

LOCUS MAP
Not to Scale

RIVER MARSH VILLAGE

(Map E-15, LOT 17)

Comprehensive Permit Plan in Pembroke, Massachusetts



SCALE: 1" = 100'

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September 22, 2016
Revised May 12, 2017
Revised July 14, 2017
Revised November 27, 2018
Revised January 27, 2021
Revised April 5, 2021
Revised June 7, 2021
Revised June 9, 2021
Revised August 31, 2021
Revised September 13, 2021

• McKenzie Engineering Group, Inc. Consulting Engineers •
150 Longwater Drive, Suite 101, Norwell, Massachusetts 02061

Applicant:

River Marsh, LLC
293 R Washington Street
Norwell, MA 02061

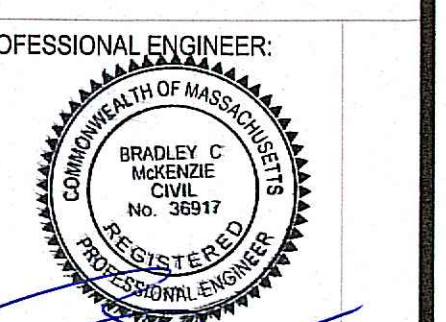
Engineer/Surveyor:

McKenzie Engineering Group, Inc.
150 Longwater Drive
Suite 101
Norwell, MA 02061

REV	DATE	DESCRIPTION
1	5/12/2017	COMMENTS PER MASSHOUSING
2	7/14/2017	COMMENTS PER MASSHOUSING
3	11/27/2018	ZBA APPLICATION
4	1/27/2021	REVISIONS TO WTPP COMPONENT
5	4/5/2021	MERRILL ENGINEERS PEER REVIEW COMMENTS
6	6/7/2021	RECONFIGURED WWT, STORMWATER SYSTEM AND BUILDINGS
7	8/31/2021	NO CHANGES THIS SHEET
8	8/31/2021	ADDED SIDEWALK, MERRILL ENGINEERS PEER REVIEW COMMENTS
9	9/13/21	ADDED SHEETS C-8 & C-10 TO TRUCK TURNING RENUMBERED C-3 TO C-11

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**RIVER MARSH VILLAGE
COMPREHENSIVE PERMIT PLAN**
(ASSESSOR'S MAP E-15, LOT 17)
WATER STREET
PEMBROKE, MASSACHUSETTS



OWNER/APPLICANT:
RIVER MARSH, LLC
293 R WASHINGTON STREET
NORWELL, MASSACHUSETTS 02061

DRAWN BY: SBS
DESIGNED BY: SBS
CHECKED BY: BCM
APPROVED BY: BCM
DATE: SEPTEMBER 22, 2016
SCALE: AS NOTED
PROJECT NO.: 215-181
DWG. TITLE:

Cover Sheet

DWG. NO.: **CS-1**

ABAN ABANDONED
 ACP ASBESTOS CEMENT PIPE
 ACCR ACCESSIBLE CURB RAMP
 AGU ADJUST
 APPROXIMATE
 ASPH ASPHALT
 ACOMP ASPHALT COATED CORRUGATED METAL PIPE
 B BO
 BLD BUILDING
 T CONC BITUMINOUS CONCRETE
 BM BENCHMARK
 C CAP
 CCB BOTTOM OF SLOPE
 CIP CORRUGATED ALUMINUM PIPE
 CCB CAST BASIN
 CSB CUT AND CAPPED
 CBHD CONC. BOUND/DRILL HOLE
 CBETPLP OBESOUTHCEN
 CIP CAPE CEMENT
 CIP CAST IRON PIPE
 CIT CHANGE IN TYPE
 C C
 CLF CENTERLINE
 CFC CHAIN FENCE
 C CLEAN OUT
 CONC CONCRETE
 CONC CONDUIT
 CONCD CORRUGATED METAL PIPE
 CPP CORRUGATED POLYETHYLENE PIPE
 CS COMBINED SEWER
 CS COMBINED SEWER MANHOLE
 CSMH CURVERT
 CLV DELTA ANGLE
 D DRAIN
 DCB DOUBLE CATCH BASIN
 DDC DUCTILE IRON PIPE
 DMH DRAIN MANHOLE
 E ELECTRIC
 ECC EXTRUDED CONCRETE CURB
 ELEV ELEVATION
 EMH ELECTRIC MANHOLE
 EMT ELECTRIC, TELEPHONE, & CABLE T
 EW END OF WALL
 EXIST EXISTING
 FAB FIRE ALARM BOX
 FES FLEED END SECTION
 FND FOUNDED
 FND FOUNDATION
 FRM FRAME AND COVER
 FG FIRST DEFENSE UNIT
 FD GAS
 G GAS
 GS GROUND
 GS GAS VALVE
 GIP GALVANIZED IRON PIPE
 GP GUARD POST
 GS GAS SERVICE
 GR GUARD RAIL
 GRAN GRANITE
 HH HANDHOLE
 H HORIZONTAL
 HP HIGH PRESSURE
 HD HEADWALL
 INV INVERT
 IP IRON PIPE
 I.R. IRON ROD
 L LEAD
 LP LIGHT POLE
 MAX MAXIMUM
 MC METAL COVER
 MH MANHOLE
 MIN MINIMUM
 MIN MASS. HIGHWAY BOUND
 MLC METAL LIGHT POLE
 N NC NOT IN CONTRACT
 NTS NOT TO SCALE
 OHW OVERHEAD WIRE
 PB PULL BOX
 P POLYETHYLENE PIPE
 P PROPOSED
 PROP PROPANED
 PWC POLYVINYL CHLORIDE PIPE
 PWT PAVED WATER
 PVM PAVEMENT
 RCM REINFORCED CONCRETE PIPE
 REM REMOVE
 REMOD REMODEL
 RET RETAIN
 ROW RIGHT OF WAY
 RR RAILROAD
 RSR REMOVE AND RESET
 RS REMOVE AND STACK
 S SEWER
 SB STONE BOUND
 SBH STONE BOUND/DRILL HOLE
 SGR SLOPED GRANITE CURB
 SMH SEWER MANHOLE
 STA STATION
 SS SEWER SERVICE
 S STEEL
 T SIDEWALK
 T TELEPHONE
 TCB TRAFFIC CONTROL BOX
 TMH TRAFFIC LIGHT
 TMH TELEPHONE MANHOLE
 T TREE
 TRANS TRANSFORMER
 TS TOP OF SLOPE
 TSV TAPPING SLEEVE, VALVE AND BOX
 TYP UTILITY PIPE
 VCP VITRIFIED CLAY PIPE
 VERT VERTICAL
 VCC VERTICAL GRANITE CURB
 W WATER MAIN
 WG WATER WASTE

EXISTING		PROPOSED		
55	100			CONTOUR ELEVATION
X 100.2	+ 100.00			SPOT GRADE
27.21TC 27.158C	27.21TC 27.158C			TOP & BOTTOM ELEVATION
21.25	21.25			SPOT ELEVATION w/LEADER
				SEWER MANHOLE (SMH)
				FIRST DEFENSE UNIT (FD)
				DRAIN MANHOLE (DMH)
				CATCH BASIN (CB)
				DOUBLE CATCH BASIN (DCB)
				HYDRANT (HYD)
				UTILITY POLE (UP)
				LIGHT
				WATER GATE (WG)
				GAS GATE (GG)
				SIGN
EP	EP			EDGE OF PAVEMENT (NO CURB)
				TEST PIT AND/OR PERC TEST LOCATION
				EXISTING TREE
				BOLLARD
				DUMPSTER PAD
				PARKING COUNT
				HANDICAP RAMP
				HANDICAP PARKING
				VAN-ACCESSIBLE HANDICAP PARKING
				UTILITY POLE
				GUY POLE
				HAND HOLE
				PULL BOX
				TELEPHONE MANHOLE
				TRANSFORMER PAD
				TREE LINE
				CHAIN LINK FENCE
				STONE WALL
				RETAINING WALL
				TOWN AQUIFER LINE
				FLOODPLAIN, WATERSHED, AND WETLAND OVERLAY DISTRICT
				DEP ZONE C
				WETLAND FLAG LOCATION
				WETLAND LINE
				WETLAND FLAG INDICATING AN OFFSITE TREND LINE (OS-OFFSET)
				OFFSITE WETLAND TREND LINE
				100' WETLAND BUFFER
				BORDERING LAND SUBJECT TO FLOODING (BSLF)
				LIMIT OF WORK/EROSION CONTROL
				SNOW STORAGE AREA

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR CORRECT. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY, AND "DIGSAFE" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES AND THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE ACTION SHALL BE TAKEN BEFORE PROCEEDING WITH THE WORK. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLAN.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL CONTROL POINTS AND BENCHMARKS NECESSARY FOR THE WORK.
3. THE CONTRACTOR SHALL COORDINATE ALL STREET WORK WITH THE PEMBROKE DEPARTMENT OF PUBLIC WORKS.
4. THE CONTRACTOR SHALL EXCAVATE THE UTILITY TRENCHES IN THE LOCATIONS SHOWN ON THE PLAN PRIOR TO COMMENCING WORK TO VERIFY THE ELEVATIONS AND LOCATIONS OF EXISTING UTILITIES. THE CONTRACTOR SHALL PROVIDE THE OWNER AND ENGINEER WITH THE RESULTS PRIOR TO COMMENCING ANY WORK.
5. ALL WATER AND FIRE SERVICES SHALL BE INSTALLED WITH 5' OF COVER EXCEPT AS NOTED OR DETAILLED OTHERWISE.
6. THE LOCATION AND SIZES OF THE DOMESTIC WATER AND FIRE SERVICES SHALL BE PROVIDED DURING FINAL DESIGN AND WERE NOT SPECIFIED BY MCKENZIE ENGINEERING GROUP, INC.
7. THE DOMESTIC WATER SERVICES SHALL BE POLYETHYLENE AND FIRE SERVICES SHALL BE CEMENT LINED DUCTILE IRON PIPE (C.L.D.I.) AND SHALL BE INSTALLED WITH APPROPRIATELY SIZED TAPPING SLEEVE, GATE VALVE AND BOX.
8. ALL WATER AND FIRE SERVICE APPURTENANCES, MATERIALS, METHODS OF INSTALLATION SHALL MEET OR EXCEED ALL LOCAL MUNICIPAL REQUIREMENTS.
9. THE FIRE SERVICE AND DOMESTIC WATER SERVICE SHALL BE ADEQUATELY PROTECTED AGAINST BACKFLOW (BACKFLOW PREVENTION) AT THE BUILDING.
10. PRIOR TO PUMPING TESTING AND CHLORINATION IS COMPLETED, SAMPLES SHALL BE TAKEN FROM THE FIRE SERVICE AND DOMESTIC WATER SERVICE AND SHALL BE TESTED AT 200 PSI FOR A MINIMUM OF 2 HOURS. THE CONTRACTOR IS REQUIRED TO NOTIFY THE PEMBROKE DEPARTMENT OF PUBLIC WORKS AT LEAST 24 HOURS PRIOR TO THE TESTING.
11. THE FIRE SERVICE AND DOMESTIC WATER SERVICE SHALL BE TESTED IN ACCORDANCE WITH DEPARTMENT OF ENVIRONMENTAL PROTECTION REGULATIONS. A MINIMUM OF 2 SEPARATE WATER SAMPLES SHALL BE TESTED AT A STATE CERTIFIED LABORATORY.
12. A MINIMUM OF 10 FEET CLEAR HORIZONTALLY SHALL BE MAINTAINED BETWEEN SANITARY SEWER SERVICES AND WATER SERVICES. WHENEVER CONDITIONS PRESENT A LATENTAL SEPARATION OF 10 FEET TO A WATER SERVICE THE ELEVATION OF THE CROWN OF THE SEWER SHALL BE AT LEAST 16 INCHES BELOW THE INVERT OF THE WATER SERVICE.
13. ALL GRAVITY SEWER PIPE SHALL BE POLYVINYL CHLORIDE (PVC) SDR-35 UNLESS OTHERWISE NOTED.
14. WHERE SANITARY SEWERS CROSS WATER MAINS, THE SEWER SHALL BE LAID AT SUCH AN ELEVATION THAT THE CROWN OF THE SEWER AT LEAST 16 INCHES BELOW THE INVERT OF THE WATER MAIN. IF THE ELEVATION OF THE SEWER CANNOT BE VARIED TO MEET THIS REQUIREMENT, THE WATER MAIN SHALL BE RELOCATED TO PROVIDE THIS SEPARATION OR CONSTRUCTED WITH MECHANICAL JOINT PIPE FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE SEWER. ONE FULL LENGTH OF WATER MAIN SHALL BE CENTERED OVER THE SEWER SO THAT BOTH JOINTS WILL BE AS FAR FROM THE SEWER AS POSSIBLE. WHENEVER IT IS POSSIBLE TO OBTAIN VERTICAL SEPARATION AS SPECIFIED ABOVE, BOTH THE WATER MAIN AND SEWER SHALL BE ENCASED IN CONCRETE FOR A MINIMUM DISTANCE OF 10 FEET FROM THE CROSSING POINT OF THE OTHER PIPE AS MEASURED NORMALLY FROM ALL POINTS ALONG THE PIPE.
15. THE LOCATIONS OF PROPOSED ELECTRIC TELEPHONE COMMUNICATION (E.T.C.) AND FIRE SERVICES ARE APPROXIMATE. THE PROJECT ELECTRICAL ENGINEER SHALL VERIFY THESE LOCATIONS PRIOR TO THE START OF CONSTRUCTION AND SHALL COORDINATE ALL E.T.C. WORK WITH THE APPROPRIATE UTILITY COMPANIES.
16. THE PROPOSED GAS SERVICE LOCATIONS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL COORDINATE THE GAS SERVICE INSTALLATION WITH THE GAS COMPANY. THE CLIENT AND CONTRACTOR SHALL CONFIRM THE LOCATION AND SIZE OF THE PROPOSED GAS SERVICES WITH THE GAS COMPANY.
17. IF DURING THE CONSTRUCTION PROCESS THE NEED FOR EXCAVATION DEWATERING ARISES, A DEWATERING FILTER PIT SHALL BE CONSTRUCTED IN ACCORDANCE WITH APPROPRIATE STORMWATER MANAGEMENT AND ENGINEERING PRACTICES.

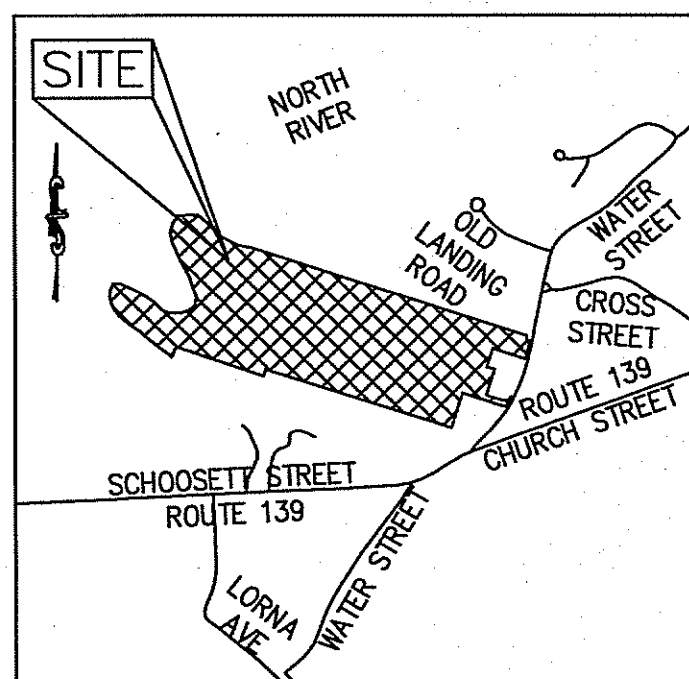
1. ALL INDIVIDUAL UNIT UTILITY SERVICES SHALL BE DESIGNED FOR TOWN SUBMISSION AND REVIEW.
2. PROPOSED GRADING AND UTILITY CONNECTIONS SHOWN ARE PRELIMINARY IN NATURE AND ARE SUBJECT TO CHANGE ONCE MORE DEFINITIVE SITE PLANS ARE PREPARED.



PERMIT PLAN SET

General Notes, Legend, & Abbreviations

CS-2

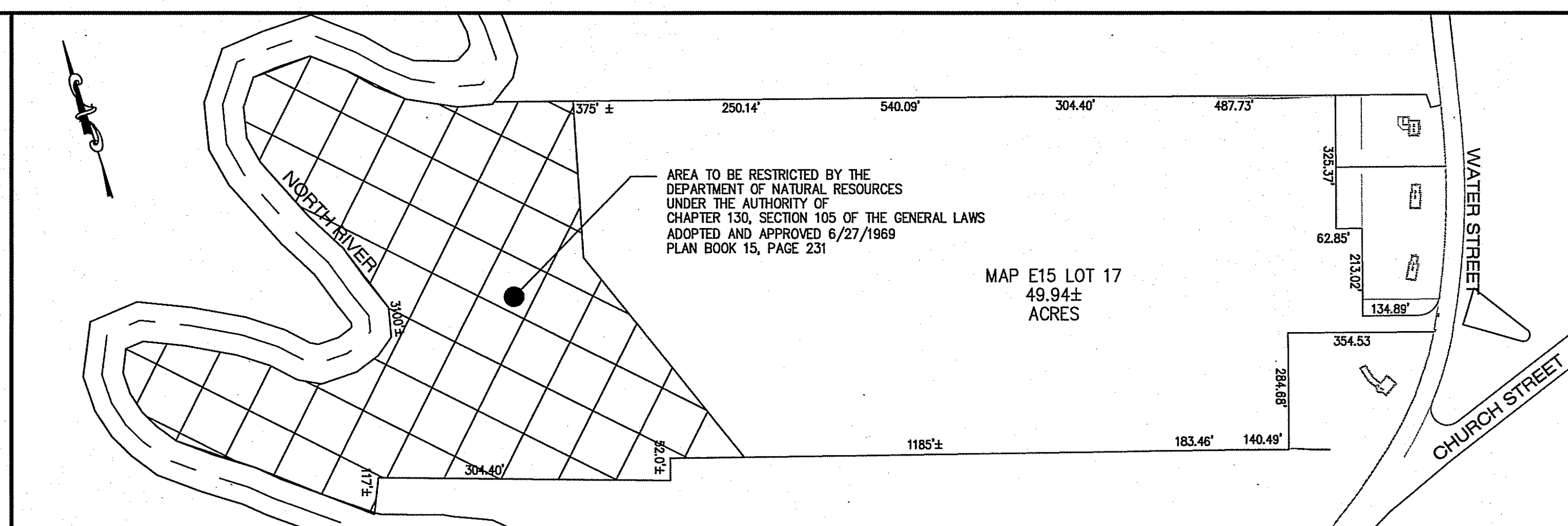


LOCUS MAP
Not to Scale

PLAN REFERENCES:
PLAN # 554 OF 1SP986

SURVEY NOTES:

1. PROPERTY LINE, DETAIL AND TOPOGRAPHIC INFORMATION WAS COMPILED FROM A PLAN PREPARED BY LAND PLANNING, INC. IN MAY OF 2002.
2. AN ON THE GROUND SURVEY WAS PERFORMED BY MCKENZIE ENGINEERING GROUP, INC. IN MARCH OF 2017 TO LOCATE THE BORDERING AND ISOLATED VEGETATED WETLANDS. AN ON THE GROUND SURVEY WAS DONE IN JANUARY OF 2018 TO LOCATE THE NATURAL BANK FLATS. AN ON THE GROUND SURVEY WAS DONE IN MARCH OF 2021 TO LOCATE EXISTING CONDITIONS AT 274 WATER STREET AND ALONG WATER STREET.
3. BORDERING VEGETATED WETLANDS DELINEATED BY ENVIRONMENTAL CONSULTING & RESTORATION, LLC ON JANUARY 31, 2017. DELINEATED BY METHODOLOGY ESTABLISHED BY THE MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (MASSDEP) REGULATIONS FOUND AT 310 CMR 10.55, SORAD (SESS-89) ISSUED ON FEBRUARY 22, 2018 AND EXTENDED UNTIL FEBRUARY 22, 2024.
4. THE NATURAL BANK WAS DELINEATED BY ENVIRONMENTAL CONSULTING & RESTORATION, LLC ON DECEMBER 20, 2017.
5. A PORTION OF THE PROPERTY SHOWN HEREON IS LOCATED IN ZONE AE (ELEVATION 8) AND ZONE X AS SHOWN ON F.I.R.M. No. 25023C0206J & 25023C0207J, EFFECTIVE JULY 17, 2012.
6. THE PROPERTY SHOWN HEREON IS NOT LOCATED WITHIN AN AREA MAPPED AS PRIORITY HABITAT & ESTIMATED HABITAT FOR RARE SPECIES ACCORDING TO THE MASSACHUSETTS NATURAL HERITAGE & ENDANGERED SPECIES PROGRAM (NHESP).
7. THE PROPERTY SHOWN HEREON DOES NOT CONTAIN A CERTIFIED VERNAL POOL ACCORDING TO THE NHESP.
8. THE PROPERTY SHOWN HEREON IS NOT LOCATED WITHIN AN AREA OF CRITICAL ENVIRONMENTAL CONCERN.
9. THE PROPERTY SHOWN HEREON IS NOT LOCATED IN A DEP ZONE II AND TOWN OF PEMBRIDGE AQUIFER PROTECTION DISTRICT ZONE.
10. UTILITY INFORMATION FROM ABOVE GROUND OBSERVED EVIDENCE IN CONJUNCTION WITH DIG SAFE MARKINGS AND RECORD PLANS. THE LAND SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN HEREON COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE LAND SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM AVAILABLE INFORMATION AND CONSTRUCTION AS THE LAND SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. BEFORE CONSTRUCTION CALL DIG SAFE SYSTEMS, INC. AT 1-888-344-7233.
11. OFFSITE AREAS SUPPLEMENTED BY MASSGIS LIDAR.



OVERALL MAP
1"=250'



ABBREVIATIONS

FTE FIRST FLOOR ELEVATION
BFC BUT CONC. BITUMINOUS CONCRETE PAVEMENT
C/CB C/CB CONC. BITUMINOUS CONCRETE CURB
EP EDGE OF PAVEMENT
BC BITUMINOUS CONCRETE CURB
BC (AM) AS MEASURED
RET WALL RETAINING WALL
CONC CONCRETE
RCP REINFORCED CONCRETE PIPE
VCC VERTICAL GRANITE CURB
ETW EDGE OF TRAVEL WAY
MIL METAL BEAM
VCC VERTICAL CONCRETE CURB
CMP CORRUGATED METAL PIPE

LEGEND

SURVEY SYMBOLS

CHB PLYMOUTH COUNTY BOUND
C/LP CONCRETE BOUND WITH LEAD PLUG
DH DRILL HOLE FOUND

UTILITY SYMBOLS

EH ELECTRIC HAND HOLE
GP GUY POLE
GW GUY WIRE
HVAC HVAC UNIT
TR TRANSFORMER
WG WATER GATE
EMH ELECTRIC MANHOLE
SMH SEWER MANHOLE
DMH DRAIN MANHOLE
TMH TELEPHONE MANHOLE
GBN DRAINAGE CATCH BASIN
HYDRANT
PIV POST INDICATOR VALVE
UP UTILITY POLE
S SIGN

LINE DESIGNATORS

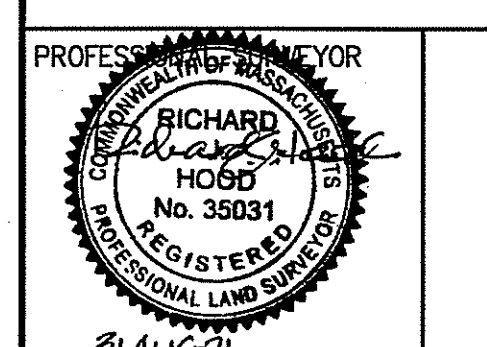
WM WATER MAIN
GR GUARD RAIL
OHW OVERHEAD WIRES
GL GAS LINE
WS WATER SERVICE
UE UNDERGROUND ELECTRIC
DL DRAIN LINE
SL SANITARY SEWER LINE
DS DRAINAGE SWALE
CLP CHAIN LINK FENCE

BY	APP	DESCRIPTION	DATE	REV
SBS	BCN	COMMENTS PER MASSHUSING	1/17/2017	1
SBS	BCN	COMMENTS PER MASSHUSING	2/17/2017	2
SBS	BCN	COMMENTS PER MASSHUSING	3/17/2017	3
SBS	BCN	REVISIONS TO WMP COMPONENT	4/17/2017	4
SBS	BCN	NOTES TO SCENIC RIVER CORRIDOR, TEST PITS & 274 WATER ST.	5/17/2017	5
SBS	BCN	ADDITIONAL TEST PITS, ANNUAL MEAN HIGH WATER LINE	6/17/2017	6
SBS	BCN	NO CHANGES THIS SHEET	7/17/2017	7
SBS	BCN	1866 PROTECTIVE ORDER ON OVERALL MAP	8/17/2017	8

PREPARED BY:

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RIVER MARSH VILLAGE
COMPREHENSIVE PERMIT PLAN
(ASSESSOR'S MAP E-15, LOT 17)
PEMBROKE, MASSACHUSETTS



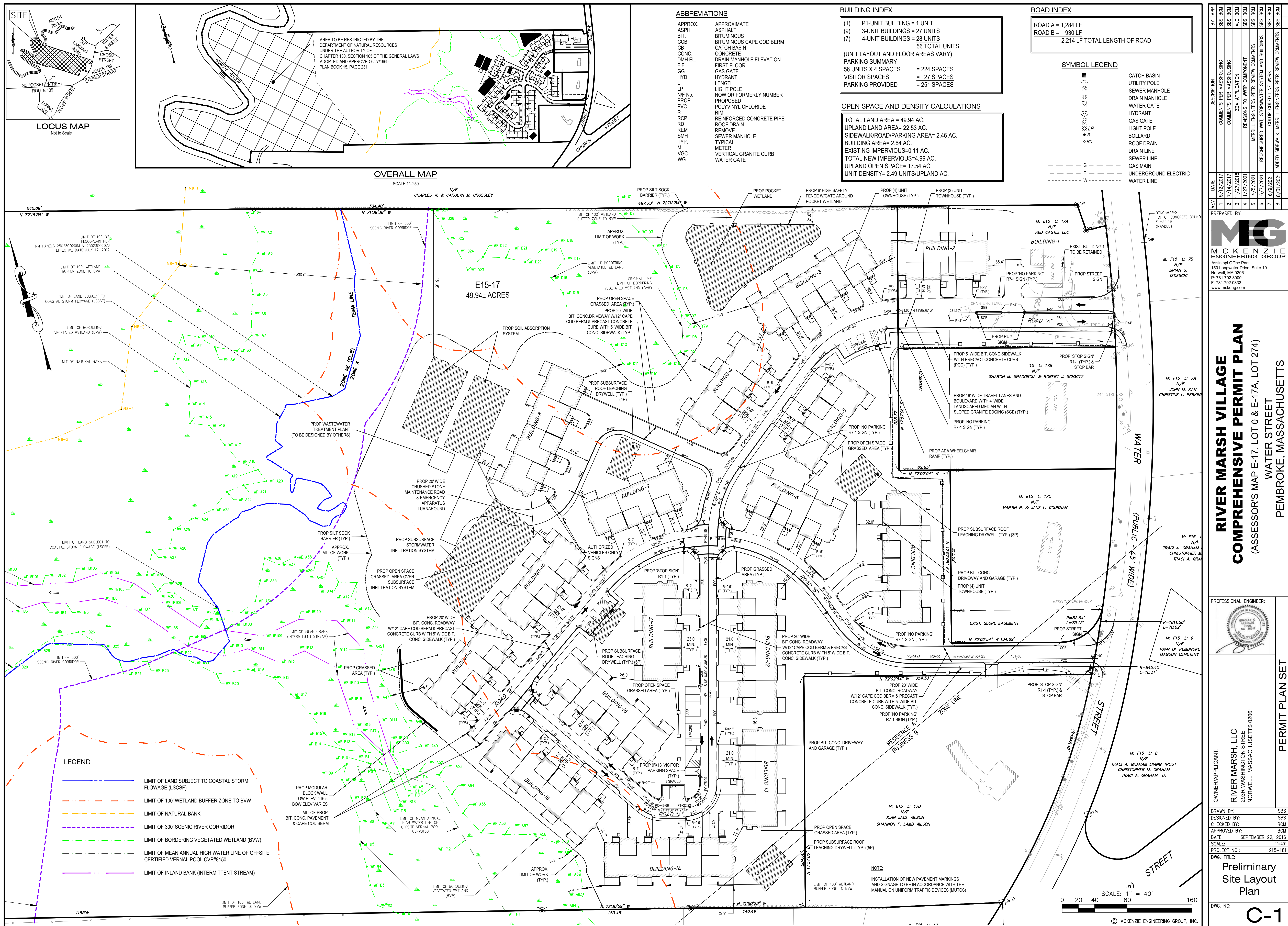
OWNER/APPLICANT:
RIVER MARSH, LLC
283R WASHINGTON STREET
NORWELL, MASSACHUSETTS 02061

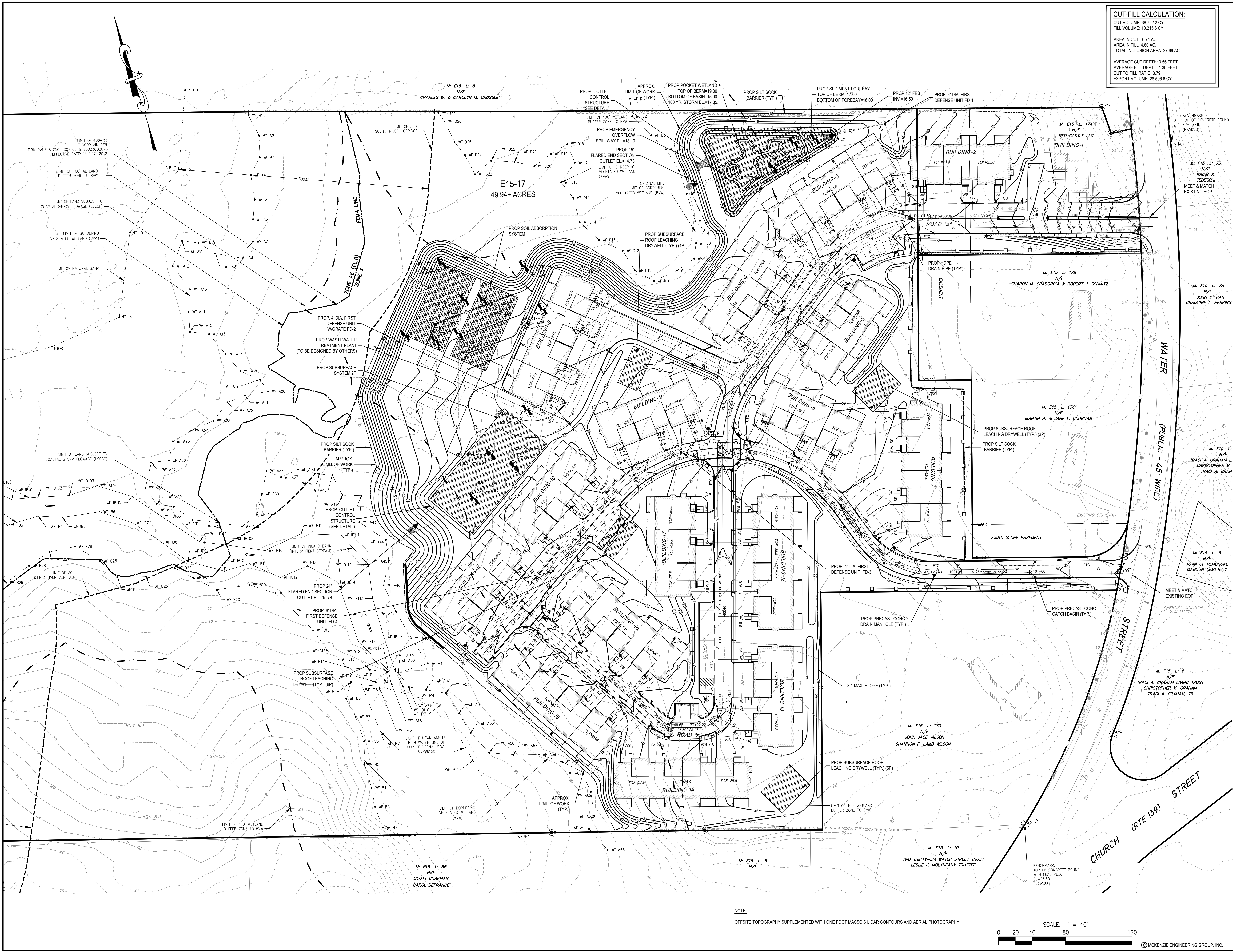
PERMIT PLAN SET

DRAWN BY: SBS
DESIGNED BY: SBS
CHECKED BY: RLS
APPROVED BY: RLS
DATE: NOVEMBER 27, 2016
SCALE: 1"=60'
PROJECT NO.: 215-181
DWG. TITLE:

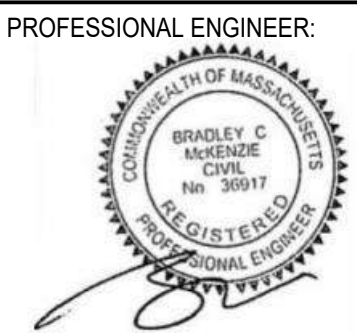
Existing
Conditions
Plan

DWG. NO.: EX-1





**RIVER MARSH VILLAGE
COMPREHENSIVE PERMIT PLAN**
(ASSESSOR'S MAP E-15, LOT 17)
PEMBROKE, MASSACHUSETTS



OWNER/APPLICANT:
RIVER MARSH, LLC
288 WASHINGTON STREET
NORWELL, MASSACHUSETTS 02061

DRAWN BY: SBS
DESIGNED BY: SBS
CHECKED BY: BCM
APPROVED BY: BCM
DATE: SEPTEMBER 22, 2016
SCALE: 1"=40'
PROJECT NO.: 215-181
DWG. TITLE:

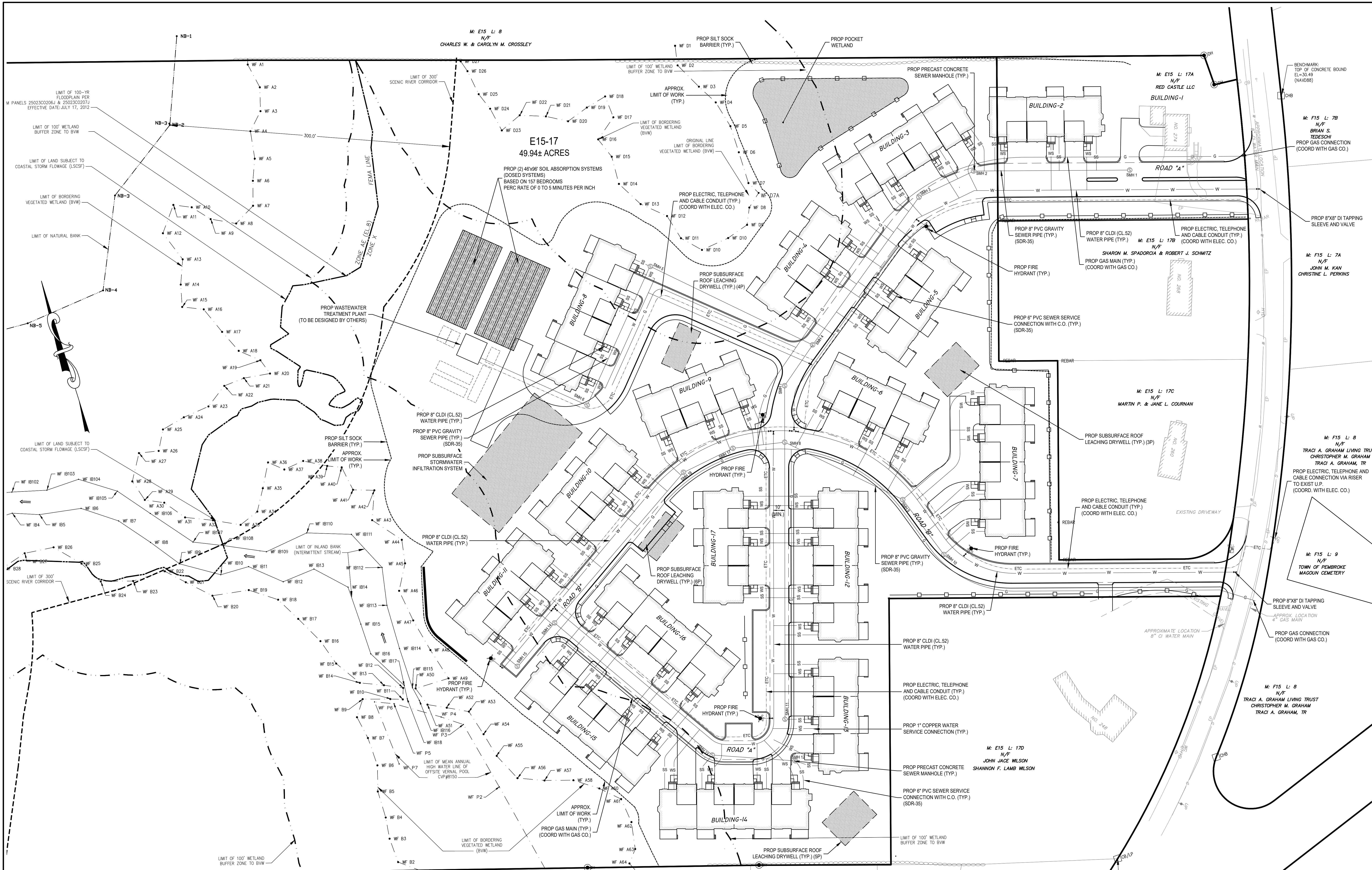
**Preliminary
Grading &
Drainage Plan**

DWG. NO.: **C-2**

NO.	DATE	REVISION	DESCRIPTION
1	5/12/2017		COMMENTS PER MASSHUSING
2	7/14/2017		COMMENTS PER MASSHUSING
3	11/02/2018		25% APPLICATION
4	1/07/2021		REVISIONS TO WMP COMPONENT
5	4/20/2021		MERRILL ENGINEERS PEER REVIEW COMMENTS
6	6/7/2021		RECONFIGURED WWT, STORMWATER SYSTEM AND BUILDINGS
7	6/9/2021		NO CHANGES THIS SHEET
8	8/1/2021		ADDED SIDEWALK, MERRILL ENGINEERS PEER REVIEW COMMENTS

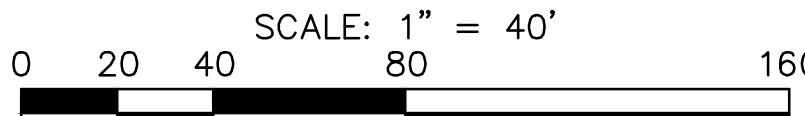
PREPARED BY:
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NO.	DATE	REVISION	DESCRIPTION
1	5/12/2017		COMMENTS PER MASSHUSING
2	7/14/2017		COMMENTS PER MASSHUSING
3	11/02/2018		25% APPLICATION
4	1/07/2021		REVISIONS TO WMP COMPONENT
5	4/20/2021		MERRILL ENGINEERS PEER REVIEW COMMENTS
6	6/7/2021		RECONFIGURED WWT, STORMWATER SYSTEM AND BUILDINGS
7	6/9/2021		NO CHANGES THIS SHEET
8	8/1/2021		ADDED SIDEWALK, MERRILL ENGINEERS PEER REVIEW COMMENTS



GENERAL UTILITY NOTES:

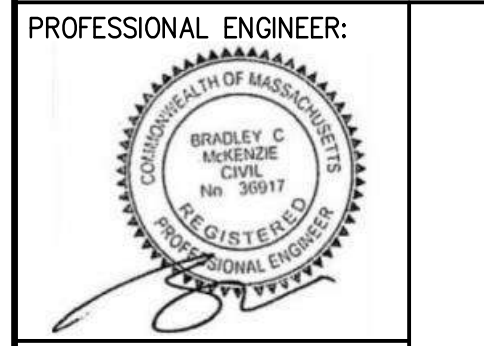
1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF VARIOUS UTILITY COMPANIES, TOWN OF PEMBROKE, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY, AND "DIGSAFE" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES AND THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION SHALL BE TAKEN BEFORE PROCEEDING WITH THE WORK. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLAN.
2. MASSACHUSETTS STATE LAW REQUIRES UTILITY NOTIFICATION AT LEAST THREE BUSINESS DAYS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CALL DIG-SAFE AT 1-888-344-7233 IN ORDER TO COMPLY WITH STATE LAW.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL CONTROL POINTS AND BENCHMARKS NECESSARY FOR THE WORK.
4. THE CONTRACTOR SHALL EXCAVATE THE UTILITY TRENCHES IN THE LOCATIONS SHOWN ON THE PLAN PRIOR TO COMMENCING WORK TO VERIFY THE ELEVATIONS AND LOCATIONS OF EXISTING UTILITIES.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE DESIGN ENGINEER FOR INSPECTION OR AS-BUILT LOCATIONS, AS REQUIRED BY THE TOWN OF PEMBROKE.
6. IF ANY PART OF THIS DESIGN IS TO BE ALTERED IN ANY WAY, THE DESIGN ENGINEER, AS WELL AS THE APPROVING AUTHORITIES, SHALL BE NOTIFIED IN WRITING BEFORE CONSTRUCTION.
7. THE WATER SERVICE SERVICE SHALL BE CEMENT LINED DUCTILE IRON (CLASS 52) AND SHALL BE INSTALLED WITH APPROPRIATELY SIZED TAPPING SLEEVE, GATE VALVE AND BOX. THE SERVICE APPURTENANCES, MATERIALS, METHODS OF INSTALLATION SHALL MEET OR EXCEED ALL STATE AND LOCAL MUNICIPAL REQUIREMENTS.
8. A MINIMUM OF 10 FEET CLEAR HORIZONTALLY SHALL BE MAINTAINED BETWEEN SANITARY SEWER SERVICES AND WATER SERVICES. WHENEVER CONDITIONS PREVENT A LATERAL SEPARATION OF 10 FEET TO A WATER SERVICE THE ELEVATION OF THE CROWN OF THE SEWER SHALL BE AT LEAST 18 INCHES BELOW THE INVERT OF THE WATER SERVICE.
9. THE MINIMUM SIZE OF ALL STORM DRAIN PIPE SHALL BE 12" AND MATERIAL SHALL BE HDPE.
10. ALL GRAVITY SEWER PIPE SHALL BE POLYVINYL CHLORIDE (PVC) SDR-35 UNLESS OTHERWISE NOTED.
11. WHERE SANITARY SEWERS CROSS WATER MAINS, THE SEWER SHALL BE LAID AT SUCH AN ELEVATION THAT THE CROWN OF THE SEWER IS AT LEAST 18 INCHES BELOW THE INVERT OF THE WATER MAIN. IF THE ELEVATION OF THE SEWER CANNOT BE VARIED TO MEET THIS REQUIREMENT, THE WATER MAIN SHALL BE RELOCATED TO PROVIDE THIS SEPARATION OR CONSTRUCTED WITH MECHANICAL-JOINT PIPE FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE SEWER. ONE FULL LENGTH OF WATER MAIN SHALL BE CENTERED OVER THE SEWER SO THAT BOTH JOINTS WILL BE AS FAR FROM THE SEWER AS POSSIBLE. WHENEVER IT IS IMPOSSIBLE TO OBTAIN VERTICAL SEPARATION AS STIPULATED ABOVE, BOTH THE WATER MAIN AND THE SEWER MAIN SHALL BE ENCASED IN CONCRETE FOR A MINIMUM DISTANCE OF 10 FEET FROM THE CROSSING POINT OF THE OTHER PIPE AS MEASURED NORMALLY FROM ALL POINTS ALONG THE PIPE.
12. ALL SEWER AND STORM DRAINAGE WORK (EXCEPT PLUMBING) SHALL BE PERFORMED BY LICENSED DRAIN LAYER (LICENSED BY TOWN OF PEMBROKE BOARD OF HEALTH) AND THE DRAIN LAYER SHALL PULL A PERMIT FOR THE SITE FROM THE WATER DEPARTMENT PRIOR TO BEGINNING WORK.
13. ALL NEW SEWER AND DRAIN CONNECTIONS MUST BE CORED AND ATTACHED WITH AN INSERTA TEE OR APPROVED EQUAL IF FACTORY WYE IS NOT AVAILABLE OR DAMAGED.
14. THE LOCATIONS OF PROPOSED ELECTRIC SERVICES ARE APPROXIMATE. THE PROJECT ELECTRICAL ENGINEER SHALL VERIFY THESE LOCATIONS PRIOR TO THE START OF CONSTRUCTION. COORDINATE ALL ELECTRICAL WORK WITH THE APPROPRIATE UTILITY COMPANIES.
15. THE PROPOSED GAS SERVICE LOCATION IS APPROXIMATE ONLY. THE CONTRACTOR SHALL COORDINATE THE GAS SERVICE INSTALLATION WITH THE LOCAL GAS COMPANY. THE CONTRACTOR SHALL GIVE ADVANCE NOTICE OF WHEN THE GAS LINE CAN BE INSTALLED.



