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Drawings and Specifications as instruments of service are and shall remain the property of the architect and engineer whether the project for which they are made is executed or not. They are not to be used by the client or others on other projects except by agreement in writing.

Any change or deviation from this plan by the owner, contractor, or surveyor shall release the architect and engineer from any and all liability relating thereto unless such change has been approved by the architect and engineer in writing.

It is the responsibility of the owner, developer and/or contractor to obtain any and all permits or approvals required for the construction of the proposed and existing improvements shown on this plan. It is the responsibility of the owner, developer and/or contractor to obtain any and all permits or approvals required for the construction of the proposed and existing improvements shown on this plan. It is the responsibility of the owner, developer and/or contractor to obtain any and all permits or approvals required for the construction of the proposed and existing improvements shown on this plan.

Completeness or accuracy of location and depth of underground utilities or structures cannot be guaranteed. The contractor shall verify the location and depth of all underground utilities and facilities prior to beginning any construction.

It is the intent of the grades shown on this plan to provide positive drainage to adjacent drainage structures. The contractor, owner or surveyor shall verify the location and depth of all underground utilities and facilities prior to beginning any construction.

Contractor/Bidder may find variations in "Existing Grades" due to cut and fill operations performed during road and utility construction. Hillcrest Associates, Inc. assumes no responsibility for any inaccuracies in existing grades due to fluctuations in the water table, faulty installation, or lack of maintenance.

The contractor, owner, or surveyor shall contact Hillcrest Assoc., Inc. immediately if any questions arise whatsoever regarding the location and depth of all underground utilities and facilities prior to beginning any construction.

Septic system installation shall be in accordance with all applicable Chester County Septic System Regulations.

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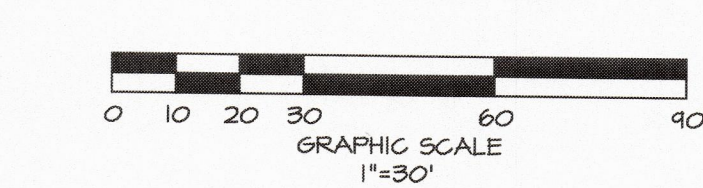
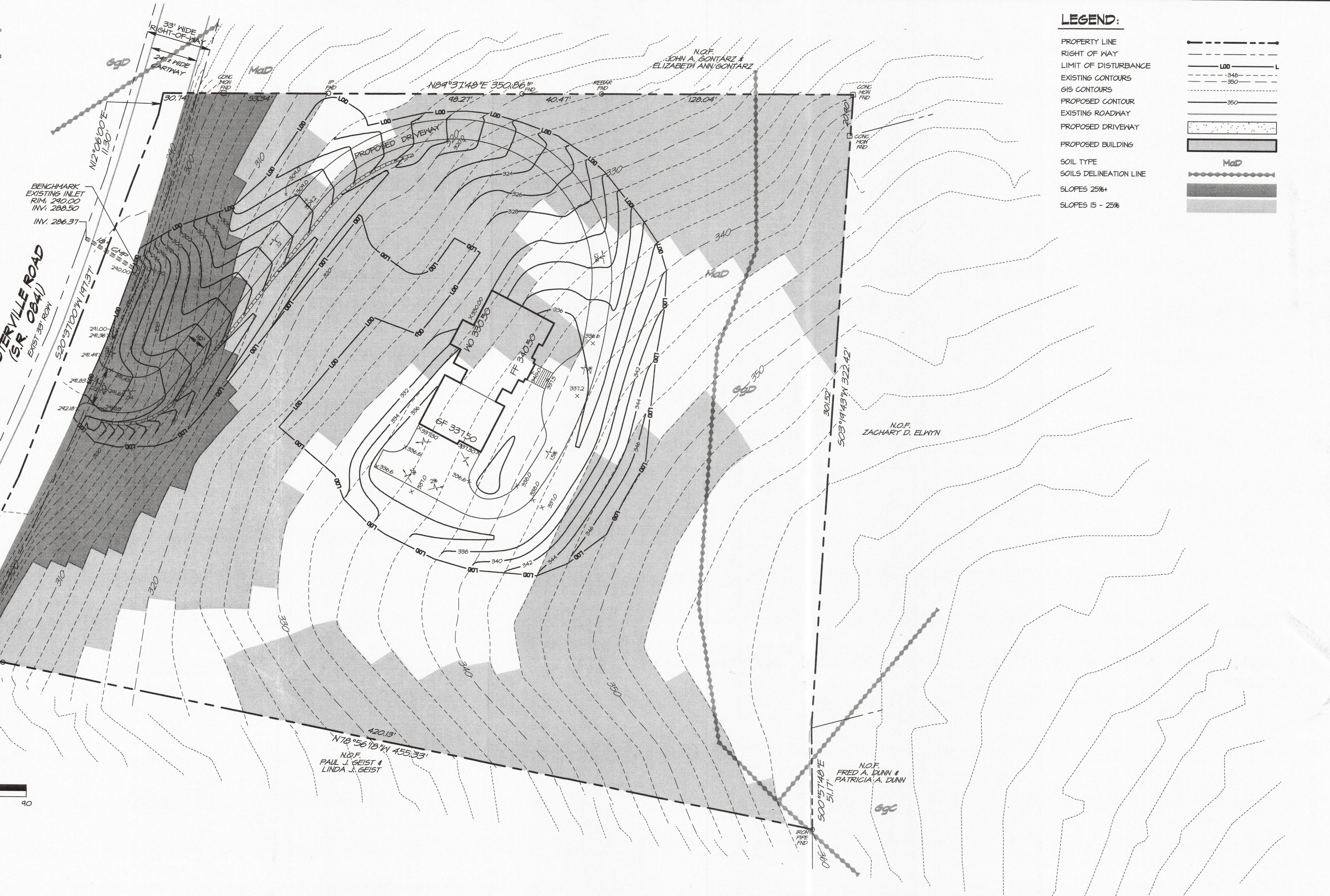
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SOIL LEGEND		
SOIL TYPE	NAME	HSG
GcB	GLENELG SILT LOAM, 8 - 15% SLOPES	B
GcC	GLENELG SILT LOAM, 15 - 25% SLOPES	B
MaD	MANOR LOAM, 15 - 25% SLOPES	B

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.
- At least 3 days before starting any earth disturbance activities, all contractors involved shall notify the Pennsylvania One Call System Inc. at 1-800-242-1776 for buried utilities location.
- Prior to any ground disturbances the contractor will stake out the proposed LOD to ensure the total disturbance does not exceed one acre. If disturbance exceeds one acre, then earthwork will cease and the site will be stabilized until a NPDES permit is obtained.
- Install construction entrance and filter fabric silt fence where indicated on plan.
- Enclose the proposed septic area and stormwater infiltration area with orange construction fence to avoid compaction from construction equipment. Construction may commence once the silt fence and orange construction fence have been installed.
- Clear and grub vegetation, strip topsoil and stockpile in areas designated on the plan. Topsoil stockpiles shall be enclosed with 6' silt fence and stabilized immediately with straw mulch.
- Excavate site to rough grade elevation. Excess subsoil that will not be used during the final grading process shall be hauled off site to an approved location. The landowner must exercise due diligence in maintaining any soil hauled off site as clean fill. In conformance with due diligence findings, asphalt and stone will be disposed of at an approved recycling facility. All subsoil removed from the site will be clean fill material. If any discrepancies are noted during excavation, the contractor shall contact the Project Engineer to establish the proper course of action for the disposal of the non-clean fill.
- As construction progresses, maintain sheet flow of surface runoff toward the installed silt fence.
- Install storm drain piping and inlets. The inlets shall be capped with marine grade plywood and a watertight seal until the site is stabilized. Construct stable driveway access to building pad.
- Construct building, remaining utilities, and paving/hardscape.
- Finish grade and immediately stabilize with seed per the permanent seeding specifications.
- When the area tributary to the infiltration area is determined to be uniformly stabilized (10% vegetative cover) based on a site inspection by Township, the plywood may be removed from the inlets.
- Prior to removal of any E45 control facility the Township must inspect the facility and approve removal.

