EDWARD B. WALSH & ASSOCIATES, INC.
Complete Civil Engineering Design / Consultation Services
Lionville Professional Center
125 Dowlin Forge Road
Exton, PA 19341

July 26, 2018

Mr. Will Ethridge, AICP
Director of Planning and Zoning Administrator
Westtown Township
1039 Wilmington Pike
West Chester, Pa. 19382

Re: Preliminary/Final Plan for Cahill subdivision
Westtown Township
EBWA No. 4062

Dear Will;

The following letter is being written to accompany the resubmission of the above referenced project. We have revised the plans in accordance with the July 11, 2018 letter from McCormick Taylor and the July 17 email form Bill Malin of Carrol Engineering. This letter's enumeration follows that of the consultant's letters.

McCormick Taylor Review Comments

Waivers

A waiver request from Section 149-600 to consider the plan preliminary and Final has been added to sheet 1.

Zoning

1. Note 8 has been added to sheet 1 requiring the signed and sealed statement to be submitted with the building permit application. It seems to be more appropriate with that submission as it will include the final house layout and grading, as it may be less than what currently is presented.

Subdivision and Land Development

2. The zoning data table on sheet one reflects the contiguous lot area.

3. We have requested a waiver to allow the plan to be considered both preliminary and final.

4. We have added a curb detail to sheet 8 and specified the Penn DOT 408 requirement in note 9 on sheet 1.

5. A driveway profile has been added to sheet 8.

6. We have added concrete apron to the driveway, however there is no sidewalk proposed on this side of Piper Lane as the grading necessary to install the sidewalk would require the construction of a retaining wall along the Cahill frontage.

7. The location of the existing sanitary sewer has been added to the plan.

Stormwater Management

8. We met with Kevin Matson and reviewed the Stormwater design and grades and we believe that he will concur that the stormwater and grading is acceptable.

9. The stormwater report has been revised. There is only one rain garden. The rain gardens will be seeded with wetland grass mix. No planting other than the grasses are proposed.

10. The blanket easement for stormwater is offered in the owner's certification on sheet 7.

11. The added the contours on Piper Lane that represent the grades proposed and contracted.

12. There are no berms proposed along Piper Lane. The grading was revised and submitted for review and approval along the Cahill property prior to construction of the road as an easement was obtained to grade on that property. Since then an agreement of sale was reached with Mr. Cahill and the new lot is proposed to be created. The new plan represents the final grading proposed along Piper Lane. We have submitted a composite grading and site plan that shows how all of the different plans come together.

13. We believe that the sequence of construction shown on the E&S plan is how this lot will be constructed. The road, curb and utilities are already in place. We discussed this with Kevin Matson and I believe it felt it was acceptable.

General Comments

14. The Legal descriptions are attached.

15. The site is to be filled with on-site spoils form the Westtown Woods subdivision. My client is fully aware of this and we discussed this with Kevin and he concurred that a cut and fill analysis is not necessary.

16. Lot 2 will be added to the homeowners Association for Westtown Woods. We added note 10 to sheet 1 specifying this.

17. Mr. Malin has been consulted during the installation of thru force main in Piper Lane so that stubs could be installed. He responded via e-mail that the plans do not affect the sewer line. See comment 10 above.

18. We revised the detail to show SuperPave.

19. We added a driveway apron detail and graphically showed it on the revised plan.

20. The property markers for the lots are already installed.

21. To be taken care of by others.

Carroll Engineering Review

Sanitary Sewer

1. We added the location of the existing sewer main to the profile.

2. The Piper Lane profile has not changed so no adjustment is necessary.

I believe we have incorporated all of the concerns and issued raised and discussed within this submission. Should you have any questions or need any additional information please contact me.

Very Truly Yours
Edward B. Walsh and Associates, Inc.

Andrew Eberwein
Enc.

POST-CONSTRUCTION STORMWATER MANAGEMENT REPORT AND NARRATIVE FOR SUBDIVISION PLAN

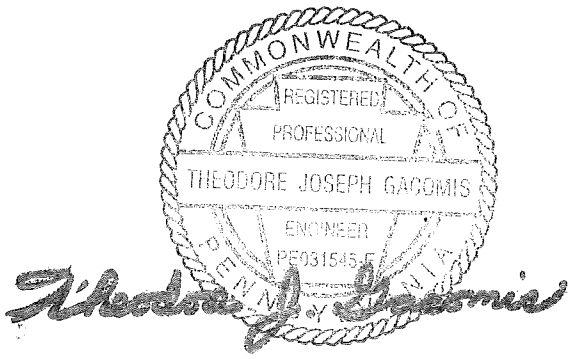
FOR

PARCEL 67-4F-73

PREPARED BY

EDWARD B. WALSH & ASSOCIATES, INC.
125 DOWLIN FORGE ROAD
LIONVILLE PROFESSIONAL CENTER
EXTON, PA 19341
610-903-0060
EBWA FILE NO. 4062

MAY 24, 2018
7/26/18



Project Narrative:

Southdown Homes is proposing a two lot subdivision of the Cahill property in Westtown Township. Construction will consist of a one single family house, driveway and stormwater management facilities. All lots will have public sewer and water.

Existing Features:

The sites existing coverage consists of mainly fallow. There are no wetlands or streams on this site. The site drains to the Plum Creek which and the classification of the watershed is WWF-MF. The soils classifications for the site are UrLD and GDB.

Post Construction Stormwater Management:

The stormwater management was designed using the Rational method. The site was designed so that the post developed peak discharge does not exceed the predeveloped peak discharge rate for the 2 year, 10 year, 25 year 50 year and 100 year and further reducing the 2 year post to the 1 year pre. For peak rate control a subsurface infiltration bed and rain garden were added.

Peak Rate Control:

	Pre	Total Post
1	.54	.46
2	.642	.54
5	.751	.639
10	.827	.704
25	.918	.781
50	.977	.831
100	1.037	.883

Infiltration:

Infiltration Tests were performed on the lot "see Soils Report for Stormwater Recharge Suitability" for test results. Worksheet #4 was used to for the 2 yr pre to post volume increase. The volume needed for infiltration is 1345 c.f. the volume provided for infiltration is 1488 c.f. A subsurface infiltration bed and a rain garden are used to obtain this number.

Erosion and Sedimentation Control:

Erosion and sedimentation control has been designed to prevent sediment laden stormwater from conveying off the site and into undisturbed areas. A rock construction entrance and silt sock was added.

Conveyance System

The cross pipe under Piper Lane is being extended through the site to a double inlet. The design conveys the 100 year storm that was used in the design of the original Piper Lane culvert design and that used for the Ballester Subdivision.

ENTIRE PROJECT AREA

WORKSHEET 4. CHANGE IN RUNOFF VOLUME FOR 2-YR STORM EVENT

PROJECT: Cahill Property
Drainage Area: 0.51 acres
2-Year Rainfall: 3.2 in

Total Site Area: 0.51 acres
Protected Site Area: 0.00 acres
Managed Area: 0.00 acres

Existing Conditions:

Cover Type / Condition	Soil Type	Area (sf)	Area (ac)	CN	S	Ia 0.2*s	Q Runoff[1] (in)	Runoff Volume[2] (ft^3)
Meadow		22,000	0.51	58	7.24	1.45	0.341	626
Woods	B	0	0.00	55	8.18	1.64	0.251	0
impervious	B	0	0.00	98	0.20	0.04	2.967	0
Woods		0	0.00	70	4.29	0.86	0.828	0
TOTAL:			**0.51**					**626**

Developed Conditions:

Cover Type / Condition	Soil Type	Area (sf)	Area (ac)	CN	S	Ia 0.2*s	Q Runoff[1] (in)	Runoff Volume[2] (ft^3)
Lawn	B	16,500	0.38	61	6.39	1.28	0.444	610
Woods	B	0	0.00	55	8.18	1.64	0.251	0
Impervious	B	5,500	0.13	98	0.20	0.04	2.967	1360
Lawn		0	0.00	74	3.51	0.70	1.038	0
Gravel		0	0.00	89	1.24	0.25	2.082	0
Impervious		0	0.00	98	0.20	0.04	2.967	0
TOTAL:			**0.51**					**1,971**

2-Year Volume Increase (ft^3): 1,345

2-Year Volume Increase = Developed Conditions Runoff Volume - Existing Conditions Runoff Volume

1. Runoff (in) = $Q = (P-0.2S)^2 / (P + 0.8S)$ where

P = 2-Year Rainfall (in)

S = (1000/CN) - 10

2. Runoff Volume (CF) = Q x Area x 1/12
Q = Runoff (in)
Area = Land Use Area (sq. ft.)

NOTE: Runoff volume must be calculated for EACH land use type/condition and HSGI. The use of a weighted CN value for volume calculations is not acceptable.

NOAA Atlas 14, Volume 2, Version 3
Location name: West Chester, Pennsylvania, US*
Latitude: 39.9356°, Longitude: -75.5909°
Elevation: 417 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF tabular | PF graphical | Maps & aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.353 (0.323–0.387)	0.421 (0.385–0.461)	0.492 (0.450–0.538)	0.542 (0.494–0.592)	0.600 (0.544–0.656)	0.639 (0.577–0.699)	0.678 (0.609–0.742)	0.711 (0.635–0.780)	0.748 (0.662–0.824)	0.775 (0.681–0.858)
10-min	0.564 (0.517–0.618)	0.673 (0.616–0.737)	0.788 (0.720–0.861)	0.866 (0.790–0.947)	0.956 (0.868–1.05)	1.02 (0.919–1.11)	1.08 (0.968–1.18)	1.13 (1.01–1.24)	1.18 (1.05–1.30)	1.22 (1.07–1.35)
15-min	0.706 (0.646–0.772)	0.846 (0.775–0.926)	0.997 (0.911–1.09)	1.10 (1.00–1.20)	1.21 (1.10–1.33)	1.29 (1.16–1.41)	1.36 (1.22–1.49)	1.42 (1.27–1.56)	1.49 (1.32–1.64)	1.53 (1.35–1.70)
30-min	0.967 (0.885–1.06)	1.17 (1.07–1.28)	1.42 (1.29–1.55)	1.59 (1.45–1.74)	1.80 (1.63–1.96)	1.94 (1.75–2.12)	2.09 (1.87–2.28)	2.21 (1.98–2.43)	2.37 (2.10–2.61)	2.48 (2.18–2.75)
60-min	1.21 (1.10–1.32)	1.47 (1.34–1.61)	1.82 (1.66–1.99)	2.07 (1.89–2.26)	2.39 (2.17–2.61)	2.63 (2.37–2.88)	2.87 (2.58–3.15)	3.10 (2.77–3.41)	3.40 (3.01–3.75)	3.62 (3.18–4.01)
2-hr	1.44 (1.31–1.59)	1.75 (1.59–1.94)	2.18 (1.97–2.41)	2.51 (2.26–2.77)	2.94 (2.63–3.24)	3.27 (2.92–3.61)	3.61 (3.20–3.99)	3.95 (3.48–4.37)	4.41 (3.83–4.88)	4.76 (4.10–5.29)
3-hr	1.57 (1.42–1.73)	1.90 (1.73–2.10)	2.37 (2.15–2.62)	2.73 (2.47–3.01)	3.21 (2.88–3.54)	3.58 (3.20–3.95)	3.96 (3.51–4.37)	4.35 (3.82–4.80)	4.86 (4.22–5.39)	5.26 (4.52–5.85)
6-hr	1.93 (1.75–2.14)	2.33 (2.12–2.59)	2.90 (2.63–3.22)	3.36 (3.03–3.72)	4.00 (3.58–4.42)	4.51 (4.01–4.98)	5.05 (4.45–5.58)	5.62 (4.89–6.20)	6.40 (5.49–7.10)	7.03 (5.94–7.83)
12-hr	2.35 (2.13–2.63)	2.84 (2.57–3.17)	3.55 (3.21–3.96)	4.14 (3.73–4.61)	5.00 (4.45–5.55)	5.71 (5.04–6.33)	6.49 (5.66–7.20)	7.32 (6.30–8.14)	8.53 (7.19–9.51)	9.54 (7.89–10.7)
24-hr	2.71 (2.50–2.96)	3.27 (3.01–3.56)	4.10 (3.77–4.47)	4.80 (4.40–5.23)	5.80 (5.30–6.31)	6.65 (6.04–7.22)	7.57 (6.83–8.19)	8.55 (7.67–9.26)	9.99 (8.86–10.8)	11.2 (9.83–12.1)
2-day	3.14 (2.89–3.44)	3.80 (3.49–4.15)	4.77 (4.38–5.21)	5.57 (5.10–6.08)	6.70 (6.11–7.31)	7.64 (6.94–8.33)	8.63 (7.81–9.41)	9.70 (8.71–10.6)	11.2 (9.99–12.2)	12.5 (11.0–13.6)
3-day	3.32 (3.05–3.63)	4.00 (3.68–4.37)	5.01 (4.61–5.47)	5.84 (5.35–6.37)	7.01 (6.40–7.65)	7.99 (7.26–8.70)	9.02 (8.15–9.82)	10.1 (9.09–11.0)	11.7 (10.4–12.7)	13.0 (11.5–14.1)
4-day	3.49 (3.21–3.81)	4.20 (3.87–4.59)	5.25 (4.83–5.74)	6.11 (5.60–6.66)	7.33 (6.69–7.99)	8.33 (7.57–9.07)	9.40 (8.50–10.2)	10.5 (9.46–11.5)	12.1 (10.8–13.2)	13.5 (11.9–14.7)
7-day	4.08 (3.79–4.43)	4.89 (4.54–5.31)	6.05 (5.61–6.57)	7.01 (6.48–7.59)	8.37 (7.71–9.06)	9.50 (8.70–10.3)	10.7 (9.76–11.6)	12.0 (10.9–12.9)	13.8 (12.4–14.9)	15.3 (13.6–16.6)
10-day	4.65 (4.33–5.01)	5.55 (5.17–5.99)	6.78 (6.30–7.30)	7.76 (7.21–8.36)	9.13 (8.45–9.82)	10.2 (9.45–11.0)	11.4 (10.5–12.2)	12.6 (11.5–13.5)	14.3 (12.9–15.4)	15.6 (14.0–16.9)
20-day	6.28 (5.89–6.73)	7.46 (6.98–7.98)	8.90 (8.33–9.52)	10.0 (9.37–10.7)	11.6 (10.8–12.4)	12.8 (11.9–13.6)	14.0 (12.9–14.9)	15.2 (14.0–16.3)	16.8 (15.4–18.0)	18.1 (16.5–19.4)
30-day	7.82 (7.37–8.29)	9.22 (8.69–9.78)	10.8 (10.1–11.4)	11.9 (11.3–12.7)	13.5 (12.7–14.3)	14.7 (13.8–15.6)	15.9 (14.8–16.9)	17.0 (15.9–18.1)	18.5 (17.2–19.7)	19.7 (18.2–20.9)
45-day	9.93 (9.42–10.5)	11.7 (11.1–12.3)	13.4 (12.7–14.2)	14.7 (14.0–15.5)	16.4 (15.5–17.3)	17.7 (16.7–18.6)	18.8 (17.8–19.9)	19.9 (18.8–21.1)	21.3 (20.0–22.5)	22.3 (20.9–23.6)
60-day	11.9 (11.3–12.5)	13.9 (13.3–14.7)	15.9 (15.1–16.7)	17.4 (16.5–18.3)	19.2 (18.2–20.2)	20.5 (19.5–21.6)	21.8 (20.6–22.9)	23.0 (21.7–24.2)	24.4 (23.0–25.7)	25.4 (23.9–26.8)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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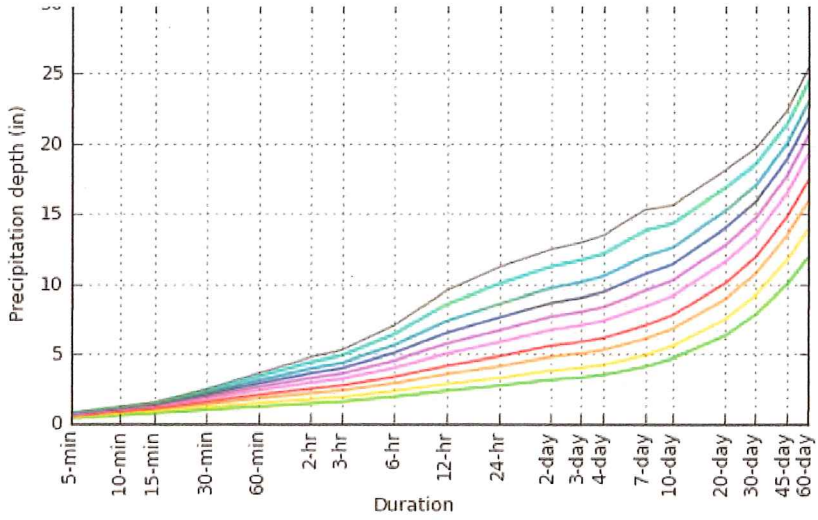
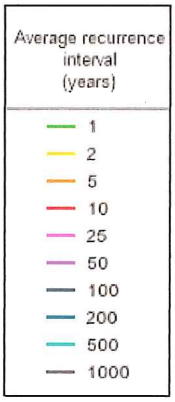
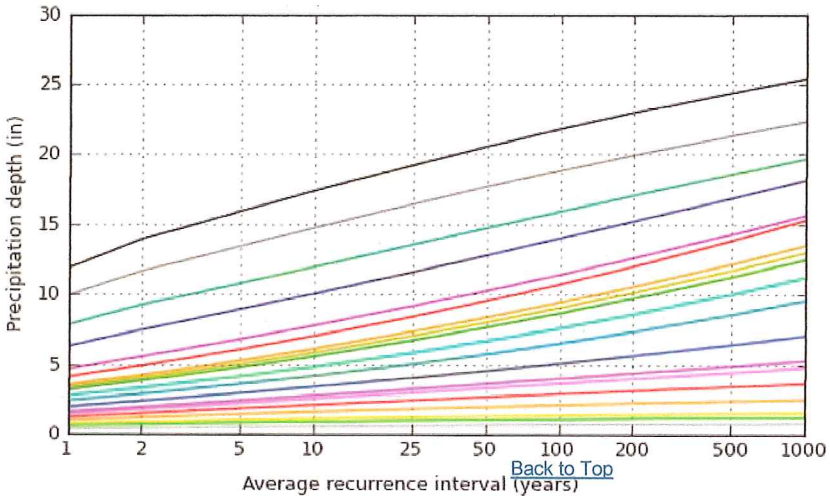
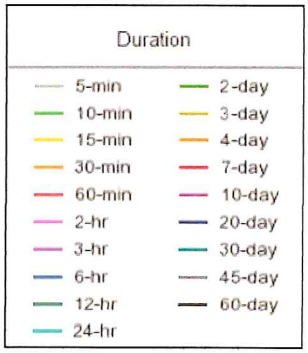
PF graphical









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Maps & aerials

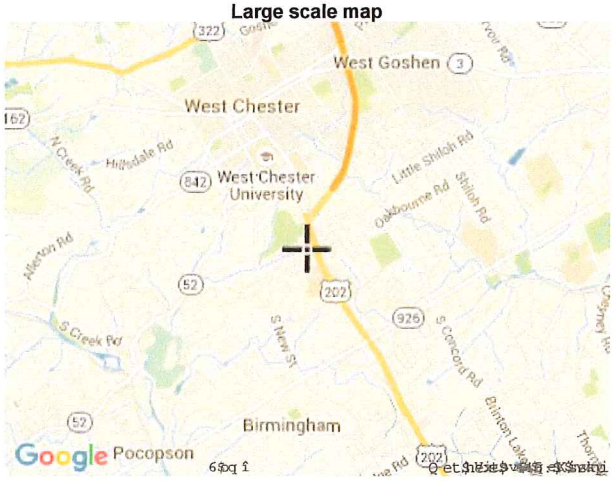
NOAA Atlas 14, Volume 2, Version 3

Created (GMT): Wed Apr 6 19:37:11 2016

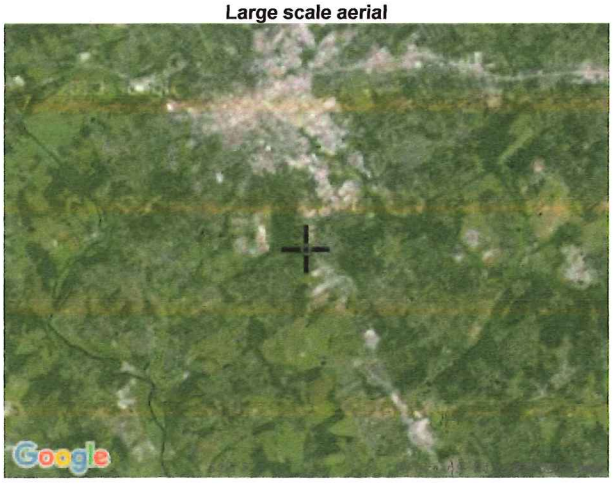
Small scale terrain

Large scale terrain

Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910

Questions?: HDSC.Questions@noaa.gov

Disclaimer

NOAA Atlas 14, Volume 2, Version 3
Location name: West Chester, Pennsylvania, US*
Latitude: 39.9356°, Longitude: -75.5909°
Elevation: 417 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF tabular | PF graphical | Maps & aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	4.24 (3.88–4.64)	5.05 (4.62–5.53)	5.90 (5.40–6.46)	6.50 (5.93–7.10)	7.20 (6.53–7.87)	7.67 (6.92–8.39)	8.14 (7.31–8.90)	8.53 (7.62–9.36)	8.98 (7.94–9.89)	9.30 (8.17–10.3)
10-min	3.38 (3.10–3.71)	4.04 (3.70–4.42)	4.73 (4.32–5.17)	5.20 (4.74–5.68)	5.74 (5.21–6.28)	6.11 (5.51–6.68)	6.46 (5.81–7.08)	6.76 (6.04–7.42)	7.10 (6.28–7.82)	7.33 (6.43–8.11)
15-min	2.82 (2.58–3.09)	3.38 (3.10–3.70)	3.99 (3.64–4.36)	4.38 (4.00–4.79)	4.85 (4.40–5.30)	5.16 (4.65–5.64)	5.44 (4.89–5.96)	5.69 (5.08–6.24)	5.96 (5.27–6.56)	6.13 (5.38–6.78)
30-min	1.93 (1.77–2.12)	2.34 (2.14–2.56)	2.83 (2.59–3.10)	3.18 (2.90–3.47)	3.59 (3.26–3.93)	3.88 (3.50–4.25)	4.17 (3.75–4.57)	4.43 (3.95–4.86)	4.74 (4.19–5.22)	4.96 (4.36–5.49)
60-min	1.21 (1.10–1.32)	1.47 (1.34–1.61)	1.82 (1.66–1.99)	2.07 (1.89–2.26)	2.39 (2.17–2.61)	2.63 (2.37–2.88)	2.87 (2.58–3.15)	3.10 (2.77–3.41)	3.40 (3.01–3.75)	3.62 (3.18–4.01)
2-hr	0.720 (0.652–0.796)	0.876 (0.794–0.968)	1.09 (0.986–1.20)	1.25 (1.13–1.38)	1.47 (1.32–1.62)	1.64 (1.46–1.81)	1.80 (1.60–1.99)	1.97 (1.74–2.18)	2.20 (1.92–2.44)	2.38 (2.05–2.65)
3-hr	0.522 (0.474–0.577)	0.633 (0.575–0.700)	0.790 (0.715–0.872)	0.909 (0.821–1.00)	1.07 (0.959–1.18)	1.19 (1.06–1.31)	1.32 (1.17–1.46)	1.45 (1.27–1.60)	1.62 (1.40–1.79)	1.75 (1.51–1.95)
6-hr	0.322 (0.293–0.358)	0.389 (0.354–0.432)	0.484 (0.439–0.537)	0.561 (0.507–0.621)	0.667 (0.598–0.738)	0.753 (0.670–0.831)	0.843 (0.743–0.931)	0.938 (0.817–1.04)	1.07 (0.916–1.19)	1.17 (0.992–1.31)
12-hr	0.195 (0.177–0.218)	0.235 (0.213–0.263)	0.295 (0.266–0.329)	0.344 (0.309–0.383)	0.415 (0.369–0.460)	0.474 (0.418–0.526)	0.538 (0.470–0.598)	0.608 (0.523–0.676)	0.708 (0.596–0.789)	0.791 (0.655–0.884)
24-hr	0.113 (0.104–0.123)	0.136 (0.126–0.149)	0.171 (0.157–0.186)	0.200 (0.183–0.218)	0.242 (0.221–0.263)	0.277 (0.252–0.301)	0.315 (0.285–0.341)	0.356 (0.320–0.386)	0.416 (0.369–0.451)	0.466 (0.410–0.505)
2-day	0.065 (0.060–0.072)	0.079 (0.073–0.086)	0.099 (0.091–0.109)	0.116 (0.106–0.127)	0.140 (0.127–0.152)	0.159 (0.145–0.173)	0.180 (0.163–0.196)	0.202 (0.181–0.220)	0.234 (0.208–0.255)	0.260 (0.229–0.283)
3-day	0.046 (0.042–0.050)	0.056 (0.051–0.061)	0.070 (0.064–0.076)	0.081 (0.074–0.089)	0.097 (0.089–0.106)	0.111 (0.101–0.121)	0.125 (0.113–0.136)	0.141 (0.126–0.153)	0.162 (0.145–0.177)	0.180 (0.159–0.196)
4-day	0.036 (0.033–0.040)	0.044 (0.040–0.048)	0.055 (0.050–0.060)	0.064 (0.058–0.069)	0.076 (0.070–0.083)	0.087 (0.079–0.095)	0.098 (0.088–0.107)	0.110 (0.099–0.119)	0.127 (0.113–0.138)	0.140 (0.124–0.153)
7-day	0.024 (0.023–0.026)	0.029 (0.027–0.032)	0.036 (0.033–0.039)	0.042 (0.039–0.045)	0.050 (0.046–0.054)	0.057 (0.052–0.061)	0.064 (0.058–0.069)	0.071 (0.065–0.077)	0.082 (0.074–0.089)	0.091 (0.081–0.099)
10-day	0.019 (0.018–0.021)	0.023 (0.022–0.025)	0.028 (0.026–0.030)	0.032 (0.030–0.035)	0.038 (0.035–0.041)	0.043 (0.039–0.046)	0.047 (0.044–0.051)	0.052 (0.048–0.056)	0.059 (0.054–0.064)	0.065 (0.059–0.070)
20-day	0.013 (0.012–0.014)	0.016 (0.015–0.017)	0.019 (0.017–0.020)	0.021 (0.020–0.022)	0.024 (0.022–0.026)	0.027 (0.025–0.028)	0.029 (0.027–0.031)	0.032 (0.029–0.034)	0.035 (0.032–0.038)	0.038 (0.034–0.041)
30-day	0.011 (0.010–0.012)	0.013 (0.012–0.014)	0.015 (0.014–0.016)	0.017 (0.016–0.018)	0.019 (0.018–0.020)	0.020 (0.019–0.022)	0.022 (0.021–0.023)	0.024 (0.022–0.025)	0.026 (0.024–0.027)	0.027 (0.025–0.029)
45-day	0.009 (0.009–0.010)	0.011 (0.010–0.011)	0.012 (0.012–0.013)	0.014 (0.013–0.014)	0.015 (0.014–0.016)	0.016 (0.015–0.017)	0.017 (0.016–0.018)	0.018 (0.017–0.019)	0.020 (0.019–0.021)	0.021 (0.019–0.022)
60-day	0.008 (0.008–0.009)	0.010 (0.009–0.010)	0.011 (0.011–0.012)	0.012 (0.011–0.013)	0.013 (0.013–0.014)	0.014 (0.014–0.015)	0.015 (0.014–0.016)	0.016 (0.015–0.017)	0.017 (0.016–0.018)	0.018 (0.017–0.019)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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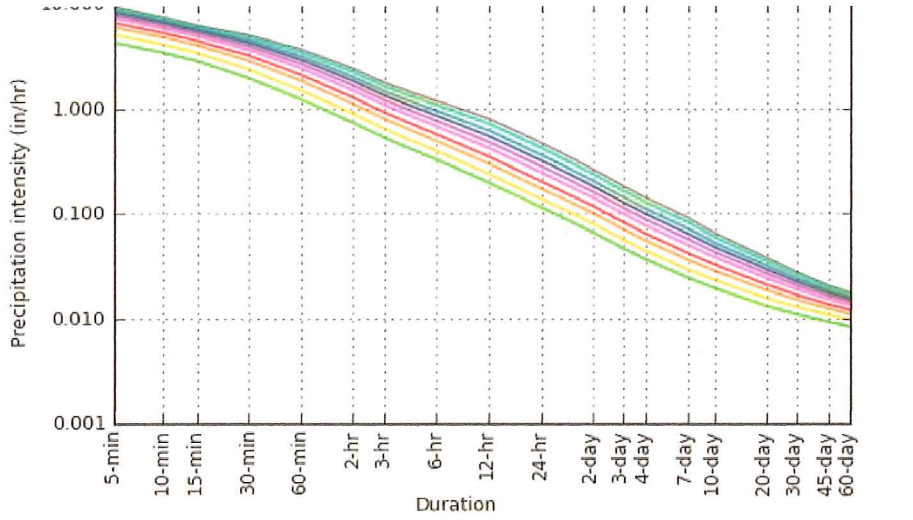
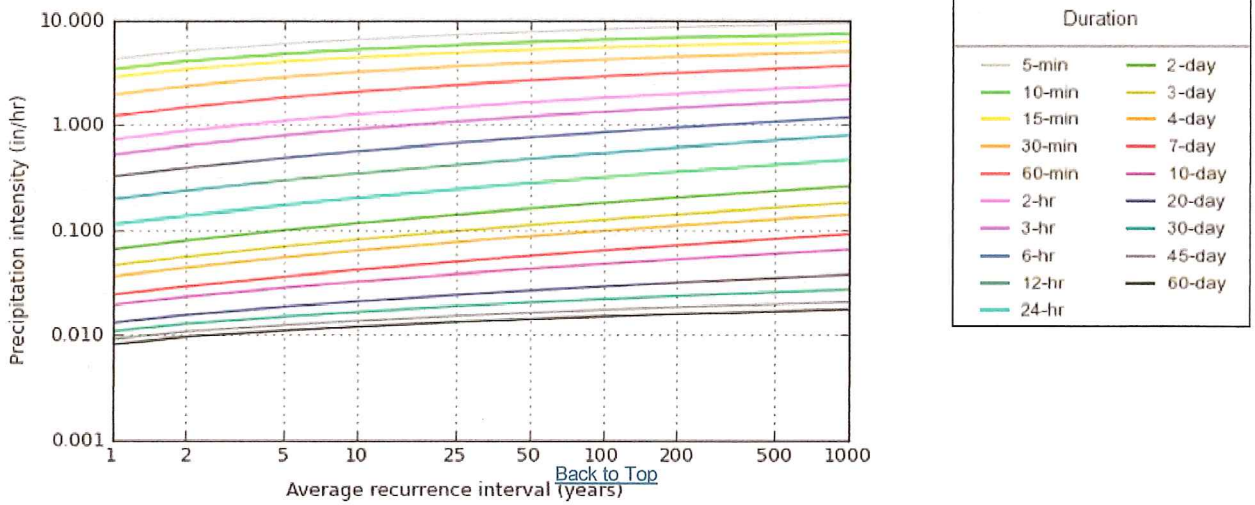
PF graphical





