

Milford Distribution CenterStormwater Treatment System - Design Summary

Milford, PA

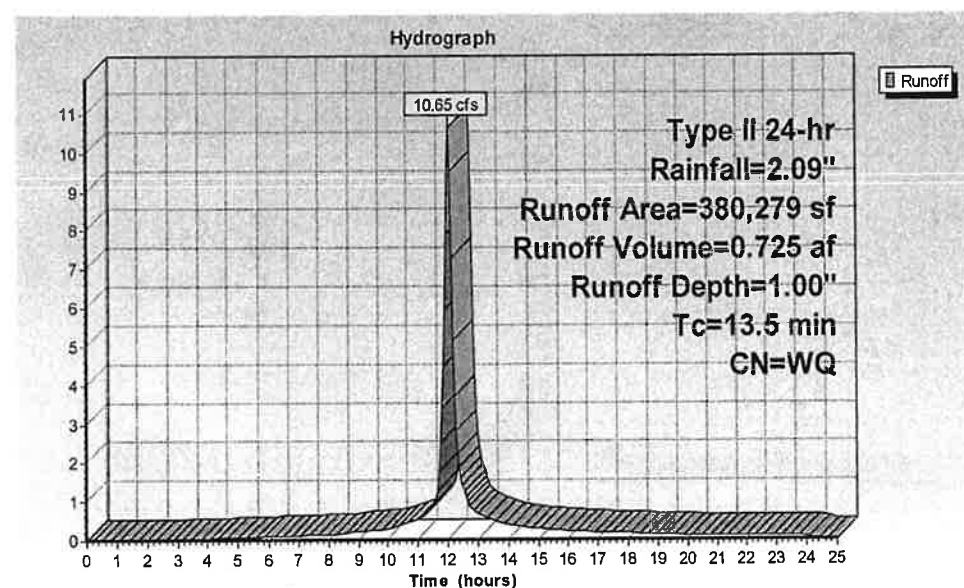
Information provided:

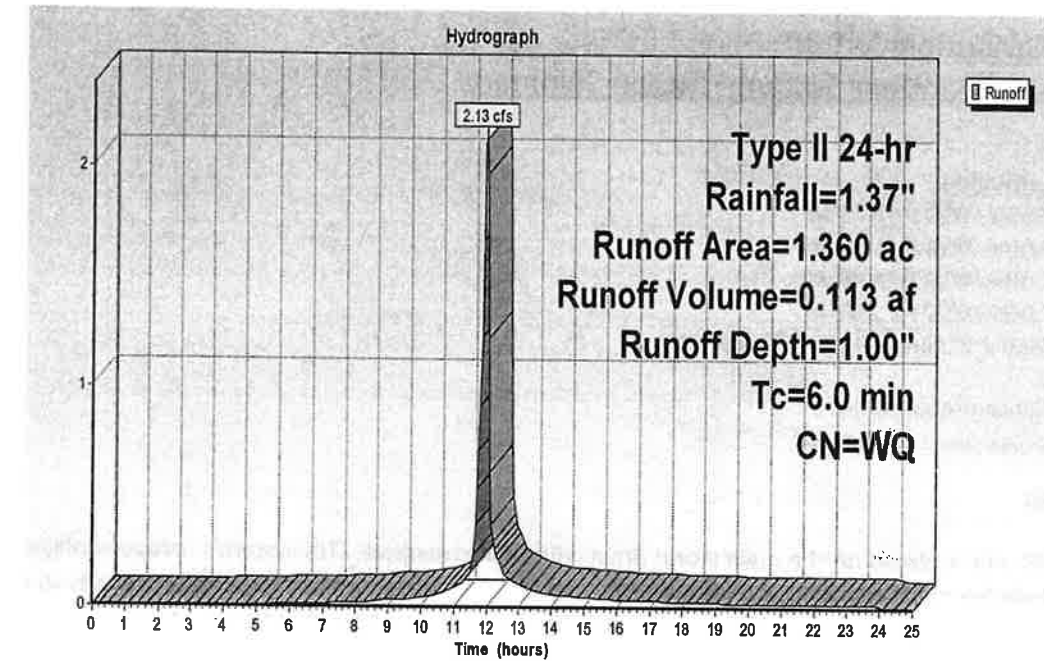
- Drainage Area, WQS 1 = 8.73 ac
- Drainage Area, WQS 2 = 1.36 ac
- Drainage Area, WQS 3 = 2.45 ac
- Drainage Area, WQS 4 = 1.00 ac
- Design Storm = 1" Runoff Type II 24-hr event
- CN varies
- Time of Concentration varies
- Target Particle Size = 180 micron

