



**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGES OF STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES
EROSION AND SEDIMENT CONTROL (E&S) MODULE 1**

Applicant: Orchard BJK Company, LLC. Project Site Name: PMCC North Warehouse
Surface Water Name(s): EV Wetlands to Duckpuddle Run Surface Water Use(s): EV/HQ-CWF,MF

E&S PLAN INFORMATION

1. Describe the existing topographic features of the project site and the immediate surrounding area.
The existing site is comprised of woodlands. Runoff from the project area flows generally in a westerly direction towards the Duckpuddle Run which flows to the south through the center of the project tract. There is no offsite contributing area which passes through the project area.

2. Complete the following table for soils present at the project site.

Map Unit Symbol	Map Unit Name	Acres	HSG	% of Disturbed Area	Depth (ft)	Hydric
CnB	Chippewa & Norwich Soils, 0 To 8 Percent Slopes, Extremely Stony	1.40	D	6%	0.5	<input checked="" type="checkbox"/>
MoB	Morris Channery Silt Loam, 0 To 8 Percent Slopes, Extremely Stony	6.02	D	24%	0.5	<input checked="" type="checkbox"/>
WpB	Wellsboro Channery Loam, 0 To 8 Percent Slopes, Extremely Stony	17.58	D	70%	0.5	<input checked="" type="checkbox"/>

Discuss any soil limitations and how the E&S Plan was designed to address those limitations.

Cutbacks cave – Caution should be taken to limit the amount of trench that is open at any given time. Shoring should be used as recommended by the respective governmental safety agencies.

Corrosive to Concrete– Suitable precautions should be taken to protect the proposed storm sewer structures and water storage tanks from corrosion due to the soils.

Corrosive to Steel – Exposed steel shall be provided with a protective coating and pipe materials will be resistant to corrosion.

Easily erodible – Earth disturbance will be limited to the immediate construction area and disturbed surfaces will be stabilized immediately. Erosion Control Blanket will be provided on slopes 3:1. Rip-Rap Aprons shall be provided at all pipe outfalls. Fill slopes will be tracked cross-slope to deter erosion. All disturbed areas will be monitored on a regular basis and after all storm events.

Depth to Saturated/ Seasonal High-Water Table - If groundwater is encountered during construction, the area will be de-watered by pumping the groundwater into a “Pumped Water Filter Bag” silt control system.

Hydric/ hydric inclusions – The existing wetlands have been delineated within the project boundary. Wetlands located outside of the proposed limit of disturbance will not be disturbed during the construction of the project.

Low strength / landslide prone – All slopes will be stabilized by permanent vegetative or impervious cover and/or by turf reinforcement or erosion control mats and blankets.

Slow percolation – Infiltration testing was performed to confirm the suitability of the soils for the proposed BMP’s. Additionally, the installation of the Infiltration BMP’s shall be limited to towards the end of construction.

Piping - The proposed basin berms have been limited in height and compacted to 98% modified proctor.

Poor Source of Topsoil (Rock Fragments) – Topsoil shall be used from areas relatively free of rock fragments. Should a suitable source of topsoil not be found, existing topsoil shall be screened to remove rock fragments or imported.

Poor Source of Topsoil (Too Acid) – A representative soil test shall be performed to determine the necessary amount of lime to be used.

Shrink-Swell/Frost Action - If winter grading is unavoidable, excavation shall take place when the temperature is above freezing and the soil is dry.

Witness – If soils are not suitable for the specific onsite application, as determined by inspection by the contractor, then suitable soil shall be derived from suitable onsite material or imported.

If Hydric soils are present, is a wetland determination attached to this module? Yes No N/A

If soils are known to be contaminated, 1) identify the pollutants exceeding Act 2 standards in the space provided below, 2) identify the extent of soil contamination on an E&S Plan Drawing that is attached to this module, and 3) describe the methods that will be used to avoid or minimize disturbance of the contaminated soils in the space provided below.

There are no known soil contaminants present within the project area.

3. Describe the characteristics of the earth disturbance activity, including the past, present and proposed land uses and the proposed alteration to the project site.

The proposed alteration to the project site, as described in Project Description section of this Narrative, will occur primarily in areas consisting of wooded cover conditions with slopes ranging from 0 - 8 percent according to the soil survey. The proposed earthmoving activities include cut and fill operations to construct the proposed improvements, however, it is anticipated that the project site will be balanced (no import or export of material). It is anticipated that excess topsoil, if applicable, will remain onsite to the extent practicable. Site design and layout employ an environmentally sensitive approach that minimizes the effect of land development on surrounding vegetation to the maximum extent practicable. Surface runoff patterns are not anticipated to be adversely impacted by the proposed alteration to the project site.

The past or historical land use(s) for the past 50 years or longer based on a review of historic aerial photographs of Pennsylvania obtained from www.pennpilot.psu.edu appear to be an undeveloped use as of 1971. The present or existing land use for the past five (5) years preceding the planned project is undeveloped. The proposed land use is commercial.

4. Describe the volume and rate of runoff from the project site and its upstream watershed area.

Runoff from within the limit of disturbance shall be directed to either the sediment basin or sediment trap. There is no offsite contributing area which passes through the project area.

5. Check boxes to indicate all BMPs that will be installed or implemented, identify plan numbers for the BMPs, and describe any deviations from the E&S Manual.

E&S BMPs	Plan No(s). Identified	Plan No(s). for O&M	Deviation(s) from E&S Manual
<input checked="" type="checkbox"/> Rock Construction Entrance	8	10	RCE lengthened to 100' for ABACT
<input type="checkbox"/> Rock Construction Entrance with Wash Rack			
<input type="checkbox"/> Rumble Pad			
<input type="checkbox"/> Wheel Wash			
<input type="checkbox"/> Temporary and Permanent Access Roads			
<input type="checkbox"/> Waterbar			
<input type="checkbox"/> Broad-based Dip			
<input type="checkbox"/> Open-top Culvert			
<input type="checkbox"/> Water Deflector			
<input type="checkbox"/> Roadside Ditch			
<input type="checkbox"/> Ditch Relief Culvert			
<input type="checkbox"/> Turnout			
<input type="checkbox"/> Compost Sock Sediment Trap			
<input type="checkbox"/> Temporary Stream Crossing			
<input type="checkbox"/> Temporary Wetland Crossing			
<input type="checkbox"/> Turbidity Barrier (Silt Curtain)			
<input type="checkbox"/> Dewatering Work Areas			
<input checked="" type="checkbox"/> Pumped Water Filter Bag		11	
<input type="checkbox"/> Sump Pit			
<input type="checkbox"/> Waste Management			
<input checked="" type="checkbox"/> Concrete Washout	8	11	
<input checked="" type="checkbox"/> Compost Filter Sock	8	11	
<input type="checkbox"/> Compost Filter Berm			
<input type="checkbox"/> Weighted Sediment Filter Tube			
<input type="checkbox"/> Rock Filter Outlet			
<input type="checkbox"/> Silt Fence (Filter Fabric Fence)			
<input type="checkbox"/> Reinforced Silt Fence			
<input type="checkbox"/> Super Silt Fence (Super Filter Fabric Fence)			

