

## PARKING REQUIREMENTS

PER THE "TOWN OF DRACUT ZONING BYLAWS, INCORPORATED FEBRUARY 26, 1701", WITH AMENDMENTS THOUGH NOVEMBER 7, 2022. SECTION 6.1.6 TABLE OF OFF STREET PARKING REQUIREMENTS & 6.1.8 PARKING DIMENSIONS.

REQUIRED  
USE: MULTI-FAMILY DWELLING = 2 SPACES PER DWELLING UNIT  
40 UNITS x 2 SPACES PER DWELLING UNIT = 80 SPACES

WIDTH: 10 FEET  
DEPTH: 20 FEET  
WIDTH OF MANEUVERING: 22 FEET

PROPOSED  
54 SURFACE SPACES + 26 GARAGE SPACES (INCLUDING 4 HANDICAP SPACES)  
80 SPACES TOTAL

WIDTH: 9 FEET\*  
DEPTH: 18 FEET\*  
WIDTH OF MANEUVERING: 22 FEET

\*WAIVER REQUESTED

## COMPREHENSIVE PERMIT SITE PLAN

PROPERTY ADDRESS:  
2041 BRIDGE STREET  
Dracut, Massachusetts 01826

PREPARED FOR:  
Marsh Hill Management, LLC  
39 Myrtle Street  
Lowell, Massachusetts 01854

HANCOCK ASSOCIATES

Civil Engineers

Land Surveyors

Environmental Consultants

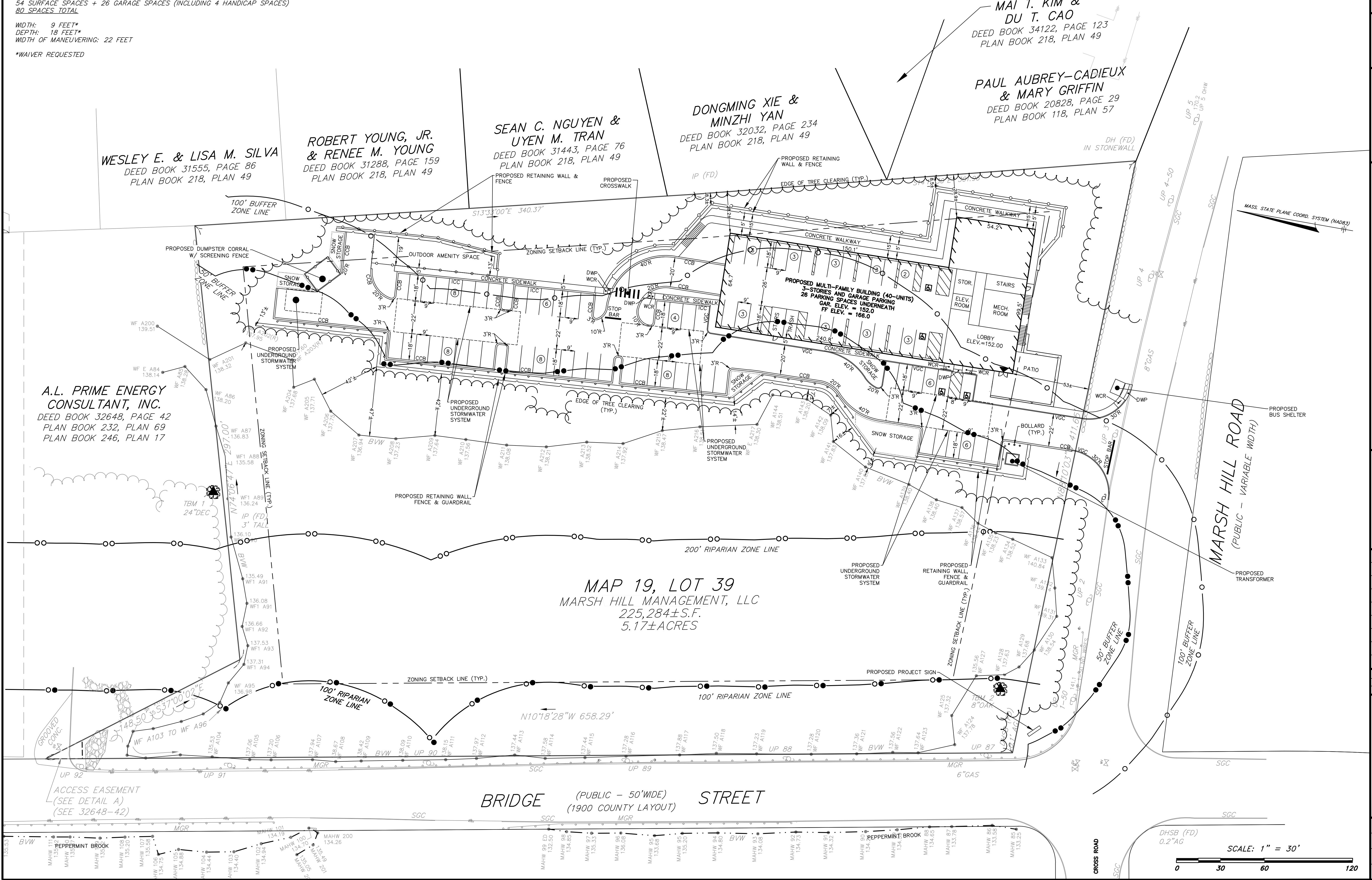
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2 MJS BGG 8/14/25 2nd PEER REVIEW COMMENTS  
1 MJS BGG 8/11/25 PEER REVIEW COMMENTS  
NO. BY APP DATE ISSUE/REVISION DESCRIPTION  
DATE: 02/28/25 DESIGN BY: RCT/MJS  
SCALE: AS SHOWN DRAWN BY: RCT/MJS  
APPR'D BY: BGG CHECK BY: JP

## LAYOUT AND MATERIALS PLAN

DWG: 27164-SP1.dwg  
LAYOUT: LM(3)  
SHEET: 3 OF 9  
JOB NO.: 27164

3



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GRADING, DRAINAGE, AND UTILITIES PLAN

DWG: 27164-SP1.dwg  
LAYOUT: GDU(4)  
SHEET: 4 OF 9  
JOB NO.: 27164

4

## SOIL TESTING DATA

DATE: 05/09/2024  
EVALUATOR: RUSSELL TEFORD, SE #14372

WITNESS: TOWN OF DRACUT DPW REPRESENTATIVE

IP-2024-1  
DEPTH: HZ TEXTURE  
0-15" AP SANDY LOAM  
14-32" BW LOAMY SAND  
32-60" C FINE SAND  
REFUSAL (BOULDERS), NO WATER, REDOX @ 50"

IP-2024-2  
DEPTH: HZ TEXTURE  
0-15" AP SANDY LOAM  
15-22" BW LOAMY SAND  
22-67" C FINE SAND  
REFUSAL (BOULDERS), WEEPING @ 46", REDOX @ 32"

IP-2024-3  
DEPTH: HZ TEXTURE  
0-15" AP SANDY LOAM  
12-24" BW LOAMY SAND  
24-52" C LOAMY SAND  
REFUSAL (BOULDERS), NO REDOX OBSERVED

IP-2024-4  
DEPTH: HZ TEXTURE  
0-15" AP SANDY LOAM  
15-24" BW LOAMY SAND  
32-74" C LOAMY SAND  
REFUSAL (BOULDERS), REDOX @ 59"

IP-2024-5  
DEPTH: HZ TEXTURE  
0-15" AP SANDY LOAM  
15-24" BW LOAMY SAND  
35-55" C1 SAND  
55-80" C2 LOAMY SAND  
REFUSAL (BOULDERS), NO REDOX

IP-2024-6  
DEPTH: HZ TEXTURE  
0-15" AP SANDY LOAM  
15-24" BW LOAMY SAND  
29-60" C1 SAND  
55-60" C2 LOAMY SAND  
REFUSAL (BOULDERS), REDOX @ 45"

IP-2024-7  
DEPTH: HZ TEXTURE  
0-28" AP SANDY LOAM  
12-28" BW LOAMY SAND  
26-42" C1 LOAMY SAND  
42-74" C2 SAND  
REFUSAL (BOULDERS), NO REDOX

## DRAINAGE PIPE SCHEDULE

PIPE ID	MATERIAL	LENGTH & SLOPE
P.CB1 -> P.DMH1	12" HDPE	5 LF; 5.00%
P.CB2 -> P.DMH1	12" HDPE	5 LF; 5.00%
P.DMH1 -> P.UIS1	12" HDPE	4 LF; 2.25%
P.UIS1 -> P.OCS1	12" HDPE	10 LF; 1.00%
P.OCS1 -> P.DMH11	12" HDPE	15 LF; 1.33%
P.DMH11 -> P.FES1	18" HDPE	33 LF; 1.00%
P.DMH10 -> P.DMH11	12" HDPE	43 LF; 1.40%
P.DCB1 -> P.DMH10	12" HDPE	131 LF; 5.50%
P.AD1 -> P.DMH13	12" HDPE	7 LF; 1.43%
P.DMH13 -> P.DMH12	12" HDPE	104 LF; 9.60%
P.AD2 -> P.DMH6	12" HDPE	12 LF; 1.25%
P.AD3 -> P.DMH7	12" HDPE	10 LF; 1.00%
P.DMH6 -> P.DMH7	12" HDPE	32 LF; 0.90%
P.AD5 -> P.DMH12	12" HDPE	11 LF; 1.00%
P.DMH12 -> P.DMH8	12" HDPE	210 LF; 2.20%
P.DMH7 -> P.DMH8	12" HDPE	151 LF; 1.00%
P.DMH8 -> P.PUS2	12" HDPE	70 LF; 8.30%
P.PUS2 -> P.OCS2	12" HDPE	5 LF; 1.80%
P.AD4 -> P.DMH8	12" HDPE	4 LF; 1.00%
P.FESA -> P.FESB	12" HDPE	8 LF; 1.25%