TOTAL DISTURBED AREA: 42,938 S.F. or 0.98 AC

IF DISTURBANCE EXCEEDS 10 ACRES, THEN EARTHWORK WILL CEASE AND THE SITE WILL BE STABILIZED UNTIL A NPDES PERMIT IS OBTAINED.

RECEIVING STREAM: UNNAMED TO WEST BRANCH WHITE CLAY CREEK (TSP-MF)

BEFORE YOU DIG ANYWHERE IN PENNSYLVANIA
 CALL 1-800-242-1776
 PA ACT 187 REQUIRES 3 WORKING DAYS NOTICE BEFORE YOU EXCAVATE
PA ONE CALL SYSTEM, INC.
 SERIAL #

LEGEND:

- PROPERTY LINE
- RIGHT OF WAY
- LIMIT OF DISTURBANCE
- EXISTING CONTOURS
- GIS CONTOURS
- PROPOSED CONTOUR
- EXISTING ROADWAY
- PROPOSED DRIVEWAY
- PROPOSED BUILDING
- SOIL TYPE
- SOILS DELINEATION LINE
- SLOPES 25%+
- SLOPES 15 - 25%



LOCATION MAP SCALE: 1"=2000'

DATA COLUMN:

TAX PARCEL # :	72-5-3216
LOT AREA :	8,024 AC
STREET ADDRESS :	352 CHESTERVILLE RD. LANDEDBERG, PA 19350
OWNER NAME(S) :	JONATHAN R. STAR
ADDRESS :	5 E ROSEMONT CIRCLE, ELKTON, MD 21821
ZONING :	LDR - LOW DENSITY RESIDENTIAL
MINIMUM LOT WIDTH :	120'
BUILDING LINE :	30'
MINIMUM SETBACKS :	
FRONT YARD -	40', 75' FROM STATE ROAD
REAR YARD -	30'
SIDE YARD -	15', 40' AGGREGATE
ON LOT WELL :	ON LOT WELL
SEPTIC SYSTEM :	ON LOT (DESIGNED BY OTHERS)

NOTES:

- ACCORDING TO FEMA FIRM PANEL FM42024C03306 THERE ARE NO FLOOD HAZARD AREAS LOCATED WITHIN THE SITE.
- BOUNDARY AND TOPOGRAPHICAL SURVEY WAS PERFORMED BY HILLCREST ASSOCIATES INC. IN MARCH OF 2021.
- ANY ADDITIONAL FUTURE IMPERVIOUS SURFACE ADDED TO THE SITE WOULD ACTIVATE THE REQUIREMENTS OF FRANKLIN TOWNSHIP'S SPM ORDINANCE, AS THE IMPERVIOUS SURFACE REQUIREMENT IS CUMULATIVE.
- FRANKLIN TOWNSHIP HAS THE RIGHT, BUT NOT THE RESPONSIBILITY, TO CONDUCT INSPECTIONS OF THE STORMWATER FACILITIES AND THE OWNER HEREBY GRANTS FRANKLIN TOWNSHIP THE FULL AND UNINTERFERED RIGHT, RIGHT-OF-WAY, PRIVILEGE, EASEMENT, AND AUTHORITY TO ENTER UPON THE PROPERTY, FROM TIME TO TIME AND AT SUCH TIMES AS FRANKLIN TOWNSHIP SHALL DEEM NECESSARY TO PERFORM SAID INSPECTIONS. FRANKLIN TOWNSHIP RESERVES THE RIGHT TO CHARGE THE OWNER FOR SUCH INSPECTIONS, AND COLLECTION OF THE COST THEREOF FROM THE OWNER BY MUNICIPAL LIEN AGAINST THE PROPERTY OR OTHERWISE.
- ALL ROOF WATER IS TO BE DIRECTED TO THE INFILTRATION BED.
- A STORMWATER MANAGEMENT REPORT HAS BEEN PREPARED BY HILLCREST ASSOCIATES, INC. IN CONJUNCTION WITH THIS PLAN AND IS MOST RECENTLY DATED JULY 2021.
- INDICATED AREAS AND ANY OTHER DISTURBED SLOPES STEEPER THAN 3:1 SHALL HAVE EROSION CONTROL BLANKET INSTALLED (SEE DETAIL).
- AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 10% 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.

IMPERVIOUS CALCULATIONS:

LOT AREA:	19,171 SF (3.03 AC)
MAX. BUILDING COVERAGE:	13,191 SF (10.0%)
MAX. LOT COVERAGE:	14,716 SF (15.0%)
EXISTING IMPERVIOUS:	0 SF (0.0%)
PROPOSED IMPERVIOUS:	
DRIVEWAY -	2,645 SF (2.0%)
TOTAL:	2,645 SF (5.4%)

STEEP SLOPE CALCULATIONS:

MODERATELY STEEP SLOPE:	65,454 SF
SEVERELY STEEP SLOPE:	14,232 SF
TOTAL:	79,686 SF
MODERATELY STEEP SLOPE DISTURBED (25% MAX.):	19,228 SF (21.7%)
SEVERELY STEEP SLOPE DISTURBED (15% MAX.):	6,291 SF (41.5%)
BUILDING COVERAGE ON STEEP SLOPE (5% MAX.):	1,106 SF (1.7%)
IMPERVIOUS COVERAGE ON STEEP SLOPE (10% MAX.):	4,285 SF (5.4%)

WAIVERS REQUESTED:

SECTION 14-314.2: A WAIVER IS BEING REQUESTED FROM SECTION 14-314.2 TO PROPOSE GRADING CLOSER TO THE ADJACENT PROPERTY LINES THAN PERMITTED BY CODE. WHEREAS OUR PROPOSAL SHOWS GRADING WITHIN 6' OF THE NORTHERN PROPERTY LINE AND A MINIMUM 10' SETBACK IS REQUIRED.

VARIANCES REQUESTED:

- SECTION 21-1408: A VARIANCE IS BEING REQUESTED FROM SECTION 21-1408 TO PROPOSE A DRIVEWAY SLOPE GREATER THAN PERMITTED BY CODE. WHEREAS OUR PROPOSAL SHOWS A DRIVEWAY WITH A SLOPE OF APPROXIMATELY 12.5% AND A MAXIMUM DRIVEWAY SLOPE OF 10% IS PERMITTED BY CODE.
- SECTION 21-1407.1.A: A VARIANCE IS BEING REQUESTED FROM SECTION 21-1407.1.A TO DISTURB THE MODERATELY STEEP SLOPES WITHIN THE PROPERTY GREATER THAN PERMITTED BY CODE. WHEREAS OUR PROPOSAL DISTURBS THE MODERATELY STEEP SLOPES 30% AND A MAXIMUM OF 25% IS PERMITTED.
- SECTION 21-1407.2.A: A VARIANCE IS BEING REQUESTED FROM SECTION 21-1407.2.A TO DISTURB THE SEVERELY STEEP SLOPES 40% AND A MAXIMUM OF 15% IS PERMITTED.

SPECIAL EXCEPTION REQUESTED

SECTION 21-1407.2.C(1): A SPECIAL EXCEPTION IS BEING REQUESTED FROM SECTION 21-1407.2.C(1) TO ALLOW A DRIVEWAY AND RETAINING WALL TO BE CONSTRUCTED WITHIN SEVERELY STEEP SLOPE DISTRICT.

PROFESSIONAL ENGINEER CERTIFICATION

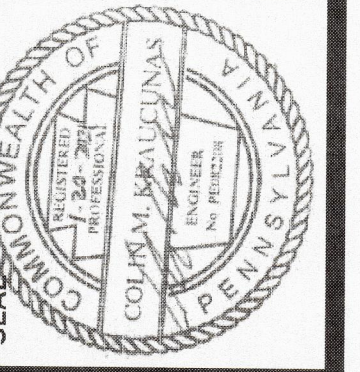
I, UNDERSIGNED, ON THIS DATE 1-20-2021 HEREBY CERTIFY THAT THE SPM SITE PLAN MEETS ALL DESIGN STANDARDS AND CRITERIA OF THE FRANKLIN TOWNSHIP STORMWATER ORDINANCE NO. 2013-04.