E&S BMPs	Plan No(s). Identified	Plan No(s). for O&M	Deviation(s) from E&S Manual
<input type="checkbox"/> Sediment Filter Log (Fiber Log)			
<input type="checkbox"/> Wood Chip Filter Berm			
<input type="checkbox"/> Straw Bale Barrier			
<input type="checkbox"/> Rock Filter			
<input type="checkbox"/> Vegetative Filter Strip			
<input type="checkbox"/> Inlet Filter Bag			
<input type="checkbox"/> Stone Inlet Protection			
<input checked="" type="checkbox"/> Runoff Conveyance (Channel)	8	11	Basin outfalls have been with rip-rap lined channels to convey runoff to wetlands
<input type="checkbox"/> Bench			
<input type="checkbox"/> Top-of-Slope Berm			
<input type="checkbox"/> Temporary Slope Pipe			
<input checked="" type="checkbox"/> Sediment Basin	8	11	Basins have been provided with skimmers
<input type="checkbox"/> Sediment Trap			
<input checked="" type="checkbox"/> Riprap Apron	8	16	
<input type="checkbox"/> Flow Transition Mat			
<input type="checkbox"/> Stilling Basin (Plunge Pool)			
<input type="checkbox"/> Stilling Well			
<input type="checkbox"/> Energy Dissipater			
<input type="checkbox"/> Drop Structure			
<input type="checkbox"/> Earthen Level Spreader			
<input type="checkbox"/> Structural Level Spreader			
<input type="checkbox"/> Surface Roughening			
<input checked="" type="checkbox"/> Vegetative Stabilization	8	11-12	
<input checked="" type="checkbox"/> Erosion Control Blanket	8	11-12	
<input type="checkbox"/> Soil Binders			
<input type="checkbox"/> Sodding			
<input type="checkbox"/> Cellular Confinement Systems			
<input type="checkbox"/> Alternative:			
<input type="checkbox"/> Alternative:			

Table 1 – For PAG-01 applicants, complete the requested information for each selected E&S BMP, where applicable.

Site Access BMPs									
BMP Name	No.	Length (ft)	Width (ft)	% Slope	Spacing (ft)	Length of Upslope Drainage (ft)	Culvert Diameter (in)	Soil Type in Ditch	E&S Manual Figure/Detail No.
Rock Construction Entrance (RCE)									
RCE with Wash Rack									
Temporary and Permanent Access Roads – Crowned Roadway									
Temporary and Permanent Access Roads – Insloped Roadway									
Waterbar									
Broad-based Dip									
Open-top Culvert									
Water Deflector									
Roadside Ditch									
Ditch Relief Culvert									
Sediment Barriers / Filters									
BMP Name	DA (ac)	Diameter (in)	Storage Capacity (cf)	Trap Height (in)	% Slope	Slope Length Above Barrier (ft)	Barrier Height (in)	E&S Manual Figure/Detail No.	
Compost Sock Sediment Trap									
Compost Filter Sock									
Compost Filter Berm									
Silt Fence (Filter Fabric Fence)									
Super Silt Fence									
Sediment Filter Log									
Weighted Sediment Filter Tube									
Straw Bale Barrier									
Wood Chip Filter Berm									
Toe-of-Slope Berm									

Table 1 – For PAG-01 applicants, complete the requested information for each selected E&S BMP, where applicable.

Runoff Conveyance BMPs													
BMP Name	Temporary	Design Storm	DA (ac)	Multiplier	Qr (cfs)	Q (cfs)	Manning's n	Va (fps)	V (fps)	D (ft)	d (ft)	Flow Depth Ratio	E&S Manual Figure/Detail No.
Vegetated Channel	<input type="checkbox"/>												
Sodded Channel	<input type="checkbox"/>												
Riprap Channel	<input type="checkbox"/>												
Energy Reduction BMPs													
BMP Name	Downstream Distance to Drainage Course (ft)		Downstream % Slope	DA (ac)	Discharge (cfs)	Manhole Depth (ft)	Inflow Pipe Diameter (in)	Outlet Pipe Diameter (in)	E&S Manual Figure/Detail No.				
Level Spreader													
Drop Structure													
Stilling Basins / Wells													
BMP Name	Pipe Diameter (in)	Discharge (cfs)	Well Diameter (in)	Depth of Well Below Invert (ft)	Basin Depth (ft)	Median Riprap Size (in)	Distance from Discharge Pipe to Basin Center (ft)	E&S Manual Figure/Detail No.					
Stilling Basin													
Stilling Well													
Other BMPs													
BMP Name	DA (ac)	Pipe Diameter (in)	Berm Height (in)	Length (ft)	% Slope	Vertical Spacing (ft)	Channel Depth (ft)	Riprap Size	Riprap Thickness (in)	Initial Width (ft)	Terminal Width (ft)	E&S Manual Figure/Detail No.	
Temporary Slope Pipe													
Bench													
Rock Filter													
Riprap Apron													

For selected BMPs not identified in Table 1, report the name of the BMP and the Figure or Detail No. from the E&S Manual that will be used for design and implementation (PAG-01 only).

BMP Name	E&S Manual Figure/Detail No.	BMP Name	E&S Manual Figure/Detail No.

6. All applicable Standard E&S Worksheets from Appendix B of the E&S Manual have been completed and are attached.
7. Other worksheets or calculations equivalent to Appendix B of the E&S Manual have been completed and are attached.
8. Identify the E&S Plan Drawing number(s) that describes the sequence of BMP installation and removal in relation to the scheduling of earth disturbance activities, prior to, during and after earth disturbance activities that ensure the proper functioning of all BMPs.
12
9. Supporting E&S calculations have been completed and are available upon request (PAG-01 only).
10. Supporting E&S calculations are attached to the NOI/application.
11. Plan drawings consist of standard Figures/Construction Details in E&S Manual (PAG-01 only).
12. Plan drawings have been developed for the project and are attached to the NOI/application.
13. BMPs will be inspected on a weekly basis and after measurable storm events (i.e., at least 0.25 inch).
14. Identify the following information relating to temporary stabilization measures on an E&S Plan Drawing and identify the Drawing No. below: 1) vegetative species, 2) % pure live seed, 3) seed application rate, 4) fertilizer type, 5) fertilizer application rate, 6) mulch type, 7) mulching rate, and 8) liming rate.
E&S Plan Drawing No(s): **12**
15. Identify the following information relating to permanent stabilization measures on an E&S Plan Drawing and identify the Drawing No. below: 1) vegetative species, 2) % pure live seed, 3) seed application rate, 4) fertilizer type, 5) fertilizer application rate, 6) mulch type, 7) mulching rate, 8) liming rate, 9) anchor material, 10) anchoring method, 11) rate of anchor material application, 12) topsoil placement depth, and 13) seeding season dates.
E&S Plan Drawing No(s): **12**
16. Describe the procedures that will be taken to ensure that recycling or disposal of materials associated with or from the project site will be conducted properly.
1. **Anticipated construction wastes: building materials and other construction site wastes, including but not limited to excess soil materials, building materials, concrete wash water, sanitary wastes, etc. That could adversely impact water quality. Additional waste material due to demolition of existing improvements is specified in the site construction sequence. Measures should be planned and implemented by the permittee or co-permittee for housekeeping, materials management, and litter control.**
 2. **Construction waste materials shall be properly managed per note 3 and recycled or disposed of to reduce potential for pollution to surface and ground waters as per 25 pa. Code § 102.4(b)(5)(xi). Proper trash disposal, recycling of materials, proper materials handling, and spill prevention and clean-up reduce the potential for construction site wastes to be mobilized by stormwater runoff and conveyed to surface waters.**
 3. **All building materials and wastes shall be removed from the site and recycled or disposed of in accordance with the department's solid waste management regulations at 25 pa. Code 260.1 et seq., 271.1, and 287.1 et. Seq. No building materials or wastes or unused building materials shall be burned, buried, dumped, or discharged at the site.**
 4. **Wherever possible, recycling of excess materials is preferred, rather than disposal.**
 5. **All applicable federal, state, and local laws and regulations must be followed in the use, handling, and disposal of potentially hazardous materials.**
 6. **Under no circumstances may erosion control bmps be used for temporary storage of demolition materials or construction wastes.**
 7. **All sediment removed from bmps shall be handled in the manner described in these notes. Sediment removed from bmps shall be disposed of in landscaped areas outside of steep slopes, wetlands, floodplains or drainage**

swales and immediately stabilized, placed on topsoil stockpiles, or hauled off-site to a permitted construction or storage site.

