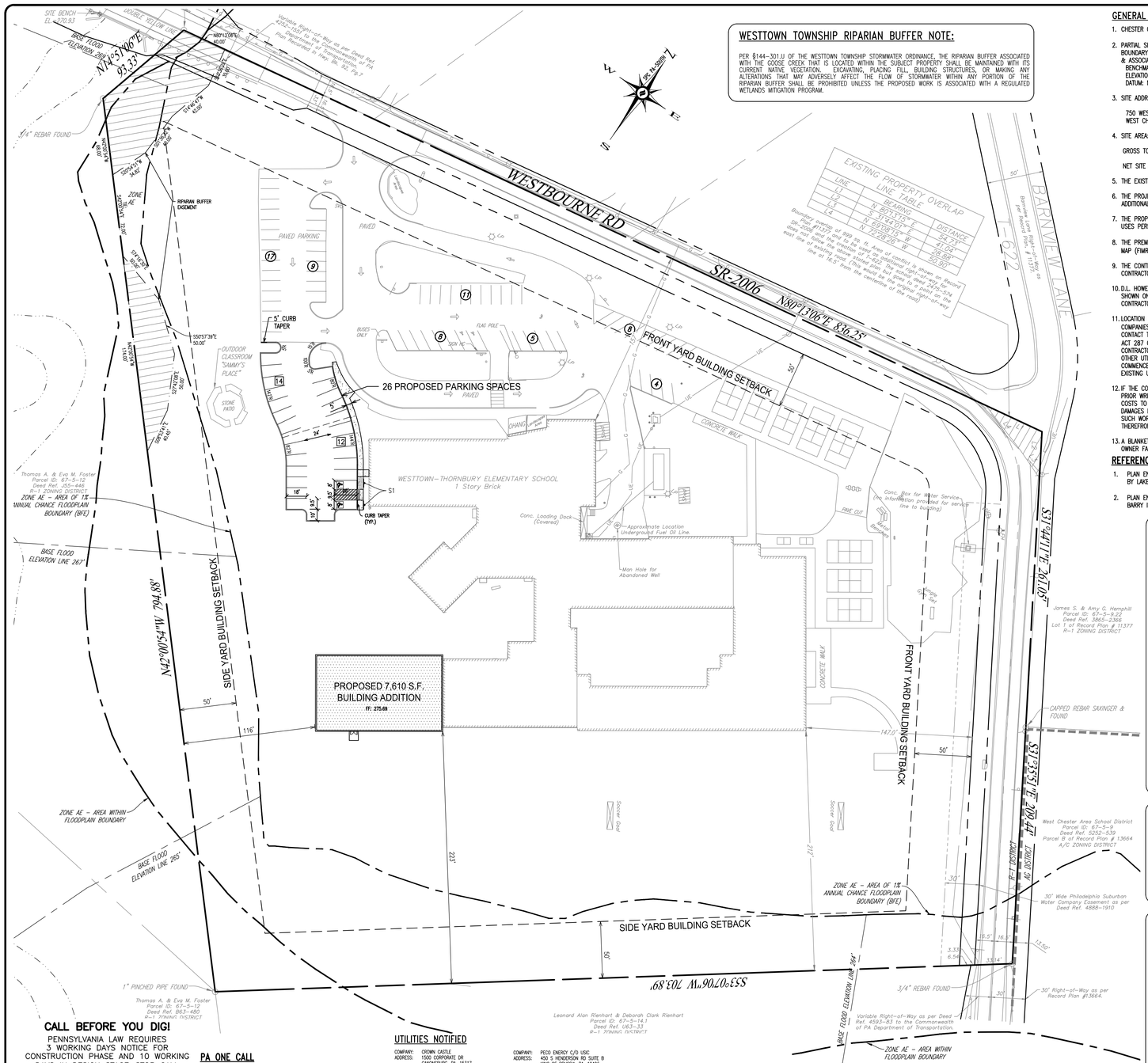


WESTTOWN TOWNSHIP RIPARIAN BUFFER NOTE:

PER §144-301.U OF THE WESTTOWN TOWNSHIP STORMWATER ORDINANCE, THE RIPARIAN BUFFER ASSOCIATED WITH THE GOOSE CREEK THAT IS LOCATED WITHIN THE SUBJECT PROPERTY SHALL BE MAINTAINED WITH ITS CURRENT NATIVE VEGETATION. EXCAVATING, PLACING FILL, BUILDING STRUCTURES, OR MAKING ANY ALTERATIONS THAT MAY ADVERSELY AFFECT THE FLOW OF STORMWATER WITHIN ANY PORTION OF THE RIPARIAN BUFFER SHALL BE PROHIBITED UNLESS THE PROPOSED WORK IS ASSOCIATED WITH A REGULATED WETLANDS MITIGATION PROGRAM.

CALL BEFORE YOU DIG!

PENNSYLVANIA LAW REQUIRES
3 WORKING DAYS NOTICE FOR
CONSTRUCTION PHASE AND 10 WORKING
DAYS IN DESIGN STAGE–STOP CALL

Pennsylvania One Call System, Inc

1–800–242–1776

ONE CALL NOTE

SCALE: **NO SCALE**

PA ONE CALL

ACT 287 SERIAL NUMBER: 20201611238

DL HOWELL & ASSOCIATES, INC. DOES NOT GUARANTEE THE ACCURACY OF THE LOCATIONS FOR EXISTING SUBSURFACE UTILITY LINES, STRUCTURES, ETC. SHOWN ON THE PLANS, NOR DOES HOWELL KLINE SURVEYING, LLC. 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

COMPANY: CROWN CASTLE
ADDRESS: 1500 CORPORATE DR
CANONSBURG, PA. 15317
CONTACT: TYLER STEIN
EMAIL: tyler.stein@crowncastle.com

COMPANY: AQUA PENNSYLVANIA INC
ADDRESS: 762 W LANCASTER AVE
BRYN MAWR, PA. 19010
CONTACT: STEVE PIZZI
EMAIL: sbpizzi@aquaamerica.com

COMPANY: COMCAST
ADDRESS: 1004 CORNERSTONE BLVD
DOWNINGTOWN, PA. 19335
CONTACT: TOM RUSSO
EMAIL: tom_russo@cable.comcast.com

COMPANY: PECO ENERGY C/O USIC
ADDRESS: 450 S HENDERSON RD SUITE B
KING OF PRUSSIA, PA. 19406
CONTACT: NIKKIA SIMPKINS
EMAIL: NIKKIASIMPKINS@USICLLC.COM

COMPANY: WESTTOWN TOWNSHIP
ADDRESS: 1039 WILMINGTON PIKE
WEST CHESTER, PA. 19382
CONTACT: MARK GROSS
EMAIL: mgross@westtown.org

COMPANY: VERIZON PENNSYLVANIA LLC
ADDRESS: 1050 VIRGINIA DR
FORT WASHINGTON, PA. 19034
CONTACT: DARLINE LEPPERD JOHNSON

LEGEND

▬ ▬ ▬	*EX. PROPERTY LINE*
— — —	PROP. PROPERTY LINE
— — —	*EX. RIGHT–OF–WAY*
— — —	PROP. RIGHT–OF–WAY
☐	*EX. MONUMENT*
☒	PROP. MONUMENT
○	*EX. IRON PIPE*
●	PROP. IRON PIPE
—·—·—	*EX. EASEMENT*
—·—·—	PROP. EASEMENT
—\\\\//—	*EX. WETLANDS*
_ _ _242_ _ _	*EXISTING CONTOUR*
242	PROPOSED CONTOUR
X 123.00	*EXISTING SPOT ELEV.*
X 123.00	NEW SPOT ELEV.
GEB2	*SOILS TYPE*
— —	*SOILS LINE*
═	*EX. CONC. CURB*
═	PROP. CONC. CURB
— — — —	*EX. EDGE OF PAVING*
——	PROP. EDGE OF PAVING
	EX. LIGHT POLE
	PROP. LIGHT POLE
—X—	*EX. FENCE*
MB	*EX. MAIL BOX*
	EX. SIGN
	PROP. SIGN
④	*EXIST. PARKING SPACES*
4	PROP. PARKING SPACES
(TBR)	*TO BE REMOVED*
—T—	*EX. TELE. LINE*
—T—	PROP. TELE. LINE
—E—	*EX. ELEC. LINE*
—E—	PROP. ELEC. LINE
—○—	*EX. UTILITY POLE*
—○—	PROP. UTILITY POLE
	EX. GUY ANCHOR
—G—	*EX. GAS LINE*
—G—	PROP. GAS LINE
G.V.	*EX. GAS VALVE*
G.V.	PROP. GAS VALVE
═ ═ ═	*EX. STORM SEWER LINE*
▬ ▬ ▬	PROP. STORM SEWER LINE
▨	*EX. STORM INLET*
▨	PROP. STORM INLET
IC 1	PROP. STORM INLET ID
	PROP. SEEPAGE BED
—S—	*EX. SANITARY SEWER LINE*
—S—	PROP. SAN. SEWER LINE
—L—	PROP. SAN. SEWER LATERAL
MH 1	PROP. SANITARY MH. ID
—W—	*EX. WATER LINE*
—W—	PROP. WATER LINE
—WL—	PROP. WATER LATERAL
—FW—	PROP. FIRE WATER LINE
W.V.	*EX. WATER VALVE*
W.V.	PROP. WATER VALVE
F.H.	*EX. HYDRANT*
F.H.	PROP. HYDRANT
○	*EX. MANHOLE*
○	PROP. MANHOLE
●	*EX. PERC TEST*
▲	*EX. TEST PIT*

LAND DEVELOPMENT PLAN

SCALE: 1" = 50'

50 0 25 50 100

GRAPHIC SCALE
1 inch = 50 feet

SIGN LEGEND

S1 "HANDICAP PARKING" SIGN (12" X 18")

OWNER/APPLICANT

WEST CHESTER AREA SCHOOL DISTRICT
782 SPRINGDALE DRIVE
EXTON, PA 19341

DRAWING INDEX

SHEET NUMBER	DRAWING NUMBER	SHEET TITLE
01	C01.1	LAND DEVELOPMENT PLAN
02	C02.1	EXISTING CONDITIONS–CONSERVATION PLAN
03	C03.1	GRADING AND UTILITIES PLAN
04	C04.1	PCSM PLAN
05	C04.2	PCSM DETAILS
06	C04.3	PCSM DETAILS
07	C05.1	EROSION CONTROL PLAN
08	C05.2	EROSION CONTROL NOTES
09	C05.3	EROSION CONTROL DETAILS
10	C06.1	CONSTRUCTION DETAILS
11	C07.1	LIGHTING PLAN
12	LP–1	LANDSCAPE PLAN
13	LP–2	LANDSCAPE PLAN

GENERAL NOTES

1. CHESTER COUNTY UNIFORM PARCEL ID#S: 67–5–13
2. PARTIAL SITE TOPOGRAPHY/PHYSICAL FEATURES SURVEY WAS COMPLETED BY HOWELLKLINE SURVEYING, LLC. ON APRIL 28, 2020. FULL BOUNDARY, TOPOGRAPHY AND PHYSICAL FEATURES SURVEY SHOWN WAS OBTAINED FROM A FIELD SURVEY PERFORMED BY LAKE, ROEDER, HILLARD & ASSOCIATES ON OCTOBER 21, 2009.
   BENCHMARK: PENNDOT BM DSK – ON WEST END OF SOUTH BRIDGE WALL
   ELEVATION: 270.95
   DATUM: NAVD 88
3. SITE ADDRESS:

   750 WESTBOURNE ROAD
   WEST CHESTER, PA 19382
4. SITE AREA:

   GROSS TOTAL SITE AREA = 11.768 ACRES

   NET SITE AREA = 11.088 ACRES
5. THE EXISTING USE OF THE PROPERTY IS A PRIMARY SCHOOL KNOWN AS WESTTOWN–THORNBURY ELEMENTARY SCHOOL.
6. THE PROJECT PROPOSES TO ADD A 7,610 S.F. BUILDING ADDITION TO THE EXISTING SCHOOL AND EXPAND THE EXISTING PARKING AREA WITH 26 ADDITIONAL SPACES.
7. THE PROPERTY IS ZONED R–1 RESIDENTIAL AND IS SUBJECT TO THE REQUIREMENTS OF SECTION 170–601.B & 170–702.E – NON–RESIDENTIAL USES PERMITTED BY SPECIAL EXCEPTION AS CONTAINED IN THE WESTTOWN TOWNSHIP ZONING ORDINANCE.
8. THE PREMISES SHOWN HEREON LIE PARTIALLY WITHIN SPECIAL FLOOD HAZARD AREA (SFHA) ZONE AE, AS SHOWN ON FLOOD INSURANCE RATE MAP (FIMR) 4202940265G, MAP REVISED SEPTEMBER 29, 2017 ISSUED BY FEMA.
9. THE CONTRACTOR SHALL VERIFY THE LOCATION AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO THE START OF ANY CONSTRUCTION. THE CONTRACTOR SHALL PERFORM A PENNSYLVANIA ONE CALL IN ACCORDANCE WITH PA ACT 199.
10. D.L. HOWELL & ASSOCIATES, INC. DOES NOT GUARANTEE THE ACCURACY OF THE LOCATIONS OF THE EXISTING SUBSURFACE UTILITY STRUCTURES SHOWN ON THE PLANS. NOR DOES D.L. HOWELL & ASSOCIATES, INC. GUARANTEE THAT ALL SUBSURFACE STRUCTURES ARE SHOWN. THE CONTRACTOR SHALL VERIFY THE LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES PRIOR TO THE START OF THE WORK.
11. LOCATION OF ALL EXISTING AND PROPOSED SERVICES ARE APPROXIMATE AND MUST BE CONFIRMED INDEPENDENTLY WITH LOCAL UTILITY COMPANIES PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION OR EXCAVATION. IT SHALL BE THE CONTRACTOR'S FULL RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES TO LOCATE THEIR FACILITIES PRIOR TO STARTING CONSTRUCTION IN ACCORDANCE WITH PENNSYLVANIA ACT 287 OF 1974 AS AMENDED BY PENNSYLVANIA ACT 187 OF 1996, "ONE CALL" SYSTEM. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR DAMAGE AND REPAIR TO THESE FACILITIES CAUSED BY HIS WORK FORCE. SANITARY SEWER, WATER, ELECTRIC, GAS AND ALL OTHER UTILITY SERVICES CONNECTION POINTS SHALL BE CONFIRMED INDEPENDENTLY BY THE CONTRACTOR IN THE FIELD PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, ALL DISCREPANCIES SHALL BE REPORTED IMMEDIATELY IN WRITING TO THE ENGINEER. CROSSINGS WITH EXISTING UNDERGROUND INSTALLATIONS SHALL BE FIELD VERIFIED BY TEST PIT PRIOR TO COMMENCEMENT OF CONSTRUCTION.
12. IF THE CONTRACTOR DEVIATES FROM THE PLANS AND SPECIFICATIONS, INCLUDING THE NOTES CONTAINED THEREON, WITHOUT FIRST OBTAINING PRIOR WRITTEN AUTHORIZATION FOR SUCH DEVIATIONS FROM THE OWNER AND ENGINEER, IT SHALL BE RESPONSIBLE FOR THE PAYMENT OF ALL COSTS TO CORRECT ANY WORK DONE. ALL FINES OR PENALTIES ASSESSED WITH RESPECT THERETO AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING FROM IT SHALL INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ALL SUCH COSTS TO CORRECT ANY SUCH WORK AND FROM ALL SUCH FINES AND PENALTIES, COMPENSATIONS AND PUNITIVE DAMAGES AND COSTS OF ANY NATURE RESULTING THEREFROM.
13. A BLANKET EASEMENT WILL BE PROVIDED TO ALLOW THE TOWNSHIP ACCESS TO ANY STORMWATER MANAGEMENT AREA SHOULD THE PROPERTY OWNER FAIL TO MAINTAIN SAID AREAS PROPERLY.

REFERENCE PLAN(S)

1. PLAN ENTITLED "BOUNDARY & TOPOGRAPHIC SURVEY WESTTOWN–THORNBURY ELEMENTARY SCHOOL" WESTTOWN TOWNSHIP, CHESTER COUNTY, PA BY LAKE, ROEDER, HILLARD AND ASSOCIATES DATED OCTOBER 29, 2009.
2. PLAN ENTITLED "RENOVATIONS AND ADDITIONS TO WESTTOWNTHORNBURY ELEMENTARY SCHOOL" WESTTOWN TOWNSHIP, CHESTER COUNTY, PA BY BARRY ISETT AND ASSOCIATES DATED AUGUST 24, 2011.

ZONING DATA TABULATION

WESTTOWN TOWNSHIP
ART. V – R–1 RESIDENTIAL DISTRICT
SECT. 170–601.B: SPECIAL EXCEPTION USES
(3). PRIMARY SCHOOL
SECT. 170–602: AREA AND BULK REGULATIONS
(F). USES BY SPECIAL EXCEPTION AS REQUIRED BY § 170–702.E.

AREA & BULK REGULATIONS (SEC. 170–702.E.)

	REQUIRED	EXISTING	PROPOSED
MIN. LOT AREA	2 ACRES	11.088 ACRES	11.088 ACRES
MIN. LOT WIDTH AT BUILDING SETBACK	200 FT.	879 FT.	879 FT.
MIN. FRONT YARD	50 FT.	157 FT.	157 FT.
MIN. SIDE YARD	50 FT.	149 FT.	116/212 FT.
MAX. BUILDING COVERAGE	20%	12.12% (58,536 S.F.)	13.23% (63,909 S.F.)
MAX. IMPERVIOUS COVERAGE	40%	27.67% (133,683 S.F.)	30.86% (149,075 S.F.)
MIN. LOT WIDTH AT STREET LINE	50 FT.	836 FT.	836 FT.
MAX. BUILDING HEIGHT	3 STORIES/38 FT.	<38 FT.	<38 FT.

*NOTE: THE IMPERVIOUS COVERAGE CALCULATION DOES NOT INCLUDE THE 13,241 S.F. MULCHED PLAY AREA. IN SECTION 170–201 OF THE WESTTOWN TOWNSHIP ORDINANCE, IT STATES THAT AN IMPERVIOUS SURFACE IS CONSIDERED ANY SURFACE WITH A COEFFICIENT OF RUNOFF OF 0.8 OR GREATER. ASSUMING THAT THIS AREA IS OPEN SPACE WITH GRASS COVERAGE LESS THAN 50% AND HYDROLOGIC SOIL GROUP B, THE RUNOFF CURVE NUMBER IS 0.79. THEREFORE, IT WAS NOT COUNTED IN THE IMPERVIOUS COVERAGE CALCULATION.

PARKING TABULATION

THORNBURY TOWNSHIP
SECT. 170–1705: SCHEDULE OF REQUIRED PARKING
(E). COMMUNITY SERVICE USES AND PLACES OF ASSEMBLY

REQUIRED	EXISTING	PROVIDED
ELEMENTARY SCHOOL: 1 SPACE/15 STUDENTS	62 SPACES + 32 OVERFLOW	88 SPACES + 32 OVERFLOW
611 STUDENTS/15 = 41 SPACES	TOTAL = 94 SPACES	TOTAL = 120 SPACES

III. ORDER

AND NOW, this 15th day of September, 2020, upon consideration of the testimony adduced and exhibits presented, it is Ordered that:

a. The Special Exception sought shall be and hereby is Granted substantially consistent with the plans and testimony presented with such modifications as my be approved to achieve compliance with the with the Subdivision and Land Development Ordinance or other State and Federal Regulations.

b. The Special Exception shall be deemed to encompass the entire tract and is not limited to a mere expansion of the existing building.

c. In pursuing Land Development Approval the Applicant shall comply with the screening requirements of section 170-1508 along the southwest property line.

Upon compliance with all of the foregoing, compliance with other applicable ordinances, including, without limitation, the Westtown Township Subdivision and Land Development Ordinance, and other applicable Federal and State Regulations, the filing of proper applications and payment of proper fees, the Zoning Officer is authorized and directed to issue the necessary permits for the construction, use and occupancy of the improvements sought consistent with the approvals herein granted.

WESTTOWN TOWNSHIP ZONING HEARING BOARD

Laura M Scanlon

LOCATION MAP
SCALE: 1" = 2,000'

Copyright ADC The Map People ®
Permitted Use Number 20910184

COMMONWEALTH OF PENNSYLVANIA COUNTY OF CHESTER

ON THIS THE _____ DAY OF _______________ 20 __ A.D. BEFORE ME, THE SUBSCRIBER, A NOTARY PUBLIC OF THE COMMONWEALTH OF PENNSYLVANIA, RESIDING IN ____________________ PERSONALLY APPEARED KEVIN CAMPBELL WHO ACKNOWLEDGES HIMSELF TO BE THE DIRECTOR OF FACILITIES AND OPERATION OF WEST CHESTER AREA SCHOOL DISTRICT, A PUBLIC SCHOOL DISTRICT, AND THAT AS SUCH TO DO SO, HE EXECUTED THE FOREGOING PLAN BY SIGNING THE NAME OF SAID PUBLIC SCHOOL DISTRICT BY HIMSELF AS THE DIRECTOR OF FACILITIES AND OPERATION, THAT THE SAID PUBLIC SCHOOL DISTRICT 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 PUBLIC SCHOOL DISTRICT DESIRES THAT THE FOREGOING PLAN MAY BE DULY RECORDED.

____
FOR: WEST CHESTER AREA SCHOOL DISTRICT
BY: KEVIN CAMPBELL, DIRECTOR OF FACILITIES AND OPERATIONS

____________________ (SEAL)
NOTARY PUBLIC

MY COMMISSION EXPIRES: ___________________________

APPROVED BY THE BOARD OF SUPERVISORS OF WESTTOWN TOWNSHIP, CHESTER COUNTY, PENNSYLVANIA, THIS ____ DAY OF ______, 20__.

____
CHAIRPERSON

____
VICE CHAIRPERSON

____
MEMBER

REVIEWED BY THE CHESTER COUNTY PLANNING COMMISSION THIS _______ DAY OF ______________, 20 ___.

____
SECRETARY

RECORDED IN THE OFFICE OF THE RECORDER OF DEEDS OF CHESTER COUNTY AT WEST CHESTER, PENNSYLVANIA, IN PLAN BOOK _____ PAGE ______, ON THE _____ DAY OF ________________ 20 ___.

____
(DEPUTY) RECORDER OF DEEDS

REVIEWED BY THE TOWNSHIP ENGINEER THIS _______ DAY OF ______________, 20 ___.

____
TOWNSHIP ENGINEER

CERTIFICATE OF CONFORMANCE – P.E.

I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE, THESE PLANS ARE IN CONFORMITY WITH ENGINEERING, ZONING, BUILDING, SANITATION AND OTHER APPLICABLE TOWNSHIP ORDINANCES AND REGULATIONS WITH EXCEPTION TO THE WAIVER REQUESTS NOTED.

Justin W Brewer
JUSTIN W. BREWER, PE LICENSE NO. PE085115

CERTIFICATE OF ACCURACY – SURVEY

I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE, ALL EASEMENT CALCULATIONS SHOWN AND DESCRIBED HEREON ARE TRUE AND CORRECT TO THE ACCURACY REQUIRED BY THE TOWNSHIP SUBDIVISION AND LAND DEVELOPMENT ORDINANCE. BOUNDARY AND BASE PLAN INFORMATION BY OTHERS.

Matthew Way
MATTHEW A. WAYMAN, PLS

PLAN PURPOSE:

1. THE PURPOSE OF THIS PLAN IS TO PROPOSE A 7,610 S.F. BUILDING ADDITION AND 26 ADDITIONAL PARKING SPACES.

WAIVER GRANTED BY WESTTOWN TOWNSHIP BOARD OF SUPERVISORS:

GRANTED AT THE FEBRUARY 16, 2021 BOARD OF SUPERVISORS MEETING

1. A WAIVER FROM § 149–600.C OF THE SUBDIVISION OF LAND ORDINANCE OF WESTTOWN TOWNSHIP TO ALLOW PLANS TO BE SUBMITTED AS PRELIMINARY/FINAL.

SPECIAL EXCEPTION GRANTED ON SEPTEMBER 15, 2020:

1. A SPECIAL EXCEPTION WAS GRANTED BY THE WESTTOWN TOWNSHIP ZONING HEARING BOARD FOR PRIMARY SCHOOL USE IN ACCORDANCE WITH SECTION 170–601.B OF THE WESTTOWN TOWNSHIP ZONING ORDINANCE WHICH STATES "RELIGIOUS USE OR PRIMARY OR SECONDARY SCHOOL, OR COLLEGE OR UNIVERSITY, WHICH SHALL COMPLY WITH SECTION 170–702.E OF THIS CHAPTER."

DLHowell
Civil Engineering
Land Planning
Environmental
www.DLHowell.com

1250 Wrights Lane
West Chester, PA 19380
Phone: (610) 918-9002
Fax: (610) 918-9003

MATTHEW A. WAYMAN
LAND SURVEYOR No. SU075525

JUSTIN WILLIAM BREWER
ENGINEER No. PE085115

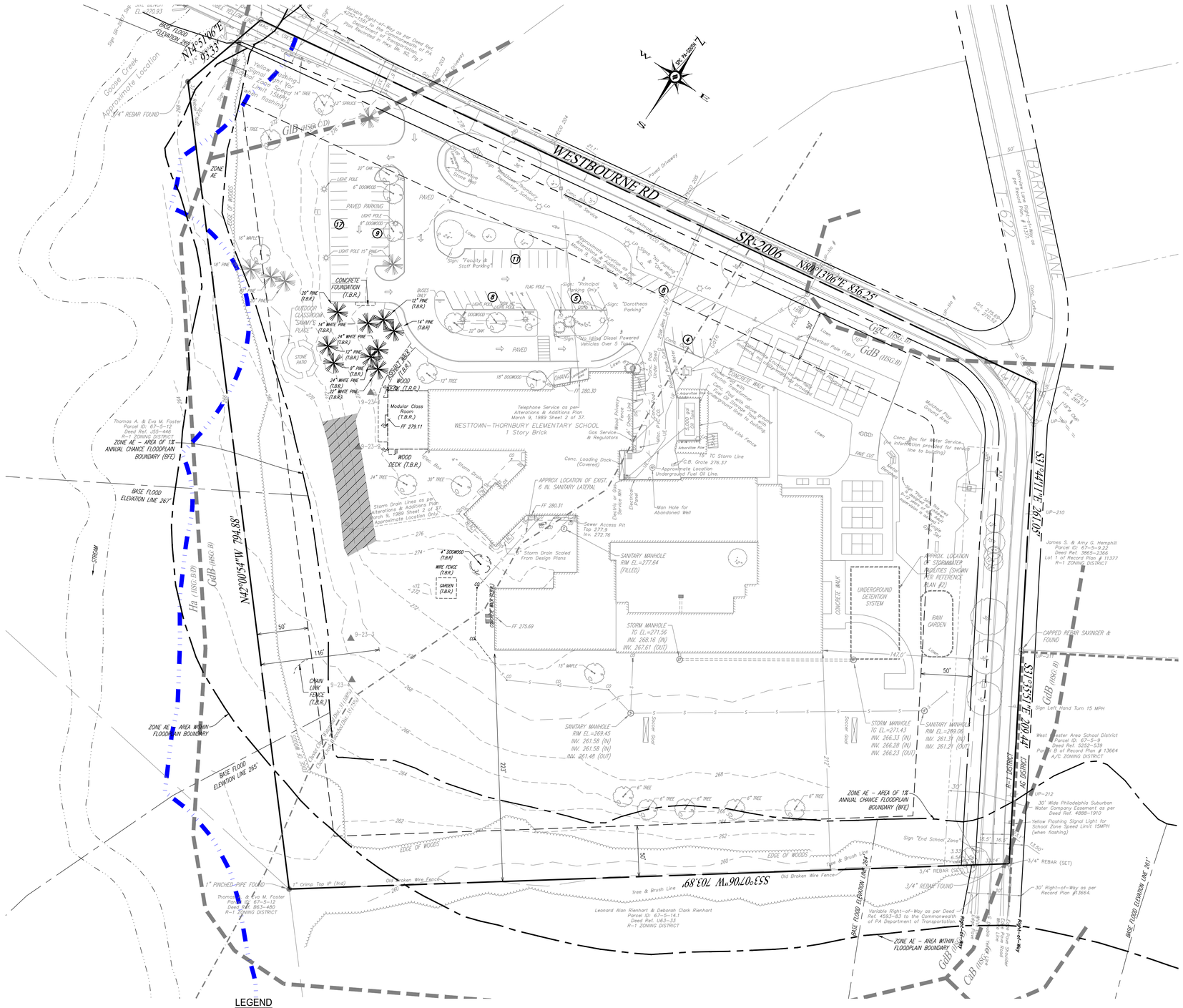
REV.	DATE	DESCRIPTION
8		
7		
6	06/30/2021	PLANS FOR RECORDING
5	05/05/2021	PLANS FOR PERMITS
4	04/29/2021	ISSUED FOR BID
3	03/09/2021	REVISED PER TOWNSHIP ENGINEER COMMENTS & CCCD LETTER DATED 03/03/2021
2	01/22/2021	REVISED PER CCCD REVIEW LETTER DATED 01/20/2021
1	12/22/2020	REVISED PER TOWNSHIP LETTER DATED 11/25/2020

PRELIMINARY/FINAL
LAND DEVELOPMENT PLAN

CLIENT: WEST CHESTER AREA SCHOOL DISTRICT
PROJECT: WESTTOWN–THORNBURY ELEMENTARY SCHOOL
LOCATION: 750 WESTBOURNE ROAD
WESTTOWN TOWNSHIP, CHESTER CO., PA.

DATE:	11/13/2020
SCALE:	1"=50'
DRAWN BY:	JWB
CHECKED BY:	JWB
PROJECT NO.:	3745
CAD FILE:	02 LAND DEVELOPMENT PLAN.dwg
PLOTTED:	06/30/2021
DRAWING NO.:	C01.1
SHEET	01 OF 13

Q:\CIVIL 3D JOBS\3745\3745 PRODUCTION PLANS\SHEET SET\SUBDIVISION & LD\02 LAND DEVELOPMENT PLAN.DWG



LOCATION MAP

SCALE: 1" = 2,000'

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MATTHEW A. WAYMAN
PROFESSIONAL LAND SURVEYOR

JUSTIN WILLIAM BREWER
PROFESSIONAL ENGINEER
No. PE085115

GENERAL NOTES

1. CHESTER COUNTY UNIFORM PARCEL ID#S: 67-5-13
2. PARTIAL SITE TOPOGRAPHY/PHYSICAL FEATURES SURVEY WAS COMPLETED BY HOWELLKLINE SURVEYING, LLC. ON APRIL 28, 2020. FULL BOUNDARY, TOPOGRAPHY AND PHYSICAL FEATURES SURVEY SHOWN WAS OBTAINED FROM A FIELD SURVEY PERFORMED BY LAKE, ROEDER, HILLARD & ASSOCIATES ON OCTOBER 21, 2009.
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1. PLAN ENTITLED "BOUNDARY & TOPOGRAPHIC SURVEY WESTTOWN–THORNBURY ELEMENTARY SCHOOL" WESTTOWN TOWNSHIP, CHESTER COUNTY, PA BY LAKE, ROEDER, HILLARD AND ASSOCIATES DATED OCTOBER 29, 2009.
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NATURAL FEATURES NOTES

1. NO WETLAND AREAS HAVE BEEN OBSERVED OR DELINEATED ON THIS PROPERTY. A SMALL AREA OF SOIL TYPE Ha (HATBORO SILT LOAM – DESIGNATED AS A HYDRIC SOIL) IS LOCATED IN THE NORTHWEST CORNER OF THE PARCEL OUTSIDE OF ANY AREAS OF PROPOSED DISTURBANCE.