Colin M. Kraucinas
 COLIN M. KRAUCINAS
 PENNSYLVANIA P.E.# FE082208

OWNER'S CERTIFICATION

I, UNDERSIGNED, ACKNOWLEDGE THAT ANY REVISION TO THE APPROVED SPM SITE PLAN SHALL BE SUBMITTED TO AND APPROVED BY THE MUNICIPALITY, AND THAT A REVISED EROSION AND SEDIMENT CONTROL PLAN SHALL BE SUBMITTED TO AND APPROVED BY THE CONSERVATION DISTRICT OR MUNICIPALITY (AS APPLICABLE) FOR A DETERMINATION OF ADEQUACY PRIOR TO CONSTRUCTION OF THE REVISED FEATURES.

HILLCREST ASSOCIATES
 ARCHITECTURE • ENGINEERING • LAND PLANNING • SURVEYING
 P.O. BOX 1180 HOCKESSIN, DE 19707
 PH: 813.274.8813
 FAX: 813.274.0587



PROTECTED RESOURCE IMPACT PLAN
 552 CHESTERVILLE RD
 FRANKLIN TOWNSHIP
 CHESTER COUNTY, PENNSYLVANIA

DATE	REVISION
1-14-22	REV PER TOWNSHIP PMS
9-1-21	DEH

DRAWN BY: DEH
 CHECKED BY: CMK
 PROJ. NO.: 2871-552
 SCALE: 1"=30'
 CAD FILE NAME: 2871-552.LG.PRO

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It is the responsibility of the owner, developer and/or contractor to obtain any and all permits or approvals required for the construction of this house and utility improvements shown on this plan, including but not limited to the required NPDES Permit. If construction disturbance over the life of the project is 1/2 acre or more. Any decisions made by the owner, developer and/or contractor to circumvent the normal permitting process shall be at their sole risk and shall release Hillcrest Associates, Inc. from any liability resulting therefrom.

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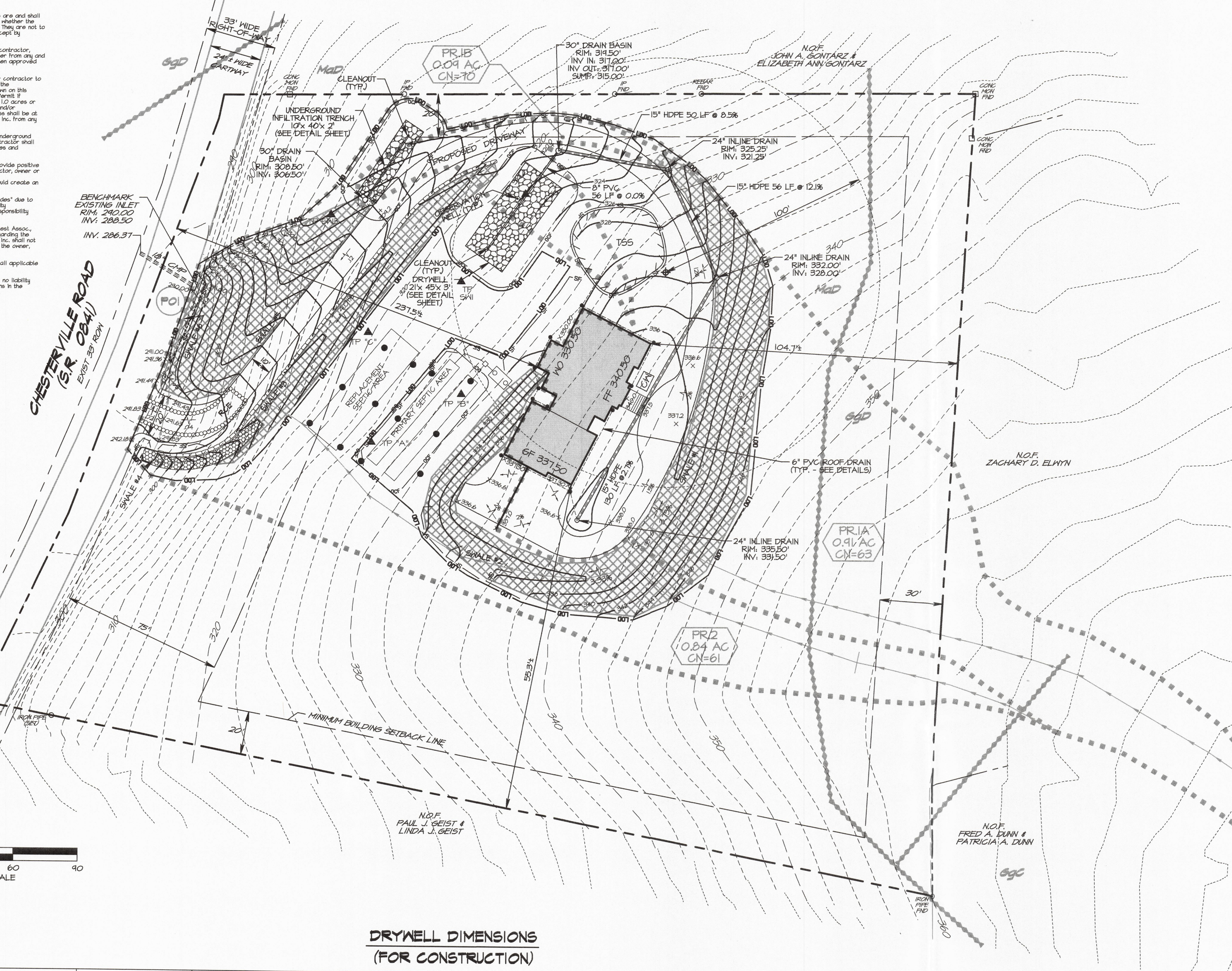
It is the intent of the grades shown on this plan to provide positive drainage to specific drainage structures. The contractor, owner or surveyor shall verify finished grades prior to the commencement of such work. If a delineated grade would create an impediment of water or an undesirable condition.

The contractor, owner or surveyor shall find variations in "existing grades" due to cut and fill operations performed during road and utility construction. Hillcrest Associates, Inc. assumes no responsibility for any such grading adjustments.