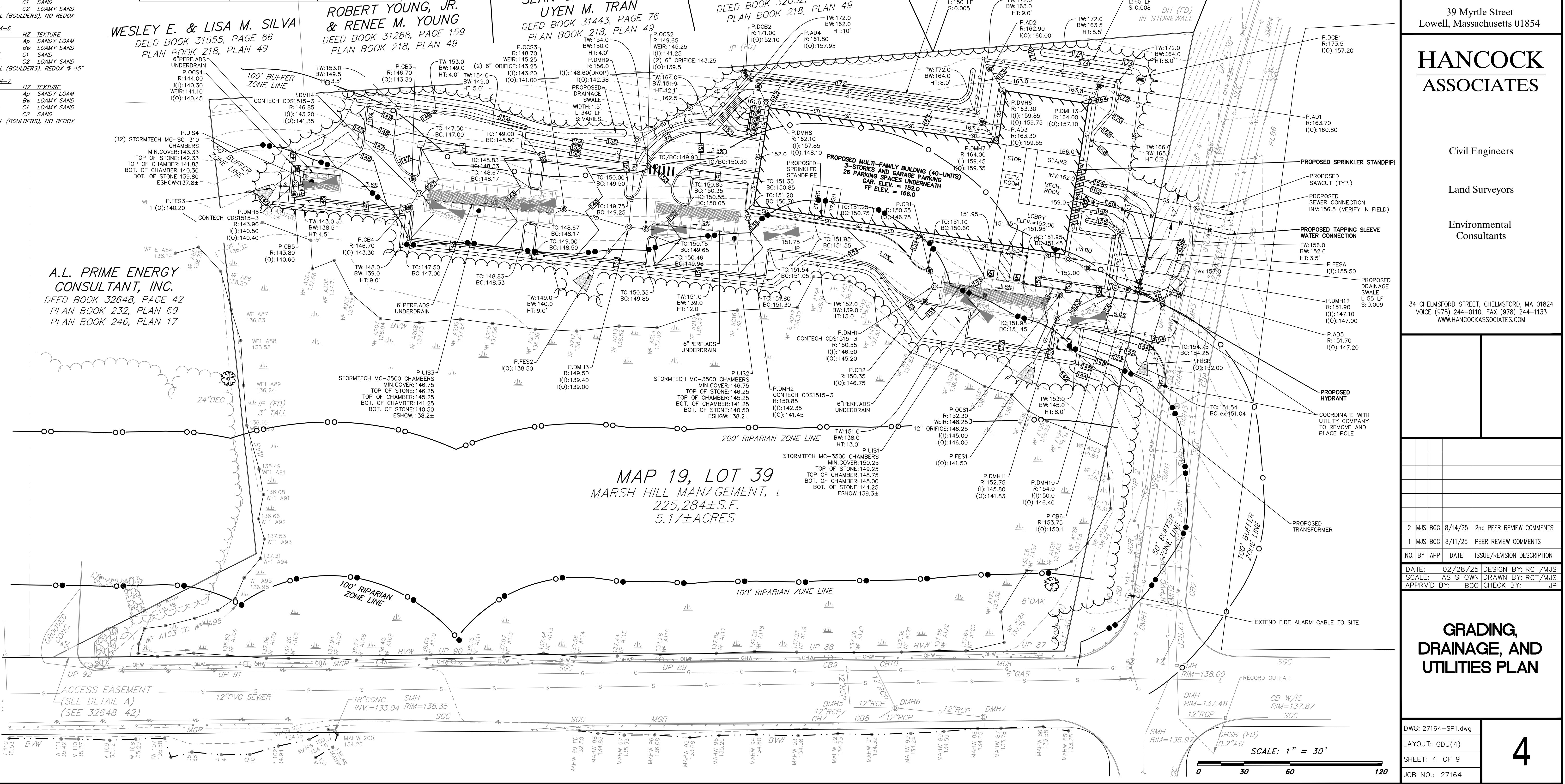
## DRAINAGE PIPE SCHEDULE, CONT.

PIPE ID	MATERIAL	LENGTH & SLOPE
P.OCS2 -> P.DMH3	12" HDPE	7 LF; 1.43%
P.DMH3 -> P.FES2	18" HDPE	35 LF; 1.43%
P.DCB2 -> P.DMH9	12" HDPE	78 LF; 4.50%
P.DMH9 -> P.DMH3	12" HDPE	55 LF; 4.50%
P.CB3 -> P.DMH4	8" HDPE	5 LF; 2.00%
P.CB4 -> P.DMH4	8" HDPE	6 LF; 1.67%
P.DMH4 -> P.UIS3	12" HDPE	4 LF; 2.00%
P.UIS3 -> P.OCS3	12" HDPE	4 LF; 2.50%
P.OCS3 -> P.DMH3	12" HDPE	45 LF; 2.44%
P.CB5 -> P.DMH5	6" HDPE	5 LF; 2.00%
P.DMH5 -> P.PUS4	6" HDPE	5 LF; 2.00%
P.PUS4 -> P.OCS4	12" HDPE	4 LF; 2.50%
P.OCS4 -> P.FES3	12" HDPE	17 LF; 1.50%
P.CB6 -> P.DMH10	12" HDPE	4 LF; 2.50%
P.FESA -> P.FESB	12" HDPE	73 LF; 4.79%

## UTILITY NOTES:

ALL UTILITY CONNECTIONS SHOWN HEREON ARE TO BE COORDINATED WITH THE RESPECTIVE DEPARTMENTS TO FOLLOW THEIR RULES AND REGULATIONS FOR INSTALLATION PRIOR TO CONSTRUCTION.

DMH1	DMH6	CB4 W/S	CB9 W/S	SMH1
RIM=139.97	RIM=136.89	RIM=151.09	RIM=136.77	RIM=146.13
DMH2	DMH7	CB5 W/S	CB8 W/S	SMH2
RIM=139.82	RIM=136.87	RIM=158.29	RIM=136.77	RIM=147.08
DMH3	CB1 W/S	RCB6		SMH3
RIM=150.53	RIM=139.83	RIM=162.38		RIM=155.02
DMH4	CB2 W/S	CB7 W/S	CB8 W/S	SMH4
RIM=151.21	RIM=140.44	RIM=136.69	RIM=136.80	RIM=168.24
DMH5	CB3 W/S	CB8 W/S	CB9 W/S	SMH5
RIM=136.80	RIM=151.04	RIM=136.78	RIM=136.80	RIM=136.78





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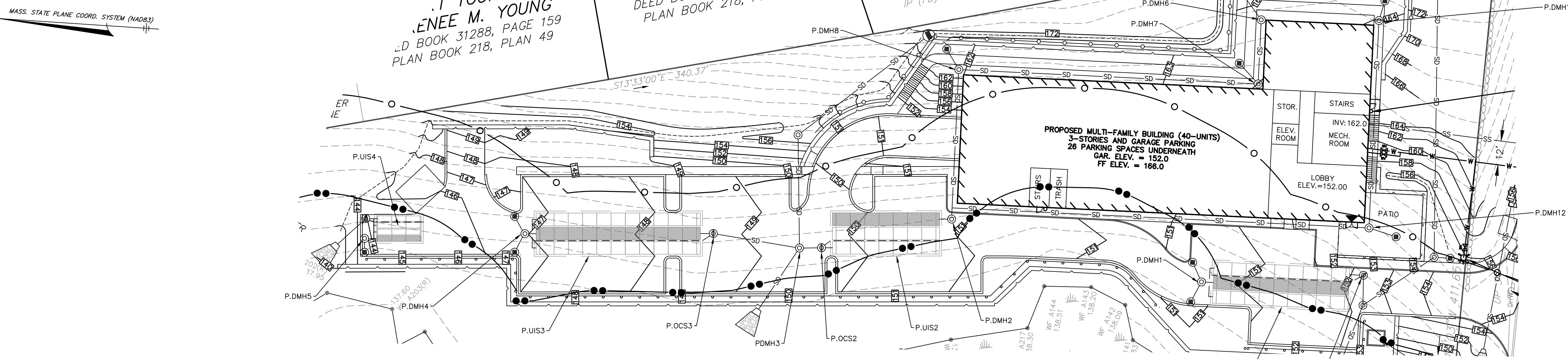
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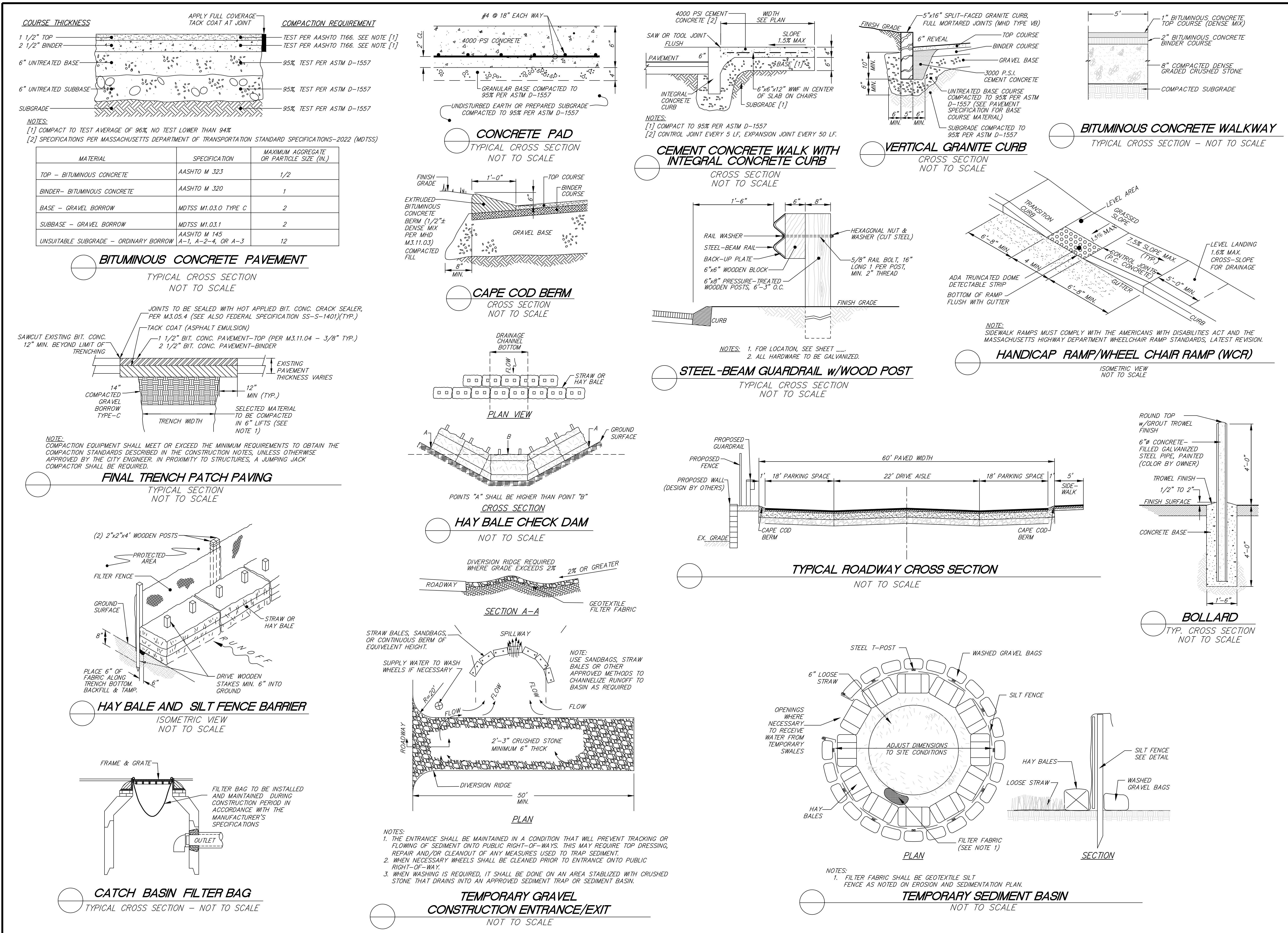
# Environmental Consultants