BY	APP	DESCRIPTION
SBS	BOA	COMMENTS PER WASHINGTON
SBS	BOA	COMMENTS PER WASHINGTON
BOA	BOA	ZBA APPLICATION
SBS	BOA	REVISIONS TO WMP COMPONENT
SBS	BOA	MERRILL ENGINEERS PEER REVIEW COMMENTS
SBS	BOA	RECONFIGURED WMT, STORMWATER SYSTEM AND BUILDINGS
SBS	BOA	NO CHANGES THIS SHEET
SBS	BOA	ADDED SIDEWALK, MERRILL ENGINEERS PEER REVIEW COMMENTS
SBS	BOA	

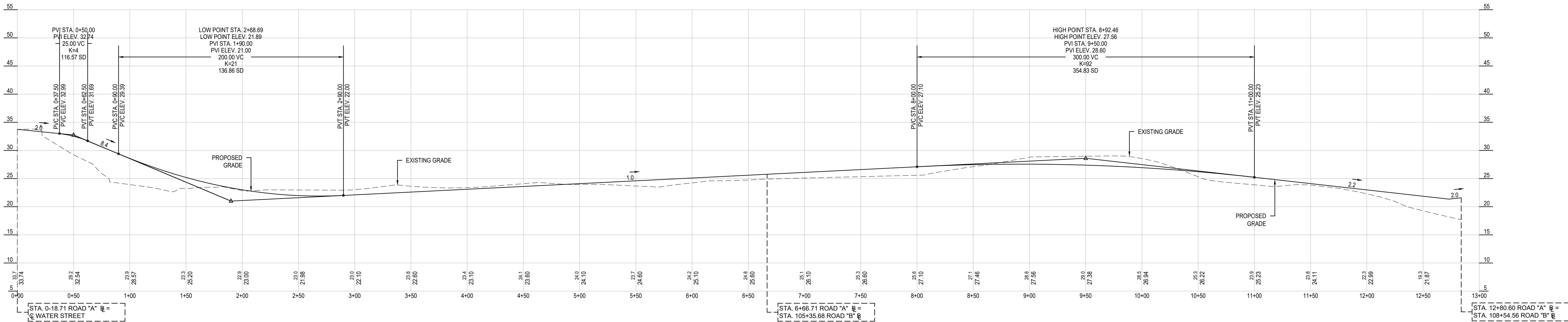
PREPARED BY:
MG
MCKENZIE
ENGINEERING GROUP
Assinippi Office Park
150 Longwater Drive, Suite 101
Norwell, MA 02061
P: 781.792.3900
F: 781.792.0333
www.mckeng.com

**RIVER MARSH VILLAGE
COMPREHENSIVE PERMIT PLAN**
(ASSESSOR'S MAP E-15, LOT 17)
PEMBROKE, MASSACHUSETTS

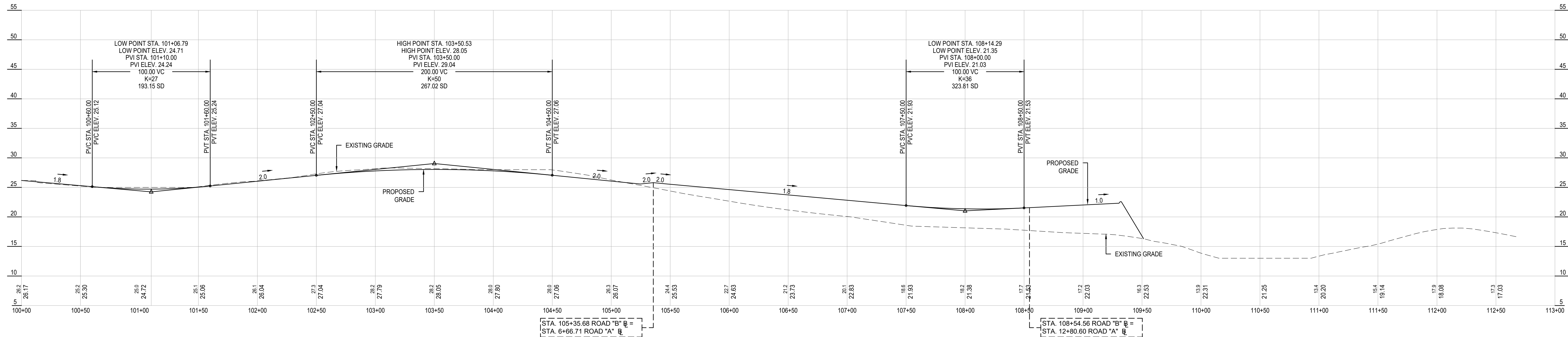


OWNER/APPLICANT: RIVER MARSH, LLC 230R WASHINGTON STREET NORWELL, MASSACHUSETTS 02061	DESIGNED BY: SBS CHECKED BY: BCM APPROVED BY: BCM DATE: SEPTEMBER 22, 2016 SCALE: 1"=40' PROJECT NO.: 215-181 DWG. TITLE: Preliminary Utility Plan
PROFESSIONAL ENGINEER: TRACI A. GRAHAM, TR CHRYSTOPHER M. GRAHAM CHRYSTOPHER M. GRAHAM, TR	PERMIT PLAN SET

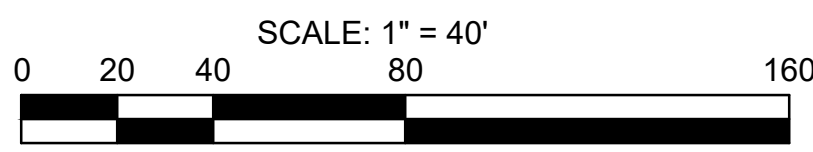
DWG. NO: **C-3**



ROAD "A"



ROAD "B"



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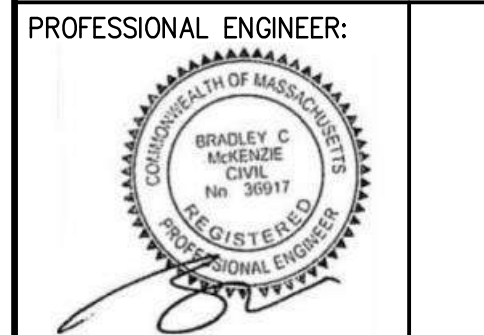
REV	DATE	DESCRIPTION
1	5/12/2017	COMMENTS PER WASHINGTON
2	7/14/2017	COMMENTS PER WASHINGTON
3	11/27/2017	ZBA APPLICATION
4	1/27/2021	REVISIONS TO WMP COMPONENT
5	4/5/2021	MERRILL ENGINEERS PEER REVIEW COMMENTS
6	6/7/2021	RECONFIGURED WMT, STORMWATER SYSTEM AND BUILDINGS
7	6/9/2021	NO CHANGES THIS SHEET
8	8/23/2021	ADDED SIDEWALK, MERRILL ENGINEERS PEER REVIEW COMMENTS

PREPARED BY:

MG
MCKENZIE
ENGINEERING GROUP

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RIVER MARSH VILLAGE
COMPREHENSIVE PERMIT PLAN
(ASSESSOR'S MAP E-15, LOT 17)
WATER STREET
PEMBROKE, MASSACHUSETTS



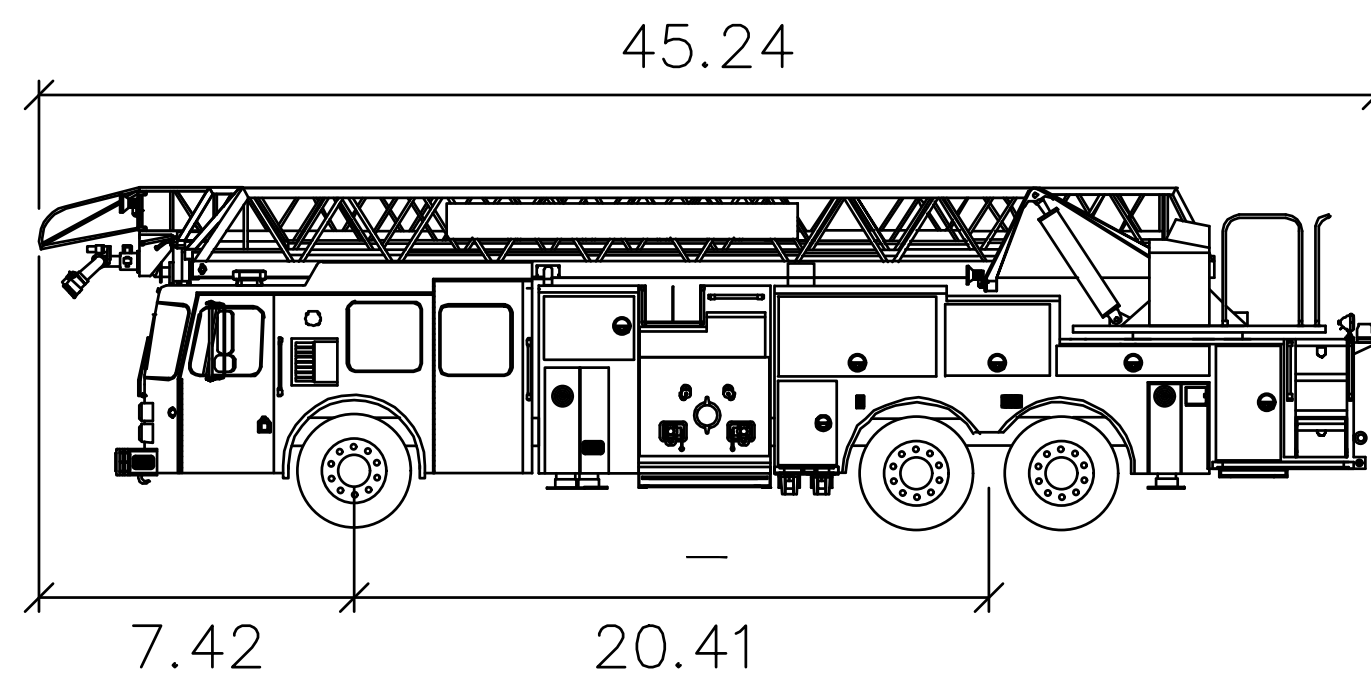
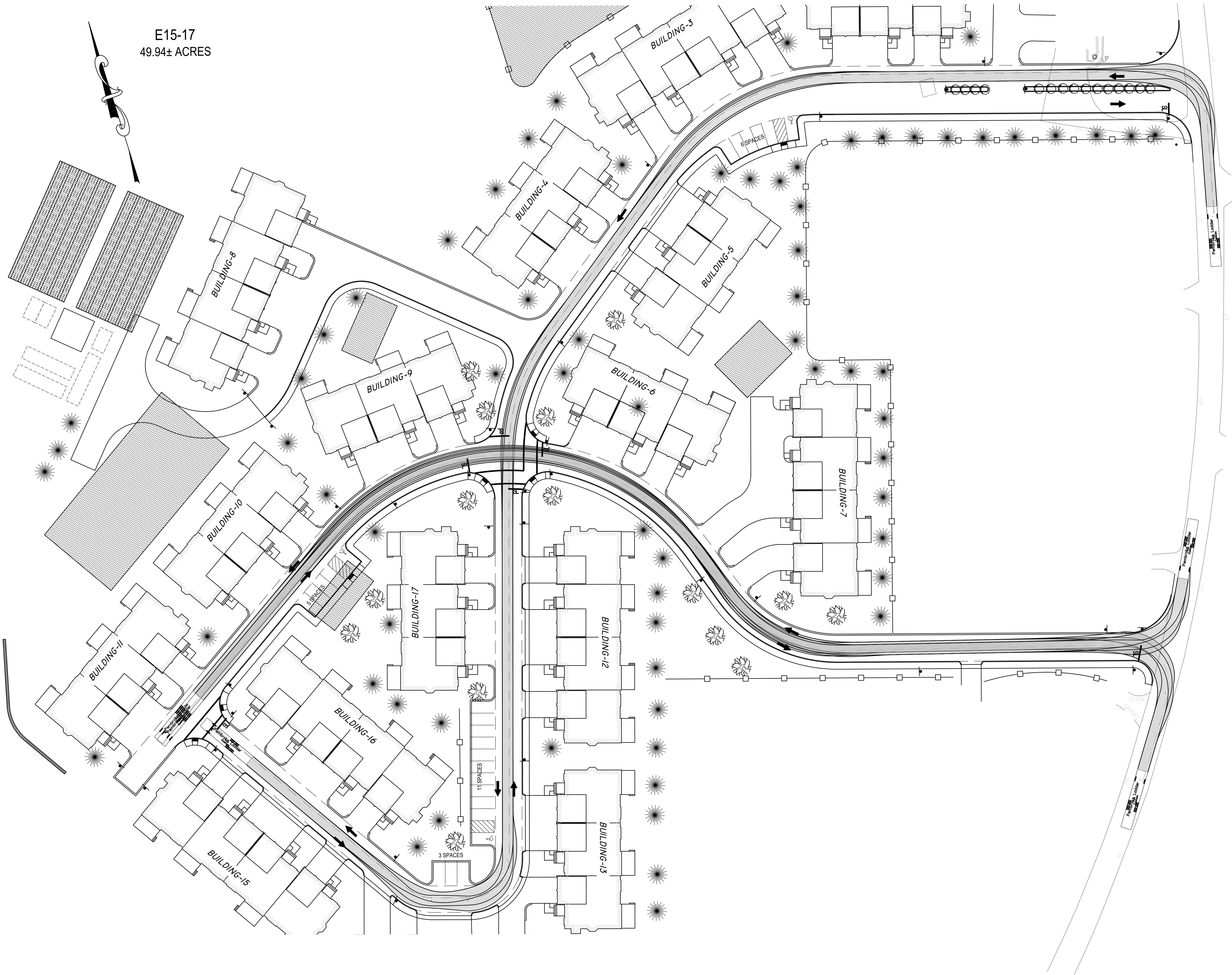
OWNER/APPLICANT:
RIVER MARSH, LLC
283R WASHINGTON STREET
NORWELL, MASSACHUSETTS 02061

DRAWN BY: SBS
DESIGNED BY: SBS
CHECKED BY: BCM
APPROVED BY: BCM
DATE: SEPTEMBER 22, 2016
SCALE: 1"=40'
PROJECT NO.: 215-181
DWG. TITLE:

Preliminary
Profiles

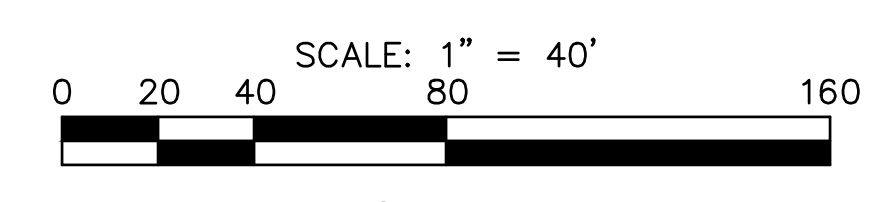
DWG. NO: **C-4**

PERMIT PLAN SET



Pembroke Ladder

Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 45.0



BY APP		DESCRIPTION	DATE	REV
SBS	BOA	COMMENTS PER WASHOUSING	5/12/2017	1
SBS	BOA	COMMENTS PER WASHOUSING	7/14/2018	2
SBS	BOA	ZBA APPLICATION	11/27/2018	3
SBS	BOA	REVISIONS TO WMP COMPONENT	1/27/2021	4
SBS	BOA	MERRILL ENGINEERS PEER REVIEW COMMENTS	4/5/2021	5
SBS	BOA	RECONFIGURED WMT, STORMWATER SYSTEM AND BUILDINGS	6/7/2021	6
SBS	BOA	NO CHANGES THIS SHEET	6/9/2021	7
SBS	BOA	ADDED SIDEWALK, MERRILL ENGINEERS PEER REVIEW COMMENTS	8/31/2021	8

PREPARED BY:

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**RIVER MARSH VILLAGE
COMPREHENSIVE PERMIT PLAN**
(ASSESSOR'S MAP E-15, LOT 17)
WATER STREET
PEMBROKE, MASSACHUSETTS

PROFESSIONAL ENGINEER:

OWNER/APPLICANT:

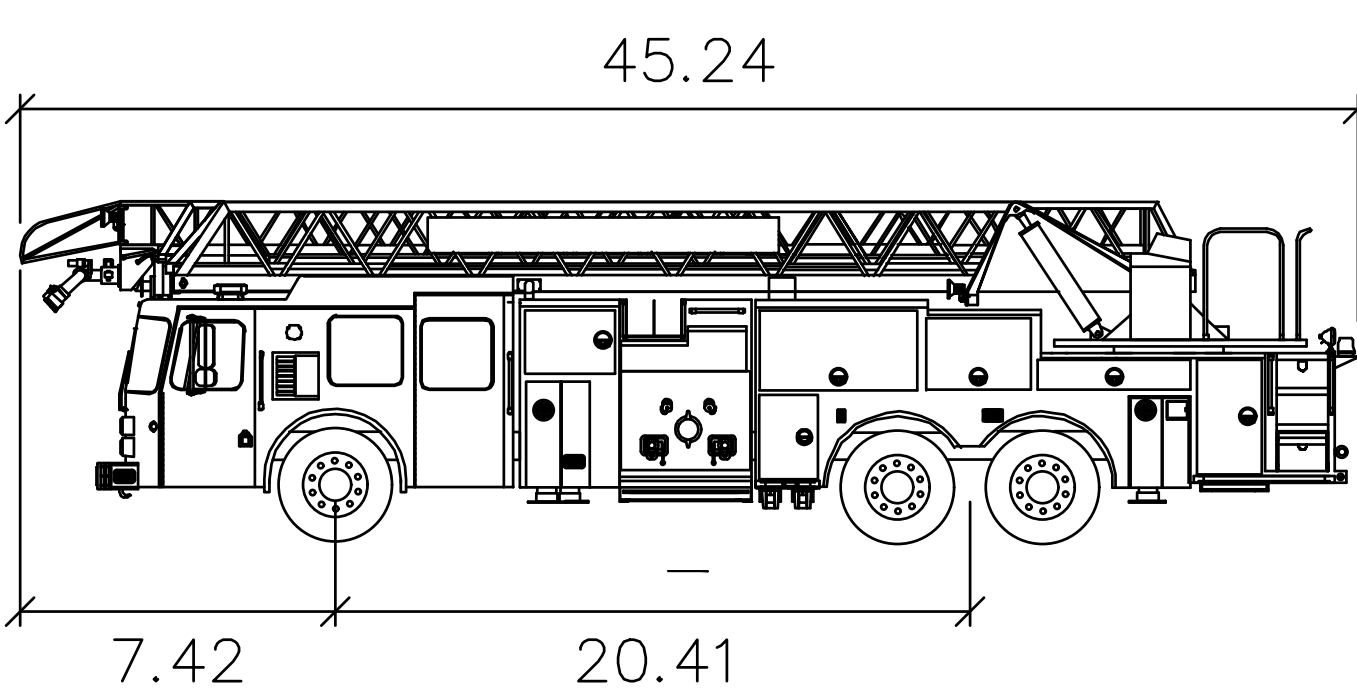
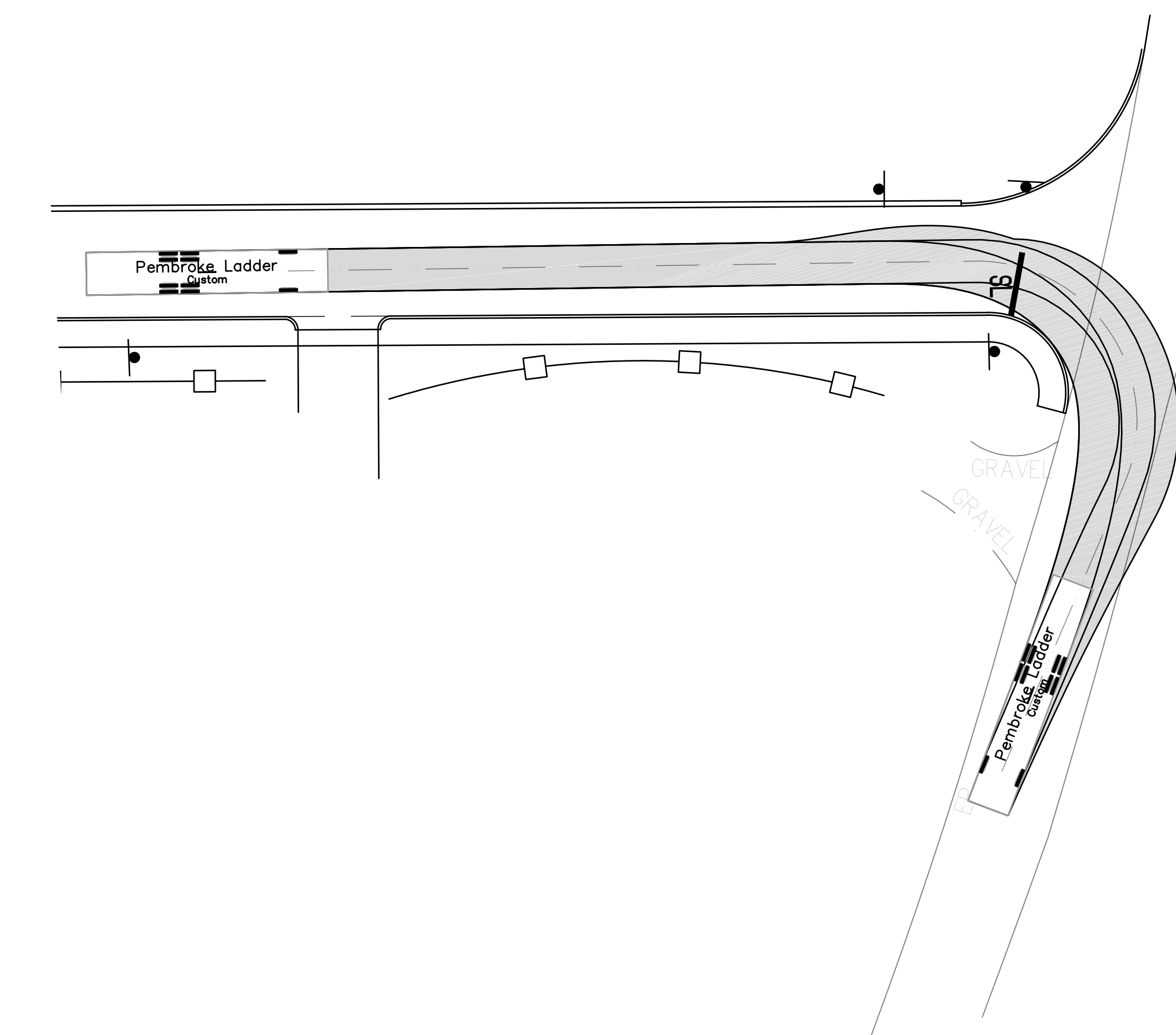
RIVER MARSH, LLC
288R WASHINGTON STREET
NORWELL, MASSACHUSETTS 02061

PERMIT PLAN SET

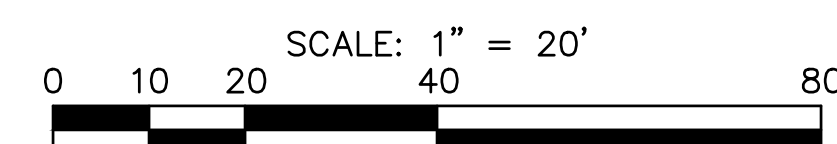
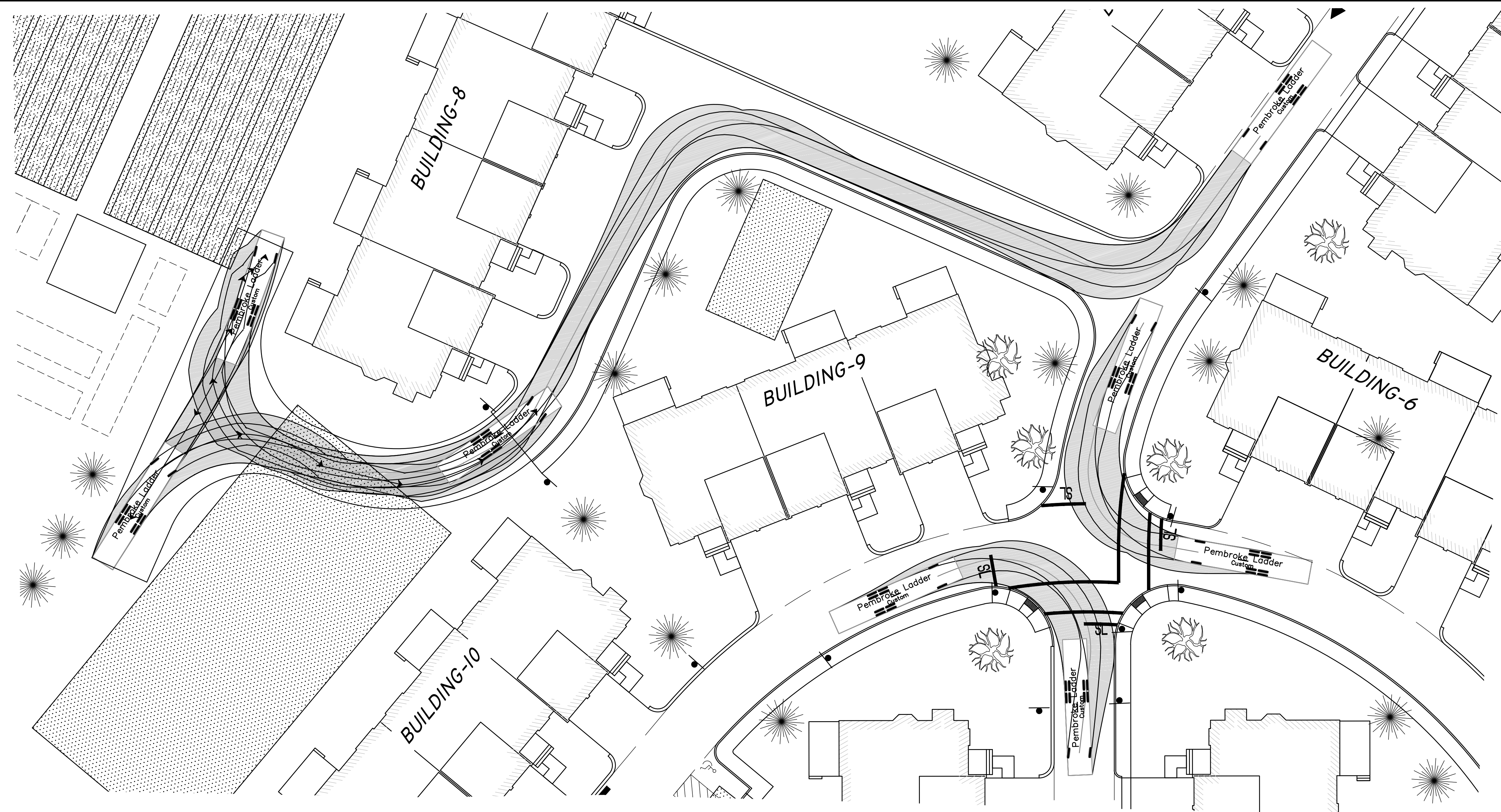
DRAWN BY: SBS
DESIGNED BY: SBS
CHECKED BY: BCM
APPROVED BY: BCM
DATE: SEPTEMBER 22, 2016
SCALE: 1"=30'
PROJECT NO.: 215-181
DWG. TITLE:

Fire Truck
Access
Plan

DWG. NO.: **C-5**



Pembroke Ladder	
	feet
Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 45.0



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REV	DATE	DESCRIPTION	BY
1	5/2/2017	COMMENTS PER MASSHOUSING	SES BOM
2	7/4/2017	COMMENTS PER MASSHOUSING	SES BOM
3	11/27/2018	ZEN APPLICATION	AAC BOM
4	1/27/2021	REVISIONS TO WMP COMMENT	SES BOM
5	4/5/2021	MERRILL ENGINEERS PEER REVIEW COMMENTS	SES BOM
6	6/7/2021	RECONFIGURED WMT STORAGE/TIE SYSTEM AND BUILDINGS	SES BOM
7	6/9/2021	NO CHANGES THIS SHEET	SES BOM
8	8/31/2021	ADDED SIDEWALK, MERRILL ENGINEERS PEER REVIEW COMMENTS	SES BOM

PREPARED BY:

MEG

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**RIVER MARSH VILLAGE
COMPREHENSIVE PERMIT PLAN**
(ASSESSOR'S MAP E-15, LOT 17)
WATER STREET
PEMBROKE, MASSACHUSETTS

PROFESSIONAL ENGINEER:	
------------------------	--



OWNER/APPLICANT:
RIVER MARSH,
293R WASHINGTON ST
NORWELL, MASSACHUSETTS 02061
P

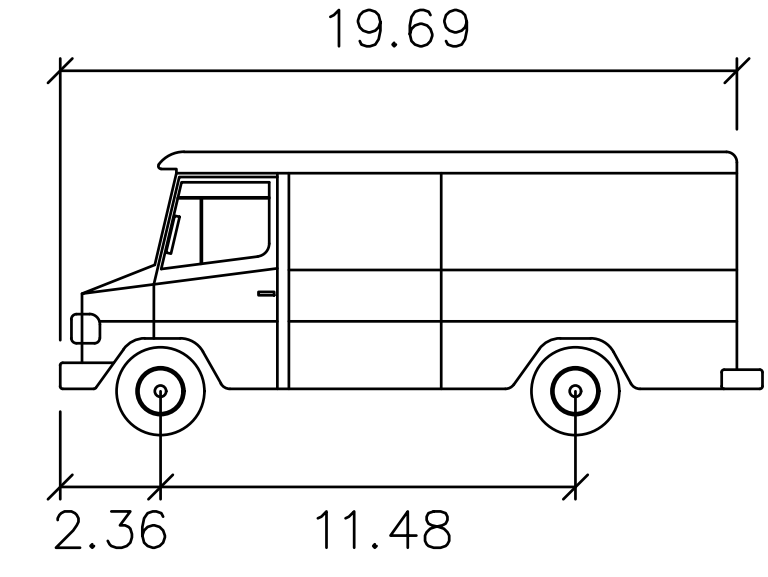
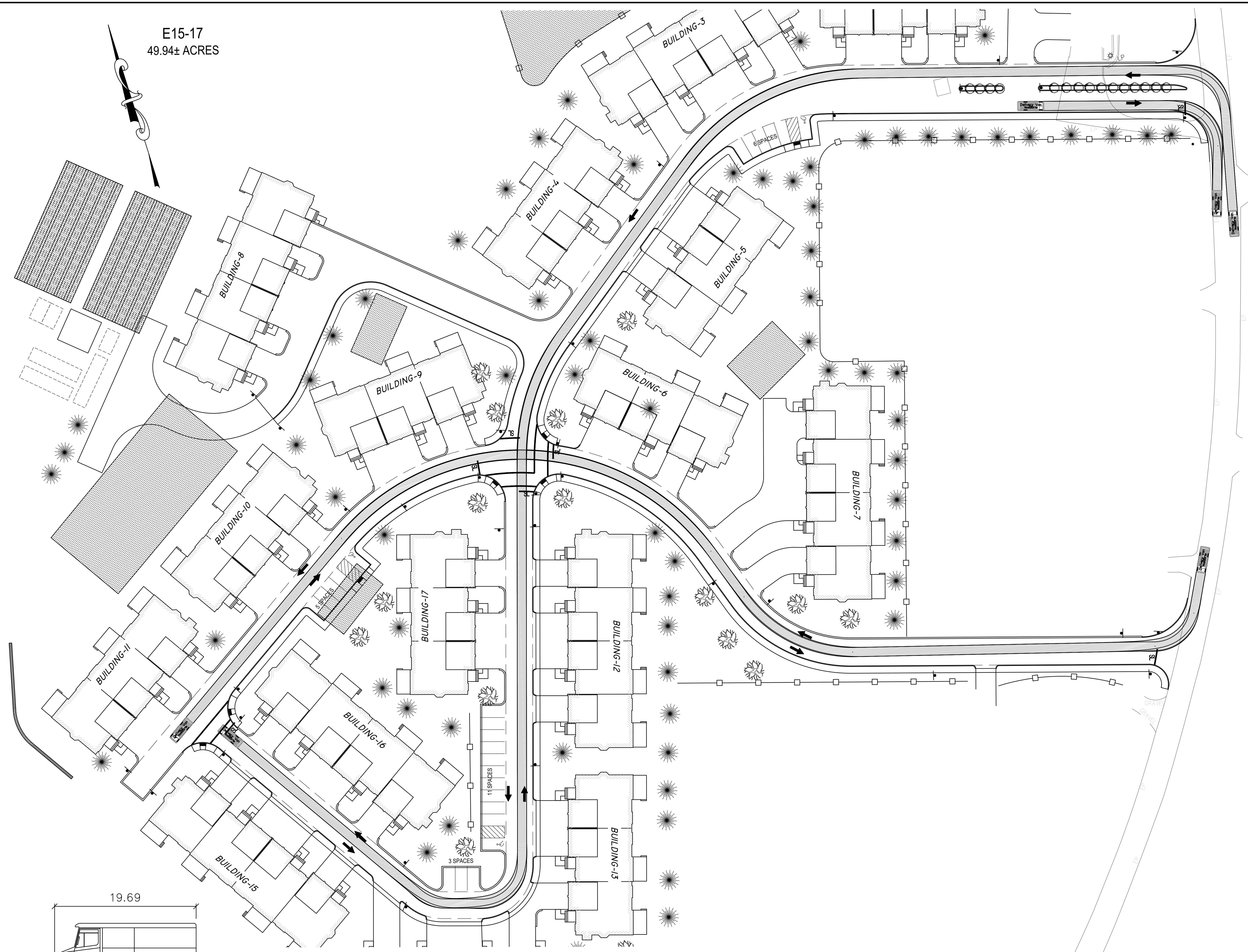
PERMIT PLAN SET

DRAWN BY:	SBS
DESIGNED BY:	SBS
CHECKED BY:	BCM
APPROVED BY:	BCM
DATE:	SEPTEMBER 22, 2016
SCALE:	1"=20'
PROJECT NO.:	215-181

DWG. TITLE:
Fire Truck
Access
Plan

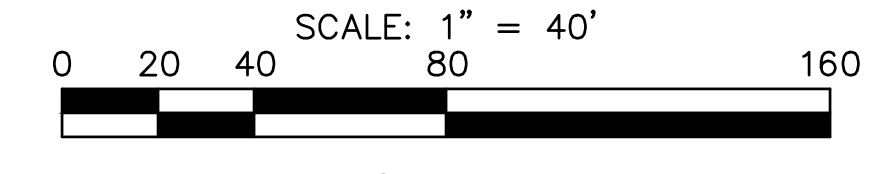
DWG. NO: **C-6**

E15-17
49.94± ACRES



Delivery Van

Width	: 6.89
Track	: 6.89
Lock to Lock Time	: 6.0
Steering Angle	: 46.2



BY APP.	DESCRIPTION	DATE	REV
SBS BOM	COMMENTS PER WASHOUSING	5/12/2017	1
SBS BOM	COMMENTS PER WASHOUSING	7/14/2017	2
AAC BOM	ZBA APPLICATION	11/27/2018	3
SBS BOM	REVISIONS TO WMP COMPONENT	1/27/2021	4
SBS BOM	MERRILL ENGINEERS PEER REVIEW COMMENTS	4/5/2021	5
SBS BOM	RECONFIGURED WWT, STORMWATER SYSTEM AND BUILDINGS	6/7/2021	6
SBS BOM	NO CHANGES THIS SHEET	6/9/2021	7
SBS BOM	ADDED SIDEWALK, MERRILL ENGINEERS PEER REVIEW COMMENTS	8/31/2021	8

PREPARED BY:

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150 Longwater Drive, Suite 101
Norwell, MA 02061
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F: 781.792.0333
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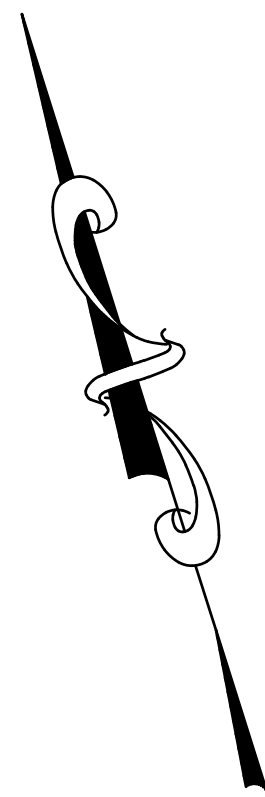
**RIVER MARSH VILLAGE
COMPREHENSIVE PERMIT PLAN**
(ASSESSOR'S MAP E-15, LOT 17)
WATER STREET
PEMBROKE, MASSACHUSETTS

PROFESSIONAL ENGINEER:

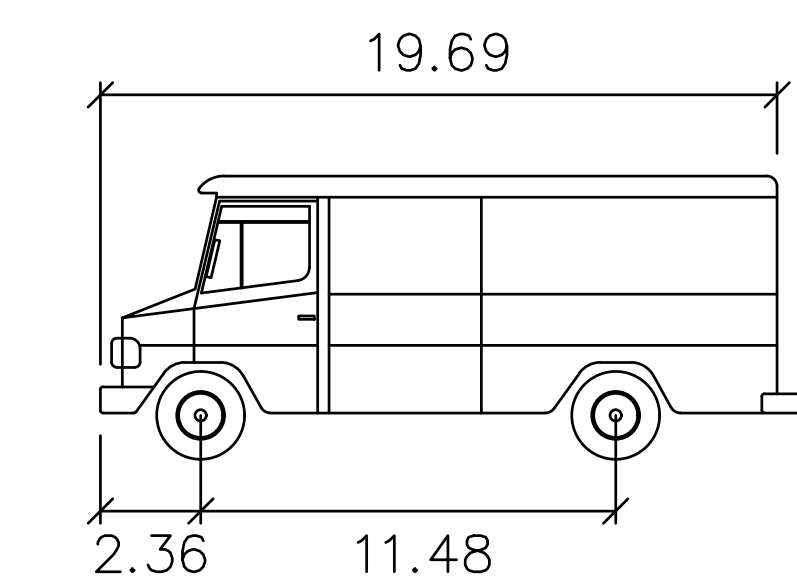
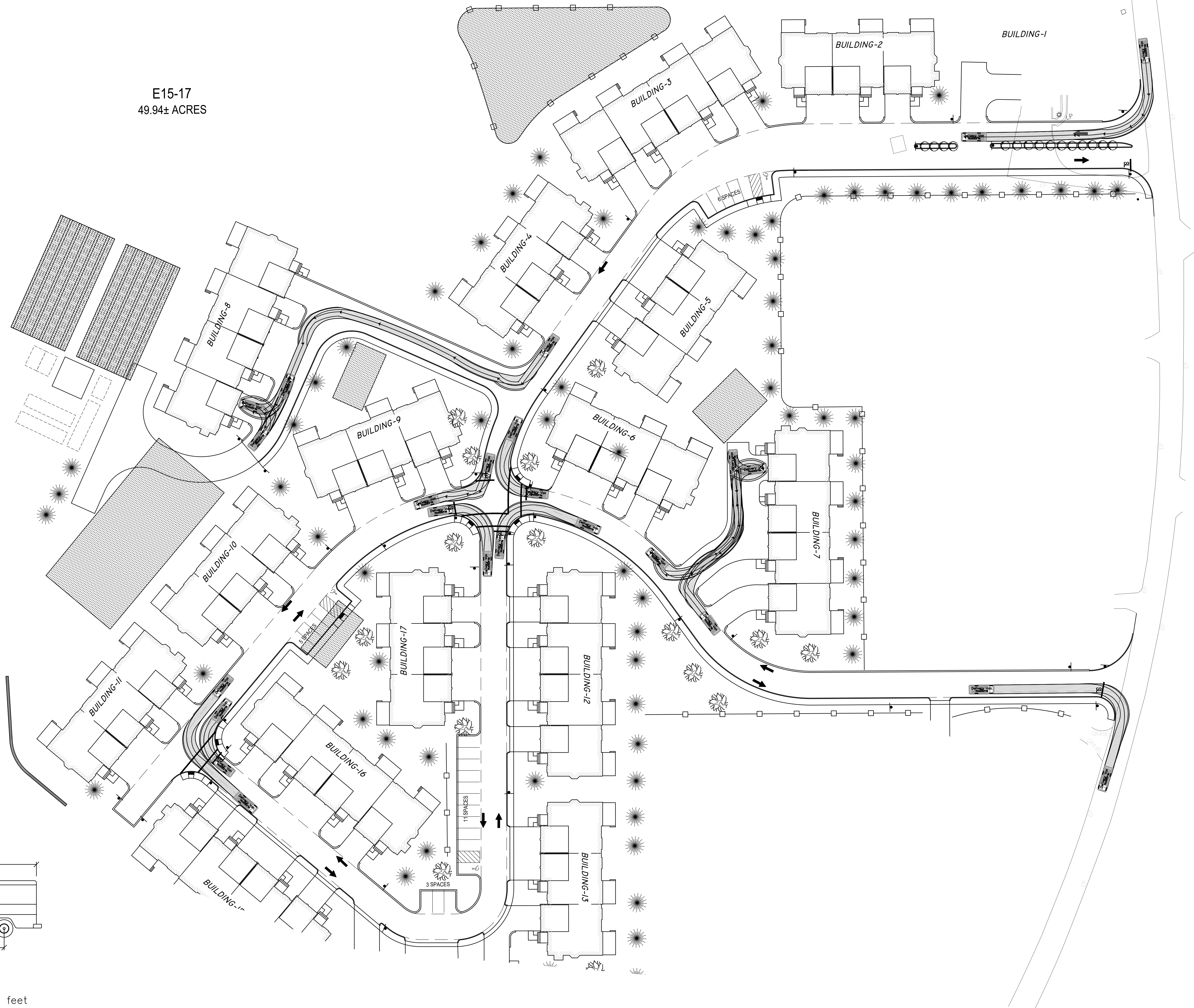
OWNER/APPLICANT:
RIVER MARSH, LLC
2383 WASHINGTON STREET
NORWELL, MASSACHUSETTS 02061

PERMIT PLAN SET

DRAWN BY: SBS
DESIGNED BY: SBS
CHECKED BY: BCM
APPROVED BY: BCM
DATE: SEPTEMBER 22, 2016
SCALE: 1"=40'
PROJECT NO.: 215-181
DWG. TITLE: Delivery Truck Access Plan
DWG. NO.: C-7

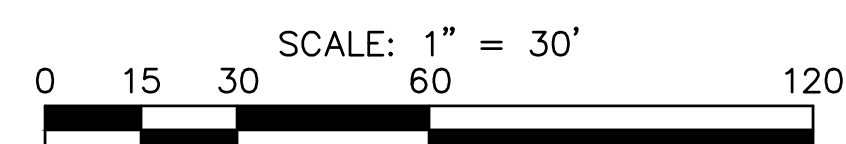


E15-17
49.94± ACRES



Delivery Van

	feet
Width	: 6.89
Track	: 6.89
Lock to Lock Time	: 6.0
Steering Angle	: 46.2



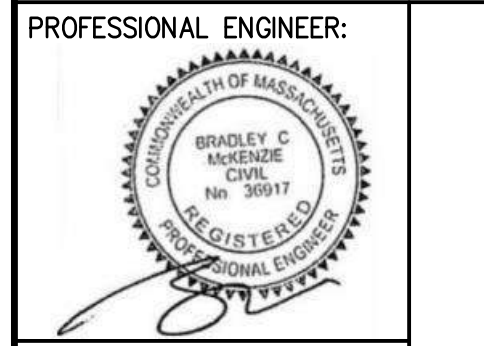
REV	DATE	DESCRIPTION	BY	APP
1	5/22/2017	COMMENTS PER WASHOUSING	SBS	BOA
2	7/14/2017	COMMENTS PER WASHOUSING	SBS	BOA
3	11/27/2018	ZBA APPLICATION	AAC	BOA
4	1/27/2021	REVISIONS TO WTMP COMPONENT	SBS	BOA
5	4/5/2021	MERRILL ENGINEERS PEER REVIEW COMMENTS	SBS	BOA
6	6/7/2021	RECONFIGURED WMT, STORMWATER SYSTEM AND BUILDINGS	SBS	BOA
7	6/9/2021	NO CHANGES THIS SHEET	SBS	BOA
8	8/23/2021	ADDED SIDEWALK, MERRILL ENGINEERS PEER REVIEW COMMENTS	SBS	BOA

PREPARED BY:

MG
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**RIVER MARSH VILLAGE
COMPREHENSIVE PERMIT PLAN**
(ASSESSOR'S MAP E-15, LOT 17)
WATER STREET
PEMBROKE, MASSACHUSETTS



OWNER/APPLICANT:
RIVER MARSH, LLC
283R WASHINGTON STREET
NORWELL, MASSACHUSETTS 02061

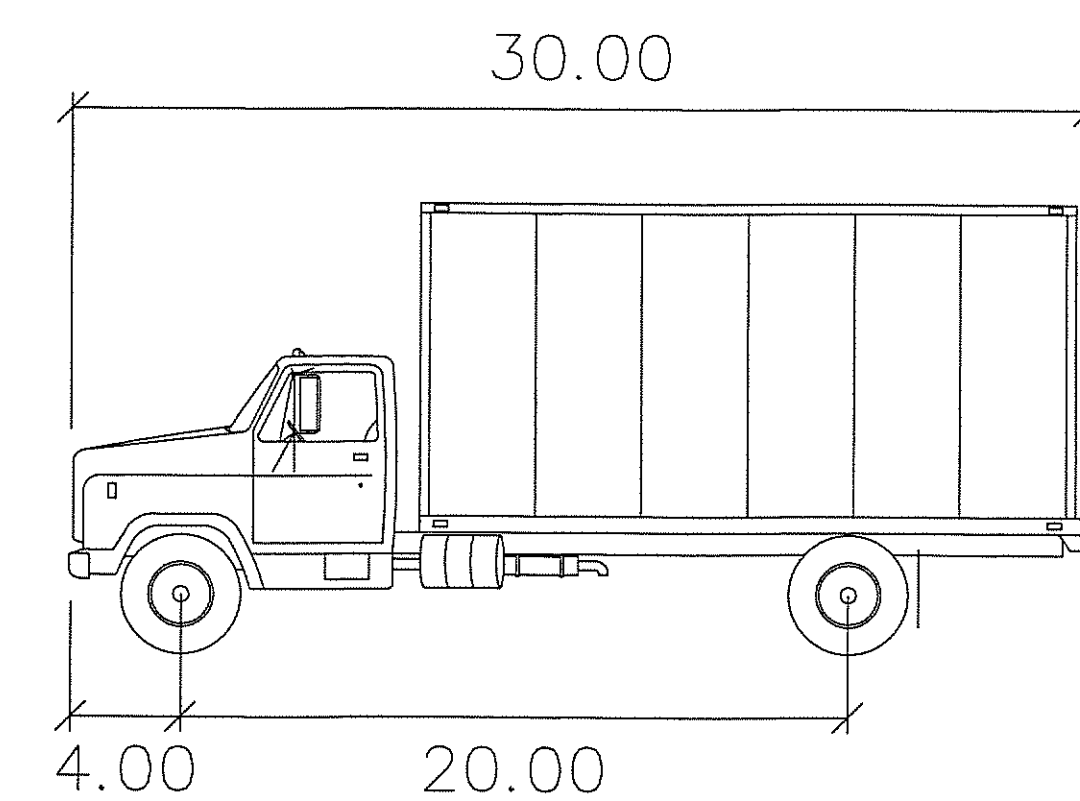
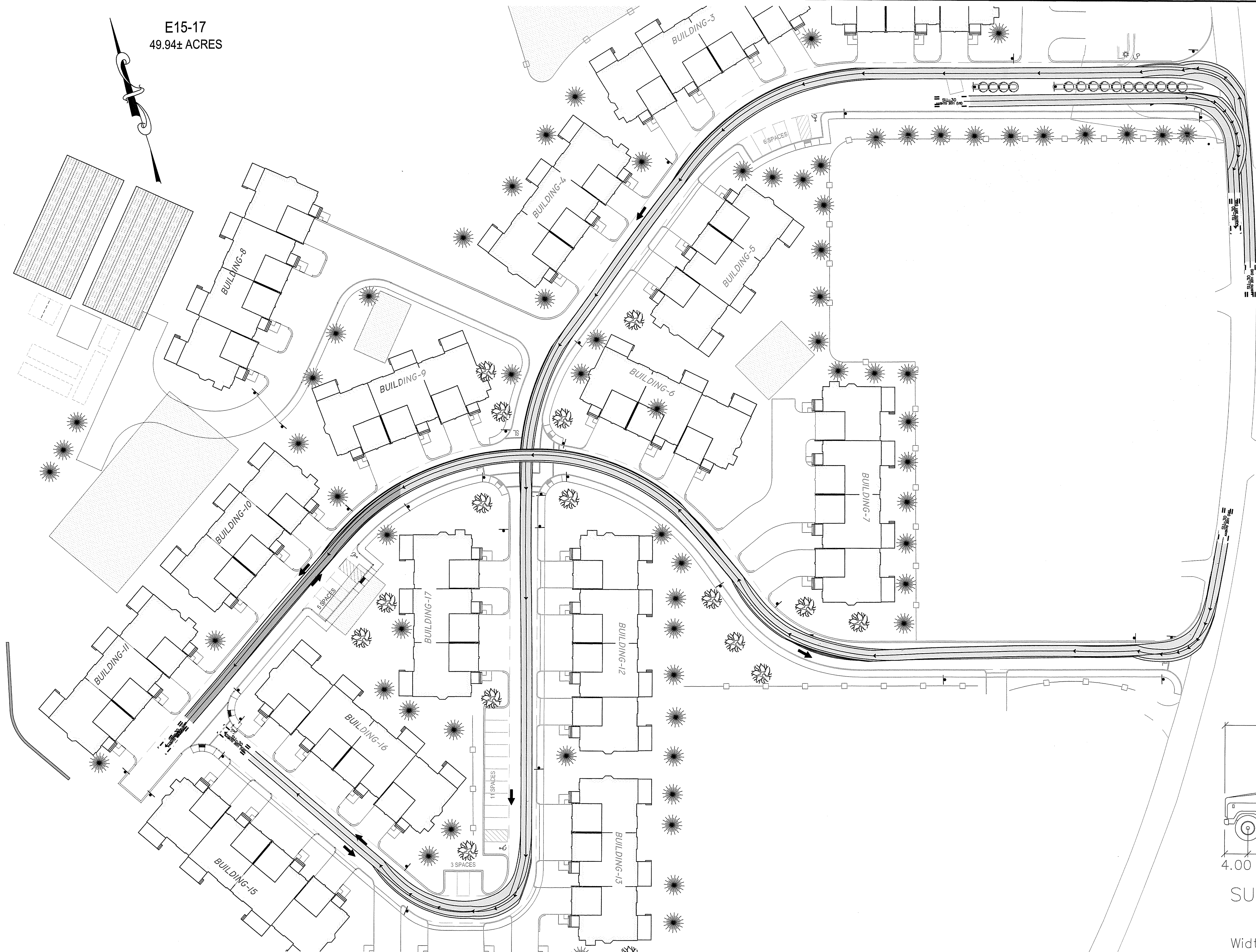
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DESIGNED BY: SBS
CHECKED BY: BCM
APPROVED BY: BCM
DATE: SEPTEMBER 22, 2016
SCALE: 1"=30'
PROJECT NO.: 215-181

DWG. TITLE:
**Delivery Truck
Access
Plan**

DWG. NO.: **C-8**

PERMIT PLAN SET

E15-17
49.94± ACRES



SU-30

Width : 8.00
Track : 8.00
Lock to Lock Time : 6.0
Steering Angle : 31.8

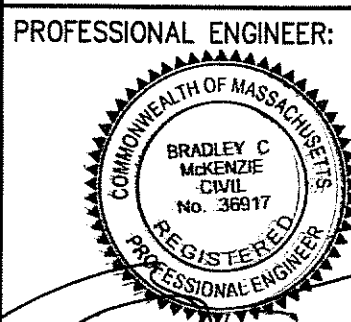
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SCALE: 1" = 40'

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REV	DATE	DESCRIPTION
1	5/12/2017	COMMENTS PER MASSHUSING
2	7/14/2017	COMMENTS PER MASSHUSING
3	7/27/2018	ZBA APPLICATION
4	1/27/2021	REVISIONS TO WMP COMPONENT
5	4/5/2021	MERRILL ENGINEERS PEER REVIEW COMMENTS
6	6/7/2021	RECONFIGURED WWT, STORMWATER SYSTEM AND BUILDINGS
7	6/9/2021	NO CHANGES THIS SHEET
8	8/21/2021	ADDED SIDEWALK, MERRILL ENGINEERS PEER REVIEW COMMENTS
9	9/13/2021	ADDED SHEETS C-9 TO C-10 SU TRUCK TURNING, RE-NUMBERED C-9 TO C-10

PREPARED BY:
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Norwell, MA 02061
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www.mckeng.com

RIVER MARSH VILLAGE COMPREHENSIVE PERMIT PLAN (ASSESSOR'S MAP E-15, LOT 17) WATER STREET PEMBROKE, MASSACHUSETTS

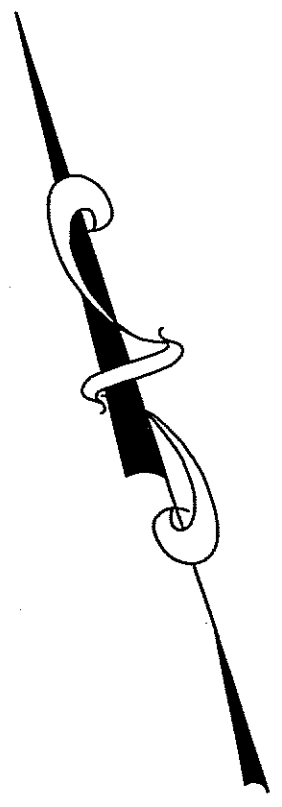


OWNER/APPLICANT:
RIVER MARSH, LLC
293R WASHINGTON STREET
NORWELL, MASSACHUSETTS 02061

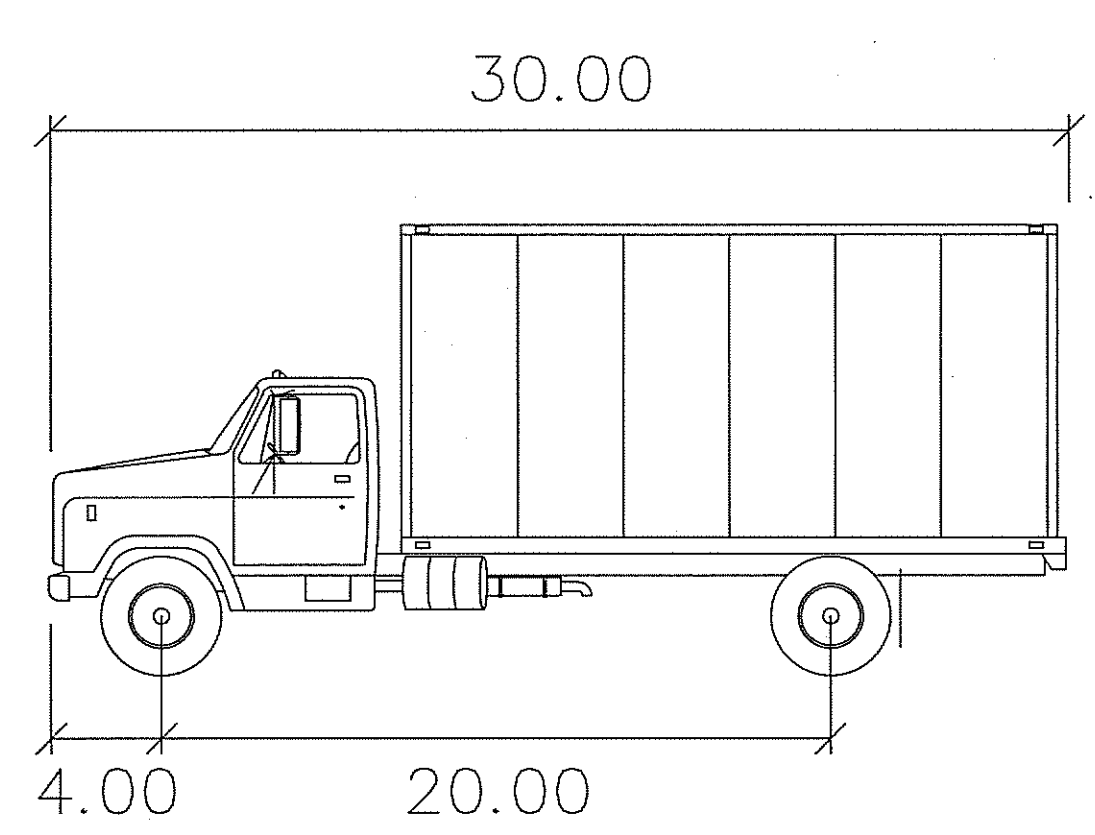
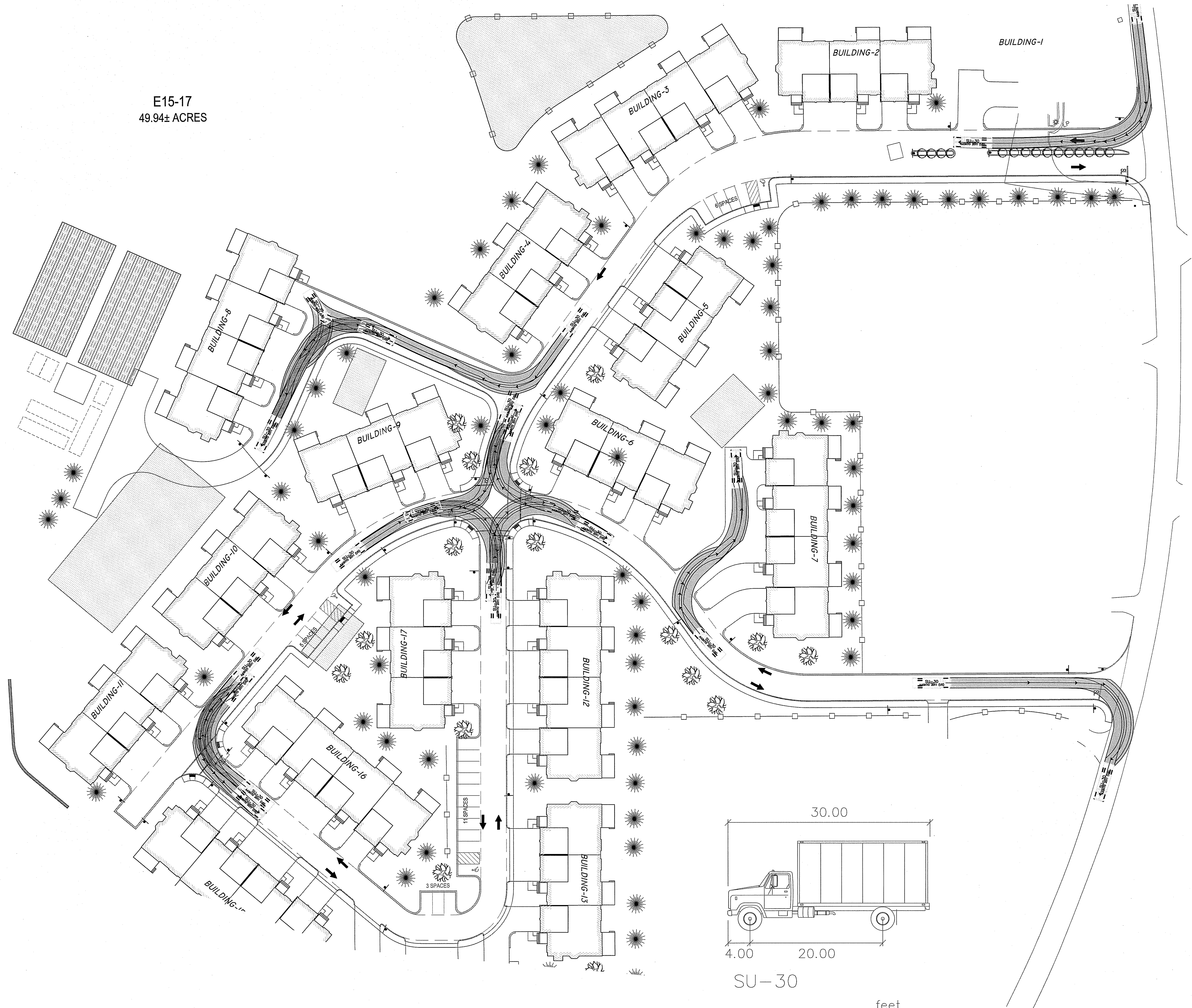
DRAWN BY: SBS
DESIGNED BY: SBS
CHECKED BY: BCM
APPROVED BY: BCM
DATE: SEPTEMBER 22, 2016
SCALE: 1"=40'
PROJECT NO.: 215-181