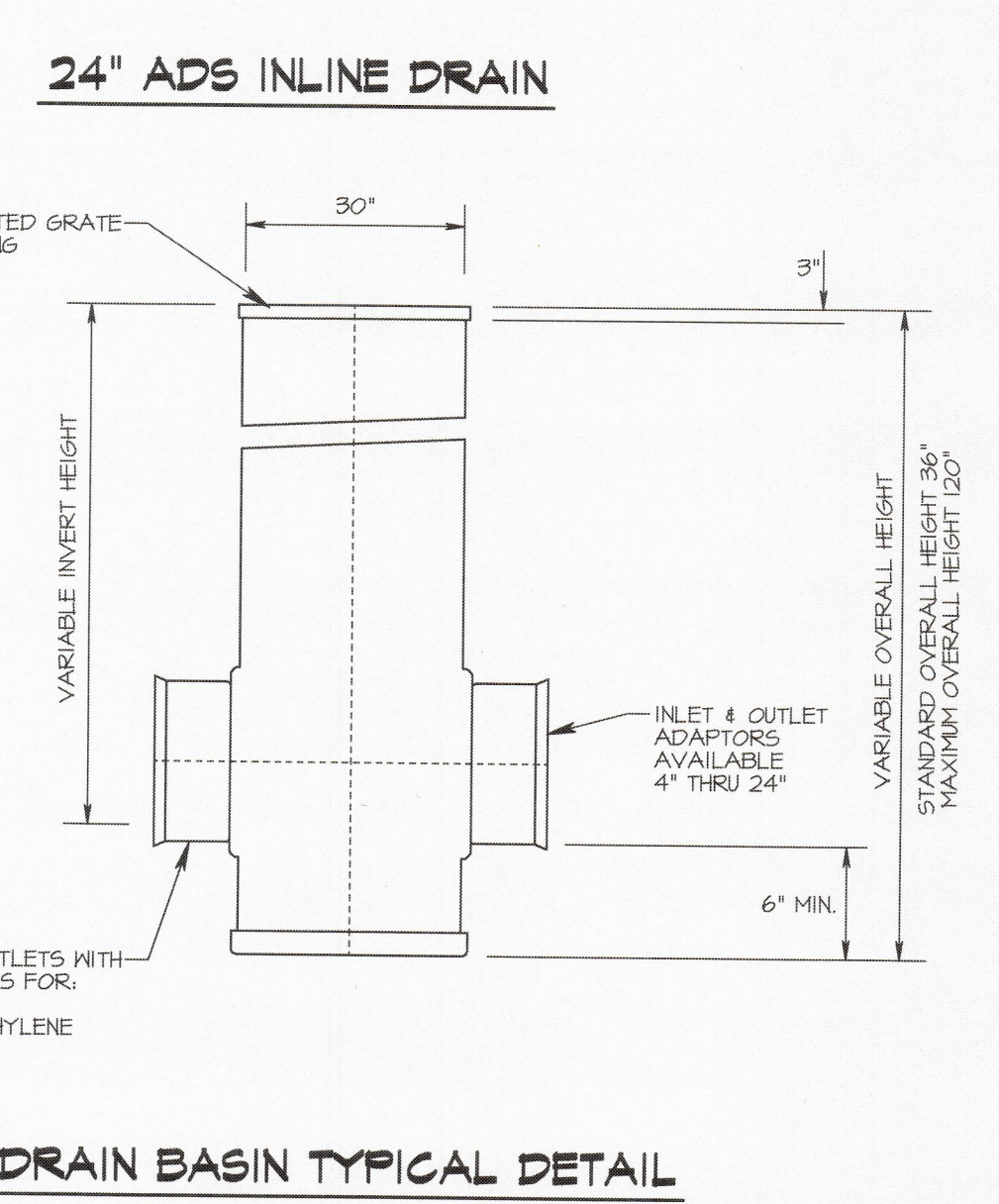
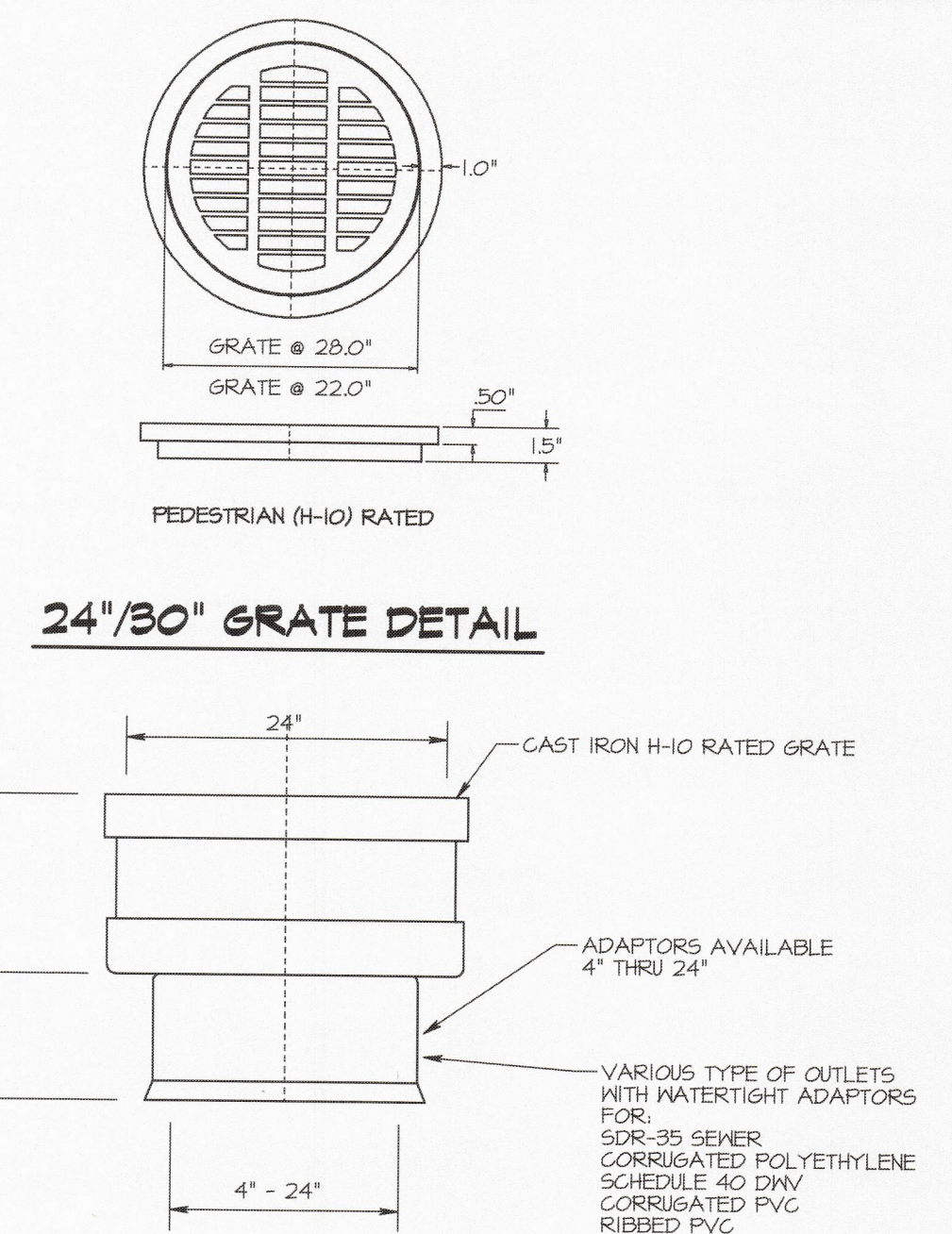
The contractor, owner or surveyor shall contact Hillcrest Assoc., Inc. immediately if any questions arise whatsoever regarding the intent of the construction. Hillcrest Associates, Inc. shall not be liable or responsible for any assumptions made by the owner, contractor or surveyor.

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- LEGEND:**
- PROPERTY LINE
 - RIGHT OF WAY
 - LIMIT OF DISTURBANCE
 - EXISTING CONTOURS
 - PROPOSED CONTOUR
 - EXISTING ROADWAY
 - PROPOSED DRIVEWAY
 - PROPOSED BUILDING
 - WELL
 - INFILTRATION BMP
 - PROPOSED STORM DRAIN
 - PROPOSED ROOF DRAIN
 - STORMWATER FLOW PATH
 - BMP DRAINAGE AREA
 - SWM POINT OF INTEREST
 - INFILTRATION TEST
 - SOILS PERC TEST / PIT
 - SOIL TYPE
 - SOILS DELINEATION LINE
 - SILT FENCE
 - ORANGE CONSTR. FENCE
 - ROCK CONSTRUCTION ENTRANCE
 - EROSION CONTROL BLANKET
 - CONCRETE WASH OUT



DRYWELL DIMENSIONS (FOR CONSTRUCTION)

