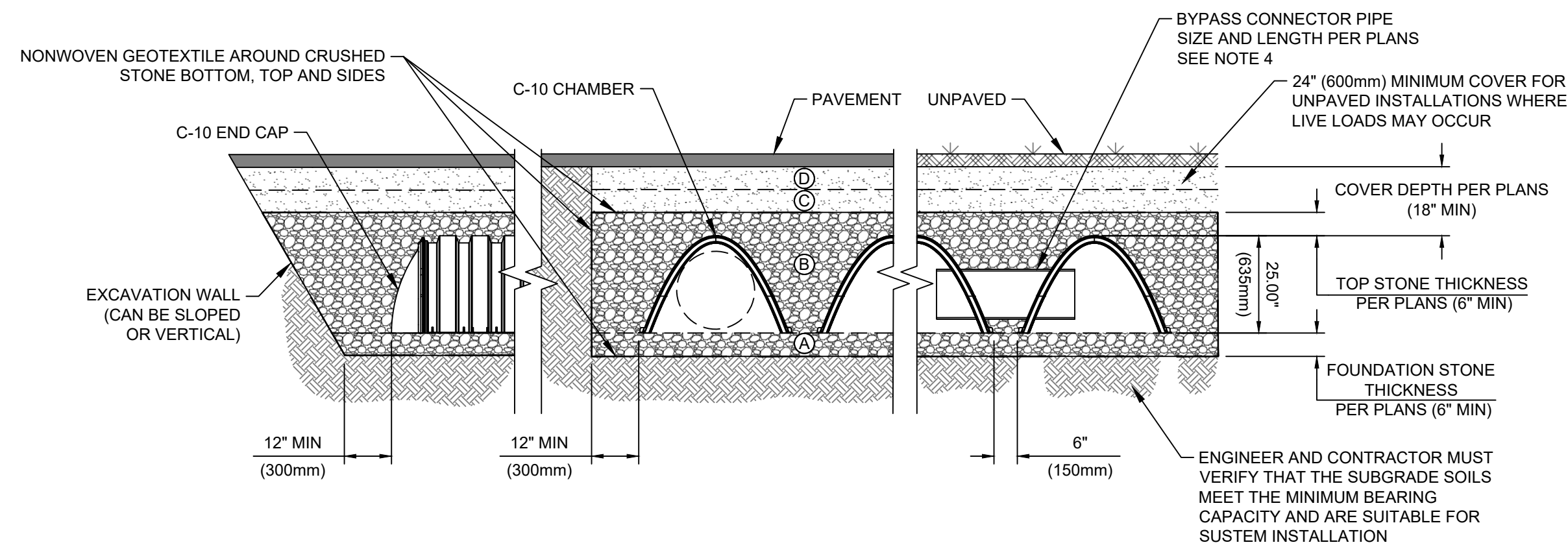


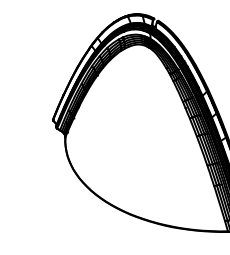
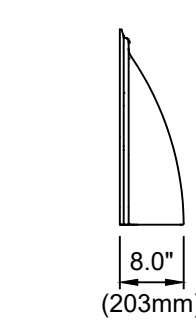
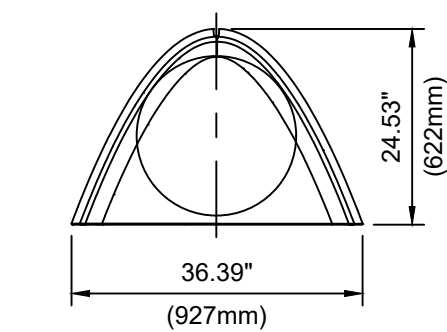
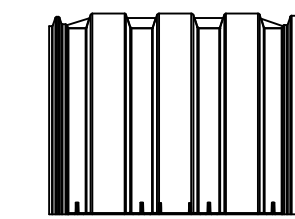
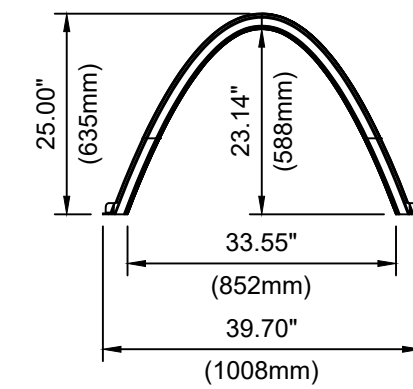
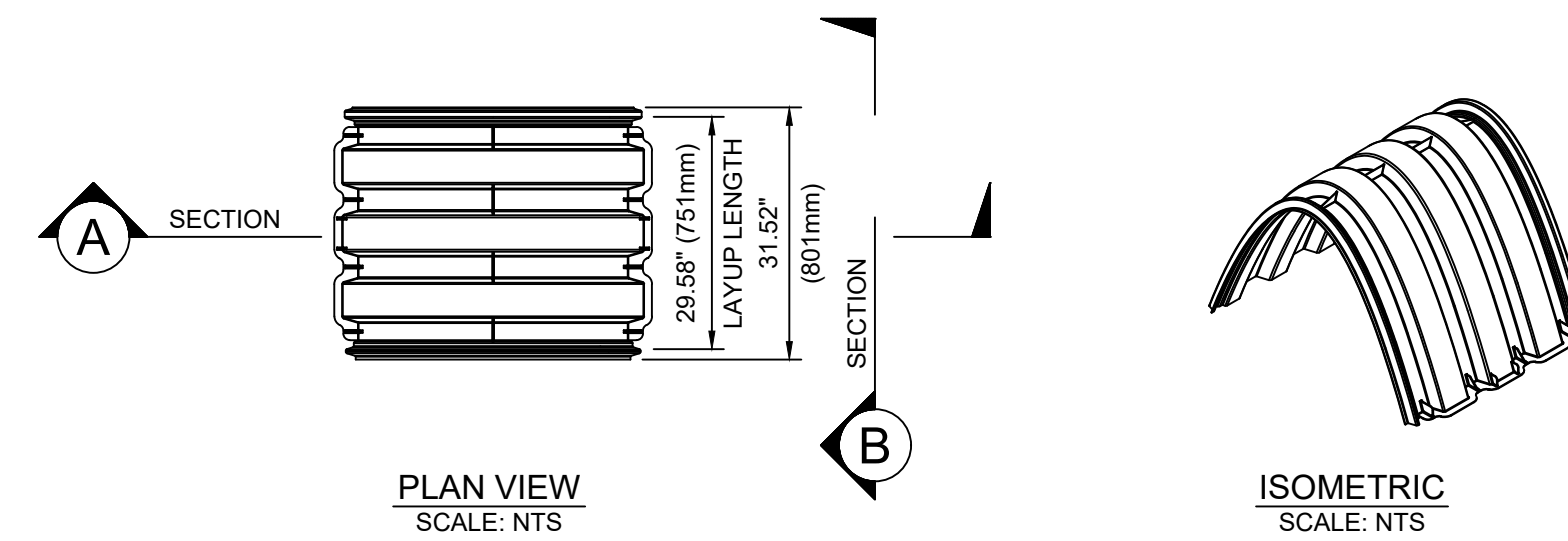
CHAMBER STANDARD FILL MATERIALS

	MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION	COMPACT/DENSITY REQUIREMENT
D	FILL MATERIAL FROM 18" (450mm) ABOVE CHAMBER TO GRADE	ANY SOIL/ROCK MATERIALS, NATIVE SOILS OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	PER PLANS	PREPARE PER ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	FILL MATERIAL FOR 6" (150mm) TO 18" (450mm) ABOVE THE CHAMBER AND 24" (600mm) FOR UNPAVED INSTALLATIONS	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES. MOST PAVEMENT SUB-BASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER	3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10 M145: A-1, A-2, A-3	COMPACT IN MAXIMUM 6" (150mm) LIFTS. SEE NOTES.
B	EMBEDMENT AND TOP STONE	3/8" - 2" (8-50mm) CLEAN, CRUSHED, ANGULAR STONE	3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE	3/8" - 2" (8-50mm) CLEAN, CRUSHED, ANGULAR STONE	3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL. SEE NOTES.

- NOTES:
- INSTALL CHAMBERS AND END CAPS IN ACCORDANCE WITH SITE SPECIFIC PLANS, HYDROCHAIN INSTALLATION MANUAL AND SUPPLEMENTAL DOCUMENTS. REFERENCE THE QR CODE BELOW FOR PRODUCT DOCUMENTS.
 - THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, AND ANGULAR.
 - AS AN ALTERNATE TO PROCTOR TESTING AND FIELD DENSITY MEASUREMENTS ON OPEN GRADED STONE, COMPACTION REQUIREMENTS ARE MET WHEN STONE IS PLACED AND COMPACTED IN 6" (150mm) MAXIMUM LIFTS USING TWO FULL PASSES WITH A VIBRATORY COMPACTOR.
 - EXTEND CROSS CONNECTION PIPES INTO THE CHAMBER BY A LENGTH EQUAL OR GREATER THAN 1/2 THE PIPE O.D.



C-10 CHAMBER CROSS SECTION



C-10 END CAP: ALLOWED PIPE PLACEMENT AREA

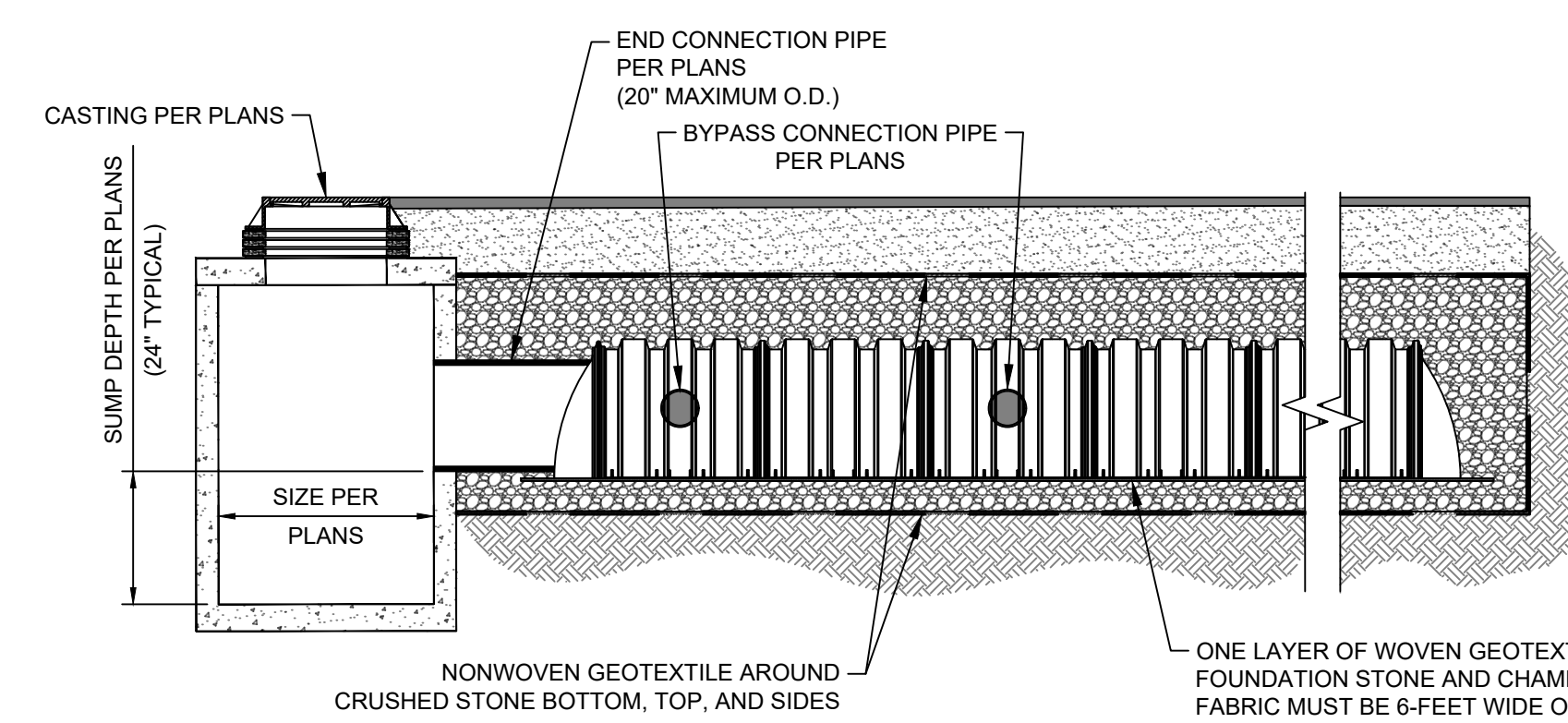
C-10 CHAMBER AND END CAP

C-10 CHAMBER PROPERTIES	
NOMINAL DIMENSIONS (LAYOUT LENGTH × WIDTH × HEIGHT)	29.58" × 39.70" × 25.00" (751mm × 1008mm × 635mm)
BARE CHAMBER STORAGE	9.8 CUBIC FEET (0.277 CUBIC METERS)
*MIN INSTALLED STORAGE	17.45 CUBIC FEET (0.494 CUBIC METERS)
CHAMBER WEIGHT	18 LBS (8.165 KG)
STORAGE PER LINEAR UNIT WITHOUT STONE	3.98 FT ³ /FT (0.370 M ³ /M)
STORAGE PER LINEAR UNIT WITH STONE	7.08 FT ³ /FT (0.658 M ³ /M)

*ASSUMING A MIN OF 6" (150mm) STONE ABOVE AND BELOW AND 6" (150mm) BETWEEN ROWS WITH 40% STONE POROSITY (DOES NOT INCLUDE 12" (300mm) PERIMETER STONE VOLUME)

C-10 END CAP PROPERTIES	
NOMINAL DIMENSIONS (LAYOUT LENGTH × WIDTH × HEIGHT)	8.0" X 36.49" X 24.53" (203mm × 921mm × 622mm)
BARE END CAP STORAGE	1.21 CUBIC FEET (0.034 CUBIC METERS)
*MIN INSTALLED STORAGE	3.86 CUBIC FEET (0.109 CUBIC METERS)