SITE SOILS

MAP UNIT: GdB—GLADSTONE GRAVELLY LOAM, 3 TO 8 PERCENT SLOPES

THE GLADSTONE COMPONENT MAKES UP 85 PERCENT OF THE MAP UNIT. SLOPES ARE 3 TO 8 PERCENT. THIS COMPONENT IS ON FOOT HILLS HILLS, PIEDMONTS. THE PARENT MATERIAL CONSISTS OF LOAMY COLLUVIUM DERIVED FROM GRANITE AND GNEISS AND/OR LOAMY RESIDUUM WEATHERED FROM GRANITE AND GNEISS. DEPTH TO A ROOT RESTRICTIVE LAYER, BEDROCK, LITHIC, IS 60 TO 80 INCHES. THE NATURAL DRAINAGE CLASS IS WELL DRAINED. WATER MOVEMENT IN THE MOST RESTRICTIVE LAYER IS MODERATELY HIGH. AVAILABLE WATER TO A DEPTH OF 60 INCHES (OR RESTRICTED DEPTH) IS MODERATE. SHRINK–SWELL POTENTIAL IS LOW. THIS SOIL IS NOT FLOODED. IT IS NOT PONDED. THERE IS NO ZONE OF WATER SATURATION WITHIN A DEPTH OF 72 INCHES. ORGANIC MATTER CONTENT IN THE SURFACE HORIZON IS ABOUT 3 PERCENT. NONIRRIGATED LAND CAPABILITY CLASSIFICATION IS 2E. THIS SOIL DOES NOT MEET HYDRIC CRITERIA.

MAP UNIT: GgC—GLENELG SILT LOAM, 8 TO 15 PERCENT SLOPES

THE GLENELG COMPONENT MAKES UP 85 PERCENT OF THE MAP UNIT. SLOPES ARE 8 TO 15 PERCENT. THIS COMPONENT IS ON HILLSLOPES, UPLAND PIEDMONTS. THE PARENT MATERIAL CONSISTS OF RESIDUUM WEATHERED FROM MICA SCHIST. DEPTH TO A ROOT RESTRICTIVE LAYER IS GREATER THAN 60 INCHES. THE NATURAL DRAINAGE CLASS IS WELL DRAINED. WATER MOVEMENT IN THE MOST RESTRICTIVE LAYER IS MODERATELY HIGH. AVAILABLE WATER TO A DEPTH OF 60 INCHES (OR RESTRICTED DEPTH) IS HIGH. SHRINK–SWELL POTENTIAL IS LOW. THIS SOIL IS NOT FLOODED. IT IS NOT PONDED. THERE IS NO ZONE OF WATER SATURATION WITHIN A DEPTH OF 72 INCHES. ORGANIC MATTER CONTENT IN THE SURFACE HORIZON IS ABOUT 3 PERCENT. NONIRRIGATED LAND CAPABILITY CLASSIFICATION IS 3E. THIS SOIL DOES NOT MEET HYDRIC CRITERIA.

MAP UNIT: GLB—GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES

THE GLENVILLE COMPONENT MAKES UP 75 PERCENT OF THE MAP UNIT. SLOPES ARE 3 TO 8 PERCENT. THIS COMPONENT IS ON DRAINAGEWAYS, PIEDMONTS. THE PARENT MATERIAL CONSISTS OF COLLUVIUM DERIVED FROM METAMORPHIC ROCK OVER SCHIST, GNEISS OR PHYLLITE RESIDUUM. DEPTH TO A ROOT RESTRICTIVE LAYER, FRAGIPAN, IS 29 TO 31 INCHES. THE NATURAL DRAINAGE CLASS IS MODERATELY WELL DRAINED. WATER MOVEMENT IN THE MOST RESTRICTIVE LAYER IS MODERATELY LOW. AVAILABLE WATER TO A DEPTH OF 60 INCHES (OR RESTRICTED DEPTH) IS MODERATE. SHRINK–SWELL POTENTIAL IS LOW. THIS SOIL IS NOT FLOODED. IT IS NOT PONDED. A SEASONAL ZONE OF WATER SATURATION IS AT 20 INCHES DURING JANUARY, FEBRUARY, MARCH, APRIL, NOVEMBER, DECEMBER. ORGANIC MATTER CONTENT IN THE SURFACE HORIZON IS ABOUT 3 PERCENT. NONIRRIGATED LAND CAPABILITY CLASSIFICATION IS 2E. THIS SOIL DOES NOT MEET HYDRIC CRITERIA.

MAP UNIT: Ha—HATBORO SILT LOAM

THE HATBORO COMPONENT MAKES UP 95 PERCENT OF THE MAP UNIT. SLOPES ARE 0 TO 3 PERCENT. THIS COMPONENT IS ON FLOOD PLAINS, VALLEYS. THE PARENT MATERIAL CONSISTS OF ALLUVIUM DERIVED FROM METAMORPHIC AND SEDIMENTARY ROCK. DEPTH TO A ROOT RESTRICTIVE LAYER, BEDROCK, LITHIC, IS 60 TO 99 INCHES. THE NATURAL DRAINAGE CLASS IS POORLY DRAINED. WATER MOVEMENT IN THE MOST RESTRICTIVE LAYER IS MODERATELY HIGH. AVAILABLE WATER TO A DEPTH OF 60 INCHES (OR RESTRICTED DEPTH) IS HIGH. SHRINK–SWELL POTENTIAL IS LOW. THIS SOIL IS FREQUENTLY FLOODED. IT IS NOT PONDED. A SEASONAL ZONE OF WATER SATURATION IS AT 3 INCHES DURING JANUARY, FEBRUARY, MARCH, APRIL, MAY, OCTOBER, NOVEMBER, DECEMBER. ORGANIC MATTER CONTENT IN THE SURFACE HORIZON IS ABOUT 3 PERCENT. NONIRRIGATED LAND CAPABILITY CLASSIFICATION IS 4W. THIS SOIL MEETS HYDRIC CRITERIA.

LEGEND

— — —	EX. PROPERTY LINE
— — —	PROP. PROPERTY LINE
— — —	EX. RIGHT–OF–WAY
— — —	PROP. RIGHT–OF–WAY
☐	EX. MONUMENT
☒	PROP. MONUMENT
○	EX. IRON PIPE
●	PROP. IRON PIPE
—·—	EX. EASEMENT
—·—	PROP. EASEMENT
—\W/—	EX. WETLANDS
242	EXISTING CONTOUR
242	PROPOSED CONTOUR
X 123.00	EXISTING SPOT ELEV.
x 123.00	NEW SPOT ELEV.
GEB2	SOILS TYPE
— —	SOILS LINE
═	EX. CONC. CURB
═	PROP. CONC. CURB
— — — —	EX. EDGE OF PAVING
——	PROP. EDGE OF PAVING
	EX. LIGHT POLE
	PROP. LIGHT POLE
—X—	EX. FENCE
MB	EX. MAIL BOX
	EX. SIGN
	PROP. SIGN
④	EXIST. PARKING SPACES
4	PROP. PARKING SPACES
(TBR)	TO BE REMOVED
—T—	EX. TELE. LINE
—T—	PROP. TELE. LINE
—E—	EX. ELEC. LINE
—E—	PROP. ELEC. LINE
○	EX. UTILITY POLE
○	PROP. UTILITY POLE
	EX. GUY ANCHOR
—G—	EX. GAS LINE
—G—	PROP. GAS LINE
G.V.	EX. GAS VALVE
G.V.	PROP. GAS VALVE
═ ═ ═	EX. STORM SEWER LINE
▬ ▬ ▬	PROP. STORM SEWER LINE
▨	EX. STORM INLET
▨	PROP. STORM INLET
IC 1	PROP. STORM INLET ID
	PROP. SEEPAGE BED
—S—	EX. SANITARY SEWER LINE
—S—	PROP. SAN. SEWER LINE
—L—	PROP. SAN. SEWER LATERAL
MH 1	PROP. SANITARY MH. ID
—W—	EX. WATER LINE
—W—	PROP. WATER LINE
—WL—	PROP. WATER LATERAL
—FW—	PROP. FIRE WATER LINE
W.V.	EX. WATER VALVE
W.V.	PROP. WATER VALVE
F.H.	EX. HYDRANT
F.H.	PROP. HYDRANT
○	EX. MANHOLE
○	PROP. MANHOLE
●	EX. PERC TEST
▲	EX. TEST PIT
▒	PRECAUTIONARY SLOPES (15%–25%)
▓	PROHIBITIVE SLOPES (25%+)
▨	MAN–MADE STEEP SLOPES
▬ ┆ ▬	75' TOWNSHIP RIPARIAN BUFFER

EXISTING CONDITIONS–CONSERVATION PLAN

SCALE: 1" = 50'

50 0 25 50 100

GRAPHIC SCALE
1 inch = 50 feet

REV.	DATE	DESCRIPTION
8		
7		
6	06/30/2021	PLANS FOR RECORDING
5	05/05/2021	PLANS FOR PERMITS
4	04/29/2021	ISSUED FOR BID
3	03/09/2021	REVISED PER TOWNSHIP ENGINEER COMMENTS & CCCD LETTER DATED 03/03/2021
2	01/22/2021	REVISED PER CCCD REVIEW LETTER DATED 01/20/2021
1	12/22/2020	REVISED PER TOWNSHIP LETTER DATED 11/25/2020

PRELIMINARY/FINAL
EXISTING CONDITIONS–CONSERVATION PLAN

CLIENT: WEST CHESTER AREA SCHOOL DISTRICT
PROJECT: WESTTOWN–THORNBURY ELEMENTARY SCHOOL
LOCATION: 750 WESTBOURNE ROAD
WESTTOWN TOWNSHIP, CHESTER CO., PA.

DATE:	11/13/2020
SCALE:	1"=50'
DRAWN BY:	JWB
CHECKED BY:	JWB
PROJECT NO.:	3745
CAD FILE:	03 EXISTING CONDITIONS PLAN.dwg
PLOTTED:	06/30/2021
DRAWING NO.:	C02.1
SHEET	02 OF 13

Q:\CIVIL 3D JOBS\3745\3745 PRODUCTION PLANS\SHEET SET\SUBDIVISION & LD\03 EXISTING CONDITIONS PLAN.DWG

CALL BEFORE YOU DIG!
PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE–STOP CALL

Pennsylvania One Call System, Inc

1–800–242–1776

ONE CALL NOTE
SCALE: **NO SCALE**

PA ONE CALL

ACT 287 SERIAL NUMBER:
20201611238

DL HOWELL & ASSOCIATES, INC. DOES NOT GUARANTEE THE ACCURACY OF THE LOCATIONS FOR EXISTING SUBSURFACE UTILITY LINES, STRUCTURES, ETC. SHOWN ON THE PLANS, NOR DOES HOWELL KLINE SURVEYING, LLC. 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

COMPANY: CROWN CASTLE
ADDRESS: 1500 CORPORATE DR CANONSBURG, PA. 15317
CONTACT: TYLER STEIN
EMAIL: tyler.stein@crowncastle.com

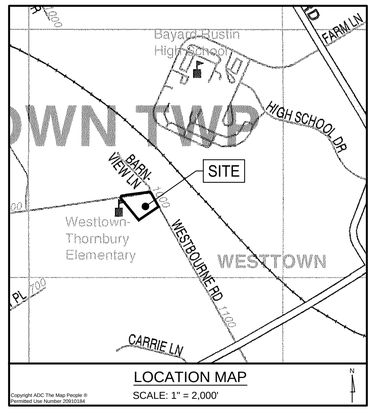
COMPANY: AQUA PENNSYLVANIA INC
ADDRESS: 762 W LANCASTER AVE. BRYN MAWR, PA. 19010
CONTACT: STEVE PIZZI
EMAIL: sbpizzi@aquaamerica.com

COMPANY: COMCAST
ADDRESS: 1004 CORNERSTONE BLVD DOWNINGTOWN, PA. 19335
CONTACT: TOM RUSSO
EMAIL: tom_russo@coble.comcast.com

COMPANY: PECO ENERGY C/O USIC
ADDRESS: 450 S HENDERSON RD SUITE B KING OF PRUSSIA, PA. 19406
CONTACT: NIKKIA SIMPKINS
EMAIL: NIKKIASIMPKINS@USICLLC.COM

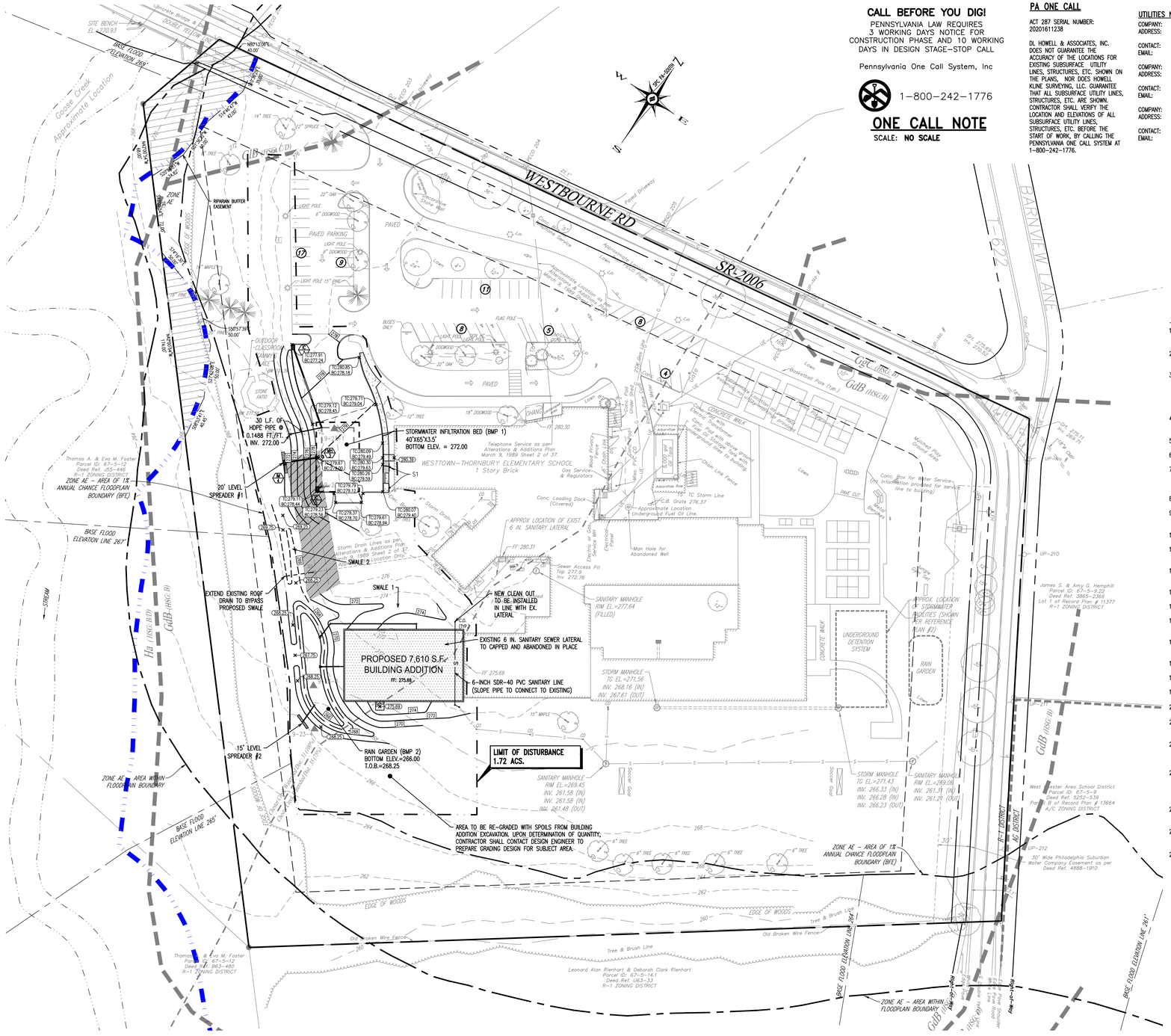
COMPANY: WESTTOWN TOWNSHIP
ADDRESS: 1039 WILMINGTON PIKE WEST CHESTER, PA. 19382
CONTACT: MARK GROSS
EMAIL: mgross@westtown.org

COMPANY: VERIZON PENNSYLVANIA LLC
ADDRESS: 1050 VIRGINIA DR FORT WASHINGTON, PA. 19034
CONTACT: DARLINE LEPPERD JOHNSON



GRADING & UTILITY GENERAL NOTES:

1. PRIOR TO STARTING CONSTRUCTION, ALL UTILITY SERVICES IN THE AREA SHALL BE LOCATED AND MEASURES TAKEN TO PROTECT THE EXISTING FACILITIES. ANY DAMAGE TO EXISTING FACILITIES SHALL BE IMMEDIATELY AND COMPLETELY REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE UTILITY "ONE–CALL" NUMBER 72 HOURS PRIOR TO COMMENCING ANY CONSTRUCTION ACTIVITIES ON THIS SITE. CONTRACTOR SHALL ALSO NOTIFY LOCAL WATER AND SEWER DEPARTMENTS TO MARK OUT THEIR UTILITIES IF NECESSARY.
3. LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM FIELD SURVEY AND EXISTING RECORDS. COMPLETENESS AND ACCURACY OF EXISTING UTILITY INFORMATION IS NOT GUARANTEED. PRIOR TO THE START OF ANY CONSTRUCTION, THE CONTRACTOR SHALL ACCURATELY FIELD MEASURE LOCATION AND ELEVATION OF EXISTING UTILITIES AT POINTS OF CONNECTION AND POTENTIAL CONFLICT. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER AND ENGINEER IN WRITING OF ANY DEVIATION FROM INFORMATION SHOWN ON THESE PLANS. CONSTRUCTION SHALL COMMENCE BEGINNING AT THE LOWEST INVERT (POINT OF CONNECTION) AND PROGRESS UP GRADIENT. INTERFACE POINTS (CROSSINGS) WITH EXISTING UNDERGROUND INSTALLATIONS SHALL BE FIELD VERIFIED BY TEST PIT PRIOR TO COMMENCEMENT OF CONSTRUCTION.
4. CONSTRUCTION SHALL BE LOCATED, AND MEASURES TAKEN TO PROTECT THE EXISTING FACILITIES IN ACCORDANCE WITH PENNSYLVANIA ACT 187. ANY DAMAGE TO EXISTING FACILITIES RESULTING FROM THE NEGLIGENCE OF THE CONTRACTOR SHALL BE IMMEDIATELY AND COMPLETELY REPAIRED AT THE CONTRACTOR'S EXPENSE.
5. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT ALL PERSONS, VEHICLES AND BUILDINGS WITHIN THE CONSTRUCTION AREAS FROM INJURY AND DAMAGE DURING THE COURSE OF WORK.
6. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.
7. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF EXISTING TOPOGRAPHIC INFORMATION PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO ENSURE 1.0% MIN. SLOPE ON ASPHALT AND 2.0% MIN. ON GRASS, TO PREVENT PONDING. ANY DISCREPANCIES THAT MAY AFFECT THE PUBLIC SAFETY OR PROJECT COST, MUST BE IDENTIFIED TO THE ENGINEER IN WRITING IMMEDIATELY. PROCEEDING WITH CONSTRUCTION WITH DESIGN DISCREPANCIES IS DONE SO AT THE CONTRACTOR'S OWN RISK.
8. ALL SITE IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE LOCAL, COUNTY, STATE AND FEDERAL STATUTES AND REGULATIONS.
9. ALL TRENCHING, SHORING AND EXCAVATING OPERATIONS SHALL BE PERFORMED IN COMPLIANCE WITH THE REQUIREMENTS OF THE U.S. DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
10. SCALED DIMENSIONS FROM THIS PLAN SHALL NOT BE USED FOR CONSTRUCTION WITHOUT CONFIRMATION FROM D.L. HOWELL & ASSOC., INC.
11. SUBBASE MATERIAL FOR CURB OR ASPHALT SHALL BE FREE OF ORGANICS AND OTHER UNSUITABLE MATERIALS. IF ANY UNSUITABLE SOIL IS ENCOUNTERED DURING EXCAVATION, THE CONTRACTOR SHALL REMOVE IT AND REPLACE TO THE RECOMMENDATIONS OUTLINED IN A GEOTECHNICAL EVALUATION PREPARED SPECIFICALLY FOR THIS SITE.
12. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE LOCAL AUTHORITY OR GOVERNING AGENCY OF THE BEGINNING DATE OF CONSTRUCTION AND TO ENSURE THAT NO WORK IS PERFORMED WITHOUT THE REQUIRED PERMITS AND INSPECTIONS BY THE LOCAL AUTHORITY OR GOVERNING AGENCY.
13. IF CONDITIONS ON THE GROUND DIFFER FROM THOSE SHOWN ON THE PLAN, THE CONTRACTOR SHALL NOTIFY IMMEDIATELY IN WRITING THE ENGINEER OF RECORD.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIRED TRAFFIC CONTROL, SHEETING, SHORING AND BARRICADING OF OPEN EXCAVATIONS.
15. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND BE SOLELY RESPONSIBLE FOR AND HAVE CONTROL OVER CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES, SAFETY PRECAUTIONS, AND PROGRAMS IN CONNECTION WITH THE WORK AND FOR COORDINATION OF ALL PORTIONS OF THE WORK UNDER CONTRACT.
16. CONTRACTOR SHALL REVIEW VARIOUS PHASES OF WORK WITH THE OWNER TO DETERMINE WHETHER ANY PHASE WILL CONFLICT WITH THE OWNERS DAILY OPERATIONS. WHERE CONFLICT IS APPARENT THE CONTRACTOR SHALL COORDINATE WITH THE OWNER THE WORK TO BE PERFORMED SO AS TO BE THE LEASE DISRUPTIVE.
17. ALL INLETS SHALL BE CONSTRUCTED FLUSH WITH THE BINDER COURSE.
18. ALL STORM SEWER SHALL BE INSTALLED IN ACCORDANCE WITH WESTTOWN TOWNSHIP STANDARDS AND PENNDOT PUBLICATION 408 SPECIFICATIONS.
19. ALL CURBING, CONCRETE OR PAVING TO BE REMOVED SHALL BE SAW CUT FIRST TO ENSURE A CLEAN SEPARATION FROM EXISTING.
20. ANY PAVING DAMAGED DURING CONSTRUCTION ACTIVITIES SHALL BE REMOVED TO SUBGRADE AND REPLACED WITH THE PAVING SECTION AT THE CONTRACTOR'S EXPENSE.
21. IN ANY AREA SUBJECT TO VEHICULAR ACTIVITY DURING CONSTRUCTION, A MINIMUM OF 18 INCHES OF COVER SHALL BE MAINTAINED FOR ALL UNDERGROUND UTILITIES (STORMWATER, SANITARY SEWER, WATER, ELECTRIC, GAS, ETC.)
22. ALL FILL SHALL BE COMPACTED TO PROVIDE STABILITY OF MATERIAL AND TO PREVENT UNDESIRABLE SETTLEMENTS. THE FILL SHALL BE SPREAD IN A SERIES OF LAYERS, NOT EXCEEDING EIGHT INCHES IN THICKNESS, AND BE COMPACTED BY A SHEEPS FOOT ROLLER OR OTHER APPROVED METHOD AFTER EACH LAYER IS SPREAD. THE TOWNSHIP ENGINEER MAY REQUIRE COMPACTION TESTS AND REPORTS.
23. IF THE CONTRACTOR DEVIATES FROM THE PLANS AND SPECIFICATIONS, INCLUDING THE NOTES CONTAINED THEREON, WITHOUT FIRST OBTAINING PRIOR WRITTEN AUTHORIZATION FOR SUCH DEVIATIONS FROM THE OWNER AND ENGINEER, IT SHALL BE RESPONSIBLE FOR THE PAYMENT OF ALL COSTS TO CORRECT ANY WORK DONE. ALL FINES OR PENALTIES ASSESSED WITH RESPECT THERETO AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING FROM IT SHALL INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ALL SUCH COSTS TO CORRECT ANY SUCH WORK AND FROM ALL SUCH FINES AND PENALTIES, COMPENSATORY AND PUNITIVE DAMAGES AND COSTS OF ANY NATURE RESULTING THEREFROM.
24. A MINIMUM 18" VERTICAL CLEARANCE SHOULD BE PROVIDED WHERE ANY AND ALL PLACES WHERE THE SEWER LATERALS AND WATER MAIN CROSS. A MINIMUM 18" VERTICAL CLEARANCE SHOULD ALSO BE PROVIDED WHERE THE SEWER LATERALS AND WATER SERVICE PIPING CROSS ALL STORM SEWERS.
25. WHEREVER POSSIBLE, WATER SERVICE PIPING SHOULD CROSS ABOVE SANITARY OR STORM SEWER PIPING WITH THE MINIMUM 18" VERTICAL CLEARANCE. A CONCRETE ENCASEMENT MUST BE UTILIZED WHEREVER THE 18" VERTICAL CLEARANCE CANNOT BE PROVIDED.
26. A 10' MINIMUM HORIZONTAL SEPARATION DISTANCE AND A 18" MINIMUM VERTICAL VERTICAL SEPARATION DISTANCE SHALL BE PROVIDED BETWEEN THE GRAVITY SANITARY SEWERS AND WATER MAINS. A CONCRETE ENCASEMENT MUST BE UTILIZED WHEREVER THE 18" VERTICAL CLEARANCE CANNOT BE PROVIDED.



GRADING AND UTILITIES PLAN
SCALE: 1" = 50'

50 0 25 50 100
GRAPHIC SCALE
1 inch = 50 feet

PRECAUTIONARY SLOPES (15%–25%)
PROHIBITIVE SLOPES (25%+)
MAN–MADE STEEP SLOPES
75' TOWNSHIP RIPARIAN BUFFER

LEGEND

EX. PROPERTY LINE
PROP. PROPERTY LINE
EX. RIGHT–OF–WAY
PROP. RIGHT–OF–WAY
EX. MONUMENT
PROP. MONUMENT
EX. IRON PIPE
PROP. IRON PIPE
EX. EASEMENT
PROP. EASEMENT
EX. WETLANDS

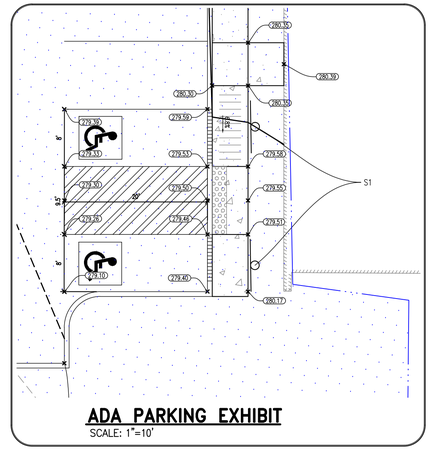
242 EXISTING CONTOUR
[242] PROPOSED CONTOUR
X 123.00 EXISTING SPOT ELEV.
x 123.00 NEW SPOT ELEV.
GEB2 SOILS TYPE
SOILS LINE
EX. CONC. CURB
PROP. CONC. CURB
EX. EDGE OF PAVING
PROP. EDGE OF PAVING
EX. LIGHT POLE

PROP. LIGHT POLE
EX. FENCE
EX. MAIL BOX
EX. SIGN
PROP. SIGN
EXIST. PARKING SPACES
PROP. PARKING SPACES
(TBR) TO BE REMOVED
EX. TELE. LINE
PROP. TELE. LINE
EX. ELEC. LINE

E PROP. ELEC. LINE
EX. UTILITY POLE
PROP. UTILITY POLE
G EX. GAS LINE
G PROP. GAS LINE
G.V.M.H. EX. GAS VALVE
G.V.M.H. PROP. GAS VALVE
EX. STORM SEWER LINE
PROP. STORM SEWER LINE
EX. STORM INLET

PROP. STORM INLET
PROP. STORM INLET ID
PROP. SEEPAGE BED
S EX. SANITARY SEWER LINE
S PROP. SAN. SEWER LINE
L PROP. SAN. SEWER LATERAL
PROP. SANITARY MH. ID
W EX. WATER LINE

W PROP. WATER LINE
WL PROP. WATER LATERAL
FW PROP. FIRE WATER LINE
W.V.M.H. EX. WATER VALVE
W.V.M.H. PROP. WATER VALVE
F.H. EX. HYDRANT
F.H. PROP. HYDRANT
EX. MANHOLE
PROP. MANHOLE
EX. PERC TEST
EX. TEST PIT



DLHowell
Civil Engineering
Land Planning
Environmental
www.DLHowell.com

1250 Wrights Lane
West Chester, PA 19380
Phone: (610) 918-9002
Fax: (610) 918-9003

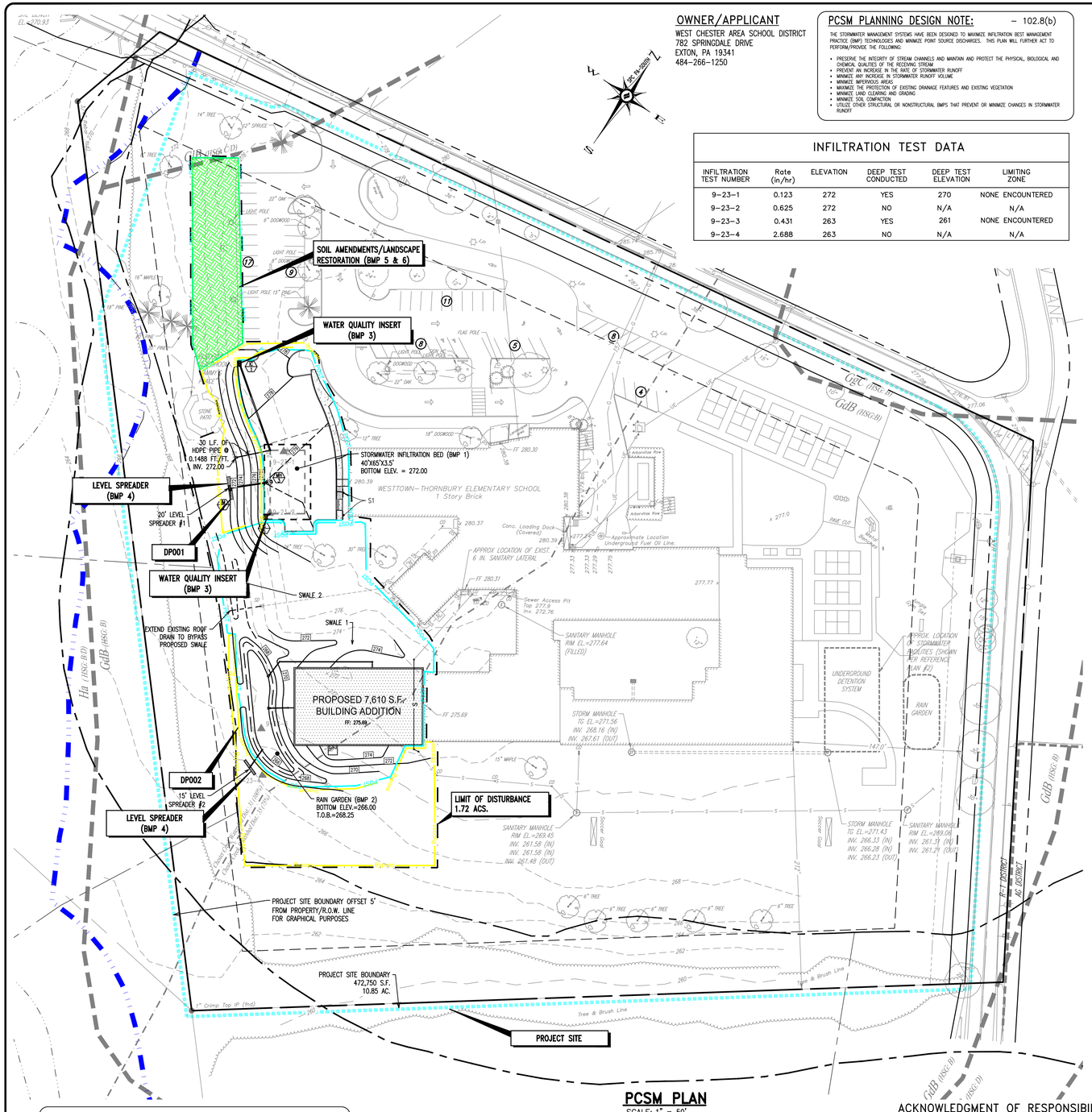
I HEREBY CERTIFY THAT I AM A REGISTERED PROFESSIONAL ENGINEER IN THE COMMONWEALTH OF PENNSYLVANIA
JUSTIN WILLIAM BREWER ENGINEER No. PE085115

REV.	DATE	DESCRIPTION
8		
7	06/30/2021	PLANS FOR RECORDING
6	05/05/2021	PLANS FOR PERMITS
5	04/29/2021	ISSUED FOR BID
4	03/09/2021	REVISED PER TOWNSHIP ENGINEER COMMENTS & CCCD LETTER DATED 03/03/2021
3	01/22/2021	REVISED PER CCCD REVIEW LETTER DATED 01/20/2021
2	12/22/2020	REVISED PER TOWNSHIP LETTER DATED 11/25/2020

PRELIMINARY/FINAL
GRADING AND UTILITIES PLAN

CLIENT: WEST CHESTER AREA SCHOOL DISTRICT
PROJECT: WESTTOWN–THORNBURY ELEMENTARY SCHOOL
LOCATION: 750 WESTBOURNE ROAD
WESTTOWN TOWNSHIP, CHESTER CO., PA.