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Maps & aerials

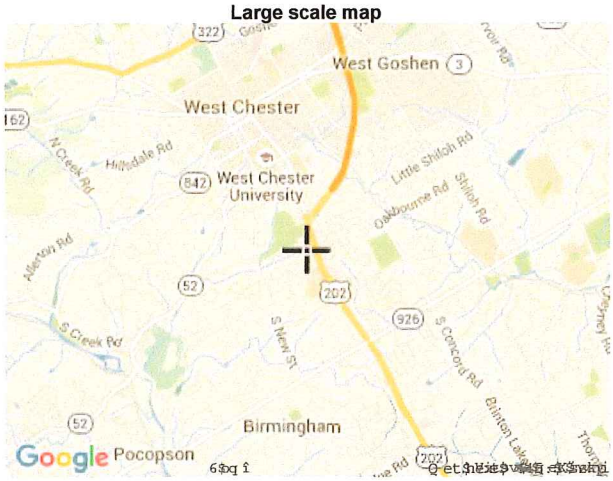
NOAA Atlas 14, Volume 2, Version 3

Created (GMT): Wed Apr 6 19:44:28 2016

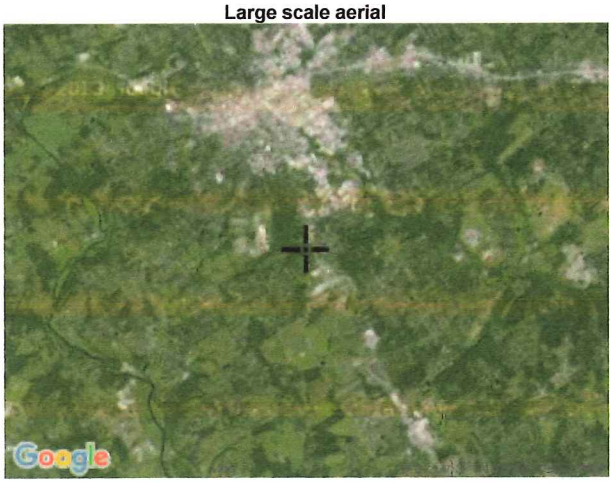
Small scale terrain

Large scale terrain

Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910

Questions?: HDSC.Questions@noaa.gov

Disclaimer

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	Rational	-------	0.540	0.642	-------	0.751	0.827	0.918	0.977	1.037	Pre Development
2	Rational	-------	0.460	0.547	-------	0.639	0.704	0.781	0.831	0.883	Post Bypass
5	Rational	-------	0.470	0.559	-------	0.654	0.720	0.799	0.851	0.903	post to bed Lot 2
6	Reservoir	5	0.000	0.000	-------	0.000	0.000	0.000	0.000	0.000	Bed Lot 2
7	Combine	2, 6	0.460	0.547	-------	0.639	0.704	0.781	0.831	0.883	total post

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	Rational	0.540	1	15	486	----	------	------	Pre Development
2	Rational	0.460	1	15	414	----	------	------	Post Bypass
5	Rational	0.470	1	15	423	----	------	------	post to bed Lot 2
6	Reservoir	0.000	1	1358	0	5	374.18	415	Bed Lot 2
7	Combine	0.460	1	15	414	2, 6	------	------	total post

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	Rational	0.642	1	15	578	----	------	------	Pre Development
2	Rational	0.547	1	15	492	----	------	------	Post Bypass
5	Rational	0.559	1	15	503	----	------	------	post to bed Lot 2
6	Reservoir	0.000	1	1571	0	5	374.47	494	Bed Lot 2
7	Combine	0.547	1	15	492	2, 6	------	------	total post

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	Rational	1.037	1	15	934	----	------	------	Pre Development
2	Rational	0.883	1	15	795	----	------	------	Post Bypass
5	Rational	0.903	1	15	813	----	------	------	post to bed Lot 2
6	Reservoir	0.000	1	2270	0	5	376.00	802	Bed Lot 2
7	Combine	0.883	1	15	795	2, 6	------	------	total post

Hydraflow Table of Contents

Cahill.gpw

Hydraflow Hydrographs by Intelisolve v9.1

Thursday, May 24, 2018

INFILTRATION

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-------	-------	0.476	-------	-------	-------	-------	-------	-------	bed 2
2	Reservoir	1	-------	0.000	-------	-------	-------	-------	-------	-------	Bed Lot 2

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.476	2	716	968	----	------	------	bed 2
2	Reservoir	0.000	2	598	0	1	375.13	654	Bed Lot 2

Hydrograph Report

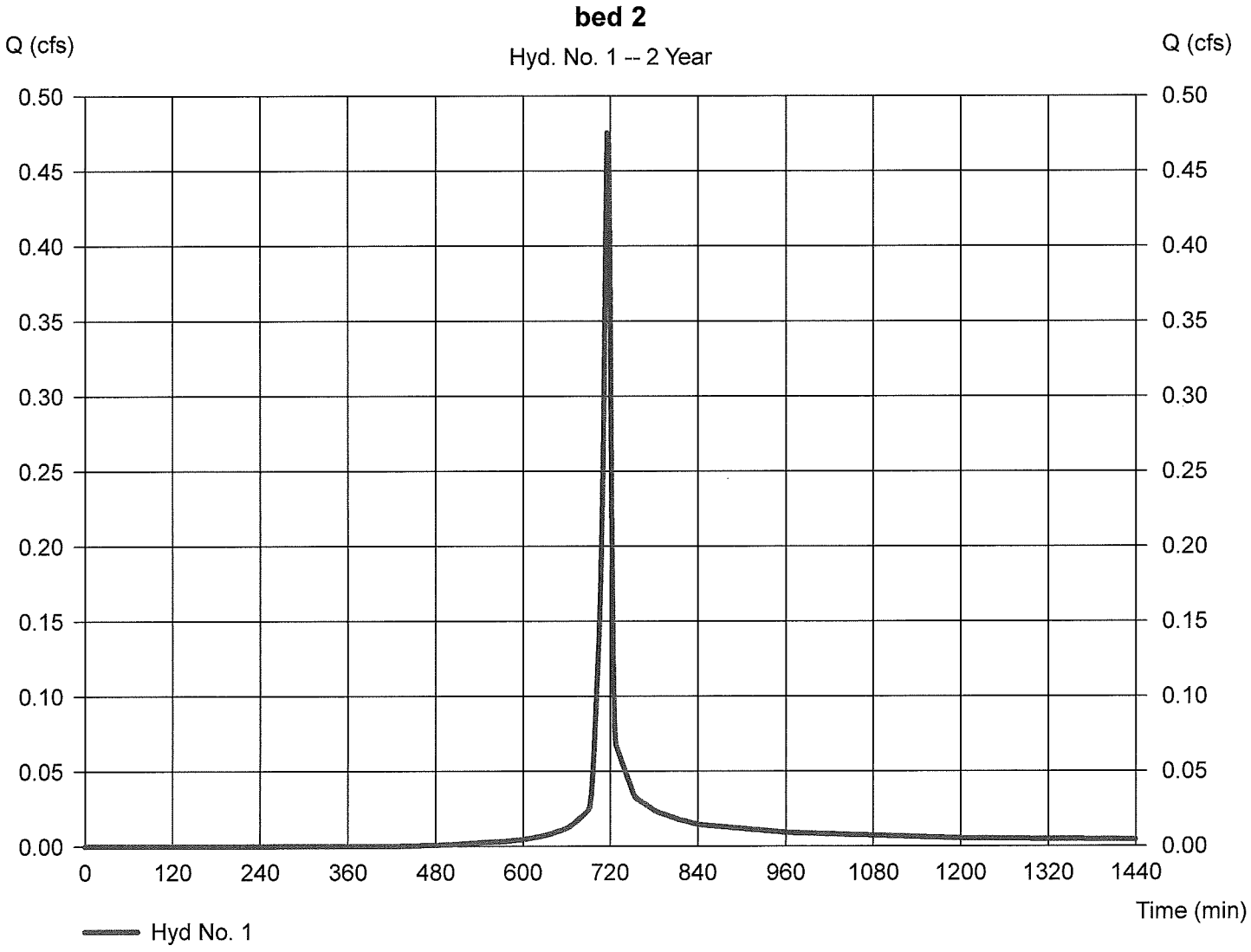
Hydraflow Hydrographs by Intelisolve v9.1 — Thursday, May 24, 2018

Hyd. No. 1

bed 2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.476 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 968 cuft
Drainage area	= 0.150 ac	Curve number	= 86*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.27 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.100 x 98) + (0.050 x 61)] / 0.150



Hydrograph Report

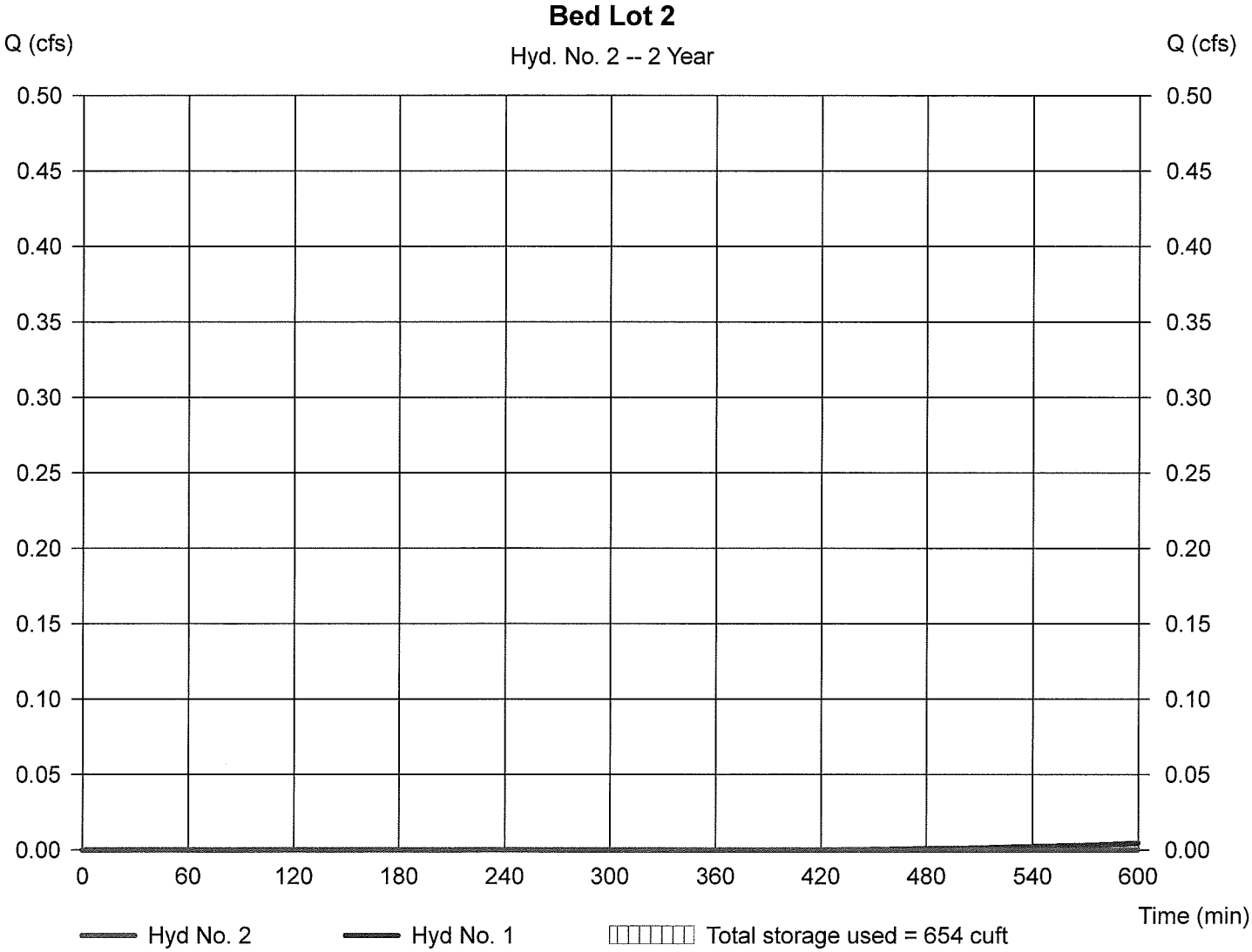
Hydraflow Hydrographs by Intelisolve v9.1 — Thursday, May 24, 2018

Hyd. No. 2

Bed Lot 2

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 598 min
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 1 - bed 2	Max. Elevation	= 375.13 ft
Reservoir name	= Lot 2	Max. Storage	= 654 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs by Intelisolve v9.1 — Thursday, May 24, 2018

Pond No. 2 - Lot 2

Pond Data

UG Chambers - Invert elev. = 373.00 ft, Rise x Span = 2.45 x 4.00 ft, Barrel Len = 30.00 ft, No. Barrels = 2, Slope = 0.00%, Headers = No
Encasement - Invert elev. = 372.50 ft, Width = 6.25 ft, Height = 4.00 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	372.50	n/a	0	0
0.40	372.90	n/a	60	60
0.80	373.30	n/a	103	163
1.20	373.70	n/a	116	279
1.60	374.10	n/a	114	393
2.00	374.50	n/a	109	502
2.40	374.90	n/a	101	603
2.80	375.30	n/a	89	692
3.20	375.70	n/a	65	757
3.60	376.10	n/a	60	817
4.00	376.50	n/a	60	877

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 4.00	4.00	0.00	0.00
Span (in)	= 4.00	4.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 376.17	376.17	0.00	0.00
Length (ft)	= 25.00	0.00	0.00	0.00
Slope (%)	= 5.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.460 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	372.50	0.00	0.00	---	---	---	---	---	---	0.000	---	0.00
0.40	60	372.90	0.00	0.00	---	---	---	---	---	---	0.005	---	0.00
0.80	163	373.30	0.00	0.00	---	---	---	---	---	---	0.005	---	0.01
1.20	279	373.70	0.00	0.00	---	---	---	---	---	---	0.006	---	0.01
1.60	393	374.10	0.00	0.00	---	---	---	---	---	---	0.006	---	0.01
2.00	502	374.50	0.00	0.00	---	---	---	---	---	---	0.007	---	0.01
2.40	603	374.90	0.00	0.00	---	---	---	---	---	---	0.007	---	0.01
2.80	692	375.30	0.00	0.00	---	---	---	---	---	---	0.008	---	0.01
3.20	757	375.70	0.00	0.00	---	---	---	---	---	---	0.008	---	0.01
3.60	817	376.10	0.00	0.00	---	---	---	---	---	---	0.009	---	0.01
4.00	877	376.50	0.12 ic	0.12 ic	---	---	---	---	---	---	0.009	---	0.13

ENTIRE PROJECT AREA

WORKSHEET 4. CHANGE IN RUNOFF VOLUME FOR 2-YR STORM EVENT

PROJECT: Cahill Property (Post Dev)
Drainage Area: 0.15 acres
2-Year Rainfall: 3.2 in

Total Site Area: 0.15 acres
Protected Site Area: 0.00 acres
Managed Area: 0.00 acres

Existing Conditions:

Cover Type / Condition	Soil Type	Area (sf)	Area (ac)	CN	S	Ia 0.2*s	Q Runoff[1] (in)	Runoff Volume[2] (ft^3)
Meadow		0	0.00	58	7.24	1.45	0.341	0
Woods	B	0	0.00	55	8.18	1.64	0.251	0
impervious	B	0	0.00	98	0.20	0.04	2.967	0
Woods		0	0.00	70	4.29	0.86	0.828	0
TOTAL:			**0.00**					**0**

Developed Conditions:

Cover Type / Condition	Soil Type	Area (sf)	Area (ac)	CN	S	Ia 0.2*s	Q Runoff[1] (in)	Runoff Volume[2] (ft^3)
Lawn	B	2,022	0.05	61	6.39	1.28	0.444	75
Woods	B	0	0.00	55	8.18	1.64	0.251	0
Impervious	B	4,367	0.10	98	0.20	0.04	2.967	1080
Lawn		0	0.00	74	3.51	0.70	1.038	0
Gravel		0	0.00	89	1.24	0.25	2.082	0
Impervious		0	0.00	98	0.20	0.04	2.967	0
TOTAL:			**0.15**					**1,155**

2-Year Volume Increase (ft^3): 1,155

2-Year Volume Increase = Developed Conditions Runoff Volume - Existing Conditions Runoff Volume

1. Runoff (in) = $Q = (P-0.2S)^2 / (P + 0.8S)$ where

P = 2-Year Rainfall (in)

S = (1000/CN) - 10

2. Runoff Volume (CF) = Q x Area x 1/12
Q = Runoff (in)
Area = Land Use Area (sq. ft.)

NOTE: Runoff volume must be calculated for EACH land use type/condition and HSGI. The use of a weighted CN value for volume calculations is not acceptable.

TOTAL INFILTRATION = 1,155+333 = 1488 C.F.

EDWARD B. WALSH & ASSOCIATES, INC.
Complete Civil Engineering Design / Consultation Services

RAIN GARDEN VOLUME CALCULATIONS

DATE: 5/14/2018
BY: AE

JOB NO.: 4062 **PROJECT:** Cahill Lot 2 RG 1 **TOWNSHIP:** WESTTOWN
DESCRIPTION:

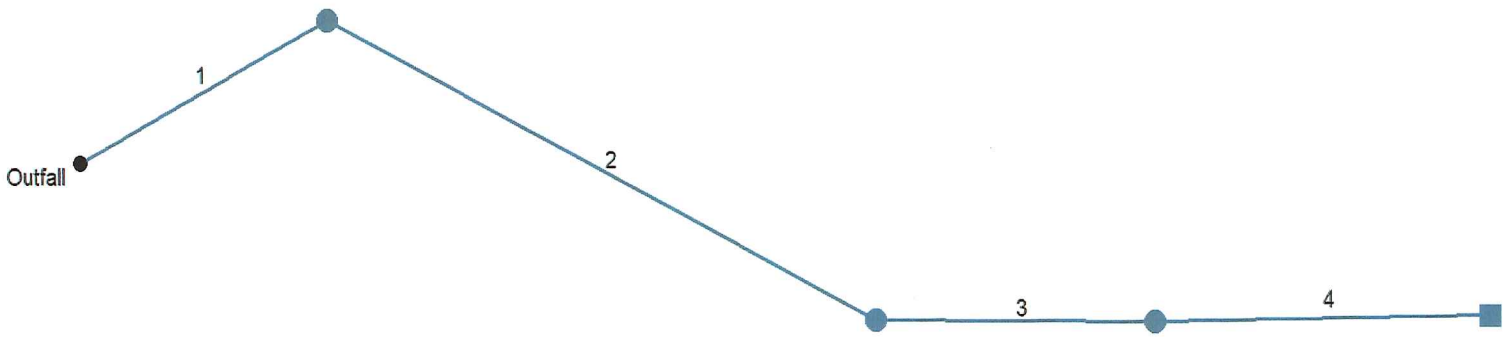
RAIN GARDEN

Area of Rain Garden	Depth of soil in Rain Garden	Void Area	Ponded Water		Total Volume (C.F.)
321	1.5	0.17	419	0.6	333

Equation: Area of rain garden x depth of soil x void area + ponded water x 0.6 = Total Volume

CONVEYANCE

Hydraflow Plan View



Ballester storm 2	No. Lines: 4	05-24-2018

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp line No
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1		0.00	1.67	0.00	1.67	MH	6.0	6.00	2.00	4.00	2.00	Sag	2.00	0.080	0.050	0.013	0.00	0.00	0.00	0.00	2.00	Off
2		0.00	1.67	0.00	1.67	MH	6.0	6.00	2.00	4.00	2.00	Sag	2.00	0.080	0.050	0.013	0.00	0.00	0.00	0.00	2.00	1
3		1.67*	0.00	0.00	1.67	MH	6.0	6.00	2.00	4.00	2.00	Sag	2.00	0.080	0.050	0.013	0.00	0.00	0.00	0.00	2.00	2
4		6.04*	0.00	6.04	0.00	DrGrt	6.0	6.00	2.00	4.00	2.00	Sag	2.00	0.080	0.050	0.013	0.40	17.94	0.40	17.94	2.00	3

Ballester storm 2 | Number of lines: 4 | Run Date: 05-24-2018

NOTES: Inlet N-Values = 0.013 ; Intensity = 161.33 / (Inlet time + 21.80) ^ 0.91; Return period = 100 Yrs. ; * Indicates Known Q added

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns line No.
1	outfall to mh1b	7.71	24 c	30.0	364.50	364.80	1.000	365.48	365.78	n/a	365.78 j	End
2	mh1b to mh1a	7.71	24 c	66.0	365.00	370.74	8.697	366.08	371.72	n/a	371.72 j	1
3	mh1a to mh1	7.71	24 c	30.0	370.94	372.79	6.167	372.02	373.77	n/a	373.77 j	2
4	m1 1 to inlet 1	6.04	24 c	36.0	372.99	375.13	5.944	374.11	376.00	n/a	376.00 j	3

Ballester storm 2 | Number of lines: 4 | Run Date: 05-24-2018

NOTES: c = cir; e = ellip; b = box; Return period = 100 Yrs. ; j - Line contains hyd. jump.