DWG. TITLE:
SU-30 Truck
Access
Plan

DWG. NO.:
C-9



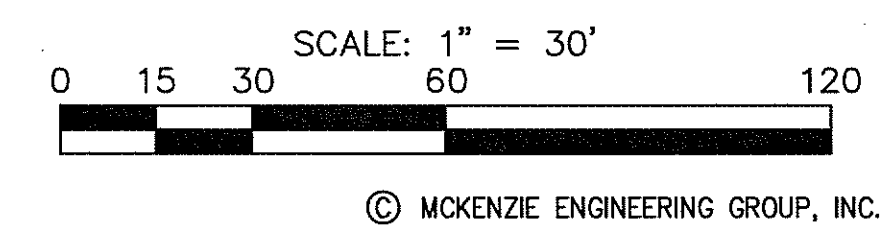
E15-17
49.94± ACRES



SU-30

Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.8

feet



BY APP		DESCRIPTION	BY APP
1	5/12/2017	COMMENTS PER MASSHUSING	SBS BOM
2	7/14/2017	COMMENTS PER MASSHUSING	SBS BOM
3	11/27/2018	ZBA APPLICATION	ACB BOM
4	1/27/2021	REVISIONS TO WMT COMPONENT	SBS BOM
5	4/15/2021	MERRILL ENGINEERS PEER REVIEW COMMENTS	SBS BOM
6	6/7/2021	RECONFIGURED WMT, STORMWATER SYSTEM AND BUILDINGS	SBS BOM
7	6/9/2021	NO CHANGES THIS SHEET	SBS BOM
8	8/31/2021	ADDED SIDEWALK, MERRILL ENGINEERS PEER REVIEW COMMENTS	SBS BOM
9	9/13/2021	ADDED SHEETS C-8 & C-9 SU TRUCK TURNING, RENUMBERED C-8 TO C-11	SBS BOM

PREPARED BY:

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Assistant Office Park
150 Longwater Drive, Suite 101
Norwell, MA 02061
P: 781.792.3900
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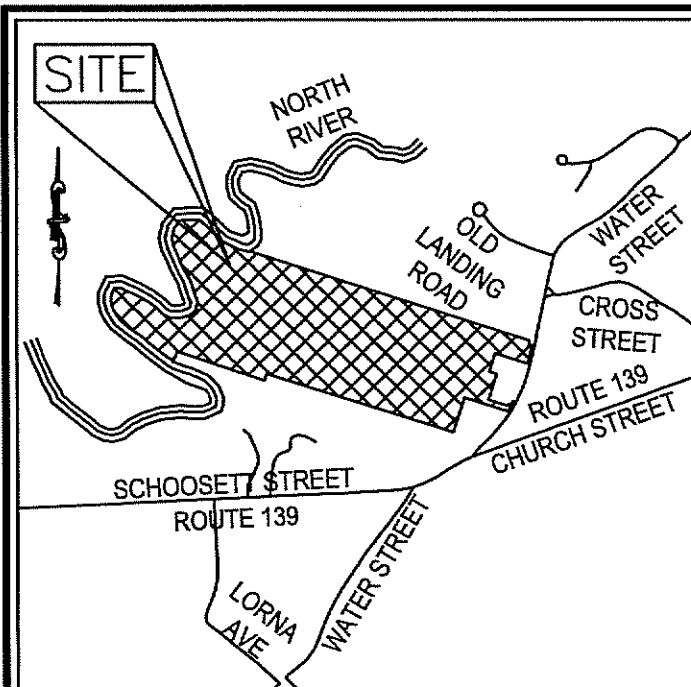
**RIVER MARSH VILLAGE
COMPREHENSIVE PERMIT PLAN**
(ASSESSOR'S MAP E-15, LOT 17)
WATER STREET
PEMBROKE, MASSACHUSETTS

PROFESSIONAL ENGINEER:

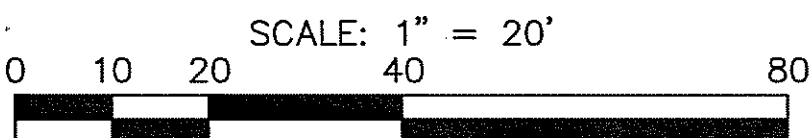
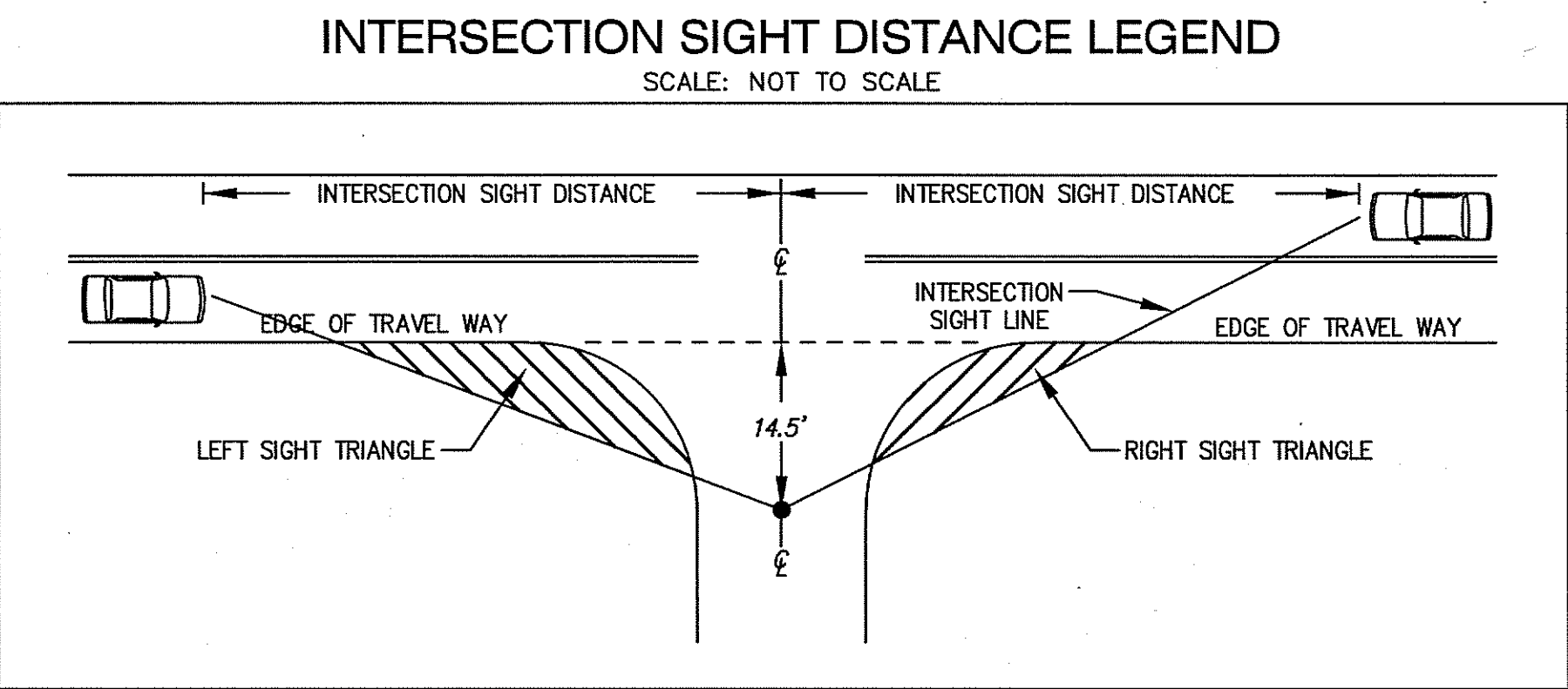
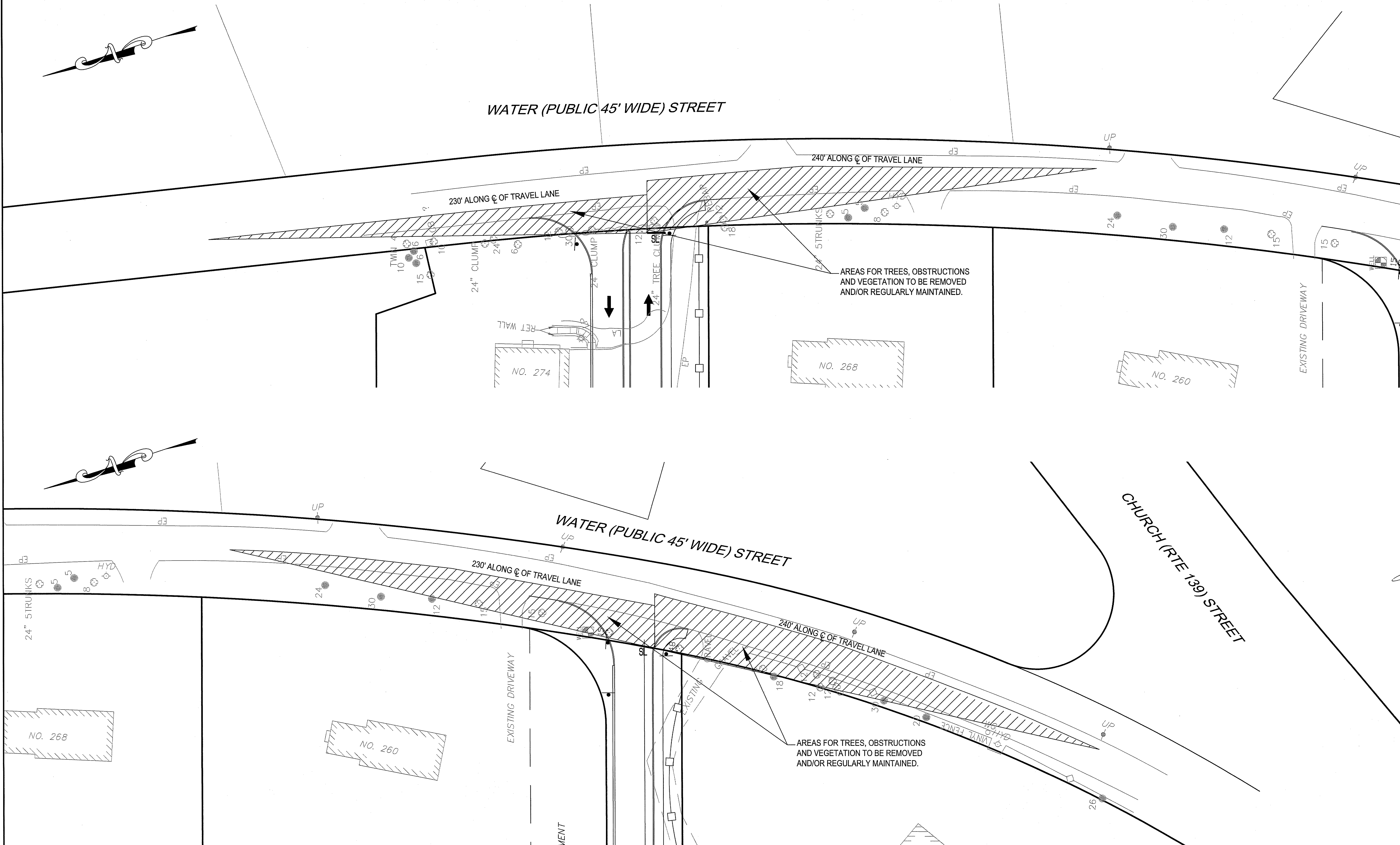
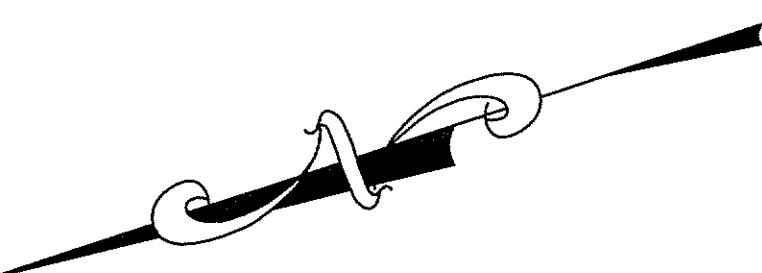
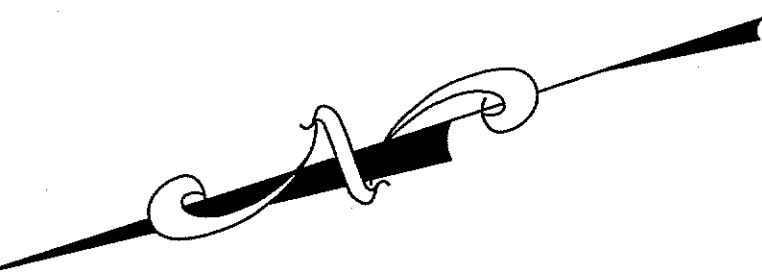
OWNER/APPLICANT:
RIVER MARSH, LLC
230R WASHINGTON STREET
NORWELL, MASSACHUSETTS 02061

PERMIT PLAN SET

DRAWN BY:	SBS
DESIGNED BY:	SBS
CHECKED BY:	BCM
APPROVED BY:	BCM
DATE:	SEPTEMBER 22, 2018
SCALE:	1"=30'
PROJECT NO.:	215-181
DWG. TITLE:	SU-30 Truck Access Plan
DWG. NO.:	C-10



LOCUS MAP
Not to Scale

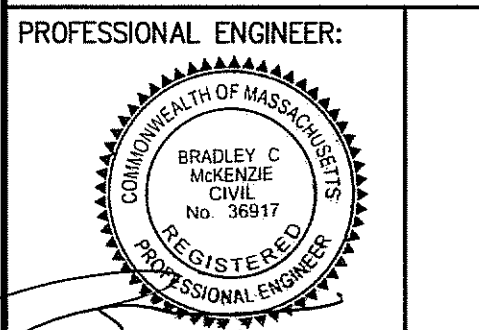


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REV	DATE	DESCRIPTION
1	5/12/2017	COMMENTS PER MASSHOUSING
2	7/14/2017	COMMENTS PER MASSHOUSING
3	11/27/2018	2BA APPLICATION
4	1/27/2021	REVISIONS TO WTP COMPONENT
5	4/5/2021	MERRILL ENGINEERS PEER REVIEW COMMENTS
6	6/7/2021	RECONFIGURED WWT, STORMWATER SYSTEM AND BUILDINGS
7	6/9/2021	NO CHANGES THIS SHEET
8	8/31/2021	ADDED SIDEWALK, MERRILL ENGINEERS PEER REVIEW COMMENTS
9	9/13/2021	ADDED SHEETS C-9, C-10 TO SUIT TRUCK TURNING, RENUMBERED C-9 TO C-11

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**RIVER MARSH VILLAGE
COMPREHENSIVE PERMIT PLAN**
(ASSESSOR'S MAP E-15, LOT 17)
WATER STREET
PEMBROKE, MASSACHUSETTS

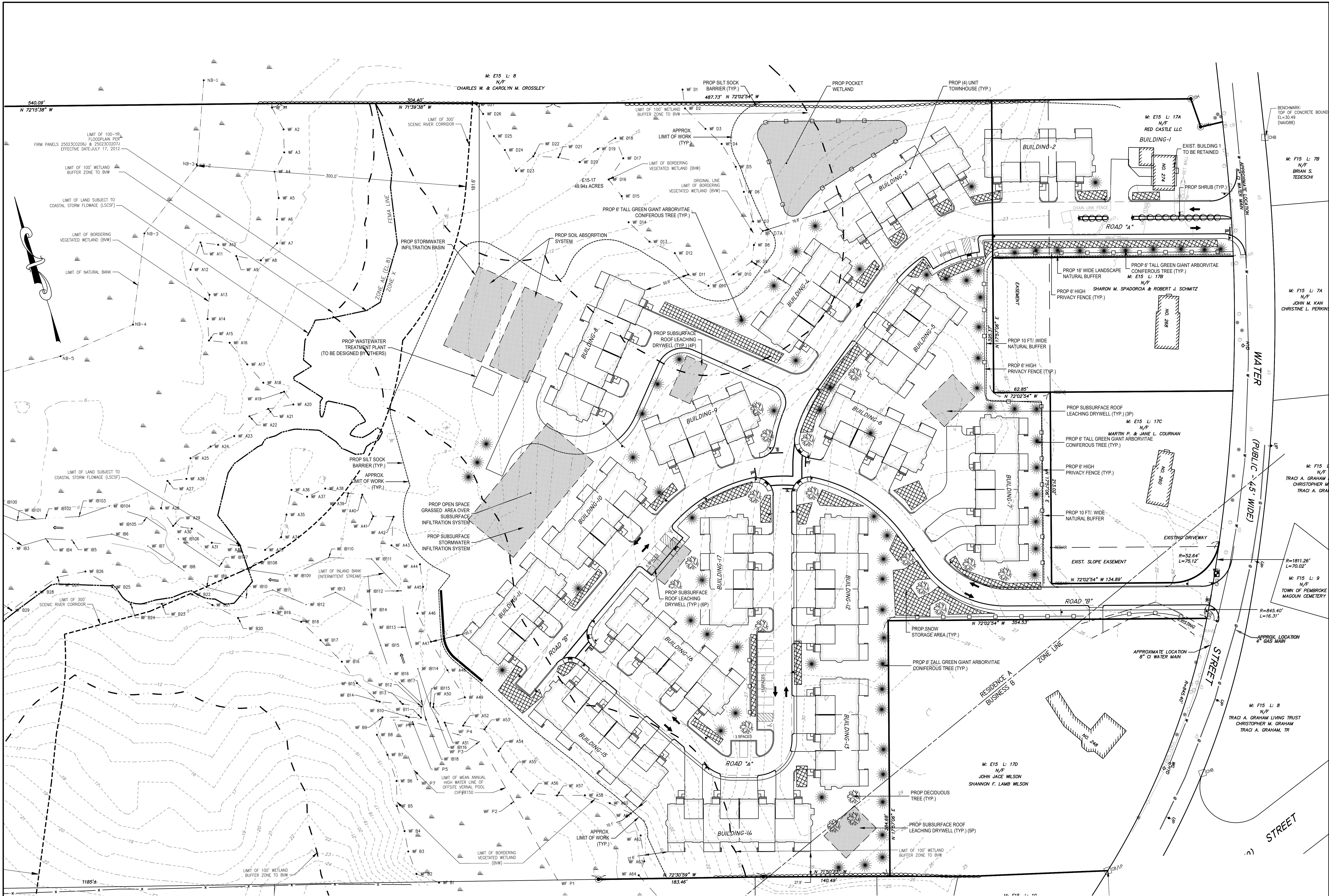


OWNER/APPLICANT:
RIVER MARSH, LLC
293R WASHINGTON STREET
NORWELL, MASSACHUSETTS 02061

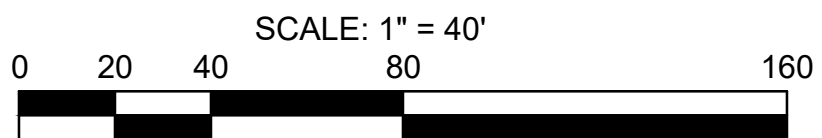
DRAWN BY: SBS
DESIGNED BY: SBS
CHECKED BY: BCM
APPROVED BY: BCM
DATE: SEPTEMBER 22, 2016
SCALE: 1"=20'
PROJECT NO.: 215-181

DWG. TITLE:
**Preliminary
Sight
Triangles**

DWG. NO.:
C-11



- NOTES:
1. LANDSCAPING SHOWN HEREON IS FOR PRELIMINARY PLANNING PURPOSES ONLY. THE FINAL PLAN IS TO BE DESIGNED AND STAMPED BY A LANDSCAPE ARCHITECT.
 2. EVERGREEN (CONIFEROUS) BUFFER TO BE FIELD LOCATED PRIOR TO INSTALLATION TO UTILIZE EXISTING VEGETATION FOR BUFFERING TO THE EXTENT PRACTICABLE. LOCATIONS SUBJECT TO PEER CONSULTANT REVIEW.
 3. MIXED LANDSCAPE BUFFER SHALL CONSIST OF MIX OF FLOWERING TREE, SHRUB PLANTS. PLANTINGS WILL BE SELECTED DURING FINAL DESIGN BY LANDSCAPE ARCHITECT.



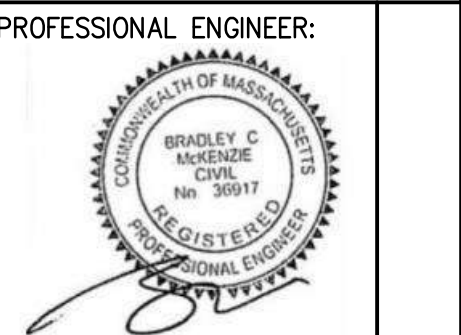
BY	APP	DESCRIPTION
1	SSS BOM	COMMENTS PER WASHOUSING
2	SSS BOM	COMMENTS PER WASHOUSING
3	AAC BOM	ZBA APPLICATION
4	SSS BOM	REVISIONS TO WMP COMPONENT
5	SSS BOM	MERRILL ENGINEERS PEER REVIEW COMMENTS
6	SSS BOM	RECONFIGURED WMT, STORMWATER SYSTEM AND BUILDINGS
7	SSS BOM	NO CHANGES THIS SHEET
8	SSS BOM	ADDED SIDEWALK, MERRILL ENGINEERS PEER REVIEW COMMENTS

PREPARED BY:

MG
MCKENZIE
ENGINEERING GROUP

Assinippi Office Park
150 Longwater Drive, Suite 101
Norwell, MA 02061
P: 781.792.3900
F: 781.792.0333
www.mckeng.com

**RIVER MARSH VILLAGE
COMPREHENSIVE PERMIT PLAN**
(ASSESSOR'S MAP E-15, LOT 17)
WATER STREET
PEMBROKE, MASSACHUSETTS



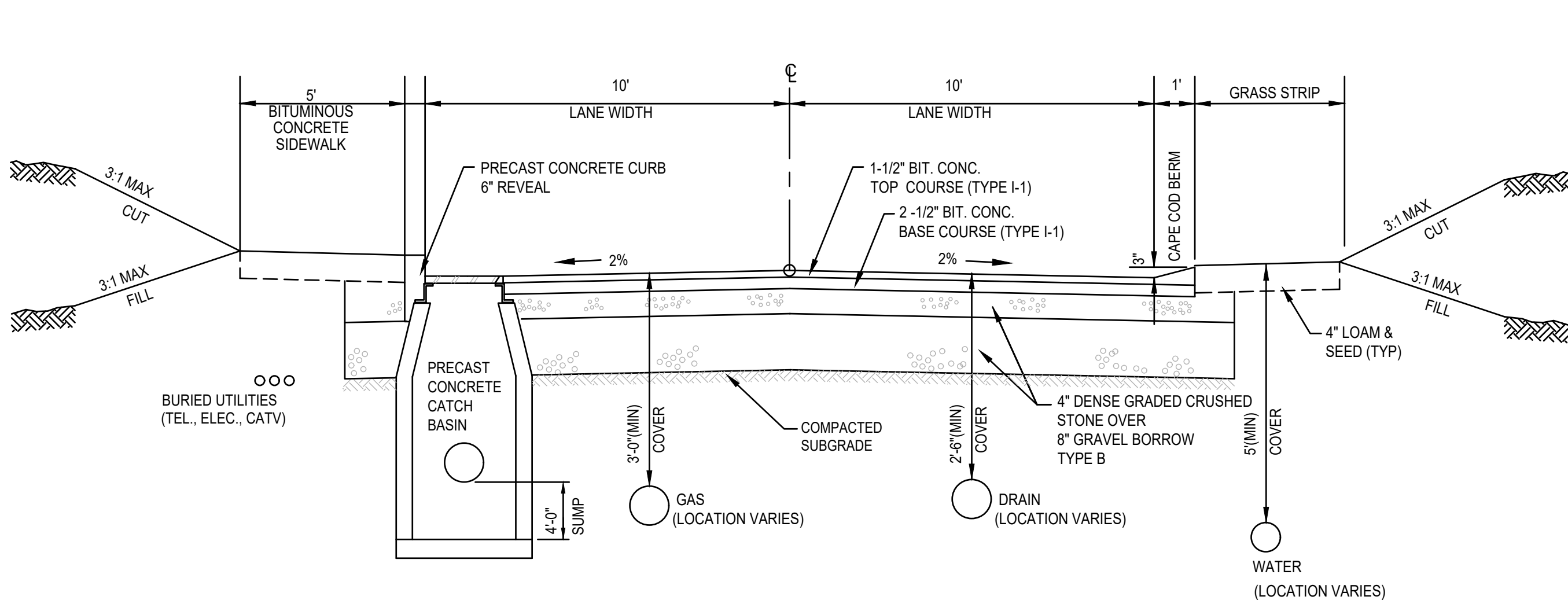
OWNER/APPLICANT:
RIVER MARSH, LLC
238R WASHINGTON STREET
NORWELL, MASSACHUSETTS 02061

PROFESSIONAL ENGINEER:
TRACI A. GRAHAM
CHRISTOPHER M. GRAHAM
TRACI A. GRAHAM, TR

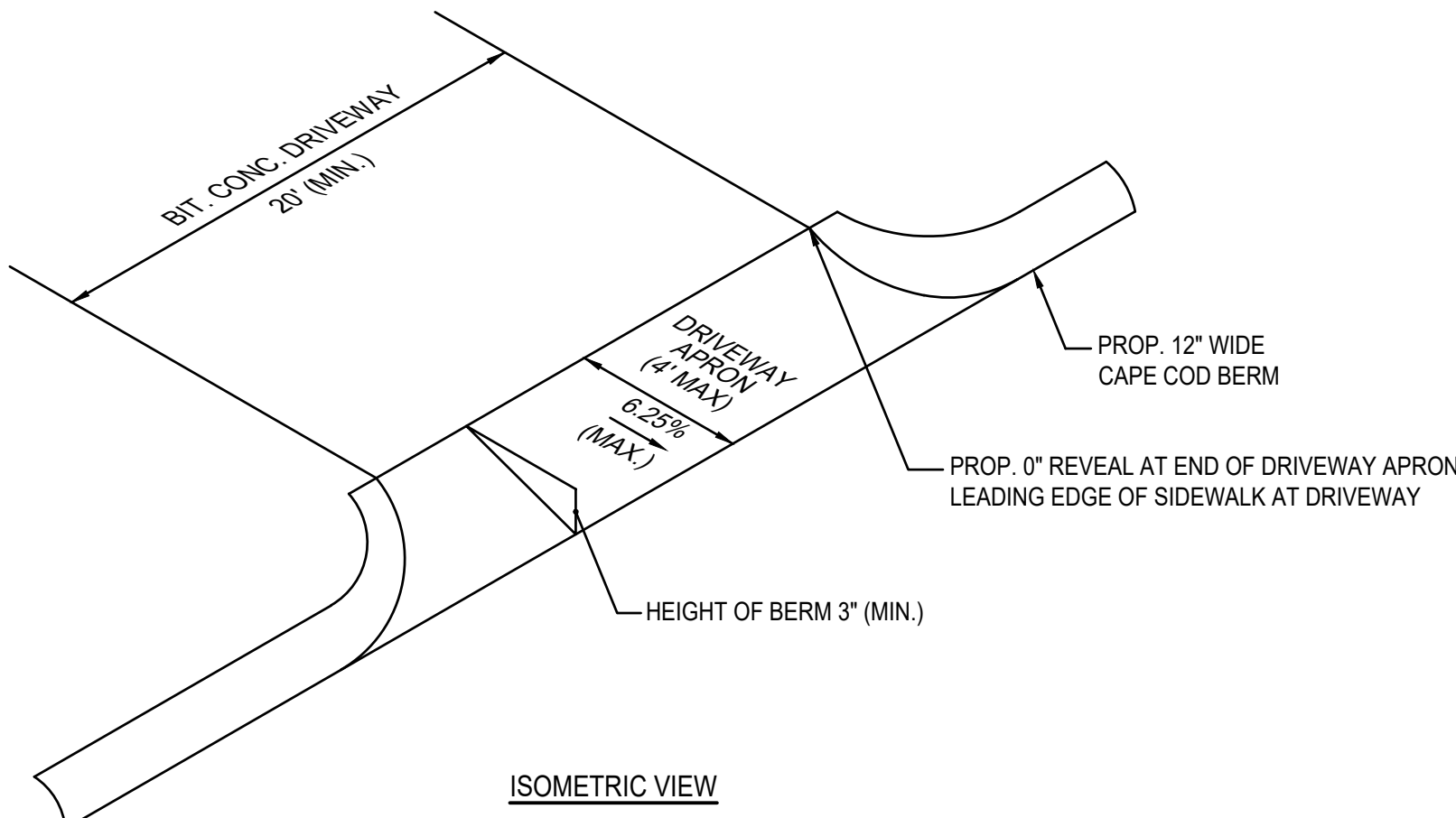
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APPROVED BY: BCM
DATE: SEPTEMBER 22, 2016
SCALE: 1"=40'
PROJECT NO.: 215-181
DWG. TITLE:

Preliminary
Landscape
Plan

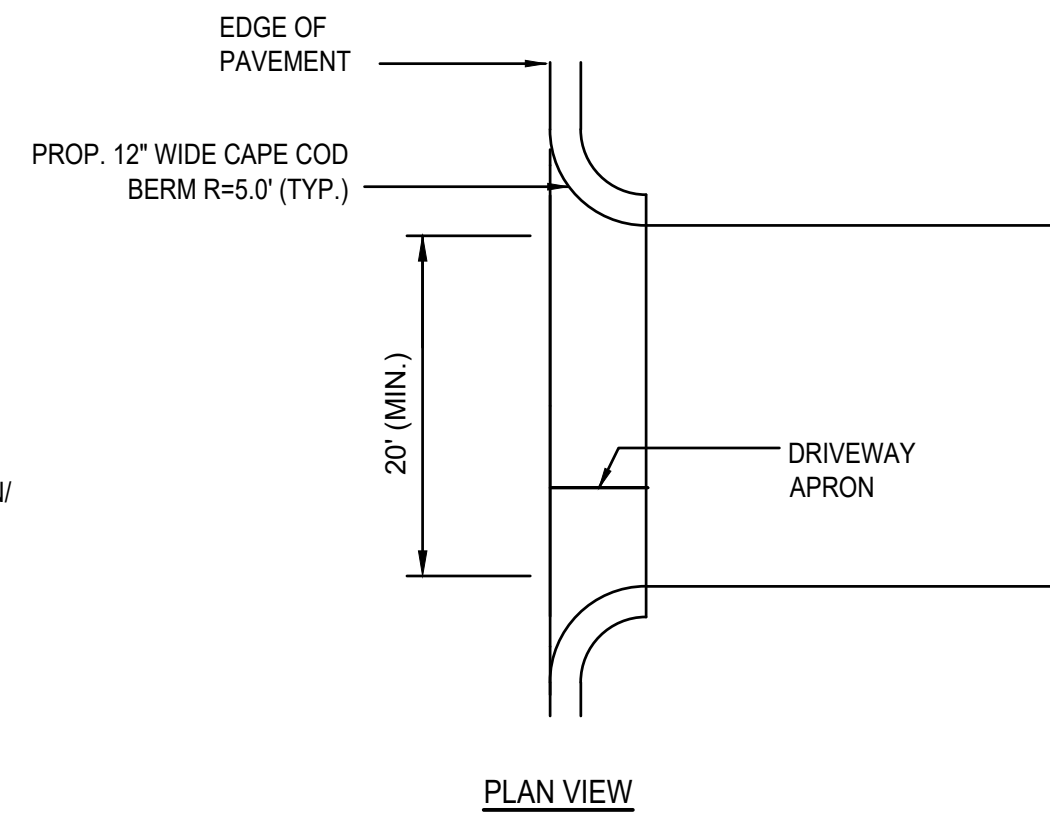
DWG. NO.:
L-1



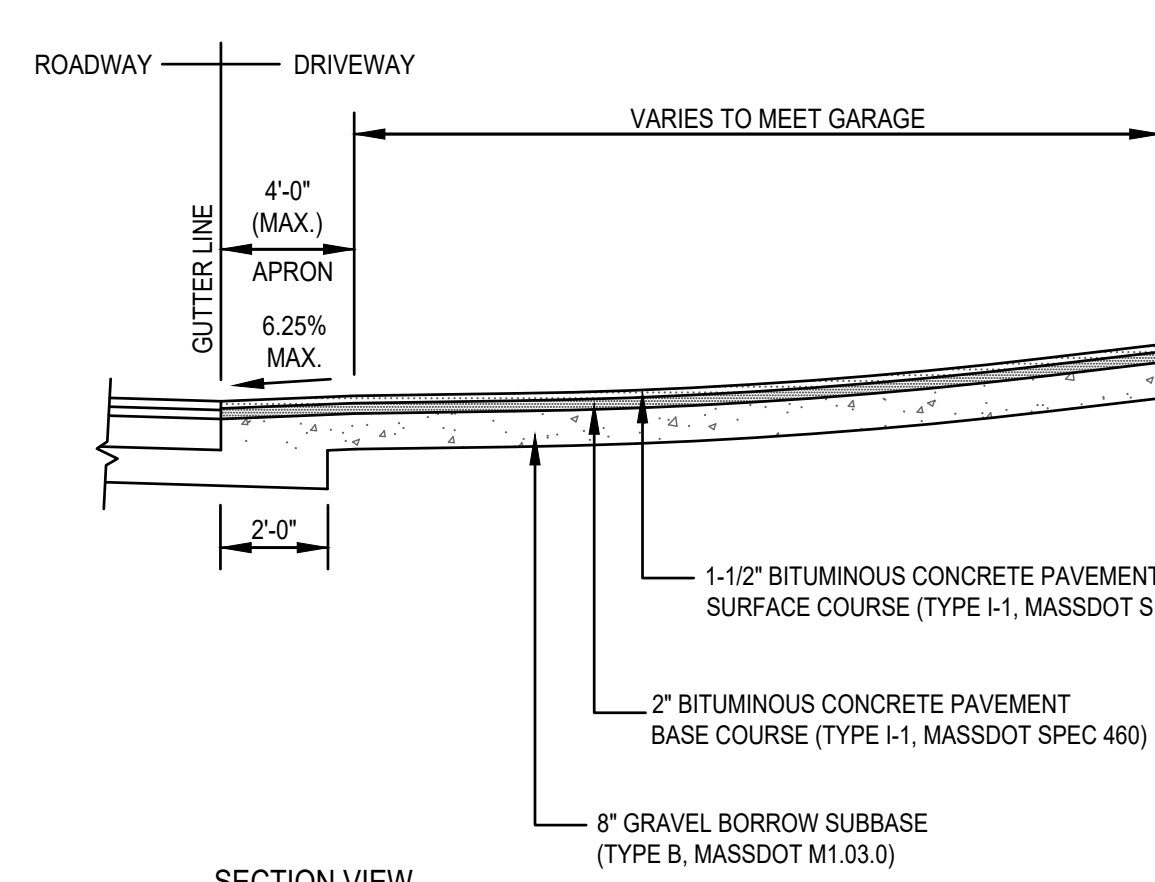
TYPICAL ROADWAY CROSS SECTION
SCALE: N.T.S.



ISOMETRIC VIEW



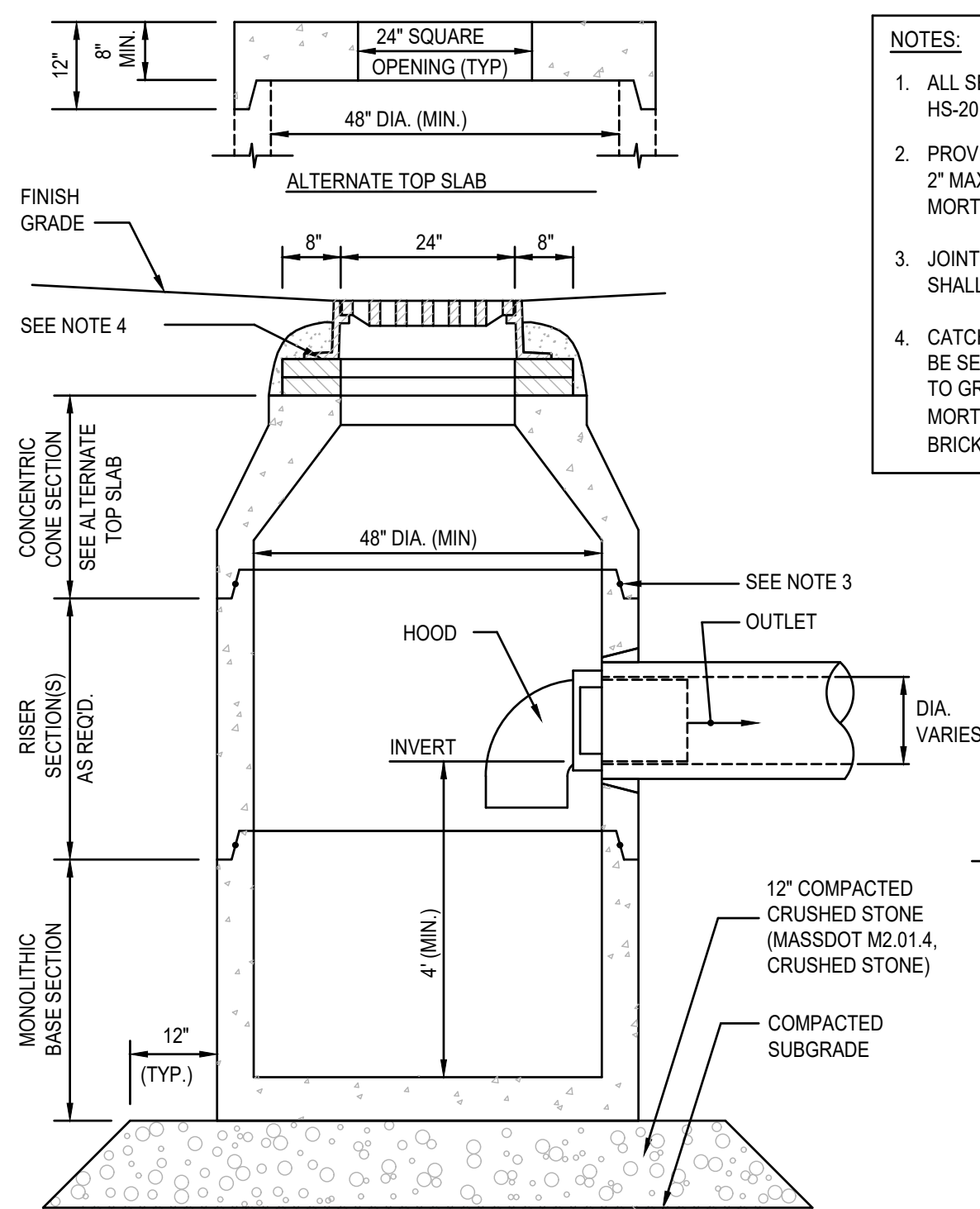
TYPICAL DRIVEWAY DETAIL WITHOUT
SIDEWALK
SCALE: N.T.S.



SECTION VIEW

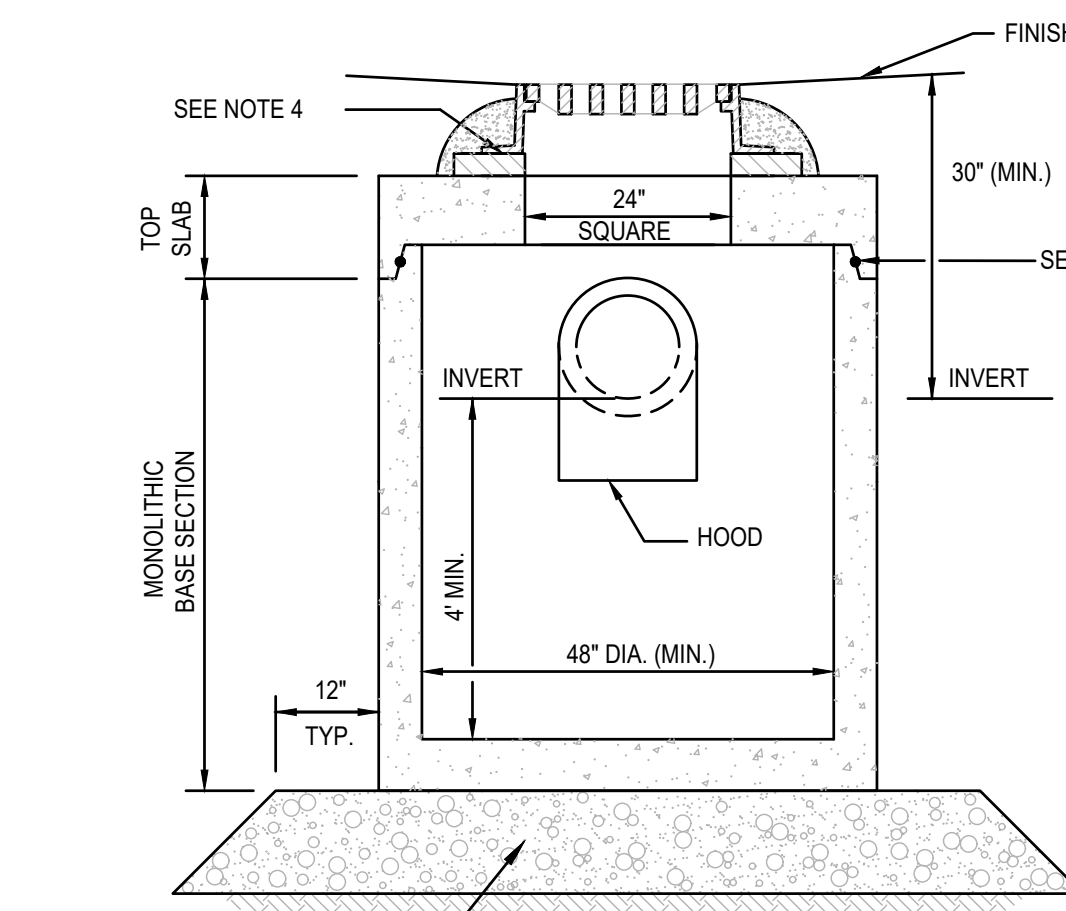
GENERAL UTILITY NOTES

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY. ANY GOVERNING PERMITTING AUTHORITY, AND "DISAFTER" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES AND THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLAN.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL CONTROL POINTS AND BENCHMARKS NECESSARY FOR THE WORK.
3. THE CONTRACTOR SHALL EXCAVATE THE TEST PITS IN THE LOCATIONS SHOWN ON THE PLAN PRIOR TO COMMENCING WORK TO VERIFY THE ELEVATIONS AND LOCATIONS OF EXISTING UTILITIES. THE CONTRACTOR SHALL PROVIDE THE OWNER AND ENGINEER WITH THE RESULTS PRIOR TO COMMENCING ANY WORK.
4. ALL WATER SERVICES SHALL BE INSTALLED WITH 5' OF COVER EXCEPT AS NOTED OR DETAILED OTHERWISE.
5. DOMESTIC WATER SERVICES 2 INCHES AND SMALLER SHALL BE TYPE K COPPER TUBING AND SHALL BE INSTALLED WITH APPROPRIATELY SIZED CORPORATION STOP WITH APPROVED SADDLE, CURB STOP, GATE AND BOX.
6. THE CONTRACTOR SHALL PROVIDE INLET PROTECTION, SUCH AS SILT SACKS, AT ALL CATCH BASINS TO PREVENT SEDIMENT FROM ENTERING THE EXTENDED DETENTION WETLAND AREA. INLET PROTECTION WILL ALLOW THE STORM DRAIN INLETS TO BE USED BEFORE FINAL STABILIZATION.
7. THE CONTRACTOR SHALL PROVIDE SIEVE ANALYSIS SUBMITTALS TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION OF THE SAND/SILT MATERIAL TO BE USED.



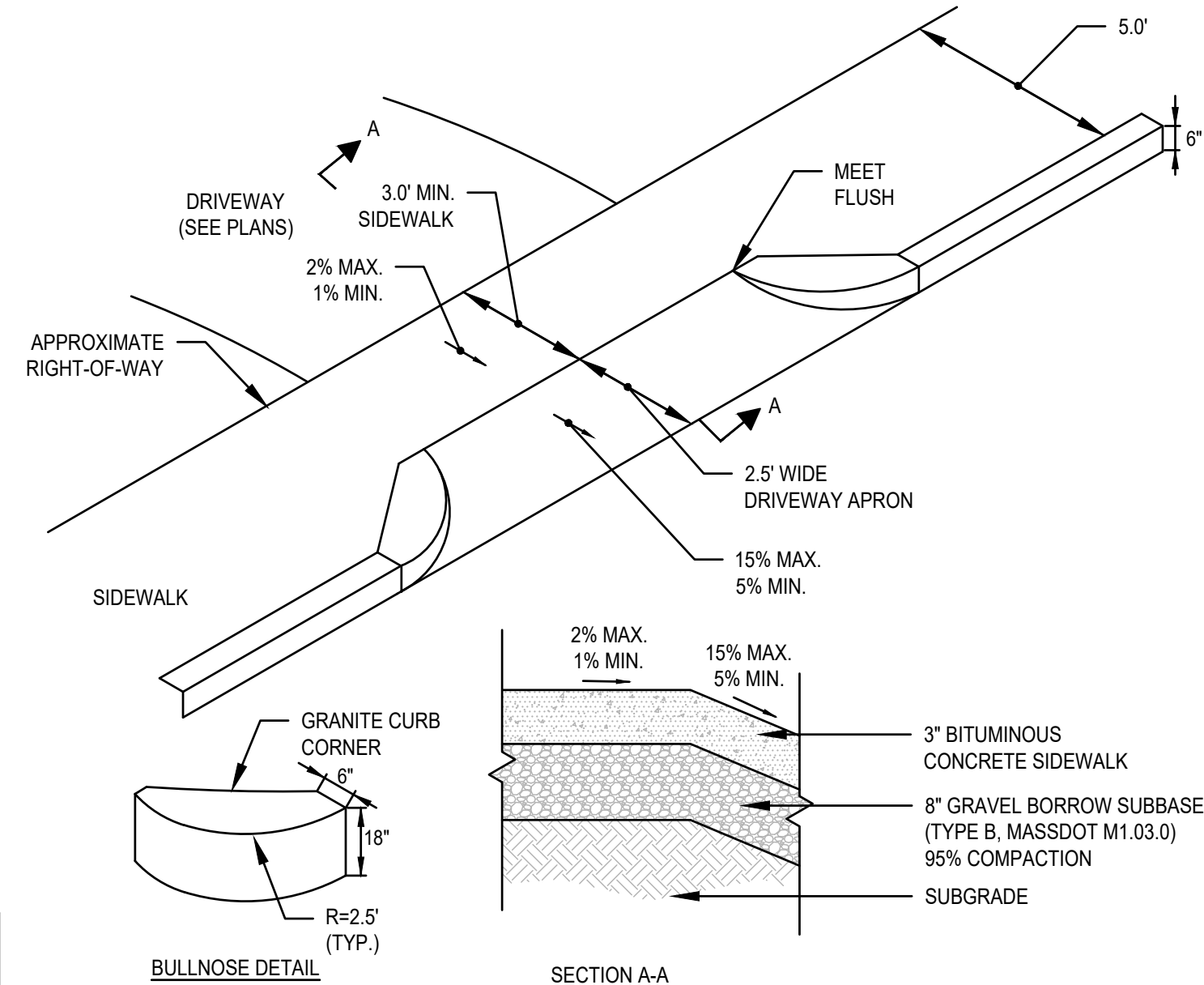
CATCH BASIN W/HOOD
SCALE: N.T.S.

- NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
 2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
 3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
 4. CATCH BASIN FRAME AND GRATE SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM).