DATE:	11/13/2020
SCALE:	1"=50'
DRAWN BY:	JWB
CHECKED BY:	JWB
PROJECT NO.:	3745
CAD FILE: 04 GRADING AND UTILITIES PLAN.dwg	
PLOTTED:	06/30/2021
DRAWING NO.:	C03.1
SHEET	03 OF 13



PCSM PLAN

SCALE: 1" = 50'

GRAPHIC SCALE

1 inch = 50 feet

OWNER/APPLICANT

WEST CHESTER AREA SCHOOL DISTRICT
782 SPRINGDALE DRIVE
EXTON, PA 19341
484–266–1250

PCSM PLANNING DESIGN NOTE: – 102.8(b)

THE STORMWATER MANAGEMENT SYSTEMS HAVE BEEN DESIGNED TO MAXIMIZE INFILTRATION BEST MANAGEMENT PRACTICE (BMP) TECHNOLOGIES AND MINIMIZE POINT SOURCE DISCHARGES. THIS PLAN WILL FURTHER ACT TO PERFORM/PROVIDE THE FOLLOWING:

- PRESERVE THE INTEGRITY OF STREAM CHANNELS AND MAINTAIN AND PROTECT THE PHYSICAL, BIOLOGICAL AND CHEMICAL QUALITIES OF THE RECEIVING STREAM
- PREVENT AN INCREASE IN THE RATE OF STORMWATER RUNOFF
- MINIMIZE ANY INCREASE IN STORMWATER RUNOFF VOLUME
- MINIMIZE IMPERVIOUS AREAS
- MAXIMIZE THE PROTECTION OF EXISTING DRAINAGE FEATURES AND EXISTING VEGETATION
- MINIMIZE LAND CLEARING AND GRADING
- MINIMIZE SOIL COMPACTION
- UTILIZE OTHER STRUCTURAL OR NONSTRUCTURAL BMPS THAT PREVENT OR MINIMIZE CHANGES IN STORMWATER RUNOFF

INFILTRATION TEST DATA

INFILTRATION TEST NUMBER	Rate (in/hr)	ELEVATION	DEEP TEST CONDUCTED	DEEP TEST ELEVATION	LIMITING ZONE
9–23–1	0.123	272	YES	270	NONE ENCOUNTERED
9–23–2	0.625	272	NO	N/A	N/A
9–23–3	0.431	263	YES	261	NONE ENCOUNTERED
9–23–4	2.688	263	NO	N/A	N/A

STORMWATER MANAGEMENT REPORT REFERENCE NOTE:

REFERENCE THE STORMWATER MANAGEMENT REPORT FOR THE WESTTOWN THORNBURY ELEMENTARY SCHOOL BUILDING EXPANSION DATED NOVEMBER 13, 2020, LAST REVISED DECEMBER 22, 2020 FOR HYDROLOGIC AND HYDRAULIC CALCULATIONS SPECIFIC TO THIS PROPOSED STORMWATER MANAGEMENT SYSTEM DESIGN.

LEGEND

EX. PROPERTY LINE
PROP. PROPERTY LINE
EX. RIGHT–OF–WAY
PROP. RIGHT–OF–WAY
EX. MONUMENT
PROP. MONUMENT
EX. IRON PIPE
PROP. IRON PIPE
EX. EASEMENT
PROP. EASEMENT
EX. WETLANDS
75' TOWNSHIP RIPARIAN BUFFER
PROJECT SITE BOUNDARY
EX. STREAM

242 EXISTING CONTOUR
242 PROPOSED CONTOUR
X 123.00 EXISTING SPOT ELEV.
x 123.00 NEW SPOT ELEV.
GEB2 SOILS TYPE
SOILS LINE
EX. CONC. CURB
PROP. CONC. CURB
EX. EDGE OF PAVING
PROP. EDGE OF PAVING
EX. LIGHT POLE

PROP. LIGHT POLE
EX. FENCE
MB EX. MAIL BOX
EX. SIGN
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PROP. ELEC. LINE
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PROP. UTILITY POLE
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EX. GAS LINE
PROP. GAS LINE
G.V. EX. GAS VALVE
G.V. PROP. GAS VALVE
EX. STORM SEWER LINE
PROP. STORM SEWER LINE
EX. STORM INLET

PROP. STORM INLET
IC 1 PROP. STORM INLET ID
PROP. SEEPAGE BED
EX. SANITARY SEWER LINE
PROP. SAN. SEWER LINE
PROP. SAN. SEWER LATERAL
MH 1 PROP. SANITARY MH. ID
EX. WATER LINE

PROP. WATER LINE
PROP. WATER LATERAL
PROP. FIRE WATER LINE
W.V. EX. WATER VALVE
W.V. PROP. WATER VALVE
F.H. EX. HYDRANT
F.H. PROP. HYDRANT
EX. MANHOLE
PROP. MANHOLE
EX. PERC TEST
EX. TEST PIT

POST CONSTRUCTION STORMWATER FACILITIES OPERATION AND MAINTENANCE PROCEDURES:

WITHIN THREE (3) MONTHS OF THE APPLICATION FOR NOTICE OF TERMINATION OF THE NPDES PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES TO THE DEPARTMENT OF ENVIRONMENTAL PROTECTION, THE PROPERTY OWNER SHALL ASSUME RESPONSIBILITY FOR STORMWATER RELATED DISCHARGES FROM THE SITE. SUBSEQUENTLY ALL INSPECTIONS AND ANY MAINTENANCE REQUIRED FOR THE CONTINUED OPERATION OF POST CONSTRUCTION STORMWATER MANAGEMENT BMP'S SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER. INSPECTIONS SHALL BE COMPLETED FOR EACH INSPECTION PERIOD INDICATED AND FILED PROMPTLY WITH THE TOWNSHIP MS4 ADMINISTRATOR. ALL INSPECTIONS SHALL BE IN ACCORDANCE WITH THE OPERATIONS AND MAINTENANCE AGREEMENT.

THE OPERATION AND MAINTENANCE REQUIREMENTS FOR THE POST CONSTRUCTION STORMWATER MANAGEMENT BMP'S FOR THIS PROJECT INCLUDE THE FOLLOWING:

SUBSURFACE INFILTRATION BED

INSPECTION:
UNDERGROUND INFILTRATION SYSTEMS SHALL BE INSPECTED QUARTERLY AND AFTER MAJOR RAINFALL EVENTS (ANY EVENT GREATER THAN 2 INCHES OF RAINFALL WITHIN 24 HOURS) FOR THE FIRST TWO (2) YEARS AND THEN YEARLY AFTER THAT. INSPECTION ITEMS SHALL INCLUDE THE CONDITION OF THE INSPECTION PORTS AND ANY VISIBLE CONNECTIONS, SEDIMENT ACCUMULATION OR STANDING WATER IN THE INLETS AND ANY SETTLING OR BREAKOUTS ALONG THE LENGTH OF THE SYSTEM. INSPECT ROOF LEADERS AND OVERFLOW PIPES FOR BLOCKAGE. ACCUMULATED RUNOFF WITHIN THE STORAGE SYSTEM FROM ALL STORM EVENTS SHOULD BE DISSIPATED WITHIN 72 HOURS.

MAINTENANCE, REPAIR AND REPLACEMENT:
REMOVE ANY ACCUMULATED SEDIMENT AND DEBRIS FROM THE INLET SUMP. IF SEDIMENT IS OBSERVED IN THE MANIFOLD PIPE, FLUSH THE SYSTEM WITH A HIGH POWERED JET, MAKING SURE TO CATCH AND DISPOSE OF THE DISPLACED MATERIAL BY AN APPROVED METHOD SUCH AS A VACUUM TRUCK. UNCLOG ROOF CONNECTIONS AND OVERFLOW PIPES AS NECESSARY AND REPAIR ANY DISCONNECTED ROOF LEADERS. IF SIGNIFICANT SETTLEMENT HAS OCCURRED, THE COLLECTED RUNOFF DOES NOT DEWATER OR THERE ARE BREAKOUTS, CONSULT THE TOWNSHIP AND THE ENGINEER OF RECORD FOR APPROPRIATE RENOVATION MEASURES.

RAIN GARDENS/BIORETENTION AREAS

INSPECTION:
RAIN GARDENS SHALL BE INSPECTED QUARTERLY AND AFTER MAJOR RAINFALL EVENTS (ANY EVENT GREATER THAN 2 INCHES OF RAINFALL WITHIN 24 HOURS) FOR THE FIRST TWO (2) YEARS AND THEN TWICE YEARLY AFTER THAT. INSPECTION ITEMS SHALL INCLUDE THE CONDITION OF THE EMBANKMENT, SPILLWAY, OUTLET STRUCTURE AND ORIFICE AS WELL AS THE OCCURRENCE OF STANDING WATER AND UNDESIRABLE VEGETATION. RUNOFF FROM ALL STORM EVENTS SHOULD DEWATER WITHIN 48 HOURS.

MAINTENANCE:
DO NOT ACCESS THE INTERIOR SURFACE WITH EQUIPMENT UNLESS IT IS COMPLETELY DRY – USE ONLY LOW GROUND PRESSURE (3 TO 5 POUNDS PER SQUARE INCH) BEARING VEHICLES. OUTLET STRUCTURES AND ORIFICES SHALL BE CLEARED IMMEDIATELY OF ALL DEBRIS TO ASSURE THE PROPER OPERATION OF THE OUTLET CONTROLS. PATCH CONCRETE DAMAGE AS NECESSARY. ELIMINATE ANY UNDESIRABLE WOODY VEGETATION FROM EMBANKMENTS WITHOUT DAMAGE TO THE EMBANKMENT. CHECK FOR AND REPAIR DAMAGE FROM BURROWING ANIMALS IN ALL BASIN AREAS. IF SYSTEM FAILS TO DEWATER WITHIN 48 HOURS CONSULT THE TOWNSHIP AND THE ENGINEER OF RECORD FOR APPROPRIATE MEASURES. REGRADE AND REPLANT AREAS WHICH HAVE SETTLED AND HAVE STANDING POOLS OF WATER. STABILIZE WITH SEED AND MULCH TO ORIGINAL SPECIFICATIONS. IF BASIN BOTTOM FAILS TO DRAIN FREELY, REMOVE SEDIMENT AND TILL LIGHTLY, THEN REPLANT. MAINTENANCE PROCEDURES ASSOCIATED WITH THE BASIN BOTTOMS SHALL BE AS FOLLOWS:

- FIRST YEAR
  CONTROL WEEDY GROWTH, BY MOWING WITH A FLAIL OR ROTARY TYPE MOWER TO A HEIGHT OF 6" APPROXIMATELY ONCE A MONTH OR WHENEVER GROWTH REACHES 10"–14". THE VEGETATION IS TO BE CHOPPED UP FINELY ENOUGH SO THAT IT WILL NOT SMOTHER AND SHADE OUT THE DESIRED SEEDLINGS.
  IN ORDER TO CONTROL INVASIVE SPECIES THE SEEDLINGS ARE TO BE INSPECTED TWICE A SEASON BY AN INDIVIDUAL THAT IS ABLE TO DISTINGUISH BETWEEN DESIRABLE AND UNDESIRABLE SPECIES. ANY UNDESIRABLE SPECIES ARE TO BE TREATED WITH A GLYPHOSATE HERBICIDE (RODEO OR APPROVED EQUAL). THE HERBICIDE IS TO BE APPLIED BY A LICENSED APPLICATOR AND ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. WICK APPLICATION OR OTHER METHOD OF SPOT SPECIFIC APPLICATION IS RECOMMENDED IN ORDER TO TARGET UNDESIRABLE SPECIES. HAND PULLING OF WEEDS IS NOT RECOMMENDED.
- SUBSEQUENT YEARS:
  MOW ANNUALLY IN MARCH WITH A ROTARY MOWER TO A HEIGHT OF 6 INCHES (NO LOWER)
  IN ORDER TO CONTROL INVASIVE SPECIES THE SEEDING IS TO BE INSPECTED TWICE A SEASON BY AN INDIVIDUAL THAT IS ABLE TO DISTINGUISH BETWEEN DESIRABLE AND UNDESIRABLE SPECIES. ANY UNDESIRABLE SPECIES ARE TO BE TREATED WITH A GLYPHOSATE HERBICIDE (RODEO OR APPROVED EQUAL). THE HERBICIDE IS TO BE APPLIED BY A LICENSED APPLICATOR AND ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. WICK APPLICATION OR OTHER METHOD OF SPOT SPECIFIC APPLICATION IS RECOMMENDED TO TARGET UNDESIRABLE SPECIES. HAND PULLING OF WEEDS IS NOT RECOMMENDED.

INLETS AND DRAINS

INSPECTION: STORMWATER INLETS AND DRAINS SHALL BE INSPECTED QUARTERLY AND AFTER MAJOR RAINFALL EVENTS FOR THE FIRST TWO (2) YEARS AND AND THEN YEARLY AFTER THAT. CHECK FOR SEDIMENT DEPOSITION IN THE SUMP. THE ACCUMULATION OF SEDIMENT CAN BE DETERMINED BY PROBING WITH A MEASURING STICK. IF APPLICABLE, FOR WATER QUALITY INLETS (THOSE WITH A HOOD DEVICE INSTALLED), CHECK FOR PROPER STRUCTURE ALIGNMENT AND ATTACHMENT, AND BLOCKAGE OF THE ANTI–SIPHON TUBE.

MAINTENANCE: SEDIMENT SHALL BE REMOVED FROM THE SUMP WHEN IT HAS REACHED 6 INCHES IN DEPTH OR YEARLY WHICHEVER COMES FIRST. VACUUM TRUCKS ARE THE RECOMMENDED REMOVAL METHOD. CLEAR THE DRAIN HOLES IN THE BOTTOM OF THE INLET. REMOVED SEDIMENT SHALL BE DISPOSED OF IN ACCORDANCE WITH PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION REGULATIONS. IN WATER QUALITY INLETS, IF APPLICABLE, CLEAR THE ANTI–SIPHON TUBE AS NECESSARY AND RE–ATTACH OR RE–ALIGN THE HOOD UNIT IF IT HAS SHIFTED. OPERATION AND MAINTENANCE SHALL BE PER MANUFACTURES SPECIFICATIONS.

SNOUT WATER QUALITY INLETS

INSPECTION: THE PROPERTY OWNER SHALL AT ALL TIMES PROPERLY OPERATE AND MAINTAIN THE WATER QUALITY STRUCTURES PER MANUFACTURERS SPECIFICATIONS. INSPECTIONS OF THE WATER QUALITY UNITS SHALL BE PERFORMED QUARTERLY FOR THE FIRST YEAR OF OPERATION AND ANNUALLY THEREAFTER. A SLUDGE JUDGE OR OTHER SLUDGE MEASURING TOOL SHALL BE UTILIZED TO MEASURE THE DEPTH OF SEDIMENT IN THE INLET BOTTOM DURING EACH INSPECTION. THE INSPECTION REPORT SHALL INCLUDE THE FOLLOWING INFORMATION FOR EACH INSPECTION EVENT:

A. THE DATE AND TIME OF INSPECTION;
B. THE NAME OF THE INDIVIDUAL(S) WHO PERFORMED THE INSPECTION;
C. THE TOTAL DEPTH OF SEDIMENT IN THE STRUCTURE;
D. THE TOTAL DEPTH OF OIL AND GREASE IN THE STRUCTURE;
E. TRANSPORT AND DISPOSAL RECORDS OF REMOVED PRODUCT(S).

MAINTENANCE: PER MANUFACTURER RECOMMENDATION, THE STRUCTURE SHALL BE CLEANED WHEN THE SUMP IS HALF FULL. REFER TO THE PROFILE SHEETS FOR SUMP DEPTHS. MAINTENANCE IS BEST DONE WITH A VACUUM TRUCK. TRANSPORT AND DISPOSAL OF SEDIMENT AND OIL SHALL BE DONE IN ACCORDANCE WITH APPLICABLE STATE AND FEDERAL REGULATIONS. TO MAINTAIN THE SNOUT HOODS THEMSELVES, AN ANNUAL INSPECTION OF THE ANTI–SIPHON VENT AND ACCESS HATCH ARE RECOMMENDED. A SIMPLE FLUSHING OF THE VENT, OR A GENTLE RODDING WITH A FLEXIBLE WIRE ARE ALL THAT'S TYPICALLY NEEDED TO MAINTAIN THE ANTI–SIPHON PROPERTIES. OPENING AND CLOSING THE ACCESS HATCH ONCE A YEAR ENSURES A LIFETIME OF TROUBLE–FREE SERVICE. THE OWNER SHALL PERMIT WESTTOWN TOWNSHIP OFFICIALS AND/OR THEIR AGENTS TO ENTER THE PROPERTY TO INSPECT THE STORMWATER WATER QUALITY STRUCTURE AND TO SAMPLE ANY DISCHARGE OF STORMWATER.

BMP PROTECTION NOTE: – 102.8(f)(7)

SITE CONTRACTOR SHALL PROVIDE PROTECTION FOR INFILTRATION BMPS UNTIL DRAINAGE AREA IS COMPLETELY STABILIZED.

DRAINAGE AREAS IN BMP'S MUST BE 70% STABILIZED BEFORE RUNOFF CAN ENTER THE BMP.

PROJECT WASTE NOTE: – 102.8(f)(11)

THE OPERATOR SHALL REMOVE FROM THE SITE, RECYCLE, OR DISPOSE OF ALL BUILDING MATERIAL 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.

GEOLOGIC FORMATION NOTE: – 102.8(f)(12)

LOCATION OF GEOLOGIC FORMATIONS TAKEN FROM PLAN ENTITLED, "GEOLOGIC FORMATIONS" PREPARED BY THE CHESTER COUNTY GIS DEPARTMENT, DATED: FEBRUARY 2004.

THERE ARE NO KNOWN GEOLOGIC FORMATIONS THAT WOULD NEGATIVELY IMPACT SITE DEVELOPMENT (i.e. SINKHOLES, FAULTS, FRACTURES, KARST).

BMP GENERAL NOTE

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, REMULCHING, RESEEDING, AND RENETTING MUST BE PERFORMED IMMEDIATELY. IF EROSION AND SEDIMENTATION BMP'S FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMP'S OR MODIFICATIONS OF THOSE INSTALLED WILL BE NEEDED. WHERE BMP'S ARE FOUND TO FAIL TO ALLEVIATE EROSION OR SEDIMENTATION 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.

RECEIVING SURFACE WATERS – 102.8(f)(5)

*THE PENNSYLVANIA TITLE 25, CHAPTER 93 CLASSIFICATION FOR THE RECEIVING WATERS OF THE COMMONWEALTH

THE SITE IS SITUATED WITHIN AN UNNAMED TRIBUTARY TO THE EAST BRANCH OF CHESTER CREEK AND CHESTER CREEK. PER PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, 25 PA. CODE, 93.9G "WATER QUALITY STANDARDS" THE UNNAMED TRIBUTARIES WITHIN WESTTOWN TOWNSHIP AREA CLASSIFIED AS TROUT STOCKING FISHERY (TSF).

ACKNOWLEDGMENT OF RESPONSIBILITY

ON THIS THE _____ DAY OF ___________, 20__ A.D. BEFORE ME, THE SUBSCRIBER, PERSONALLY APPEARED ___________________________, KNOWN TO ME OR SATISFACTORILY PROVEN TO BE THE PERSON(S) OR ORGANIZATION WHO, DULY SWORN ACCORDING TO LAW, DEPOSE AND SAY THAT THEY ARE THE OWNERS OF THE PROPERTY SHOWN ON THIS PLAN, AND THAT THEY ACKNOWLEDGE THAT STORMWATER BMP'S ARE PERMANENT FEATURES THAT CAN BE ALTERED AND REMOVED ONLY AFTER APPROVAL BY THE DEP, THE CHESTER COUNTY CONSERVATION DISTRICT AND THE TOWNSHIP.

PRINT

SIGNATURE

NOTARY PUBLIC

COUNTY: ____________________

MY COMMISSION EXPIRES: ____________________

BMP FAILURE DEFINED (PROTOCOL 2 DEP BMP MANUAL): – 102.11(a)(2)

BMP 6.4.3 SUBSURFACE INFILTRATION BED
FAILURE OF THE BED OCCURS WHEN THE BOTTOM OF THE BED BECOMES OVERLY COMPACTED AND/OR SEDIMENT OR DEBRIS ENTERS THE BED AND CLOGS THE STONE VOIDS.

BMP 6.4.5 RAIN GARDEN/BIORETENTION
FAILURE OF THE RAIN GARDEN/BIORETENTION OCCURS WHEN THE RAIN GARDEN FAILS TO INFILTRATE AND HOLDS WATER MORE THAN 72 HOURS AFTER A RAIN EVENT. FAILURE ALSO OCCURS WHEN THE RAIN GARDENS FAILS TO SUPPORT VEGETATIVE GROWTH.

PRIMARY CAUSES OF FAILURE INCLUDE SOIL COMPACTION/SMEARING WHICH LEADS TO POOR INFILTRATION RATES, LACK OF PROPER STABILIZATION PRIOR TO BMP INSTALLATION WHICH LEADS TO SEDIMENTATION; LACK OF PRETREATMENT LEADING TO SEDIMENTATION, AND LACK OF PROPER BMP MAINTENANCE.

SHOULD ANY OF THE ABOVE CONDITIONS BE OBSERVED, THE DESIGN ENGINEER AND TOWNSHIP ENGINEER SHOULD BE CONTACTED TO IMPLEMENT CORRECTIVE ACTIONS.

STORMWATER MANAGEMENT NOTES:

1. NO PROPERTY OWNER SHALL OBSTRUCT OR ALTER THE FLOW, LOCATION OR CARRYING CAPACITY OF A STREAM, CHANNEL OR DRAINAGE SWALE TO THE DETRIMENT OF ANY OTHER PROPERTY OWNER, WHETHER UPSTREAM OR DOWNSTREAM.
2. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR THE OPERATIONS AND MAINTENANCE OF ALL STORMWATER FACILITIES INCLUDING:
   ~ SUBSURFACE INFILTRATION BED
   ~ RAIN GARDEN
   ~ SOIL AMENDMENTS
   ALL STORMWATER FACILITIES LISTED ABOVE ARE IDENTIFIED ON THE STORMWATER PLAN CONTAINED ON THE PCSM PLANS.
3. A BLANKET EASEMENT WILL BE PROVIDED TO ALLOW THE TOWNSHIP ACCESS TO ANY STORMWATER MANAGEMENT AREA SHOULD THE PROPERTY OWNER FAIL TO MAINTAIN SAID AREAS PROPERLY.
4. THE APPLICANT SHALL BE RESPONSIBLE FOR COMPLETING AN AS–BUILT SURVEY OF ALL STORMWATER BMP'S INCLUDED IN THE APPROVED PROJECT PLAN.
5. THE TOWNSHIP ENGINEER SHALL RECEIVE COPIES OF THE AS–BUILT PLANS IN DIGITAL CAD FORMAT (OR SIMILAR DIGITAL DATA).
6. A COPY OF THE STORMWATER FACILITY OPERATIONS AND MAINTENANCE PLAN SHALL BE SUBMITTED TO THE TOWNSHIP ENGINEER.
7. SEDIMENT REMOVAL SHALL OCCUR WHEN THE BED IS THOROUGHLY DRY. DISPOSAL OF DEBRIS, TRASH, SEDIMENT, AND OTHER WASTE MATERIAL SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.
8. DURING SITE CONSTRUCTION, ALL INFILTRATION BMP'S SHALL BE PROTECTED FROM SEDIMENTATION USING APPROPRIATE PROTECTION IN CONFORMANCE WITH PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (PADEP) CHAPTER 102 REGULATIONS, AS AMENDED, AND THE EROSION AND SEDIMENT POLLUTION CONTROL MANUAL, AS AMENDED. PROTECTION SHALL REMAIN UNTIL THE CONTRIBUTORY DRAINAGE AREA HAS ACHIEVED FULL STABILIZATION.

LOCATION MAP

SCALE: 1" = 2,000'

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BMP IMPLEMENTATION/INSTALLATION/CRITICAL STAGE OVERSIGHT AND AS–BUILT PLAN REQUIREMENTS: – 102.8(f)(7)

OVERSIGHT

THE APPLICANT/PERMITTEE SHALL PROVIDE ENGINEERING CONSTRUCTION OVERSIGHT FOR THE PROPOSED STORMWATER BEST MANAGEMENT PRACTICES (BMPs). ADDITIONAL SOIL TESTING MAY BE REQUIRED PRIOR TO THE INSTALLATION OF INFILTRATION BMPs TO ENSURE PROPER LOCATION AND FUNCTION. A LICENSED PROFESSIONAL ENGINEER KNOWLEDGEABLE IN THE DESIGN AND CONSTRUCTION OF STORMWATER BMPs, PREFERABLY THE DESIGN ENGINEER, SHALL CONDUCT THE OVERSIGHT.

CRITICAL STAGES

1. INSTALLATION OF SUBSURFACE INFILTRATION BED AND RAIN GARDEN AND LEVEL SPREADERS.
2. INSTALLATION OF WATER QUALITY INSERTS
3. INSTALL PLANTINGS PER THE LANDSCAPE PLAN

AS–BUILT PLANS

REGARDLESS OF OWNERSHIP, THE APPLICANT/PERMITTEE SHALL SUBMIT TO THE TOWNSHIP AN ACTUAL AS–BUILT PLAN FOR THE STORMWATER MANAGEMENT FACILITIES REQUIRED PER THE APPROVED STORMWATER MANAGEMENT PLAN. THE AS–BUILT PLAN SHALL SHOW ALL FINAL DESIGN SPECIFICATIONS FOR ALL PERMANENT STORMWATER MANAGEMENT FACILITIES AND SHALL BE BASED ON AN ACTUAL FIELD SURVEY PERFORMED BY THE SURVEYOR OF RECORD. THE SURVEYOR SHALL CERTIFY AS TO THE ACCURACY OF THE AS–BUILT DATA. IN ADDITION TO THE SURVEYOR'S CERTIFICATION, THE AS–BUILT PLAN SHALL CONTAIN A STATEMENT SIGNED AND SEALED BY THE ENGINEER OF RECORD INDICATING THAT THE BMPs WERE INSTALLED PER THE APPROVED STORMWATER MANAGEMENT DESIGN.

THE AS–BUILT PLAN FOR THE STORMWATER MANAGEMENT FACILITIES SHALL BE SUBMITTED TO THE TOWNSHIP WITHIN SIX MONTHS OF THE COMPLETION OF THE PROJECT FOR REVIEW AND FINAL INSPECTION BY THE MUNICIPAL ENGINEER.

AS–BUILT PLANS FOR THE STORMWATER BMPS SHALL BE SUBMITTED TO THE CONSERVATION DISTRICT WITHIN SIX MONTHS FOLLOWING THE COMPLETION OF THE PROJECT TO ALLOW FOR NOTICE OF TERMINATION (NOT) PROCESSING.

NOTICE OF TERMINATION & FINANCIAL SECURITY

A NOTICE OF TERMINATION (NOT) WILL BE REQUIRED TO BE SUBMITTED FOLLOWING THE APPROVAL OF THE FINAL AS–BUILT PLANS (SEE POST CONSTRUCTION STORMWATER FACILITIES OPERATIONS AND MAINTENANCE PROCEDURES – THIS PLAN)

ANY PERFORMANCE AND/OR FINANCIAL SECURITIES ESTABLISHED FOR THE PROJECT SHALL INCLUDE REQUIREMENTS FOR SUBMITTAL OF 'AS–BUILT' PLANS AND ENGINEERING CONSTRUCTION OVERSIGHT.

PCSM REPORTING AND RECORDKEEPING – THE PCSM PLAN, INSPECTION REPORTS AND MONITORING RECORDS SHALL BE AVAILABLE FOR REVIEW AND INSPECTION BY THE DEPARTMENT OR THE CONSERVATION DISTRICT.

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. § 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."

UPON PERMANENT STABILIZATION OF THE EARTH DISTURBANCE ACTIVITY UNDER § 102.22(A)(2) (RELATING TO PERMANENT STABILIZATION), AND INSTALLATION OF BMPS IN ACCORDANCE WITH AN APPROVED PLAN PREPARED AND IMPLEMENTED IN ACCORDANCE WITH §§ 102.4 AND 102.8 (RELATING TO EROSION AND SEDIMENT CONTROL REQUIREMENTS; AND PCSM REQUIREMENTS), THE PERMITTEE OR CO–PERMITTEE SHALL SUBMIT A NOTICE OF TERMINATION TO THE DEPARTMENT OR CONSERVATION DISTRICT.

THE NOTICE OF TERMINATION (NOT) MUST INCLUDE:
(1) THE FACILITY NAME, ADDRESS AND LOCATION.
(2) THE OPERATOR NAME AND ADDRESS.
(3) THE PERMIT NUMBER.
(4) THE REASON FOR PERMIT TERMINATION.
(5) IDENTIFICATION OF THE PERSONS WHO HAVE AGREED TO AND WILL BE RESPONSIBLE FOR LONG–TERM OPERATION AND MAINTENANCE OF THE PCSM BMPS IN ACCORDANCE WITH § 102.8(M) AND PROOF OF COMPLIANCE WITH § 102.8(M)(2).

PRIOR TO ACCEPTING THE NOT, THE DEPARTMENT AND/OR CONSERVATION DISTRICT STAFF WILL PERFORM A FINAL INSPECTION AND APPROVE OR DENY THE NOTICE OF TERMINATION.

PCSM LONG TERM OPERATIONS AND MAINTENANCE REQUIREMENTS

UNTIL THE PERMITTEE OR CO–PERMITTEE HAS RECEIVED WRITTEN APPROVAL OF A NOTICE OF TERMINATION, 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 OCCURRING 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 BMPS 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 AND PROVIDE NOTICE THEREOF TO THE DEPARTMENT.

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.

A COMPLETE WRITTEN REPORT MUST BE PROVIDED FOR ANY AND ALL INSPECTIONS AND/OR MAINTENANCE REPAIRS TO ALL BMPS.