FL-DOT Report

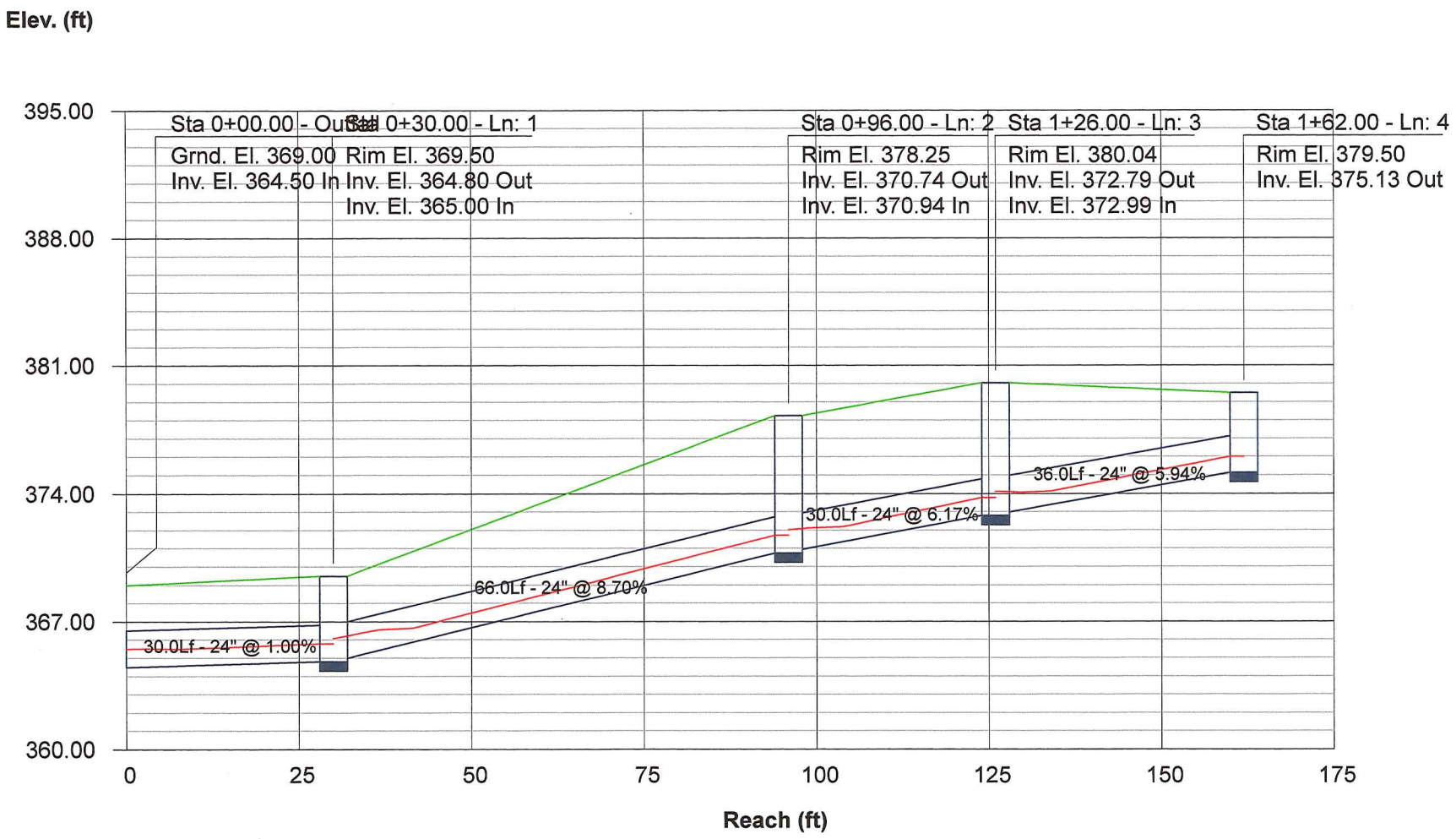
Line No	To Line	Type of struc	n - value	Len	Drainage Area			Time of conc	Time of flow in sect	Inten (I)	Total CA	Add Q	Inlet elev	Elev of HGL			Rise	HGL	Actual		Date: 05-24-2018
					C1 = 0.99 C2 = 0.25 C3 = 0.2							Total flow		Elev of Crown			Span	Pipe	Full Flow		Frequency: 100 yrs
														Elev of Invert							Proj: Ballester storm.stm
					Increment (ac)	Sub-total (ac)	Sum CA					Q		Up	Down	Fall	Size	Slope	Vel	Cap	
				(ft)				(min)	(min)	(in/hr)		(cfs)	(ft)	(ft)	(ft)	(ft)	(in)	(%)	(ft/s)	(cfs)	Line description
1	End	MH	0.013	30.0	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.96	0.20	0.0	0.00	0.00 7.71	369.50	365.78 366.80 364.80	365.48 366.50 364.50	0.30 0.30	24 24 Cir	1.00 1.00	5.01 7.20	7.71 22.62	outfall to mh1b
2	1	MH	0.013	66.0	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.52	0.45	0.0	0.00	0.00 7.71	378.25	371.72 372.74 370.74	366.08 367.00 365.00	5.64 5.74	24 24 Cir	8.55 8.70	4.73 21.23	7.71 66.70	mh1b to mh1a
3	2	MH	0.013	30.0	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.31	0.20	0.0	0.00	1.67 7.71	380.04	373.77 374.79 372.79	372.02 372.94 370.94	1.75 1.85	24 24 Cir	5.84 6.17	4.73 17.88	7.71 56.17	mh1a to mh1
4	3	DrGrt	0.013	36.0	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00	0.31	0.0	0.00	6.04 6.04	379.50	376.00 377.13 375.13	374.11 374.99 372.99	1.89 2.14	24 24 Cir	5.26 5.94	3.98 17.55	6.04 55.15	m1 1 to inlet 1

NOTES: Intensity = 161.33 / (Inlet time + 21.80) ^ 0.91 (in/hr) ; Time of flow in section is based on full flow.

Ballester storm 2

Storm Sewer Profile

Proj. file: Ballester storm.stm



INFILTRATION TESTING

SOILS REPORT FOR STORMWATER RECHARGE SUITABILITY

9 Jacqueline Drive

WESTTOWN TOWNSHIP
CHESTER COUNTY

March 9, 2018

Prepared By:

Edward B. Walsh and Associates, Inc.
125 Dowlin Forge Road, Lionville Professional Center
Exton, PA 19341-1550
610-903-0060

Project Background

Edward B. Walsh and Associates, Inc. (EBW) conducted a soils evaluation to determine the potential for storm water infiltration on proposed Lot #2 located at 9 Jacqueline Drive in Westtown Township, Chester County, Pa.

Soils and Geology

According to Soil Survey Staff, Natural Resource Conservation Service, United States Department of Agriculture Web Soil Survey; available at http://websoilsurvey.nrcs.usda.gov the property is mapped as containing Gladstone (GdC) and Urban Land Gladstone Complex (UrlD) soil series, Figure #1.

The Gladstone series consists of very deep, well drained soils formed in residuum and colluvium from granitic gneiss. The depth to a water table is generally greater than eighty (80) inches and the depth to bedrock is generally between sixty-five (65) and sixty-seven (67) inches below the ground surface.

Methods

One (1) soil probe was conducted near the northwest corner of Lot #2, see attached map for approximate location. One (1) soil probe was conducted in the northwest corner of lot #2. The soil probe was excavated by a backhoe to allow for the collection of detailed soil morphology data, included in Appendix A. The objective of the soil evaluations was to determine if the soil conditions to a depth of a minimum of two (2) feet below the proposed infiltration area were conducive to groundwater recharge. Particular soil conditions that are not conducive to storm water infiltration are bedrock, groundwater or seasonally high water table and karst areas.

Results

Test pit (TP#1) was excavated within the area of the proposed storm water recharge bed. The test pit was excavated to a depth of 9 feet below grade. No limiting zones were identified in the test pit. Soil infiltration testing was conducted at various depths (5 feet and 7 feet below grade) to account for the change in depth below existing grade across the proposed bed. The average infiltration rate was calculated to be 0.79 inches per hour (not including the PA DEP required safety factor of 2).

Summary

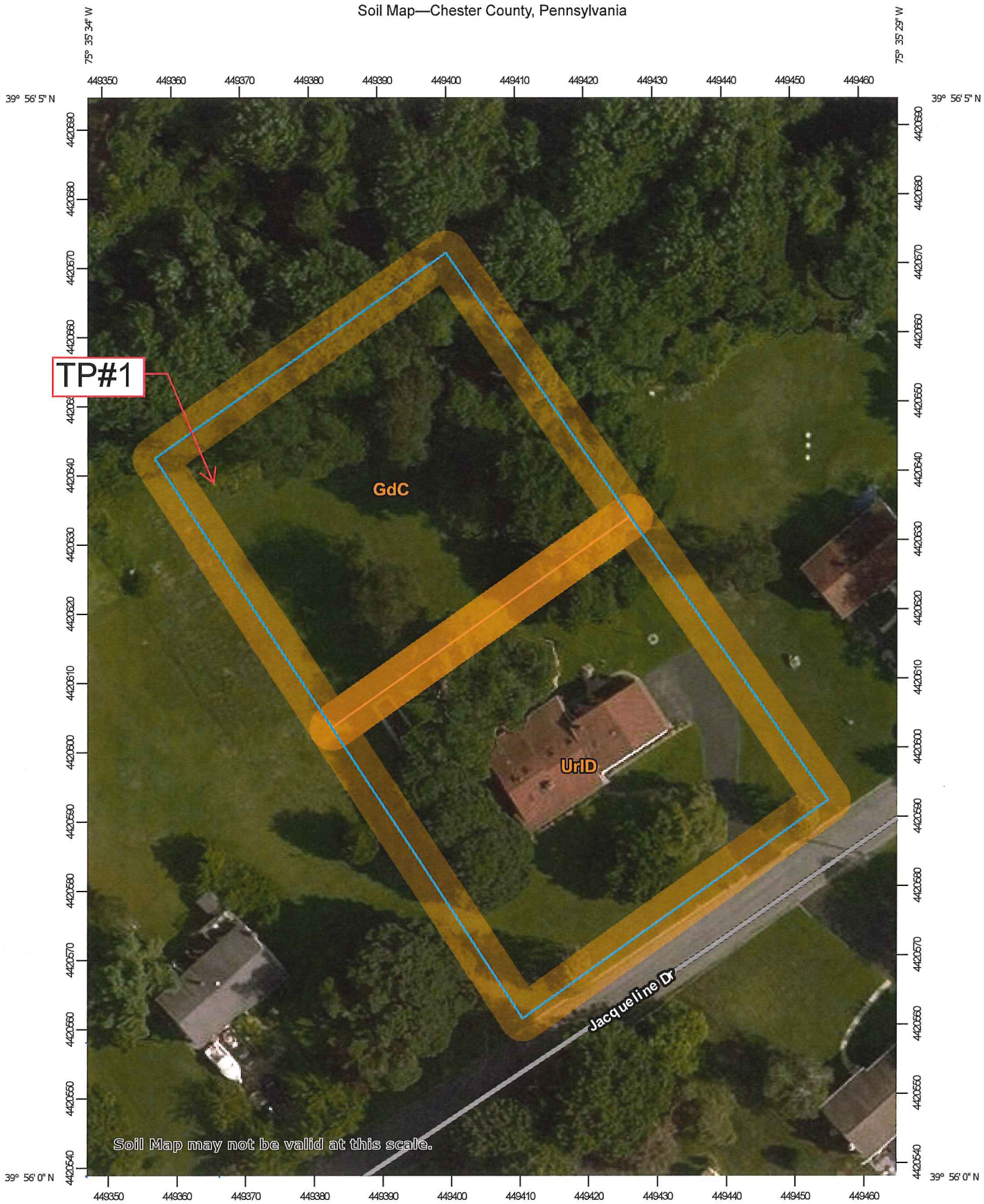
The results of the soils evaluations indicate that site as tested is generally suitable for storm water infiltration in locations and depths referenced in this report.

EDWARD B. WALSH AND ASSOCIATES, INC

Scott Andress, SEO
Environmental Scientist

Figure 1

Soil Map—Chester County, Pennsylvania



Map Scale: 1:760 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 10 20 40 60

Feet: 0 35 70 140 210

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Chester County, Pennsylvania
Survey Area Data: Version 9, Oct 3, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 25, 2014—Aug 11, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GdC	Gladstone gravelly loam, 8 to 15 percent slopes	0.6	47.5%
UrlD	Urban land-Gladstone complex, 8 to 25 percent slopes	0.7	52.5%
Totals for Area of Interest		**1.3**	**100.0%**

Appendix A

SOIL PROFILE

Date: 3/16/2018		Location: 9 Jacqueline Drive			Person Conducting Test: S. Andress				Probe # 1
HORIZON	**DEPTH**	**TEXTURE**	**R4/3**	**STRUCTURE**	**CONSISTENCE**	**% COARSE FRAG.**	**Redoximorphic Features**		**Additional Information**
Ap	0-8	Silt Loam	10YR4/4	M. Gran.	Friable	-----	-----	-----	
Bt1	8-12	Silt Loam	7.5YR5/4	M. SBK	Friable	-----	-----	-----	
Bt2	12-30	Silt Loam	7.5YR5/6	M. SBK	Friable	-----	-----	-----	
C	30-108	Loam	Variegated	Stuctureless	Firm in Place - Friable	20	-----	-----	

Limiting Zone Type and Depth: 108" Bottom of Probe	Slope % 3-8	Loading Rate: NA

Date:		Location:			Person Conducting Test:				Probe #
HORIZON	**DEPTH**	**TEXTURE**	**COLOR**	**STRUCTURE**	**CONSISTENCE**	**% COARSE FRAG.**	**Redoximorphic Features**		**Additional Information**

Limiting Zone Type and Depth:	Slope %	Loading Rate:

Appendix B

Cased Borehole Falling Head Permeability Testing

Location: 9 Jacqueline Drive
Test ID: TP#1 / I#1
Person Conducting Test: S. Andress
Date of Test: 3/16/2018

Holes are presoaked 1 hour prior to conducting readings

Time (min.)	Water Level Drop (inches)
0.0	NA
30.0	5.00
60.0	4.75
90.0	4.25
120.0	4.25
150.0	4.00
180.0	4.00

Test Information:

Overall Casing Length (inches):	12.00
Casing Diameter (in.)	4.00
Depth Below Ex. Grade (ft.):	5.00

Coefficient of Permeability (K) = [A/F*D*t] x ln(h1/h2)

where: K = Vertical Permeability (cm/sec)

A = Cross sectional Area of Cased Hole	12.56
F = Shape Factor (2.75 for flat bottom)	2.75
D = Cased Hole Diameter	4.00
t = Time for head to change from h1 to h2	30.00
h1 = Initial height of water column in casing	12.00
h2 = Final height of water column in casing	8.00

K = 0.0154322478 in/min

K = 0.926 in/hour

Cased Borehole Falling Head Permeability Testing

Location: 9 Jacqueline Drive
Test ID: TP#1 / I#2
Person Conducting Test: S. Andress
Date of Test: 3/16/2018

Test Information:

Overall Casing Length (inches):	12.00
Casing Diameter (in.)	4.00
Depth Below Ex. Grade (ft.):	7.00

Holes are presoaked 1 hour prior to conducting readings

Time (min.)	Water Level Drop (inches)
0.0	NA
30.0	3.75
60.0	3.50
90.0	3.25
120.0	3.25
150.0	3.25
180.0	3.00

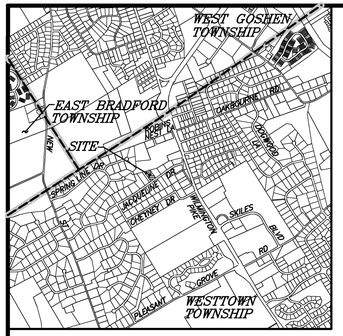
Coefficient of Permeability (K) = [A/F*D*t] x ln(h1/h2)

where:

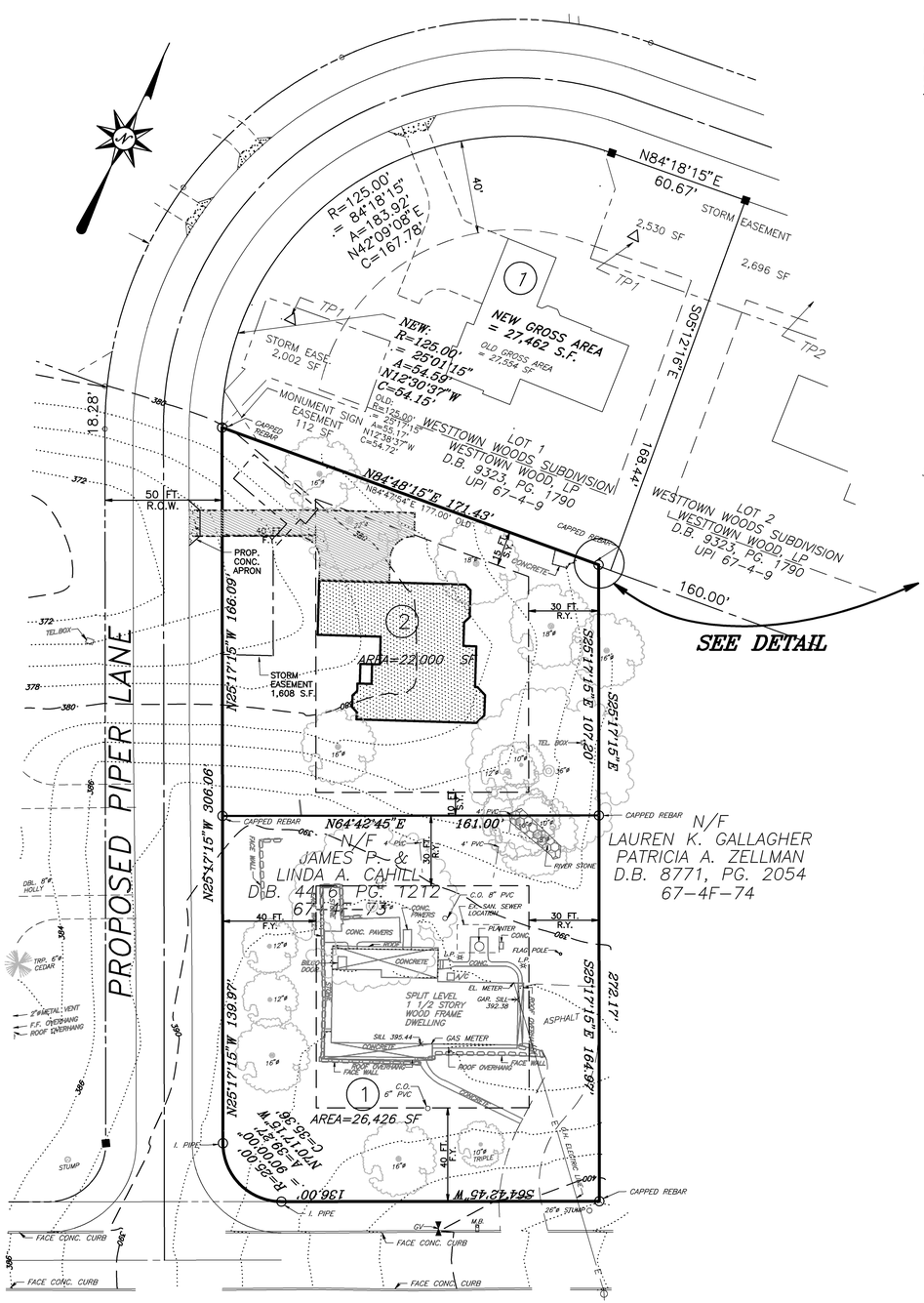
K = Vertical Permeability (cm/sec)	
A = Cross sectional Area of Cased Hole	12.56
F = Shape Factor (2.75 for flat bottom)	2.75
D = Cased Hole Diameter	4.00
t = Time for head to change from h1 to h2	30.00
h1 = Initial height of water column in casing	12.00
h2 = Final height of water column in casing	9.00

K = 0.0109493540 in/min

K = 0.657 in/hour



LOCATION MAP
SCALE: 1"=2000'



JACQUELINE DRIVE

30 0 30 60 90 120 FEET
GRAPHIC SCALE

EXISTING

IMPERVIOUS COVERAGE:	LOT 1
HOUSE & ROOF OVERHANG:	3,241 SF
DRIVE:	122 SF
WALKS & PATIOS:	615 SF
TOTAL:	3,978 SF

ZONING DATA

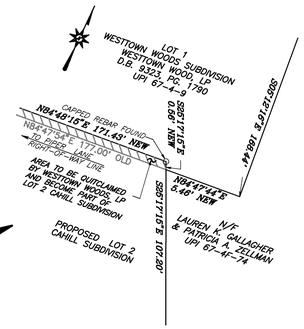
R-2 RESIDENTIAL DISTRICT W/PUBLIC SEWER AND WATER

		LOT 1	LOT 2
MIN. LOT AREA	22,000 S.F.	26,426 S.F.	22,000 S.F.
MIN. LOT WIDTH		NET 26,426 S.F. CONT.	NET 17,420 S.F. (79%) CONT.
BLDG. LINE	100'	161.00'	151.36'
STREET LINE	50'	136.00'	166.09'
MIN. SIDE YARD	10' (25' AGG)	NO SIDE YARD	10', 15'
MIN. FRONT YARD	40'	40'	40'
MIN. REAR YARD	30'	30'	30'
MAX. LOT COVERAGE	25%	15.1%	25%
MAX. BLDG. HEIGHT	35'	35'	35'

TOTAL TRACT AREA = 1.111 AC.

NO. LOT PROPOSED = 2

WAIVER REQUEST: SECTION 149-600 TO ALLOW THE PLAN TO BE CONSIDERED PRELIMNINARY & FINAL.



GENERAL NOTES:

1. THE PURPOSE OF THIS PLAN IS TWO FOLD:
   1) SINCE A TITLE OVERLAP WAS FOUND ALONG THE LINE COMMON TO CAHILL AND LOT 1 OF THE WESTTOWN WOODS SUBDIVISION ACCORDING TO SURVEYS PERFORMED BY ABACUS SURVEYING AND COMMONWEALTH ENGINEERS, INC., WESTTOWN WOODS, LP DESIRES TO QUITCLAIM TITLE TO THEIR PORTION OF THE OVERLAP AS SHOWN HEREON. THE QUITCLAIM AREA IS TO BECOME A PART OF THE LANDS OWNED BY JAMES P. & LINDA A. CAHILL.
   2) THE LANDS OF JAMES P. & LINDA A. CAHILL ARE TO BE SUBDIVIDED INTO 2 LOTS AS SHOWN HEREON.
2. BOUNDARY INFORMATION IS FROM A "SURVEY REPORT PLAN FOR JAMES CAHILL 90 JACQUELINE DRIVE, WEST CHESTER, PA 19382", PREPARED BY ABACUS SURVEYING, HONEY BROOK, PA, DATED APRIL 05, 2018.
3. EXISTING FEATURES AND TOPOGRAPHIC FEATURES INFORMATION SHOWN HEREON ARE FROM A FIELD SURVEY PERFORMED BY EDWARD B. WALSH & ASSOCIATES ON MARCH 13, 2018.
4. RECORD OWNERS OF UPI 67-4F-73; LINDA A. & JAMES P CAHILL 9 JACQUELINE DRIVE WEST CHESTER, PA. 19382
5. DEED REFERENCE: DEED BOOK 4416, PAGE 1212 BEING LOT 5 SHOW ON THE RECORD PLAN RECORDED AT THE CHESTER COUNTY RECORDER OF DEEDS IN PLAN BOOK 13, PAGE 14 .
6. EQUITABLE OWNER/ APPLICANT: WESTTOWN WOODS, L.P. 55 COUNTRY CLUB DRIVE SUITE 204 DOWNINGTOWN, PA 19335
7. ALL LOTS WILL BE SERVED BY PUBLIC SEWER AND WATER.
8. A STATEMENT SIGNED AND SEALED BY A REGISTERED ARCHITECT OR ENGINEER, EXPLAINING THE BUILDING METHODS TO BE USED TO OVERCOME FOUNDATION AND OTHER STRUCTURAL PROBLEMS CREATED BY SLOPE CONDITIONS, PRESERVING THE NATURAL WATERSHED, AND PREVENTING SOIL EROSION AND EXCESSIVE SURFACE WATER RUNOFF TO NEIGHBORING PROPERTIES AND/OR STREETS SHALL BE SUBMITTED FOR REVIEW TO THE TOWNSHIP ENGINEER WITH THE BUILDING PERMIT APPLICATION.
9. ALL MATERIALS ENTERING INTO THE CONSTRUCTION OF CURBS AND THE METHOD OF CONSTRUCTION AND INSTALLATION SHALL BE IN ACCORDANCE WITH PENNDOT SPECIFICATION PUBLICATION 408.
10. LOT 2 WILL BECOME PART OF THE HOMEOWNERS ASSOCIATION FOR WESTTOWN WOODS.
11. ALL STORMWATER FACILITIES OUTSIDE OF THE R.O.W. SHALL BE OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION.

REFERENCE PLANS:

1. "PRELIMINARY SUBDIVISION AND LAND DEVELOPMENT PLAN FOR WESTTOWN WOODS", PREPARED BY COMMONWEALTH ENGINEERS, INC., DOWNINGTOWN, PA, DATED JULY 02, 2014, SHEET 2
2. "MAP OF WESTTOWN NORTH, PROPERTY OF ALBERT P. MANDES, INC." PREPARED BY YERKES ENGINEERING CO., BRYN MAWR, PA, DATED JANUARY 19, 1962, REVISED FEBRUARY 27, 1962, RECORDED IN PLAN BOOK13, PAGE 14 AT THE CHESTER COUNTY RECORDER OF DEEDS.
3. "SURVEY REPORT PLAN FOR JAMES CAHILL, 90 JACQUELINE DRIVE, WEST CHESTER, PA 19382", PREPARED BY ABACUS SURVEYING, HONEY BROOK, PA, DATED APRIL 05, 2018.

COMMONWEALTH OF PENNSYLVANIA SS:
COUNTY OF CHESTER

On this _____day of _____A.D. 2018 before me, the subscriber, a Notary Public of the Commonwealth of Pennsylvania, residing, in Chester County, Pa., personally appeared Adam R. Loew, who acknowledges himself to be the President of Southdown Properties Inc. the general Partner of Westtown Woods, L.P. and that as such President, being authorized to do so, he executed the foregoing plan by signing that the said partnership is the owner of the designated land, that all necessary approval of the plan has been obtained and is endorsed thereon, and that the said partnership desires that the foregoing plan may be duly recorded.

_____
Adam R. Loew

_____
Notary Public
My Commission Expires:_____

COMMONWEALTH OF PENNSYLVANIA SS:
COUNTY OF CHESTER

On the _____day of _____A.D. 20____ before me, the subscriber, a Notary Public of the Commonwealth of Pennsylvania, residing in _____, personally appeared _____who acknowledges himself to be the _____ and that as such to do so, he executed the foregoing plan by signing his name by himself as _____ that he is the owner of the designated land, that necessary approval of the plan has been obtained and is endorsed thereon and that he desires that the foregoing plan may be duly recorded.