8. Concrete wash water shall be handled in the manner described in these notes. In no case shall it be allowed to enter any surface waters, groundwater systems or storm sewer systems.

9. All off-site waste and borrow areas must have an e&s plan approved by the local conservation district or dep fully implemented prior to being activated.

17. Identify the presence of any naturally occurring geologic formations or soil conditions that may have the potential to cause pollution during earth disturbance activities. If such formations or conditions exist, identify BMPs that will be implemented to avoid or minimize potential pollution.

N/A

18. Identify whether the potential exists for thermal impacts to surface waters from the earth disturbance activity. If such potential exists, identify BMPs that will be implemented to avoid, minimize, or mitigate potential thermal impacts.

Potential thermal impacts to surface waters of the Commonwealth include the following activities:

Exposure of stormwater to surfaces, specifically pavement and rooftops, with elevated temperatures prior to reaching surface waters. During construction, BMPs and/or construction practices shall be implemented to avoid, minimize or mitigate the potential to cause pollution from thermal impacts are as follows:

- Collected Runoff shall flow through deep storm sewer prior to discharge from the site.

- The majority of the site runoff shall flow through a sediment control facility where it will be contained and discharged slowly though a vegetated area prior to discharge from the site.

19. The E&S Plan has been planned, designed, and will be implemented to be consistent with the PCSM Plan.

20. If applicable, identify existing and proposed riparian forest buffers on E&S and PCSM Plan Drawings and identify the Drawing No(s) below (select N/A if not applicable).

E&S Plan Drawing No(s): **Plan 8 & 9** N/A

PCSM Plan Drawing No(s): **Plan 13 & 14**

E&S PLAN DEVELOPER

I am trained and experienced in E&S control methods.

I am a licensed professional.

Name: **Michael Hartman**

Title: **Project Engineer**

Company: **Schlouch, Incorporated**

Phone No.: **484-663-3487**

Address: **P.O. Box 69**

Email: **mhartman@schlouch.com**

City, State, ZIP: **Blandon, PA 19510**

License No.: **PE 059897**

License Type: **Professional Engineer**

Exp. Date: **9/23**


E&S Plan Developer Signature

12/8/22

Date

WORKSHEET #12
Sediment Basin Capacity Requirements

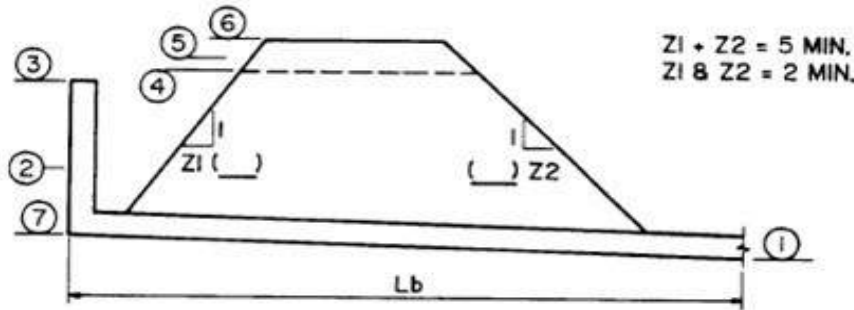
PROJECT NAME: PMCC North Warehouse
 LOCATION: Coolbaugh Township, Monroe County
 PREPARED BY: MDH DATE: 12/8/2022
 CHECKED BY: _____ DATE: _____

BASIN NUMBER		1
PERMANENT OR TEMPORARY BASIN?	(P or T)	P
SPECIAL PROTECTION WATERSHED?	(YES OR NO)	N
Karst soils?	(YES OR NO)	N
(A) MAXIMUM TOTAL DRAINAGE AREA	(AC)	14.6
IS DRAINAGE AREA (A) MORE THAN 10% LARGER THAN THE PRECONSTRUCTION CONDITION?	(YES OR NO)	N
(A1) DISTURBED ACRES IN DRAINAGE AREA	(AC)	14.6
(I) INITIAL REQ'D DEWATERING ZONE (5,000 X A)	(CF)	72973
(T) REDUCTION FOR TOP DEWATERING (-700 X A)	(CF)	0
(P) REDUCTION FOR PERMANENT POOL (-700 X A)	(CF)	0
(L) REDUCTION FOR 4:1 FLOW LENGTH:WIDTH (-350 X A)	(CF)	0
(D) REDUCTION FOR 4 TO 7 DAY DEWATERING (- 350 X A)	(CF)	0
(Sv) REQUIRED DEWATERING ZONE $[I - (T+P+L+D)]^1$	(CF)	72973
(Sd) REQUIRED SEDIMENT STORAGE VOLUME (1000 X A1) (CF)	(CF)	14595
(St) TOTAL REQUIRED STORAGE VOLUME (Sv + Sd)	(CF)	87567
TOTAL STORAGE VOLUME PROVIDED (@ ELEV 3) ²	(CF)	102853
DEWATERING TIME FOR DEWATERING ZONE (DAYS)	(DAYS)	5.7
REQUIRED DISCHARGE CAPACITY (2 X A)	(CFS) ³	29.19
PRINCIPAL SPILLWAY TYPE (PERFORATED RISER, SKIMMER, etc.)		Skimmer
PEAK FLOW FROM 10 YR/24 HR STORM FOR DRAINAGE AREA	(A)	N/A
PRINCIPAL SPILLWAY CAPACITY (@ ELEV 5)	(CFS) ⁴	32.03
EMERGENCY SPILLWAY CAPACITY (@ ELEV 5)	(CFS) ⁴	0.00
TOTAL BASIN DISCHARGE CAPACITY (@ ELEV 5)	(CFS)	32.03
EMERGENCY SPILLWAY PROTECTIVE LINING ⁵		SC 250
OUTLET TO A SURFACE WATER?	(YES OR NO) ⁶	Y
PEAK FLOW FROM A 100 YR/24 HR STORM FOR DRG. AREA	(CFS)	N/A

- 1 The minimum dewatering zone capacity for sediment basins is (3,600 X A). No reduction is permitted in Special Protection (HQ and EV) Watersheds.
- 2 Total Storage Volume provided at riser crest.
- 3 Or provide calculations to show peak flow from 25 yr./24 hr. storm for area (A) is routed through the basin.
- 4 Provide supporting computations.
- 5 If grass lining is proposed, spillway should be constructed in original ground unless a suitable TRM lining is used. Wherever a TRM is used, riprap should be placed at the bottom of the embankment to prevent scour.
- 6 If no, and basin is permanent or drainage area is more than 10% larger than pre-construction, provide supporting calculations to show accelerated erosion will not result from the proposed discharge. For discharges increasing volume or rate of flow onto a neighboring property prior to entering a surface water, an easement should be obtained prior to plan submittal.

