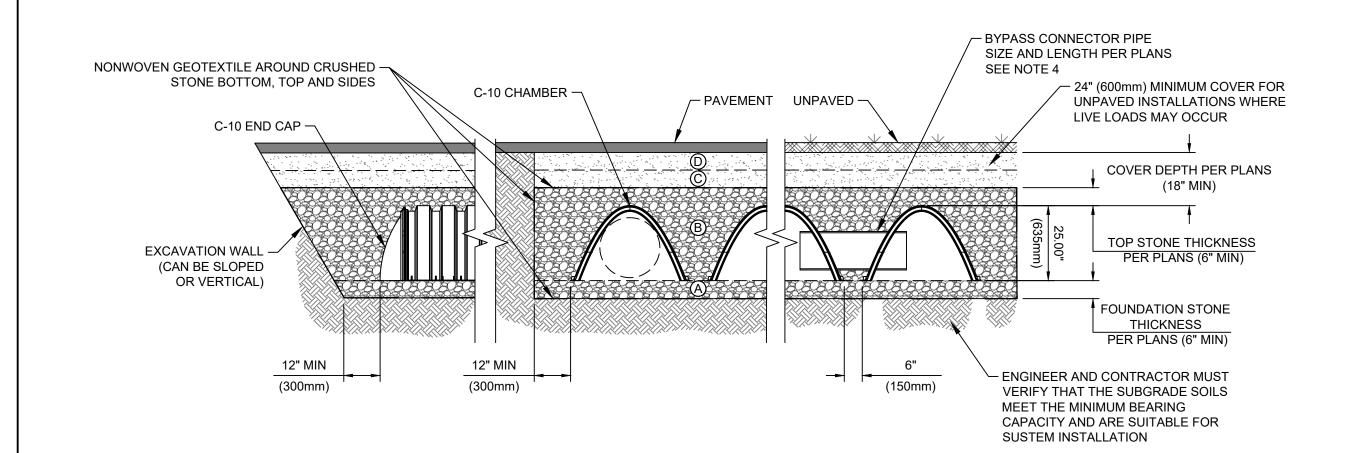
	CHAMBER STANDARD FILL MATERIALS						
	MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION	COMPACT/DENSITY REQUIREMENT			
D	FILL MATERIAL FROM 18" (450mm) ABOVE CHAMBER TO GRADE	ANY SOIL/ROCK MATERIALS, NATIVE SOILS OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	PER PLANS	PREPARE PER ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.			
С	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.			
В	EMBEDMENT AND TOP STONE	3/8" - 2" (8-50mm) CLEAN, CRUSHED, ANGULAR STONE	3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.			
Α	FOUNDATION STONE	3/8" - 2" (8-50mm) CLEAN, CRUSHED, ANGULAR STONE	3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL. SEE NOTES.			

- 1. INSTALL CHAMBERS AND END CAPS IN ACCORDANCE WITH SITE SPECIFIC PLANS, HYDROCHAIN INSTALLATION MANUAL AND SUPPLEMENTAL DOCUMENTS. REFERENCE THE QR CODE BELOW FOR
- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, AND ANGULAR.
- 3. 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.
- 4. 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 CHAMBER CROSS SECTION

- END CONNECTION PIPE PER PLANS (20" MAXIMUM O.D.) CASTING PER PLANS -BYPASS CONNECTION PIPE PER PLANS SIZE PER **PLANS** ONE LAYER OF WOVEN GEOTEXTILE BETWEEN

NONWOVEN GEOTEXTILE AROUND —

CRUSHED STONE BOTTOM, TOP, AND SIDES

NOTES:

FABRIC MUST BE 6-FEET WIDE OR LARGER AND INSTALLED WITHOUT SEAMS

- 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.
- 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

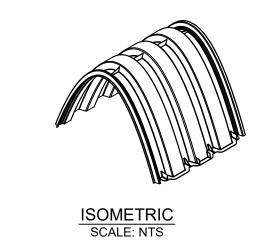
CHAMBERS MUST BE MANUFACTURED BY COMPRESSION MOLDING OF FIBERGLASS REINFORCED

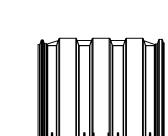
CHAMBERS MUST BE EVALUATED AND TESTED TO MEET OR EXCEED THE STANDARDS IN ASTM

F2418 STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER

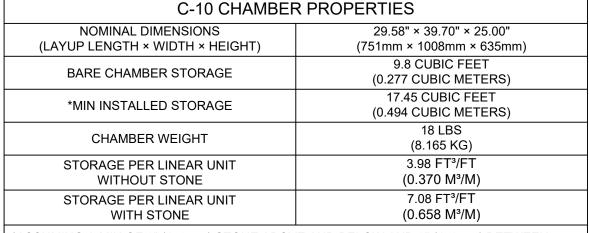
1. CHAMBERS MUST BE XERXES® HYDROCHAIN™ C-10. ONLY CHAMBERS APPROVED BY THE SITE

- 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/FT/% PER ASTM F2418, SECTION 6.2.8 AND MAINTAIN STIFFNESS THROUGH TEMPERATURE RANGES OF -40 DEGREES FAHRENHEIT TO 180 DEGREES FAHRENHEIT.
- 8. THE CHAMBER MUST INTERCONNECT USING AN OVERLAPPING CORRUGATION JOINT.
- 9. 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.
- 10. CHAMBERS AND END CAPS MUST BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.