_____
Notary Public

_____
My Commission Expires

APPROVED by the Board of Supervisors of Westtown Township, Chester County, Pa., this _____day of _____, 2018.

Chairperson	Member
Vice-Chairperson	Member
Member	Member
Member	Member

REVIEWED by the Planning Commision of Westtown Township, Chester County, Pa., this _____day of_____, 2018.

Chairperson	Supervisor
Vice-Chairperson	Supervisor
	Supervisor

REVIEWED by the Chester County Planning Commission this_____ day of _____, 2018.

_____
Secretary

REVIEWED by the Westtown Township Engineer;

_____ _____
Date

Recorded in the Office of the Recorder of Deeds of Chester County at West Chester, Pennsylvania in Plan book _____, Page _____ on the _____day of _____, 2018.

_____
(Deputy) Recorder of Deeds

ACT 287 SERIAL NUMBER 20180862796
Edward B. Walsh & Associates, Inc. does not guarantee the accuracy of the locations for existing subsurface utility lines, structures, etc. shown on the plans, nor does E. B. Walsh & Assoc., Inc. guarantee that all subsurface utility lines, structures, etc. are shown.

Contractor shall verify the location and elevations of all subsurface utility lines, structures, etc. before the start of work, by calling the Pennsylvania One Call System at 1-800-242-1776.

UTILITIES NOTIFIED

VERIZON PENNSYLVANIA, INC.
AQUA PENNSYLVANIA, INC.
COMCAST CABLE COMMUNICATIONS, INC.
WESTTOWN TOWNSHIP
PECO ENERGY

UPI 67-4F-73

SUBDIVISION PLAN

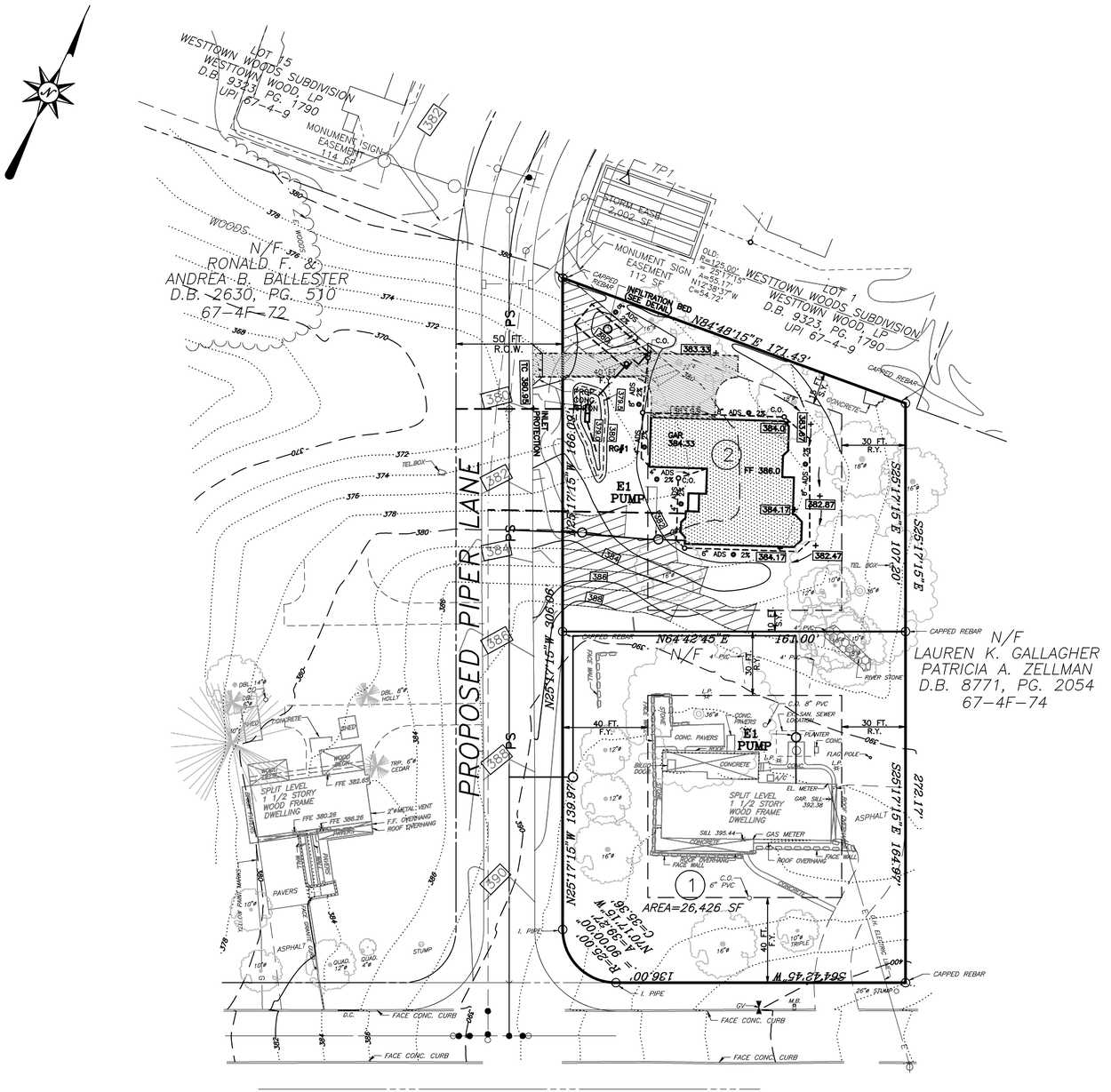
1 7-26-18 REV. PER McCORMICK TAY LOR REVIEW OF JULY 11, 2018

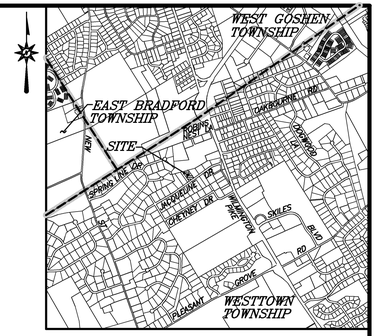
PLAN OF SUBDIVISION AND LOT LINE ADJUSTMENT
FOR
WESTTOWN WOODS, LP &
JAMES P. & LINDA A. CAHILL
WESTTOWN TOWNSHIP CHESTER COUNTY, PA.

Edward B. Walsh & Associates, Inc.
CIVIL ENGINEERS & LAND SURVEYORS
LIONVILLE PROFESSIONAL CENTER
125 Doulin Forge Rd.
Exton, Pennsylvania 19341
Phone: 610-903-0060
Fax: 610-903-0080

Project-	4062
Date-	5-10-18
Scale-	1"= 30'
Drawn-	RBL
Checked-	AE
Sheet-	1 OF 8

Plotted: 7/26/2018 File: F:\JB\4062\4062-B5 Cahill sub.pro





LOCATION MAP
SCALE: 1"=2000'

LEGEND

- EXISTING INDEX CONTOUR
- EXISTING INTERIOR CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- PROPOSED INLET
- PROPOSED STORM SEWER PIPE
- PROPOSED WATER LINE
- EXISTING WATER LINE
- PROPOSED PRESSURE SEWER
- SOILS LINE
- EXISTING TREE LINE
- EXISTING WETLANDS
- EDGE OF PAVING
- RIGHT OF WAY LINE
- NATURALLY OCCURRING PRECAUTIONARY SLOPES
- EXISTING TREE
- PROPOSED CURB
- FENCE
- PROPOSED WALL
- PROPOSED LOT NUMBER

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30 0 30 60 90 120 FEET
GRAPHIC SCALE

CONSERVATION GRADING & UTILITIES PLAN

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UPI 67-4F-73

1	7-26-18	REV. PER McCORMICK TAYLOR REVIEW OF JULY 11, 2018

PLAN OF SUBDIVISION
OF
UPI 67-4F-73

WESTTOWN TOWNSHIP — CHESTER COUNTY, PA.

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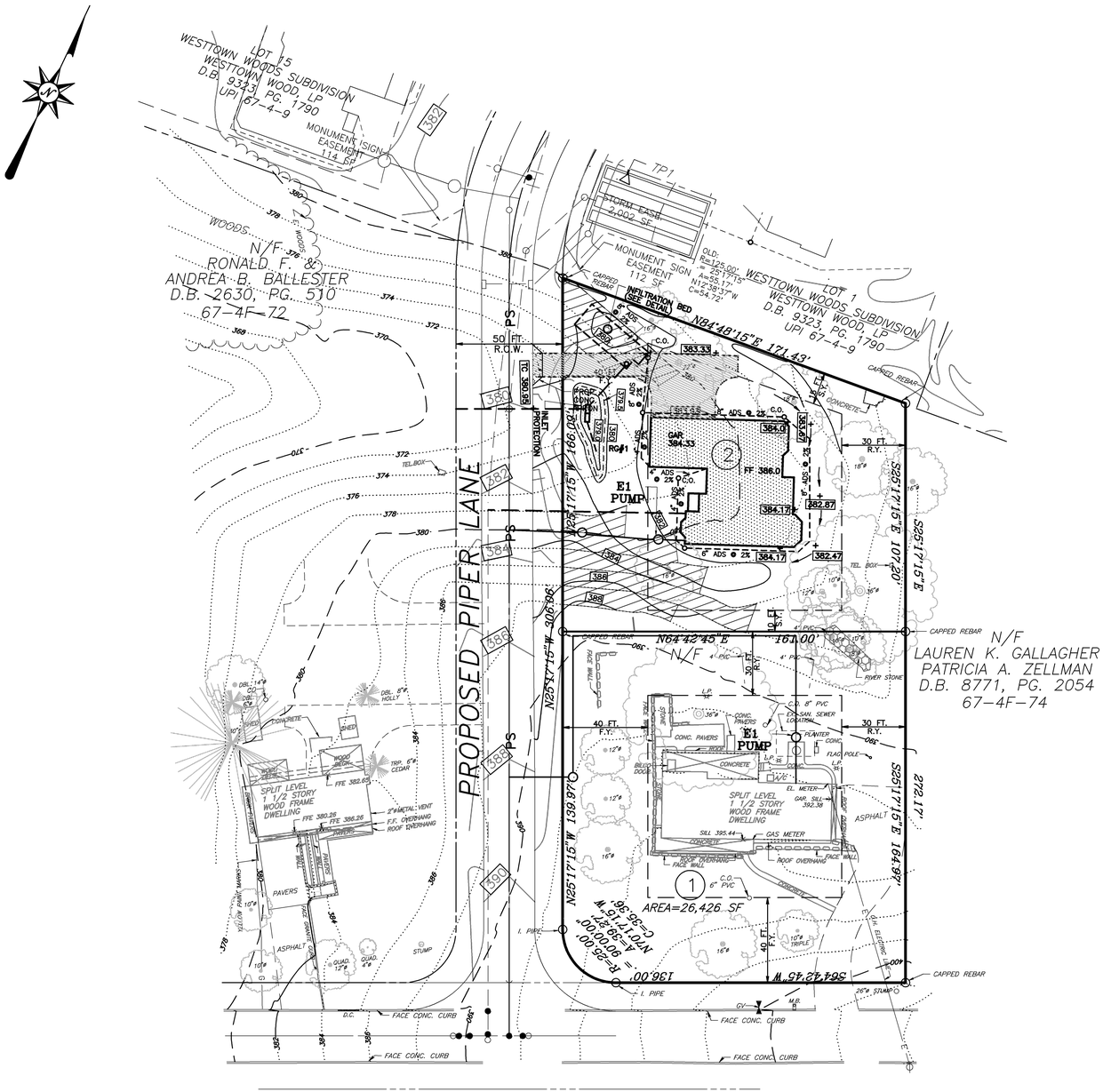

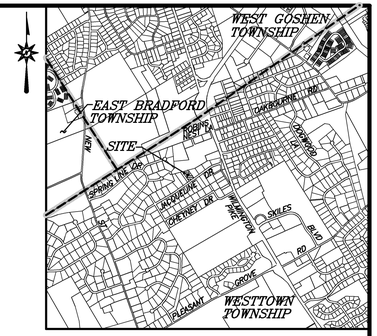

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SCALE: 1"=2000'

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   BEING LOT 5 SHOW ON THE RECORD PLAN RECORDED AT THE CHESTER COUNTY RECORDER OF DEEDS IN PLAN BOOK 13, PAGE 14 .
6. EQUITABLE OWNER/ APPLICANT:
   WESTTOWN WOODS, L.P.
   55 COUNTRY CLUB DRIVE
   SUITE 204 DOWNINGTOWN, PA 19335
7. ALL LOTS WILL BE SERVED BY PUBLIC SEWER AND WATER.
8. A STATEMENT SIGNED AND SEALED BY A REGISTERED ARCHITECT OR ENGINEER, EXPLAINING THE BUILDING METHODS TO BE USED TO OVERCOME FOUNDATION AND OTHER STRUCTURAL PROBLEMS CREATED BY SLOPE CONDITIONS, PRESERVING THE NATURAL WATERSHED, AND PREVENTING SOIL EROSION AND EXCESSIVE SURFACE WATER RUNOFF TO NEIGHBORING PROPERTIES AND/OR STREETS SHALL BE SUBMITTED FOR REVIEW TO THE TOWNSHIP ENGINEER WITH THE BUILDING PERMIT APPLICATION.
9. ALL MATERIALS ENTERING INTO THE CONSTRUCTION OF CURBS AND THE METHOD OF CONSTRUCTION AND INSTALLATION SHALL BE IN ACCORDANCE WITH PENNDOT SPECIFICATION PUBLICATION 408.
10. LOT 2 WILL BECOME PART OF THE HOMEOWNERS ASSOCIATION FOR WESTTOWN WOODS.
11. ALL STORMWATER FACILITIES OUTSIDE OF THE R.O.W. SHALL BE OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION.

30 0 30 60 90 120 FEET
GRAPHIC SCALE

CONSERVATION GRADING & UTILITIES PLAN

ACT 287 SERIAL NUMBER 20180862796
Edward B. Walsh & Associates, Inc. does not guarantee the accuracy of the locations for existing subsurface utility lines, structures, etc. shown on the plans, nor does E. B. Walsh & Assoc., Inc. guarantee that all subsurface utility lines, structures, etc. are shown.

Contractor shall verify the location and elevations of all subsurface utility lines, structures, etc. before the start of work, by calling the Pennsylvania One Call System at 1-800-242-1776.

UTILITIES NOTIFIED

VERIZON PENNSYLVANIA, INC.
AQUA PENNSYLVANIA, INC.
COMCAST CABLE COMMUNICATIONS, INC.
WESTTOWN TOWNSHIP
PECO ENERGY

UPI 67-4F-73

1	7-26-18	REV. PER McCORMICK TAYLOR REVIEW OF JULY 11, 2018

PLAN OF SUBDIVISION
OF
UPI 67-4F-73

WESTTOWN TOWNSHIP — CHESTER COUNTY, PA.

Edward B. Walsh & Associates, Inc.
CIVIL ENGINEERS & LAND SURVEYORS
LIONVILLE PROFESSIONAL CENTER
125 Dowlin Forge Rd.
Exton, Pennsylvania 19341
Phone: 610-903-0060
Fax: 610-903-0080

Project-	4062
Date-	5-07-18
Scale-	1"= 30'
Drawn-	RBL
Checked-	AE
Sheet-	3 OF 8

Plotted: 7/26/2018 File: F:\JB\4062\4062-B5 Cahill sub.pro

SOILS SERIES AND MAP SYMBOL	DEPTH TO–		PERMEABILITY (MICROMETER/HR.)	AVAILABLE MOISTURE CAPACITY (IN. PER IN OF SOIL DEPTH)	REACTION PH	SULTABILITY AS SOURCE OF	
	SEASONAL HIGH WATER TABLE (FT.)	BEDROCK (FT)				TOPSOIL	ROAD FILL
Gladstone GdB GdC	5+	5+	9.17 22.30	.14 .14	6.3 6.1	Fair	Fair

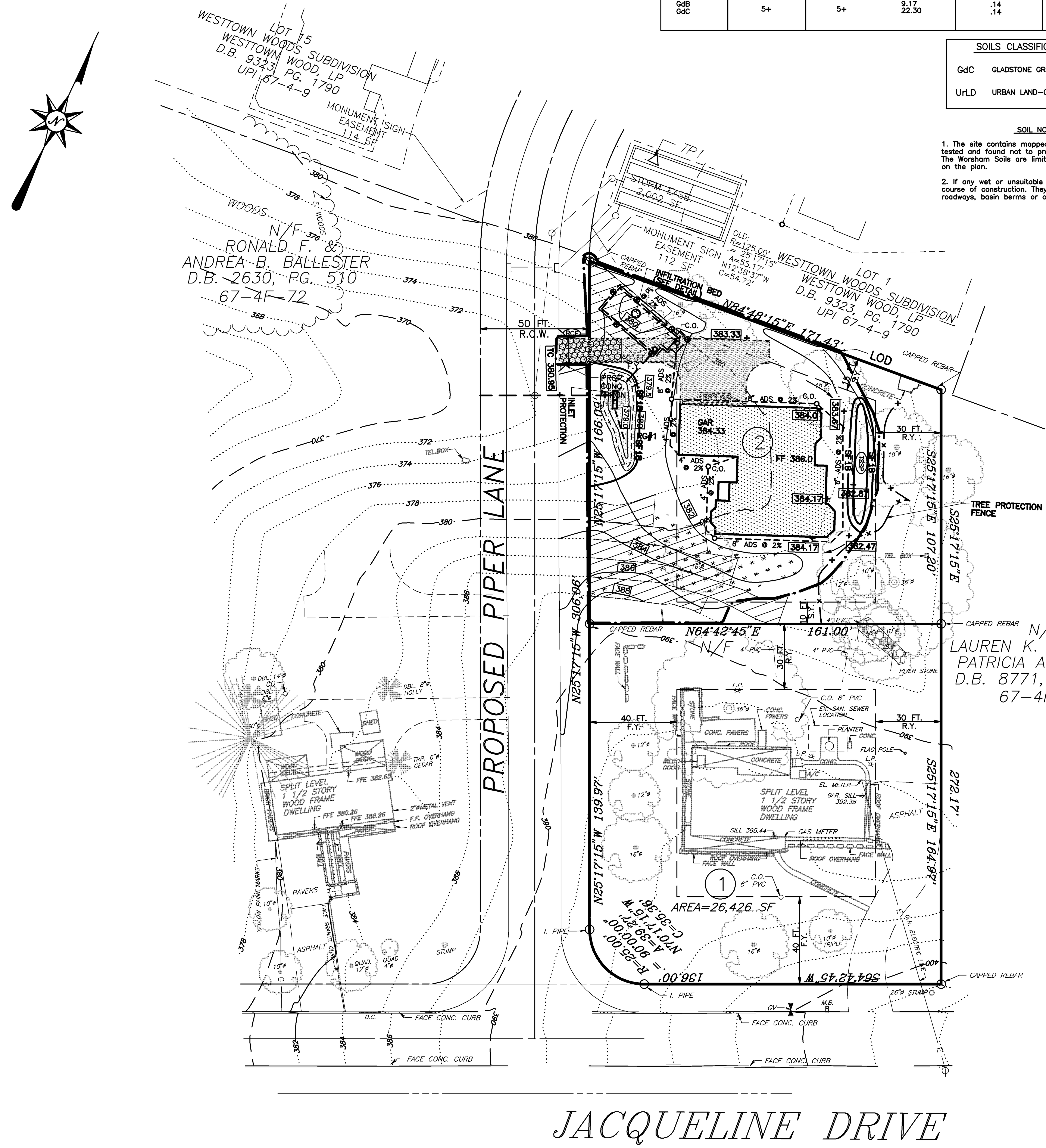
SOILS CLASSIFICATION

GdC	GLADSTONE GRAVELLY LOAM, 8 TO 15 PERCENT SLOPES
UrLD	URBAN LAND–GLADSTONE COMPLEX, 5 TO 25 PERCENT SLOPES

SOIL NOTE

1. The site contains mapped Worsham Soils that have been tested and found not to present to the extent mapped. The Worsham Soils are limited to the shaded area depicted on the plan.

2. If any wet or unsuitable soils are encountered through the course of construction. They shall not be used to construct roadways, basin berms or other structural fill.



CONSTRUCTION SEQUENCE

1. DELINEATE THE LIMIT OF DISTURBANCE WITH RIBBON ON FLAGGING. INSTALL TREE PROTECTION FENCE AND CONSTRUCTION FENCE AROUND THE INFILTRATION BED.
2. INSTALL THE CONSTRUCTION ENTRANCE.
3. INSTALL THE DOUBLE INLET LOCATED IN THE FRONT YARD. ONCE IN PLACE INSTALL THE INLET PROTECTION AND SUPER SILT FENCE AROUND THE INLET AS DEPICTED ON THE PLAN. STABILIZE IMMEDIATELY. ONCE THE ITEMS ARE IN PLACE THEN REMOVE THE TREES, GRUB AND STRIP THE TOPSOIL. STOCKPILE THE TOPSOIL AS SHOWN ON THE PLAN.
4. INSTALL THE DOUBLE INLET LOCATED IN THE FRONT YARD. ONCE IN PLACE INSTALL
5. CONTINUE THE HOUSE CONSTRUCTION.
6. ONCE THE HOUSE IS CLOSED IN AND THE ROOF COMPLETE, INSTALL THE INFILTRATION FACILITY AND YARD DRAIN. SEAL THE YARD DRAIN SO NO SEDIMENT LAIDEN WATER ENTERS THE BED.
   THIS IS A CRITICAL STEP AND MUST BE PERFORMED UNDER AND INSPECTED BY A LICENSED ENGINEER.
7. FINISH THE HOUSE AND FINAL GRADING. SEED MULCH AND STABILIZE THE REMAINDER OF THE HOUSE AREA. PAVE THE DRIVEWAY.
8. ONCE THE LOT AREA HAS ACHIEVED 70% UNIFORM COVER THAN REMOVE THE INLET PROTECTION AND INSTALL THE RAIN GARDEN IN ACCORDANCE WITH THE CONSTRUCTION DETAILS AND SPECIFICATION HERE WITH. SEED WITH THE ERNST WETLAND SEED MIX.
   THIS IS A CRITICAL STEP AND MUST BE PERFORMED UNDER THE GUIDANCE AND INSPECTION OF A PROFESSIONAL ENGINEER.
9. REMOVE THE COVER ON THE YARD DRAIN. SEED MULCH AND STABILIZE THE DISTURBED AREA IMMEDIATELY.
10. REMOVE ANY REMAINING EROSION CONTROLS.

PAST AND PRESENT USES

THE SITE HAS BEEN USED AS AGRICULTURAL PURPOSES 50 YEARS AGO UNTIL THE LAST 20 YEARS WHEN IT HAS BEEN LEFT TO BECOME WOODLAND.

POST CONSTRUCTION STORMWATER MANAGEMENT FACILITIES/ CRITICAL BMP'S INCLUDE THE FOLLOWING:

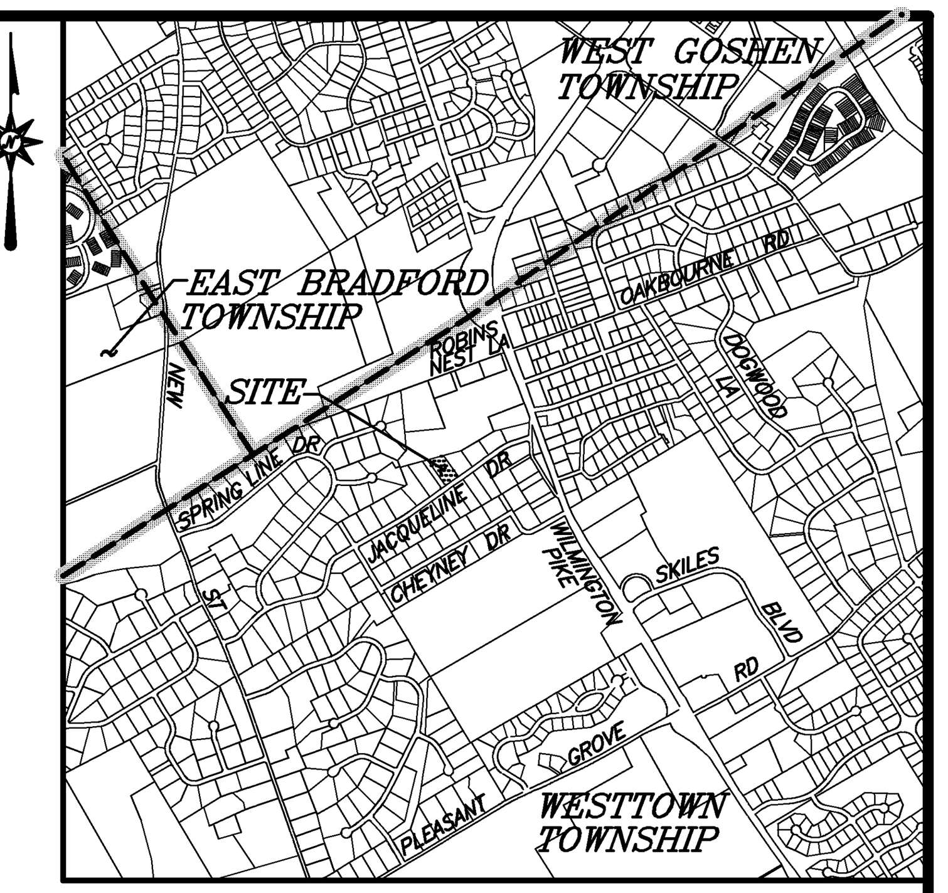
1. INFILTRATION BED LOT 2 AND RAIN GARDEN
2. SNOUTS

BMP CONSTRUCTION INSPECTIONS & ENGINEERING OVERSIGHT

1. INFILTRATION BED LOT 2 AND RAIN GARDEN
2. SNOUTS

GEOLOGIC FORMATIONS

THERE ARE NO GEOLOGIC FORMATIONS WITH LIMITATIONS PRESENT ON THIS SITE.



LOCATION MAP
SCALE: 1"=2000'

GENERAL BMP AND E&S NOTES

1. ALL OF THE BMP'S IDENTIFIED/PROPOSED ON THIS PLAN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAILS SHOWN HEREIN AND THE NOTES CONTAINED ON THE SHEET. THE WETLAND VEGETATION FOR THE BASINS SHALL NOT BE INSTALLED UNTIL 70% STABILIZATION OF THE TRIBUTARY AREA IS ACHIEVED AND THE CONVERSION TO ITS FINAL CONFIGURATION IS COMPLETE.