WORKSHEET #13
Sediment Basin Dimensions And Elevations

PROJECT NAME: PMCC North Warehouse
 LOCATION: Coolbaugh Township, Monroe County
 PREPARED BY: MDH DATE: 12/8/2022
 CHECKED BY: _____ DATE: _____



BASIN NUMBER		1	
1. DISCHARGE PIPE ELEVATION	(FT)	1949.37	
2. TOP OF SEDIMENT STORAGE ZONE (@ Sd) (MIN. 1.0' ABOVE ELEVATION 7)	(FT)	1953.40	
3. ELEVATION AT TOP OF DEWATERING ZONE (St) (CREST OF PRINCIPAL SPILLWAY)	(FT)	1954.48	
4. EMERGENCY SPILLWAY CREST ELEVATION (MIN. 0.5' ABOVE ELEVATION 3)	(FT)	1956.95	
5. 2 CFS/ACRE OR 25-YR/24-HR FLOW ELEVATION		1955.30	
6. TOP OF EMBANKMENT ELEVATION (MIN. 24" ABOVE ELEVATION 5 OR 12" WITH ROUTED 100-YR/24-HR STORM)	(FT)	1958.45	
7. BOTTOM ELEVATION	(FT)	1952.33	
AVERAGE BOTTOM WIDTH (FT)	(FT)	135	
AVERAGE BOTTOM LENGTH (FT)	(FT)	330	
(SAmin) REQUIRED SURFACE AREA AT ELEVATION 2	(SQ. FT.)	47100	
SURFACE AREA PROVIDED AT ELEVATION 2	(SQ. FT.)	47100	
AVERAGE BASIN WIDTH (W) AT ELEVATION 3	(FT)	155	
FLOW LENGTH (L) AT ELEVATION 3	(FT)	314	
FLOW LENGTH:WIDTH RATIO AT ELEVATION 3	(L/W)	2.0	
SILT CURTAIN OR FOREBAY? (IF YES, INDICATE WHICH)	(FT)	N/A	
EMBANKMENT TOP WIDTH (FT, 8' MIN.)	(FT)	8	
EMBANKMENT SOIL TYPE(S)		Loam	
KEY TRENCH DEPTH (FT, 2' MIN.)		2	
KEY TRENCH WIDTH (FT, 4' MIN.)		4	
RISER DIAMETER/TYPE (15" MIN.)	(FT)	N/A	
BARREL DIAMETER/TYPE (12" MIN.)	(FT)	30	
Lb (BARREL LENGTH (FT)	(FT)	18	
EMERGENCY SPILLWAY WIDTH (FT)	(FT)	150	
EMERGENCY SPILLWAY SIDE SLOPES (H:V)	(FT)	3	
EMERGENCY SPILLWAY DEPTH (FT)		N/A	

For irregular shaped traps, provide stage storage data

WORKSHEET #17
Sediment Basin Discharge Capacity

PROJECT NAME: PMCC North Warehouse
 LOCATION: Coolbaugh Township, Monroe County
 PREPARED BY: MDH DATE: 12/8/2022
 CHECKED BY: _____ DATE: _____

PRINCIPAL SPILLWAY DISCHARGE CAPACITY

BASIN NO: 1

WATER SURFACE ELEVATION ⁴ (FT)	Flow into Top of PERMANENT RISER			BARREL PIPE FLOW		PRINCIPAL SPILLWAY CAPACITY (CFS) ³
	HEAD (FT)	ORIFICE FLOW ¹ Q (CFS)*	WEIR FLOW Q (CFS)	HEAD ² (FT)	Q (CFS)	
1955.30	0.82	52.22	32.03	4.68	53.98	32.03

EMERGENCY SPILLWAY DISCHARGE CAPACITY

WATER SURFACE ELEVATION ⁴ (FT)	EMERGENCY SPILLWAY BOTTOM WIDTH ⁵ (FT)	TABLE OR C VALUE USED ⁶	EMERGENCY SPILLWAY CAPACITY (CFS)	REQUIRED DISCHARGE CAPACITY (CFS)	TOTAL DISCHARGE CAPACITY PROVIDED (CFS)
1955.30	150.00	2.8	0	29.19	32.03

1. Flow into top of riser only (Flow through perforations not included)
2. Water surface elevation minus elevation at centerline of pipe outlet
3. Least of orifice, weir, or pipe flow (Peak flow from 10 yr/24 hr storm Min.)
4. 24" below top of embankment (12" if 100-year storm routed through basin)
5. 8 Ft. minimum
6. Use Tables 7.5 through 7.8 or equation for broad-crested weir [$Q = CLH^{1.5}$, where $C < 2.8$ (MAX)]; for
7. Principal Spillway Capacity + Emergency Spillway Capacity

WORKSHEET #12
Sediment Basin Capacity Requirements

PROJECT NAME: PMCC North Warehouse

LOCATION: Coolbaugh Township, Monroe County

PREPARED BY: MDH DATE: 12/8/2022

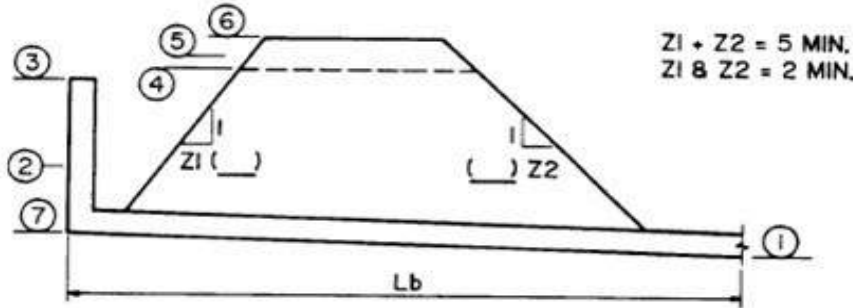
CHECKED BY: _____ DATE: _____

BASIN NUMBER		2
PERMANENT OR TEMPORARY BASIN?	(P or T)	P
SPECIAL PROTECTION WATERSHED?	(YES OR NO)	N
Karst soils?	(YES OR NO)	N
(A) MAXIMUM TOTAL DRAINAGE AREA	(AC)	7.3
IS DRAINAGE AREA (A) MORE THAN 10% LARGER THAN THE PRECONSTRUCTION CONDITION?	(YES OR NO)	N
(A1) DISTURBED ACRES IN DRAINAGE AREA	(AC)	7.3
(I) INITIAL REQ'D DEWATERING ZONE (5,000 X A)	(CF)	36700
(T) REDUCTION FOR TOP DEWATERING (-700 X A)	(CF)	0
(P) REDUCTION FOR PERMANENT POOL (-700 X A)	(CF)	0
(L) REDUCTION FOR 4:1 FLOW LENGTH:WIDTH (-350 X A)	(CF)	0
(D) REDUCTION FOR 4 TO 7 DAY DEWATERING (- 350 X A)	(CF)	0
(Sv) REQUIRED DEWATERING ZONE $[I - (T+P+L+D)]^1$	(CF)	36700
(Sd) REQUIRED SEDIMENT STORAGE VOLUME (1000 X A1) (CF)	(CF)	7340
(St) TOTAL REQUIRED STORAGE VOLUME (Sv + Sd)	(CF)	44040
TOTAL STORAGE VOLUME PROVIDED (@ ELEV 3) ²	(CF)	51991
DEWATERING TIME FOR DEWATERING ZONE (DAYS)	(DAYS)	4.6
REQUIRED DISCHARGE CAPACITY (2 X A)	(CFS) ³	14.68
PRINCIPAL SPILLWAY TYPE (PERFORATED RISER, SKIMMER, etc.)		Skimmer
PEAK FLOW FROM 10 YR/24 HR STORM FOR DRAINAGE AREA	(A)	N/A
PRINCIPAL SPILLWAY CAPACITY (@ ELEV 5)	(CFS) ⁴	15.17
EMERGENCY SPILLWAY CAPACITY (@ ELEV 5)	(CFS) ⁴	0.00
TOTAL BASIN DISCHARGE CAPACITY (@ ELEV 5)	(CFS)	15.17
EMERGENCY SPILLWAY PROTECTIVE LINING ⁵		SC 250
OUTLET TO A SURFACE WATER?	(YES OR NO) ⁶	Y
PEAK FLOW FROM A 100 YR/24 HR STORM FOR DRG. AREA	(CFS)	N/A

- 1 The minimum dewatering zone capacity for sediment basins is (3,600 X A). No reduction is permitted in Special Protection (HQ and EV) Watersheds.
- 2 Total Storage Volume provided at riser crest.
- 3 Or provide calculations to show peak flow from 25 yr./24 hr. storm for area (A) is routed through the basin.
- 4 Provide supporting computations.
- 5 If grass lining is proposed, spillway should be constructed in original ground unless a suitable TRM lining is used. Wherever a TRM is used, riprap should be placed at the bottom of the embankment to prevent scour.
- 6 If no, and basin is permanent or drainage area is more than 10% larger than pre-construction, provide supporting calculations to show accelerated erosion will not result from the proposed discharge. For discharges increasing volume or rate of flow onto a neighboring property prior to entering a surface water, an easement should be obtained prior to plan submittal.