Size estimates:

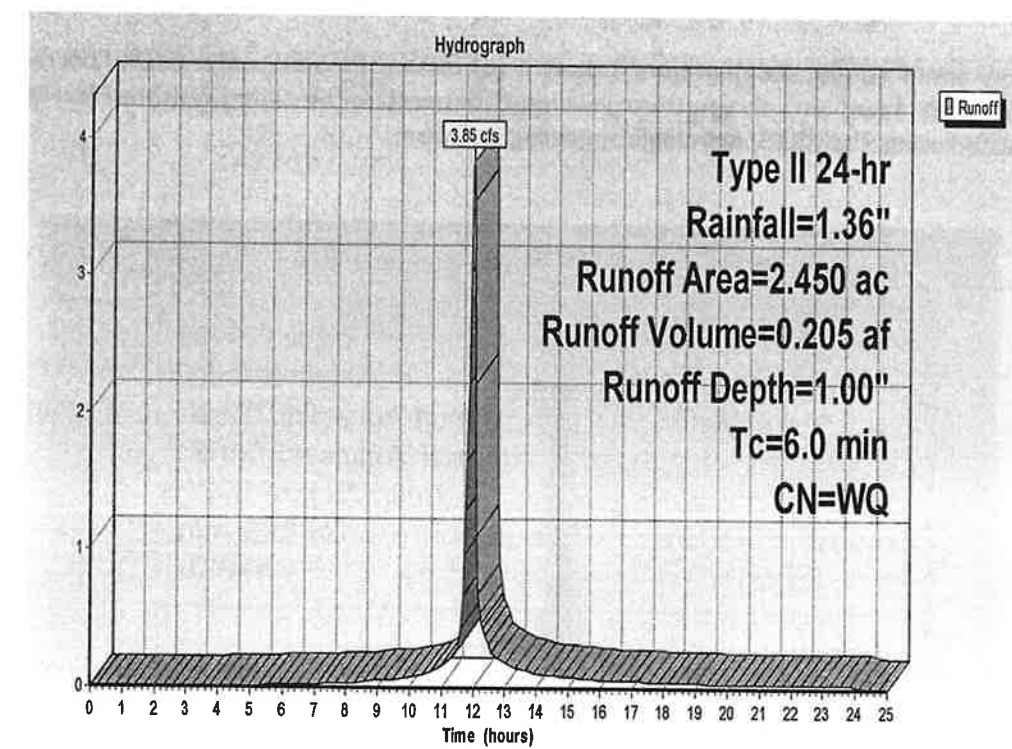
The Inline CDS Unit is placed on the main storm drain within one manhole. This system's unique configuration meets multiple engineering objectives by combining both treatment and bypass capabilities in one structure. By utilizing CDS' patented non-blocking screening technology, the Inline Unit ensures removal of both fine and suspended solids along with oil, grease, trash and debris. Offering a remarkably small footprint, this system can be incorporated into new development projects or retrofitted into existing storm water collection systems. It can also be fitted with an inlet grate to accept surface flow.

