AMENDED FINAL
LAND DEVELOPMENT PLAN
OF
PAOLI WALK
SITUATED IN
WILLISTOWN TOWNSHIP, CHESTER COUNTY
PENNSYLVANIA

GENERAL NOTES:

1. RECORD OWNER:
   PAOLI DEVELOPMENT ASSOCIATES, LLP.
   SOURCE OF TITLE: DEED/RECORD BOOK 4668, PAGE 586
   TAX PARCEL #54-1K-1.7, #54-1K-1.10, #54-1K-1.24 & #54-1L-6.4A
   LOT AREA: 3.100 ACRES (GROSS)

2. BOUNDARY BEARINGS SHOWN HEREON ARE ORIENTED TO PENNSYLVANIA STATE PLANE COORDINATE SYSTEM (NAD-83) AND IS FROM FIELD SURVEY BY HOWELL KLINE SURVEYING, LLC. PERFORMED ON APRIL 25 AND MAY 6, 2014.

3. TOPOGRAPHIC INFORMATION SHOWN IS FROM FIELD SURVEY BY HOWELL KLINE SURVEYING, LLC. PERFORMED ON APRIL 25 AND MAY 6, 2014.

4. CONTOURS PLOTTED FROM FIELD RUN TOPOGRAPHIC SURVEY BY HOWELL KLINE SURVEYING, L.L.C.. DATUM: NAVD 88 (COMPUTED USING GEOID12A) & NAD 83 (2011) (EPOCH:2010.0000) (AS DETERMINED BY GPS OBSERVATION), SITE BENCH = RIM OF SANITARY MANHOLE LOCATED APPROX. 10' SOUTH EAST FROM 5/8" REBAR FOUND AT THE SOUTH WEST CORNER OF U.P.I. #54-1K-124, ELEVATION= 549.30', CONTOUR INTERVAL: 2 FEET.

5. UNDERGROUND UTILITIES SHOWN WERE PLOTTED FROM OBSERVABLE EVIDENCE AT THE TIME OF SURVEY AND INFORMATION FROM PLANS SUPPLIED BY UTILITY COMPANIES. NO GUARANTEE IS MADE THAT UNDERGROUND UTILITIES ARE ACCURATELY OR COMPLETELY SHOWN HEREON.

6. THIS PROPERTY IS LOCATED WITHIN FLOOD HAZARD ZONE X, AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN AS PER THE NATIONAL FLOOD INSURANCE RATE MAP FOR CHESTER COUNTY, PA. MAP NO. 42029C0165F, PANEL 165 OF 380, DATED SEPTEMBER 29, 2006.

7. SOILS INFORMATION PROVIDED WITH SUPPORT FROM THE NATURAL RESOURCES CONSERVATION SERVICE. SOILS ATTRIBUTE DATA IS SERVED FROM THE NRCS SOIL DATA MART.

8. THE PURPOSE OF THIS PLAN IS TO DETAIL THE PROPOSED SITE IMPROVEMENTS FOR PAOLI WALK TOWNHOUSE COMMUNITY, INCLUDING, BUT NOT LIMITED TO, ACCESS DRIVES, PARKING AREAS, STORMWATER MANAGEMENT, GRADING, EROSION CONTROL, LANDSCAPING, AND LIGHTING.

9. THE HOME OWNERS ASSOCIATION SHALL OWN AND MAINTAIN THE PROPOSED STORMWATER MANAGEMENT FACILITIES LOCATED ON THIS SITE.

10. PUBLIC WATER SERVICE IS TO BE PROVIDED BY AQUA PA. ALL WORK SHALL BE IN ACCORDANCE WITH THEIR STANDARDS AND SPECIFICATIONS. THE SITE IS TO BE SERVICED BY PUBLIC SEWER VIA GRAVITY LATERALS, GRINDER PUMPS AND A LOW PRESSURE FORCE MAIN WITHIN THE ROADWAY. SEWAGE GRINDER PUMPS, AND THEIR ASSOCIATED LATERAL CONNECTIONS ARE TO BE OWNED AND MAINTAINED BY THE HOA. THE PRESSURE SEWER AND GRAVITY SEWER WITHIN TREYBURN DRIVE IS BEING OFFERED FOR DEDICATION TO THE TOWNSHIP.

11. 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.

12. 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.

13. UNLESS NOTED OTHERWISE ON THE PLANS OR IN THE PERMITS GOVERNING THE WORK, ALL CONSTRUCTION METHODS AND MATERIALS SHALL BE IN ACCORDANCE WITH THE FOLLOWING APPROPRIATE STANDARDS AND SPECIFICATIONS:
    A. WILLISTOWN TOWNSHIP SUBDIVISION AND LAND DEVELOPMENT ORDINANCE AND AMENDMENTS.
    B. PADOT SPECIFICATION PUBLICATION, 408/2003 LATEST EDITION & ALL OF THE LATEST ADDENDA.

14. THE LIMITS OF DISTURBANCE SHALL BE STAKED IN THE FIELD AND MARKED WITH ORANGE CONSTRUCTION FENCING PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AND SHALL BE MAINTAINED DURING THE ENTIRE PERIOD OF CONSTRUCTION. NO VARIATION THEREFROM SHALL BE PERMITTED, UNLESS APPROVED BY THE TOWNSHIP ENGINEER IN WRITING, SUBJECT TO SUCH REASONABLE CONDITIONS AS HE MAY DETERMINE NECESSARY.

15. ALL NON-PAVED OR NON-STABILIZED GROUND SURFACES SHALL BE PROTECTED WITH VEGETATIVE GROWTH THAT IS CAPABLE OF PREVENTING EROSION.

16. ALL DIMENSIONS ARE TO FACE OF CURB OR FACE OF BUILDING UNLESS NOTED OTHERWISE. SCALED DIMENSIONS SHALL NOT BE USED WITHOUT FIRST CONTACTING THE ENGINEER OR ARCHITECT.

17. REPRESENTATIVES OF WILLISTOWN TOWNSHIP AND/OR OTHER GOVERNMENTAL AUTHORITIES SHALL HAVE PERMISSION TO GAIN ACCESS TO THE STORMWATER BED THROUGH A BLANKET EASEMENT OVER THE PROPERTY TO PERFORM INSPECTIONS, MAINTENANCE AND REPAIRS OF THE BASIN, AS NECESSARY.

18. STORMWATER DEVICES SHALL NOT BE REMOVED, ALTERED OR RELOCATED BY THE LANDOWNER. IN THE EVENT OF THE FAILURE OF THE LANDOWNER TO COMPLY WITH THESE CONDITIONS AND RESTRICTIONS, THE TOWNSHIP SHALL HAVE THE AUTHORITY TO RESTORE SAID STORMWATER MANAGEMENT FACILITIES TO THEIR ORIGINAL STATE AND THE COSTS THEREOF SHALL BE ASSESSED TO THE LANDOWNER. THE TOWNSHIP, BEFORE IT MAY EXERCISE THIS RIGHT, SHALL NOTIFY THE LANDOWNER BY CERTIFIED MAIL OF ITS INTENTION TO DO SO. THE NOTICE SHALL SET FORTH IN WHAT MANNER THE OWNER HAS ALTERED THE STORMWATER MANAGEMENT FACILITIES, AND IF THE OWNER FAILS TO CORRECT THE ALTERATION LISTED IN THE NOTICE FROM THE TOWNSHIP, THEN AND ONLY THEN THE TOWNSHIP MAY EXERCISE THIS RIGHT.

19. THE APPLICANT SHALL SECURE A BUILDING PERMIT FOR ANY AND ALL RETAINING WALLS WITH THE UNDERSTANDING THAT THE TOWNSHIP ENGINEER WILL REVIEW AND APPROVE THE ENGINEERING PLANS AND CALCULATIONS FOR THE PROPOSED RETAINING WALLS (AND GUIDERAIL/FENCES AS APPLICABLE) PRIOR TO ISSUANCE OF SAID BUILDING PERMIT. THE PLANS AND CALCULATIONS SHALL BE PREPARED IN ACCORDANCE WITH THE CURRENTLY ADOPTED BUILDING CODE BY A PENNSYLVANIA-LICENSED PROFESSIONAL ENGINEER.

20. ALL OTHER UTILITY LINES, INCLUDING BUT NOT LIMITED TO ELECTRIC, GAS, STREETLIGHT SUPPLY AND TELEPHONE, SHALL BE PLACED UNDERGROUND. INSTALLATION OF ALL UTILITIES SHALL BE IN STRICT ACCORDANCE WITH THE ENGINEERING STANDARDS AND SPECIFICATIONS OF THE TOWNSHIP, MUNICIPAL AUTHORITY OR OTHER PUBLIC UTILITY CONCERNED.

21. ALL LOT CORNERS TO BE SET WITH IRON PINS. CONCRETE MONUMENTS SHALL BE SET ALONG THE RIGHT-OF-WAY. MONUMENTS SHALL BE OF CONCRETE OR STONE WITH A MINIMUM OF 6"x6"x20" OR AS APPROVED BY THE TOWNSHIP ENGINEER. THEY SHALL BE PLACED SO THAT THE SCORED OR MARKED POINT SHALL COINCIDE EXACTLY WITH THE INTERSECTION OF LINES. PURSUANT TO SECTION 123-36 MARKERS SHALL BE SET AT LOCATIONS SHOWN ON THE FINAL PLAN AS FOLLOWS: AT LEAST ONE MONUMENT AT EACH INTERSECTION; AT CHANGES IN DIRECTION OF STREET LINES, EXCLUDING CURB ARCS AT INTERSECTIONS; AT EACH END OF EACH CURBED STREET LINE, EXCLUDING CURB ARCS AT INTERSECTIONS; AT SUCH PLACES WHERE TOPOGRAPHICAL OR OTHER CONDITIONS MAKE IT IMPOSSIBLE TO SIGHT BETWEEN TWO OTHERWISE REQUIRED MONUMENTS, INTERMEDIATE MONUMENTS SHALL BE PLACED; AT SUCH OTHER PLACE ALONG THE LINE OF STREETS AS MAY BE DETERMINED BY THE TOWNSHIP ENGINEER TO BE NECESSARY SO THAT ANY STREET MAY BE READILY DEFINED FOR THE FUTURE.

19. ALL CURB RADII SHALL BE 5' UNLESS OTHERWISE NOTED.

20. A PENNSYLVANIA DEPARTMENT OF TRANSPORTATION HIGHWAY OCCUPANCY PERMIT IS REQUIRED PURSUANT TO SECTION 420 OF THE ACT OF JUNE 1, 1945, P.L. 1242, ND 428, KNOWN AS THE "STATE HIGHWAY LAW" FOR THE PROPOSED STORM SEWER PIPE WITHIN CEDAR HOLLOW ROAD.

21. THESE NOTES ARE FOR INFORMATIONAL PURPOSES AND ANY REFERENCE MADE TO A RECORD DOCUMENT THAT IS NOT APPLICABLE TO THE PROPERTY, HAS EXPIRED, OR IS NO LONGER VALID OR ENFORCEABLE SHALL NOT BE DEEMED TO BE APPLICABLE TO THE PROPERTY OR REVIVED IN ANY WAY BY NOTATION HERE.

22. THE HOME OWNERS ASSOCIATION (HOA) SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE PRIVATE STREET, PAVING, CURBING, STREET LIGHTING (IF PROVIDED), STREET SIGNAGE, WALKING TRAIL, CONCRETE SIDEWALKS (INCLUDING THE PORTION ALONG CENTRAL AVENUE EAST OF THE PROPOSED ROADWAY INTERSECTION), SEWAGE GRINDER PUMPS, THEIR ASSOCIATED LATERAL CONNECTIONS, AND STORMWATER MANAGEMENT SYSTEMS. THE PRESSURE SEWER AND GRAVITY SEWER WITHIN TREYBURN DRIVE IS BEING OFFERED FOR DEDICATION TO THE TOWNSHIP.

23. THE PROPOSED ROAD IS A PRIVATE STREET AND IS NOT OFFERED FOR DEDICATION TO THE TOWNSHIP.

24. ALL PROPOSED UTILITIES MUST BE PLACED UNDERGROUND.

25. PARKING IS PROHIBITED ON THE PROPOSED PRIVATE ROAD EXCEPT WITHIN DEDICATED STRIPPED PARKING STALLS.

26. MONITORING AND COMPACTION VERIFICATION FOR ALL SITE FILL PLACEMENT WILL NEED TO BE COMPLETED BY THE APPLICANT'S GEOTECHNICAL ENGINEER.

27. A GEOTECHNICAL ENGINEER SHALL PROVIDE ON SITE INSPECTION OF THE RETAINING WALL CONSTRUCTION AND BACKFILLING OPERATIONS TO VERIFY METHODS OF CONSTRUCTION, COMPACTION OF FILL, AND QUALITY OF MATERIALS.

28. THE TOWNHOUSE UNITS SHALL BE DEED RESTRICTED AGAINST THE CONVERSION OF GARAGES TO LIVING SPACE AND ARE RESTRICTED FROM ANY USE THAT DOES NOT ALLOW FOR VEHICLE PARKING WITHIN THE GARAGE.

29. DUSK TO DAWN LIGHTING SHALL BE PROVIDED FOR EACH RESIDENTIAL UNIT.

30. AS PART OF THE NPDES PERMIT APPROVAL, THE HOMEOWNERS ASSOCIATION/PROPERTY MANAGER SHALL PROVIDE STREET SWEEPING FOR ALL PAVED AREAS, INCLUDING THE STREET CARTWAY AND OFF STREET PARKING AREAS WITH A VACUUM FILTER QUARTERLY OR ON A MORE REGULAR BASIS IF DEEMED NECESSARY DURING ANNUAL INSPECTIONS OF BMPs BY THE PROFESSIONAL ENGINEER.

31. AN AS-BUILT PLAN DEFINING THE LOCATION OF EACH DWELLING UNIT, IDENTIFYING THE OVERALL BUILDING COVERAGE, AND IDENTIFYING THE OVERALL IMPERVIOUS COVERAGE WILL BE SUBMITTED TO THE TOWNSHIP UPON COMPLETION OF THE PROJECT.

32. PLOT PLANS FOR THE BUILDING UNIT GROUPS WILL BE PROVIDED WITH THE SUBMISSION OF THE BUILDING PERMIT APPLICATIONS. THESE PLOT PLANS WILL ADDRESS BUILDING SETBACK FROM THE PERIMETER BOUNDARY LINES AND VEHICULAR ACCESSWAYS AS WELL AS MINIMUM SEPERATION DISTANCE REQUIREMENTS BETWEEN BUILDINGS.

REFERENCE PLAN(S)

1. PLAN ENTITLED, "FINAL SUBDIVISION PLAN FOR CENTRAL DEVELOPMENT ASSOCIATES", PREPARED BY REAL ESTATE ENGINEERING ASSOCIATES, INC. DATED 1-30-1984, LAST REVISED 4-23-1984, RECORD PLAN FILE #6867.
2. PLAN ENTITLED, "CENTRAL DEVELOPMENT LOT LINE CHANGE", PREPARED BY ARTHUR C. OLSEN ARCHITECT. DATED 9-30-1985, LAST REVISED 10-22-1985, RECORD PLAN FILE #6041.
3. PLAN ENTITLED, "PLAN OF SECTION 3 OF RONNIE PARK DEVELOPMENT COMPANY, INC.", PREPARED BY YERKES ENGINEERING, COMPANY. DATED 9-24-1957, LAST REVISED 9-27-1957, RECORD PLAN BOOK #7, PAGE 17.

WAIVERS GRANTED:

1. A WAIVER WAS GRANTED FROM SECTION 123-24.A OF THE WILLISTOWN TOWNSHIP SUBDIVISION AND LAND DEVELOPMENT ORDINANCE TO ALLOW A SINGLE ACCESS STREET TO SERVE MORE THAN 24 UNITS.
2. A WAIVER WAS GRANTED FROM SECTION 73.38.G OF THE WILLISTOWN TOWNSHIP ENVIRONMENTAL PROTECTION ORDINANCE TO ALLOW PERMANENT STORMWATER EASEMENT TO BE LESS THAN 20 FEET IN WIDTH.

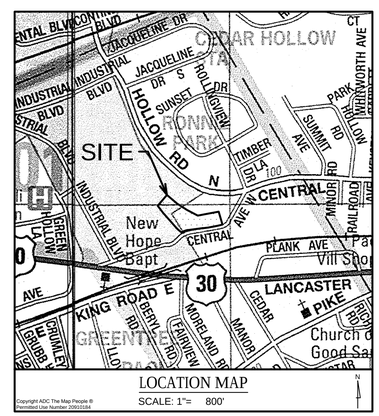
RECORDER OF DEEDS

UPI # 54-1K-1.7	D.B. 4668 PAGE 586
UPI # 54-1K-1.10	D.B. 4668 PAGE 586
UPI # 54-1K-1.24	D.B. 4668 PAGE 586
UPI # 54-1L-6.4A	D.B. 4668 PAGE 586

CERTIFICATIONS AND APPROVALS APPLY TO AND ENCOMPASS SHEETS 1 THROUGH 3

TREYBURN DRIVE POSTAL ADDRESSES

UNIT NUMBER	POSTAL ADDRESS
1	6
2	4
3	2
4	1
5	3
6	5
7	7
8	9
9	11
10	13
11	15
12	17
13	19
14	21
15	23
16	25
17	27
18	29
19	31
20	33
21	26
22	24
23	22
24	20
25	18
26	16
27	14
28	12
29	10
30	8



LOCATION MAP
SCALE: 1"= 800'

ACT 287 AS AMENDED BY ACT 181 OF 2006
SERIAL NUMBER 20143070528

D. L. Howell & Associates, Inc. does not guarantee the accuracy of the locations for existing subsurface utility lines, structures, etc. shown on the plans, nor does D. L. Howell & Assoc., Inc. guarantee that all subsurface utility lines, structures, etc. are shown.

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

UTILITIES NOTIFIED

AQUA PENNSYLVANIA INC
762 W LANCASTER AVE
BRYN MAWR, PA. 19010
CONTACT: STEVE PIZZI

COMCAST CABLE COMMUNICATIONS INC
1004 CORNERSTONE BLVD.
DOWNINGTOWN, PA. 19335
CONTACT: LEE MCGARRITY

PECO ENERGY
C/O USIC 450 S HENDERSON RD SUITE B
KING OF PRUSSIA, PA 19406
CONTACT: GAVEIN HEWITT

LEVEL 3 COMMUNICATIONS LLC
1025 ELDORADO BLVD. BUILDING
BROOMFIELD, CO. 80021
CONTACT: LEVEL 3 OPERATOR

VERIZON PENNSYLVANIA LLC
180 SHREE BLVD STE 2100 ROOM N/A
EXTON, PA. 19341
KELLY BLOUNT

VERIZON BUSINESS
2400 N GLENVILLE
RICHARDSON, TX. 75082
CONTACT: DEAN BOYERS

ZAYO BANDWIDTH FORMERLY
PPL TELCOM LLC C/O STAKE
CENTER LOCATING 2920
WEST DIRECTORS ROW SALT
LAKE CITY, UT. 84104
CONTACT: DAVE MOSIER

WILLISTOWN TOWNSHIP
40 LLOYD AVE
MALVERN, PA. 19355
CONTACT: JIM STAIRS

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: NOT TO SCALE

DRAWING INDEX

SHEET NUMBER	Drawing Number	SHEET TITLE
01	C01.1	COVER SHEET
02	C01.2	LAND DEVELOPMENT PLAN
03	C01.3	LOT CONSOLIDATION PLAN
04	C01.4	CONDITIONAL USE DECISION & ORDER
05	C02.1	EXISTING CONDITIONS PLAN
06	C02.2	EXISTING CONDITIONS PLAN
07	C03.1	GRADING & UTILITIES PLAN
08	C03.2	PCSWM PLAN
09	C03.3	PCSWM DETAILS
10	C04.1	EROSION CONTROL PLAN
11	C04.2	EROSION CONTROL NOTES
12	C04.3	EROSION CONTROL DETAILS
13	C05.1	PROFILES
14	C05.2	PROFILES
15	C05.3	PROFILES
16	C05.4	PROFILES
17	C06.1	CONSTRUCTION DETAILS
18	C06.2	CONSTRUCTION DETAILS
19	LP1.1	LANDSCAPE PLAN
20	LP1.2	LANDSCAPE NOTES & DETAILS
21	C07.1	LIGHTING PLAN

ZONING DATA TABULATION

WILLISTOWN TOWNSHIP ZONING ORDINANCE
ARTICLE VI : M3 - MULTI-FAMILY DISTRICT
PERMITTED USES BY CONDITIONAL USE: MULTI-FAMILY DWELLINGS

SECTION 139-49.C. - SITE DEVELOPMENT STANDARDS

	REQUIRED	PROPOSED
MIN. LOT AREA	2 ACRES	2.769 ACS.
MIN. LOT WIDTH (AT ANY POINT)	100 FT.	150 FT.
MAX. DENSITY (UNITS/ACRE)	12 DU/AC	12 DU/AC
MAX. BUILDING COVERAGE	25 %	22.97 %
MAX. BLDG & PAVED COVERAGE	50 %	48.17 %
MIN. OUTDOOR RECREATION AREA	10 %	10.48 %
MIN. BLDG SETBACK FROM TRACT BOUNDARY	25 FT.	25.2 FT.

OUTDOOR RECREATIONAL AREA
REQUIRED - 10% OF THE LOT AREA = 12,063 SF
PROVIDED - 12,640 SF (10.48%)

Gross Tract Area	135,052 (SF)	3.100 (ACS)
Existing R.O.W.'s	0 (SF)	0.000 (ACS)
Existing Utility Easement	-1,844 (SF)	-0.042 (ACS)
Proposed Utility Easement	-17,364 (SF)	-0.399 (ACS)
Additional ROW Along W. Central Ave.	5,661 (SF)	0.130 (ACS)
ROW Area Dedicated to Township	-875 (SF)	-0.020 (ACS)
Lot Area	**120,630 (SF)**	**2.769 (ACS)**

PARKING REQUIREMENTS

	REQUIRED	REQUIRED	PROPOSED
MULTI-FAMILY	2 SP. / DWELLING UNIT	60 SPACES	60 SPACES (44 GARAGE) (16 OFF-STREET)

Parcel 54-1K-1.7 (285 West Central Ave.)

Gross Tract Area	135,052 (SF)	3.100 (ACS)
Existing R.O.W.'s	0 (SF)	0.000 (ACS)
Existing Utility Easement	-1,844 (SF)	-0.042 (ACS)
Proposed Sewer/Water/Util Easements	-17,364 (SF)	-0.399 (ACS)
Excluding Easement Area through Steep Slopes >25%	950 (SF)	0.022 (ACS)
Excluding 50% Easement Area through Steep Slopes 15-25%	322 (SF)	0.007 (ACS)
Additional ROW Along W. Central Ave.	5,661 (SF)	0.130 (ACS)
ROW Area Dedicated to Township	-875 (SF)	-0.020 (ACS)
Base Site Area	**121,902 (SF)**	**2.798 (ACS)**

Natural Resources	Measured Area	Resouce Protection	Protected Land
- Floodplain/Floodway	0.000 (ACS)	100%	0.000 (ACS)
- Wetlands	0.000 (ACS)	100%	0.000 (ACS)
- Steep Slopes >25%	0.180 (ACS)	100%	0.180 (ACS)
- Steep Slopes 15%-25%	0.238 (ACS)	50%	0.119 (ACS)
- Woodlands	0.000 (ACS)	75%	0.000 (ACS)
- Hydric Soils	0.000 (ACS)	50%	0.000 (ACS)
- Riparian Buffers	0.000 (ACS)	100%	0.000 (ACS)
Total Protected Lands			**0.299 (ACS)**
- (% of Lot Area)			**(10.67%)**
- Developable Land			2.500 (ACS)
- Maximum Density			12 (D.U./Acre
Parcel Yield/Density			**30.0 (D.U.'s)**

COMMONWEALTH OF PENNSYLVANIA COUNTY OF CHESTER

ON THIS THE _____ DAY OF _____ 20 17. A.D. BEFORE ME, THE UNDERSIGNED OFFICER, PERSONALLY APPEARED B. MITCHELL KOTLER, WHO ACKNOWLEDGED HIMSELF TO BE THE VICE PRESIDENT OF GRAYS INVESTMENT PROPERTIES, L.P. AND AS SUCH OFFICER EXECUTED THE FOREGOING INSTRUMENT FOT THE PURPOSES THEREIN CONTAINED.

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND AND NOTARIAL SEAL.

_____ (SEAL)
NOTARY PUBLIC

MY COMMISSION EXPIRES: _____

WE, GRAYS INVESTMENT PROPERTIES, L.P., IS THE OWNER OF THE DESIGNATED LAND, SITUATE IN THE TOWNSHIP OF WILLISTOWN, COUNTY OF CHESTER, COMMONWEALTH OF PENNSYLVANIA, AND THAT THEY DESIRE THE FOREGOING PLAN TO BE DULY RECORDED.

WITNESS MY HAND AND SEAL THIS _____ DAY OF _____, 2017.

_____
FOR: GRAYS INVESTMENT PROPERTIES, L.P.

REVIEWED BY THE PLANNING COMMISSION OF **WILLISTOWN** TOWNSHIP, **CHESTER** COUNTY, PENNSYLVANIA, THIS ____ DAY OF _____, 20___.

_____
CHAIRPERSON

APPROVED BY THE BOARD OF SUPERVISORS OF **WILLISTOWN** TOWNSHIP, **CHESTER** COUNTY, PENNSYLVANIA, THIS ____ DAY OF _____, 20___.

_____
CHAIRMAN

_____
VICE CHAIRMAN

_____
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

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 ANY WAIVER REQUESTS.

_____
DAVID W. GIBBONS, PE LICENSE NO. PE076444

CERTIFICATE OF ACCURACY - SURVEY

I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE, ALL SURVEY INFORMATION AND COMPUTATIONS SHOWN AND DESCRIBED HEREON ARE TRUE AND CORRECT TO THE ACCURACY REQUIRED BY THE TOWNSHIP SUBDIVISION AND LAND DEVELOPMENT ORDINANCE, (BOUNDARY LINES CLOSE WITH AN ERROR OF NOT MORE THAN ONE FOOT IN 10,000 FEET).

_____
RICHARD F. KLINE, PLS

OFFER OF DEDICATION

WE THE UNDERSIGNED, OWNERS OF THE REAL ESTATE SHOWN AND DESCRIBED HEREIN, DO HEREBY CERTIFY THAT WE HAVE LAID OFF, PLATTED AND SUBDIVIDED, AND HEREBY LAY OFF, PLAT AND SUBDIVIDE, SAID REAL ESTATE IN ACCORDANCE WITH THIS PLAT, AND THAT THE AREA WITHIN THE WEST CENTRAL AVENUE ULTIMATE RIGHT-OF-WAY SHOWN ARE HEREBY OFFERED FOR DEDICATION TO THE APPLICABLE GOVERNMENT AUTHORITY.

_____
PROPERTY OWNER

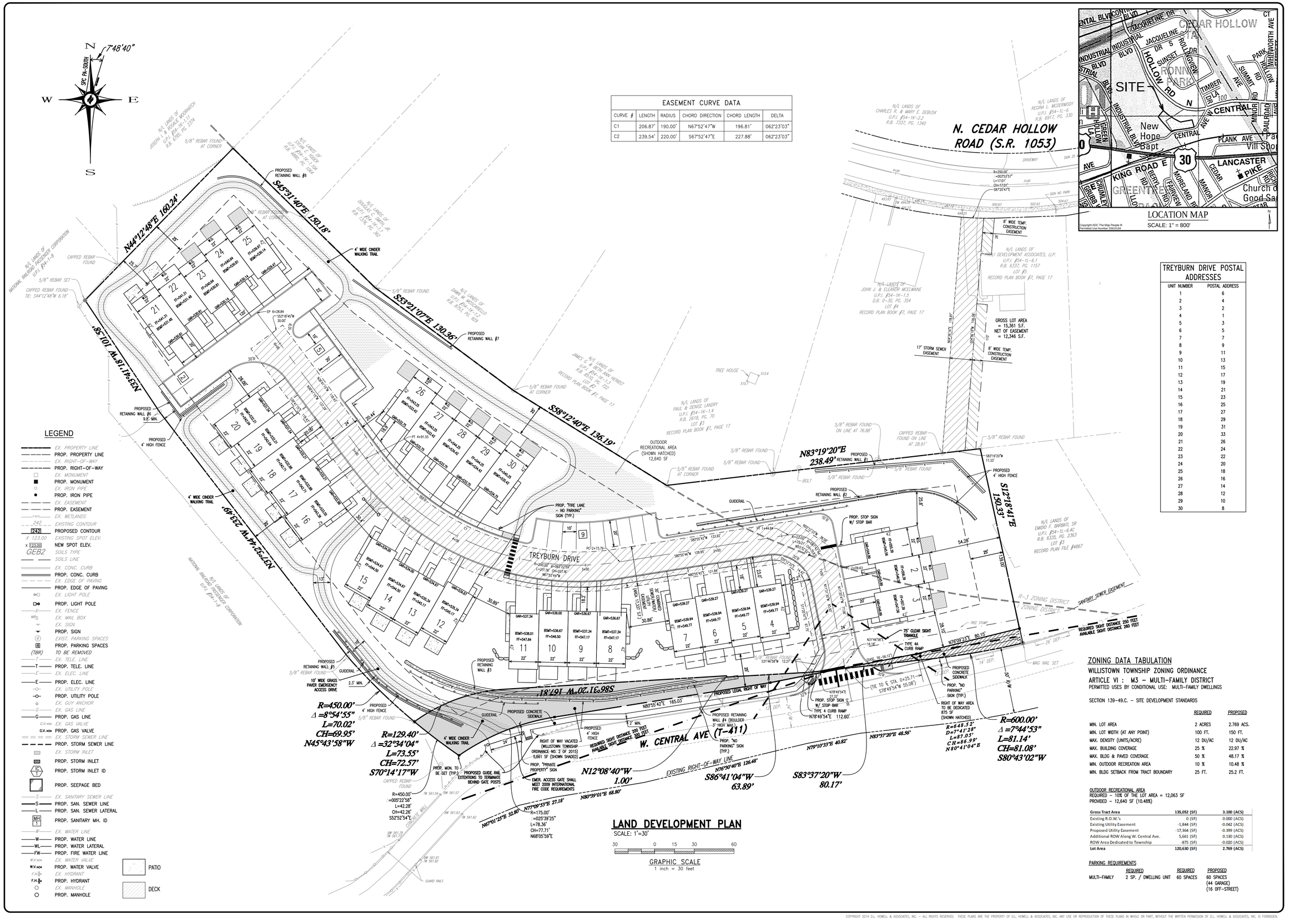
EQUITABLE OWNER, APPLICANT

GRAYS INVESTMENT PROPERTIES, LP.
1595 PAOLI PIKE, SUITE 202
WEST CHESTER, PA 19380

PREPARED BY:

DLHowell
Civil Engineering & Land Planning
D.L. Howell & Assoc., Inc.
1250 Wrights Lane
West Chester, PA 19380
Phone: (610) 918-9002
Fax: (610) 918-9003
www.DLHowell.com

DATE:	05/11/15
SCALE:	N.T.S.
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	2708
CAD FILE:	01 COVER SHEET.DWG
PLOTTED:	04/11/17
DRAWING NO.:	C01.1
SHEET	01 OF 21



EASEMENT CURVE DATA					
CURVE #	LENGTH	RADIUS	CHORD DIRECTION	CHORD LENGTH	DELTA
C1	206.87'	190.00'	N67°52'47"W	196.81'	062°23'03"
C2	239.54'	220.00'	S67°52'47"E	227.88'	062°23'03"

TREYBURN DRIVE POSTAL ADDRESSES	
UNIT NUMBER	POSTAL ADDRESS
1	6
2	4
3	2
4	1
5	3
6	5
7	7
8	9
9	11
10	13
11	15
12	17
13	19
14	21
15	23
16	25
17	27
18	29
19	31
20	33
21	26
22	24
23	22
24	20
25	18
26	16
27	14
28	12
29	10
30	8

ZONING DATA TABULATION

WILLISTOWN TOWNSHIP ZONING ORDINANCE

ARTICLE VI : M3 – MULTI-FAMILY DISTRICT

PERMITTED USES BY CONDITIONAL USE: MULTI-FAMILY DWELLINGS

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MIN. LOT AREA	2 ACRES	2.769 ACS.
MIN. LOT WIDTH (AT ANY POINT)	100 FT.	150 FT.
MAX. DENSITY (UNITS/ACRE)	12 DU/AC	12 DU/AC
MAX. BUILDING COVERAGE	25 %	22.97 %
MAX. BLDG & PAVED COVERAGE	50 %	48.17 %
MIN. OUTDOOR RECREATION AREA	10 %	10.48 %
MIN. BLDG SETBACK FROM TRACT BOUNDARY	25 FT.	25.2 FT.

OUTDOOR RECREATIONAL AREA
REQUIRED – 10% OF THE LOT AREA = 12,063 SF
PROVIDED – 12,640 SF (10.48%)

Gross Tract Area	135,052 (SF)	3.100 (ACS)
Existing R.O.W.'s	0 (SF)	0.000 (ACS)
Existing Utility Easement	-1,844 (SF)	-0.042 (ACS)
Proposed Utility Easement	-17,364 (SF)	-0.399 (ACS)
Additional ROW Along W. Central Ave.	5,661 (SF)	0.130 (ACS)
ROW Area Dedicated to Township	-875 (SF)	-0.020 (ACS)
Lot Area	**120,630 (SF)**	**2.769 (ACS)**

PARKING REQUIREMENTS

	REQUIRED	REQUIRED	PROPOSED
MULTI-FAMILY	2 SP. / DWELLING UNIT	60 SPACES	60 SPACES (44 GARAGE) (16 OFF-STREET)

DLHowell
Civil Engineering & Land Planning
www.DLHowell.com

D.L. Howell & Assoc., Inc.
1250 Wrights Lane
West Chester, PA 19380
Phone: (610) 918-9002
Fax: (610) 918-9003

	DATE	DESCRIPTION
8	04/11/17	REVISED PER TOWNSHIP ENGINEER COMMENTS
7	02/09/17	REVISED FOR WALKING PATH RELOCATION
6	02/10/16	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED JANUARY 29,2016
5	01/25/15	REVISED PER CCCD REVIEW LETTER DATED JANUARY 20, 2016
4	12/18/15	REVISED PER TOWNSHIP REVIEWS
3	09/21/15	REVISED PER TOWNSHIP REVIEWS
2	07/27/15	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED JULY 2, 2015
1		
REV.		