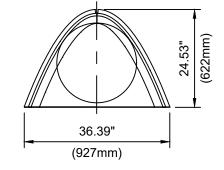




*ASSUMING A MIN OF 6" (150mm) STONE ABOVE AND BELOW AND 6" (150mm) BETWEEN ROWS WITH 40% STONE POROSITY (DOES NOT INCLUDE 12" (300mm) PERIMETER STONE

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



PLAN VIEW

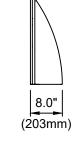
33.55" (852mm)

39.70"

(1008mm)

SECTION

SCALE: NTS





C-10 END CAP: ALLOWED PIPE PLACEMENT AREA

GENERAL

COMPOSITE.

DESIGN ENGINEER ARE PERMITTED.

SIDE VIEW SCALE: NTS

C-10 CHAMBER AND END CAP

INSTALLATION

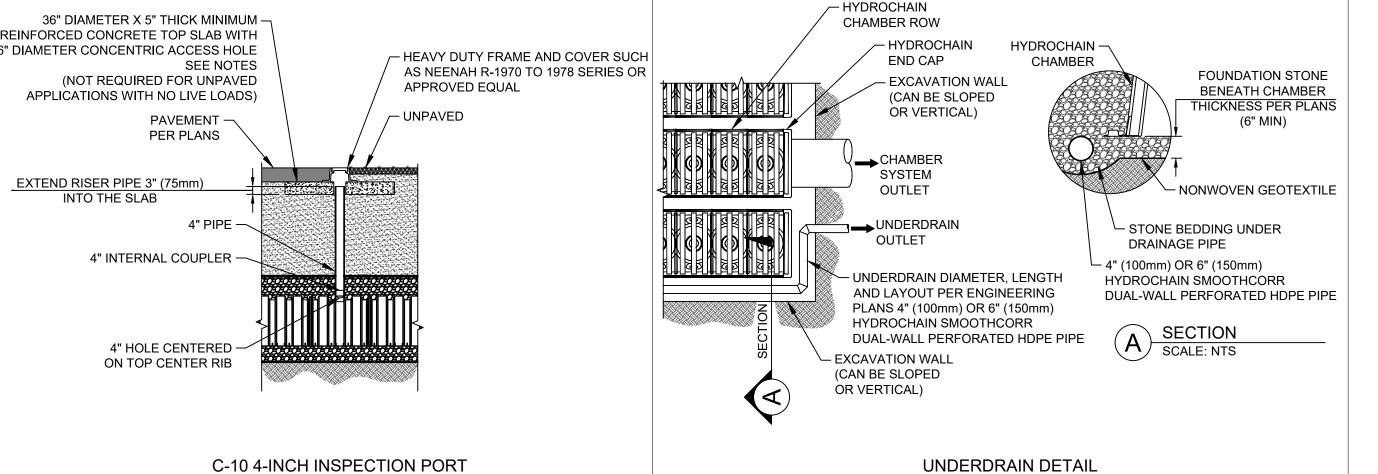
- 1. INSTALLATION MUST NOT START UNTIL A PRE-CONSTRUCTION MEETING HAS BEEN HELD WITH THE MANUFACTURER'S REPRESENTATIVE AND THE INSTALLERS.
- 2. INSTALLATION MUST BE IN ACCORDANCE WITH THE CONSTRUCTION PLANS AND HYDROCHAIN™ INSTALLATION MANUAL.
- 3. BACKFILLING OVER CHAMBERS MUST NOT BE DONE WITH A DOZER 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:
- C. BACKFILLING FROM OUTSIDE THE EXCAVATION USING A LONG BOOM EXCAVATOR.

B. BACKFILLING WHILE PLACING ROWS USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.

- 4. THE FOUNDATION STONE MUST BE LEVELED AND COMPACTED BEFORE PLACING CHAMBERS.
- 5. JOINTS BETWEEN CHAMBERS MUST BE PROPERLY SEATED BEFORE PLACING STONE.

A. USING A STONE SHOOTER LOCATED OFF THE CHAMBER BED.

- 6. A MINIMUM 6-INCH (150 MM) SPACING MUST BE MAINTAINED BETWEEN CHAMBER ROWS.
- 7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE CLEAN, CRUSHED, ANGULAR STONE MEASURING
- 8. ANY DISCREPANCIES WITH CHAMBER FOUNDATION BEARING CAPACITIES MUST BE REPORTED TO THE SITE
- 9. IT IS RECOMMENDED TO INSTALL EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMWATER SYSTEM DURING ALL PHASES OF CONSTRUCTION.