The CDS is a flow-based system, and therefore, is sized by calculating the peak water quality flow rate associated with the design storm. Based on a design storm yielding 1" of runoff for the 24-hr event the first flush treatment flow was calculated using HydroCAD hydrologic modelling software:

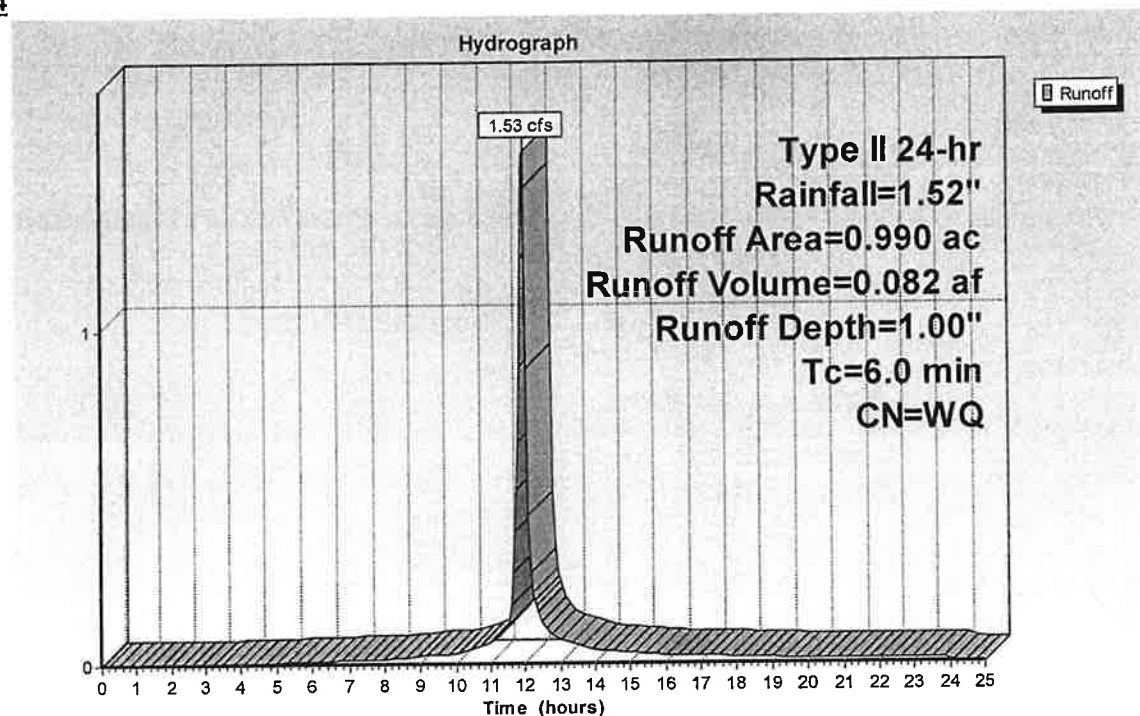
WQS 1



WQS 3



WQS 4



To accommodate a treatment flow rate of 10.65 cfs, 2.13 cfs, 3.85 cfs, and 1.53 cfs, Contech recommends using a CDS5640-10-C, CDS2025-5-C, CDS3030-6-C and a CDS2020-5-C Hydrodynamic Separation Unit, respectively (See attached Detail). Up to the treatment flowrates, each CDS is also capable of 80% TSS removal based on a particle size distribution with an average particle size of 180 microns. The estimated cost of this system, complete and delivered to the job site, is available upon request. The contractor is responsible for installing the CDS unit and all external piping.

Maintenance

Like any stormwater best management practice, the CDS system requires regular inspection and maintenance to ensure optimal performance. Maintenance frequency will be driven by site conditions. Quarterly visual inspections are recommended, at which time the accumulation of pollutants can be determined. On average, the CDS system requires annual removal of accumulated pollutants. Please contact Contech or navigate to contechES.com for more information in this regard.

Thank you for the opportunity to present this to you and your client.

Sincerely,

John E. Wright

John Wright
Contech Engineered Solutions, LLC.



• PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE

1. CONTRACTOR TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT. PLEASE CONTACT YOUR CONTECH ENGINEER FOR ANY QUESTIONS.
3. CONCRETE QUALITY, STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN REQUIREMENTS CONTAINED IN THIS DRAWING.
4. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT. CONTRACTOR SHALL PROVIDE ELEVATION OF $\pm 0 - 0$ AND GROUNDWATER ELEVATION AT OR BELOW STRUCTURE SHEET PILE MEASUREMENT. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET ALL PROJECT REQUIREMENTS.
5. ASHITO MESH AND BE CAST WITH THE CONTECH LOGO.
6. CONTRACTOR SHALL PROVIDE SHEAR PLATE TO BE PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS REQUIRED.
7. CONSTRUCTION SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND ASHITO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.

- INSTALLATION NOTES**
- A. ANY SUBGRADE BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE DETERMINED BY THE DESIGN ENGINEER.
- B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
- C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). WATCH 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.

NOT TO SCALE

CDS5640-10-C
ONLINE CDS
STANDARD DETAIL

CONTECH.
ENGINEERED SOLUTIONS LLC

www.contechES.com
8025 Centre Pointe Dr., Suite 400, West Chester, OH 41069
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* PER ENGINEER OF RECORD

GENERAL NOTES
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5. IF REQUIRED, PVC HYDRAULIC SHEAR PLUG IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NEEDED.

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.

- E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED

CONTECH
ENGINEERED SOLUTIONS LLC

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Jellyfish Filter Design Summary

Milford Distribution Center

Milford, PA

Information Provided:

- Drainage Area, Tc, CN
- Design Storm = PA First Flush – 1" of runoff, Type II 24-hr Storm Event
- Presiding agency = Pennsylvania Department of Environmental Protection (PADEP)

Jellyfish Information and Cartridge Data:

The Jellyfish® Filter is an engineered Stormwater quality treatment technology featuring pre-treatment and membrane filtration in a compact stand-alone treatment system that removes a high level and wide variety of Stormwater pollutants. Exceptional pollutant removal is achieved at high treatment flow rates with minimal head loss and low maintenance costs. Each lightweight Jellyfish Filter cartridge contains an extraordinarily large amount of membrane surface area, resulting in superior flow capacity and pollutant removal capacity. The Jellyfish Filter has received final certification from the NJDEP for 80% TSS removal as a stand-alone treatment system.

- Jellyfish cartridge length = 54 inches (nominal)
- Jellyfish cartridge flowrate (Hi Flo) = 80 gpm
- Jellyfish cartridge flowrate (Drain Down) = 40 gpm
- Jellyfish cartridge headloss = Minimum 18" above outlet

Design Summary:

The Jellyfish for this site was design as a flow-based system, and was sized based on calculating the peak water quality flow rate associated with the design storm. The design storm yielding 1" of runoff was selected. Using HydroCAD modeling software, a water quality flow rate of 10.65 cfs was calculated. See Hydrograph below:

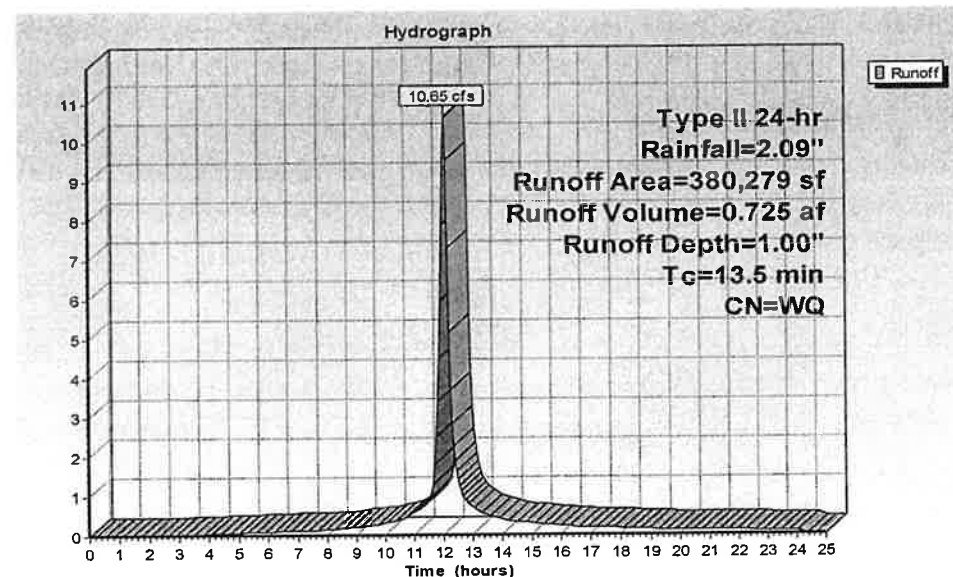


Fig. 1 - Hydrograph



Jellyfish Filter Design Summary

The Jellyfish for this site was sized to provide 55 Hi Flo and 11 Drain Down cartridge in order to meet the water quality flowrate requirement (calculations seen below). In order to house this number of cartridges, Contech Engineered Solutions (Contech) recommends either of the following options. The cartridges can be housed in a JFPD0822-55-11, which is an 8'x22' Precast Vault Jellyfish Filter.

$$N_{\substack{\text{cartridges} \\ \text{Hyd. Load}}} = Q_{\text{Treat}} \times 449 \frac{\text{gpm}}{\text{cfs}} \leq Q_{\substack{\text{specific} \\ \text{(cartridges)}}}$$
$$10.65 \text{ cfs} \times 449 \frac{\text{gpm}}{\text{cfs}} \leq (x)80 \frac{\text{gpm}}{\text{ft}^2} + (y)40 \frac{\text{gpm}}{\text{ft}^2}$$
$$N_{\substack{\text{cartridges} \\ \text{Hyd. Load}}} = [x = 55; y = 11]$$

Hydraulic Loading Requires: (55) Hi Flo, (11) Drain Down Cartridges

Maintenance:

Contech offers a network of Preferred Service Providers that have the capability to perform all necessary inspections, compliance reporting and cleaning services. Contech recommends inspecting the system annually and maintaining the system at the recommendation of the annual inspection. Full maintenance is typically required every 24-36 months. Please contact Contech's Maintenance Department for all questions regarding maintenance at (503) 258-3157 or visit our website at www.ContechES.com.