2. NO BMP SHALL BE INSTALLED UNTIL 70% VEGETATIVE COVER IS ACHIEVED. THE CONSERVATION DISTRICT SHALL BE NOTIFIED PRIOR TO THE INSTALLATION AND MUST CONCUR WITH THE 70% COVER BEFORE INSTALLATION IS BEGUN.

3. DURING CONSTRUCTION THE CONSTRACTOR SHALL TAKE EVERY EFFORT TO KEEP SEDIMENT LADEN WATER OUT OF THE INFILTRATION BMP'S. IF ANY SEDIMENT LADEN WATER SHALL ENTER THE FACILITY, IMMEDIATE STEPS MUST BE UNDERTAKEN TO REMOVE IT. INCLUDING BUT NOT LIMITED TO CLEANING THE FABRIC AND STONE OR REPLACING IT DEPENDING ON THE SEVERITY OF THE INCURSION.

4. 50' BUFFER AREAS ARE REQUIRED AT THE STREAM CROSSING. ALL CLEARING SOD DISTURBANCES, EXCAVATION AND EQUIPMENT TRAFFIC SHOULD BE AVOIDED AND/OR MINIMIZED. ALL OTHER CONSTRUCTION OPERATIONS SHALL TAKE PLACE OUTSIDE THE BUFFER.

GENERAL NOTES

1. SHOULD ANY MEASURES CONTAINED WITHIN THIS PLAN PROVE INCAPABLE OF ADEQUATELY REMOVING SEDIMENT FROM ON–SITE FLOWS PRIOR TO DISCHARGE OR OF STABILIZING THE SURFACES INVOLVED, ADDITIONAL MEASURES MUST BE IMMEDIATELY IMPLEMENTED BY THE DEVELOPER TO ELIMINATE ALL SUCH PROBLEMS.
2. ONLY LIMITED UPSLOPE DISTURBANCE WILL BE PERMITTED TO PROVIDE ACCESS TO SEDIMENT TRAPS AND INTERCEPTOR CHANNELS FOR GRADING AND ACQUIRING BORROW TO CONSTRUCT THESE CONTROLS.
3. EROSION AND SEDIMENTATION CONTROLS MUST BE CONSTRUCTED, STABILIZED, AND FUNCTIONAL BEFORE GENERAL SITE DISTURBANCE WITHIN THE TRIBUTARY AREAS OF THOSE CONTROLS.
4. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENTATION CONTROLS MUST BE REMOVED. AREAS DISTURBED DURING REMOVAL OF THE CONTROLS MUST BE STABILIZED.
5. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENTATION CONTROLS MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENTATION CONTROLS AFTER EACH STORM EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING, AND RENETTING MUST BE PERFORMED IMMEDIATELY.
6. THE DEVELOPER IS ADVISED TO BECOME THOROUGHLY FAMILIAR WITH THE PROVISIONS OF APPENDIX 64, EROSION CONTROL RULES AND REGULATIONS, TITLE 25, PART I, DEPARTMENT OF ENVIRONMENTAL RESOURCES, SUB–APART C, PROTECTION OF NATURAL RESOURCES, ARTICLE 11, WATER RESOURCES, CHAPTER 102, EROSION CONTROL.
7. A COPY OF THIS PLAN MUST BE POSTED AT THE CONSTRUCTION SITE IMPLEMENTED IN ACCORDANCE WITH STATE LAW.
8. LIMITS OF DISTURBANCE MUST BE CLEARLY MARKED IN THE FIELD PRIOR TO DISTURBANCE. ANY CHANGE OR ENCROACHMENT INTO THESE AREAS WITHOUT CONSERVATION DISTRICT REVIEW AND APPROVAL MAY REQUIRE THE DEVELOPER TO CEASE DISTURBANCE.
9. THE DEVELOPER MUST DEVELOP AND HAVE APPROVED BY THE COUNTY CONSERVATION DISTRICT, A SEPARATE EROSION AND SEDIMENTATION CONTROL PLAN FOR EACH SPOIL, BORROW, OR OTHER WORK AREA NOT DETAILED IN THE APPROVED PLAN, WHETHER LOCATED WITHIN OR OUTSIDE THE CONSTRUCTION LIMITS.
10. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 ABOVE GROUND HEIGHTS OF SILT FENCING.
11. IF ANY SIGNIFICANT CHANGES ARE TO BE MADE TO THE LIMITS OF DISTURBANCE OR TO THE EROSION AND SEDIMENT CONTROL PLAN, THE BUILDER OR LANDOWNER WILL CONTACT THE CHESTER COUNTY CONSERVATION DISTRICT AT 696–5126 FOR ADEQUACY OF THESE CHANGES.
12. ALL AREAS REQUIRING INTERIM OR FINAL STABILIZATION MUST BE ADDRESSED IMMEDIATELY UPON COMPLETION OF DISTURBANCE. AREAS UTILIZING VEGETATIVE STABILIZATION MUST BE SEEDED/PLANTED AND MULCHED IN SUFFICIENT TIME TO GERMINATE BY OCTOBER 15 OF EACH YEAR. SEEDING WILL BE ACCOMPLISHED THROUGH THE USE OF HYDRO–SEEDING TECHNIQUES OR CONVENTIONAL SEEDING AND MULCHING AT A RATE OF 3.0 TONS PER ACRE AS RECOMMENDED IN THE PENN STATE AGRONOMY GUIDE.

CRITICAL STAGES

1. INSTALLATION OF INFILTRATION BED LOT 2 AND THE RAIN GARDEN
2. SNOUTS

MAINTENANCE AND CONSTRUCTION NOTES

A. STORM WATER DETENTION SHALL BE INSPECTED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF PA. ON BEHALF OF THE UNIT OWNER OR RESPONSIBLE ENTITY (INCLUDING) THE TOWNSHIP ENGINEER ON THE FOLLOWING BASIS:
   1. TWO INSPECTIONS PER YEAR FOR THE FIRST TWO YEARS.
   2. ONE INSPECTION PER YEAR FOR THE FOLLOWING THREE YEARS.
   3. ONE INSPECTION EVERY THREE YEARS THEREAFTER.
   4. DURING OR IMMEDIATELY AFTER CESSATION OF A 100–YEAR OR GREATER STORM EVENT.

B. THE PROFESSIONAL ENGINEER CONDUCTING THE INSPECTION SHALL BE REQUIRED TO SUBMIT A WRITTEN REPORT TO THE TOWNSHIP WITHIN ONE (1) MONTH FOLLOWING COMPLETION OF THE INSPECTION. THE REPORT WILL PRESENT DOCUMENTATION AND INCLUDE PICTURES REGARDING THE CONDITION OF THE FACILITY AND RECOMMEND NECESSARY REPAIRS OR REPLACEMENT, IF NEEDED. ANY NEEDED REPAIRS OR REPLACEMENTS SHALL BE IMPLEMENTED BY THE OWNER WITHIN ONE (1) MONTH OF THE REPORT ISSUANCE DATE.

C. THE INLET PROTECTION MUST REMAIN UNTIL ALL DISTURBED AREAS ARE STABILIZED WITH ESTABLISHED GROWTH OF GRASS (MIN. COVERAGE = 70%).

D. THE STORMWATER MANAGEMENT SYSTEM MAY NOT BE DISRUPTED OR MODIFIED IN ANY WAY UNLESS APPROVED BY CHARLESTOWN TOWNSHIP.

E. ALL INLET AND MANHOLES CONTAINING SNOUTS MUST BE INSPECTED AS DEFINED IN NOTE 'A' ABOVE. THE INSPECTOR SHALL ENSURE THE BOTTOM OF THE STRUCTURE IS FREE OF DEBRIS AND THE SNOUT IS NOT DAMAGED. ALL DEBRIS MUST BE REMOVED FROM THE STRUCTURES ON A YEARLY BASIS AND SENT TO AN APPROVED FACILITY.

CLEAN FILL RESPONSIBILITY

THE CONTRACTOR IS RESPONSIBLE TO PERFORM ENVIRONMENTAL DUE DILIGENCE TO DETERMINE THAT IMPORTED FILL MATERIAL MEETS THE PADEP QUALIFICATIONS FOR 'CLEAN FILL'.

CLEAN FILL IS DEFINED AS: UNCONTAMINATED, NON–WATER SOLUBLE, NON–DECOMPOSABLE, INERT, SOLID MATERIAL. THE TERM INCLUDES SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT, AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED. (THE TERM "USED ASPHALT" DOES NOT INCLUDE MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESSED FOR RE–USE.)

ENVIRONMENTAL DUE DILIGENCE IS DEFINED AS: INVESTIGATIVE TECHNIQUES, INCLUDING, BUT NOT LIMITED TO, VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF PROPERTY OWNERSHIP, REVIEW OF PROPERTY HISTORY, SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS. ANALYTICAL TESTING IS NOT A REQUIRED PART OF DUE DILIGENCE UNLESS VISUAL INSPECTION AND/OR REVIEW OF THE PAST LAND USE OF THE PROPERTY INDICATES THAT THE FILL MAY HAVE BEEN SUBJECTED TO A SPILL OR RELEASE OF REGULATED SUBSTANCE IT MUST BE RESTED TO DETERMINE IF IT QUALIFIES AS CLEAN FILL. TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH APPENDIX A OF THE PA DEP'S POLICY "MANAGEMENT OF FILL."

FILL MATERIAL THAT DOES NOT QUALIFY AS CLEAN FILL IS REGULATED FILL. REGULATED FILL IS WASTE AND MUST BE MANAGED IN ACCORDANCE WITH THE PADEP'S MUNICIPAL OR RESIDUAL WASTE REGULATIONS BASED ON 25 PA CODE CHAPTERS 287 RESIDUAL WASTE MANAGEMENT OR 271 MUNICIPAL WASTE MANAGEMENT, WHICHEVER IS APPLICABLE.

THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ANY MATERIAL BROUGHT ON SITE IS CLEAN FILL. FORM FP–001 MUST BE RETAINED BY THE PROPERTY OWNER FOR ANY FILL MATERIAL AFFECTED BY A SPILL OR RELEASE OF REGULATED SUBSTANCE BUT QUALIFYING AS CLEAN FILL DUE TO ANALYTICAL TESTING.

EROSION AND SEDIMENTATION CONTROL NOTES

1. BEFORE INITIATING ANY REVISION TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN OR REVISIONS TO OTHER PLANS WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVED E&S CONTROL PLAN, THE OPERATOR MUST RECEIVE APPROVAL OF THE REVISIONS FROM THE CHESTER COUNTY CONSERVATION DISTRICT. THE OPERATOR SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCLELERATED EOSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGMENT PRACTICES TO ELIMINATE POTENTIAL FOR ACCELERATED EOSION AND/OR SEDIMENT POLLUTION.
2. ALL PUMPING OF SEDIMENT LADEN WATER SHALL BE THROUGH A SEDIMENT CONTROL BMP, SUCH AS A PUMPED WATER FILTER BAG DISCHARGING OVER NON DISTURBED AREAS.
3. THE CONTRACTOR IS ADVISED TO BECOME THOROUGHLY FAMILIAR WITH THE PROVISIONS OF THE APPENDIX 64, EROSION CONTROL RULES AND REGULATIONS, TITLE 25, PART 1, DEPARTMENT OF ENVIRONMENTAL PROTECTION, SUBPART C, PROTECTION OF NATURAL RESOURCES, ARTICLE III, WATER RESOURCES, CHAPTER 102, EROSION CONTROL.
4. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN MUST BE AVAILABLE AT ALL TIMES. THE OPERATOR SHALL ASSURE THAT AN EROSION AND SEDIMENT CONTROL PLAN HAS BEEN PREPARED, APPROVED BY THE CHESTER COUNTY CONSERVATION DISTRICT, AND IS BEING IMPLEMENTED AND MAINTAINED FOR ALL SOIL AND/OR ROCK SPOIL AND BORROW AREAS, REGARDLESS OF THEIR LOCATIONS.
5. THE OPERATOR SHALL REMOVE FROM THE SITE, RECYCLE, OR DISPOSE OF ALL BUILDING MATERIALS AND WASTES IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1 ET SEQ., AND 287.1 ET SEQ. THE CONTRACTOR SHALL NOT ILLEGALLY BURY, DUMP OR DISCHARGE ANY BUILDING MATERIAL OR WASTES AT THE SITE.
6. SHOULD UNFORESEEN EROSIVE CONDITIONS DEVELOP DURING CONSTRUCTION, THE CONTRACTOR SHALL TAKE ACTION TO REMEDY SUCH CONDITIONS AND TO PREVENT DAMAGE TO ADJACENT PROPERTIES AS A RESULT OF INCREASED RUNOFF AND OR SEDIMENT DISPLACEMENT. STOCKPILES OF WOOD CHIPS, HAY BALES, CRUSHED STONE AND OTHER MULCHES SHALL BE HELD IN READINESS TO DEAL IMMEDIATELY WITH EMERGENCY PROBLEMS OR EROSION.
7. PROTECTION TO EXISTING TREES AND SHRUBS SHALL BE TAKEN BY THE CONTRACTOR TO ELIMINATE UNNECESSARY DAMAGE
8. UNTIL THE SITE IS STABILIZED ALL EROSION AND SEDIMENTATION BMP'S MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENTATION BMP'S AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL SITE INSPECTIONS WILL BE DOCUMENTED IN AN INSPECTION LOG KEPT FOR THIS PURPOSE. THE COMPLIANCE ACTIONS AND THE DATE, TIME AND NAME OF THE PERSON CONDUCTING THE INSPECTION. THE INSPECTION LOG WILL BE KEPT ON SITE AT ALL TIMES AND MADE AVAILABLE TO THE DISTRICT UPON REQUEST.
   ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING REMULCHING AND RENETTING, MUST BE PERFORMED IMMEDIATELY. IF EROSION AND SEDIMENTATION BMP'S FAIL TO PERFORM AS EXPECTED REPLACEMENT BMP'S OF MODIFICATIONS OF THOSE INSTALLED WILL BE NEEDED.
   WHERE BMP'S ARE FOUND TO FAIL TO ALLEVIATE EROSION OR SEDIMENT POLLUTION THE PERMITTEE OR CO–PERMITTEE SHALL INCLUDE THE FOLLOWING INFORMATION:
   A. THE LOCATION AND SEVERITY OF THE BMP'S FAILURE AND ANY POLLUTION EVENTS.
   B. ALL STEPS TAKEN TO REDUCE, ELIMINATE AND PREVENT THE RECURRENCE OF THE NON–COMPLIANCE.
   C. THE TIME FRAME TO CORRECT THE NON–COMPLIANCE, INCLUDING THE EXACT DATES WHEN THE ACTIVITY WILL RETURN TO COMPLIANCE.
9. 3:1 SLOPES TO BE STABILIZED W/ EROSION CONTROL BLANKET NORTH AMERICAN S–75.
10. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON–VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS.
11. BEFORE INITIATING ANY REVISION TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN OR REVISIONS TO OTHER PLANS WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVAL E & S CONTROL PLAN, THE OPERATOR MUST RECEIVE APPROVAL OF THE REVISIONS FROM THE CHESTER COUNTY CONSERVATION DISTRICT. THE OPERATOR SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
   THE CONTRACTOR IS RESPONSIBLE TO PERFORM ENVIRONMENTAL DUE DILIGENCE TO DETERMINE THAT IMPORTED FILL MATERIAL MEETS THE PADEP QUALIFICATIONS FOR 'CLEAN FILL'.
   CLEAN FILL IS DEFINED AS: UNCONTAMINATED, NON–WATER SOLUBLE, NON–DECOMPOSABLE, INERT, SOLID MATERIAL. THE TERM INCLUDES SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT, AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED. (THE TERM "USED ASPHALT" DOES NOT INCLUDE MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESSED FOR RE–USE.)
   ENVIRONMENTAL DUE DILIGENCE IS DEFINED AS: INVESTIGATIVE TECHNIQUES, INCLUDING, BUT NOT LIMITED TO, VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF PROPERTY OWNERSHIP, REVIEW OF PROPERTY HISTORY, SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS. ANALYTICAL TESTING IS NOT A REQUIRED PART OF DUE DILIGENCE UNLESS VISUAL INSPECTION AND/OR REVIEW OF THE PAST LAND USE OF THE PROPERTY INDICATES THAT THE FILL MAY HAVE BEEN SUBJECTED TO A SPILL OR RELEASE OF REGULATED SUBSTANCE IT MUST BE RESTED TO DETERMINE IF IT QUALIFIES AS CLEAN FILL. TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH APPENDIX A OF THE PA DEP'S POLICY "MANAGEMENT OF FILL."
   FILL MATERIAL THAT DOES NOT QUALIFY AS CLEAN FILL IS REGULATED FILL. REGULATED FILL IS WASTE AND MUST BE MANAGED IN ACCORDANCE WITH THE PADEP'S MUNICIPAL OR RESIDUAL WASTE REGULATIONS BASED ON 25 PA CODE CHAPTERS 287 RESIDUAL WASTE MANAGEMENT OR 271 MUNICIPAL WASTE MANAGEMENT, WHICHEVER IS APPLICABLE.
13. SEDIMENT TRACKED ONTO ANY ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE BY THE END OF EACH WORKDAY OR AS DIRECTED BY THE MUNICIPALITY OR THE CONSERVATION DISTRICT AND DISPOSED IN A MANNER DESCRIBED IN THIS PLAN, IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED OR SWEPT INTO ANY ROAD SIDE DITCH, STORM SEWER OR SURFACE WATER.
14. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.
15. UPON REQUEST, THE PERMIT HOLDER AND/OR HIS CONTRACTOR SHALL PROVIDE AN AS–BUILT FOR ANY SEDIMENT BASIN OR TRAP TO THE MUNICIPAL INSPECTOR, LOCAL CONSERVATION DISTRICT OR DEP.
16. UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY THAT WILL EXCEED 4 DAYS, OR ANY STAGE THEREOF, THE PROJECT SITE SHALL BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILZATION.
17. CONSTRUCTION OF THE SITE MUST BE COMPLETED IN A MANNER TO MINIMIZE SOIL COMPACTION IN PROPOSED GRASS AREAS.
18. ALL EXISTING DRAINAGE FEATURES MUST BE PROTECTED AND NOT DISTURBED IN ANY WAY.
19. THE PROPOSED E & S BMP'S HAVE BEEN PROVIDED TO PREVENT SEDIMENT DISCHARGE FROM THE SITE AND TO ENSURE AN INCREASE IN THE RATE OF RUNOFF DOES NOT OCCUR DURING CONSTRUCTION.
20. THE SITE DEVELOPMENT AND CONSTRUCTION SEQUENCE HAS BEEN GENERATED TO MINIMIZE THE EXTENT AND DURATION OF EARTH DISTURBANCE.
21. THE E&S DESIGN HAS BEEN COMPLETED IN A MANNER TO PREVENT PONDING FOR EXTENDED PERIODS OF TIME TO AVOID THERMAL ISSUES.
22. THE NPDES BOUNDARY IS LIMITED TO THE OUTER PERIMETER OF THE SITE AREAS WITHIN THE LIMIT OF DISTURBANCE THAT ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL INCLUDING OFFSITE FACILITIES SUCH AS UTILITIES AND ROADWAY IMPROVEMENTS.

LEGEND

- 430 — EXISTING INDEX CONTOUR
- EXISTING INTERIOR CONTOUR
- 432 — PROPOSED CONTOUR
- 94.66 + — PROPOSED SPOT ELEVATION
- PROPOSED INLET
- PROPOSED STORM SEWER PIPE
- W — PROPOSED WATER LINE
- W — EXISTING WATER LINE
- PS — PROPOSED PRESSURE SEWER
- SOILS LINE
- EXISTING TREE LINE
- EXISTING WETLANDS
- EDGE OF PAVING
- RIGHT OF WAY LINE
- NATURALLY OCCURRING PRECAUTIONARY SLOPES
- 18" MAPLE — EXISTING TREE
- PROPOSED CURB
- FENCE
- PROPOSED WALL
- (1) — PROPOSED LOT NUMBER

EROSION & SEDIMENTATION CONTROL LEGEND

- LIMIT OF DISTURBANCE
- CONSTRUCTION FENCE
- RCE — ROCK CONSTR. ENTRANCE
- TSSP — TOPSOIL STOCKPILE
- INLET PROTECTION
- SF30 — 30" SILT FENCE
- SSF — SUPER SILT FENCE
- EROSION CONTROL BLANKET
- TREE PROTECTION FENCE
- CONSTRUCTION FENCE

EROSION & SEDIMENTATION CONTROL PLAN

STABILIZATION NOTE:

AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON–VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS. IMMEDIATELY AFTER EARTH DISTURBANCE ACTITIVITES CEASE, THE OPERATOR SHALL STABILIZE ANY AREAS DISTURBED BY THE ACTIVITIES. DURING NON–GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE SPECIFIED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY VEGETATIVE STABILIZATION SPECIFICATIONS. DISTURBED AREAS WHICH ARE AT FINISHED GRADE OR WHICH WILL NOT BE REDISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.

1. Should unforeseen erosive conditions develop during construction, the contractor shall take action to remedy such conditions and to prevent damage to adjacent properties as a result of increased runoff and or sediment displacement. Stockpiles of wood chips, hay bales, crushed stone and other mulches shall be held in readiness to deal immediately with emergency problems of erosion.
2. The contractor is advised to become thoroughly familiar with the provision of Appendix 64, Erosion Control Rules and Regulations, Title 25, Part 1, Department of Environmental Resources, Sub–Part C, Protection of Natural Resources, Article III, Water Resources, Chapter 102, Erosion Control.
3. Protection to existing trees and shrubs shall be taken by the contractor to eliminate unnecessary damage.

A COPY OF THESE EROSION AND SEDIMENTATION CONTROL PLANS MUST BE POSTED AT THE CONSTRUCTION SITE IN ACCORDANCE WITH STATE LAW.

WATERSHED: UNNAMED TRIBUTARY OF PLUM RUN WWF MH

NOTE;
ALL SLOPES GREATER THAN 3:1 MUST UTILIZE ECB's.

30 0 30 60 90 120 FEET
GRAPHIC SCALE

ACT 287 SERIAL NUMBER 20180862796
Edward B. Walsh & Associates, Inc. does not guarantee the accuracy of the locations for existing subsurface utility lines, structures, etc. shown on the plans, nor does E. B. Walsh & Assoc., Inc. guarantee that all subsurface utility lines, structures, etc. are shown.

Contractor shall verify the location and elevations of all subsurface utility lines, structures, etc. before the start of work, by calling the Pennsylvania One Call System at 1–800–242–1776.

UTILITIES NOTIFIED

VERIZON PENNSYLVANIA, INC.
AQUA PENNSYLVANIA, INC.
COMCAST CABLE COMMUNICATIONS, INC.
WESTTOWN TOWNSHIP
PECO ENERGY

UPI 67–4F–73

1 7–26–18 REV. PER McCORMICK TAYLOR REVIEW OF JULY 11, 2018

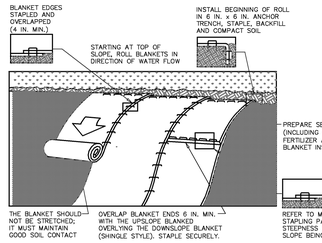
PLAN OF SUBDIVISION
OF
UPI 67–4F–73

WESTTOWN TOWNSHIP — CHESTER COUNTY, PA.

Edward B. Walsh & Associates, Inc.
CIVIL ENGINEERS & LAND SURVEYORS
LIONVILLE PROFESSIONAL CENTER
125 Dowlin Forge Rd.
Exton, Pennsylvania 19341
Phone: 610–903–0060
Fax: 610–903–0080

Project–	4062
Date–	5–07–18
Scale–	1"= 30'
Drawn–	RBL
Checked–	AE
Sheet–	4 OF 8

Plotted: 7/26/2018 File: F:\JB\4062\4062–B5 Cahill sub.pro



NOTES:

SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.

PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.

SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.

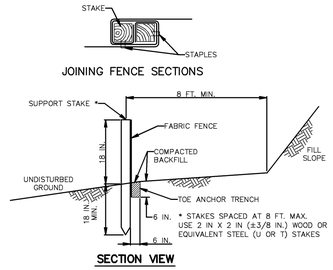
BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.

THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.

STANDARD CONSTRUCTION DETAIL #11-1
EROSION CONTROL BLANKET INSTALLATION

NOT TO SCALE



NOTES:

FABRIC SHALL HAVE THE MINIMUM PROPERTIES AS SHOWN IN TABLE 4.3 OF THE PA DEP EROSION CONTROL MANUAL.

FABRIC WIDTH SHALL BE 30 IN. MINIMUM. STAKES SHALL BE HARDWOOD OR EQUIVALENT STEEL (U OR T) STAKES.

SILT FENCE SHALL BE PLACED AT LEVEL EXISTING GRADE, BOTH ENDS OF THE FENCE SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.

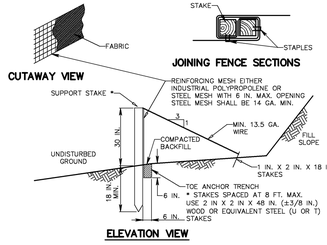
SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH HALF THE ABOVE GROUND HEIGHT OF THE FENCE.

ANY SECTION OF SILT FENCE WHICH HAS BEEN UNDERMINED OR TOPPED SHALL BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET (STANDARD CONSTRUCTION DETAIL # 4-6).

FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.

STANDARD CONSTRUCTION DETAIL #4-7
STANDARD SILT FENCE (18" HIGH)

NOT TO SCALE



NOTES:

FABRIC SHALL HAVE THE MINIMUM PROPERTIES AS SHOWN IN TABLE 4.3 OF THE PA DEP EROSION CONTROL MANUAL.

FABRIC WIDTH SHALL BE 30 IN. MINIMUM. STAKES SHALL BE HARDWOOD OR EQUIVALENT STEEL (U OR T) STAKES.

INSTALLATION SEQUENCE:

1. PREPARE SURFACE BY REMOVING ANY DEBRIS AND ENSURING A SMOOTH CONSISTENT SURFACE IS PROVIDED.
2. SILT FENCE SHALL BE PLACED AT LEVEL EXISTING GRADE, BOTH ENDS OF THE FENCE SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.
3. FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.