*ASSUMING A MIN OF 6" (150mm) STONE ABOVE AND BELOW AND 6" (150mm) BETWEEN ROWS WITH 40% STONE POROSITY (DOES NOT INCLUDE 12" (300mm) PERIMETER STONE VOLUME)



C-10 CHAMBER CROSS SECTION

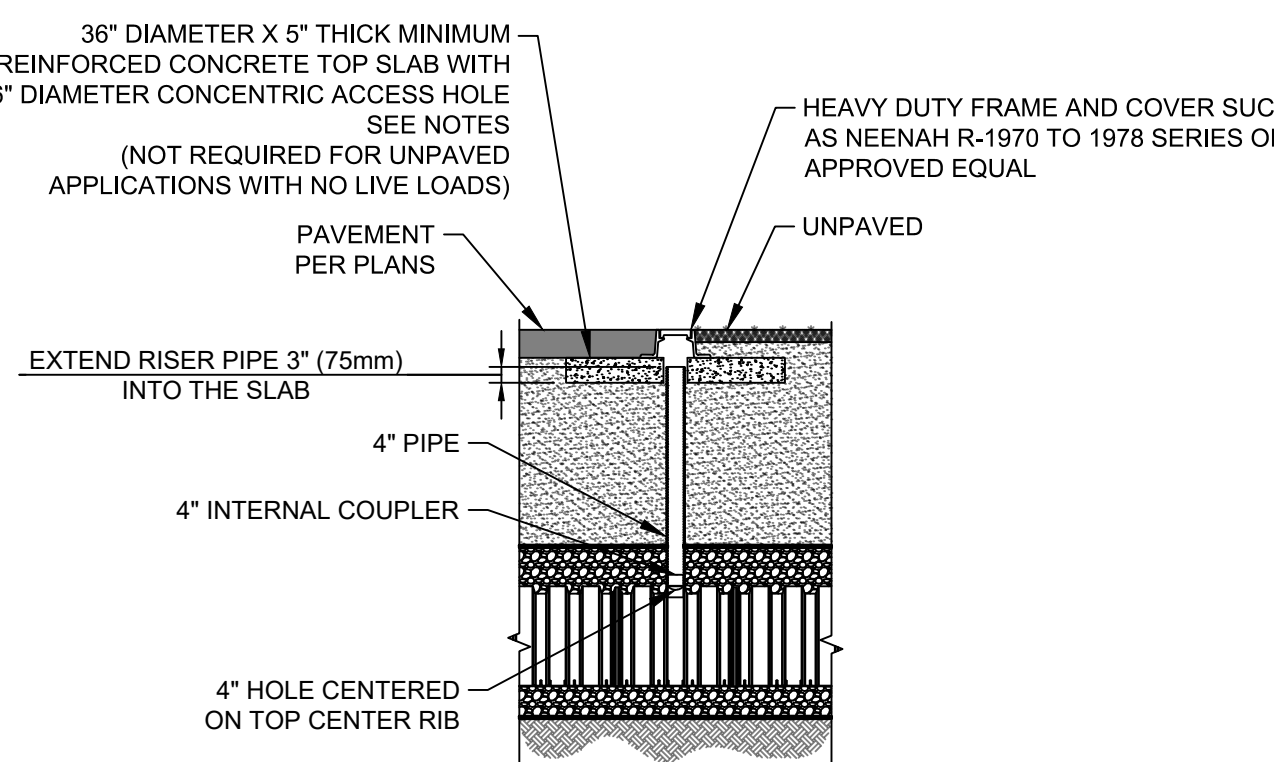
- NOTES:
- INSTALL THE MAIN HEADER ROW, CHAMBERS, AND END CAPS IN ACCORDANCE WITH THE SITE SPECIFIC PLANS, HYDROCHAIN INSTALLATION MANUAL AND SUPPLEMENTAL DOCUMENTS. REFERENCE THE QR CODE BELOW FOR PRODUCT DOCUMENTS.
 - CONDUCT INSPECTION AND MAINTENANCE IN ACCORDANCE WITH HYDROCHAIN CHAMBER MAIN HEADER ROW OPERATION AND MAINTENANCE MANUAL.

GENERAL

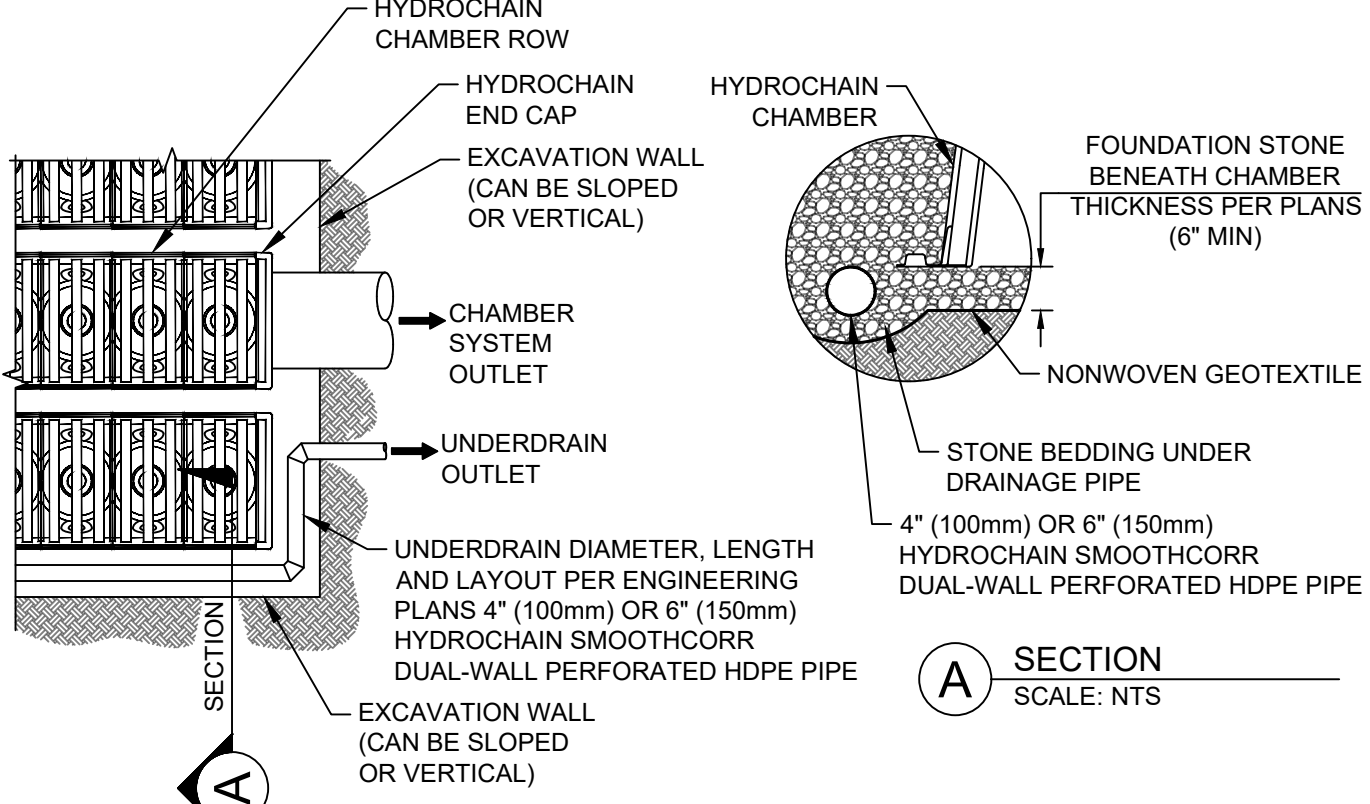
- CHAMBERS MUST BE XERXES® HYDROCHAIN™ C-10. ONLY CHAMBERS APPROVED BY THE SITE DESIGN ENGINEER ARE PERMITTED.
- CHAMBERS MUST BE MANUFACTURED BY COMPRESSION MOLDING OF FIBERGLASS REINFORCED COMPOSITE.
- CHAMBERS MUST BE EVALUATED AND TESTED TO MEET OR EXCEED THE STANDARDS IN ASTM F2418 STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS.
- CHAMBERS MUST BE ARCH-SHAPED AND HAVE AN OPEN BOTTOM. CHAMBER ROWS MUST BE CONTINUOUS, UNOBSTRUCTED, AND WITHOUT INTERNAL SUPPORT THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION AND MAINTENANCE.
- THE INSTALLED CHAMBER SYSTEM MUST BE DESIGNED TO MEET THE LOAD REQUIREMENTS OF ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" FOR:
 - A. INSTANTANEOUS LIVE LOAD FROM AASHTO DESIGN TRUCK AT MINIMUM COVER
 - B. MAXIMUM DEAD LOAD (100-YEAR)
 - C. 1-WEEK AASHTO DESIGN TRUCK LOAD AT MINIMUM COVER
- THE INSTALLED CHAMBER SYSTEM MUST BE DESIGNED TO MEET THE LOAD REQUIREMENTS OF AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SPECIFICATION 12.12 FOR:
 - A. LONG-DURATION DEAD LOADS
 - B. SHORT-DURATION LIVE LOADS WITH IMPACT AND MULTIPLE VEHICLE PRESENCE
- CHAMBERS MUST HAVE AN ARCH STIFFNESS CONSTANT (ASC) ≥ 700 LBS/FT³ PER ASTM F2418, SECTION 6.2.8 AND MAINTAIN STIFFNESS THROUGH TEMPERATURE RANGES OF -40 DEGREES FAHRENHEIT TO 180 DEGREES FAHRENHEIT.
- THE CHAMBER MUST INTERCONNECT USING AN OVERLAPPING CORRUGATION JOINT.
- THE STORMWATER CHAMBER SYSTEM SHALL INCORPORATE A MAIN HEADER ROW FOR STORMWATER TREATMENT AND SYSTEM MAINTENANCE WHICH HAS BEEN TESTED TO A MINIMUM OF 80% OF TSS REMOVAL FOLLOWING NJCAT TESTING PROTOCOLS.
- CHAMBERS AND END CAPS MUST BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

INSTALLATION

- INSTALLATION MUST NOT START UNTIL A PRE-CONSTRUCTION MEETING HAS BEEN HELD WITH THE MANUFACTURER'S REPRESENTATIVE AND THE INSTALLERS.
- INSTALLATION MUST BE IN ACCORDANCE WITH THE CONSTRUCTION PLANS AND HYDROCHAIN™ INSTALLATION MANUAL.
- BACKFILLING OVER CHAMBERS MUST NOT BE DONE WITH A DOZER OR AN EXCAVATOR LOCATED OVER THE CHAMBERS. SEE THE INSTALLATION MANUAL FOR MAXIMUM EQUIPMENT LOADS BASED ON THE DEPTH OF COVER OVER THE CHAMBERS. RECOMMENDED BACKFILL METHODS INCLUDE:
 - A. USING A STONE SHOOTER LOCATED OFF THE CHAMBER BED.
 - B. BACKFILLING WHILE PLACING ROWS USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
 - C. BACKFILLING FROM OUTSIDE THE EXCAVATION USING A LONG BOOM EXCAVATOR.
- THE FOUNDATION STONE MUST BE LEVELED AND COMPACTED BEFORE PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS MUST BE PROPERLY SEATED BEFORE PLACING STONE.
- A MINIMUM 6-INCH (150 MM) SPACING MUST BE MAINTAINED BETWEEN CHAMBER ROWS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE CLEAN, CRUSHED, ANGULAR STONE MEASURING 3/4-2 INCHES (20-50 MM).
- ANY DISCREPANCIES WITH CHAMBER FOUNDATION BEARING CAPACITIES MUST BE REPORTED TO THE SITE ENGINEER.
- IT IS RECOMMENDED TO INSTALL EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMWATER SYSTEM DURING ALL PHASES OF CONSTRUCTION.



C-10 4-INCH INSPECTION PORT



UNDERDRAIN DETAIL

XS-006074



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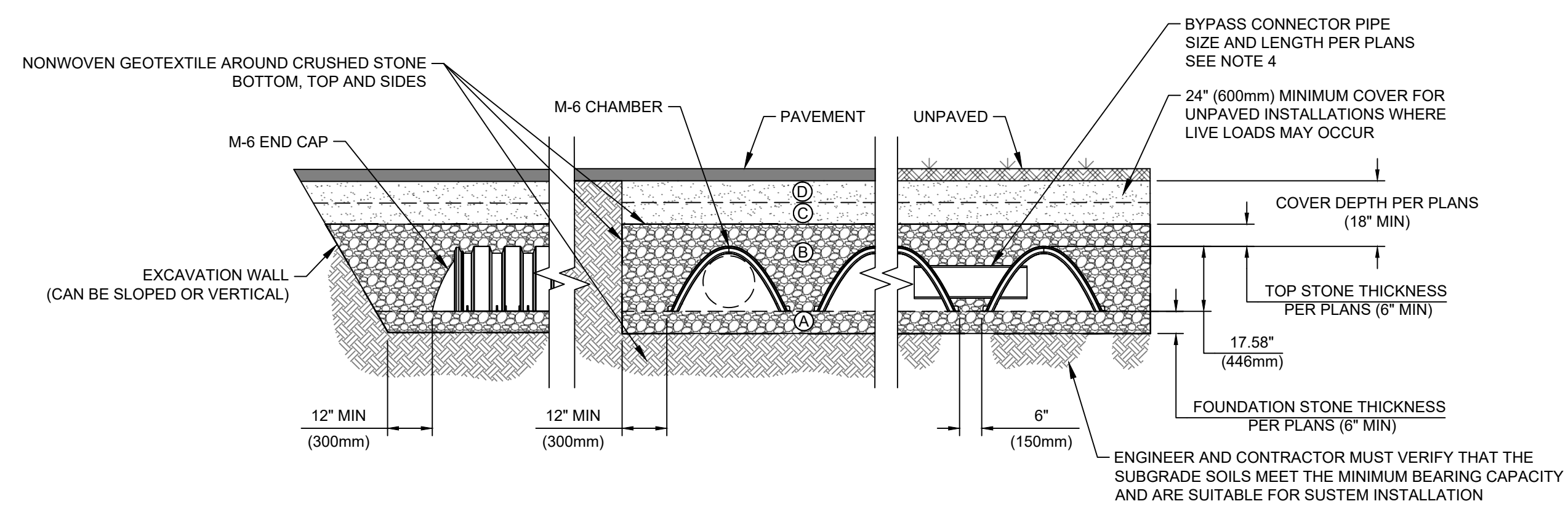