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8/14/25	2nd PEER REVIEW COMMENTS
8/11/25	PEER REVIEW COMMENTS
DATE	ISSUE/REVISION DESCRIPTION
02/28/25	DESIGN BY: RCT/MJS
AS SHOWN	DRAWN BY: RCT/MJS
Y: RGG	CHECK BY: JPS

# DETAIL SHEET (1 OF 3)

DWG: 27164-SP1.dwg
LAYOUT: DET(7)
SHEET: 7 OF 9
JOB NO.: 27164



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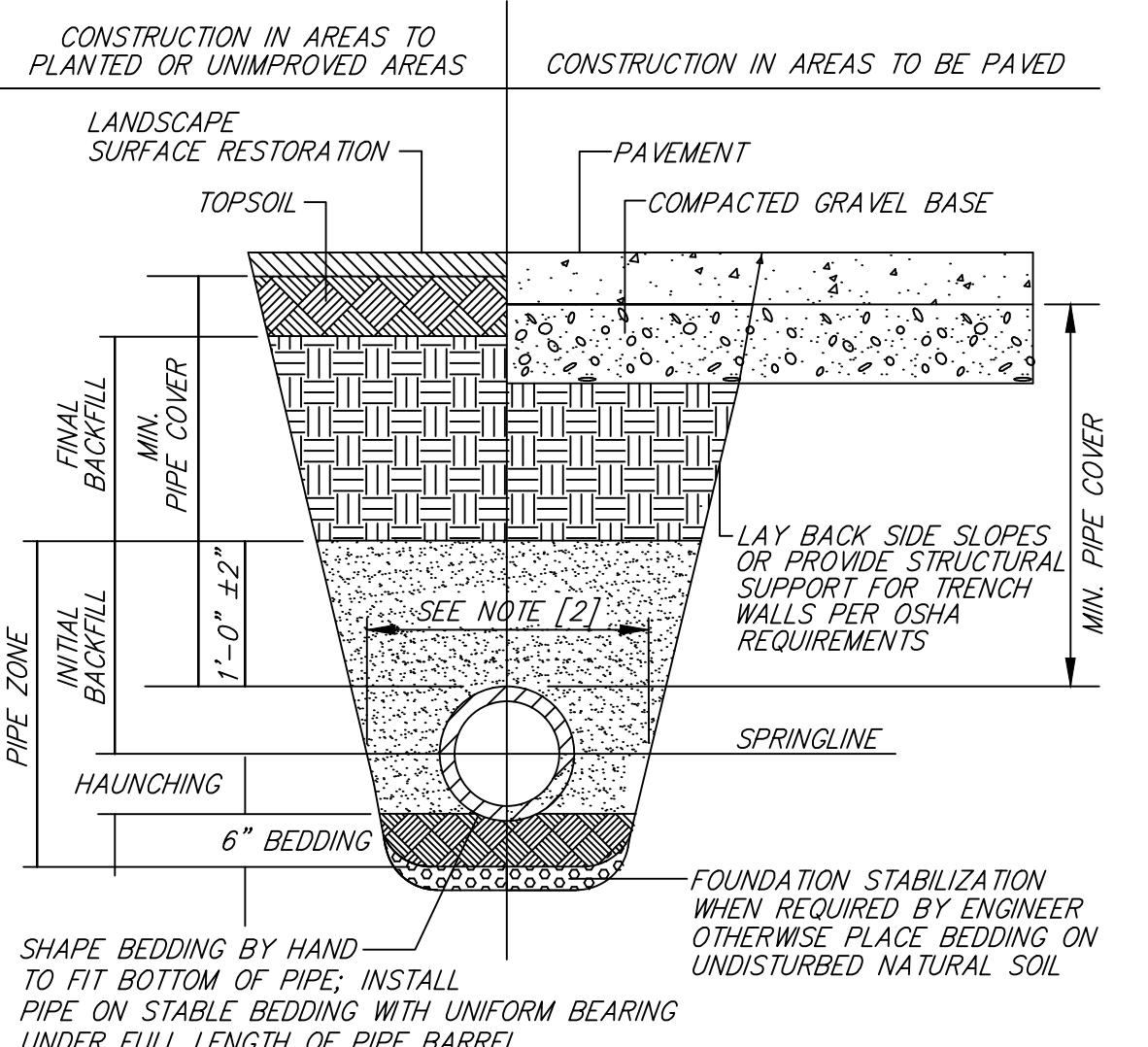
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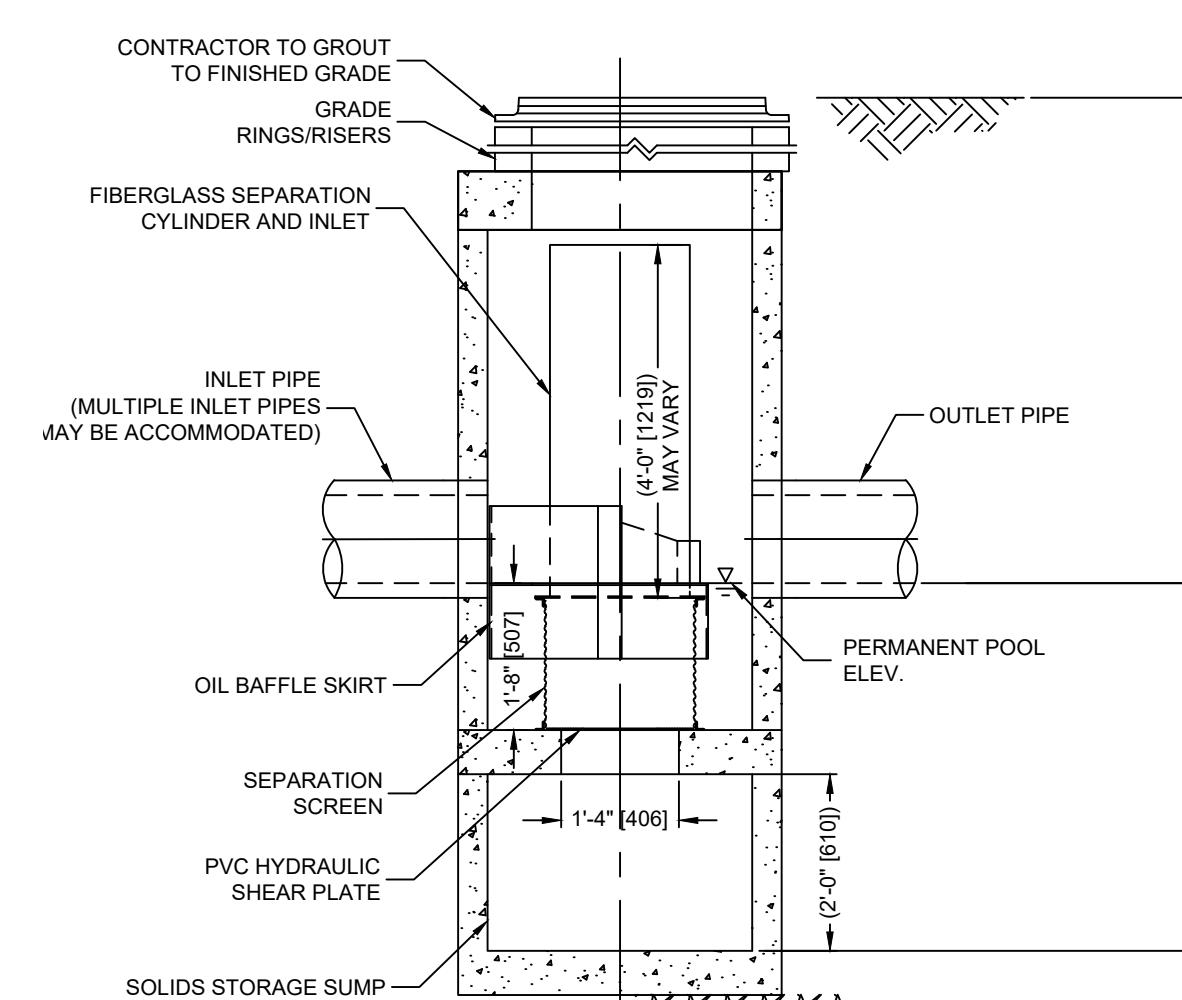
FOUNDATION, BEDDING & BACKFILL MATERIALS		
PIPE MATERIAL	HDP, PVC	RC, DI
FOUNDATION STABILIZATION	[6]	[6]
BEDDING	[1]	[1]
HAUNCHING	[1]	[1]
INITIAL BACKFILL	[1]	[1]
FINAL BACKFILL	[4]	[4]
MIN. PIPE COVER	[5]	[5]

[3] INSTALL PIPE IN CENTER OF TRENCH.  
[4] IN PLANTED OR UNIMPROVED AREAS, USE ON-SITE EXCAVATED MATERIAL FOR FINAL BACKFILL. COMPACT TO 95% PER ASTM D-1557. IN PAVED AREAS, OBTAIN ENGINEER APPROVAL OF ON-SITE EXCAVATED MATERIALS FOR USE AS FINAL BACKFILL.

