8	Poor Condition
95	Cherry-Flowering	Prunus serrulata	8	Poor Condition
96	Cherry-Flowering	Prunus serrulata	7	Poor Condition
97	Cherry-Black	Prunus serotina	8	Poor Condition
98	Tree of Heaven	Ailanthus altissima	6	Sidewalk Construction

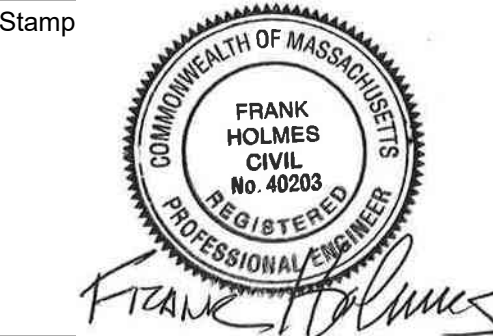
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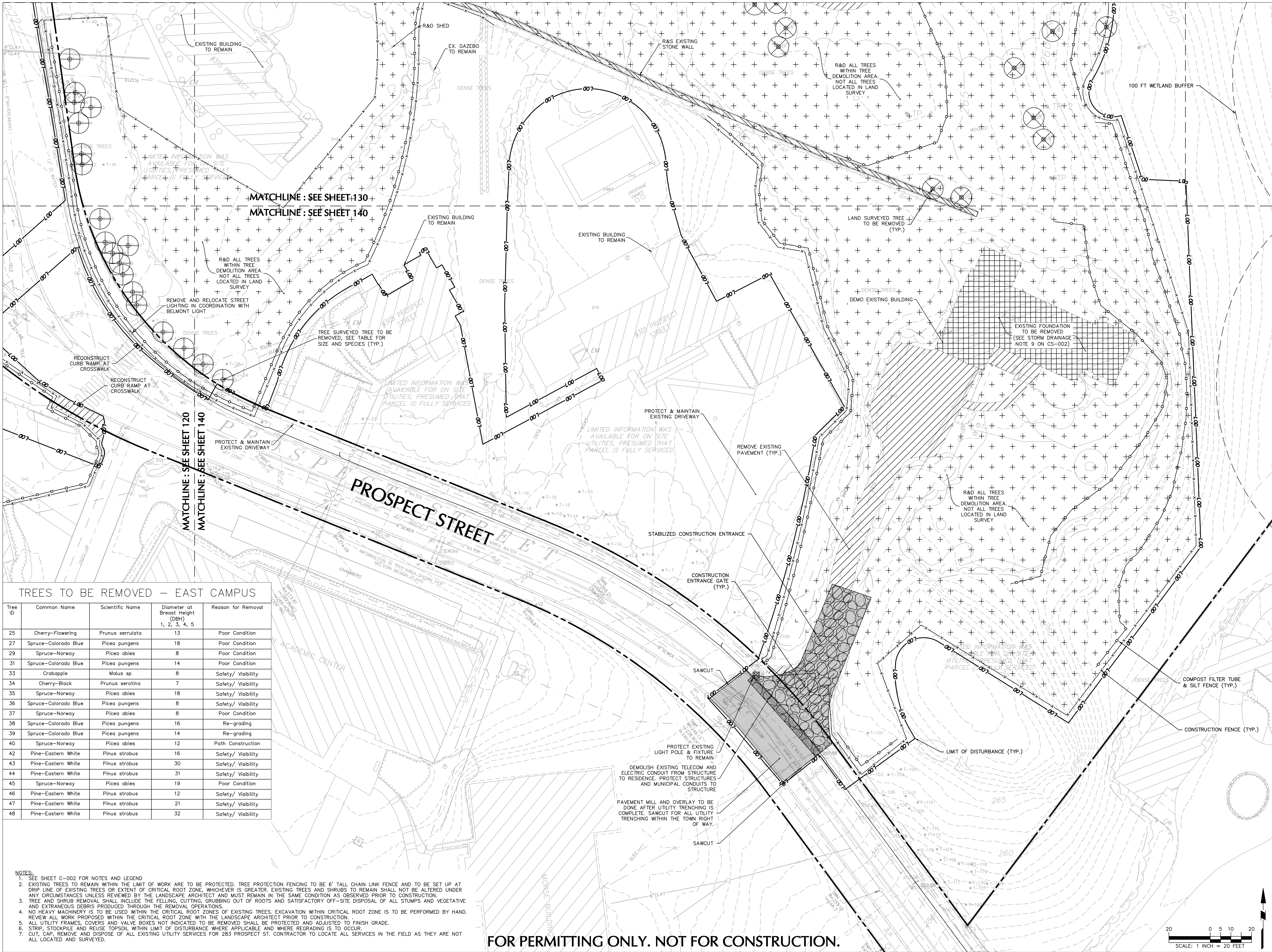
Revisions		
Number	Date	Description
01	11/30/22	Peer Review Comments
02	03/03/23	Design Revisions

Job number: 151021201
Drawn by: KH, JW Checked by: HH, FH
Scale: 1"=20' Date: 07/27/2022



Sheet Title
**SITE PREP &
EROSION
CONTROL
PLAN III**

Sheet Number
CES-130



Revisions

Number	Date	Description
01	03/03/23	Design Revisions

Job number 151021201
Drawn by **KH, JW** / Checked by **HH, FH**
Scale **1"=20'** / Date **07/27/2022**

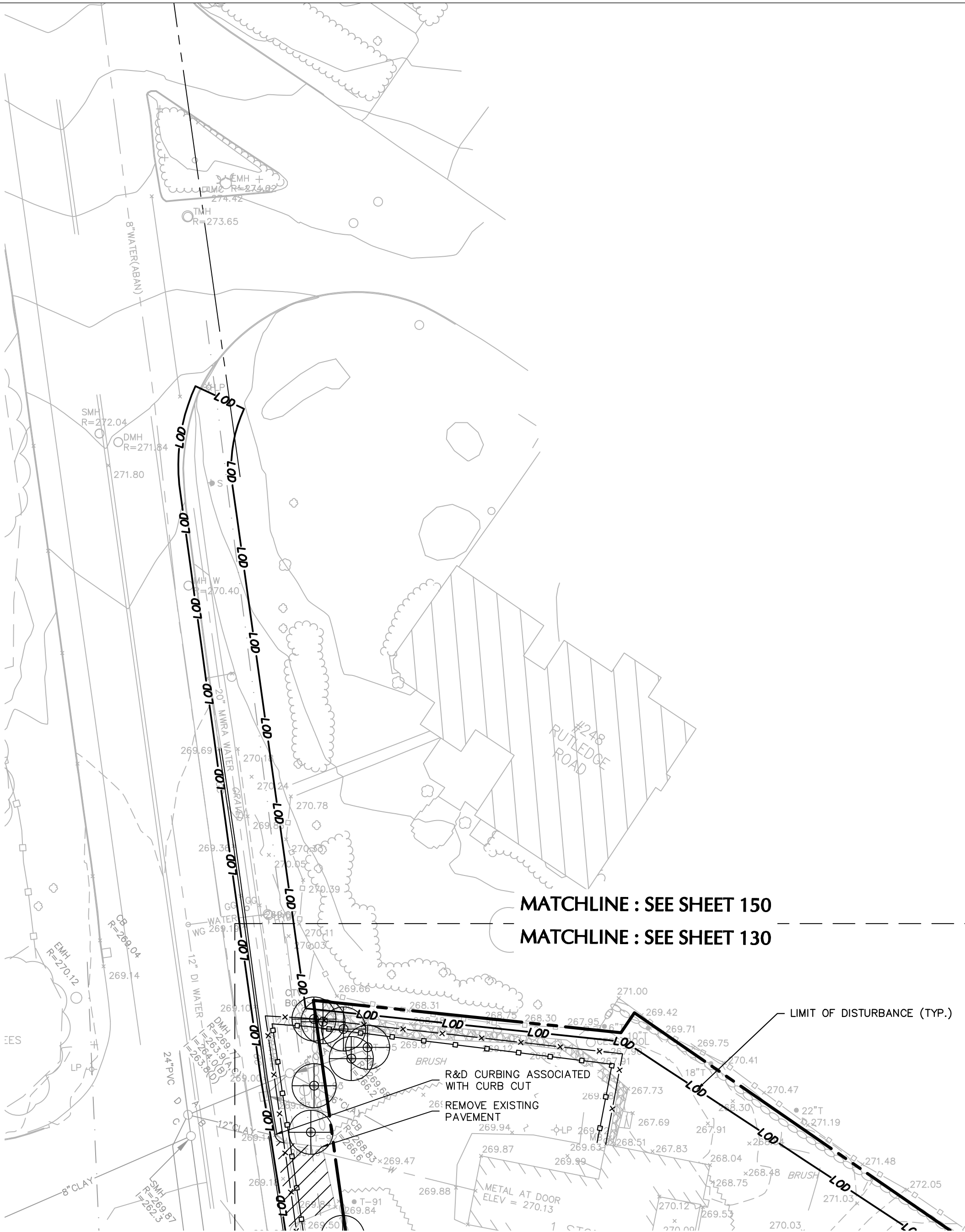
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Sheet Title
**SITE PREP &
EROSION
CONTROL
PLAN IV**

Sheet Number
CES-140

Scale: 1 INCH = 20 FEET

Date: 3/3/2023 Time: 12:08 User: jwattler Style Table: Langan.stb Layout: CES-140 Document Code: 151021201-0302-CE101-0105



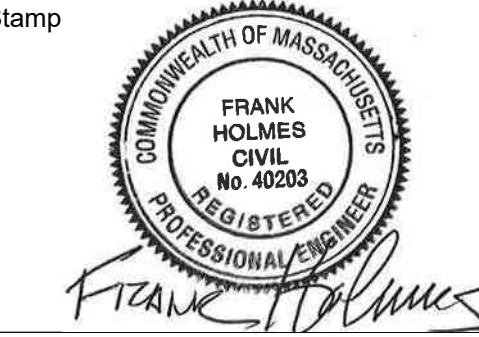
NOTES:

1. SEE SHEET C-002 FOR NOTES AND LEGEND
2. EXISTING TREES TO REMAIN WITHIN THE LIMIT OF WORK ARE TO BE PROTECTED. TREE PROTECTION FENCING TO BE 6' TALL CHAIN LINK FENCE AND TO BE SET UP AT DRIP LINE OF EXISTING TREES OR EXTENT OF CRITICAL ROOT ZONE, WHICHEVER IS GREATER. EXISTING TREES AND SHRUBS TO REMAIN SHALL NOT BE ALTERED UNDER ANY CIRCUMSTANCES UNLESS REVIEWED BY THE LANDSCAPE ARCHITECT AND MUST REMAIN IN THE SAME CONDITION AS OBSERVED PRIOR TO CONSTRUCTION.
3. TREE AND SHRUB REMOVAL SHALL INCLUDE THE FELLING, CUTTING, GRUBBING OUT OF ROOTS AND SATISFACTORY OFF-SITE DISPOSAL OF ALL STUMPS AND VEGETATIVE AND EXTRANEOUS DEBRIS PRODUCED THROUGH THE REMOVAL OPERATIONS.
4. NO HEAVY MACHINERY IS TO BE USED WITHIN THE CRITICAL ROOT ZONES OF EXISTING TREES. EXCAVATION WITHIN CRITICAL ROOT ZONE IS TO BE PERFORMED BY HAND. REVIEW ALL WORK PROPOSED WITHIN THE CRITICAL ROOT ZONE WITH THE LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION.
5. ALL UTILITY FRAMES, COVERS AND VALVE BOXES NOT INDICATED TO BE REMOVED SHALL BE PROTECTED AND ADJUSTED TO FINISH GRADE.
6. STRIP, STOCKPILE AND REUSE TOPSOIL WITHIN LIMIT OF DISTURBANCE WHERE APPLICABLE AND WHERE REGRADING IS TO OCCUR.
7. CUT, CAP, REMOVE AND DISPOSE OF ALL EXISTING UTILITY SERVICES FOR 263 PROSPECT ST. CONTRACTOR TO LOCATE ALL SERVICES IN THE FIELD AS THEY ARE NOT ALL LOCATED AND SURVEYED.

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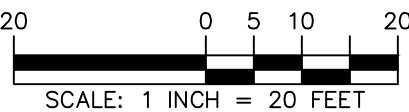
Revisions		
Number	Date	Description

Job number 151021201
Drawn by **KH, JW** Checked by **HH, FH**
Scale **1"=20'** Date **11/23/2022**



Sheet Title
**SITE PREP &
EROSION
CONTROL
PLAN V**

Sheet Number
CES-150



[illegible]

Job number 151021201	
Drawn by KH, JW	Checked by HH, FH
Scale N/A	Date 07/27/2022