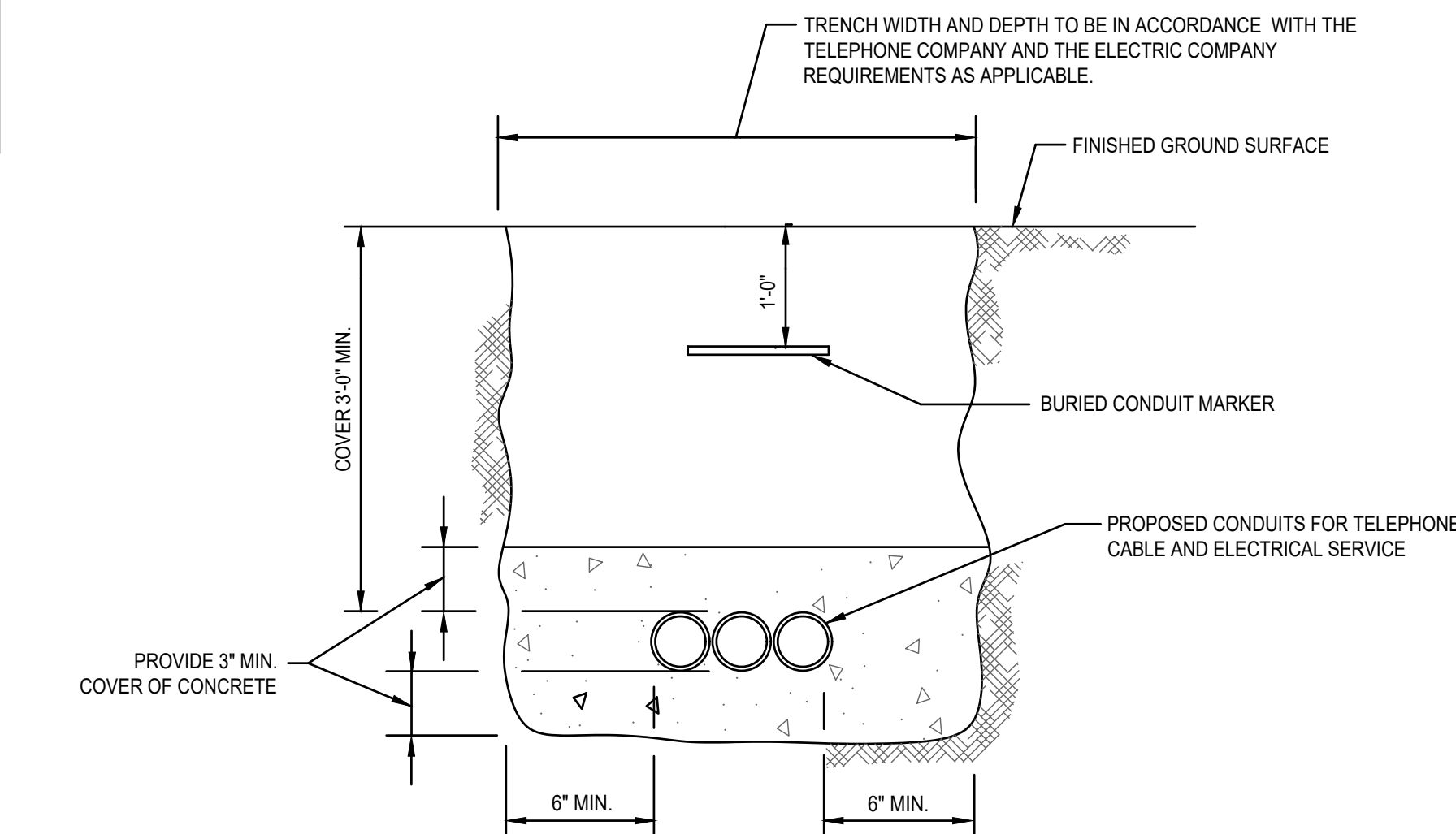


SHALLOW CATCH BASIN W/HOOD
SCALE: N.T.S.

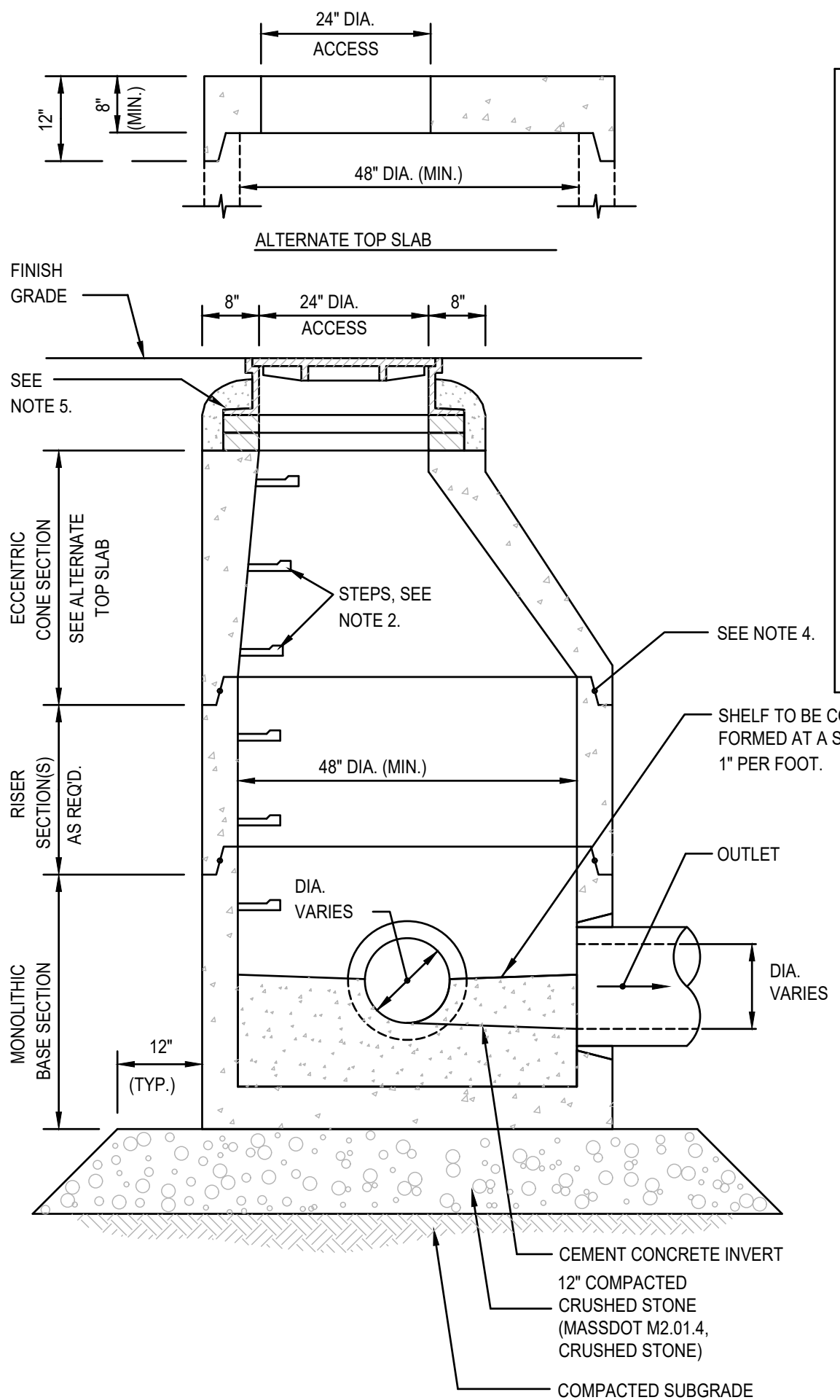
- NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
 2. PROVIDE DOGHOUSE OPENING FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. TOP SLAB SHALL NOT REST DIRECTLY ON PIPE. GROUT ALL PIPE CONNECTIONS (NON-SHRINK GROUT).
 3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
 4. CATCH BASIN FRAME AND GRATE (4" DEPTH) SHALL BE SET IN FULL MORTAR BED.
 5. ADJUST TO FINISH GRADE WITH CLAY BRICK AND MORTAR AS REQUIRED.



SIDEWALK THRU DRIVEWAYS WITH CURB RETURNS
SCALE: N.T.S.

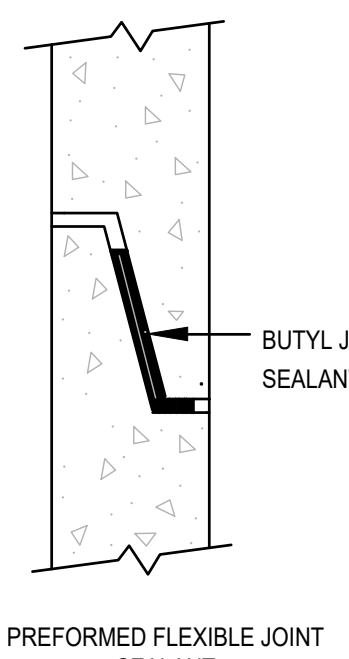


TYPICAL ELECTRIC/TELEPHONE/CABLE CONDUIT
(US-UTILITY SERVICE)
SCALE: N.T.S.

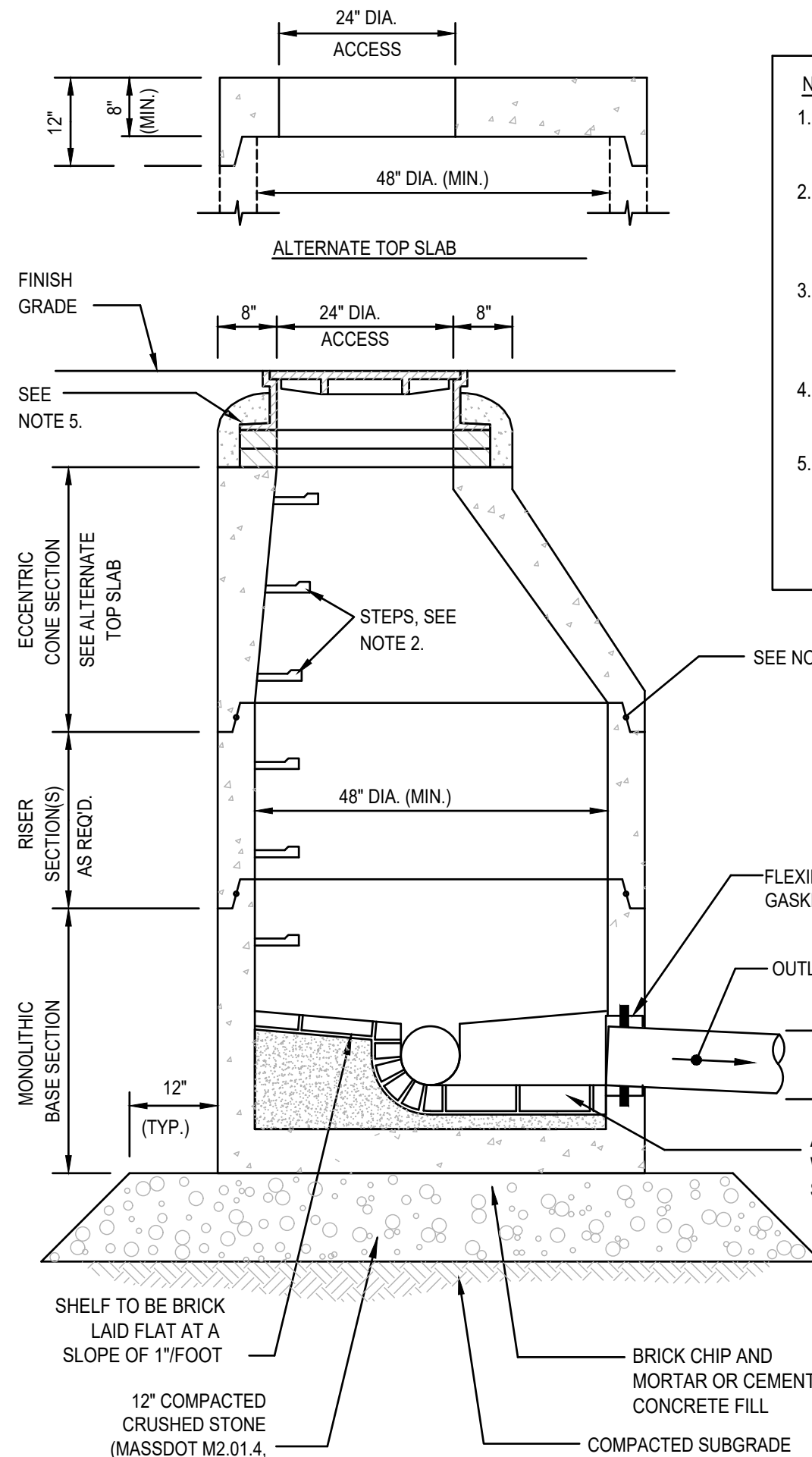


DRAIN MANHOLE DETAIL
SCALE: N.T.S.

- NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
 2. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
 3. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
 4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
 5. DRAIN MANHOLE FRAME AND COVER SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM).
 6. DRAIN MANHOLE COVER SHALL HAVE A DIAMOND PATTERN, PICKHOLES & THE WORD "DRAIN" CAST IN 3" LETTERS (LEBARON LK 110-A).

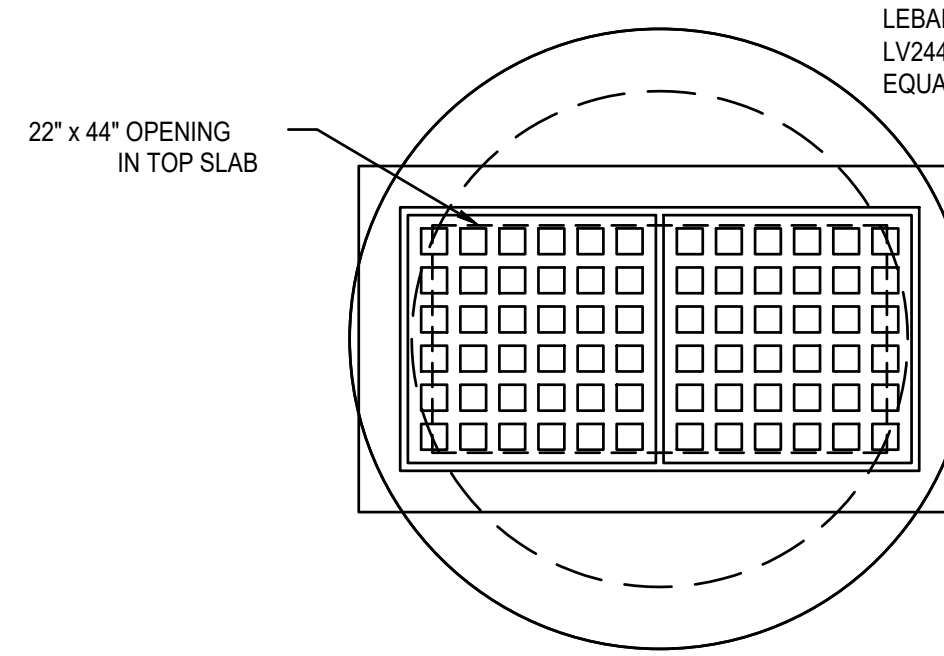


MANHOLE JOINT DETAILS
SCALE: N.T.S.



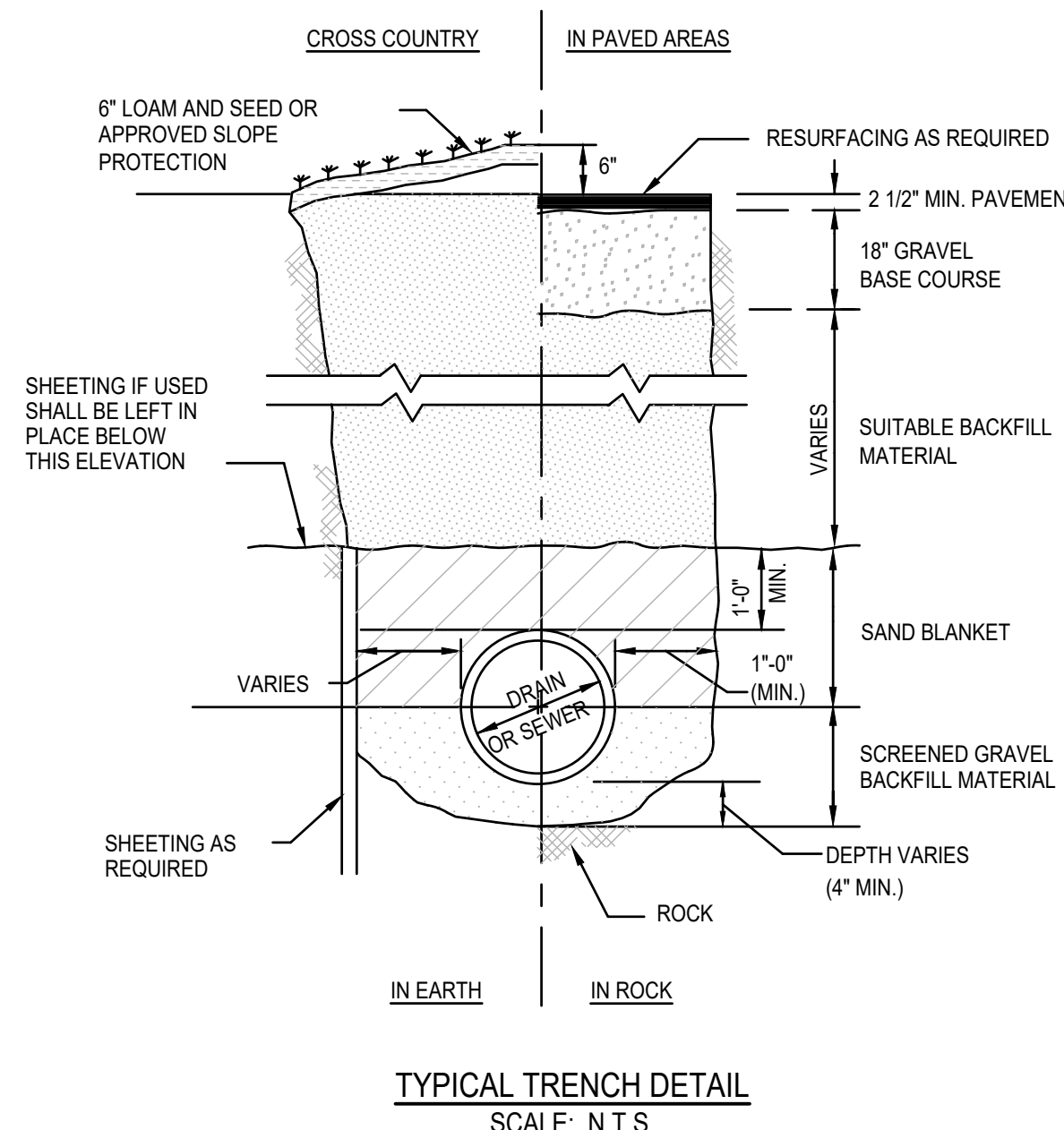
SEWER MANHOLE DETAIL
SCALE: N.T.S.

- NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
 2. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
 3. ALL EXTERIOR SURFACES SHALL BE GIVEN TWO COATS OF BITUMINOUS WATER-PROOFING MATERIAL.
 4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
 5. STANDARD SEWER MANHOLE FRAME AND COVER SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM).



DOUBLE GRATE CATCH BASIN DETAIL
SCALE: N.T.S.

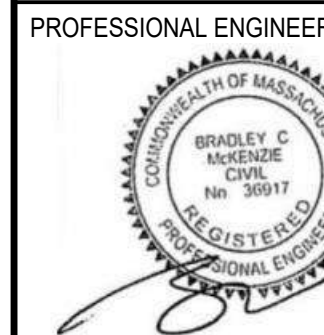
- NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
 2. PROVIDE DOGHOUSE OPENING FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. TOP SLAB SHALL NOT REST DIRECTLY ON PIPE. GROUT ALL PIPE CONNECTIONS (NON-SHRINK GROUT).
 3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
 4. CATCH BASIN FRAME AND GRATE (4" DEPTH) SHALL BE SET IN FULL MORTAR BED.
 5. ADJUST TO FINISH GRADE WITH CLAY BRICK AND MORTAR AS REQUIRED.



TYPICAL TRENCH DETAIL
SCALE: N.T.S.

REV	DATE	DESCRIPTION	BY	APP
1	5/12/2017	COMMENTS PER MASSHUSING	SSS	SSS
2	7/14/2017	COMMENTS PER MASSHUSING	SSS	SSS
3	11/07/2018	ZBA APPLICATION	AC	BCM
4	11/07/2021	NO REVISIONS THIS SHEET	SSS	SSS
5	4/6/2021	REVISIONS TO DRIVEWAY DETAIL	SSS	BCM
6	6/7/2021	NO CHANGES THIS SHEET	SSS	SSS
7	6/9/2021	NO CHANGES THIS SHEET	SSS	SSS
8	8/1/2021	REVISIONS TO TYPICAL ROADWAY SECTION DRIVEWAY DETAIL	SSS	SSS

RIVER MARSH VILLAGE
COMPREHENSIVE PERMIT PLAN
(ASSESSOR'S MAP E-17, LOT 0 & E-17A, LOT 274)
WATER STREET
PEMBROKE, MASSACHUSETTS



OWNER/APPLICANT:
RIVER MARSH, LLC
238 WASHINGTON STREET
NORWELL, MASSACHUSETTS 02061

DRAWN BY: SSS
DESIGNED BY: SSS
CHECKED BY: BCM
APPROVED BY: BCM
DATE: SEPTEMBER 22, 2016
SCALE: AS NOTED
PROJECT NO.: 215-181
DWG. TITLE:

Construction
Details
Sheet 1 of 6

D-1

SEEDING SPECIFICATIONS

SEEDING RECOMMENDATIONS

1. SEEDBED PREPARATION

- A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
- B. STONES LARGER THAN FOUR INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT FOUR INCHES TO PREPARE A SEEDBED AND MIX FERTILIZER AND LIME INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.

2. ESTABLISHING A STAND

- A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING AND INCORPORATED INTO THE SOIL. KINDS AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:

AGRICULTURAL LIMESTONE: 2 TONS PER ACRE OR 100 LBS. PER SQ. FT.

NITROGEN (N): 50 LBS. PER ACRE OR 1.1 LBS. PER 1000 SQ. FT.

PHOSPHATE (P O): 100 LBS. PER ACRE OR 2.2 LBS. PER 1000 SQ. FT.

POTASH (K O): 100 LBS. PER ACRE OR 2.2 LBS. PER 1000 SQ. FT.

(NOTE: THIS IS THE EQUIVALENT OF 500 LBS. PER ACRE OF 10-20-20 FERTILIZER OF 1,000 LBS. PER ACRE OF 5-10-10)

- B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING, AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH 0.25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.

- C. REFER TO SEEDING RATES AND SEEDING GUIDES FOR APPROPRIATE SEED MIXTURES AND RATES OF SEEDING.

- D. WHEN SEEDING AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING SPRING TO EARLY OCTOBER. WHEN SEEDING AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 10 TO SEPTEMBER 1.

3. MULCH

- A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
- B. MULCH WILL BE HELD IN PLACE USING TECHNIQUES AS SPECIFIED IN THE "BEST MANAGEMENT PRACTICES OPERATION AND MAINTENANCE PLAN"

4. MAINTENANCE TO ESTABLISH A STAND

- A. PLANTED AREAS SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
- B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ONSITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIALS TAKE 2 TO 3 YEARS TO BECOME ESTABLISHED.

- C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED OCCASIONAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.

NOTES:

1. TOP OF LOAM (TOPSOIL) IS FINISHED GRADE.
2. TOPSOIL SHALL CONTAIN BETWEEN 5% AND 12% ORGANIC MATTER AND SHALL HAVE A MAXIMUM STONE SIZE OF 3/4" AND SHALL CONFORM

SEEDING RATES

	POUND / ACRE	POUNDS / 1,000 S.F.
A. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
REDTOP	2	0.05
TOTAL	42	0.95
B. TALL FESCUE	15	0.35
CREEPING RED FESCUE	10	0.25
BIRDSFOOT TREFOIL	15	0.35
TOTAL	40	0.95
C. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
BIRDSFOOT TREFOIL	8	0.20
TOTAL	48	1.10
D. BIRDSFOOT TREFOIL	10	0.25
REED CANARY GRASS	15	0.35
TOTAL	30	0.70
E. TALL FESCUE	20	0.45
FLATPEA	30	0.75
TOTAL	50	1.20
F. CREEPING RED FESCUE 1/	85	2.00
KENTUCKY BLUEGRASS 1/	85	2.00
TOTAL	170	4.00
G. TALL FESCUE 1/	150	3.60

TEMPORARY SEEDING RATES

		2.50	(BEST FOR FALL SEEDING, AUG 15 TO SEPT. 5)
H. WINTER RYE	112		
OATS	80	2.00	(BEST FOR SPRING SEEDING, BEFORE MAY 15)
ANNUAL RYEGRASS	40	1.00	(BEST FOR FALL SEEDING, AUG 15 TO SEPT. 15)
			(MAY BE USED EARLY SPRING ALSO)

1/ FOR HEAVY USE ATHLETIC FIELDS CONSULT THE UNIVERSITY OF NEW HAMPSHIRE COOPERATIVE EXTENSION TURF SPECIALIST FOR CURRENT VARIETIES AND SEEDING RATES.

SEEDING GUIDE

SEEDING MIXTURE 1/

E

STEEP CUTS AND

FILLS, BORROW

AND DISPOSAL

AREAS

D

WATERWAYS, EMERGENCY

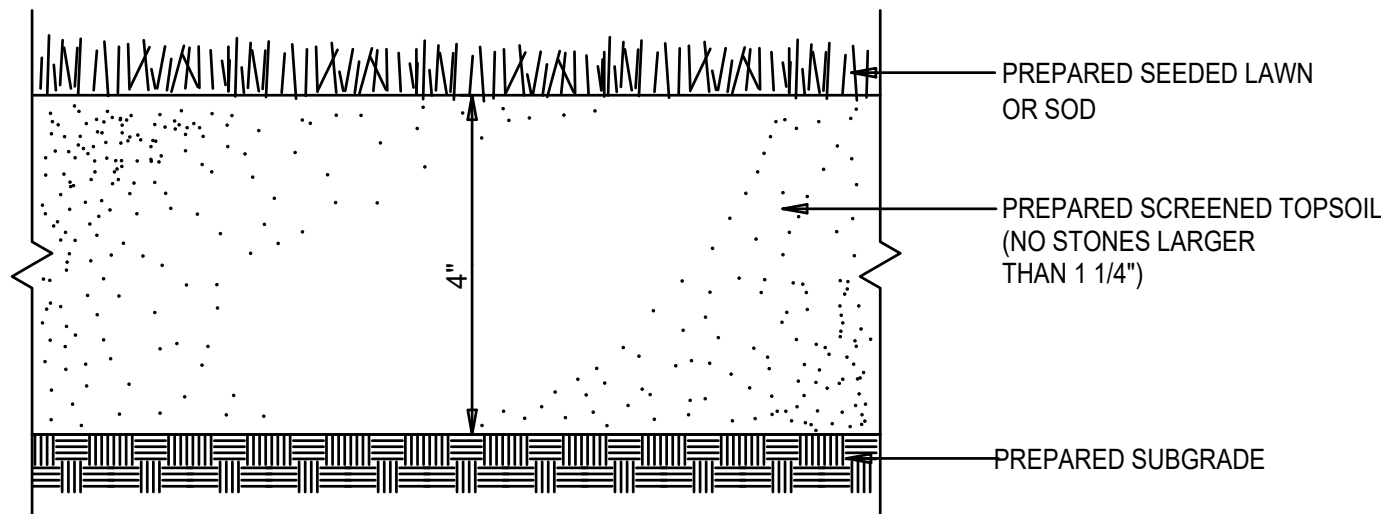
SPILLWAYS, AND OTHER

CHANNELS WITH

FLOWING WATER

F

LAWN AREAS

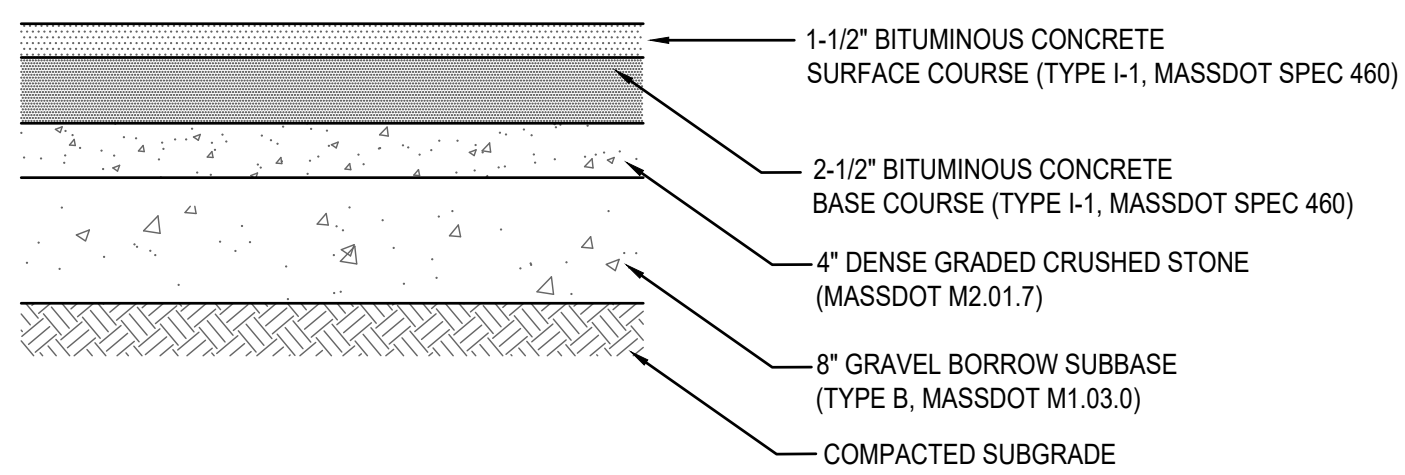


NOTES:

1. TOP OF LOAM (TOPSOIL) IS FINISHED GRADE.
2. LOAM AND SOD OR SEED, SHALL CONFORM TO MASSDOT MATERIAL SPECIFICATIONS M1.05.0, M1.07.0 AND M1.08.1, AND CONSTRUCTION METHODS 751.60 TO 751.63.

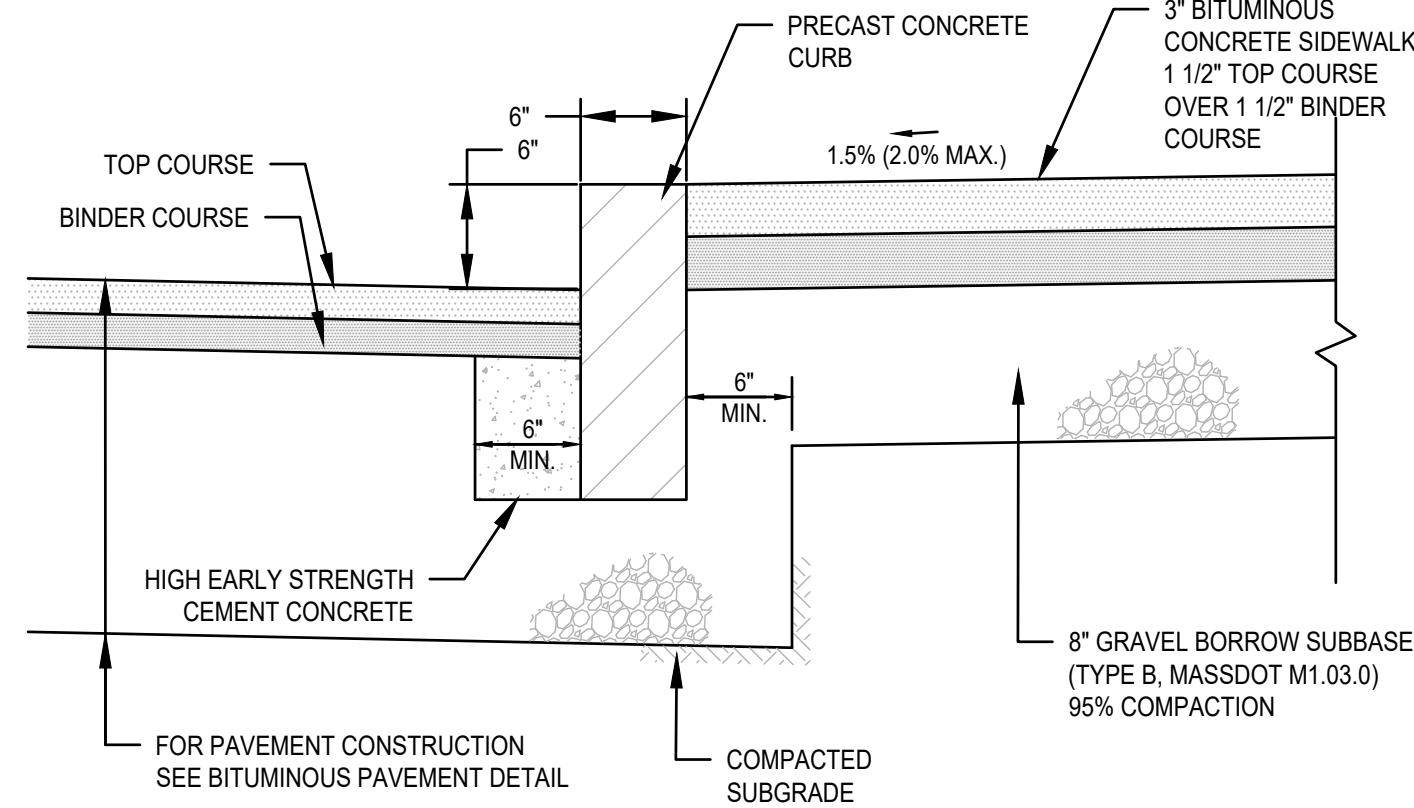
SEEDING OR SODDED LAWN DETAIL

SCALE: N.T.S.



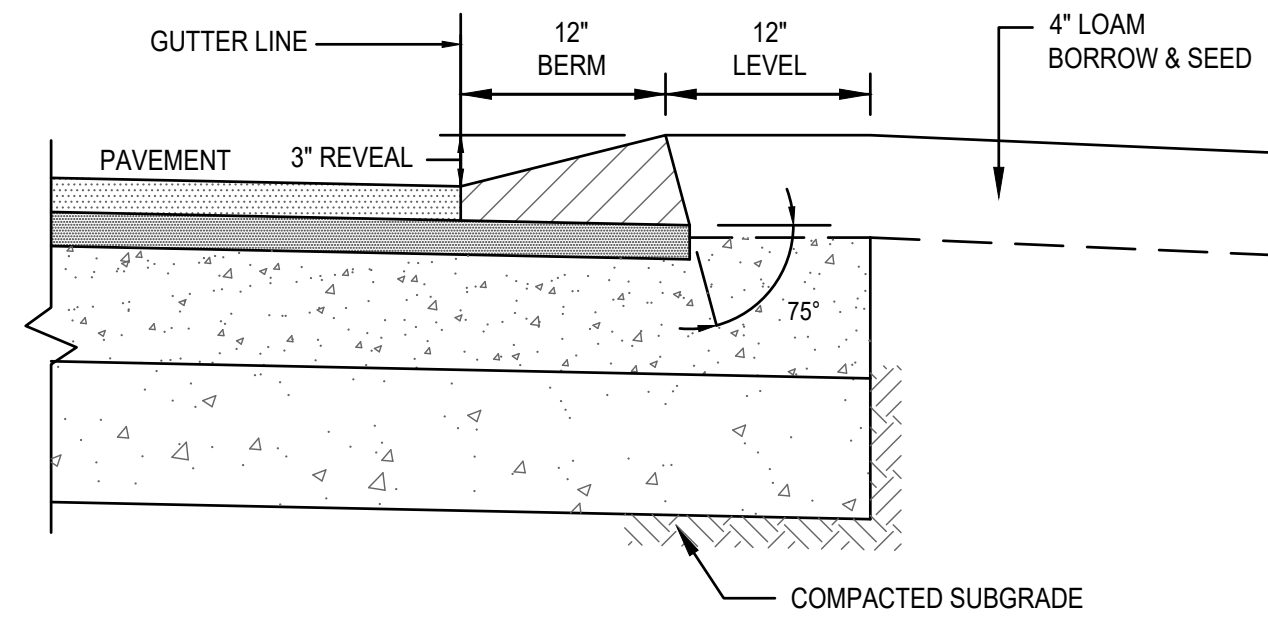
BITUMINOUS CONCRETE PAVEMENT DETAIL

SCALE: N.T.S.



PRECAST CONCRETE CURB WITH BITUMINOUS CONC. SIDEWALK DETAIL

SCALE: N.T.S.

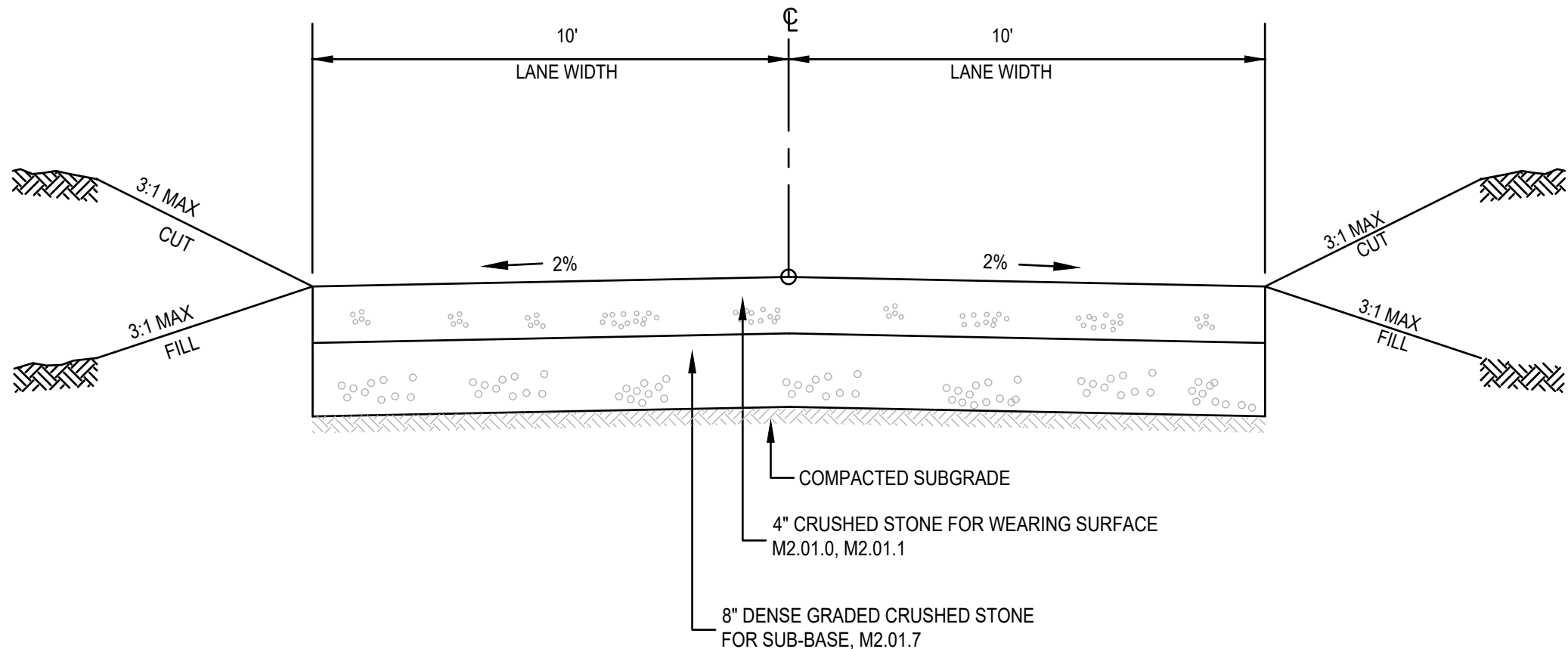


MONOLITHIC BITUMINOUS CONCRETE BERM (CAPE COD BERM) DETAIL

SCALE: N.T.S.

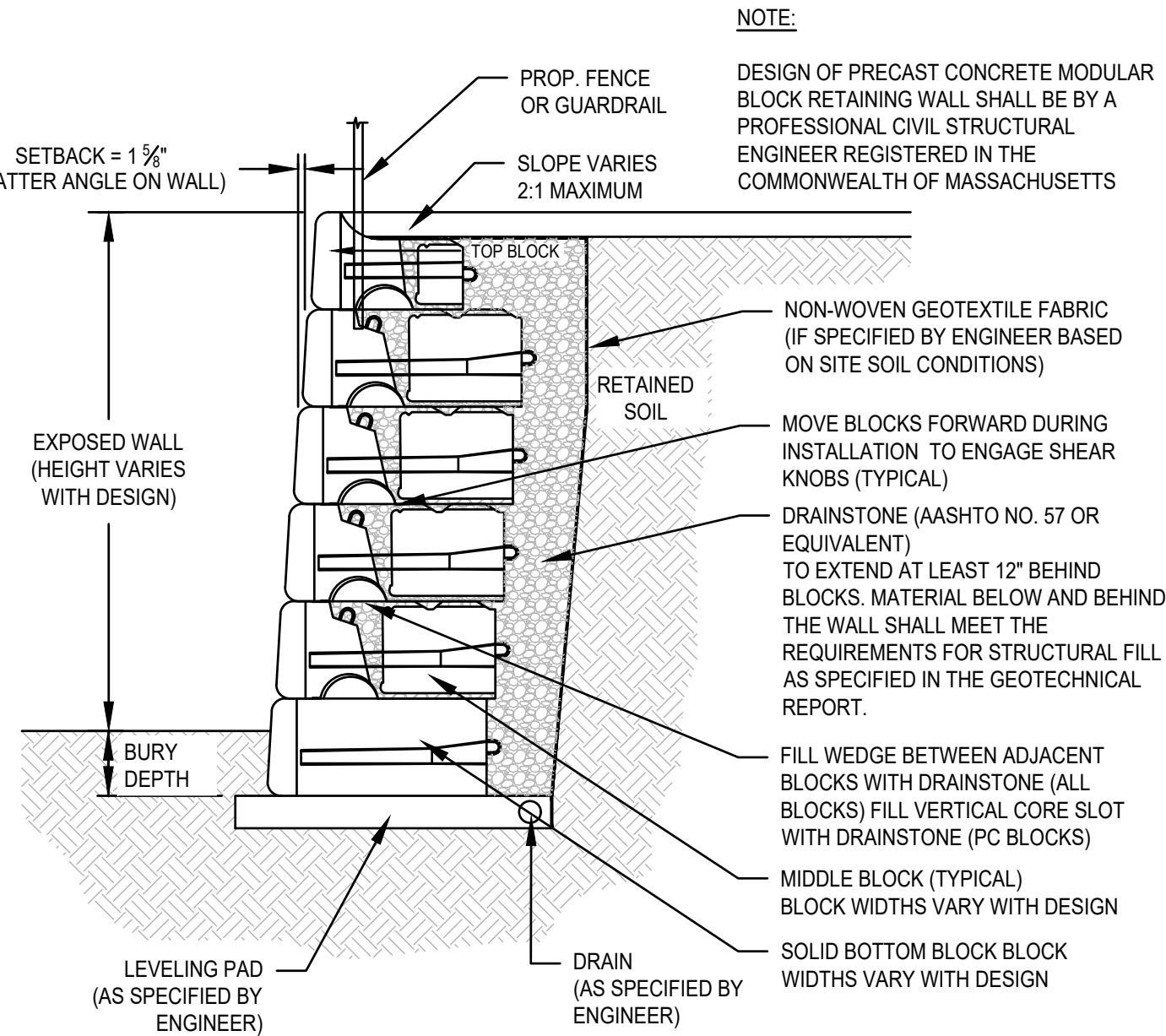
NOTES:

1. CURBS AND WALKS ALONG ACCESSIBLE ROUTES SHALL MEET OR EXCEED THE APPLICABLE REGULATIONS OF THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD, FAIR HOUSING ACT AND ADA.
2. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 2%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
4. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE CURB RAMPS SHALL BE 7.5%.
5. MAINTAIN A MINIMUM OF 3 FEET CLEAR AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS ETC.).
6. GRADE BASE OF RAMP TO PREVENT PONDING.
7. RAMP CONSTRUCTION SHALL CONFORM TO TYPICAL SIDEWALK SECTION.
8. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5'X5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
9. ALL CURBING AT RAMPS SHALL BE VERTICAL CURBING SET FLUSH WHERE IT ABUTS ROADWAY.
10. ALL RAMPS SHALL BE CEMENT CONCRETE WITH ROUGHENED NON-SLIP SURFACE.
11. ALL DETECTABLE WARNING PANELS SHALL BE CAST IN PLACE WITH A STAINLESS STEEL ANCHORING SYSTEM. MINIMUM DIMENSIONS SHALL BE 2-FEET WIDE BY 5-FEET LONG, OR AS APPROVED.
12. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE. DETECTABLE WARNINGS USED ON INTERIOR SURFACES SHALL DIFFER FROM ADJOINING WALKING SURFACES IN RESILIENCY OR SOUND-ON-CANE-CONTACT.
13. CEMENT CONCRETE TO BE 4000 PSI, 3/4", 610, TYPE II.



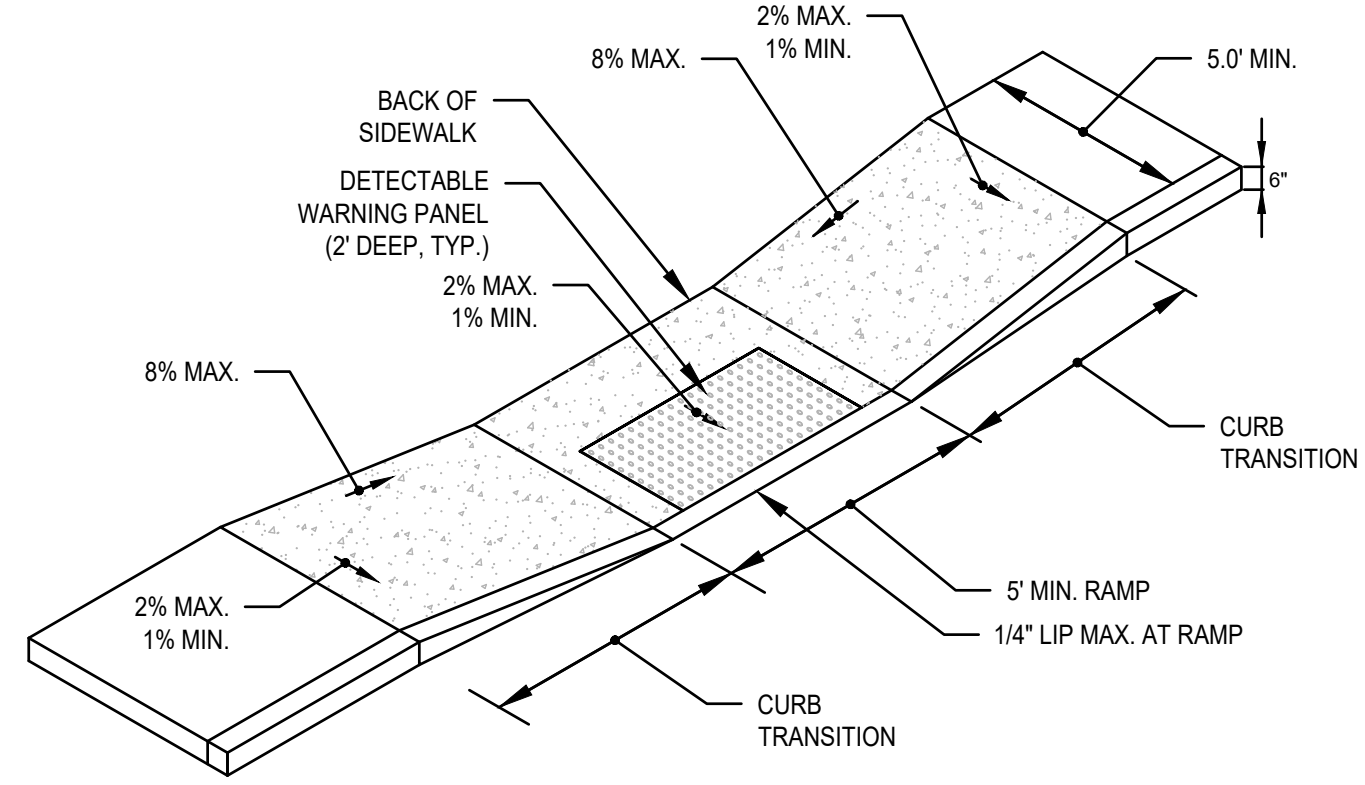
TYPICAL ROADWAY GRAVEL MAINTENANCE ROAD

SCALE: N.T.S.