HYDROCHAIN™
C-10 STANDARD DETAILS

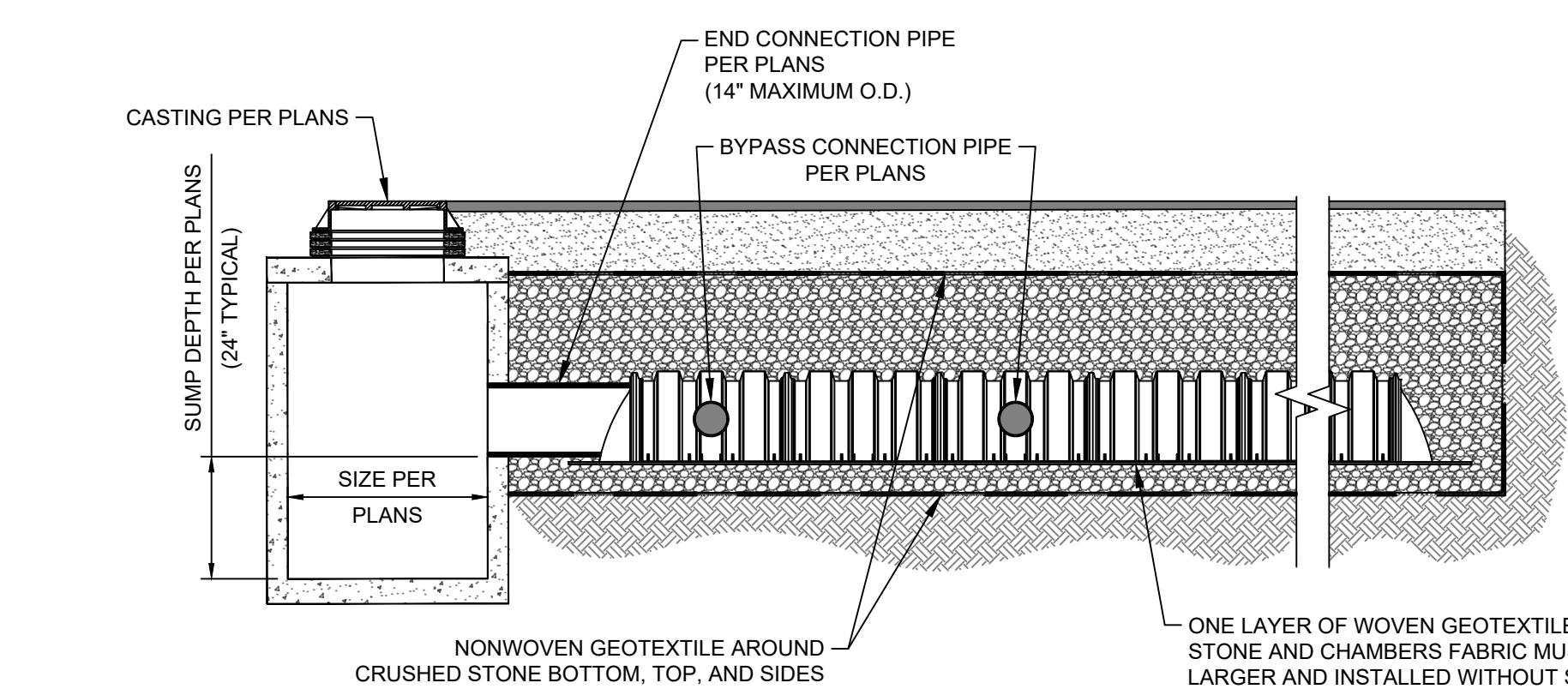
CHAMBER STANDARD FILL MATERIALS

	MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION	COMPACT/DENSITY REQUIREMENT
D	FILL MATERIAL FROM 18" (450mm) ABOVE CHAMBER TO GRADE	ANY SOIL/ROCK MATERIALS, NATIVE SOILS OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	PER PLANS	PREPARE PER ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	FILL MATERIAL FOR 6" (150mm) TO 18" (450mm) ABOVE THE CHAMBER AND 24" (600mm) FOR UNPAVED INSTALLATIONS	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES. MOST PAVEMENT SUB-BASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER	3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10 M145: A-1, A-2, A-3	COMPACT IN MAXIMUM 6" (150mm) LIFTS. SEE NOTES.
B	EMBEDMENT AND TOP STONE	3/8" - 2" (8-50mm) CLEAN, CRUSHED, ANGULAR STONE	3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE	3/8" - 2" (8-50mm) CLEAN, CRUSHED, ANGULAR STONE	3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL. SEE NOTES.

- NOTES:
- INSTALL CHAMBERS AND END CAPS IN ACCORDANCE WITH SITE SPECIFIC PLANS, HYDROCHAIN INSTALLATION MANUAL AND SUPPLEMENTAL DOCUMENTS. REFERENCE THE QR CODE BELOW FOR PRODUCT DOCUMENTS.
 - THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, AND ANGULAR.
 - AS AN ALTERNATE TO PROCTOR TESTING AND FIELD DENSITY MEASUREMENTS ON OPEN GRADED STONE, COMPACTION REQUIREMENTS ARE MET WHEN STONE IS PLACED AND COMPACTED IN 6" (150mm) MAXIMUM LIFTS USING TWO FULL PASSES WITH A VIBRATORY COMPACTOR.
 - SPACERS ARE REQUIRED TO CONNECT PERPENDICULAR CHAMBER ROWS WITH 6" SPACING. SEE S-22 SPACER DETAIL.
 - EXTEND CROSS CONNECTION PIPES INTO THE CHAMBER BY A LENGTH EQUAL OR GREATER THAN 1/2 THE PIPE O.D.