Stamp



FRANK HOLMES
CIVIL
No. 40203
REGISTERED
PROFESSIONAL ENGINEER

FRANK HOLMES

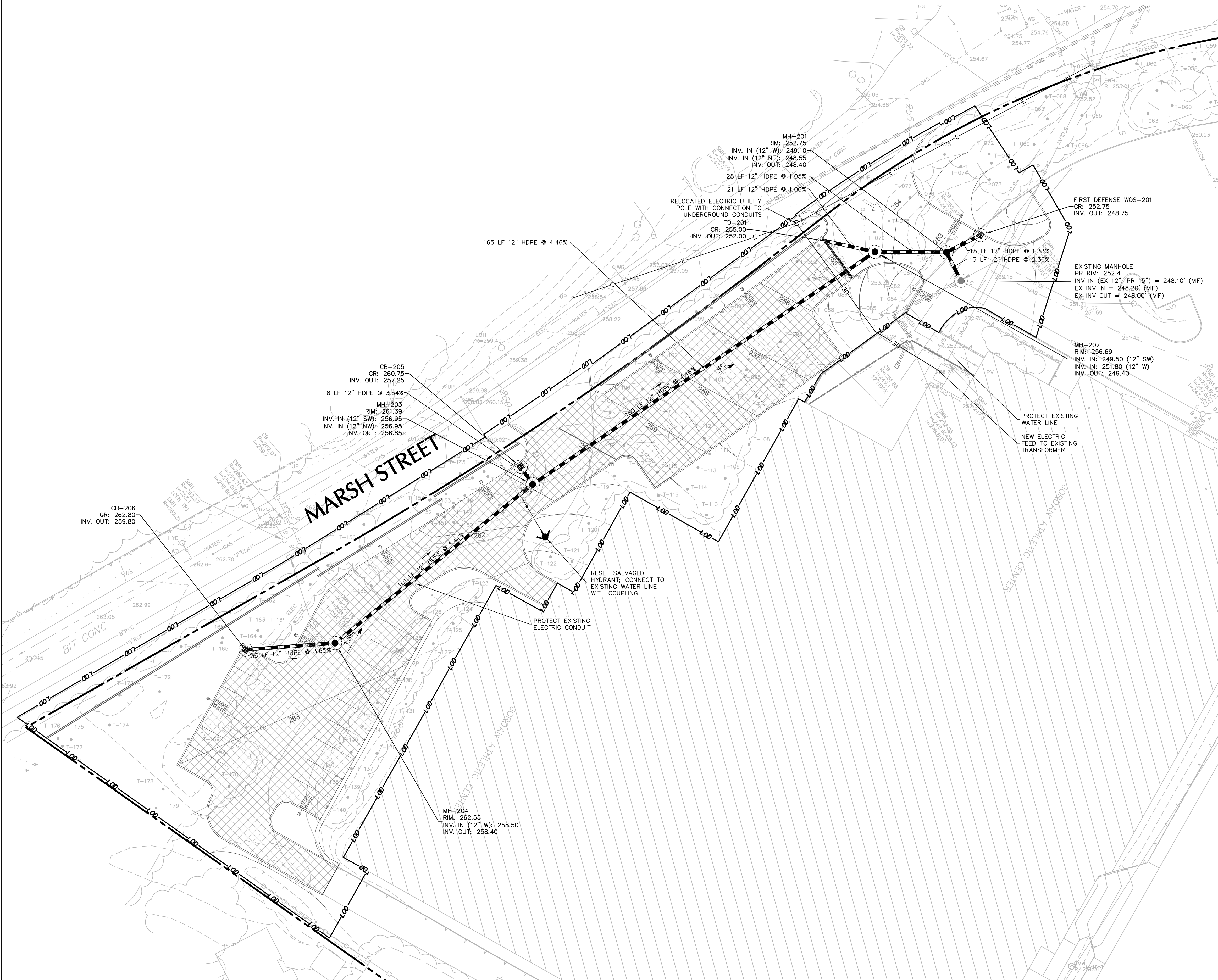
Sheet Title

SITE PREP & EROSION CONTROL DETAILS I

Sheet Number

CES-521

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Revisions

Number	Date	Description
01	11/30/22	Peer Review Comments
02	03/03/23	Design Revisions

Job number 151021201
Drawn by **KH, JW** Checked by **HH, FH**
Scale **1"=20'** Date **07/27/2022**

Stamp

COMMONWEALTH OF MASSACHUSETTS
FRANK HOLMES
CIVIL
No. 40203
REGISTERED PROFESSIONAL ENGINEER

Sheet Title

DRAINAGE &
UTILITIES
PLAN I

Sheet Number

CU-110

NOTE

1. SEE SHEET CS-002 FOR NOTES AND LEGEND.

2. SEE LANDSCAPE PLANS FOR DETAILED GRADING INFORMATION.

20 0 5 10 20

SCALE: 1 INCH = 20 FEET

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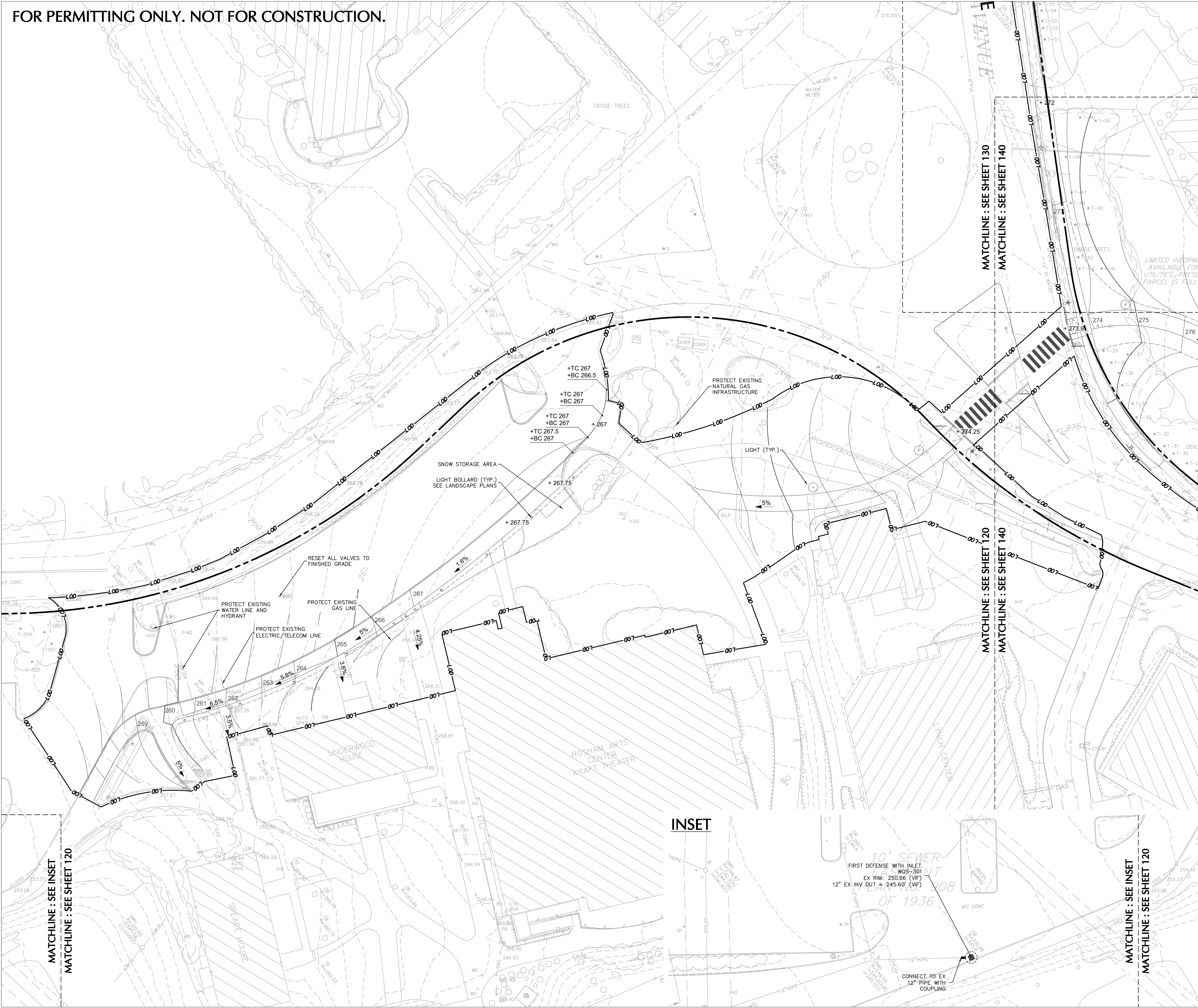
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INSET

FIRST DEFENSE WITH INLET
WOS-301
EX RIM: 250.66 (VIF)
12" EX INV. OUT = 245.60' (VIF)

NOTE
1. SEE SHEET CS-002 FOR NOTES
AND LEGEND.
2. SEE LANDSCAPE PLANS FOR
DETAILED GRADING INFORMATION.



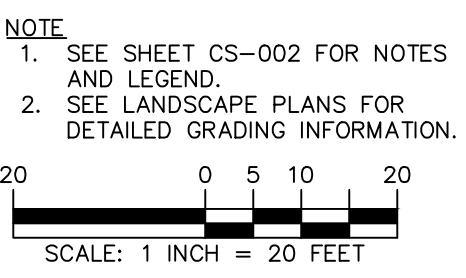
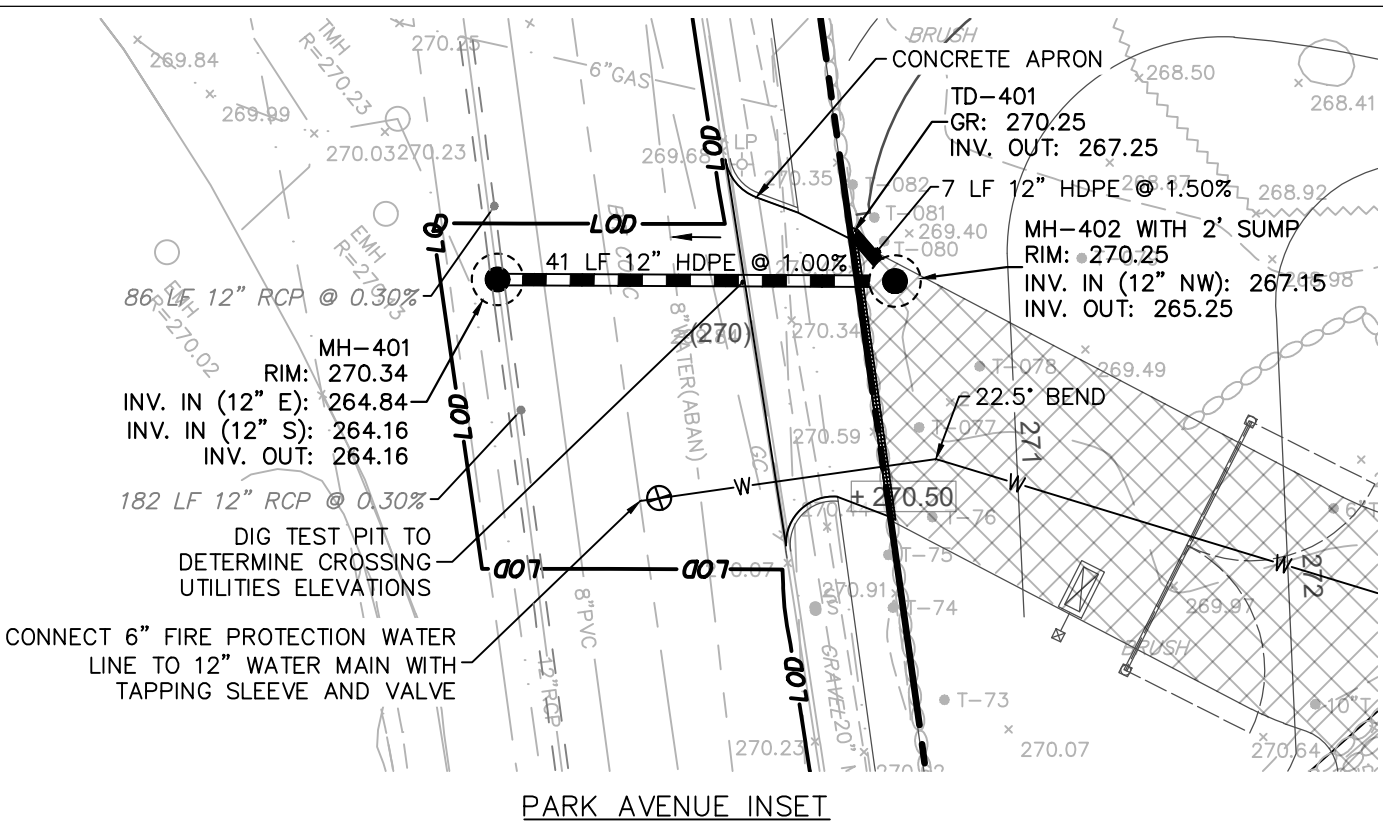
Revisions		
Number	Date	Description
01	11/30/22	Peer Review Comments
02	03/03/23	Design Revisions

Job number 151021201
Drawn by **KH, JW** / Checked by **HH, FH**
Scale **1"=20'** Date **07/27/2022**



Sheet Title
**DRAINAGE &
UTILITIES
PLAN II**

Sheet Number
CU-120



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Revisions		
Number	Date	Description
01	11/30/22	Peer Review Comments
02	03/03/23	Design Revisions

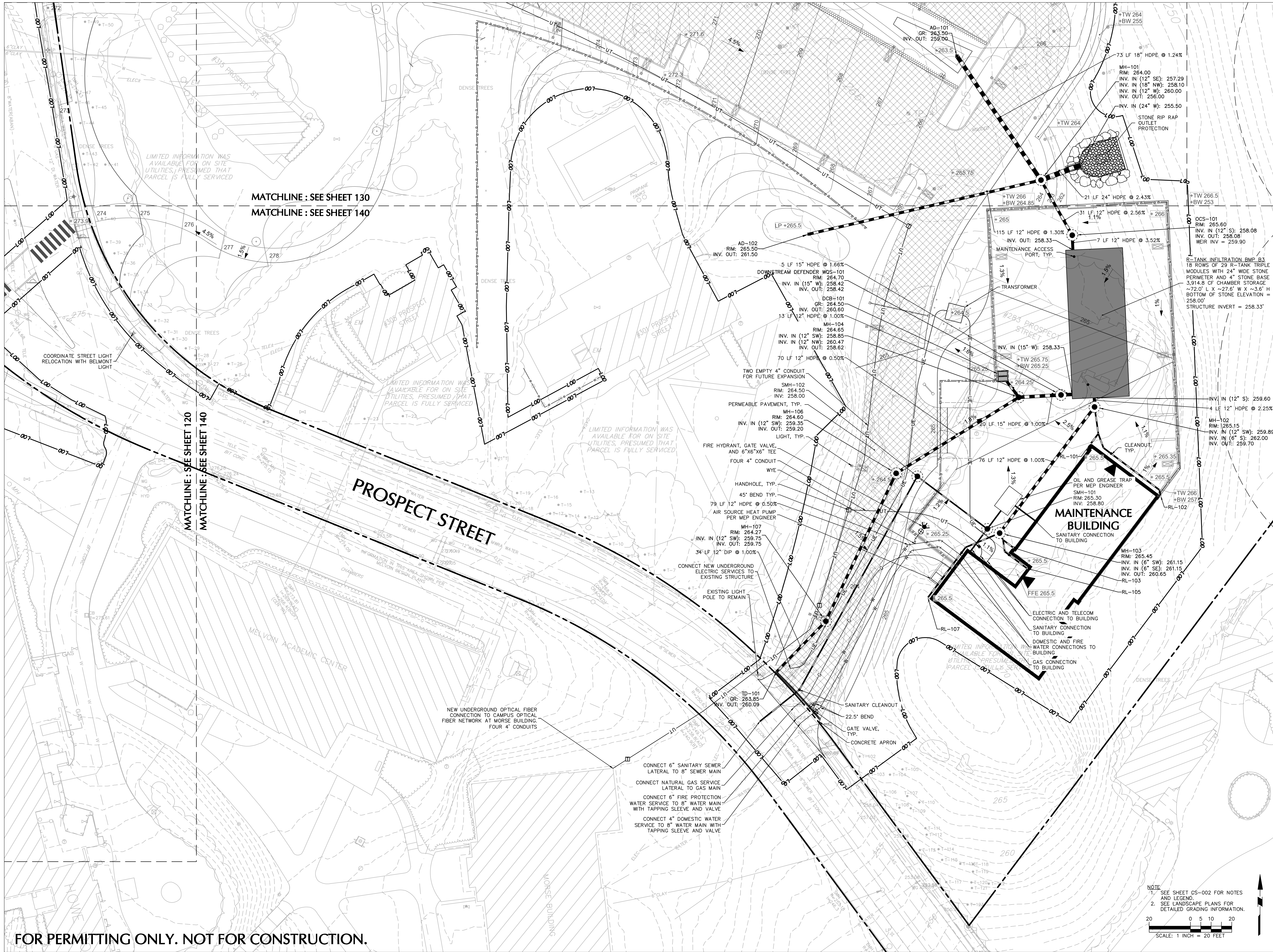
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Drawn by **KH, JW** Checked by **HH, FH**
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Stamp