WORKSHEET #13
Sediment Basin Dimensions And Elevations

PROJECT NAME: PMCC North Warehouse
 LOCATION: Coolbaugh Township, Monroe County
 PREPARED BY: MDH DATE: 12/8/2022
 CHECKED BY: _____ DATE: _____



BASIN NUMBER		2	
1. DISCHARGE PIPE ELEVATION	(FT)	1945.83	
2. TOP OF SEDIMENT STORAGE ZONE (@ Sd) (MIN. 1.0' ABOVE ELEVATION 7)	(FT)	1947.73	
3. ELEVATION AT TOP OF DEWATERING ZONE (St) (CREST OF PRINCIPAL SPILLWAY)	(FT)	1949.00	
4. EMERGENCY SPILLWAY CREST ELEVATION (MIN. 0.5' ABOVE ELEVATION 3)	(FT)	1949.55	
5. 2 CFS/ACRE OR 25-YR/24-HR FLOW ELEVATION		1949.55	
6. TOP OF EMBANKMENT ELEVATION (MIN. 24" ABOVE ELEVATION 5 OR 12" WITH ROUTED 100-YR/24-HR STORM)	(FT)	1951.55	
7. BOTTOM ELEVATION	(FT)	1946	
AVERAGE BOTTOM WIDTH (FT)	(FT)	52	
AVERAGE BOTTOM LENGTH (FT)	(FT)	220	
(S _{Amin}) REQUIRED SURFACE AREA AT ELEVATION 2	(SQ. FT.)	17409	
SURFACE AREA PROVIDED AT ELEVATION 2	(SQ. FT.)	17409	
AVERAGE BASIN WIDTH (W) AT ELEVATION 3	(FT)	70	
FLOW LENGTH (L) AT ELEVATION 3	(FT)	244	
FLOW LENGTH:WIDTH RATIO AT ELEVATION 3	(L/W)	3.5	
SILT CURTAIN OR FOREBAY? (IF YES, INDICATE WHICH)	(FT)	N/A	
EMBANKMENT TOP WIDTH (FT, 8' MIN.)	(FT)	8	
EMBANKMENT SOIL TYPE(S)		Loam	
KEY TRENCH DEPTH (FT, 2' MIN.)		2	
KEY TRENCH WIDTH (FT, 4' MIN.)		4	
RISER DIAMETER/TYPE (15" MIN.)	(FT)	N/A	
BARREL DIAMETER/TYPE (12" MIN.)	(FT)	24	
L _b (BARREL LENGTH (FT)	(FT)	18	
EMERGENCY SPILLWAY WIDTH (FT)	(FT)	80	
EMERGENCY SPILLWAY SIDE SLOPES (H:V)	(FT)	3	
EMERGENCY SPILLWAY DEPTH (FT)		N/A	

For irregular shaped traps, provide stage storage data

WORKSHEET #17
Sediment Basin Discharge Capacity

PROJECT NAME: PMCC North Warehouse
 LOCATION: Coolbaugh Township, Monroe County
 PREPARED BY: MDH DATE: 12/8/2022
 CHECKED BY: _____ DATE: _____

PRINCIPAL SPILLWAY DISCHARGE CAPACITY

BASIN NO: 2

WATER SURFACE ELEVATION ⁴ (FT)	Flow into Top of PERMANENT RISER			BARREL PIPE FLOW		PRINCIPAL SPILLWAY CAPACITY (CFS) ³
	HEAD (FT)	ORIFICE FLOW ¹ Q (CFS)*	WEIR FLOW Q (CFS)	HEAD ² (FT)	Q (CFS)	
1949.55	0.55	28.57	15.17	2.72	25.98	15.17

EMERGENCY SPILLWAY DISCHARGE CAPACITY

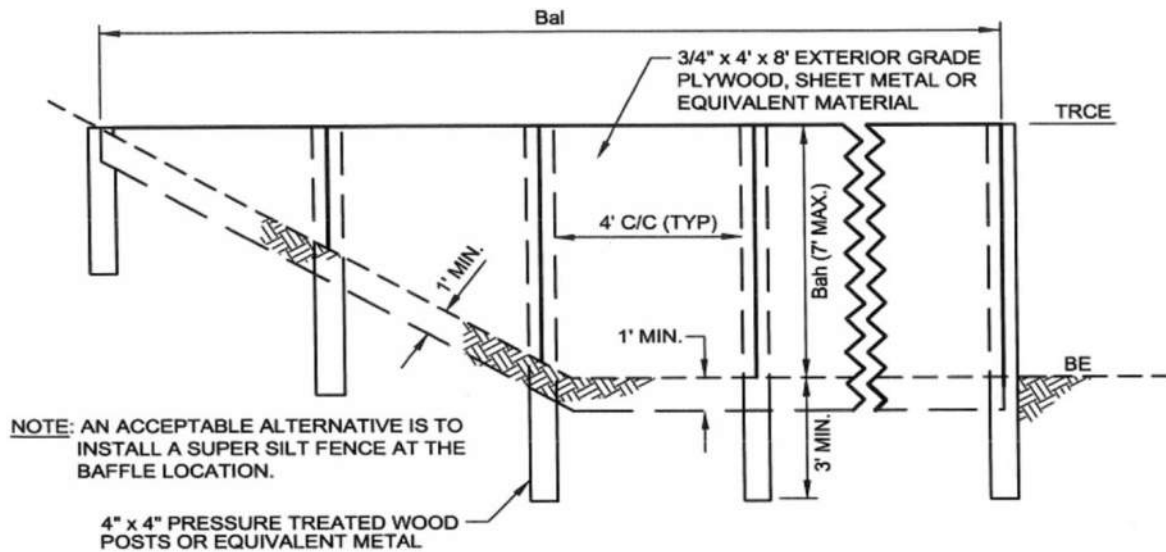
WATER SURFACE ELEVATION ⁴ (FT)	EMERGENCY SPILLWAY BOTTOM WIDTH ⁵ (FT)	TABLE OR C VALUE USED ⁶	EMERGENCY SPILLWAY CAPACITY (CFS)	REQUIRED DISCHARGE CAPACITY (CFS)	TOTAL DISCHARGE CAPACITY PROVIDED (CFS)
1949.55	80.00	2.8	0	14.68	15.17

1. Flow into top of riser only (Flow through perforations not included)
2. Water surface elevation minus elevation at centerline of pipe outlet
3. Least of orifice, weir, or pipe flow (Peak flow from 10 yr/24 hr storm Min.)
4. 24" below top of embankment (12" if 100-year storm routed through basin)
5. 8 Ft. minimum
6. Use Tables 7.5 through 7.8 or equation for broad-crested weir [$Q = CLH^{1.5}$, where $C < 2.8$ (MAX)]; for
7. Principal Spillway Capacity + Emergency Spillway Capacity