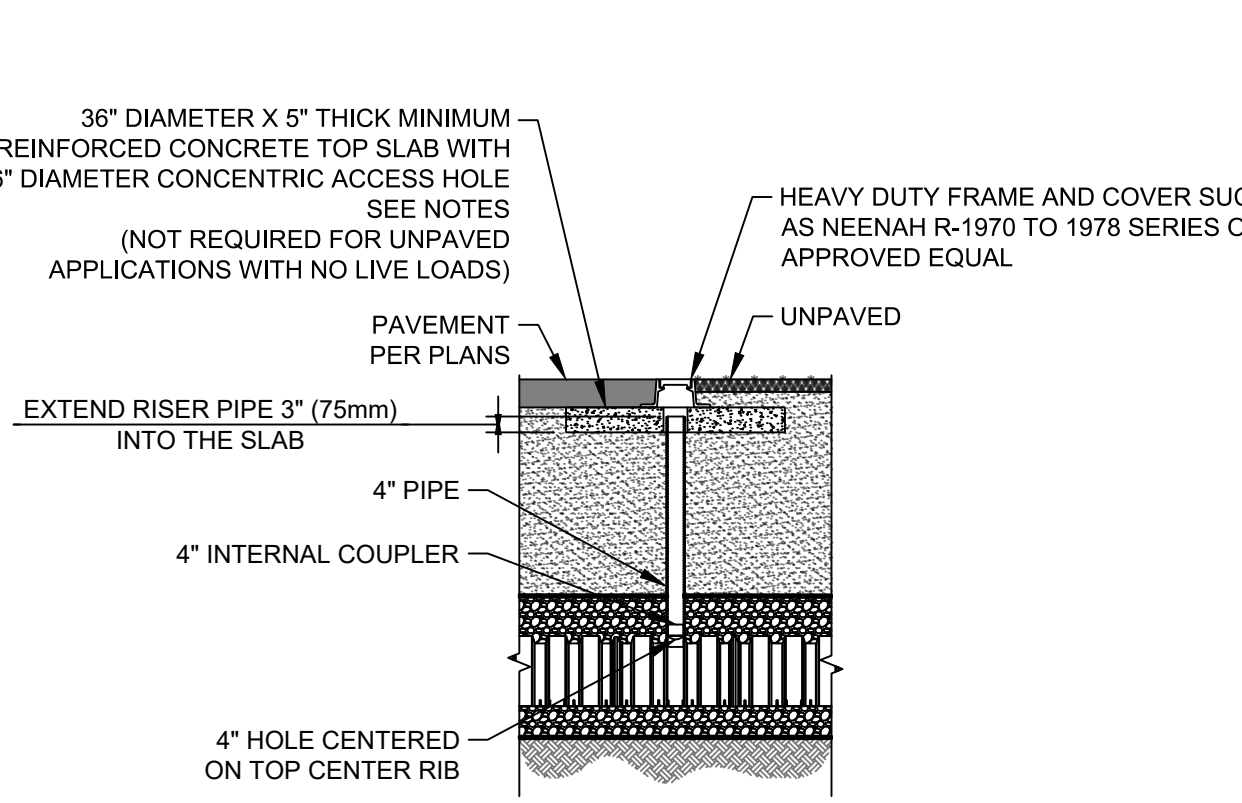


M-6 CHAMBER CROSS SECTION

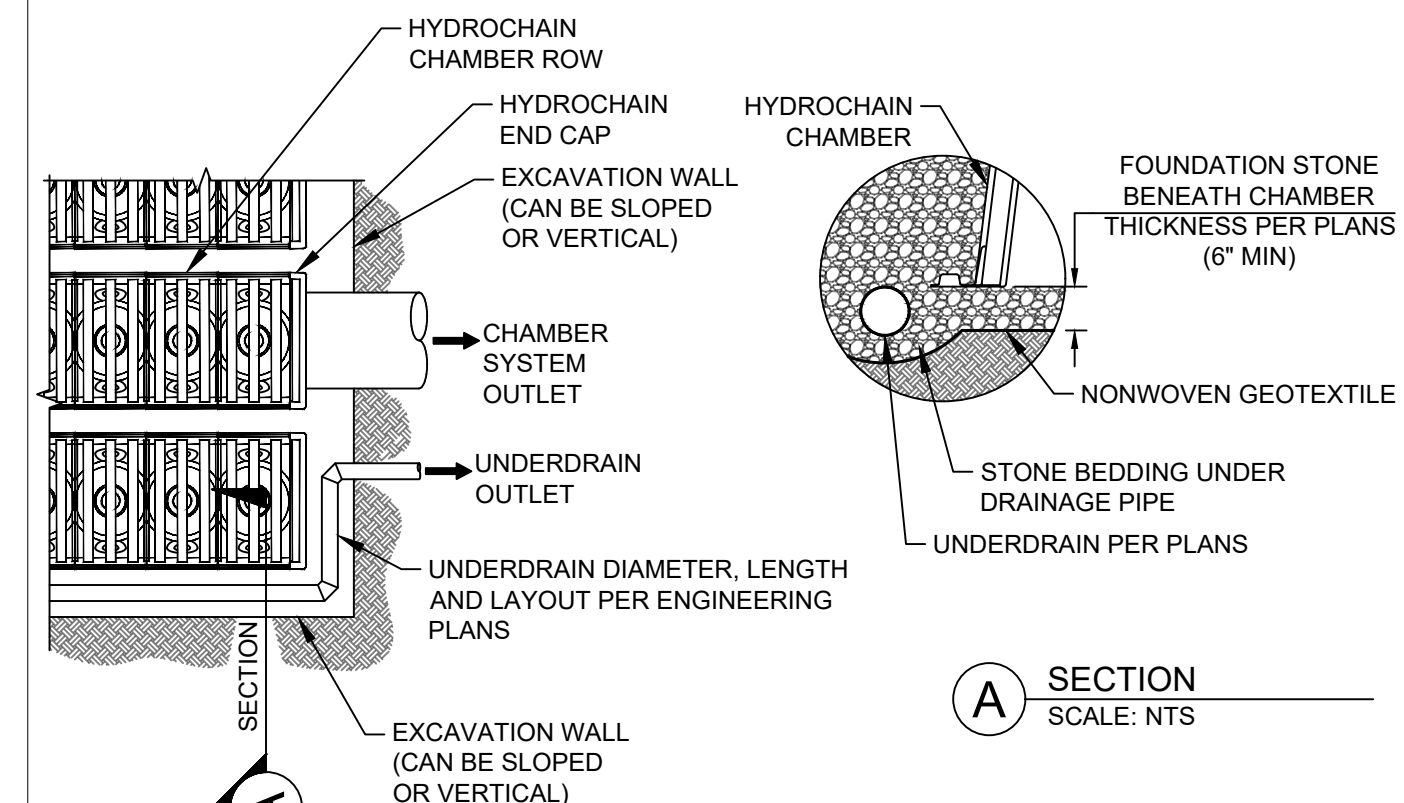


M-6 CHAMBER CROSS SECTION

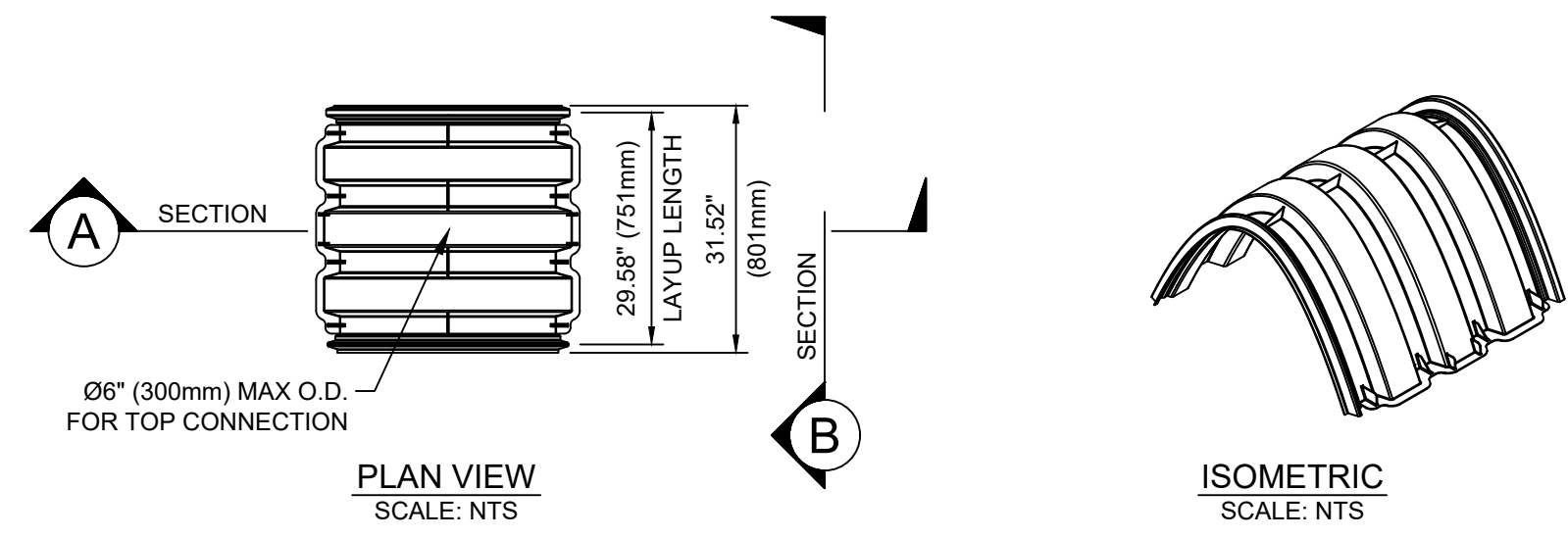
- NOTES:
- INSTALL THE MAIN HEADER ROW, CHAMBERS, AND END CAPS IN ACCORDANCE WITH THE SITE SPECIFIC PLANS, HYDROCHAIN INSTALLATION MANUAL AND SUPPLEMENTAL DOCUMENTS. REFERENCE THE QR CODE BELOW FOR PRODUCT DOCUMENTS.
 - CONDUCT INSPECTION AND MAINTENANCE IN ACCORDANCE WITH HYDROCHAIN CHAMBER MAIN HEADER ROW OPERATION AND MAINTENANCE MANUAL.



M-6 4-INCH INSPECTION PORT



UNDERDRAIN DETAIL

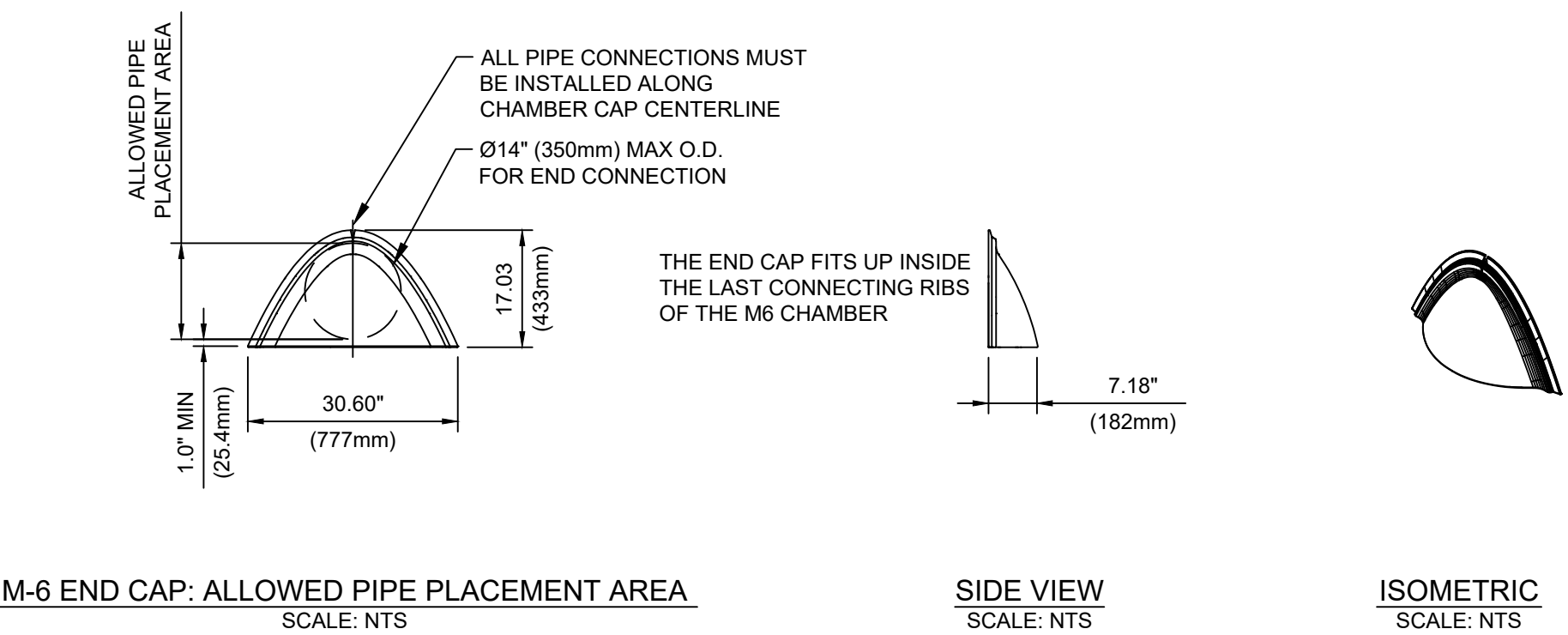


M-6 CHAMBER PROPERTIES	
NOMINAL DIMENSIONS (LAYOUT LENGTH x WIDTH x HEIGHT)	29.58" x 33.61" x 17.5" (751mm x 854mm x 445mm)
BARE CHAMBER STORAGE	5.6 CUBIC FEET (0.159 CUBIC METERS)
*MIN INSTALLED STORAGE	11.36 CUBIC FEET (0.322 CUBIC METERS)
CHAMBER WEIGHT	14 LBS (6.35 KG)
STORAGE PER LINEAR UNIT WITHOUT STONE	2.27 FT ³ /FT (0.211 M ³ /M)
STORAGE PER LINEAR UNIT WITH STONE	4.61 FT ³ /FT (0.428 M ³ /M)

*ASSUMING A MIN OF 6" (150mm) STONE ABOVE AND BELOW AND 6" (150mm) BETWEEN ROWS WITH 40% STONE POROSITY (DOES NOT INCLUDE 12" (300mm) PERIMETER STONE VOLUME)



M-6 CHAMBER



M-6 END CAP: ALLOWED PIPE PLACEMENT AREA SCALE: NTS

SIDE VIEW SCALE: NTS

ISOMETRIC SCALE: NTS

M-6 END CAP

GENERAL

- CHAMBERS MUST BE XERXES® HYDROCHAIN™ M-6. ONLY CHAMBERS APPROVED BY THE SITE DESIGN ENGINEER ARE PERMITTED.
- CHAMBERS MUST BE MANUFACTURED BY COMPRESSION MOLDING OF FIBERGLASS REINFORCED COMPOSITE.
- CHAMBERS MUST BE EVALUATED AND TESTED TO MEET OR EXCEED THE STANDARDS IN ASTM F2418 STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS.
- CHAMBERS MUST BE ARCH-SHAPED AND HAVE AN OPEN BOTTOM. CHAMBER ROWS MUST BE CONTINUOUS, UNOBSTRUCTED, AND WITHOUT INTERNAL SUPPORT THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION AND MAINTENANCE.
- THE INSTALLED CHAMBER SYSTEM MUST BE DESIGNED TO MEET THE LOAD REQUIREMENTS OF ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" FOR:
 - INSTANTANEOUS LIVE LOAD FROM AASHTO DESIGN TRUCK AT MINIMUM COVER
 - MAXIMUM DEAD LOAD (100-YEAR)
 - 1-WEEK AASHTO DESIGN TRUCK LOAD AT MINIMUM COVER
- THE INSTALLED CHAMBER SYSTEM MUST BE DESIGNED TO MEET THE LOAD REQUIREMENTS OF AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SPECIFICATION 12.12 FOR:
 - LONG-DURATION DEAD LOADS
 - SHORT-DURATION LIVE LOADS WITH IMPACT AND MULTIPLE VEHICLE PRESENCE
- CHAMBERS MUST HAVE AN ARCH STIFFNESS CONSTANT (ASC) ≥ 700 LBS/FT/% PER ASTM F2418, SECTION 6.2.8 AND MAINTAIN STIFFNESS THROUGH TEMPERATURE RANGES OF -40 DEGREES FAHRENHEIT TO 180 DEGREES FAHRENHEIT.
- THE CHAMBER MUST INTERCONNECT USING AN OVERLAPPING CORRUGATION JOINT.
- THE STORMWATER CHAMBER SYSTEM SHALL INCORPORATE A MAIN HEADER ROW FOR STORMWATER TREATMENT AND SYSTEM MAINTENANCE WHICH HAS BEEN TESTED TO A MINIMUM OF 80% OF TSS REMOVAL FOLLOWING NJCAT TESTING PROTOCOLS.
- CHAMBERS AND END CAPS MUST BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

INSTALLATION

- INSTALLATION MUST NOT START UNTIL A PRE-CONSTRUCTION MEETING HAS BEEN HELD WITH THE MANUFACTURER'S REPRESENTATIVE AND THE INSTALLERS.
- INSTALLATION MUST BE IN ACCORDANCE WITH THE CONSTRUCTION PLANS AND HYDROCHAIN™ INSTALLATION MANUAL.
- BACKFILLING OVER CHAMBERS MUST NOT BE DONE WITH A DOZER OR AN EXCAVATOR LOCATED OVER THE CHAMBERS. SEE THE INSTALLATION MANUAL FOR MAXIMUM EQUIPMENT LOADS BASED ON THE DEPTH OF COVER OVER THE CHAMBERS. RECOMMENDED BACKFILL METHODS INCLUDE:
 - USING A STONE SHOOTER LOCATED OFF THE CHAMBER BED.
 - BACKFILLING WHILE PLACING ROWS USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
 - BACKFILLING FROM OUTSIDE THE EXCAVATION USING A LONG BOOM EXCAVATOR.
- THE FOUNDATION STONE MUST BE LEVELED AND COMPACTED BEFORE PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS MUST BE PROPERLY SEATED BEFORE PLACING STONE.
- A MINIMUM 6-INCH (150 MM) SPACING MUST BE MAINTAINED BETWEEN CHAMBER ROWS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE CLEAN, CRUSHED, ANGULAR STONE MEASURING 3/4-2 INCHES (20-50 MM).
- ANY DISCREPANCIES WITH CHAMBER FOUNDATION BEARING CAPACITIES MUST BE REPORTED TO THE SITE ENGINEER.
- IT IS RECOMMENDED TO INSTALL EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMWATER SYSTEM DURING ALL PHASES OF CONSTRUCTION.

XS-006075



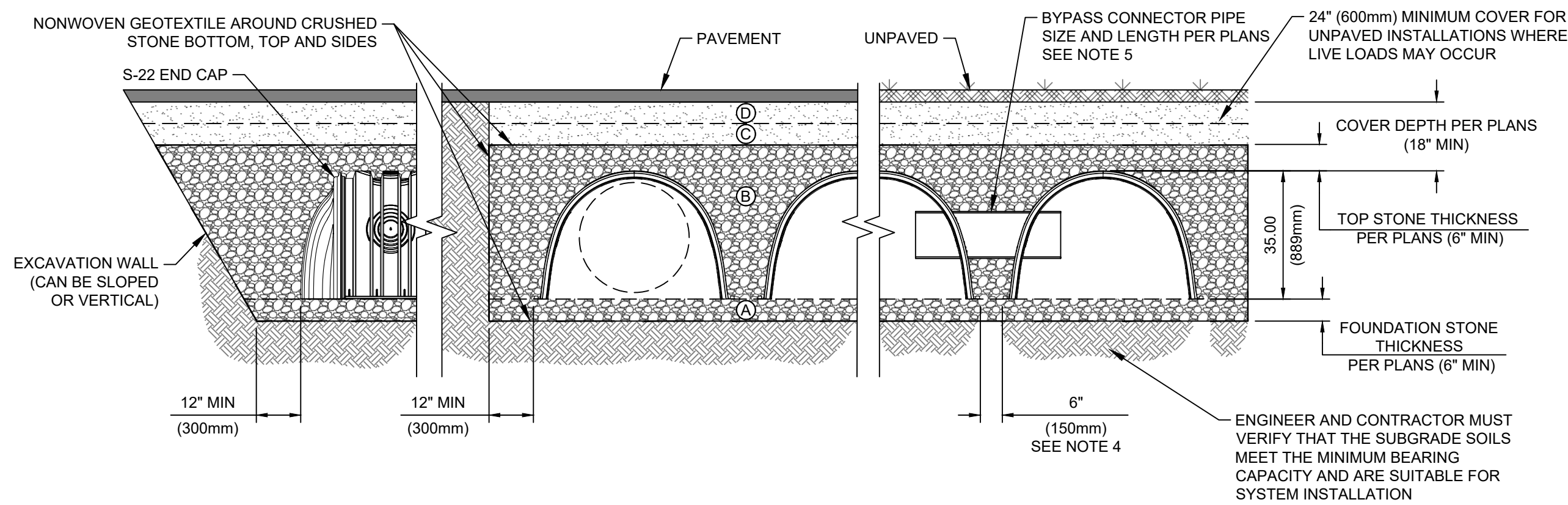
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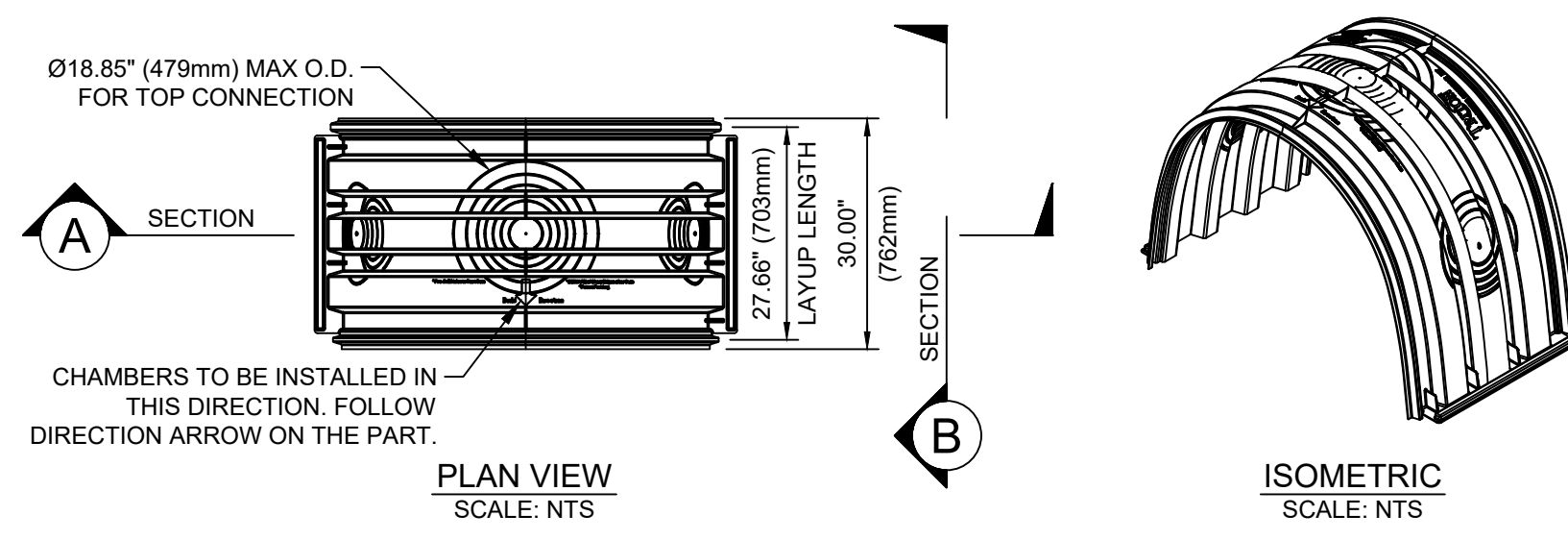
HYDROCHAIN™
M-6 STANDARD DETAILS