FRANK HOLMES
CIVIL
No. 40203
REGISTERED PROFESSIONAL ENGINEER

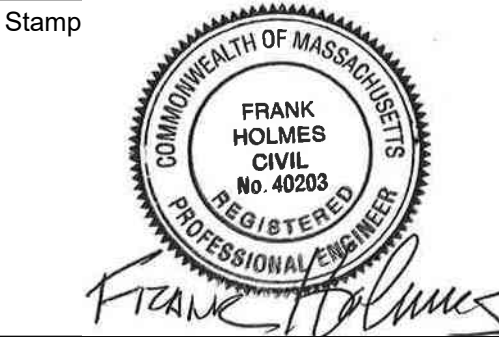
Sheet Title
DRAINAGE & UTILITIES PLAN III

Sheet Number
CU-130



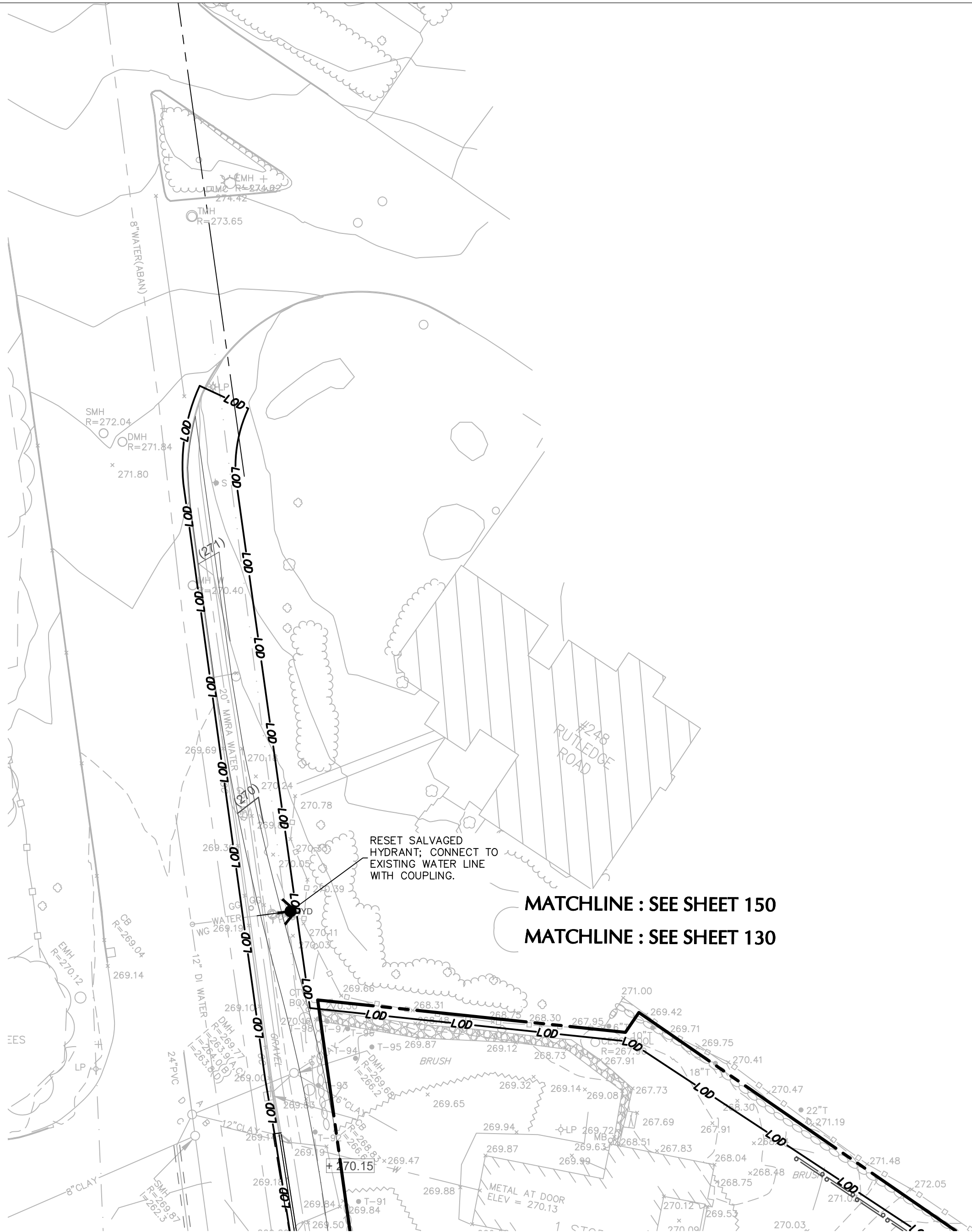
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Number	Date	Description
01	03/03/23	Design Revisions

Job number 151021201
Drawn by **KH, JW** Checked by **HH, FH**
Scale **1"=20'** Date **07/27/2022**



Sheet Title
**DRAINAGE &
UTILITIES
PLAN IV**

Sheet Number
CU-140



MATCHLINE : SEE SHEET 150
MATCHLINE : SEE SHEET 130

Revisions		
Number	Date	Description
Job number 151021201		
Drawn by KH, JW Checked by HH, FH		
Scale 1"=20' Date 07/27/2022		



Sheet Number

**DRAINAGE
AND
UTILITIES
PLAN V**

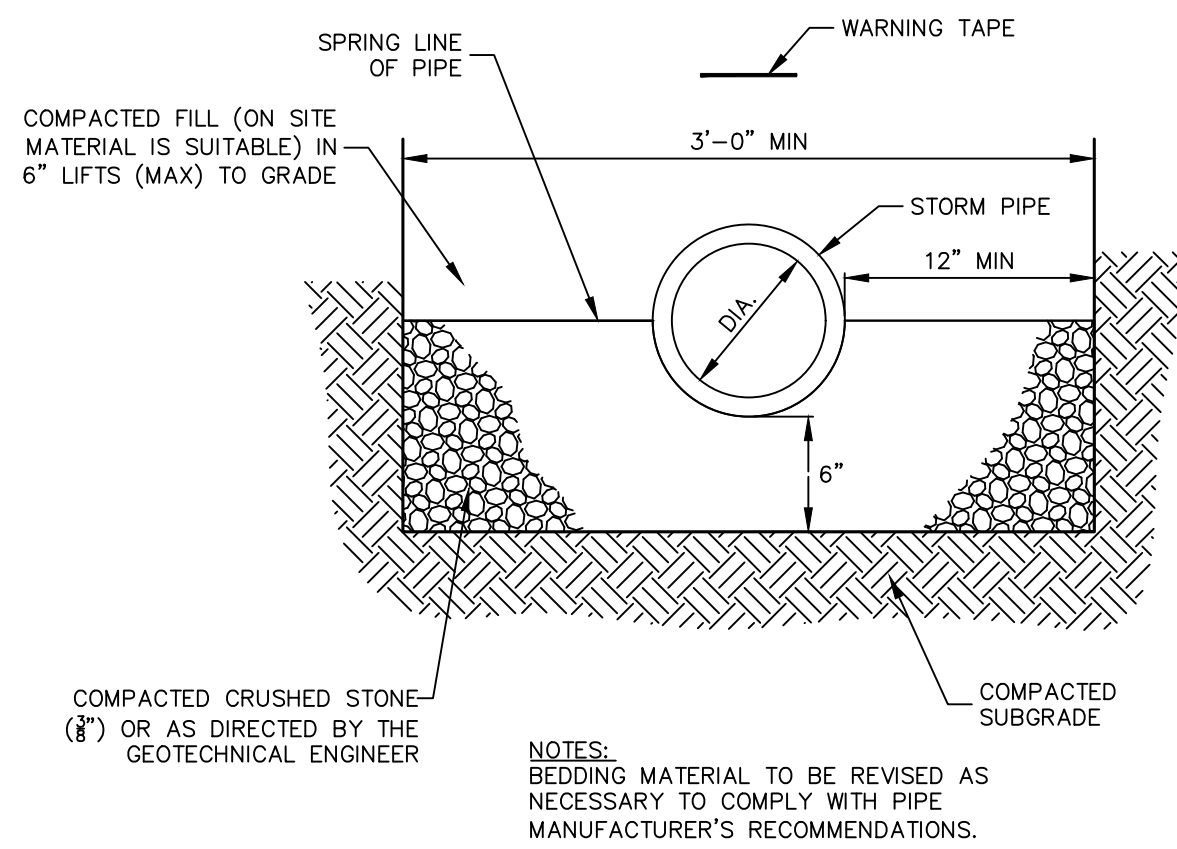
CU-150

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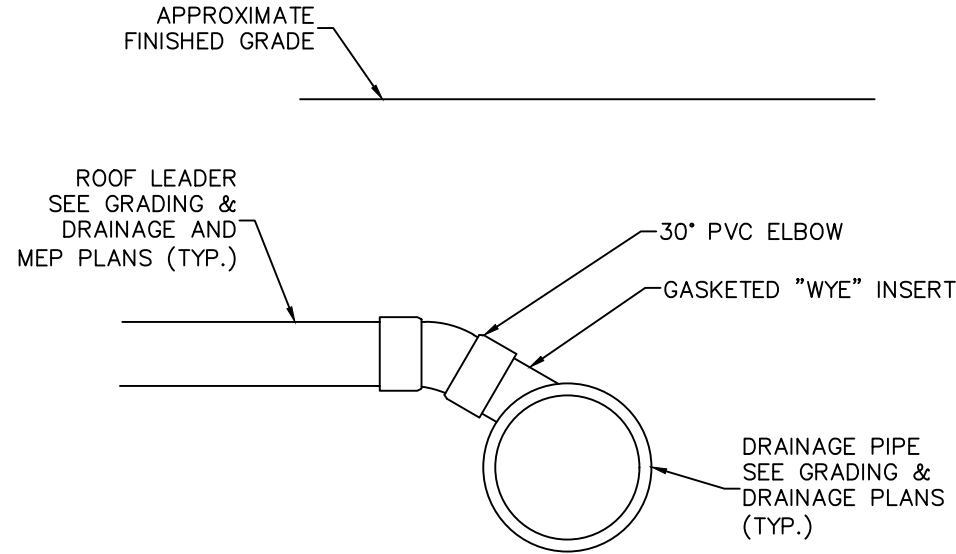
NOTE

- SEE SHEET CS-002 FOR NOTES AND LEGEND.
- SEE LANDSCAPE PLANS FOR DETAILED GRADING INFORMATION.