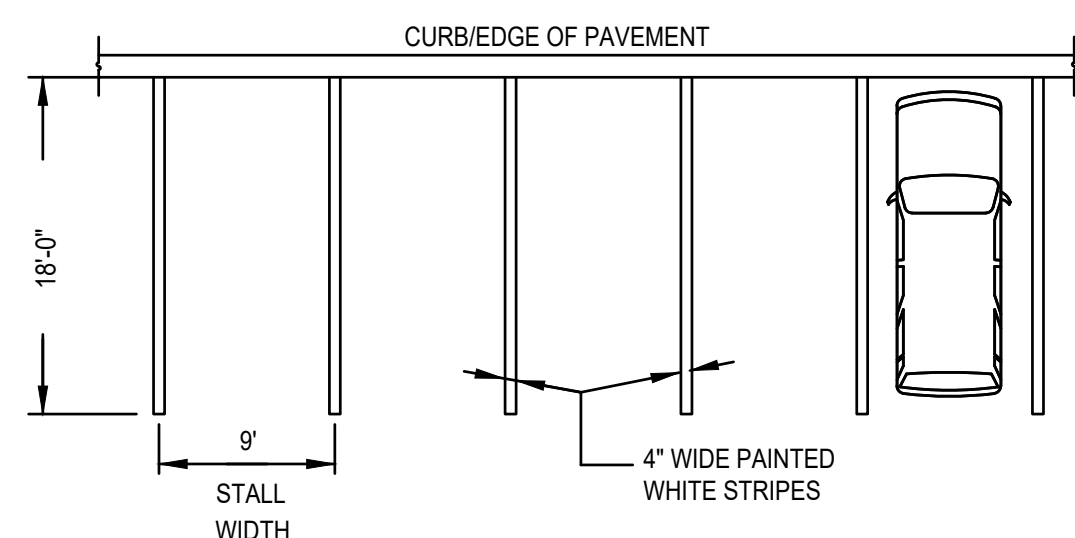
MODULAR BLOCK GRAVITY RETAINING WALL DETAIL

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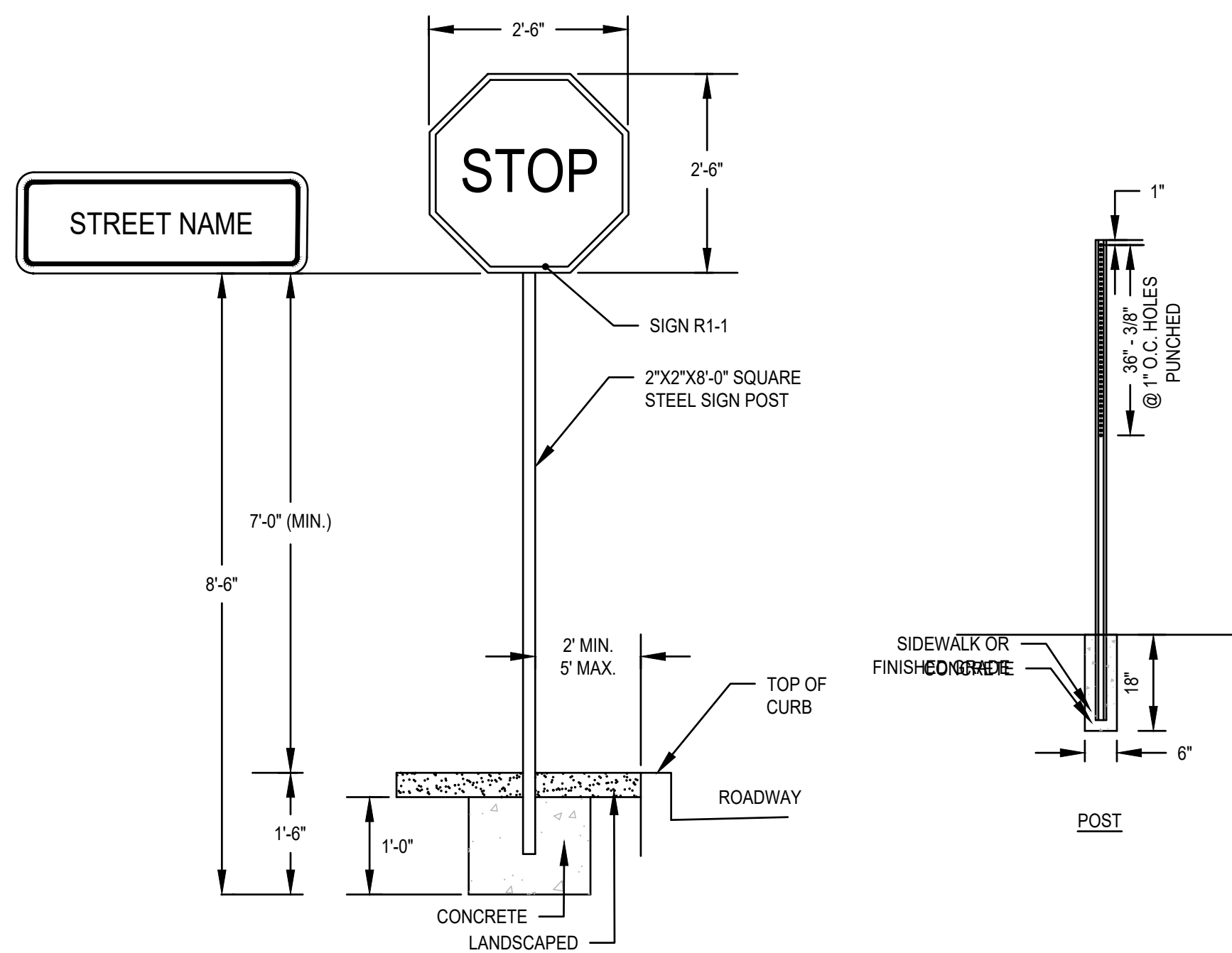
CEM. CONC. ACCESSIBLE CURB RAMP

SCALE: N.T.S.



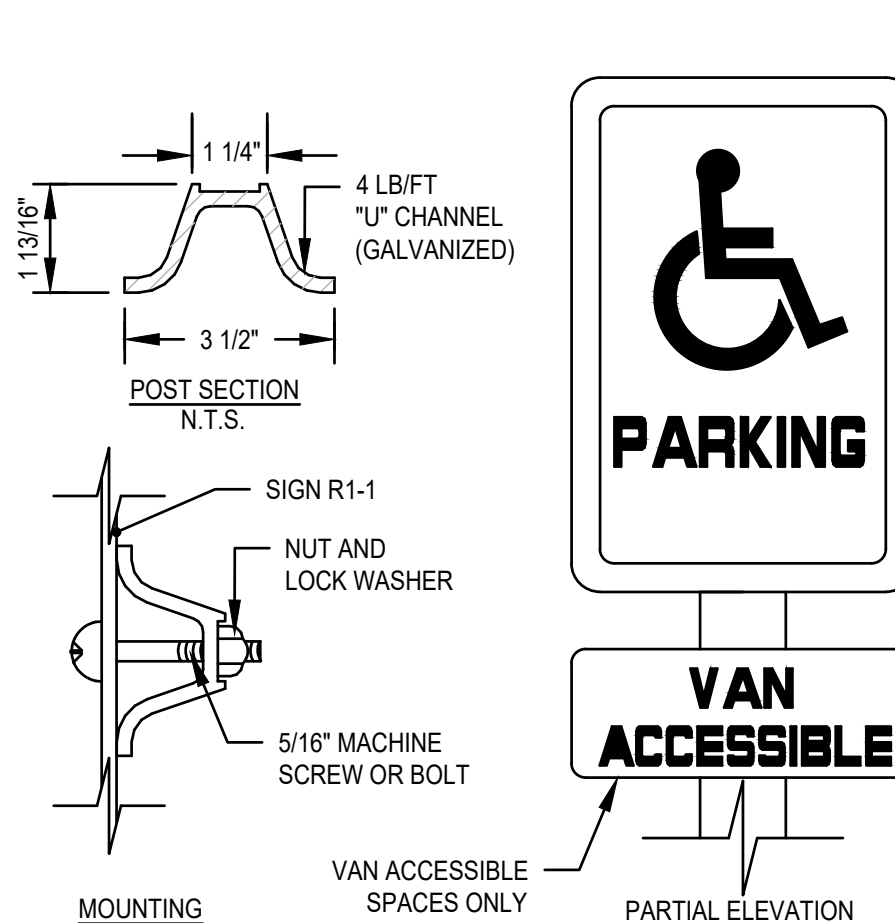
TYPICAL STRIPING DETAILS

SCALE: N.T.S.



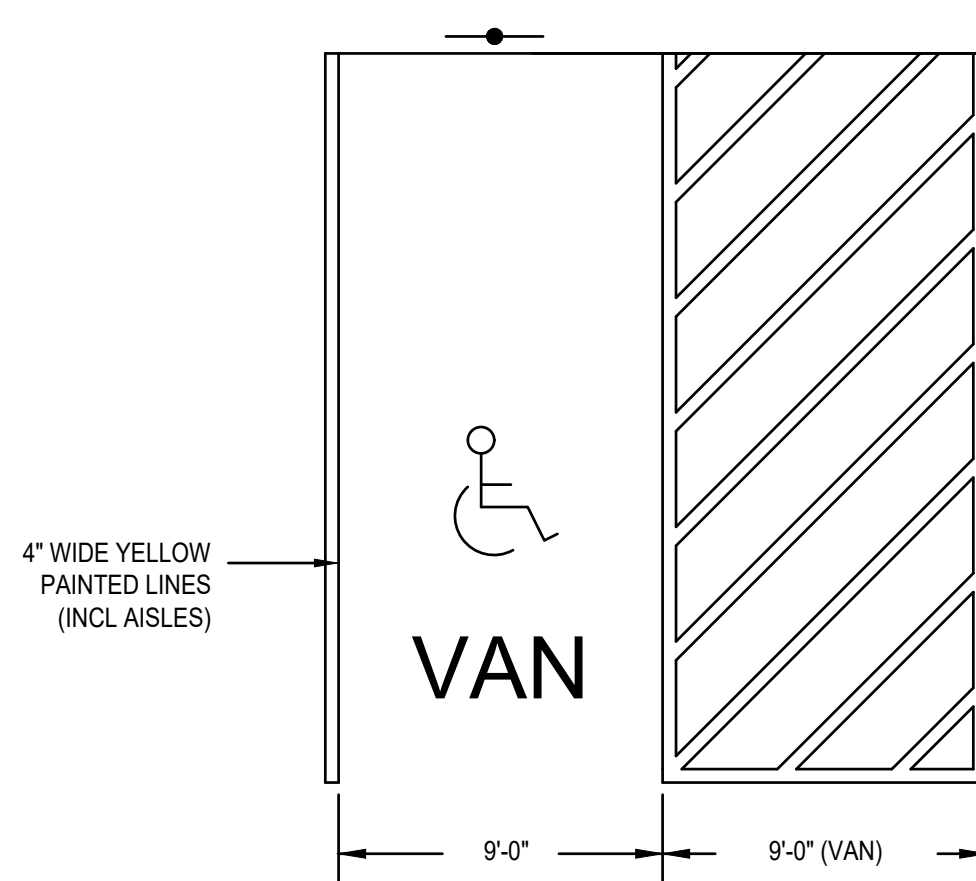
TYPICAL SIGN DETAIL

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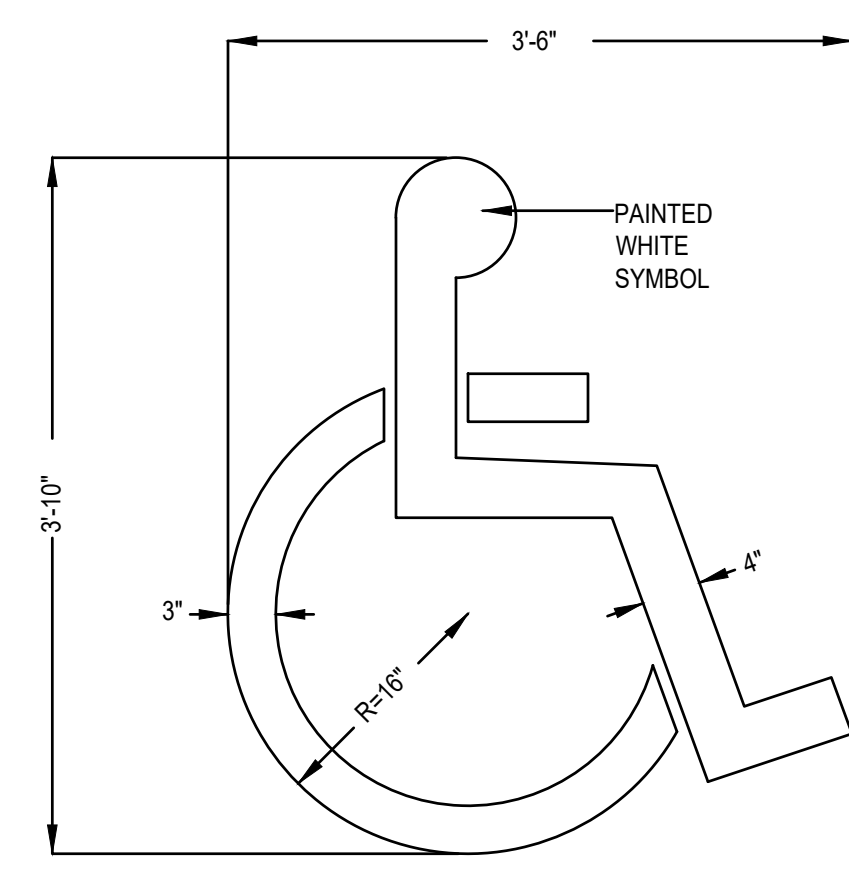
VAN ACCESSIBLE SPACES ONLY

PARTIAL ELEVATION



HANDICAP PARKING STALL DETAIL

SCALE: N.T.S.



PAINTED HANDICAP SYMBOL DETAIL

SCALE: N.T.S.

BY	APP.	DESCRIPTION	DATE	REV.
SBS	SBS	COMMENTS PER MASSHOUSING	5/12/2017	1
BCM	BCM	COMMENTS PER MASSHOUSING	7/14/2017	2
AJC	AJC	ZBA APPLICATION	11/07/2018	3
SBS	SBS	NO REVISIONS THIS SHEET	1/07/2021	4
BCM	BCM	REVISIONS TO STORMWATER INFILTRATION BASIN	4/6/2021	5
SBS	SBS	ADDITION OF MODULAR BLOCK WALL DETAIL	6/7/2021	6
BCM	BCM	NO REVISIONS THIS SHEET	8/9/2021	7
SBS	SBS	ADDITION OF PRECAST CONCRETE CURB & SIDEWALK DETAIL	8/1/2021	8

PREPARED BY:



RIVER MARSH VILLAGE

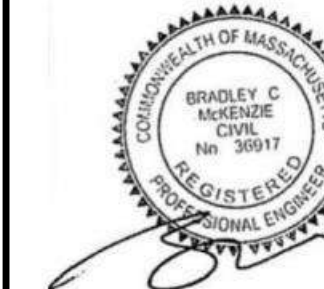
COMPREHENSIVE PERMIT PLAN

(ASSESSOR'S MAP E-17, LOT 0 & E-17A, LOT 274)

WATER STREET

PEMBROKE, MASSACHUSETTS

PROFESSIONAL ENGINEER:



OWNER/APPLICANT:

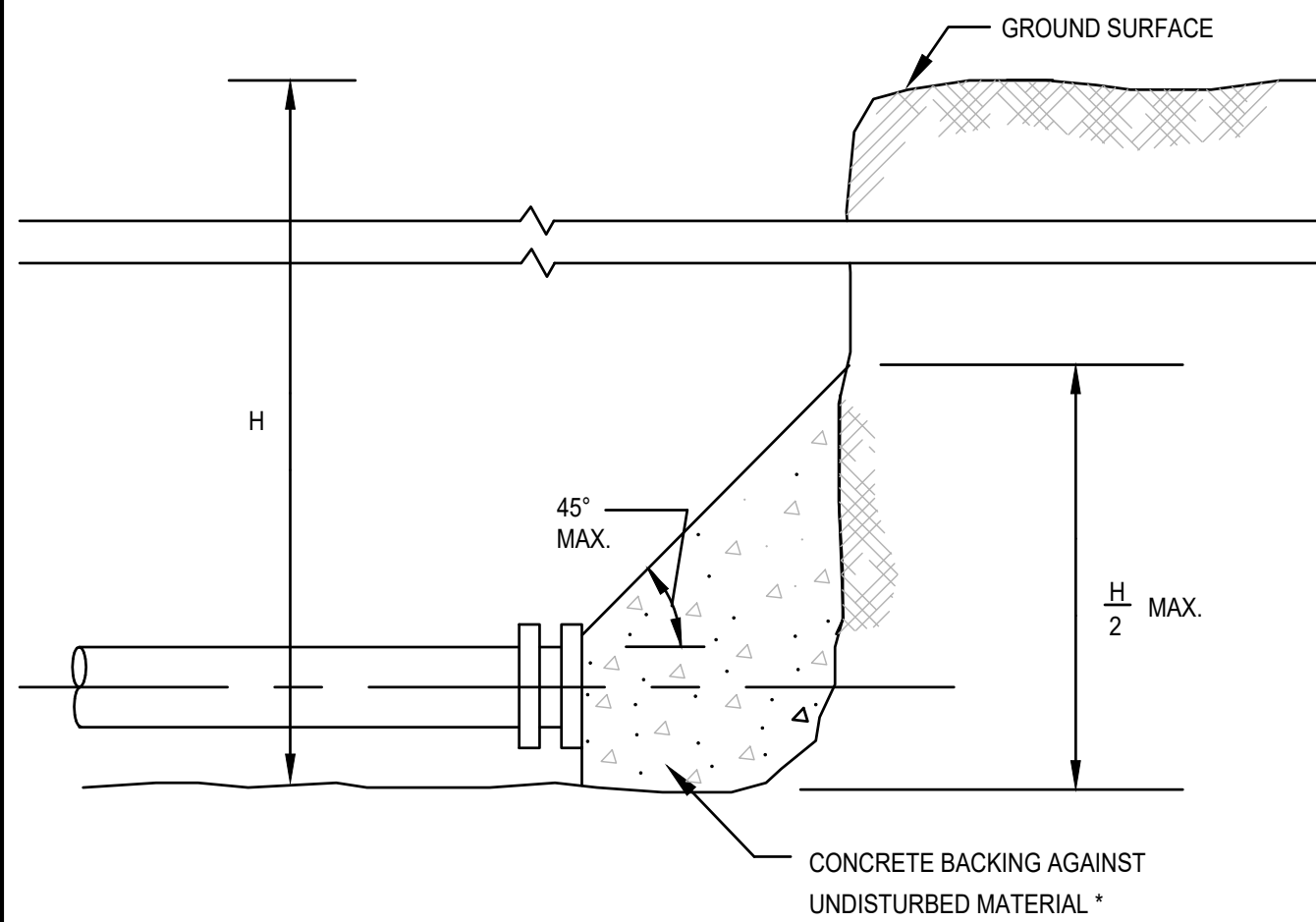
RIVER MARSH, LLC
238R WASHINGTON STREET
NORWELL, MASSACHUSETTS 02061

DRAWN BY:	SBS
DESIGNED BY:	SBS
CHECKED BY:	BCM
APPROVED BY:	BCM
DATE:	SEPTEMBER 22, 2016
SCALE:	AS NOTED
PROJECT NO.:	215-181
DWG. TITLE:	

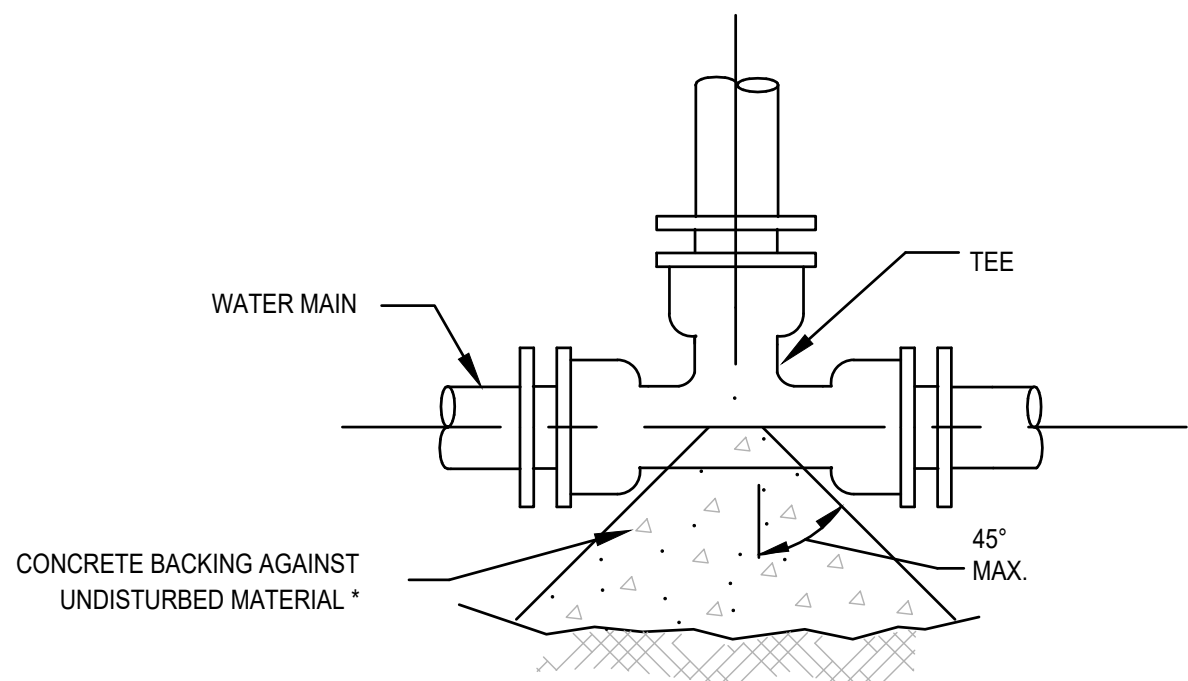
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Details
Sheet 2 of 6

DWG. NO.:

D-2



TYPICAL WATER MAIN PLUG
SCALE: N.T.S.



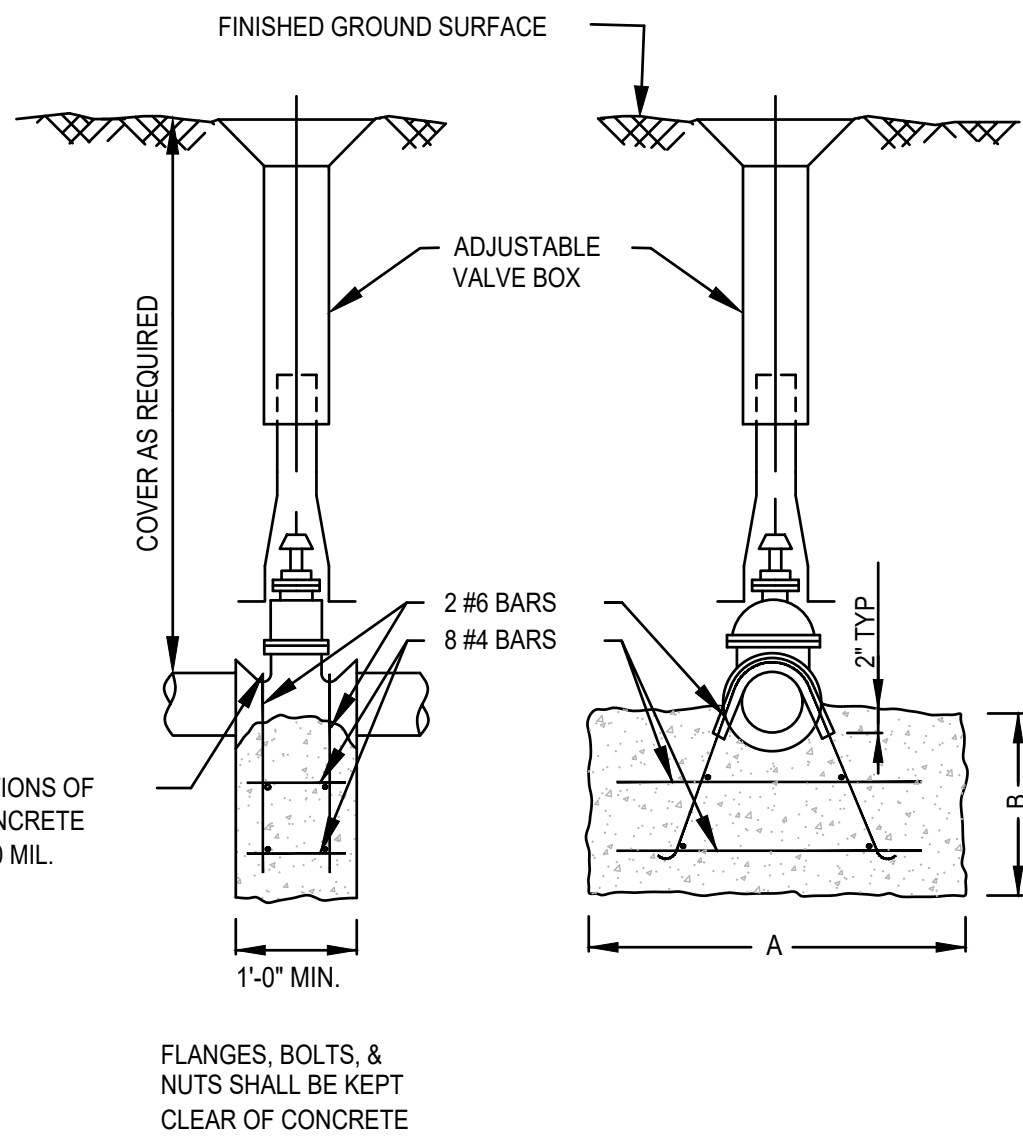
TYPICAL WATER MAIN TEE THRUST BLOCK DETAILS
SCALE: N.T.S.

THRUST BLOCK BEARING AREAS FOR WATER PIPE			
TABLE OF BEARING AREAS IN SQ. FT. AGAINST UNDISTURBED MATERIAL FOR WATER MAIN FITTINGS*			
SIZE OF MAIN (IN.)	90° BEND	TEES AND PLUGS	45° BEND
6	4	2.5	2
8	6	4	3
12	12	9	7
16	21	16	12

* TYPE OF SOIL IS MEDIUM CLAYEY, 6 OR MORE BLOWS PER FOOT, OR LOOSE GRANULAR, 9 OR MORE BLOWS PER FOOT. SOIL CONDITIONS OTHER THAN THOSE GIVEN WILL REQUIRE LARGER BEARING AREAS.

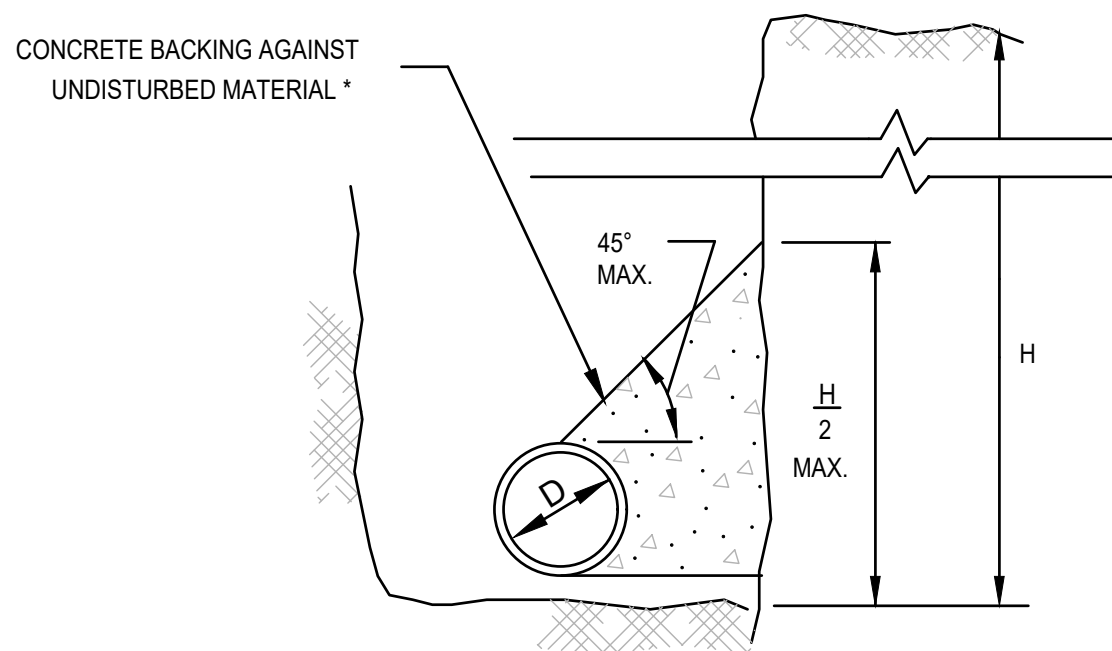
NOTES:

- FOR FITTINGS WITH LESS THAN 45° DEFLECTION, USE BEARING AREAS FOR 45° BEND.
- BEARING AREAS BASED ON HORIZONTAL PASSIVE SOIL PRESSURE OF 2000 P.S.F. AND INTERNAL WATER PRESSURE OF 150 P.S.I.G. JOINTS SHALL NOT BE ENCASED IN CONCRETE. BEARING AREAS MAY BE DIREGARDED FOR TRENCHES IN ROCK WHERE THE TOP OF THE ROCK FACE IS AT OR ABOVE THE CROWN OF THE PIPE. HOWEVER, CONCRETE BACKING SHALL BE PLACED BETWEEN THE PIPE AND THE ROCK FACE.
- THE CONTRACTOR SHALL SUBMIT 2 WEEKS IN ADVANCE OF PLACEMENT, WORKING DRAWINGS FOR EACH THRUST BLOCK TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
- ALL TEES, GATE VALVES, HYDRANTS AND FITTINGS SHALL BE MECHANICAL JOINTS WITH MEGA-LUGS.
- THRUST BLOCKS SHALL BE BARREL BLOCKS.

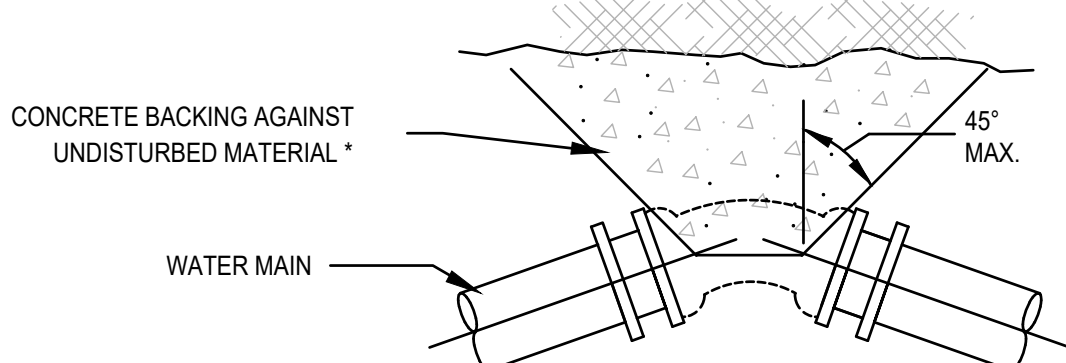


WATER GATE DETAIL
SCALE: N.T.S.

SIZE OF GATE VALVE	ANCHOR BLOCK DIMENSIONS (FT.)		
	A	B	
3"	1.5	200 PSI TEST	250 PSI TEST
4"	2.0	1.5	2.0
6"	3.0	1.5	2.0
8"	3.0	1.5	2.0
10"	3.0	2.0	2.5
12"	3.5	2.0	2.5



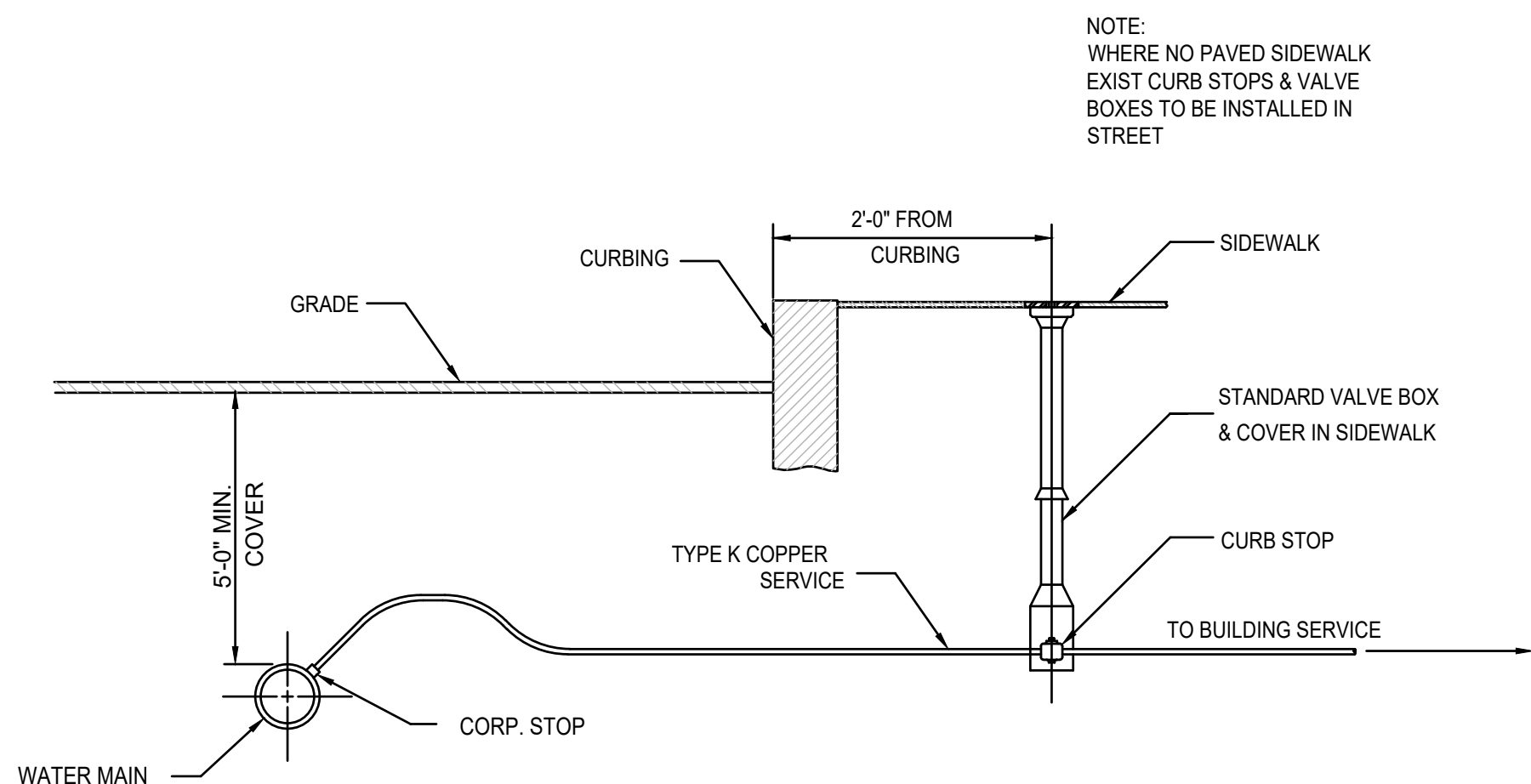
TYPICAL WATER MAIN THRUST BLOCK SECTION DETAILS
SCALE: N.T.S.



TYPICAL WATER MAIN BEND THRUST BLOCK DETAILS
SCALE: N.T.S.

MAXIMUM SIZE TAPPED CONNECTION *	
WATER MAIN DIAMETER	MAXIMUM TAP DIAMETER
4"	1/2"
6"	3/4"
8"	3/4"
12"	1"

* WHERE THE SIZE OF THE CONNECTION EXCEEDS THAT GIVEN IN THE TABLE A BOSS SHALL BE PROVIDED OR THE TAP SHALL BE MADE BY MEANS OF MULTIPLE CORP. STOPS AND BRANCH FITTINGS, TAPPED TEE, OR TAPPED SADDLE.



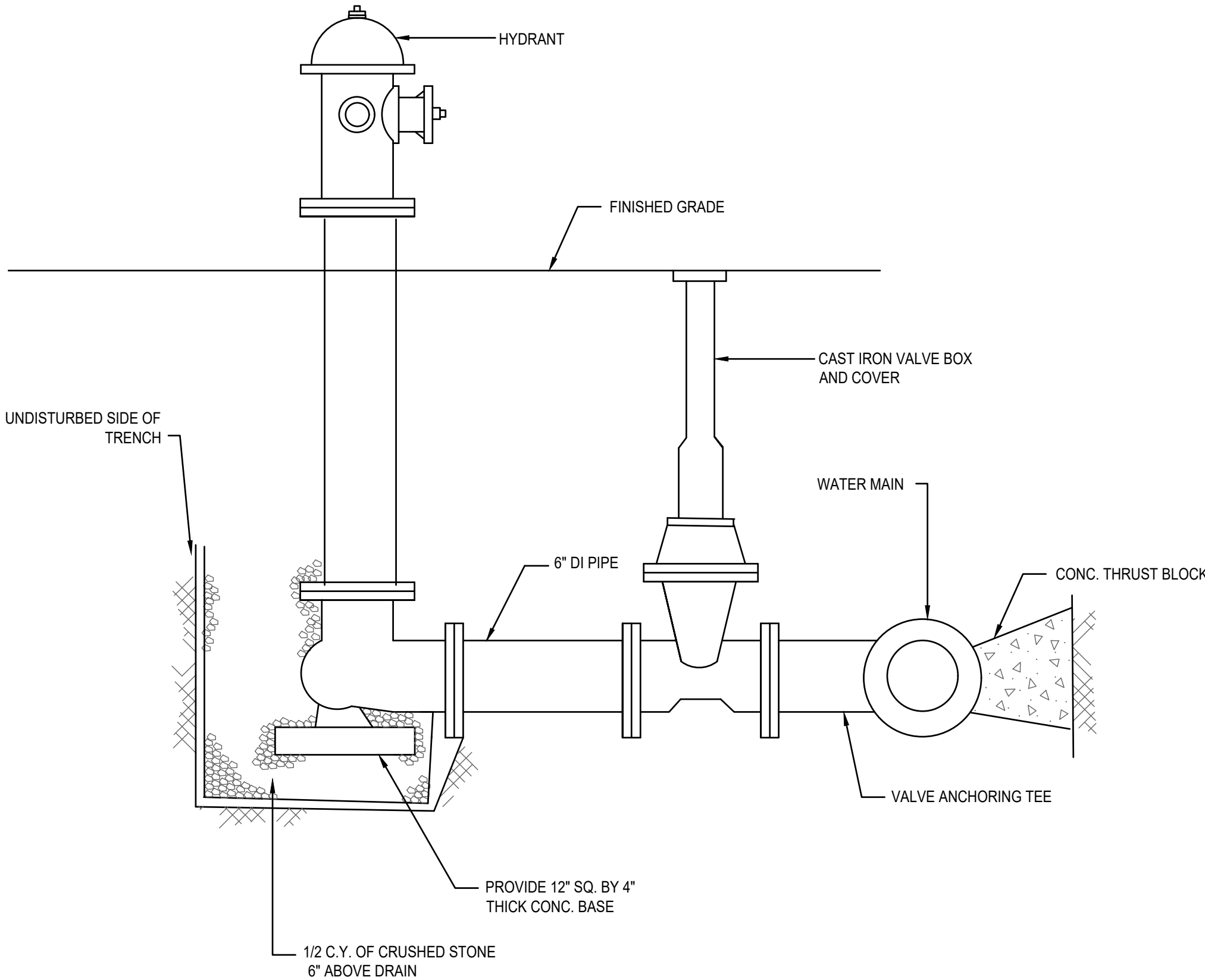
COPPER SERVICE CONNECTION
SCALE: N.T.S.

NOTE: WHERE NO PAVED SIDEWALK EXIST CURB STOPS & VALVE BOXES TO BE INSTALLED IN STREET

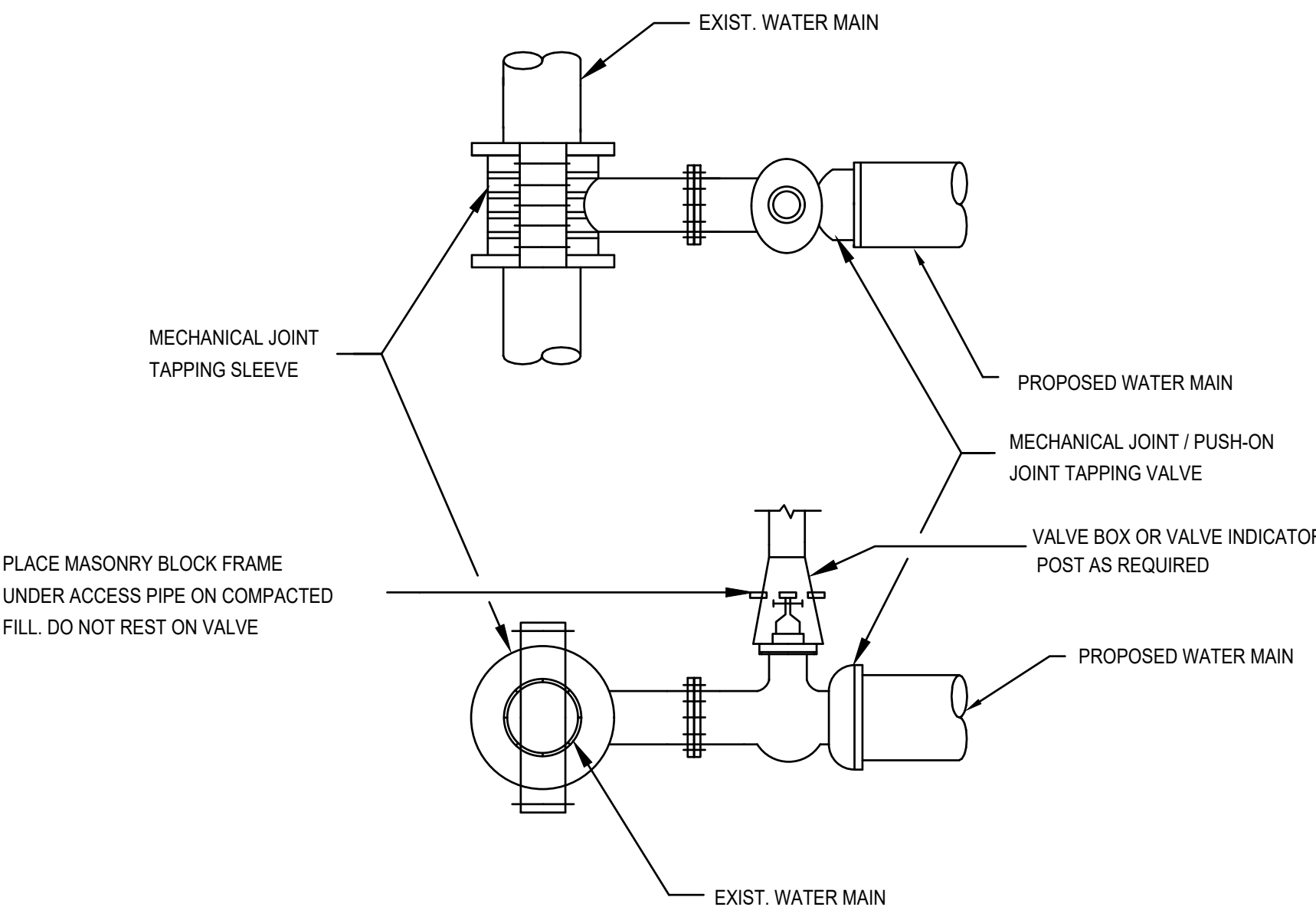
GENERAL NOTES

ALL WATER MAIN MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE PEMBROKE WATER DEPARTMENT RULES AND REGULATIONS.

- IF SHEETING IS USED, IT SHALL BE CUT OFF NO MORE THAN 12" ABOVE TOP OF PIPE.
- ALL PIPES SHALL BE PRESSURE TESTED AT 200 PSI WORKING PRESSURE FOR A MINIMUM DURATION OF TWO HOUR.
- WATER SYSTEM IS TO BE DISINFECTED TO 50 P.P.M. AVAILABLE CHLORINE AND AFTER 24 HOURS TO 25 P.P.M. OR AS REQUIRED BY PEMBROKE WATER SUPERINTENDENT/ENGINEER.
- WATER PIPE IS TO BE CEMENT LINED DUCTILE IRON "TYTON" OR EQUAL TYPE JOINT, CONFORMING TO A.N.S.I./A.W.W.A. C150/A21.50, CLASS 52, AS APPROVED BY THE PEMBROKE WATER SUPERINTENDENT/ENGINEER.
- ALL PIPING SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH A.W.W.A. STANDARDS PRIOR TO PAVING IF PAVING ABOVE TRENCH IS REQUIRED.
- BACKFILL IS TO BE COMPACTED TO 90% MAXIMUM DRY DENSITY BY AASHTO T-160 D.
- ALL WATER PIPE SHALL BE LAID WITH A MINIMUM OF 5 FEET OF COVER OF APPROVED MATERIALS.
- ALL HYDRANT LOCATIONS ARE TO BE APPROVED BY FIRE DEPARTMENT.
- RESULTS FROM PRESSURE TESTING AND DISINFECTION SHALL BE FURNISHED TO THE DIRECTOR OF PUBLIC WORKS FOR APPROVAL PRIOR TO WATER BEING TURNED ON
- ALL WORK SHALL BE IN CONFORMANCE WITH PEMBROKE WATER DEPARTMENT STANDARDS.
- ALL PERMITS REQUIRED FOR STREET OPENINGS AND WATER MAIN TAPPING MUST BE OBTAINED.
- NO WATER WILL BE TURNED ON IN THE PROJECT WITHOUT WATER DEPARTMENT APPROVAL.



HYDRANT DETAIL
SCALE: N.T.S.



TYPICAL TAPPING SLEEVE AND VALVE
SCALE: N.T.S.

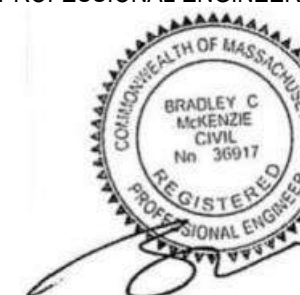
BY	APP.	DESCRIPTION	DATE	REV.
SBS	BCM	COMMENTS PER MASSHOUSING	5/12/2017	1
SBS	BCM	COMMENTS PER MASSHOUSING	7/14/2017	2
SBS	BCM	ZBA APPLICATION	11/07/2018	3
SBS	BCM	NO REVISIONS THIS SHEET	1/07/2021	4
SBS	BCM	ADDITION OF CEN. CONC. ACCESSIBLE CURB RAMP	4/5/2021	5
SBS	BCM	REMOVED NON-WATER DETAILS TO OTHER SHEETS	6/7/2021	6

PREPARED BY:

MG
MCKENZIE
ENGINEERING GROUP
Assinippi Office Park
150 Longwater Drive, Suite 101
Norwell, MA 02061
P: 781.792.3900
F: 781.792.0333
www.mckeng.com

RIVER MARSH VILLAGE COMPREHENSIVE PERMIT PLAN (ASSESSOR'S MAP E-17, LOT 0 & E-17A, LOT 274) WATER STREET PEMBROKE, MASSACHUSETTS

PROFESSIONAL ENGINEER:



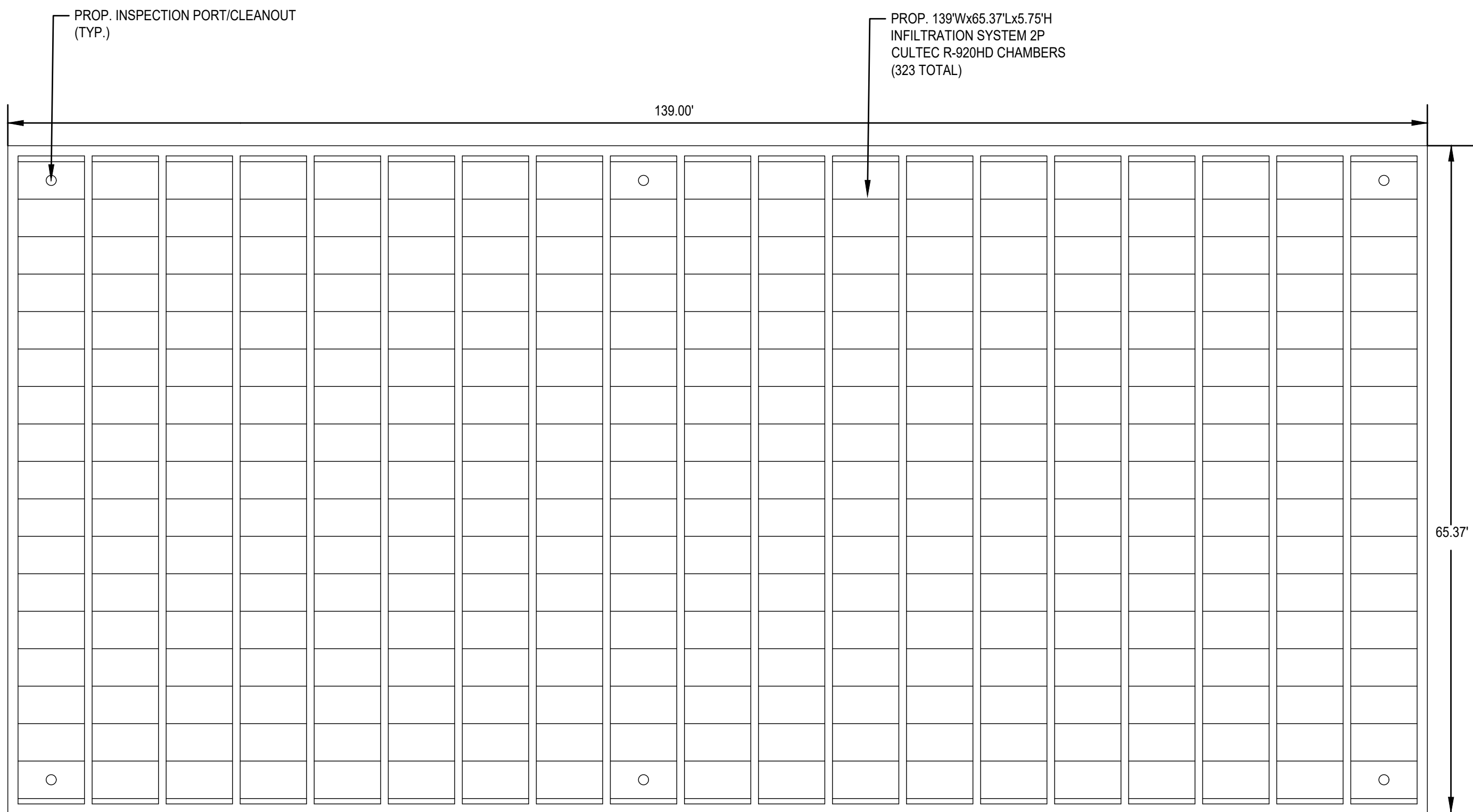
OWNER/APPLICANT:
RIVER MARSH, LLC
238R WASHINGTON STREET
NORWELL, MASSACHUSETTS 02061

DRAWN BY: SBS
DESIGNED BY: SBS
CHECKED BY: BCM
APPROVED BY: BCM
DATE: SEPTEMBER 22, 2016
SCALE: AS NOTED
PROJECT NO.: 215-181
DWG. TITLE:

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DWG. NO.:

D-3



NOTES:

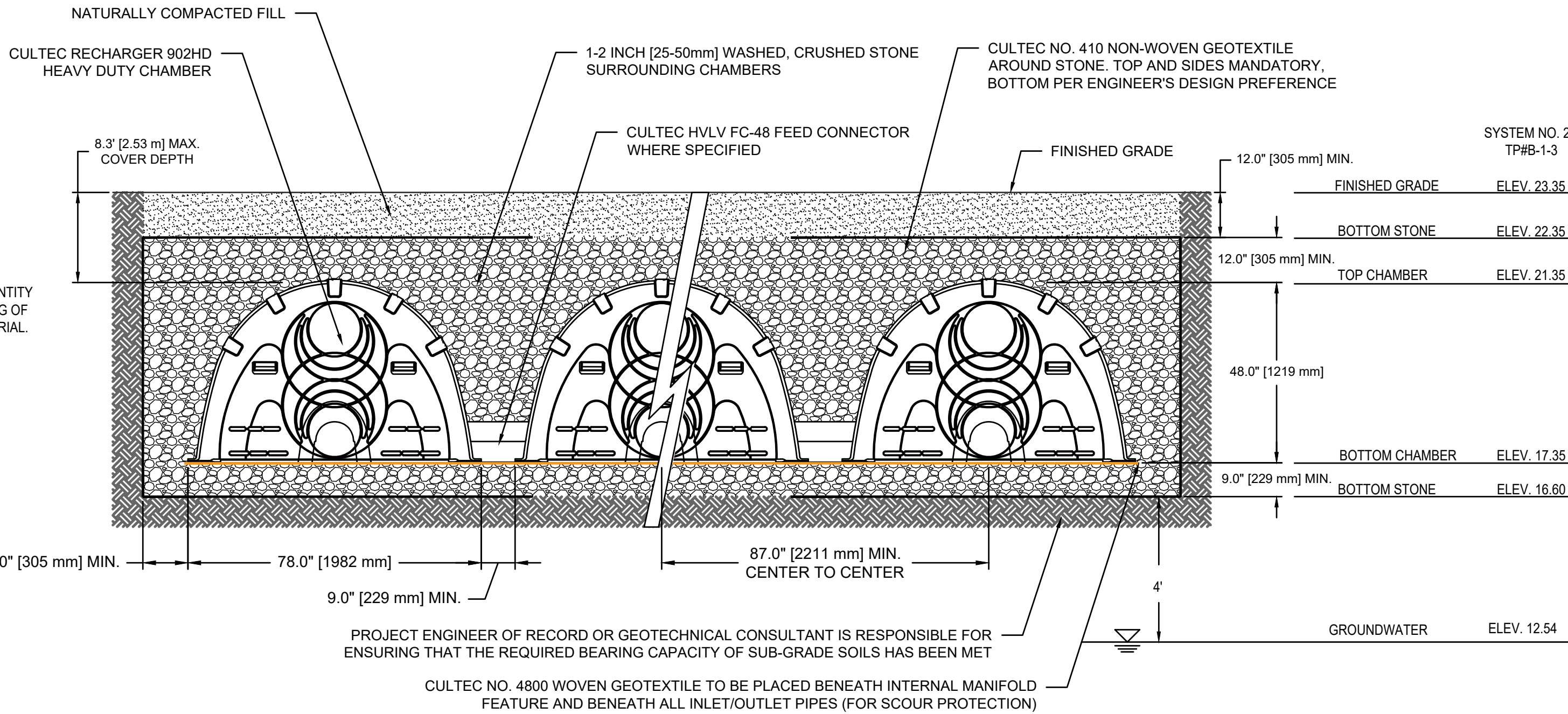
- EXCAVATE BELOW BOTTOM OF CRUSHED STONE BASE AND BACKFILL WITH CLEAN GRAVEL BORROW (MASS. HIGHWAY M1.03.0 TYPE B) TO NATURALLY OCCURRING PERVIOUS MATERIAL. (REFER TO TEST PIT SOIL LOGS SUBMITTED HERewith).
- INSTALLATION AND INSPECTION OF ALL SUBSURFACE INFILTRATION AND DETENTION SYSTEMS SHALL BE PERFORMED AND WRITTEN APPROVAL OBTAINED.