CHAMBER STANDARD FILL MATERIALS				
	MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION	COMPACT/DENSITY REQUIREMENT
D	FILL MATERIAL FROM 18" (450mm) ABOVE CHAMBER TO GRADE	ANY SOIL/ROCK MATERIALS, NATIVE SOILS OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	PER PLANS	PREPARE PER ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	FILL MATERIAL FOR 6" (150mm) TO 18" (450mm) ABOVE THE CHAMBER AND 24" (600mm) FOR UNPAVED INSTALLATIONS	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES. MOST PAVEMENT SUB-BASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER	3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10 M145: A-1, A-2, A-3	COMPACT IN MAXIMUM 6" (150mm) LIFTS. SEE NOTES.
B	EMBEDMENT AND TOP STONE	3/8" - 2" (8-50mm) CLEAN, CRUSHED, ANGULAR STONE	3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE	3/8" - 2" (8-50mm) CLEAN, CRUSHED, ANGULAR STONE	3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL. SEE NOTES.

- NOTES:
- INSTALL CHAMBERS AND END CAPS IN ACCORDANCE WITH SITE SPECIFIC PLANS, HYDROCHAIN INSTALLATION MANUAL AND SUPPLEMENTAL DOCUMENTS. REFERENCE THE QR CODE BELOW FOR PRODUCT DOCUMENTS.
 - THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, AND ANGULAR.
 - AS AN ALTERNATE TO PROCTOR TESTING AND FIELD DENSITY MEASUREMENTS ON OPEN GRADED STONE, COMPACTION REQUIREMENTS ARE MET WHEN STONE IS PLACED AND COMPACTION IN 6" (150mm) MAXIMUM LIFTS USING TWO FULL PASSES WITH A VIBRATORY COMPACTOR.
 - SPACERS ARE REQUIRED TO CONNECT PERPENDICULAR CHAMBER ROWS WITH 6" SPACING. SEE S-22 SPACER DETAIL.
 - EXTEND CROSS CONNECTION PIPES INTO THE CHAMBER BY A LENGTH EQUAL OR GREATER THAN 1/2 THE PIPE O.D.

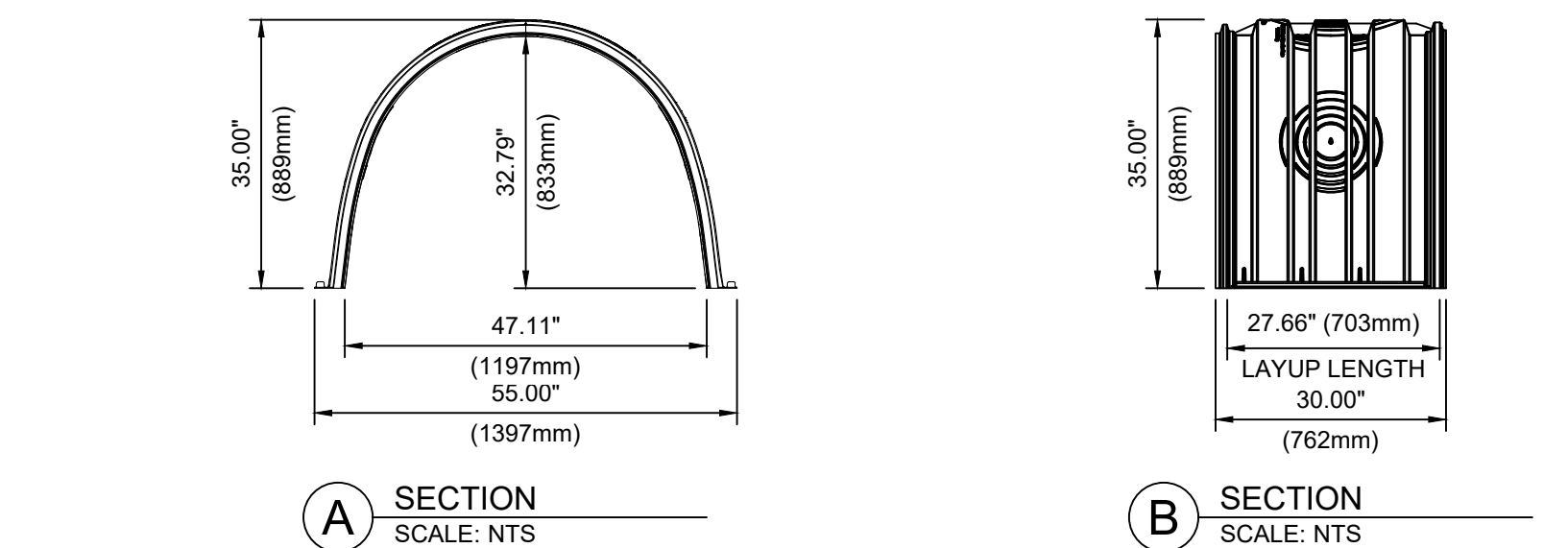


S-22 CHAMBER CROSS SECTION



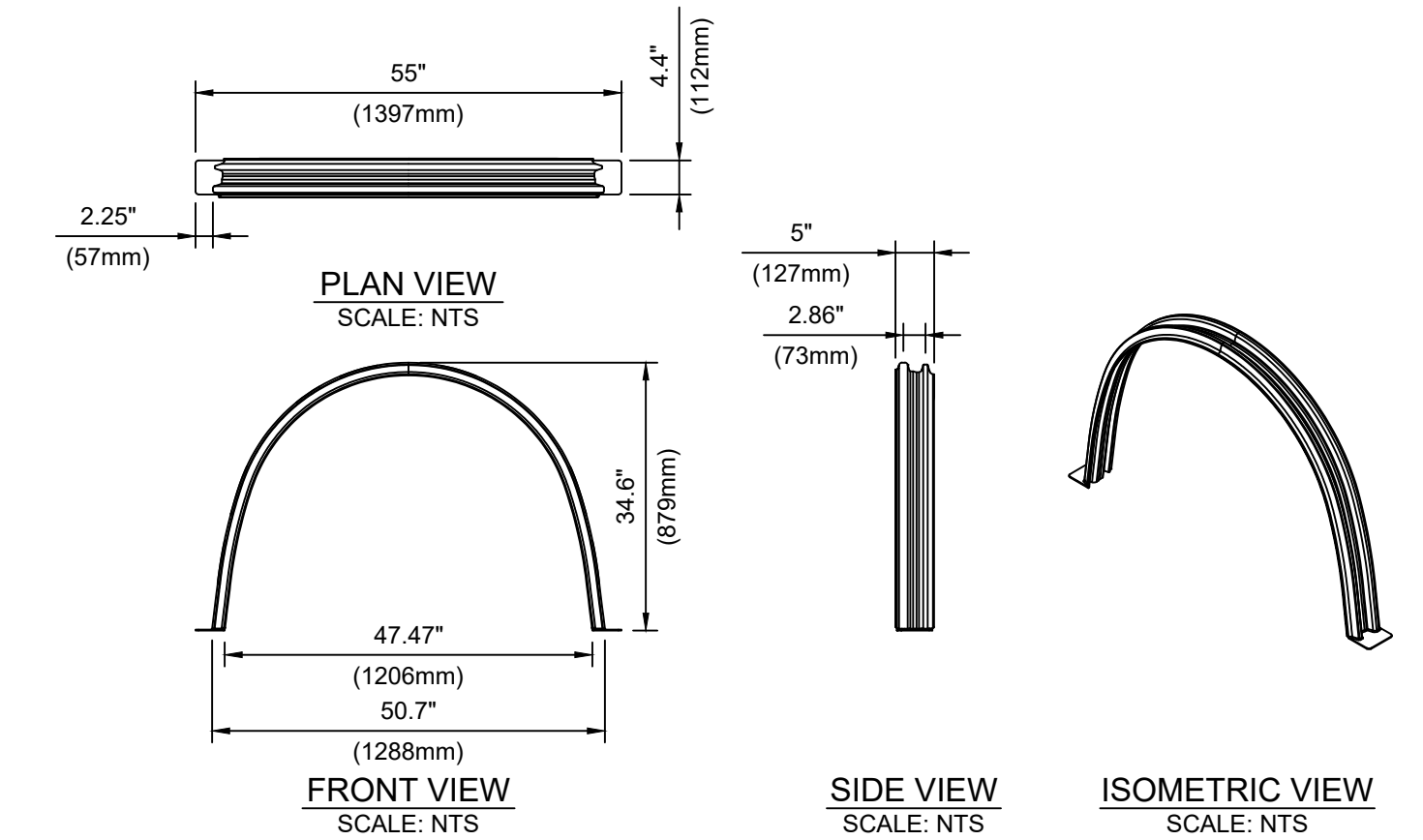
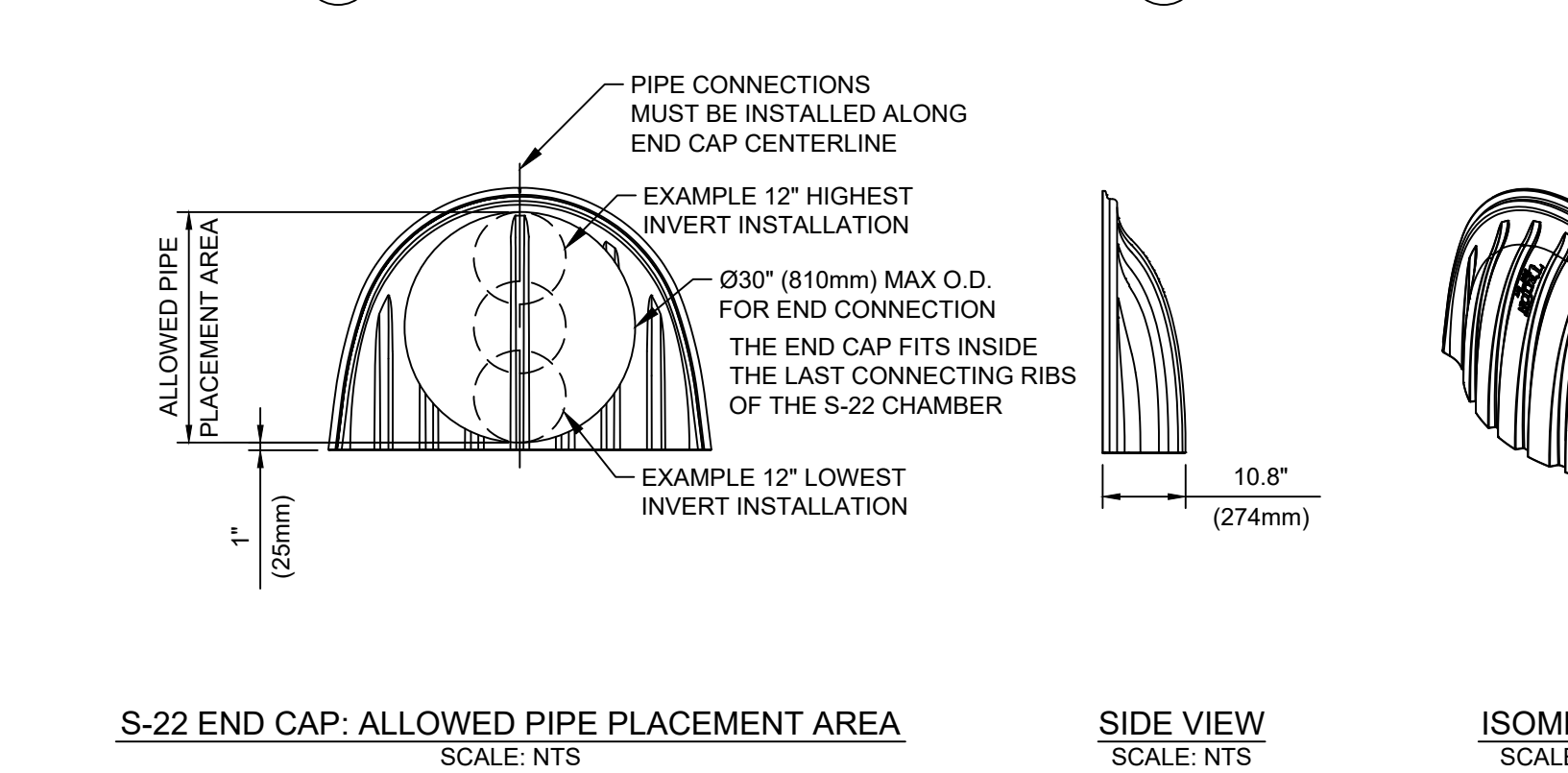
S-22 CHAMBER PROPERTIES	
NOMINAL DIMENSIONS (LAYOUT LENGTH x WIDTH x HEIGHT)	27.66" x 55.00" x 35.00" (703mm x 1397mm x 889mm)
BARE CHAMBER STORAGE	21.57 CUBIC FEET (0.611 CUBIC METERS)
*MIN INSTALLED STORAGE	31.30 CUBIC FEET (0.886 CUBIC METERS)
CHAMBER WEIGHT	28 LBS (12.701 KG)
STORAGE PER LINEAR UNIT WITHOUT STONE	9.36 FT ³ /FT (0.869 M ³ /M)
STORAGE PER LINEAR UNIT WITH STONE	13.58 FT ³ /FT (1.261 M ³ /M)