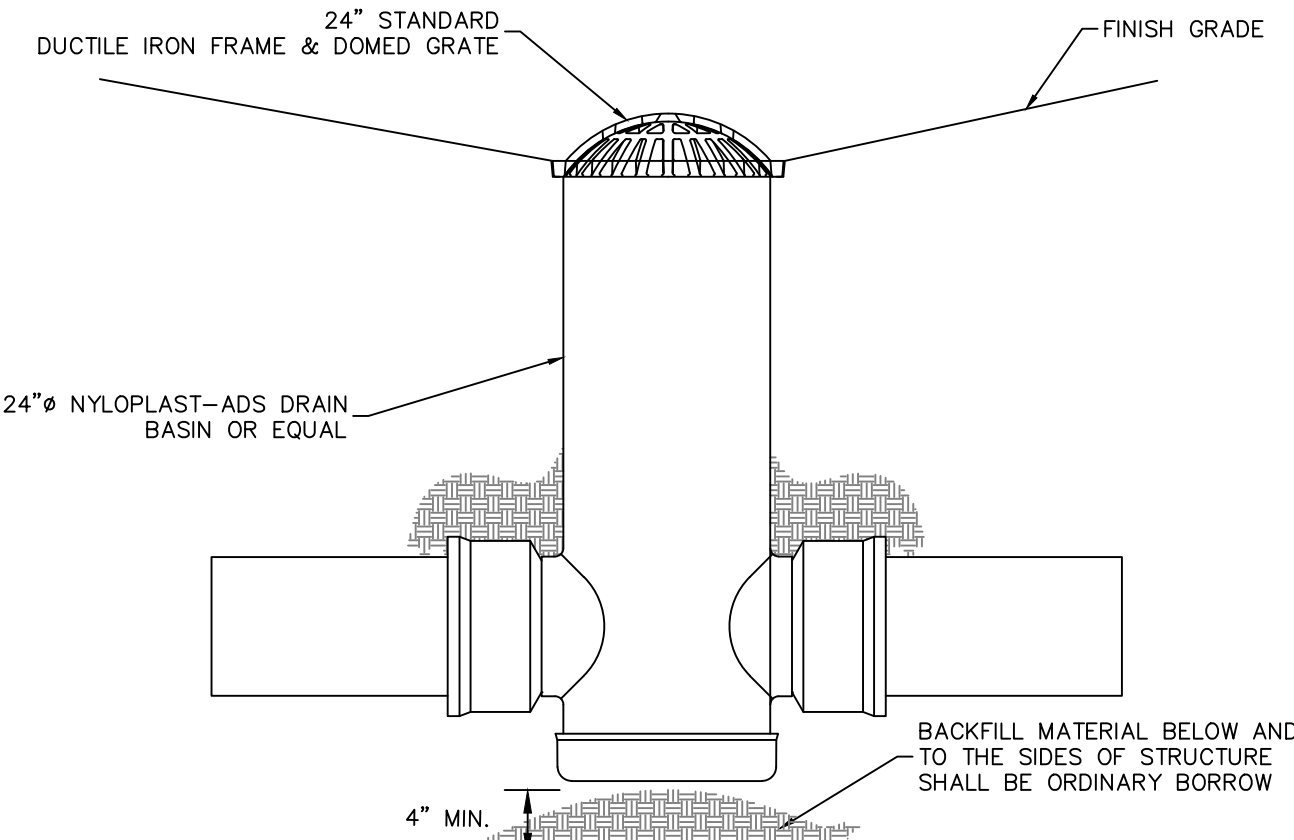
SCALE: 1 INCH = 20 FEET



1 STORMWATER TRENCH / BEDDING
N.T.S.

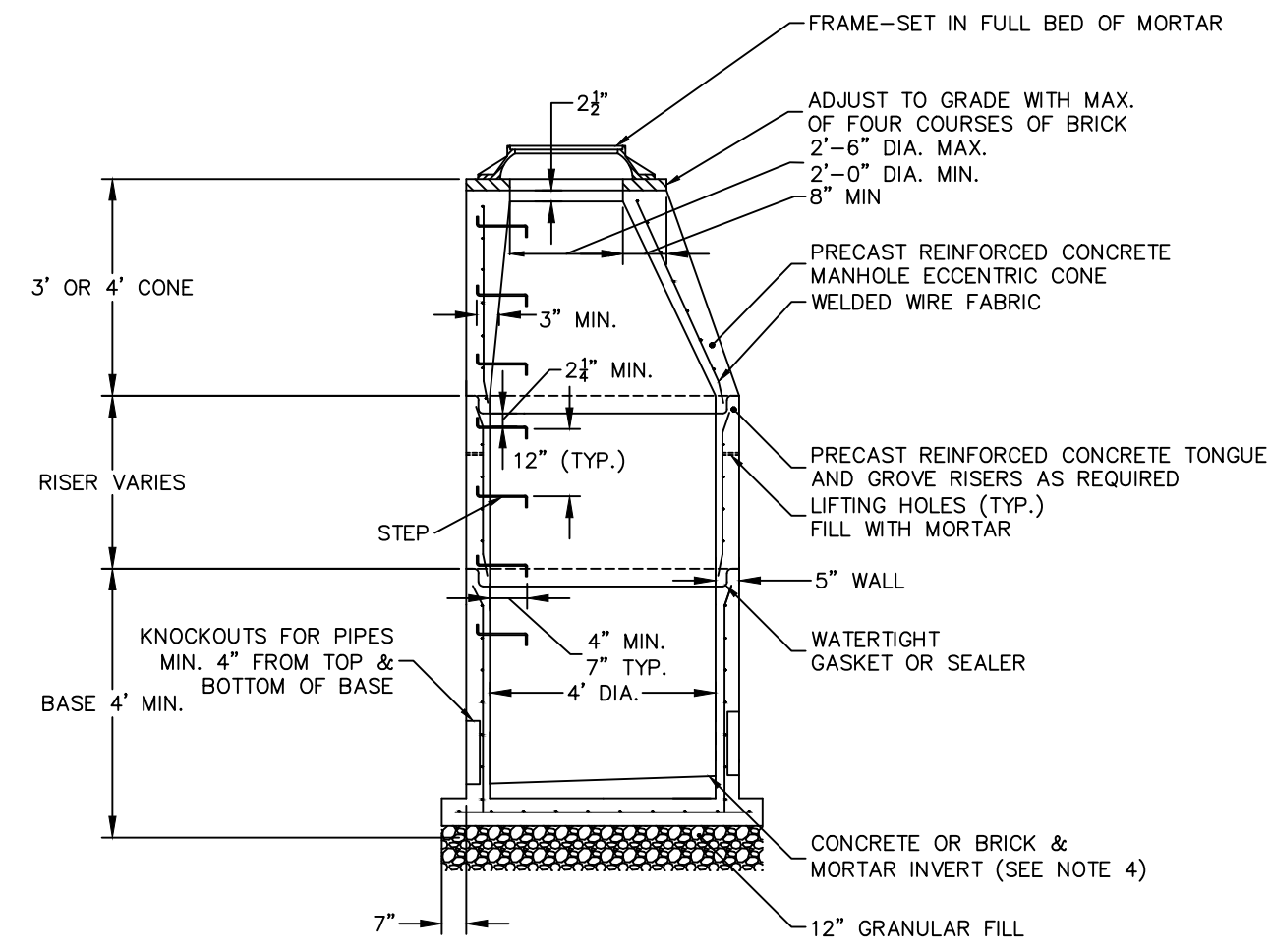


2 ROOF DRAIN CONNECTION TO MAIN
N.T.S.

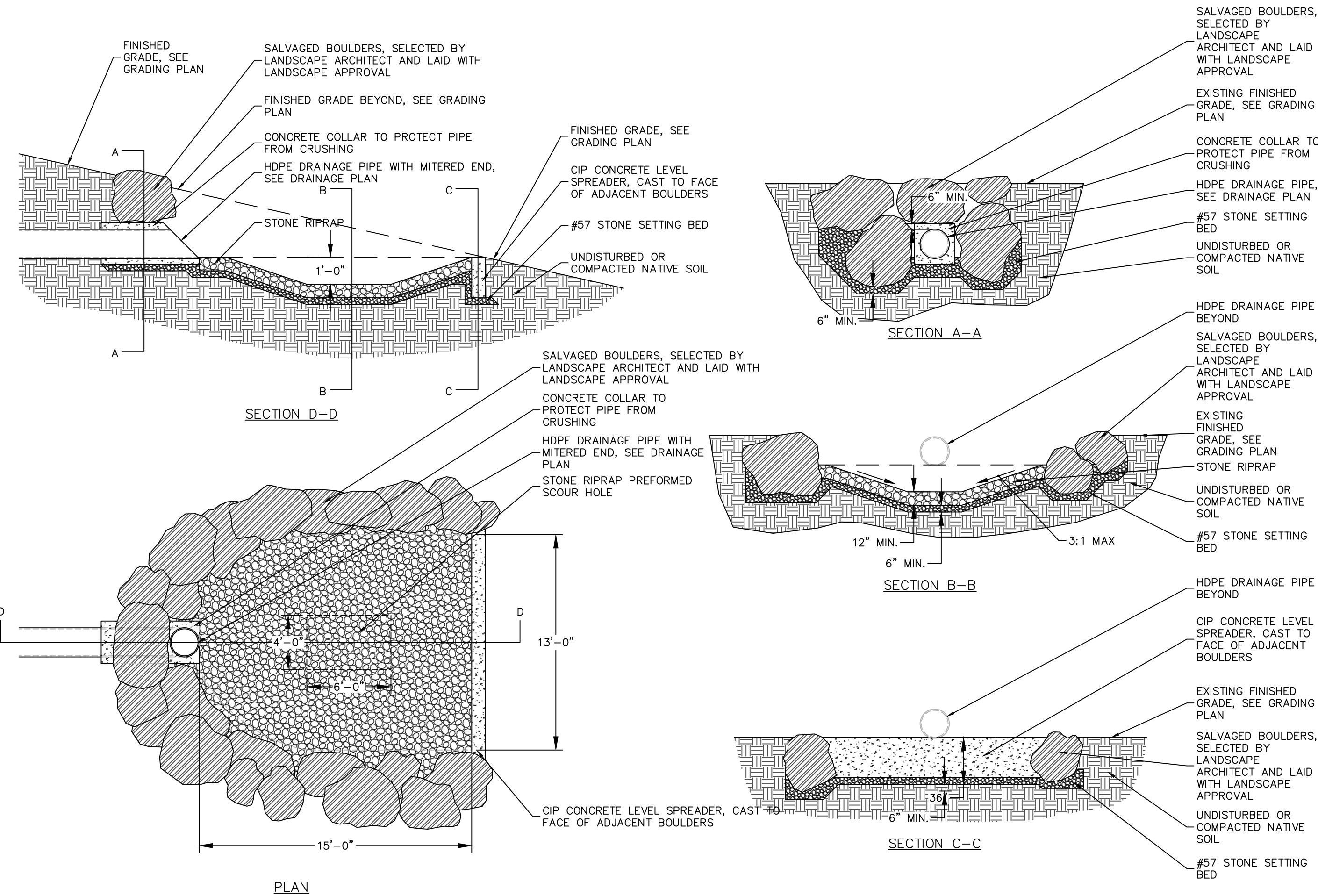


- NOTES:
1. GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.2
 2. FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
 3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS.
 4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER.
 5. ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°.

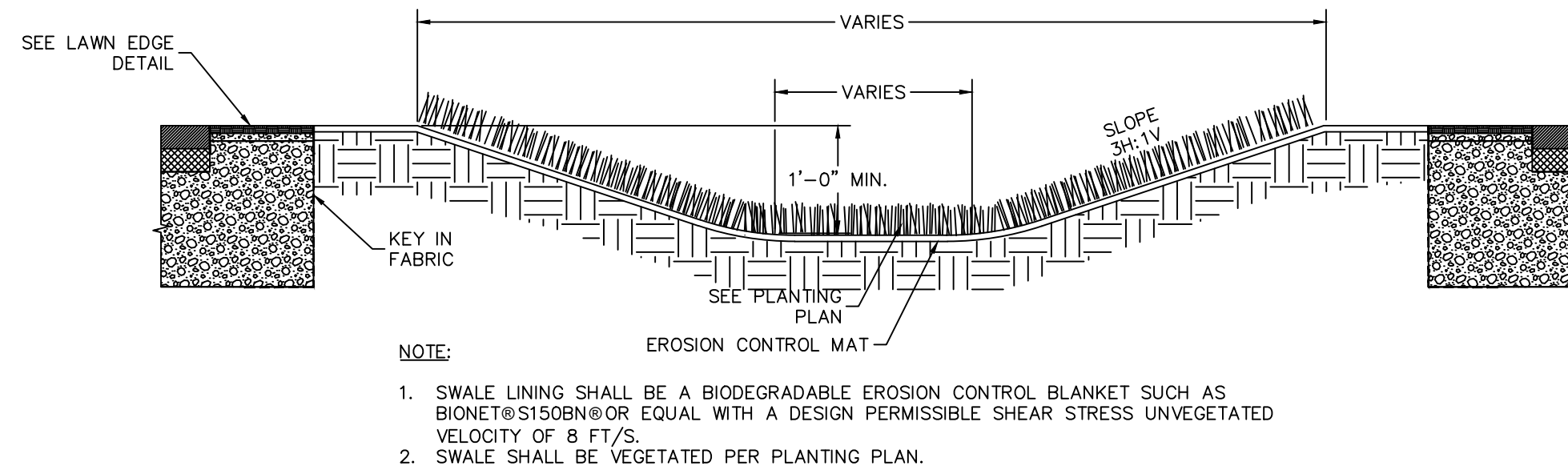
3 AREA DRAIN
N.T.S.



4 STORMWATER MANHOLE
N.T.S.



5 RIPRAP PROTECTION & SCOUR HOLE
N.T.S.



6 VEGETATED SWALE
N.T.S.

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01	11/30/22	Peer Review Comments

Job number 151021201
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Scale **N/A** Date **07/27/2022**

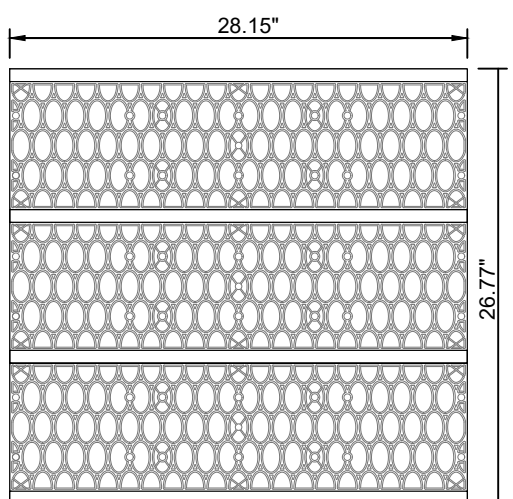
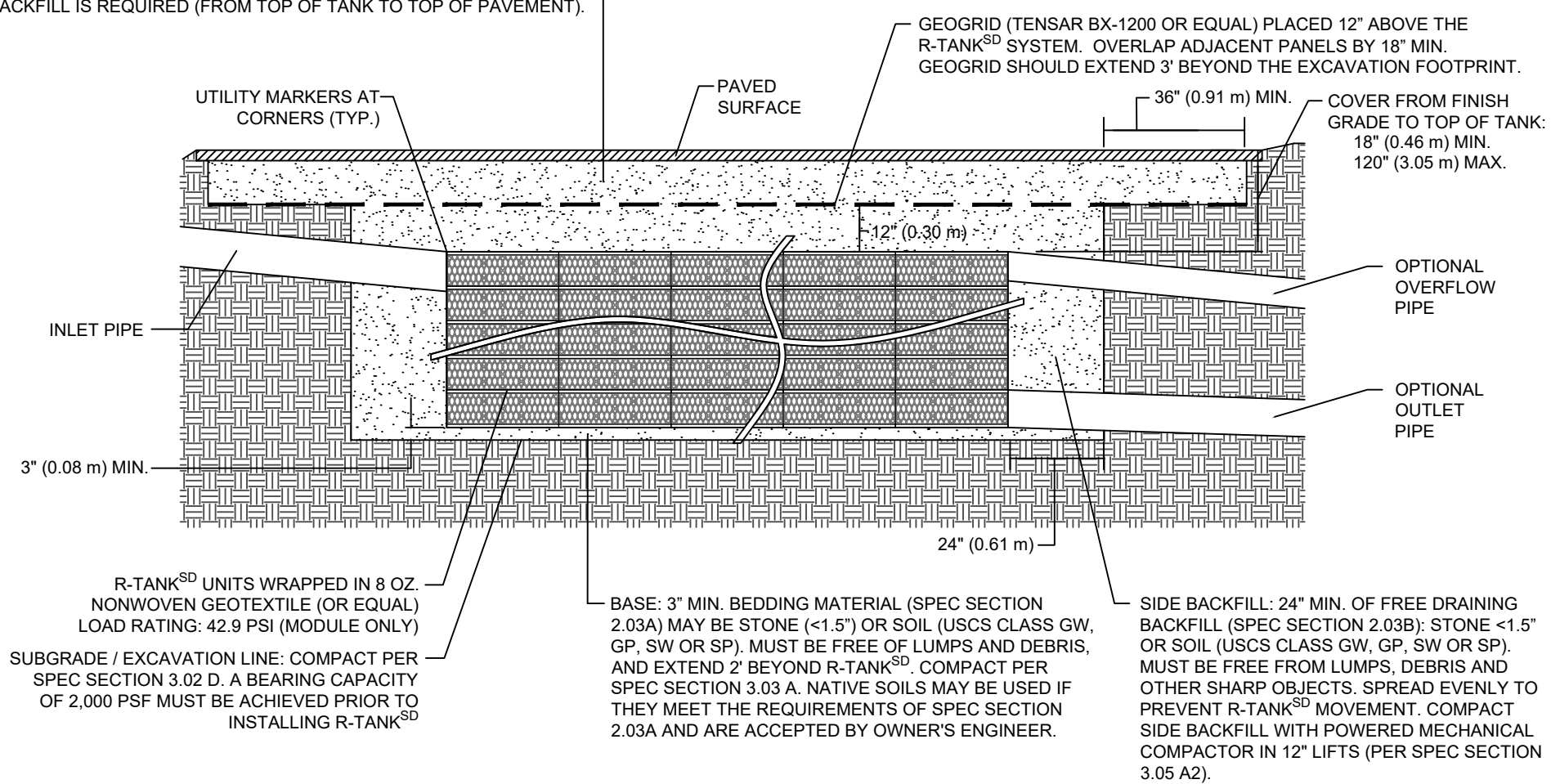
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Sheet Title
**DRAINAGE &
UTILITY
DETAILS I**