AMENDED FINAL
LAND DEVELOPMENT PLAN

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE
WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	05/11/15
SCALE:	1"=30'
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	2708
CAD FILE:	02 LAND DEVELOPMENT PLAN.dwg
PLOTTED:	04/11/17
DRAWING NO.:	C01.2
SHEET	02 OF 21

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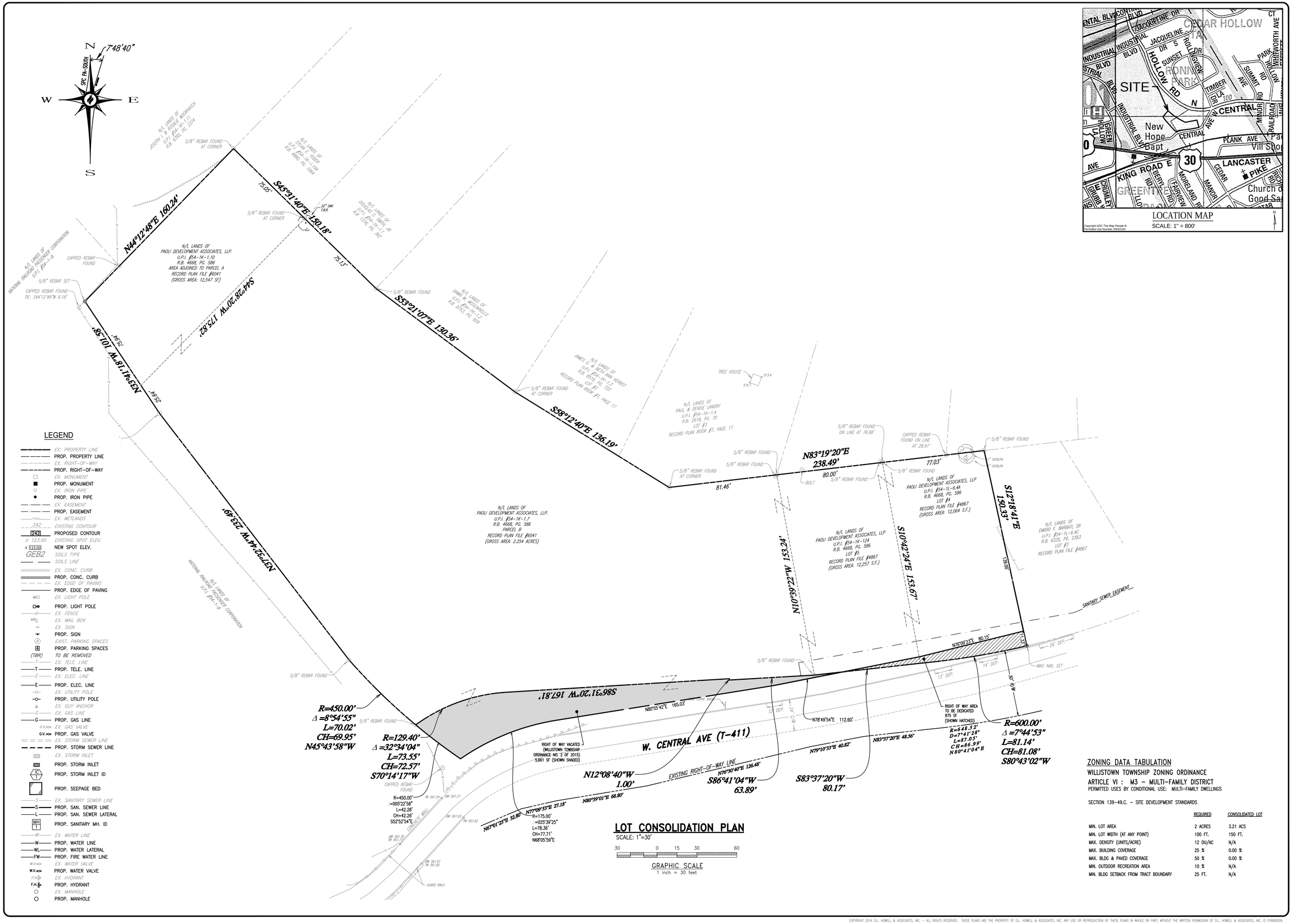

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1	04/11/15	

AMENDED FINAL
LOT CONSOLIDATION PLAN

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE
WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	05/11/15
SCALE:	1"=30'
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	2708
CAD FILE:	G2 LAND DEVELOPMENT PLAN.dwg
PLOTTED:	04/11/17
DRAWING NO.:	C01.3
SHEET	03 OF 21

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Before the Board of Supervisors of Willistown Township, Chester County, Pennsylvania

In Re:

Application of Grays Investment Properties, L.P.; For Conditional Use Approval : No. C-6-14

DECISION AND ORDER

AND NOW, this 23rd day of March, 2015, the Board of Supervisors of Willistown Township hereby grants, subject to the conditions specified hereinbelow, the application of Grays Investment Properties, L.P. ("Applicant") for conditional use approval to authorize a multi-family (townhouse) development and related improvements made pursuant to Sections 139-42, 139-49.C. and 139-118.1 of the Willistown Township Zoning Ordinance of 1981, as amended (the "Zoning Ordinance") and to authorize disturbance of areas of precautionary and prohibitive steep slopes pursuant to Section 73-32.D. of the Willistown Township Environmental Protection Ordinance of 1995, as amended (the "EPO") and 139-118.1 of the Zoning Ordinance, for the property located at 281, 283 and 285 West Central Avenue, Paoli, and with respect to certain related sanitary sewer and stormwater improvements, the adjoining property located at 5 North Cedar Hollow Road (collectively the "Property") and enters the following factual findings, conclusions and discussions of reasoning in support of the grant of the Application.

I. Background of the Application

By written Application received November 18, 2014 (the "Application"), Applicant requested approval by the Board of Supervisors of Willistown Township (the "Board" and the

"Township" respectively) for conditional use approval to allow the development of 33 multi-family dwellings (townhouses) on the Property located at West Central Avenue and North Cedar Hollow Road. The Property upon which the construction of the townhouses is proposed consists of four tax parcels of approximately 3.1 acres known as UPI (tax parcel) nos. 54-1K-1.7, 54-1K-1.10, 54-1K-1.24 and 51-4-6.4A. The adjoining Property which is proposed for the construction of sanitary sewer and stormwater facilities is known as UPI no. 54-1L-6.1. The Property is legally owned by Paoli Development Associates, LLP. The Applicant is the equitable owner of UPI nos. 54-1K-1.7, 54-1K-1.10, 54-1K-124 and 54-1K-6.4A; Paoli Development Associates, LLP is the owner of UPI no. 54-1L-6.1. The Property upon which the townhomes are proposed is situated in the M-3 Multifamily Overlay District.

Notice of the scheduling of a public hearing for January 26, 2015, was published in the Daily Local News, a newspaper of general circulation in the Township, on December 31, 2014 and January 7, 2015. The public meeting on January 26, 2015 was cancelled due to an announced snow emergency, and the public hearing was rescheduled to February 9, 2015 pursuant to additional public notice. On February 9, 2015, the hearing was duly commenced and conducted as advertised. The hearing was then continued for further testimony on February 17, 2015. At the conclusion of the hearing on February 17, 2015, the Board closed the record.

The Applicant's case in support of the Application was presented to the Board through the testimony of B. Mitchell Kotler of Bentley Homes, David W. Gibbons, P.E. of D.L. Howell & and Associates, Inc., Patrick J. Stuart, RLA of Ornatti & Stuart Associates, Inc., Scott Emerson of Bentley Homes and Thomas Bentley of Bentley Homes; together with the presentation of

certain documentary exhibits. George W. Brossman, Esquire, of the firm of Kaplin Stewart represented the Applicant; its Solicitor, Vincent M. Pompo, Esquire of the firm of Lamb McErlane PC, represented the Board.

The record in this matter consists of the transcribed notes of testimony taken at the public hearing conducted on February 9, 2015 and February 17, 2015, together with the documentary exhibits marked for identification and admitted into the record by the Board. This Decision and Order is promulgated pursuant to Zoning Ordinance §139-118.1 and the enabling provisions of the Pennsylvania Municipalities Planning Code, Act of July 31, 1968, P.L. 805, as amended, 53 P.S. §10101 et seq. (the "MPC").

II. Findings of Fact

1. The Applicant is Grays Investment Properties, L.P., the equitable owner of the 3.1 gross acres of land legally owned by Paoli Development Associates, LLP located on West Central Avenue; Paoli Development Associates, LLP is the owner of the parcel on North Cedar Hollow Road (the "Property").

2. The portion of the Property proposed for the construction of the multi-family dwelling units is located in the M-3 Multifamily Overlay Zoning District (the "M-3 Multifamily District Overlay").

3. Upon the petition of the Applicant, the Board on September 8, 2014, enacted Ordinance No. 5 of 2014, adopting certain text amendments to the M-3 Multifamily District Overlay addressing setbacks from the property lines and building separation requirements. At that time, the Board did not address any other development aspect of the Property, including the parcel yield or the density of the multifamily units.

4. The Applicant now proposes 33 multifamily townhouse residential dwelling units.

5. The Applicant proposes that the proposed townhouse units will be served by a single access common driveway or private road intersecting with West Central Avenue, which private road would exceed 1,600 feet in length.

6. Since the private, single access road would serve more than 24 units and exceed 1,600 feet in length, the Applicant proposes to request the approval of the Board under Section 123-24.A of the Township's Subdivision and Land Development Ordinance (the "SLDO") to exceed these requirements.

7. The Applicant also proposes an emergency access to address emergency vehicle access; however the proposed emergency access potentially conflicts with other features of the development including a proposed recreation trail, buffer and landscaping plantings, outdoor recreation, retention walls and the rear of proposed units.

8. A bridge carrying West Central Avenue is located to the west of the Property, west of the proposed intersections of both the private road and the emergency access road and

West Central Avenue. The bridge functioned in the past as a train underpass for the former Paoli Railroad Yard, which is adjacent to the Property. The Township Traffic Engineer has advised that any consideration of vacating road right-of-way in the vicinity of the bridge consider the need of the right-of-way in light of the bridge.

9. The Paoli Railroad Yard is a Superfund Site known as the Paoli Rail Yard Superfund Site involving contamination of soils by Polychlorinated Bi-Phenols (PCBs). The owner of the subject Property (281, 283, 285 West Central Avenue and 5 North Cedar Hollow Road) received a letter from the Environmental Protection Agency dated February 21, 2013, stating that no further action is necessary with respect to these properties and that the properties are suitable for unrestricted use. (Exhibit A-24).

10. However, the proposed development of the Property will involve considerable grading of the Property including the disturbance of areas of precautionary and prohibitive slope, well below the prior soil testing depth of 12 inches.

11. The Applicant has no plan for further testing of the soils for PCBs or remediation as a result of the proposed grading activities; however, the Applicant agreed at the hearing to do such testing and provide such a plan.

12. The Applicant proposes a conceptual stormwater management system that involves inlets and pipes along the northern property boundary to both capture uncontrolled runoff and discharge from the new internal stormwater collection systems, stormwater piping

through an existing easement on the 5 North Cedar Hollow Road parcel, and new stormwater piping within North Cedar Hollow Road to connect the stormwater system directly to the allegedly existing stormwater sewer system located in North Cedar Hollow Road.

13. Numerous residents along North Cedar Hollow Road raised questions regarding existing, severe stormwater problems along North Cedar Hollow Road and questioned the very existence and, alternatively, the effectiveness, of the existing stormwater sewer system to convey existing stormwater flows let alone additional flows from the Property.

14. The Applicant's civil engineer testified that the Applicant would verify the existence of the stormwater sewer system within North Cedar Hollow Road to which the Applicant proposes to connect, and its ability to handle the additional stormwater drainage from the Property.

15. The Applicant contends that the steep slopes on the portion of the Property proposed for the construction of the townhouse units are manmade; but does not make that contention for the steep slopes on the adjacent 5 North Cedar Hollow Road parcel for which relief is sought for steep slope disturbance for the construction sanitary sewer and stormwater facilities.

16. The EPO makes no distinction between manmade and natural areas of precautionary or prohibitive slopes.

17. The Applicant's landscape architect testified that the Zoning Ordinance's requirements for buffer strips and screening would have to be achieved in places by appropriate fencing as opposed to the required planting material.

18. The Applicant proposes a recreation trail and a barbecue area in order to meet the Zoning Ordinance's requirement for an outdoor recreation area constituting at least 10% of the lot area and convenient for its use as regards shape, location, grade and seclusion.

19. The Applicant's parcel yield/density calculations do not consider the subtraction of all existing and proposed road and utility rights-of-way as required by Section 73-11.1 of the EPO.

20. The Applicant agreed that the parcel yield/density calculations regarding the maximum permissible densities for the Property are to be deferred to land development.

21. The proposed development includes the sanitary sewer and stormwater facilities proposed for 5 North Cedar Hollow Road, and this parcel is included by the Applicant within this Application, and is therefore before this Board as part of this Application.

22. According to the Township Engineer, the Zoning Ordinance requires that the 30' sewer easement area on 5 North Cedar Hollow Road, in addition to any other utility easements on the parcel, must be deducted from the lot area for zoning compliance purposes, and such deduction will render the parcel nonconforming as to lot area.

23. The Applicant proposes that all internal roadways will be private, not dedicated to the Township, and owned and maintained by a homeowners association.

24. Subject to further review during land development, a reduction of density may be necessary to meet the required standards and criteria set forth in Article XI of the Zoning Ordinance and §139-55 of the Zoning Ordinance.

III. Conclusions of Law

1. The Board has jurisdiction of this Application for conditional use approval. Jurisdiction extends to the parcel located 5 North Cedar Hollow Road which is included in the Application for conditional use approval, and which is proposed as part of the Application for the development of sanitary sewer and stormwater utility facilities.

2. The sewer easement agreement on 5 North Cedar Hollow Road proposed for the development of the sanitary and stormwater utility facilities would render the parcel nonconforming as to lot area.

3. The Applicant has not met its initial burden of compliance with Section 139-43 of the Zoning Ordinance with respect to proving the maximum density shall not exceed the parcel yield determined under the natural resources protection and density calculations referenced in §139-158 of the Zoning Ordinance and §73-11.1 of the EPO.

4. The Applicant has not met its initial burden of compliance with Section 139-49.C.(3) of the Zoning Ordinance requiring that the outdoor recreation area in the aggregate shall constitute at least 10% of the lot area and shall be convenient for its use as regards to shape, location, grade and seclusion.

5. The Applicant has not met its initial burden of compliance with Sections 139-51.B. and 139-53 of the Zoning Ordinance regarding buffer planting strips and screening.

6. The Applicant has not otherwise met its initial burden of compliance with Section 139-118.1.D. of the Zoning Ordinance, the criteria governing conditional use review.

7. The structures, i.e. the townhouses, the roads necessary to provide primary access where no practical alternative exists in an area of lesser slope, and sanitary or storm sewers, when approved by all regulatory agencies, as proposed by the Applicant for this Property are permitted within the areas of prohibitive and precautionary slope by conditional use by Section 73-32.D. of the EPO.

8. Section 73-33.A (1) of the EPO sets forth the materials that must be submitted for review by the Township Engineer, and Section 73-33.A.(2) of the EPO provides that "no conditional use shall be granted by the Board of Supervisors, without the Township Engineer's review of this material and his recommendations thereon."

9. The Applicant has not met its initial burden of compliance with Sections 73-32.D., 73-33.A.(2) and 73-33.B. of the EPO.

10. The Applicant can meet its initial burden of compliance with the specific requirements of the Zoning Ordinance and the EPO, as conditioned hereinbelow.

11. Approval of the Application as conditioned hereinbelow, is consistent with the evidence of record and complies with, or can comply with, the criteria and standards specified in aforementioned Sections of the Zoning Ordinance and EPO.

IV. Discussion

This Board has had the opportunity to review the standards applicable to reviewing an application for conditional use approval in many instances in the past. Generally, a conditional use is a form of permitted use. Pennridge Development Enterprises, Inc. v. Volovnik, 624 A.2d 674 (Pa. Cmwlth. 1993). The fact that a use is permitted as a conditional use evidences a legislative decision that the particular type of use is not adverse to the public interest *per se*. Vision Quest National Ltd. v. Board of Supervisors of Honeybrook Township, 524 Pa. 107, 169 A.2d 915 (1990).

An application for conditional use is analogous to a special exception, and the burden of proof standards of Bray v. Zoning Board of Adjustment, 410 A.2d 909 (Pa. Cmwlth. 1980), apply to conditional use proceedings. White Advertising Metro., Inc. v. Zoning Hearing Board

of Susquehanna Township, 453 A.2d 29 (Pa. Cmwlth. 1982). Initially, both the burden and the duty fall upon the applicant to affirmatively prove the "specific requirements" of the ordinance. In other words, once the applicant has brought itself within the standards of the ordinance, the application must be granted unless the protestants, if any, present sufficient evidence that the use will present a substantial risk to the community. Id.; Susquehanna Township Board of Commissioners v. Hardee's Food Systems, Inc., 430 A.2d 367 (Pa. Cmwlth. 1981); Greensburg City Planning Commission v. Threshold, Inc., 315 A.2d 311 (Pa. Cmwlth. 1974).

Under Section 603(c)(2) of the MPC, 53 P.S. §10603(c)(2), it is clear that the Board of Supervisors, as the governing body of the Township, has the authority to grant conditional uses pursuant to the express standards and criteria set forth in the Zoning Ordinance enacted by the Board to regulate land use pursuant to the police power. It is equally clear that the Board has the authority, pursuant to Section 603(c)(2) of the MPC to attach such reasonable conditions and safeguards, in allowing a conditional use, in addition to those expressed in the Zoning Ordinance, as it may deem necessary to implement the purposes of the MPC and the Zoning Ordinance. Clinton County Solid Waste Authority v. Wayne Township, 643 A.2d 1162 (Pa. Cmwlth. 1994). Any conditions which the Board imposes must be upheld if the conditions are reasonably related to the health, safety or welfare of the public. Id.

Turning to the specific ordinances which control the grant of the instant Application, in considering an application within the M-3 Multifamily Overlay District, the Board is to consider

the standards and criteria for the allowance or denial of such conditional use as set forth in the regulations pertaining to the Multifamily Districts. Likewise, in considering an application for incursion within steep slopes, the Board is to consider the standards and criteria set forth in the EPO. In addition, in both instances, the Board shall consider the criteria for the allowance or denial of such conditional use as set forth in Section 139-118.1 pertaining to conditional use applications in general.

While the Board has found that the Applicant has not met its burden to show compliance with the criteria for review of these conditional uses, the Board believes that attaching reasonable conditions will be sufficient to meet the criteria for multifamily development and incursion in the areas of prohibitive and precautionary steep slope. Most importantly, the Board has determined that the Applicant has not met its burden of proving entitlement to 33 multifamily units on the Property, and that the acceptable number of units in compliance with the applicable provisions of the Zoning Ordinance, EPO and SLDO must be determined during land development.

V. Order

Therefore, the Board finds and concludes that the Applicant has met the requirements of the Zoning Ordinance for conditional use approval, provided the following conditions are adhered to. In granting the Application, the Board has relied upon the testimony, plans and exhibits presented by the Applicant in this proceeding and said testimony, plans, exhibits and documentary evidence are hereby incorporated as additional conditions of approval, the

Applicant being strictly bound by all the representations made in the testimony, plans, and exhibits and documentary evidence.

The additional conditions described below are imposed and attached subject to the following general principles. Unless a different mechanism is expressly required, compliance with these conditions shall ordinarily be established in the context of the subsequent applications for preliminary and final land development approvals. All conditions shall be complied with to the satisfaction of the Township. Any aspect of the said application or any revision thereto materially inconsistent with these conditions will require re-application to and re-hearing by the Board prior to land development approval. Any violation of the conditions during or following construction will be treated as a violation of the financial security or the Zoning Ordinance, as the case shall be, subject to the enforcement mechanisms specified in MPC §§ 511 and 616-617, 53 P.S. §§ 10511 and 10616-10617. Improvements, whether public, quasi-public, or common private, required by these conditions shall be depicted in the land development submission and their construction secured as required by MPC §509, 53 P.S. §10509.

Most fundamentally, this Decision and Order grants only conditional use approval in accordance with their express terms for the development as described in the Application of the Applicant and by the testimony and exhibits. Nothing contained in this Decision and Order shall be construed to abrogate or limit the obligation of Applicant to comply with the applicable requirements of the Township's Zoning Ordinance, Environmental Protection Ordinance ("EPO") and Subdivision and Land Development Ordinance ("SLDO"). Except as expressly augmented and clarified by these conditions, review of the land development application shall be

in accordance with all of the otherwise applicable standards, specifications, and regulations of the Zoning Ordinance, EPO and SLDO and of all other agencies with jurisdiction over the Property, the development, or any aspect thereof. Any proposed development or use of the Property different in any aspect from Applicant's proposal will require conditional use application to and approval from the Board.

The following conditions are imposed and attached pursuant to Section 603(c)(2) of the Municipalities Planning Code and Zoning Ordinance Sections 139-55 and 139-118.1.E. For the purpose of this Decision and Order, and specifically the following conditions, the term "Applicant" shall include the Applicant's successors and assigns and interests with respect to the Property and the Application:

1. The maximum density shall not exceed the parcel yield determined under the natural resources protection and density calculations referenced in Section 139-158 of the Zoning Ordinance and Section 73-11.1 of the EPO, and shall be determined prior to preliminary land development approval.

2. Compliance with Section 139-49.C.(3) of the Zoning Ordinance requiring that the outdoor recreation area in the aggregate shall constitute at least 10% of the lot area and shall be convenient for its use as regards to shape, location, grade and seclusion, shall be determined prior to preliminary land development approval. Such compliance may require a reduction in density pursuant to Section 139-55 of the Zoning Ordinance if the Board finds that such reduction in density is necessary to meet the standards and criteria for the outdoor recreation area.

3. Compliance with Sections 139-51.B. and 139-53 of the Zoning Ordinance regarding buffer planting strips and screening, shall be determined prior to preliminary land development approval. Such compliance may require a reduction in density pursuant to Section 139-55 of the Zoning Ordinance if the Board finds that such reduction in density is necessary to meet the standards and criteria for buffer strips and planting.

4. The Board will consider the approval of the single access road serving more than 24 units and exceeding 1,600 feet in length, under Section 123-24.A of the SLDO prior to preliminary land development approval, including the provision of the proposed emergency access. Such approval may require a reduction in density pursuant to Section 139-55 of the Zoning Ordinance if the Board finds that such reduction in density is necessary to meet the safety needs for emergency access in conjunction with the standards and criteria for outdoor recreation areas and buffer strips and planting.

5. Prior to preliminary land development approval, the Applicant shall verify the existence of the stormwater sewer system within North Cedar Hollow Road to which the Applicant proposes to connect, and its ability to handle existing flows and the additional stormwater drainage from the Property, in compliance with all applicable Township stormwater requirements through field and documentary verification including but not limited to video analysis, under the direction of a qualified civil engineer to the satisfaction of the Township Engineer. In the event the stormwater sewer system does not exist, or is not capable to handle existing drainage and/or additional drainage from the Property, the Applicant shall design and

install such stormwater drainage improvements as necessary to meet all applicable Township stormwater requirements to the satisfaction of the Township Engineer.

6. The Applicant shall take all necessary steps to determine if the Plan can be revised to eliminate or reduce the amount of stormwater management facilities located within the PennDOT right-of-way. If the Applicant is unable to eliminate all of the stormwater management facilities located within the PennDOT right-of-way, the Applicant shall submit documentation supporting this conclusion for the Township's consultants review. If the Township's consultants agree that the stormwater management facilities cannot be completely eliminated from the PennDOT right-of-way, the Township will consider being a co-permittee on the Applicant's Highway Occupancy Permit subject to the Applicant: a) revising the Plan to show the entire proposed stormwater management facilities located within the PennDOT right-of-way; b) recording of the Highway Occupancy Permit in the Office of the Recorder of Deeds of Chester County; and c) entering into a separate maintenance and re-location agreement with the Township for the stormwater management facilities located within the PennDOT right-of-way, to the satisfaction of the Township Solicitor.

7. The internal roads shall be private roads owned and maintained by a single Homeowners Association to be established for the townhouse community by the recording of a declaration immediately following the recording of final plans and prior to the first residential conveyance, and shall not be subject to dedication to the Township. The declaration shall prohibit on-street parking on the internal roads, with the exception of approved parking spaces shown on the approved plans, and require the posting of no parking signs on said roadways.

8. Prior to preliminary land development approval, Applicant shall prepare a sampling plan for further testing of the soils on the Property for PCBs and any other toxic/hazardous substances of concern at a depth between the depth of prior testing and below the lowest depth of the proposed grading activities, prior to the commencement of grading activities, in order to assess whether the presence of such substances in the soils would violate the health, safety and general welfare of the community. Should the testing reveal the presence of such substances, the Applicant shall undertake such remediation as may be necessary to satisfy all applicable standards of the Pennsylvania Department of Environmental Protection and the United States Environmental Protection Agency. The sampling plan including the parameters of concern shall be subject to the reasonable approval of a qualified environmental consultant selected by the Board of Supervisors.

9. The sanitary sewage collection system shall be designed in accordance with the Township's specifications to the satisfaction of the Township's Sewer Engineer, and the common sewage collection system (i.e., the portion of the system serving more than one lot or unit) shall be subject to an offer of dedication to the Township along with all necessary easements to the satisfaction of the Township Solicitor, with the understanding that the Township prefers not to accept dedication but will consider doing so if required by PaDEP.

10. The Applicant shall submit for review and approval by the Township, easements, covenants and restrictions that will describe the party or parties that will be responsible for the maintenance and management of the stormwater systems, roadway systems, sidewalks, outdoor

recreation areas, emergency access drives, landscaping, trails or any other common elements of the development.

11. Nothing contained in this Decision and Order shall be construed to abrogate or limit the obligation of the Applicant to seek and obtain sewage planning module approval under Act 537, building permits or any other necessary permits or approvals for construction on the Property.

12. All existing vegetation used to satisfy the buffer and screening requirements and all new landscaping shall be made subject to the Township's Landscaping Restrictive Covenant to the satisfaction of the Township solicitor.

13. The Applicant shall fully comply with all of the recommendations of the Township Engineer per Section 73-33.A.(2) of the EPO, including future recommendations of the Township Engineer to implement this Decision and Order, to the satisfaction of the Township Engineer.

14. The Applicant shall resolve the nonconformity of 5 North Cedar Hollow Road resulting from the plan to construct sanitary sewer and stormwater facilities within the 30' utility easement, to the satisfaction of the Township prior to preliminary land development approval.

15. Any material deviation or change from the testimony, plans and exhibits presented on behalf of the Applicant, or from this Decision and any conditions imposed hereby shall

require an amendment to this Decision and Order by the Board of Supervisors following proper application and hearing.

16. The Applicant shall execute and provide to the Township a recordable, notarized copy of a memorandum containing a metes and bounds description of the property in question and stipulating the terms and conditions of this approval and shall consent to the recording by the Township in the office of the Recorder of Deeds of Chester County within thirty (30) days following expiration of the appeal period.

17. The Applicant shall express to the Board in writing within fourteen (14) days of the date of this Decision and Order, its agreement to the above conditions or the Application is denied; the Board expressly finding and concluding that the Application in the absence of compliance with the said conditions is inconsistent with the objective criteria set forth in the applicable provisions of the Zoning Ordinance and the EPO.

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ADOPTED and **ORDERED** this 23rd day of March, 2015.

BOARD OF SUPERVISORS
WILLISTOWN TOWNSHIP

by:

William H. Shoemaker, Chairman

George J. McHugh, IV, Vice Chairman

Robert T. Lange, Member

ATTEST:

David R. Burman, Secretary

DLHowell
Civil Engineering & Land Planning
www.DLHowell.com

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AMENDED FINAL
CONDITIONAL USE DECISION & ORDER

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE
WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	05/11/15
SCALE:	AS SHOWN
DRAWN BY:	ADM
CHECKED BY:	DWC
PROJECT NO.:	2708
CAD FILE:	02 LAND DEVELOPMENT PLAN.dwg
PLOTTED:	04/11/17
DRAWING NO.:	C01.4
SHEET	04 OF 21

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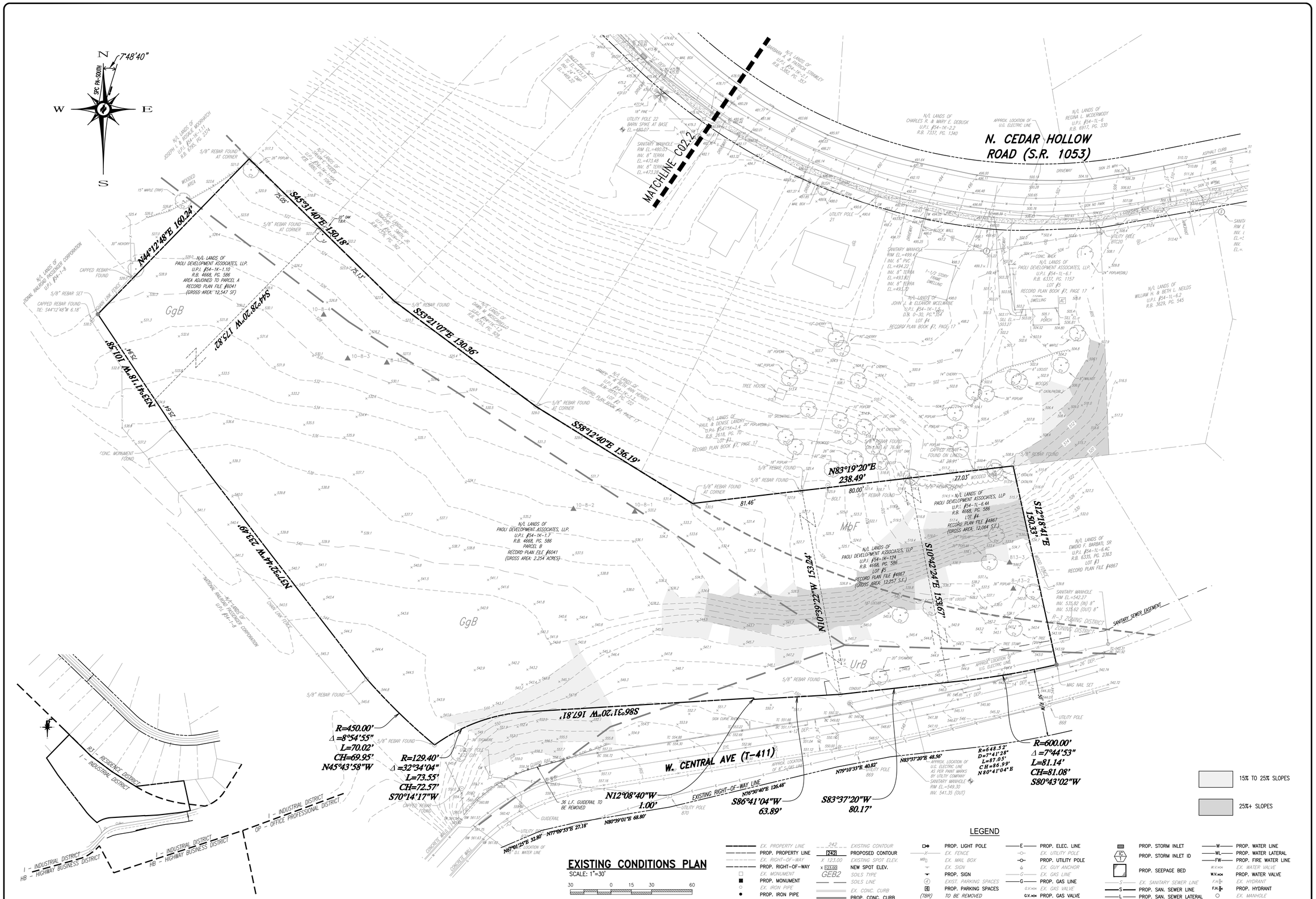

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Civil Engineering & Land Planning
www.DLHowell.com

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

REV.	DATE	DESCRIPTION
8		
7	04/11/17	REVISED PER TOWNSHIP ENGINEER COMMENTS
6	02/09/17	REVISED FOR WALKING PATH RELOCATION
5	02/10/16	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED JANUARY 29,2016
4	01/25/15	REVISED PER CCCD REVIEW LETTER DATED JANUARY 20, 2016
3	12/18/15	REVISED PER TOWNSHIP REVIEWS
2	09/21/15	REVISED PER TOWNSHIP REVIEWS
1	07/27/15	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED JULY 2, 2015

AMENDED FINAL
EXISTING CONDITIONS PLAN

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE
WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	05/11/15
SCALE:	1"=30'
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	2708
CAD FILE:	04 EXISTING CONDITIONS PLAN.dwg
PLOTTED:	04/11/17
DRAWING NO.:	C02.1
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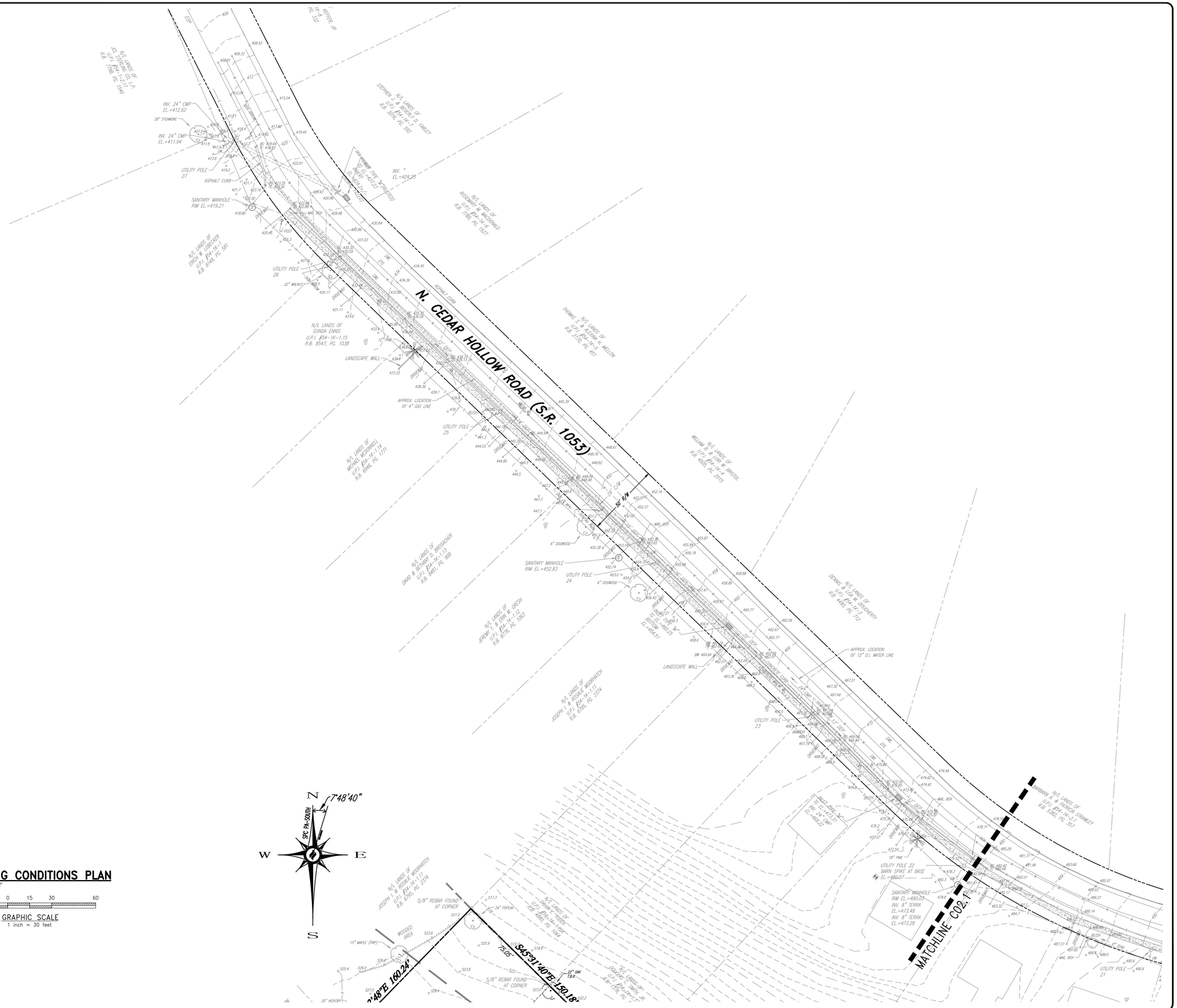