*ASSUMING A MIN OF 6" (150mm) STONE ABOVE AND BELOW AND 6" (150mm) BETWEEN ROWS WITH 40% STONE POROSITY (DOES NOT INCLUDE 12" (300mm) PERIMETER STONE VOLUME)



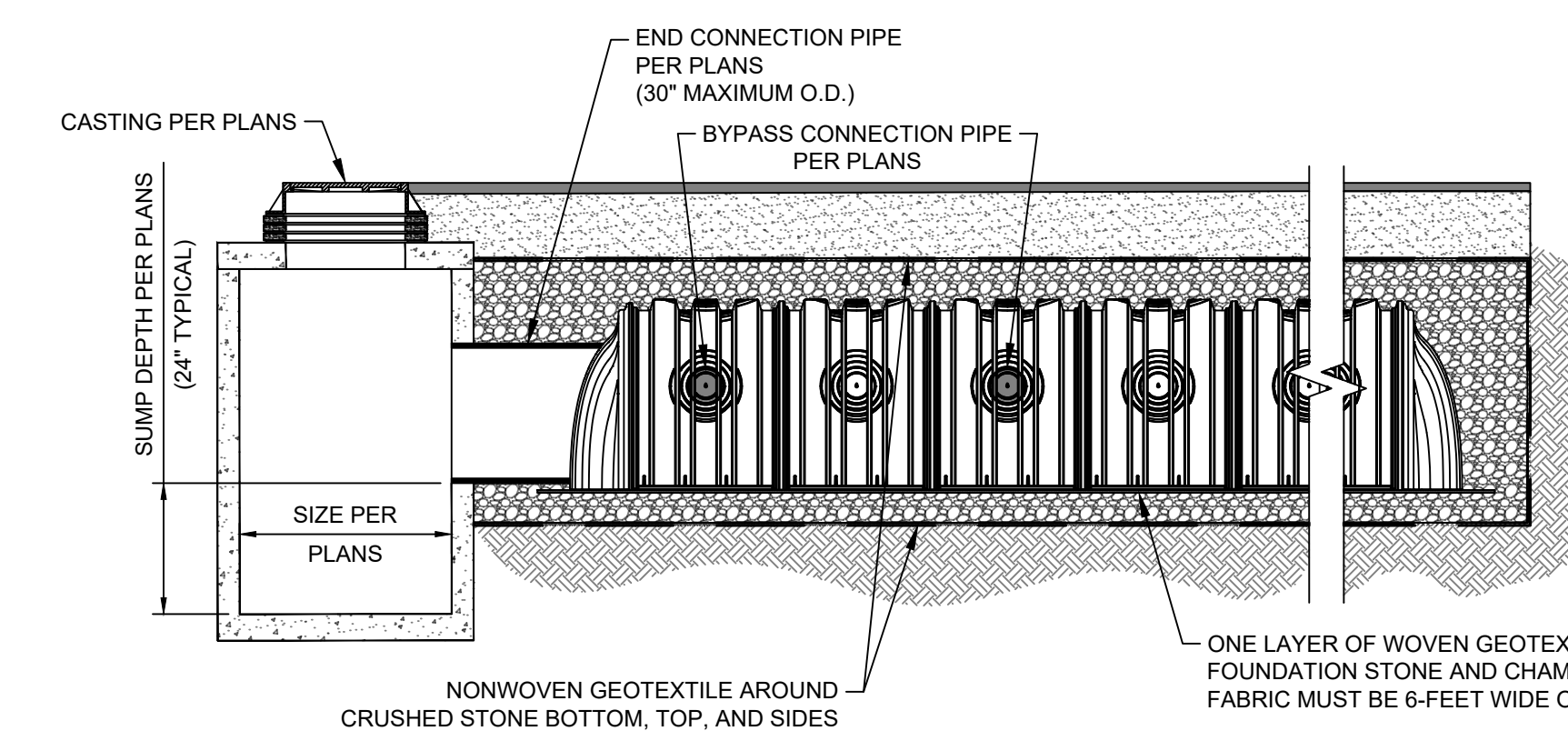
S-22 END CAP PROPERTIES	
NOMINAL DIMENSIONS (LAYOUT LENGTH x WIDTH x HEIGHT)	10.8" x 49.9" x 34.16" (274mm x 1267mm x 868mm)
BARE END CAP STORAGE	3.98 CUBIC FEET (0.113 CUBIC METERS)
*MIN INSTALLED STORAGE	9.56 CUBIC FEET (0.271 CUBIC METERS)

*ASSUMING A MIN OF 6" (150mm) STONE ABOVE AND BELOW AND 6" (150mm) BETWEEN ROWS WITH 40% STONE POROSITY (DOES NOT INCLUDE 12" (300mm) PERIMETER STONE VOLUME)



S-22 CHAMBER AND END CAP

S-22 SPACER



S-22 CHAMBER CROSS SECTION

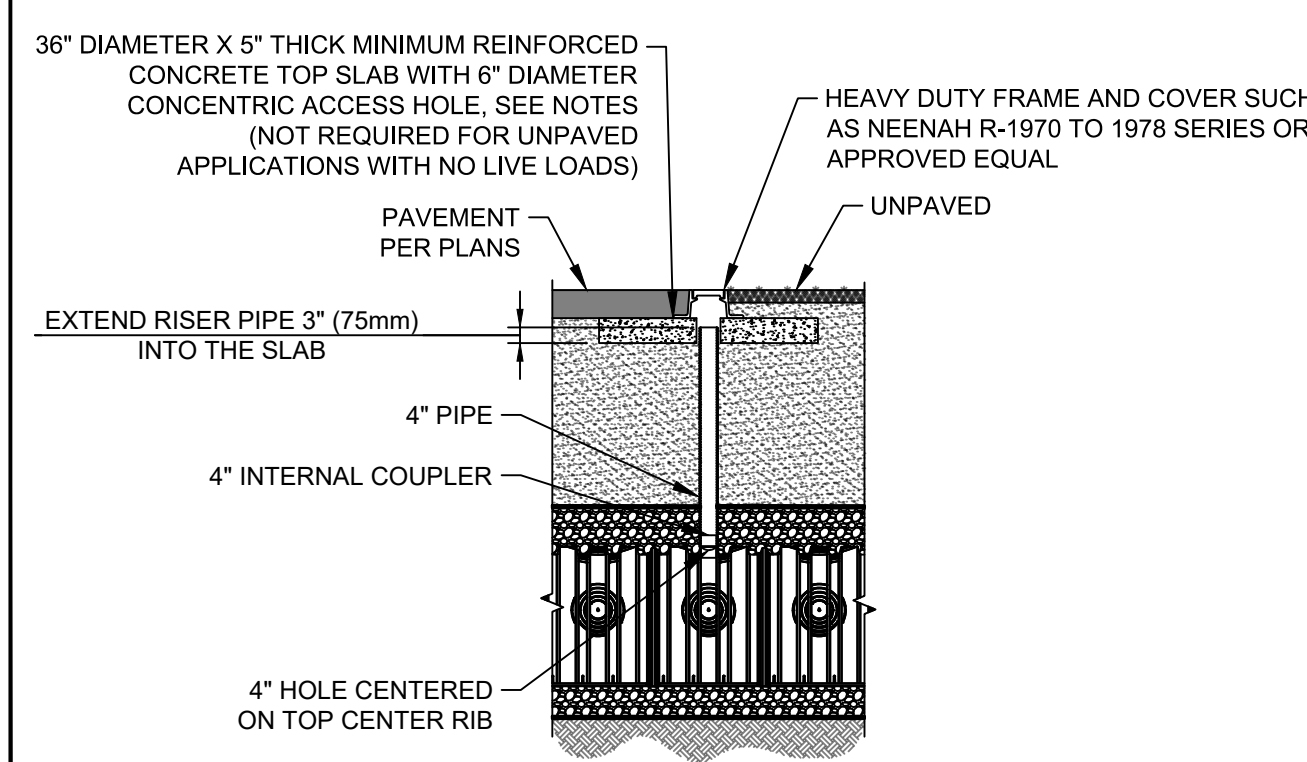
- NOTES:
- INSTALL THE MAIN HEADER ROW, CHAMBERS, AND END CAPS IN ACCORDANCE WITH THE SITE SPECIFIC PLANS, HYDROCHAIN INSTALLATION MANUAL AND SUPPLEMENTAL DOCUMENTS. REFERENCE THE QR CODE BELOW FOR PRODUCT DOCUMENTS.
 - CONDUCT INSPECTION AND MAINTENANCE IN ACCORDANCE WITH HYDROCHAIN CHAMBER MAIN HEADER ROW OPERATION AND MAINTENANCE MANUAL.

GENERAL

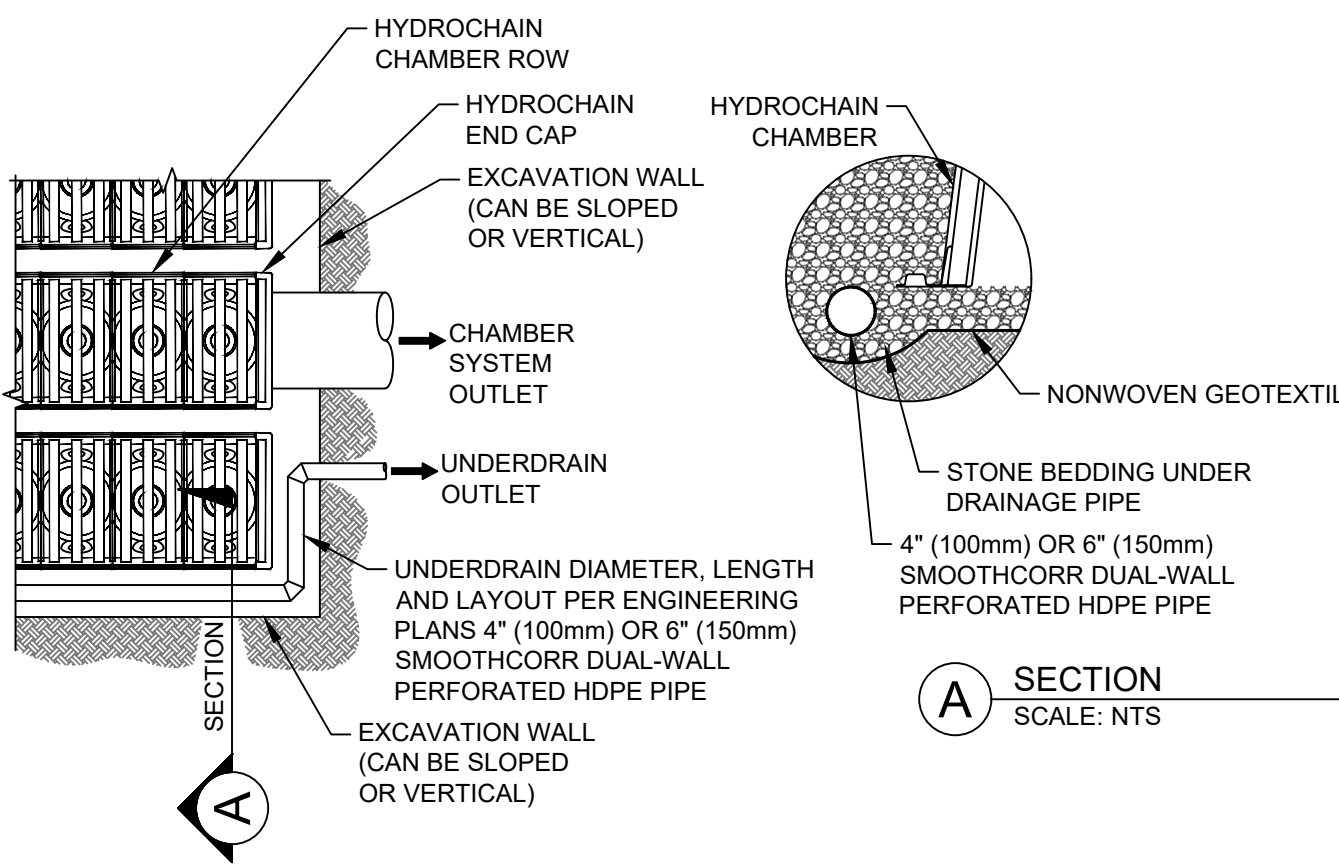
- CHAMBERS MUST BE XERXES® HYDROCHAIN™ S-22. ONLY CHAMBERS APPROVED BY THE SITE DESIGN ENGINEER ARE PERMITTED.
- CHAMBERS MUST BE MANUFACTURED BY COMPRESSION MOLDING OF FIBERGLASS REINFORCED COMPOSITE.
- CHAMBERS MUST BE EVALUATED AND TESTED TO MEET OR EXCEED THE STANDARDS IN ASTM F2418 STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS.
- CHAMBERS MUST BE ARCH-SHAPED AND HAVE AN OPEN BOTTOM. CHAMBER ROWS MUST BE CONTINUOUS, UNOBSTRUCTED, AND WITHOUT INTERNAL SUPPORT THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION AND MAINTENANCE.
- THE INSTALLED CHAMBER SYSTEM MUST BE DESIGNED TO MEET THE LOAD REQUIREMENTS OF ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" FOR:
 - A. INSTANTANEOUS LIVE LOAD FROM AASHTO DESIGN TRUCK AT MINIMUM COVER
 - B. MAXIMUM DEAD LOAD (100-YEAR)
 - C. 1-WEEK AASHTO DESIGN TRUCK LOAD AT MINIMUM COVER
- THE INSTALLED CHAMBER SYSTEM MUST BE DESIGNED TO MEET THE LOAD REQUIREMENTS OF AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SPECIFICATION 12.12 FOR:
 - A. LONG-DURATION DEAD LOADS
 - B. SHORT-DURATION LIVE LOADS WITH IMPACT AND MULTIPLE VEHICLE PRESENCE
- CHAMBERS MUST HAVE AN ARCH STIFFNESS CONSTANT (ASC) ≥ 700 LBS/FT²% PER ASTM F2418, SECTION 6.2.8 AND MAINTAIN STIFFNESS THROUGH TEMPERATURE RANGES OF -40 DEGREES FAHRENHEIT TO 180 DEGREES FAHRENHEIT.
- THE CHAMBER MUST INTERCONNECT USING AN OVERLAPPING CORRUGATION JOINT.
- THE STORMWATER CHAMBER SYSTEM SHALL INCORPORATE A MAIN HEADER ROW FOR STORMWATER TREATMENT AND SYSTEM MAINTENANCE WHICH HAS BEEN TESTED TO A MINIMUM OF 80% OF TSS REMOVAL FOLLOWING NJCAT TESTING PROTOCOLS.
- CHAMBERS AND END CAPS MUST BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