FOUNDATION STONE AND CHAMBERS





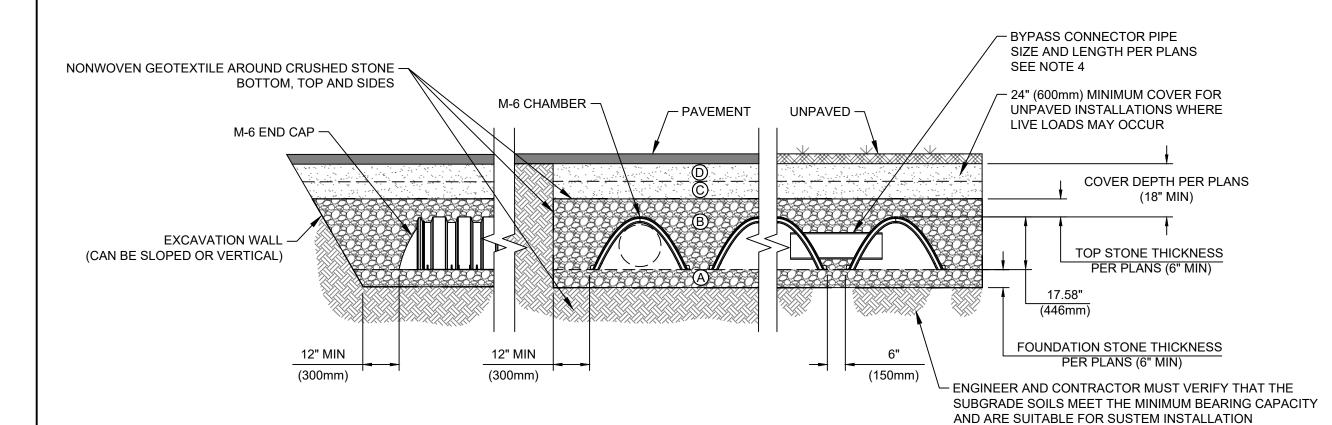
HYDROCHAIN™ C-10 STANDARD DETAILS

DATE SHEET 1 04/09/2024 OF

INTO THE SLAB

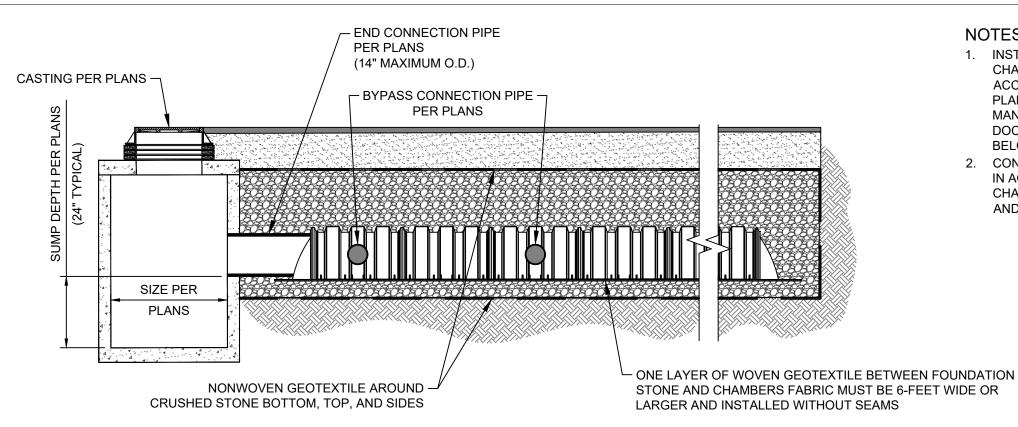
	CHAMBER STANDARD FILL MATERIALS						
	MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION	COMPACT/DENSITY REQUIREMENT			
D	FILL MATERIAL FROM 18" (450mm) ABOVE CHAMBER TO GRADE	ANY SOIL/ROCK MATERIALS, NATIVE SOILS OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	PER PLANS	PREPARE PER ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.			
С	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.			
В	EMBEDMENT AND TOP STONE	3/8" - 2" (8-50mm) CLEAN, CRUSHED, ANGULAR STONE	3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.			
А	FOUNDATION STONE	3/8" - 2" (8-50mm) CLEAN, CRUSHED, ANGULAR STONE	3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL. SEE NOTES.			

- 1. INSTALL CHAMBERS AND END CAPS IN ACCORDANCE WITH SITE SPECIFIC PLANS, HYDROCHAIN INSTALLATION MANUAL AND SUPPLEMENTAL DOCUMENTS. REFERENCE THE QR CODE BELOW FOR
- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, AND ANGULAR.
- 3. 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.
- 4. SPACERS ARE REQUIRED TO CONNECT PERPENDICULAR CHAMBER ROWS WITH 6" SPACING, SEE S-22 SPACER DETAIL. 5. 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



- HEAVY DUTY FRAME AND COVER SUCH

APPROVED EQUAL

— UNPAVED

M-6 4-INCH INSPECTION PORT

AS NEENAH R-1970 TO 1978 SERIES OR

HYDROCHAIN -

CHAMBER

- 1. 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. 2. CONDUCT INSPECTION AND MAINTENANCE IN ACCORDANCE WITH HYDROCHAIN
- CHAMBER MAIN HEADER ROW OPERATION AND MAINTENANCE MANUAL.
- 5. 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:

DESIGN ENGINEER ARE PERMITTED.

GENERAL

COMPOSITE.

COLLECTION CHAMBERS.

Ø6" (300mm) MAX O.D.

PLAN VIEW

SCALE: NTS

27.36"

(695mm)

33.61"

(854mm)

SECTION

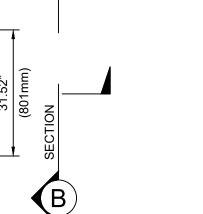
(A) SCALE: NTS

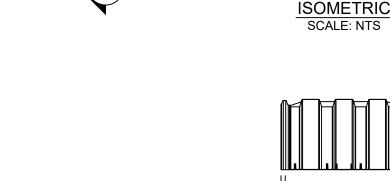
FOR TOP CONNECTION

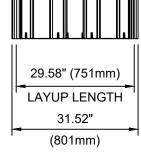
- A. INSTANTANEOUS LIVE LOAD FROM AASHTO DESIGN TRUCK AT MINIMUM COVER B. MAXIMUM DEAD LOAD (100-YEAR)
- C. 1-WEEK AASHTO DESIGN TRUCK LOAD AT MINIMUM COVER

OR LIMIT ACCESS FOR INSPECTION AND MAINTENANCE.

- 6. 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
- 7. 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.
- 8. THE CHAMBER MUST INTERCONNECT USING AN OVERLAPPING CORRUGATION JOINT.
- 9. 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.
- 10. CHAMBERS AND END CAPS MUST BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.