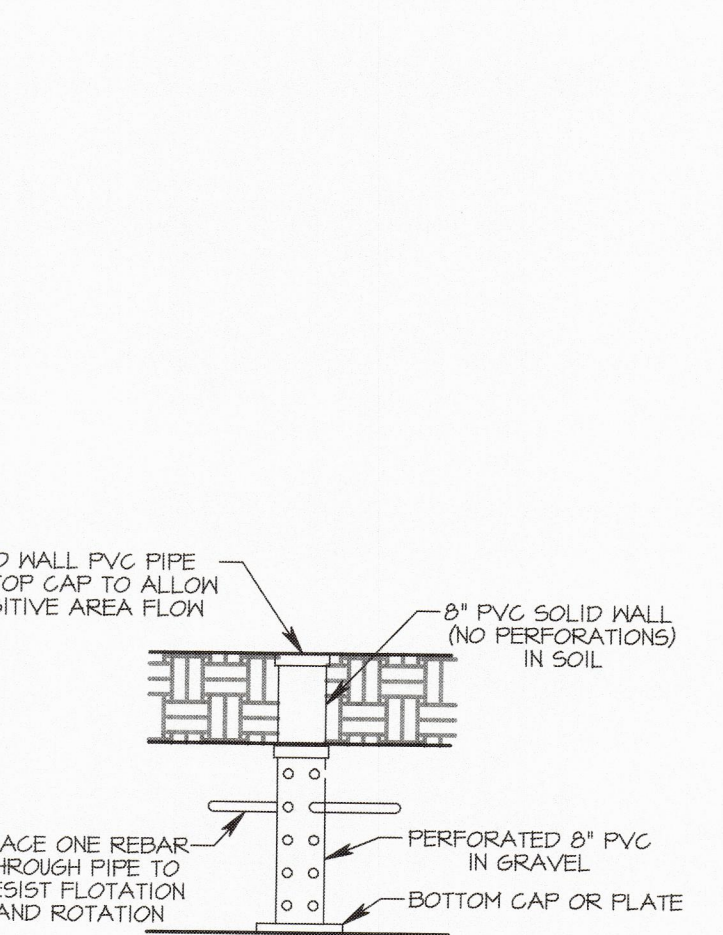
BMP FACILITY	WIDTH (FT)	LENGTH (FT)	DEPTH (FT)	TOP OF BED ELEVATION (FT)	BOTTOM OF BED ELEVATION (FT)	DISTRIBUTION PIPE INVERT (FT)	BOTTOM OF INLET ELEVATION (FT)	SOIL TEST ELEVATION (FT)	LIMITING ZONE ELEVATION (FT)
DRYWELL	21.0	45.0	3.0	319.0	316.0	317.0	315.0	317.0 & 316.0	NONE > 314.0±
INFIL. TRENCH	10.0	40.0	2.0	308.0	306.0	306.5	305.0	306.0	NONE > 304.0±

PCSWM BMP OPERATION & MAINTENANCE PLAN:

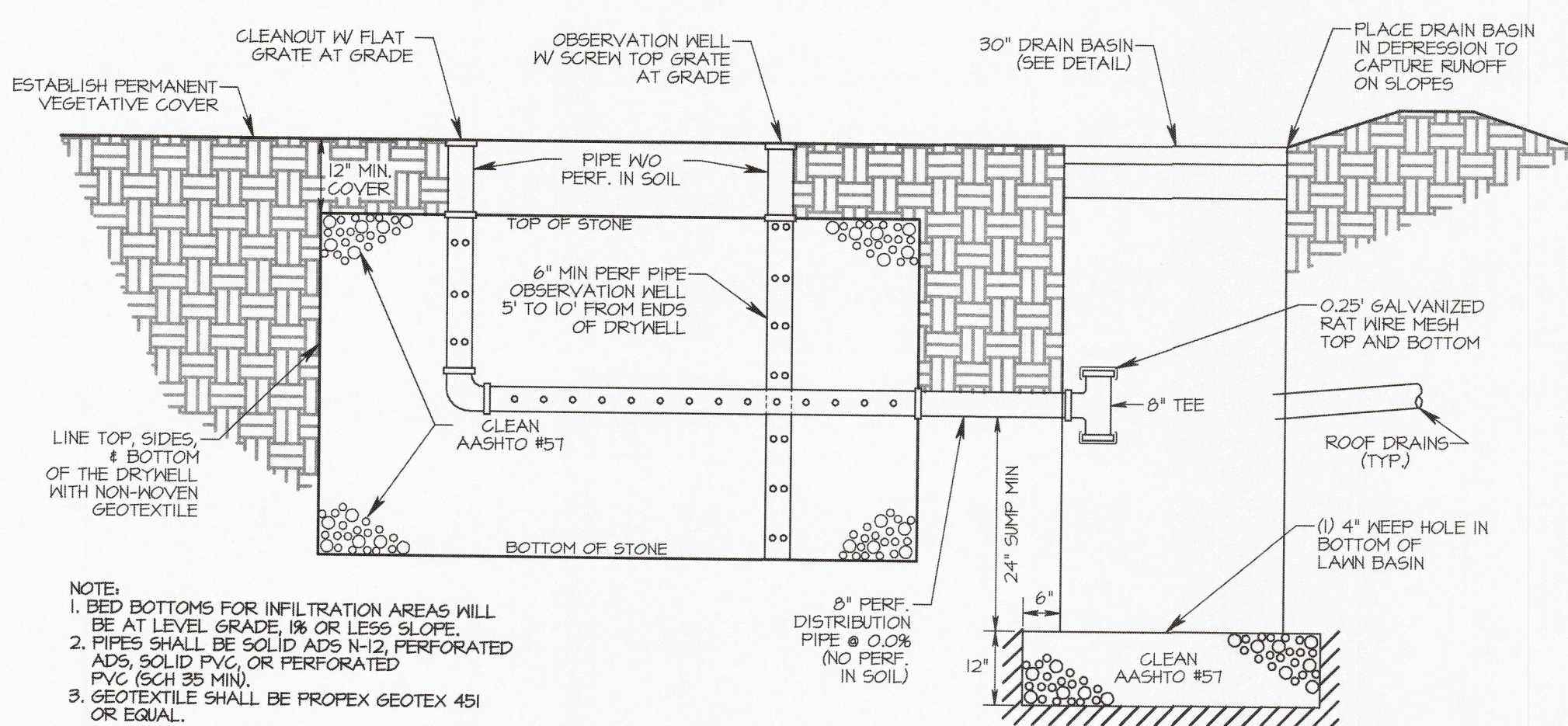
- The infiltration facilities and yard inlets shall be inspected quarterly and any trash, debris, sediment, or similar material shall be removed and properly disposed of.
- Observations shall be made to determine the length of time needed for retained water to infiltrate into the soil after a storm event. The observations shall be made by reading the water level in the inlet of the facility several times over a period of two days following a large storm event. The first of these observations shall provide a record of how well the system is working when comparing future observations. Observations shall be made twice the first year and once each year thereafter.
- Annual inspection and maintenance reports should be prepared and available for submittal to the Township upon request.
- Any leaves/debris/trash observed on the yard inlet grates shall be immediately removed to provide free flow into the inlet box.
- As to time shall vehicles be parked or driven over the infiltration facility.
- The stormwater management facilities shown on these plans - including but not necessarily limited to the drywell and roof drain connections - are permanent and are not to be removed. The individual lot owner along with his successors and assigns shall assume the responsibility for perpetual maintenance of the said facilities. If the lot owner, or his successors or assigns, fails in any way to maintain the said facilities or causes the facilities to be altered or removed, the township may provide written notification to the owner to correct the detected problem promptly at the owner's expense. Upon the owner's failure to correct defects make the necessary repairs, maintenance, and/or corrections. A lien may be filed against the property for all costs of said work, including applicable engineering and/or attorney's fees. This maintenance responsibility shall be incorporated into the deed.
- The stormwater best management practices shown on this plan are permanent structures that can be altered or removed only after approval by Franklin Township.
- At least once every quarter the owner shall inspect the drywell via the observation port approximately 12 hours after a runoff producing rainfall event. If water is remaining in the facility, the owner shall contact the design engineer to seek assistance in either re-designing or re-locating the facility. Prior to implementation, the corrective action shall be reviewed by Franklin Township. The owner shall implement the approved corrective action within 60 days of said approval. A follow-up inspection shall be conducted by the design engineer to verify that the modifications were successful.