STRUCTURAL BMPS INCLUDING THE INFILTRATION BASINS SHOULD BE INSPECTED FOR ACCUMULATION OF SEDIMENT, DAMAGE TO OUTLET STRUCTURES, SIGNS OF CONTAMINATION OR SPILLS, AND BERM STABILITY.

GENERAL PCSM NOTES:

1. 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 ACTIVITIES 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 RE–DISTURBED 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 RE–DISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.
2. IF THE CONTRACTOR ENCOUNTERS HIGH WATER TABLE, SHALLOW BEDROCK, SINKHOLES OR SOIL INSTABILITY DURING SITE CONSTRUCTION, THE DESIGN ENGINEER OR THE ON–SITE GEOTECHNICAL ENGINEER MUST BE CONTACTED IMMEDIATELY FOR CORRECTIVE MEASURES.
3. IF GROUNDWATER OR BEDROCK IS ENCOUNTERED DURING THE INSTALLATION OF THE INFILTRATION BMP'S STOP WORK AND CONTACT THE TOWNSHIP AND DESIGN ENGINEER FOR AN ALTERNATE STORMWATER BMP LOCATION OR NEW DESIGN.
4. THE EROSION AND SEDIMENTATION CONTROL PLAN HAS BEEN DESIGNED IN AN EFFORT TO MINIMIZE THE EXTENT AND DURATION OF EARTH DISTURBANCE, WHILE PROTECTING THE EXISTING DRAINAGE FEATURES AND VEGETATION. THE E&S PLAN AND CONSTRUCTION SEQUENCE HAS BEEN DEVELOPED AS TO MINIMIZE SOIL COMPACTION, LAND CLEARING, AND IMPERVIOUS AREAS.
5. THE DESIGN WILL PRESERVE THE INTEGRITY OF STREAM CHANNELS AND MAINTAIN AND PROTECT THE PHYSICAL, BIOLOGICAL AND CHEMICAL QUALITIES OF THE DOWNSTREAM WATERSHED.
6. THE OPERATOR SHALL REMOVE FROM THE SITE, RECYCLE, OR DISPOSE OF ALL BUILDING MATERIAL 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.
7. IF ANY UNFAVORABLE CONDITIONS ARE ENCOUNTERED DURING THE INSTALLATION OF THE BMPS (I.E. GROUNDWATER AND/OR BEDROCK, ETC.)., THE OWNER/ENGINEER SHOULD BE NOTIFIED AND THE PROPOSED SYSTEM SHOULD BE RELOCATED TO A MORE SUITABLE LOCATION ON THE PROPERTY.
8. DLH HAS PROPOSED TO UTILIZE CONVEYANCE SWALES, INLETS AND CONVEYANCE PIPING TO COLLECT AND CONVEY THE STORMWATER RUNOFF INTO THE STORMWATER MANAGEMENT SYSTEM. THERMAL IMPACTS WILL BE MITIGATED BY ROUTING HEATED RUNOFF THROUGH ABOVE GROUND INFILTRATION FACILITIES WHICH WILL ALLOW INFILTRATED RUNOFF TO COOL PRIOR TO REACHING SURFACE WATERS.
9. ANY EROSION CAUSED BY DISCHARGES FROM BMPS WITH IN THE SITE WILL BE REPAIRED AND STABILIZED.

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COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
JUSTIN WILLIAM BREWER
No. PE085115

REV.	DATE	DESCRIPTION
8		
7		
6	06/30/2021	PLANS FOR RECORDING
5	05/05/2021	PLANS FOR PERMITS
4	04/29/2021	ISSUED FOR BID
3	03/09/2021	REVISED PER TOWNSHIP ENGINEER COMMENTS & CCCD LETTER DATED 03/03/2021
2	01/22/2021	REVISED PER CCCD REVIEW LETTER DATED 01/20/2021
1	12/22/2020	REVISED PER TOWNSHIP LETTER DATED 11/25/2020

PRELIMINARY/FINAL
PCSM PLAN

CLIENT: WEST CHESTER AREA SCHOOL DISTRICT
PROJECT: WESTTOWN–THORNBURY ELEMENTARY SCHOOL
LOCATION: 750 WESTBOURNE ROAD
WESTTOWN TOWNSHIP, CHESTER CO., PA.

DATE: 11/13/2020
SCALE: 1"=50'
DRAWN BY: JWB
CHECKED BY: JWB
PROJECT NO.: 3745
CAD FILE: 05 PCSWM PLAN.dwg
PLOTTED: 06/30/2021
DRAWING NO.: C04.1
SHEET 04 OF 13

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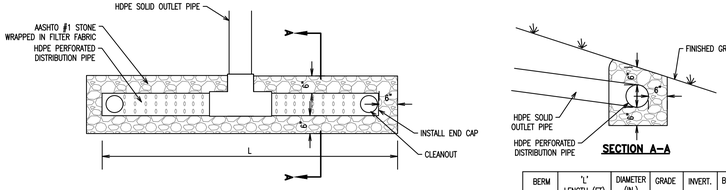

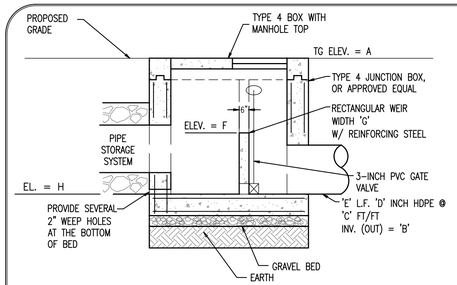

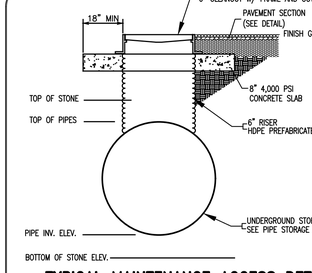

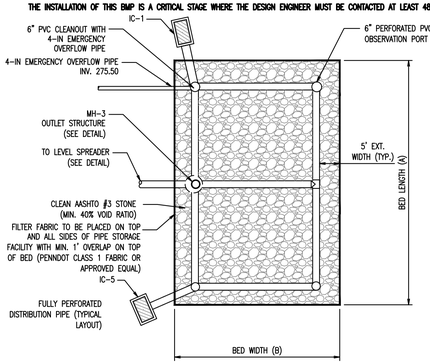

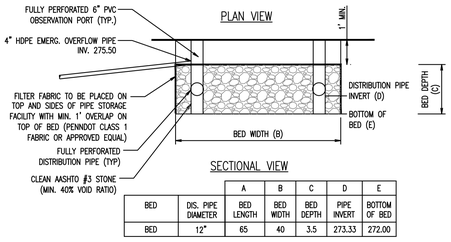

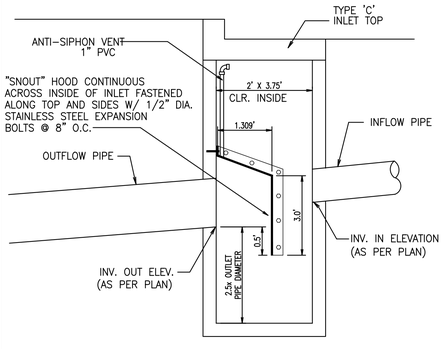

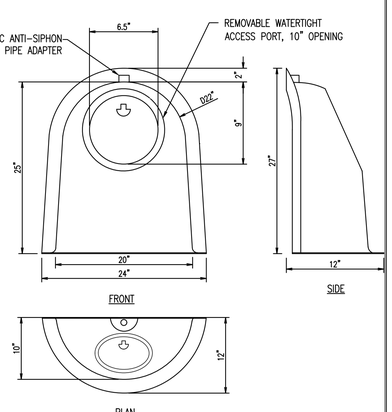

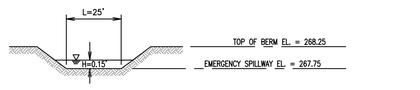

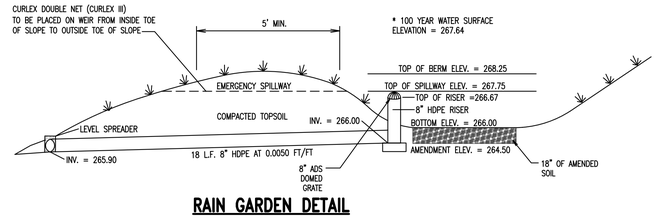

BMP 6.8.1: LEVEL SPREADER

THE INSTALLATION OF THIS BMP IS A CRITICAL STAGE WHERE THE DESIGN ENGINEER MUST BE CONTACTED AT LEAST 48 HOURS IN ADVANCE TO PROVIDE CONSTRUCTION OVERSIGHT.

BERM	'L' LENGTH (FT)	DIAMETER (IN.)	GRADE	INVERT.	BOTTOM
BED	20'	12"	270.00	268.50	268.00
RAIN GARDEN	15'	8"	266.00	265.90	265.40

LEVEL SPREADER DETAIL

NO SCALE

CONSTRUCTION SEQUENCE

1. LEVEL SPREADERS ARE CONSIDERED A PERMANENT PART OF A SITE'S STORMWATER MANAGEMENT SYSTEM. THEREFORE, THE UPHILL DEVELOPMENT SHOULD BE STABILIZED BEFORE DIVERTING RUNOFF TO ANY DISPERSING FLOW TECHNIQUES. IF THE LEVEL SPREADER IS USED AS AN EROSION AND SEDIMENTATION CONTROL MEASURE, IT MUST BE RECONFIGURED (FLUSH PERFORATED PIPE, CLEAN OUT ALL SEDIMENT), TO ITS ORIGINAL STATE BEFORE USE AS A PERMANENT STORMWATER FEATURE.
2. ALL CONTRIBUTING STORMWATER ELEMENTS (INFILTRATION BEDS, INLETS, OUTLET CONTROL STRUCTURES, PIPES, ETC) SHOULD BE INSTALLED.
3. PERFORATED PIPE SHOULD BE INSTALLED ALONG A CONTOUR, WITH CARE TAKEN TO CONSTRUCT A LEVEL BOTTOM. THE PIPE CAN BE UNDERGROUND IN A SHALLOW INFILTRATION TRENCH (SEE INFILTRATION TRENCH FOR DESIGN GUIDANCE), OR CLOSER TO THE SURFACE AND COVERED WITH A 12–INCH THICK LAYER OF AASHTO #57 STONE. IF THE PERFORATED PIPE IS IN A TRENCH, EXCAVATE TO THE DESIGN DIMENSIONS. IF THE PIPE IS TO BE AT OR NEAR THE SURFACE, SOME MINOR EXCAVATION OR FILLING MAY BE NECESSARY TO MAINTAIN A LEVEL BOTTOM.
4. IF NECESSARY, INSTALL EROSION CONTROL MATTING ALONG THE LENGTH OF THE LEVEL SPREADER AND TO A DISTANCE DOWNHILL, AS SPECIFIED BY THE MANUFACTURER/SUPPLIER. COVER THE PIPE WITH AASHTO #57 STONE.
5. FOR CONSTRUCTION SEQUENCE OF EARTHEN BERMS, SEE BMP 6.4.10 INFILTRATION BERM.

SPECIFICATIONS

1. STONE SHALL BE 2–INCH TO 1–INCH UNIFORMLY GRADED COARSE AGGREGATE, WITH A WASH LOSS OF NO MORE THAN 0.5%, AASHTON SIZE NUMBER 3 PER AASHTO SPECIFICATIONS, PART 1, 19TH EDITION, 1998, OR LATER AND SHALL HAVE VOIDS 35% AS MEASURED BY ASTM–C29.
2. NON–WOVEN GEOTEXTILE SHALL CONSIST OF NEEDLED NON–WOVEN POLYPROPYLENE FIBERS AND MEET THE FOLLOWING PROPERTIES:

a.	GRAB TENSILE STRENGTH (ASTM–D4632)	120 LBS
b.	MULLEN BURST STRENGTH (ASTM–D3786)	225 PSI
c.	FLOW RATE (ASTM–D4491)	95 GAL/MIN/FT²
d.	UV RESISTANCE AFTER 500 HRS (ASTM–D4355)	70%

   e. HEAT–SET OR HEAT–CALENDARED FABRICS NOT PERMITTED
   ACCEPTABLE TYPES INCLUDE MIRAFI 140N, AMOCO 4547, AND GEOTEX 451.
3. TOPSOIL AMEND WITH COMPOST (SEE BMP 6.7.3, SOIL AMENDMENT RESTORATION)
4. PIPE SHALL BE SOLID OR CONTINUOUSLY PERFORATED, SMOOTH INTERIOR, WITH A MINIMUM INSIDE DIAMETER OF 4–INCHES. HIGH–DENSITY POLYETHYLENE (HDPE) PIPE SHALL MEET AASHTO M252, TYPE S OF AASHTO M294, TYPE S.
5. VEGETATION SEE NATIVE PLANT LIST APPENDIX B

MAINTENANCE

COMPARED WITH OTHER BMPS, LEVEL SPREADERS REQUIRE ONLY MINIMAL MAINTENANCE EFFORTS, MANY OF WHICH MAY OVERLAP WITH STANDARD LANDSCAPING DEMANDS. THE FOLLOWING RECOMMENDATIONS REPRESENT THE MINIMUM MAINTENANCE EFFORT FOR LEVEL SPREADERS:

MAINTENANCE ACTIVITIES TO BE DONE ANNUALLY AND WITHIN 48 HOURS AFTER EVERY MAJOR STORM EVENT (> 1 INCH RAINFALL DEPTH):

1. CATCH BASINS AND INLETS DRAINING TO A LEVEL SPREADER SHOULD BE INSPECTED AND CLEANED ON AN ANNUAL BASIS.
2. THE RECEIVING LAND AREA SHOULD BE IMMEDIATELY RESTORED TO DESIGN CONDITIONS AFTER ANY DISTURBANCE. VEGETATED AREAS SHOULD BE SEEDED AND BLANKETED.
3. IT IS CRITICAL THAT EVEN SHEET FLOW CONDITIONS ARE SUSTAINED THROUGHOUT THE LIFE OF THE LEVEL SPREADER, AS THEIR EFFECTIVENESS CAN DETERIORATE DUE TO LACK OF MAINTENANCE, INADEQUATE DESIGN/LOCATION AND POOR VEGETATIVE COVER.

   INSPECTION – THE AREA BELOW A LEVEL SPREADER SHOULD BE INSPECTED FOR CLOGGING, DENSITY OF VEGETATION, DAMAGE BY FOOT OR VEHICULAR TRAFFIC, EXCESSIVE ACCUMULATIONS, AND CHANNELIZATION. INSPECTIONS SHOULD BE MADE ON A QUARTERLY BASIS FOR THE FIRST TWO YEARS FOLLOWING INSTALLATION, AND THEN ON A SEMIANNUAL BASIS THEREAFTER. INSPECTIONS SHOULD ALSO BE MADE AFTER EVERY STORM EVENT GREATER THAN 1–INCH.

   REMOVAL – SEDIMENT AND DEBRIS SHOULD BE ROUTINELY REMOVED (BUT NEVER LESS THAN SEMIANNUALLY), OR UPON OBSERVATION, WHEN BUILDUP OCCURS IN THE CLEAN OUTS. REGRADING AND RESEEDING MAY BE NECESSARY IN THE AREAS BELOW THE LEVEL SPREADER. REGRADING MAY ALSO BE REQUIRED WHEN POOLS OF STANDING WATER ARE OBSERVED ALONG THE SLOPE. (IN NO CASE SHOULD STANDING WATER BE ALLOWED FOR LONGER THAN 72 HOURS.)

   VEGETATION – MAINTAINING A VIGOROUS VEGETATIVE COVER ON THE AREAS BELOW A LEVEL SPREADER IS CRITICAL FOR MAXIMIZING POLLUTANT REMOVAL EFFICIENCY AND EROSION PREVENTION. IF VEGETATIVE COVER IS NOT FULLY ESTABLISHED WITHIN THE DESIGNATED TIME, IT MAY NEED TO BE REPLACED WITH AN ALTERNATIVE SPECIES. (IT IS STANDARD PRACTICE TO CONTRACTUALLY REQUIRE THE CONTRACTOR TO REPLACE DEAD VEGETATION.) UNWANTED OR INVASIVE GROWTH SHOULD BE REMOVED ON AN ANNUAL BASIS. BIWEEKLY INSPECTIONS ARE RECOMMENDED FOR AT LEAST THE FIRST GROWING SEASON, OR UNTIL THE VEGETATION IS PERMANENTLY ESTABLISHED. ONCE THE VEGETATION IS ESTABLISHED, INSPECTIONS OF HEALTH, DIVERSITY, AND DENSITY SHOULD BE PERFORMED AT LEAST TWICE PER YEAR, DURING BOTH THE GROWING AND NON–GROWING SEASON. VEGETATIVE COVER SHOULD BE SUSTAINED AT 85% AND REPLACED IF DAMAGE GREATER THAN 50% IS OBSERVED.

BMP 6.6.4: INLET FILTERS

THE INSTALLATION OF THIS BMP IS A CRITICAL STAGE WHERE THE DESIGN ENGINEER MUST BE CONTACTED AT LEAST 48 HOURS IN ADVANCE TO PROVIDE CONSTRUCTION OVERSIGHT.

INLET FILTER HOOD DETAIL

NO SCALE

NOTE:
1. DIMENSIONS SHOWN FOR 18F SNOUT OIL & DEBRIS STOP. DIMENSIONS VARY DEPENDING ON SNOUT SIZE. SEE TABLE FOR SNOUT SIZES GUIDE.
2. SNOUTS SHALL BE SIZED AND INSTALLED PER MANUFACTURER'S SPECIFICATIONS.

18F SNOUT OIL & DEBRIS STOP

NOT TO SCALE

PIPE O.D.	SNOUT SIZE
<12"	12F OR R
<18"	18F OR R
<24"	24F OR R
<30"	30F OR R
<36"	36F OR R
<48"	48F OR R

F=(FLAT BACK, FOR SQUARE STRUCTURES)
R= (ROUND STRUCTURES)

SNOUT INLET SCHEDULE	
INLET	SIZE
IC1	18F
IC5	18F

INLET FILTER OPERATION AND MAINTENANCE SPECIFICATIONS:

1. THE PROPERTY OWNER SHALL AT ALL TIMES PROPERLY OPERATE AND MAINTAIN THE WATER QUALITY STRUCTURES PER MANUFACTURERS SPECIFICATIONS. AN INSPECTION REPORT SHALL BE PROVIDED TO THE TOWNSHIP FOLLOWING EACH INSPECTION EVENT. INSPECTIONS OF THE WATER QUALITY UNITS SHALL BE PERFORMED QUARTERLY FOR THE FIRST YEAR OF OPERATION AND SEMIANNUALLY THEREAFTER.
2. THE INSPECTION REPORT SHALL INCLUDE THE FOLLOWING INFORMATION FOR EACH INSPECTION EVENT:
   A. THE DATE AND TIME OF INSPECTION;
   B. THE NAME OF THE INDIVIDUAL(S) WHO PERFORMED THE INSPECTION;
   C. THE TOTAL DEPTH OF SEDIMENT IN THE STRUCTURE;
   D. THE TOTAL DEPTH OF OIL AND GREASE IN THE STRUCTURE;
   E. TRANSPORT AND DISPOSAL RECORDS OF REMOVED PRODUCT(S).
3. PER MANUFACTURER RECOMMENDATION, THE STRUCTURE SHALL BE CLEANED WHEN THE SUMP IS HALF FULL.
4. INSPECTION SHALL BE COMPLETED WITH A SLUDGE JUDGE OR SIMILAR SEDIMENT MEASURING DEVICE. IF MAINENTANCE OR REMOVAL IS REQUIRED, THIS IS BEST DONE WITH A VACUUM TRUCK. TRANSPORT AND DISPOSAL OF SEDIMENT AND OIL SHALL BE DONE IN ACCORDANCE WITH APPLICABLE STATE AND FEDERAL REGULATIONS.
5. TO MAINTAIN THE SNOUT HOODS THEMSELVES, AN ANNUAL INSPECTION OF THE ANTI–SIPHON VENT AND ACCESS HATCH ARE RECOMMENDED. A SIMPLE FLUSHING OF THE VENT, OR A GENTLE RODDING WITH A FLEXIBLE WIRE ARE ALL THAT'S TYPICALLY NEEDED TO MAINTAIN THE ANTI–SIPHON PROPERTIES. OPENING AND CLOSING THE ACCESS HATCH ONCE A YEAR ENSURES A LIFETIME OF TROUBLE–FREE SERVICE.
6. THE OWNER SHALL PERMIT TOWNSHIP OFFICIALS AND/OR THEIR AGENTS TO ENTER THE PROPERTY TO INSPECT THE STORMWATER WATER QUALITY STRUCTURE AND TO SAMPLE ANY DISCHARGE OF STORMWATER.

THIS SHEET TO BE RECORDED

SECTION B–B

OUTLET STRUCTURES									
	TG	PIPE INVERT OUT	PIPE SLOPE (FT/FT)	PIPE SIZE	PIPE LENGTH	KNEE WALL ELE.	WEIR WIDTH	STONE BOTTOM	NOTES
	A	B	C	D	E	F	G	H	
BED 1	279.05	272.00	0.0995	15"	35'	275.00	4.00'	272.00'	3"x 8" REC. ORIFICE @ 274.25

OUTLET STRUCTURE DETAIL

NO SCALE

TYPICAL MAINTENANCE ACCESS DETAIL

NOT TO SCALE

BMP 6.7.2 LANDSCAPE RESTORATION

THE INSTALLATION OF THIS BMP IS A CRITICAL STAGE WHERE THE DESIGN ENGINEER MUST BE CONTACTED AT LEAST 48 HOURS IN ADVANCE TO PROVIDE CONSTRUCTION OVERSIGHT.

CONSTRUCTION SEQUENCE

MEADOW PLANTING

1. ALL WEEDS OR EXISTING VEGETATION MUST BE ELIMINATED PRIOR TO SEEDING.
2. PERENNIAL WEEDS MAY REQUIRE YEAR LONG SMOTHERING, REPEATED SPRAYINGS WITH HERBICIDES, OR REPEATED TILLAGE WITH EQUIPMENT THAT CAN UPROOT AND KILL PERENNIAL WEEDS.
3. PLANTING CAN TAKE PLACE FROM SPRING THAW THROUGH JUNE 30 OR FROM SEPTEMBER 1 THROUGH SOIL FREEZE–UP ("DORMANT SEEDING")
4. PLANTING IN JULY AND AUGUST IS GENERALLY NOT RECOMMEND DUE TO THE FREQUENCY OF DROUGHT DURING THIS TIME.
5. SEE LANDSCAPE PLAN FOR ADDITIONAL SEQUENCING OF LANDSCAPE INSTALLATION

MAINTENANCE

- IN THE FIRST YEAR WEEDS MUST BE CAREFULLY CONTROLLED AND CONSISTENTLY MOWED BACK TO 4–6 INCHES TALL WHEN THEY REACH 12 INCHES IN HEIGHT. IN THE SECOND YEAR, WEEDS SHOULD CONTINUE TO MONITORED AND MOWED AND RHIZOMATOUS WEEDS SHOULD BE HAND TREATED WITH HERBICIDE.
- WEEDS SHOULD NOT BE SPRAYED WITH HERBICIDE AS THE DRIFT FROM THE SPRAY MAY KILL LARGE PATCHES OF DESIRABLE PLANTS, ALLOWING WEEDS TO MOVE IN TO THESE NEW OPEN AREAS.
- IN THE BEGINNING OF THE THIRD SEASON, THE YOUNG MEADOW SHOULD BE BURNED OFF IN MID–SPRING. IF BURNING IS NOT POSSIBLE, THE MEADOW SHOULD BE MOWED VERY CLOSELY TO THE GROUND INSTEAD. THE MOWED MATERIAL SHOULD BE REMOVED FROM THE SITE TO EXPOSE THE SOIL TO THE SUN. THIS HELPS ENCOURAGE RAPID SOIL WARMING WHICH FAVORS THE ESTABLISHMENT OF "WARM SEASON" PLANTS OVER "COOL SEASON" WEEDS.

SPECIFICATIONS

VEGETATION:
- PLANT WITH NATIVE SPECIES (SEE LANDSCAPE PLAN FOR PLANT TYPE AND LOCATIONS)

BMP 6.7.3 SOIL AMENDMENT & RESTORATION

THE INSTALLATION OF THIS BMP IS A CRITICAL STAGE WHERE THE DESIGN ENGINEER MUST BE CONTACTED AT LEAST 48 HOURS IN ADVANCE TO PROVIDE CONSTRUCTION OVERSIGHT.

CONSTRUCTION SEQUENCE

1. ALL CONSTRUCTION SHOULD BE COMPLETED AND STABILIZED BEFORE BEGINNING SOIL RESTORATION.
2. COMPOST SHOULD BE ADDED AT A RATE OF 2:1 (SOIL:COMPOST). IF A PROPRIETARY PRODUCT IS USED, THE MANUFACTURER'S INSTRUCTIONS SHOULD BE FOLLOWED IN TERMS OF MIXING AND APPLICATION RATE.
3. ON–SITE SOILS WITH A MINIMUM ORGANIC CONTENT OF 5% CAN BE PROPERLY STOCKPILED (TO MAINTAIN ORGANIC CONTENT) AND REUSED.
4. PROCEDURE: ROTOTILL OR RIP THE SUBGRADE, REMOVE ROCKS, DISTRIBUTE THE COMPOST, SPREAD THE NUTRIENTS, ROTOTILL AGAIN.
5. SPREAD 2–3 INCHES OF APPROVED COMPOST ON EXISTING SOIL. TILL ADDED SOIL INTO EXISTING SOIL WITH ROTARY TILLER THAT IS SET TO A DEPTH OF 6 INCHES. ADD AN ADDITIONAL 4 INCHES OF APPROVED COMPOST TO BRING THE AREA UP TO GRADE.
6. ALL PADEP GUIDELINES (PA BMP MANUAL) REGARDING SOIL AMENDMENTS SHOULD BE ADHERED TO BY CONTRACTOR.

MAINTENANCE

- THE SOIL RESTORATION PROCESS MAY NEED TO BE REPEATED OVER TIME, DUE TO COMPACTION BY USE AND/OR SETTLING.

SPECIFICATIONS

SOIL AMENDMENT:
- 2:1 (SOIL:COMPOST RATIO)

NOTE: FILTREXX COMPOST BLANKETS INSTALLED PER THE MANUFACTER'S SPECIFICATIONS MAY BE USED AS AN APPROVED ALTERNATIVE TO THE ABOVE STIPULATED SOILS AMENDMENT. CONTACT DESIGN ENGINEER FOR SPECIFICATION INFORMATION AND JAMES WEAVER, WEAVER'S MULCH, STRASBURG ROAD, COATESVILLLE, PA 19320 AT 610 383–6818 FOR INSTALLATION INFORMATION.

BMP 6.4.6: INFILTRATION BED

THE INSTALLATION OF THIS BMP IS A CRITICAL STAGE WHERE THE DESIGN ENGINEER MUST BE CONTACTED AT LEAST 48 HOURS IN ADVANCE TO PROVIDE CONSTRUCTION OVERSIGHT.

PLAN VIEW

SECTIONAL VIEW

		A	B	C	D	E
BED	DIS. PIPE DIAMETER	BED LENGTH	BED WIDTH	BED DEPTH	PIPE INVERT	BOTTOM OF BED
BED	12"	65	40	3.5	273.33	272.00

NOTE: ALL DIMENSIONS ARE IN FEET.

TYPICAL UNDERGROUND STONE BED DETAIL

NO SCALE

CONSTRUCTION SEQUENCE

1. **DUE TO SITE CONSTRAINTS, CONSTRUCTION ACCESS WILL NEED TO TRAVERSE THE AREA OF THE PROPOSED INFILTRATION BED. A TEMPORARY CONSTRUCTION DRIVE WILL BE BUILT TO PROVIDE ADDITIONAL COVER OVER THE PROPOSED INFILTRATION SURFACE (MINIMUM 4 FEET). ADDITIONAL TESTING WILL BE REQUIRED AT THE TIME OF CONSTRUCTION TO CONFIRM THAT THE INFILTRATION RATES USED DURING THE DESIGN OF THE FACILITY ARE MET OR EXCEEDED. IF THE RATES DO NOT MEET THE DESIGN RATES, THE DESIGN ENGINEER MUST BE CONTACTED TO DETERMINE AN ALTERNATE SOLUTION.**
2. IF GROUNDWATER OR BEDROCK IS ENCOUNTERED DURING THE INSTALLATION OF THE INFILTRATION SYSTEMS STOP WORK AND CONTACT THE TOWNSHIP AND DESIGN ENGINEER FOR AN ALTERNATE BED LOCATION OR NEW DESIGN.
3. IF POSSIBLE, INSTALL INFILTRATION BED DURING LATER PHASES OF SITE CONSTRUCTION TO PREVENT SEDIMENTATION AND/OR DAMAGE FROM CONSTRUCTION ACTIVITY.
4. INSTALL AND MAINTAIN PROPER EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION.
5. EXCAVATE INFILTRATION BED BOTTOM TO AN UNCOMPACTED SUBGRADE FREE FROM ROCKS AND DEBRIS. DO NOT COMPACT SUBGRADE. PRIOR TO PLACEMENT OF AGGREGATE, THE SOIL SURFACE AT THE BOTTOM OF THE BED SHALL BE SCARIFIED TO FURTHER PROMOTE INFILTRATION.
6. SEED AND STABILIZE TOPSOIL.
7. DO NOT REMOVE INLET PROTECTION OR OTHER EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.

NOTES:

1. COMPACTION IS TO BE MINIMIZED IN THE AREAS DESIGNATED FOR INFILTRATION.
2. INFILTRATION BED FILTER FABRIC AND STONE SHOULD BE KEPT CLEAN OF SOIL/SEDIMENT DURING THE INSTALLATION PROCESS. IF INSPECTION INDICATES THAT SOIL SEDIMENT HAS ENTERED ANY OF THE INFILTRATION BED, APPROPRIATE MEASURES (I.E. CLEANING THE SOIL/SEDIMENT FROM THE FABRIC, STONE, BED ETC. AND OR REPLACEMENT OF THE FABRIC AND STONE) SHOULD BE ADDRESSED.
3. ALL STONE FOR THE CONSTRUCTION OF THE INFILTRATION BED SHOULD BE UNIFORMLY GRADED AND CLEAN WASHED AGGREGATE.
4. THE BOTTOM OF ALL INFILTRATION BED SHALL BE UNDISTURBED OR UNCOMPACTED SUBGRADE.

OPERATION AND MAINTENANCE:

1. INFILTRATION BED FILTER FABRIC AND STONE SHOULD BE KEPT CLEAN OF SOIL/SEDIMENT DURING THE INSTALLATION PROCESS. IF INSPECTION INDICATES THAT SOIL/ SEDIMENT HAS ENTERED ANY OF THE INFILTRATION BED, APPROPRIATE MEASURES (I.E. CLEANING THE SOIL/SEDIMENT FROM THE FABRIC, STONE, BED ETC. AND OR REPLACEMENT OF THE FABRIC AND STONE) SHOULD BE ADDRESSED.
2. INFLOW AND OUTFLOW POINTS INTO THE THE INFILTRATION 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.
3. IF GROUNDWATER OR BEDROCK IS ENCOUNTERED DURING THE INSTALLATION OF THE INFILTRATION BED STOP WORK AND CONTACT THE TOWNSHIP AND DESIGN ENGINEER FOR AN ALTERNATE SEEPAGE BED LOCATION OR NEW DESIGN.
4. COMPACTION IS TO BE MINIMIZED IN AREAS DESIGNATED FOR INFILTRATION.
5. CATCH BASINS AND INLETS (UPGRADIENT OF INFILTRATION BED) SHOULD BE INSPECTED AND CLEANED AT LEAST TWICE PER YEAR AND AFTER MAJOR RUNOFF EVENTS.
6. INSPECT THE BED AFTER RUNOFF EVENTS AND MAKE SURE THAT RUNOFF DRAINS DOWN WITHIN 72 HOURS. MOSQUITO'S SHOULD NOT BE A PROBLEM IF THE WATER DRAINS IN 72 HOURS. MOSQUITOES REQUIRE A CONSIDERABLY LONG BREEDING PERIOD WITH RELATIVELY STATIC WATER LEVELS.
7. ALSO INSPECT FOR ACCUMULATION OF SEDIMENT, DAMAGE TO OUTLET CONTROL STRUCTURES, EROSION CONTROL MEASURES, AND SIGNS OF WATER CONTAMINATION/SPILLS
8. REMOVE ACCUMULATED SEDIMENT FROM BASIN AS REQUIRED. RESTORE ORIGINAL CROSS SECTION AND INFILTRATION RATE. PROPERLY DISPOSE OF SEDIMENT.
9. THE INFILTRATION FACILITY IS CONSIDERED TO BE AT FAILURE WHEN IT DOES NOT DEWATER WITHIN 72 HOURS.