INSTALLATION

- INSTALLATION MUST NOT START UNTIL A PRE-CONSTRUCTION MEETING HAS BEEN HELD WITH THE MANUFACTURER'S REPRESENTATIVE AND THE INSTALLERS.
- INSTALLATION MUST BE IN ACCORDANCE WITH THE CONSTRUCTION PLANS AND HYDROCHAIN™ INSTALLATION MANUAL.
- BACKFILLING OVER CHAMBERS MUST NOT BE DONE WITH A DOZER OR AN EXCAVATOR LOCATED OVER THE CHAMBERS. SEE THE INSTALLATION MANUAL FOR MAXIMUM EQUIPMENT LOADS BASED ON THE DEPTH OF COVER OVER THE CHAMBERS. RECOMMENDED BACKFILL METHODS INCLUDE:
 - A. USING A STONE SHOOTER LOCATED OFF THE CHAMBER BED.
 - B. BACKFILLING WHILE PLACING ROWS USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
 - C. BACKFILLING FROM OUTSIDE THE EXCAVATION USING A LONG BOOM EXCAVATOR.
- THE FOUNDATION STONE MUST BE LEVELED AND COMPACTION BEFORE PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS MUST BE PROPERLY SEATED BEFORE PLACING STONE.
- A MINIMUM 6-INCH (150 MM) SPACING MUST BE MAINTAINED BETWEEN CHAMBER ROWS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE CLEAN, CRUSHED, ANGULAR STONE MEASURING 3/4-2 INCHES (20-50 MM).
- ANY DISCREPANCIES WITH CHAMBER FOUNDATION BEARING CAPACITIES MUST BE REPORTED TO THE SITE ENGINEER.
- IT IS RECOMMENDED TO INSTALL EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMWATER SYSTEM DURING ALL PHASES OF CONSTRUCTION.



S-22 4-INCH INSPECTION PORT



UNDERDRAIN DETAIL

XS-006082



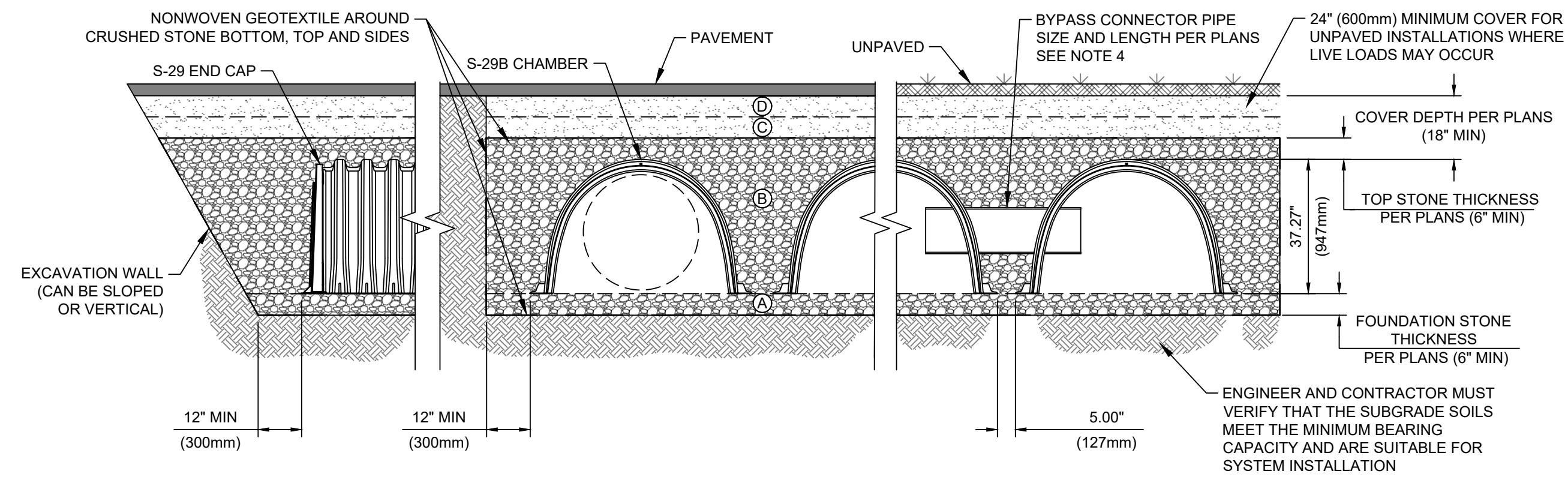
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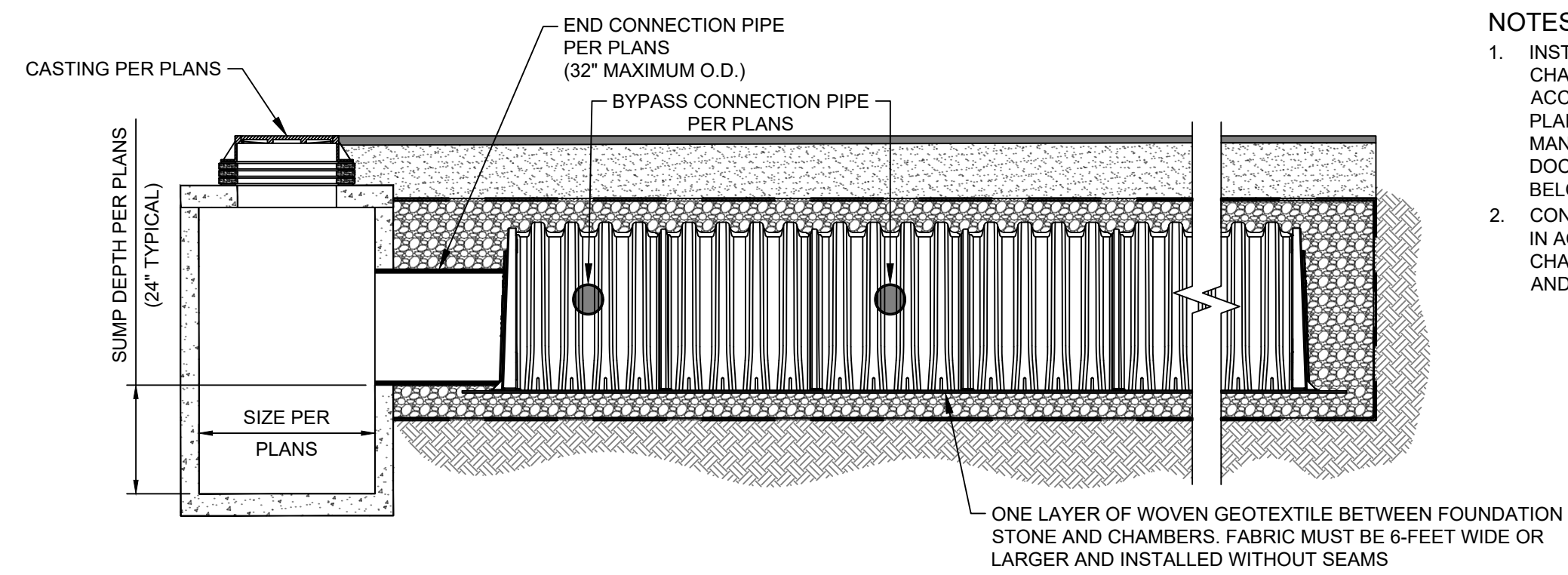
HYDROCHAIN™
S-22 STANDARD DETAILS

CHAMBER STANDARD FILL MATERIALS				
	MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION	COMPACT/DENSITY REQUIREMENT
D	FILL MATERIAL FROM 18" (450mm) ABOVE CHAMBER TO GRADE	ANY SOIL/ROCK MATERIALS, NATIVE SOILS OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	PER PLANS	PREPARE PER ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	FILL MATERIAL FOR 6" (150mm) TO 18" (450mm) ABOVE THE CHAMBER AND 24" (600mm) FOR UNPAVED INSTALLATIONS	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES. MOST PAVEMENT SUB-BASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER	3, 357, 4, 467, 5, 56, 6, 67, 68, 7, 78, 8, 89, 9, 10 M145: A-1, A-2, A-3	COMPACT IN MAXIMUM 6" (150mm) LIFTS. SEE NOTES.
B	EMBEDMENT AND TOP STONE	3/8" - 2" (8-50mm) CLEAN, CRUSHED, ANGULAR STONE	3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE	3/8" - 2" (8-50mm) CLEAN, CRUSHED, ANGULAR STONE	3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL. SEE NOTES.

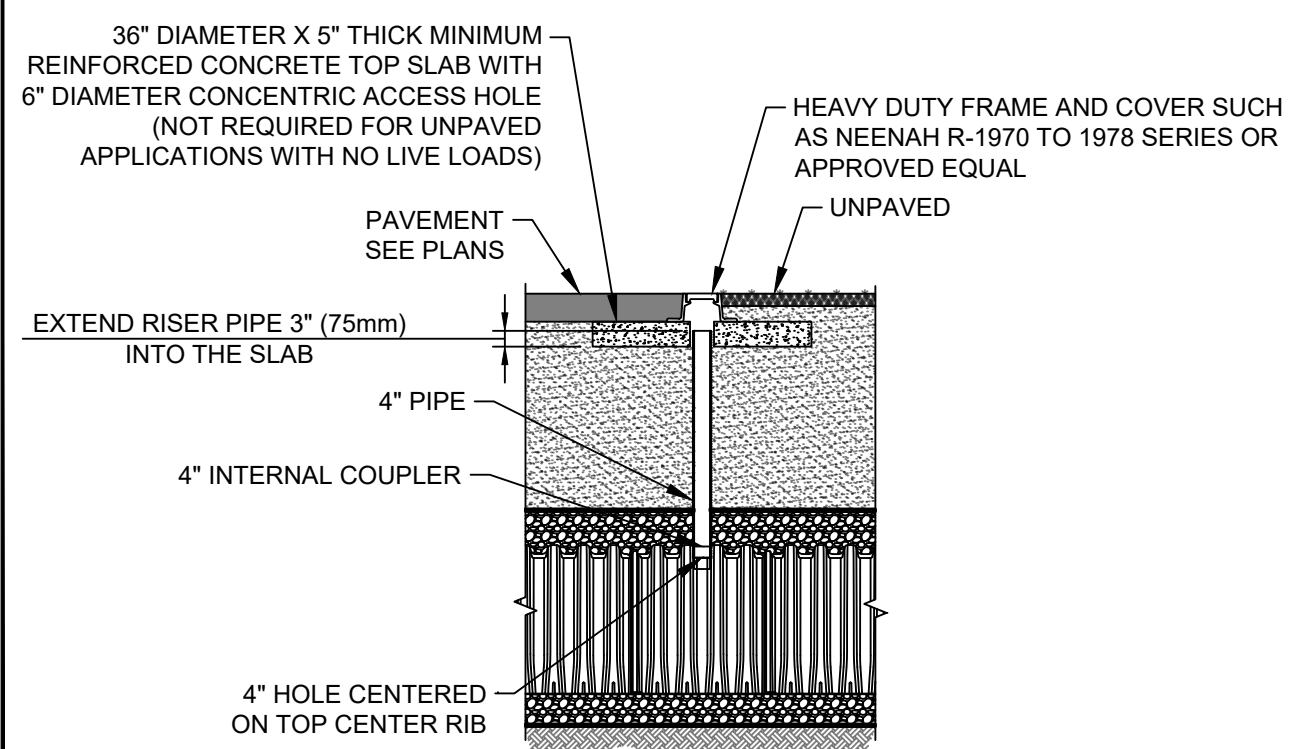
- NOTES:
- INSTALL CHAMBERS AND END CAPS IN ACCORDANCE WITH SITE SPECIFIC PLANS, HYDROCHAIN INSTALLATION MANUAL AND SUPPLEMENTAL DOCUMENTS. REFERENCE THE QR CODE BELOW FOR PRODUCT DOCUMENTS.
 - THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, AND ANGULAR.
 - AS AN ALTERNATE TO PROCTOR TESTING AND FIELD DENSITY MEASUREMENTS ON OPEN GRADED STONE, COMPACTION REQUIREMENTS ARE MET WHEN STONE IS PLACED AND COMPACTED IN 6" (150mm) MAXIMUM LIFTS USING TWO FULL PASSES WITH A VIBRATORY COMPACTOR.
 - EXTEND CROSS CONNECTION PIPES INTO THE CHAMBER BY A LENGTH EQUAL OR GREATER THAN 1/2 THE PIPE O.D.