INFILTRATION FACILITY INSTALLATION:

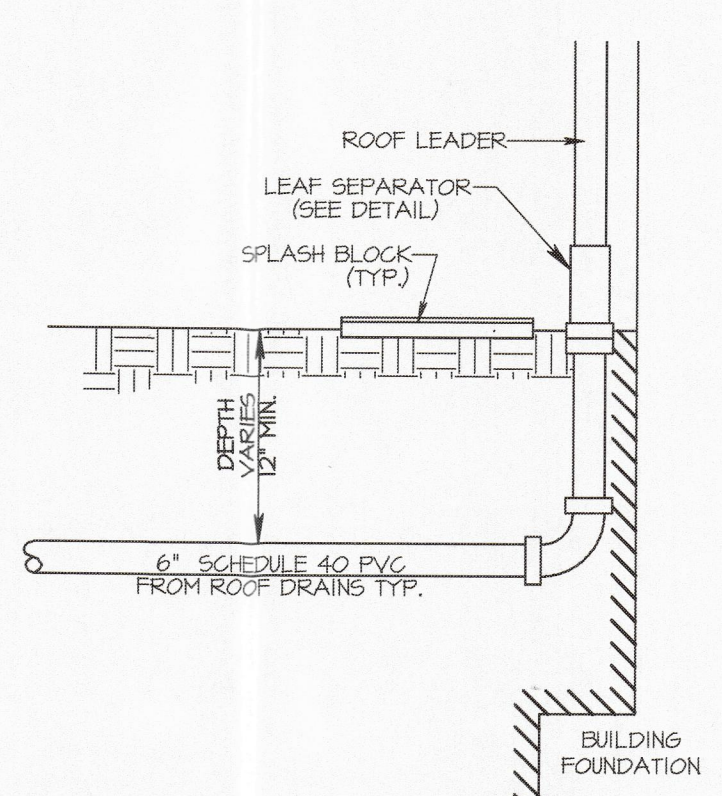
- Excavate the facility to the design dimensions. Excavated materials shall be placed away from the excavated sides to enhance soil stability. Large tree roots shall be trimmed flush with the sides in order to prevent fabric puncturing or tearing during subsequent installation procedures. The sides of the infiltration bed shall be roughened where sheared and sealed by heavy equipment.
- If unfavorable conditions (i.e., bedrock, gravel, etc.) construction shall immediately cease and the design engineer shall be contacted in order to either re-locate or re-design the system.
- Line top, sides, and bottom of trench with geotextile. The non-woven geotextile roll shall be cut to proper width prior to installation. The cut width must include sufficient material to provide a 12-inch minimum overlap for all joints. Stones or other anchoring objects shall be placed on the fabric at the edge of the bed to keep the lined bed open during windy periods.
- Installation of the stone to be checked by the design or site engineer prior to installation to ensure that it is clean washed stone. Care shall be exercised to prevent natural or fill soils from intermingling with the drainage aggregate. All contaminated aggregate shall be removed and replaced with uncontaminated aggregate.
- Drainage aggregate shall be placed in lifts and compacted using plate compactors. As a rule of thumb, a maximum loose lift thickness of 12 inches is recommended.
- Install the perforated distribution pipes per the infiltration bed detail.
- Following aggregate placement, the fabric previously weighted by stones should be folded over the aggregate to form a 12-inch minimum longitudinal overlap. The sewed fill soil or parking lot subgrade/stone should be placed over this lap at sufficient interval to maintain the lap during subsequent backfilling.
- VOIDS can be located between the fabric and excavation sides and should be avoided. Removing boulders or other obstacles from the bed walls is one source of such voids. Natural soils should be placed in these voids at the most convenient time during construction to ensure fabric conformity to the excavation sides. This remedial process will avoid soil piping, fabric clogging, and possible surface subsidence.
- Vertical walls may be difficult to maintain in areas where the soil moisture is high or where soft cohesive or cohesionless soils predominate. These conditions may require laying back of the sides in order to prevent fabric puncturing or tearing during subsequent installation procedures. These conditions may require laying back of the sides in order to prevent fabric puncturing or tearing during subsequent installation procedures. These conditions may require laying back of the sides in order to prevent fabric puncturing or tearing during subsequent installation procedures.
- The infiltration facilities shall not be placed in service until all of the contributing drainage area has been stabilized and approved by the Township. The outlet pipes into the infiltration bed shall be capped with watertight seals until the area tributary to the infiltration bed is stabilized. (An area shall be considered to have achieved final stabilization when it has a minimum uniform 10% perennial vegetation)



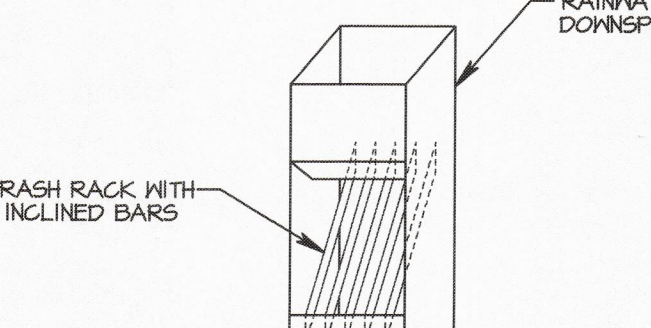
OBSERVATION WELL DETAIL
SCALE: 1" = 8"



TYPICAL DRYWELL/INFILTRATION TRENCH DETAIL
NOT TO SCALE



TYPICAL ROOF CONNECTION
NOT TO SCALE



LEAF SEPARATOR DETAIL
NOT TO SCALE

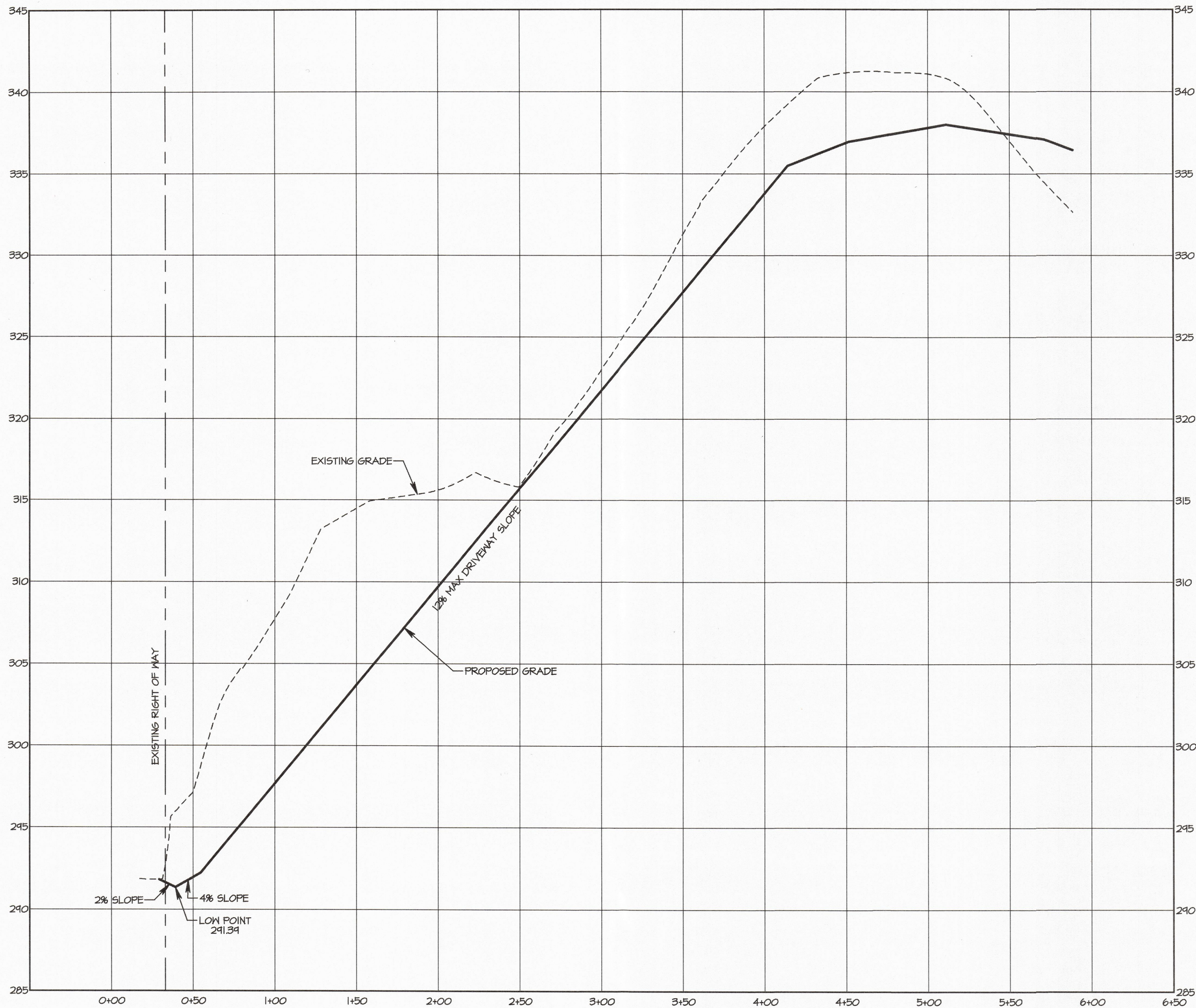
HILLCREST ASSOCIATES
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610.274.8613
PH: 610.274.0587