[5] MINIMUM COVER OVER TOP OF PIPE:

PIPE MATERIAL	HDP, PVC	RC, DI
WATER	5'-0"	5'-0"
SEWER	4'-0"	4'-0"
DRAIN	1'-6"	1'-0"

[6] FOR FOUNDATION STABILIZATION, USE 2"± CRUSHED STONE.

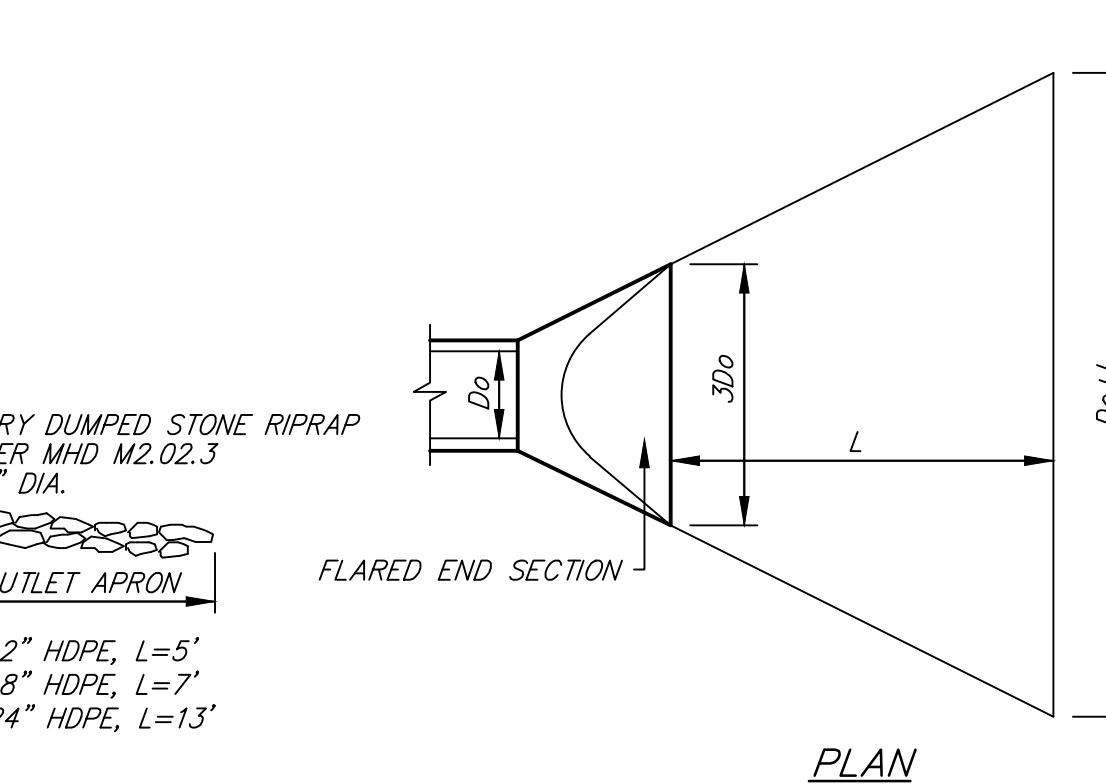