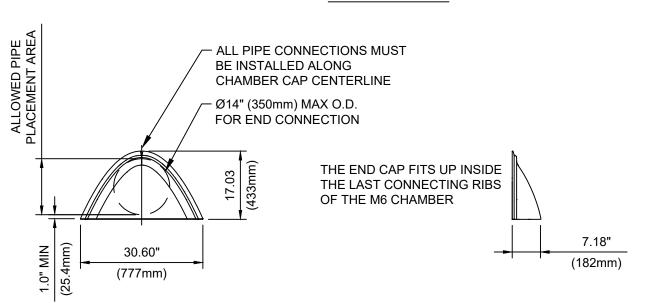






M-6 CHAMBER

M-6 END CAP





1. CHAMBERS MUST BE XERXES® HYDROCHAIN™ M-6. ONLY CHAMBERS APPROVED BY THE SITE

CHAMBERS MUST BE MANUFACTURED BY COMPRESSION MOLDING OF FIBERGLASS REINFORCED

3. CHAMBERS MUST BE EVALUATED AND TESTED TO MEET OR EXCEED THE STANDARDS IN ASTM

4. CHAMBERS MUST BE ARCH-SHAPED AND HAVE AN OPEN BOTTOM. CHAMBER ROWS MUST BE

F2418 STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER

CONTINUOUS, UNOBSTRUCTED, AND WITHOUT INTERNAL SUPPORT THAT WOULD IMPEDE FLOW



INSTALLATION

- 1. INSTALLATION MUST NOT START UNTIL A PRE-CONSTRUCTION MEETING HAS BEEN HELD WITH THE MANUFACTURER'S REPRESENTATIVE AND THE INSTALLERS.
- 2. INSTALLATION MUST BE IN ACCORDANCE WITH THE CONSTRUCTION PLANS AND HYDROCHAIN $^{\mathrm{TM}}$ 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.

M-6 CHAMBER PROPERTIES

*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

M-6 END CAP PROPERTIES

*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

29.58" × 33.61" × 17.5"

(751mm × 854mm × 445mm) 5.6 CUBIC FEET

(0.159 CUBIC METERS) 11.36 CUBIC FEET

(0.322 CUBIC METERS) 14 LBS

> (6.35 KG) 2.27 FT3/FT

 $(0.211 \text{ M}^3/\text{M})$

4.61 FT³/FT

 $(0.428 \text{ M}^3/\text{M})$

7.18" × 30.60" × 17.03"

(183mm × 777mm × 432mm)

0.53 CUBIC FEET

(0.015 CUBIC METERS)

2.26 CUBIC FEET

(0.064 CUBIC METERS)

NOMINAL DIMENSIONS

(LAYUP LENGTH × WIDTH × HEIGHT)

BARE CHAMBER STORAGE

*MIN INSTALLED STORAGE

CHAMBER WEIGHT

STORAGE PER LINEAR UNIT

WITHOUT STONE

STORAGE PER LINEAR UNIT

WITH STONE

NOMINAL DIMENSIONS (LAYUP LENGTH × WIDTH × HEIGHT)

BARE END CAP STORAGE

*MIN INSTALLED STORAGE

VOLUME)

- C. BACKFILLING FROM OUTSIDE THE EXCAVATION USING A LONG BOOM EXCAVATOR.
- 4. THE FOUNDATION STONE MUST BE LEVELED AND COMPACTED BEFORE PLACING CHAMBERS.
- 5. JOINTS BETWEEN CHAMBERS MUST BE PROPERLY SEATED BEFORE PLACING STONE.

6. A MINIMUM 6-INCH (150 MM) SPACING MUST BE MAINTAINED BETWEEN CHAMBER ROWS.

- 7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE CLEAN, CRUSHED, ANGULAR STONE MEASURING 3/4-2 INCHES (20-50 MM).
- 8. ANY DISCREPANCIES WITH CHAMBER FOUNDATION BEARING CAPACITIES MUST BE REPORTED TO THE SITE
- 9. IT IS RECOMMENDED TO INSTALL EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMWATER SYSTEM DURING ALL PHASES OF CONSTRUCTION.





HYDROCHAIN™ M-6 STANDARD DETAILS

DATE SHEET 1 04/09/2024 OF

20900-

4" HOLE CENTERED -ON TOP CENTER RIB

36" DIAMETER X 5" THICK MINIMUM -

(NOT REQUIRED FOR UNPAVED

4" INTERNAL COUPLER

SEE NOTES

PAVEMENT

PER PLANS

4" PIPE

REINFORCED CONCRETE TOP SLAB WITH

6" DIAMETER CONCENTRIC ACCESS HOLE

EXTEND RISER PIPE 3" (75mm) INTO THE SLAB

APPLICATIONS WITH NO LIVE LOADS)

OUTLET - UNDERDRAIN DIAMETER, LENGTH AND LAYOUT PER ENGINEERING **PLANS** EXCAVATION WALL (CAN BE SLOPED

UNDERDRAIN DETAIL

- HYDROCHAIN

CHAMBER ROW

CHAMBER

SYSTEM

OUTLET

UNDERDRAIN

OR VERTICAL)

- HYDROCHAIN

EXCAVATION WALL

(CAN BE SLOPED

OR VERTICAL)