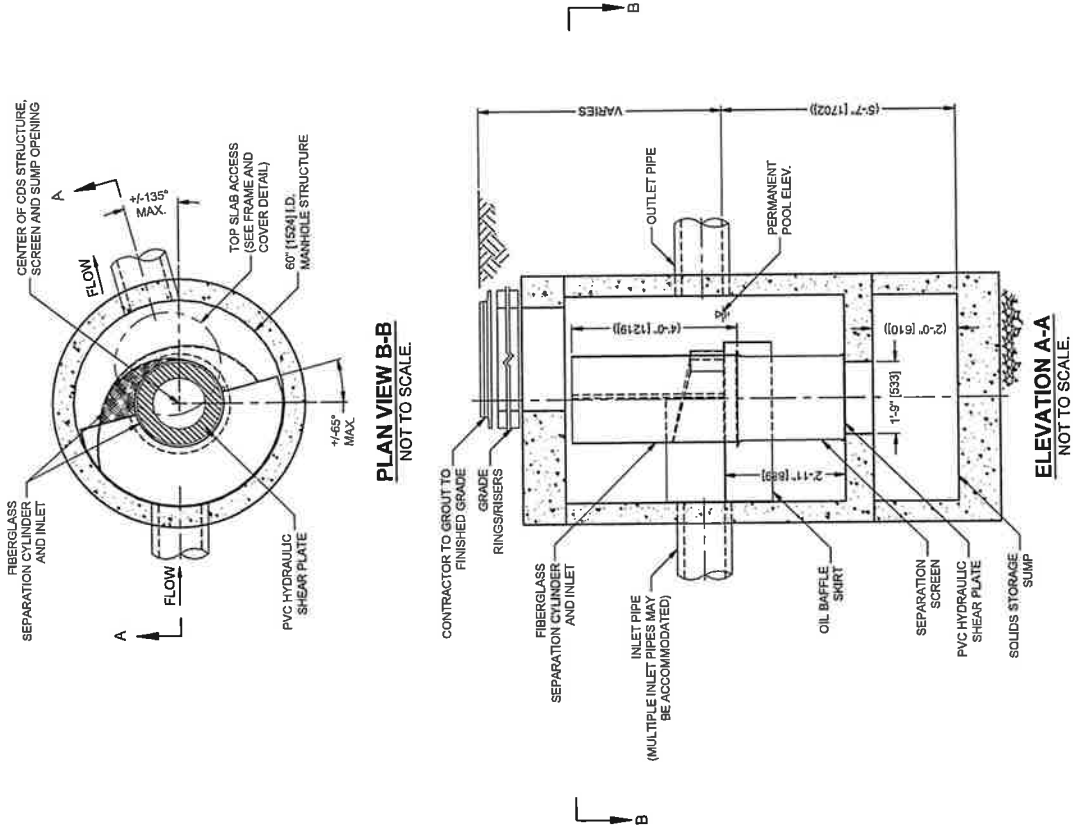
Thank you for the opportunity to present this information to you and your client.

Sincerely,

John Wright
Contech Engineered Solutions, LLC.

CDS2025-5-C DESIGN NOTES

CDS2025-5-C STANDARD CONFIGURATION IS SHOWN.
FOR NUDEP PROJECTS, PLEASE CONTACT YOUR LOCAL CONTECH REPRESENTATIVE FOR APPROVED CONFIGURATIONS.



SITE SPECIFIC DATA REQUIREMENTS			
STRUCTURE ID			
WATER QUALITY FLOWRATE (GFS OR LA)			*
PEAK FLOWRATE (GFS OR LA)			*
RETURN PERIOD OF PEAK FLOW (YRS)			*
SCREEN APERTURE (2400 OR 4700)			*
PIPE DATA			
I.E.	MATERIAL	DIAMETER	
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*
RIM ELEVATION			
ANTI-FLOTATION BALLAST	WIDTH	HEIGHT	
NOTES/SPECIAL REQUIREMENTS:			
* PER ENGINEER OF RECORD			