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AMENDED FINAL
EXISTING CONDITIONS PLAN

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE
WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	05/11/15
SCALE:	1"=30'
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	2708
CAD FILE:	04 EXISTING CONDITIONS PLAN.dwg
PLOTTED:	04/11/17
DRAWING NO.:	C02.2
SHEET	06 OF 21

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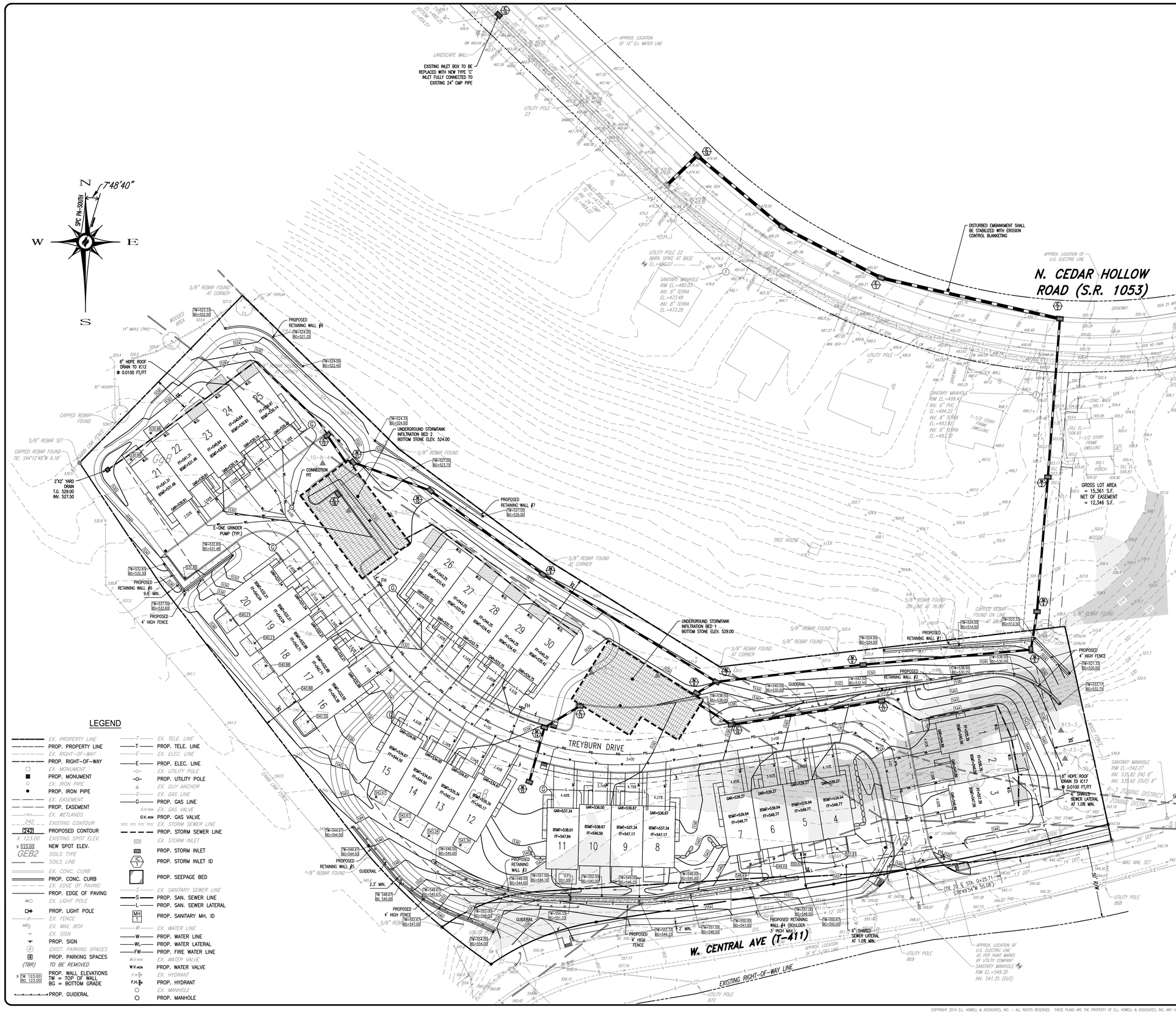

GRADING & UTILITY GENERAL NOTES:

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 SPECIFIC BUILDING PERMIT PLAN FOR EACH INDIVIDUAL TOWNHOUSE GROUP.
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 WALKS AND 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 OWNER'S DAILY OPERATIONS. WHERE CONFLICT IS APPARENT THE CONTRACTOR SHALL COORDINATE WITH THE OWNER THE WORK TO BE PERFORMED SO AS TO BE THE LEAST DISRUPTIVE.
17. ANY PAVING DAMAGED DURING CONSTRUCTION ACTIVITIES SHALL BE REMOVED TO SUBGRADE AND REPLACED WITH THE PAVING SECTION AT THE CONTRACTOR'S EXPENSE, AND SHALL MATCH THE EXISTING PAVING SECTION.
18. 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.)
19. THE OWNER OR OWNER'S REPRESENTATIVE MUST RETAIN A GEOTECHNICAL ENGINEER TO EVALUATE ALL PHASES OF WALL CONSTRUCTION, INCLUDING THE SOIL CONDITIONS PRIOR TO CONSTRUCTION. UNSUITABLE SOILS, IF ANY, SHALL BE REMOVED AND REPLACED WITH PROPERLY COMPACTED FILL SOIL AS DIRECTED BY THE OWNER'S GEOTECHNICAL ENGINEER. UNSUITABLE SOILS ARE DEFINED AS ANY SOIL THAT DOES NOT HAVE SUFFICIENT BEARING CAPACITY OR WILL CAUSE EXCESSIVE WALL SETTLEMENT. OWNER'S ENGINEER MUST BE QUALIFIED IN GEOTECHNICAL ENGINEERING AND SEGMENTAL WALL INSPECTION, AND IS RESPONSIBLE FOR DOCUMENTING THAT ALL ASPECTS OF THE WALL CONSTRUCTION INCLUDING COMPACTION TESTING, GEOGRID PLACEMENT, GEOGRID LENGTHS, GEOGRID ORIENTATION, ELEVATION OF THE WALL ELEMENTS, AND DRAINAGE SYSTEM HAVE BEEN INSTALLED IN GENERAL ACCORDANCE WITH THESE PLANS. WRITTEN REPORTS DOCUMENTING ALL ASPECTS OF CONSTRUCTION FOR EACH WALL SHALL BE SUBMITTED TO THE TOWNSHIP PRIOR TO ACCEPTANCE OF THE PROJECT.
20. ALL STORM SEWER SHALL BE INSTALLED IN ACCORDANCE WITH WILLISTOWN TOWNSHIP STANDARDS AND PENNDOT PUBLICATION 408 SPECIFICATIONS.
21. ALL OTHER UTILITY LINES, INCLUDING, BUT NOT LIMITED TO, ELECTRIC, GAS, STREETLIGHT SUPPLY, CABLE TELEVISION, AND TELEPHONE, SHALL BE PLACED UNDERGROUND. INSTALLATION OF UTILITIES SHALL BE IN STRICT ACCORDANCE WITH THE ENGINEERING STANDARDS AND SPECIFICATIONS OF THE TOWNSHIP OR PUBLIC UTILITY CONCERNED. UNDERGROUND UTILITIES SHALL BE PUT IN PLACE, CONNECTED, AND APPROVED BEFORE THE STREETS ARE CONSTRUCTED WHERE SUCH UTILITIES LIE UNDER THE PROPOSED CARTWAY AND BEFORE ANY PERSON IS PERMITTED TO OCCUPY ANY BUILDING SERVED BY SUCH FACILITIES.
22. THE STORMWATER MANAGEMENT SYSTEMS HAVE BEEN DESIGNED ASSUMING THE IMPERVIOUS COVER DEPICTED ON THIS PLAN. IF FUTURE IMPERVIOUS IS ADDED, SEPARATE STORMWATER MANAGEMENT MUST BE DESIGNED AT THAT TIME, AS REQUIRED BY THE TOWNSHIP STORMWATER MANAGEMENT ORDINANCE.
23. 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.
24. 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.
25. CLEANOUTS SHALL BE PLACED AT ALL GRADE CHANGES OR CHANGES IN ALIGNMENT OF THE RAIN WATER CONDUCTORS AND SANITARY SEWER LATERALS.
26. ANY WORK WITH EXISTING ASBESTOS CEMENT SEWER PIPE SHALL CONFORM TO FEDERAL AND STATE REGULATIONS FOR THE CUTTING, HANDLING, AND DISPOSAL OF ASBESTOS.

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	
4 PROP. PARKING SPACES	
(TBR) TO BE REMOVED	
x TW 123.00 BG 123.00 PROP. WALL ELEVATIONS TW = TOP OF WALL BG = BOTTOM GRADE	
PROP. GUIDERAL	
EX. TELE. LINE	
PROP. TELE. LINE	
EX. ELEC. LINE	
PROP. ELEC. LINE	
EX. UTILITY POLE	
PROP. UTILITY POLE	
EX. GUY ANCHOR	
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 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	
EX. WATER VALVE	
W.V. PROP. WATER VALVE	
EX. HYDRANT	
F.H. PROP. HYDRANT	
EX. MANHOLE	
PROP. MANHOLE	

GRADING & UTILITIES PLAN

SCALE: 1"=30'

30 0 15 30 60

GRAPHIC SCALE
1 inch = 30 feet

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AMENDED FINAL
GRADING & UTILITIES PLAN

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE
WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	05/11/15
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SHEET	07 OF 21

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RECEIVING SURFACE WATERS – 102.8(f)(5)

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

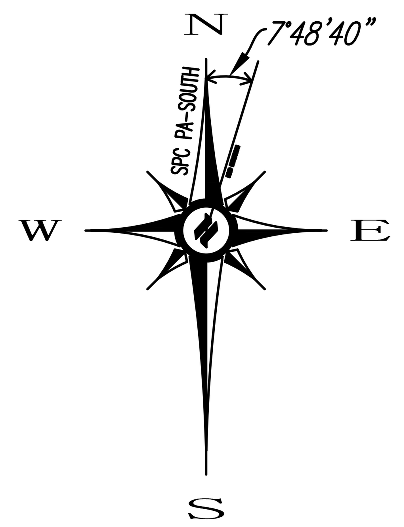
LITTLE VALLEY CREEK IN THE VALLEY CREEK WATERSHED: A EXCEPTIONAL VALUE (EV) WATER COURSE

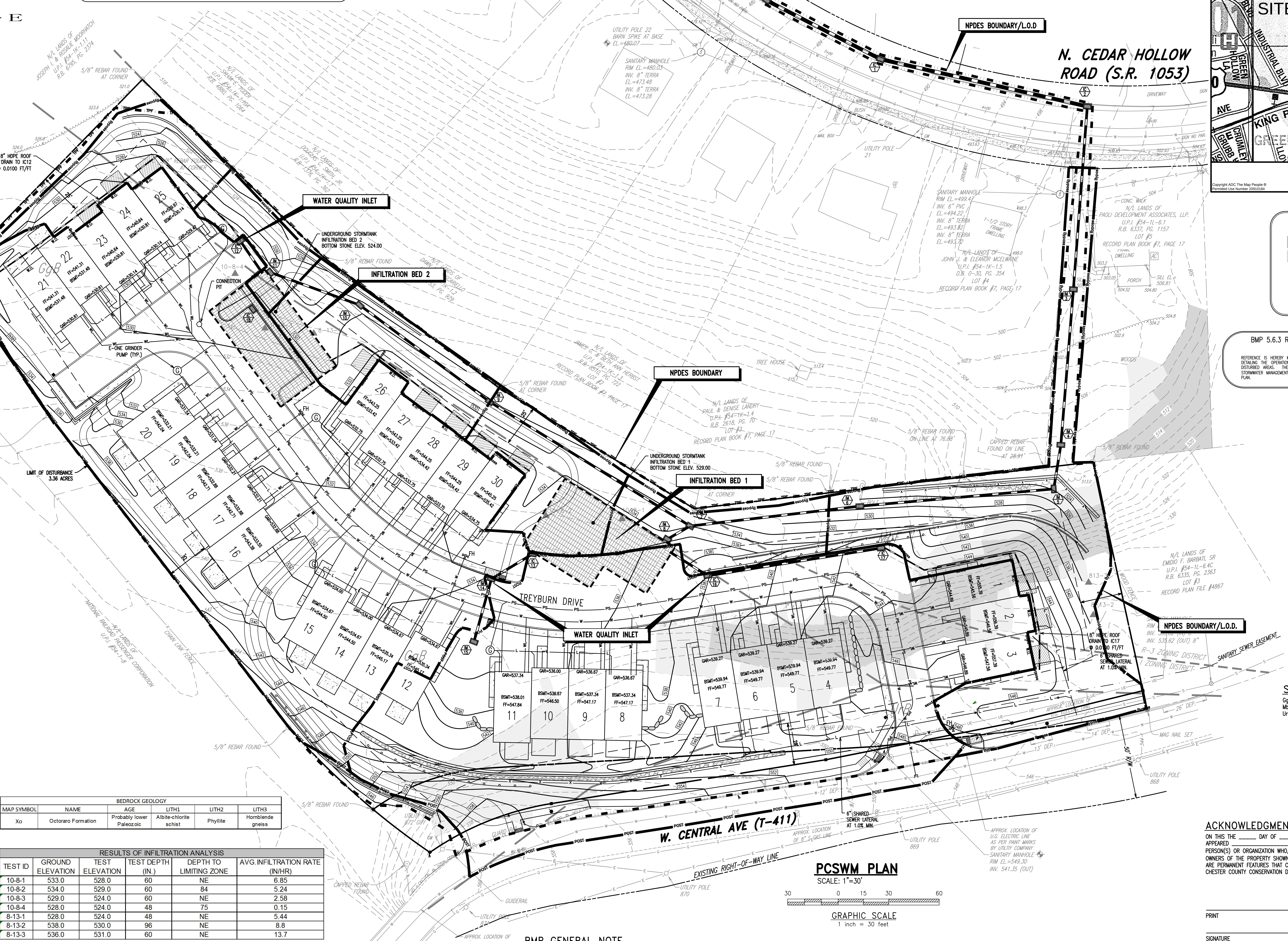
SURFACE WATERS NOTE

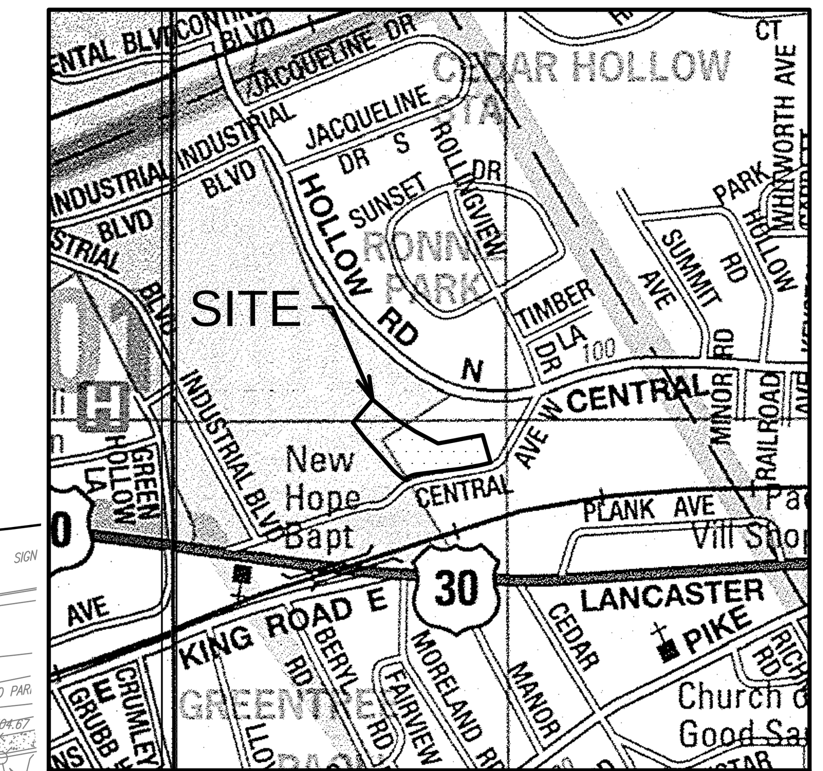
1. THE SITE IS SITUATED WITHIN THE LITTLE VALLEY CREEK WATERSHED AND WILL DISCHARGE TO AN EXISTING INLET WITHIN CEDAR HOLLOW ROAD PEAK FLOWS AND THE NECESSARY VOLUME REDUCTIONS ARE PROVIDED TO THIS POINT OF INTEREST.

APPLICANT/RESPONSIBLE PARTY

GRAYS INVESTMENT PROPERTIES, LP.
1595 PAOLI PIKE, SUITE 202
WEST CHESTER, PA 19380







LOCATION MAP
SCALE: 1" = 800'

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NATURAL SENSITIVE RESOURCE LEGEND

STEEP SLOPES 25%+ = 0 AC.**

STEEP SLOPES 15% TO 25% = 0 AC.**

**ALL STEEP SLOPES DEPICTED ON THIS SITE ARE CATEGORIZED AS MAN-MADE AND NOT NATURAL

STORMWATER BMP LEGEND

BMP 6.4.3: SUBSURFACE INFILTRATION BED
BMP 6.6.4: WATER QUALITY FILTERS

BMP 5.6.3 RE-VEGETATE AND RE-FOREST DISTURBED AREAS, USING NATIVE SPECIES

REFERENCE IS HEREBY MADE TO THE LANDSCAPE PLAN, SHEETS LP1.1 AND LP1.2, FOR PURPOSES OF DETAILING THE OPERATION AND MAINTENANCE OF NON-STRUCTURAL BMP RE-VEGETATE AND RE-FOREST DISTURBED AREAS. THE LANDSCAPE PLAN SHALL BE CONSIDERED PART OF THE POST CONSTRUCTION STORMWATER MANAGEMENT (PCSM) DESIGN FOR THIS PROJECT AND SHALL BE RECORDED WITH THE PCSM PLAN.

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
EXISTING CONTOUR
PROPOSED CONTOUR
EXISTING SPOT ELEV.
NEW SPOT ELEV.
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
PROP. ELEC. LINE
EX. UTILITY POLE
PROP. UTILITY POLE
EX. GUY ANCHOR
EX. GAS LINE
PROP. GAS LINE
EX. GAS VALVE
PROP. GAS VALVE
EX. STORM SEWER LINE
PROP. STORM SEWER LINE
EX. STORM INLET
PROP. STORM INLET
PROP. STORM INLET ID
PROP. SEEPAGE BED
EX. SANITARY SEWER LINE
PROP. SAN. SEWER LINE
PROP. SAN. SEWER LATERAL
PROP. SANITARY MH. ID
EX. WATER LINE
PROP. WATER LINE
PROP. WATER LATERAL
PROP. FIRE WATER LINE
EX. WATER VALVE
PROP. WATER VALVE
EX. HYDRANT
PROP. HYDRANT
EX. MANHOLE
PROP. MANHOLE

STEEP LEGEND

STEEP SLOPES 30%+
STEEP SLOPES 20% TO 30%

BEDROCK GEOLOGY					
MAP SYMBOL	NAME	AGE	LITH1	LITH2	LITH3
Xo	Octoraro Formation	Probably lower Paleozoic	Albite-chlorite schist	Phyllite	Hornblende gneiss

RESULTS OF INFILTRATION ANALYSIS					
TEST ID	GROUND ELEVATION	TEST ELEVATION	TEST DEPTH (IN.)	DEPTH TO LIMITING ZONE	AVG.INFILTRATION RATE (IN/HR)
10-8-1	533.0	528.0	60	NE	6.85
10-8-2	534.0	529.0	60	84	5.24
10-8-3	529.0	524.0	60	NE	2.58
10-8-4	528.0	524.0	48	75	0.15
8-13-1	528.0	524.0	48	NE	5.44
8-13-2	538.0	530.0	96	NE	8.8
8-13-3	536.0	531.0	60	NE	13.7

THIS SHEET TO BE RECORDED

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:

THE LOCATION AND SEVERITY OF THE BMP'S FAILURE AND ANY POLLUTION EVENTS.

ALL STEPS TAKEN TO REDUCE, ELIMINATE AND PREVENT THE RECURRENCE OF THE NON-COMPLIANCE.

THE TIME FRAME TO CORRECT THE NON-COMPLIANCE, INCLUDING THE EXACT DATES WHEN THE ACTIVITY WILL RETURN TO COMPLIANCE.

PCSWM PLAN

SCALE: 1"=30'

30 0 15 30 60

GRAPHIC SCALE
1 inch = 30 feet

Stormwater BMP Information Chart 5.B

Proposed Infiltration BMP(s) (site specific)		Infiltration Information: Measured Infiltration Rate (in./hr.)	Factor of Safety (2 min.)	Design Infiltration Rate (in./hr.)	Dewatering Time[1] (hrs.)	Elevation Soils, Water Table, Rock[2]	Drainage Information: Total Drainage Area to BMP (sq. ft)	Total Impervious Drainage Area to BMP (sq. ft.)	Infiltration BMP Surface Area (sq. ft.)	Total Drainage Area Loading Ratio Ŧ (8:1 Max)	Impervious Area Loading Ratio (5:1 Max)	Volume of Runoff Tributary to BMP During the 2yr/24hr Design (cf)	BMP Information: Volume to be Infiltrated or Managed[5] (cf)	Infil. Elevation Top of Bed/ Basin[3]	Infil. Elevation Bottom of Bed[3]	Elevation of Infiltration Test[4]	Elevation of E&S Sediment Basin Bottom (if applies)
BMP 6.4.3	Subsurface Infiltration Bed																
	Infiltration Bed 1	2.99	2	1.50	22	527.0 (2')	52,438	36,497	3,263	16	11	53,447	9,615	532.67	529.0	529.0	n/a
	Infiltration Bed 2	3.74	2	1.87	19	>2'	54,100	40,181	2,788	19	14	41,287	10,451	527.67	524.0	524.0	n/a

SOILS CLASSIFICATIONS

GgB	GLENELG SILT LOAM, 3 TO 8 PERCENT SLOPES
MbF	MANOR LOAM, 25 TO 60 PERCENT SLOPES, VERY STONY
UrB	URBAN LAND, 0 TO 8 PERCENT SLOPES

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: ___________________________

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REV.	DATE	DESCRIPTION
8		
7	04/11/17	REVISED PER TOWNSHIP ENGINEER COMMENTS
6	02/09/17	REVISED FOR WALKING PATH RELOCATION
5	02/10/16	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED JANUARY 29,2016
4	01/25/15	REVISED PER CCCD REVIEW LETTER DATED JANUARY 20, 2016
3	12/18/15	REVISED PER TOWNSHIP REVIEWS
2	09/21/15	REVISED PER TOWNSHIP REVIEWS
1	07/27/15	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED JULY 2, 2015

AMENDED FINAL PCSWM PLAN

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	05/11/15
SCALE:	1"=30'
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	2708
CAD FILE:	05 PCSWM PLAN.dwg
PLOTTED:	04/11/17
DRAWING NO.:	C03.2
SHEET	08 OF 21

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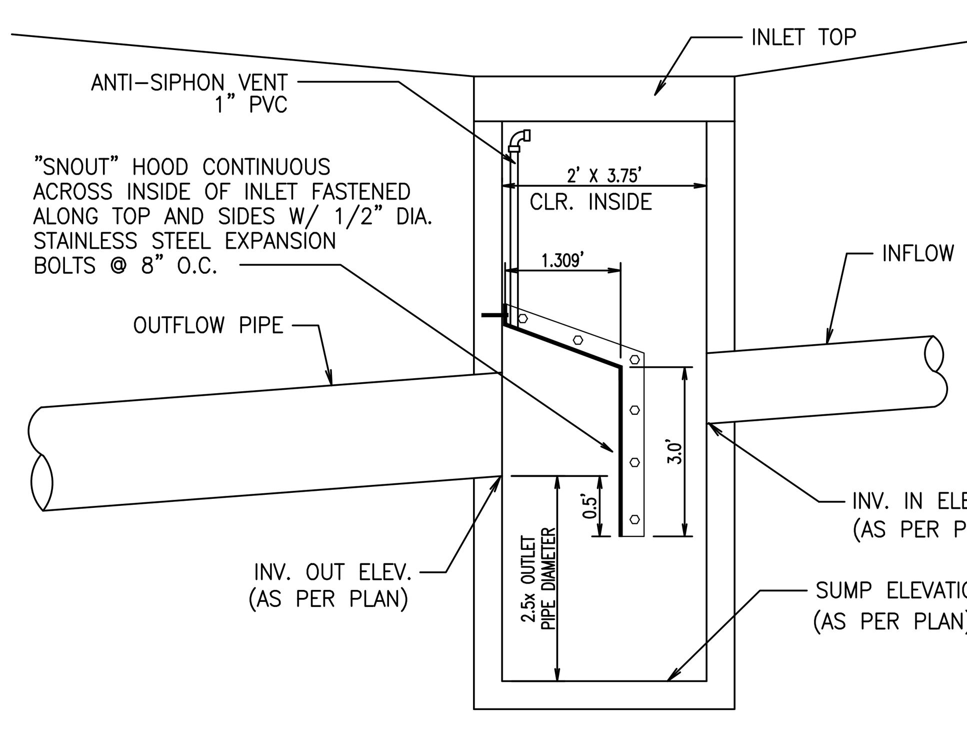
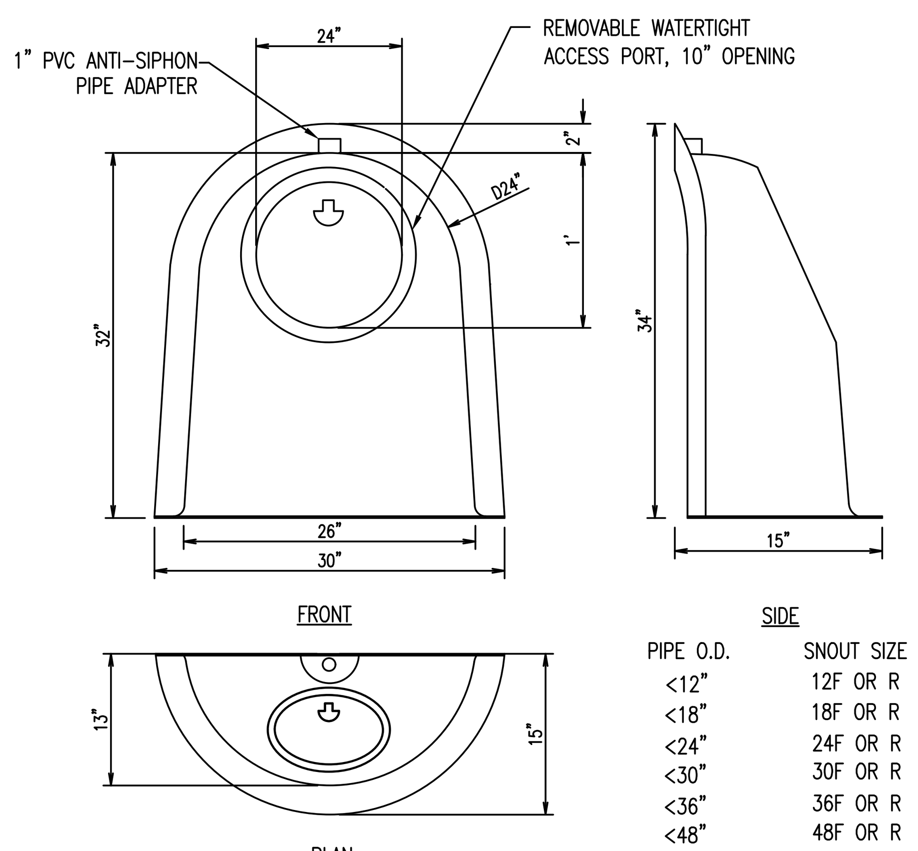
BMP 6.6.4: WATER QUALITY FILTERS

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.



NOTE:
INLETS IM7 & IM3 TO BE FITTED WITH OIL & DEBRIS STOP.

WATER QUALITY STRUCTURE DETAIL
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)

NOTE:
1. DIMENSIONS SHOWN FOR 24F 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.

24F SNOUT OIL & DEBRIS STOP
NOT TO SCALE

STORMWATER WATER QUALITY STRUCTURE 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; AND
   E. TRANSPORT AND DISPOSAL RECORDS OF REMOVED PRODUCT(S).

3) PER MANUFACTURER RECOMMENDATION, THE STRUCTURE SHALL BE CLEANED WHEN THE SUMP IS HALF FULL. FOR IC12, IM14, AND IC16, THE SUMP IS 3.12 FEET DEEP AND SHOULD THEREFORE BE CLEANED OUT WHEN 1.5 FEET OF MATERIAL COLLECTS IN THE SUMP.

4) 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.

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.

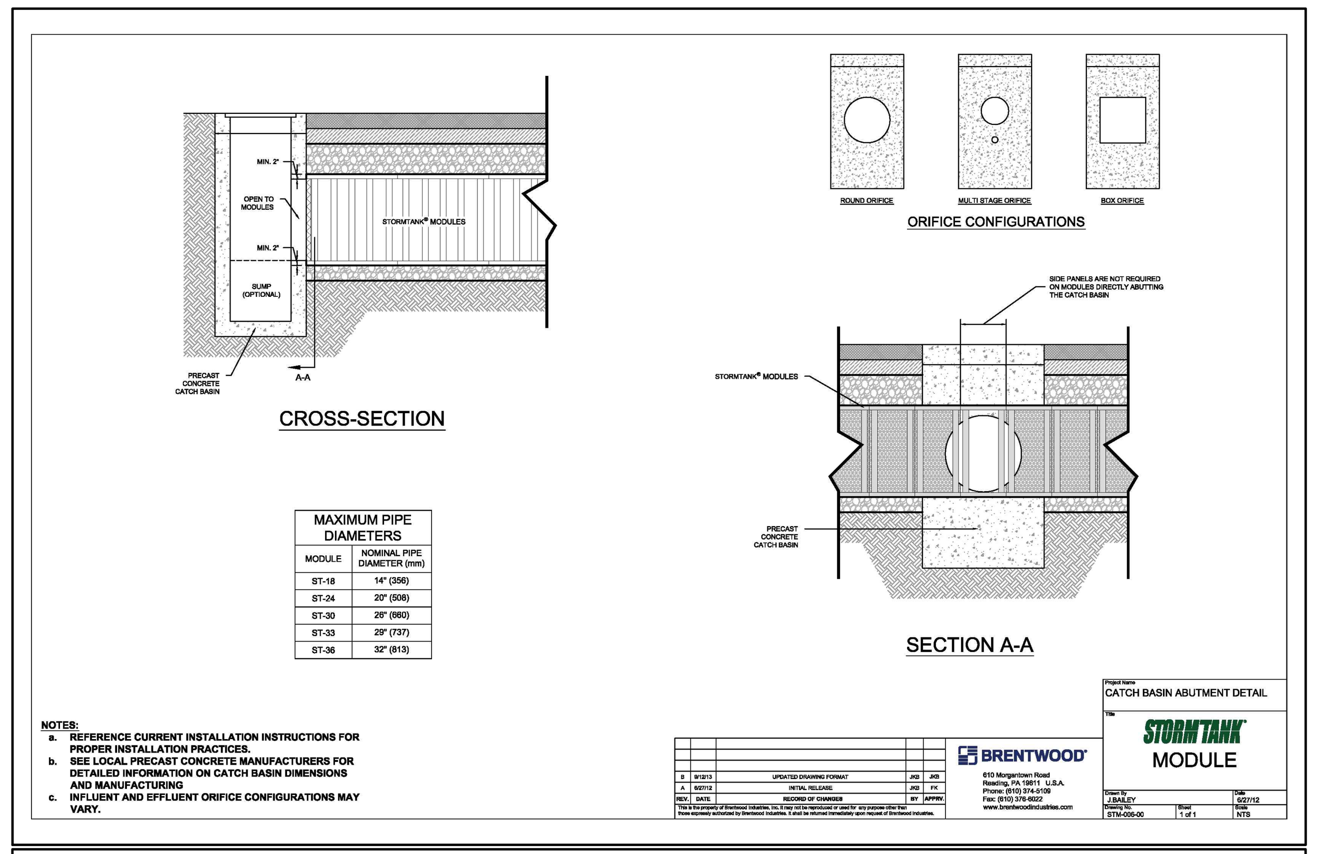
6) THE OWNER SHALL PERMIT THE TOWNSHIP OFFICIALS AND/OR THEIR AGENTS TO ENTER THE PROPERTY TO INSPECT THE STORMWATER WATER QUALITY STRUCTURE AND TO SAMPLE ANY DISCHARGE OF STORMWATER.

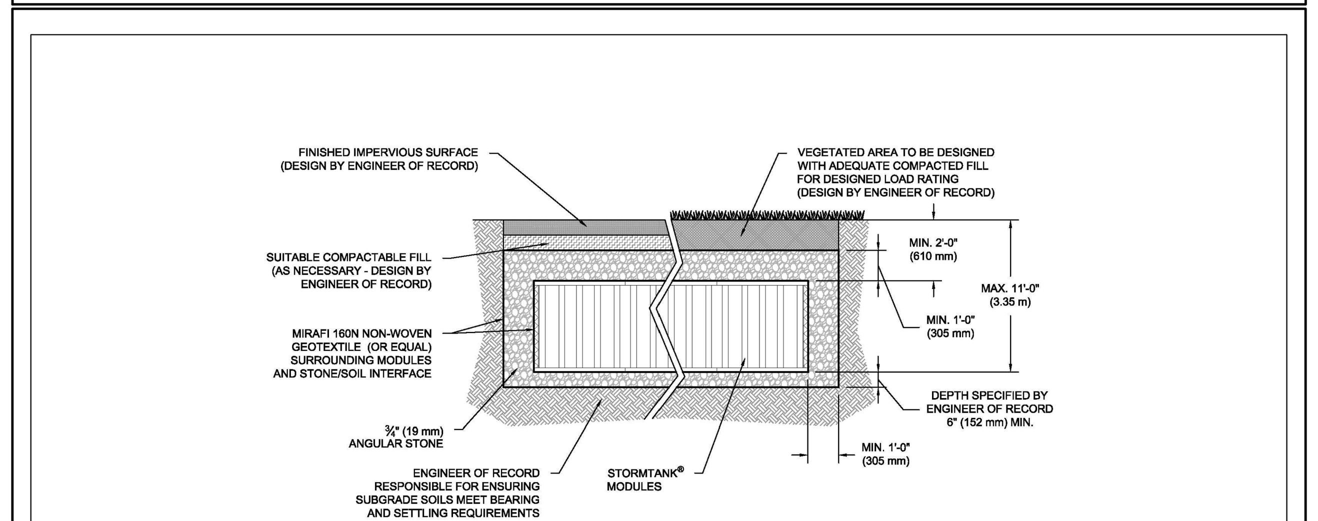
SNOUT INLET SCHEDULE	
INLET	SIZE
IC12	18F
IM14	18F
IC16	18F

THIS SHEET TO BE RECORDED

BMP 6.4.3: SUBSURFACE 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.