L&G PLAN / SWM O&M PLAN
552 CHESTERTOWN RD
FRANKLIN TOWNSHIP
CHESTER COUNTY, PENNSYLVANIA

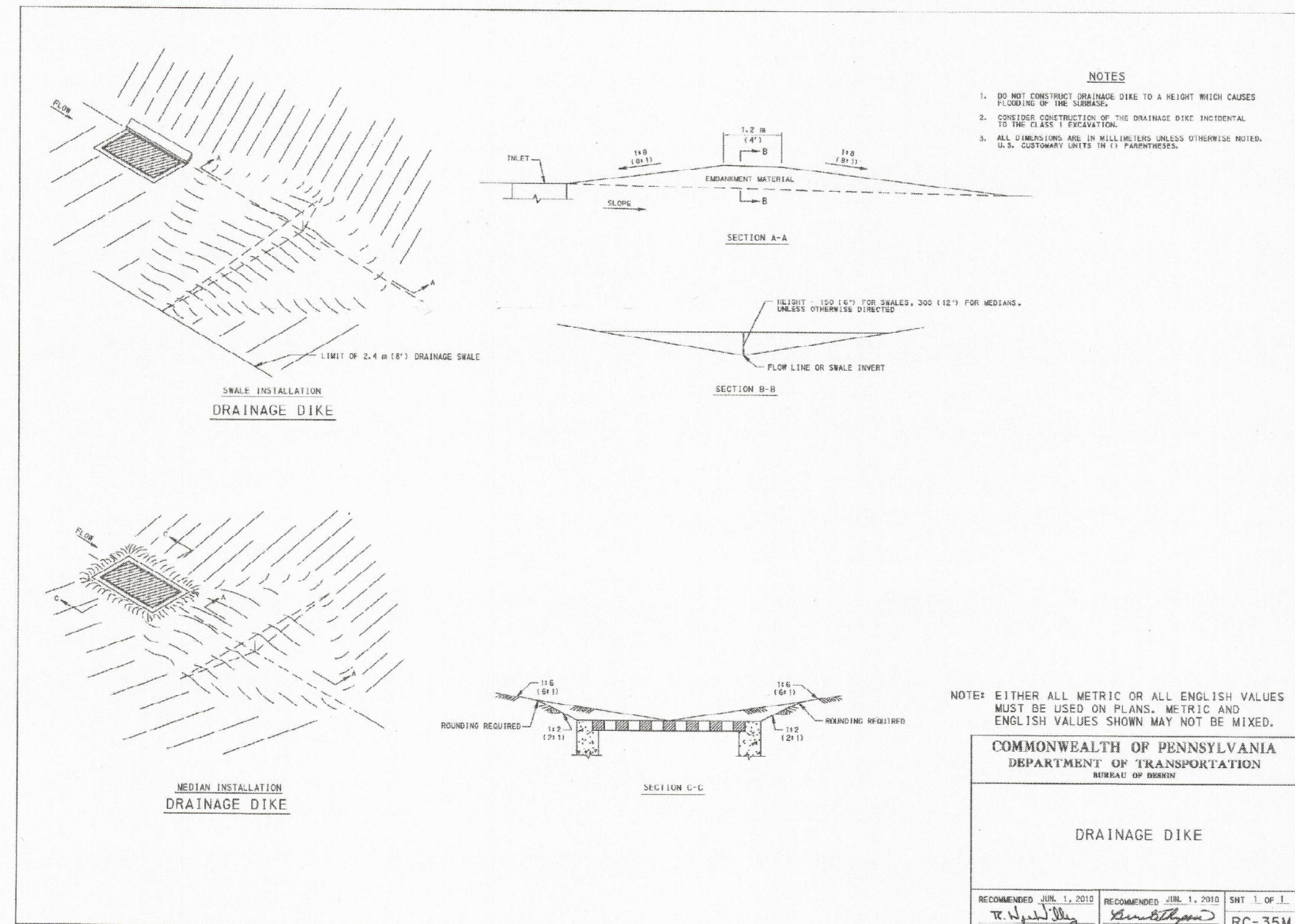
DATE: 4-1-21
DRAWN BY: DPB
CHECKED BY: CMK
PROJ. NO.: 2017-552
SCALE: AS NOTED
CAD FILE NAME: 2017-552/L&G.PRC

REVISION
REV. PER. TOWNSHIP PINS
DATE: 1-14-22

DWG. NO. 2 of 4



DRIVEWAY PROFILE
 HORIZONTAL SCALE 1" = 50'
 VERTICAL SCALE 1" = 5'



NOTES

- DO NOT CONSTRUCT CHANNEL DIKE TO A HEIGHT WHICH CAUSES FLOODING OF THE SURROUNDING AREAS.
- CONSTRUCT CHANNEL DIKE TO THE DRAINAGE AREA HORIZONTAL SETBACK PER "E" PREPARATION.
- ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED.
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ANCHOR TRENCHES SHALL BE INSTALLED AT BEGINNING AND END OF CHANNEL IN THE SAME MANNER AS LONGITUDINAL ANCHOR TRENCHES.

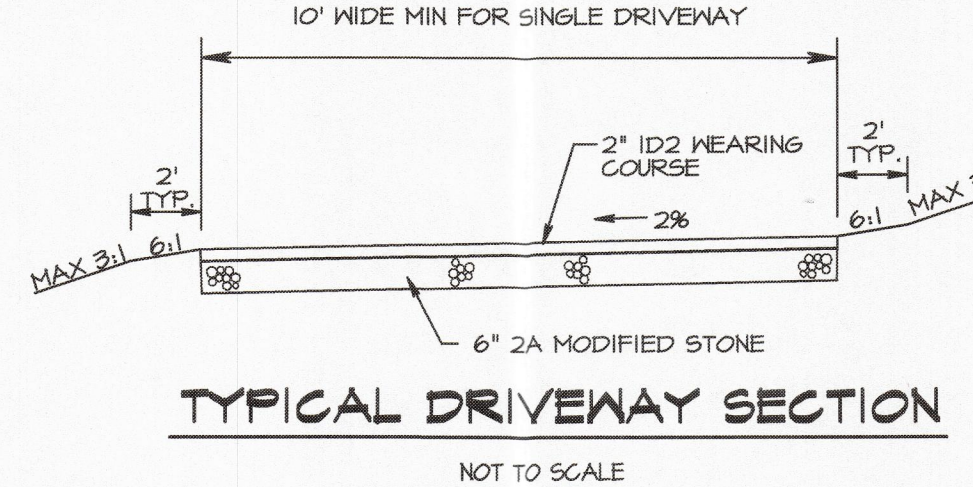
CHANNEL DIMENSIONS SHALL BE CONSTANTLY MAINTAINED. CHANNEL SHALL BE CLEANED WHENEVER TOTAL CHANNEL DEPTH IS REDUCED BY 25% AT ANY LOCATION. SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY OR AS SOON AS SOIL CONDITIONS PERMIT ACCESS TO CHANNEL WITHOUT FURTHER DAMAGE. DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.