MAINTENANCE NOTES:

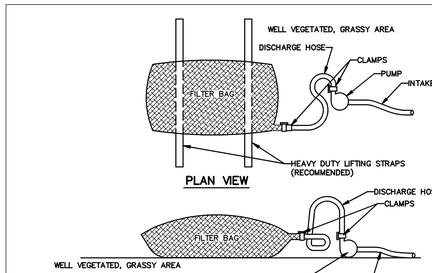
1. SILT FENCE SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED FENCE SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.
2. ANY SECTION OF SILT FENCE WHICH HAS BEEN UNDERMINED OR TOPPED SHALL BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET (STANDARD CONSTRUCTION DETAIL # 4-6).
3. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.

INSPECTIONS:

INSPECTIONS MUST BE PERFORMED AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL SITE INSPECTIONS WILL BE DOCUMENTED IN AN INSPECTION LOG KEPT FOR THIS PURPOSE. THE COMPLIANCE ACTIONS AND THE DATE, TIME AND NAME OF THE PERSON CONDUCTING THE INSPECTION. THE INSPECTION LOG WILL BE KEPT ON SITE AT ALL TIMES AND MADE AVAILABLE TO THE DISTRICT UPON REQUEST.

STANDARD CONSTRUCTION DETAIL #4-8
REINFORCED SILT FENCE (30" HIGH)

NOT TO SCALE



NOTES:

LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D-4884	60 LB/IN
GRAB TENSILE	ASTM D-4632	205 LB
PUNCTURE	ASTM D-4833	110 LB
MULLEN BURST	ASTM D-3786	350 PSI
UV RESISTANCE	ASTM D-4355	70%
AOS % RETAINED	ASTM D-4751	80 SIEVE

A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.

BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5% FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.

NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.

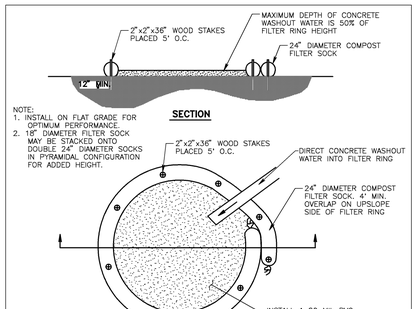
THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.

FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

FILTER SOCK SHALL BE INSTALLED BELOW FILTER BAG.

STANDARD CONSTRUCTION DETAIL #3-16
PUMPED WATER FILTER BAG

NOT TO SCALE



INSTALLATION SEQUENCE:

1. PREPARE SURFACE BY REMOVING ANY DEBRIS AND ENSURING A SMOOTH CONSISTENT SURFACE IS PROVIDED.
2. INSTALL PVC GEOMEMBRANE IN WASHOUT AREA.
3. COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL OVERLAP TO FORM A CIRCLE AS SHOWN.
4. UPON REMOVAL OF THE WASHOUT AREA, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.
5. ALL CONCRETE AND THE GEOMEMBRANE MUST BE REMOVED FROM THE SITE AND DISPOSED OF AT AN APPROVED DEP FACILITY.

MAINTENANCE NOTES:

WASHOUT AREA SHALL BE INSPECTED WEEKLY. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.

INSPECTIONS:

INSPECTIONS MUST BE PERFORMED ON A WEEKLY BASIS. ALL SITE INSPECTIONS WILL BE DOCUMENTED IN AN INSPECTION LOG KEPT FOR THIS PURPOSE. THE COMPLIANCE ACTIONS AND THE DATE, TIME AND NAME OF THE PERSON CONDUCTING THE INSPECTION. THE INSPECTION LOG WILL BE KEPT ON SITE AT ALL TIMES AND MADE AVAILABLE TO THE DISTRICT UPON REQUEST.

CONCRETE WASHOUT AREA DETAIL

N.T.S.

* MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE

NOTES:

REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE.

RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.

MOUNTABLE BERM SHALL BE INSTALLED WHEREVER OPTIONAL CULVERT PIPE IS USED AND PROPER PIPE COVER AS SPECIFIED BY MANUFACTURER IS NOT OTHERWISE PROVIDED. PIPE SHALL BE SIZED APPROPRIATELY FOR SIZE OF DITCH BEING CROSSED.

INSTALLATION SEQUENCE:

1. PREPARE SURFACE BY REMOVING ANY DEBRIS AND TOPSOIL.
2. EXTEND ROCK OVER FULL WIDTH OF ENTRANCE.
3. UPON REMOVAL OF CONSTRUCTION ENTRANCE, REMOVE STONE AS NEEDED AND STABILIZE ACCORDINGLY DEPENDENT ON THE PERMANENT USE OF THE AREA.

MAINTENANCE NOTES:

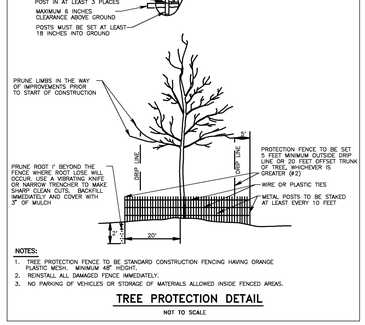
MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50 FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

INSPECTIONS:

INSPECTIONS MUST BE PERFORMED AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL SITE INSPECTIONS WILL BE DOCUMENTED IN AN INSPECTION LOG KEPT FOR THIS PURPOSE. THE COMPLIANCE ACTIONS AND THE DATE, TIME AND NAME OF THE PERSON CONDUCTING THE INSPECTION. THE INSPECTION LOG WILL BE KEPT ON SITE AT ALL TIMES AND MADE AVAILABLE TO THE DISTRICT UPON REQUEST.

STANDARD CONSTRUCTION DETAIL #3-1
ROCK CONSTRUCTION ENTRANCE

NOT TO SCALE

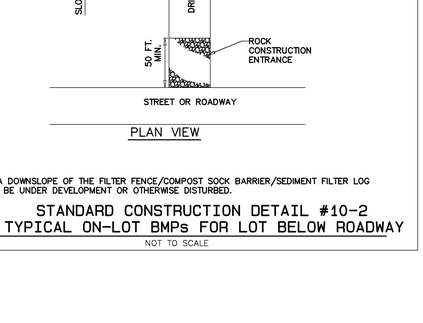


NOTES:

1. TREE PROTECTION FENCE TO BE STANDARD CONSTRUCTION FENCING HAVING ORANGE PLASTIC MESH. MINIMUM 48" HEIGHT.
2. REINSTALL ALL DAMAGED FENCE IMMEDIATELY.
3. NO PARKING OF VEHICLES OR STORAGE OF MATERIALS ALLOWED INSIDE FENCED AREAS.

TREE PROTECTION DETAIL

NOT TO SCALE



NOTES:

THE AREA DOWNSLOPE OF THE FILTER FENCE/COMPOST SOCK BARRIER/SEDIMENT FILTER LOG MAY NOT BE UNDER DEVELOPMENT OR OTHERWISE DISTURBED.

STANDARD CONSTRUCTION DETAIL #10-2
TYPICAL ON-LOT BMPs FOR LOT BELOW ROADWAY

NOT TO SCALE

SEED MIX SPECIFICATIONS

Grass Seed: All seed shall be fresh, and new crop seed shall be labeled in accordance with the U.S. Department of Agriculture's Rules and Regulations under the Federal Seed Act in effect on the date of invitation for bids. All seed shall be furnished in sealed standard containers, bearing the warranty of the supplier and certifying as to the kind, percent by weight, purity and germination. The grass seed shall contain the percentages of varieties and shall be of the quality indicated by the percentages of purity and germination indicated on the list furnished with the applicable plan. Seed mix shall be as specified. Spread at the rate of 4 lbs. per 1000 sq. ft. minimum for slopes 3:1 if greater, use 5 lbs. per 1000 sq. feet.

PERMANENT SEEDING DATES MARCH 1 TO JUNE 1, AUGUST 1 TO OCTOBER 1

GRASS SEED

NAME	PARTS BY WEIGHT	%PURITY	GERMINATION
Kentucky Blue Grass Varieties Pennstar or Pennfine	35%	95%	85%
Perennial Ryegrass	35%	95%	90%
Pennlawn Fescue	15%	95%	85%
Annual Ryegrass	15%	90%	80%

Mulch: Shall be hay which is free of weeds and seeds, not moldy or rotten, and shall be applied at all disturbed areas at a rate of 3 tons per acre.

Kentucky Bluegrass Sod (if called for)
Sod shall be grown under supervision of the Bureau of Plant Industry Pennsylvania Department of Agriculture or shall be composed of only Blue Tag Certified Seed.

Temporary Seeding Dates: Anytime

Temporary Seeding: Shall be annual ryegrass at 40 lbs. per acre. Site preparation -- apply 1 ton of agricultural grade limestone per acre plus fertilizer at the rate of 50-50-50 per acre and work in where possible. After seeding, mulch with hay or straw at a rate of 3 tons per acre.

Hydroseeding: Shall be lime, fertilizer, grass seeds, legume seeds and inculant mixed with water and applied as slurry, at a rate of 1,000 gallons per acre.

Fertilizer: at rate of 50-100-100 per acre.

Inoculant: use 5 times rate recommended on the package when seeding with a hydroseeder.

PERMANENT SEEDING:
For permanent seeding, soil supplements shall be applied to areas to be seeded as follows: 10-20-20 fertilizer shall be applied to 25 LBS/1000 Sq. Ft. pulverized dolomite limestone at 90 LBS/1000 Sq. Ft.

SEEDING AND MULCH NOTES

1. Any undisturbed area on which activity has ceased must be seeded and mulched immediately. During non-germinating periods, mulch must be applied at the recommended rates. Disturbed areas which are not at finished grade and which will be redisturbed within 1 year may be seeded and mulched with a quick growing temporary seeding mixture and mulch. Disturbed areas which are either at finished grade or will not be redisturbed within 1 year must be seeded and mulched with a permanent seed mixture and mulch.

2. Diversions, channels, sedimentation basins, sediment traps, and stockpiles must be seeded and mulched immediately.

3. Hay or straw mulch must be applied at rates of at least 3.0 tons per acre.

4. Graded areas are to be temporarily seeded and mulched immediately following earth moving procedures. Seed shall be annual rye grass applied at the rate of 3 lbs. per 1000 sq. ft.

5. Establish permanent seeding as soon as possible after final grading is complete. Permanent seeding shall be 30% Pennlawn Red Fescue, 10% Pennfine Perennial Ryegrass and 60% Kentucky Bluegrass applied at the rate of 3.5 lbs. per 1000 sq. ft.

EROSION & SEDIMENTATION CONTROL DETAILS

1	7-26-18 REV. PER McCORMICK TAYLOR REVIEW OF JULY 11, 2018

PLAN OF SUBDIVISION
FOR
PARCEL 67 -4F -73

WESTTOWN TOWNSHIP — CHESTER COUNTY, PA.

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125 Dowlin Forge Rd.
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Phone: 610-903-0060
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Project-	4062
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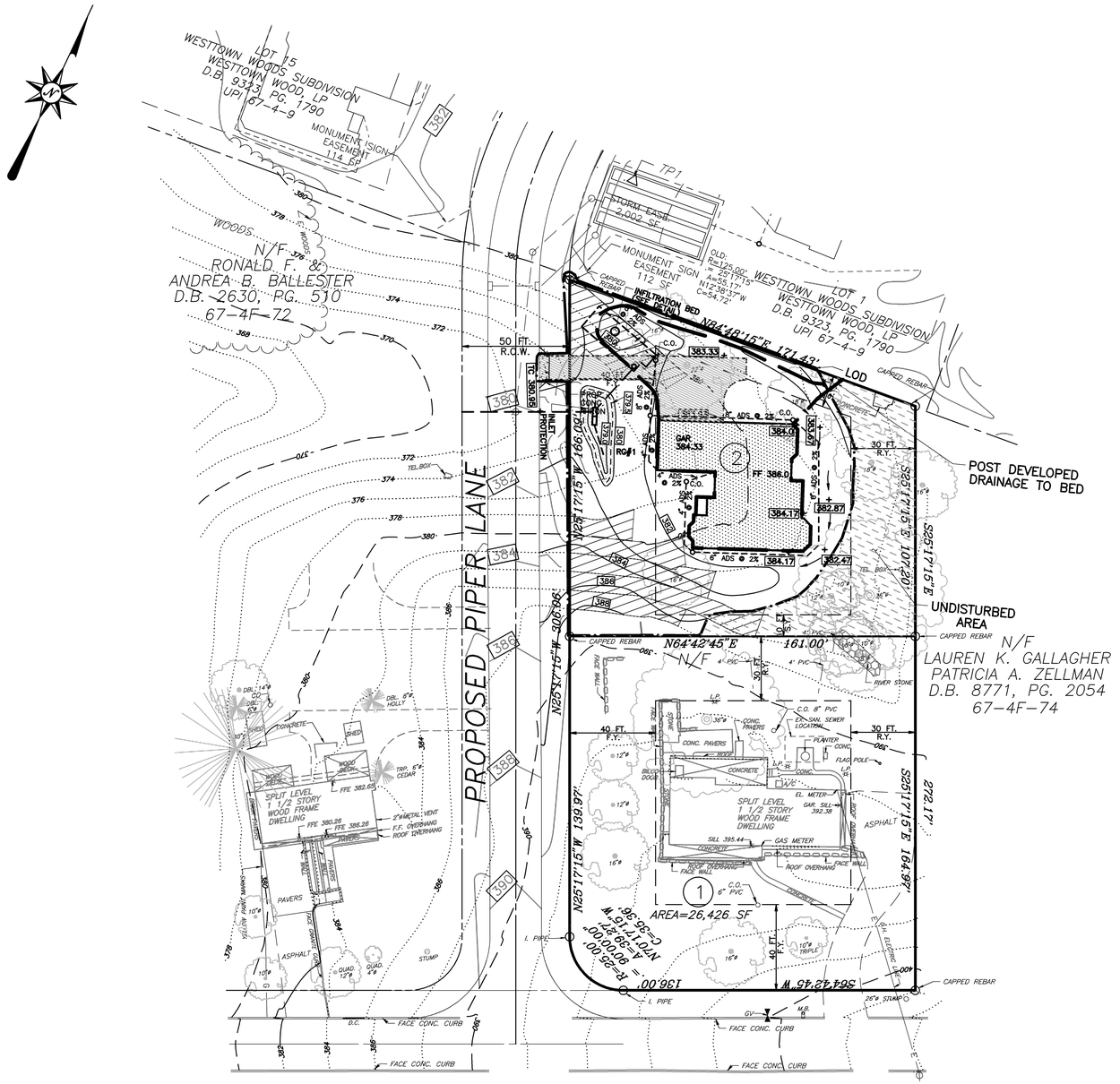
Sheet-	5 OF 8

Plotted: 7/26/2018 | *File:* F:\JB\4062\4062-B5 Cahill sub.pro



SOILS SERIES AND MAP SYMBOL	DEPTH TO— SEASONAL HIGH WATER TABLE (FT.)	DEPTH TO— BEDROCK (FT)	PERMEABILITY (MICROMETER/HR.)	AVAILABLE MOISTURE CAPACITY (IN. PER IN OF SOIL DEPTH)	REACTION PH	SUITABILITY AS SOURCE OF TOPSOIL	SUITABILITY AS SOURCE OF ROAD FILL
Gladstone GdB GdC	5+	5+	9.17 22.30	.14 .14	6.3 6.1	Fair	Fair

SOILS CLASSIFICATION

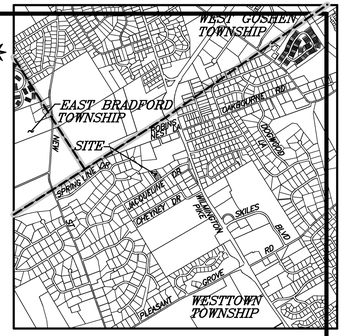
GdC GLADSTONE GRAVELLY LOAM, 8 TO 15 PERCENT SLOPES

UrLD URBAN LAND–GLADSTONE COMPLEX, 5 TO 25 PERCENT SLOPES

SOIL NOTE

1. The site contains mapped Worsham Soils that have been tested and found not to present to the extent mapped. The Worsham Soils are limited to the shaded area depicted on the plan.

2. If any wet or unsuitable soils are encountered through the course of construction. They shall not be used to construct roadways, basin berms or other structural fill.



LOCATION MAP
SCALE: 1"=2000'

LEGEND

- 430 — EXISTING INDEX CONTOUR
- EXISTING INTERIOR CONTOUR
- 438 — PROPOSED CONTOUR
- 94.68 + PROPOSED SPOT ELEVATION
- PROPOSED INLET
- PROPOSED STORM SEWER PIPE
- W — PROPOSED WATER LINE
- W — EXISTING WATER LINE
- PS — PROPOSED PRESSURE SEWER
- SOILS LINE
- EXISTING TREE LINE
- EXISTING WETLANDS
- EDGE OF PAVING
- RIGHT OF WAY LINE
- NATURALLY OCCURRING PRECAUTIONARY SLOPES
- 18" MAPLE — EXISTING TREE
- PROPOSED CURB
- FENCE
- PROPOSED WALL
- 1 — PROPOSED LOT NUMBER
- LIMIT OF DISTURBANCE
- POST DEV. DRAINAGE LINE
- UNDISTURBED AREA

ENGINEERS CERTIFICATION

I, THEODORE GACOMIS, P.E., ON THIS DATE _____ 2018, HEREBY CERTIFY THAT THE STORMWATER MANAGEMENT DESIGN AND SYSTEM AS PROVIDED MEETS ALL DESIGN STANDARDS AND CRITERIA OF WESTTOWN TOWNSHIP ORDINANCE, STORMWATER MANAGEMENT ORDINANCE.

PROPERTY OWNERS CERTIFICATION

THE LANDOWNER ACKNOWLEDGES THAT, PER THE PROVISIONS OF THE WESTTOWN TOWNSHIP STORMWATER MANAGEMENT ORDINANCE, IT IS UNLAWFUL TO MODIFY, REMOVE, FILL, LANDSCAPE, ALTER OR IMPAIR THE EFFECTIVENESS OF, OR PLACE ANY STRUCTURE, OTHER VEGETATION, YARD WASTE, BRUSH CUTTINGS, OR OTHER WASTE OR DEBRIS INTO ANY PERMANENT STORMWATER MANAGEMENT BMP OR CONVEYANCE DESCRIBED IN THIS O&M PLAN OR TO ALLOW THE BMP CONVEYANCE TO EXIST IN A CONDITION WHICH DOES NOT CONFORM TO THIS O&M PLAN, WITHOUT WRITTEN APPROVAL FROM THE TOWNSHIP. THE INDIVIDUAL LOT OWNER, HIS/HER HEIRS, ASSIGNS OR SUCCESSORS, SHALL BE RESPONSIBLE FOR THE PERPETUAL MAINTENANCE OF THE SAID FACILITIES. THE TOWNSHIP MAINTAINS THE RIGHT, BUT NOT THE RESPONSIBILITY, TO ENTER SAID PREMISES TO OBSERVE OR INSPECT THE FUNCTIONING OF THESE FACILITIES. IF THE PROPERTY OWNER, HIS/HER HEIRS, ASSIGNS OR SUCCESSORS FAILS IN ANY WAY TO MAINTAIN THE SAID FACILITIES OR CAUSES THESE FACILITIES TO BE ALTERED OR REMOVED, UPON WRITTEN NOTIFICATION BY THE TOWNSHIP, THE DEFECTS SHALL SHALL PROMPTLY BE CORRECTED BY PROPERTY OWNER. UPON THE OWNER'S FAILURE TO CORRECT THE DEFECTS WITHIN TIME SPECIFIED BY THE TOWNSHIP, THE OWNER, HIS/HER HEIRS, ASSIGNS OR SUCCESSORS DO HEREBY AUTHORIZE THE TOWNSHIP AND/OR THEIR CONTRACTOR TO ENTER UPON THE SAID PROPERTY AND CAUSE THE REPAIR, MAINTENANCE, AND/OR CORRECTION TO BE MADE. A LIEN MAY BE FILED AGAINST THE PROPERTY FOR THE COST OF ALL CORRECTIONS INCULDING APPLICABLE ENGINEERING AND/OR ATTORNEY'S FEES. THE TOWNSHIP IS UNDER NO OBLIGATION TO TAKE ANY ACTION. ALL SUBSEQUENT REAL ESTATE TRANSACTIONS, THE EXISTENCE OF THESE STORMWATER FACILITIES AND THEIR MAINTENANCE RESPONSIBILITIES SHALL BE DISCLOSED TO THE NEW OWNERS. ANY REVISION TO THE APPROVED SWM SITE PLAN SHALL BE SUBMITTED TO THE TOWNSHIP ALONG WITH AN EROSION & SEDIMENTATION CONTROL PLAN FOR REVIEW AND APPROVAL.

_____
Owner

30 0 30 60 90 120 FEET
GRAPHIC SCALE

ACT 287 SERIAL NUMBER 20180862796
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WESTTOWN TOWNSHIP
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STORMWATER MANAGEMENT PLAN

1 7–26–18 REV. PER McCORMICK TAYLOR REVIEW OF JULY 11, 2018

PLAN OF SUBDIVISION
OF
UPI 67–4F–73

WESTTOWN TOWNSHIP — CHESTER COUNTY, PA.

Edward B. Walsh & Associates, Inc.
CIVIL ENGINEERS & LAND SURVEYORS
LIONVILLE PROFESSIONAL CENTER
125 Dowlin Forge Rd.
Exton, Pennsylvania 19341
Phone: 610–903–0060
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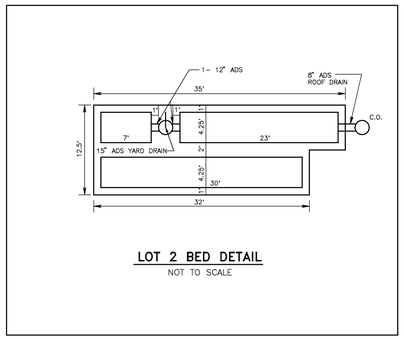
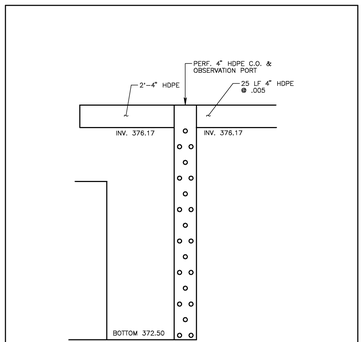
Project–	4062
Date–	5–07–18
Scale–	1"=30'
Drawn–	RBL
Checked–	AE
Sheet–	6 OF 8

Plotted: 7/26/2018 File: F:\JB\4062\4062–B5 Cahill sub.pro



LOT 2 BED DETAIL

NOT TO SCALE



LOT 2 BED OUTLET DETAIL

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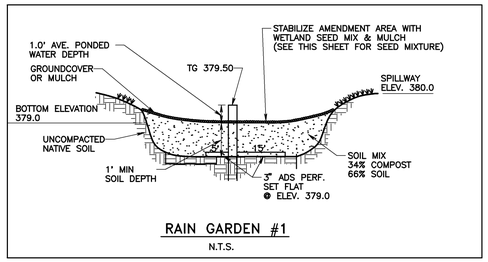


RAIN GARDEN #1

N.T.S.

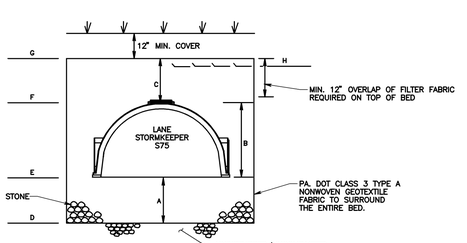
RAIN GARDEN CONSTRUCTION SEQUENCE

1. DELINEATE THE LIMIT OF THE RAIN GARDEN AS DEPICTED ON THE PLAN.
2. EXCAVATE THE SOIL WITH THE LIMITS OF THE RAIN GARDEN AND RIP THE SOIL AT THE BOTTOM OF THE EXCAVATED AREA WITH A RUBBER TIRED MACHINE TO LOOSEN THE SOIL.
3. BACKFILL THE EXCAVATED AREA WITH SOIL MIX. INSTALL THE SOIL IN 1 FT. LIFTS. TILL THE SOIL AFTER EACH LIFT.
4. AFTER SOIL PLACEMENT AND TILLING ARE COMPLETE, HAND RAKE AND INSTALL THE WETLAND SEED MIX AND LANDSCAPING IN ACCORDANCE WITH THE RAIN GARDEN LANDSCAPE PLAN AND MULCH ACCORDINGLY.
5. EVERY EFFORT MUST BE TAKEN TO MINIMIZE COPMPACTION WITH THE RAIN GARDEN AREAS.

POST CONSTRUCTION MAINTENANCE

RAIN GARDEN

A. WHILE VEGETATION IS BEING ESTABLISHED PRUNNING AND WEEDING MAY BE NECESSARY.
B. DETRITUS MUST BE REMOVED EVERY YEAR. PERENNIAL PLANTINGS MAY BE CUT DOWN AT THE END OF THE GROWING SEASON.
C. THE RAIN GARDEN MUST BE INSPECTED TWO(2) TIMES PER YEAR FOR SEDIMENT, SEDIMENT BUILD UP, EROSION AND VEGETATIVE CONDITIONS. ADDITIONALLY, TREES AND SHRUBS MUST BE INSPECTED TO EVALUATE THEIR HEALTH. IF FOUND TO BE UNHEALTHY THEY SHOULD BE REMOVED AND REPLACED.
D. ANY DEBRIS OR SEDIMENT BUILDUP MUST BE REMOVED AND SENT TO A DEP APPROVED FACILITY. IF DEWATERING IS NECESSARY THE WATER MUST BE DISCHARGED INTO A DEP APPROVED DEWATERING FACILITY. (DIRT BAG.)
E. MULCH SHOULD BE RE-SPREAD WHEN EROSION IS EVIDENT AND REPLENISHED AS NEEDED.
F. IF THE SYSTEM DOES NOT DRAIN FOR 72 HOURS FOLLOWING A RAIN EVENT IT IS CONSIDERED TO HAVE FAILED. THE BOTTOM MUST BE RE-TILLED TO LOOSEN THE SOIL. FOLLOWING THE TILLING THE AREAS MUST BE RE-TILLED TO LOOSEN THE SOIL. FOLLOWING THE TILLING AREAS MUST BE RE-SEEDED WITH THE SEED MIX SPECIFIED FOR THE RAIN GARDEN AREA.