SPECIFICATIONS

STONE:
- SHALL BE 2–INCH TO 1–INCH UNIFORMLY GRADED COARSE AGGREGATE, WITH A WASH LOSS OF NO MORE THAN 0.5%, AASHTO SIZE NUMBER 3 PER AASHTO SPECIFICATIONS, PART I, 19TH ED., 1998, OR LATER AND SHALL HAVE VOIDS 40% AS MEASURED BY ASTM–C29.

NON–WOVEN GEOTEXTILE:
- SHALL CONSIST OF NEEDLED NON–WOVEN POLYPROPYLENE FIBERS AND MEET THE FOLLOWING PROPERTIES:

a.	GRAB TENSILE STRENGTH (ASTM–D4632)	120 LBS
b.	MULLEN BURST STRENGTH (ASTM–D3786)	225 PSI
c.	FLOW RATE (ASTM–D4491)	95 GAL/MIN/FT²
d.	UV RESISTANCE AFTER 500 HRS (ASTM–D4355)	70%

   e. HEAT–SET OR HEAT–CALENDARED FABRICS ARE NOT PERMITTED
   •••• ACCEPTABLE TYPES INCLUDE MIRAFI 140N, AMOCO 4547, AND GEOTEX 451.

TOPSOIL:
- MAY BE AMENDED WITH COMPOST (IF APPLICABLE)

PIPE:
- SHALL BE CONTINUOUSLY PERFORATED, SMOOTH INTERIOR, WITH A MINIMUM INSIDE DIAMETER OF 6–INCHES.
- HIGH–DENSITY POLYETHYLENE (HDPE) PIPE SHALL MEET AASHTO M252, TYPE S OR AASHTO M294, TYPE S.

STORM DRAIN INLETS AND STRUCTURES:
   a. CONCRETE CONSTRUCTION: CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH SECTION 1001, PENNDOT SPECIFICATIONS, 1990 OR LATEST EDITION.
   b. PRECAST CONCRETE INLETS AND MANHOLES: PRECAST CONCRETE INLETS MAY BE SUBSTITUTED FOR CAST–IN–PLACE STRUCTURES AND SHALL BE CONSTRUCTED AS SPECIFIED FOR CAST–IN–PLACE. PRECAST STRUCTURES MAY BE USED IN ONLY THOSE AREAS WHERE THERE IS NO CONFLICT WITH EXISTING UNDERGROUND STRUCTURES THAT MAY NECESSITATE REVISION OF INVERTS. TYPE M STANDARD PENNDOT INLET BOXES WILL BE MODIFIED TO PROVIDE MINIMUM 12 INCH SUMP STORAGE AND BOTTOM LEACHING BASINS, OPEN TO GRAVEL SUMPS IN SUB–GRADE, WHEN SITUATED IN THE RECHARGE BED.
   c. ALL PVC CATCH BASINS/CLEANOUTS/INLINE DRAINS SHALL HAVE H–10 OR H–20 RATED GRATES, DEPENDING ON THEIR PLACEMENT (H–20 IF VEHICULAR LOADING).
   d. STEEL REINFORCING BARS OVER THE TOP OF THE OUTLET STRUCTURE SHALL CONFORM TO ASTM A615, GRADES 60 AND 40.
   e. PERMANENT TURF REINFORCEMENT MATTING SHALL BE INSTALLED ACCORDING TO MANUFACTURERS' SPECIFICATIONS. (IF APPLICABLE)

ALTERNATIVE STORAGE MEDIA (IF APPLICABLE):
- FOLLOW MANUFACTURER'S SPECIFICATIONS

NOTES:

1. PIPE BEDDING MATERIAL SHALL BE PER MANUFACTURER'S SPECIFICATION.
2. HAUNCH MATERIAL SHALL BE PER MANUFACTURER'S SPECIFICATION.
3. ADHERE TO ALL INFILTRATION BED CONSTRUCTION SPECIFICATIONS ON THE STORMWATER FACILITY OPERATIONS AND MAINTENANCE PLAN.
4. GEOTEXTILE FABRIC SHALL CONFORM TO PENNDOT 408 SPECIFICATIONS – SECTION 212 GEOTEXTILES OR LATEST ADDENDA.
5. ALL STONE TO BE USED FOR INFILTRATION DEVICES SHALL BE CLEAN WASHED AASHTO #3 AND SHALL BE INSPECTED BY THE DESIGN ENGINEER PRIOR TO BED INSTALLATION.

BMP 6.4.5: RAIN GARDEN

THE INSTALLATION OF THIS BMP IS A CRITICAL STAGE WHERE THE DESIGN ENGINEER MUST BE CONTACTED AT LEAST 48 HOURS IN ADVANCE TO PROVIDE CONSTRUCTION OVERSIGHT.

EMERGENCY SPILLWAY DESIGN

Q100 POST = 5.08 CFS   L = 25 FT

$$H = \left[\frac{Q100\ POST}{3.37(L)}\right]^{(.67)} = \left[\frac{5.08}{(3.37)(25)}\right]^{(.67)} = \underline{0.15}\ FT$$

0.50' OK

EMERGENCY SPILLWAY DETAIL

RAIN GARDEN DETAIL

NO SCALE

RAIN GARDEN CONSTRUCTION SPECIFICATIONS:

1. PERIMETER SEDIMENT CONTROL DEVICES MUST BE INSTALLED PRIOR TO CLEARING AND GRUBBING ACTIVITIES. AREAS WHERE THE BERM AND EMBANKMENT IS TO BE PLACED SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIAL.
2. THE BOTTOM OF ALL INFILTRATION BMP'S SHALL BE UNDISTURBED OR UNCOMPACTED SUBGRADE SCARIFIED TO A DEPTH OF SIX (6) INCHES.
3. EXCAVATE IRAIN GARDEN TO WITHIN TWO FEET OF FINAL ELEVATION OF THE RAIN GARDEN FLOOR. FINAL EXCAVATION TO FINISHED GRADE SHALL BE DEFERRED UNTIL ALL UPGRADIENT–DISTURBED AREAS HAVE BEEN STABILIZED. THE RAIN GARDEN BOTTOM AND SIDE EMBANKMENTS SHALL BE ROUGHENED WERE SHEARED AND SEALED BY HEAVY EQUIPMENT.
4. ALL RAIN GARDEN EXCAVATION EQUIPMENT SHALL BE PERFORMED LIGHTWEIGHT, RUBBER–TIRED EQUIPMENT.
5. THE EMBANKMENT SHALL BE CONSTRUCTED TO AN ELEVATION OF 10 PERCENT HIGHER THAN THE DESIGN HEIGHT TO ALLOW FOR SETTLEMENT IF COMPACTION IS OBTAINED WITH HAULING EQUIPMENT. IF COMPACTION IS OBTAINED THROUGH THE USE OF COMPACTORS, THE OVER BUILD MAY BE REDUCED TO NOT LESS THAN 5 PERCENT.
6. FOLLOWING COMPLETION OF THE FINAL GRADING, THE BOTTOM OF THE RAIN GARDEN SHALL BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW AND THEN SMOOTHED OUT WITH A LEVELING DRAG OR EQUIVALENT GRADING EQUIPMENT.
7. THE RAIN GARDEN SHALL BE STABILIZED IN ACCORDANCE WITH THE APPROPRIATE VEGETATIVE STANDARD AND SPECIFICATIONS IMMEDIATELY FOLLOWING CONSTRUCTION.
8. ONCE INFILTRATION BMP'S HAVE BEEN CONVERTED TO THEIR FINAL CONFIGURATION, CONTRIBUTING AREAS SHALL BE AT MINIMUM OF 70% STABILIZATION.

CONSTRUCTION SEQUENCE

1. **DUE TO SITE CONSTRAINTS, CONSTRUCTION ACCESS TO THE REAR OF THE BUILDING WILL NEED TO TRAVERSE THE AREA OF THE PROPOSED RAIN GARDEN. TRAFFIC IN THIS AREA SHALL BE KEPT TO MINIMUM AND ONLY USED WHEN NECESSARY.**
2. INSTALL RAIN GARDEN DURING LATER PHASES OF SITE CONSTRUCTION TO PREVENT SEDIMENTATION AND/OR DAMAGE FROM CONSTRUCTION ACTIVITY. INSTALLATION SHALL TAKE PLACE ONCE CONSTRUCTION ACCESS IS NO LONGER NEEDED TO THE REAR OF THE BUILDING. AFTER INSTALLATION, PREVENT SEDIMENT–LADEN WATER FROM ENTERING INLETS AND PIPES.
3. INSTALL AND MAINTAIN PROPER EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION.
4. EXCAVATE RAIN GARDEN BOTTOM TO AN UNCOMPACTED SUBGRADE FREE FROM ROCKS AND DEBRIS. DO NOT COMPACT SUBGRADE.
5. **RE–TEST RAIN GARDEN BOTTOM AND VERIFY RATES MEET DESIGN INTENT. IN THE EVENT RATES ARE BELOW DESIGN VALUES, CONTACT DESIGN ENGINEER FOR ALTERNATE DESIGN OR RESOLUTION.**
6. INSTALL OUTLET CONTROL STRUCTURES.
7. SEED AND STABILIZE TOPSOIL. (VEGETATE IF APPROPRIATE WITH NATIVE PLANTINGS.)
8. DO NOT REMOVE INLET PROTECTION OR OTHER EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.

MAINTENANCE

1. CATCH BASINS AND INLETS (UPGRADIENT OF RAIN GARDEN) SHOULD BE INSPECTED AND CLEANED AT LEAST ONCE PER YEAR AND AFTER MAJOR RUNOFF EVENTS.
2. THE VEGETATION ALONG THE SURFACE OF THE RAIN GARDEN SHOULD BE MAINTAINED IN GOOD CONDITION, AND ANY BARE SPOTS REVEGETATED AS SOON AS POSSIBLE.
3. VEHICLES SHOULD NOT BE PARKED OR DRIVEN ON A RAIN GARDEN, AND CARE SHOULD BE TAKEN TO AVOID EXCESSIVE COMPACTION BY MOWERS.
4. INSPECT THE RAIN GARDEN AFTER RUNOFF EVENTS AND MAKE SURE THAT RUNOFF DRAINS DOWN WITHIN 72 HOURS. MOSQUITO'S SHOULD NOT BE A PROBLEM IF THE WATER DRAINS IN 72 HOURS. MOSQUITOES REQUIRE A CONSIDERABLY LONG BREEDING PERIOD WITH RELATIVELY STATIC WATER LEVELS.
5. ALSO INSPECT FOR ACCUMULATION OF SEDIMENT, DAMAGE TO OUTLET CONTROL STRUCTURES, EROSION CONTROL MEASURES, SIGNS OF WATER CONTAMINATION/SPILLS, AND SLOPE STABILITY IN THE RAIN GARDEN.
6. MOW ONLY AS APPROPRIATE FOR VEGETATIVE COVER SPECIES.
7. REMOVE ACCUMULATED SEDIMENT FROM RAIN GARDEN AS REQUIRED. RESTORE ORIGINAL CROSS SECTION AND INFILTRATION RATE. PROPERLY DISPOSE OF SEDIMENT.

SPECIFICATIONS

TOPSOIL:
- SOIL AMENDMENT IN THE BOTTOM OF BASIN SHALL BE OF THE FOLLOWING (TO PROVIDE MIN. 10% VOID RATIO):
  25% SOIL
  25% COMPOST
  50% SAND

VEGETATION:

REFER TO LANDSCAPING PLAN FOR RAIN GARDEN PLANTING.

DLHowell
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JUSTIN WILLIAM BREWER
No. PE085115

REV.	DATE	DESCRIPTION
8		
7		
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PCSM DETAILS

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PROJECT: WESTTOWN–THORNBURY ELEMENTARY SCHOOL
LOCATION: 750 WESTBOURNE ROAD
WESTTOWN TOWNSHIP, CHESTER CO., PA.

DATE: 11/13/2020
SCALE: N.T.S.
DRAWN BY: JWB
CHECKED BY: JWB
PROJECT NO.: 3745
CAD FILE: 05 PCSWM PLAN.dwg
PLOTTED: 06/30/2021
DRAWING NO.: C04.2
SHEET 05 OF 13

Q:\CIVIL 3D JOBS\3745\3745 PRODUCTION PLANS\SHEET SET\SUBDIVISION & LD\05 PCSWM PLAN.DWG

BMP 6.4.8: VEGETATED SWALES

CHANNEL CROSS-SECTION

LINING INSTALLATION

* SEE MANUFACTURER'S LINING INSTALLATION DETAIL FOR STAPLE PATTERNS, AND VEGETATION STABILIZATION SPECIFICATIONS FOR SOIL AMENDMENTS, SEED MIXTURES, AND MULCHING INFORMATION.

CHANNEL TABULATION

CHANNEL #	B (FT)	D (MIN.)	CHANNEL LINING	COMMENTS
PERM. SWALE				
1	4.0	1.50	NORTH AMERICAN GREEN SC150	0.50' FREEBOARD
2	4.0	0.75	PERMANENT TURF REINFORCEMENT MAT	0.50' FREEBOARD

STANDARD CONSTRUCTION DETAIL #1

VEGETATED CHANNELS

NOT TO SCALE

CONSTRUCTION SEQUENCE

1. BEGIN VEGETATED SWALE CONSTRUCTION ONLY WHEN THE UPGRADIENT TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES ARE IN PLACE. VEGETATED SWALES SHOULD BE CONSTRUCTED AND STABILIZED EARLY IN THE CONSTRUCTION SCHEDULE, PREFERABLY BEFORE MASS EARTHWORK AND PAVING INCREASE THE RATE AND VOLUME OF RUNOFF. (EROSION AND SEDIMENT CONTROL METHODS SHALL ADHERE TO THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION'S EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL, MARCH 2000 OR LATEST EDITION.)
2. ROUGH GRADE THE VEGETATED SWALE. EQUIPMENT SHALL AVOID EXCESSIVE COMPACTION AND/OR LAND DISTURBANCE. EXCAVATING EQUIPMENT SHOULD OPERATE FROM THE SIDE OF THE SWALE AND NEVER ON THE BOTTOM. IF EXCAVATION LEADS TO SUBSTANTIAL COMPACTION OF THE SUBGRADE (WHERE AN INFILTRATION TRENCH IS NOT PROPOSED), 18 INCHES SHALL BE REMOVED AND REPLACED WITH A BLEND OF TOPSOIL AND SAND TO PROMOTE INFILTRATION AND BIOLOGICAL GROWTH. AT THE VERY LEAST, TOPSOIL SHALL BE THOROUGHLY DEEP PLOWED INTO THE SUBGRADE IN ORDER TO PENETRATE THE COMPACTED ZONE AND PROMOTE AERATION AND THE FORMATION OF MACROPORES. FOLLOWING THIS, THE AREA SHOULD BE DISKED PRIOR TO FINAL GRADING OF TOPSOIL.
3. CONSTRUCT CHECK DAMS, IF REQUIRED.
4. FINE GRADE THE VEGETATED SWALE. ACCURATE GRADING IS CRUCIAL FOR SWALES. EVEN THE SMALLEST NON-CONFORMITIES MAY COMPROMISE FLOW CONDITIONS.
5. SEED, VEGETATE AND INSTALL PROTECTIVE LINING AS PER APPROVED PLANS AND ACCORDING TO FINAL PLANTING LIST. PLANT THE SWALE AT A TIME OF THE YEAR WHEN SUCCESSFUL ESTABLISHMENT WITHOUT IRRIGATION IS MOST LIKELY. HOWEVER, TEMPORARY IRRIGATION MAY BE NEEDED IN PERIODS OF LITTLE RAIN OR DROUGHT. VEGETATION SHOULD BE ESTABLISHED AS SOON AS POSSIBLE TO PREVENT EROSION AND SCOUR.
6. ONCE ALL TRIBUTARY AREAS ARE SUFFICIENTLY STABILIZED, REMOVE TEMPORARY EROSION AND SEDIMENT CONTROLS. IT IS VERY IMPORTANT THAT THE SWALE BE STABILIZED BEFORE RECEIVING UPLAND STORMWATER FLOW.
7. FOLLOW MAINTENANCE GUIDELINES, AS DISCUSSED BELOW.

   NOTE: IF A VEGETATED SWALE IS USED FOR RUNOFF CONVEYANCE DURING CONSTRUCTION, IT SHOULD BE REGRADED AND RESEEDED IMMEDIATELY AFTER CONSTRUCTION AND STABILIZATION HAS OCCURRED. ANY DAMAGED AREAS SHOULD BE FULLY RESTORED TO ENSURE FUTURE FUNCTIONALITY OF THE SWALE.

MAINTENANCE

COMPARED TO OTHER STORMWATER MANAGEMENT MEASURES, THE REQUIRED UPKEEP OF VEGETATED SWALES IS RELATIVELY LOW. IN GENERAL, MAINTENANCE STRATEGIES FOR SWALES FOCUS ON SUSTAINING THE HYDRAULIC AND POLLUTANT REMOVAL EFFICIENCY OF THE CHANNEL, AS WELL AS MAINTAINING A DENSE VEGETATIVE COVER. EXPERIENCE HAS PROVEN THAT PROPER MAINTENANCE ACTIVITIES ENSURE THE FUNCTIONALITY OF VEGETATED SWALES FOR MANY YEARS. THE FOLLOWING SCHEDULE OF INSPECTION AND MAINTENANCE ACTIVITIES IS RECOMMENDED:

MAINTENANCE ACTIVITIES TO BE DONE ANNUALLY AND WITHIN 48 HOURS AFTER EVERY MAJOR STORM EVENT (> 1 INCH RAINFALL DEPTH):

1. INSPECT AND CORRECT EROSION PROBLEMS, DAMAGE TO VEGETATION, AND SEDIMENT AND DEBRIS ACCUMULATION (ADDRESS WHEN > 3 INCHES AT ANY SPOT OR COVERING VEGETATION)
2. INSPECT VEGETATION ON SIDE SLOPES FOR EROSION AND FORMATION OF RILLS OR GULLIES, CORRECT AS NEEDED
3. INSPECT FOR POOLS OF STANDING WATER; DEWATER AND DISCHARGE TO AN APPROVED LOCATION AND RESTORE TO DESIGN GRADE
4. MOW AND TRIM VEGETATION TO ENSURE SAFETY, AESTHETICS, PROPER SWALE OPERATION, OR TO SUPPRESS WEEDS AND INVASIVE VEGETATION; DISPOSE OF CUTTINGS IN A LOCAL COMPOSTING FACILITY; MOW ONLY WHEN SWALE IS DRY TO AVOID RUTTING
5. INSPECT FOR LITTER; REMOVE PRIOR TO MOWING
6. INSPECT FOR UNIFORMITY IN CROSS-SECTION AND LONGITUDINAL SLOPE, CORRECT AS NEEDED
7. INSPECT SWALE INLET (CURB CUTS, PIPES, ETC.) AND OUTLET FOR SIGNS OF EROSION OR BLOCKAGE, CORRECT AS NEEDED

MAINTENANCE ACTIVITIES TO BE DONE AS NEEDED:

1. PLANT ALTERNATIVE GRASS SPECIES IN THE EVENT OF UNSUCCESSFUL ESTABLISHMENT
2. RESEED BARE AREAS; INSTALL APPROPRIATE EROSION CONTROL MEASURES WHEN NATIVE SOIL IS EXPOSED OR EROSION CHANNELS ARE FORMING
3. ROTOTILL AND REPLANT SWALE IF DRAW DOWN TIME IS MORE THAN 48 HOUR
4. INSPECT AND CORRECT CHECK DAMS WHEN SIGNS OF ALTERED WATER FLOW (CHANNELIZATION, OBSTRUCTIONS, EROSION, ETC.) ARE IDENTIFIED
5. WATER DURING DRY PERIODS, FERTILIZE, AND APPLY PESTICIDE ONLY WHEN ABSOLUTELY NECESSARY

MOST OF THE ABOVE MAINTENANCE ACTIVITIES ARE REASONABLY WITHIN THE ABILITY OF INDIVIDUAL HOMEOWNERS. MORE INTENSIVE SWALES (I.E. MORE SUBSTANTIAL VEGETATION, CHECK DAMS, ETC.) MAY WARRANT MORE INTENSIVE MAINTENANCE DUTIES AND SHOULD BE VESTED WITH A RESPONSIBLE AGENCY. A LEGALLY BINDING AND ENFORCEABLE MAINTENANCE AGREEMENT BETWEEN THE FACILITY OWNER AND THE LOCAL REVIEW AUTHORITY MIGHT BE WARRANTED TO ENSURE SUSTAINED MAINTENANCE EXECUTION. WINTER CONDITIONS ALSO NECESSITATE ADDITIONAL MAINTENANCE CONCERNS, WHICH INCLUDE THE FOLLOWING:

1. INSPECT SWALE IMMEDIATELY AFTER THE SPRING MELT, REMOVE RESIDUALS (E.G. SAND) AND REPLACE DAMAGED VEGETATION WITHOUT DISTURBING REMAINING VEGETATION.
2. IF ROADSIDE OR PARKING LOT RUNOFF IS DIRECTED TO THE SWALE, MULCHING AND/OR SOIL AERATION/MANIPULATION MAY BE REQUIRED IN THE SPRING TO RESTORE SOIL STRUCTURE AND MOISTURE CAPACITY AND TO REDUCE THE IMPACTS OF DEICING AGENTS.
3. USE NONTOXIC, ORGANIC DEICING AGENTS, APPLIED EITHER AS BLENDED, MAGNESIUM CHLORIDE-BASED LIQUID PRODUCTS OR AS PRETREATED SALT.
4. USE SALT-TOLERANT VEGETATION IN SWALES.

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COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — JUSTIN WILLIAM BREWER — ENGINEER — No. PE085192

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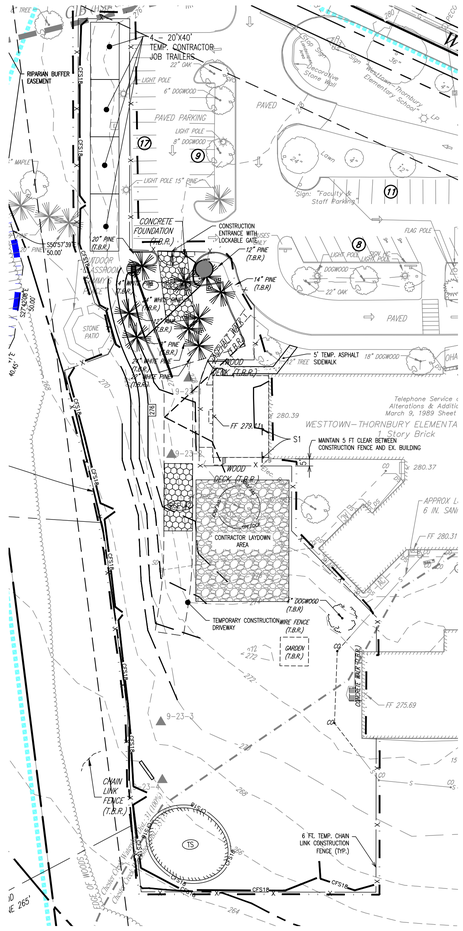

EROSION CONTROL PLAN – STAGE 1

SCALE: 1" = 50'

50 0 25 50 100

GRAPHIC SCALE
1 inch = 50 feet

EROSION CONTROL PLAN

SCALE: 1" = 50'

50 0 25 50 100

GRAPHIC SCALE
1 inch = 50 feet

LOCATION MAP

SCALE: 1" = 2,000'

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EROSION CONTROL LEGEND

▬ ▬	DRAINAGE AREA
▬ · · ▬	LIMIT OF DISTURBANCE
— FF18 — (FF18)	18" SILT FENCE
— FF30 — (FF30)	30" SILT FENCE
— SSF —	30" SILT FENCE REINFORCED W/ STRAW HAY BALES
— OCF —	ORANGE CONSTRUCTION FENCE
(TS)	TOPSOIL STOCKPILE
(RCE)	STABILIZED ROCK CONSTRUCTION ENTRANCE
(RF)	ROCK FILTER OUTLET
(RD)	ROCK DISSIPATOR
(DC)	DIVERSION CHANNEL
(IP)	INLET PROTECTION
(ST)	SEDIMENT TRAP
(TR)	TEMPORARY RISER
▨	EROSION CONTROL BLANKET

LEGEND

▬ ▬ ▬	EX. PROPERTY LINE
— — —	PROP. PROPERTY LINE
— — —	EX. RIGHT-OF-WAY
— — —	PROP. RIGHT-OF-WAY
☐	EX. MONUMENT
▣	PROP. MONUMENT
○	EX. IRON PIPE
●	PROP. IRON PIPE
— · —	EX. EASEMENT
— · —	PROP. EASEMENT
—\\//—	EX. WETLANDS
242	EXISTING CONTOUR
242	PROPOSED CONTOUR
X 123.00	EXISTING SPOT ELEV.
X 123.00	NEW SPOT ELEV.
GEB2	SOILS TYPE
— —	SOILS LINE
═	EX. CONC. CURB
═	PROP. CONC. CURB
— — —	EX. EDGE OF PAVING
—	PROP. EDGE OF PAVING
⊶□	EX. LIGHT POLE
□⊸	PROP. LIGHT POLE
—X—	EX. FENCE
MB	EX. MAIL BOX
⊤	EX. SIGN
⊤	PROP. SIGN
④	EXIST. PARKING SPACES
4	PROP. PARKING SPACES
(TBR)	TO BE REMOVED
—T—	EX. TELE. LINE
—T—	PROP. TELE. LINE
—E—	EX. ELEC. LINE
—E—	PROP. ELEC. LINE
-○-	EX. UTILITY POLE
-○-	PROP. UTILITY POLE
⊖	EX. GUY ANCHOR
—G—	EX. GAS LINE
—G—	PROP. GAS LINE
G.V. ⋈	EX. GAS VALVE
G.V. ⋈	PROP. GAS VALVE
═ ═ ═	EX. STORM SEWER LINE
▬ ▬ ▬	PROP. STORM SEWER LINE
▨	EX. STORM INLET
▨	PROP. STORM INLET
IC 1	PROP. STORM INLET ID
☐	PROP. SEEPAGE BED
—S—	EX. SANITARY SEWER LINE
—S—	PROP. SAN. SEWER LINE
—L—	PROP. SAN. SEWER LATERAL
MH 1	PROP. SANITARY MH. ID
—W—	EX. WATER LINE
—W—	PROP. WATER LINE
—WL—	PROP. WATER LATERAL
—FW—	PROP. FIRE WATER LINE
W.V. ⋈	EX. WATER VALVE
W.V. ⋈	PROP. WATER VALVE
F.H.	EX. HYDRANT
F.H.	PROP. HYDRANT
○	EX. MANHOLE
○	PROP. MANHOLE
●	EX. PERC TEST
▲	EX. TEST PIT
▬ ׀׀׀ ▬	75' TOWNSHIP RIPARIAN BUFFER

CALL BEFORE YOU DIG!

PENNSYLVANIA LAW REQUIRES
3 WORKING DAYS NOTICE FOR
CONSTRUCTION PHASE AND 10 WORKING
DAYS IN DESIGN STAGE–STOP CALL

Pennsylvania One Call System, Inc

1–800–242–1776

ONE CALL NOTE

SCALE: NO SCALE

PA ONE CALL

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UTILITIES NOTIFIED

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CHECKED BY:	JWB
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CAD FILE:	06 EROSION CONTROL PLAN.dwg
PLOTTED:	06/30/2021
DRAWING NO.:	C05.1
SHEET	07 OF 13

LINE TRENCH EXCAVATION NOTES:

1. LIMIT ADVANCED CLEARING AND GRUBBING OPERATIONS TO A DISTANCE EQUAL TO TWO TIME THE LENGTH OF PIPE INSTALLATION THAT CAN BE COMPLETED IN ONE DAY.
2. WORK CREWS AND EQUIPMENT FOR TRENCHING, PLACEMENT OF PIPE, PLUG CONSTRUCTION AND BACKFILLING WILL BE SELF CONTAINED AND SEPARATE FROM CLEARING AND GRUBBING AND SITE RESTORATION AND STABILIZATION OPERATIONS.
3. ALL SOIL EXCAVATED FROM THE TRENCH WILL BE PLACED ON THE UPHILL SIDE OF THE TRENCH.
4. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT, PLUG INSTALLATION AND BACKFILL THAT CAN BE COMPLETED THE SAME DAY.
5. WATER WHICH ACCUMULATES IN THE OPEN TRENCH WILL BE COMPLETELY REMOVED BY PUMPING BEFORE PIPE PLACEMENT AND/OR BACKFILLING BEGINS. WATER REMOVED FROM THE TRENCH SHALL BE PUMPED THROUGH A FILTRATION DEVICE.
6. ON THE DAY FOLLOWING PIPE PLACEMENT AND TRENCH BACKFILLING, THE DISTURBED AREA WILL BE GRADED TO FINAL CONTOURS AND IMMEDIATELY STABILIZED.

SOIL USE LIMITATIONS AND RESOLUTIONS:

ACID SOIL TYPES: pHs LOWER THAN 5.5

SOIL TESTS SHOULD BE TAKEN TO DETERMINE THE ACTUAL SOIL pH REACTION. A pH OF 5.5 SHOULD BE ACHIEVED. TO RESOLVE THIS LIMITATION THE SOIL pH SHOULD BE ADJUSTED BY APPLYING LIME RATES IN ACCORDANCE WITH THE PENN STATE AGRONOMY GUIDE AND THE RECOMMENDATIONS FROM A REPUTABLE LABORATORY.

WET SOIL TYPES

TO RESOLVE THIS LIMITATION VEGETATIVE SPECIES THAT ARE TOLERANT TO WET CONDITIONS SHOULD BE SELECTED FOR LANDSCAPING.

POOR TOPSOIL

SOIL SHOULD BE IMPORTED FROM OTHER AREAS ON SITE. THE CHESTER COUNTY CONSERVATION DISTRICT MUST APPROVE ANY DEVIATION FROM THE E&SC SEQUENCE.

WET SOIL TYPES / HIGH WATER TABLE DURING EXCAVATION ACTIVITIES

WATER TO BE PUMPED TO A DEWATERING STRUCTURE, SEE DETAIL

POOR SUITABILITY FOR WINTER GRADING / FROST ACTION

ADEQUATE COMPACTION OF SOIL IS REQUIRED FOR THE EMBANKMENTS, PIPE BACKFILL, ROAD CONSTRUCTION AND THE BUILDING PADS. IF ADEQUATE COMPACTION CANNOT BE ACHIEVED DUE TO FROST ACTION OR WET SOIL TYPE, EITHER SOIL SHOULD BE IMPORTED FROM OTHER AREAS ON SITE OR CONSTRUCTION OF THESE FACILITIES SHOULD NOT BE WORKED ON DURING PERIODS PRONE TO FROST. THE CHESTER COUNTY CONSERVATION DISTRICT MUST APPROVE ANY DEVIATION FROM THE E&SC SEQUENCE.