STORM TANK	MODULE SIZE	NUMBER OF MODULES	LENGTH	WIDTH	MODULE INVERT	LEVELING BED EL.	BASIN SLOPE	SIDE BACKFILL	TOP BACKFILL	TOTAL BED LENGTH	TOTAL BED WIDTH
BED 1A	30"H	500	75'	30'	529.50	529.00	0.0000	1'	1'	77'	31'
BED 1B	30"H	150	45'	15'	529.50	529.00	0.0000	1'	1'	47'	16'
BED 2	30"H	598	69'	39'	524.50	524.00	0.0000	1'	1'	71'	41'

NOTE: ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED.

NOTES:
a. REFERENCE CURRENT INSTALLATION INSTRUCTIONS FOR PROPER INSTALLATION PRACTICES.

TYPICAL SINGLE STK. INFILTRATION BASIN CROSS-SECTION DETAIL — BRENTWOOD — STORMTANK MODULE

NOTE: STORMTANK SUPPLIER OR REPRESENTATIVE SHALL PROVIDE CONSTRUCTION OVERSIGHT OF THE SYSTEM INSTALLATION AND PROVIDE CERTIFICATION TO THE TOWNSHIP THAT THE SYSTEM IS INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.

STORMWATER INFILTRATION BED CONSTRUCTION SPECIFICATIONS:

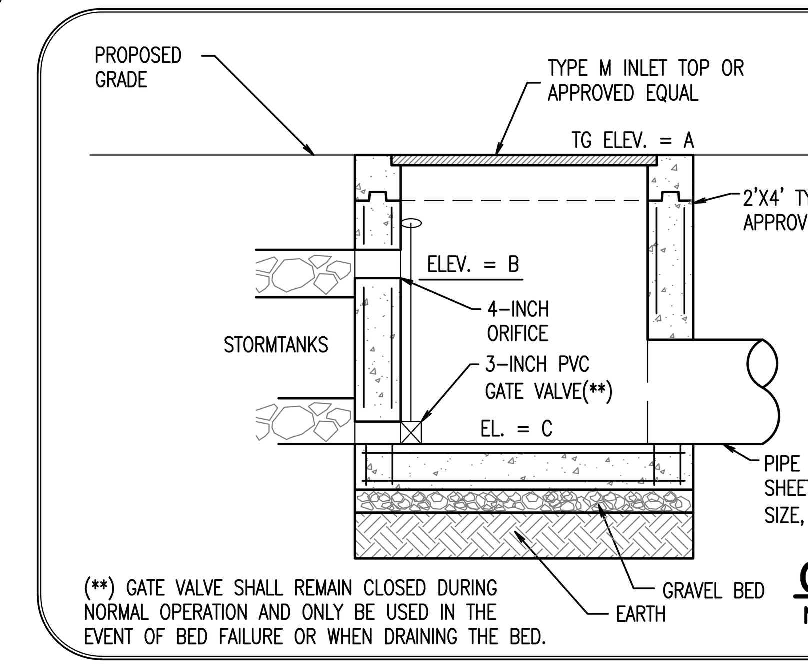
1. PERIMETER SEDIMENT CONTROL DEVICES MUST BE INSTALLED PRIOR TO CLEARING AND GRUBBING ACTIVITIES. AREAS WHERE THE BASIN AND EMBANKMENT IS TO BE PLACED SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIAL.
2. HEAVY EQUIPMENT AND TRAFFIC SHALL BE RESTRICTED FROM TRAVELING OVER THE PROPOSED LOCATION OF THE INFILTRATION BASIN TO MINIMIZE COMPACTION OF THE SOIL.
3. THE BOTTOM OF ALL INFILTRATION BMP'S SHALL BE LEVEL, UNDISTURBED OR UNCOMPACTED SUBGRADE SCARIFIED TO A DEPTH OF SIX (6) INCHES.
4. EXCAVATE INFILTRATION BASIN TO WITHIN TWO FEET OF FINAL ELEVATION OF THE BASIN FLOOR. FINAL EXCAVATION TO FINISHED GRADE SHALL BE DEFERRED UNTIL ALL UPGRADIENT-DISTURBED AREAS HAVE BEEN STABILIZED. THE BASIN BOTTOM AND SIDE EMBANKMENTS SHALL BE ROUGHENED WERE SHEARED AND SEALED BY HEAVY EQUIPMENT.
5. ALL BASIN EXCAVATION EQUIPMENT SHALL BE PERFORMED LIGHTWEIGHT, RUBBER-TIRED EQUIPMENT.
6. FOLLOWING COMPLETION OF THE FINAL GRADING, THE BOTTOM OF THE BASIN 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 BASIN 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.
9. BASIN EMBANKMENTS TO BE INSPECTED BY THE TOWNSHIP ENGINEER.

CONSTRUCTION SEQUENCE (STORMTANK SYSTEM)

1. PROTECT INFILTRATION BASIN AREA FROM COMPACTION PRIOR TO INSTALLATION.
2. IF POSSIBLE, INSTALL INFILTRATION BASIN DURING LATER PHASES OF SITE CONSTRUCTION TO PREVENT SEDIMENTATION AND/OR DAMAGE FROM CONSTRUCTION ACTIVITY. AFTER INSTALLATION, PREVENT SEDIMENT-LADEN WATER FROM ENTERING INLETS AND PIPES.
3. INSTALL AND MAINTAIN PROPER EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION AS SHOWN ON THE EROSION AND SEDIMENTATION CONTROL PLAN AND ALSO DESCRIBED IN THE OVERALL SITE SEQUENCE OF CONSTRUCTION. **THE FOLLOWING STEPS ARE A GENERAL GUIDE TO THE INSTALLATION OF A STORMTANK SYSTEM. CONTRACTOR SHALL ADHERE TO SPECIFIC MANUFACTURER'S INSTALLATION SPECIFICATIONS.**
4. ASSEMBLE STORMTANK MODULES BY HAND AS SPECIFIED BY MANUFACTURER'S INSTRUCTIONS.
5. EXCAVATE INFILTRATION BED BOTTOM TO A MINIMUM OF 6" BELOW STORMTANK MODULE INVERT ELEVATION TO AN UNCOMPACTED SUBGRADE FREE FROM ROCKS AND DEBRIS. DO NOT COMPACT SUBGRADE.
6. INSTALL GEOTEXTILE FABRIC. FABRIC SHALL BE PLACED PER MANUFACTURER'S RECOMMENDATIONS.
7. AFTER THE GEOTEXTILE IS SECURED, PLACE A MINIMUM 6" STONE LEVELING BED.
8. INSTALL MODULES. UPON COMPLETION, WRAP THE MODULES IN GEOTEXTILE FABRIC AND SECURE.
9. INSTALL OUTLET CONTROL STRUCTURES.
10. INSTALL STONE SIDE AND TOP BACKFILL.
11. UPON COMPLETION OF TOP BACKFILLING, WRAP THE SYSTEM IN GEOTEXTILE FABRIC.
12. PLACE FILL ONTO THE GEOTEXTILE. TOPSOIL, SEED AND STABILIZE TOPSOIL. (VEGETATE IF APPROPRIATE WITH NATIVE PLANTINGS.)
13. DO NOT REMOVE INLET PROTECTION OR OTHER EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.

MAINTENANCE

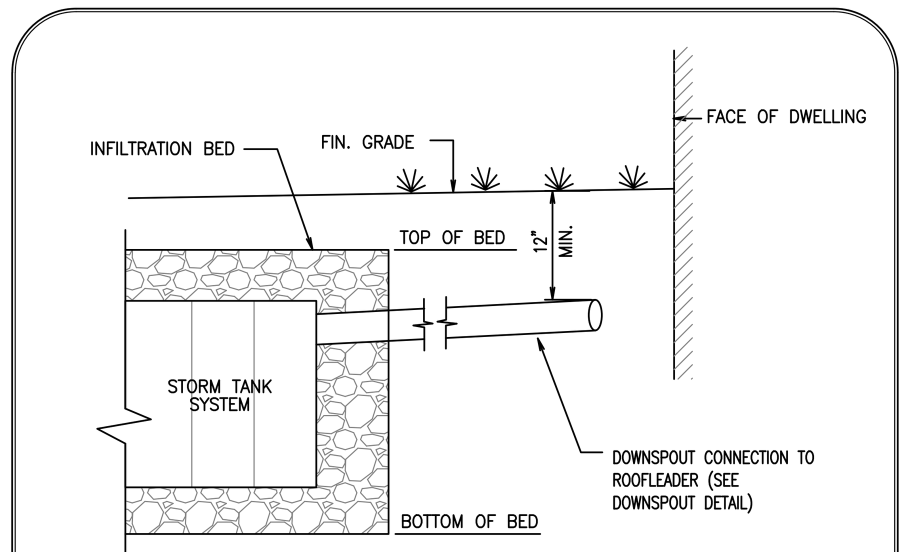
1. CATCH BASINS AND INLETS (UPGRADIENT OF INFILTRATION BASIN) SHOULD BE INSPECTED AND CLEANED AT LEAST ONCE PER YEAR AND AFTER MAJOR RUNOFF EVENTS.
2. THE VEGETATION ALONG THE SURFACE OF THE INFILTRATION BASIN SHOULD BE MAINTAINED IN GOOD CONDITION, AND ANY BARE SPOTS REVEGETATED AS SOON AS POSSIBLE.
3. VEHICLES SHOULD NOT BE PARKED OR DRIVEN ON AN INFILTRATION BASIN, AND CARE SHOULD BE TAKEN TO AVOID EXCESSIVE COMPACTION BY MOWERS.
4. INSPECT THE BASIN 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 BERMS.
6. MOW ONLY AS APPROPRIATE FOR VEGETATIVE COVER SPECIES.
7. REMOVE ACCUMULATED SEDIMENT FROM BASIN AS REQUIRED. RESTORE ORIGINAL CROSS SECTION AND INFILTRATION RATE. PROPERLY DISPOSE OF SEDIMENT.



OUTLET STRUCTURES			
	TOP OF GRATE	4" ORIFICE ELEV.	3" ORIFICE & INLET BOTTOM
	A	B	C
BED 1	535.50	532.67	529.00
BED 2	529.00	527.67	524.00

(**) GATE VALVE SHALL REMAIN CLOSED DURING NORMAL OPERATION AND ONLY BE USED IN THE EVENT OF BED FAILURE OR WHEN DRAINING THE BED.

OUTLET STRUCTURE DETAIL
NO SCALE



NOTE:
1. PVC MAY BE SUBSTITUTED WITH AN APPROVED EQUAL MATERIAL

TYP. DOWNSPOUT CONNECTION DETAIL
NO SCALE

HIGH QUALITY WATERSHED NOTES:

- THE PROJECT IS LOCATED IN A HIGH QUALITY WATERSHED. THE SPECIAL PROTECTION WATERS IMPLEMENTATION HANDBOOK BEST MANAGEMENT PRACTICES APPLY TO ALL NEW NON-AGRICULTURAL ACTIVITIES/PROJECTS RESULTING IN AN EARTH DISTURBANCE ON HIGH QUALITY OR EXCEPTIONAL VALUE WATERSHEDS. IMPLEMENTATION OF THESE PRACTICES AND THE ADDITIONAL REQUIREMENTS FOR SPECIFIC ACTIVITIES LISTED IN THE HANDBOOK PLUS SELECTED STORMWATER MANAGEMENT PRACTICES DESCRIBED IN SECTION TWO OF THE HANDBOOK CONSTITUTE APPROPRIATE, REASONABLE AND COST EFFECTIVE BEST MANAGEMENT PRACTICES FOR NON-POINT SOURCE CONTROL. PERSONS ENGAGED IN THESE LAND DISTURBANCE ACTIVITIES ARE EXPECTED TO COMPLY WITH BOTH THE GENERAL AND PROGRAM SPECIFIC REQUIREMENTS LISTED IN THIS APPENDIX.
- THIS PROJECT IS IN A HIGH QUALITY STREAM DESIGNATION. EXTREME CARE SHOULD BE EXERCISED IN ALL DISTURBANCE ACTIVITIES TO PREVENT DEGRADATION TO THE WATERS OF THE COMMONWEALTH.
- BECAUSE THIS PROJECT IS IN A SPECIALLY PROTECTED HIGH QUALITY OR EXCEPTIONAL VALUE WATERSHED, UPON COMPLETION OR TEMPORARY CESSATION OF EARTH DISTURBANCE ACTIVITIES, THE PROJECT SITE MUST BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION.

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 OR WHEN THE FACILITY DOES NOT DEWATER WITHIN 72 HOURS.

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.

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.

   THE PERMITTEE OR CO-PERMITTEE SHALL BE RESPONSIBLE FOR LONG-TERM OPERATION AND MAINTENANCE OR REPLACEMENT 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.
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. THE PENNSYLVANIA TITLE 25, CHAPTER 93 CLASSIFICATION FOR THE RECEIVING WATERS OF THE COMMONWEALTH. LITTLE VALLEY CREEK WITHIN WILLISTOWN TOWNSHIP IS CLASSIFIED AS HIGH QUALITY EXCEPTIONAL VALUE (HQ EV).
9. DLH HAS PROPOSED TO UTILIZE 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 BELOW GROUND INFILTRATION FACILITIES WHICH WILL ALLOW INFILTRATED RUNOFF TO COOL PRIOR TO REACHING SURFACE WATERS.

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 HOA SHALL BE RESPONSIBLE FOR THE OPERATIONS AND MAINTENANCE OF ALL STORMWATER FACILITIES INCLUDING:
   ~ INFILTRATION BEDS 1 AND 2
   ~ ROADWAY INLETS AND PIPING
   ~ WATER QUALITY INSERTS

   ALL STORMWATER FACILITIES LISTED ABOVE ARE IDENTIFIED ON THE STORMWATER PLAN CONTAINED ON THE PCSM PLANS.
3. A BLANKET EASEMENT WILL BE PROVIDED OVER THE ENTIRE SITE AND EACH LOT TO ALLOW THE TOWNSHIP ACCESS TO ANY STORMWATER MANAGEMENT AREA SHOULD THE PROPERTY OWNER FAIL TO MAINTAIN SAID AREAS PROPERLY.
2. THE APPLICANT SHALL BE RESPONSIBLE FOR COMPLETING AN AS-BUILT SURVEY OF ALL STORMWATER BMP'S INCLUDED IN THE APPROVED PROJECT PLAN.
3. THE TOWNSHIP ENGINEER SHALL RECEIVE COPIES OF THE AS-BUILT PLANS IN DIGITAL CAD FORMAT (OR SIMILAR DIGITAL DATA).
4. THE OWNERS OF THE STORMWATER FACILITIES SHALL PREPARE AND SUBMIT A REPORT TO THE TOWNSHIP ENGINEER DESCRIBING ALL MAINTENANCE ACTIVITIES AND INSPECTIONS ANNUALLY.
5. A COPY OF THE STORMWATER FACILITY OPERATIONS AND MAINTENANCE PLAN SHALL BE SUBMITTED TO THE TOWNSHIP ENGINEER.
6. 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.
7. 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.

BMP 5.6.3 RE-VEGETATE AND RE-FOREST DISTURBED AREAS, USING NATIVE SPECIES

REFERENCE IS HEREBY MADE TO THE LANDSCAPE PLAN, SHEETS LP1.1 AND LP1.2, FOR PURPOSES OF DETAILING THE OPERATION AND MAINTENANCE OF NON-STRUCTURAL BMP RE-VEGETATE AND RE-FOREST DISTURBED AREAS. THE LANDSCAPE PLAN SHALL BE CONSIDERED PART OF THE POST CONSTRUCTION STORMWATER MANAGEMENT (PCSM) DESIGN FOR THIS PROJECT AND SHALL BE RECORDED WITH THE PCSM PLAN.

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:

INLETS AND DRAINS (HOA RESPONSIBILITY)

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.

U.G. STORAGE SYSTEMS (HOA RESPONSIBILITY)

INSPECTION: UNDERGROUND INFILTRATION SYSTEMS SHALL BE INSPECTED QUARTERLY AND AFTER MAJOR RAINFALL EVENTS (2"+) FOR THE FIRST TWO (2) YEARS AND 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 MANHOLE 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 48 HOURS.

MAINTENANCE: REMOVE ANY ACCUMULATED SEDIMENT AND DEBRIS FROM THE MANHOLE 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.

SNOUT WATER QUALITY INLETS (HOA RESPONSIBILITY)

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 TOWNSHIP OFFICIALS AND/OR THEIR AGENTS TO ENTER THE PROPERTY TO INSPECT THE STORMWATER WATER QUALITY STRUCTURE AND TO SAMPLE ANY DISCHARGE OF STORMWATER.

STREET SWEEPING (HOA RESPONSIBILITY)

THE HOMEOWNERS ASSOCIATION/PROPERTY MANAGER SHALL PROVIDE STREET SWEEPING FOR ALL PAVED AREAS, INCLUDING THE STREET CARTWAY AND OFFSTREET PARKING AREAS, WITH A VACUUM FILTER QUARTERLY OR ON A MORE REGULAR BASIS IF DEEMED NECESSARY DURING ANNUAL INSPECTIONS BMPs BY THE PROFESSIONAL ENGINEER.

SITE SOILS

MAP UNIT: GgB—GLENELG SILT LOAM, 3 TO 8 PERCENT SLOPES

THE GLENELG COMPONENT MAKES UP 92 PERCENT OF THE MAP UNIT. SLOPES ARE 3 TO 8 PERCENT. THIS COMPONENT IS ON NEARLY LEVEL TO STEEP DISSECTED HILLSLOPES, HILLS. 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 2E. THIS SOIL DOES NOT MEET HYDRIC CRITERIA.

MAP UNIT: MbF—MANOR LOAM, 25 TO 60 PERCENT SLOPES, VERY STONY

THE MANOR, VERY STONY COMPONENT MAKES UP 100 PERCENT OF THE MAP UNIT. SLOPES ARE 25 TO 60 PERCENT. THIS COMPONENT IS ON NEARLY LEVEL TO VERY STEEP DISSECTED HILLSLOPES, UPLANDS. 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. BELOW THIS THIN ORGANIC HORIZON THE ORGANIC MATTER CONTENT IS ABOUT 2 PERCENT. NONIRRIGATED LAND CAPABILITY CLASSIFICATION IS 7S. THIS SOIL DOES NOT MEET HYDRIC CRITERIA.

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

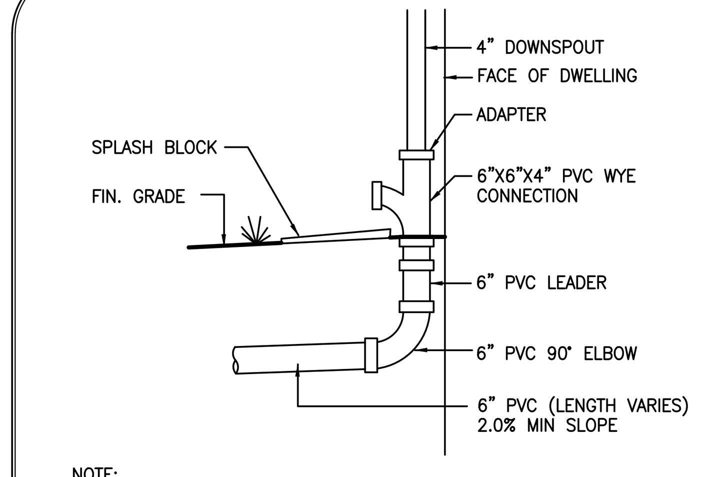
IDENTIFYING AND RESOLVING CHARACTERISTICS, THAT RENDER SOIL TYPES POORLY SUITED AS TOPSOIL.

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.



NOTE:
1. PVC MAY BE SUBSTITUTED WITH AN APPROVED EQUAL MATERIAL
2. LEAF GUARDS TO BE INSTALLED ON ALL GUTTER DOWNSPOUTS

DOWNSPOUT CONNECTION DETAIL
NOT TO SCALE

RECEIVING SURFACE WATERS – 102.8(f)(5)

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

LITTLE VALLEY CREEK IN THE VALLEY CREEK WATERSHED: A EXCEPTIONAL VALUE (EV) WATER COURSE

SURFACE WATERS NOTE

1. THE SITE IS SITUATED WITHIN THE LITTLE VALLEY CREEK WATERSHED AND WILL DISCHARGE TO AN EXISTING INLET WITHIN CEDAR HOLLOW ROAD PEAK FLOWS AND THE NECESSARY VOLUME REDUCTIONS ARE PROVIDED TO THIS POINT OF INTEREST.

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

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).

LONG-TERM OPERATION AND MAINTENANCE: – 102.8(j)

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

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

- INSTALLATION OF INFILTRATION BED 1 AND 2
- INSTALLATION OF WATER QUALITY HOODS

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.

VEHICLES SHOULD NOT BE PARKED OR DRIVEN OVER INFILTRATION BMPs.

DLHowell
Civil Engineering & Land Planning
www.DLHowell.com

D.L. Howell & Assoc., Inc.
1250 Wrights Lane
West Chester, PA 19380
Phone: (610) 918-9002
Fax: (610) 918-9003

REV.	DATE	DESCRIPTION
8		
7	04/11/17	REVISED PER TOWNSHIP ENGINEER COMMENTS
6	02/09/17	REVISED FOR WALKING PATH RELOCATION
5	02/10/16	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED JANUARY 29,2016
4	01/25/15	REVISED PER CCCD REVIEW LETTER DATED JANUARY 20, 2016
3	12/18/15	REVISED PER TOWNSHIP REVIEWS
2	09/21/15	REVISED PER TOWNSHIP REVIEWS
1	07/27/15	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED JULY 2, 2015

AMENDED FINAL
PCSWM DETAILS

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	05/11/15
SCALE:	AS SHOWN
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	2708
CAD FILE:	05 PCSWM PLAN.dwg
PLOTTED:	04/11/17
DRAWING NO.:	C03.3
SHEET	09 OF 21

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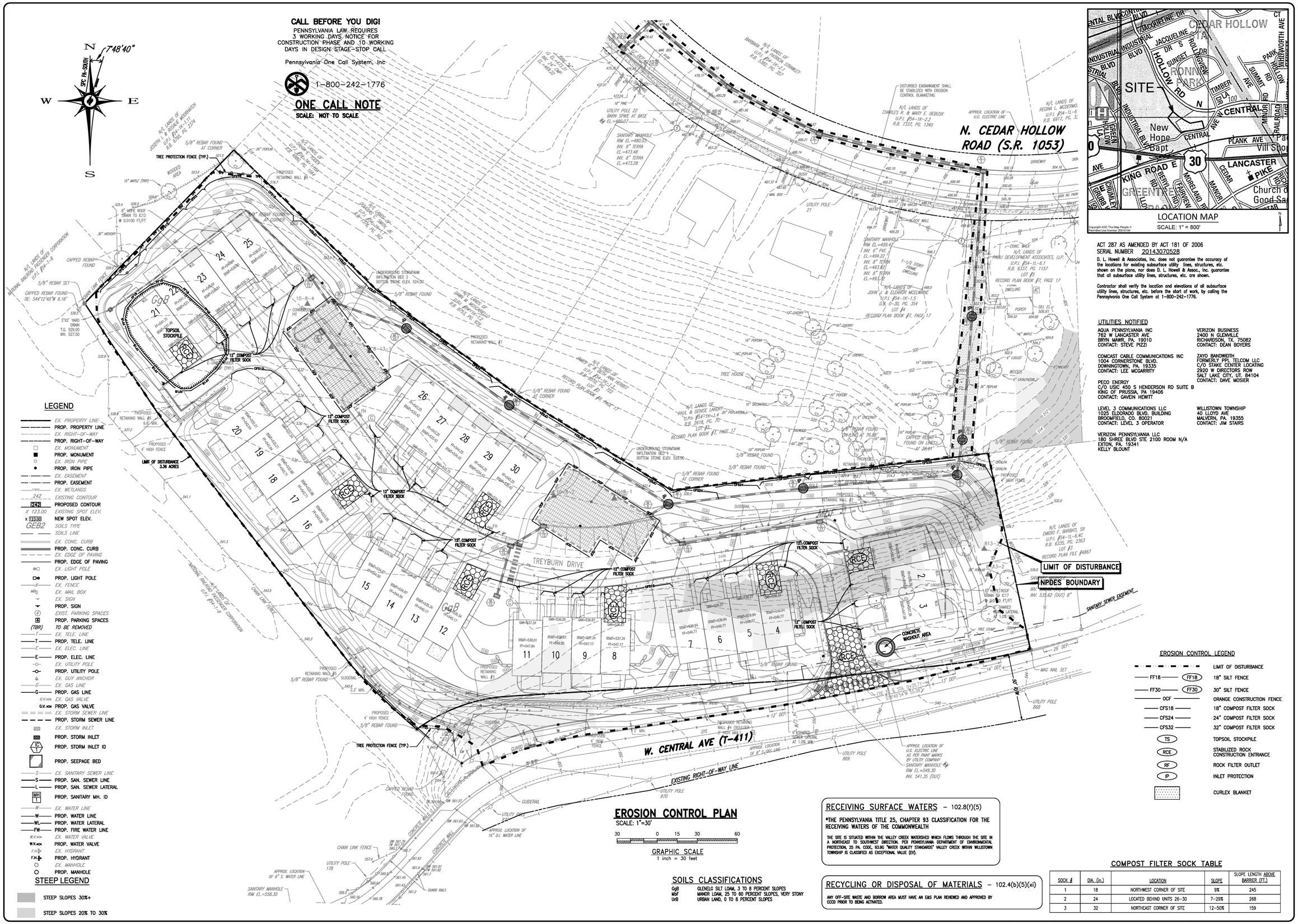
CALL BEFORE YOU DIG!
PENNSYLVANIA LAW REQUIRES
3 WORKING DAYS NOTICE FOR
CONSTRUCTION PHASE AND 10 WORKING
DAYS IN DESIGN STAGE–STOP CALL

Pennsylvania One Call System, Inc

1-800-242-1776

ONE CALL NOTE
SCALE: NOT TO SCALE



LOCATION MAP
SCALE: 1" = 800'

ACT 287 AS AMENDED BY ACT 181 OF 2006
SERIAL NUMBER 20143070528

D. L. Howell & Associates, Inc. does not guarantee the accuracy of the locations for existing subsurface utility lines, structures, etc. shown on the plans, nor does D. L. Howell & Assoc., Inc. guarantee that all subsurface utility lines, structures, etc. are shown.

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

UTILITIES NOTIFIED

AQUA PENNSYLVANIA INC
762 W LANCASTER AVE
BRYN MAWR, PA. 19010
CONTACT: STEVE PIZZI

VERIZON BUSINESS
2400 N GLENVILLE
RICHARDSON, TX. 750B2
CONTACT: DEAN BOYERS

COMCAST CABLE COMMUNICATIONS INC
1004 CORNERSTONE BLVD.
DOWNINGTOWN, PA. 19335
CONTACT: LEE MCGARRITY

ZAYO BANDWIDTH
FORMERLY PPL TELCOM LLC
C/O STAKE CENTER LOCATING
2920 W DIRECTORS ROW
SALT LAKE CITY, UT. 84104
CONTACT: DAVE MOSIER

PECO ENERGY
C/O USIC 450 S HENDERSON RD SUITE B
KING OF PRUSSIA, PA 19406
CONTACT: GAVEIN HEWITT

LEVEL 3 COMMUNICATIONS LLC
1025 ELDORADO BLVD. BUILDING
BROOMFIELD, CO. 80021
CONTACT: LEVEL 3 OPERATOR

WILLISTOWN TOWNSHIP
40 LLOYD AVE
MALVERN, PA. 19355
CONTACT: JIM STAIRS

VERIZON PENNSYLVANIA LLC
180 SHREE BLVD STE 2100 ROOM N/A
EXTON, PA. 19341
KELLY BLOUNT

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 133.00 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
- PROP. SIGN
- EXIST. PARKING SPACES
- PROP. PARKING SPACES
- (TBR) TO BE REMOVED
- EX. TELE. LINE
- PROP. TELE. LINE
- EX. ELEC. LINE
- PROP. ELEC. LINE
- EX. UTILITY POLE
- PROP. UTILITY POLE
- EX. GUY ANCHOR
- 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
- EX. WATER VALVE
- PROP. WATER VALVE
- EX. HYDRANT
- PROP. HYDRANT
- EX. MANHOLE
- PROP. MANHOLE

STEEP LEGEND

- STEEP SLOPES 30%+
- STEEP SLOPES 20% TO 30%

EROSION CONTROL LEGEND

- LIMIT OF DISTURBANCE
- FF18 — 18" SILT FENCE
- FF30 — 30" SILT FENCE
- OCF — ORANGE CONSTRUCTION FENCE
- CFS18 — 18" COMPOST FILTER SOCK
- CFS24 — 24" COMPOST FILTER SOCK
- CFS32 — 32" COMPOST FILTER SOCK
- TS — TOPSOIL STOCKPILE
- RCE — STABILIZED ROCK CONSTRUCTION ENTRANCE
- RF — ROCK FILTER OUTLET
- IP — INLET PROTECTION
- CURLEX BLANKET

EROSION CONTROL PLAN

SCALE: 1"=30'

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

SOILS CLASSIFICATIONS

GeB	GLENELG SILT LOAM, 3 TO 8 PERCENT SLOPES
MbF	MANOR LOAM, 25 TO 60 PERCENT SLOPES, VERY STONY
UrB	URBAN LAND, 0 TO 8 PERCENT SLOPES

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 THE VALLEY CREEK WATERSHED WHICH FLOWS THROUGH THE SITE IN A NORTHEAST TO SOUTHWEST DIRECTION. PER PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, 25 PA. CODE, 93.9G "WATER QUALITY STANDARDS" VALLEY CREEK WITHIN WILLISTOWN TOWNSHIP IS CLASSIFIED AS EXCEPTIONAL VALUE (EV).

RECYCLING OR DISPOSAL OF MATERIALS – 102.4(b)(5)(xi)

ANY OFF-SITE WASTE AND BORROW AREA MUST HAVE AN E&S PLAN REVIEWED AND APPROVED BY CCCD PRIOR TO BEING ACTIVATED.

COMPOST FILTER SOCK TABLE

SOCK #	DIA. (in.)	LOCATION	SLOPE	SLOPE LENGTH ABOVE BARRIER (FT.)
1	18	NORTHWEST CORNER OF SITE	9%	245
2	24	LOCATED BEHIND UNITS 26–30	7–29%	268
3	32	NORTHEAST CORNER OF SITE	12–50%	159

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REV.	DATE	DESCRIPTION
8	04/11/17	REVISED PER TOWNSHIP ENGINEER COMMENTS
7	02/09/17	REVISED FOR WALKING PATH RELOCATION
6	02/10/16	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER
5	01/25/15	REVISED PER CCCD REVIEW LETTER DATED JANUARY 29,2016
4	12/16/15	REVISED PER TOWNSHIP REVIEWS
3	09/21/15	REVISED PER TOWNSHIP REVIEWS
2	07/27/15	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED JULY 2, 2015
1	DATE	DESCRIPTION

AMENDED FINAL
EROSION CONTROL PLAN

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE
WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	05/11/15
SCALE:	1"=30'
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	2708
CAD FILE:	C7 EROSION CONTROL PLAN.dwg
PLOTTED:	04/11/17
DRAWING NO.:	C04.1
SHEET	10 OF 21

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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. THE CONTRACTOR MUST DEVELOP AND HAVE APPROVED BY THE CHESTER COUNTY CONSERVATION DISTRICT, A SEPARATE EROSION AND SEDIMENTATION CONTROL PLAN FOR EACH SPOIL, BORROW OR OTHER WORK AREA NOT DETAILED IN THE APPROVED PLAN, WHETHER LOCATED WITHIN OR OUTSIDE THE CONSTRUCTION LIMITS.
8. 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.
9. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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.
15. 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.
16. EROSION AND SEDIMENTATION CONTROL INSPECTIONS SHALL BE PERFORMED ON A WEEKLY BASIS AND AFTER EVERY RAIN EVENT.
17. ALL SLOPES STEEPER THAN 3:1 MUST UTILIZE EROSION CONTROL BLANKET (CURLEX BLANKET OR APPROVED EQUAL).
18. IF UNSUITABLE MATERIAL IS ENCOUNTERED DURING CONSTRUCTION, A GEOTECHNICAL ENGINEER SHOULD BE ONSITE FOR RESOLUTIONS TO THE UNSUITABLE SOIL.
19. TEMPORARY TOPSOIL STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET, AND SLOPES MUST BE 2:1 OR FLATTER.
20. 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.
21. ALL PUMPING OF SEDIMENT LADEN WATER OR POTENTIALLY SEDIMENT LADEN WATER SHALL BE THROUGH A SEDIMENT CONTROL BMP, SUCH AS A PUMPED WATER FILTER BAG DISCHARGING OVER NON-DISTURBED AREAS.
22. 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.
23. 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.
24. SEDIMENT TRAPS MUST BE PROTECTED FROM UNAUTHORIZED ACTS OF THIRD PARTIES.
25. 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.
26. 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.
27. AS-BUILT PLANS OF THE STORMWATER BMPS SHALL BE PROVIDED WITHIN SIX MONTHS FOLLOWING THE COMPLETION OF EACH PHASE. THE AS-BUILT PLANS SHALL BE SIGNED AND SEALED BY A PA REGISTERED PROFESSIONAL ENGINEER.
28. A NOTICE OF TERMINATION (N.O.T.) WILL BE REQUIRED TO BE SUBMITTED FOLLOWING APPROVAL OF THE FINAL AS-BUILT PLANS. PRIOR TO ACCEPTING THE N.O.T., THE DEPARTMENT AND/OR CONSERVATION DISTRICT STAFF WILL PERFORM A FINAL INSPECTION TO ENSURE SITE STABILIZATION AND VERIFY ADEQUATE INSTALLATION AND FUNCTION OF STORMWATER BMPS.
29. 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.
30. 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.
31. CLEAN FILL IS DEFINED AS: UNCONTAMINATED, NON-WATER SOLUBLE, NON-DECOMPOSABLE, INERT, SOLID MATERIAL. THE TERM INCLUDES SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT, AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED. (THE TERM "USED ASPHALT" DOES NOT INCLUDE MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESSED FOR RE-USE).
32. 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.
33. 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".
34. 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.
35. 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 CCCD OR MUNICIPALITY 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.
36. 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.
37. ANY CHANGES RECOMMENDED BY ANY REVIEWING BODY OF THE WATERWAY AND WETLAND ENCROACHMENT/IMPACTS THAT WILL AFFECT THE PCSM OR E&S PLANS ASSOCIATED WITH THE WATER OBSTRUCTION OR ENCROACHMENT ACTIVITIES SHOULD HAVE THOSE PLAN UPDATED AND SUBMITTED TO CHESTER COUNTY CONSERVATION DISTRICT.

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. COMPOST FILTER SOCK SHALL BE PLACED DOWNSLOPE OF THE TRENCH AREA WHEN EXCAVATING ADJACENT TO THE RIPARIAN BUFFER ZONE (WATER LINE EXTENSION).
4. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT, PLUG INSTALLATION AND BACKFILLING 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.