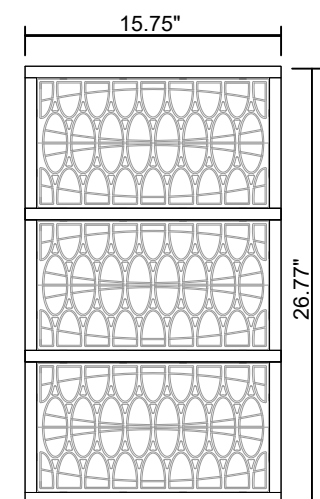
Sheet Number
CU-531

TOTAL COVER: 18" MINIMUM AND 120" MAXIMUM. FIRST 12" MUST BE FREE DRAINING BACKFILL (SPEC SECTION 2.03B); STONE <1.5" OR SOIL (USCS CLASS GW, GP, SW OR SP). ADDITIONAL FILL MAY BE STRUCTURAL FILL (SPEC SECTION 2.03c); STONE OR SOIL (USCS CLASS SM, SP, SW, GM, GP OR GW) WITH MAX CLAY CONTENT <10%, MAX 25% PASSING NO. 200 SIEVE, AND MAX PLASTICITY INDEX OF 4. A MIN. 12" COVER MUST BE MAINTAINED BETWEEN BACKFILL EQUIPMENT AND THE TOP OF THE R-TANK™ SYSTEM AT ALL TIMES. TOTAL HEIGHT OF TOP BACKFILL SHOULD NOT EXCEED 10'. CONTACT ACF ENVIRONMENTAL IF MORE THAN 10' OR LESS THAN 18" OF TOP BACKFILL IS REQUIRED (FROM TOP OF TANK TO TOP OF PAVEMENT).

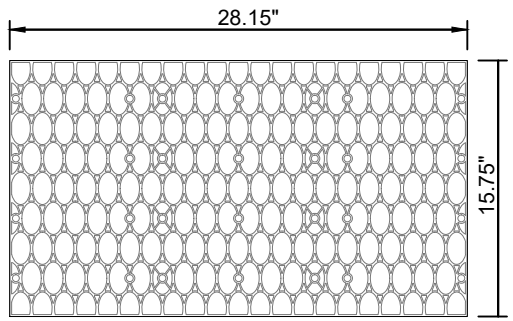
- NOTES:
- FOR COMPLETE MODULE DATA, SEE APPROPRIATE R-TANK® MODULE SHEET.
 - INSTALLATIONS PER THIS DETAIL MEET GUIDELINES OF HL-93 LOADING PER THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, CUSTOMARY U.S. UNITS, 7TH EDITION, 2014 WITH 2015 AND 2016 INTERIM REVISIONS.
 - PRE-TREATMENT STRUCTURES NOT SHOWN.
 - FOR INFILTRATION APPLICATIONS, GEOTEXTILE ENVELOPING R-TANK SHALL BE ACF M200 (PER SPEC SECTION 2.02A) AND BASE SHALL BE 4" MIN. UNCOMPACTED FREE DRAINING BACKFILL (PER SPEC SECTION 2.03A) TO PROVIDE A LEVEL BASE. SURFACE MUST BE SMOOTH, FREE OF LUMPS OR DEBRIS, AND EXTEND 2' BEYOND R-TANK® FOOTPRINT.



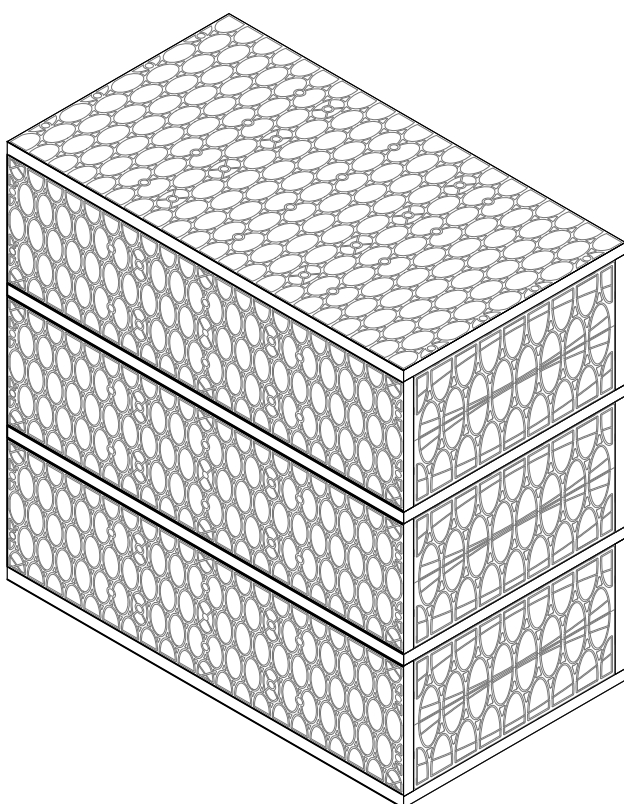
SIDE VIEW



FRONT VIEW



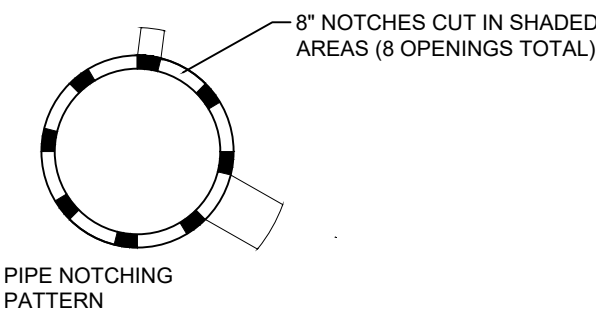
PLAN VIEW



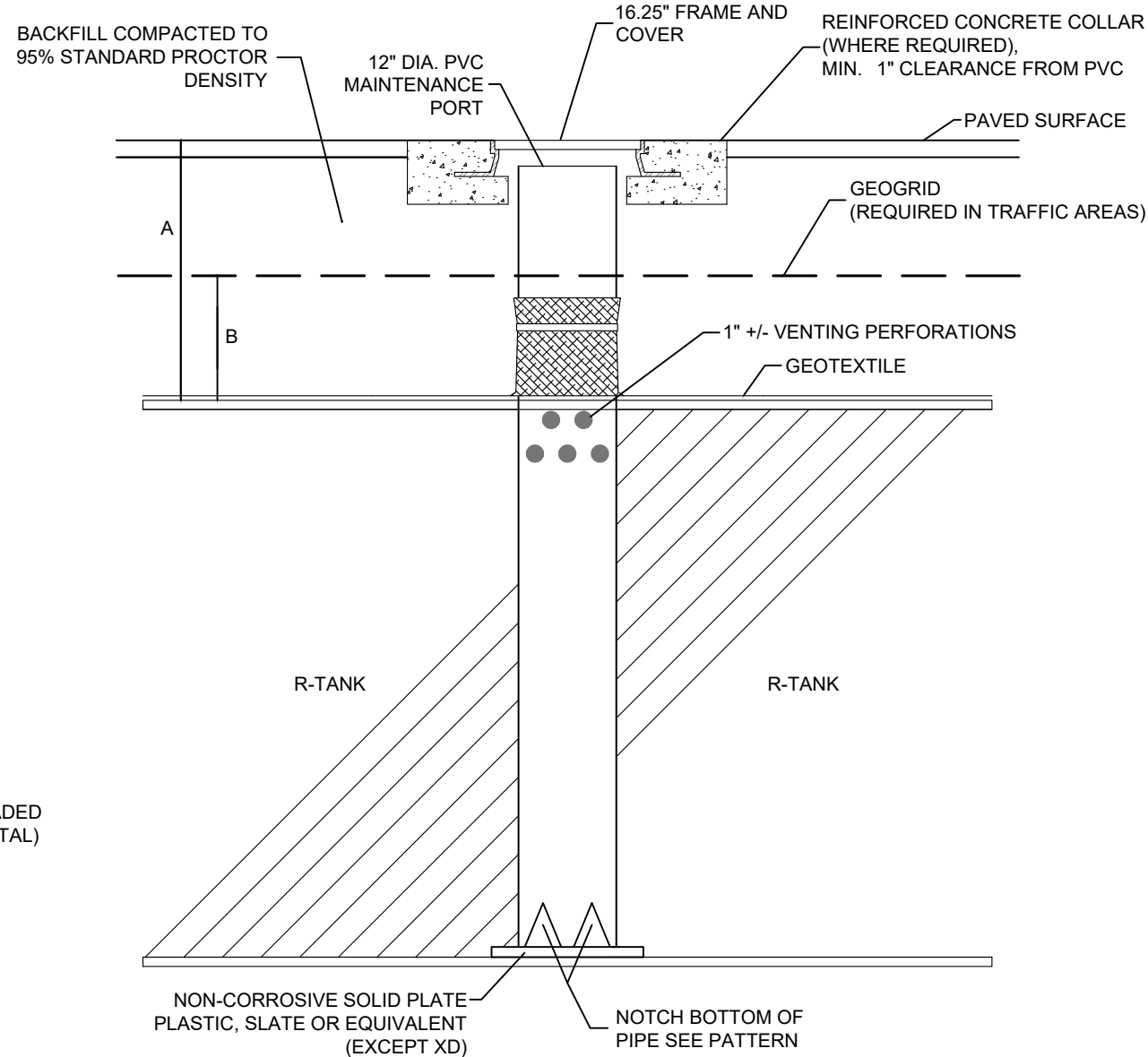
ISOMETRIC VIEW

- NOTES
- THIS PORT IS USED TO PUMP WATER INTO THE SYSTEM AND RE-SUSPEND ACCUMULATED SEDIMENT SO THAT IT MAY BE PUMPED OUT.
 - MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION DURING THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER. FLUSH AS NEEDED.
 - ONLY R-TANK®, R-TANK®, R-TANK®, AND R-TANK® MAY BE USED IN TRAFFIC APPLICATIONS.
 - IF MAINTENANCE PORT IS LOCATED IN A NON-TRAFFIC AREA, A PLASTIC CAP CAN BE USED IN LEU OF A FRAME AND COVER WITH CONCRETE COLLAR.

DEPTH SUMMARY		
TYPE	A	B
R-TANK®	18" MIN - 9.99' MAX	12"