CRUSHED STONE:

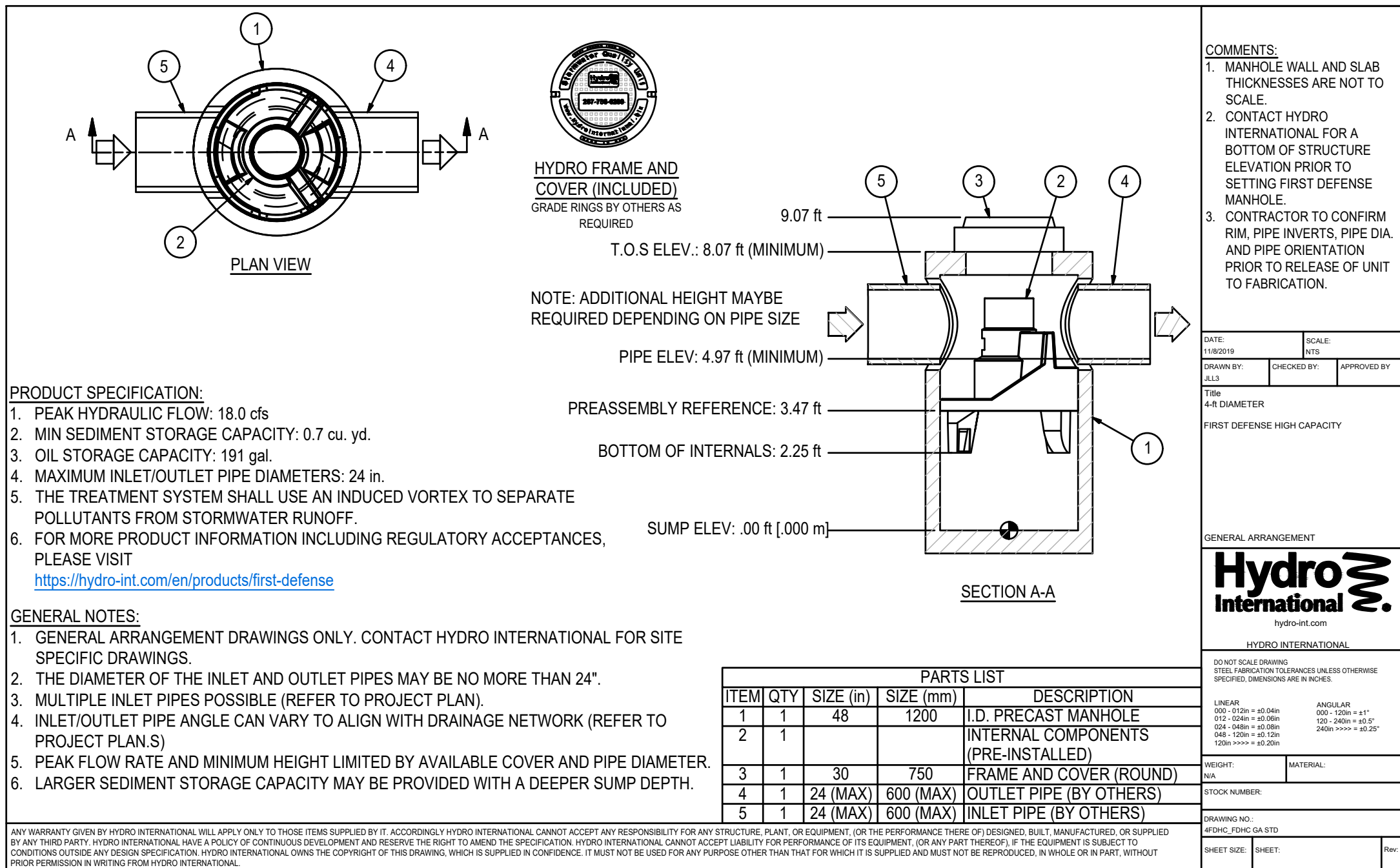
SHALL BE DURABLE CRUSHED ROCK CONSISTING OF ANGULAR FRAGMENTS, FREE FROM A DETRIMENTAL QUANTITY OF THIN, FLAT, ELONGATED PIECES OR DURABLE CRUSHED GRAVEL STONE OBTAINED BY ARTIFICIAL CRUSHING OF BOULDERS OR FIELDSTONE. THE CRUSHED STONE MUST BE FREE FROM CLAY, LOAM, OR DELETERIOUS MATERIAL.

CRUSHED STONE TO CONFORM TO THE FOLLOWING GRADATIONS:

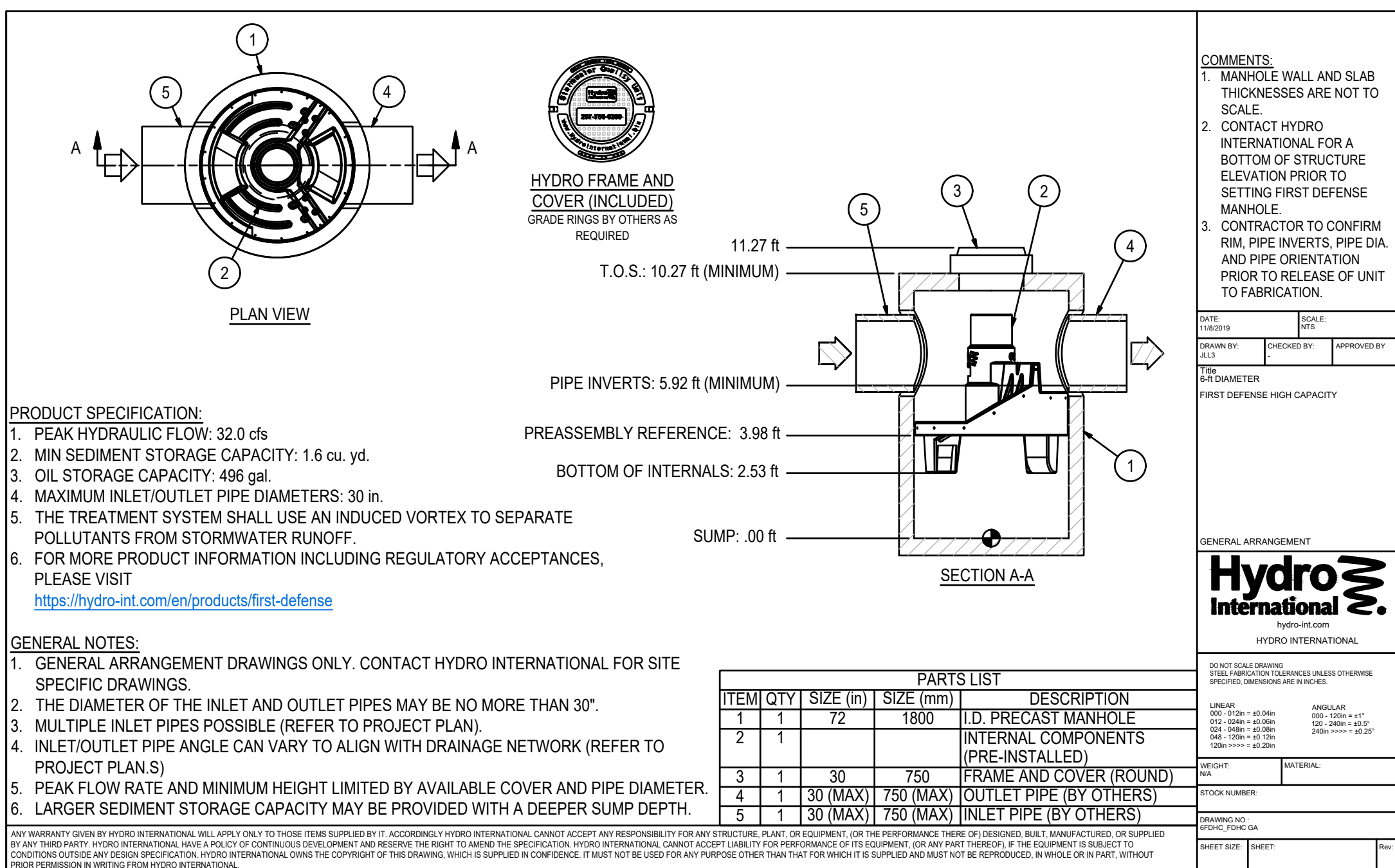
SIEVE SIZE	PERCENT PASSING			
	STONE SIZE			
1 1/4 INCH				
3/4 INCH				
1/2 INCH				
3/8 INCH				
2"				
1 1/2"	100			
1 1/4"	85-100			
1"		100		
3/4"	10-40	90-100		
5/8"			100	
1/2"	0-8	10-50	85-100	100
3/8"		0-20	14-45	85-100
#4		0-5	0-15	20-20
#8			0-5	0-15
#16				0-5



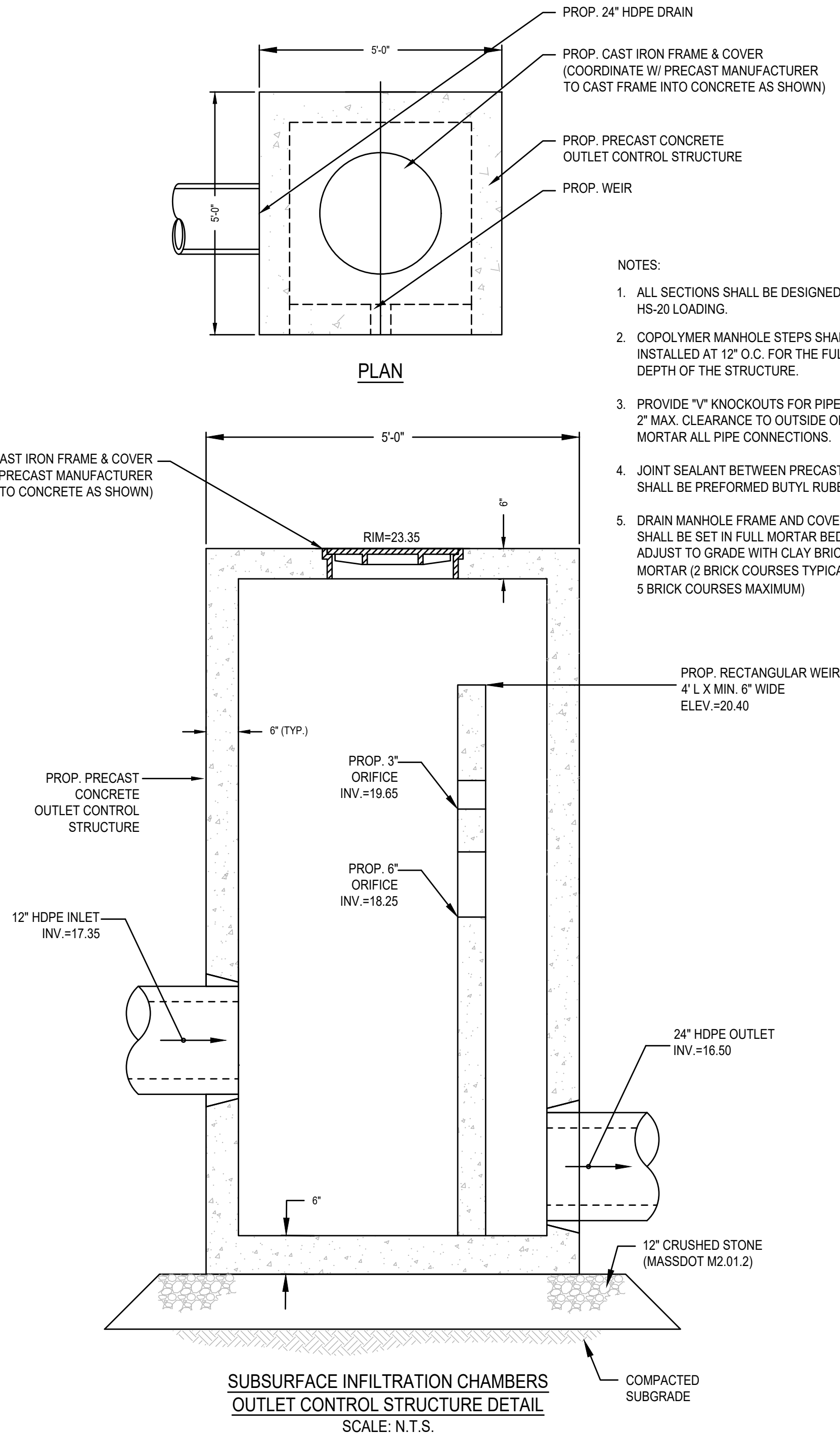
SUBSURFACE INFILTRATION SYSTEM 2P
SCALE: N.T.S.



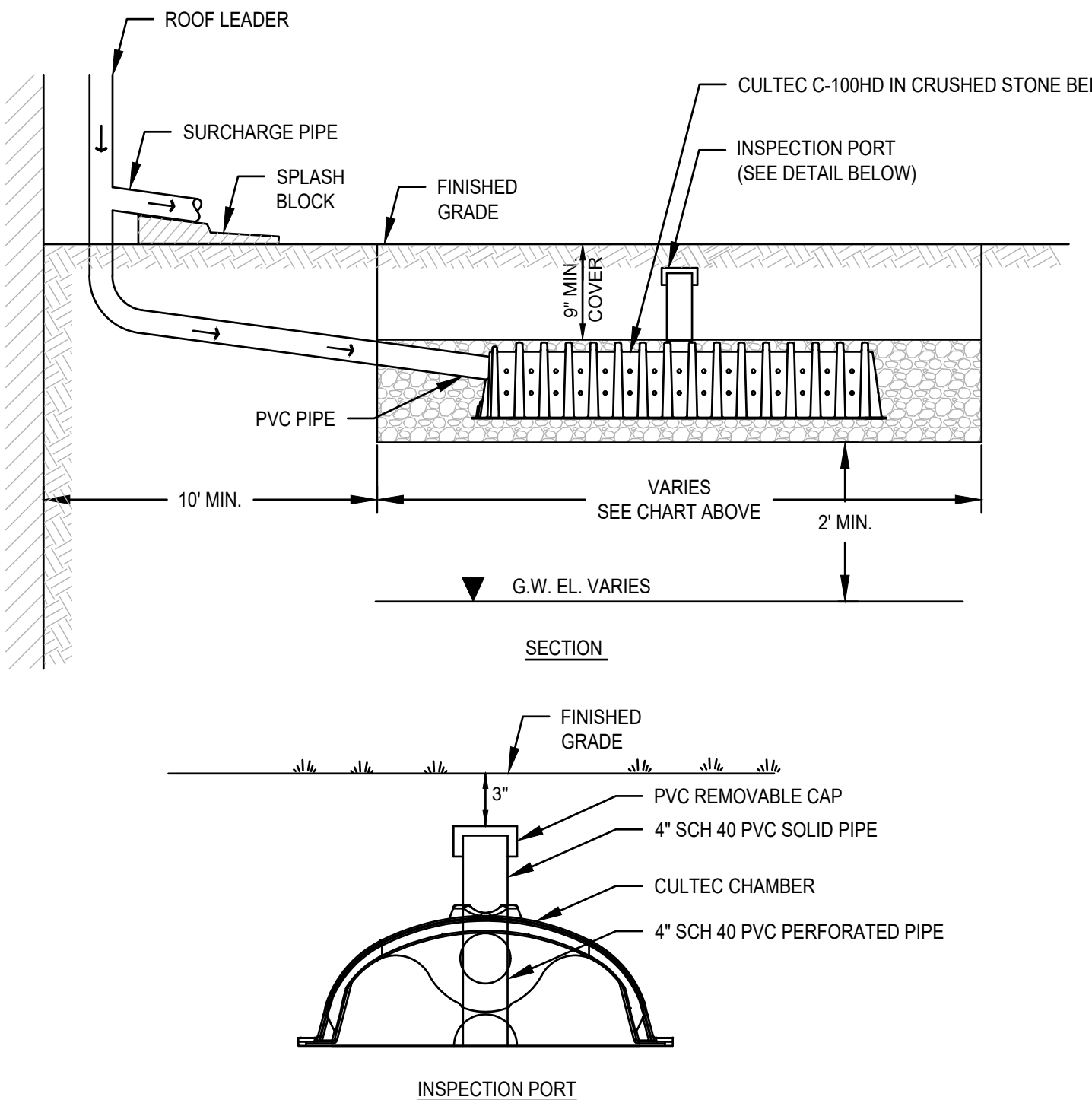
4'-FOOT DIAMETER WATER QUALITY UNIT
SCALE: N.T.S.



6'-FOOT DIAMETER WATER QUALITY UNIT
SCALE: N.T.S.



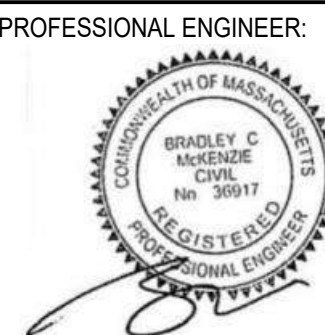
SUBSURFACE INFILTRATION CHAMBERS
OUTLET CONTROL STRUCTURE DETAIL
SCALE: N.T.S.



SUBSURFACE ROOF LEACHING DRWELL
SCALE: N.T.S.

SYSTEM	LENGTH	WIDTH	# UNITS
3P	47.50 FEET	35.00 FEET	60
4P	47.50 FEET	25.00 FEET	42
5P	47.50 FEET	35.00 FEET	60
6P	47.50 FEET	25.00 FEET	42

RIVER MARSH VILLAGE
COMPREHENSIVE PERMIT PLAN
(ASSESSOR'S MAP E-17, LOT 0 & E-17A, LOT 274)
WATER STREET
PEMBROKE, MASSACHUSETTS

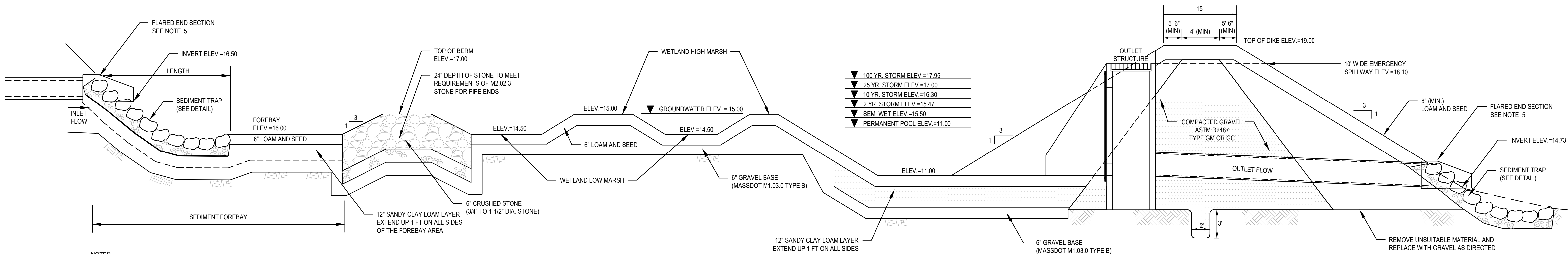


OWNER/APPLICANT:
RIVER MARSH, LLC
283R WASHINGTON STREET
NORWELL, MASSACHUSETTS 02061

DRAWN BY: SBS
DESIGNED BY: SBS
CHECKED BY: BCM
APPROVED BY: BCM
DATE: SEPTEMBER 22, 2016
SCALE: AS NOTED
PROJECT NO.: 215-181

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Sheet 4 of 6

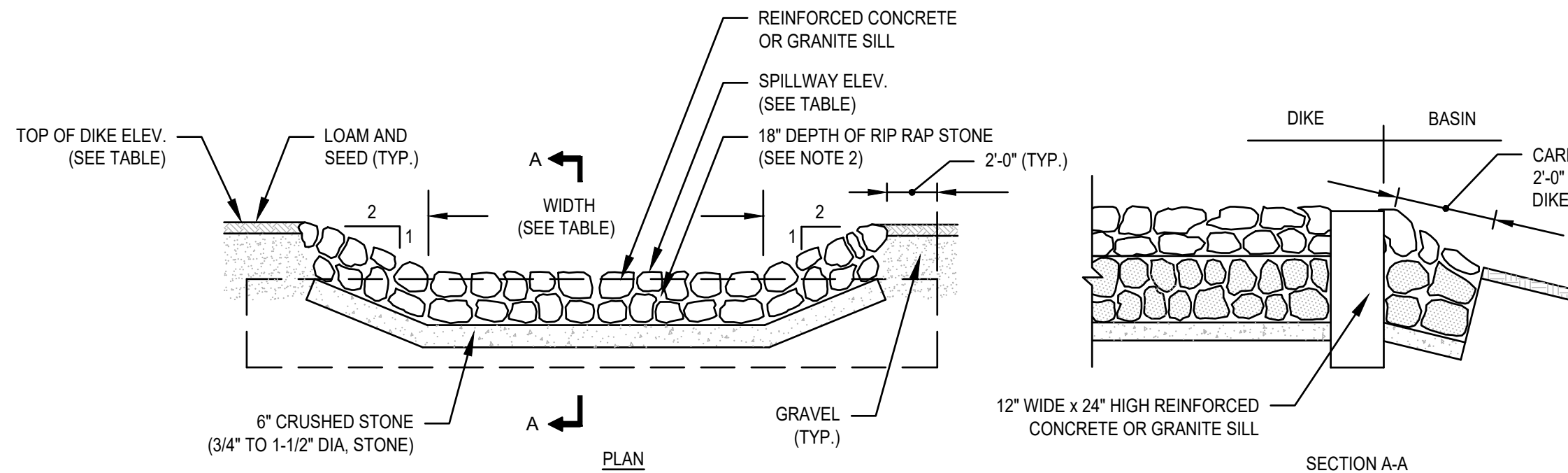
DWG. NO.:
D-4



NOTES:

1. FILL AND BASE FOR DIKE SHALL INSURE WATER TIGHTNESS AND STABILITY.
2. THE CONTRACTOR SHALL NOT DISCHARGE SEDIMENT-LADEN WATER TO BASIN DURING CONSTRUCTION. NO HEAVY EQUIPMENT SHALL BE ALLOWED ON THE BASIN FLOOR AFTER INSTALLATION.
3. ALL CONTRIBUTING AREAS TO THE BASIN SHALL BE FULLY STABILIZED PRIOR TO THE INFILTRATION BASIN BEING PLACED INTO SERVICE.
4. THE CONTRACTOR SHALL PROVIDE SIEVE ANALYSIS SUBMITTALS TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION OF THE SANDY CLAY LOAM MATERIAL USED ON SITE.
5. FLARED END SECTIONS TO BE EQUIPPED TRASH RACKS

POCKET WETLAND BASIN SECTION
SCALE: N.T.S.

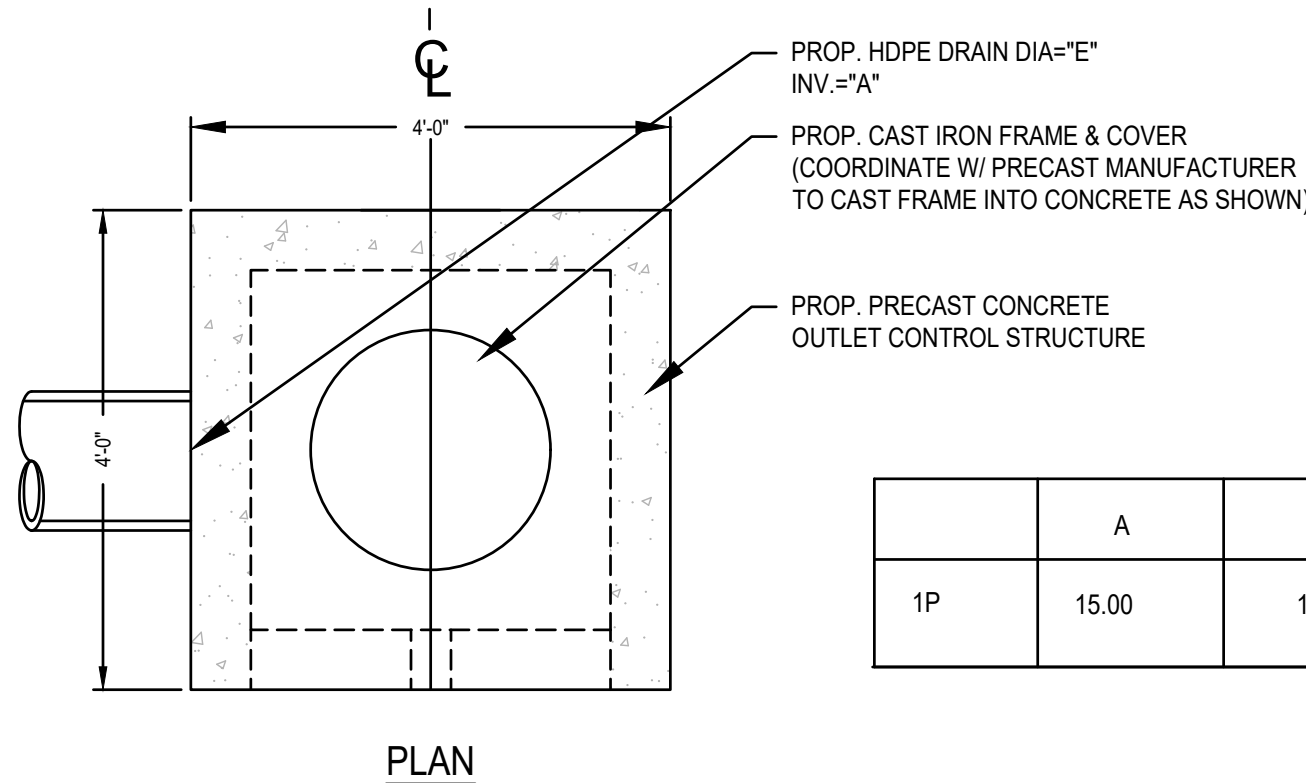


NOTES:

1. DIMENSIONS VARY TO SUIT CAPACITY REQUIREMENTS.
2. RIP RAP TO BE HAND CHUNKED WITH A SMOOTH SURFACE ALONG THE TOP OF THE DIKE AND A ROUGH SURFACE ALONG THE DOWNSTREAM FACE AND TOE OF THE DIKE. STONE TO MEET MASSDOT REQUIREMENTS OF M2.02.3 STONE FOR PIPE ENDS.
3. RIP RAP SHALL EXTEND A MINIMUM OF 2 FT. DOWN THE UPSTREAM FACE OF DIKE AND DOWN DOWNSTREAM FACE OF THE DIKE TO A POINT AT LEAST 2 FT. BEYOND THE TOE OF SLOPE.

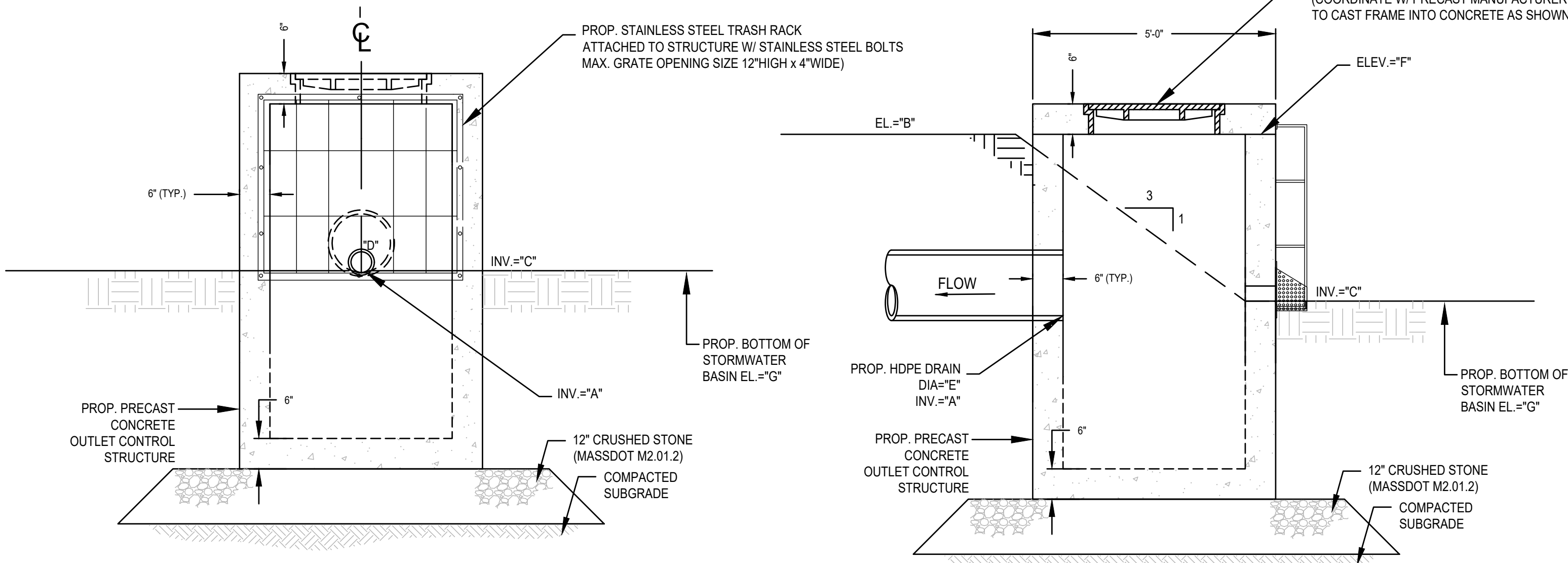
STORMWATER BASIN	TOP OF DIKE ELEV.	SPILLWAY ELEV.	100 YEAR STORM ELEV.	FLOOD ELEV.	WIDTH
1P	19.00	18.10	17.95	18.22	10 FT.

SPILLWAY DETAIL
SCALE: N.T.S.



PLAN

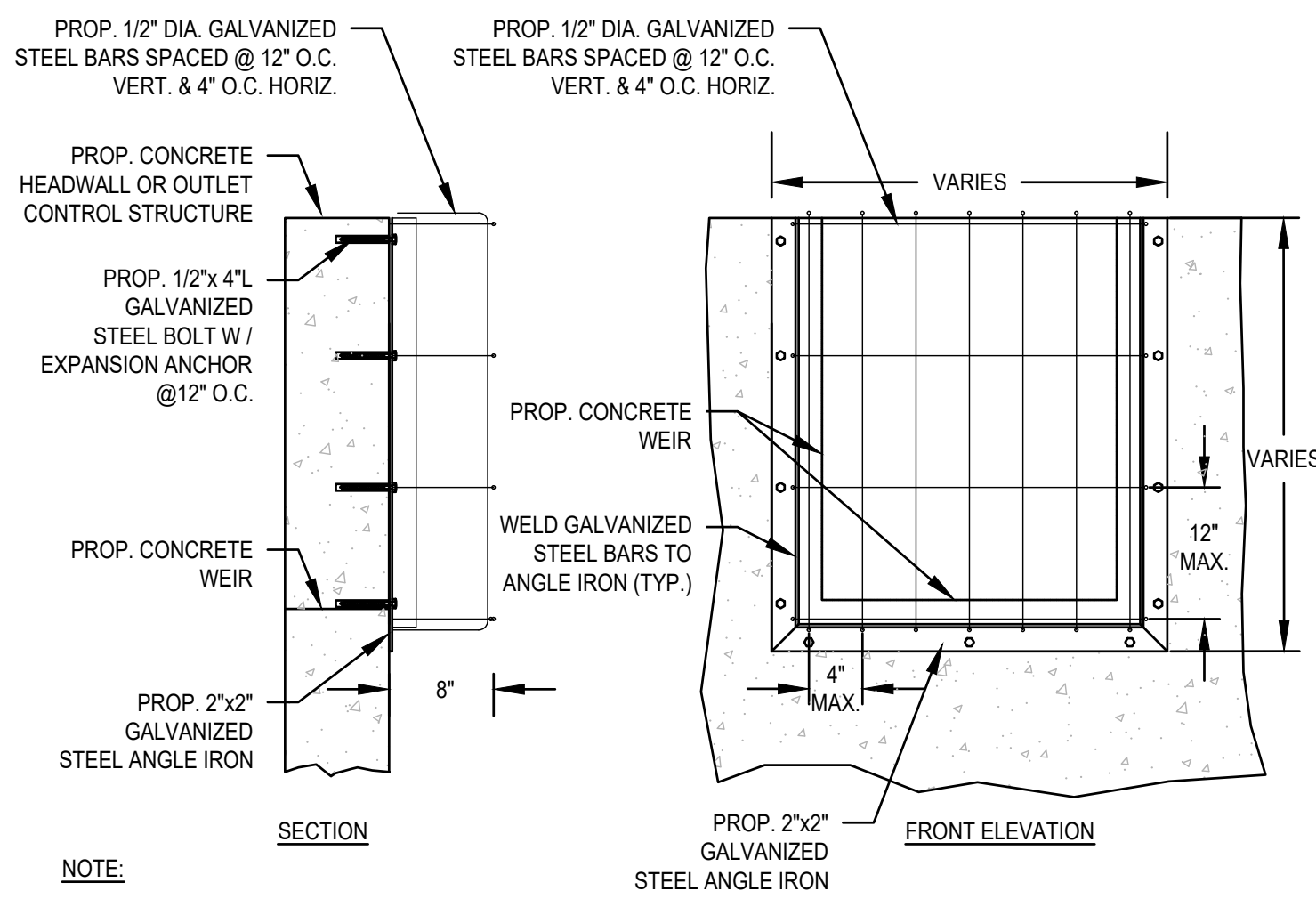
	A	B	C	D	E	F	G
1P	15.00	19.00	15.00	4" DIA. ORIFICE	15"	18.00	15.00



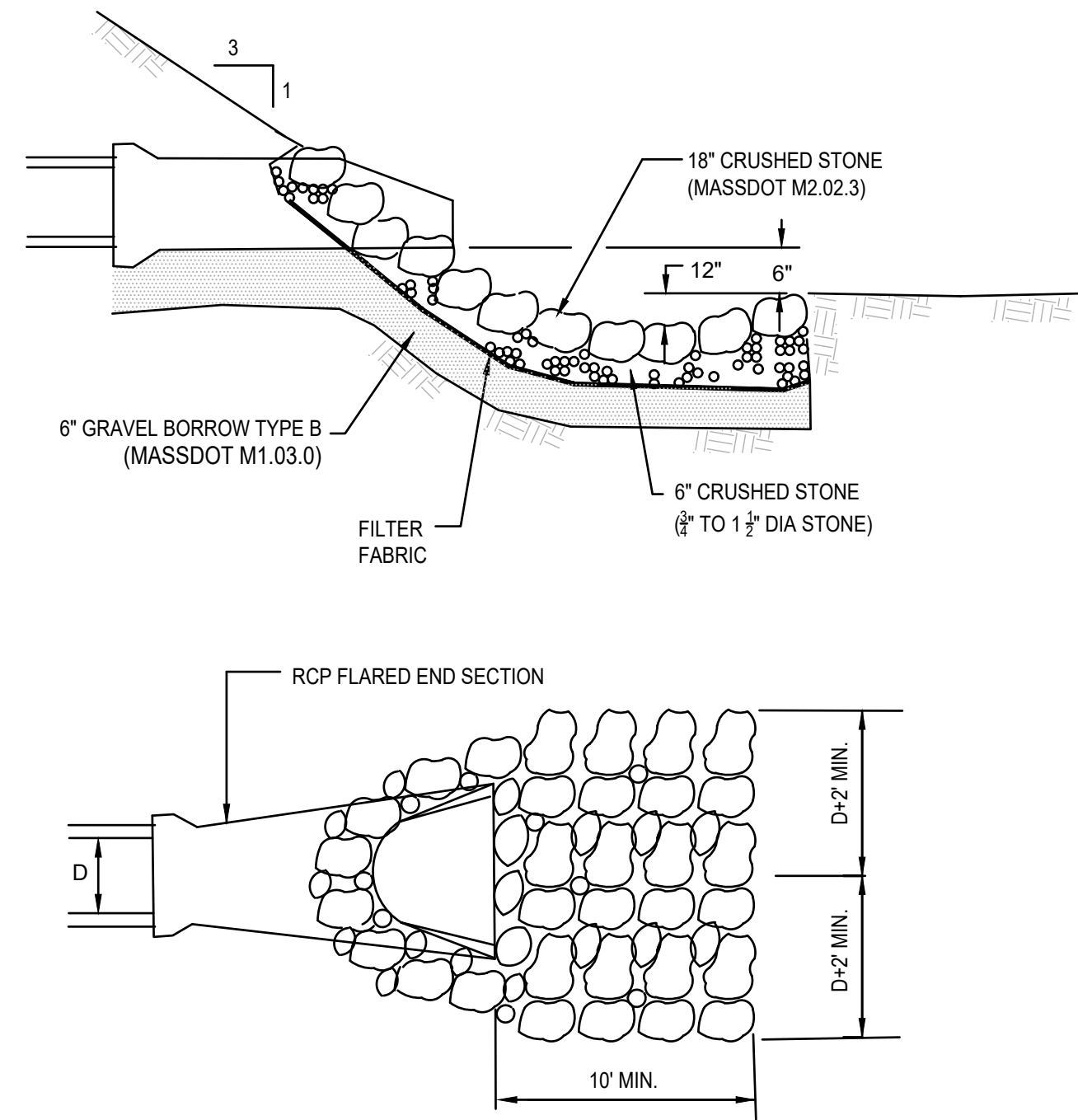
FRONT ELEVATION

SECTION

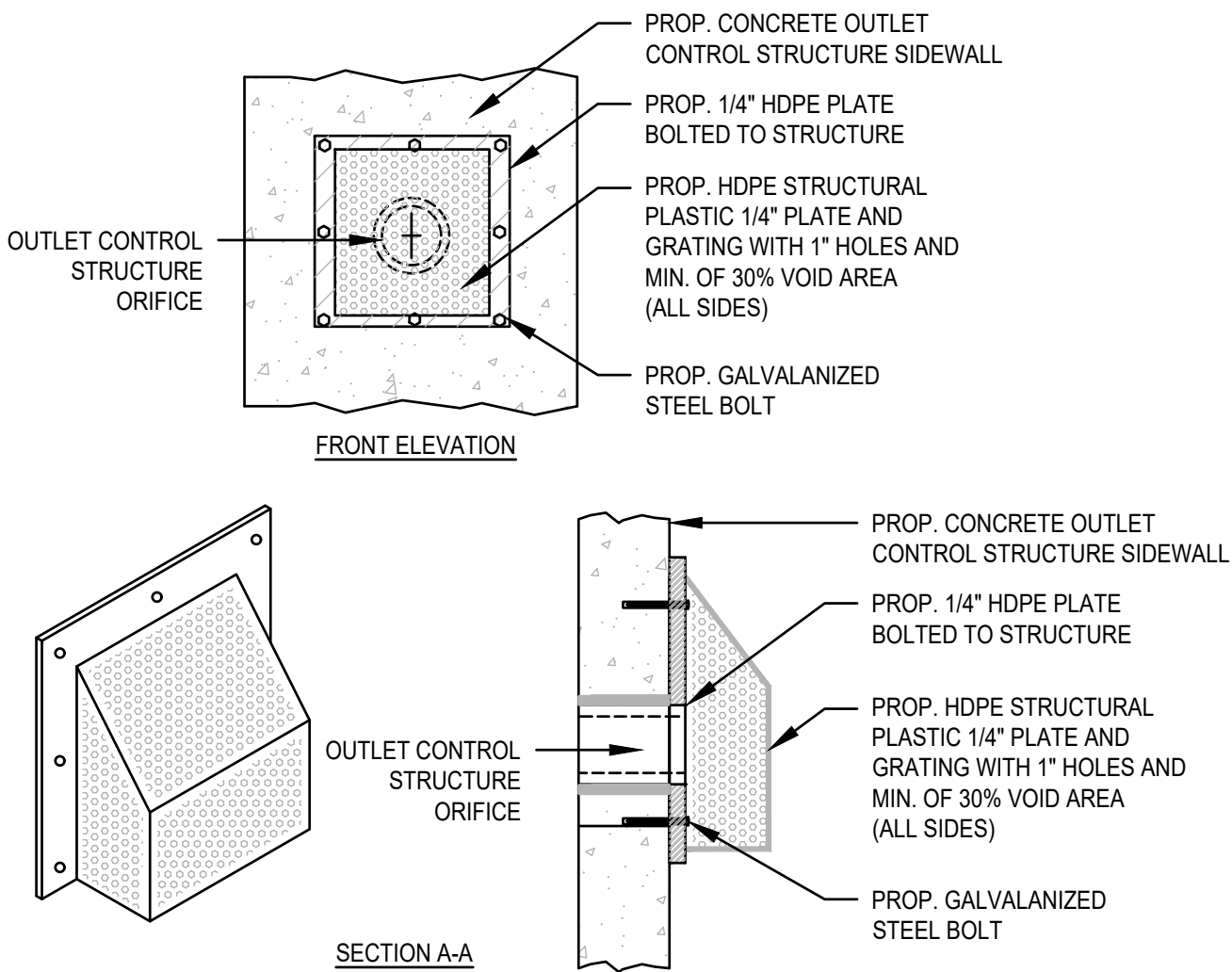
POCKET WETLAND OUTLET CONTROL STRUCTURE DETAIL
SCALE: N.T.S.



TYPICAL TRASH RACK DETAIL
SCALE: N.T.S.



TYPICAL SEDIMENT TRAP DETAIL
SCALE: N.T.S.



HDPE TRASH RACK DETAIL
SCALE: N.T.S.

RIVER MARSH VILLAGE
COMPREHENSIVE PERMIT PLAN
(ASSESSOR'S MAP E-17, LOT 0 & E-17A, LOT 274)
WATER STREET
PEMBROKE, MASSACHUSETTS

PROFESSIONAL ENGINEER:



OWNER/APPLICANT:
RIVER MARSH, LLC
238R WASHINGTON STREET
NORWELL, MASSACHUSETTS 02061

DRAWN BY: SBS
DESIGNED BY: SBS
CHECKED BY: BCM
APPROVED BY: BCM
DATE: SEPTEMBER 22, 2016
SCALE: AS NOTED
PROJECT NO.: 215-181
DWG. TITLE:

Construction
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DWG. NO.:

D-5

CULTEC RECHARGER 902HD® SPECIFICATIONS
GENERAL
CULTEC RECHARGER® 902HD CHAMBERS ARE DESIGNED FOR UNDERGROUND STORMWATER MANAGEMENT. THE CHAMBERS MAY BE USED FOR RETENTION, RECHARGING, DETENTION OR CONTROLLING THE FLOW OF ON-SITE STORMWATER RUNOFF.

CHAMBER PARAMETERS

- THE CHAMBERS SHALL BE MANUFACTURED IN THE U.S.A. OR CANADA BY CULTEC, INC. OF BROOKFIELD, CT (CULTEC.COM, 203-775-4416).
- THE CHAMBERS SHALL BE DESIGNED AND TESTED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". THE LOAD CONFIGURATION SHALL INCLUDE:
 - INSTANTANEOUS AASHTO DESIGN TRUCK LIVE LOAD AT MINIMUM COVER
 - MAXIMUM PERMANENT (50-YEAR) COVER LOAD
 - 1-WEEK PARKED AASHTO DESIGN TRUCK LOAD
- THE CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F3430-20 "STANDARD SPECIFICATION FOR CELLULAR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- THE INSTALLED CHAMBER SYSTEM SHALL PROVIDE RESISTANCE TO THE LOADS AND LOAD FACTORS AS DEFINED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.12, WHEN INSTALLED ACCORDING TO CULTEC'S RECOMMENDED INSTALLATION INSTRUCTIONS. THE STRUCTURAL DESIGN OF THE CHAMBERS SHALL INCLUDE THE FOLLOWING:
 - THE CREEP MODULUS SHALL BE 50-YEAR AS SPECIFIED IN ASTM F3430
 - THE MINIMUM SAFETY FACTOR FOR LIVE LOADS SHALL BE 1.75
 - THE MINIMUM SAFETY FACTOR FOR DEAD LOADS SHALL BE 1.95
- THE CHAMBER SHALL BE STRUCTURAL FOAM INJECTION MOLDED OF BLUE VIRGIN HIGH MOLECULAR WEIGHT IMPACT-MODIFIED POLYPROPYLENE.
- THE CHAMBER SHALL BE ARCHED IN SHAPE.
- THE CHAMBER SHALL BE OPEN-BOTTOMED.
- THE CHAMBER SHALL BE JOINED USING AN INTERLOCKING OVERLAPPING RIB METHOD. CONNECTIONS MUST BE FULLY SHOULDERED OVERLAPPING RIBS, HAVING NO SEPARATE COUPLINGS.
- THE NOMINAL CHAMBER DIMENSIONS OF THE CULTEC RECHARGER®902HD SHALL BE 48 INCHES (1219 mm) TALL, 78 INCHES (1981 mm) WIDE AND 4.25 FEET (1.30 m) LONG. THE INSTALLED LENGTH OF A JOINED RECHARGER 902HD SHALL BE 3.67 FEET (1.12 m).
- MULTIPLE CHAMBERS MAY BE CONNECTED TO FORM DIFFERENT LENGTH ROWS. EACH ROW SHALL BEGIN AND END WITH A SEPARATELY FORMED CULTEC RECHARGER® 902HD END CAP. MAXIMUM INLET OPENING ON THE END CAP IS 30 INCHES (750 mm) HDPE OR 36 INCHES (900 mm) PVC.
- THE CHAMBER SHALL HAVE TWO SIDE PORTALS TO ACCEPT CULTEC HVLV™ FC-48 FEED CONNECTORS TO CREATE AN INTERNAL MANIFOLD. MAXIMUM ALLOWABLE PIPE SIZE IN THE SIDE PORTAL IS 10 INCHES (250 mm) HDPE AND 12 INCHES (300 mm) PVC.
- THE NOMINAL CHAMBER DIMENSIONS OF THE CULTEC HVLV™ FC-48 FEED CONNECTOR SHALL BE 12 INCHES (305 mm) TALL, 16 INCHES (406 mm) WIDE AND 49 INCHES (1245 mm) LONG.
- THE NOMINAL STORAGE VOLUME OF THE RECHARGER 902HD CHAMBER SHALL BE 17.31 FT³ / FT (1.61 m³ / m) - WITHOUT STONE. THE NOMINAL STORAGE VOLUME OF A JOINED RECHARGER 902HD SHALL BE 63.47 FT³ / UNIT (1.80 m³ / UNIT) - WITHOUT STONE.
- THE NOMINAL STORAGE VOLUME OF THE HVLV™ FC-48 FEED CONNECTOR SHALL BE 0.913 FT³ / FT (0.085 m³ / m) - WITHOUT STONE.
- THE RECHARGER 902HD CHAMBER SHALL HAVE 3 CORRUGATIONS.
- THE CHAMBER SHALL BE CAPABLE OF ACCEPTING A 6 INCH (150 mm) INSPECTION PORT OPENING AT THE TOP CENTER OF EACH CHAMBER, CENTERED ON THE CORRUGATION CREST.
- THE CHAMBER SHALL BE MANUFACTURED IN A FACILITY EMPLOYING CULTEC'S QUALITY CONTROL AND ASSURANCE PROCEDURES.
- MAXIMUM ALLOWABLE COVER OVER THE TOP OF THE CHAMBER SHALL BE 8.3 FEET (2.53 m).

END CAP PARAMETERS

- THE CULTEC RECHARGER® 902HD END CAP (REFERRED TO AS "END CAP") SHALL BE MANUFACTURED IN THE U.S.A. BY CULTEC, INC. OF BROOKFIELD, CT (CULTEC.COM, 203-775-4416).
- THE END CAP SHALL BE TWIN-SHEET THERMOFORMED OF VIRGIN HIGH MOLECULAR WEIGHT POLYETHYLENE.
- THE END CAP SHALL BE JOINED AT THE BEGINNING AND END OF EACH ROW OF CHAMBERS USING AN INTERLOCKING OVERLAPPING RIB METHOD. CONNECTIONS MUST BE FULLY SHOULDERED OVERLAPPING RIBS, HAVING NO SEPARATE COUPLINGS.
- THE NOMINAL DIMENSIONS OF THE END CAP SHALL BE 48.5 INCHES (1231 mm) TALL, 78 INCHES (1982 mm) WIDE AND 9.7 INCHES (246 mm) LONG. WHEN JOINED WITH A RECHARGER 902HD CHAMBER, THE INSTALLED LENGTH OF THE END CAP SHALL BE 6.2 INCHES (157 mm).
- THE NOMINAL STORAGE VOLUME OF THE END CAP SHALL BE 5.34 FT³ / FT (0.50 m³ / m) - WITHOUT STONE. THE NOMINAL STORAGE VOLUME OF AN INTERLOCKED END CAP SHALL BE 2.76 FT³ / UNIT (0.08 m³ / UNIT) - WITHOUT STONE.
- MAXIMUM INLET OPENING ON THE END CAP IS 30 INCHES (750 mm) HDPE OR 36 INCHES (900 mm) PVC.
- THE END CAP SHALL PROVIDE RESISTANCE TO THE LOADS AND LOAD FACTORS AS DEFINED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.12.