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.

SEQUENCE OF CONSTRUCTION:

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. 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. INSTALL STABILIZED ROCK CONSTRUCTION ENTRANCE AS SHOWN AND DETAILED ON THE PLANS. THE ENTRANCE WILL BE CONSTRUCTED AND MAINTAINED AS DESCRIBED ON THE E&S CONTROL PLAN DRAWINGS.
4. STAKE LIMITS OF DISTURBANCE IN THE FIELD PRIOR TO CLEARING OF 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 ORANGE CONSTRUCTION FENCING AROUND INFILTRATION AREAS AS SHOWN ON THE PLANS TO PROTECT FROM COMPACTION. INSTALL TREE PROTECTION FENCING AS SHOWN ON THE PLANS.
5. INSTALL THE 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.
6. INSTALL OFFSITE INLETS, INLET PROTECTION AND CONVEYANCE SYSTEM FROM CEDAR HOLLOW ROAD UP TO IM5.
7. ALL EROSION AND SEDIMENT CONTROLS MUST BE COMPLETELY CONSTRUCTED AND STABILIZED PRIOR TO DISTURBANCE OF THE TRIBUTARY TO THEM.
8. ANY DISTURBED OR REGRADED AREAS HAVING A FINAL GRADE OF THIRTY THREE PERCENT (33%) OR GREATER 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.
9. STRIP TOPSOIL IN BUILDINGS AND ROAD AREAS AND STOCKPILE. ROUGH GRADE ROAD AND BUILDING PADS. RETAINING WALLS IN THE NORTH EAST CORNER OF THE SITE SHALL BE CONSTRUCTED AS FILL IS BEING PLACED IN THE AREA OF ROAD STATION 0+50 TO 2+00.
10. BEGIN INSTALLATION OF UNDERGROUND STORMWATER BEDS 1 & 2 AND INSTALL STORM SEWER INLET, INLET PROTECTION AND PIPING ASSOCIATED WITH THESE SYSTEMS. **THIS IS CRITICAL STAGE WHERE THE DESIGN ENGINEER MUST BE CONTACTED AT LEAST 48 HOURS IN ADVANCE TO PROVIDE CONSTRUCTION OVERSIGHT.** ALL INLETS FOR THE UNDERGROUND BEDS MUST BE SEALED UNTIL THE LOT AREAS CONTRIBUTORY TO THEM ARE FULLY STABILIZED TO ENSURE SEDIMENT DOES NOT ENTER THE SYSTEM. AT THAT TIME THE BEDS CAN BE UNSEALED AND PUT INTO SERVICE.
11. INSTALL UNDERGROUND UTILITIES (WATER SERVICES, ELECTRIC, GAS, COMMUNICATIONS, ETC.) ASSOCIATED WITH THE BUILDINGS. THE WATER LINE SHALL BE EXCAVATED, INSTALLED, BACKFILLED AND STABILIZED ON A DAILY BASIS, WITH ONLY AS MUCH EXCAVATED AS CAN BE BACKFILLED AND STABILIZED EACH WORKING DAY.
12. FINE GRADE ACCESS DRIVE. PLACE BITUMINOUS STONE BASE COURSE ON ALL ACCESS DRIVES AND COMPACT AS SOON AS POSSIBLE IN ORDER TO STABILIZE SOIL.
13. PAVE ACCESS DRIVES AREAS WITH BINDER COURSE IN ACCORDANCE WITH PAVING SPECIFICATIONS ON THE PLANS.
14. COMMENCE WITH INDIVIDUAL BUILDING CONSTRUCTION. EACH TOWNHOUSE GROUPING SHALL BE PROVIDED WITH A DRIVEWAY ROCK CONSTRUCTION ENTRANCE AND INDIVIDUAL COMPOST FILTER SOCKS DOWNGRADIENT OF THE TOWNHOMES.
15. ONCE DRAINAGE AREAS ARE ADEQUATELY STABILIZED, UNBLOCK INLETS AND COMPLETE CONNECTION BETWEEN STORMWATER CONVEYANCE PIPING AND UNDERGROUND PIPE STORAGE BEDS. SNOUT WATER QUALITY INSERTS SHALL BE INSTALLED ON THE APPLICABLE INLETS AT THIS TIME. **THIS IS CRITICAL STAGE WHERE THE DESIGN ENGINEER MUST BE CONTACTED AT LEAST 48 HOURS IN ADVANCE TO PROVIDE CONSTRUCTION OVERSIGHT.**
16. INSTALL ALL LANDSCAPING MATERIAL.
17. PROVIDE SIX (6) INCHES OF TOPSOIL ON ALL DISTURBED AREAS. SEED AND MULCH ALL DISTURBED AREAS WITH PERMANENT SEED MIXTURE SPECIFICATIONS. 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.
18. ALL IMPORTED TOPSOIL, IF REQUIRED, SHALL BE FERTILE AND TYPICAL OF THE LOCALITY AND SHALL BE FREE FROM STONE, CLAY AND WEEDS.
19. PAVE ACCESS ROAD WITH WEARING COURSE.
20. 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.
29. A NOTICE OF TERMINATION (N.O.T.) WILL BE REQUIRED TO BE SUBMITTED FOLLOWING APPROVAL OF THE FINAL AS-BUILT PLANS. PRIOR TO ACCEPTING THE N.O.T., THE DEPARTMENT AND/OR CONSERVATION DISTRICT STAFF WILL PERFORM A FINAL INSPECTION TO ENSURE SITE STABILIZATION AND VERIFY ADEQUATE INSTALLATION AND FUNCTION OF STORMWATER BMPS.

STORMWATER INFILTRATION FACILITY CONSTRUCTION SPECIFICATIONS:

THE INSTALLATION OF STORMWATER INFILTRATION FACILITIES ARE CONSIDERED CRITICAL STAGES WHERE THE DESIGN ENGINEER MUST BE CONTACTED AT LEAST 48 HOURS IN ADVANCE TO PROVIDE CONSTRUCTION OVERSIGHT.

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. HEAVY EQUIPMENT AND TRAFFIC SHALL BE RESTRICTED FROM TRAVELING OVER THE PROPOSED LOCATION OF THE INFILTRATION BERM TO MINIMIZE COMPACTION OF THE SOIL.
3. THE BOTTOM OF ALL INFILTRATION BMP'S SHALL BE UNDISTURBED OR UNCOMPACTED SUBGRADE SCARIFIED TO A DEPTH OF SIX (6) INCHES.
4. EXCAVATE INFILTRATION BERM TO WITHIN TWO FEET OF FINAL ELEVATION OF THE BERM FLOOR. FINAL EXCAVATION TO FINISHED GRADE SHALL BE DEFERRED UNTIL ALL UPGRADIENT-DISTURBED AREAS HAVE BEEN STABILIZED. THE BERM BOTTOM AND SIDE EMBANKMENTS SHALL BE ROUGHENED WERE SHEARED AND SEALED BY HEAVY EQUIPMENT.
5. 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.
6. ALL BERM EXCAVATION EQUIPMENT SHALL BE PERFORMED WITH THE LIGHTEST PRACTICAL EXCAVATION EQUIPMENT AND/OR LIGHTWEIGHT, RUBBER-TIRED EQUIPMENT.

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

HIGH QUALITY WATERSHED NOTES:

- THE PROJECT IS LOCATED IN A HIGH QUALITY WATERSHED. THE SPECIAL PROTECTION WATERS IMPLEMENTATION HANDBOOK BEST MANAGEMENT PRACTICES APPLY TO ALL NEW NON-AGRICULTURAL ACTIVITIES/PROJECTS RESULTING IN AN EARTH DISTURBANCE ON HIGH QUALITY OR EXCEPTIONAL VALUE WATERSHEDS. IMPLEMENTATION OF THESE PRACTICES AND THE ADDITIONAL REQUIREMENTS FOR SPECIFIC ACTIVITIES LISTED IN THE HANDBOOK PLUS SELECTED STORMWATER MANAGEMENT PRACTICES DESCRIBED IN SECTION TWO OF THE HANDBOOK CONSTITUTE APPROPRIATE, REASONABLE AND COST EFFECTIVE BEST MANAGEMENT PRACTICES FOR NON-POINT SOURCE CONTROL. PERSONS ENGAGED IN THESE LAND DISTURBANCE ACTIVITIES ARE EXPECTED TO COMPLY WITH BOTH THE GENERAL AND PROGRAM SPECIFIC REQUIREMENTS LISTED IN THIS APPENDIX.
- THIS PROJECT IS IN A HIGH QUALITY STREAM DESIGNATION. EXTREME CARE SHOULD BE EXERCISED IN ALL DISTURBANCE ACTIVITIES TO PREVENT DEGRADATION TO THE WATERS OF THE COMMONWEALTH.
- BECAUSE THIS PROJECT IS IN A SPECIALLY PROTECTED HIGH QUALITY OR EXCEPTIONAL VALUE WATERSHED, UPON COMPLETION OR TEMPORARY CESSATION OF EARTH DISTURBANCE ACTIVITIES, THE PROJECT SITE MUST BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION.

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.

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.

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.

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

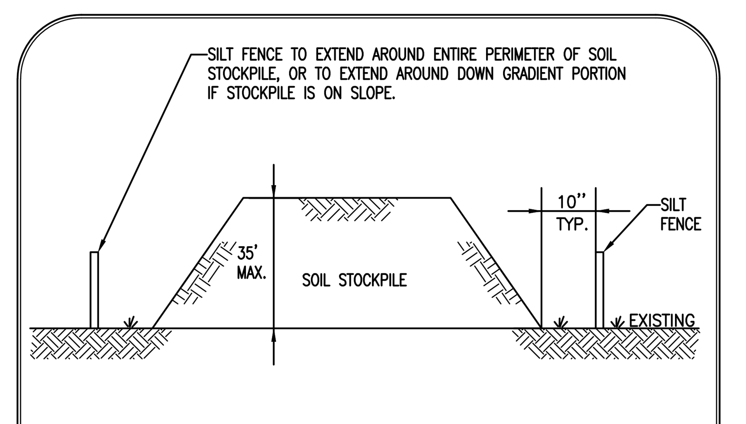
IDENTIFYING AND RESOLVING CHARACTERISTICS, THAT RENDER SOIL TYPES POORLY SUITED AS TOPSOIL.

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.

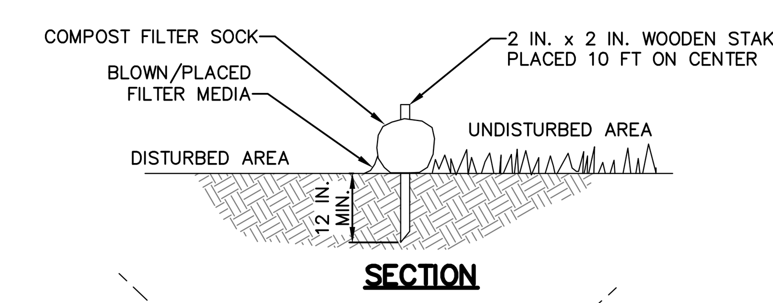
SOILS SUSCEPTIBLE TO SINKHOLE FORMATION

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.

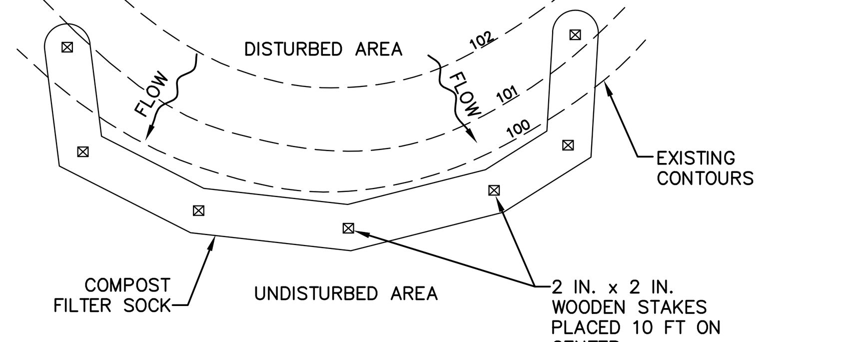


GENERAL NOTES:
1. SEE SILT FENCE DETAIL FOR SILT FENCE INSTALLATION SPECIFICATIONS AND MAINTENANCE REQUIREMENTS.
2. STOCKPILE HEIGHT MUST NOT EXCEED 35-FEET.
3. STOCKPILE SLOPE MUST BE 3:1 OR FLATTER.
4. IF THE STOCKPILE IS TO REMAIN FOR MORE THAN 15 DAYS, IT SHALL BE STABILIZED WITH UNROTTED SMALL GRAIN 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 DELAWARE COUNTY CONSERVATION DISTRICT.

SOIL STOCKPILE DETAIL
NO SCALE



SECTION



PLAN VIEW

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

DLHowell
Civil Engineering & Land Planning
www.DLHowell.com

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1250 Wrights Lane
West Chester, PA 19380
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REV.	DATE	DESCRIPTION
8		
7	04/11/17	REVISED PER TOWNSHIP ENGINEER COMMENTS
6	02/09/17	REVISED FOR WALKING PATH RELOCATION
5	02/10/16	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED JANUARY 29,2016
4	01/25/15	REVISED PER CCCD REVIEW LETTER DATED JANUARY 20, 2016
3	12/18/15	REVISED PER TOWNSHIP REVIEWS
2	09/21/15	REVISED PER TOWNSHIP REVIEWS
1	07/27/15	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED JULY 2, 2015

AMENDED FINAL
EROSION CONTROL NOTES

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	05/11/15
SCALE:	AS SHOWN
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	2708
CAD FILE:	07 EROSION CONTROL PLAN.dwg
PLOTTED:	04/11/17
DRAWING NO.:	C04.2
SHEET	11 OF 21

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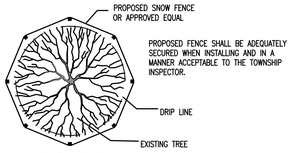
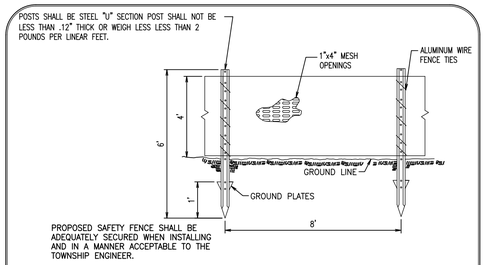
TREE PROTECTION NOTES

1. DIAMETER OF TREE PROTECTION ZONE SHALL BE ONE FOOT FOR EACH INCH OF TRUNK DIAMETER OR ⅓ THE HEIGHT OR THE TREE, WHICHEVER IS GREATER. FOR 3-INCH CALIPER TREES THE PROTECTION ZONE SHALL BE 6 FOOT DIAMTER MINIMUM.
2. TEMPORARY FENCING (6 FEET HIGH) SHALL BE PLACED AT THE DRIPLINE OF THE TREE TO BE PRESERVED. FENCING SHALL COMPLETELY ENCIRCLE THE TREE(S). AVOID DRIVING FENCE POSTS OR STAKES INTO MAJOR ROOTS.
3. DEAD TREES, SCRUB, OR UNDERGROWTH SHALL BE CUT FLUSH WITH ADJACENT GRADE. THERE SHALL BE NO SOIL DISTURBANCE UNDER THE DRIP LINE OF TREES TO BE PRESERVED.
4. PLACE 6 INCHES OF BARK MULCH AT AREAS NOT PROTECTED BY FENCING.
5. TREATMENT OF ROOTS EXPOSED DURING CONSTRUCTION SHALL BE AS FOLLOWS; FOR ROOTS OVER 1 INCH DIAMETER DAMAGED, MAKE A CLEAN STRAIGHT CUT TO REMOVE DAMAGED PORTION OF ROOT. ALL EXPOSED ROOTS SHOULD BE TEMPORARILY COVERED WITH DAMP BURLAP AND COVERED WITH SOIL OR MULCH AS SOON AS POSSIBLE TO PREVENT DRYING.
6. NO EQUIPMENT OR MACHINERY SHALL BE USED WITHIN THE TREE PROTECTION ZONE.
7. WORK REQUIRED WITHIN THE TREE PROTECTION ZONE SHALL BE DONE MANUALLY.
8. NO STOCKPILING OF MATERIALS, VEHICULAR TRAFFIC, OR STORAGE IS ALLOWED WITHIN THE LIMIT OF THE TREE PROTECTION.

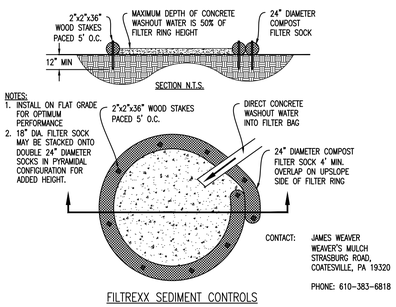


PLAN VIEW

TREE PROTECTION DETAIL
NO SCALE



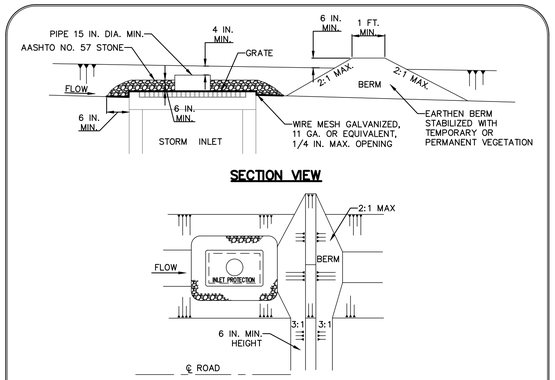
ORANGE CONSTRUCTION FENCE, PLASTIC
NO SCALE



FILTREXX SEDIMENT CONTROLS

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
NOT TO SCALE



SECTION VIEW

PLAN VIEW

NOTES:

INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS NOT LOCATED AT A LOW POINT.

ROLLED EARTHEN BERM IN ROADWAY SHALL BE PROVIDED AND MAINTAINED IMMEDIATELY DOWN GRADIENT OF THE PROTECTED INLET UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR TO REMAIN PERMANENTLY.

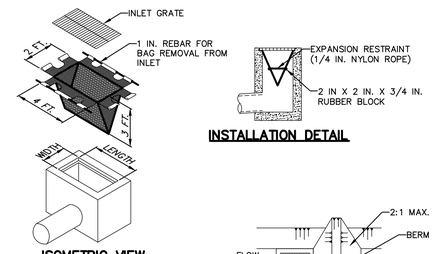
STONE INLET PROTECTION AND BERM FOR A TYPE M INLET CAN BE USED IN ONE ACRE MAXIMUM DRAINAGE AREA WITH 15 IN. OVERFLOW PIPE AND 4 IN. HEAD. A PERFORATED PLATE WELDED TO A METAL RISER MAY NOT BE SUBSTITUTED FOR THE WIRE MESH. A SLOTTED PLATE WELDED TO THE RISER MAY BE USED IN CONJUNCTION WITH THE WIRE MESH IF CALCULATIONS ARE PROVIDED TO SHOW SUFFICIENT CAPACITY OF THE INLET TO ACCEPT THE PEAK RUNOFF FOR A 2-YEAR STORM EVENT FROM THE TRIBUTARY DRAINAGE AREA. TOP OF PIPE SHALL BE AT LEAST 6 INCHES BELOW ADJACENT ROADWAY IF PONDED WATER WOULD POSE A SAFETY HAZARD TO TRAFFIC. EARTHEN BERM SHALL BE ROLLED.

SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE HEIGHT OF THE STONE. DAMAGED OR CLOGGED INSTALLATIONS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.

FOR SYSTEMS DISCHARGING TO HQ OR EV SURFACE WATER, A 6 IN. THICK COMPOST LAYER SHALL BE SECURELY ANCHORED ON OUTSIDE AND OVER TOP OF STONE. COMPOST SHALL MEET THE STANDARDS IN TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.

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

STANDARD CONSTRUCTION DETAIL #4-20
STONE INLET PROTECTION AND BERM - TYPE M INLET
NOT TO 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.

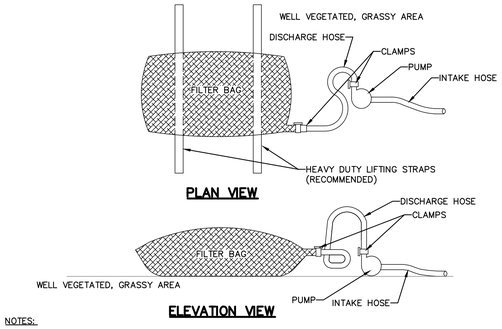
ROLLED EARTHEN BERM IN ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR REMAIN PERMANENTLY.

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 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 #4-16
FILTER BAG INLET PROTECTION - TYPE M INLET
NOT TO SCALE



NOTES:

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

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

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

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

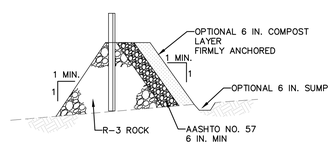
NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

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

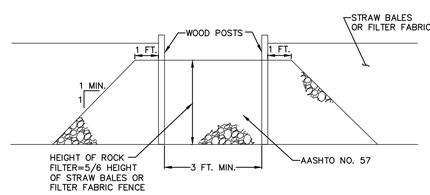
THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.

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

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



OUTLET CROSS-SECTION



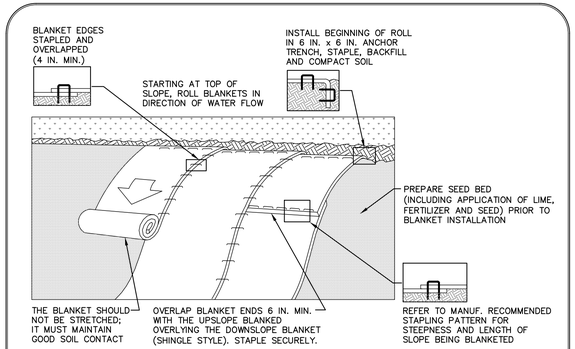
UP-SLOPE FACE

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



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.

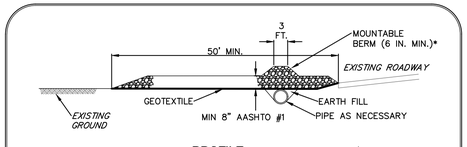
SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.

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.

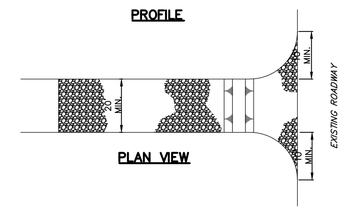
THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

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



PROFILE



PLAN VIEW

* 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

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REV.	DATE	DESCRIPTION
8	04/11/17	REVISED PER TOWNSHIP ENGINEER COMMENTS
7	02/09/17	REVISED FOR WALKING PATH RELOCATION
6	02/10/16	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED JANUARY 29,2016
5	01/25/15	REVISED PER CCCD REVIEW LETTER DATED JANUARY 20, 2016
4	12/18/15	REVISED PER TOWNSHIP REVIEWS
3	09/21/15	REVISED PER TOWNSHIP REVIEWS
2	07/27/15	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED JULY 2, 2015
1		

AMENDED FINAL
EROSION CONTROL DETAILS

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE
WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	05/11/15
SCALE:	AS SHOWN
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	2708
CAD FILE:	07 EROSION CONTROL PLAN.dwg
PLOTTED:	04/11/17
DRAWING NO.:	C04.3
SHEET	12 OF 21

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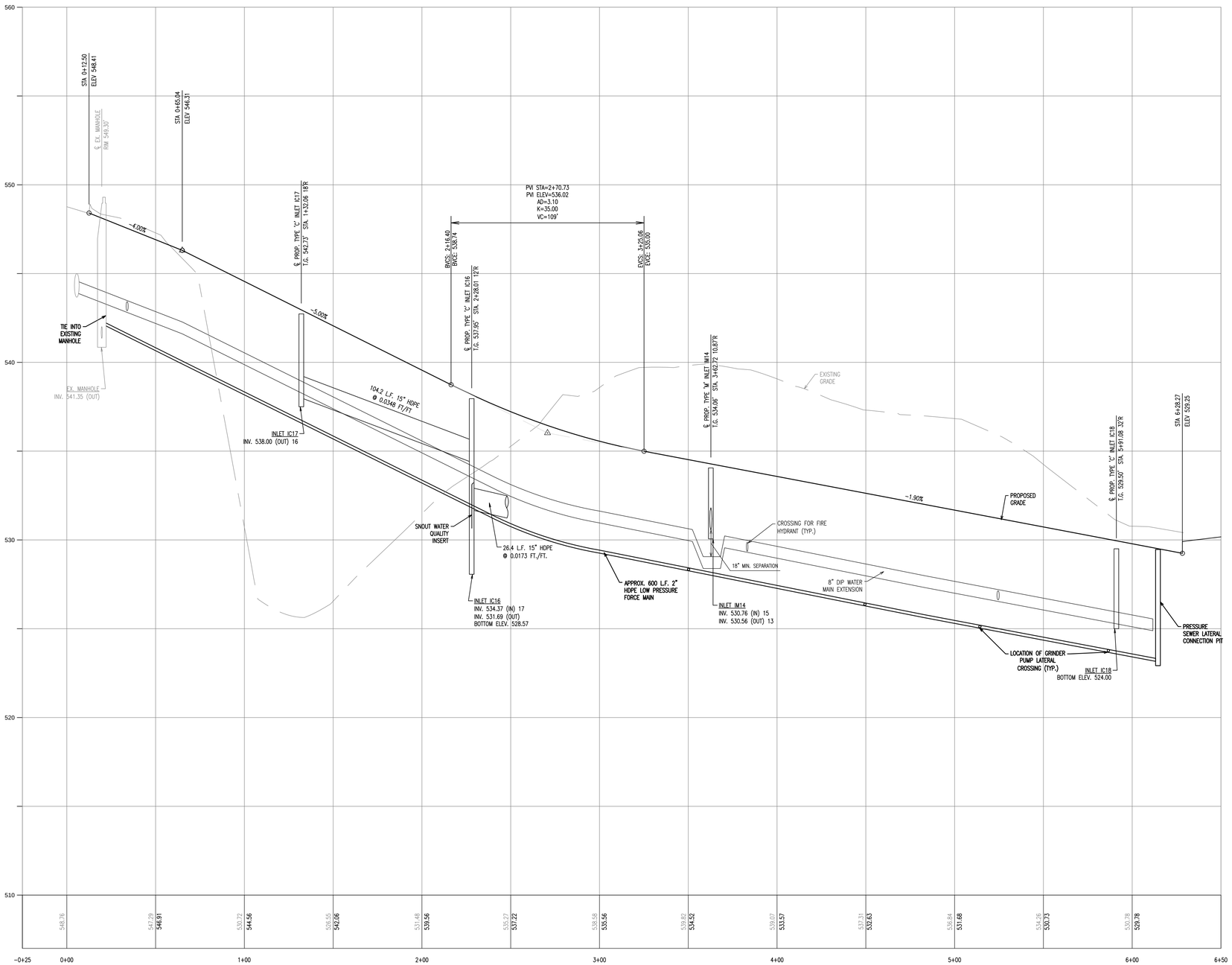
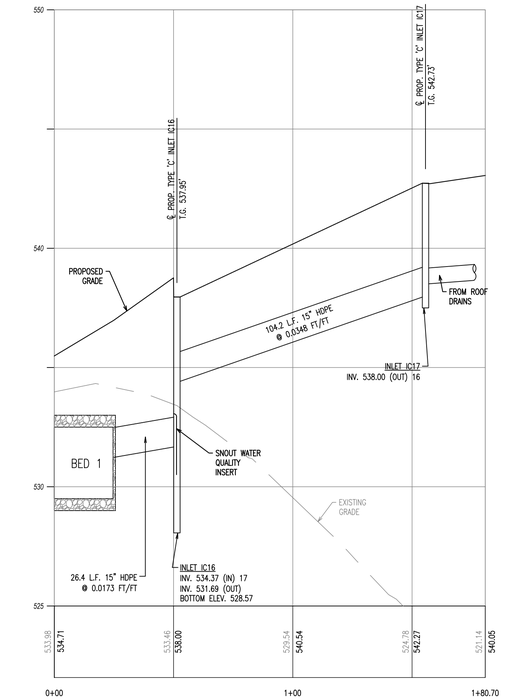
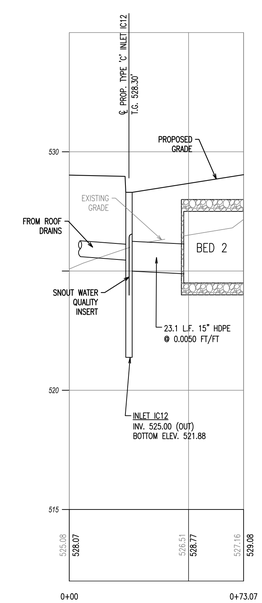


TREYBURN DRIVE PROFILE STA -0+25 - 6+50.00
HORIZ SCALE: 1"=30'
VERT SCALE: 1"=3"



STORM IC17 - BED 1 PROFILE
HORIZ SCALE: 1"=30'
VERT SCALE: 1"=3"



STORM IC12 - BED 2 PROFILE
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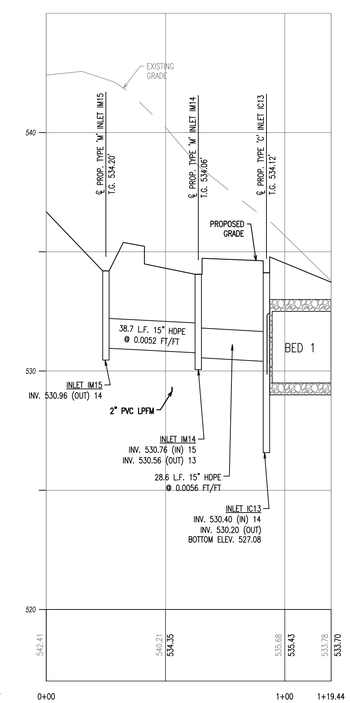
VERT SCALE: 1"=3"



STORM IM15 - BED 1 PROFILE
HORIZ SCALE: 1"=30'
VERT SCALE: 1"=3"

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2	07/27/15	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED JULY 2, 2015
1	05/11/15	

AMENDED FINAL
PROFILES

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE
WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	05/11/15
SCALE:	AS SHOWN
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	2708
CAD FILE:	12 PROFILES.dwg
PLOTTED:	04/11/17
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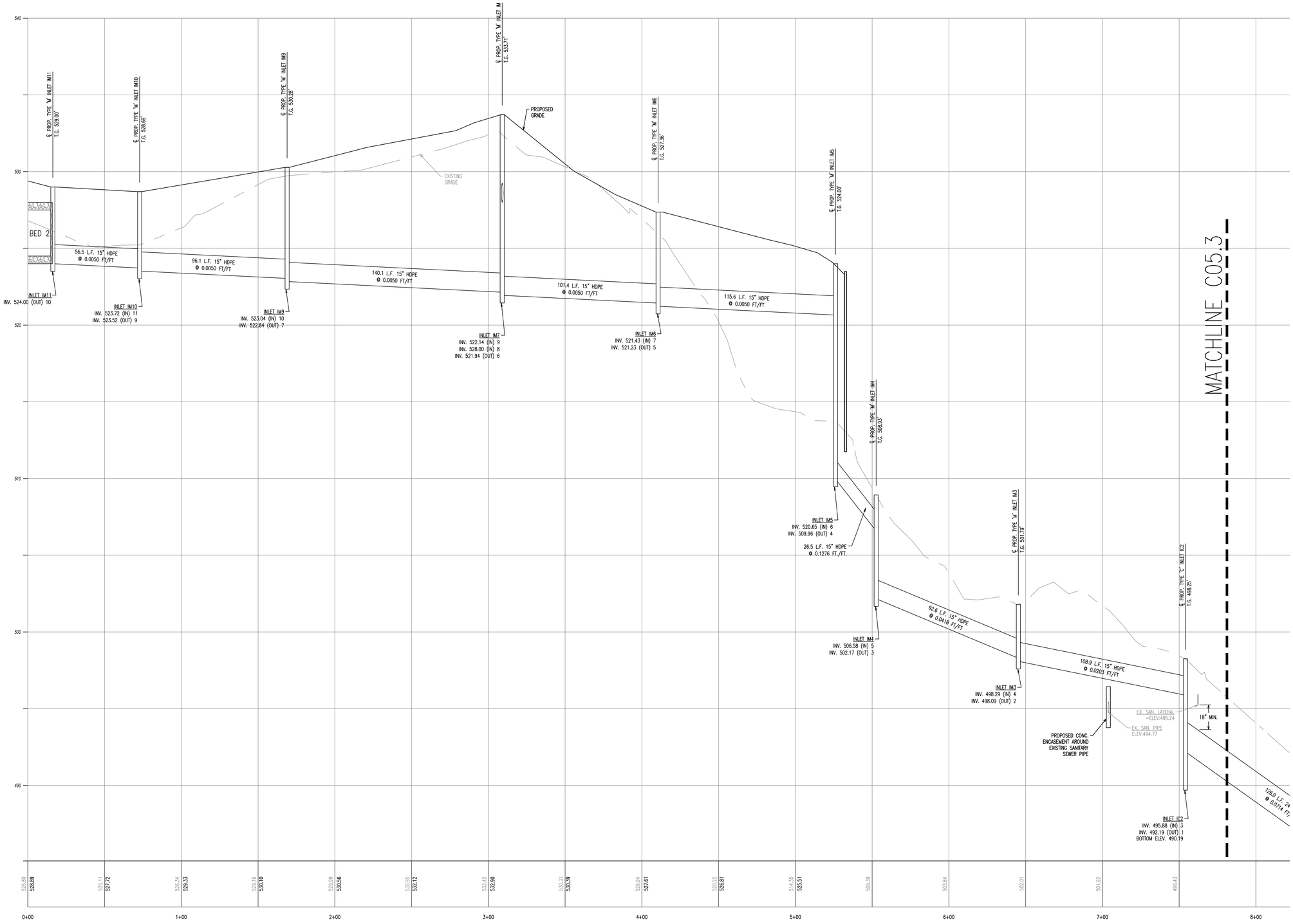

STORM IM11 – EXISTING INLET PROFILE
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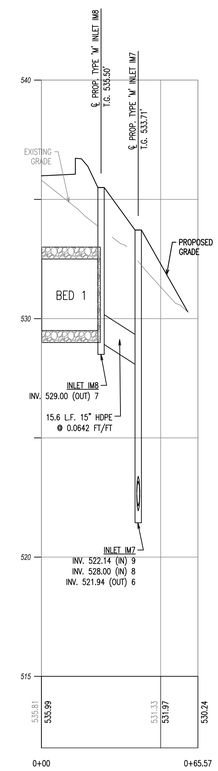
VERT SCALE: 1"=3"



STORM IM8 – IM7 PROFILE
HORIZ SCALE: 1"=30'
VERT SCALE: 1"=3"