END CAP

DRAINAGE PIPE - UNDERDRAIN PER PLANS

SECTION (A) SCALE: NTS

- STONE BEDDING UNDER

FOUNDATION STONE

BENEATH CHAMBER

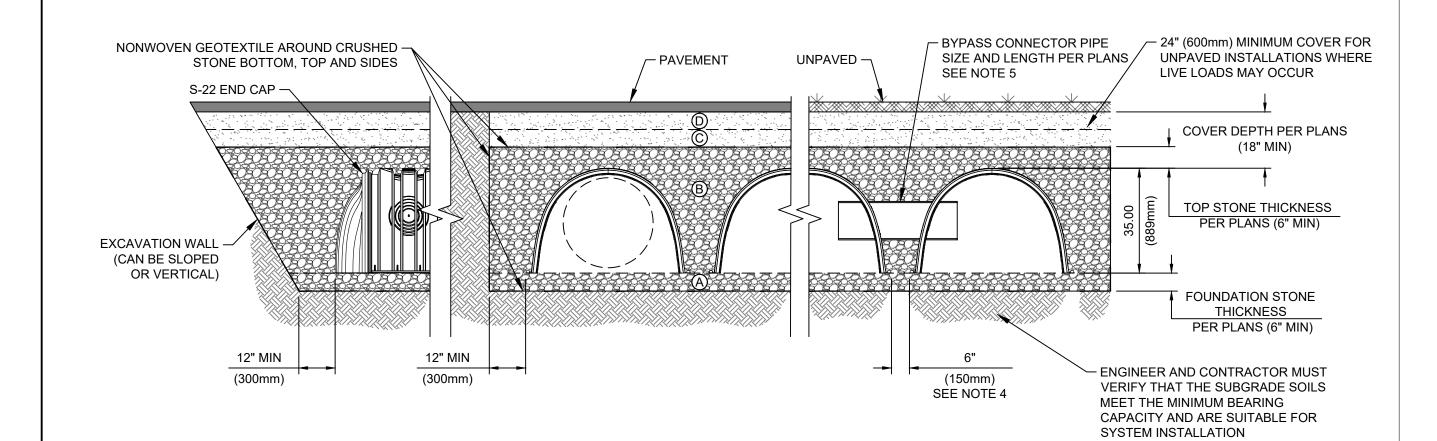
THICKNESS PER PLANS

(6" MIN)

NONWOVEN GEOTEXTILE

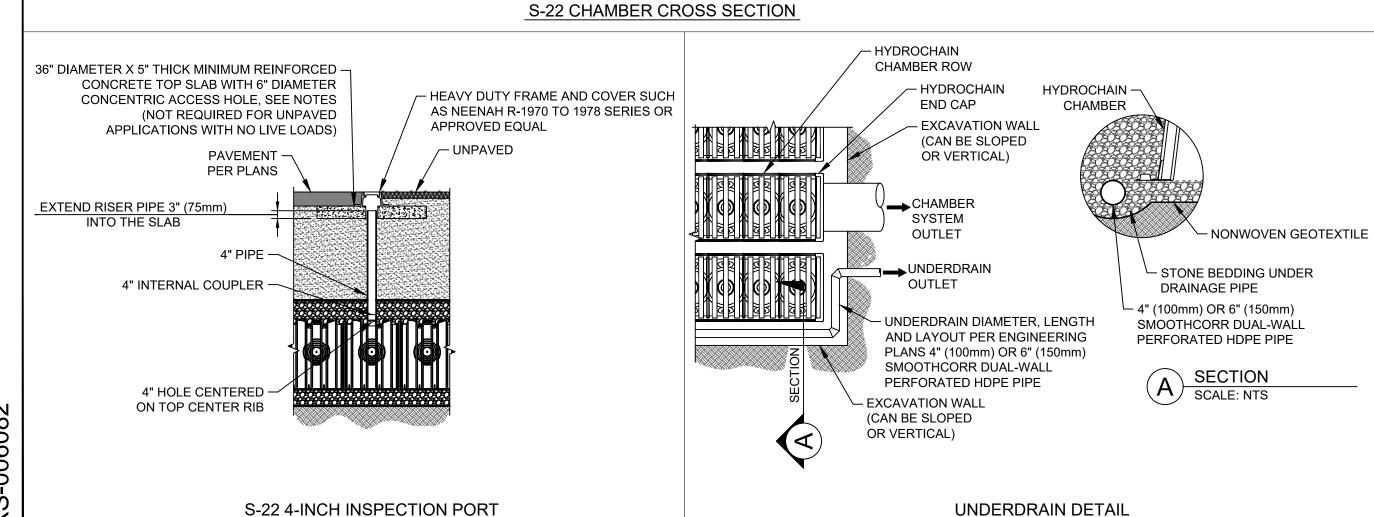
CHAMBER STANDARD FILL MATERIALS AASHTO M43 MATERIAL LOCATION DESCRIPTION COMPACT/DENSITY REQUIREMENT DESIGNATION ANY SOIL/ROCK MATERIALS, NATIVE SOILS OR PER PREPARE PER ENGINEER'S PLANS. PAVED FILL MATERIAL FROM 18" (450mm) ABOVE ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT INSTALLATIONS MAY HAVE STRINGENT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

- 1. INSTALL CHAMBERS AND END CAPS IN ACCORDANCE WITH SITE SPECIFIC PLANS, HYDROCHAIN INSTALLATION MANUAL AND SUPPLEMENTAL DOCUMENTS. REFERENCE THE QR CODE BELOW FOR
- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, AND ANGULAR.
- 3. 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.
- 4. SPACERS ARE REQUIRED TO CONNECT PERPENDICULAR CHAMBER ROWS WITH 6" SPACING, SEE S-22 SPACER DETAIL. 5. EXTEND CROSS CONNECTION PIPES INTO THE CHAMBER BY A LENGTH EQUAL OR GREATER THAN 1/2 THE PIPE O.D.