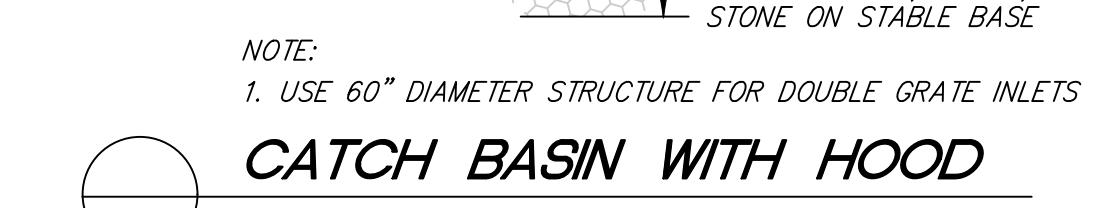
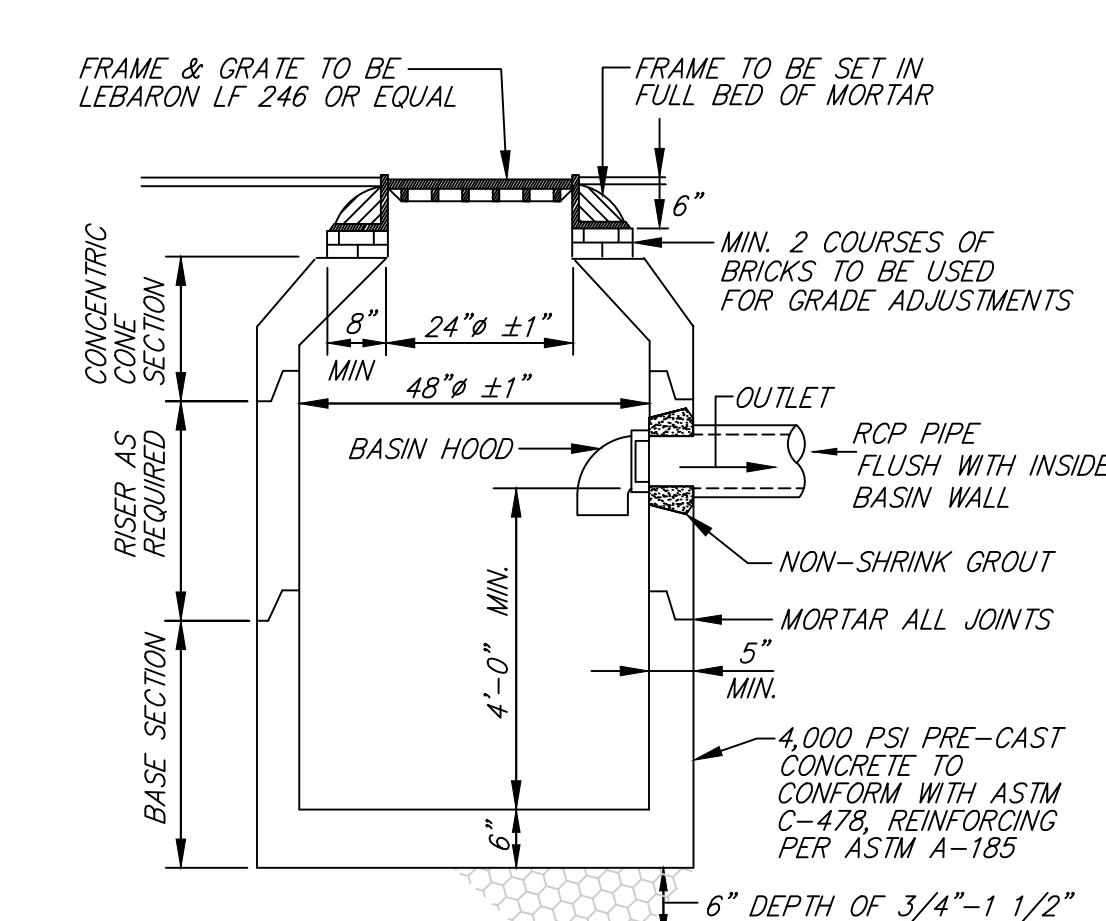
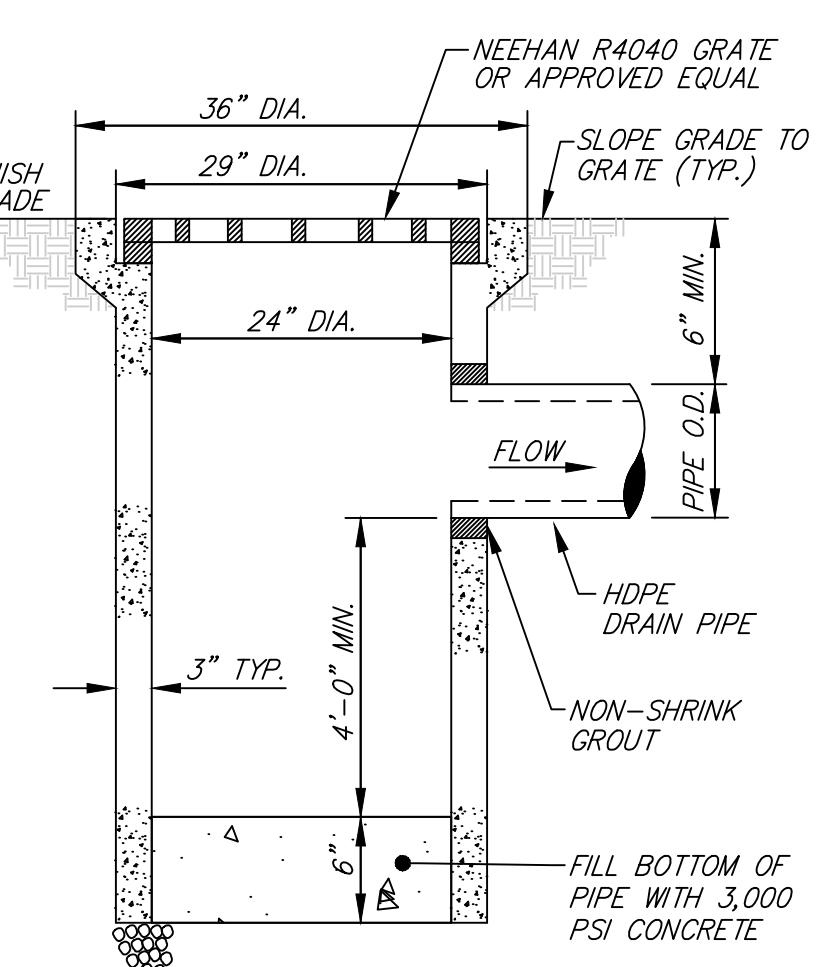
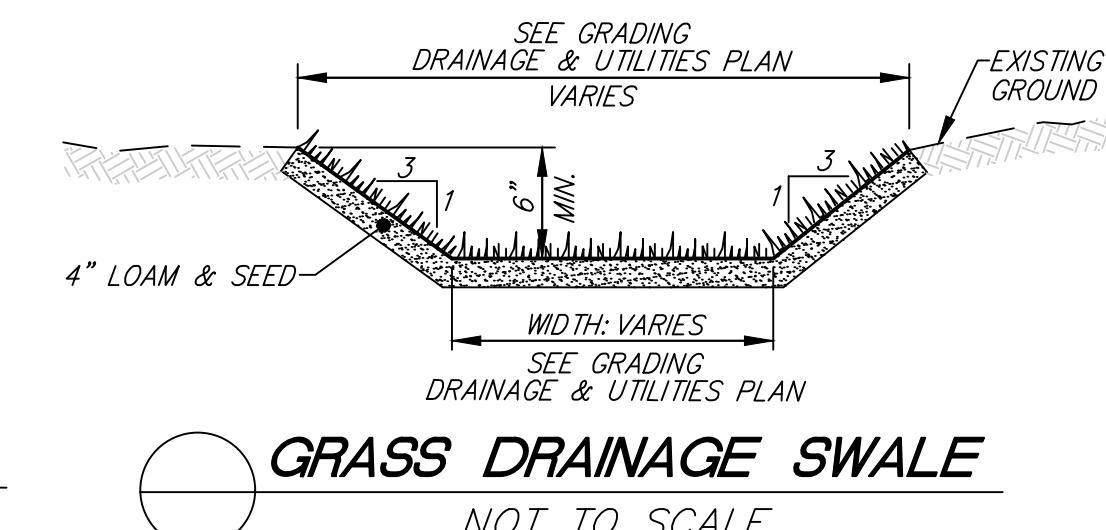
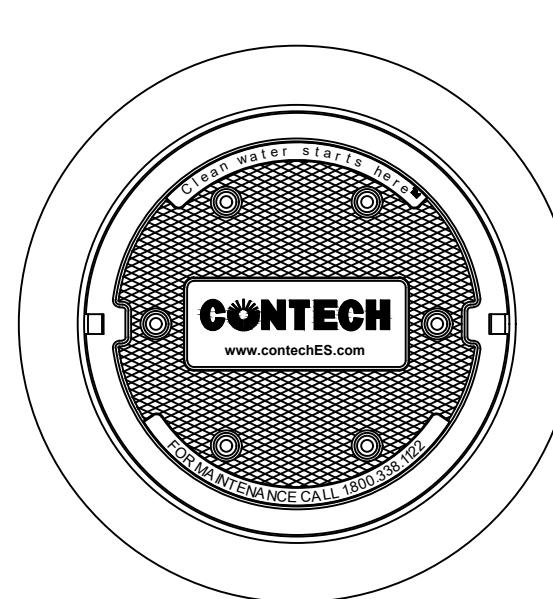
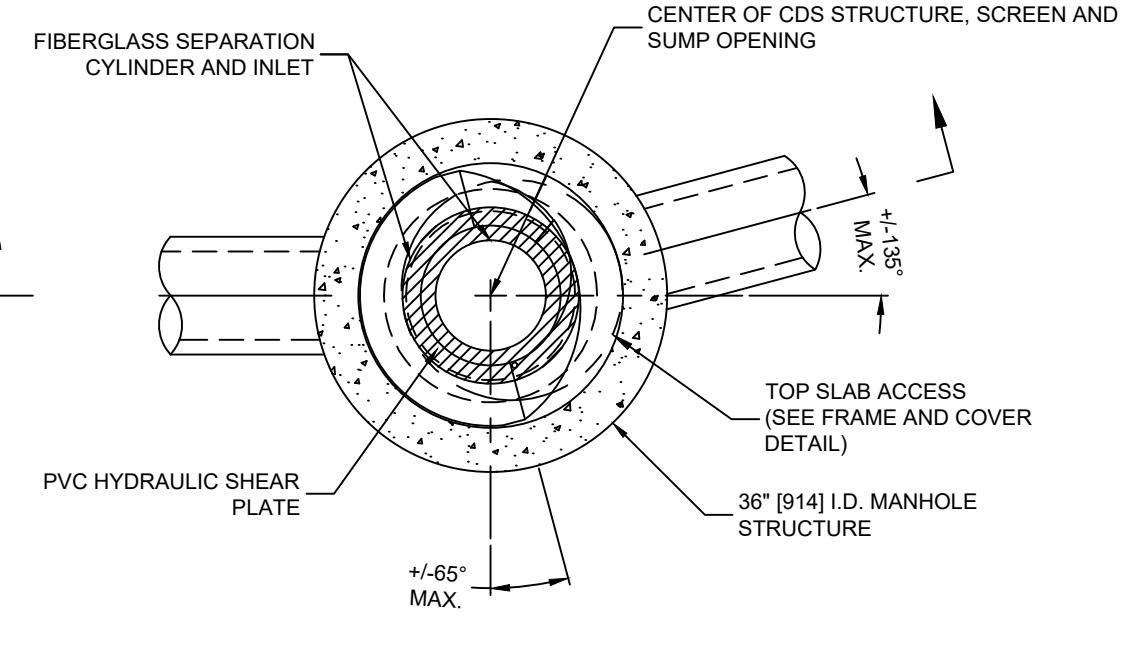