PIPE NOTCHING PATTERN



1

R-TANK INFILTRATION BMP - SECTION VIEW

N.T.S. — PROVIDED BY ACF ENVIRONMENTAL

2

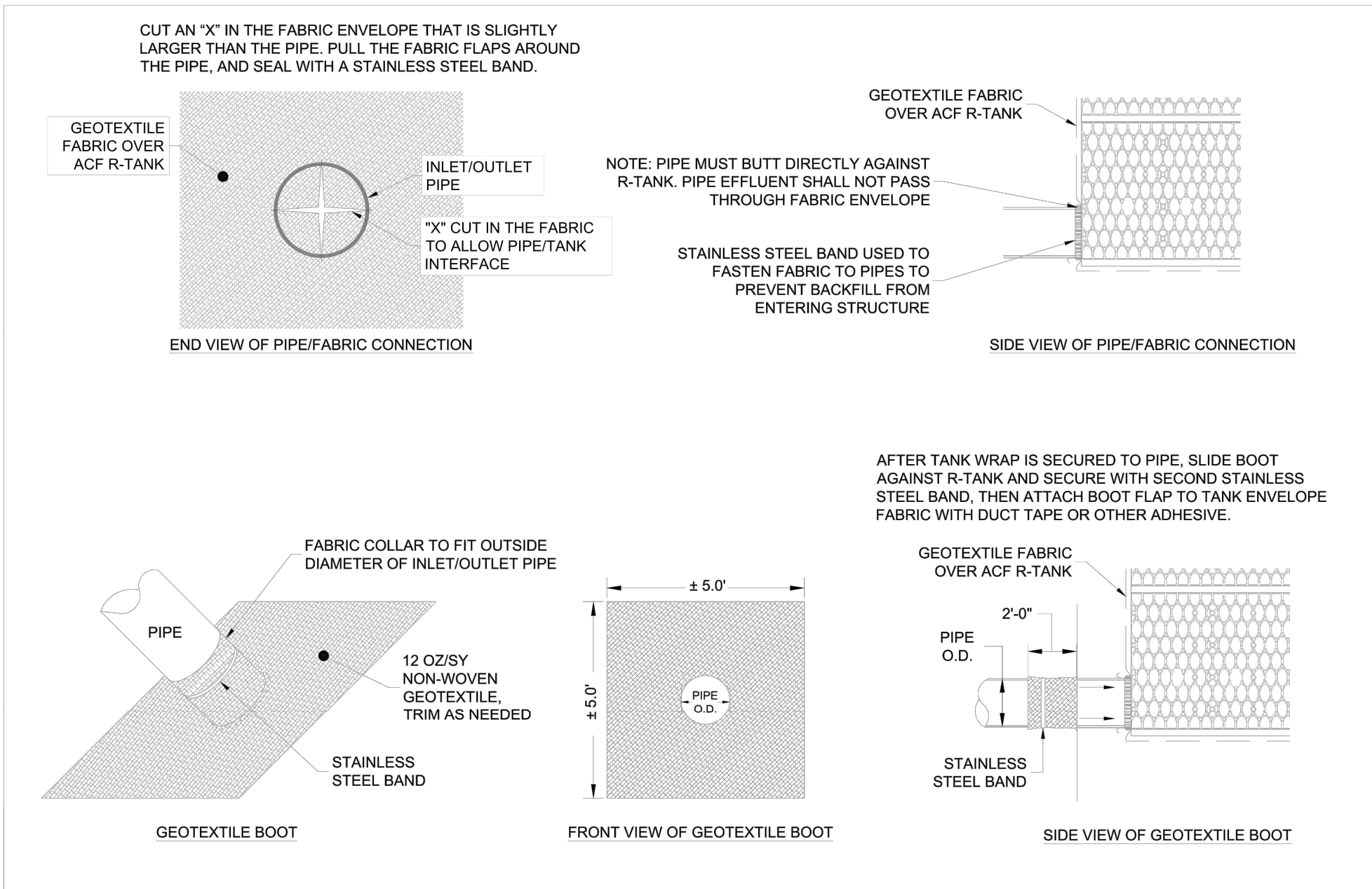
R-TANK INFILTRATION BMP - TRIPLE MODULE

N.T.S. — PROVIDED BY ACF ENVIRONMENTAL

3

R-TANK MAINTENANCE PORT

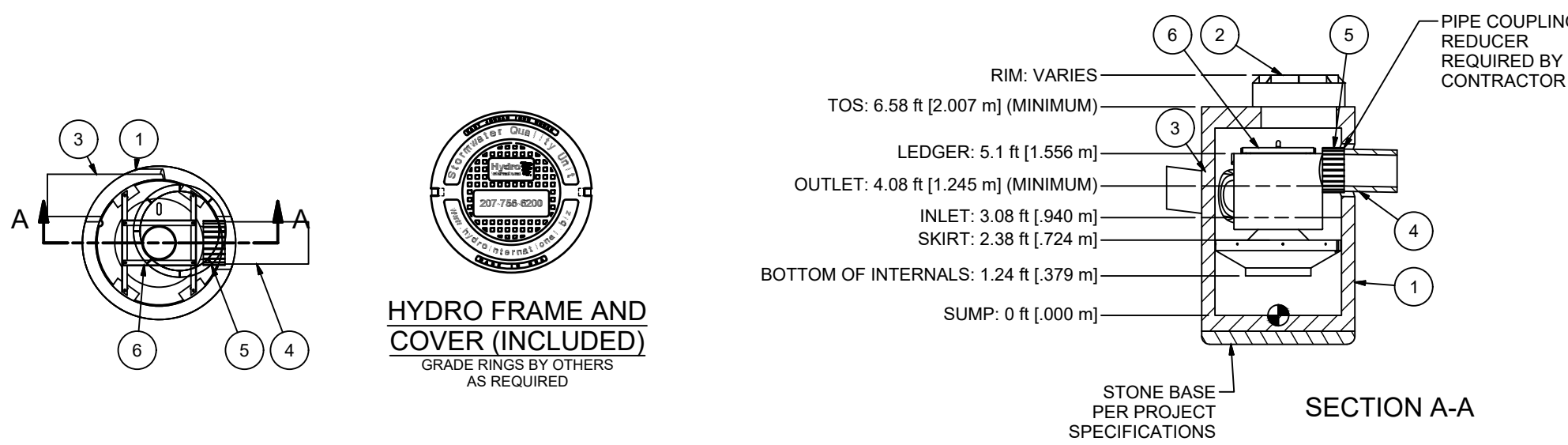
N.T.S. — PROVIDED BY ACF ENVIRONMENTAL



4

R-TANK INFILTRATION BMP - INLET/OUTLET WITH GEOTEXTILE BOOT

N.T.S. — PROVIDED BY ACF ENVIRONMENTAL



6

DOWNSTREAM DEFENDER WATER QUALITY STRUCTURE (4-FT DIAMETER)

N.T.S. — PROVIDED BY HYDRO INTERNATIONAL

5

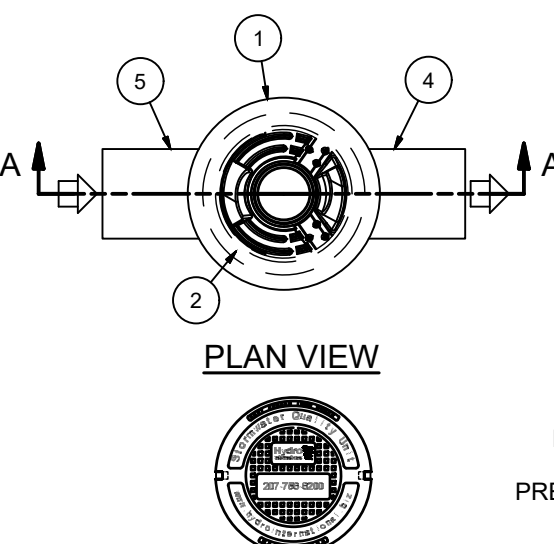
FIRST DEFENSE WATER QUALITY STRUCTURE (3-FT DIAMETER)

N.T.S. — PROVIDED BY HYDRO INTERNATIONAL

EQUIPMENT PERFORMANCE
The stormwater treatment unit shall adhere to the hydraulic parameters given in the chart below and provide the removal efficiencies and storage capacities as follows:

- The treatment system shall use an induced vortex to separate pollutants from stormwater runoff.
- Peak Hydraulic Capacity: 3.0 cfs (85 l/s)
- Sediment Storage Capacity: 0.70 cu. yd. (0.53 cu. m)
- Continuous Oil Storage Capacity: 70 gal. (265 liters)
- Sediment shall be stored in a zone that is isolated from the main flow path and protected from reentrainment by a benching skirt.
- OK-110 110 micron 80% TSS removal 1.56 cfs (44.2 l/s) (Independently Verified)

NOTE: NOT FOR CONSTRUCTION.
CONTACT HYDRO FOR SITE SPECIFIC DETAIL



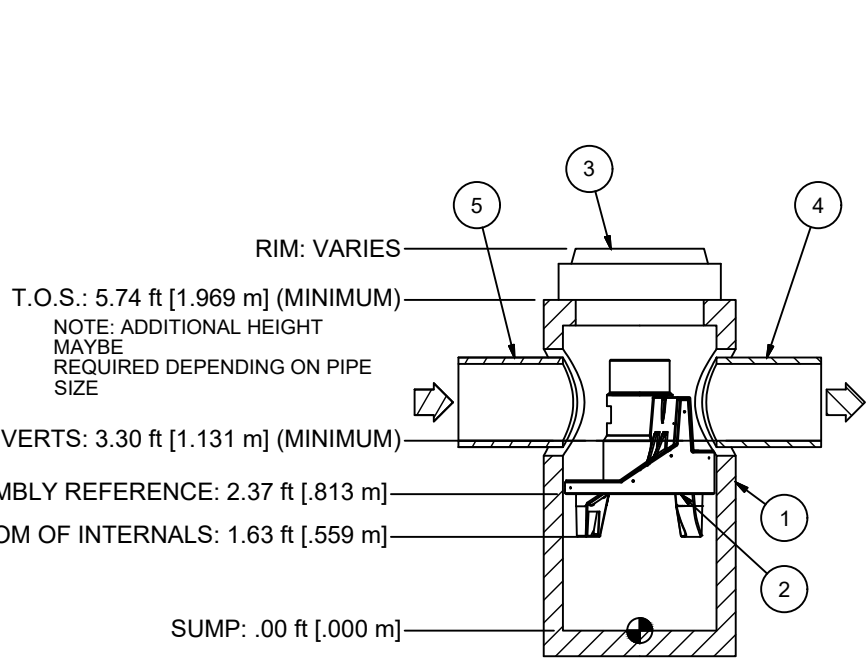
HYDRO FRAME AND COVER (INCLUDED) GRADE RINGS BY OTHERS AS REQUIRED

PRODUCT SPECIFICATION:

- Peak Hydraulic Flow: 15.0 cfs (424 l/s)
- Min Sediment Storage Capacity: 0.4 cu. yd. (0.3 cu. m)
- Maximum Inlet/Outlet Pipe Diameters: 18 in. (450 mm)

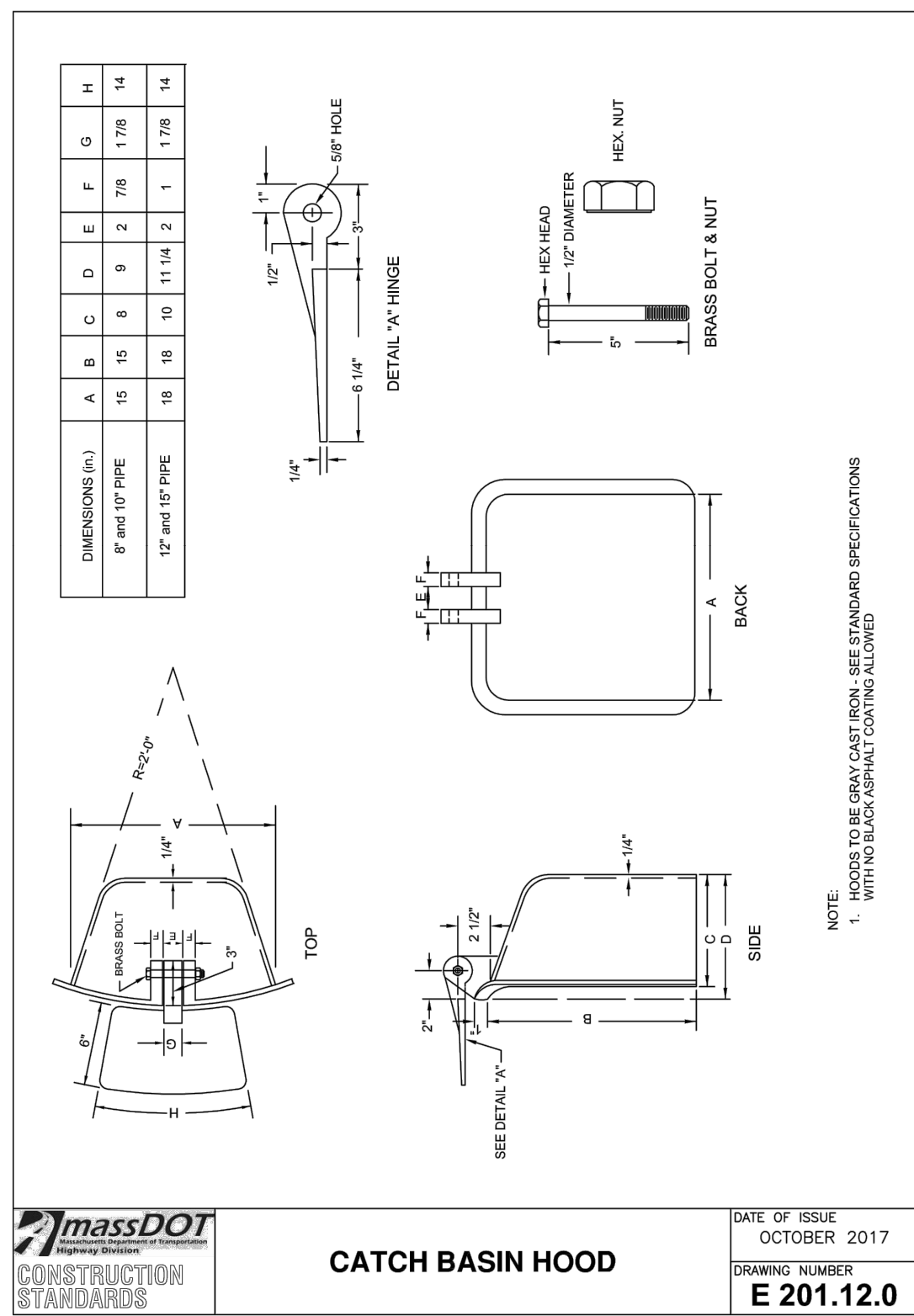
GENERAL NOTES:

- General Arrangement drawings only. Contact Hydro International for site specific drawings.
- The diameter of the inlet and outlet pipes may be no more than 18".
- Multiple inlet pipes possible (refer to project plan).
- Inlet/outlet pipe angle can vary to align with drainage network (refer to project plan.s)
- Peak flow rate and minimum height limited by available cover and pipe diameter.
- Larger sediment storage capacity may be provided with a deeper sump depth.



SECTION A-A

- MANHOLE WALL AND SLAB THICKNESSES ARE NOT TO SCALE.
- CONTACT HYDRO INTERNATIONAL FOR A BOTTOM OF STRUCTURE ELEVATION PRIOR TO SETTING FIRST DEFENSE MANHOLE.
- CONTRACTOR TO CONFIRM RIM, PIPE INVERTS, PIPE DIA. AND PIPE ORIENTATION PRIOR TO RELEASE OF UNIT TO FABRICATION.