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1	05/11/15	

AMENDED FINAL
PROFILES

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE
WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	05/11/15
SCALE:	AS SHOWN
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	2708
CAD FILE:	12 PROFILES.dwg
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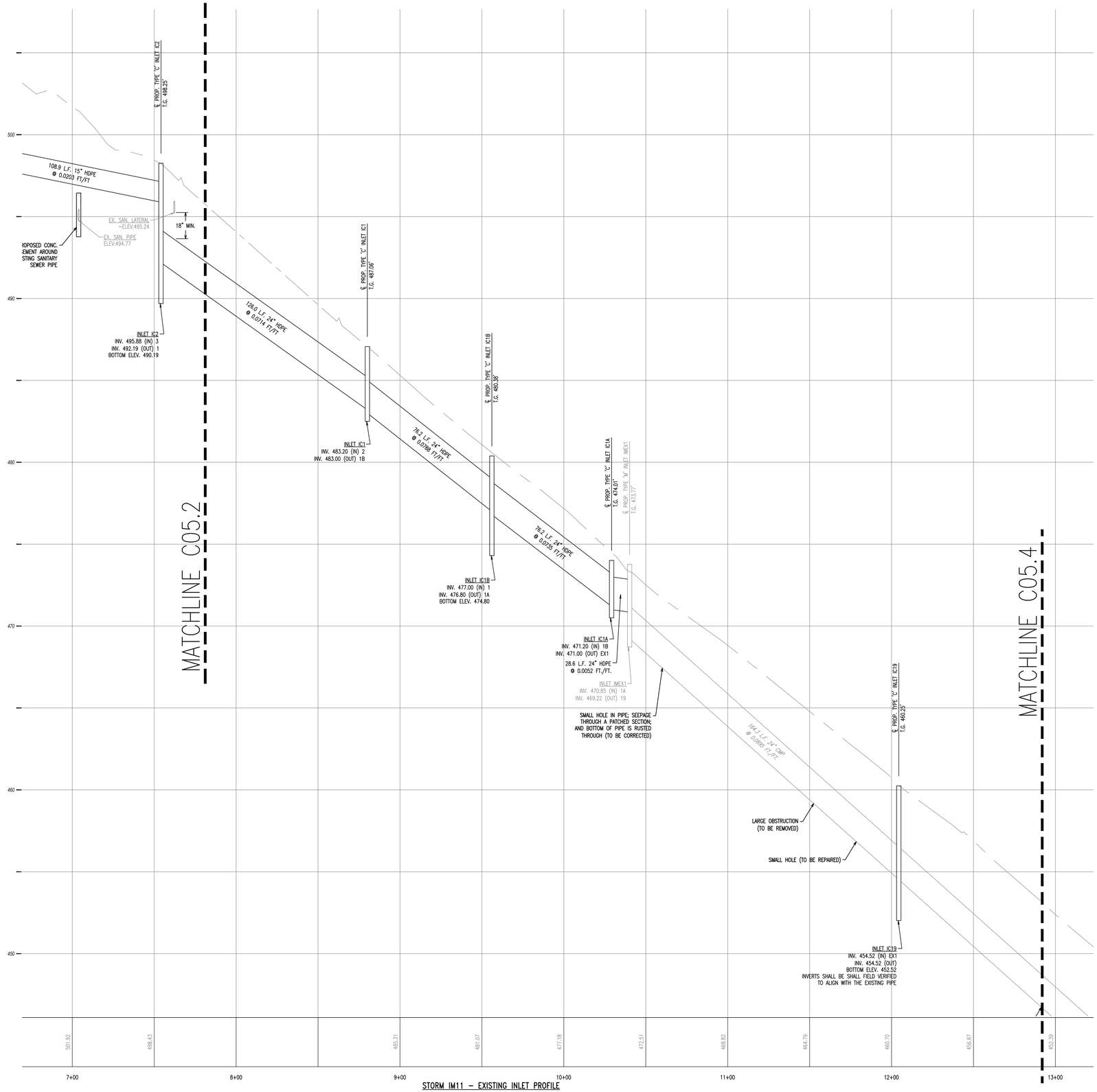

STORM IM11 – EXISTING INLET PROFILE
HORIZ SCALE: 1"=30'
VERT SCALE: 1"=3"

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AMENDED FINAL
PROFILES

CLIENT: GRAY'S INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE
WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	05/11/15
SCALE:	AS SHOWN
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	2708
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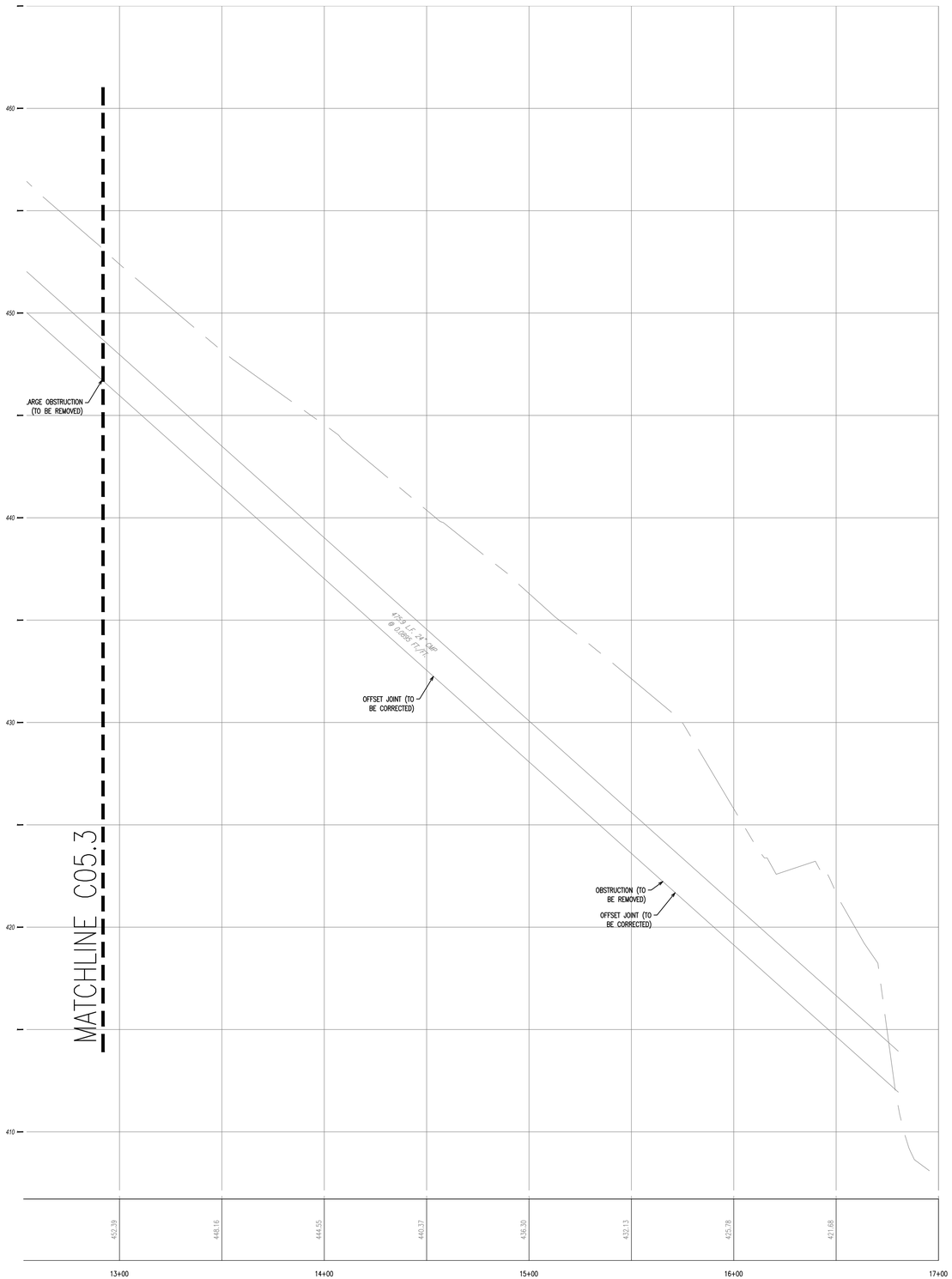
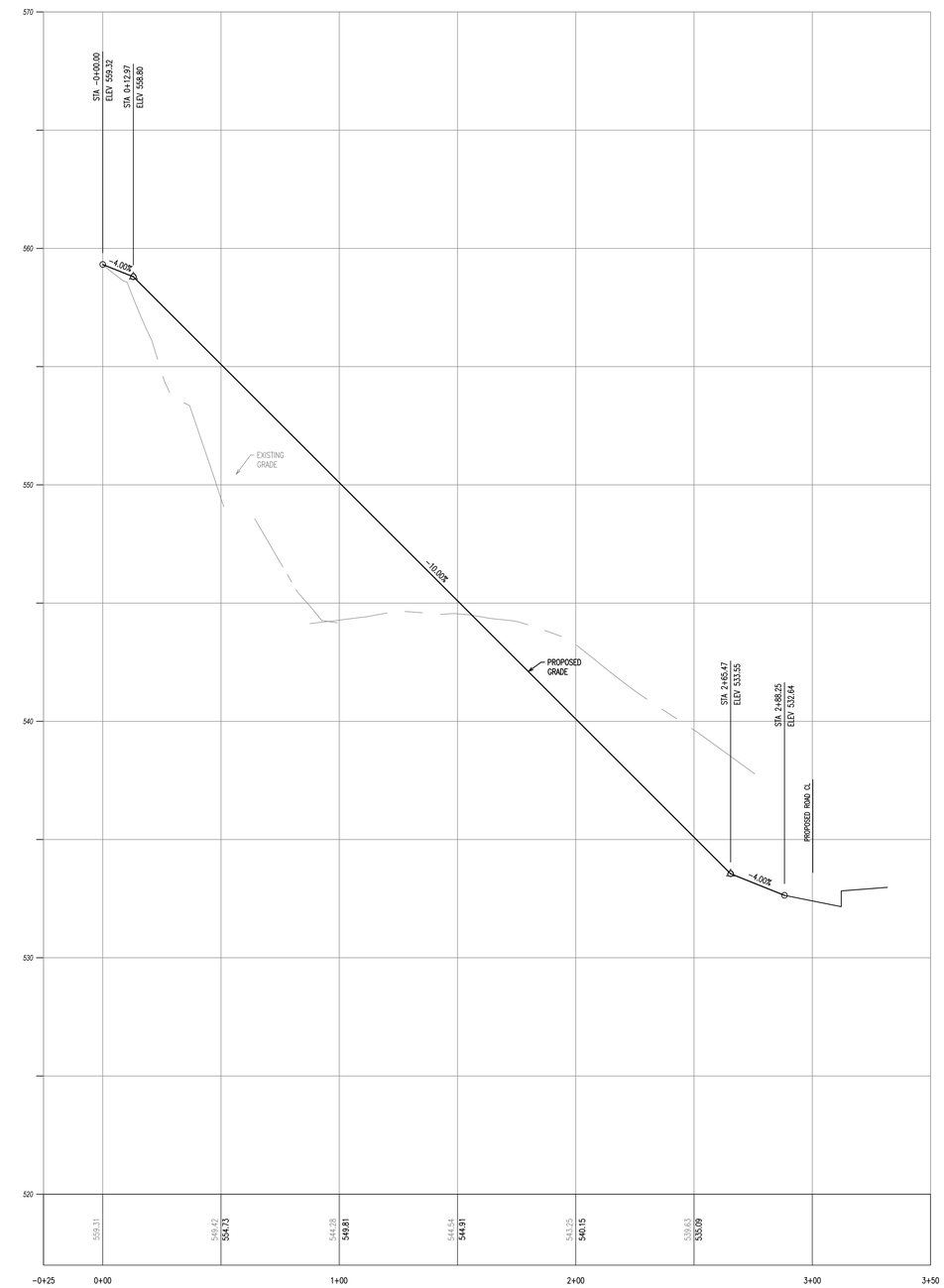


STORM IM11 - EXISTING INLET PROFILE
HORIZ SCALE: 1"=30'
VERT SCALE: 1"=3"



EMERGENCY ACCESS PROFILE
HORIZ SCALE: 1"=30'
VERT SCALE: 1"=3"

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AMENDED FINAL
PROFILES

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PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE
WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA

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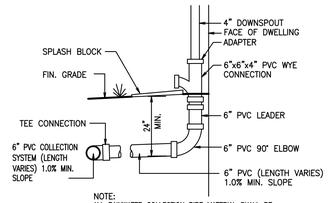
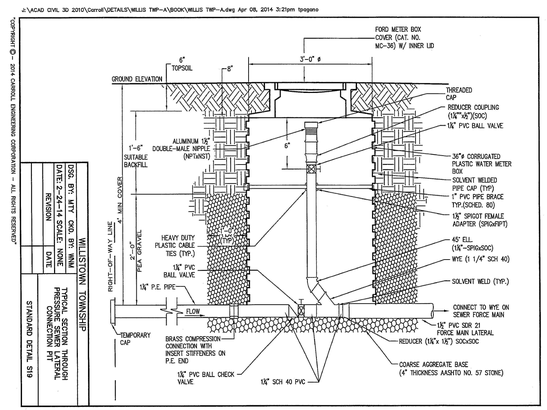


NOTE:
ALL RAINWATER COLLECTION PIPE MATERIAL SHALL BE SMOOTH INTERIOR PVC

DOWNSPOUT CONNECTION DETAIL
NO SCALE



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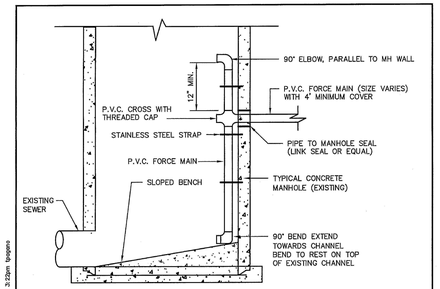

NOTES:
1. PRESSURE TEST FORCE MAIN PRIOR TO INSTALLATION OF DROP PIPE AND AIR VENT.

WILLISTOWN TOWNSHIP		
DSG. BY: MTY CKD. BY: WNM		FORCE MAIN TO GRAVITY MANHOLE CONNECTION
DATE: 2-24-14 SCALE: NONE		
REVISION	DATE	
		STANDARD DETAIL S21

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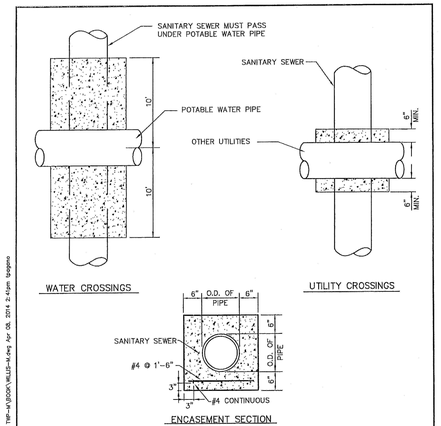

NOTES:
1. PROVIDE REINFORCEMENT AT UTILITY CROSSINGS

WILLISTOWN TOWNSHIP		
DSG. BY: MTY CKD. BY: WNM		CONCRETE ENCASEMENT
DATE: 2-24-14 SCALE: NONE		
REVISION	DATE	
		STANDARD DETAIL M2

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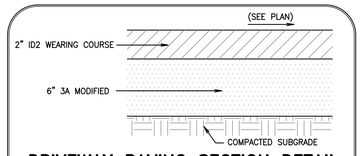
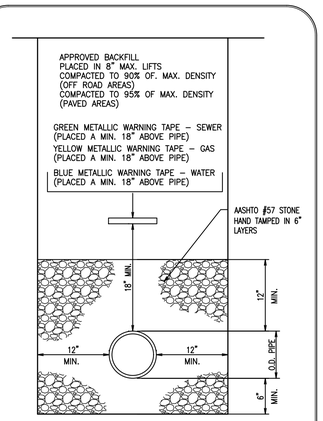
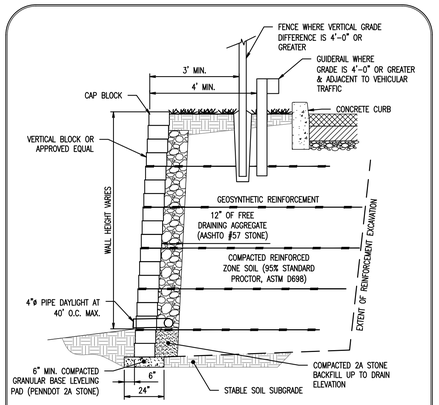


DRIVEWAY PAVING SECTION DETAIL
NO SCALE

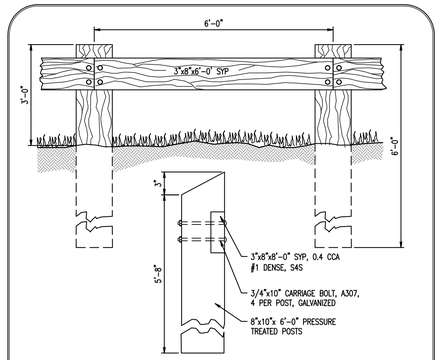


TYPICAL TRENCH DETAIL
NO SCALE

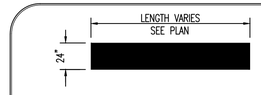


1. SPECIFIC DESIGN SPECIFICATIONS WILL BE PROVIDED BY THE MANUFACTURER.
2. SHOP DRAWINGS FOR THE PROPOSED RETAINING WALLS MUST BE APPROVED BY THE TOWNSHIP ENGINEER PRIOR TO CONSTRUCTION.
3. WALL SECTION IS FOR PRELIMINARY BIDDING PURPOSES ONLY. FINAL DESIGN IS THE RESPONSIBILITY OF THE WALL CONTRACTOR AND HIS PROFESSIONAL ENGINEER, WHO WILL PREPARE AND SUBMIT SEALED DESIGNS AND DRAWINGS FOR THE CIVIL ENGINEER OR TOWNSHIP TO REVIEW.
4. WHERE A GUIDERAIL IS REQUIRED, IT SHALL BE INSTALLED AND CONSTRUCTED FROM PRESS-TREATED WOOD, GALVANIZED STEEL OR APPROVED EQUAL.

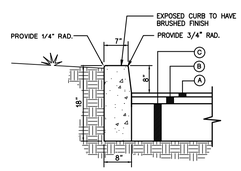
TYPICAL RETAINING WALL SECTION
NO SCALE



WOODEN GUIDE RAIL & POST DETAIL
NOT TO SCALE



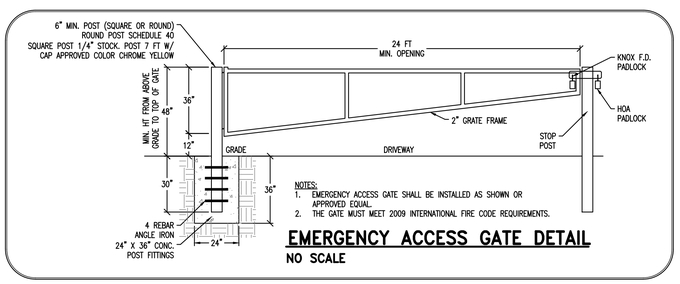
PAINTED STOP BAR DETAIL
NOT TO SCALE



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

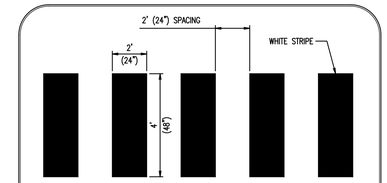
NOTES:
1. ALL MATERIALS & WORK TO CONFORM TO PennDot FORM 408 SPECIFICATIONS. LATEST EDITION, AND RC-64M OF PENNDOT'S STANDARDS FOR ROADWAY CONSTUCTION.
2. CONCRETE TO BE 3,500 PSI 28-DAY STRENGTH AIR ENTRAINED.
3. CURBS SHALL BE BUILT IN TEN (10) FOOT LENGTHS; CONSTRUCTION JOINTS OF ASPHALT IMPREGNATED 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

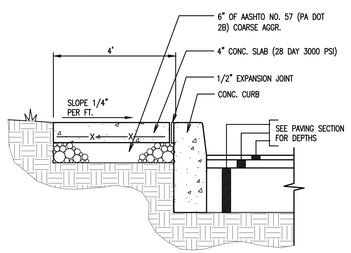


NOTES:
1. EMERGENCY ACCESS GATE SHALL BE INSTALLED AS SHOWN OR APPROVED EQUAL.
2. THE GATE MUST MEET 2009 INTERNATIONAL FIRE CODE REQUIREMENTS.

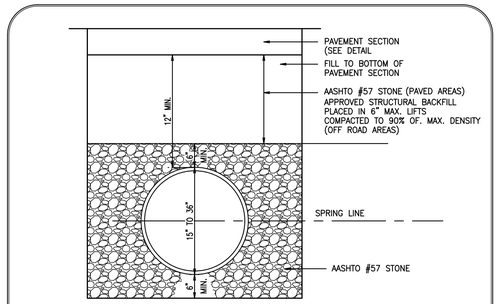
EMERGENCY ACCESS GATE DETAIL
NO SCALE



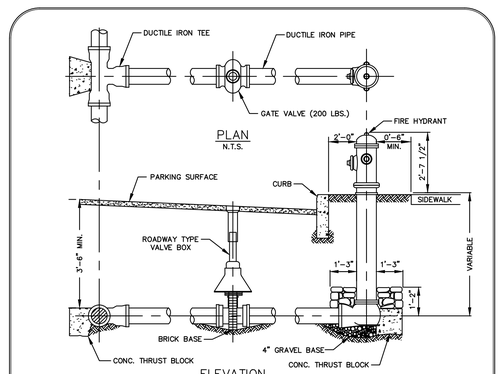
TYPICAL CROSSWALK STRIPING DETAIL
NOT TO SCALE



TYPICAL SIDEWALK DETAIL
NO SCALE

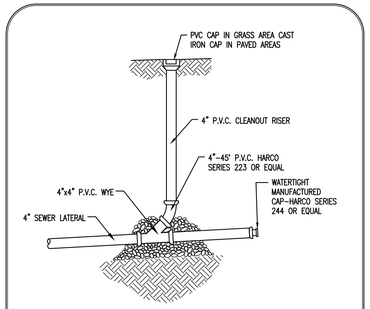


HDPE STORM PIPE TRENCH DETAIL
NO SCALE

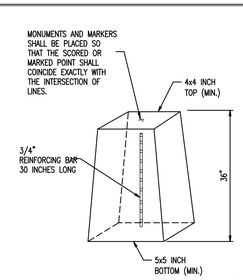


NOTES:
1. HYDRANTS SHALL BE NO LESS THAN 15 INCHES AND NO MORE THAN 30 INCHES FROM THE FINISHED GRADE TO THE FIRE DEPARTMENT CONNECTION INVERT, AND SHALL BE EQUIPPED WITH A FIVE-INCH STORZ LOCKING COUPLING AND TWO TWO-AND-ONE-HALF-INCH NST COUPLINGS. THE FIVE-INCH STORZ LOCKING COUPLING SHALL FACE THE STREET.
2. THE HYDRANT BARREL SHALL BE SET SO THAT NO PORTION OF THE PUMPER OR HOSE NOZZLE CAP WILL BE LESS THAN 24 INCHES FROM THE GUTTER FACE OF THE CURB. WHEN SET IN LAWN SPACE BETWEEN THE CURB AND THE SIDEWALK, IF ANY, OR BETWEEN THE CURB AND THE LOT LINE, NO PORTION OF THE HYDRANT OR NOZZLE CAP SHALL BE WITHIN SIX INCHES OF THE SIDEWALK.

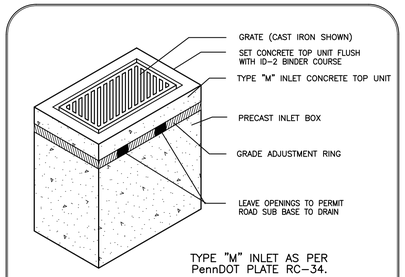
FIRE HYDRANT INSTALLATION
NO SCALE



SERVICE LATERAL AND CLEANOUT
NO SCALE

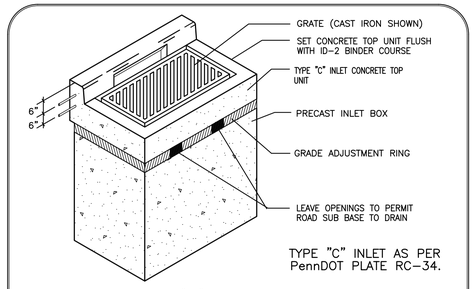


CONCRETE MONUMENT DETAIL
NO SCALE



TYPE "M" INLET AS PER PennDOT PLATE RC-34.

TYPE 'M' INLET
NO SCALE



TYPE "C" INLET AS PER PennDOT PLATE RC-34.

TYPE 'C' INLET
NO SCALE

DLHowell
Civil Engineering & Land Planning
www.DLHowell.com

D.L. Howell & Assoc., Inc.
1250 Wrights Lane
West Chester, PA 19380
Phone: (610) 918-9002
Fax: (610) 918-9003

REV.	DATE	DESCRIPTION
8		
7	04/11/17	REVISED PER TOWNSHIP ENGINEER COMMENTS
6	02/09/17	REVISED FOR WALKING PATH RELOCATION
5	02/10/16	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED JANUARY 29,2016
4	01/25/15	REVISED PER CCCD REVIEW LETTER DATED JANUARY 20, 2016
3	12/18/15	REVISED PER TOWNSHIP REVIEWS
2	09/21/15	REVISED PER TOWNSHIP REVIEWS
1	07/27/15	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED JULY 2, 2015

AMENDED FINAL
CONSTRUCTION DETAILS

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE
WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	05/11/15
SCALE:	AS SHOWN
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	2708
CAD FILE:	13 CONSTRUCTION DETAILS.dwg
PLOTTED:	04/11/17
DRAWING NO.:	C06.1
SHEET	17 OF 21

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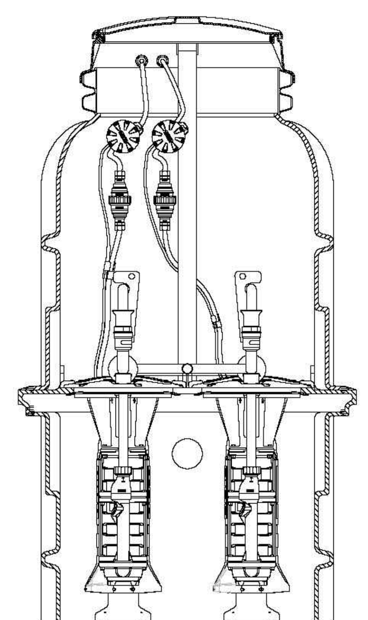
E/ONE EXTREME SERIES

DH152/~~DR152~~



Patent Numbers: 5,752,315 5,562,254 5,439,180

* Discharge data includes loss through check valve, which is minimal.

NA0052P01

General Features

The DH152 or DR152 grinder pump station is a complete unit that includes: two grinder pumps with check valves, HDPE (high density polyethylene) tank and controls. The DH152 or DR152 is packaged into a single complete unit, ready for installation.

The DH152 is the "hardwired," or "wired," model where a cable connects the motor controls to the level controls through watertight penetrations.

The DR152 is the "radio frequency identification" (RFID), or "wireless," model that uses wireless technology to communicate between the level controls and the motor controls.

All solids are ground into fine particles, allowing them to pass easily through the pump, check valve and small-diameter pipelines. Even objects that are not normally found in sewage, such as plastic, rubber, fiber, wood, etc., are ground into fine particles.

The 1 1/4-inch discharge connection is adaptable to any piping materials, thereby allowing it to meet local code requirements.

The tank is made of tough corrosion-resistant HDPE. The optimum tank capacity of 150 gallons is based on computer studies of water usage patterns. A single DH152 or DR152 is ideal for up to four average, single-family homes, and can also be used for up to 12 average, single-family homes with the consent of the factory. This model can accommodate flows of 3000 GPD.

The internal check valve assembly, located in each grinder pump, is custom-designed for non-clog, trouble-free operation.

The grinder pump is automatically activated and runs infrequently for very short periods. The annual energy consumption is typically that of a 40-watt light bulb.

Units are available for indoor and outdoor installations. Outdoor units are designed to accommodate a wide range of burial depths.

Operational Information

Motor
1 hp, 1,725 rpm, high torque, capacitor start, thermally protected, 120/240V, 60 Hz, 1 phase

Inlet Connections
4-inch inlet grommet standard for DWV pipe. Other inlet configurations available from the factory.

Discharge Connections
Pump discharge terminates in 1 1/4-inch NPT female thread. Can easily be adapted to 1 1/4-inch PVC pipe or any other material required by local codes.

*Discharge**
15 gpm at 0 psig (per pump)

11 gpm at 40 psig (per pump)

7.8 gpm at 80 psig (per pump)

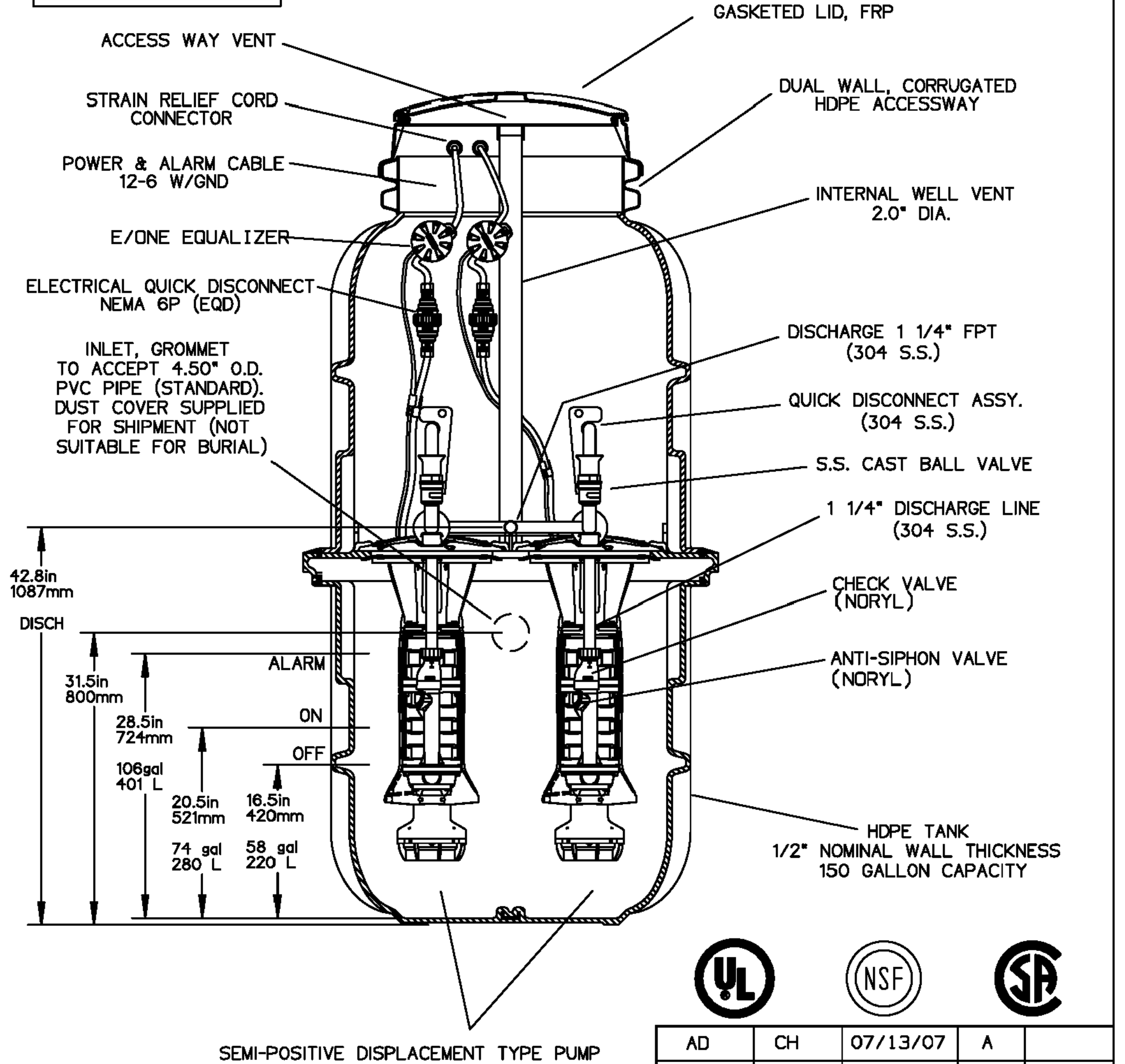
Control Panel
This station is designed to use the Alternating Control Panel, MOD T260.

Overload Capacity

The maximum pressure that the pump can generate is limited by the motor characteristics. The motor generates a pressure well below the rating of the piping and appurtenances. The automatic reset feature does not require manual operation following overload.