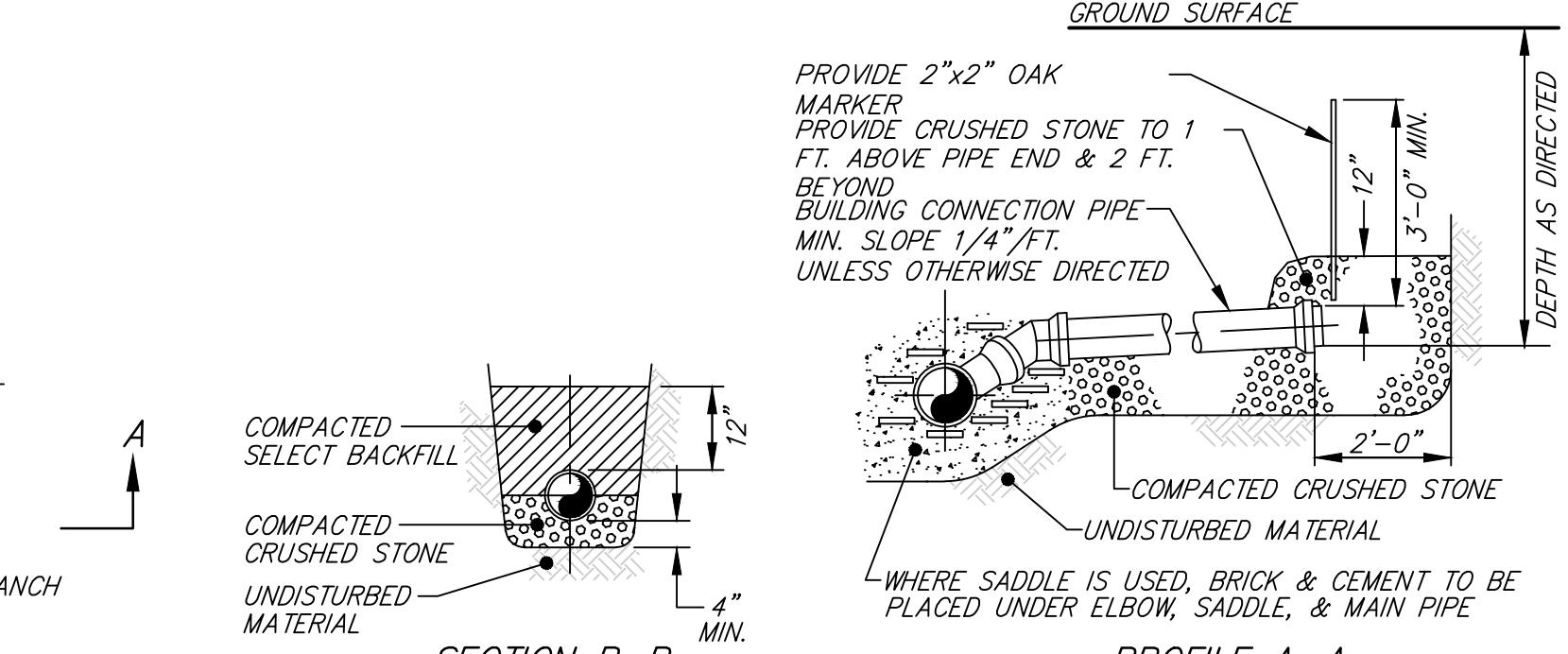
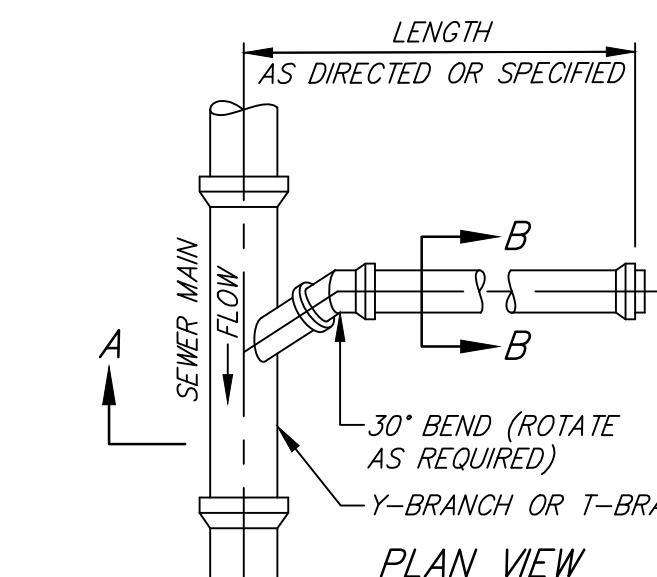
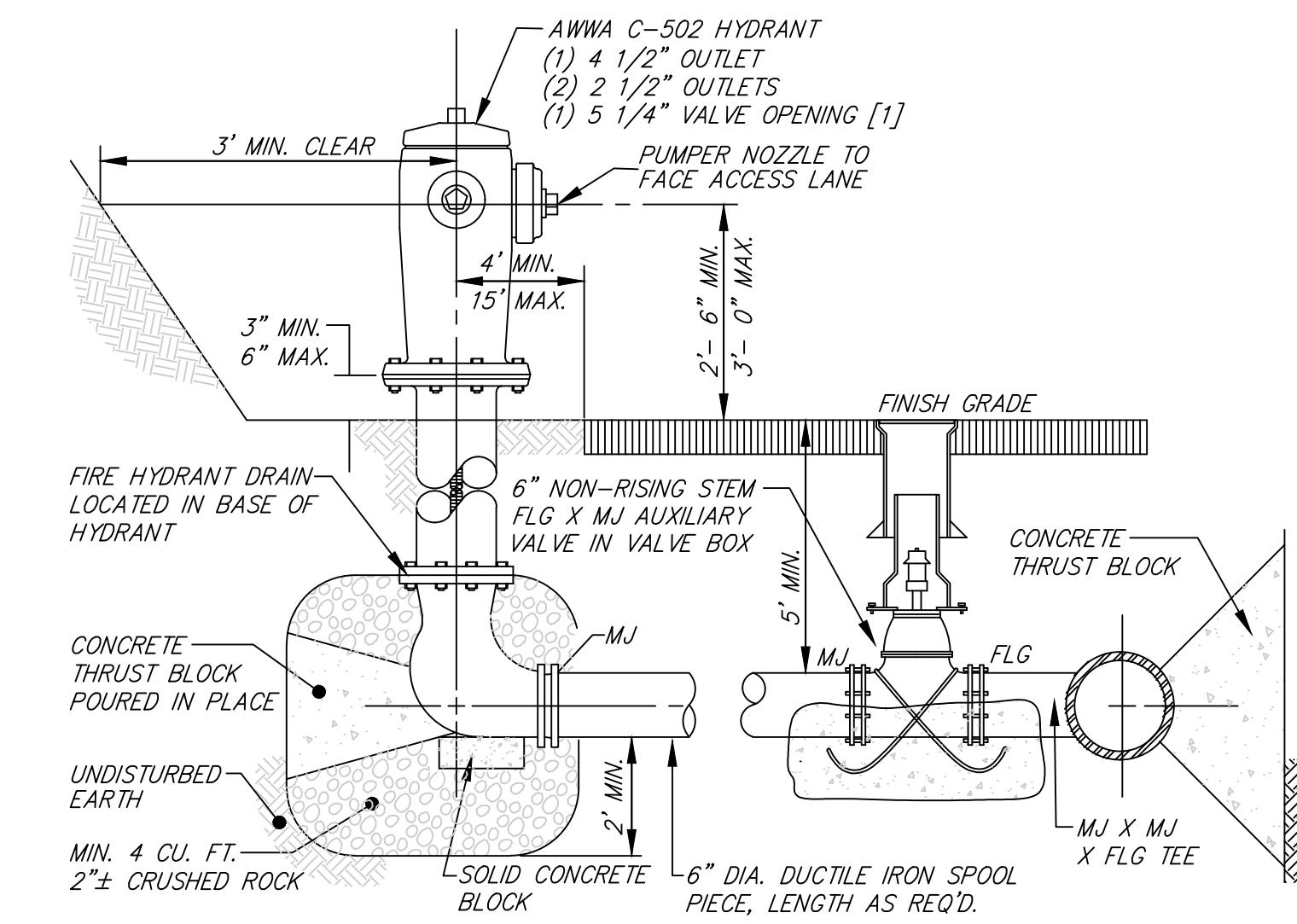
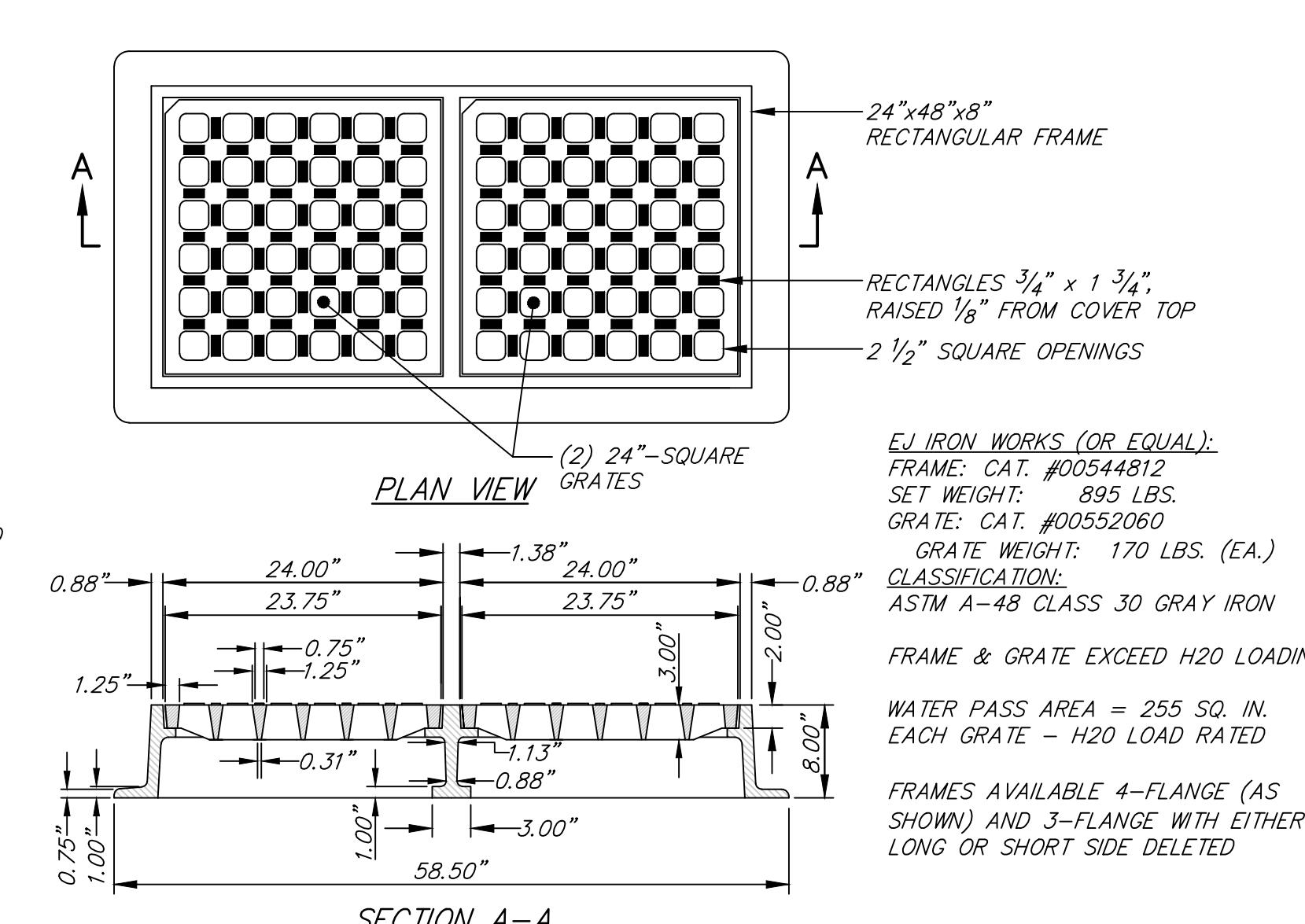
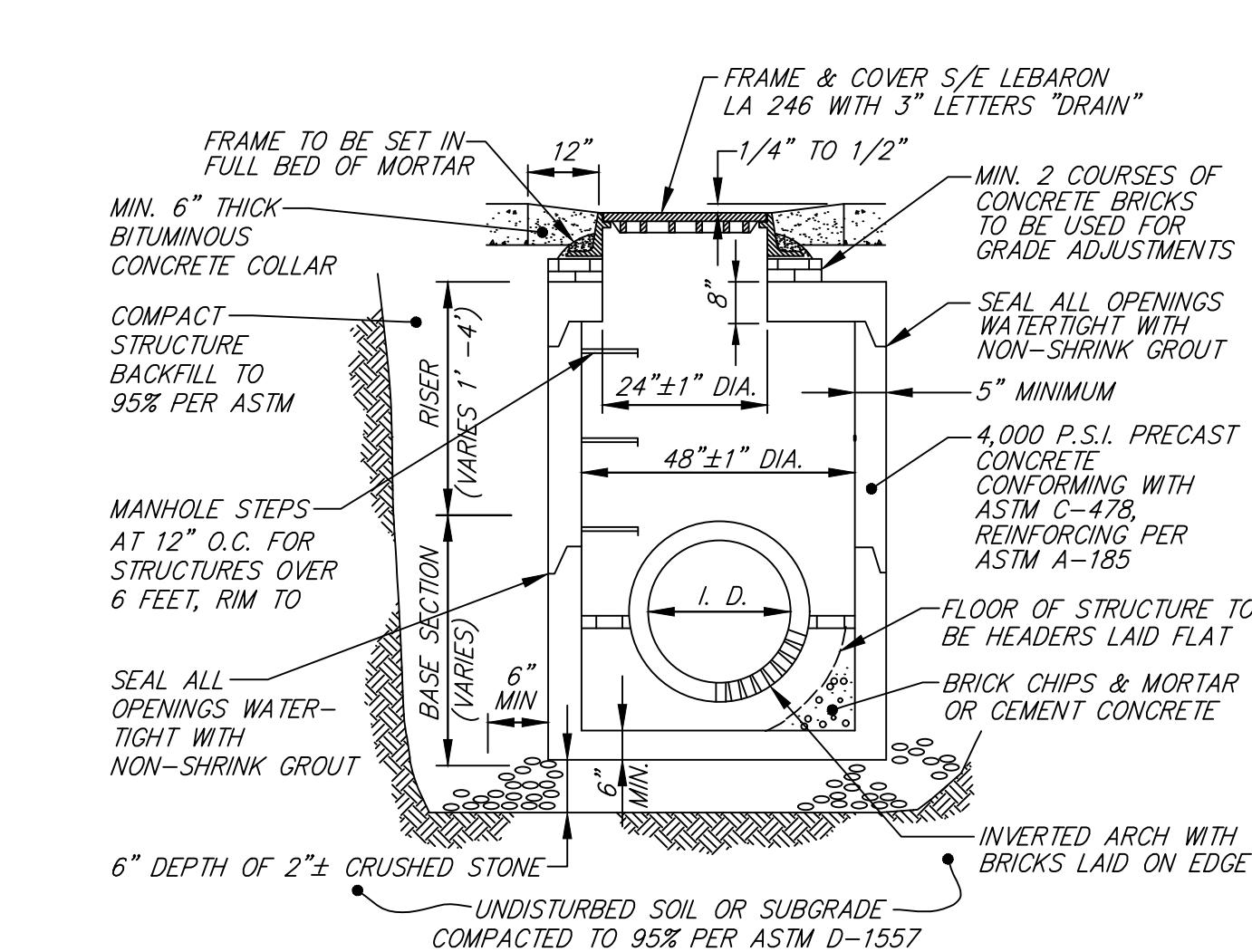


