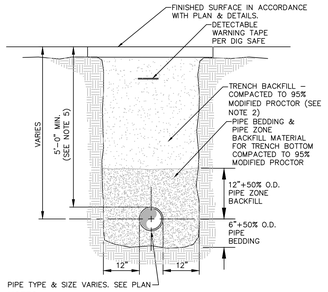


PIPE TYPE & SIZE VARIES. SEE PLAN

NOTES:

1. PIPE BEDDING & PIPE ZONE BACKFILL SHALL BE A NATURAL RUN–OF–BANK (R.O.B.) SAND OR A MIXTURE OF CRUSHED STONE AND GRAVEL, FREE OF SOFT, NONDURABLE PARTICLES, ORGANIC MATERIALS AND ELONGATED PARTICLES, AND SHALL BE WELL GRADED FROM FINE TO COARSE PARTICLES. BEDDING GRADATIONS SHALL BE APPROVED BY THE ENGINEER AND SHALL MEET THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE DESIGNATION	% PASSING
3/4"	100%
NO. 40	0–70%
NO. 200	0–10%

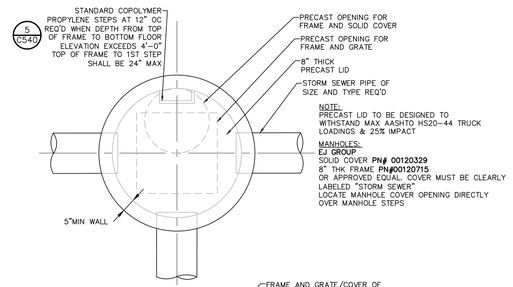
2. TRENCH BACKFILL SHALL BE A NATURAL RUN–OF–BANK (R.O.B.) OR PROCESSED GRAVEL, OR EXCAVATED MATERIAL FREE OF SOFT, NONDURABLE PARTICLES, ORGANIC MATERIALS AND ELONGATED PARTICLES, AND SHALL BE WELL GRADED FROM FINE TO COARSE PARTICLES. TRENCH BACKFILL GRADATIONS SHALL BE APPROVED BY THE ENGINEER AND SHALL MEET THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE DESIGNATION	% PASSING
4"	100%
NO. 40	0–70%
NO. 200	0–10%

IN NON–TRAFFIC UNPAVED AREAS TRENCH BACKFILL CAN BE MATERIALS EXCAVATED FROM THE TRENCH AS APPROVED BY THE ENGINEER AND COMPACTED TO 90% MODIFIED PROCTOR.

3. INSTALL CONTINUOUS DETECTABLE MARKING TAPE DURING BACKFILLING OF TRENCH FOR UNDERGROUND PIPING. LOCATE TAPE 12" BELOW FINISHED GRADE, DIRECTLY OVER PIPING, EXCEPT 6" BELOW SUBGRADE UNDER PAVEMENTS & SLAB.
4. TRENCHING SHALL BE IMPLEMENTED IN ACCORDANCE WITH O.S.H.A. STANDARDS.
5. 5'–0" MIN COVER SHALL BE APPLIED TO WATER MAIN OR SANITARY SEWER FORCE MAINS ONLY.

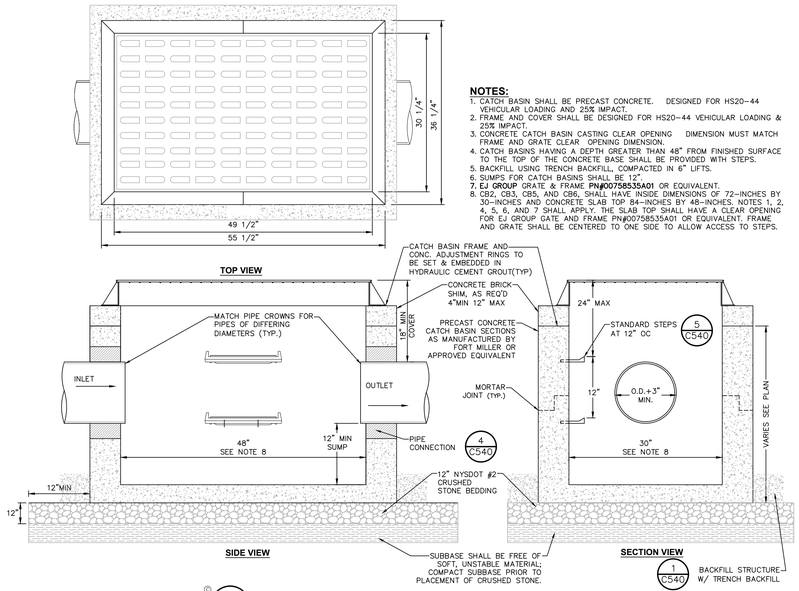
1 PIPE TRENCH DETAIL (TYPICAL)
SCALE: NOT TO SCALE