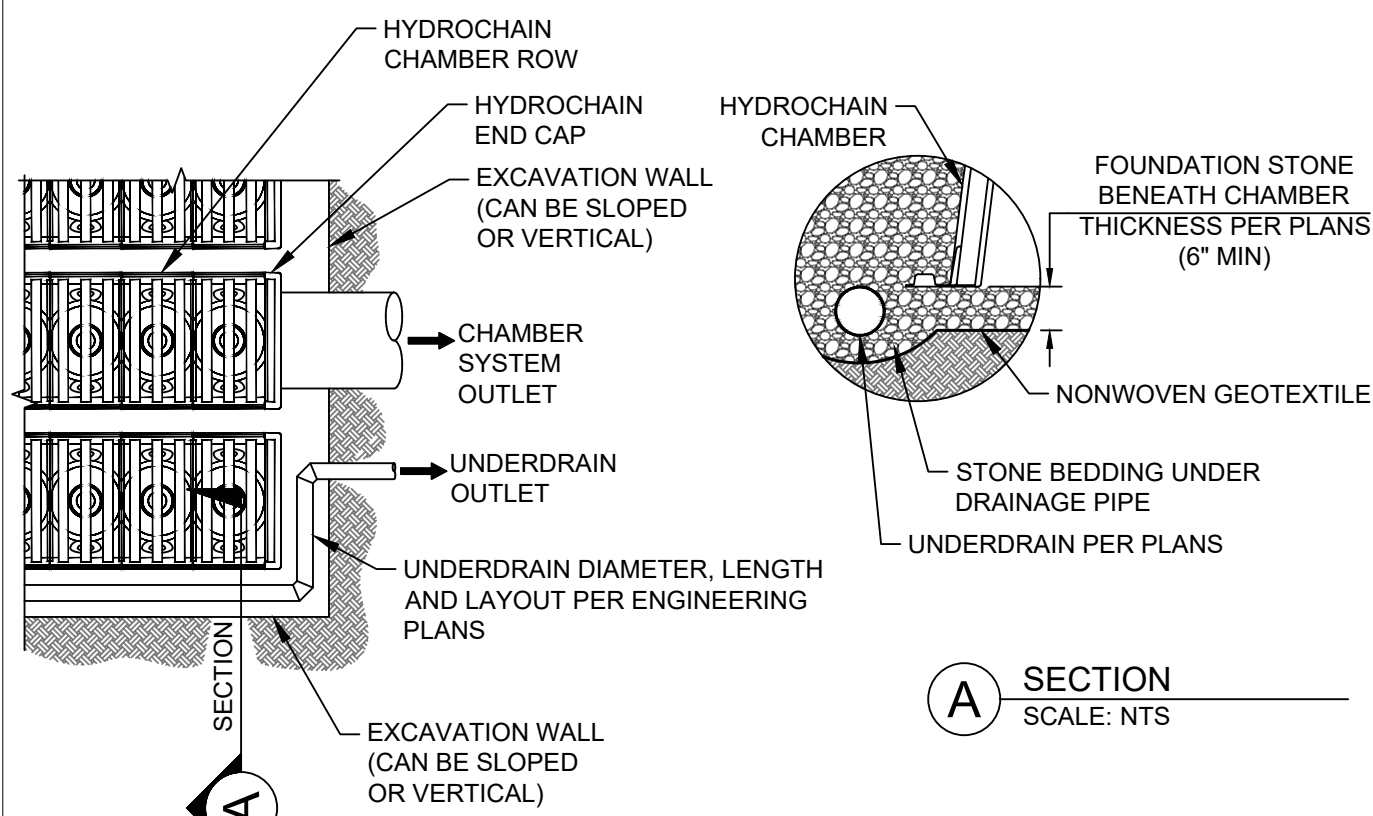
S-29B CHAMBER CROSS SECTION



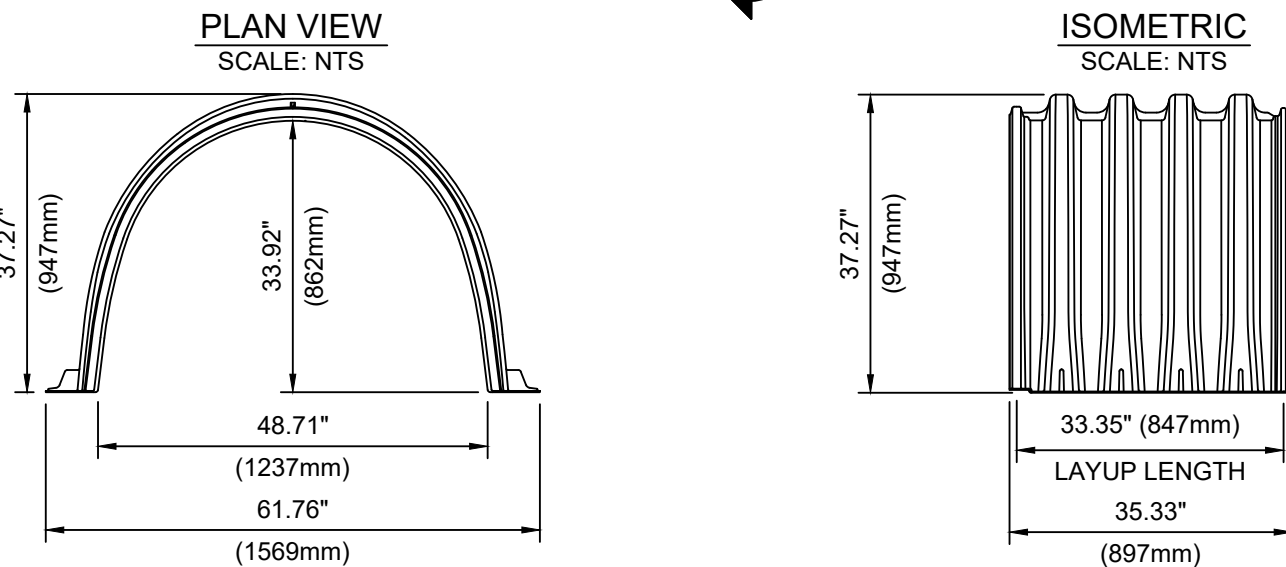
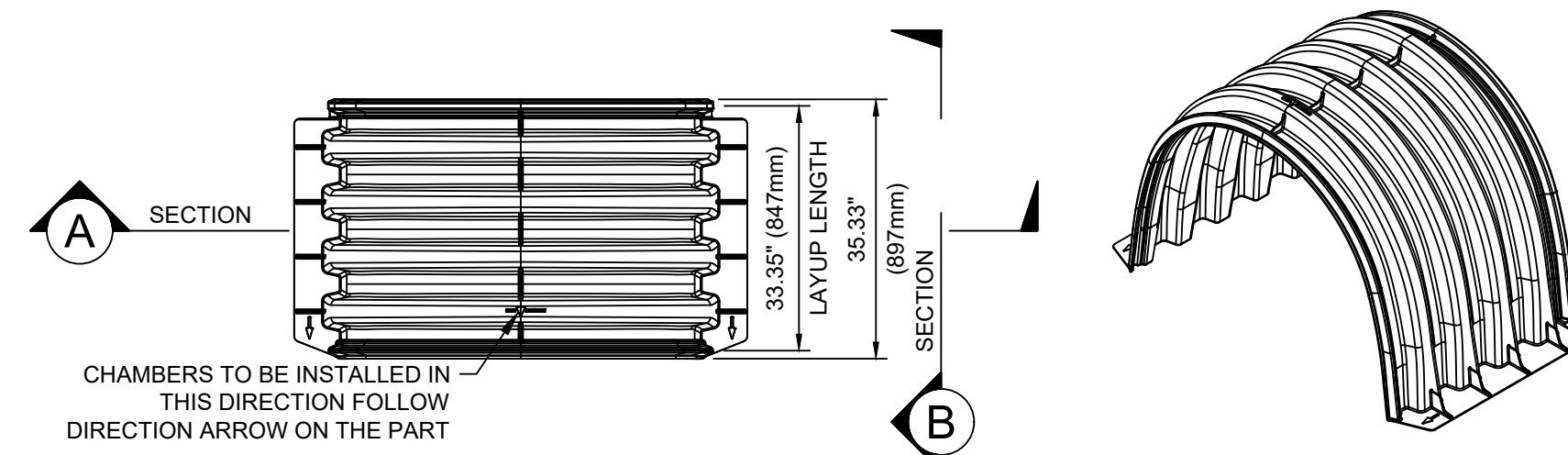
S-29B CHAMBER CROSS SECTION



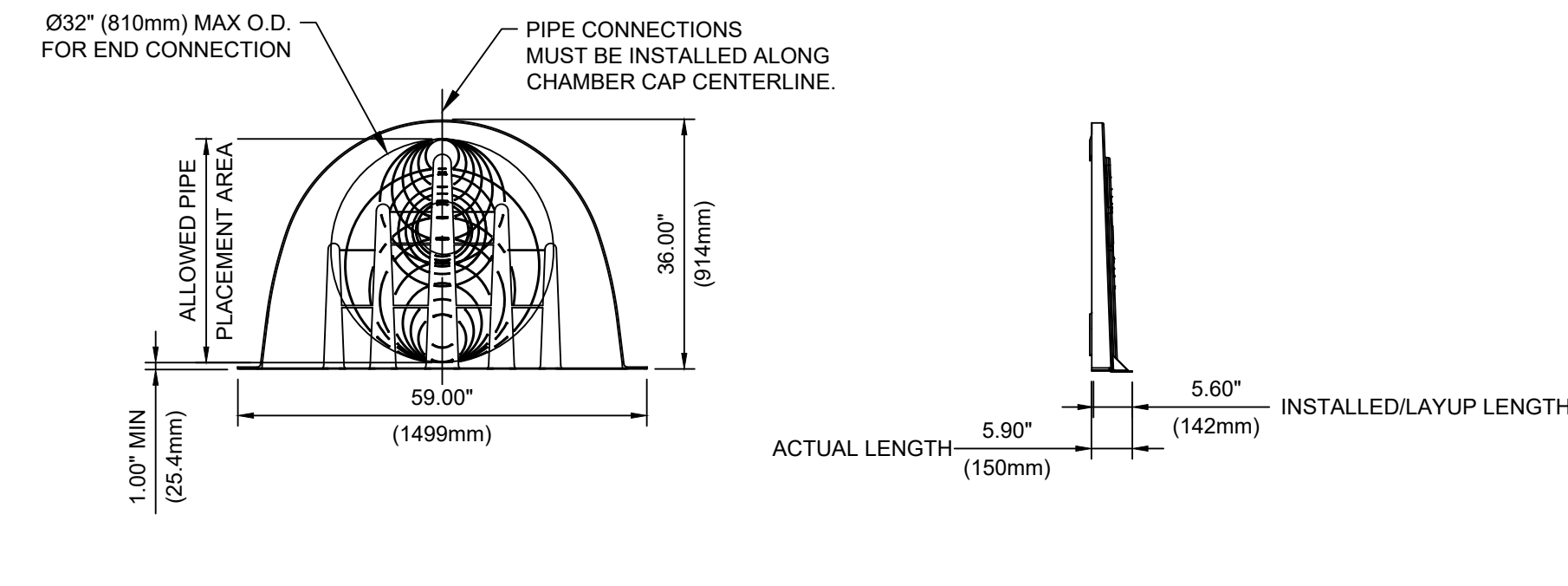
S-29B 4-INCH INSPECTION PORT



UNDERDRAIN DETAIL



S-29B CHAMBER



S-29 END CAP: ALLOWED PIPE PLACEMENT AREA

SIDE VIEW

S-29 END CAP

S-29B CHAMBER PROPERTIES	
NOMINAL DIMENSIONS (LAYUP LENGTH x WIDTH x HEIGHT)	33.35" x 61.76" x 37.27" (847mm x 1569mm x 947mm)
BARE CHAMBER STORAGE	27.80 CUBIC FEET (0.787 CUBIC METERS)
*MIN INSTALLED STORAGE	42.07 CUBIC FEET (1.191 CUBIC METERS)
CHAMBER WEIGHT	34 LBS (15.42 kg)
STORAGE PER LINEAR UNIT WITHOUT STONE	10.0 FT ³ /FT (0.929 M ³ /M)
STORAGE PER LINEAR UNIT WITH STONE	15.1 FT ³ /FT (1.406 M ³ /M)

*ASSUMING A MIN OF 6" (150mm) STONE ABOVE AND BELOW AND 5" (127mm) BETWEEN ROWS WITH 40% STONE POROSITY (DOES NOT INCLUDE 12" (300mm) PERIMETER STONE VOLUME)

S-29 END CAP PROPERTIES	
NOMINAL DIMENSIONS (LAYUP LENGTH x WIDTH x HEIGHT)	5.90" x 59.00" x 36.00" (150mm x 1499mm x 914mm)
BARE END CAP STORAGE	1.031 CUBIC FEET (0.029 CUBIC METERS)
*MIN INSTALLED STORAGE	4.98 CUBIC FEET (0.141 CUBIC METERS)

*ASSUMING A MIN OF 6" (150mm) STONE ABOVE AND BELOW AND 7.5" (191mm) BETWEEN ROWS WITH 40% STONE POROSITY (DOES NOT INCLUDE 12" (300mm) PERIMETER STONE VOLUME)

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- THE FOUNDATION STONE MUST BE LEVELED AND COMPACTED BEFORE PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS MUST BE PROPERLY SEATED BEFORE PLACING STONE.
- A MINIMUM 5-INCH (125 MM) SPACING MUST BE MAINTAINED BETWEEN CHAMBER ROWS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE CLEAN, CRUSHED, ANGULAR STONE MEASURING 3/4-2 INCHES (20-50 MM).
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XS-005669



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HYDROCHAIN™
S-29B STANDARD DETAILS