ELEVATION A-A  
N.T.S.

GENERAL NOTES  
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.  
2. FOR CONSTRUCTION AND INSTALLATION OF DESIGNED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. [www.contechES.com](http://www.contechES.com)  
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.  
4. CONTRACTOR TO PROVIDE STRUCTURE TO MEET REQUIREMENTS OF RECORD.  
5. STRUCTURE SHALL MEET ASSESS TO H2O LOAD RATING, ASSUMING EARTH COVER OF 0'-2", AND GROUNDWATER ELEVATION AT OR BELOW THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.  
6. REINFORCING STEEL PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.  
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES  
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.  
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.  
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.  
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.  
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ENSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH CDS1515-3-C ONLINE CDS STANDARD DETAIL  
NOT TO SCALE



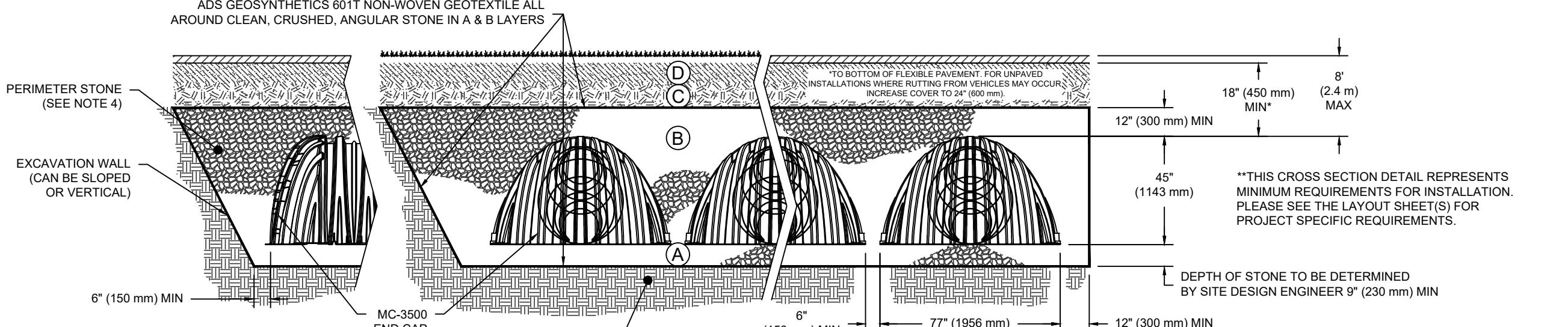
## DETAIL SHEET (2 OF 3)

DWG: 27164-SP1.dwg  
LAYOUT: DET(8)  
SHEET: 8 OF 9  
JOB NO.: 27164  
8

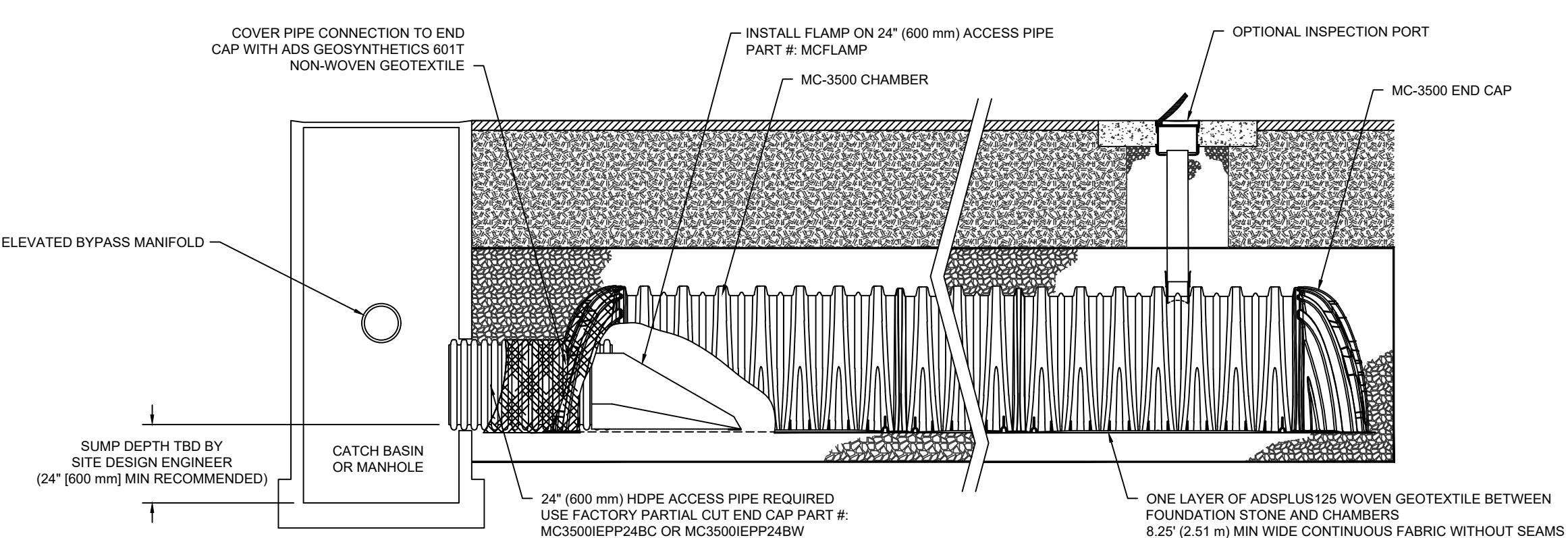
### ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 & SC-310 CHAMBER SYSTEMS

MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UP-PAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRATEGIC MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145 <sup>1</sup> A-1, A-2, A-3 OR AASHTO M43 <sup>2</sup> 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10 AASHTO M43 <sup>3</sup> 3, 357, 4, 467, 5, 56, 57
B	EMBEDMENT STONE: FILL MATERIAL FOR LAYER 'B' STARTS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE <sup>4</sup>	AASHTO M43 <sup>1</sup> 3, 357, 4, 467, 5, 56, 57
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE <sup>5</sup>	AASHTO M43 <sup>1</sup> 3, 357, 4, 467, 5, 56, 57 PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE <sup>2,3</sup>