OPTIONS : ☒ DH152 (HARD WIRED LEVEL CONTROLS) ☐ DR152 (WIRELESS LEVEL CONTROLS)

FIELD JOINT REQUIRED FOR MODELS DH152-129 / DR152-129 & DH152-160 / DR152-160



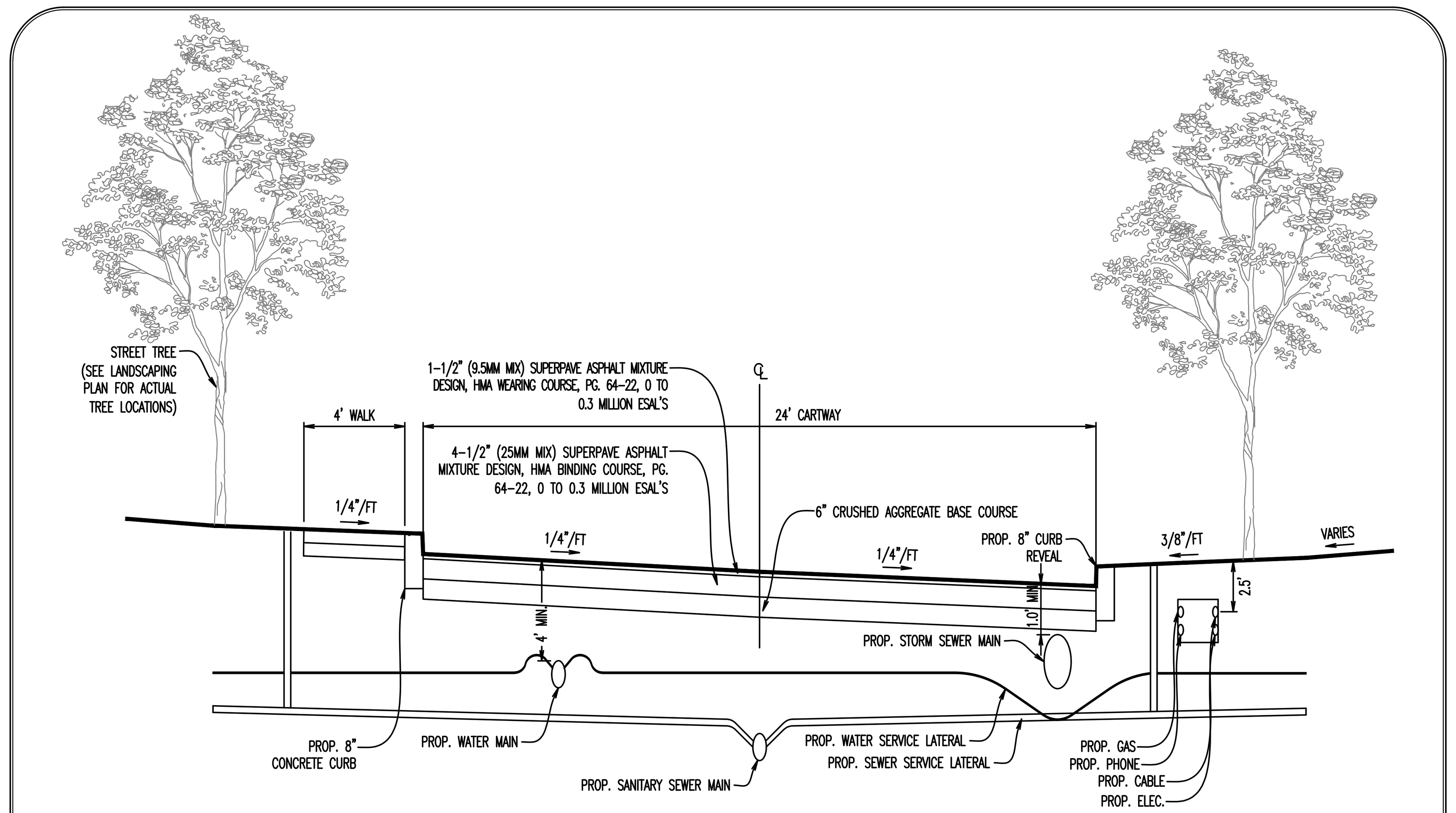
CONCRETE BALLAST MAY BE REQUIRED SEE INSTALLATION INSTRUCTIONS FOR DETAILS

AD	CH	07/13/07	A	
DR BY	CHK'D	DATE	ISSUE	SCALE

e|one SEWER SYSTEMS

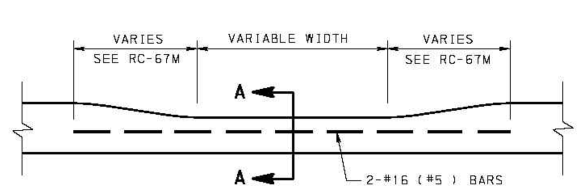
MODEL DH152 / DR152 DETAIL SHEET

NA0052P02

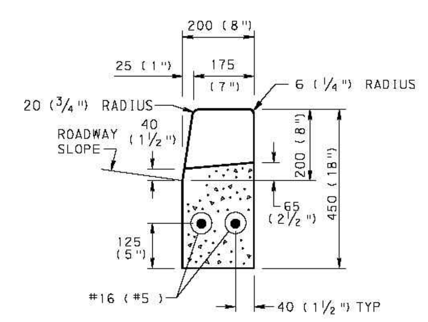


TYPICAL TOWNHOUSE ROAD CROSS-SECTION & PAVING DETAIL

NO SCALE



ELEVATION VIEW



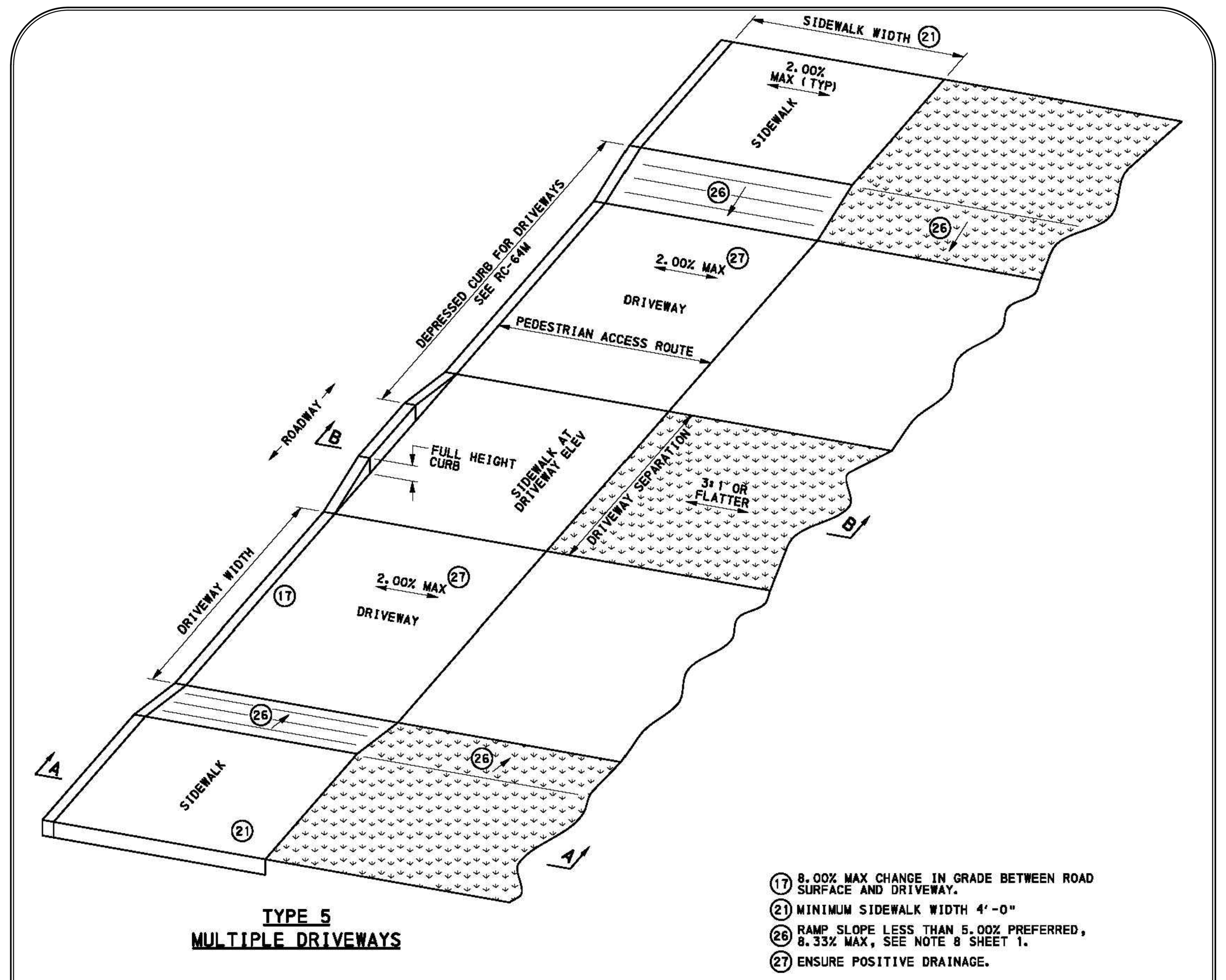
SECTION A-A

NOTES

1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PUBLICATION 408, SECTION 630 FOR PLAIN CEMENT CONCRETE CURB AND DEPRESSED CURB, SECTION 640 FOR PLAIN CEMENT CONCRETE GUTTER AND SECTION 641 FOR PLAIN CEMENT CONCRETE CURB GUTTER.
2. SPACE CONTRACTION JOINTS IN UNIFORM LENGTHS OR SECTIONS.
3. PLACE 20 (3/4") THICK PREMOLDED EXPANSION JOINT FILLER MATERIAL AT STRUCTURES AND AT THE END OF THE WORK DAY. CUT MATERIAL TO CONFORM TO AREA ADJACENT TO CURB OR TO CONFORM TO CROSS SECTIONAL AREA OF CURB.
4. SEE RC-50M FOR PLAIN CEMENT CONCRETE CURB SLOPED TOP TREATMENT AT END OF STRUCTURES.
5. WHERE CURBS ARE INSTALLED ADJACENT TO PARKING LANES A 150 (6") HIGH CURB CAN BE UTILIZED WITH APPROVAL FROM THE LOCAL MUNICIPALITY.
6. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. U.S. CUSTOMARY UNITS IN ( ) PARENTHESES.

DEPRESSED CURBS FOR DRIVEWAY DETAIL

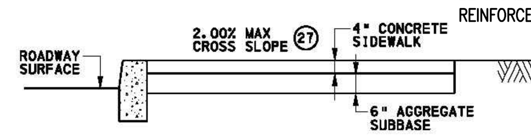
NO SCALE



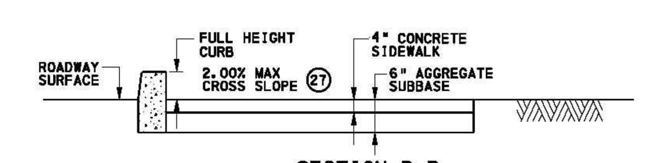
TYPE 5
MULTIPLE DRIVEWAYS

(17) 8.00% MAX CHANGE IN GRADE BETWEEN ROAD SURFACE AND DRIVEWAY.
(21) MINIMUM SIDEWALK WIDTH 4'-0"
(26) RAMP SLOPE LESS THAN 5.00% PREFERRED, 8.33% MAX, SEE NOTE 8 SHEET 1.
(27) ENSURE POSITIVE DRAINAGE.

SIDEWALK NOTE:
CONCRETE DEPTH AT ALL DRIVEWAY CROSSINGS SHALL BE INCREASED TO 6" IN DEPTH WITH WELDED WIRE REINFORCEMENT (66-1010)



SECTION A-A



SECTION B-B

CURB RAMPS, SIDEWALKS & DRIVEWAY APRONS DETAIL

NO SCALE

TYPAR Geosynthetics you can trust

BODPAVE®85

B8502_0812

Installation Guide
For Grassed Surfaces

BODPAVE®85 Installation Method

1. Install edge retention as specified: Either tanalised timber boards, concrete, steel or plastic curbs, or other as appropriate.
2. Ensure that the sand:soil rootzone bedding layer is the correct and uniform thickness, is level and well consolidated.
3. Place the paver units: With the two sets of edge loop connectors facing in directions of laying, place BODPAVE®85 pavers firmly onto the surface so that its ground spikes are pressed fully into the bedding and the base of the paver cells sit flat on the bedding layer surface. Connect adjacent pavers together by slotting the edge cell connectors down into the edge loops (LOOPS ALWAYS LEAD) and progress over the area in rows. Pavers are locked in place by snap-fit clips. If paver separation is required, clips can be dislocated using careful, firm hand or screwdriver pressure or by gently twisting the paver joints. Use protective gloves to avoid abrasions.
4. Pavers can be offset by one cell increments or cut to fit around obstructions and curves using a hand or power saw. The use of cut-pieces which do not have integral snap-fit connectors should be avoided wherever possible.
5. Fill pavers with specified rootzone to finished levels: 0.25" below top of the cells after settlement. A light plate compactor may be used to consolidate the pavers and settle rootzone fill. Do not overfill or over consolidate.
6. Carry out a normal seeding, fertilizing and watering program. A light top dressing may be applied to just cover the seed and to provide adequate germination conditions. Do not overfill the paver cells. Thin-cut or Washed Turf may be lightly rolled into the surface as an alternative if required.
7. The surface may be trafficked immediately for critical access purposes, but it is preferable to allow grass to fully establish prior to use.

Design Notes

Note 1: A class 5 road sub-base may be used provided that installation has adequate drainage. Alternatively, a permeable/open-graded(reduced fines) sub-base layer (i.e reduced fines class 7) may be specified, e.g. as part of a LID/NPDES system for stormwater control.

Note 2: Advised separation layer of TYPAR Geotextile 3401 to be installed between sub-base and bedding layer

Note 3: If construction traffic axle loads will be greater than (approx 6.5 Tons), minimum sub-base thickness shall be 6". Maximum sub-base particle size should match minimum sub-base thickness but not exceed 3" diameter.

Note 4: A geogrid may be used below sub-base layer to provide additional strength or reduce sub-base depth. Contact TYPAR Technical Sales for assistance.

Note 5: Specific advice on CBR% strengths, ground conditions and construction over weak ground with a CBR less than 1% is available from TYPAR Geosynthetics Technical Sales. CBR% = California Bearing Ratio, a measurement of subgrade soil strength

Note 6: Where an open-graded 'reduced fines' sub-base is specified for LID/NPDES applications, the sub-base should be wrapped with TYPAR geotextile fabric to avoid the bedding layer or sub-grade soils from leaching into the sub-base.

Note 7: Optional drainage may be required under impermeable soil conditions. Contact TYPAR Technical Sales for assistance.

Optional drainage detail: 4" diameter perforated pipe drains laid at minimum gradient 1:100, bedded on gravel in trench backfilled with .25" drainage stone / aggregate, trench covered &/or wrapped with a geotextile fabric (i.e TYPAR 3401), pipes leading to a suitable outfall or soakaway. Drains installed down center or one edge of areas up to 16' wide. Wider areas may require additional lateral drains at 16'-32' centers. Optional drainage design to be determined by the specifier based on specific site conditions.

Note 8: Drainage for a LID/NPDES application will vary according to the site but generally omits the requirement for extensive pipe and trench drainage systems with an open-graded sub-base layer.

Note 9: Rootzone bedding and paver fill must be a free-draining, structurally sound blend of sand:soil or sand:compost such as used in sports/golf construction and normally identified as a 60:40 or 70:30 ratio blend. The use of site-won materials or in-situ self-blending is NOT recommended without taking further advice from TYPAR Technical Sales.

Note 10: Maximum advised gradient for traffic applications: 12% (1:8) 7º. BODPAVE®85 pavers have specific pegging points if required for steep slope applications. Pegging is not necessary for standard applications.

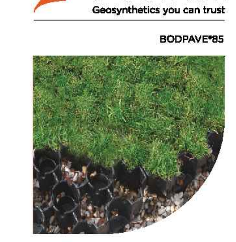
Specific advice on the use of BODPAVE®85 pavers on steep slopes, drainage suitability, soil suitability and LID/NPDES systems for water drainage applications, can be obtained from TYPAR Technical Sales.

Fiberweb Minneapolis
1611 County Road B West #102
Roseville, MN 55113 | USA
Tel: +1 651 330 2920
e.mail: geosales@fiberweb.com | www.typargeosynthetics.com.com

A fiberweb BUSINESS

TYPAR Geosynthetics you can trust

BODPAVE®85



Installation Guide For Grassed Surfaces

Typical Construction Profile

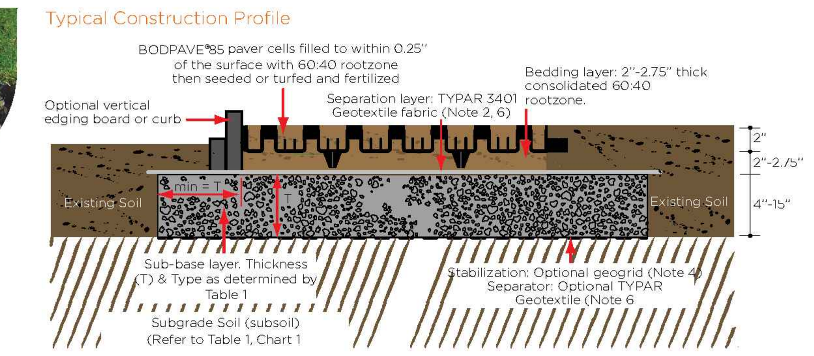


Table 1: Typical Sub-base Thickness (Tx) Requirements

Application/Load	CBR (%) Strength of Subgrade Soil (see chart 1)	(TX) DoT Sub-Base Thickness (mm & inches) (See Notes 1-5)		TYPAR Geotextile (see Notes 1-3)
Fire Trucks, Coaches and occasional HGV access	≥6	100mm	4"	3601
	=4<6	120mm	4"	3601
	=2<4	190mm	10"	3601
	=1<2	380mm	12"	3601
Light vehicle access and overspill car parking	≥6	100mm	4"	3401
	=4<6	100mm	4"	3401
	=2<4	135mm	6"	3401
	=1<2	260mm	10"	3401

Table 2: Materials Specification

Bedding Layer	60:40 rootzone : 2" - 2.75" thick
Paver fill (seed bed)	60:40 rootzone 1.75" thick
Grass seed or turf	0.01 lbs/ft² amenity blend low maintenance seed or turf as required
Fertilizer	Pre-seed fertilizer followed up with appropriate seasonal fertilizer
Sub-base type	Class 5 road base or a modified permeable reduced fines class 7 sub-base (Table 1)
Sub-base reinforcement	TYPAR Geotextile (Table 1) or geogrid Specification upon request

Chart 1: Field guidance for estimating sub-grade strengths

Consistency	Indicator: Tactile (feel)	Indicator: Visual	Indicator: Mechanical (test) SPT	Strength: CBR %	Strength: CU kN/sqm
Very Soft	Hand sample squeezes through fingers	Man standing will sink > 3"	<2	<1	< 25
Soft	Easily moulded by finger pressure	Man walking sinks 2" - 3"	2-4	Around 1	Around 25
Medium	Moulded by moderate finger pressure	Man walking sinks 1"	4-8	1-2	25-40
Firm	Moulded by strong finger pressure	Utility truck ruts 0.5" - 1"	8-15	2-4	40-75
Stiff	Cannot be moulded but can be indented by thumb	Loaded construction vehicle ruts by 1"	15-30	4-6	75-150

This field guide is provided as an aid to assessing the mechanical stabilization requirements in commonly encountered site conditions. Fiberweb accepts no responsibility for any loss or damage resulting from the use of this guide.

Please note that the information above is given as a guide only. All sizes and weights are nominal figures and may vary to what is published. Fiberweb Inc., cannot be liable for damage caused by incorrect installation of this product. Final determination of the suitability of any information or material for the use contemplated and the manner of its use is the sole responsibility of the user and the user must assume all risk and responsibility in connection therewith.

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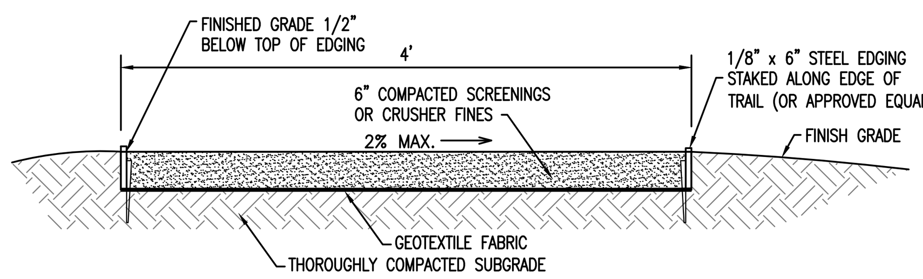
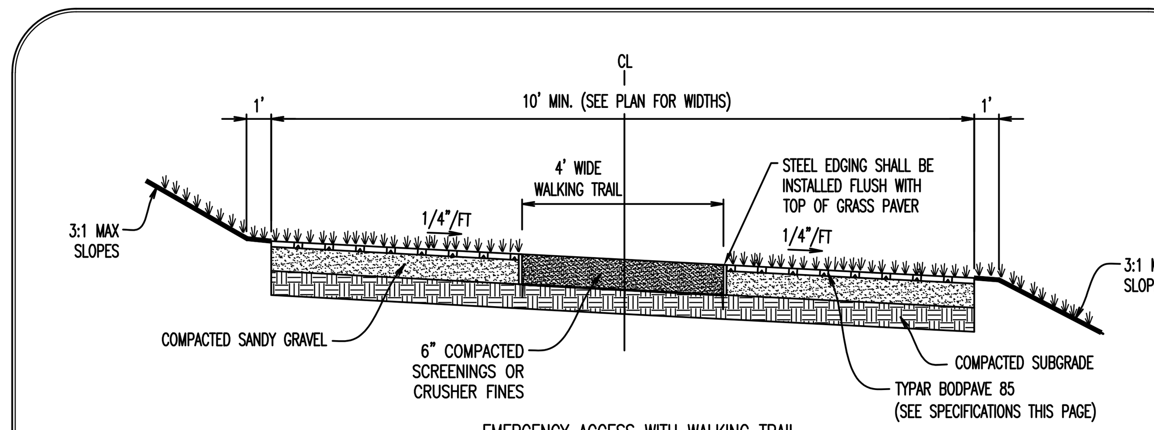
A fiberweb BUSINESS

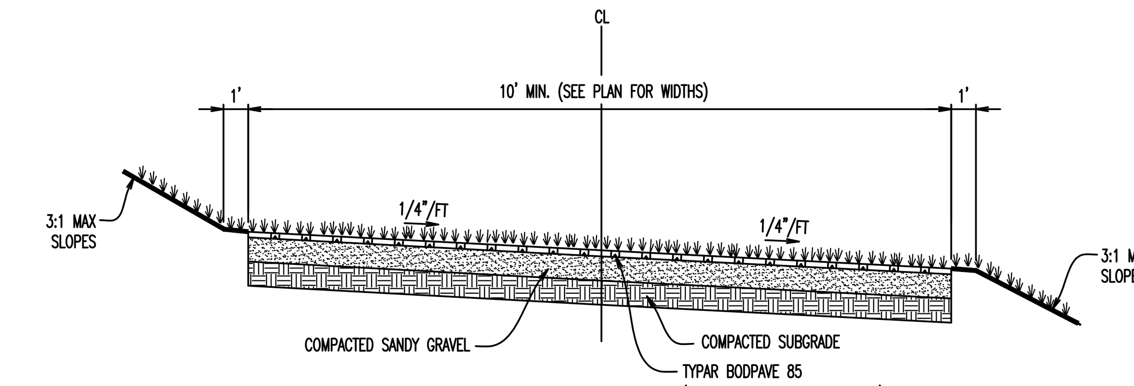


TYPICAL WALKING TRAIL SECTION

NO SCALE



EMERGENCY ACCESS WITH WALKING TRAIL



1. SPECIFIC DESIGN SPECIFICATIONS BASED ON ACTUAL FIELD SOIL CONDITIONS SHALL BE COORDINATED BETWEEN THE PROJECT'S GEOTECHNICAL ENGINEER AND THE MANUFACTURER. THE NEED FOR "OPTIONAL" ITEMS DISCUSSED IN THE SPECIFICATIONS BELOW SHALL INCLUDED IF APPLICABLE BASED UPON SOIL CONDITIONS.
2. SHOP DRAWINGS FOR THE PROPOSED EMERGENCY ACCESS MUST BE APPROVED BY THE TOWNSHIP ENGINEER PRIOR TO CONSTRUCTION.

TYPICAL EMERGENCY ACCESS CROSS-SECTION DETAIL

NO SCALE

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REV.	DATE	DESCRIPTION
8		
7	04/11/17	REVISED PER TOWNSHIP ENGINEER COMMENTS
6	02/09/17	REVISED FOR WALKING PATH RELOCATION
5	02/10/16	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED JANUARY 29,2016
4	01/25/15	REVISED PER CCCD REVIEW LETTER DATED JANUARY 20, 2016
3	12/18/15	REVISED PER TOWNSHIP REVIEWS
2	09/21/15	REVISED PER TOWNSHIP REVIEWS
1	07/27/15	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED JULY 2, 2015

AMENDED FINAL

CONSTRUCTION DETAILS

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA

DATE:	05/11/15
SCALE:	AS SHOWN
DRAWN BY:	ADM
CHECKED BY:	DWG
PROJECT NO.:	2708
CAD FILE:	13 CONSTRUCTION DETAILS.dwg
PLOTTED:	04/11/17
DRAWING NO.:	C06.2
SHEET	18 OF 21

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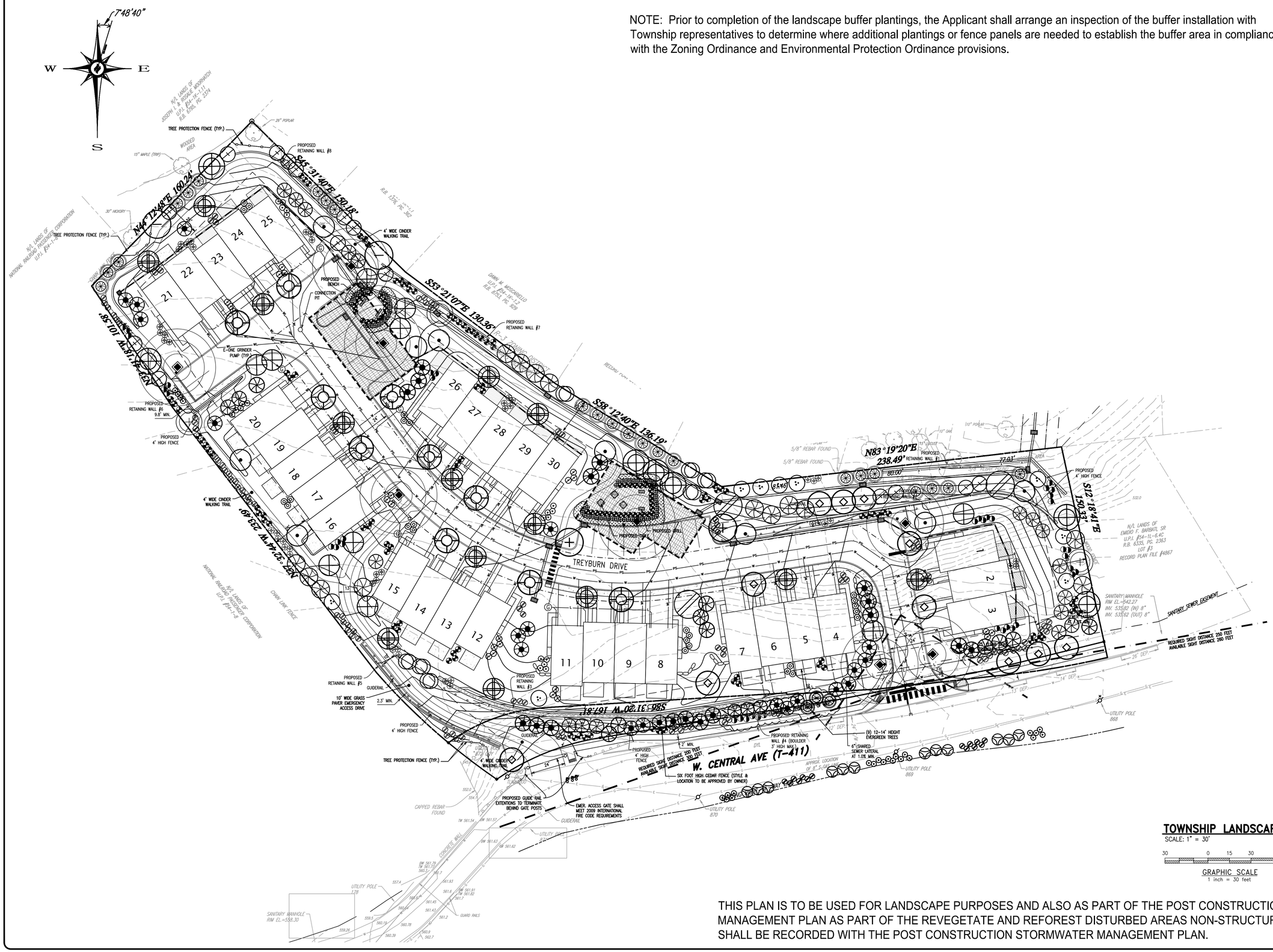
NOTE: Prior to completion of the landscape buffer plantings, the Applicant shall arrange an inspection of the buffer installation with Township representatives to determine where additional plantings or fence panels are needed to establish the buffer area in compliance with the Zoning Ordinance and Environmental Protection Ordinance provisions.



TOWNSHIP LANDSCAPE PLAN

SCALE: 1" = 30'

30 0 15 30 60

GRAPHIC SCALE
1 inch = 30 feet

THIS PLAN IS TO BE USED FOR LANDSCAPE PURPOSES AND ALSO AS PART OF THE POST CONSTRUCTION STORMWATER MANAGEMENT PLAN AS PART OF THE REVEGETATE AND REFOREST DISTURBED AREAS NON-STRUCTURAL BMP. THIS PLAN SHALL BE RECORDED WITH THE POST CONSTRUCTION STORMWATER MANAGEMENT PLAN.

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REV.	DATE	DESCRIPTION
8		
7		
6	04-11-17	REVISED LANDSCAPING PER 3/27/17 MTG WITH TWP LANDSCAPE ARCHITECT
5	02-10-17	REVISED SIDEWALK LOCATION AND LANDSCAPING
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3	12-18-15	REVISED PER FIELD VISIT ON 11-17-15 AND REVIEW LTR DATED 10-20-15
2	09-21-15	REVISED PER YERKES LETTER DATED JULY 2, 2015
1	07-27-15	REVISED PER YERKES LETTER DATED JULY 2, 2015

AMENDED FINAL
LANDSCAPE PLAN

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE
WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA.

DATE:	11/12/2014
SCALE:	1"=30'
DRAWN BY:	PJS
CHECKED BY:	PJS
PROJECT NO.:	2708
CAD FILE:	
PLOTTED:	04/11/2017
DRAWING NO.:	LP1.1
SHEET	19 OF 21

TOWNSHIP LANDSCAPE REQUIREMENTS

Chapter 73 - Environmental Protection

Section 73-52. Applicability.
A. Residential Uses. All residential dwellings with the exception of single-family detached dwellings and multifamily dwellings not otherwise requiring subdivision and land development approval. Those projects subject to subdivision and land development approval shall not be required to buffer along the property boundary if such projects border other residential development of similar scale.

(2) Multifamily Zones M-1 to M-7 shall comply with Items 1 through 5 of Table 1, Minimum Planting Standards.

(a) Front, side and rear perimeter planting buffers shall be 25 feet wide.

Section 73-53. Mitigation of visual impacts.
A. Consistent with the terms of this section, the applicant shall plant trees and shrubs and make other landscape improvements (e.g., berms, fences) as necessary to mitigate the adverse visual impacts which his proposed actions will have on his property, adjoining properties and the Township in general.

B. In demonstrating compliance with Subsection A above, the applicant shall abide by the requirements of §§ 73-54 and 73-55 below.

Section 73-54. Minimum Planting Standards.

Table 1 Minimum Planting Standards.	Required	Provided
1. Per 1,000 sf of gross building footprint area		
27,720 sf of gross building footprint / 1,000sf = 27.7		
2 Deciduous Trees	55	36***
4 Deciduous Shrubs	111	111
1 Evergreen Tree	28	28
2 Evergreen Shrubs	55	55
2. Per 40 linear feet of new paved street frontage (private or public)		
643 linear feet / 40' = 16		
1 Deciduous Tree	16	16
1 Evergreen Tree	16	16
3. Per 2,000 sf parking/loading area		
3,200 sf parking area / 2,000sf = 1.6		
1 Deciduous Tree	2	2
2 Deciduous Shrubs	4	4
1 Evergreen Tree	2	2
2 Evergreen Shrubs	4	4
4. Per 40 linear feet of existing public road frontage		
436 linear feet / 40' = 10.9		
1 Deciduous Tree	11	5***
1 Evergreen Tree	11	11
5. Per 100 linear feet of property boundary along adjoining residential or institutional properties		
1,412 linear feet / 100' = 14.1		
3 Deciduous Trees	43	43
3 Deciduous Shrubs	43	43
3 Evergreen Trees	43	43
10 Evergreen Shrubs	141	141

***25 Deciduous Trees were eliminated to increase the size of 28 Evergreen trees along Central Avenue.

TOWNSHIP PLANT SCHEDULE

Quantity	Symbol	Scientific Name	Common Name	Planting Size
Parking Lot Landscaping				
2		Celtis occidentalis	Common Hackberry	2-2 1/2" cal., 12-14'ht., 6-7'sp., B&B
2		Picea omorika	Serbian Spruce	6-8' ht. min., 4-5' sp., B&B
4		Ilex glabra 'Compacta'	Compact Inkberry Holly	24" ht. min., 15-18" sp., Cont.
4		Clethra alnifolia 'Hummingbird'	Hummingbird Summersweet	24" ht. min., 15-18" sp., Cont.
Tract Boundary Landscaping				
7		Acer rubrum 'Bowhall'	Bowhall Red Maple	2-2 1/2" cal., 12-14'ht., 6-7'sp., B&B
2		Liriondendron tulipifiera 'Fastigiatum'	Columnar Tulip Poplar	2-2 1/2" cal., 12-14'ht., 6-7'sp., B&B
3		Quercos phellos 'Wynstar'	Wynstar Willow Oak	2-2 1/2" cal., 12-14'ht., 6-7'sp., B&B
20		Picea omorika	Serbian Spruce	6-8' ht. min., 4-5' sp., B&B
23		Picea abies	Norway Spruce	6-8' ht. min., 4-5' sp., B&B
7		Cercis canadensis	Redbud	8-10' ht., 4-5' sp., B&B
9		Amelanchier canadensis	Multi-stem Serviceberry	8-10' ht., 4-5' sp., B&B
15		Cornus florida	Flowering Dogwood	8-10' ht., 4-5' sp., B&B
23		Hydrangea quercifolia	Oakleaf Hydrangea	24" ht. min., 15-18" sp., Cont.
67		Prunus laurocerasus	Cherry Laurel	24" ht. min., 15-18" sp., Cont.
20		Cornus sericea 'Baileyi'	Bailey's Red Twig Dogwood	24" ht. min., 15-18" sp., Cont.
74		Ilex glabra	Inkberry	24" ht. min., 15-18" sp., Cont.
Road Frontage Landscaping				
11		Ulmus parvifolia	Chinese Elm	2-2 1/2" cal., 12-14'ht., 6-7'sp., B&B
10		Quercus imbricaria	Shingle Oak	2-2 1/2" cal., 12-14'ht., 6-7'sp., B&B
4		Picea omorika	Serbian Spruce	6-8' ht. min., 4-5' sp., B&B
6		Picea omorika	Serbian Spruce	10-12' ht. min., 5-6' sp., B&B
8		Cryptomeria japonica 'Radicans'	Radicans Japanese Cryptomeria	6-8' ht. min., 4-5' sp., B&B
9		Cryptomeria japonica 'Radicans'	Radicans Japanese Cryptomeria	10-12' ht. min., 5-6' sp., B&B
Building Foundation Landscaping				
3		Quercos alba	White Oak	2-2 1/2" cal., 12-14'ht., 6-7'sp., B&B
10		Syringa reticulata 'Ivory Silk'	Ivory Silk Tree Lilac	2-2 1/2" cal., 12-14'ht., 6-7'sp., B&B
9		Amelanchier laevis	Allegheny Serviceberry	2-2 1/2" cal., 12-14'ht., 6-7'sp., B&B
14		Prunus sargentii 'Columnaris'	Columnar Sargent Cherry	2-2 1/2" cal., 12-14'ht., 6-7'sp., B&B
6		Picea omorika	Serbian Spruce	6-8' ht. min., 4-5' sp., B&B
5		Picea omorika	Serbian Spruce	8-10' ht. min., 5-6' sp., B&B
9		Cryptomeria japonica 'Radicans'	Radicans Japanese Cryptomeria	6-8' ht. min., 4-5' sp., B&B
8		Cryptomeria japonica 'Radicans'	Radicans Japanese Cryptomeria	10-12' ht. min., 5-6' sp., B&B
25		Itea virginica 'Merlot'	Merlot Sweetspire	24" ht. min., 15-18" sp., Cont.
23		Hydrangea macrophylla 'Endless Summer'	Endless Summer Hydrangea	24" ht. min., 15-18" sp., Cont.
27		Ilex glabra 'Compacta'	Compact Inkberry Holly	24" ht. min., 15-18" sp., Cont.
20		Clethra alnifolia 'Hummingbird'	Hummingbird Summersweet	24" ht. min., 15-18" sp., Cont.
18		Hydrangea quercifolia 'Ruby Slippers'	Ruby Slippers Oakleaf Hydrangea	24" ht. min., 15-18" sp., Cont.
28		Ilex crenata 'Helleri'	Heller's Japanese Holly	24" ht. min., 15-18" sp., Cont.
25		Cornus sericea 'Baileyi'	Bailey's Red Twig Dogwood	24" ht. min., 15-18" sp., Cont.
Additional Landscaping				
44		Buxus sempervirens 'Green Mountain'	Green Mountain Boxwood	24" ht. min., 15-18" sp., Cont.
65		Rosa 'Pink Knock Out'	Pink Knockout Shrub Rose	#2 Container
250		Assorted Perennials (Daylilly, Lavender, Heuchera, Salvia, Sedum, Black-Eyed Susan)		#1 Container

NOTES: 1. ALL DISTURBED AREAS ARE TO BE FINE GRADED, RAKED AND SEEDED. CONTRACTOR IS TO VERIFY SEEDING QUANTITY PRIOR TO BID.
2. THE 8-10', 10-12' & 12-14' FOOT HEIGHT EVERGREEN TREES ARE TO BE INSTALLED ALONG CENTRAL AVENUE.