NOTES:

1. MANHOLE SHALL BE PRECAST CONCRETE. DESIGNED FOR HS20–44 VEHICULAR LOADING AND 25% IMPACT.
2. FRAME AND COVER SHALL BE DESIGNED FOR HS20–44 VEHICULAR LOADING & 25% IMPACT.
3. CONCRETE MANHOLE LID CLEAR OPENING DIMENSION MUST MATCH FRAME AND GRATE CLEAR OPENING DIMENSION.
4. MANHOLES HAVING A DEPTH GREATER THAN 48" FROM FINISHED SURFACE TO THE FLOOR OF THE CONCRETE BASE SHALL BE PROVIDED WITH STEPS.
5. BACKFILL USING TRENCH BACKFILL, COMPACTED IN 6" LIFTS.
6. SUMPS FOR MANHOLES SHALL BE 12".
7. ECCENTRIC CONE TOP CAN BE USED FOR MANHOLES DEPTH GREATER THAN 7 FEET.
8. SEE CHART FOR REQUIRED MANHOLES DIAMETERS.
9. ALL PRECAST CONSTRUCTION IN ACCORDANCE W/ASTM C478

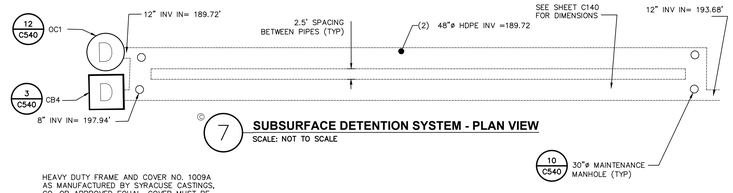
2 PRECAST CONCRETE MANHOLE DETAIL
SCALE: NOT TO SCALE



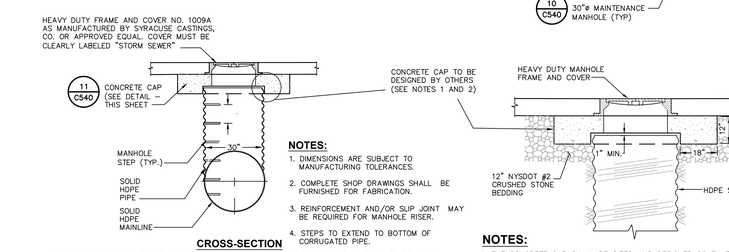
NOTES:

1. CATCH BASIN SHALL BE PRECAST CONCRETE. DESIGNED FOR HS20–44 VEHICULAR LOADING AND 25% IMPACT.
2. FRAME AND COVER SHALL BE DESIGNED FOR HS20–44 VEHICULAR LOADING & 25% IMPACT.
3. CONCRETE CATCH BASIN CASTING CLEAR OPENING DIMENSION MUST MATCH FRAME AND GRATE CLEAR OPENING DIMENSION.
4. CATCH BASINS HAVING A DEPTH GREATER THAN 48" FROM FINISHED SURFACE TO THE TOP OF THE CONCRETE BASE SHALL BE PROVIDED WITH STEPS.
5. BACKFILL USING TRENCH BACKFILL, COMPACTED IN 6" LIFTS.
6. SUMPS FOR CATCH BASINS SHALL BE 12".
7. EJ GROUP GRATE & FRAME PN#00758535A01 OR EQUIVALENT.
8. CB2, CB3, CB5, AND CB6, SHALL HAVE INSIDE DIMENSIONS OF 72–INCHES BY 30–INCHES AND CONCRETE SLAB TOP 84–INCHES BY 48–INCHES. NOTES 1, 2, 4, 5, 6, AND 7 SHALL APPLY. THE SLAB TOP SHALL HAVE A CLEAR OPENING FOR EJ GROUP GATE AND FRAME PN#00758535A01 OR EQUIVALENT. FRAME AND GRATE SHALL BE CENTERED TO ONE SIDE TO ALLOW ACCESS TO STEPS.