GENERAL NOTES		
PIPE	A	B
6" [150 mm]	N/A	N/A
8" [200 mm]	N/A	N/A
10" [250 mm]	N/A	N/A
12" [300 mm]	29.50" [749 mm]	2.25" [57 mm]
16" [375 mm]	26.50" [673 mm]	2.25" [57 mm]
18" [450 mm]	23.50" [597 mm]	2.50" [64 mm]
24" [600 mm]	16.50" [420 mm]	3.00" [76 mm]

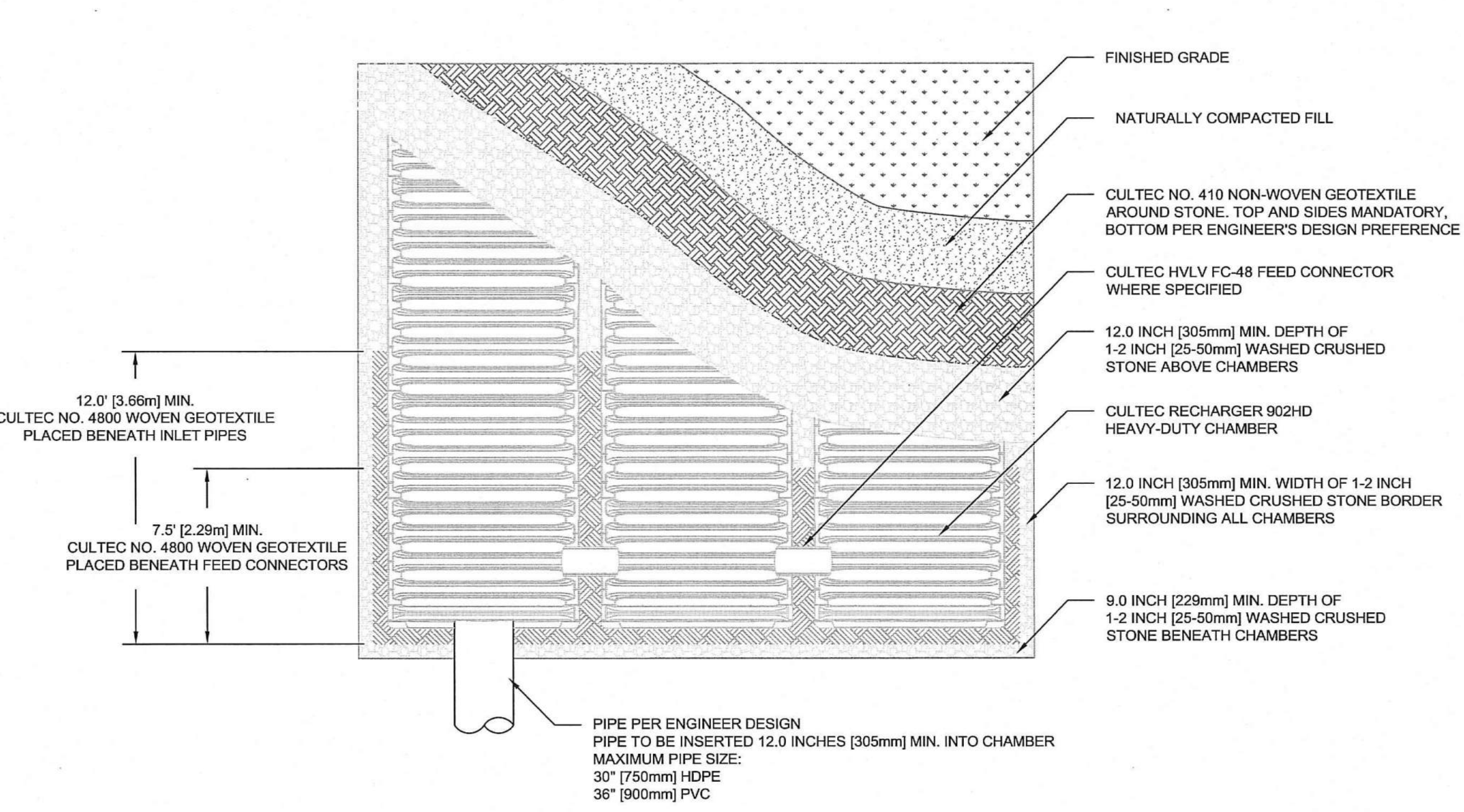
*THE TYPICAL INVERT TABLE ABOVE IS BASED ON THE INSIDE DIAMETER OF STANDARD CORRUGATED PLASTIC PIPE. THE HEAVY DUTY END CAP HAS PRE-MARKED TRIM LINES FOR PIPE DIAMETERS 12" (300mm), 16" (375mm), 18" (450mm) AND 24" (600mm). PIPES OF ANY SIZE AND MATERIAL UP TO 24" MAY BE PLACED AT CUSTOM LOCATIONS AND CUSTOM INVERTS. THE CROWN OF THE PIPE MUST REMAIN A MINIMUM OF 4" (100mm) FROM THE EDGE OF THE HEAVY DUTY END CAP.

CULTEC RECHARGER 902HD TYPICAL PIPE INVERTS

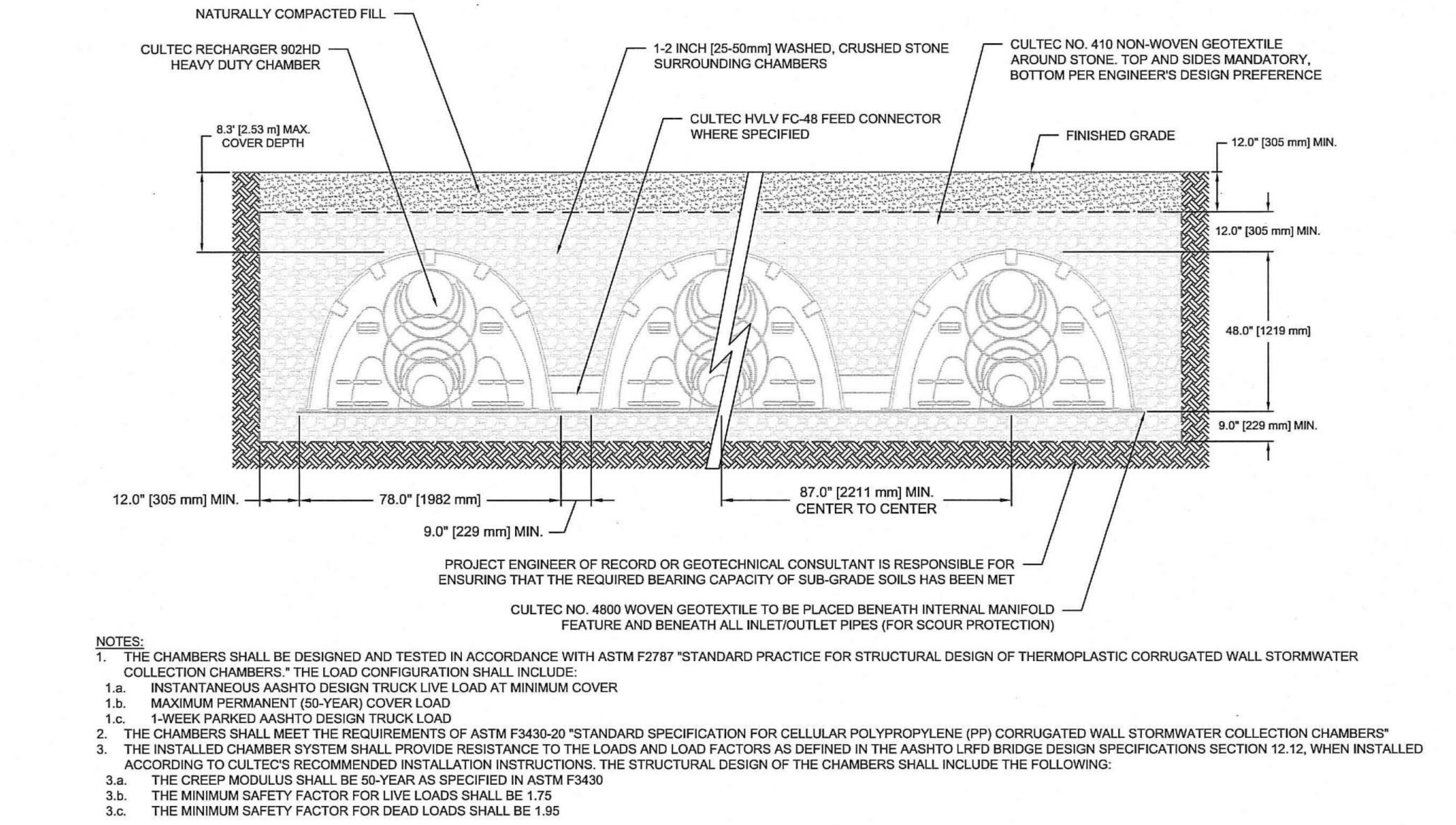


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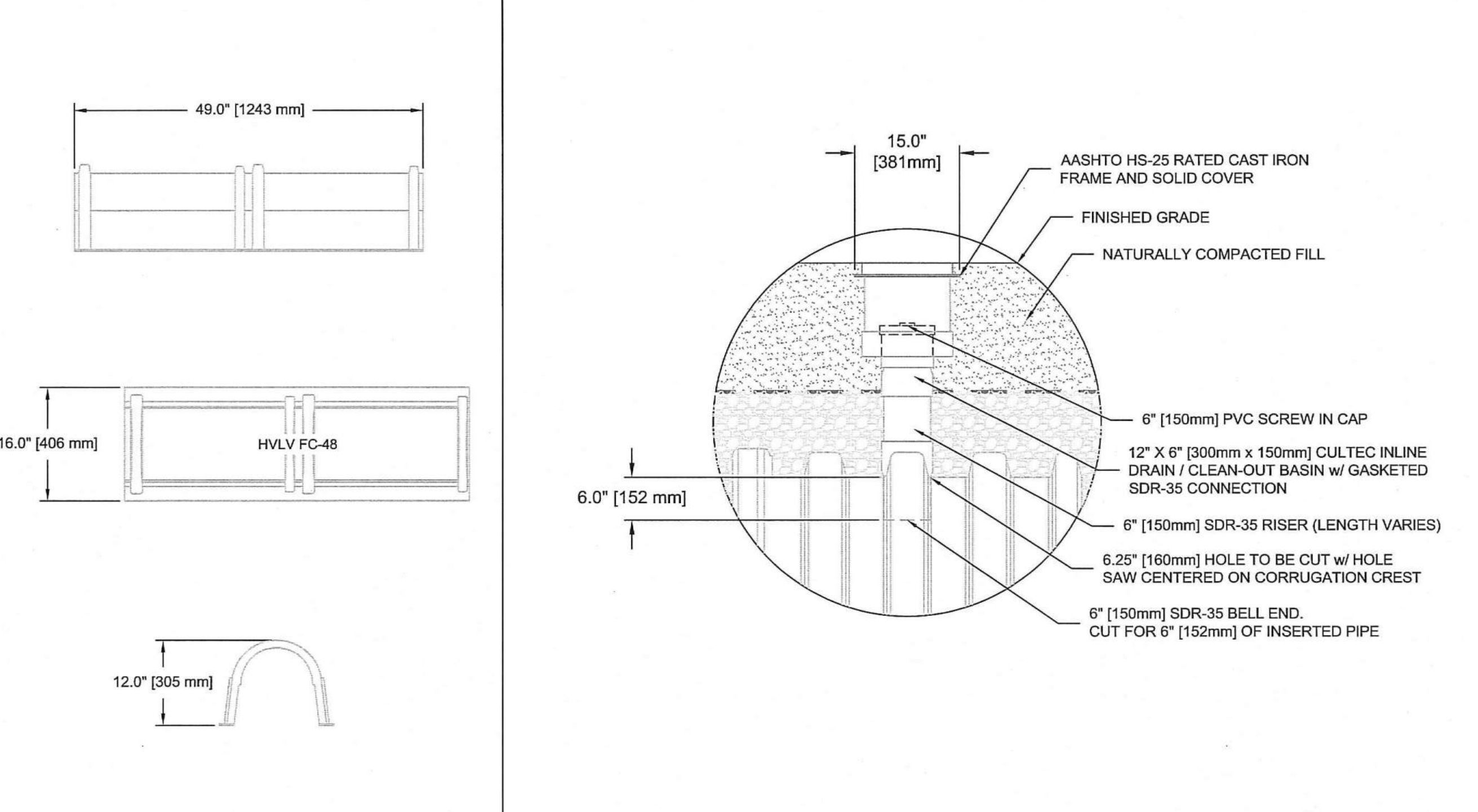
THIS DRAWING WAS PREPARED TO SUPPORT THE PROJECT ENGINEER OF RECORD FOR THE PROPOSED SYSTEM. IT IS THE ULTIMATE RESPONSIBILITY OF THE PROJECT ENGINEER OF RECORD TO ENSURE THAT THE CULTEC SYSTEM'S DESIGN IS IN FULL COMPLIANCE WITH ALL APPLICABLE LAWS AND REGULATIONS. IT IS THE PROJECT ENGINEER OF RECORD'S RESPONSIBILITY TO ENSURE THAT THE CULTEC PRODUCTS ARE DESIGNED IN ACCORDANCE WITH CULTEC'S MINIMUM REQUIREMENTS. CULTEC DOES NOT APPROVE PLANS, SIZING, OR SYSTEM DESIGNS.



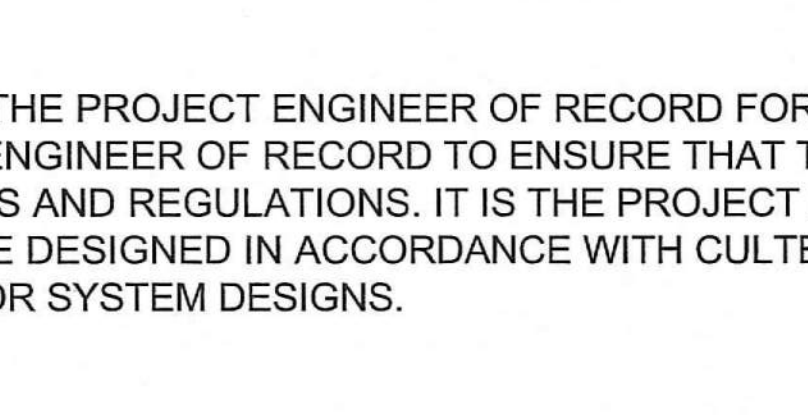
CULTEC RECHARGER 902HD HEAVY DUTY PLAN VIEW



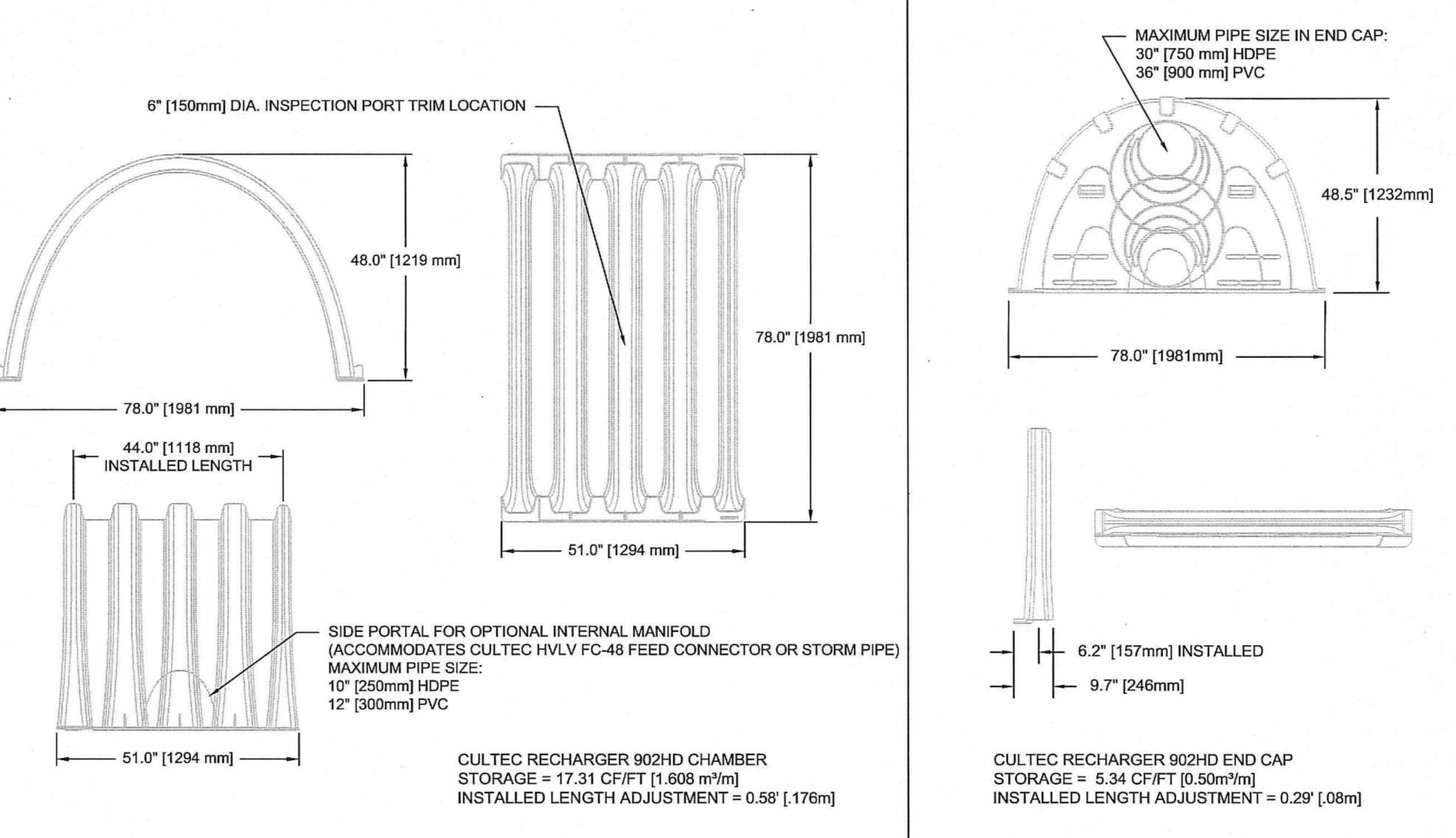
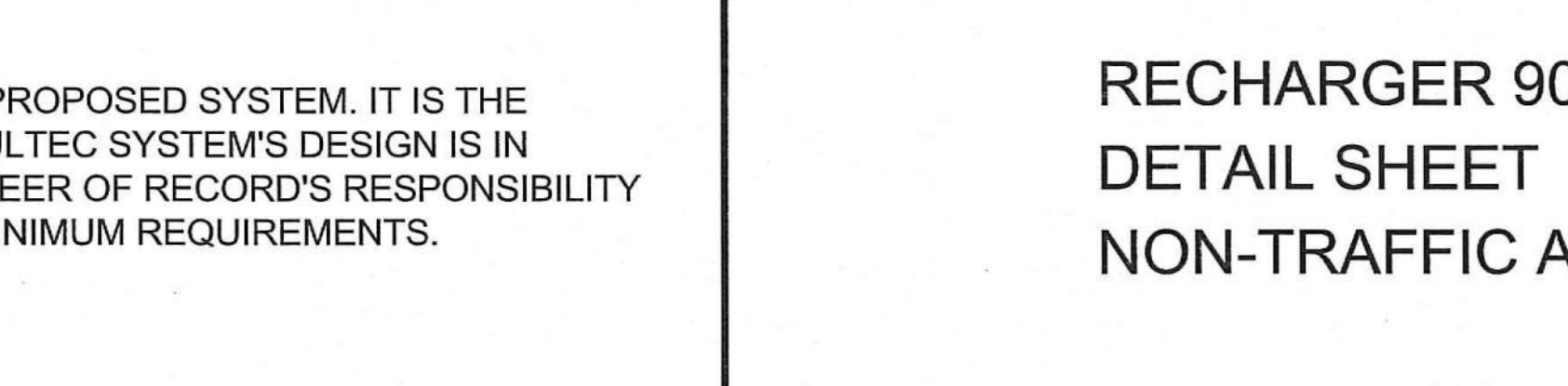
CULTEC RECHARGER 902HD HEAVY DUTY CROSS SECTION



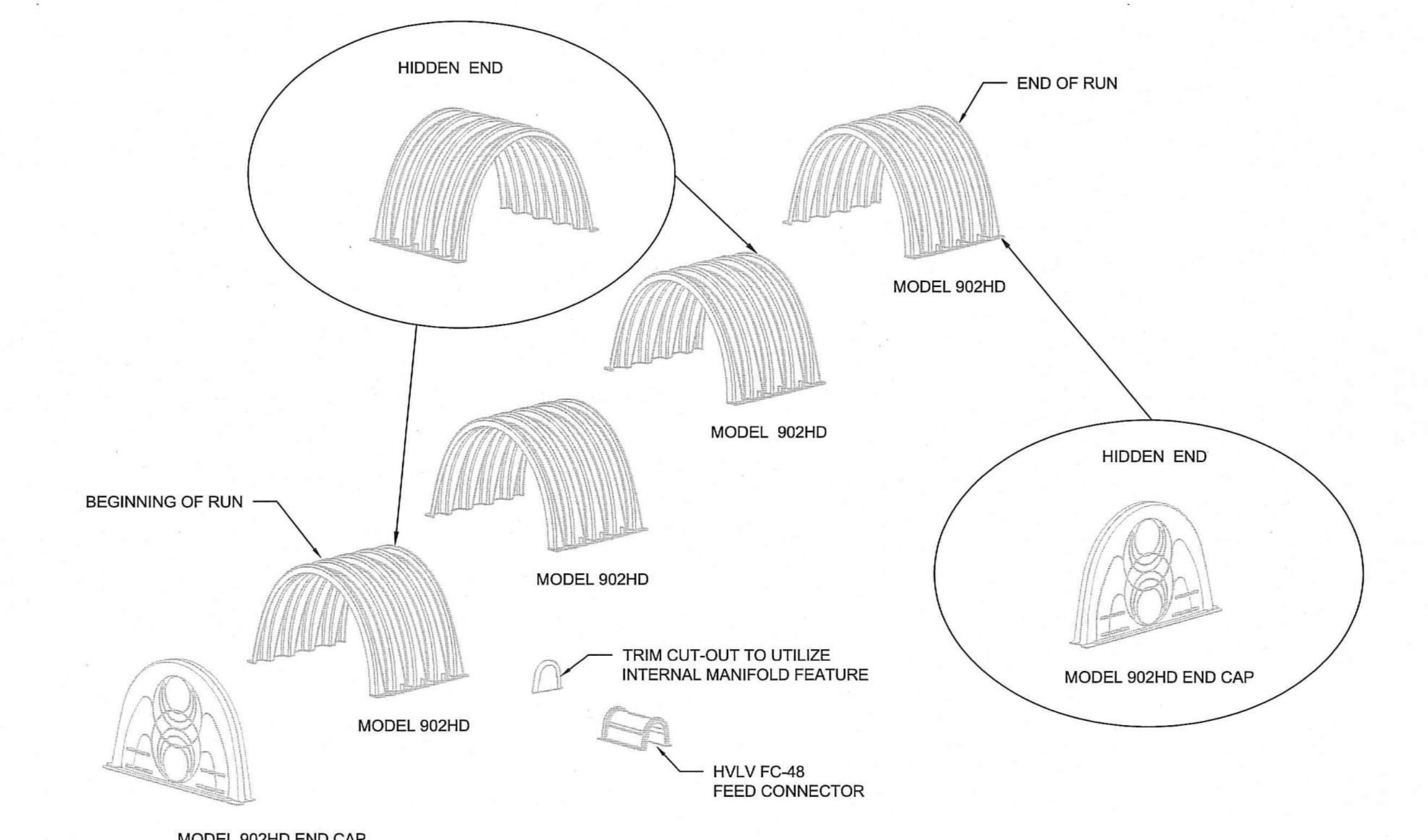
CULTEC HVLV FC-48 FEED CONNECTOR THREE VIEW



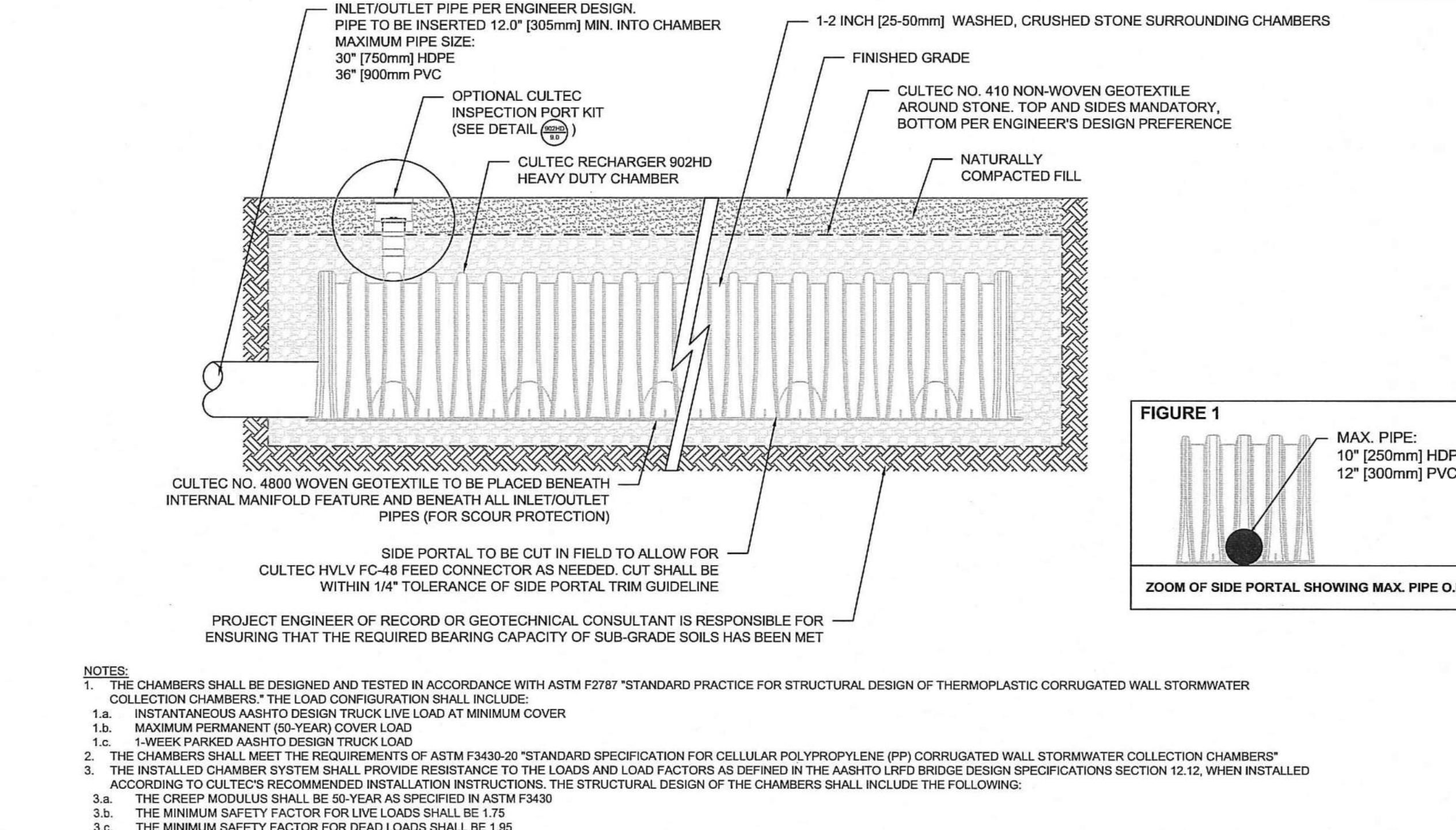
CULTEC INSPECTION PORT - ZOOM DETAIL



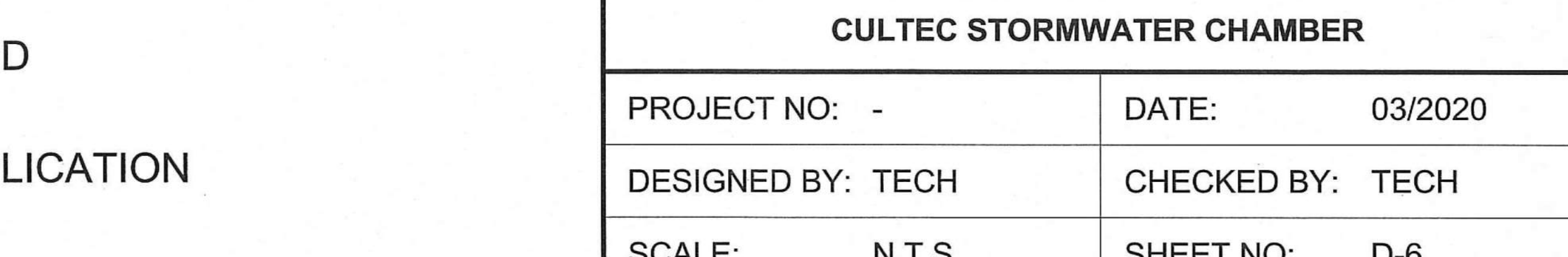
CULTEC RECHARGER 902HD HEAVY DUTY THREE VIEW



CULTEC RECHARGER 902HD HEAVY DUTY TYPICAL INTERLOCK



CULTEC INTERNAL MANIFOLD - OPTIONAL INSPECTION PORT DETAIL



RECHARGER 902HD
DETAIL SHEET
NON-TRAFFIC APPLICATION

CULTEC STORMWATER CHAMBER

PROJECT NO: -	DATE: 03/2020
DESIGNED BY: TECH	CHECKED BY: TECH
SCALE: N.T.S.	SHEET NO: D-6

CULTEC CONTACTOR® 100HD CHAMBER PRODUCT SPECIFICATIONS

GENERAL
CULTEC CONTACTOR 100HD CHAMBERS ARE DESIGNED FOR UNDERGROUND STORMWATER MANAGEMENT. THE CHAMBERS MAY BE USED FOR RETENTION, RECHARGING, DETENTION OR CONTROLLING THE FLOW OF ON-SITE STORMWATER RUNOFF.

CHAMBER PARAMETERS

- THE CHAMBERS SHALL BE MANUFACTURED BY CULTEC, INC. OF BROOKFIELD, CT. (203-775-4416 OR 1-800-428-5832)
- THE CHAMBER SHALL BE VACUUM THERMOFORMED OF HIGH MOLECULAR WEIGHT HIGH DENSITY POLYETHYLENE (HMWHDPE) WITH A BLACK INTERIOR AND BLUE EXTERIOR.
- THE CHAMBER SHALL BE ARCHED IN SHAPE.
- THE CHAMBER SHALL BE OPEN-BOTTOMED.
- THE CHAMBER SHALL BE JOINED USING AN INTERLOCKING OVERLAPPING RIB METHOD. CONNECTIONS MUST BE FULLY SHOULDERED OVERLAPPING RIBS, HAVING NO SEPARATE COUPLINGS OR SEPARATE END WALLS.
- THE NOMINAL CHAMBER DIMENSIONS OF THE CULTEC CONTACTOR 100HD SHALL BE 12.5 INCHES (318 mm) TALL, 36 INCHES (914 mm) WIDE AND 8 FEET (2.44 m) LONG. THE INSTALLED LENGTH OF A JOINED CONTACTOR 100HD SHALL BE 7.5 FEET (2.29 m).
- MAXIMUM INLET OPENING ON THE CHAMBER ENDWALL IS 10 INCHES (250 mm).
- THE CHAMBER SHALL HAVE TWO SIDE PORTALS TO ACCEPT CULTEC HVLV SFCX2 FEED CONNECTORS TO CREATE AN INTERNAL MANIFOLD. THE NOMINAL INSIDE DIMENSIONS OF EACH SIDE PORTAL SHALL BE 5.75 INCHES (146 mm) HIGH BY 7.5 INCHES (191 mm) WIDE. MAXIMUM ALLOWABLE OUTER DIAMETER (O.D.) PIPE SIZE IN THE SIDE PORTAL IS 6.9 INCHES (175 mm).
- THE NOMINAL CHAMBER DIMENSIONS OF THE CULTEC HVLV SFCX2 FEED CONNECTOR SHALL BE 7.6 INCHES (194 mm) TALL, 12 INCHES (305 mm) WIDE AND 19.7 INCHES (500 mm) LONG.
- THE NOMINAL STORAGE VOLUME OF THE CONTACTOR 100HD CHAMBER SHALL BE 1,866 FT³ / FT (0.173 m³ / m) - WITHOUT STONE. THE NOMINAL STORAGE VOLUME OF A JOINED CONTACTOR 100HD SHALL BE 13,995 FT³ / UNIT (0.396 m³ / UNIT) - WITHOUT STONE.
- THE NOMINAL STORAGE VOLUME OF THE HVLV SFCX2 FEED CONNECTOR SHALL BE 0.294 FT³ / FT (0.027 m³ / m) - WITHOUT STONE.
- THE CONTACTOR 100HD CHAMBER SHALL HAVE FORTY-FOUR DISCHARGE HOLES BORED INTO THE SIDEWALLS OF THE UNIT'S CORE TO PROMOTE LATERAL CONVEYANCE OF WATER.
- THE CONTACTOR 100HD CHAMBER SHALL HAVE 16 CORRUGATIONS.
- THE ENDWALL OF THE CHAMBER, WHEN PRESENT, SHALL BE AN INTEGRAL PART OF THE CONTINUOUSLY FORMED UNIT. SEPARATE END PLATES CANNOT BE USED WITH THIS UNIT.
- THE CONTACTOR 100RHD STARTER UNIT MUST BE FORMED AS A WHOLE CHAMBER HAVING TWO FULLY FORMED INTEGRAL ENDWALLS AND HAVING NO SEPARATE END PLATES OR SEPARATE END WALLS.
- THE CONTACTOR 100EHD MIDDLE/END UNIT MUST BE FORMED AS A WHOLE CHAMBER HAVING ONE FULLY FORMED INTEGRAL ENDWALL AND ONE FULLY OPEN END WALL AND HAVING NO SEPARATE END PLATES OR END WALLS.
- THE HVLV SFCX2 FEED CONNECTOR MUST BE FORMED AS A WHOLE CHAMBER HAVING TWO OPEN END WALLS AND HAVING NO SEPARATE END PLATES OR SEPARATE END WALLS. THE UNIT SHALL FIT INTO THE SIDE PORTALS OF THE CONTACTOR 100HD AND ACT AS CROSS FEED CONNECTIONS.
- CHAMBERS MUST HAVE HORIZONTAL STIFFENING FLEX REDUCTION STEPS BETWEEN THE RIBS.
- THE CHAMBER SHALL BE DESIGNED TO WITHSTAND TRAFFIC LOADS WHEN INSTALLED ACCORDING TO CULTEC'S RECOMMENDED INSTALLATION INSTRUCTIONS.
- HEAVY DUTY UNITS ARE DESIGNATED BY A COLORED STRIPE FORMED INTO THE PART ALONG THE LENGTH OF THE CHAMBER.
- THE CHAMBER SHALL HAVE A RAISED INTEGRAL CAP AT THE TOP OF THE ARCH IN THE CENTER OF EACH UNIT TO BE USED AS AN OPTIONAL INSPECTION PORT OR CLEAN-OUT.
- THE UNITS MAY BE TRIMMED TO CUSTOM LENGTHS BY CUTTING BACK TO ANY CORRUGATION.
- THE CHAMBER SHALL BE MANUFACTURED IN AN ISO 9001:2015 CERTIFIED FACILITY.
- THE CHAMBER SHALL BE DESIGNED AND MANUFACTURED TO MEET THE MATERIAL AND STRUCTURAL REQUIREMENTS OF IAPMO PS 63-2019, INCLUDING RESISTANCE TO AASHTO H-10 AND H-20 HIGHWAY LIVE LOADS, WHEN INSTALLED IN ACCORDANCE WITH CULTEC'S INSTALLATION INSTRUCTIONS.
- MAXIMUM ALLOWED COVER ON TOP OF UNIT SHALL BE 12.0 FEET [3.66 m]

CULTEC HVLV SFCx2 FEED CONNECTOR

GENERAL
CULTEC HVLV SFCx2 FEED CONNECTORS ARE DESIGNED TO CREATE AN INTERNAL MANIFOLD FOR CULTEC CONTACTOR 100HD STORMWATER CHAMBERS.

CHAMBER PARAMETERS

- THE CHAMBERS SHALL BE MANUFACTURED BY CULTEC, INC. OF BROOKFIELD, CT. (203-775-4416 OR 1-800-428-5832)
- THE CHAMBER SHALL BE VACUUM THERMOFORMED OF HIGH MOLECULAR WEIGHT HIGH DENSITY POLYETHYLENE (HMWHDPE) WITH A BLACK INTERIOR AND BLUE EXTERIOR.
- THE CHAMBER SHALL BE ARCHED IN SHAPE.
- THE CHAMBER SHALL BE OPEN-BOTTOMED.
- THE NOMINAL CHAMBER DIMENSIONS OF THE CULTEC HVLV SFCx2 FEED CONNECTOR SHALL BE 7.6 INCHES (194 mm) TALL, 12 INCHES (305 mm) WIDE AND 19.7 INCHES (500 mm) LONG.
- THE NOMINAL STORAGE VOLUME OF THE HVLV SFCx2 FEED CONNECTOR SHALL BE 0.294 FT³ / FT (0.027 m³ / m) - WITHOUT STONE.
- THE HVLV SFCx2 FEED CONNECTOR CHAMBER SHALL HAVE 3 CORRUGATIONS.
- THE HVLV SFCx2 FEED CONNECTOR MUST BE FORMED AS A WHOLE CHAMBER HAVING TWO OPEN END WALLS AND HAVING NO SEPARATE END PLATES OR SEPARATE END WALLS. THE UNIT SHALL FIT INTO THE SIDE PORTALS OF THE CONTACTOR 100HD STORMWATER CHAMBER AND ACT AS CROSS FEED CONNECTIONS CREATING AN INTERNAL MANIFOLD.
- THE CHAMBER SHALL BE DESIGNED TO WITHSTAND TRAFFIC LOADS WHEN INSTALLED ACCORDING TO CULTEC'S RECOMMENDED INSTALLATION INSTRUCTIONS.
- THE CHAMBER SHALL BE MANUFACTURED IN AN ISO 9001:2008 CERTIFIED FACILITY.

CULTEC NO. 410™ NON-WOVEN GEOTEXTILE

CULTEC NO. 410™ NON-WOVEN GEOTEXTILE MAY BE USED WITH CULTEC CONTACTOR® AND RECHARGER® STORMWATER INSTALLATIONS TO PROVIDE A BARRIER THAT PREVENTS SOIL INTRUSION INTO THE STONE.

GEOTEXTILE PARAMETERS

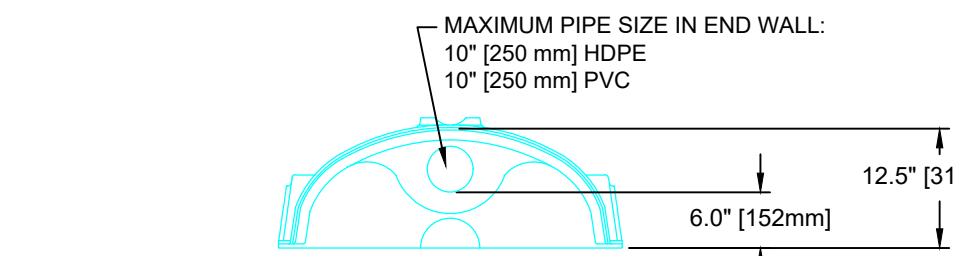
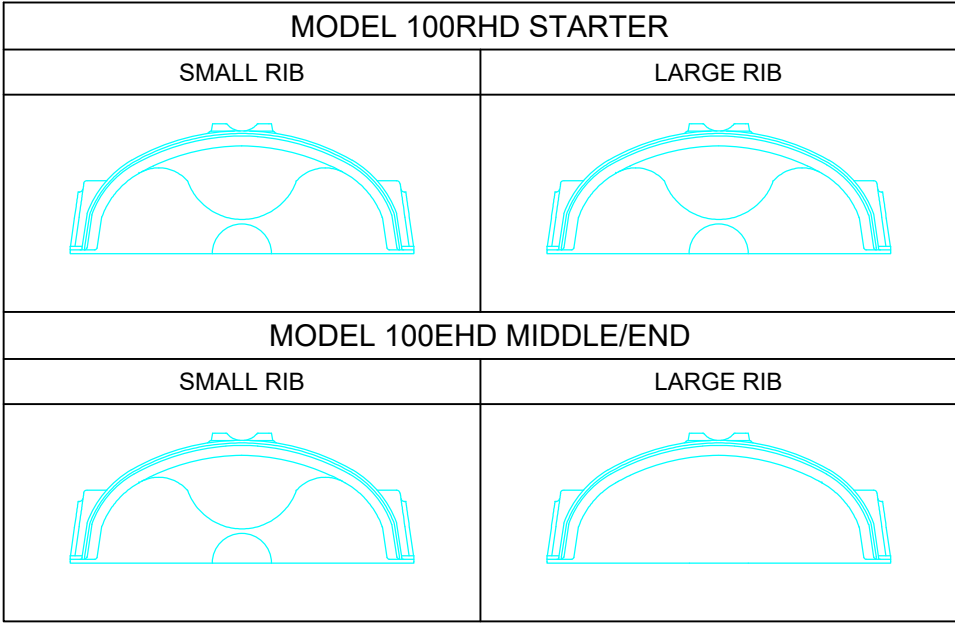
- THE GEOTEXTILE SHALL BE PROVIDED BY CULTEC, INC. OF BROOKFIELD, CT. (203-775-4416 OR 1-800-428-5832)
- THE GEOTEXTILE SHALL BE BLACK IN APPEARANCE.
- THE GEOTEXTILE SHALL HAVE A TYPICAL WEIGHT OF 4.5 OZ/SY (142 G/M).
- THE GEOTEXTILE SHALL HAVE A TENSILE STRENGTH VALUE OF 120 LBS (533 N) PER ASTM D4632 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE AN ELONGATION @ BREAK VALUE OF 50% PER ASTM D4632 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE A MULLEN BURST VALUE OF 225 PSI (1551 KPA) PER ASTM D3786 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE A PUNCTURE STRENGTH VALUE OF 65 LBS (289 N) PER ASTM D4833 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE A CBR PUNCTURE VALUE OF 340 LBS (1513 N) PER ASTM D6241 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE A TRAPEZOID TEAR VALUE OF 50 LBS (222 N) PER ASTM D4533 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE A AOS VALUE OF 70 U.S. SIEVE (0.212 MM) PER ASTM D4751 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE A PERMITTIVITY VALUE OF 1.7 SEC-1 PER ASTM D4491 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE A WATER FLOW RATE VALUE OF 135 GAL/MIN/SF (5500 L/MIN/SM) PER ASTM D4491 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE A UV STABILITY @ 500 HOURS VALUE OF 70% PER ASTM D4355 TESTING METHOD.

CULTEC NO. 4800™ WOVEN GEOTEXTILE

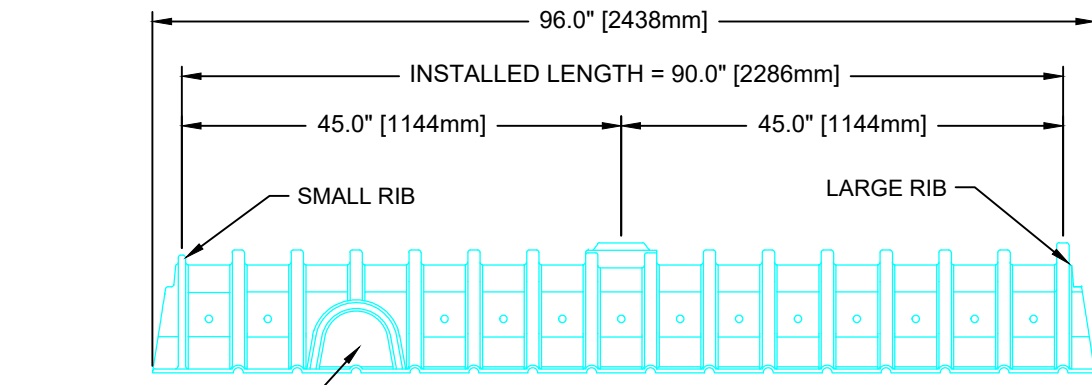
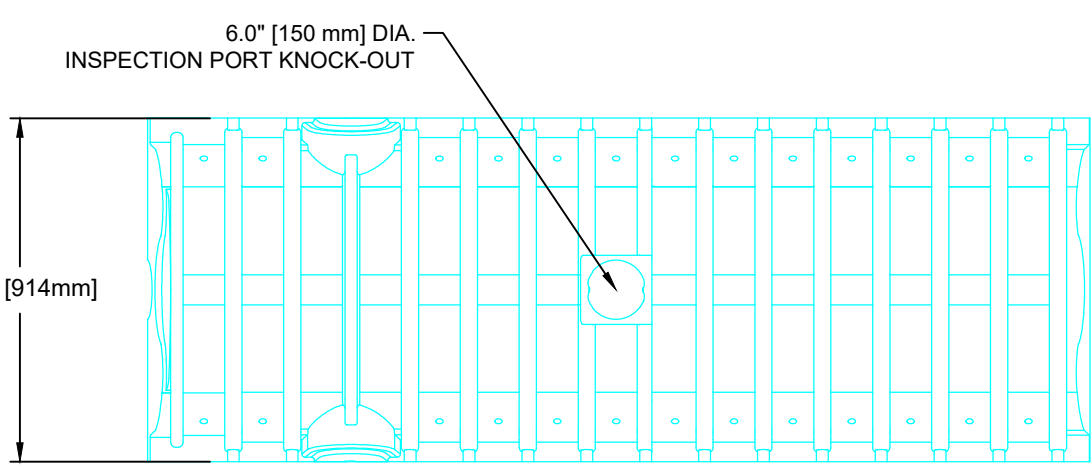
CULTEC NO. 4800 WOVEN GEOTEXTILE IS DESIGNED AS A UNDERLAYMENT TO PREVENT SCOURING CAUSED BY WATER MOVEMENT WITHIN THE CULTEC CHAMBERS AND FEED CONNECTORS UTILIZING THE CULTEC MANIFOLD FEATURE. IT MAY ALSO BE USED AS A COMPONENT OF THE CULTEC SEPARATOR ROW TO ACT AS A BARRIER TO PREVENT SOIL/CONTAMINANT INTRUSION INTO THE STONE WHILE ALLOWING FOR MAINTENANCE.

GEOTEXTILE PARAMETERS

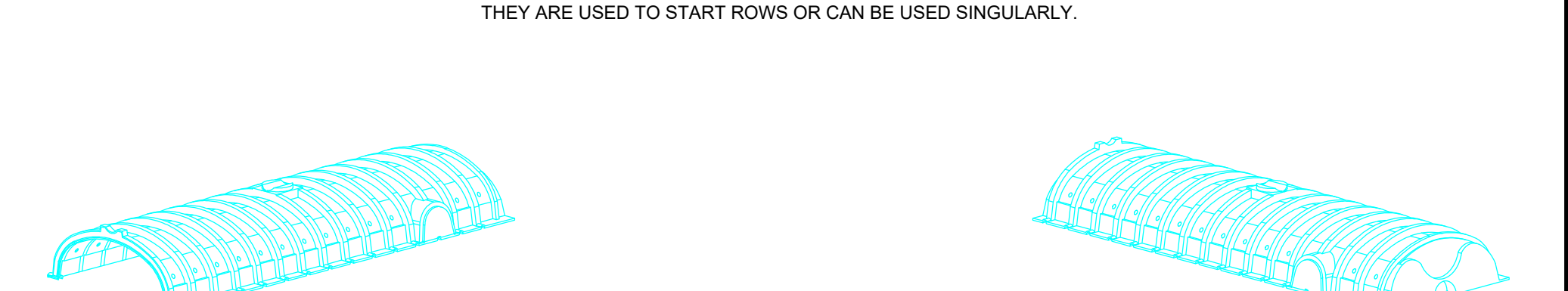
- THE GEOTEXTILE SHALL BE PROVIDED BY CULTEC, INC. OF BROOKFIELD, CT. (203-775-4416 OR 1-800-428-5832)
- THE GEOTEXTILE SHALL BE BLACK IN APPEARANCE.
- THE GEOTEXTILE SHALL HAVE A TENSILE STRENGTH OF 550 X 550 LBS (2,448 X 2,448 N) PER ASTM D4632 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE AN ELONGATION @ BREAK RESISTANCE OF 20 X 20% PER ASTM D4632 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE A WIDE WIDTH TENSILE RESISTANCE OF 5,070 X 5,070 LBS/FT (74 X 74 KN/M) PER ASTM D4595 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE A WIDE WIDTH TENSILE RESISTANCE @ 2% STRAIN OF 960 X 1,096 LBS/FT (14 X 16 KN/M) PER ASTM D4595 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE A WIDE WIDTH TENSILE RESISTANCE @ 5% STRAIN OF 2,740 X 2,740 LBS/FT (40 X 40 KN/M) PER ASTM D4595 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE A WIDE WIDTH TENSILE RESISTANCE @ 10% STRAIN OF 4,800 X 4,800 LBS/FT (70 X 70 KN/M) PER ASTM D4595 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE A CBR PUNCTURE RESISTANCE OF 1,700 LBS (7,560 N) PER ASTM D6241 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE A TRAPEZOIDAL TEAR RESISTANCE OF 180 X 180 LBS (801 X 801 N) PER ASTM D4533 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE AN APPARENT OPENING SIZE OF 40 US STD. SIEVE (0.425 MM) PER ASTM D4753 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE A PERMITTIVITY RATING OF 0.15 SEC-1 PER ASTM D4491 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE A WATER FLOW RATING OF 11.5 GPM/FT2 (470 LPM/M2) PER ASTM D4491 TESTING METHOD.
- THE GEOTEXTILE SHALL HAVE A UV RESISTANCE OF 80% @ 500 HRS. PER ASTM D4355 TESTING METHOD.