- END CONNECTION PIPE PER PLANS 1. INSTALL THE MAIN HEADER ROW, CHAMBERS, AND END (30" MAXIMUM O.D.) CAPS IN ACCORDANCE WITH THE SITE SPECIFIC PLANS, CASTING PER PLANS - \vdash BYPASS CONNECTION PIPE \lnot HYDROCHAIN INSTALLATION MANUAL AND PER PLANS 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. SIZE PER **PLANS** - ONE LAYER OF WOVEN GEOTEXTILE BETWEEN FOUNDATION STONE AND CHAMBERS NONWOVEN GEOTEXTILE AROUND -FABRIC MUST BE 6-FEET WIDE OR LARGER AND INSTALLED WITHOUT SEAMS CRUSHED STONE BOTTOM, TOP, AND SIDES

S-22 CHAMBER CROSS SECTION



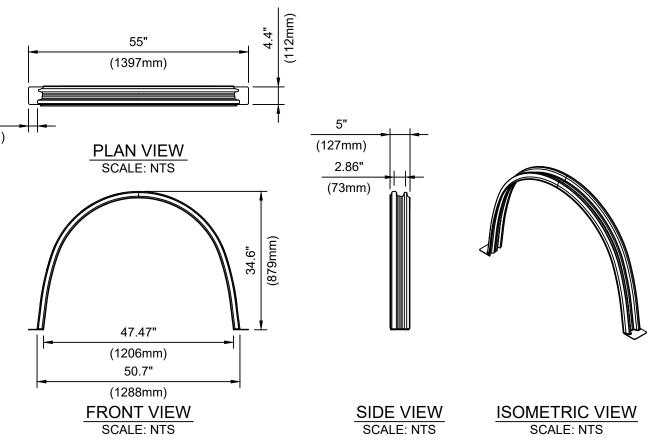
Ø18.85" (479mm) MAX O.D. FOR TOP CONNECTION SECTION CHAMBERS TO BE INSTALLED IN -THIS DIRECTION. FOLLOW DIRECTION ARROW ON THE PART. PLAN VIEW SCALE: NTS 27.66" (703mm) 47.11" LAYUP LENGTH 55.00" 30.00" (1397mm) (762mm) SECTION SECTION SCALE: NTS SCALE: NTS - PIPE CONNECTIONS MUST BE INSTALLED ALONG END CAP CENTERLINE - EXAMPLE 12" HIGHEST INVERT INSTALLATION Ø30" (810mm) MAX O.D. FOR END CONNECTION THE END CAP FITS INSIDE THE LAST CONNECTING RIBS OF THE S-22 CHAMBER ► EXAMPLE 12" LOWEST 10.8" INVERT INSTALLATION (274mm)

ROWS WITH 40% STONE POROSITY (DOES NOT INCLUDE 12" (300mm) PERIMETER STONE 2.25" (57mm)

S-22 CHAMBER PROPERTIES NOMINAL DIMENSIONS 27.66" × 55.00" × 35.00" (LAYUP LENGTH × WIDTH × HEIGHT) (703mm × 1397mm × 889mm) 21.57 CUBIC FEET BARE CHAMBER STORAGE (0.611 CUBIC METERS) 31.30 CUBIC FEET *MIN INSTALLED STORAGE (0.886 CUBIC METERS) CHAMBER WEIGHT (12.701 KG) 9.36 FT3/FT STORAGE PER LINEAR UNIT $(0.869 \text{ M}^3/\text{M})$ WITHOUT STONE 13.58 FT3/FT STORAGE PER LINEAR UNIT $(1.261 \text{ M}^3/\text{M})$ WITH STONE *ASSUMING A MIN OF 6" (150mm) STONE ABOVE AND BELOW AND 6" (150mm) BETWEEN

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

GENERAL

- CHAMBERS MUST BE XERXES® HYDROCHAIN™ S-22. ONLY CHAMBERS APPROVED BY THE SITE DESIGN ENGINEER ARE PERMITTED.
- 2. CHAMBERS MUST BE MANUFACTURED BY COMPRESSION MOLDING OF FIBERGLASS REINFORCED COMPOSITE.

S-22 CHAMBER AND END CAP

- 3. CHAMBERS MUST BE EVALUATED AND TESTED TO MEET OR EXCEED THE STANDARDS IN ASTM F2418 STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER
- 4. 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.
- 5. 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

S-22 END CAP: ALLOWED PIPE PLACEMENT AREA

- 6. 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
- 7. 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.
- 8. THE CHAMBER MUST INTERCONNECT USING AN OVERLAPPING CORRUGATION JOINT.
- 9. 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.
- 10. CHAMBERS AND END CAPS MUST BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING

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.
- 4. THE FOUNDATION STONE MUST BE LEVELED AND COMPACTED BEFORE PLACING CHAMBERS.
- 5. JOINTS BETWEEN CHAMBERS MUST BE PROPERLY SEATED BEFORE PLACING STONE.
- 6. 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).
- 8. ANY DISCREPANCIES WITH CHAMBER FOUNDATION BEARING CAPACITIES MUST BE REPORTED TO THE SITE
- 9. IT IS RECOMMENDED TO INSTALL EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMWATER SYSTEM DURING ALL PHASES OF CONSTRUCTION.