3 PRECAST CONCRETE RECTANGULAR CATCH BASIN DETAIL
SCALE: NOT TO SCALE



7 SUBSURFACE DETENTION SYSTEM - PLAN VIEW
SCALE: NOT TO SCALE



CROSS-SECTION

NOTES:

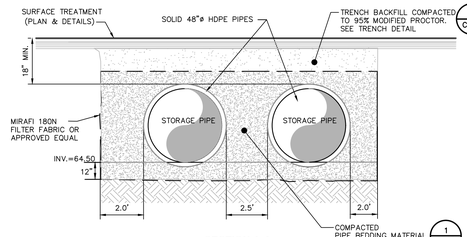
1. DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
2. COMPLETE SHOP DRAWINGS SHALL BE FURNISHED FOR FABRICATION.
3. REINFORCEMENT AND/OR SLIP JOINT MAY BE REQUIRED FOR MANHOLE RISER.
4. STEPS TO EXTEND TO BOTTOM OF CORRUGATED PIPE.

NOTES:

1. THE CONCRETE CAP SHALL BE SIZED AND DESIGNED SO THAT LOADS ARE TRANSMITTED TO THE SOIL AND NOT THE RISER. DESIGN FOR H–20 LOADING.
2. THE CONCRETE CAP SHALL BE SIZED TO PROVIDE AN ADEQUATE BOTTOM AREA BASED ON THE ALLOWABLE BEARING CAPACITY OF THE SOIL.

10 MAINTENANCE MANHOLE DETAIL
SCALE: NOT TO SCALE

11 CONCRETE CAP
SCALE: NOT TO SCALE



SECTION A-A

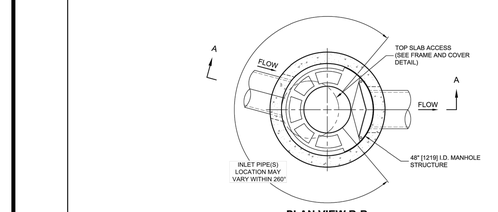
NOTES:

1. PIPE BEDDING MATERIAL SHALL BE COMPOSED OF CRUSHED STONE OR GRAVEL FREE OF SOFT NONDURABLE PARTICLES, ORGANIC MATERIALS AND THIN OR ELONGATED PARTICLES WITH THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE DESIGNATION	% PASSING
3/4"	100
3/8"	95–100
1/4"	0–15
No. 40	0–5

2. ALL CONNECTIONS SHALL BE WATERTIGHT AND PROVIDED TO ENGINEER FOR REVIEW.
3. HEADERS, MAINTENANCE MANHOLE/BARREL CONNECTIONS, INLET/BARREL CONNECTIONS, INLET/MAINTENANCE MANHOLE/ BARREL CONNECTIONS, SHALL BE PRE–FABRICATED BY MANUFACTURER.
4. MAINTENANCE SHALL BE IN ACCORDANCE WITH SWPPP.