Sediment Basin Baffle Design

PROJECT NAME: PMCC North Warehouse
 LOCATION: Coolbaugh Township, Monroe County
 PREPARED BY: MDH DATE: 12/8/2022
 CHECKED BY: _____ DATE: _____

CONSTRUCTION DETAIL

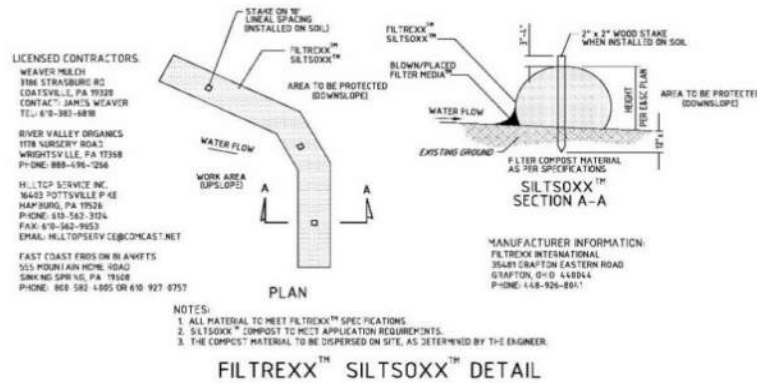


Basin or Trap No.	Baffle		Temporary Riser	Bottom
	Length Bal (FT)	Height Bah (FT)	Crest ELEV TRCE (FT)	Bottom ELEV BE (FT)
1	132	2.2	1954.48	1952.33
2	184	3.0	1949.00	1946.00

STANDARD WORKSHEET #5A Silt Soxx Sediment Barrier

PROJECT NAME: PMCC North Warehouse
 LOCATION: Coolbaugh Township, Monroe County
 PREPARED BY: MDH DATE: 8/25/2022
 CHECKED BY: _____ DATE: _____

CONSTRUCTION DETAIL



Barrier No.	Location	Soxx Height	Slope-Percent	Actual Slope Length	Allowable Slope Length
1	North-East side of Basin 1	24	0.026	920	1168
2	East side of Basin 1	24	0.031	860	1053
3	North-East side of Basin 2	24	0.056	486	622
4	South-East side of Basin 2	24	0.084	250	480
5	South of truck parking area	24	0.067	300	567
6	Along S.R. 611 widening	12	0.172	64	150

Schlouch Incorporated

PO Box 69
Blandon, PA 19510
Phone: 610-926-7070

Project: PMCC North Warehouse
Order No.: 20402110
Calc. by: MDH
Date: 12/8/2022

WORKSHEET #11 CHANNEL DESIGN DATA

Channel or Channel Section		1	1	
Temporary or Permanent	(T OR P)	Perm	Perm	
Design Storm	(2,5, 10 YR)	100-year	10-year	
Acres	(AC)	N/A	N/A	
Multiplier	(1.6, 2.25, or 2.75) ¹	N/A	N/A	
Q _r (Required Capacity)	(CFS)	22.43	22.43	
Q (Calculated at flow depth,d)	(CFS)	19.46		
Protective Lining ²		R-4	R-4	
V _a (Allowable Velocity)	(FPS)	N/A	N/A	
V (Calculated At Flow Depth, d)	(FPS)	2.90		
τ _a (Max allowable shear stress)	(LB/FT ²)	2.00	2.00	
τ _d (Calculated At Flow Depth, d)	(LB/FT ²)	1.13	0.14	
Channel Bottom Width	(FT)	10.00	10.00	
Channel Side Slopes	(H:V)	2.00	2.00	
D (Total Depth)	(FT)	1.00		
Channel Top Width (ft)@ D	(FT)	14.00		
d (Calculated Flow depth in ft)	(FT)	0.60	0.07	
Channel Top Width (ft)@ d	(FT)	12.40		
Bottom Width:Depth Ratio	(12:1 Max)	16.67		
d ₅₀ Stone Size (in)	(IN)	6.00	6.00	
A (Area in sq. ft.)	(SQ. FT.)	6.72	0.72	
n (Manning's Coefficient) ²		0.0585		
R (Hydraulic Radius)		0.53		
S (Bed Slope) ³	(FT/FT)	0.03		
S _c (Critical Slope)	(FT/FT)	0.063		
.7S _c	(FT/FT)	0.044		
1.3S _c	(FT/FT)	0.082		
Stable Flow? (Y/N)	(Y/N)	Y		
Freeboard Based On Unstable Flow	(FT)	N/A		
Freeboard Based On Stable Flow	(FT)	0.50		
Minimum Required Freeboard ⁴	(FT)	0.50		
Design Method For Protective Lining ⁵		S	S	
Permissible Velocity (V) Or Shear Stress (S)				

- Use 1.6 for Temporary Channels; 2.25 for Temporary Channels in Special Protection (HQ or EV) Watersheds; 2.75 for Permanent Channels. For Rational Method, enter "N/A" and attach E&S Worksheets 9 and 10. For TR-55 enter "N/A" and attach appropriate Worksheets.
- Adjust "n" value for changes in channel liner and flow depth. For vegetated channels, provide data for manufactured linings without vegetation and with vegetation in separate columns.
- Slopes may not be averaged.
- Minimum Freeboard is 0.5 ft. or ¼ Total Channel Depth, whichever is greater
- Permissible velocity lining design method is not acceptable for channels with a bed slope of 10% or greater. Shear stress lining design method is required for channels with a bed slope of 10% or greater. Shear stress lining design method may be used for any channel bed slope.

Schlouch Incorporated

PO Box 69
 Blandon, PA 19510
 Phone: 610-926-7070

Project: PMCC North Warehouse
 Order No.: 20402110
 Calc. by: MDH
 Date: 12/8/2022

WORKSHEET #11 CHANNEL DESIGN DATA

Channel or Channel Section		2	2	
Temporary or Permanent (T OR P)		Perm	Perm	
Design Storm (2,5, 10 YR)		100-year	10-year	
Acres (AC)		N/A	N/A	
Multiplier (1.6, 2.25, or 2.75) ¹		N/A	N/A	
Q _r (Required Capacity) (CFS)		2.57	2.57	
Q (Calculated at flow depth,d) (CFS)		2.35		
Protective Lining ²		R-4	R-4	
V _a (Allowable Velocity) (FPS)		N/A	N/A	
V (Calculated At Flow Depth, d) (FPS)		1.38		
τ _a (Max allowable shear stress) (LB/FT ²)		2.00	2.00	
τ _d (Calculated At Flow Depth, d) (LB/FT ²)		0.39	0.18	
Channel Bottom Width (FT)		2.00	2.00	
Channel Side Slopes (H:V)		2.00	2.00	
D (Total Depth) (FT)		1.00		
Channel Top Width (ft)@ D (FT)		6.00		
d (Calculated Flow depth in ft) (FT)		0.55	0.25	
Channel Top Width (ft)@ d (FT)		4.20		
Bottom Width:Depth Ratio (12:1 Max)		3.64		
d ₅₀ Stone Size (in) (IN)		6.00	6.00	
A (Area in sq. ft.) (SQ. FT.)		1.71	0.51	
n (Manning's Coefficient) ²		0.0608		
R (Hydraulic Radius)		0.38		
S (Bed Slope) ³ (FT/FT)		0.01		
S _c (Critical Slope) (FT/FT)		0.079		
.7S _c (FT/FT)		0.055		
1.3S _c (FT/FT)		0.102		
Stable Flow? (Y/N) (Y/N)		Y		
Freeboard Based On Unstable Flow (FT)		N/A		
Freeboard Based On Stable Flow (FT)		0.50		
Minimum Required Freeboard ⁴ (FT)		0.50		
Design Method For Protective Lining ⁵		S	S	
Permissible Velocity (V) Or Shear Stress (S)				