PERMEABLE SOIL FOR EMBANKMENT CONSTRUCTION

SOIL SHOULD BE IMPORTED FROM OTHER AREAS ON SITE. THE CHESTER COUNTY CONSERVATION DISTRICT MUST APPROVE ANY DEVIATION FROM THE E&SC SEQUENCE.

POORLY SUITED AS SOURCES OF TOPSOIL

IDENTIFYING AND RESOLVING CHARACTERISTICS, THAT RENDER SOIL TYPES POORLY SUITED AS TOPSOIL.

ERODIBLE SOIL

TYPES EXHIBITING K VALUES GREATER THAN 0.36 OR PLASTICITY INDEX VALUES LOWER THAN 10, LIMIT VEGETATIVE STABILIZATION OF CHANNELS. RESOLUTIONS: TEMPORARY CHANNEL LINING, PROVIDING PERMANENT CHANNEL LINING, DECREASING CHANNEL GRADE, INCREASING CHANNEL WIDTH, SELECTION VEGETATIVE WITH GREATER RETARDANCE, SELECTING PERMANENT LININGS OTHER THAN GRASSES, AND IMPLEMENTING COMBINATION OF THESE AND OTHER METHODS.

SOILS SUSCEPTIBLE TO SINKHOLE FORMATION

LOCATING FACILITIES, SUCH AS SEDIMENT BASINS OR TRAPS OR STORMATER DETENTION OR RETENTION BAINS, ON OTHER SOIL TYPES. LINING RESERVOIR AREAS WITH IMPERMEABLE LININGS, LIMITING STANDING WATER DEPTHS, LIMITING RETENTION TIMES AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS.

CONSTRUCTION SEQUENCE NOTES:

1. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. EACH STAGE SHALL BE COMPLETED BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE.
2. AT LEAST 7 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE OPERATOR SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES, THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS, THE EROSION AND SEDIMENTATION CONTROL PLAN PREPARER, AND A REPRESENTATIVE OF THE CHESTER COUNTY CONSERVATION DISTRICT.
3. THE OPERATOR SHALL REMOVE FROM THE SITE, RECYCLE, OR DISPOSE OF ALL BUILDING MATERIAL 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 BURY, DUMP, OR DISCHARGE ANY BUILDING MATERIAL WASTES AT THE SITE.
4. 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 STABILIZATION.
5. 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 THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
6. SHOULD ANY MEASURES CONTAINED WITHIN THIS PLAN PROVE INCAPABLE OF ADEQUATELY MITIGATING STORMWATER DRAINAGE THERMAL IMPACTS PRIOR TO THE DISCHARGE TO SURFACE WATERS, THE DESIGN ENGINEER MUST BE CONTACTED IMMEDIATELY AND ADDITIONAL MEASURES MUST BE IMMEDIATELY IMPLEMENTED BY THE CONTRACTOR TO ELIMINATE SUCH PROBLEMS.

CONSTRUCTION SEQUENCE:

ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. EACH STAGE SHALL BE COMPLETED BEFORE ANY FOLLOWING STAGE IS INITIATED. A ROUTINE END-OF-DAY CHECK SHALL BE MADE DURING CONSTRUCTION TO MAKE CERTAIN THAT ALL CONTROL MEASURES ARE WORKING PROPERLY. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE. EROSION AND SEDIMENTATION CONTROL MEASURES AND EARTH MOVING ACTIVITIES WILL BE STAGED AS FOLLOWS:

1. AT LEAST 7 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES THE OPERATOR SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES INCLUDING BUT NOT LIMITED TO: THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE EROSION AND SEDIMENTATION CONTROL PLAN PREPARER, AND A REPRESENTATIVE FROM THE CHESTER COUNTY CONSERVATION DISTRICT FOR AN ON-SITE PRE-CONSTRUCTION MEETING.
2. 72 HOURS PRIOR TO ANY SOIL DISTURBANCE, CONTRACTOR SHALL CONTACT THE CHESTER COUNTY SOIL CONSERVATION DISTRICT AT WILLOWDALE TOWN CENTER, 688 UNIONVILLE ROAD, SUITE 200, KENNETT SQUARE, PA 19348, (610) 925-4920.
3. CESSATION OF ACTIVITY FOR 4 DAYS OR LONGER REQUIRES TEMPORARY STABILIZATION.
4. STAKE LIMITS OF DISTURBANCE IN THE FIELD PRIOR TO CLEARING OR ANY EARTH DISTURBANCE. ANY CHANGE OR ENCROACHMENT ONTO THESE AREAS WITHOUT CONSERVATION DISTRICT REVIEW AND APPROVAL MAY REQUIRE THE CONTRACTOR TO CEASE DISTURBANCE AND OBTAIN AN EARTH DISTURBANCE PERMIT. INSTALL TREE PROTECTION FENCING AROUND PERIMETER OR SITE WHERE LIMIT OF DISTURBED ABUTS WOODLANDS.
5. DEMO EXISTING TREES IN THE AREA OF THE PROPOSED PARKING AND ROCK CONSTRUCTION ENTRANCE ONLY.
6. INSTALL STABILIZED ROCK CONSTRUCTION ENTRANCE (RCE #1) AS SHOWN AND DETAILED ON THE PLANS. THE ENTRANCE WILL BE CONSTRUCTED AND MAINTAINED AS DESCRIBED ON THE E&S CONTROL PLAN DRAWINGS.
7. INSTALL TEMPORARY CHAIN LINK CONSTRUCTION FENCE AS DETAILED ON PLANS. A MINIMUM OF 5 FEET CLEAR SHALL BE MAINTAINED ANYWHERE THE FENCE IS ADJACENT TO THE EXISTING BUILDING.
8. INSTALL THE PERIMETER COMPOST FILTER SOCKS AS SHOWN ON THE PLANS AND AS DIRECTED BY THE CONSERVATION DISTRICT. MAINTAIN TEMPORARY CONTROL MEASURES UNTIL PERMANENT COVER IS ESTABLISHED. THE CONTRACTOR WILL INSTALL THE SYSTEMS IN CONFORMANCE WITH THE DETAILS AND MANUFACTURER'S SPECIFICATIONS.
9. STRIP TOPSOIL IN AREAS NECESSARY TO GRADE THE PROPOSED PARKING LOT AND CONSTRUCT BUILDING ADDITION. STOCKPILE TOPSOIL IN LOCATION SHOWN ON PLANS. STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER.
10. DEMO REMAINING ITEMS (IE, CHAIN LINK BACKSTOP, GARDEN, ASPHALT SIDEWALK) WITHIN THE CONSTRUCTION AREA AS INDICATED ON THE PLANS
11. INSTALL TEMPORARY ASPHALT SIDEWALK FROM EXISITING MODULAR CLASSROOM TO CONNECT TO THE EXISTING SIDEWALK ALONG THE ACCESS DRIVE.
12. ROUGH GRADE PROPOSED PARKING LOT AREA OF STAGE 1. INSTALL STORM SEWERS WITHIN PARKING LOT. GRAVITY PIPING SHALL BE INSTALLED BEGINNING AT LOW POINT AND WORKING UPSLOPE. POSITIVE DRAINAGE MUST BE MAINTAINED TO ALL INLETS. INLET AND PIPING SHALL BE BLOCKED TO PREVENT ANY WATER FROM ENTERING THE INLET OR PIPE.
13. CONSTRUCT TEMPORARY ACCESS DRIVE AND TEMPORARY CONTRACTOR LAYDOWN AREA AS DEPICTED ON THE PLANS
14. ANY DISTURBED OR REGRADED AREAS HAVING A FINAL GRADE OF THIRTY THREE PERCENT (33%) OR GREATER AND ALL DISTURBED AREAS WITHIN 50 FEET OF A SURFACE WATER SHALL BE STABILIZED IMMEDIATELY. DURING GRADING ACTIVITIES, THESE AREAS SHALL BE IMMEDIATELY LINED WITH A STABILIZING EROSION CONTROL BLANKET (ECB) (EAST COAST EROSION BLANKETS TYPE ECS-I OR APPROVED EQUAL) PRIOR TO TEMPORARY SEEDING. ECB SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. THE CESSATION OF ACTIVITY FOR FOUR (4) DAYS OR LONGER REQUIRES TEMPORARY STABILIZATION. NO MORE THAN 15,000 SQUARE FEET OF DISTURBED AREA REACH FINAL GRADE BEFORE INITIATING SEEDING AND MULCHING OPERATIONS.
15. BEGIN CONSTRUCTION OF BUILDING ADDITION. AS PART OF THE CONSTRUCTION OF THE BUILDING ADDITION, INSTALL THE NEW 6-INCH SANITARY SEWER LATERAL TO BE LOCATED UNDER THE NEW ADDITION. CONNECT TO THE EXISTING SANITARY SEWER LATERAL AS DEPCITED ON THE PLANS.
16. CONSTRUCT CONCRETE CURB AND BACKFILL CURB LOCATED WITHIN THE AREA OF STAGE 1. PLACE STONE BASE COURSE ON PARKING AREA AND COMPACT AS SOON AS POSSIBLE IN ORDER TO STABILIZE SOIL.
17. PAVE STAGE 1 PARKING AREA WITH BINDER COURSE. THIS AREA IS TO BE USED FOR CONTRACTOR PARKING.
18. RELOCATE ROCK CONSTRUCTION ENTRANCE (RCE #2) TO EDGE OF THE COMPLETED STAGE 1 PARKING AREA.
19. COMPLETE BUILDING ADDITION CONSTRUCTION AND OTHER IMPROVEMENTS ASSOCIATED WITH THE BUILDING ADDITION.
20. INSTALL VEGETATED VEGETATED SWALES 1 & 2. STABILIZE SWALE IMMEDIATELY WITH NAG SC150 EROSION CONTROL BLANKET (OR APPROVED EQUAL)
21. EXCAVATE AND CONSTRUCT RAIN GARDEN INCLUDING LEVEL SPREADER. DUE TO THE PROXIMITY OF CONSTRUCTION VEHICLE TRAFFIC IN THIS AREA DUE TO THE BUILDING ADDITION CONSTRUCTION, **ADDITIONAL INFILTRATION TESTS SHALL BE PERFORMED UPON EXCAVATION TO THE PROPOSED RAIN GARDEN BOTTOM. IF TEST RESULTS DO NOT SUPPORT THE DESIGN INTENT, THE DESIGN ENGINEER SHALL BE CONTACTED TO DETERMINE NECESSARY STEPS TO MEET DESIGN.** IF THE CONTRACTOR ENCOUNTERS A HIGH WATER TABLE, SHALLOW BEDROCK, SINKHOLES OR SOIL INSTABILITY DURING CONSTRUCTION OF THE BED, THE DESIGN ENGINEER AND THE OWNER MUST BE CONTACTED IMMEDIATELY. **THIS IS A CRITICAL STAGE WHERE A LICENSED PROFESSIONAL MUST BE CONTACTED AT LEAST 48 HOURS IN ADVANCE TO PROVIDE CONSTRUCTION OVERSIGHT.**
22. UPON COMPLETION OF ALL IMPROVEMENTS IN THE AREA OF THE BUILDING ADDITION, REMOVE THE TEMPORARY ACCESS DRIVE AND CONTRACTOR LAYDOWN AREA. DISTURBED AREAS SHALL BE STABILIZED IMMEDIATELY.
23. DEMO MODULAR CLASSROOM BUILDING AND TEMPORARY ASPHALT SIDEWALK.
24. EXCAVATE AND CONSTRUCT SUBSURFACE INFILTRATION BED INCLUDING LEVEL SPREADER. DUE TO THE PROXIMITY OF CONSTRUCTION VEHICLE TRAFFIC IN THIS AREA DUE TO THE BUILDING ADDITION CONSTRUCTION, **ADDITIONAL INFILTRATION TESTS SHALL BE PERFORMED UPON EXCAVATION TO THE PROPOSED INFILTRATION BED BOTTOM. IF TEST RESULTS DO NOT SUPPORT THE DESIGN INTENT, THE DESIGN ENGINEER SHALL BE CONTACTED TO DETERMINE NECESSARY STEPS TO MEET DESIGN**.IF THE CONTRACTOR ENCOUNTERS A HIGH WATER TABLE, SHALLOW BEDROCK, SINKHOLES OR SOIL INSTABILITY DURING CONSTRUCTION OF THE BED, THE DESIGN ENGINEER AND THE OWNER MUST BE CONTACTED IMMEDIATELY. **THIS IS A CRITICAL STAGE WHERE A LICENSED PROFESSIONAL MUST BE CONTACTED AT LEAST 48 HOURS IN ADVANCE TO PROVIDE CONSTRUCTION OVERSIGHT.**
25. ROUGH GRADE REMAINING PARKING LOT AREA. INSTALL REMAINING INLETS AND ASSOCIATED PIPING. GRAVITY PIPING SHALL BE INSTALLED BEGINNING AT LOW POINT AND WORKING UPSLOPE. POSITIVE DRAINAGE MUST BE MAINTAINED TO ALL INLETS. INLET AND PIPING SHALL BE BLOCKED TO PREVENT ANY WATER FROM ENTERING THE INLET OR PIPE.
26. CONSTRUCT REMAINING CONCRETE CURB AND BACKFILL CURB. PLACE STONE BASE COURSE ON PARKING AREA AND COMPACT AS SOON AS POSSIBLE IN ORDER TO STABILIZE SOIL.
27. PAVE REMAINING PARKING AREA WITH BINDER COURSE.
28. INSTALL NEW SIDEWALK ALONG NEW PARKING AREA AND TO CONNECT TO EXISTING SIDEWALK
29. NO RUNOFF SHALL BE PERMITTED TO ENTER ANY STORMWATER MANAGEMENT BMP UNTIL THE SITE IS AT 70% STABILIZATION. PRIOR TO UN-SEALING INFILTRATION BED AND OPENING THE BED TO RUNOFF, WATER QUALITY SNOUTS SHALL BE INSTALLED ON INLETS AS DEPICTED ON DETAIL. **THIS IS A CRITICAL STAGE WHERE A LICENSED PROFESSIONAL MUST BE CONTACTED AT LEAST 48 HOURS IN ADVANCE TO PROVIDE CONSTRUCTION OVERSIGHT.**
30. PROVIDE SIX (6) INCHES OF TOPSOIL ON ALL DISTURBED AREAS. SEED AND MULCH ALL DISTURBED AREAS WITH PERMANENT SEED MIXTURE SPECIFICATION. ALL TOPSOIL PLACEMENT, SEEDING, SOIL SUPPLEMENTS, AND/OR MULCHING SHALL BE COMPLETED IN ACCORDANCE WITH THE STANDARDS FOR EROSION AND SEDIMENT POLLUTION CONTROL IN PENNSYLVANIA.
31. ALL IMPORTED TOPSOIL, IF REQUIRED, SHALL BE FERTILE AND TYPICAL OF THE LOCALITY AND SHALL BE FREE FROM STONE, CLAY, AND WEEDS.
32. PAVE PARKING LOT WITH WEARING COURSE.
33. INSTALL PLANTINGS PER THE LANDSCAPE PLAN. **THIS IS A CRITICAL STAGE WHERE A LICENSED PROFESSIONAL MUST BE CONTACTED AT LEAST 48 HOURS IN ADVANCE TO PROVIDE CONSTRUCTION OVERSIGHT.**
34. REMOVE TEMPORARY CONSTRUCTION FENCING AND ANY OTHER CONTRACTOR LAYDOWN AREAS. DISTURBED AREAS SHALL BE STABILIZED WITH PERMANENT SEED MIX IMMEDIATELY.
35. UPON COMPLETION OF CONSTRUCTION ACTIVITIES, ALL DISTURBED AREAS WILL BE STABILIZED. ONCE ALL DISTURBED AREAS HAVE BEEN STABILIZED AND THERE ARE NO FUTURE SIGNS OF EROSION EVIDENT AND UPON FINAL APPROVAL BY THE CHESTER COUNTY SOIL CONSERVATION DISTRICT, REMOVE ALL TEMPORARY EROSION CONTROL STRUCTURES. IMMEDIATELY STABILIZE ANY AREA DISTURBED DURING THE REMOVAL OF THESE CONTROLS.
36. NO RUNOFF SHALL BE PERMITTED TO ENTER ANY STORMWATER MANAGEMENT BMP UNTIL THE DRAINAGE AREA TO THE BMP IS AT 70% STABILIZATION.
37. THE DESIGN ENGINEER SHALL INSPECT ALL PCSM BMPS TO ENSURE THAT THEY HAVE NOT BEEN IMPACTED BY CONSTRUCTION ACTIVITIES. **THIS IS A CRITICAL STAGE WHERE A LICENSED PROFESSIONAL MUST BE CONTACTED AT LEAST 48 HOURS IN ADVANCE.**
38. NOTICE OF TERMINATION & FINANCIAL SECURITY
    A NOTICE OF TERMINATION (NOT) WILL BE REQUIRED TO BE SUBMITTED FOLLOWING THE APPROVAL OF THE FINAL AS-BUILT PLANS (SEE POST CONSTRUCTION STORMWATER FACILITIES OPERATIONS AND MAINTENANCE PROCEDURES – THIS PLAN) ANY PERFORMANCE AND/OR FINANCIAL SECURITIES ESTABLISHED FOR THE PROJECT SHALL INCLUDE REQUIREMENTS FOR SUBMITTAL OF 'AS-BUILT' PLANS AND ENGINEERING CONSTRUCTION OVERSIGHT.

EROSION AND SEDIMENTATION CONTROL NARRATIVE

THE PURPOSE OF THIS NARRATIVE AND THE EROSION CONTROL ASPECTS OF THE PLANS ARE TO PREVENT THE ACCELERATED EROSION OF EXPOSED SITE SOILS DURING CONSTRUCTION AND TO RETAIN ON SITE ALL SEDIMENT PRODUCED BY CONSTRUCTION ACTIVITIES. THIS WILL BE ACCOMPLISHED BY STRICT ADHERENCE TO THE FOLLOWING NOTES, SEQUENCE OF CONSTRUCTION, AND EROSION AND SEDIMENT CONTROL DETAILS SHOWN ON THE PLAN. THE EROSION CONTROLS PROVIDED WILL MINIMIZE THE EXTENT AND DURATION OF EARTH DISTURBANCE, SOIL COMPACTION, AND MAXIMIZE PROTECTION OF EXISTING DRAINAGE FEATURES AND VEGETATION. THE DESIGN FURTHER UTILIZES OTHER MEASURES AND CONTROLS THAT PREVENT OR MINIMIZE GENERATION OF INCREASED STORMWATER RUNOFF.

EROSION AND SEDIMENTATION CONTROL GENERAL NOTES

1. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES.
2. IF ANY SIGNIFICANT CHANGES ARE TO BE MADE TO THE LIMITS OF DISTURBANCE OR TO THE EROSION AND SEDIMENTATION CONTROL PLAN, THE CONTRACTOR OR LAND OWNER MUST CONTACT THE CHESTER COUNTY CONSERVATION DISTRICT AT 610-925-4920 FOR ADEQUACY OF THESE CHANGES.
3. THE OPERATOR SHALL REMOVE FROM THE SITE, RECYCLE, OR DISPOSE OF ALL BUILDING MATERIAL 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.
4. SHOULD UNFORESEEN EROSIVE CONDITIONS DEVELOP DURING CONSTRUCTION, THE CONTRACTOR MUST 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 SHOULD BE HELD IN READINESS TO DEAL IMMEDIATELY WITH EMERGENCY PROBLEMS OF EROSION.
5. 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 CONTRACTOR TO ELIMINATE SUCH PROBLEMS.
6. 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.
7. ALL PUMPING OF SEDIMENT LADEN WATER SHALL BE THROUGH A SEDIMENT CONTROL BMP, SUCH AS A PUMPED WATER FILTER BAG OR EQUIVALENT SEDIMENT REMOVAL FACILITY, OVER UNDISTURBED VEGETATED AREAS.
8. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.
9. LIMITS OF DISTURBANCE MUST BE CLEARLY MARKED IN THE FIELD PRIOR TO ANY DISTURBANCE. ANY CHANGE OR ENCROACHMENT ONTO THESE AREAS WITHOUT CONSERVATION DISTRICT REVIEW AND APPROVAL MAY REQUIRE THE CONTRACTOR TO CEASE DISTURBANCE AND OBTAIN AN EARTH DISTURBANCE PERMIT.
10. 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 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, REMULCHING, RESEEDING, AND RENETTING MUST BE PERFORMED IMMEDIATELY. IF EROSION AND SEDIMENTATION BMP'S FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMP'S OR 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 & SEVERITY OF THE BMP'S FAILURE & ANY POLLUTION EVENTS.
    B. ALL STEPS TAKEN TO REDUCE, ELIMINATE & PREVENT THE RECURRENCE OF THE NON-COMPLIANCE.
    C. THE TIME FRAME TO CORRECT THE NONCOMPLIANCE, INCLUDING THE EXACT DATES WHEN THE ACTIVITY WILL RETURN TO COMPLIANCE.
11. UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY, OR ANY STAGE THEREOF, THE PROJECT SHALL BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION. ALL AREAS REQUIRING INTERIM OR FINAL STABILIZATION MUST BE ADDRESSED WITH IMMEDIATE STABILIZATION 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 CONVENTIONAL SEEDING AND MULCHING AT A RATE OF 3.0 TONS PER ACRE AS RECOMMENDED IN THE PENN STATE AGRONOMY GUIDE.
12. AFTER FINAL STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMP'S MUST BE REMOVED. AREAS DISTURBED DURING REMOVAL OF THE BMP'S MUST BE STABILIZED IMMEDIATELY.
13. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 ABOVE GROUND HEIGHTS OF COMPOST FILTER SOCKS AND WHEN THEY REACH THE CLEAN-OUT ELEVATION IN THE SEDIMENT BASIN.
14. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE PROPER CONSTRUCTION, STABILIZATION, AND MAINTENANCE OF ALL EROSION AND SEDIMENTATION CONTROLS AND RELATED ITEMS INCLUDED WITH THIS PLAN.
15. EROSION AND SEDIMENTATION CONTROL INSPECTIONS SHALL BE PERFORMED ON A WEEKLY BASIS AND AFTER EVERY RAIN EVENT.
16. IF UNSUITABLE MATERIAL IS ENCOUNTERED DURING CONSTRUCTION, A GEOTECHNICAL ENGINEER SHOULD BE ONSITE FOR RESOLUTIONS TO THE UNSUITABLE SOIL.
17. TEMPORARY TOPSOIL STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET, AND SLOPES MUST BE 2:1 OR FLATTER.
18. 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 ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
19. 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. ANY OFF-SITE WASTE AND BORROW AREA MUST HAVE AN EROSION AND SEDIMENT CONTROL PLAN REVIEWED AND APPROVED BY THE CHESTER COUNTY CONSERVATION DISTRICT PRIOR TO BEING ACTIVATED.
20. 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 ACTIVITIES 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 RE-DISTURBED 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 RE-DISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.
21. IF THE CONTRACTOR ENCOUNTERS HIGH WATER TABLE, SHALLOW BEDROCK, OR SOIL INSTABILITY DURING SITE CONSTRUCTION, THE DESIGN ENGINEER OR THE ON-SITE GEOTECHNICAL ENGINEER MUST BE CONTACTED IMMEDIATELY FOR CORRECTIVE MEASURES.
22. IF THE SITE CONSTRUCTION YIELDS A NET CUT RESULTING IN EXCESS SOIL BEING REMOVED FROM THE SITE THE SOIL MUST BE TRANSFERRED TO A SITE WITH A VALID NPDES PERMIT.
23. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO USE CLEAN FILL AND TO PERFORM ENVIRONMENTAL DUE DILIGENCE, AS REQUIRED BY THE DISTRICT, TO DETERMINE THAT ALL FILL IMPORTED TO THE SITE MEETS THE DEP'S DEFINITION OF CLEAN FILL. SEE DEFINITIONS OF CLEAN FILL AND ENVIRONMENTAL DUE DILIGENCE THIS SHEET. 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 A REGULATED SUBSTANCE BUT QUALIFYING AS CLEAN FILL DUE TO ANALYTICAL TESTING.
24. AN EROSION CONTROL BLANKET WILL BE INSTALLED ON ALL DISTURBED SLOPES STEEPER THAN 3:1, ALL AREAS OF CONCENTRATED FLOWS, AND DISTURBED AREAS WITHIN 50' OF WATERS OF THE COMMONWEALTH.
25. ENVIRONMENTAL DUE DILIGENCE MUST BE PERFORMED TO DETERMINE IF THE FILL MATERIALS ASSOCIATED WITH THE PROJECT QUALIFY AS CLEAN FILL. 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 USE 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 A REGULATED SUBSTANCE. IF THE FILL MAY HAVE BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE, IT MUST BE TESTED TO DETERMINE IF IT QUALIFIES AS CLEAN FILL. TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH APPENDIX A OF THE DEPARTMENT'S POLICY "MANAGEMENT OF CLEAN FILL".
26. AREAS WHICH ARE TO BE TOP-SOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES (6 TO 12 INCHES ON COMPACTED SOILS) PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING, I.E. YARDS.
27. SEDIMENT TRACKED ONTO ANY ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE BY THE END OF EACH WORKDAY, OR AS NEEDED OR AS DIRECTED BY THE MUNICIPALITY OR THE CONSERVATION DISTRICT AND DISPOSED AS 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.
28. ANY DAMAGE THAT OCCURS AS A RESULT OF THE BASIN OR TRAP DISCHARGE SHALL BE REPAIRED IN A PERMANENT MANNER THAT IS SATISFACTORY TO THE MUNICIPALITY, CONSERVATION DISTRICT AND DOWN SLOPE LANDOWNERS.
29. THE APPLICANT/PERMITTEE SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL SOIL AND EROSION CONTROL MEASURES UNTIL THE CLOSEOUT OF THE ESCROW ACCOUNT.

MAINTENANCE & INSPECTION OF EROSION CONTROLS:

MAINTENANCE OF EROSION AND SEDIMENTATION CONTROL DEVICES WILL CONSIST OF WEEKLY INSPECTIONS OF EACH DEVICE TO DETERMINE HOW WELL THE SLOPE STABILIZATION MEASURES AND SEDIMENT CONTROL FACILITIES USED ARE WORKING. ALL FACILITIES WILL BE INSPECTED AFTER EVERY STORM TO DETERMINE THEIR DURABILITY TO WITHSTAND DRIVING RAIN AND EROSION. ALL LOCAL REGULATIONS SHALL BE COMPLIED WITH. ALL DAMAGES CAUSED BY SOIL EROSION OR CONSTRUCTION EQUIPMENT SHALL BE REPAIRED BEFORE THE END OF EACH WORKING DAY. WRITTEN DOCUMENTATION OF THE INSPECTIONS SHALL BE LOGGED ONTO DEP FORM 3150-FM-BWEW0083, DATED FEBRUARY 2012, AND SHALL BE KEPT ON SITE AT ALL TIMES AND/OR PROVIDED TO THE NECESSARY AGENCIES UPON REQUEST.

THE FOLLOWING MAINTENANCE PROCEDURES SHALL APPLY:

1. ANY SEEDED OR SODDED AREAS THAT HAVE BECOME STRIPPED OF VEGETATION SHALL BE REESTABLISHED WITH APPROPRIATE STABILIZATION MATERIALS. THIS PROCEDURE SHALL BE REPEATED AFTER EVERY SIZABLE STORM (2"+) UNTIL NO MORE SIGNS OF EROSION ARE EVIDENT.
2. AT WEEKLY INSPECTIONS AND AFTER EACH RAIN EVENT NECESSARY CLEANING WILL BE PERFORMED.
3. ANY FILTER FABRIC FENCE, WHICH HAS BEEN UNDERMINED OR OVER TOPPED, MUST BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET.
4. ANY SEDIMENT REMOVED FROM BMPS DURING CONSTRUCTION WILL BE RETURNED TO UPLAND AREAS ON SITE AND INCORPORATED INTO THE SITE GRADING.

DEFINITIONS (PER THE DEPARTMENT OF ENVIRONMENTAL PROTECTION):

CLEAN FILL - UNCONTAMINATED, NONWATER-SOLUBLE, NONDECOMPOSABLE 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 RECOGNIZABLE AS SUCH. (25 PA. CODE §§ 271.101 AND 287.101) THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED.

ENVIRONMENTAL DUE DILIGENCE – INVESTIGATIVE TECHNIQUES, INCLUDING, BUT NOT LIMITED TO, VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF OWNERSHIP AND USE HISTORY OF PROPERTY, SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS.

SEEDING, MULCHING AND SODDING

SEEDING, MULCHING AND SODDING

ALL SEEDING, MULCHING AND SODDING SHALL BE DONE IN ACCORDANCE WITH THE SPECIFICATIONS OF THE CHESTER COUNTY CONSERVATION DISTRICT. ALL SLOPES STEEPER THAN 5H:1V SHALL BE STABILIZED WITH EITHER SOD OR PERMANENT SEEDING AND MULCH ANCHORED IN PLACE WITH JUTE NETTING. NO SLOPES SHALL BE STEEPER THAN 2H:1V.

TEMPORARY AND PERMANENT SEEDING SHALL BE IN ACCORDANCE WITH THE PENN STATE AGRONOMY GUIDE OR AS RECOMMENDED BELOW. DURING NON-GERMINATING PERIODS APPLY MULCH AT THE RATES RECOMMENDED BELOW.

SHOULD UNFORESEEN EROSIVE CONDITIONS DEVELOP DURING CONSTRUCTION, THE CONTRACTOR SHALL TAKE ACTION TO REMEDY SUCH CONDITIONS AND TO PREVENT DAMAGE TO ADJACENT/DOWN GRADIENT PROPERTIES AS A RESULT OF INCREASED SEDIMENT DISPLACEMENT. STOCKPILES OF WOOD CHIPS, HAY BALES, CRUSHED STONE AND/OR OTHER MULCHES SHALL BE HELD IN READINESS TO DEAL IMMEDIATELY WITH EMERGENCY PROBLEMS OF EROSION.

TEMPORARY SEEDING SPECIFICATIONS

WHERE IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA IMMEDIATELY AFTER THE FINAL EARTH MOVING HAS BEEN COMPLETED, TEMPORARY SEEDING SHALL BE DONE IN ACCORDANCE TO THE CHESTER COUNTY CONSERVATION DISTRICT, THE E&S MANUAL AND/OR THE PENN STATE AGRONOMY GUIDE.

AREAS TO BE STABILIZED MUST BE SEEDED/PLANTED IN SUFFICIENT TIME TO GERMINATE, AT LEAST 4 TO 6 WEEKS OF GROWTH PRIOR TO HARD FROSTS. AFTER SEEDING IS COMPLETE, MULCH THE SEEDED AREAS WITH UNROTTED SMALL GRAIN STRAW AT A RATE OF 3 TONS PER ACRE.

SITE PREPARATION: APPLY 4 TONS AGRICULTURAL GRADE LIMESTONE (EQUIVALENT TO 190 LBS. PER 1000 S.F.) PER ACRE PLUS 10-20-10 FERTILIZER AT A RATE 930 LBS. (EQUIVALENT TO 25 LBS. PER 1000 S.F.) PER ACRE AND WORK IN WHERE POSSIBLE. SECURE A SOIL TEST BEFORE MAKING A PERMANENT SEEDING. AFTER SEEDING, MULCH WITH STRAW AT A RATE OF 3.0 TONS PER ACRE.