	A STONE UNDER PIPE (FT)	B RECHARGER CHAMBER HEIGHT (IN)	C TOP PIPE TO TOP BED (FT)	D BOTTOM BED	E BOTTOM PIPE	F TOP PIPE	G TOP OF BED	H 100 YR ELEV.	# OF ROWS	LENGTH OF ROWS (FT)	TOTAL LINER FEET
BED 1	0.50'	2.5'	1.0'	372.50	373.0	375.50	376.50	376.0	2	30'	60'

Rain Garden Seed Mixture: ERNMX-120.

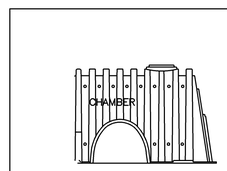
Botanical Name	Common Name
Carex vulpinoidea	Fox Sedge
Elymus virginicus	Virginia Wild Rye
Verbena hastata	Blue Vervain
Carex crinita	Fringed (Nodding) Sedge
Carex lurida	Lurid (Shallow) Sedge
Glyceria grandis	American Mannagrass
Glyceria striata	Fowl Mannagrass
Juncus effusus	Soft Rush
Scirpus cyperinus	Wool Grass
Sparganium americanum	Eastern Lesser Bur Reed
Sparganium eurycarpum	Giant Bur Reed
Scirpus atrovirens	Green Bulrush
Carex comosa	Cosmos (Bristly) Sedge
Carex gynandra	Nodding Sedge
Carex lupulina	Hop Sedge
Glyceria canadensis	Rattlesnake Grass

Seeding rate: 15 bulk lbs per acre or 1/3-1/2 lbs per 1,000 ft2.

SEEDING SHALL TAKE PLACE BETWEEN APRIL 1 AND MAY 15 OR BETWEEN SEPT. 1 AND OCT. 15.

ERNST CONSERVATION SEED
9006 MERCER PIKE
MEADVILLE, PA 16335
www.ernestseed.com

1-800-873-3321 Fax (814) 336-5191



BED #	INVERT OF OUTLET PIPE	OUTLET PIPE DIA (IN)	OUTLET PIPE LENGTH (FT)	SLOPE OF OUTLET PIPE	DOWNSTREAM INVERT OF OUTLET PIPE
1	376.17	4"	25'	.005	376.04

RAIN GARDEN CONSTRUCTION SEQUENCE

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3. BACKFILL THE EXCAVATED AREA WITH SOIL MIX. INSTALL THE SOIL IN 1 FT. LIFTS. TILL THE SOIL AFTER EACH LIFT.
4. AFTER SOIL PLACEMENT AND TILLING ARE COMPLETE, HAND RAKE AND INSTALL THE WETLAND SEED MIX AND LANDSCAPING IN ACCORDANCE WITH THE RAIN GARDEN LANDSCAPE PLAN AND MULCH ACCORDINGLY.
5. EVERY EFFORT MUST BE TAKEN TO MINIMIZE COPMPACTION WITH THE RAIN GARDEN AREAS.

POST CONSTRUCTION MAINTENANCE

RAIN GARDEN

A. WHILE VEGETATION IS BEING ESTABLISHED PRUNNING AND WEEDING MAY BE NECESSARY.
B. DETRITUS MUST BE REMOVED EVERY YEAR. PERENNIAL PLANTINGS MAY BE CUT DOWN AT THE END OF THE GROWING SEASON.
C. THE RAIN GARDEN MUST BE INSPECTED TWO(2) TIMES PER YEAR FOR SEDIMENT, SEDIMENT BUILD UP, EROSION AND VEGETATIVE CONDITIONS. ADDITIONALLY, TREES AND SHRUBS MUST BE INSPECTED TO EVALUATE THEIR HEALTH. IF FOUND TO BE UNHEALTHY THEY SHOULD BE REMOVED AND REPLACED.
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E. MULCH SHOULD BE RE-SPREAD WHEN EROSION IS EVIDENT AND REPLENISHED AS NEEDED.
F. IF THE SYSTEM DOES NOT DRAIN FOR 72 HOURS FOLLOWING A RAIN EVENT IT IS CONSIDERED TO HAVE FAILED. THE BOTTOM MUST BE RE-TILLED TO LOOSEN THE SOIL. FOLLOWING THE TILLING THE AREAS MUST BE RE-TILLED TO LOOSEN THE SOIL. FOLLOWING THE TILLING AREAS MUST BE RE-SEEDED WITH THE SEED MIX SPECIFIED FOR THE RAIN GARDEN AREA.

THE PCSWM PLAN/DESIGN PROVIDES THE FOLLOWING:

1. PRESERVE THE INTEGRITY OF STREAM CHANNELS AND MAINTAIN AND PROTECT THE PHYSICAL, BIOLOGICAL AND CHEMICAL QUALITIES OF THE RECEIVING STREAM.
2. PREVENT AN INCREASE IN THE RATE OF STORMWATER RUNOFF.
3. MINIMIZE ANY INCREASE IN STORMWATER RUNOFF.
4. MINIMIZE IMPERVIOUS AREAS.
5. MAXIMIZE THE PROTECTION OF EXISTING DRAINAGE FEATURES AND EXISTING VEGETATION.
6. MINIMIZE LAND CLEARING AND GRADING.
7. MINIMIZE SOIL COMPACTION.
8. UTILIZES BMP's THAT PREVENT OR MINIMIZE CHANGES IN STORMWATER RUNOFF.
9. UTILIZES BMP's TO PREVENT THERMAL IMPACTS WITH THE STORMWATER DISCHARGE.

PCSM SHORT TERM OPERATIONS AND MAINTENANCE REQUIREMENTS

UNTIL THE PERMITTEE OR CO-PERMITTEE HAS RECEIVED WRITTEN APPROVAL OF A NOTICE OF TEMINATION, THE PERMITTEE OR CO-PERMITTEE WILL REMAIN RESPONSIBLE FOR COMPLIANCE WITH THE PERMIT TERMS AND CONDITIONS INCLUDING LONG-TERM OPERATION AND MAINTENANCE OF ALL PCSM BMPs ON THE PROJECT SITE AND IS RESPONSIBLE FOR VIOLATIONS OCCURING ON THE PROJECT SITE.

THE PERMITTEE OR CO-PERMITTEE SHALL BE RESPONSIBLE FOR LONG-TERM OPERATION AND MAINTENANCE OF PCSM BMPs UNLESS A DIFFERENT PERSON IS IDENTIFIED IN THE NOTICE OF TERMINATION AND HAS AGREED TO LONG-TERM OPERATION AND MAINTENANCE OF PCSM BMPs.

FOR ANY PROPERTY CONTAINING A PCSM BMP, THE PERMITTEE OR CO-PERMITTEE SHALL RECORD AN INSTRUMENT WITH THE RECORDER OF DEEDS WHICH WILL ASSURE DISCLOSURE OF THE PCSM BMP AND THE RELATED OBLIGATIONS IN THE ORDINARY COURSE OF A TITLE SEARCH OF THE SUBJECT PROPERTY. THE RECORDED INSTRUMENT MUST IDENTIFY THE PCSM BMP, PROVIDE FOR NECESSARY ACCESS RELATED TO LONG-TERM OPERATION AND MAINTENANCE FOR PCSM BMP's AND PROVIDE NOTICE THAT THE RESPONSIBILITY FOR LONG-TERM OPERATION AND MAINTENANCE OF THE PCSM BMP IS A COVENANT THAT RUNS WITH THE LAND THAT IS BINDING UPON AND ENFORCEABLE BY SUBSEQUENT GRANTEES, AND PROVIDE PROOF OF FILING WITH THE NOTICE OF TERMINATION UNDER 102.7(b)(5) (RELATING TO PERMIT TERMINATION).

THE PERSON RESPONSIBLE FOR PERFORMING LONG-TERM OPERATION AND MAINTENANCE MAY ENTER INTO AN AGREEMENT WITH ANOTHER PERSON INCLUDING A CONSERVATION DISTRICT, NONPROFIT ORGANIZATION, MUNICIPALITY, AUTHORITY, PRIVATE CORPORATION OR OTHER PERSON, TO TRANSFER THE RESPONSIBILITY FOR PCSM BMPS OR TO PERFORM LONG -TERM OPERATION AND MAINTENANCE OF THE PCSM BMPs LOCATED ON THE PROPERTY.

A PERMITTEE OR CO-PERMITTEE THAT FAILS TO TRANSFER LONG-TERM OPERATION AND MAINTENANCE OF THE PCSM BMP OR OTHERWISE FAILS TO COMPLY WITH THIS REQUIREMENT SHALL REMAIN JOINTLY AND SEVERALLY RESPONSIBLE WITH THE LANDOWNER FOR LONG TERM OPERATION AND MAINTENANCE OF THE PCSM BMPs LOCATED ON THE PROPERTY.

POST CONSTRUCTION REPORTING & RECORD KEEPING

1. THE POST CONSTRUCTION STORMWATER PLAN, INSPECTION REPORTS AND MONITORING RECORDS SHALL BE AVAILABLE FOR REVIEW AND INSPECTION BY THE D.E.P. OR THE CONSERVATION DISTRICT.

CONSTRUCTION DEBRIS HANDLING:

1. CONSTRUCTION DEBRIS MUST BE STORED IN REFUSE CONTAINERS FOR REMOVAL FROM THE SITE. THE CONTAINERS MUST BE PLACED IN ACCESSIBLE LOCATIONS.
2. NO DEBRIS MAY BE STORED/LEFT IN AREAS OR DEPRESSIONS ON THE SITE.
3. NO FUEL MAY BE STORED ON SITE.

POST-CONSTRUCTION LONG TERM OPERATION AND MAINTENANCE OF STORMWATER FACILITIES:

THE OPERATION AND MAINTENANCE OF THE BMP'S IS THE RESPONSIBILITY OF THE PROPERTY OWNER.

STORMWATER DETENTION FACILITY:

1. ALL SEDIMENT MUST BE REMOVED WHEN NOTED IN THE BOTTOM OF STRUCTURES. SEDIMENT REMOVAL MUST BE PERFORMED WHEN IT HAS NO STANDING WATER. ACCUMULATED SEDIMENT MUST BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER. IF THE AMOUNT OF SEDIMENT REQUIRES ITS TRANSPORT TO ANOTHER SITE, THE SITE MUST HAVE AN NPDES PERMIT.
2. SYSTEM DEWATERING: SHOULD DEWATERING OF THE BASIN AREA BE REQUIRED, THE WATER MUST BE DISCHARGED TO A DEP APPROVED DEWATERING FACILITY (DIRT BAG OR EQUAL).
3. THE BASIN OUTLET MUST BE INSPECTED TO ENSURE THE STRUCTURES ARE FREE OF DEBRIS. ALL DEBRIS MUST BE REMOVED FROM THE STRUCTURES ON A YEARLY BASIS.
4. THE SYSTEM IS CONSIDERED FAILING IF IT DOES NOT DEWATER IN 72 HOURS. IF IT IS NOT DEWATERING THE OUTLET SYSTEM MUST BE CHECKED AND CLEARED OF ANY DEBRIS CLOGGING THE OUTLET SYSTEM.

REGULAR REMOVAL OF LITTER AND DEBRIS WITHIN THE PROPERTY SHALL BE PERFORMED. STORMWATER FACILITIES SHALL BE INSPECTED AT LEAST ANNUALLY. THE PROFESSIONAL ENGINEER CONDUCTING THE INSPECTION SHALL NOT BE REQUIRED TO SUBMIT A WRITTEN REPORT TO THE TOWNSHIP UPON THE COMPLETION OF EACH INSPECTION REQUIRED BY THIS PARAGRAPH. INSTEAD, THE PROFESSIONAL ENGINEER SHALL BE REQUIRED TO SUBMIT A WRITTEN INSPECTION REPORT TO THE TOWNSHIP IN ACCORDANCE WITH THE SCHEDULE ESTABLISHED UNDER THE POST-CONSTRUCTION STORMWATER MANAGEMENT FACILITIES INSPECTION REQUIREMENTS SET FORTH SEPARATELY ON THESE PLANS. ANY TRASH, DEBRIS, SEDIMENT, ETC., SHALL BE REMOVED AND PROPERLY DISPOSED OF.

THE STORMWATER MANAGEMENT FACILITIES SHOWN ON THESE PLANS, INCLUDING STORM INLETS, STORM DRAIN PIPES, DETENTION SYSTEMS, RAIN GARDEN, AND ROOF DRAIN CONNECTIONS ARE PERMANENT AND ARE NOT TO BE REMOVED.

UNDERGROUND STONE RECHARGE BED & STONE BED

1. IF WATER IS STILL IN THE BOTTOM OF THE INLETS AT THE RECHAGE BED 72 HOURS AFTER A STORM EVENT, THE SYSTEM HAS FAILED AND MUST BE REPAIRED. THE SYSTEM MAY NEED TO BE EXCAVATED AND NEW STONE INSTALLED.
2. SHOULD DEWATERING BE REQUIRED, THE WATER MUST BE DISCHARGED TO A DEP APPROVED DEWATERING FACILITY (DIRTBAG OR EQUAL).
3. ANY DEBRIS OR TRASH IN THE BOTTOM OF THE INLETS MUST BE REMOVED AND DISPOSED OF PROPERLY.

RAIN GARDEN:

1. SYSTEM DEWATERING:
   IF WATER IS PONDING IN THE BOTTOM OF THE RAIN GARDEN BEYOND THREE DAYS FOLLOWING A STORM EVENT THE GATE VALVE SHOULD BE OPENED TO ALLOW THE UNDERDRAIN TO FUNCTION.
   SHOULD DEWATERING OF THE PONDING AREA BE REQUIRED, THE WATER MUST BE DISCHARGED TO A DEP APPROVED DEWATERING FACILITY (DIRT BAG OR EQUAL).
2. ANY DEBRIS THAT IS DEPOSITED IN THE RAIN GARDEN AREAS MUST BE RECYCLED OR REMOVED AND SENT TO AN APPROVED FACILITY.
3. THE SYSTEMS MUST BE CHECKED ANNUALLY. SHOULD IT NOT DEWATER FOR 72 HOURS FOLLOWING A RAIN EVENT IT IS CONSIDERED TO BE FAILING AND THE BOTTOM MUST BE TILLED TO LOOSEN THE SOIL. FOLLOWING THE TILLING, THE DISTURBED AREA MUST BE STABILIZED WITH THE SEED MIX SPECIFIED FOR THE RAIN GARDEN AREA.

GENERAL BMP AND E&S NOTES

1. ALL OF THE BMP'S IDENTIFIED/PROPOSED ON THIS PLAN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAILS SHOWN HEREIN AND THE NOTES CONTAINED ON THE SHEET. THE WETLAND VEGETATION FOR THE BASINS SHALL NOT BE INSTALLED UNTIL 70% STABILIZATION OF THE TRIBUTARY AREA IS ACHIEVED AND THE CONVERSION TO ITS FINAL CONFIGURATION IS COMPLETE.

2. NO BMP SHALL BE INSTALLED UNTIL 70% VEGETATIVE COVER IS ACHIEVED. THE CONSERVATION DISTRICT SHALL BE NOTIFIED PRIOR TO THE INSTALLATION AND MUST CONCUR WITH THE 70% COVER BEFORE INSTALLATION IS BEGUN.

3. DURING CONSTRUCTION THE CONSTRACTOR SHALL TAKE EVERY EFFORT TO KEEP SEDIMENT LADEN WATER OUT OF THE INFILTRATION BMP'S. IF ANY SEDIMENT LADEN WATER SHALL ENTER THE FACILITY, IMMEDIATE STEPS MUST BE UNDERTAKEN TO REMOVE IT. INCLUDING BUT NOT LIMITED TO CLEANING THE FABRIC AND STONE OR REPLACING IT DEPENDING ON THE SEVERITY OF THE INCURSION.

4. 50' BUFFER AREAS ARE REQUIRED AT THE STREAM CROSSING. ALL CLEARING SOD DISTURBANCES, EXCAVATION AND EQUIPMENT TRAFFIC SHOULD BE AVOIDED AND/OR MINIMIZED. ALL OTHER CONSTRUCTION OPERATIONS SHALL TAKE PLACE OUTSIDE THE BUFFER.

INFILTRATION BED CONSTRUCTION SEQUENCE

(ENGINEERING OVERSIGHT REQUIRED)

1. EXCAVATE AREA FOR BED TO SPECIFIED ELEVATION. CONTRACTOR MUST FOLLOW ALL NOTES AND DETAILS PROVIDED ON PCSWM PLAN REGARDING INSTALLATION.
2. CONTRACTOR SHALL BE VERY CAREFUL NOT TO RUN HEAVY EQUIPMENT OVER THE BOTTOM OF BED TO MINIMIZE POTENTIAL COMPACTION. SCARIFY BOTTOM.
3. PLACE GEOTEXTILE FABRIC ON BOTTOM AND ALL SIDES OF BED.
4. FILL BED WITH STONE TO THE ELEVATION OF THE INFLOW PIPES.
5. INSTALL INFLOW PIPES AND COMPLETE PLACEMENT OF STONE UP TO INVERT ELEVATION OF OUTLET STRUCTURE. INSTALL OUTLET STRUCTURE AND COMPLETE PLACEMENT OF STONE.
6. PLACE GEOTEXTILE OVER TOP OF BED WITH A MINIMUM OVERLAP OF 12 INCHES.
7. PLACE 1 FOOT OF COVER OVER ENTIRE BED AND INSTALL AN IMPERVIOUS GEOTEXTILE FABRIC AS SPECIFIED ON PLAN. BACKRILL THE REMAINDER OF THE BED. SEED MULCH AND STABILIZE IMMEDIATELY.

INFILTRATION BED AND STORMWATER FACILITIES MAINTENANCE NOTES

1. Regular removal of litter and debris within the property shall be performed. Stormwater facilities shall be inspected quarterly and any trash, debris, sediment, etc., shall be removed and properly disposed of.

2. Observations shall be made to determine the length of time needed for retained water to infiltrate into the soil after a storm event. The observations shall be made by reading the water level in the inlet box(es) of the underground system several times over a period of two (2) days after a large storm event. The first of these observations shall provide a record of how well the system is working when comparing future observations. Observations shall be made twice the first year and yearly thereafter.

3. Stormwater detention and retention basins or facilities shall be inspected by, or under the direction of, a registered professional engineer licensed in the Commonwealth of Pennsylvania on behalf of the applicant or responsible entity (including the Township Engineer for dedicated facilities) on the following basis:

a. Annually for the first five (5) years.
b. Once every three (3) years thereafter.
c. During or immediately after the cessation of a 100-year or greater storm event.

The professional engineer conducting the inspection shall be required to submit a written report to the Township within one (1) month following completion of the inspection. The report will present documentation and include pictures regarding the condition of the facility and recommend necessary repairs or replacement, if needed. Any needed repairs shall be implemented by the owner within one (1) month of the report issuance date.

4. The stormwater management facilities shown on these plans, including storm inlets, storm drain pipes, underground detention systems, and roof drain connections, are permanent and are not to be removed. The Homeowner's Association, its successor or assigns shall assume the responsibility for perpetual maintenance of the said facilities. If the lot owner, its sucessor or assigns, fails in any way to maintain the said facilities or causes the facilities to be altered or removed, upon written notification by the municipality, the defects shall be promptly corrected at the owner.s expense. Upon the owner.s failure to correct the defect within the time specified by the municipality, the owner, his successor or assigns do hereby authorize the municipality to enter upon the said property and cause the repairs maintenance and/or corrections to be made. A lien may be filed against the property for all costs of all corrections, including applicable engineering and/or attorney fees, although the municipality is under no obligation to take action. The permission granted herein shall constitute an access easement for maintenance purposes should same be necessary by the municipality in the sole opinion of the municipality. This maintenance responsibility shall be added into the deed.

5. All inflow and outflow points to the individual on-lot systems should be kept clear of leaves and other debris. Any leaves or debris will negatively impact the performance of these systems. All downspouts and overflow pipes should be kept in good working order.

INFLT MAINTENANCE NOTES

POST CONSTRUCTION INFILTRATION BED AND STORMWATER FACILITIES MAINTENANCE NOTES

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FINAL CERTIFICATION

THE PERMITTEE SHALL INCLUDE WITH THE NOTICE OF TERMINATION "RECORD DRAWINGS" WITH A FINAL CERTIFICATION STATEMENT FROM A LICENSED PROFESSIONAL, WHICH READS AS FOLLOWS:

" I _____ DO HEREBY CERTIFY PURSUANT TO THE PENALTIES OF 18 PA.C.S.A. SECTION 4904 TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THAT THE ACCOMPANYING RECORD DRAWINGS ACCURATELY REFLECT THE AS-BUILT CONDITIONS, ARE TRUE AND CORRECT, AND ARE IN CONFORMANCE WITH CHAPTER 102 OF THE RULES AND REGULATIONS OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THAT THE PROJECT SITE WAS CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PCSM PLAN, ALL APPROVED PLAN CHANGES AND ACCEPTED CONSTRUCTION PRACTICES."

(1) THE PERMITTEE SHALL RETAIN A COPY OF THE RECORD DRAWINGS AS A PART OF THE APPROVED PCSM PLAN.
(2) THE PERMITTEE SHALL PROVIDE A COPY OF THE RECORD DRAWINGS AS PART OF THE APPROVED PCSM PLAN TO THE PERSON IDENTIFIED IN THIS SECTION AS BEING RESPONSIBLE FOR THE LONG-TERM OPERATION AND MAINTENANCE OF THE PCSM BMPs.

STORMWATER MANAGEMENT DETAILS

1	7-26-18 REV. PER McCORMICK TAYLOR REVIEW OF JULY 11, 2018

PLAN OF SUBDIVISION
OF
UPI 67-4F-73

WESTTOWN TOWNSHIP — CHESTER COUNTY, PA.

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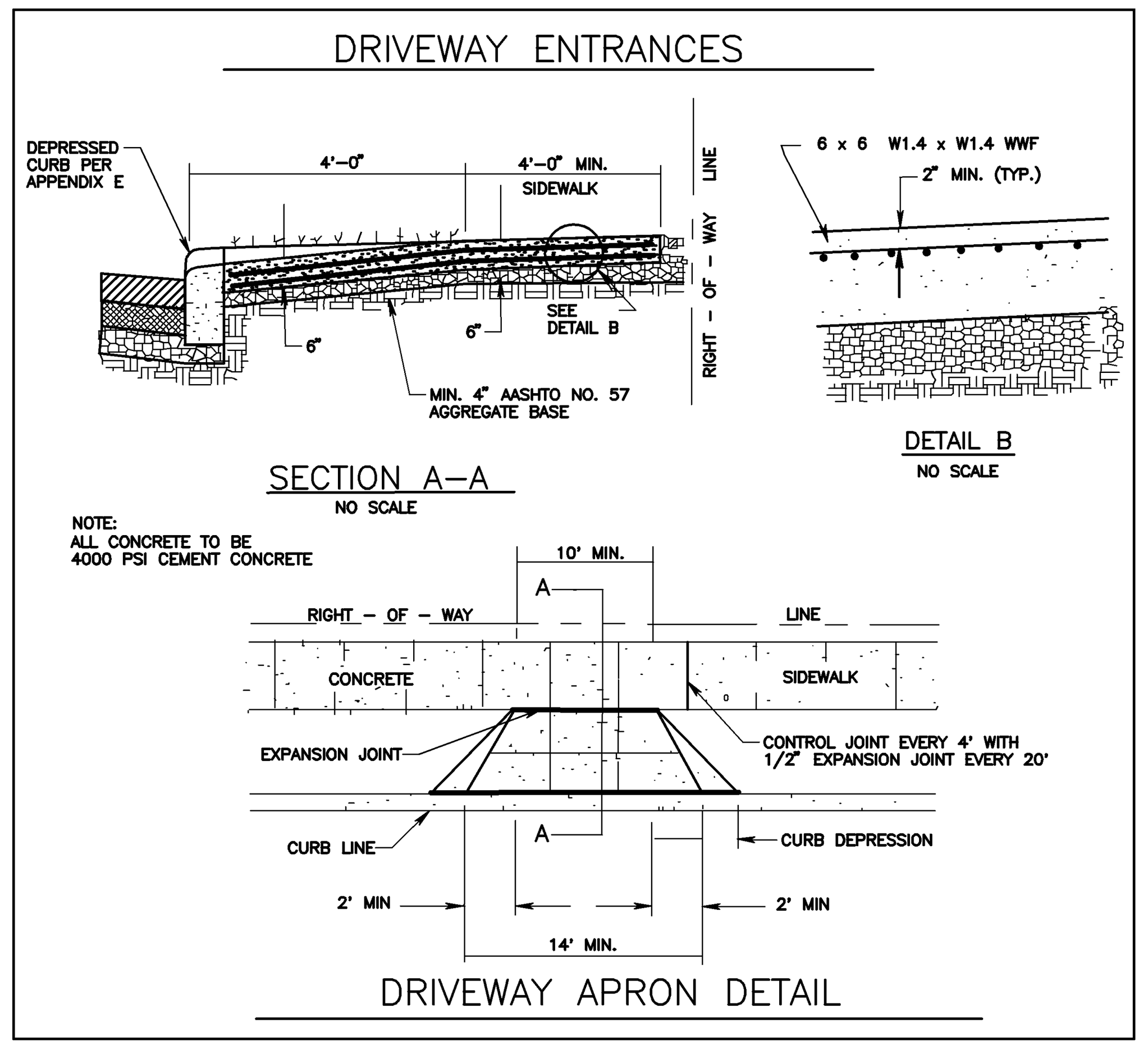