CULTEC CONTACTOR 100HD CHAMBER STORAGE = 1.866 CF/FT [0.173 m³/m]
INSTALLED LENGTH ADJUSTMENT = 0.5' [0.15 m]



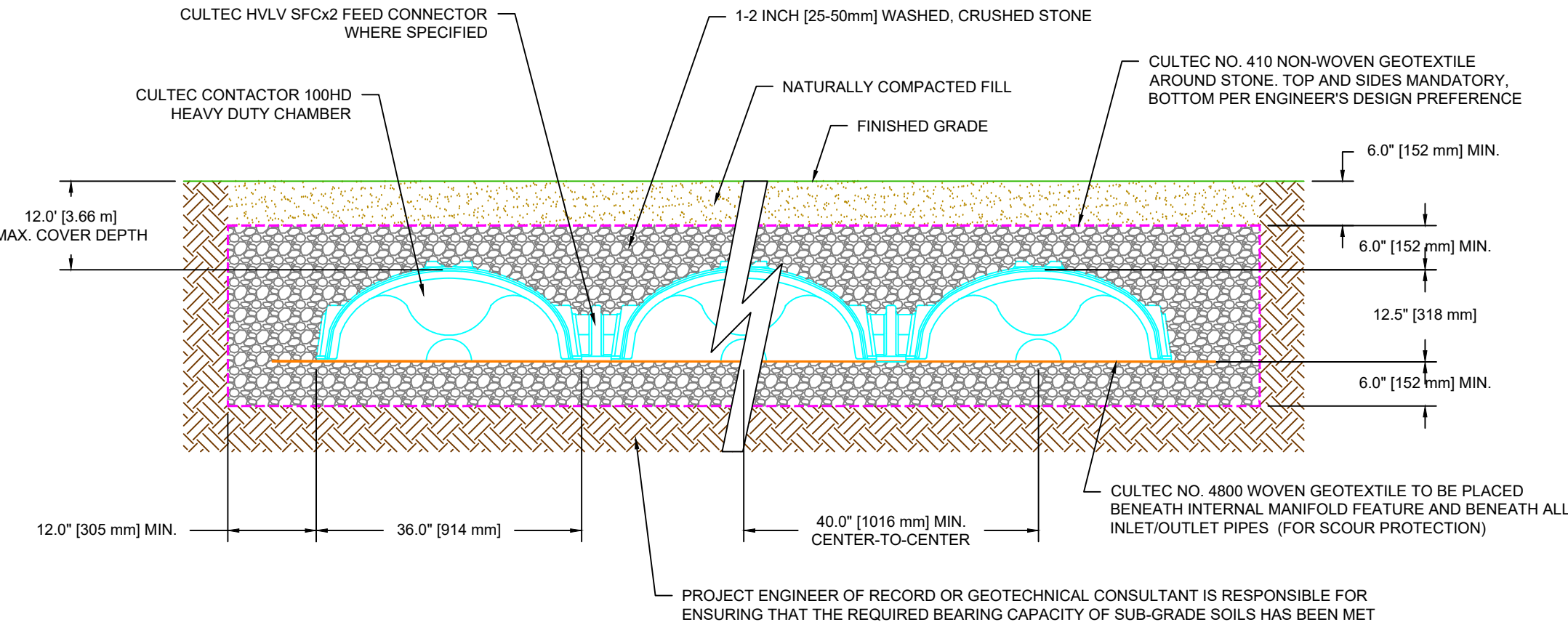
SIDE PORTAL FOR OPTIONAL INTERNAL MANIFOLD
(ACCOMMODATES CULTEC HVLV SFCx2 FEED CONNECTOR OR STORM PIPE)
MAX. PIPE:
6" [150 mm] HDPE
6" [150 mm] PVC



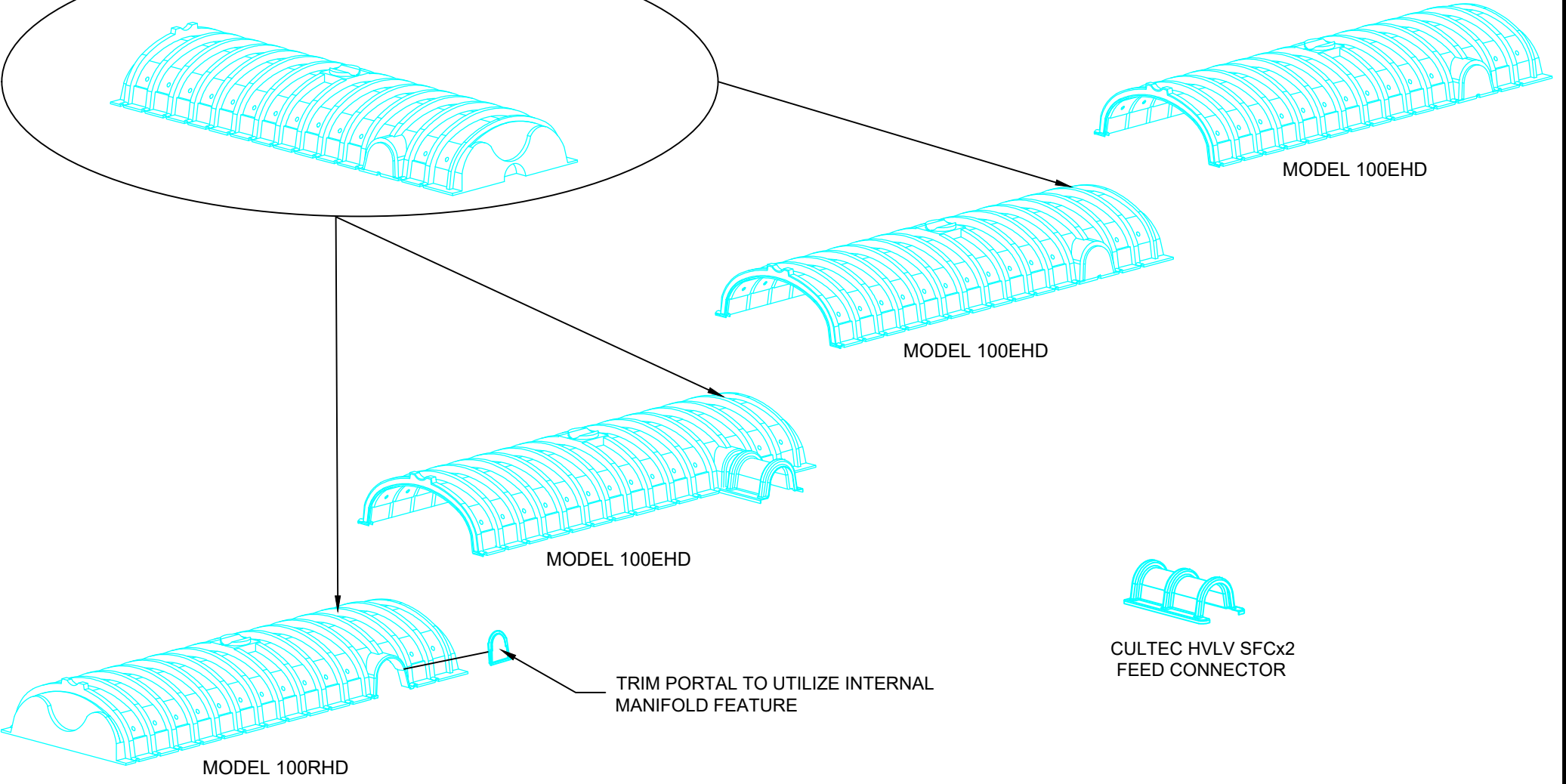
MODEL 100RHD IS A STARTER/STAND ALONE UNIT.
THEY ARE USED TO START ROWS OR CAN BE USED SINGULARLY.

MODEL 100EHD IS A MIDDLE/END UNIT.
THEY ARE USED TO CONTINUE ROWS AND ALSO USED TO END A ROW.

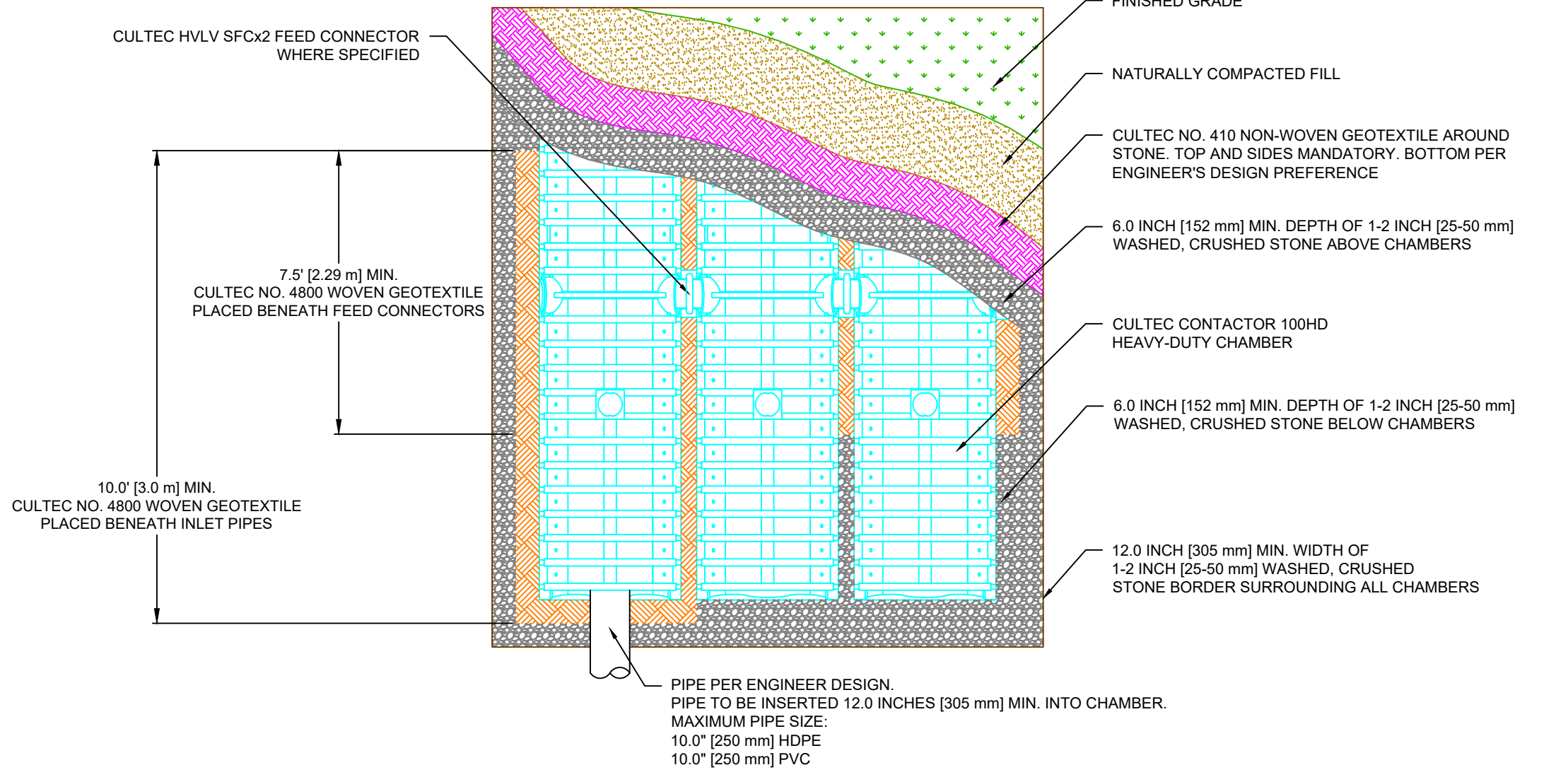
CULTEC CONTACTOR 100HD HEAVY DUTY THREE VIEW



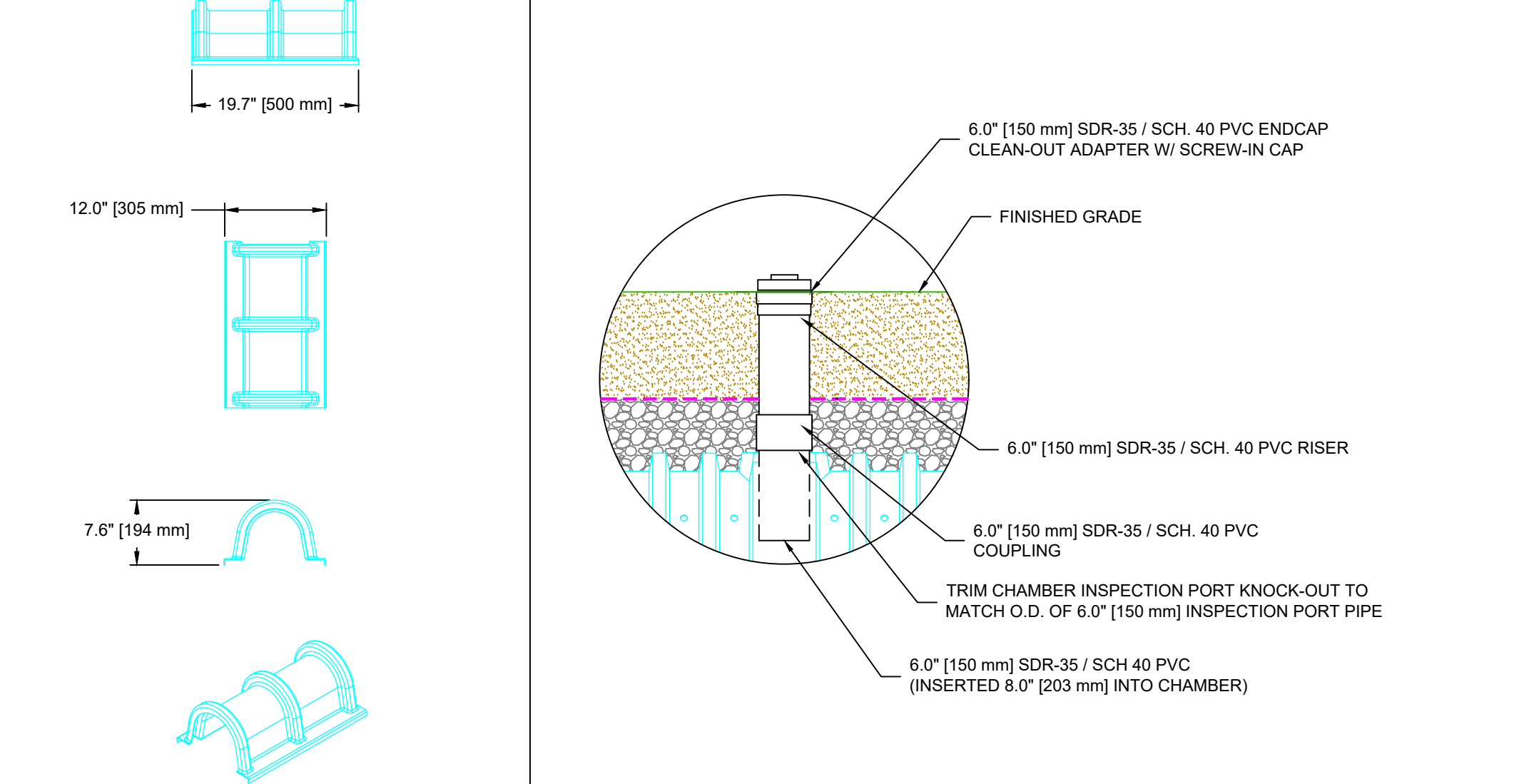
CULTEC CONTACTOR 100HD HEAVY DUTY END DETAIL INFORMATION



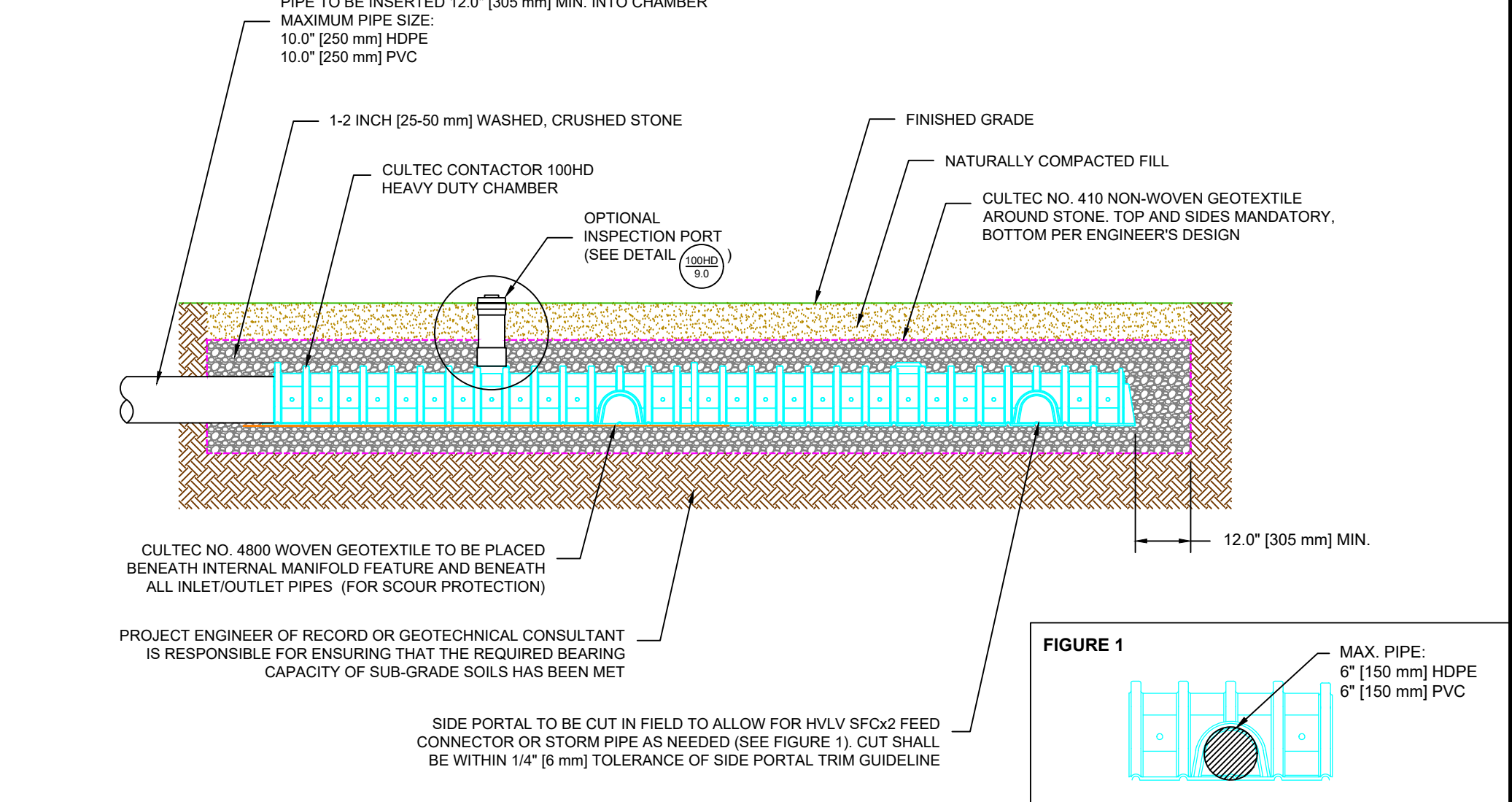
GENERAL NOTES



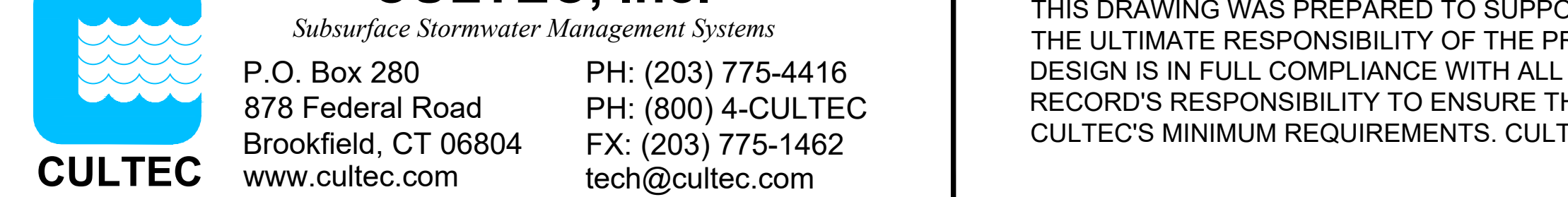
CULTEC CONTACTOR 100HD HEAVY DUTY SYSTEM CROSS SECTION



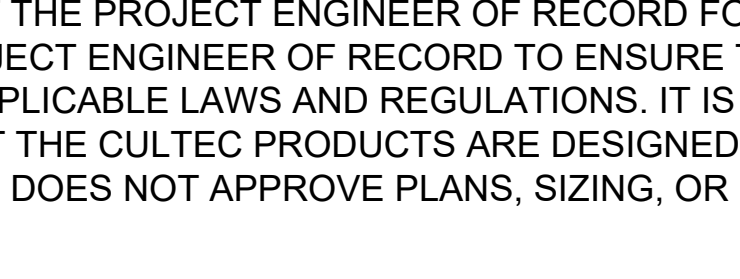
CULTEC CONTACTOR 100HD HEAVY DUTY TYPICAL INTERLOCK



CULTEC CONTACTOR 100HD HEAVY DUTY PLAN VIEW



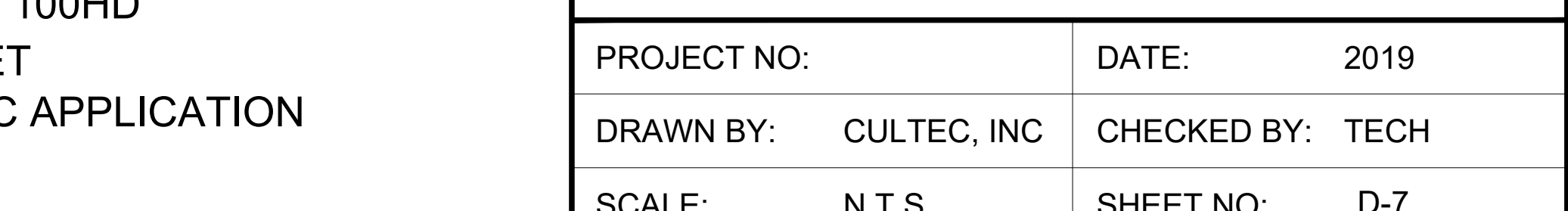
CULTEC HVLV SFCx2 FEED CONNECTOR



OPTIONAL INSPECTION PORT - ZOOM DETAIL



CULTEC MANIFOLD - OPTIONAL INSPECTION PORT DETAIL



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CONTACTOR 100HD
DETAIL SHEET
NON-TRAFFIC APPLICATION

CULTEC STORMWATER CHAMBER			
PROJECT NO:		DATE:	2019
DRAWN BY: CULTEC, INC		CHECKED BY: TECH	
SCALE: N.T.S.		SHEET NO: D-7	

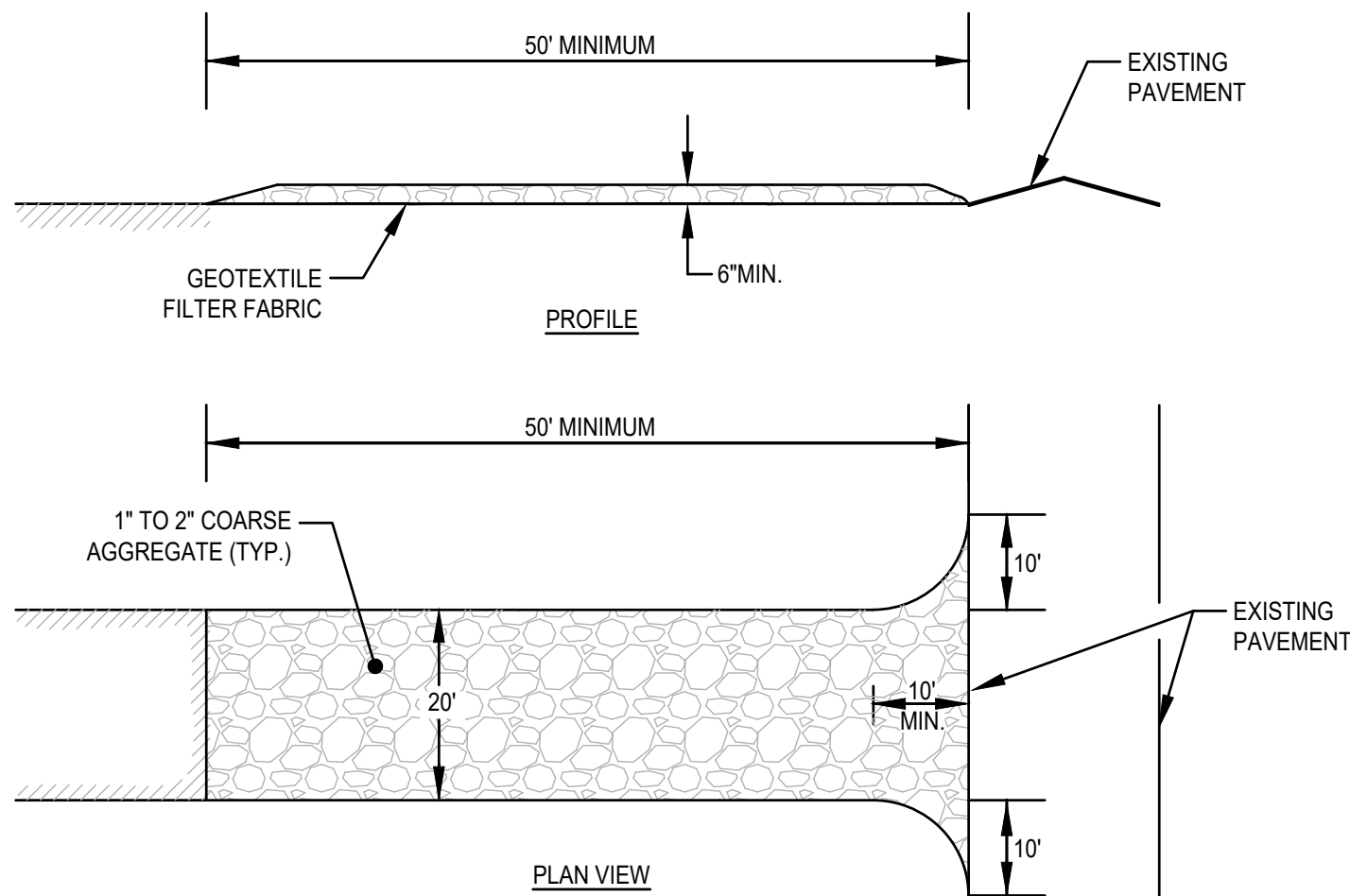
CONSTRUCTION SEQUENCE

TO PREVENT EXCESSIVE EROSION AND SILTING, THE FOLLOWING CONSTRUCTION SEQUENCE COUPLED WITH OTHER WIDELY ACCEPTED PRINCIPALS FOR REDUCING EROSION AND SEDIMENTATION SHALL BE IMPLEMENTED IN THE DEVELOPMENT OF THE SITE. STABILIZATION PRACTICES FOR EROSION AND SEDIMENT CONTROL SHALL BE INSTALLED

- PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES, REFER TO "EROSION AND SEDIMENTATION CONTROL" SECTION OF THIS PLAN. PLACE EROSION CONTROL BARRIERS AT LOCATIONS INDICATED ON THE CONSTRUCTION DRAWINGS AND CONSTRUCT STABILIZED CONSTRUCTION ENTRANCES AT LANDRY AVENUE AND TOWNE STREETS.
- CLEAR AND GRUB ALL AREAS ASSOCIATED WITH THE CONSTRUCTION OF THE ACCESS ROAD.
- EXCAVATE TOPSOIL AND SUBSOIL FROM CUT AND FILL AREAS AND STOCKPILE ON SITE IN LOCATIONS AS DIRECTED BY THE NORTH ATTLEBORO ELECTRIC DEPARTMENT. CONSIDERATION SHOULD BE GIVEN TO LOCATING STOCKPILES ON THE UPHILL SIDE OF DISTURBED AREAS, WHERE POSSIBLE, TO ACT AS TEMPORARY DIVERSIONS. CONSTRUCT CUT AND FILL AREAS, INSTALLING HAYBALE CHECK DAMS AT TOES OF ALL 3:1 OR GREATER SLOPES, AND AT ENDS OF ALL CUT AREAS.
- ALL FILL WILL BE INSTALLED USING 12" MAXIMUM COMPACTION LIFTS.
- PLACE ALL SLOPE PROTECTION WHERE INDICATED ON THE PLAN.
- GRADE ACCESS ROAD TO SUBGRADE ELEVATION AND CONSTRUCT SIDE SLOPES. APPLY TEMPORARY STABILIZATION MEASURES WHERE WARRANTED. REFER TO "EROSION AND SEDIMENT CONTROL" SECTION OF THIS PLAN.
- PLACE GRAVEL SUBBASE PER SPECIFICATIONS.
- GRADE SLOPES AND STABILIZE CUT AREAS AT TOE OF SLOPES. BLEND ALL SLOPES INTO EXISTING TOPOGRAPHY AND LOAM AND SEED ALL DISTURBED AREAS. SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH JUTE MESH.
- PLACE THE FINAL WEARING COURSE OF CRUSHED STONE.
- COMPLETE FINE GRADING OF SHOULDERS, REMOVE TEMPORARY EROSION CONTROL DEVICES ONCE ADEQUATE GROWTH IS ESTABLISHED. ADEQUATE GROWTH IS DEFINED AS VEGETATION COVERING 75% OR MORE

EROSION AND SEDIMENTATION CONTROL

- STRUCTURAL PRACTICES UTILIZED FOR THE PROJECT WILL INCLUDE SILT SOCK BARRIER CONTROLS, STABILIZED CONSTRUCTION ENTRANCE, TEMPORARY DIVERSION SWALES WITH STONE CHECK DAMS, SEDIMENT BASINS, AND INLET PROTECTION.
- STABILIZATION PRACTICES UTILIZED FOR THE PROJECT WILL INCLUDE TEMPORARY SEEDING, GEOTEXTILES (JUTE MESH), MULCHING, AND PERMANENT SEEDING.
- IN GENERAL, THE SMALLEST POSSIBLE AREA OF LAND SHOULD BE EXPOSED AT ONE TIME. WHEN LAND IS EXPOSED DURING DEVELOPMENT, THE EXPOSURE SHALL BE CONFINED TO A MAXIMUM PERIOD OF 3 MONTHS. LAND SHALL NOT BE EXPOSED DURING THE WINTER MONTHS. ANY DISTURBED AREAS WHICH ARE TO BE LEFT TEMPORARILY AND THAT WILL BE REGRADED AT A LATER DATE SHALL BE MACHINE HAY MULCHED AND SEEDED WITH WINTER RYE TO PREVENT EROSION.



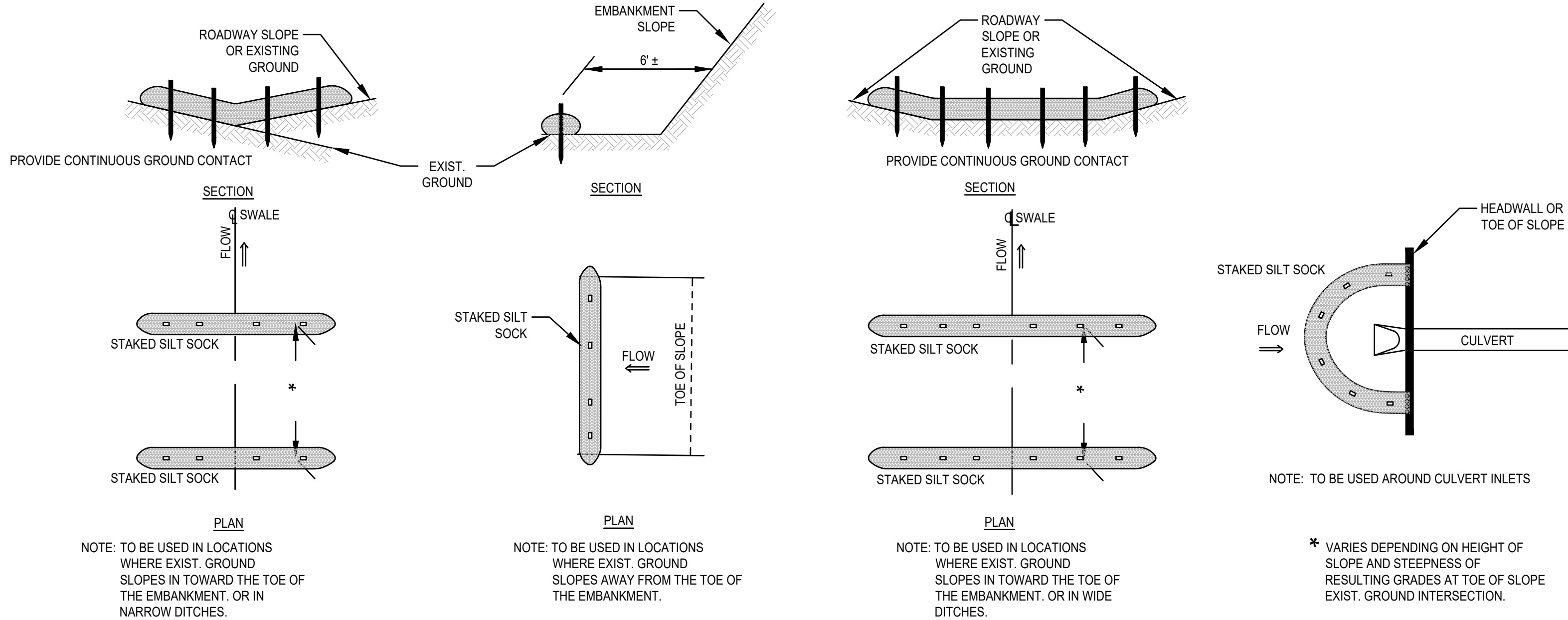
(SCE) CONSTRUCTION SPECIFICATIONS:

- STONE FOR A STABILIZATION CONSTRUCTION ENTRANCE SHALL BE 1 TO 2 INCH STONE, RECLAIMED STONE.
- THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET, EXCEPT FOR A SINGLE RESIDENTIAL LOT A 30 FOOT MINIMUM LENGTH WOULD APPLY.
- THE THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
- THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN A FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICH EVER IS GREATER.
- GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE.
- ALL SURFACE WATER THAT IS FLOWING TO OR DEVERTED TOWARDS THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 6:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOPDRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. SEDIMENT SPILLED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED PROMPTLY.

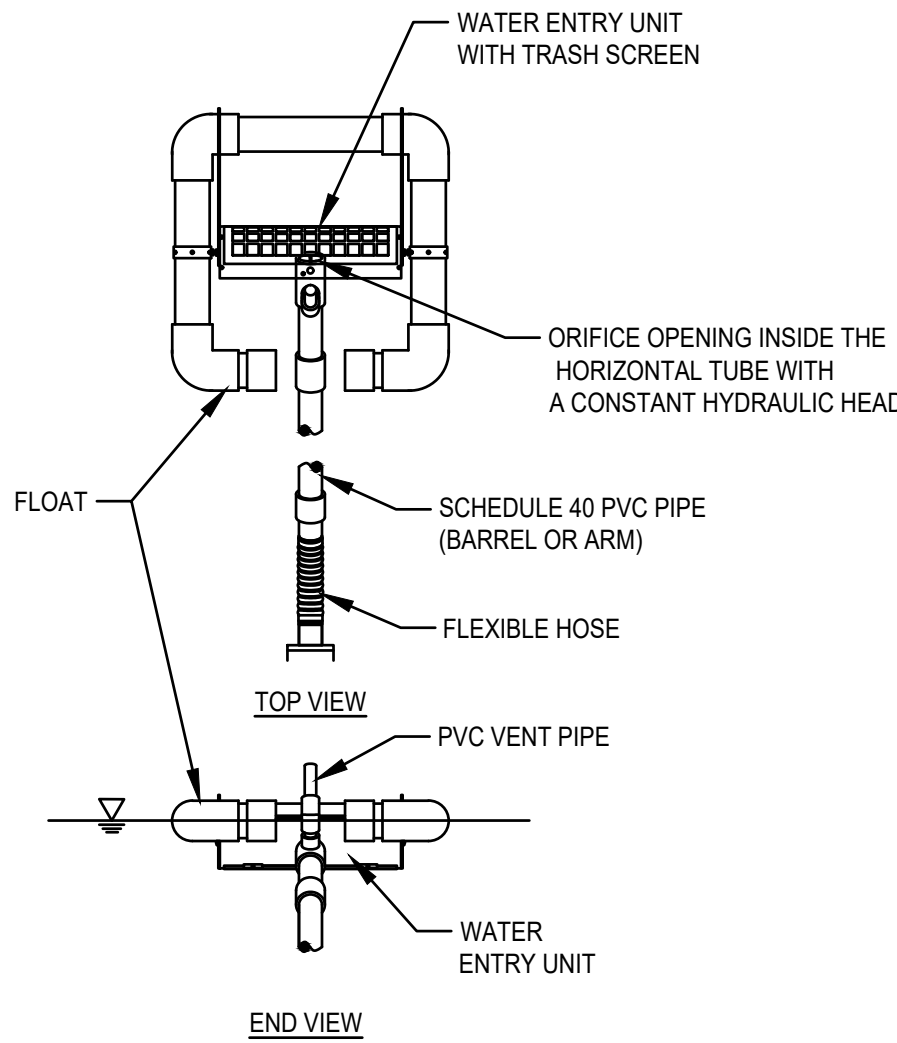
STABILIZED CONSTRUCTION ENTRANCE (SCE) DETAIL
SCALE: N.T.S.

CONSTRUCTION PHASE BMP OPERATION AND MAINTENANCE NOTES:

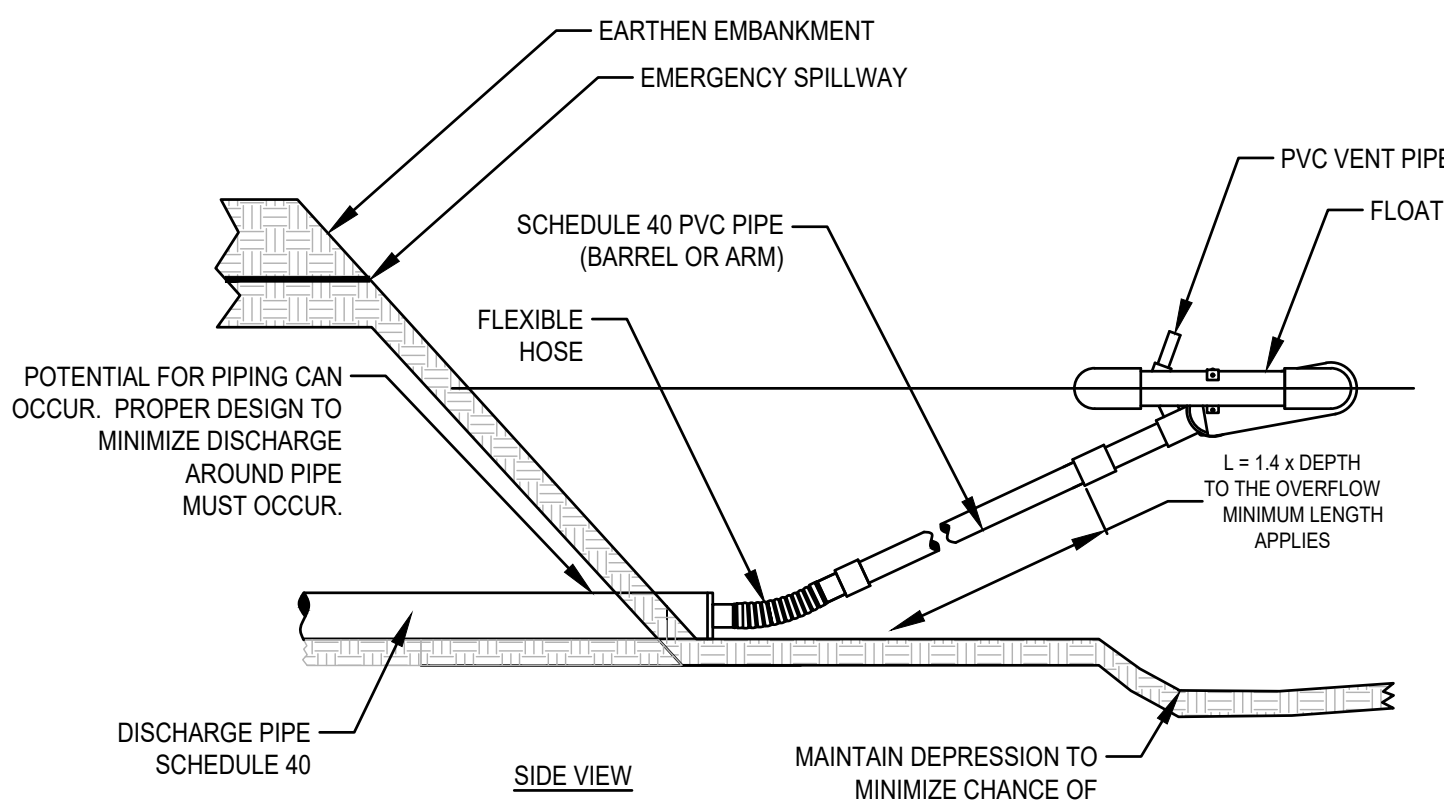
- REFER TO THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARED UNDER THE E.P.A. GENERAL CONSTRUCTION PERMIT PROVISIONS FOR FURTHER DETAIL OF STRUCTURAL, STABILIZATION, DUST CONTROL AND EROSION AND SEDIMENTATION CONTROL MEASURES.
- STRUCTURAL PRACTICES UTILIZED FOR THE PROJECT WILL INCLUDE EROSION CONTROL BARRIERS, STABILIZED CONSTRUCTION ENTRANCES, TEMPORARY DIVERSION SWALES WITH CHECK DAMS, SEDIMENT BASINS, AND INLET PROTECTION.
- STABILIZATION PRACTICES UTILIZED FOR THE PROJECT WILL INCLUDE TEMPORARY SEEDING, GEOTEXTILES (JUTE MESH), MULCHING, AND PERMANENT SEEDING.
- OPERATOR PERSONNEL MUST INSPECT THE CONSTRUCTION SITE AT LEAST ONCE EVERY 14 CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT OF 1/2 INCH OR GREATER. THE INSPECTOR SHOULD REVIEW THE EROSION AND SEDIMENT CONTROLS WITH RESPECT TO THE FOLLOWING:
A. WHETHER OR NOT THE MEASURE WAS INSTALLED/PERFORMED CORRECTLY.
B. WHETHER OR NOT THERE HAS BEEN DAMAGE TO THE MEASURE SINCE IT INSTALLED OR PERFORMED.
C. WHAT SHOULD BE DONE TO CORRECT ANY PROBLEMS WITH THE MEASURE.
- THE INSPECTOR SHALL COMPLETE THE INSPECTION SCHEDULE AND EVALUATION CHECKLIST FOR FINDINGS AND SHOULD REQUEST THE REQUIRED MAINTENANCE OR REPAIR. THE CHECKLIST IS PROVIDED WITHIN THE OPERATION AND MAINTENANCE PLAN.
- THE TEMPORARY BASINS SHALL BE INSPECTED AND CLEANED IF REQUIRED PRIOR TO ANY PREDICTED LARGE STORM EVENT.



TEMPORARY EROSION CONTROL
SCALE: N.T.S.



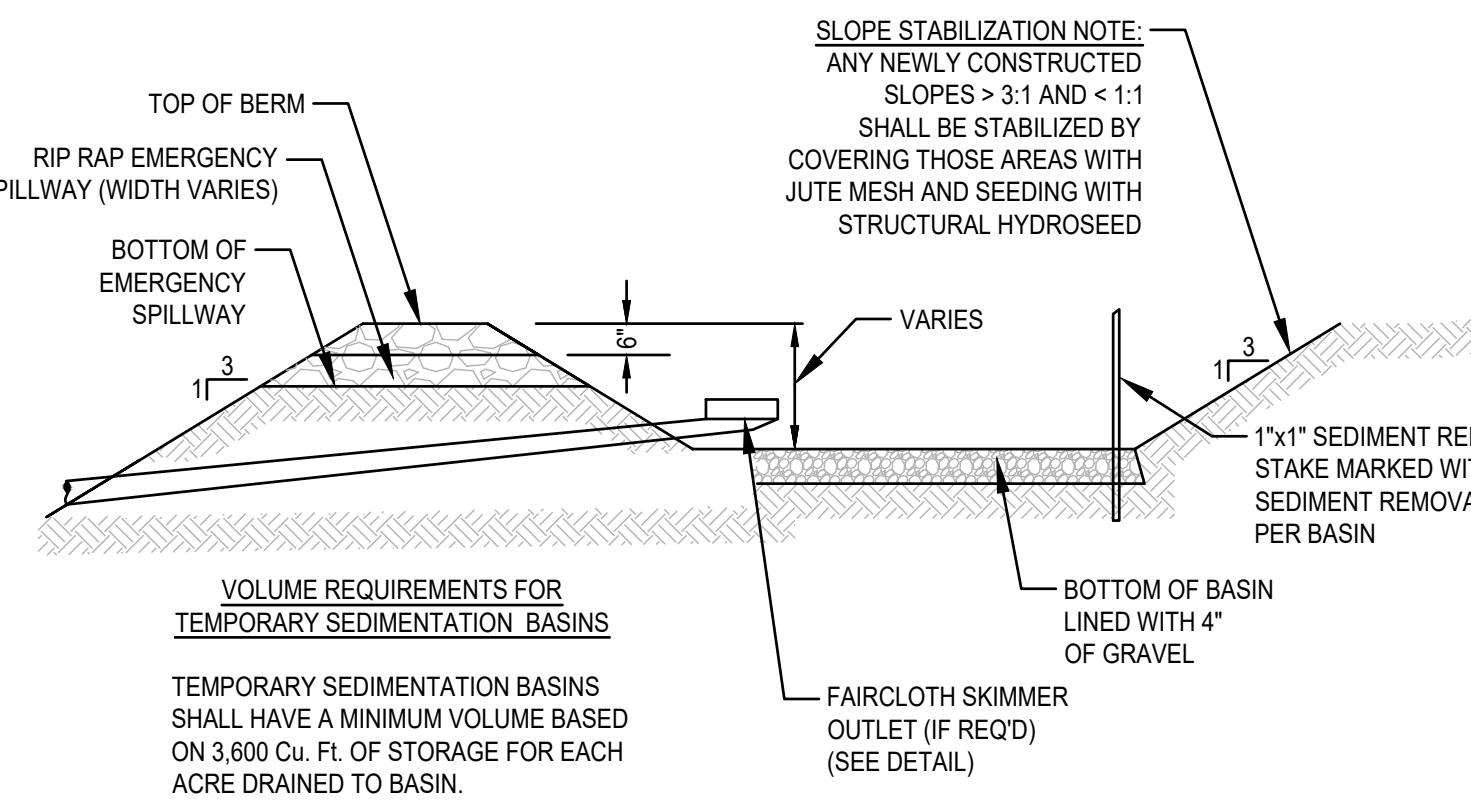
SILT SOCK EROSION CONTROL BARRIER DETAIL
SCALE: N.T.S.



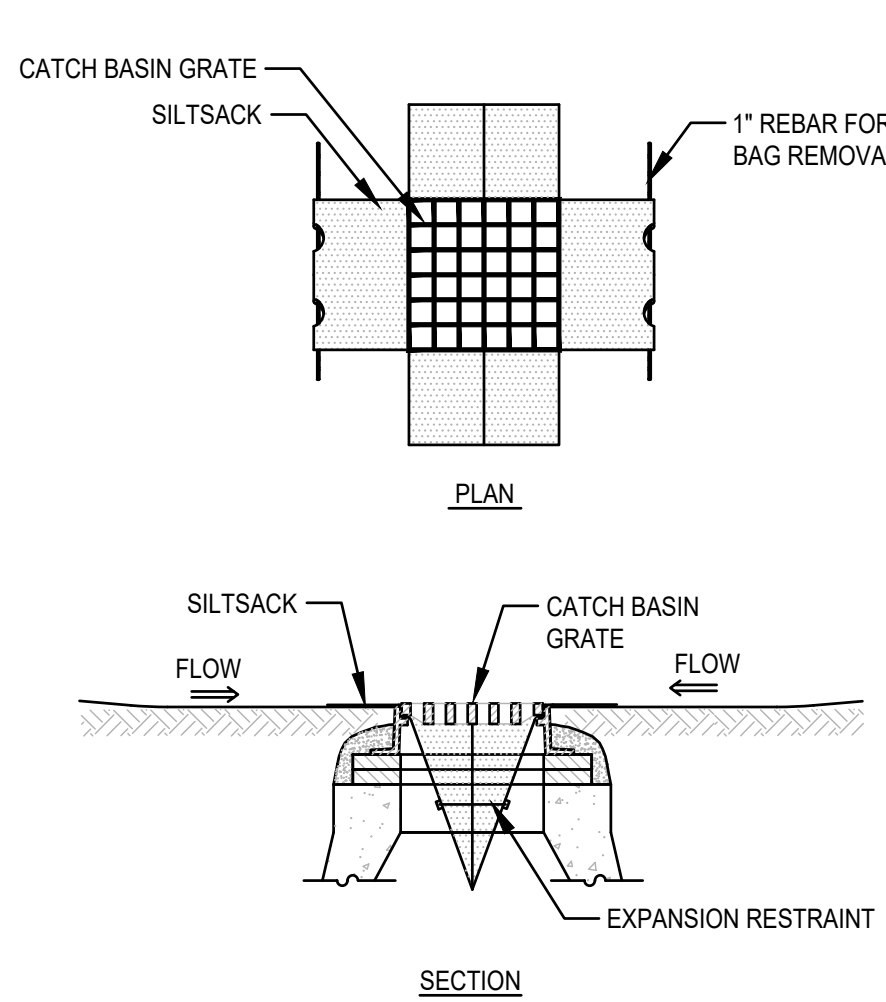
GENERAL NOTES:

- PROPER DESIGN MUST BE COMPLETED TO MINIMIZE PIPING AROUND DISCHARGE PIPE.
- PROPER ORIFICE OPENING MUST BE SELECTED TO ENSURE POND DRAINS IN CORRECT AMOUNT OF TIME. MODIFICATIONS MAY BE REQUIRED IF FIELD CONDITIONS WARRANT A CHANGE.
- EMBANKMENT MUST BE COMPACTED TO DESIGN SPECIFICATIONS.
- EMERGENCY SPILLWAY MUST BE CORRECTLY SIZED AND EROSION PROTECTION INSTALLED.
- EROSION PROTECTION MUST BE INSTALLED ALONG THE EMBANKMENT AND AT THE DISCHARGE END OF THE PIPE.
- INSPECT SYSTEM REGULARLY TO ENSURE IT IS FUNCTIONING IN A CORRECT MANNER.
- EIGHT SIZES OF SKIMMERS ARE AVAILABLE, REFER TO THE FLOW SHEET, CUT SHEET, AND INSTRUCTIONS ON WEB SITE FOR EACH SIZE.

FAIRCLOTH SKIMMER DISCHARGE SYSTEM W/ EMBANKMENT
SCALE: N.T.S.



TEMPORARY SEDIMENTATION BASIN
SCALE: N.T.S.



SILT SACK SEDIMENT TRAP
SCALE: N.T.S.

REV	DATE	DESCRIPTION	BY	APP
1	5/12/2017	COMMENTS PER MASHOUSING	SBS	BCM
2	7/14/2017	COMMENTS PER MASHOUSING	SBS	BCM
3	11/07/2018	ZBA APPLICATION	AJC	BCM
4	1/07/2021	REVISIONS TO CONSTRUCTION DETAILS	SBS	BCM
5	4/6/2021	REVISIONS TO CONSTRUCTION DETAILS	SBS	BCM
6	6/7/2021	REVISIONS TO OPEN BOTTOM BOX CULVERT	SBS	BCM
7	6/9/2021	NEW SHEET NUMBER	SBS	BCM
8	8/1/2021	NO CHANGES THIS SHEET	SBS	BCM

PREPARED BY:



RIVER MARSH VILLAGE
COMPREHENSIVE PERMIT PLAN
(ASSESSOR'S MAP E-17, LOT 0 & E-17A, LOT 274)
WATER STREET
PEMBROKE, MASSACHUSETTS

PROFESSIONAL ENGINEER:



OWNER/APPLICANT:

RIVER MARSH, LLC
238R WASHINGTON STREET
NORWELL, MASSACHUSETTS 02061

DRAWN BY: SBS
DESIGNED BY: SBS
CHECKED BY: BCM
APPROVED BY: BCM
DATE: SEPTEMBER 22, 2016
SCALE: AS NOTED
PROJECT NO.: 215-181
DWG. TITLE:

Erosion Control
Details

DWG. NO:

ES-1