TEMPORARY SEED MIXTURE: APPLY ANNUAL RYE GRASS AT 40 PLS (LBS/ACRE) (EQUIVALENT TO 1 LBS. PER 1000 S.F.) MINIMUM GERMINATION PERCENTAGE – 85%

PERMANENT SEEDING SPECIFICATIONS
MATERIALS:

- * LIMESTONE – RAW, GROUND AGRICULTURAL LIMESTONE CONTAINING MORE THAN 90% CARBONATES.
- * COMMERCIAL FERTILIZER (10-20-10) – USE 500 LBS. TO THE ACRE MIXED INTO THE SEEDBED PRIOR TO SEEDING, OR MIXED IN WITH THE SEED IF HYDROSEEDING.
- * MULCH – CLEAN OAT OR STRAW SHALL BE FREE FROM MATURE SEED-BEARING STALKS OR ROOTS OF PROHIBITED OR NOXIOUS WEEDS. APPLY AT A RATE OF 3.0 TONS PER ACRE. THE MULCH SHOULD BE STABILIZED UNTIL THE VEGETATIVE COVER IS ESTABLISHED. SPREAD MULCH UNIFORMLY IN A LOOSE LAYER 1/2" TO 1" DEEP. MULCH ANCHORING (MULCH NETTING, PEG AND TWINE, LIQUID MULCH BINDER) SHALL BE ACCOMPLISHED IMMEDIATELY AFTER MULCH PLACEMENT TO MINIMIZE LOSS BY WIND OR WATER.
- * SEED MIXTURE – SHALL BEAR A GUARANTEED STATEMENT OF ANALYSIS.

PERMANENT SEEDING SPECIFICATIONS

LAWN AND MOWED AREAS: (PLS = PURE LIVE SEED PERCENTAGE)			MIN. GERMINATION %'S
A. KENTUCKY BLUEGRASS	30 PLS (LBS/ACRE)	12 OZ. PER 1,000 S.F.	75%
PERENNIAL RYEGRASS	20 PLS (LBS/ACRE)	8 OZ. PER 1,000 S.F.	85%
REDTOP	3 PLS (LBS/ACRE)	2 OZ. PER 1,000 S.F.	80%
B. PENNLAWN-FINE FESCUE	40 PLS (LBS/ACRE)	16 OZ. PER 1,000 S.F.	85%
PERENNIAL RYEGRASS	20 PLS (LBS/ACRE)	8 OZ. PER 1,000 S.F.	85%
REDTOP	3 PLS (LBS/ACRE)	2 OZ. PER 1,000 S.F.	80%
SLOPES OR UN-MOWED AREAS:			
C. ANNUAL RYE GRASS	25 PLS (LBS/ACRE)	10 OZ. PER 1,000 S.F.	65%
PERENNIAL RYEGRASS	25 PLS (LBS/ACRE)	10 OZ. PER 1,000 S.F.	85%

AREAS TO BE STABILIZED MUST BE SEEDED/PLANTED IN SUFFICIENT TIME TO GERMINATE, AT LEAST 4 TO 6 WEEKS OF GROWTH PRIOR TO HARD FROSTS. AFTER SEEDING IS COMPLETE, MULCH THE SEEDED AREAS WITH UNROTTED SMALL GRAIN STRAW AT A RATE OF 3 TONS PER ACRE.

PERMANENT SEEDING SHALL ONLY OCCUR DURING THE DATES LISTED ABOVE. IF AREAS ARE PREPARED FOR SEEDING AT OTHER TIMES, THEN THE PREPARED SEEDBED SHALL BE HEAVILY MULCHED WITH CLEAN UNROTTED SMALL GRAIN STRAW OR SALT HAY AT A RATE OF 3 TONS PER ACRES. THE MULCH SHALL REMAIN IN PLACE UNTIL SEEDING DATES ARE APPROPRIATE. THE MULCH SHALL BE REMOVED; THE AREA SHALL BE DRESSED, SEEDED AND REMULCHED AS DESCRIBED ABOVE.

TOPSOIL APPLICATION

GRADED AREAS SHOULD BE SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES TO PERMIT BONDING OF THE TOPSOIL TO THE SURFACE AREAS AND TO PROVIDE A ROUGHENED SURFACE TO PREVENT TOPSOIL FROM SLIDING DOWN SLOPE.

TOPSOIL SHOULD BE UNIFORMLY DISTRIBUTED ACROSS THE DISTURBED AREA TO A DEPTH OF 4 TO 8 INCHES MINIMUM – 2 INCHES ON FILL OUTSLOPES. SPREADING SHOULD BE DONE IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL PREPARATION OR TILLAGE. IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOIL PLACEMENT SHOULD BE CORRECTED IN ORDER TO PREVENT FORMATION OF DEPRESSIONS UNLESS SUCH DEPRESSIONS ARE PART OF THE PCSM PLAN.

TOPSOIL SHOULD NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET, OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION. COMPACTED SOILS SHOULD BE SCARIFIED 6 TO 12 INCHES ALONG CONTOUR WHEREVER POSSIBLE PRIOR TO SEEDING.

TABLE 11.1
CUBIC YARDS OF TOPSOIL REQUIRED FOR APPLICATION TO VARIOUS DEPTHS

DEPTH (IN)	PER 1,000 SQUARE FEET	PER ACRE
1	3.1	134
2	6.2	268
3	9.3	403
4	12.4	537
5	15.5	672
6	18.6	806
7	21.7	940
8	24.8	1,074

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JUSTIN WILLIAM BREWER

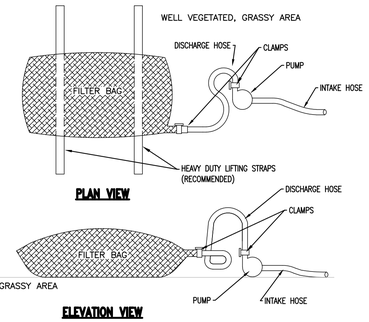
REV.	DATE	DESCRIPTION
8		
7		
6	06/30/2021	PLANS FOR RECORDING
5	05/05/2021	PLANS FOR PERMITS
4	04/29/2021	ISSUED FOR BID
3	03/09/2021	REVISED PER TOWNSHIP ENGINEER COMMENTS & CCCD LETTER DATED 03/03/2021
2	01/22/2021	REVISED PER CCCD REVIEW LETTER DATED 01/20/2021
1	12/22/2020	REVISED PER TOWNSHIP LETTER DATED 11/25/2020

PRELIMINARY/FINAL
EROSION CONTROL NOTES

CLIENT: WEST CHESTER AREA SCHOOL DISTRICT
PROJECT: WESTTOWN-THORNBURY ELEMENTARY SCHOOL
LOCATION: 750 WESTBOURNE ROAD
WESTTOWN TOWNSHIP, CHESTER CO., PA.

DATE: 11/13/2020
SCALE: N.T.S.
DRAWN BY: JWB
CHECKED BY: JWB
PROJECT NO.: 3745
CAD FILE: 08 EROSION CONTROL PLAN.dwg
PLOTTED: 06/30/2021
DRAWING NO.: C05.2
SHEET 08 OF 13

Q:\CIVIL 3D JOBS\3745\3745 PRODUCTION PLANS\SHEET SET\SUBDIVISION & LD\08 EROSION CONTROL PLAN.DWG



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.

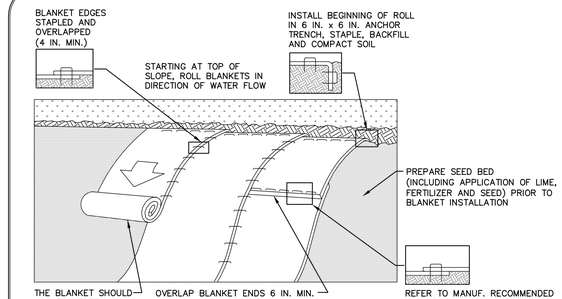
NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

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.

STANDARD CONSTRUCTION DETAIL #3-16
PUMPED WATER FILTER BAG
NOT TO SCALE



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.

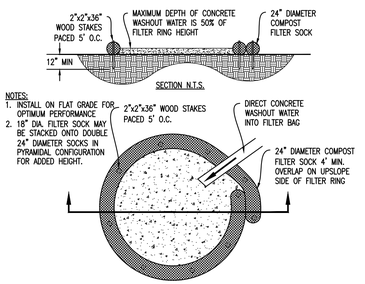
SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.

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



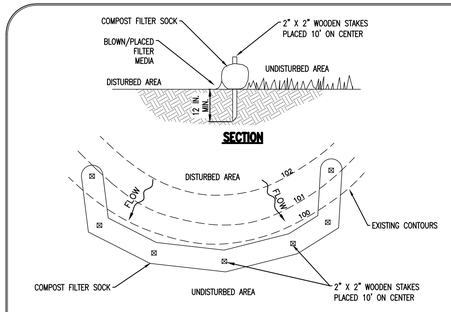
FILTREXX SEDIMENT CONTROLS

CONTACT: JAMES WEAVER
WEAVER'S MULCH
STRASBURG ROAD,
COATESVILLE, PA 19320
PHONE: 610-383-6818

GENERAL NOTES:

1. WASHOUT FACILITIES SHOULD NOT BE PLACED WITHIN 50 FEET OF STORM DRAINS, OPEN DITCHES, OR SURFACE WATERS.
2. WASHOUT FACILITIES SHOULD BE IN A CONVENIENT LOCATION FOR THE TRUCKS, PREFERABLY NEAR THE PLACE WHERE THE CONCRETE IS BEING POURED, BUT FAR ENOUGH FROM OTHER VEHICULAR TRAFFIC TO MINIMIZE THE POTENTIAL FOR ACCIDENTAL DAMAGE OR SPILLS. WHEREVER POSSIBLE, THEY SHOULD BE LOCATED ON SLOPES NOT EXCEEDING A 2% GRADE.
3. COMPOST SOCKS SHOULD BE STAKED IN THE MANNER RECOMMENDED BY THE MANUFACTURER AROUND PERIMETER OF THE GEOMEMBRANE SO AS TO FORM A RING WITH THE ENDS OF THE SOCK LOCATED AT THE UPSLOPE CORNER. CARE MUST BE TAKEN TO ENSURE CONTINUOUS CONTACT OF THE SOCK WITH THE GEOMEMBRANE AT ALL LOCATIONS. WHERE NECESSARY, SOCKS MAY BE STACKED AND STAKED SO AS TO FORM A TRIANGULAR CROSS-SECTION.
4. PROPER SIGNAGE SHOULD BE PROVIDED TO DRIVERS SO THAT THEY ARE AWARE OF THE PRESENCE OF WASHOUT FACILITIES.

COMPOST SOCK WASHOUT DETAIL
NO SCALE



NOTES:

SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.

COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.

TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.

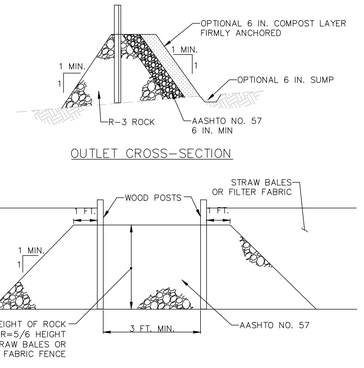
ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.

COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.

BIODEGRADABLE COMPOST FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, 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.

STANDARD CONSTRUCTION DETAIL #4-1
COMPOST FILTER SOCK
NOT TO SCALE

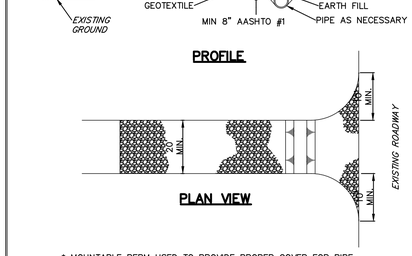


NOTES:

A ROCK FILTER OUTLET SHALL BE INSTALLED WHERE FAILURE OF A SILT FENCE OR STRAW BALE BARRIER HAS OCCURRED DUE TO CONCENTRATED FLOW. ANCHORED COMPOST LAYER SHALL BE USED ON UPSLOPE FACE IN HQ AND EV WATERSHEDS.

SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLET.

STANDARD CONSTRUCTION DETAIL #4-6
ROCK FILTER OUTLET
NOT TO SCALE



* MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE

NOTES:

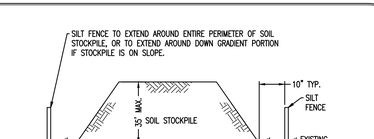
REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE. EXTEND ROCK OVER FULL WIDTH OF ENTRANCE.

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.

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.

STANDARD CONSTRUCTION DETAIL #3-1
ROCK CONSTRUCTION ENTRANCE
NOT TO SCALE



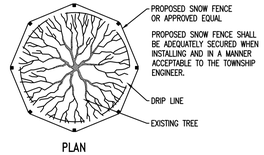
GENERAL NOTES:

1. SEE SILT FENCE DETAIL FOR SILT FENCE INSTALLATION SPECIFICATIONS AND MAINTENANCE REQUIREMENTS.
2. STOCKPILE HEIGHT MUST NOT EXCEED 35-FEET.
3. STOCKPILE SLOPE MUST BE 3:1 OR FLATTER.
4. IF THE STOCKPILE IS TO REMAIN FOR MORE THAN 15 DAYS, IT SHALL BE STABILIZED WITH UNROTTED SMALL GRAIN STRAW OR SALT HAY AT A RATE OF 3 TONS PER ACRE.
5. SILT FENCES SHALL BE MAINTAINED IN PLACE UNTIL TOPSOIL STOCKPILE HAS BEEN ELIMINATED AND SHALL BE REMOVED ONLY WHEN DIRECTED BY THE CHESTER COUNTY CONSERVATION DISTRICT.

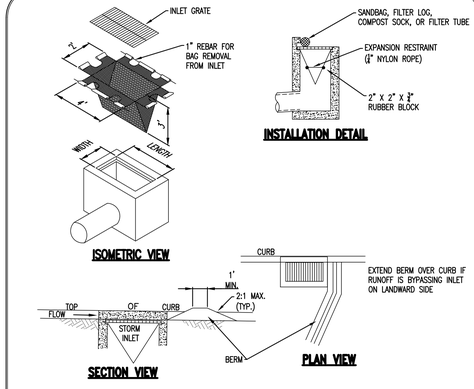
SOIL STOCKPILE DETAIL
NO SCALE

NOTES:

1. WHERE EXISTING GROUND LEVELS ARE CHANGED, DRAINAGE TILE WILL BE PAVED AT THE OLD SOIL LEVEL AND OPEN INTO A WELL BUILT AROUND THE BASE OF THE TREE. SUCH WELL MAY BE LEFT OPEN OR CAN BE FILLED WITH COARSE STONES OR GRAVEL. TILES MAY BE INSTALLED IN A RADIATING PATTERN OR LAID IN PARALLEL LINES.
2. THOSE TREES WHICH HAVE BEEN DELINEATED ON THE PLAN AND ARE WITHIN 25 FEET OF A PROPOSED BUILDING EXCAVATION OR OTHER LOCATIONS DEEMED APPROPRIATE BY THE TOWNSHIP ENGINEER SHALL BE PROTECTED BY INSTALLING AND MAINTAINING A FENCE AT THE DRIP LINE.
3. NO BOARDS OR OTHER MATERIAL SHALL BE NAILED TO TREES DURING CONSTRUCTION.
4. HEAVY EQUIPMENT OPERATORS SHALL AVOID DAMAGING EXISTING TREE TRUNKS AND ROOTS. FEEDER ROOTS SHALL NOT BE CUT CLOSER THAN 25 FEET FROM TREE TRUNKS.
5. TREE TRUNKS AND EXPOSED ROOTS DAMAGED DURING CONSTRUCTION SHALL BE PROTECTED FROM FURTHER DAMAGE BY BEING TREATED IMMEDIATELY.
6. TREE LIMBS DAMAGED DURING CONSTRUCTION SHALL BE PROPERLY PRUNED AND TREATED IMMEDIATELY.
7. THE OPERATIONS OF HEAVY EQUIPMENT OVER ROOT SYSTEMS OF SUCH TREES SHALL BE MINIMIZED IN ORDER TO PREVENT SOIL COMPACTION.
8. DAMAGED TREES SHALL BE FERTILIZED TO AID IN THEIR RECOVERY.
9. CONSTRUCTION DEBRIS SHALL NOT BE DISPOSED OF NEAR OR AROUND THE BASES OF SUCH TREES.



TREE PROTECTION DETAIL
NO SCALE



NOTES:

MAXIMUM DRAINAGE AREA = 1/2 ACRE.

INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.

ROLLED EARTHEN BERM SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. SIX INCH MINIMUM HEIGHT ASPHALT BERM SHALL BE MAINTAINED UNTIL ROADWAY SURFACE RECEIVES FINAL COAT.
AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS, A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.

INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE OF ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.

DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

STANDARD CONSTRUCTION DETAIL #4-15
FILTER BAG INLET PROTECTION - TYPE C INLET
NOT TO SCALE

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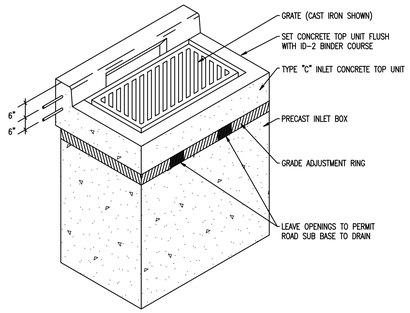
COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL JUSTIN WILLIAM BREWER ENGINEER No. PE085115

REV.	DATE	DESCRIPTION
8		
7		
6	06/30/2021	PLANS FOR RECORDING
5	05/05/2021	PLANS FOR PERMITS
4	04/29/2021	ISSUED FOR BID
3	03/09/2021	REVISED PER TOWNSHIP ENGINEER COMMENTS & CCCD LETTER DATED 03/03/2021
2	01/22/2021	REVISED PER CCCD REVIEW LETTER DATED 01/20/2021
1	12/22/2020	REVISED PER TOWNSHIP LETTER DATED 11/25/2020

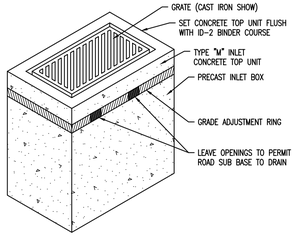
PRELIMINARY/FINAL
EROSION CONTROL DETAILS
CLIENT: WEST CHESTER AREA SCHOOL DISTRICT
PROJECT: WESTTOWN-THORNBURY ELEMENTARY SCHOOL
LOCATION: 750 WESTBOURNE ROAD
WESTTOWN TOWNSHIP, CHESTER CO., PA.

DATE:	11/13/2020
SCALE:	N.T.S.
DRAWN BY:	JWB
CHECKED BY:	JWB
PROJECT NO.:	3745
CAD FILE:	D6 EROSION CONTROL PLAN.dwg
PLOTTED:	06/30/2021
DRAWING NO.:	C05.3
SHEET	09 OF 13



TYPE "C" INLET AS PER PENNDOT PLATE RC-45M & RC-46M

TYPE "C" INLET
NOT TO SCALE



TYPE "M" INLET AS PER PENNDOT PLATE RC-45M & RC-46M

TYPE "M" INLET
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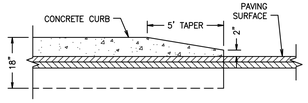
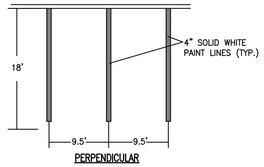
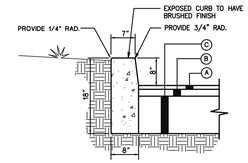


CURB TAPER DETAIL
NO SCALE



PERPENDICULAR

TYPICAL PARKING SPACE DIMENSIONS
NOT TO SCALE

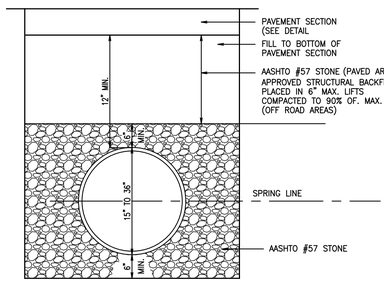


PAVING SECTION

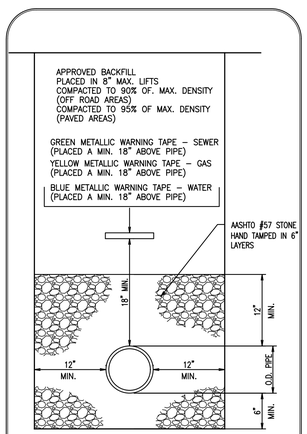
A. 1-1/2" (9.5mm MIX) SUPERPAVE ASPHALT MIXTURE DESIGN, WMA WEARING COURSE, PG. 64-22, 0 TO 0.3 MILLION ESAL'S
B. 4-1/2" (25mm MIX) SUPERPAVE ASPHALT MIXTURE DESIGN, WMA BINDING COURSE, PG. 64-22, 0 TO 0.3 MILLION ESAL'S
C. 6" CRUSHED AGGREGATE BASE COURSE

NOTES:
1. ALL MATERIALS & WORK TO CONFORM TO PennDot FORM 408 SPECIFICATIONS. LATEST EDITION, AND RC-64M OF PENNDOT'S STANDARDS FOR ROADWAY CONSTUCTION.
2. CONCRETE TO BE 3,500 PSI 28-DAY STRENGTH AIR ENTRAINED.
3. CURBS SHALL BE BUILT IN TEN (10) FOOT LENGTHS; CONSTRUCTION JOINTS OF ASPHALT IMPREGNATED PAPER OF ONE-SIXTEENTH (1/16) INCH SHALL BE PROVIDED AT TEN (10) FOOT INTERVALS, AND EXPANSION JOINTS OF ONE-QUARTER (1/4) INCH PREMOLDED FILLER SHALL BE PLACED AT INTERVALS OF ONE HUNDRED (100) FEET.
4. SLOPE TOP SURFACE OF CURB BACK TO FRONT AT 1/4" PER FOOT.

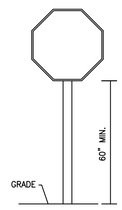
8" CURBING & PAVING SECTION
NOT TO SCALE



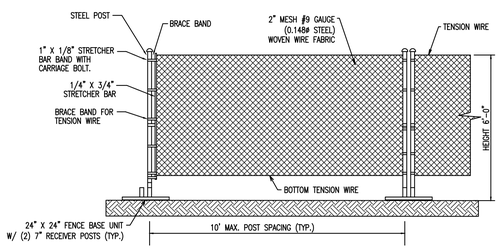
HDPE STORM PIPE TRENCH DETAIL
NOT TO SCALE



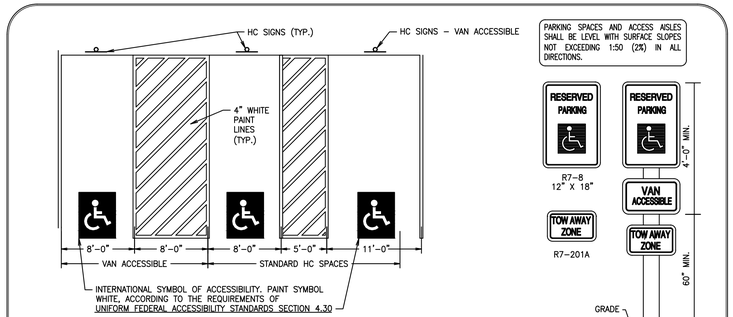
TYPICAL TRENCH DETAIL
NOT TO SCALE



TYPICAL SIGN MOUNTING HEIGHT
NOT TO SCALE



6' TEMPORARY CHAINLINK FENCE
NOT TO SCALE (OR APPROVED EQUAL)

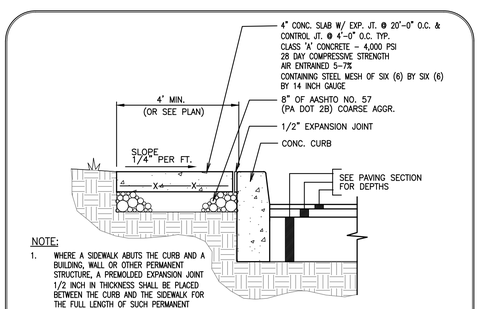


PLAN SIGNAGE

HANDICAP ACCESSIBILITY FACILITIES
NOT TO SCALE

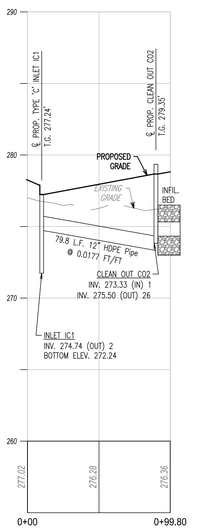
NOTES:
1. CONSTRUCT PRECAST CONCRETE MANHOLE IN ACCORDANCE WITH PADOT PUBLICATION 408 SPECIFICATIONS, MOST RECENTLY DATED AND WITH PADOT STANDARDS FOR ROADWAY CONSTRUCTION PUBLICATION 72M, RC-39M DATED 2010.
2. CONCRETE FOR PRECAST CONSTRUCTION SHALL BE 4,000 PSI MIN.
3. MANHOLE STEPS SHALL BE SPACED AS SHOWN IN A SINGLE VERTICAL ALIGNMENT. THE STEPS SHALL NOT BE STAGGERED.
4. TOP OF BENCH TO MATCH CROWN OF PIPE.
5. ALL STORM MANHOLES AND INLETS SHALL HAVE SMOOTH FLOW-LINES GROUTED TO A HEIGHT OF 3/4 THE DIAMETER OF THE PIPE AND USING 3,500 PSI CONCRETE.

PRECAST CONCRETE STORM MANHOLE
NO SCALE

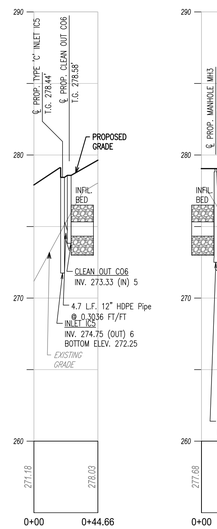


NOTE:
1. WHERE A SIDEWALK ABUTS THE CURB AND A BUILDING, WALL OR OTHER PERMANENT STRUCTURE, A PREMOLDED EXPANSION JOINT 1/2 INCH IN THICKNESS SHALL BE PLACED BETWEEN THE CURB AND THE SIDEWALK FOR THE FULL LENGTH OF SUCH PERMANENT STRUCTURE.

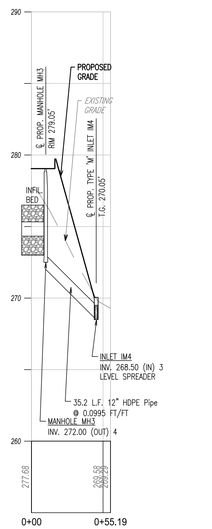
SIDEWALK ALONG CURB & BLDG
NOT TO SCALE



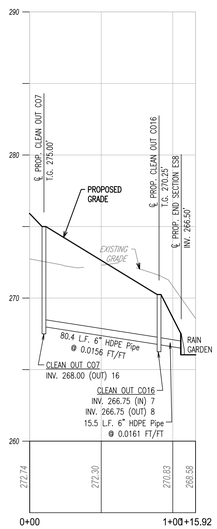
IC1 TO BED PROFILE
HORIZ SCALE: 1"=50'
VERT SCALE: 1"=5'



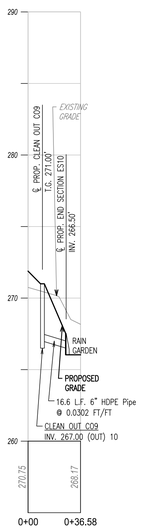
IC5 TO BED PROFILE
HORIZ SCALE: 1"=50'
VERT SCALE: 1"=5'



BED OUT TO L.S. PROFILE
HORIZ SCALE: 1"=50'
VERT SCALE: 1"=5'



NORTH ROOF DRAIN PROFILE
HORIZ SCALE: 1"=50'
VERT SCALE: 1"=5'



EAST ROOF DRAIN PROFILE
HORIZ SCALE: 1"=50'
VERT SCALE: 1"=5'

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COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL JUSTIN WILLIAM BREWER ENGINEER No. PE085192

REV.	DATE	DESCRIPTION
8		
7		
6	06/30/2021	PLANS FOR RECORDING
5	05/05/2021	PLANS FOR PERMITS
4	04/29/2021	ISSUED FOR BID
3	03/09/2021	REVISED PER TOWNSHIP ENGINEER COMMENTS & CCCD LETTER DATED 03/03/2021
2	01/22/2021	REVISED PER CCCD REVIEW LETTER DATED 11/25/2020
1	12/22/2020	REVISED PER TOWNSHIP LETTER DATED 11/25/2020

PRELIMINARY/FINAL
CONSTRUCTION DETAILS

CLIENT: WEST CHESTER AREA SCHOOL DISTRICT
PROJECT: WESTTOWN-THORNBURY ELEMENTARY SCHOOL
LOCATION: 750 WESTBOURNE ROAD WESTTOWN TOWNSHIP, CHESTER CO., PA.

DATE:	11/13/2020
SCALE:	1"=50'
DRAWN BY:	JWB
CHECKED BY:	JWB
PROJECT NO.:	3745
CAD FILE:	07 CONSTRUCTION DETAILS.dwg
PLOTTED:	06/30/2021
DRAWING NO.:	C06.1
SHEET	10 OF 13

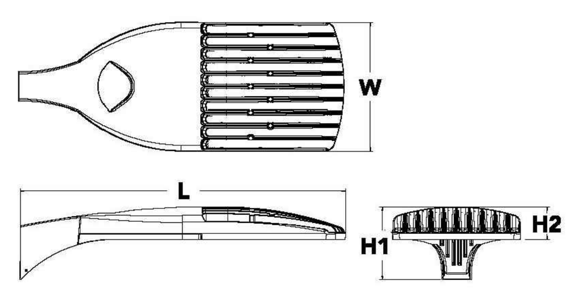
D-Series Size 1
LED Area Luminaire

Catalog Number

Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.



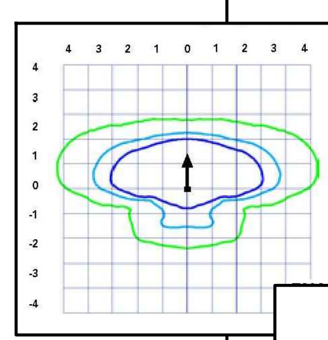
Specifications

EPA:	1.01 ft² (0.09 m²)
Length:	33" (83.8 cm)
Width:	13" (33.0 cm)
Height H1:	7-1/2" (19.0 cm)
Height H2:	3-1/2"
Weight (max):	27 lbs (12.2 kg)

Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment. The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 750W metal halide in pedestrian and area lighting applications with typical energy savings of 65% and expected service life of over 100,000 hours.



A+ Capable options indicated by this color background.

Ordering Information

EXAMPLE: DSX1 LED P7 40K T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX1 LED | Series | LEDs | Color temperature | Distribution | Voltage | Mounting | Control options | Other options | Finish (required)

Ordering Information

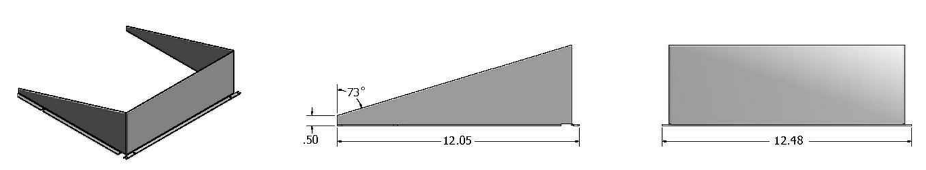
Accessories

Ordered and shipped separately.