- Use 1.6 for Temporary Channels; 2.25 for Temporary Channels in Special Protection (HQ or EV) Watersheds; 2.75 for Permanent Channels. For Rational Method, enter "N/A" and attach E&S Worksheets 9 and 10. For TR-55 enter "N/A" and attach appropriate Worksheets.
- Adjust "n" value for changes in channel liner and flow depth. For vegetated channels, provide data for manufactured linings without vegetation and with vegetation in separate columns.
- Slopes may not be averaged.
- Minimum Freeboard is 0.5 ft. or ¼ Total Channel Depth, whichever is greater
- Permissible velocity lining design method is not acceptable for channels with a bed slope of 10% or greater. Shear stress lining design method is required for channels with a bed slope of 10% or greater. Shear stress lining design method may be used for any channel bed slope.

Schlouch Incorporated

PO Box 69
 Blandon, PA 19510
 Phone: 610-926-7070

Project: PMCC North Warehouse
 Order No.: 20402110
 Calc. by: MDH
 Date: 1/12/2023

WORKSHEET #11 CHANNEL DESIGN DATA

Channel or Channel Section		Berm	
Temporary or Permanent (T OR P)		Temp	
Design Storm (2,5, 10 YR)		5-year	
Acres (AC)		0.81	
Multiplier (1.6, 2.25, or 2.75) ¹		2.25	
Q _r (Required Capacity) (CFS)		1.82	
Q (Calculated at flow depth,d) (CFS)		1.82	
Protective Lining ²		S75	
V _a (Allowable Velocity) (FPS)		N/A	
V (Calculated At Flow Depth, d) (FPS)		0.94	
τ _a (Max allowable shear stress) (LB/FT ²)		1.55	
τ _d (Calculated At Flow Depth, d) (LB/FT ²)		0.26	
Channel Bottom Width (FT)		0.00	
Channel Side Slopes (H:V)		11.50	
D (Total Depth) (FT)		1.00	
Channel Top Width (ft)@ D (FT)		23.00	
d (Calculated Flow depth in ft) (FT)		0.41	
Channel Top Width (ft)@ d (FT)		9.45	
Bottom Width:Depth Ratio (12:1 Max)		0.00	
d ₅₀ Stone Size (in) (IN)		0.00	
A (Area in sq. ft.) (SQ. FT.)		1.94	
n (Manning's Coefficient) ²		0.0550	
R (Hydraulic Radius)		0.20	
S (Bed Slope) ³ (FT/FT)		0.01	
S _c (Critical Slope) (FT/FT)		0.075	
.7S _c (FT/FT)		0.053	
1.3S _c (FT/FT)		0.098	
Stable Flow? (Y/N) (Y/N)		Y	
Freeboard Based On Unstable Flow (FT)		N/A	
Freeboard Based On Stable Flow (FT)		0.50	
Minimum Required Freeboard ⁴ (FT)		0.50	
Design Method For Protective Lining ⁵		S	
Permissible Velocity (V) Or Shear Stress (S)			

- Use 1.6 for Temporary Channels; 2.25 for Temporary Channels in Special Protection (HQ or EV) Watersheds; 2.75 for Permanent Channels. For Rational Method, enter "N/A" and attach E&S Worksheets 9 and 10. For TR-55 enter "N/A" and attach appropriate Worksheets.
- Adjust "n" value for changes in channel liner and flow depth. For vegetated channels, provide data for manufactured linings without vegetation and with vegetation in separate columns.
- Slopes may not be averaged.
- Minimum Freeboard is 0.5 ft. or ¼ Total Channel Depth, whichever is greater
- Permissible velocity lining design method is not acceptable for channels with a bed slope of 10% or greater. Shear stress lining design method is required for channels with a bed slope of 10% or greater. Shear stress lining design method may be used for any channel bed slope.



North American Green
 5401 St. Wendel-Cynthiana Rd.
 Poseyville, Indiana 47633
 Tel. 800.772.2040
 >Fax 812.867.0247
 www.nagreen.com
 ECMDS v7.0

CHANNEL ANALYSIS

> > Topsoil Berm

Name Topsoil Berm
 Discharge 1.82
 Channel Slope 0.01
 Channel Bottom Width 0
 Left Side Slope 3
 Right Side Slope 20
 Low Flow Liner
 Retardence Class E <2 in
 Vegetation Type None
 Vegetation Density None
 Soil Type None

S75

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
S75 Unvegetated	Straight	1.82 cfs	1.19 ft/s	0.36 ft	0.04	1.6 lbs/ft ²	0.23 lbs/ft ²	7.03	STABLE	D
Underlying Substrate	Straight	1.82 cfs	1.19 ft/s	0.36 ft	0.04	0.37 lbs/ft ²	0.11 lbs/ft ²	3.3	STABLE	D

Schlouch Incorporated

PO Box 69
 Blandon, PA 19510
 Phone: 610-926-7070

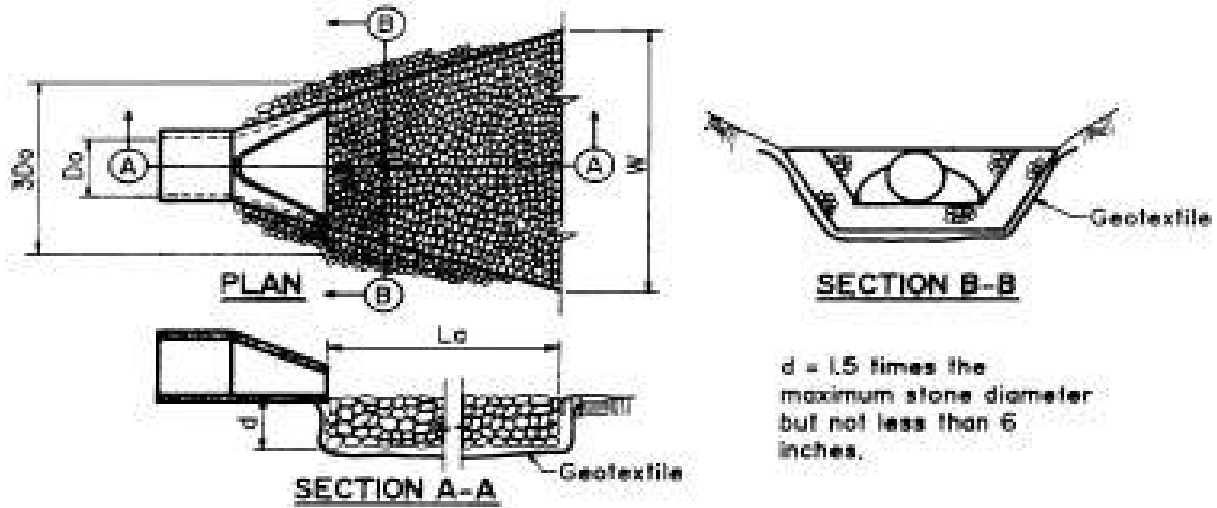
Project: PMCC North Warehouse

Order No.: 20402110

Calc. by: MDH

Date: 12/8/2022

Riprap Apron Outlet Protection Design



Outlet Number	Pipe Dia DO (in.)	Slope (ft/ft)	Tail Water Min/Max	Mannings "n"	Q _d (cfs)	V _d (fps)	Allow Veloc.	Rip-Rap Size	3Do (ft)	La (ft)	W (ft)
ES-1**	24	0.030	Min	0.0130	25.95	8.32	9.0	R-4	6.00	17.00	23.00
ES-2**	36	0.010	Min	0.0130	54.97	7.78	9.0	R-4	9.00	28.00	37.00
ES-3*	30	0.020	Min	0.0130	22.43	10.94	11.5	R-5	7.50	16.00	23.50
ES-4**	18	0.020	Min	0.0130	14.66	8.30	9.0	R-4	4.50	13.00	17.50
ES-5*	24	0.005	Min	0.0130	2.57	3.73	9.0	R-4	6.00	12.00	18.00