CENTRAL AVENUE PLANT SCHEDULE

Quantity	Symbol	Scientific Name	Common Name	Planting Size
Buffer Plantings				
3		Picea abies	Norway Spruce	12-14' ht., 6-8' sp., B&B
3		Picea omorika	Serbian Spruce	12-14' ht., 6-8' sp., B&B
3		Cryptomeria japonica 'Radicans'	Radicans Japanese Cryptomeria	12-14' ht., 6-8' sp., B&B
South Side of Central Avenue Plantings				
12		Thuja standishii x plicata 'Green Giant'	Green Giant Arborvitae	5-6' ht., 3-4' sp., Cont.
14		Ilex glabra	Inkberry	24" ht. min., 15-18" sp., Cont.
20		Clethra alnifolia 'Ruby Spice'	Ruby Spice Summersweet	24" ht. min., 15-18" sp., Cont.

Section 73-57. Site maintenance and guaranty.

A. All landscape improvements to be provided in accordance with this article and Article IV, Conservation of Valued Woodlands and Other Vegetation, shall be installed and maintained by accepted practices as recognized by the American Association of Nurserymen. Planting and maintenance of vegetation shall include, as appropriate, but not necessarily be limited to provisions for surface mulch, guy-wires and stakes, irrigation, fertilization, insect and disease control, pruning, mulching, weeding and watering.

B. The applicant shall make arrangements acceptable to the Township that all landscape improvements installed in accordance with this chapter shall be guaranteed and maintained in a healthy and/or sound condition or otherwise be replaced once by equivalent improvements for a period of at least 12 months following their acceptance by the Township, except as otherwise required by the Township Subdivision and Land Development Ordinance.[1] After installation and prior to Township acceptance of the site improvements, representatives of the Township shall perform an inspection of the finished site for compliance with the approved planting plan. Provided that the finished site is found to be acceptable, the twelve-month guaranty period shall commence five days from the date of inspection. Plants found to be in poor health or lacking normal growth habit shall be replaced with a substitute plant material determined by the Township to be more suitable for the planting scheme. Replacement plants shall be inspected by representatives of the Township after installation. All plants shall be in a vigorous and thriving condition at the end of the twelve-month period as determined above. Final inspection of the site following the twelve-month period will be made by representatives of the Township and final approval given.

C. The applicant shall make arrangements acceptable to the Township for the property's long-term landscape maintenance. The applicant shall provide the names, addresses and telephone numbers of those persons or organizations who will be assuming such responsibilities. Landscaping improvements required by this chapter or any other ordinance shall be subject to suitable restrictive covenants and, if practicable, rules and regulations governing the use and maintenance of common lands and facilities, which covenants, rules and regulations shall be in form and substance acceptable to the Township Solicitor and, in the case of covenants, rules and regulations, shall, without limiting the foregoing, require the maintenance and replacement and prohibit the destruction or removal of all landscaping materials and improvements depicted on the landscaping plan; empower the Township to enforce said obligations; and prohibit the amendment or termination of any of the mandatory terms thereof without the express approval of the Township.

D. Where accidental damage or vandalism of plants occur, the applicant shall replace the damaged plant material in accordance with the original or modified planting plan. In such cases, the twelve-month replacement policy required above may be waived, and any remaining time in the guaranty period shall be binding for repeat replacements.

E. At the Township's discretion, the applicant may be required to escrow sufficient funds for the maintenance and/or replacement of the proposed vegetation during the twelve-month replacement period. In addition, an escrow may be required for the removal and replacement of specimen trees damaged during construction.

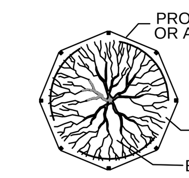
THIS PLAN IS TO BE USED FOR LANDSCAPE PURPOSES AND ALSO AS PART OF THE POST CONSTRUCTION STORMWATER MANAGEMENT PLAN AS PART OF THE REVEGETATE AND REFOREST DISTURBED AREAS NON-STRUCTURAL BMP. THIS PLAN SHALL BE RECORDED WITH THE POST CONSTRUCTION STORMWATER MANAGEMENT PLAN.

General Notes:

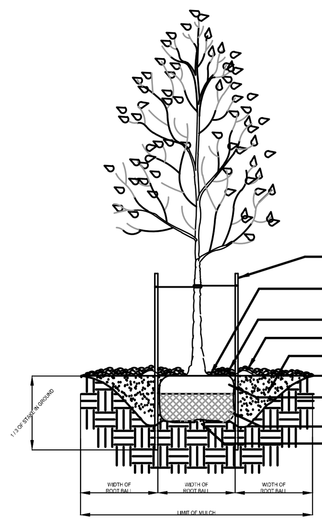
1. All plants shall be of specimen quality.
2. All plants shall conform with the most current version of the "American Standard for Nursery Stock" of the American Nursery and Landscape Association.
3. All plant material shall be guaranteed for a period of one (1) year.
4. Location of all underground utilities shall be verified and marked in the field, prior to any digging operations.
5. All trees shall be provided with a 3" deep saucer, consisting of shredded Oak bark mulch. All shrub beds shall be provided with a 3" deep layer of shredded Oak bark mulch.
6. All plants shall be thoroughly watered by the Contractor at least three (3) times in the first month after planting. Additional watering may be required during summer months depending upon rainfall amounts.
7. All trees and shrubs shall be inspected and approved by the Landscape Architect, prior to planting. All plant material shall be laid out in the field by the Landscape Architect prior to installation.

TREE PROTECTION NOTES

1. DIAMETER OF TREE PROTECTION ZONE SHALL BE ONE FOOT FOR EACH INCH OF TRUNK DIAMETER OR $\frac{1}{2}$ THE HEIGHT OR THE TREE, WHICHEVER IS GREATER. FOR 3-INCH CALIPER TREES THE PROTECTION ZONE SHALL BE 6 FOOT DIAMTER MINIMUM.
2. TEMPORARY FENCING (6 FEET HIGH) SHALL BE PLACED AT THE DRIPLINE OF THE TREE TO BE PRESERVED. FENCING SHALL COMPLETELY ENCIRCLE THE TREE(S). AVOID DRIVING FENCE POSTS OR STAKES INTO MAJOR ROOTS.
3. DEAD TREES, SCRUB, OR UNDERGROWTH SHALL BE CUT FLUSH WITH ADJACENT GRADE. THERE SHALL BE NO SOIL DISTURBANCE UNDER THE DRIP LINE OF TREES TO BE PRESERVED.
4. PLACE 6 INCHES OF BARK MULCH AT AREAS NOT PROTECTED BY FENCING.
5. TREATMENT OF ROOTS EXPOSED DURING CONSTRUCTION SHALL BE AS FOLLOWS; FOR ROOTS OVER 1 INCH DIAMETER DAMAGED, MAKE A CLEAN STRAIGHT CUT TO REMOVE DAMAGED PORTION OF ROOT. ALL EXPOSED ROOTS SHOULD BE TEMPORARILY COVERED WITH DAMP BURLAP AND COVERED WITH SOIL OR MULCH AS SOON AS POSSIBLE TO PREVENT DRYING.
6. NO EQUIPMENT OR MACHINERY SHALL BE USED WITHIN THE TREE PROTECTION ZONE.
7. WORK REQUIRED WITHIN THE TREE PROTECTION ZONE SHALL BE DONE MANUALLY.
8. NO STOCKPILING OF MATERIALS, VEHICULAR TRAFFIC, OR STORAGE IS ALLOWED WITHIN THE LIMIT OF THE TREE PROTECTION.

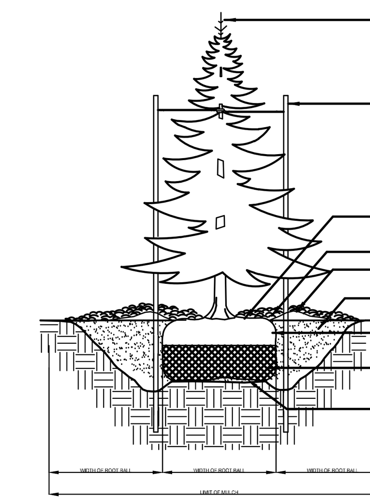


TREE PROTECTION DETAIL
NO SCALE



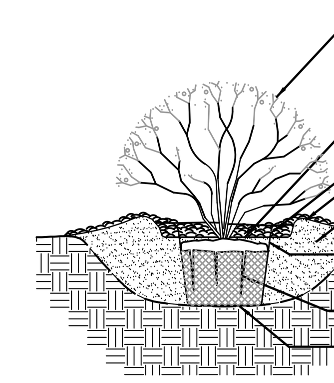
NOTES:
1. DO NOT DAMAGE MAIN ROOTS OR ROOT BALL WHEN INSTALLING TREE STAKE.
2. WATER THOROUGHLY AFTER INSTALLATION.
3. REMOVE STAKES TWO YEARS OR LESS AFTER INSTALLATION.
4. CONTRACTOR IS NOT TO USE TREE WRAP.

TYPICAL DECIDUOUS TREE PLANTING DETAIL
NOT TO SCALE



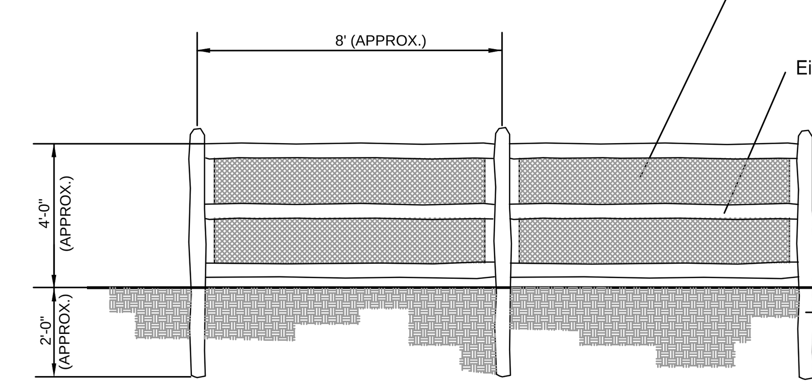
NOTES:
1. DO NOT DAMAGE MAIN ROOTS OR DESTROY ROOT BALL WHEN INSTALLING TREE STAKE.
2. WATER THOROUGHLY AFTER INSTALLATION.
3. REMOVE STAKES TWO YEARS OR LESS AFTER INSTALLATION.

TYPICAL EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE



NOTES:
1. WATER THOROUGHLY AFTER INSTALLATION.
2. FOR PLANTING BED INSTALLATION EXCAVATE ENTIRE SHRUB BED AS SHOWN ON PROJECT DRAWINGS.

TYPICAL SHRUB PLANTING DETAIL
NOT TO SCALE



SPLIT-RAIL FENCE WITH WIRE MESH DETAIL
NOT TO SCALE

NOTE: ALL FENCES ON TOP OF RETAINING WALLS SHALL COMPLY WITH ALL SAFETY REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE.

NOTE: PRIOR TO COMPLETION OF THE LANDSCAPE BUFFER PLANTINGS, THE APPLICANT SHALL ARRANGE AN INSPECTION WITH TOWNSHIP REPRESENTATIVES TO DETERMINE IF ANY ADDITIONAL PLANTINGS OR, IF APPROPRIATE FENCE PANELS ARE REQUIRED TO ESTABLISH THE BUFFER AREA.

LANDSCAPE NOTES & DETAILS
SCALE:

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PENNSYLVANIA REGISTERED LANDSCAPE ARCHITECT PATRICK J. STUART

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REV.	DATE	DESCRIPTION
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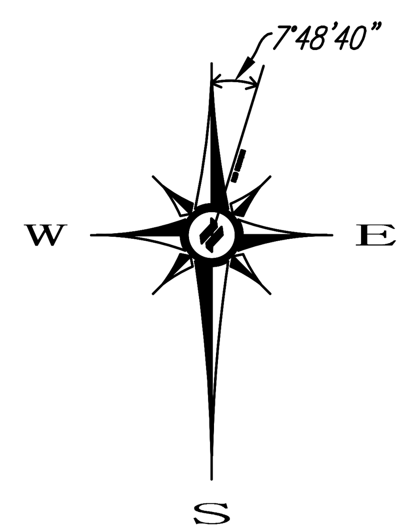
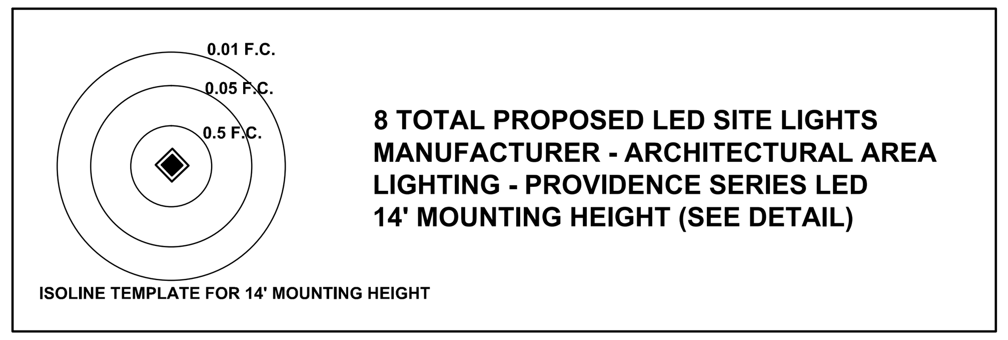
AMENDED FINAL
LANDSCAPE NOTES & DETAILS

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA.

DATE:	11/12/2014
SCALE:	1"=30'
DRAWN BY:	PJS
CHECKED BY:	PJS
PROJECT NO.:	2708
CAD FILE:	
PLOTTED:	04/11/2017
DRAWING NO.:	LP1.2
SHEET	20 OF 21





PROS – Providence Small Housing Scale TYPE

- Warm white and bright white LEDs or HID
- Die cast aluminum construction for reliability, robust construction and corrosion resistance
- Tool-less access and removal of lamp and ballast
- Direct full cutoff optical system
- Indirect asymmetric and symmetric cut-off optical systems
- Slips over a 3"/75mm pole for mounting
- IP55 rating
- Powder coat finish in 13 standard colors with a polymer primer sealer

PROS

1. LUMINAIRE	2. LAMP/LED	3. COLOR	4. OPTIONS	5. MOUNTING

1. LUMINAIRE
LED
☒ PROS-X
DIRECT REFLECTIVE OPTICAL SYSTEM
☐ PROS-DIRS (Symmetric Compact fluorescent and Metal Halide)

2. LAMP/BALLAST
LED (Warm white (3000K), Neutral White (4000K), Bright white (5000K); 120 thru 277 volt)
16.4 watts, Type 1
☐ 18LED-WW (Warm white)
☐ 18LED-NW (Neutral white)
☐ 18LED-BW (Bright white)
33.6 watts, Type 3
☐ 27LED-WW (Warm white)
☐ 27LED-NW (Neutral white)
☐ 27LED-BW (Bright white)
32.7 watts, Type 5
☐ 36LED-WW (Warm white)
☐ 36LED-NW (Neutral white)
☒ 36LED-BW (Bright white)
ELECTRONIC METAL HALIDE
PGJ5 base, Mini Mastercolor lamp.
☐ 20MMC ☐ 39MMC
G12 base, T-6 ceramic lamp
☐ 39MHT6EB ☐ 70MHT6EB
COMPACT FLUORESCENT (Specify wattage. -18°C minimum starting temp)
GX24q base, 26, 32 or 42 watt lamp
☐ CF
Lamps not included, except LED option.

3. COLOR
☐ AWT (Arctic White) ☐ CRT (Corten)
☐ BLK (Black) ☐ MAL (Matte Aluminum)
☒ MTB (Matte Black) ☐ MDG (Medium Grey)
☐ DGN (Dark Green) ☐ ATG (Antique Green)
☐ DBZ (Dark Bronze) ☐ LGY (Light Grey)
☐ WRZ (Weathered Bronze) ☐ RAL/PREMIUM COLOR (Provide RAL)
☐ BRM (Metallic Bronze) ☐ CUSTOM COLOR (Provide color chip for matching)
☐ VBL (Verde Blue)

4. OPTIONS
☐ SPK (Decorative spike) ☐ PFN (Finial painted brass)
☐ BPS (Struts painted brass) ☐ HSS (House side shield, not available for Type 5. Factory installed. Not for LED.)
☐ LDL (Lightly diffused lens. Frosted, flat tempered glass lens has a lightly diffused finish to minimize the lamp and reflector brightness.)
☐ AD4 (Adapter used only with standard AAL arms and post top mount fixtures to slip over a 4"/100mm O.D. pole)

SCP (Sensor Control Programmable) pole accessory is available to provide occupancy detection for outdoor applications meeting California Title 24. For complete spec sheet and ordering information, visit www.aal.net/products/sensor_control_programmable/

5. MOUNTING – Optional
One-piece cast aluminum arms accept the standard 3" slip fitter on the Providence fixture. The arms are prewired with quick disconnects. Wall mounted arms do not include wall mounting hardware. Pole mounted arms use 3/8-16 hardware bolts for attaching to the pole.
WALL MOUNT
☐ WMA59D (Mount down) ☐ WMA59U (Mount up)
POLE MOUNT (Side mounts to a 4" O.D. pole.)
☐ TRA59D (Mount down) ☒ TRA59U (Mount up)
Visit www.aal.net for Arms, Poles & Accessories Specification Guide

SPECIFICATIONS
REFLECTOR MODELS - REFLECTOR/LAMP
The upper lamp housing shall be die cast aluminum. The internal reflector module is sealed from the outer housing with a one piece, memory retentive, molded silicone gasket. The tempered glass lens shall be sealed to the housing with a silicone gasket. One stainless steel latch shall release the door to allow access to the lamp.
The reflector module shall be composed of a spun, specular aluminum panel rigidly attached in a die cast aluminum housing. The horizontal lamp reflectors (DIRS) shall meet ANSI-IES standards for full cutoff reflector systems.
REFLECTOR MODELS - BALLAST
The lower ballast housing shall be cast aluminum. The tool-less ballast access for servicing is accomplished by a quarter turn motion of the top cover. The ballast shall be mounted on a prewired tray with a quick disconnect plug attached to the underside of the cover. HID ballasts are high power factor, rated for -30°C starting. Electronic ballasts for metal halide lamps are sound rated A. Sockets are medium base, G12 for use with T6 lamps. All sockets are pulse rated porcelain. All configurations shall accept 120 through 277 volt input. Compact fluorescent ballasts are rated for -18°C

See next page

JOB
TYPE
NOTES

ARCHITECTURAL AREA LIGHTING
16555 East Gale Ave. I City of Industry I CA 91745
P 626.968.5666 I F 626.369.2695 I www.aal.net
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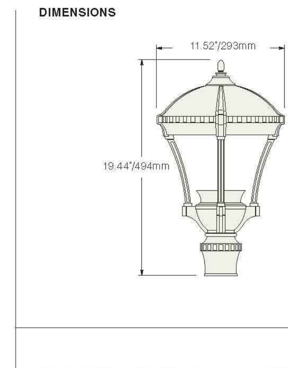

PROS – Providence Small Housing Scale TYPE

INSTALLATION & MOUNTING
The PROS shall be factory supplied as a complete, prewired assembly. The fixture shall slip over a 3"/75mm open top pole or 4"/100mm pole mounted arm and secured and leveled with 3 stainless steel set screws.

CONTROLS
- SCP shall have an integral surge protection device with a currentt rating of 10,000 Amps using the industry standard 8/20uSec wave and sure rating of 372J
- Sensor not intended for use with additional photo-control, wireless control or dimming systems.

FINISH
Fixture finish consists of a five stage pretreatment regimen with a polymer primer sealer, oven dry off and top coated with a thermoset super TGIC polyester powder coat finish. The finish shall meet the AAMA 605.2 performance specification which includes passing a 3000 hour salt spray test for corrosion resistance.

CERTIFICATION
The fixture shall be listed with ETL for outdoor, wet location use, UL1598 and Canadian CSA Std. C22.2 no.250. IP=55.

WARRANTY / TERMS AND CONDITIONS OF SALE
Download:
http://www.hubbelllighting.com/resources/warranty/

Contact AAL for complete warranty language, exceptions, and limitations.

DIMENSIONS
11.52"/293mm
19.44"/494mm
Weight: 9 LBS
EPA: 0.46

PROS H5 70MH WATTAGE: 82 LUMEN OUTPUT: 2221 EFFICACY: 75.6

B1 U0 G0

FORWARD LIGHT			LUMEN
FL	30°	13.3%	822
FM	60°	6.8%	419
FH	80°	0.7%	46
FVH	90°	0%	2
BACK LIGHT			
BL	30°	8.0%	498
BM	60°	6.6%	409
BH	80°	0.4%	26
BVH	90°	0%	2
UPLIGHT			
UL	100°	0%	0
UH	180°	0%	0

20' MOUNTING HEIGHT

Mounting Height	Multiplier
10	4.000
15	1.778
20	1.000
25	0.640
30	0.444
35	0.327
40	0.250
45	0.198
50	0.160

UPLIGHT 0%
DOWNLIGHT 100%

PROS 36LED BW WATTAGE: 32.7 LUMEN OUTPUT: 1634 EFFICACY: 50

B1 U1 G0

FORWARD LIGHT			LUMEN
FL	30°	10.5%	172
FM	60°	30.3%	495
FH	80°	8.9%	146
FVH	90°	0.2%	3
BACK LIGHT			
BL	30°	11.0%	179
BM	60°	30.2%	493
BH	80°	8.5%	139
BVH	90°	0.2%	3
UPLIGHT			
UL	100°	0.1%	1
UH	180°	0.2%	4

20' MOUNTING HEIGHT

Mounting Height	Multiplier
10	4.000
15	1.778
20	1.000
25	0.640
30	0.444
35	0.327
40	0.250
45	0.198
50	0.160

UPLIGHT 0.3%
DOWNLIGHT 99.7%

AAL reserves the right to change product specifications without notice.

IES files can be found at www.aal.net

ARCHITECTURAL AREA LIGHTING
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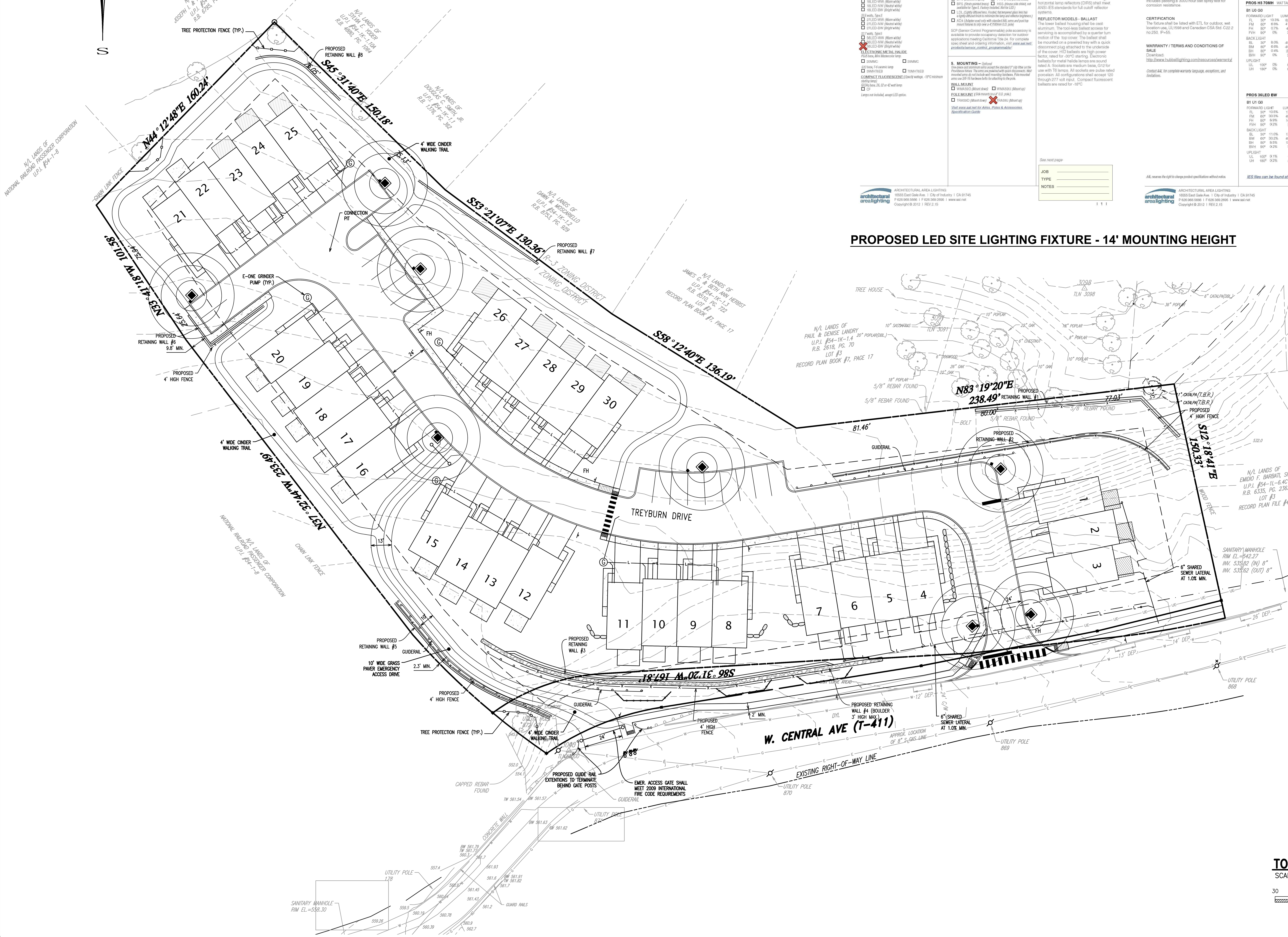
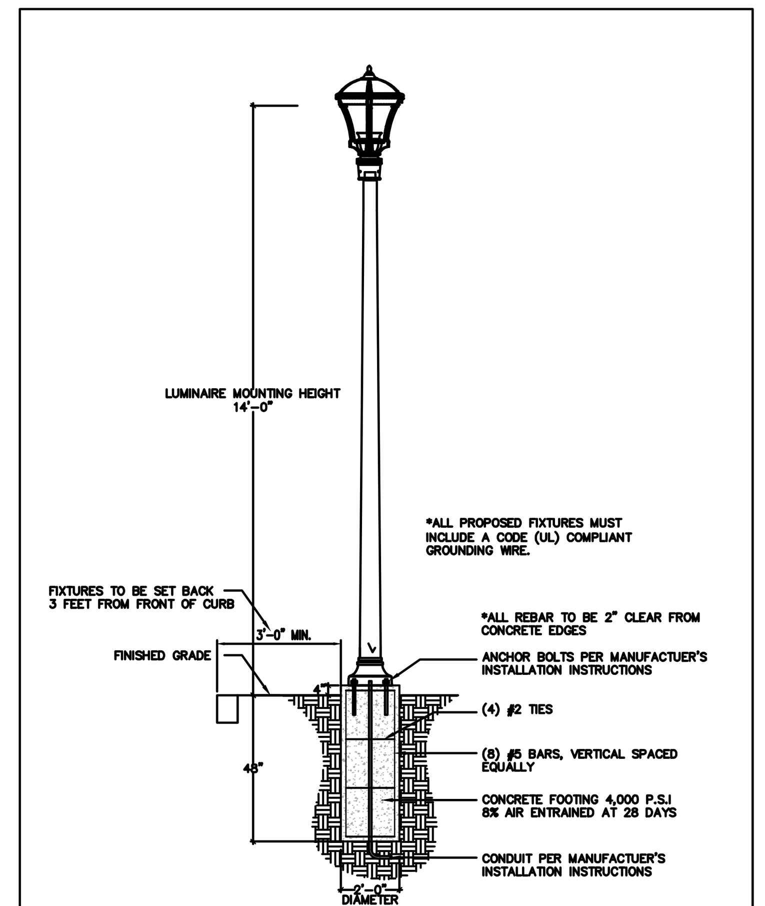
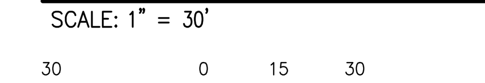
PROPOSED LED SITE LIGHTING FIXTURE - 14' MOUNTING HEIGHT





LIGHT FIXTURE FOOTING DETAIL
—WITHIN LANDSCAPED AREAS—

TOWNSHIP LIGHTING PLAN
SCALE: 1" = 30'



GRAPHIC SCALE
1 inch = 30 feet

ORSATTI & STUART ASSOCIATES, INC.
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PATRICK J. STUART
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1250 Wrights Lane
West Chester, PA 19380
Phone: (610) 918-9002
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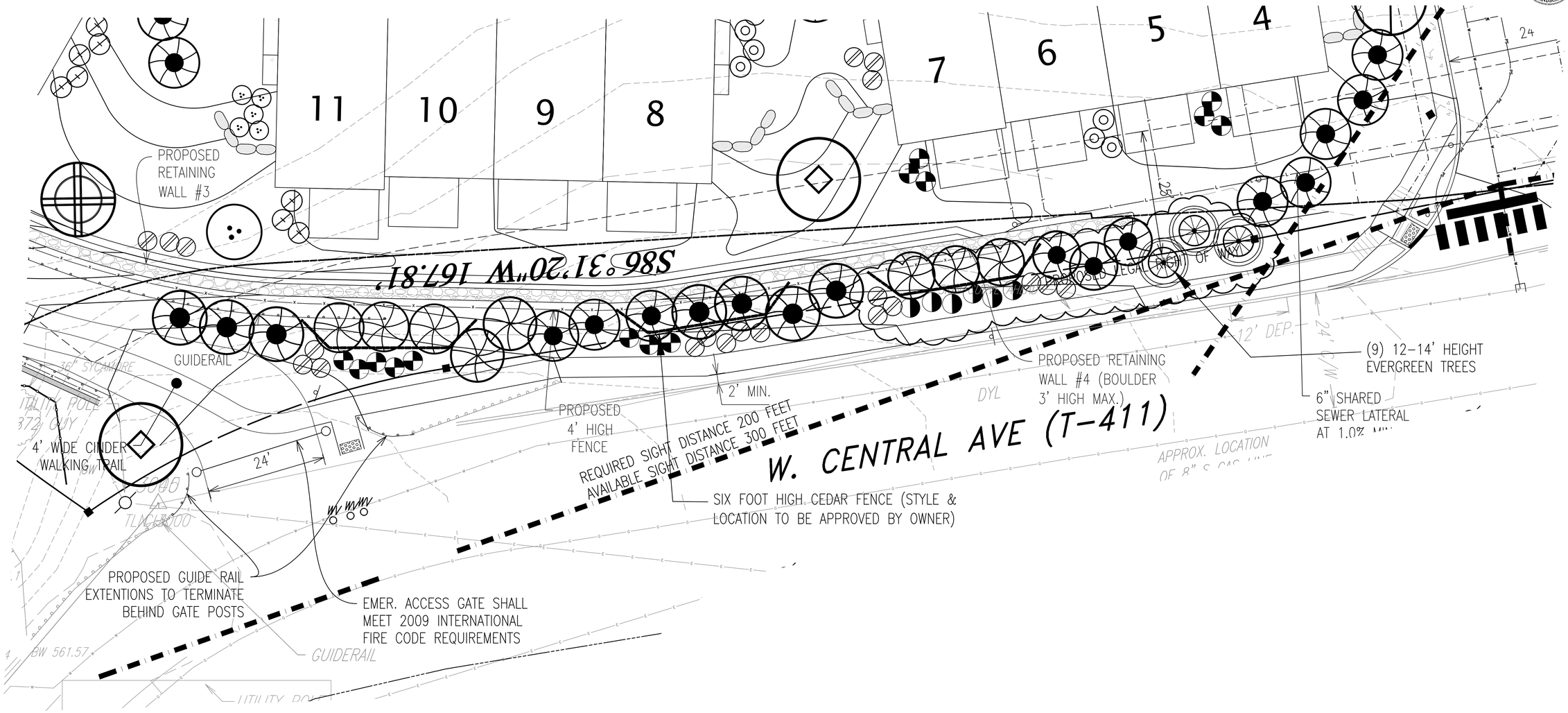
REV.	DATE	DESCRIPTION
8		
7		
6		
5	04-11-17	REVISED LANDSCAPING PER 3/27/17 MTG WITH TWP LANDSCAPE ARCHITECT
4	02-10-16	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED 01/29/16
3	12-18-15	REVISED PER FIELD VISIT ON 11-17-15 AND REVIEW LTR DATED 10-20-15
2	09-21-15	REVISED PER YERKES LETTER DATED JULY 2, 2015
1	07-27-15	REVISED PER YERKES LETTER DATED JULY 2, 2015

PRELIMINARY/FINAL
LIGHTING PLAN

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE
WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA.

DATE:	11/12/2014
SCALE:	1"=30'
DRAWN BY:	PJS
CHECKED BY:	PJS
PROJECT NO.:	2708
CAD FILE:	
PLOTTED:	04/11/2017
DRAWING NO.:	C07.1
SHEET	21 OF 21



LANDSCAPE ENLARGEMENT PLAN

SCALE: 1" = 10'

10 0 5 10 20

GRAPHIC SCALE
1 inch = 10 feet

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

REV.	DATE	DESCRIPTION
8		
7		
6	04-11-17	REVISED LANDSCAPING PER 3/27/17 MTG WITH TWP LANDSCAPE ARCHITECT
5	02-10-17	REVISED SIDEWALK LOCATION AND LANDSCAPING
4	02-10-16	REVISED PER TOWNSHIP ENGINEER REVIEW LETTER DATED 01/28/16
3	12-18-15	REVISED PER FIELD VISIT ON 11-17-15 AND REVIEW LTR DATED 10-20-15
2	09-21-15	REVISED PER YERKES LETTER DATED JULY 2, 2015
1	07-27-15	REVISED PER YERKES LETTER DATED JULY 2, 2015

AMENDED FINAL
LANDSCAPE ENLARGEMENT PLAN

CLIENT: GRAYS INVESTMENT PROPERTIES, L.P.
PROJECT: PAOLI WALK
LOCATION: 285 WEST CENTRAL AVENUE
WILLISTOWN TOWNSHIP, CHESTER COUNTY, PA.

DATE:	11/12/2014
SCALE:	1"=30'
DRAWN BY:	PJS
CHECKED BY:	PJS
PROJECT NO.:	2708
CAD FILE:	
PLOTTED:	04/11/2017
DRAWING NO.:	LEP1.1
SHEET	1 OF 1