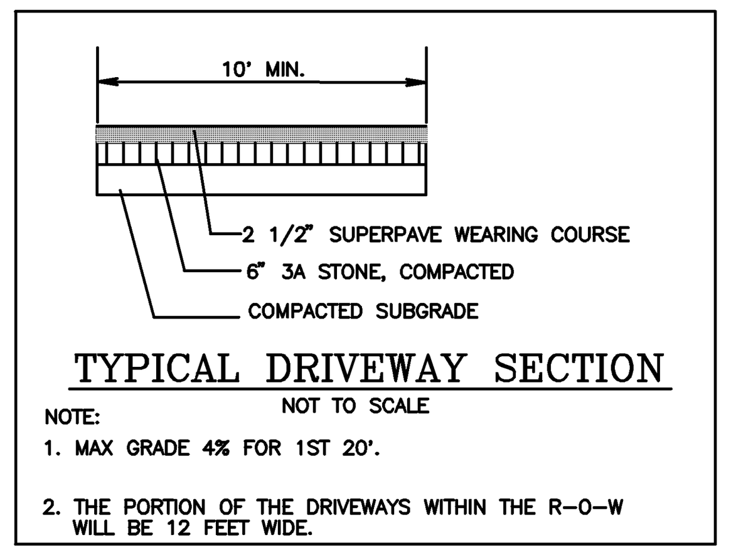

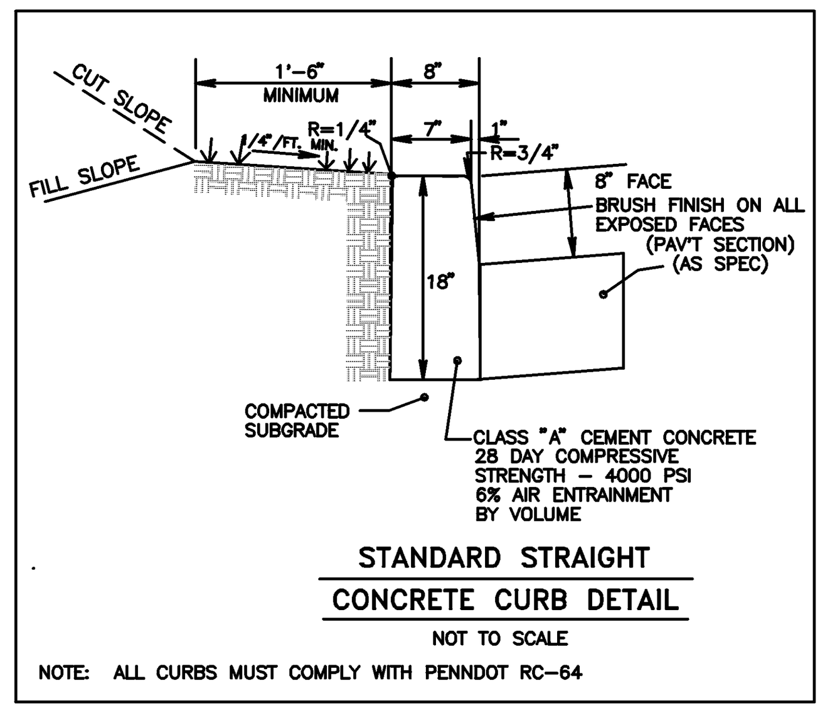

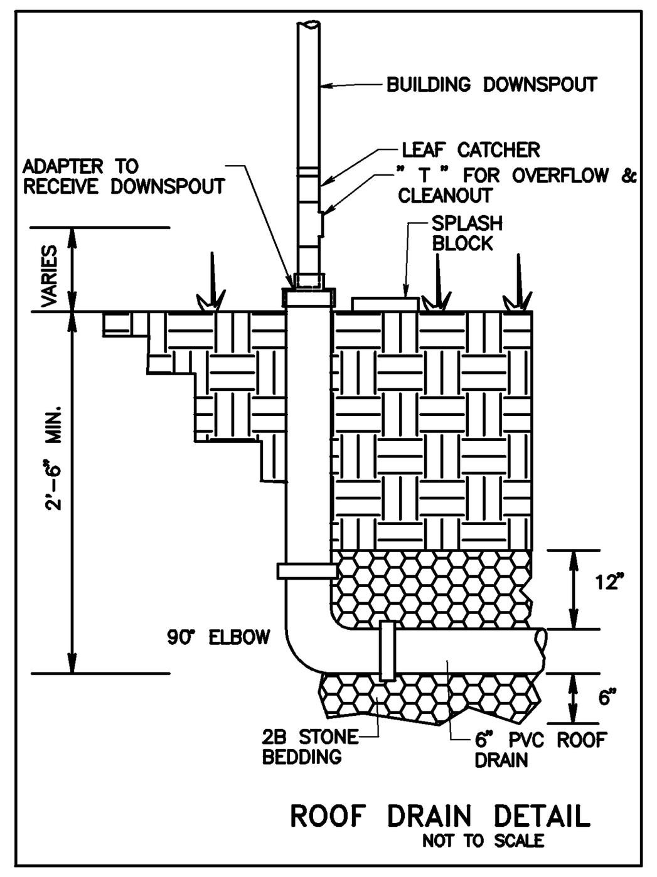

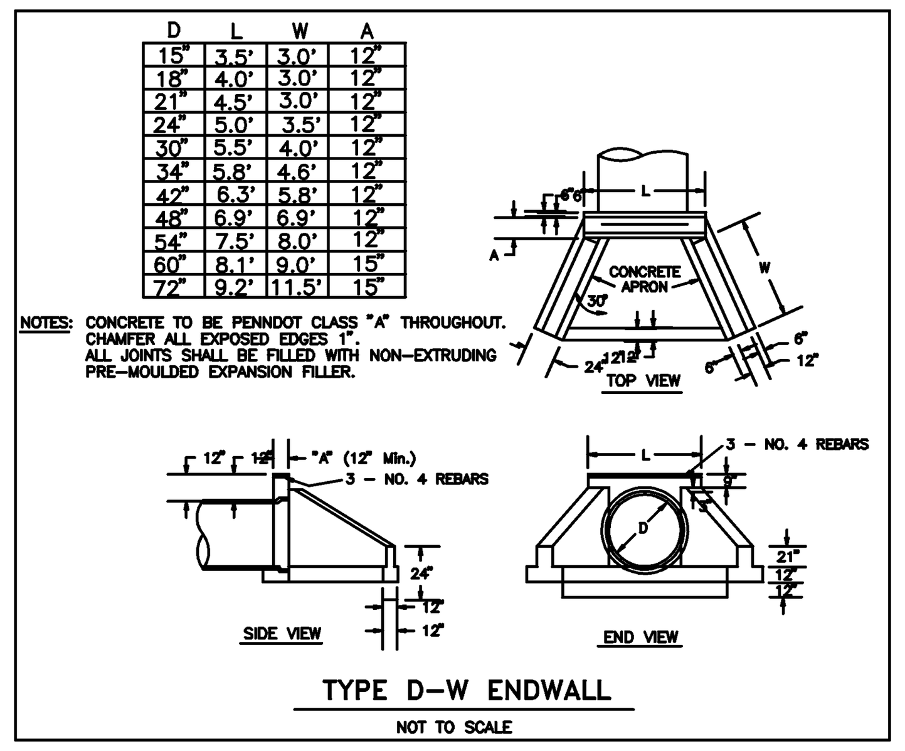

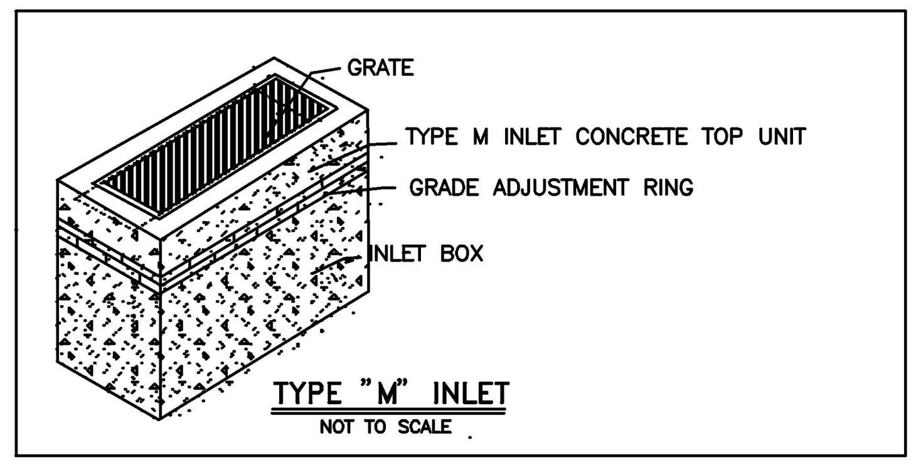

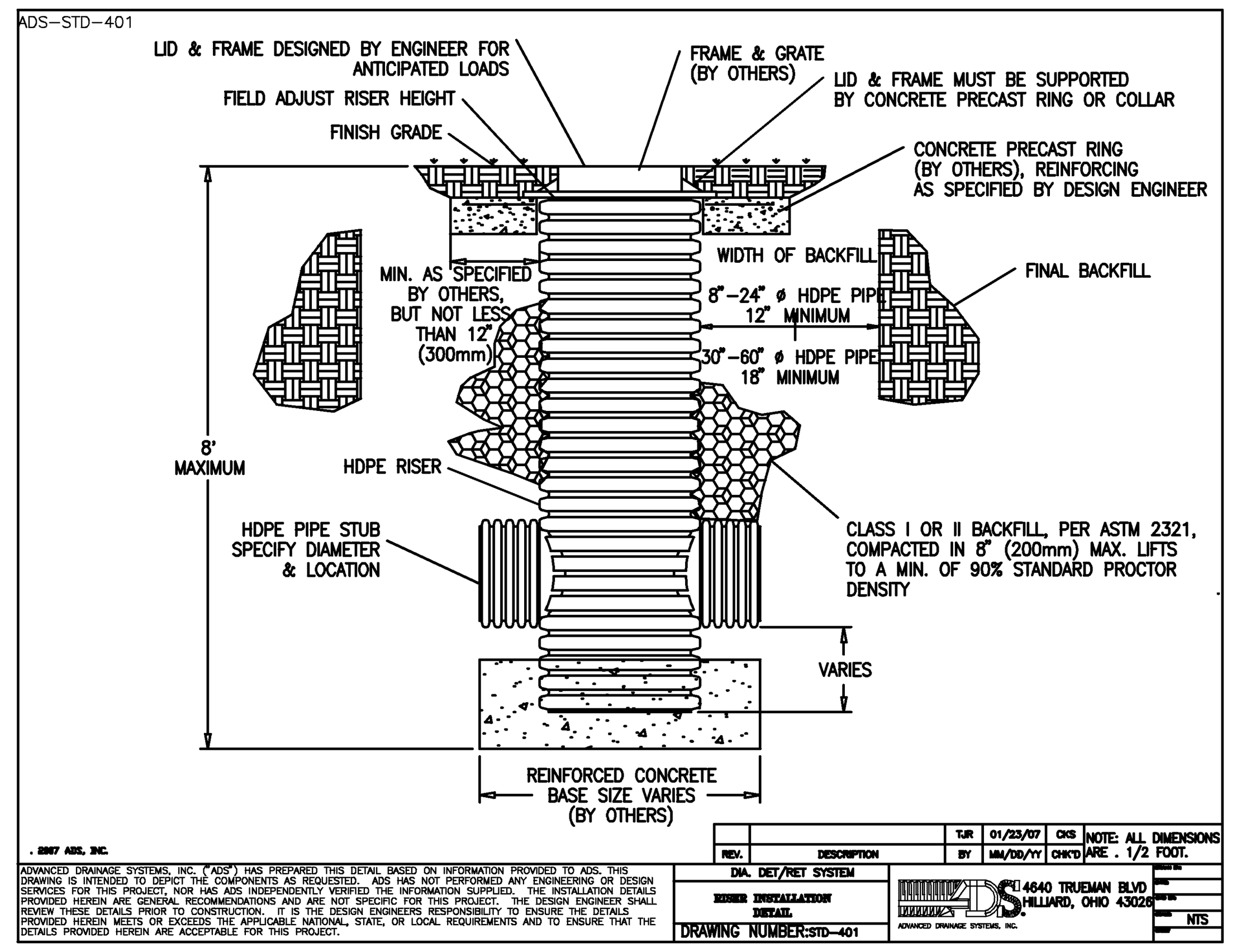

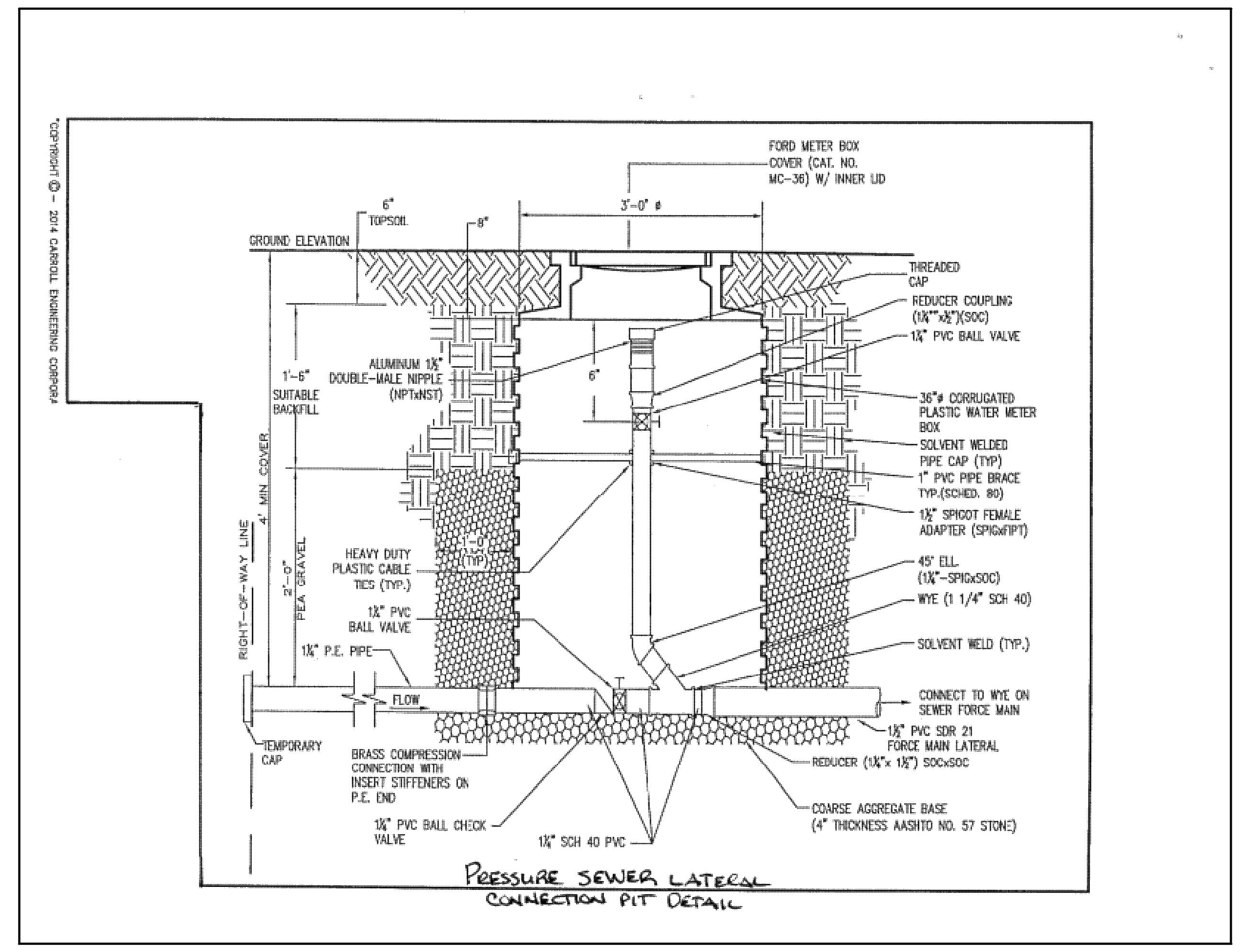

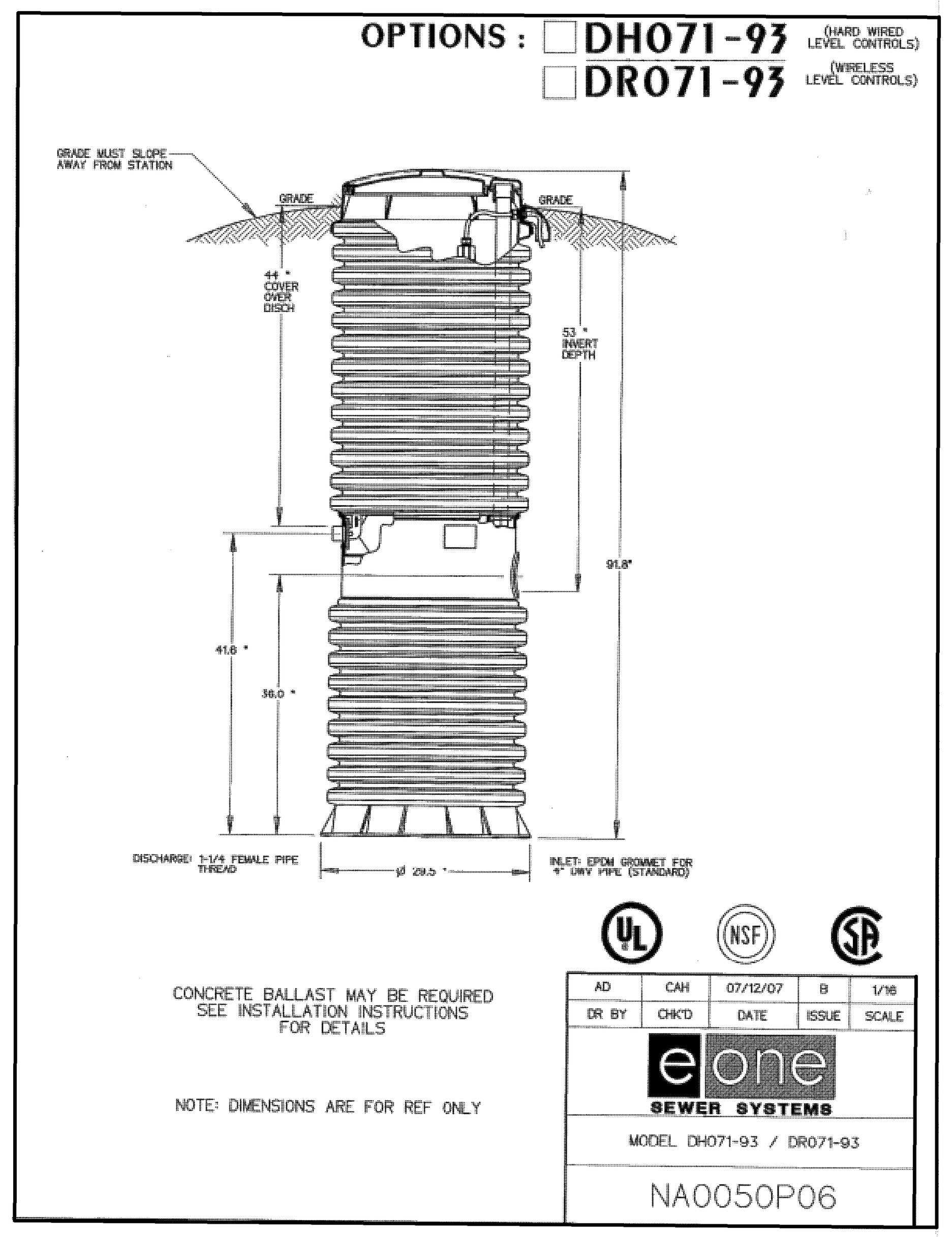

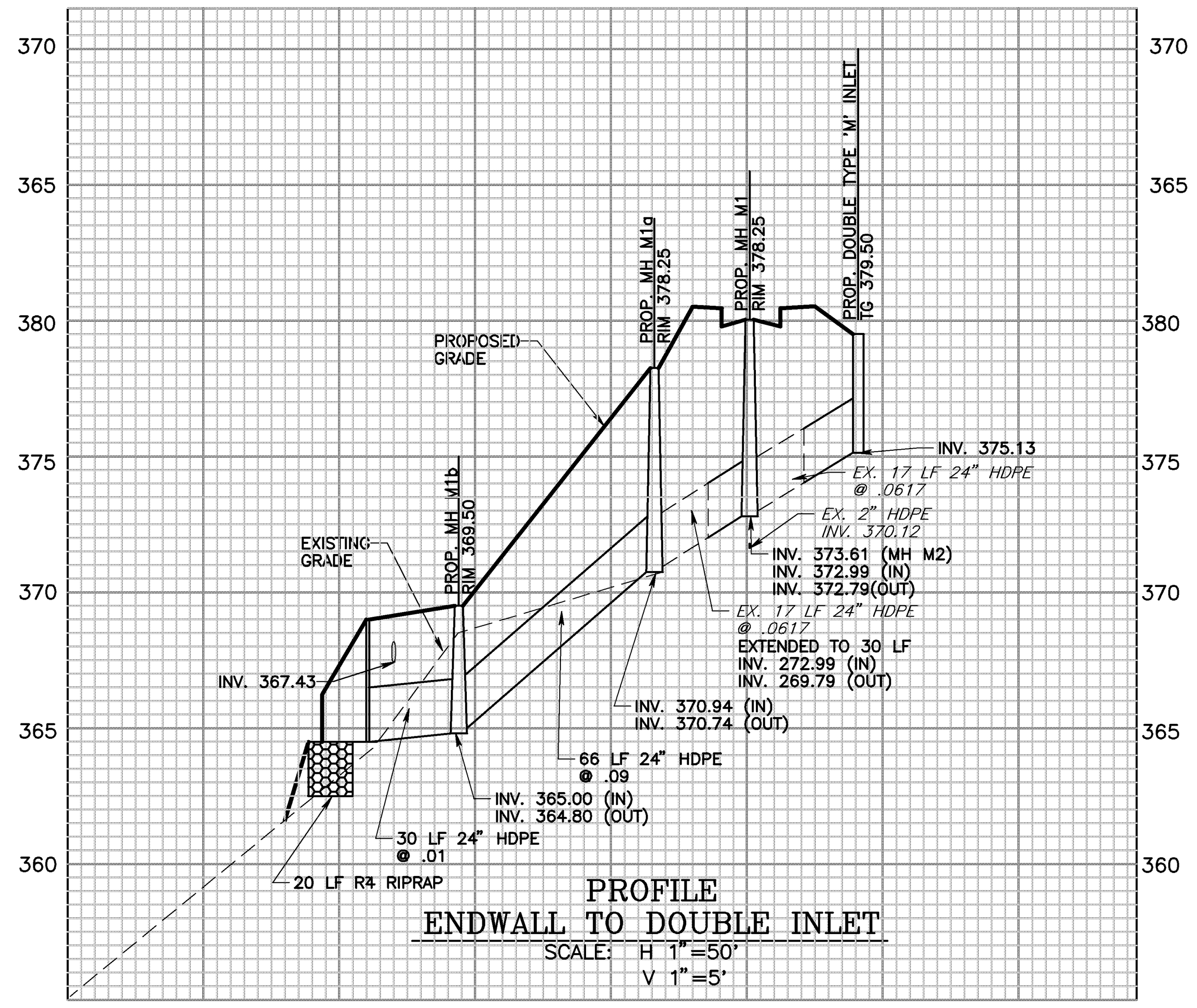

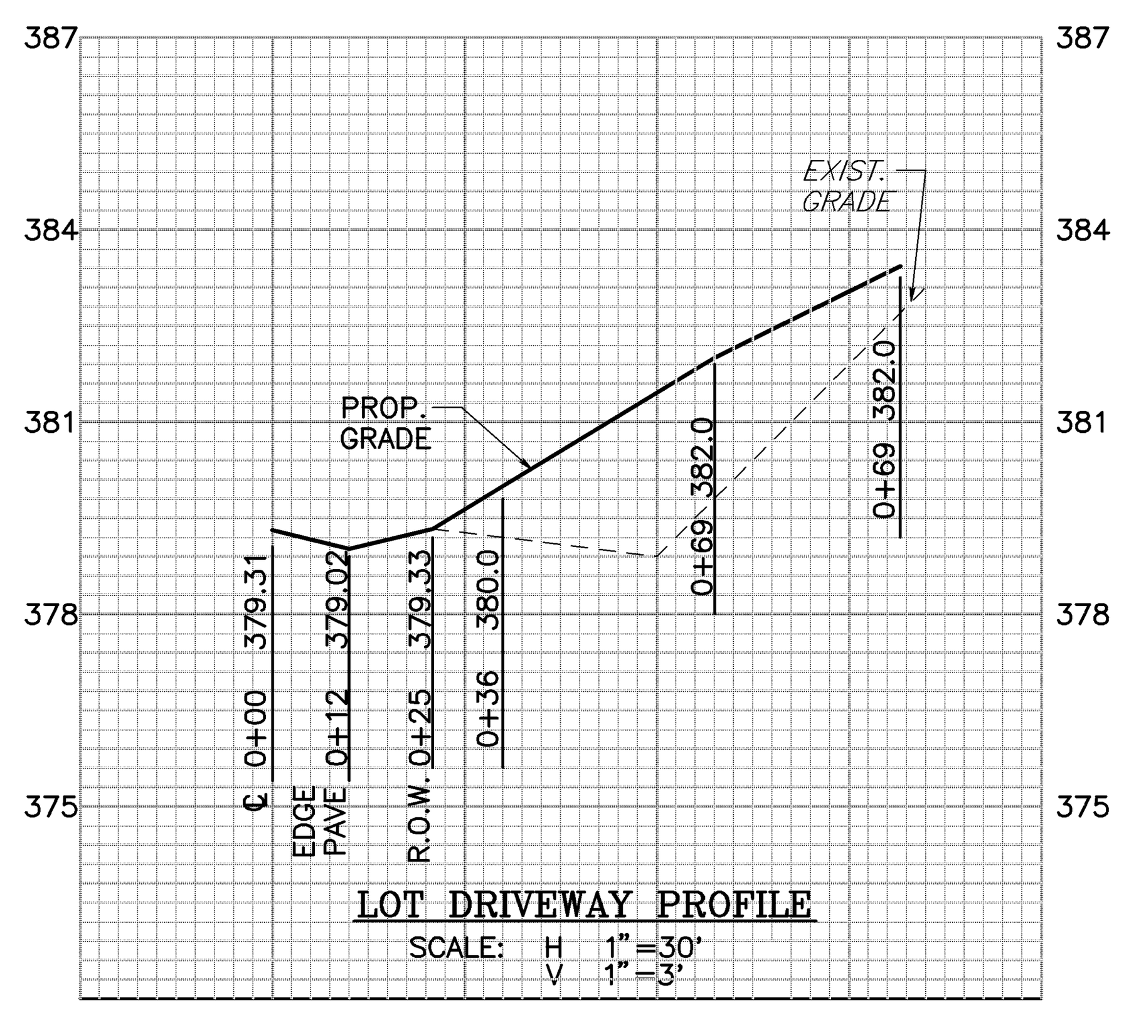

DETAILS

1 7-26-18 REV. PER McCORMICK TAYLOR REVIEW OF JULY 11, 2018

PLAN OF SUBDIVISION
OF
UPI 67-4F-73

WESTTOWN TOWNSHIP — CHESTER COUNTY, PA.

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Project– 4062
Date– 5-07-18
Scale– N.T.S.
Drawn– RBL
Checked– AE
Sheet– 8 OF 8

Plotted: 7/26/2018 *File:* F:\JB\4062\4062-B5 Cahill sub.pro