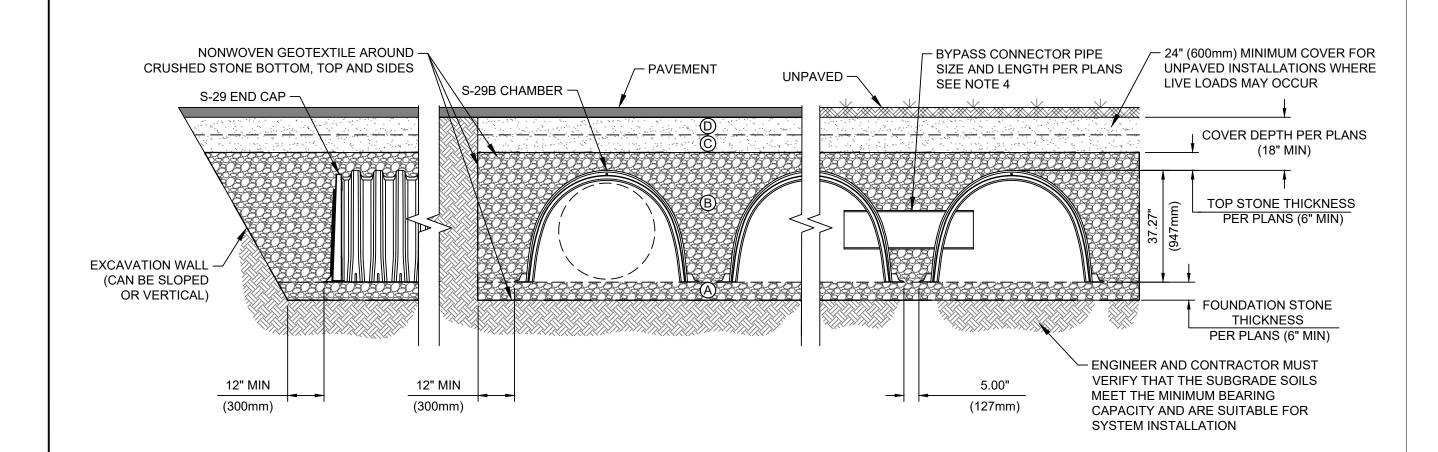
HYDROCHAIN™ S-22 STANDARD DETAILS

DATE SHEET 1 04/09/2024 OF

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

NOTES:

- 1. 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.
- 2. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, AND ANGULAR.
- 3. 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.
- 4. EXTEND CROSS CONNECTION PIPES INTO THE CHAMBER BY A LENGTH EQUAL OR GREATER THAN 1/2 THE PIPE O.D.



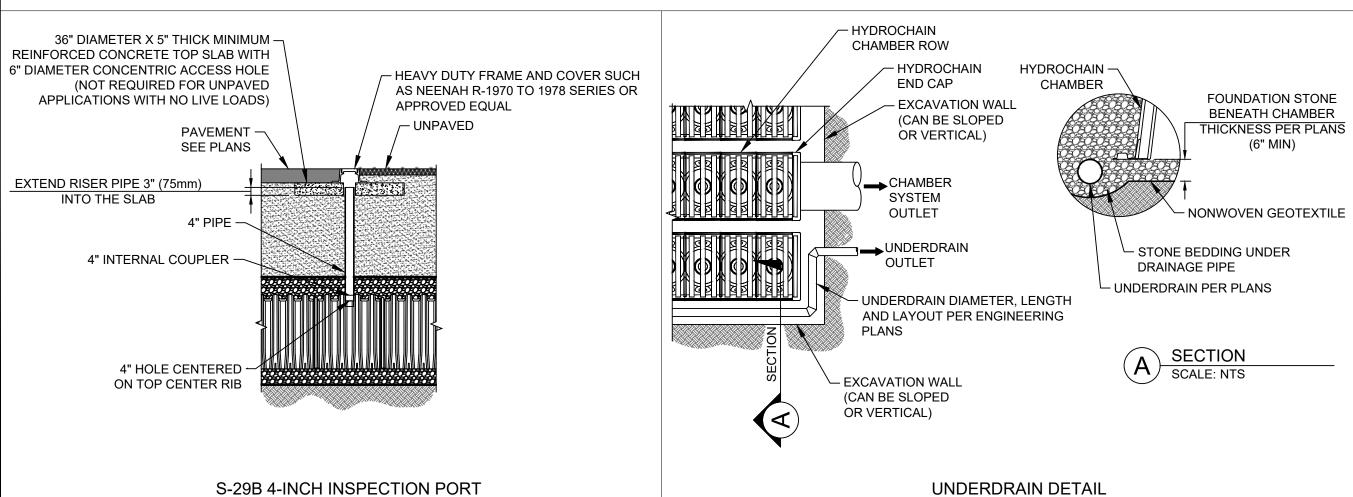
- END CONNECTION PIPE PER PLANS 1. INSTALL THE MAIN HEADER ROW, CASTING PER PLANS -(32" MAXIMUM O.D.) CHAMBERS, AND END CAPS IN ACCORDANCE WITH THE SITE SPECIFIC ─ BYPASS CONNECTION PIPE ¬ PLANS, HYDROCHAIN INSTALLATION PER PLANS MANUAL AND SUPPLEMENTAL DOCUMENTS. REFERENCE THE QR CODE BELOW FOR PRODUCT DOCUMENTS. 2. CONDUCT INSPECTION AND MAINTENANCE IN ACCORDANCE WITH HYDROCHAIN CHAMBER MAIN HEADER ROW OPERATION AND MAINTENANCE MANUAL. SIZE PER PLANS ONE LAYER OF WOVEN GEOTEXTILE BETWEEN FOUNDATION