FRAME AND COVER
(DIAMETER VARIES)
NOT TO SCALE

GENERAL NOTES

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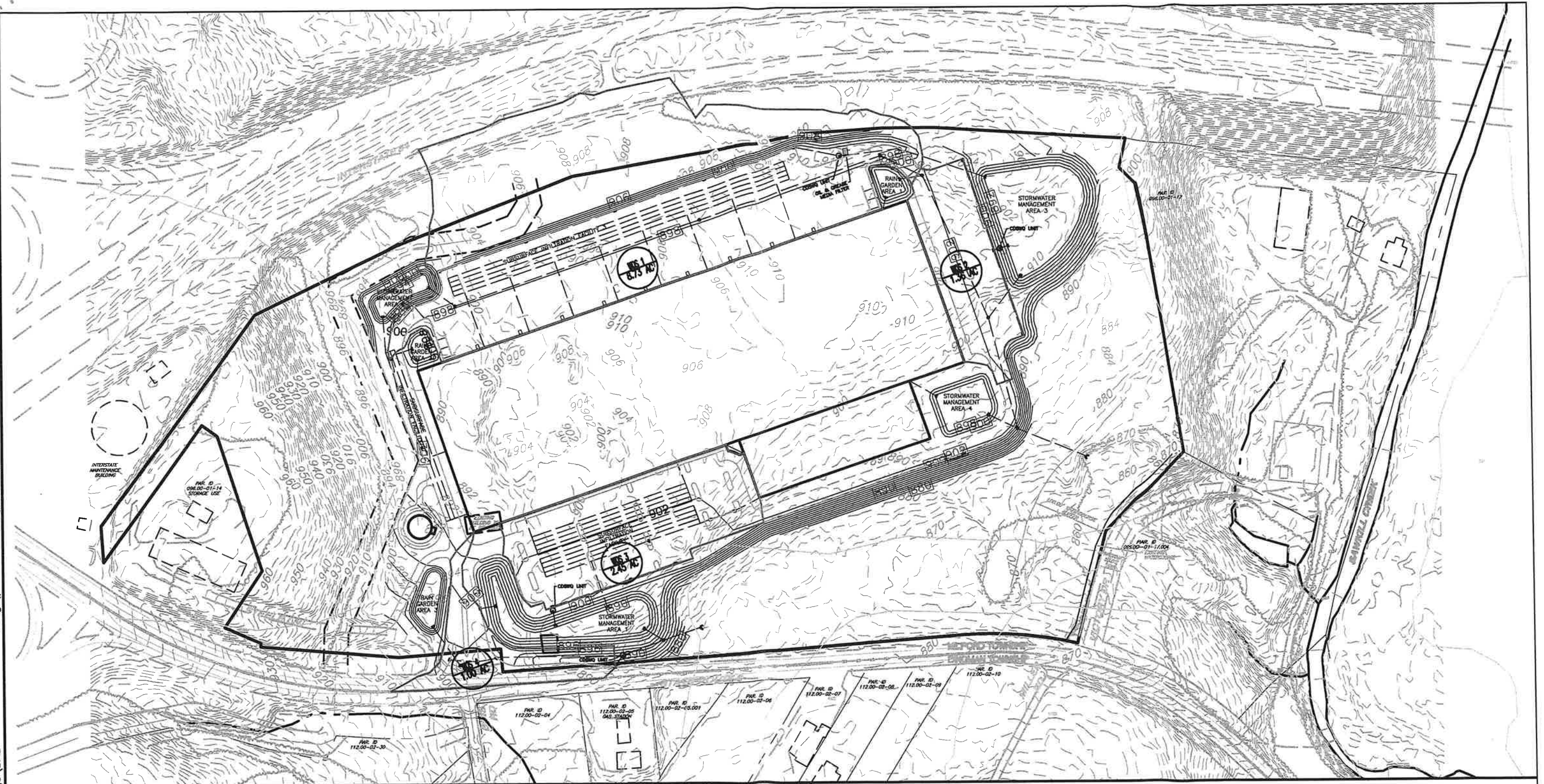
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- B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
- C. CONTRACTOR TO INSTALL JOINTS AND GROUT IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
- D. CONTRACTOR 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.



CDS2025-5-C
ONLINE CDS
STANDARD DETAIL

S:\2021\218686\Drawg\Final Dwg\WQ-DAB-CDSWQ UNIT PLAN.dwg || Tabname :Layout1 || Jun 01, 2022 - 10:30am || mgable



PROJECT : MILFORD DISTRIBUTION CENTER MILFORD TOWNSHIP PIKE COUNTY, PA		JOB NO.: 218686		TITLE : WQ SYSTEM DA MAPPING		
APPLICANT : NATIONAL DEVELOPERS		DRAWN BY: MEG	DOYLESTOWN (215) 345-9400 ⊕ STROUDSBURG (570) 629-0300 www.lvlengineers.com ENGINEERING GROUP BETHLEHEM CORPORATE OFFICE 559 MAIN STREET, SUITE 230 BETHLEHEM, PA 18018 (610) 419-9407		SHEET 1 OF 1	
		CHECKED BY: MEG				
		SCALE: 1" = 200'				
		PLAN STATUS: PRELIMINARY				
		PROJECT NAME : MILFORD DISTRIBUTION CENTER		DATE: MAY 23, 2022		