CATCH BASIN HOOD

DATE OF ISSUE	OCTOBER 2017
DRAWING NUMBER	E 201.12.0

9

CATCH BASIN HOOD

N.T.S. — PROVIDED BY MASSDOT

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Revisions		
Number	Date	Description

Job number 151021201
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Scale **N/A** Date **07/27/2022**

Stamp

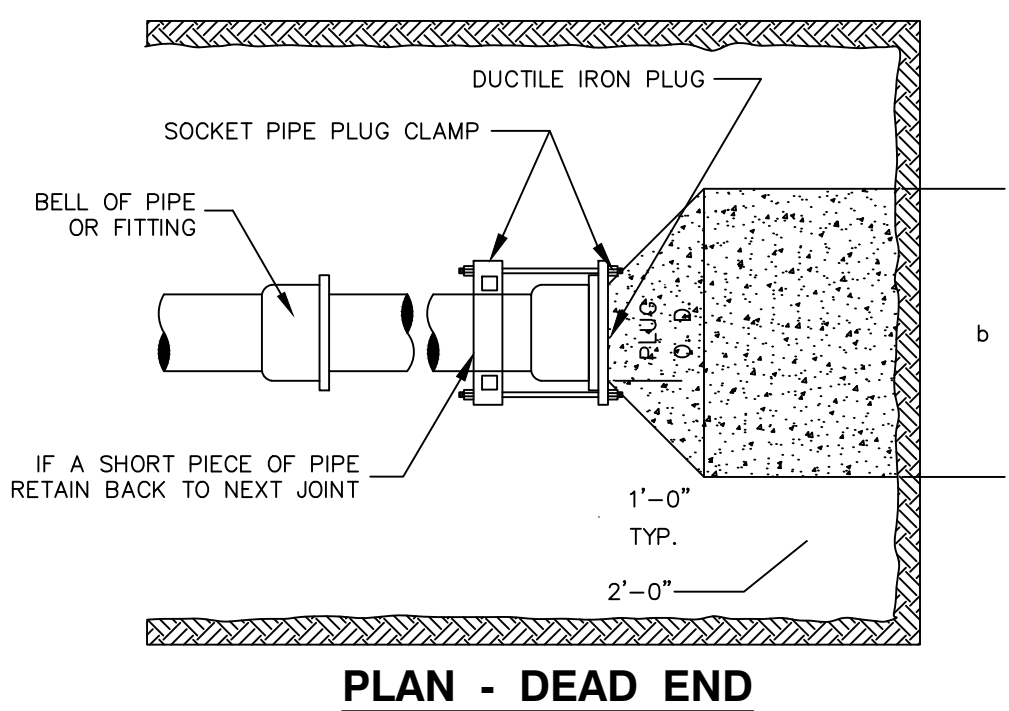
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**DRAINAGE &
UTILITY
DETAILS II**

Sheet Number

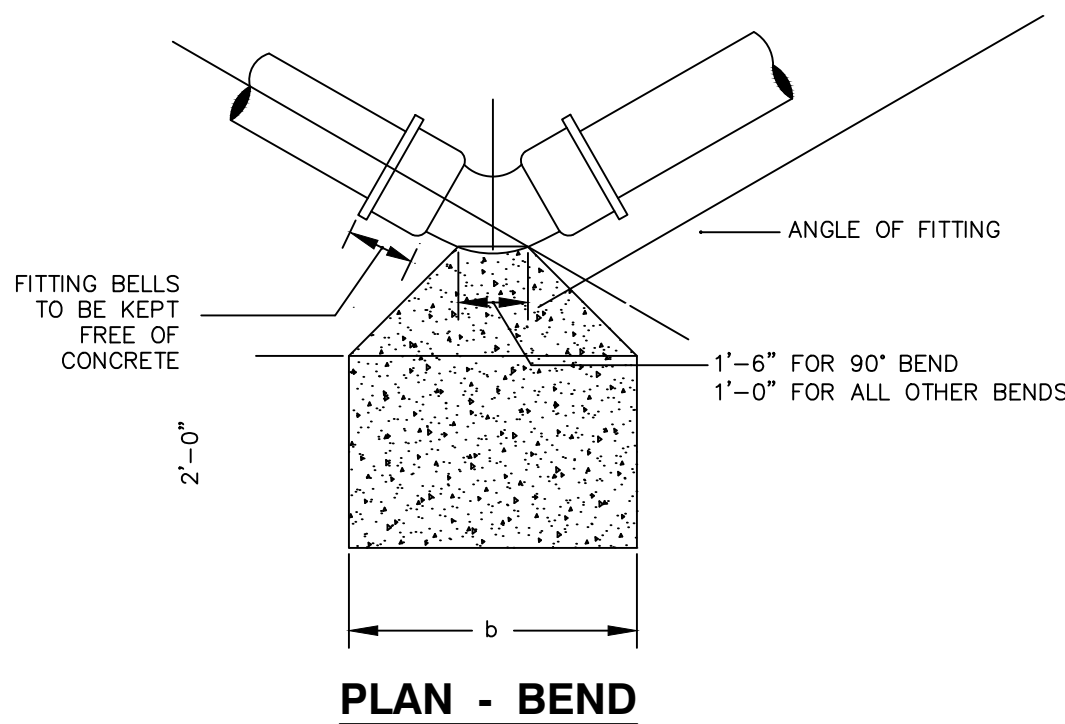
CU-532



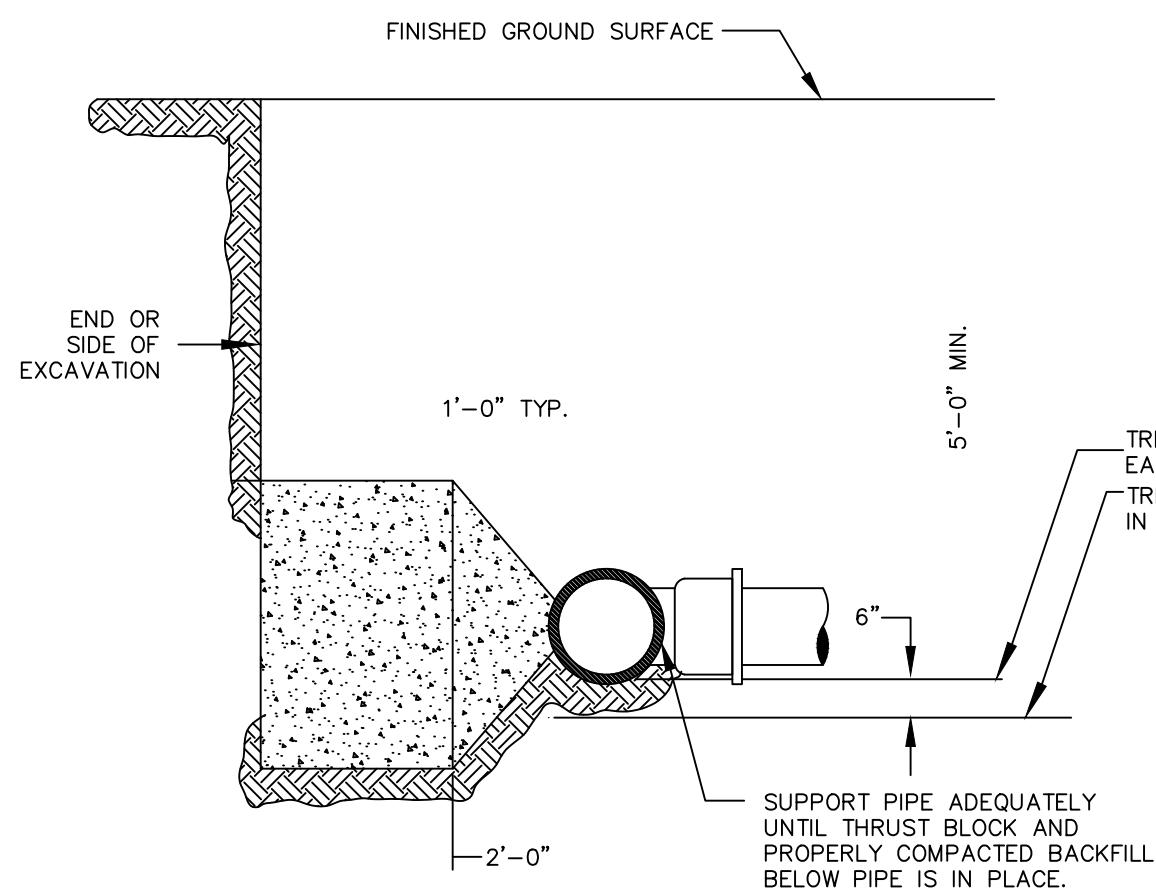
Revisions		
Number	Date	Description
Job number 151021201		
Drawn by	KH, JW	Checked by HH, FH
Scale	N/A	Date 07/27/2022
Stamp		
<p>A circular professional engineer seal for the Commonwealth of Massachusetts. The outer ring contains the text "COMMONWEALTH OF MASSACHUSETTS". Inside the ring, it says "FRANK HOLMES CIVIL No. 402603 REGISTERED PROFESSIONAL ENGINEER". A handwritten signature, "Frank Holmes", is written across the bottom half of the seal.</p>		
Sheet Title		
DRAINAGE & UTILITY DETAILS IV		
Sheet Number		
CU-534		



PLAN - DEAD END



PLAN - BEND



TYPICAL SECTION
(FOR TEES, BENDS & DEAD ENDS)

- NOTES:
- THRUST BLOCKS REQUIRED AS DIRECTED BY ENGINEER.
 - REFER TO DETAIL 2 FOR THRUST BLOCK DIMENSIONS, TABLE AND CHART.
 - THE TABLE ABOVE PROVIDES MINIMUM THRUST BLOCK SIZES AND IS BASED ON A SOIL BEARING CAPACITY OF 1,500 LBS PER SQUARE FOOT.
 - POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL. WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL.
 - NO JOINTS SHALL BE COVERED WITH CONCRETE.
 - ALL FITTINGS SHALL BE WRAPPED IN POLYETHYLENE OR BUILDING PAPER PRIOR TO INSTALLATION OF CONCRETE RESTRAINT.
 - INSTALL LIFT HOOKS INTO THRUST BLOCKS AT END CAPS AND PLUGS.

THRUST BLOCKS

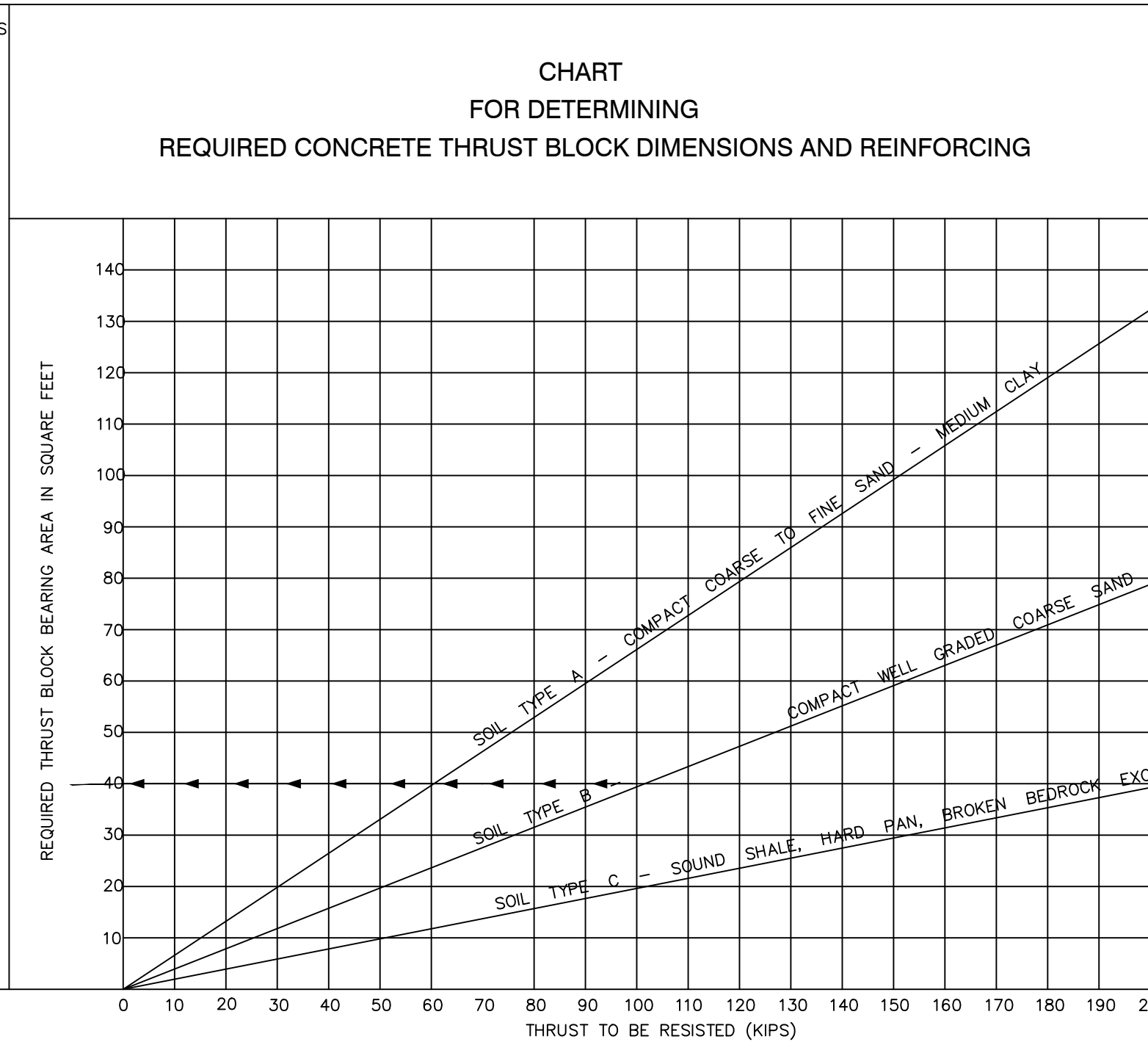
N.T.S.