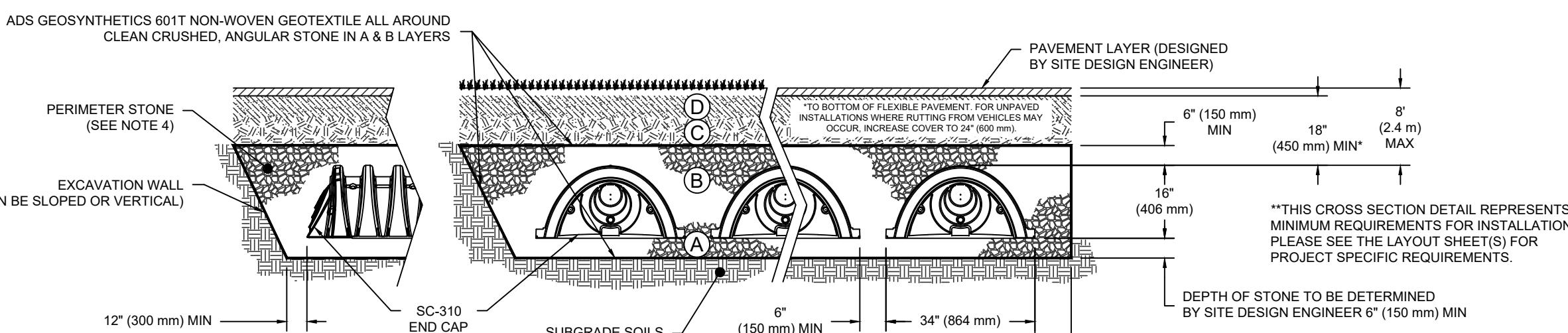
PLEASE NOTE:  
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43)  
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR A' LOCATION MATERIALS WHEN PLACED AND COMPACTION IN 9" (230 mm) MAX LIFTS USING TWO FULL COVERS WITH A VIBRATORY COMPACTOR.  
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.  
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.  
5. WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



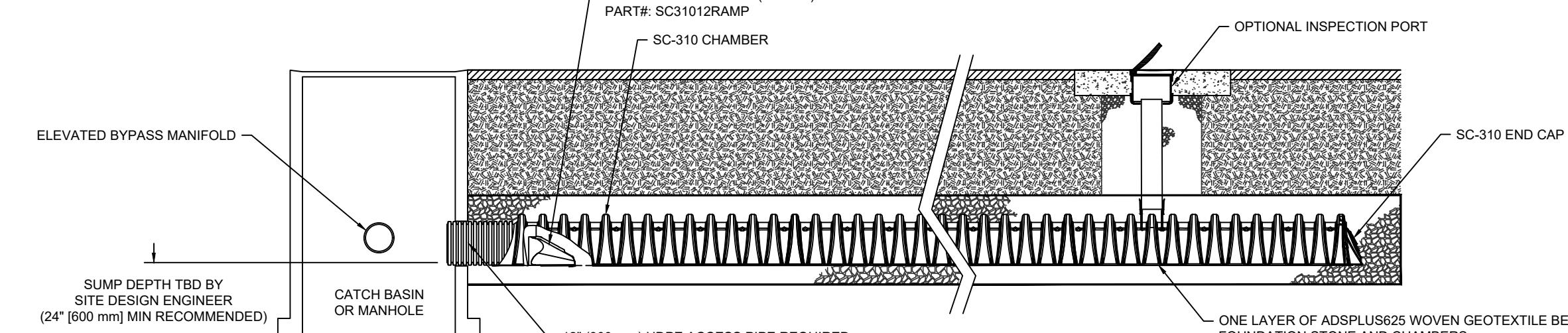
MC-3500 CHAMBER CROSS SECTION  
NOT TO SCALE



MC-3500 CHAMBER ISOLATOR ROW DETAIL  
NOT TO SCALE



SC-310 CHAMBER CROSS SECTION  
NOT TO SCALE



SC-310 CHAMBER ISOLATOR ROW DETAIL  
NOT TO SCALE

### MC-3500 STORMTECH CHAMBER SPECIFICATIONS

- CHAMBERS SHALL BE STORMTECH MC-3500.
- CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 4x76 DESIGNATION SS.
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRF BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
- CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
  - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
  - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
  - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 400 LBS/FT<sup>2</sup>, THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418, AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
  - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
  - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRF BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
  - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2922 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

### IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-3500 CHAMBER SYSTEM

- STORMTECH MC-3500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
- STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS.
  - STONESHOOTER LOCATED OFF THE CHAMBER BED.
  - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
  - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
- THE FOUNDATION STONE SHALL BE LEVELLED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEALED PRIOR TO PLACING STONE.
- MAINTAIN MINIMUM - SPACING BETWEEN THE CHAMBER ROWS.
- INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
- STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
- ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

#### NOTES FOR CONSTRUCTION EQUIPMENT

- STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- THE USE OF EQUIPMENT OVER MC-3500 CHAMBERS IS LIMITED:
  - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
  - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
  - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

### SC-310 STORMTECH CHAMBER SPECIFICATIONS

- CHAMBERS SHALL BE STORMTECH SC-310.
- CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE OR POLYETHYLENE COPOLYMERS.
- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLETHYLENE) OR ASTM F2418 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRF BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
- CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
  - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
  - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
  - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 400 LBS/FT<sup>2</sup>, THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418, AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
  - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
  - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRF BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
  - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2922 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

#### NOTES FOR CONSTRUCTION EQUIPMENT

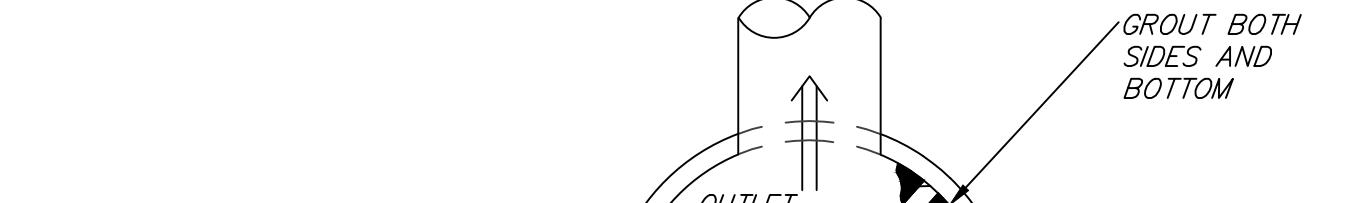
- STORMTECH SC-310 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
- THE USE OF CONSTRUCTION EQUIPMENT OVER SC-310 & SC-740 CHAMBERS IS LIMITED:
  - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
  - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
  - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
- FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

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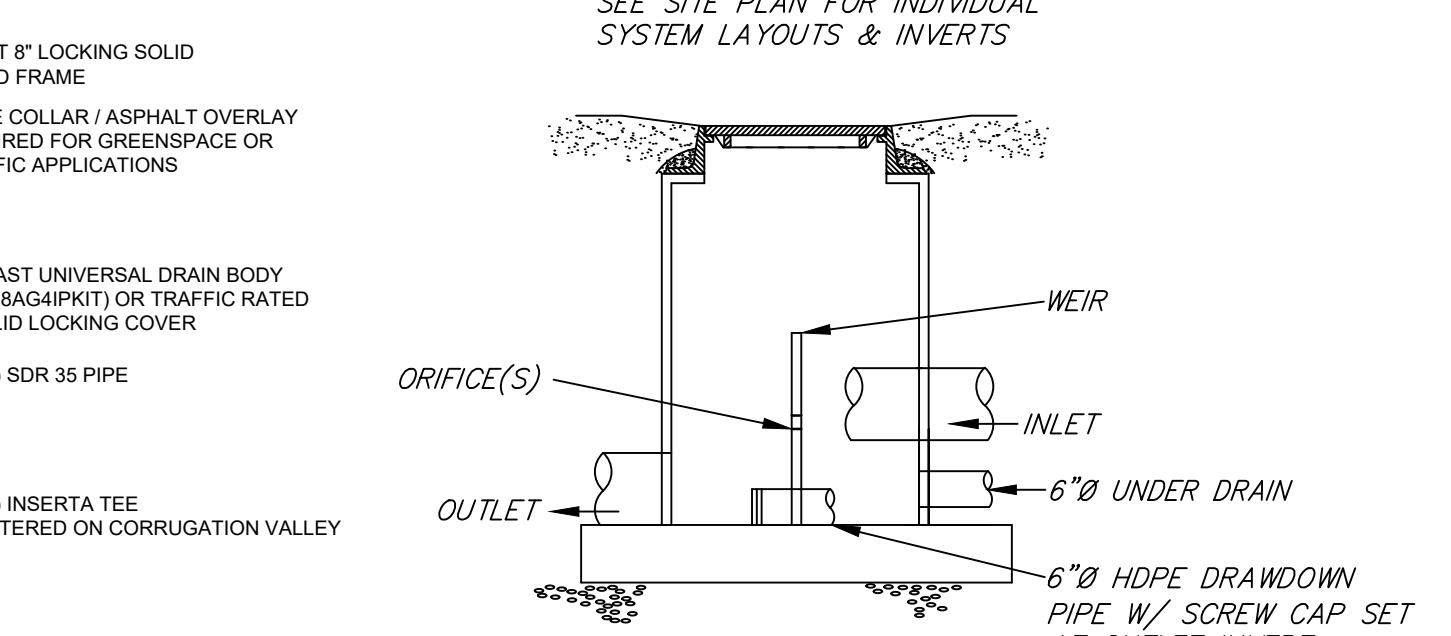
CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

### INSTALLATION NOTES:

- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 4x76 DESIGNATION SS.
- MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
  - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
  - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
  - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 500 LBS/FT<sup>2</sup>, THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/FT<sup>2</sup>, AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.



### TYPICAL SECTION VIEW SEE SITE PLAN FOR INDIVIDUAL SYSTEM LAYOUTS & INVERTS



### UNDERGROUND INFILTRATION SYSTEM ELEVATION TABLE

	BOTTOM OF SYSTEM	ESHW
P.UIS1	144.25	139.±
P.UIS2	140.50	138.2±
P.UIS3	140.50	138.2±
P.UIS4	139.80	<137.8±

NOTE: INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION VALLEY.

### 4" PVC INSPECTION PORT NOT TO SCALE

NOT TO SCALE

### OUTLET CONTROL STRUCTURE (P.OCS) NOT TO SCALE

NOT TO SCALE

# COMPREHENSIVE PERMIT SITE PLAN

PROPERTY ADDRESS:  
2041 BRIDGE STREET  
Dracut, Massachusetts 01826

PREPARED FOR:  
Marsh Hill Management, LLC

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