* Denotes 100-year design outflow was used for sizing of Rip-Rap Apron
 ** Use 25-year Storm Sewer Outflows (Flow and Velocity based on Hydroflow printout)



North American Green
 5401 St. Wendel-Cynthiana Rd.
 Poseyville, Indiana 47633
 Tel. 800.772.2040
 >Fax 812.867.0247
 www.nagreen.com
 ECMDS v7.0

SPILLWAY ANALYSIS

> > > Basin 1 Spillway

Name Basin 1 Spillway
 Discharge 159.95
 Peak Flow Period 0.5
 Channel Slope 0.33
 Channel Bottom Width 150
 Low Flow Liner
 Retardence Class C 6-12 in
 Vegetation Type Mix (Sod and Bunch)
 Vegetation Density Very Good 80-95%
 Soil Type Silt Loam (SM)

SC250 - Class C - Mix (Sod & Bunch) - Very Good 80-95%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
SC250 Unvegetated	Straight	159.95 cfs	7.98 ft/s	0.13 ft	0.028	3 lbs/ft ²	2.74 lbs/ft ²	1.09	STABLE	E
Underlying Substrate	Straight	159.95 cfs	7.98 ft/s	0.13 ft	0.028	2.2 lbs/ft ²	2.74 lbs/ft ²	0.8	UNSTABLE	E
SC250 Reinforced Vegetation	Straight	159.95 cfs	7.54 ft/s	0.14 ft	0.031	10 lbs/ft ²	2.9 lbs/ft ²	3.45	STABLE	E
Underlying Substrate	Straight	159.95 cfs	7.54 ft/s	0.14 ft	0.031	3 lbs/ft ²	2.9 lbs/ft ²	1.04	STABLE	E



North American Green
 5401 St. Wendel-Cynthiana Rd.
 Poseyville, Indiana 47633
 Tel. 800.772.2040
 >Fax 812.867.0247
 www.nagreen.com
 ECMDS v7.0

SPILLWAY ANALYSIS

> > > Basin 2 Spillway

Name Basin 2 Spillway
 Discharge 40.06
 Peak Flow Period 0.5
 Channel Slope 0.33
 Channel Bottom Width 80
 Low Flow Liner
 Retardence Class C 6-12 in
 Vegetation Type Mix (Sod and Bunch)
 Vegetation Density Very Good 80-95%
 Soil Type Silt Loam (SM)

SC250 - Class C - Mix (Sod & Bunch) - Very Good 80-95%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
SC250 Unvegetated	Straight	40.06 cfs	5.62 ft/s	0.09 ft	0.03	3 lbs/ft ²	1.83 lbs/ft ²	1.64	STABLE	E
Underlying Substrate	Straight	40.06 cfs	5.62 ft/s	0.09 ft	0.03	2.2 lbs/ft ²	1.83 lbs/ft ²	1.2	STABLE	E
SC250 Reinforced Vegetation	Straight	40.06 cfs	5.11 ft/s	0.1 ft	0.035	10 lbs/ft ²	2.02 lbs/ft ²	4.96	STABLE	E
Underlying Substrate	Straight	40.06 cfs	5.11 ft/s	0.1 ft	0.035	3 lbs/ft ²	2.01 lbs/ft ²	1.49	STABLE	E



North American Green
 5401 St. Wendel-Cynthiana Rd.
 Poseyville, Indiana 47633
 Tel. 800.772.2040
 >Fax 812.867.0247
 www.nagreen.com
 ECMDS v7.0

SPILLWAY ANALYSIS

> > > RG 1 Spillway

Name RG 1 Spillway
 Discharge 22.99
 Peak Flow Period 0.5
 Channel Slope 0.33
 Channel Bottom Width 75
 Low Flow Liner
 Retardence Class C 6-12 in
 Vegetation Type Mix (Sod and Bunch)
 Vegetation Density Very Good 80-95%
 Soil Type Silt Loam (SM)

SC250 - Class C - Mix (Sod & Bunch) - Very Good 80-95%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
SC250 Unvegetated	Straight	22.99 cfs	4.48 ft/s	0.07 ft	0.032	3 lbs/ft ²	1.41 lbs/ft ²	2.13	STABLE	E
Underlying Substrate	Straight	22.99 cfs	4.48 ft/s	0.07 ft	0.032	2.2 lbs/ft ²	1.4 lbs/ft ²	1.57	STABLE	E
SC250 Reinforced Vegetation	Straight	22.99 cfs	3.97 ft/s	0.08 ft	0.039	10 lbs/ft ²	1.59 lbs/ft ²	6.29	STABLE	E
Underlying Substrate	Straight	22.99 cfs	3.97 ft/s	0.08 ft	0.039	3 lbs/ft ²	1.59 lbs/ft ²	1.89	STABLE	E



North American Green
 5401 St. Wendel-Cynthiana Rd.
 Poseyville, Indiana 47633
 Tel. 800.772.2040
 >Fax 812.867.0247
 www.nagreen.com
 ECMDS v7.0

SPILLWAY ANALYSIS

> > > Rain Garden - Downstream

Name Rain Garden - Downstream
 Discharge 22.99
 Peak Flow Period 0.5
 Channel Slope 0.039
 Channel Bottom Width 75
 Low Flow Liner
 Retardence Class C 6-12 in
 Vegetation Type Bunch Type
 Vegetation Density Fair 50-64%
 Soil Type Sandy Loam (GM)

Unreinforced Vegetation - Class C - Bunch Type - Fair 50-64%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	22.99 cfs	1.56 ft/s	0.2 ft	0.063	4 lbs/ft ²	0.48 lbs/ft ²	8.39	STABLE	--
Underlying Substrate	Straight	22.99 cfs	1.56 ft/s	0.2 ft	0.063	7.48 lbs/ft ²	0.47 lbs/ft ²	15.77	STABLE	--



North American Green
 5401 St. Wendel-Cynthiana Rd.
 Poseyville, Indiana 47633
 Tel. 800.772.2040
 >Fax 812.867.0247
 www.nagreen.com
 ECMDS v7.0

SLOPE ANALYSIS

>>> Slope

Country United States
 State/Region Pennsylvania
 City Scranton
 Annual R Factor 100.00
 Adjusted R Factor 34.00
 Total Slope Length 50
 Protection Type Permanent
 Protection Period 6
 Beginning Month January
 Slope Gradient (H:1) 3
 Soil Type Sandy Loam
 K Factor 0.19

Reach 1

Start: 0ft End: 50 ft

Vegetation Type: 80-95%

Material	ASL bare	ASL mat	MSL bare	MSL mat	Soil Loss Tolerance	SF	Remarks	Staple / App Rate
SC150BN	0.1 in	0.0 in	0.2 in	0.0 in	0.25 in	>10	STABLE	D
Estb. Veg.	0.4 in	0.0 in	N/A in	N/A in	0.03 in	1.895	STABLE	--