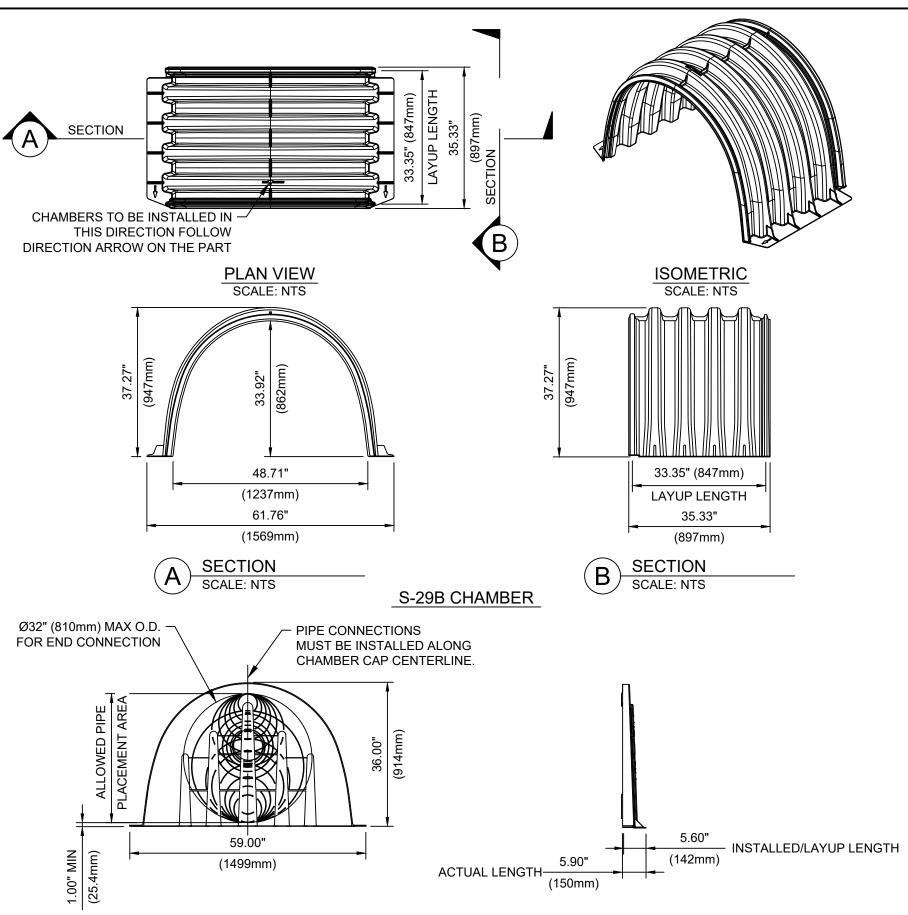
S-29B CHAMBER CROSS SECTION

S-29B CHAMBER CROSS SECTION

STONE AND CHAMBERS. FABRIC MUST BE 6-FEET WIDE OR

LARGER AND INSTALLED WITHOUT SEAMS



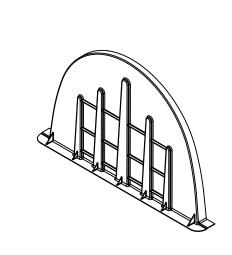


S-29B CHAMBER PROPERTIES NOMINAL DIMENSIONS 33.35" × 61.76" × 37.27" (LAYUP LENGTH × WIDTH × HEIGHT) (847mm × 1569mm × 947mm) 27.80 CUBIC FEET BARE CHAMBER STORAGE (0.787 CUBIC METERS) 42.07 CUBIC FEET *MIN INSTALLED STORAGE (1.191 CUBIC METERS) CHAMBER WEIGHT (15.42 kg) 10.0 FT³/FT STORAGE PER LINEAR UNIT $(0.929 \text{ M}^3/\text{M})$ WITHOUT STONE 15.1 FT³/FT STORAGE PER LINEAR UNIT $(1.406 \text{ M}^3/\text{M})$ WITH STONE

*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	5.90" × 59.00" × 36.00"			
(LAYUP LENGTH × WIDTH × HEIGHT)	(150mm × 1499mm × 914mm)			
BARE END CAP STORAGE	1.031 CUBIC FEET			
	(0.029 CUBIC METERS)			
*MIN INSTALLED STORAGE	4.98 CUBIC FEET			
WIIN INSTALLED STORAGE	(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)



S-29 END CAP: ALLOWED PIPE PLACEMENT AREA

SIDE VIEW
SCALE: NTS

S-29 END CAP

SCALE: N

GENERAL

- 1. CHAMBERS MUST BE XERXES® HYDROCHAIN™ S-29B. ONLY CHAMBERS APPROVED BY THE SITE DESIGN ENGINEER ARE PERMITTED.
- 2. CHAMBERS MUST BE MANUFACTURED BY COMPRESSION MOLDING OF FIBERGLASS REINFORCED COMPOSITE POLYPROPYLENE.
- 3. 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
- 4. 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.
- 5. 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
- C. 1-WEEK AASHTO DESIGN TRUCK LOAD AT MINIMUM COVER
- 6. 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/FT/% PER ASTM F2418, SECTION 6.2.8 AND MAINTAIN STIFFNESS THROUGH TEMPERATURE RANGES OF -40 DEGREES FAHRENHEIT TO 180 DEGREES FAHRENHEIT.
- 8. THE CHAMBER MUST INTERCONNECT USING AN OVERLAPPING CORRUGATION JOINT.
- 9. 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.
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 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.
- 4. THE FOUNDATION STONE MUST BE LEVELED AND COMPACTED BEFORE PLACING CHAMBERS.
- 5. JOINTS BETWEEN CHAMBERS MUST BE PROPERLY SEATED BEFORE PLACING STONE.
- 6. A MINIMUM 5-INCH (125 MM) SPACING MUST BE MAINTAINED BETWEEN CHAMBER ROWS.
- 7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE CLEAN, CRUSHED, ANGULAR STONE MEASURING 3/4-2 INCHES (20-50 MM).
- 8. ANY DISCREPANCIES WITH CHAMBER FOUNDATION BEARING CAPACITIES MUST BE REPORTED TO THE SITE
- 9. IT IS RECOMMENDED TO INSTALL EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMWATER SYSTEM DURING ALL PHASES OF CONSTRUCTION.



ENG.SUPPORT@MATTR.COM



HYDROCHAIN™ S-29B STANDARD DETAILS

DATE 03/18/2024 SHEET 1 OF 1

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