TABLE 2 - "V" DIMENSION - FEET		
PIPE DIAMETER - INCHES	90° FITTING	OTHERS
6, 8, 10 & 12	1 - 6	1 - 0
16 & 20	2 - 0	1 - 6
24" - 30"	3 - 0	2 - 0

TABLE 1 - THRUST - KIPS (WATER PRESSURE = 200 P.S.I.)										
PIPE DIAMETER (INCHES)	6	8	10	12	16	20	24	30	36	42
DEAD ENDS AND TEES	5.6	10	15.8	22.6	40.2	62.8	90.4	141.0	203.6	277.0
FITTINGS	90°	7.9	14.2	22.4	32.0	56.8	88.8	127.7	199.0	392.0
	67 1/2"	-	11.1	17.6	25.1	44.7	70.0	100.2	157.0	226.0
	56 1/4"	-	-	14.9	21.2	37.9	59.2	85.1	133.0	261.0
	45"	-	-	-	17.3	30.8	48.1	69.0	108.0	212.0
ANGLE	33 3/4"	-	-	-	13.1	23.3	36.5	52.5	82.0	161.0
	22 1/2"	-	-	-	8.8	15.7	24.5	35.2	55.0	108.0

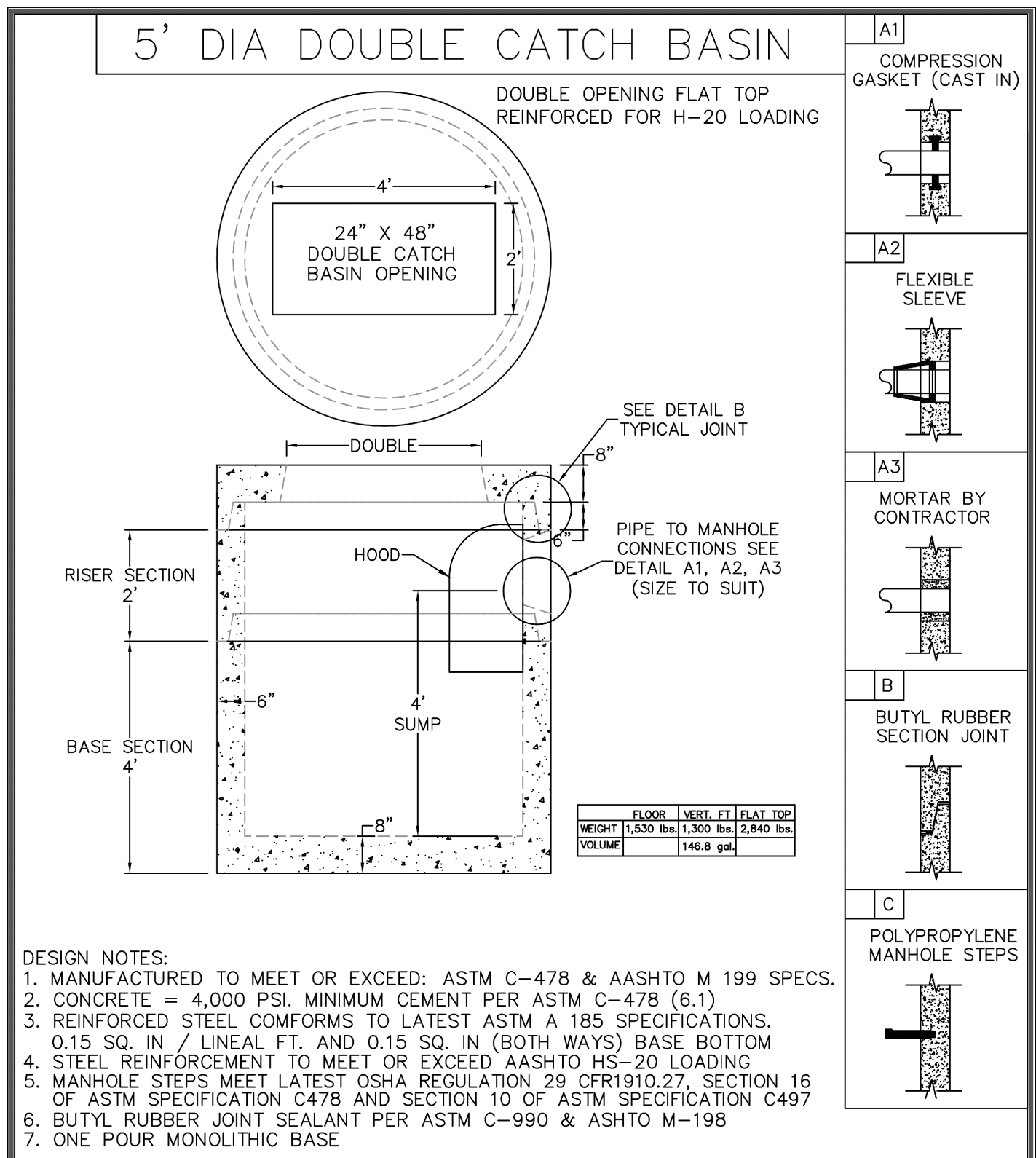
DESIGN THRUST BLOCKS OR OTHER SUITABLE ANCHORAGE TO SUIT ACTUAL CONDITIONS

REINFORCING STEEL EACH WAY			THRUST BLOCK DIMENSIONS		
TYPE I THRUST BLOCK			b = WIDTH	d = DEPTH	
SOIL TYPE					
A	B	C	A	B	C
#6 @ 12"	#7 @ 12"	#8 @ 11"	18 - 0	8 - 0	
#6 @ 12"	#7 @ 12"	#8 @ 11"	16 - 0	8 - 0	
#6 @ 12"	#7 @ 12"	#8 @ 11"	14 - 0	8 - 0	
#6 @ 12"	#7 @ 12"	#8 @ 11"	12 - 0	8 - 0	
#6 @ 12"	#7 @ 12"	#8 @ 11"	10 - 0	8 - 0	
#6 @ 12"	#7 @ 12"	#8 @ 11"	8 - 0	8 - 0	
#6 @ 12"	#7 @ 12"	#8 @ 11"	7 - 0	7 - 0	
#6 @ 12"	#7 @ 12"	#8 @ 11"	6 - 0	6 - 0	
#6 @ 12"	#7 @ 12"	#8 @ 11"	5 - 0	5 - 0	
#6 @ 12"	#7 @ 12"	#8 @ 11"	4 - 0	4 - 0	
#6 @ 12"	#7 @ 12"	#8 @ 11"	3 - 0	3 - 0	
#6 @ 12"	#7 @ 12"	#8 @ 11"	2 - 0	2 - 0	



THRUST BLOCK DIMENSIONS, TABLE AND CHART (A-01C)

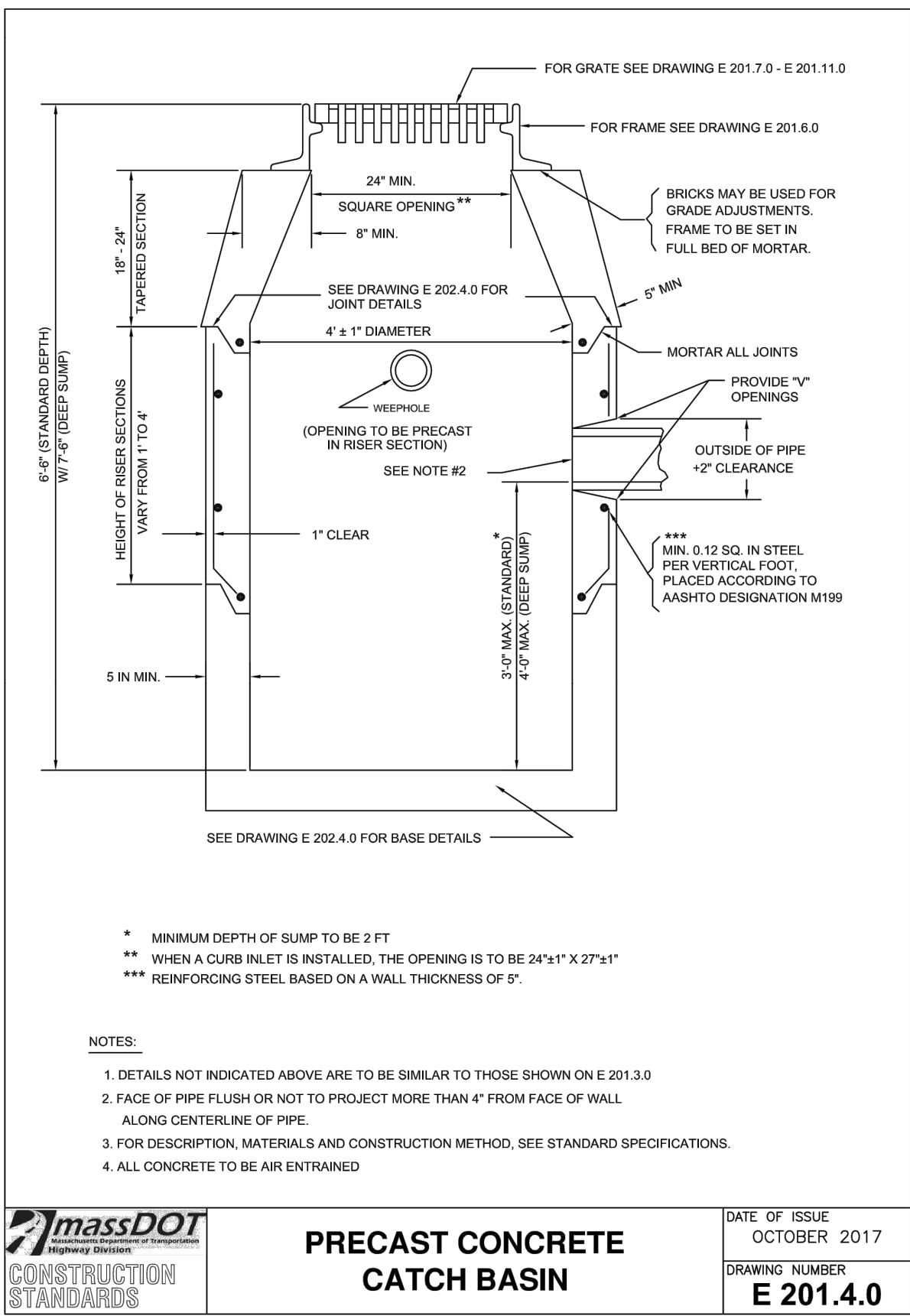
N.T.S. - PROVIDED BY BOSTON WATER AND SEWER COMMISSION



- DESIGN NOTES:
- MANUFACTURED TO MEET OR EXCEED: ASTM C-478 & AASHTO M 199 SPECS.
 - CONCRETE = 4,000 PSI. MINIMUM CEMENT PER ASTM C-478 (6.1)
 - REINFORCED STEEL COMFORMS TO LATEST ASTM A 185 SPECIFICATIONS. 0.15 SQ. IN / LINEAL FT. AND 0.15 SQ. IN (BOTH WAYS) BASE BOTTOM
 - STEEL REINFORCEMENT TO MEET OR EXCEED AASHTO HS-20 LOADING
 - MANHOLE STEPS MEET LATEST OSHA REGULATION 29 CFR1910.27 SECTION 16 OF ASTM SPECIFICATION C478 AND SECTION 10 OF ASTM SPECIFICATION C497
 - BUTYL RUBBER JOINT SEALANT PER ASTM C-990 & ASHTO M-198
 - ONE FOUR MONOLITHIC BASE

DOUBLE GRATE CATCH BASIN

N.T.S. - PROVIDED BY MASSDOT

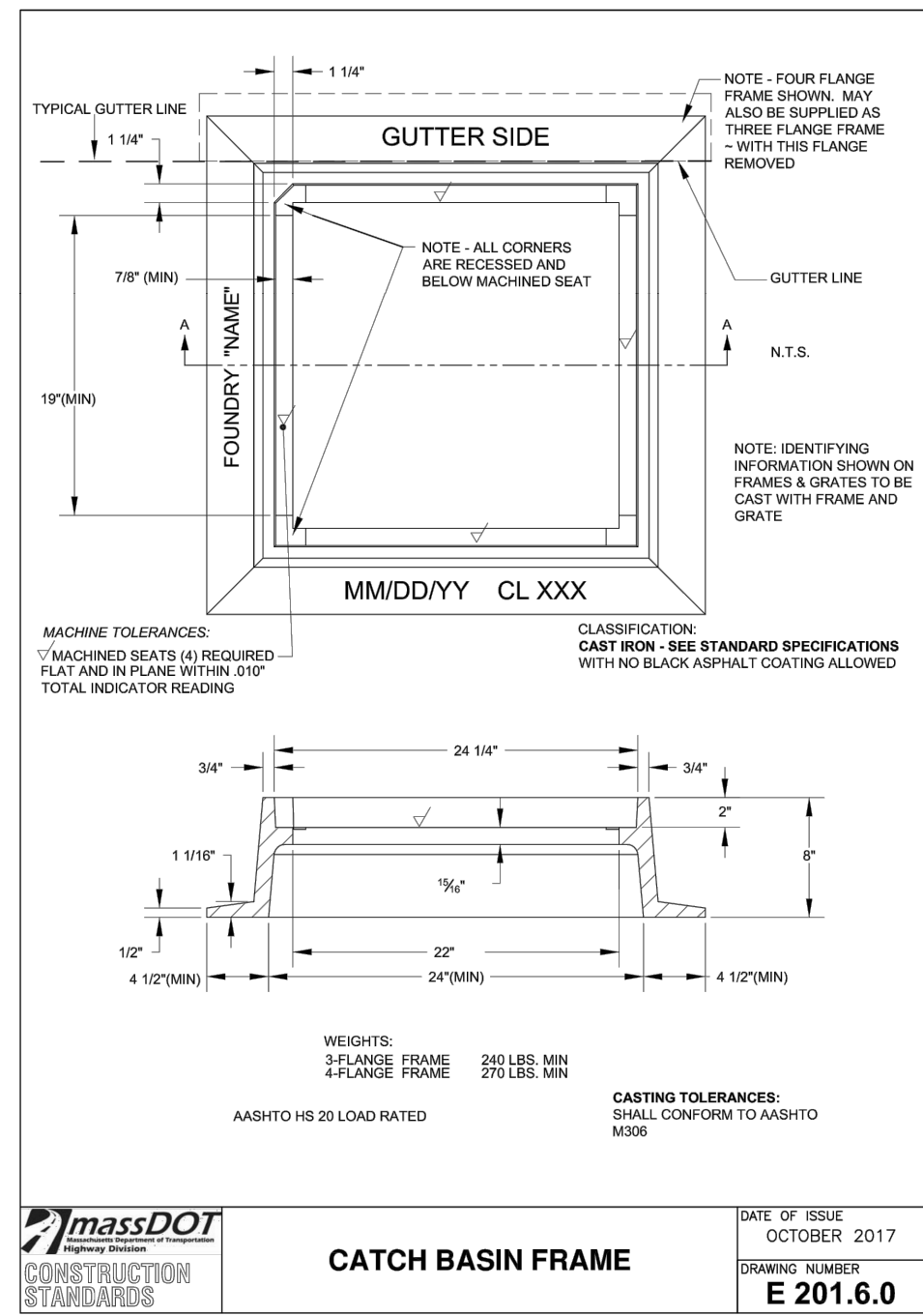


- NOTES:
- MINIMUM DEPTH OF SLUMP TO BE 2 FT
 - WHEN A CURB INLET IS INSTALLED, THE OPENING IS TO BE 24"x11" X 27"x11"
 - REINFORCING STEEL BASED ON A WALL THICKNESS OF 5"



PRECAST CONCRETE CATCH BASIN

DATE OF ISSUE
OCTOBER 2017
DRAWING NUMBER
E 201.4.0



CATCH BASIN FRAME

DATE OF ISSUE
OCTOBER 2017
DRAWING NUMBER
E 201.6.0

CATCH BASIN FRAME & GRATE

N.T.S. - PROVIDED BY MASSDOT

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Revisions		
Number	Date	Description

Job number 151021201
Drawn by **KH, JW** Checked by **HH, FH**
Scale **N/A** Date **07/27/2022**

Stamp

Sheet Title
**DRAINAGE &
UTILITY
DETAILS V**

Sheet Number

CU-535