6 SUBSURFACE DETENTION SYSTEM - SECTION VIEW
SCALE: NOT TO SCALE



PLAN VIEW B-B
NOT TO SCALE

CASCADE SEPARATOR DESIGN NOTES

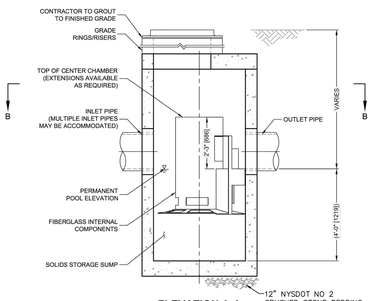
THE STANDARD CS-4 CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID			
WATER QUALITY FLOW RATE (cfs [L/s])			
PEAK FLOW RATE (cfs [L/s])			
RETURN PERIOD OF PEAK FLOW (yrs)			
RIM ELEVATION			
PIPE DATA:	INVERT	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
NOTES / SPECIAL REQUIREMENTS:			

FRAME AND COVER
(DIAMETER VARIES)
NOT TO SCALE



ELEVATION A-A
NOT TO SCALE

CASCADE separator™

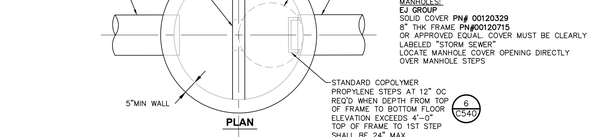
NOTES
GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com.
3. CASCADE SEPARATOR WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. CASCADE SEPARATOR STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2' (610), AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
5. CASCADE SEPARATOR STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. ALTERNATE UNITS ARE SHOWN IN MILLIMETERS [mm.].

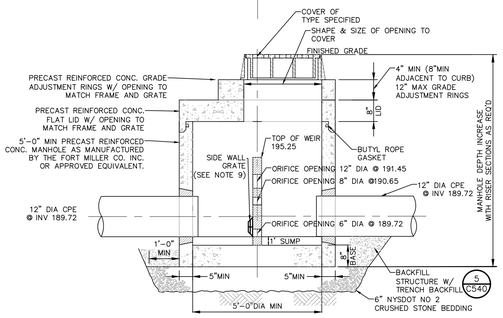
INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CASCADE SEPARATOR MANHOLE STRUCTURE.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

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CS-4
CASCADE SEPARATOR
STANDARD DETAIL

8 HYDRODYNAMIC SEPARATOR DETAIL
SCALE: NOT TO SCALE



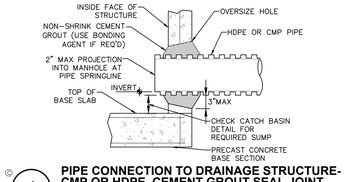


SECTION

NOTES:

1. OUTLET CONTROL STRUCTURE SHALL BE PRECAST CONCRETE. DESIGNED FOR HS20–44 VEHICULAR LOADING AND 25% IMPACT.
2. FRAME AND COVER SHALL BE DESIGNED FOR HS20–44 VEHICULAR LOADING & 25% IMPACT.
3. OUTLET CONTROL STRUCTURE LID CLEAR OPENING DIMENSION MUST MATCH FRAME AND GRATE CLEAR OPENING DIMENSION.
4. OUTLET CONTROL STRUCTURE HAVING A DEPTH GREATER THAN 48" FROM FINISHED SURFACE TO THE FLOOR OF THE CONCRETE BASE SHALL BE PROVIDED WITH STEPS.
5. BACKFILL USING TRENCH BACKFILL, COMPACTED IN 6" LIFTS.
6. SEE TABLE FOR OUTLET CONTROL STRUCTURE ORIFICE AND WEIR OPENING SIZES AND ELEVATIONS.
7. ALL PRECAST CONSTRUCTION IN ACCORDANCE W/ASTM C478.
8. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ALL OUTLET CONTROL STRUCTURES TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
9. INSTALL J.R. HOE SIDE WALL GRATE PRODUCT No. LSW–1024 OR APPROVED EQUIVALENT.