NOTES

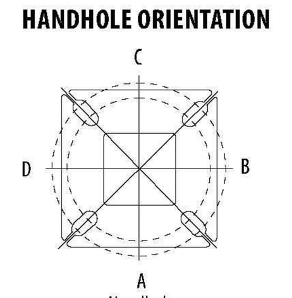
Options

EGS - External Glare Shield

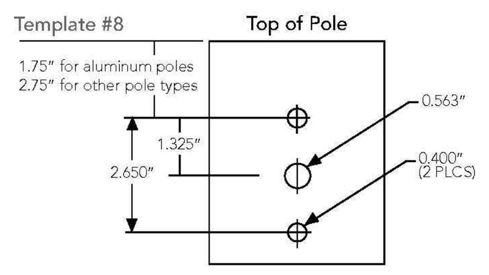


Drilling

HANDHOLE ORIENTATION



Template #8 — Top of Pole



Tenon Mounting Slipfitter

DSX1 Area Luminaire - EPA

PK Series
RxA LED Area Light & Pole Kit

DESCRIPTION

The PK Series is an RxA LED area luminaire and pole kit. RxA features a sleek low-profile housing design in lumen packages ranging from 9600 lumens to 41,000 lumens. Its high-efficiency light engine is designed for optimal light control and illumination with three distribution types in three physical sizes. The RxA family provides substantial energy savings with minimal to no uplight and efficacies up to 139 LPW. The RxA ships standard with a 7" upswept arm, and is designed for ease of installation on included poles. This product is ideal for large areas such as parking lots, walkways, roadways, etc.

RxA SPECIFICATIONS

Construction:
- Sleek die-cast aluminum housing with stainless steel hardware and powder coated bronze (standard) finish for durability
- UV-stabilized polycarbonate optical lens
- Integral heat sink fins maximize heat dissipation
- Hinged driver access for ease of maintenance
- Standard with 7" straight arm
- Includes a 12" whip (5 conductors provided for convenience, dimming leads not connected)

Optics/LEDs:
- Designed with minimal uplight to eliminate light pollution
- 70 to 300 Watts replace up to 750 Watts HID for up to 70% energy savings
- Efficacies up to 139 LPW maximize energy savings and utility rebates
- Type III, IV and V distributions optimize light distribution
- Available in 3000K, 4000K and 5000K CCT
- L70 of 130,000 hours
- CRI ≥70

Electrical:
- Class 2 power supply, 120-277VAC, 50/60Hz
- 1-10V Dimming driver for models 150W+ (120-277VAC only), dimming leads require connection in field
- Power supply with high-power factor of 90% typical
- 347/480VAC Dedicated driver option for 70W, 150W, 200W and 300W
- Standard 10kVA surge protection for models ≥150W

Testing & Compliance: (See last page for RxA fixture details)
- cULus Listed for Wet Locations
- Tested to meet IP66 requirements
- DesignLights Consortium® (DLC) PREMIUM Qualified (consult QPL for qualified models)
- Operating temperature: -40°C to 45°C (-40°F to 113°F)

Installation:
- Hinged driver door for ease of access
- Standard with pole mount arm (7") suitable for 4" square poles. Arm features access door for easy wiring on site and includes knockouts for motion and photocontrol sensors

Options:
- Integral 120-277VAC dimming sensor (SC) for models 150W+
- 120-277VAC Twist Lock receptacle installed on arm (Twist Lock photocontrol included)

RxA Specs at a Glance					
Model	RxA-70	RxA-100	RxA-150	RxA-200	RxA-300
Wattage*	70	100	150	200	300
Lumens (lm)	9600	13,800	20,800	25,700	41,000
Efficacy (LPW)	136	137	139	139	137
Equivalency (HID)	150/175W	250W	400W	400W	750W+
Distribution	Type III, IV, V				
CCT (K)	3000K, 4000K, 5000K				
CRI	>70				
Input Voltage	120-277VAC, 50/60Hz, 347/480VAC				
Operating Temp	-40°C to 45°C (-40°F to 113°F)				
Certifications	UL Listed for Wet Locations, DLC PREMIUM				
Warranty	5 Years				
Weight	8.9 lbs	9.4 lbs	12.4 lbs	12.9 lbs	18.7 lbs

* Nominal Wattage. Tested at 5000K CCT, 120-277VAC, Type III distribution. See performance table for more detailed lumen information.

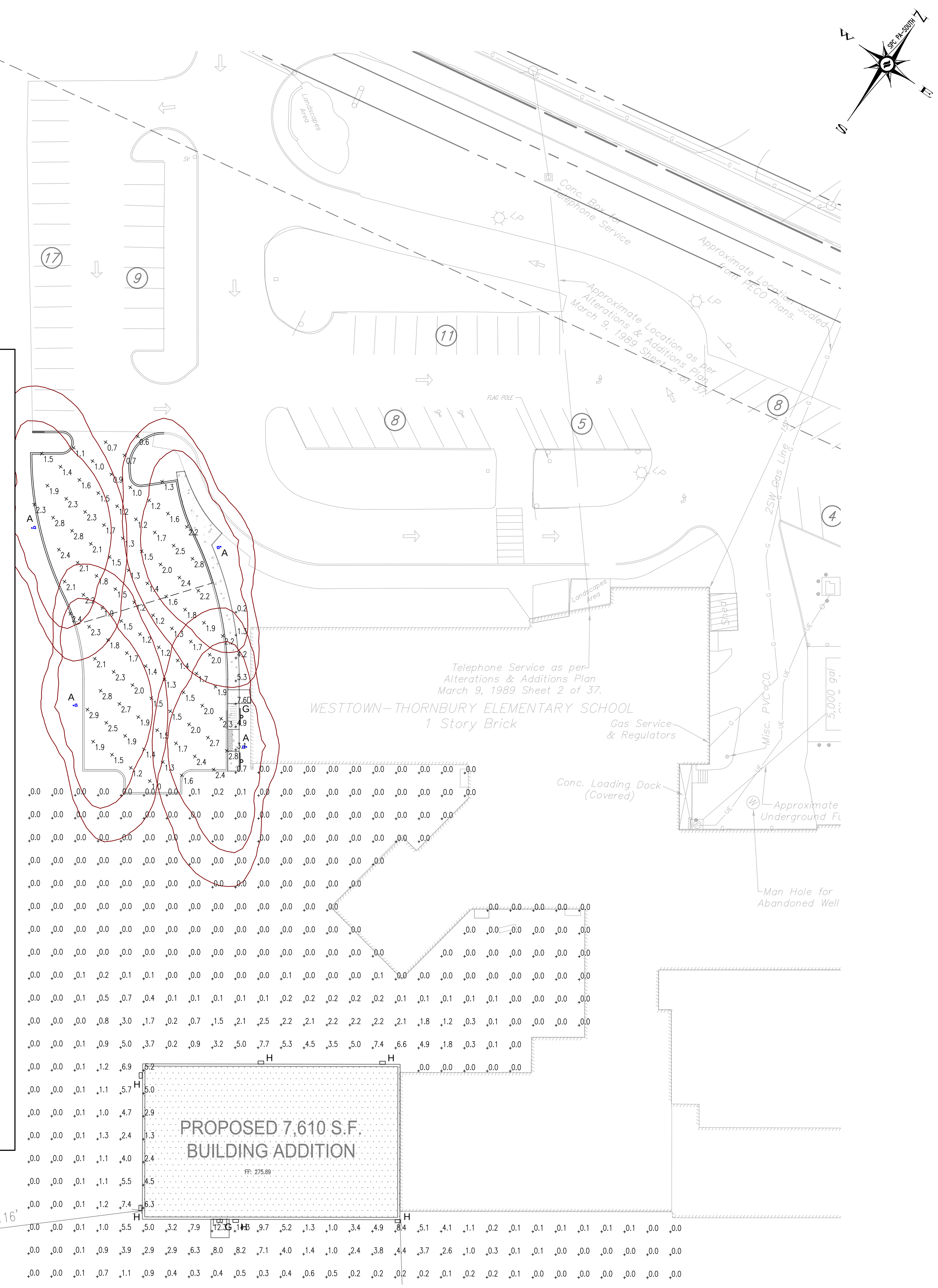
Note: Environment and application will affect actual performance. Typical values and 25°C used for testing.

Accessories:
- Twist Lock universal photocontrol (120-277VAC) for dusk to dawn lighting control
- Dimming sensor for additional energy savings
- Button photocontrol (120-277VAC) for 70W and 100W models

Warranty:
- Five year warranty on RxA, 1 year warranty on poles (Terms and Conditions Apply)

Model: Date:
Accessories:
Job Name: Type:

TRACE-LITE commercial & industrial lighting



PROPOSED 7,610 S.F. BUILDING ADDITION

WESTTOWN-THORNBURY ELEMENTARY SCHOOL
1 Story Brick

Schedule

Symbol	Label	QTY	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens per Lamp	Lumen Multiplier	LLF	Wattage
	A	4	Lithonia Lighting	DSX1 LED P2 40K T2M MVOLT	DSX1 LED P2 40K T2M MVOLT	LED	1	DSX1_LED_P2_40K_T2M_MVOLT	8877	1	0.95	70
	G	2	Hubbell	TRP2 24L50 4K7 3 120 Note 1 2DR PC	Outdoor NE LED wall sconce with two drivers	LED	1	5819LU 4000K LED			0.95	120
	H	6	Hubbell	TRP2 24L50 4K7 3 120 Note 1 PC	Outdoor NE LED wall sconce	LED	1	5819LU 4000K LED			0.95	120

LIGHTING PLAN
SCALE: 1" = 30'

GRAPHIC SCALE
30 0 15 30 60
1 inch = 30 feet

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #1	+	1.8 fc	2.9 fc	0.6 fc	4.8:1	3.0:1

Note
1. Calcs taken at grade
2. Fixtures mounted at 20ft
3. Calculations are estimations based on the information provided and may vary with actual conditions

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Phone: (610) 918-9002
Fax: (610) 918-9003

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
JUSTIN WILLIAM BREWER
No. PE085115

REV.	DATE	DESCRIPTION
8		
7		
6	06/30/2021	PLANS FOR RECORDING
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1	12/22/2020	REVISED PER TOWNSHIP LETTER DATED 11/25/2020

PRELIMINARY/FINAL
LIGHTING PLAN

CLIENT: WEST CHESTER AREA SCHOOL DISTRICT
PROJECT: WESTTOWN-THORNBURY ELEMENTARY SCHOOL
LOCATION: 750 WESTBOURNE ROAD
WESTTOWN TOWNSHIP, CHESTER CO., PA.

DATE:	11/13/2020
SCALE:	1"=30'
DRAWN BY:	JWB
CHECKED BY:	JWB
PROJECT NO.:	3745
CAD FILE:	08 LIGHTING PLAN.dwg
PLOTTED:	06/30/2021
DRAWING NO.:	C07.1
SHEET	11 OF 13

WESTTOWN TOWNSHIP LANDSCAPE REQUIREMENTS

DISTRICT: R-1 RESIDENTIAL DISTRICT

	REQUIRED	PROPOSED
SALDO:		
§149-925. LANDSCAPING REQUIREMENTS AND STANDARDS:		
G.MINIMUM PLANT QUANTITIES.		
1. LOT OR PERIMETER YARD: PER 100 LINEAR FEET, STREET FRONTAGES SHALL HAVE 2 CANOPY TREES, 1.5 ORNAMENTAL TREES, AND 6 SHRUBS.		
WESTBOURNE RD = 277 LF		
277' / 100 = 2.77		
2.8 X 2 = 5.6	6 CANOPY TREES	6 TREES
2.8 X 1.5 = 4.2	4 ORNAMENTAL TREES	4 TREES
2.8 X 6 = 16.8	17 SHRUBS	17 SHRUBS
PER 100 LINEAR FEET, ALL OTHER PROPERTY LINES SHALL HAVE 1 CANOPY TREE, 1 ORNAMENTAL TREE, AND 3 SHRUBS.		
WEST BOUNDARY = 850 LF		
850' / 100 = 8.5		
8.5 X 1 = 8.5	9 CANOPY TREES	9 TREES
8.5 X 1 = 8.5	9 ORNAMENTAL TREES	9 TREES
8.5 X 3 = 25.5	26 SHRUBS	26 SHRUBS
SOUTH BOUNDARY = 230 LF		
347' / 100 = 2.3		
3.5 X 1 = 2.3	3 CANOPY TREES	4 TREES
3.5 X 1 = 2.3	3 ORNAMENTAL TREES	5 TREES
3.5 X 3 = 6.9	7 SHRUBS	11 SHRUBS
2. PARKING AREA: EACH PLANTER ISLAND 20 FEET OR LESS IN LENGTH SHALL CONTAIN ONE TREE AND 10 SHRUBS.		
2 PLANTING ISLANDS	2 TREES 20 SHRUBS	3 TREES 22 SHRUBS
ZONING:		
§170-1508. SCREENING:		
A. A COMPLETELY PLANTED LANDSCAPE SCREEN SHALL BE PROVIDED BETWEEN ANY NEW OR EXPANDED NONRESIDENTIAL USE THAT ABUTS AN EXISTING RESIDENTIAL USE.		EXISTING AND PROPOSED VEG. TO SATISFY
D. 2. COMPLETE PLANT VISUAL SCREENING SHALL NOT BE REQUIRED ALONG THE PRIMARY FRONT LOT LINE OF A LOT.		

COMPENSATORY PLANTING CHART

§149-924. EXISTING TREES:

D.12. COMPENSATORY PLANTING.

B. COMPENSATORY TREES SHALL BE PROVIDED IN THE FOLLOWING RATIOS:
1. FOR VIABLE NONSPECIMEN: ONE INCH OF NEW TREE CALIPER SHALL BE PROVIDED FOR EVERY FOUR INCHES OF EXISTING TREE DIAMETER REMOVED.

D. COMPENSATORY TREES SHALL BE 3 1/2 INCHES IN CALIPER. EVERGREEN TREES MAY BE SUBSTITUTED AT A RATIO OF TWO EVERGREENS TO ONE DECIDUOUS TREE.

DIAMETER INCHES TO BE REMOVED = 150" OF NONSPECIMEN TREE

154" / 4 = 38.5" OF NEW TREE CALIPER NEEDED

38.5" / 3.5 = 11 TREES

11 COMPENSATORY TREES REQUIRED

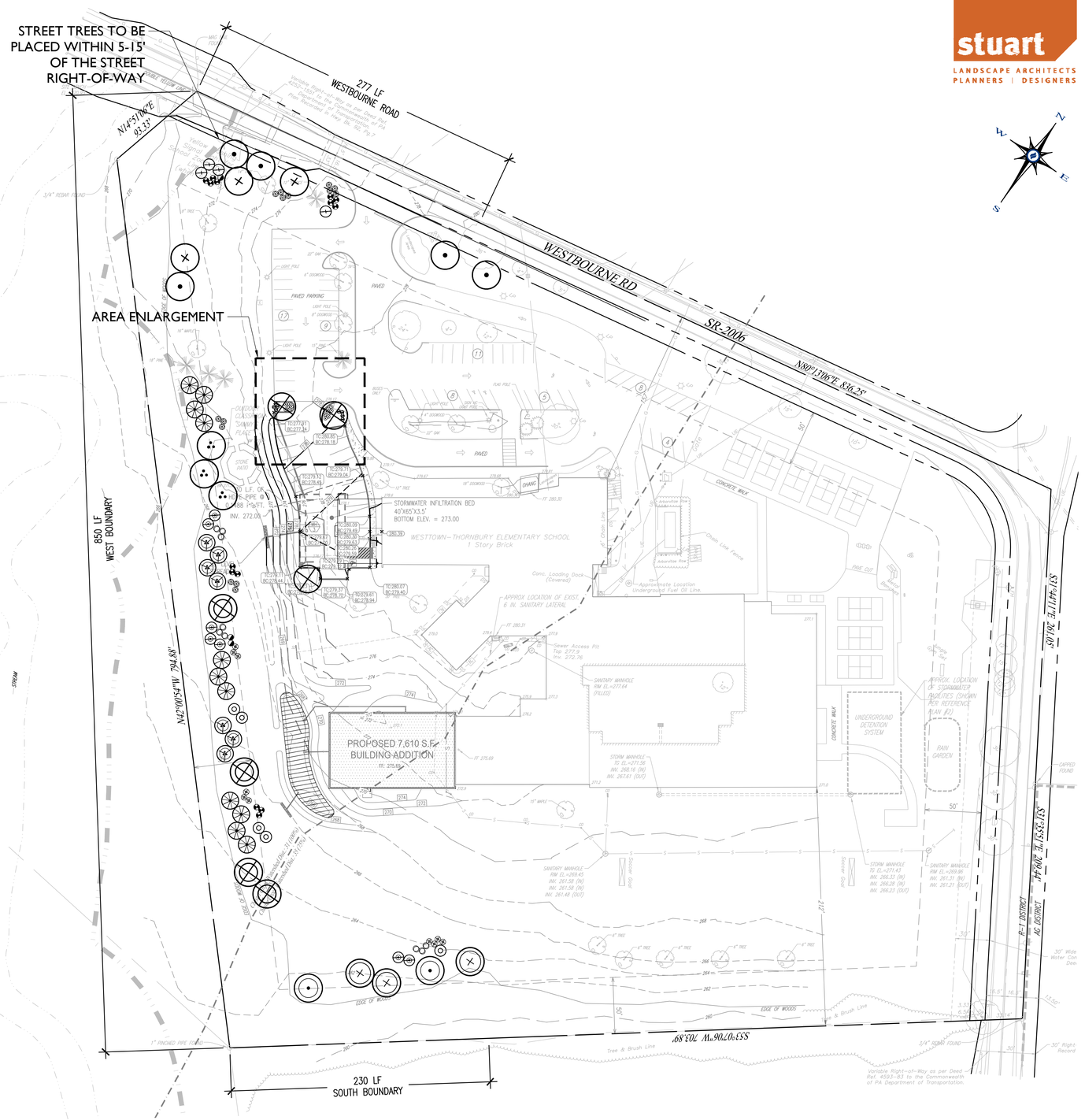
18 EVERGREEN TREES + 2 DECIDUOUS TREES PROVIDED

EXISTING TREES TO BE REMOVED

Size	Tree
14"	White Pine
24"	White Pine
24"	White Pine
22"	White Pine
20"	Pine
12"	Pine
14"	Pine
12"	Pine
8"	Pine
4"	Dogwood
Total = 154"	

Plant Schedule

Quantity	Symbol	Scientific Name	Common Name	Size
Perimeter Yard				
Trees				
5		Acer saccharum 'Fall Fiesta'	'Fall Fiesta' Sugar Maple	3-3.5" cal. min., B&B
3		Quercus shumardii	Shumard Oak	3-3.5" cal. min., B&B
4		Nyssa sylvatica 'Wildfire'	'Wildfire' Black Gum	3-3.5" cal. min., B&B
3		Carpinus caroliniana	American Hornbeam	3-3.5" cal. min., B&B
3		Betula nigra	River Birch	3-3.5" cal. min., B&B
7		Amelanchier x grandiflora 'Autumn Brilliance'	'Autumn Brilliance' Serviceberry	3-3.5" cal. min., B&B
5		Magnolia virginiana glauca	Sweetbay Magnolia	3-3.5" cal. min., B&B
4		Cornus florida 'Cherokee Princess'	Cherokee Princess Dogwood	3-3.5" cal. min., B&B
Shrubs				
14		Ilex verticillata 'Red Sprite'	'Red Sprite' Winterberry	24-30" ht.
3		Ilex verticillata 'Jim Dandy'	'Jim Dandy' Winterberry	24-30" ht.
14		Hydrangea quercifolia 'Alice'	'Alice' Oakleaf Hydrangea	24-30" ht.
10		Aronia melanocarpa 'Viking'	'Viking' Black Chokeberry	24-30" ht.
9		Cephalanthus occidentalis 'Smcoss'	'Sugar Shack' Buttonbush	24-30" ht.
Parking Areas				
3		Gleditsia triacanthos inermis 'Skyline'	Skyline Thornless Honeylocust	3-3.5" cal. min., B&B
8		Clethra alnifolia 'Hummingbird'	'Hummingbird' Summersweet	24-30" ht., 30-36" spacing
14		Hypericum kalmianum 'Deppe'	'Sunny Boulevard' St. John's Wort	24-30" ht., 30-36" spacing
Compensatory Trees				
2		Carya cordiformis	Bitternut Hickory	3-3.5" cal. min., B&B
11		Cupressocyparis leylandii	Leyland Cypress	7-8' ht. min., B&B
7		Picea abies	Norway Spruce	7-8' ht. min., B&B
Rain Garden				
2,200 SF		Ernst Seed Mix 180	Rain Garden Mix	Seed at a rate of 20 lbs / acre



50 0 25 50 100

GRAPHIC SCALE
1 inch = 50 feet

NOTES: 1. THIS PLAN IS TO BE USED FOR LANDSCAPE PURPOSES ONLY.
2. CLIENT DID NOT RETAIN STUART AND ASSOCIATES TO PROVIDE LONG TERM MAINTENANCE SPECIFICATIONS FOR THE LANDSCAPE MATERIAL.

stuart
LANDSCAPE ARCHITECTS
PLANNERS | DESIGNERS

DLHowell
Civil Engineering
Land Planning
Environmental
www.DLHowell.com
1250 Wrights Lane
West Chester, PA 19380
Phone: (610) 918-9002
Fax: (610) 918-9003

PENNSYLVANIA
REGISTERED LANDSCAPE ARCHITECT

NO.	REV.	DATE	DESCRIPTION
8	1		
7	1		
6	06/30/2021		PLANS FOR RECORDING
5	05/25/2021		PLANS FOR PERMITS
4	04/29/2021		ISSUED FOR BID
3	03/09/21		REVISED PER TOWNSHIP ENGINEER COMMENTS & CCCD LETTER DATED 02/03/2021
2	01/22/21		REVISED PER CCCD REVIEW LETTER DATED 01/20/2021
1	12/22/20		REVISED PER TOWNSHIP LETTER DATED 11/25/2020

PRELIMINARY/FINAL
LANDSCAPE PLAN

CLIENT: WEST CHESTER AREA SCHOOL DISTRICT
PROJECT: WESTTOWN-THORNBURY ELEMENTARY SCHOOL
LOCATION: 750 WESTBOURNE ROAD
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE: 11/13/2020
SCALE: 1" = 50'
DRAWN BY: KTD
CHECKED BY: PJS
PROJECT NO.: 3745
CAD FILE: 3-01-21_Westtown Thornbury_TLP_REV3.dwg
PLOTTED: 06/30/2021
DRAWING NO.: LP-1
SHEET 12 OF 13

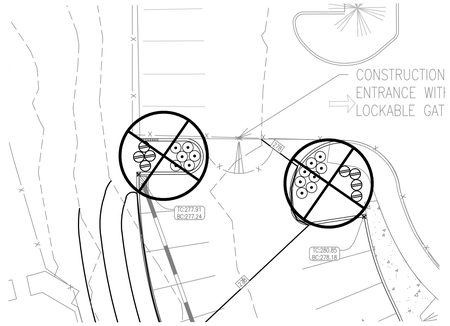
GENERAL NOTES:

1. Contractor shall be responsible for contacting PA ONE CALL and locating all underground utilities before any digging or plant removal occurs.
2. Contractor shall be responsible for removing existing trees and plant material within the area of proposed improvements.
3. Contractor shall be responsible for disposing of all debris off-site; clean-up of all paved areas (roadways, sidewalks, etc.); and restoration of all disturbed lawn areas.
4. Contractor shall be required to repair any damage to underground utilities damaged.
5. Contractor shall install silt fence in any areas where soil may runoff into parking areas or into existing inlets.
6. All plant material shall be of specimen quality.
7. All plant material shall conform with the most current version of the "American Standard for Nursery Stock".
8. Contractor shall provide Landscape Architect with nursery source of all plant material. Landscape Architect shall perform a site visit to inspect nursery source prior to delivery of any plant material.
9. All trees and shrubs delivered to the site shall be inspected and approved by the Landscape Architect prior to planting. All trees and shrubs shall have waterproof tag bearing legible designation of botanical and common name.
10. All plant substitutions must be approved by the Westtown Township Landscape Architect.
11. Any plant material exhibiting signs of disease, insects, eggs, larvae and defects such as knots, sun-scald, injuries, abrasions or disfigurement shall be rejected.
12. All plant material shall be laid out in field by Landscape Architect. (Note: No shrubs shall be planted until all tree planting is completed.)
13. All proposed shrubs shall be planted in continuous mulched beds, consisting of 3" of Oak bark mulch.
14. All trees shall be provided with a 3" deep saucer, consisting of shredded Oak bark mulch.
15. All plant material shall be thoroughly watered during installation and throughout the guarantee period.
16. All plant material shall be watered by Contractor at least three (3) times in absence of natural rainfall or until the end of the guarantee period.
17. Following completion of all planting installation work, the Contractor shall be required to restore all disturbed lawn areas.
18. Following the completion, the existing vegetation will be inspected for health and quality, and if not deemed in good condition, replaced with the equivalent compensatory plantings.
19. All plant material shall be guaranteed for (2) two years.

ERNST - Rain Garden Mix (ERNMX-180)

Mix Composition:

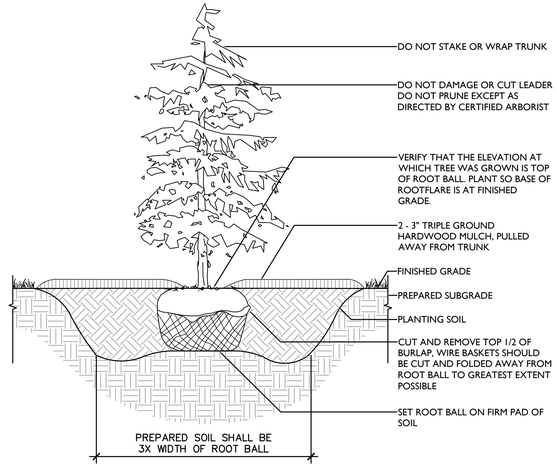
33.4% Schizachyrium scoparium, 'Itasca', MN Ecotype (Little Bluestem, 'Itasca')
20.0% Elymus virginicus, 'Madison' (Virginia Wildrye, 'Madison')
7.0% Carex vulpinoidea, PA Ecotype (Fox Sedge, PA Ecotype)
5.6% Chasmanthium latifolium, WV Ecotype (River Oats, WV Ecotype)
5.5% Echinacea purpurea (Purple Coneflower)
3.0% Chamaecrista fasciculata, PA Ecotype (Partridge Pea, PA Ecotype)
3.0% Coreopsis lanceolata (Lanceleaf Coreopsis)
3.0% Panicum clandestinum, Tioga (Deertongue, Tioga)
3.0% Panicum rigidulum, PA Ecotype (Redtop Panicgrass, PA Ecotype)
3.0% Rudbeckia hirta, (Blackeyed Susan)
3.0% Verbena hastata, PA Ecotype (Blue Vervain, PA Ecotype)
2.0% Heliopsis helianthoides, PA Ecotype (Oxeye Sunflower, PA Ecotype)
1.8% Asclepias incarnata, PA Ecotype (Swamp Milkweed, PA Ecotype)
1.0% Carex scorparia, PA Ecotype (Blunt Broom Sedge, PA Ecotype)
1.0% Senna hebecarpa, VA & WV Ecotype (Wild Senna, VA & WV Ecotype)



AREA ENLARGEMENT
SCALE: 1" = 20'

20 0 10 20 40

GRAPHIC SCALE
1 inch = 20 feet



NOTES:

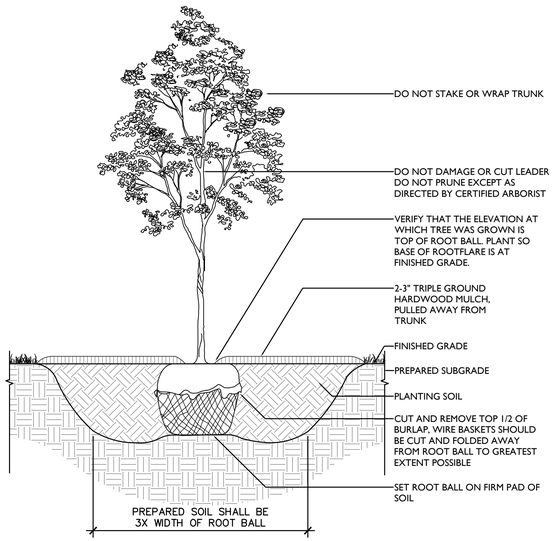
1. TO AVOID SETTLING, DO NOT DIG THE HOLE DEEPER THAN THE ROOT BALL DEPTH.
2. SCARIFY THE SUBGRADE AND SIDES OF THE PLANTING HOLE WHEN PLANTING IN CLAY SOILS.

2 EVERGREEN TREE PLANTING DETAIL ON GRADE

SCALE : 1/2" = 1'-0"

GENERAL PLANTING NOTES:

1. ALL PLANT MATERIALS SHALL BE IN ACCORDANCE WITH THE AMERICAN STANDARDS FOR NURSERY STOCK (ANSI Z60.1-2004). PLANT ACCORDING TO ANSI A300 PART 6.
2. SCARIFY THE SUBGRADE AND SIDES OF THE PLANTING HOLE WHEN PLANTING IN CLAY SOILS (MORE THAN 15% CLAY).
3. LIFT AND SET THE TREE BY ROOTBALL ONLY. DO NOT LIFT USING THE TREE TRUNK AND DO NOT USE TREE TRUNK AS A LEVER.
4. SET THE TOP OF THE ROOTBALL LEVEL WITH THE SOIL SURFACE OR SLIGHTLY HIGHER IF THE SOIL IS PRONE TO SETTLING.
5. AFTER THE TREE IS SET IN PLACE, REMOVE BURLAP, WIRE AND STRAPS FROM AT LEAST THE UPPER 1/2 OF THE ROOTBALL.
6. PRUNING SHALL BE LIMITED TO DEAD, DISEASED, OR BROKEN LIMBS ONLY AND SHALL BE IN ACCORDANCE WITH THE ANSI A300 SPECIFICATIONS. IF ADDITIONAL PRUNING IS NECESSARY, IT SHALL BE DONE BY A CERTIFIED ARBORIST.
7. REMOVE ANY TRUNK WRAP REMAINING AT TIME OF PLANTING. NO WRAPS SHALL BE PLACED ON TRUNK.
8. DO NOT REMOVE TREE IDENTIFICATION TAGS UNTIL THE LANDSCAPE ARCHITECT HAS CONFIRMED CORRECT SPECIES MATCHES THE PROJECT PLANTING SCHEDULE.



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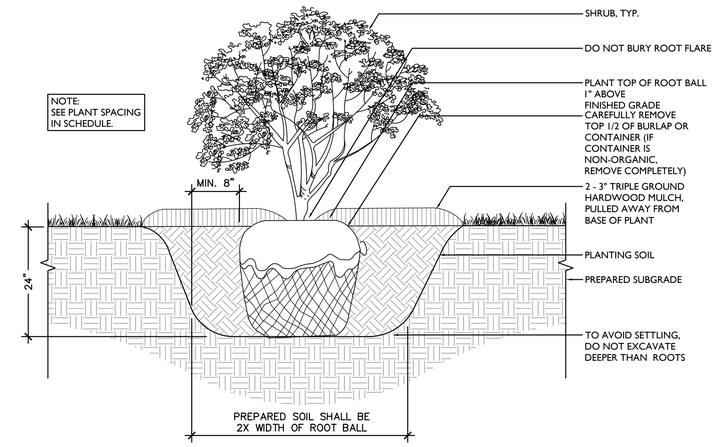
3 DECIDUOUS TREE PLANTING DETAIL ON GRADE

SCALE : 1/2" = 1'-0"



1 SHRUB DETAIL ON GRADE

SCALE : 1" = 1'-0"

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DRAWING NO.:	LP-2
SHEET	13 OF 13