12 PRECAST CONCRETE OUTLET CONTROL STRUCTURE DETAIL
SCALE: NOT TO SCALE



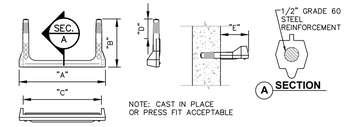
4 PIPE CONNECTION TO DRAINAGE STRUCTURE- CMP OR HDPE CEMENT GROUT SEAL JOINT
SCALE: NOT TO SCALE

ACCEPTABLE MANHOLE STEPS

MANUFACTURER	PATTERN NUMBER	"A" STEP WIDTH	"B" LEG LENGTH	"C" RUNG CLEAR	"D" EMBED–MENT	"E" RUNG CLEAR
M.A. INDUSTRIES INC*	PS2–PF	14 3/4	9 1/4	13 3/4	3 3/8	5 7/8
M.A. INDUSTRIES INC*	PS2–PFS	14 3/4	8 1/4	13 3/4	3 3/8	4 7/8

* OR EQUIVALENT

MH STEP DESIGN AND INSTALLATION SHALL COMPLY WITH ALL OSHA REGULATIONS



NOTE: CAST IN PLACE OR PRESS FIT ACCEPTABLE

5 COPOLYMER POLYPROPYLENE MH STEP
SCALE: NOT TO SCALE

ISSUED FOR SITE PLAN APPROVAL

ALL RIGHTS RESERVED. COPY OR REPRODUCTION OF THIS DRAWING OR DOCUMENT, OR ANY PORTION THEREOF, WITHOUT THE EXPRESS WRITTEN PERMISSION OF CHAZEN ENGINEERING, LAND SURVEYING, LANDSCAPE ARCHITECTURE & GEOLOGY CO., D.P.C. IS PROHIBITED. THIS DRAWING OR DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR ANY PURPOSE OTHER THAN THE SPECIFIC PROJECT, APPLICATION AND SITUATION FOR WHICH IT WAS INTENDED. ANY MODIFICATION OF THIS DRAWING OR DOCUMENT, OR ANY USE FOR ANY PROJECT, APPLICATION OR SITUATION OTHER THAN THAT FOR WHICH IT WAS INTENDED, WILL BE AT USER'S SOLE RISK AND WITHOUT LIABILITY TO CHAZEN ENGINEERING, LAND SURVEYING, LANDSCAPE ARCHITECTURE & GEOLOGY CO., D.P.C.

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER THIS DRAWING OR DOCUMENT IN ANY WAY, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED DESIGN PROFESSIONAL (PROFESSIONAL ENGINEER, LAND SURVEYOR, ARCHITECT, LANDSCAPE ARCHITECT OR GEOLOGIST). IF THIS DRAWING OR DOCUMENT IS ALTERED, THE ALTERING DESIGN PROFESSIONAL SHALL AFFIX TO THE DRAWING OR DOCUMENT HIS OR HER SEAL, THE NOTATION "ALTERED BY" FOLLOWED BY HIS OR HER SIGNATURE, THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

CHAZEN ENGINEERING, LAND SURVEYING, LANDSCAPE ARCHITECTURE & GEOLOGY CO., D.P.C.
THE Chazen COMPANIES®
Proud to be Employee Owned
www.chazencompanies.com
(888) 539-9073
Office Locations
- Glens Falls, NY
- Troy, NY
- Poughkeepsie, NY
- White Plains, NY
- New York City, NY

rev.	date	description
2	05/23/22	REVISED PER TOWN COMMENTS
1	03/28/22	REVISED PER TOWN COMMENTS

1998 SOUTH ROAD - STORAGE FACILITY

STORM SEWER DETAILS

TOWN OF POUGHKEEPSIE, DUTCHESS COUNTY, NEW YORK

designed	checked
LTN	CPL
date	scale
11/22/21	AS SHOWN
project no.	
8213	3.00
sheet no.	
C540	

0 1 2 3
ORIGINAL SCALE IN INCHES

I:\COMMON\CAD\TREATMENT\D1 CASCADE-4S STANDARD DRAWINGS\DWGS\CS-4-DTL.DWG 12/22/2019 9:34 AM

Drawing Name: Z:\Projects\82100–82199\82133.00 Diamond Point Development – OSHO\DWG\01_C540_82133–00_STORMD.dwg
Xref's Attached: XTB_82133–00_H30x42; XUTIL_81941–00
Date Printed: Jul 06, 2022, 10:58am