NO MORE THAN ONE THIRD OF THE SHOOT (GRASS LEAF) SHALL BE REMOVED IN ANY MOWING. GRASS HEIGHT SHALL BE MAINTAINED BETWEEN 2 AND 3 INCHES UNLESS OTHERWISE SPECIFIED. EXCESS VEGETATION SHALL BE REMOVED FROM PERMANENT CHANNELS TO ENSURE SUFFICIENT CHANNEL CAPACITY.

NOTES: EITHER ALL METRIC OR ALL ENGLISH VALUES MUST BE USED ON PLANS. METRIC AND ENGLISH VALUES SHOWN MAY NOT BE MIXED.

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF TRANSPORTATION
 BUREAU OF HIGHWAYS

RECOMMENDED PER 11, 2010
 RECOMMENDED PER 1, 2012
 RC-35M



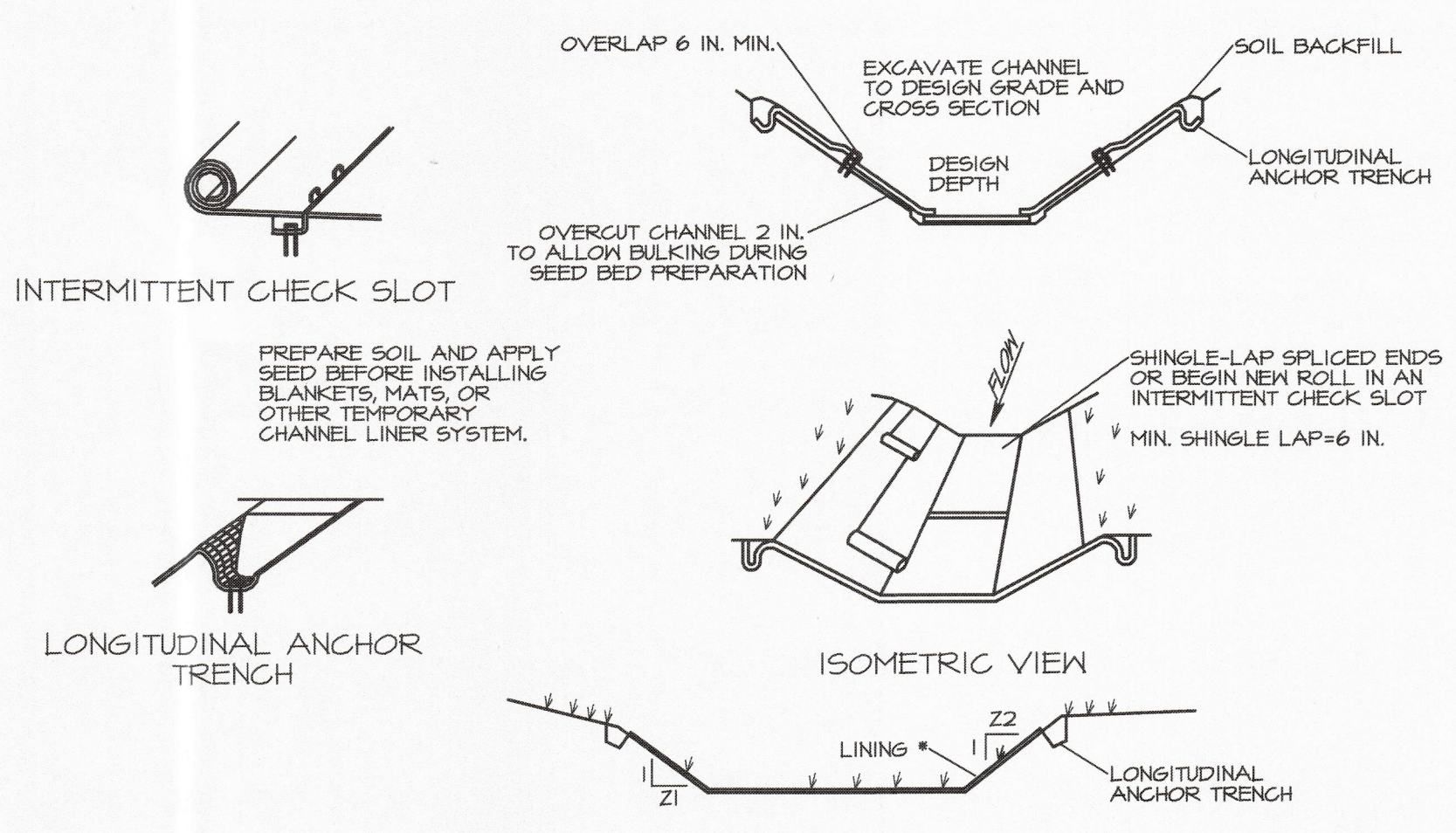
TYPICAL DRIVEWAY SECTION
 NOT TO SCALE

STANDARD E45 WORKSHEET #1
 CHANNEL DESIGN DATA

PROJECT NAME: 552 CHESTERTOWN RD
 LOCATION: 552 CHESTERTOWN RD, LANDEDBERG, PA 19350

CHANNEL ID*	1	2	3	4	5	6
TEMP. OR PERMANENT?	P	P	P	P	P	P
ACROSS (AC)	0.66	0.41	0.36	0.64	0.04	0.81
VELOCITY (PER AC)	1.6	1.6	1.6	1.2	1.6	1.2
Q (REQUIRED) (CFS)	1.05	0.91	0.58	1.02	0.15	1.24
Q @ DEPTH d (CFS)	1.00	0.56	0.21	1.12	0.14	1.24
PROTECTIVE LINING:	SP-4	SP-4	SP-4	R-4 Reno	SP-4	SP-4
W/ Net	N/ Net	N/ Net	N/ Net	Mattress	N/ Net	N/ Net
ALLOWABLE VEL (FPS)	0.28	0.28	0.28	0.28	0.28	0.28
VEL @ DEPTH d (FPS)	1.6	1.6	1.6	1.2	1.6	1.2
ALLOW SHEAR STRESS (LB/FT ²)	1.70	1.70	1.70	1.70	1.70	1.70
SHEAR STRESS @ d (LB/FT ²)	0.20	0.20	0.20	0.20	0.20	0.20
BOTTOM WIDTH (FT)	1.00	1.00	1.00	1.00	1.00	1.00
SIDE SLOPES (H:V)	3:1	3:1	3:1	3:1	3:1	3:1
TOTAL DEPTH D (FT)	1	1	1	1	1	1
FLOW DEPTH d (FT)	0.34	0.25	0.25	0.15	0.10	0.35
TOP WIDTH @ d (FT)	3.04	2.50	2.50	2.00	1.60	4.10
BOTTOM WIDTH @ RATIO (2:1 MAX)	2.51	4.1	3.1	1.21	0.51	4.51
CROSS-SECTION AREA (SQ. FT.)	0.64	0.44	0.44	0.22	0.16	1.55
HYDRAULIC RADIUS	0.22	0.17	0.17	0.11	0.08	0.25
DESIGN VELOCITY (V) (FT/SEC)	0.2375	0.2333	0.2401	0.2000	0.2003	0.2201
FREEBOARD (STABLE FLOW) (FT)	0.66	0.15	0.15	0.88	0.88	0.54
REQUIRED FREEBOARD (FT)	0.5	0.5	0.5	0.5	0.5	0.5
DESIGN METHOD FOR LINING	S	S	S	S	S	S

* DRAINAGE AREA INCLUDES AREA OF UPSTREAM CHANNELS DRAINING TO IT.
 ** CHANNEL SLOPE FOLLOWS NATURAL GRADE, CALCULATION IS BASED ON STEEPEST PORTIONS OF THE CHANNEL.



CHANNEL CROSS-SECTION

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

CHANNEL NO.	BOTTOM WIDTH (FT)	DEPTH (FT)	TOP WIDTH (FT)	Z1 (FT)	Z2 (FT)	TEMPORARY LINING
#4	1.50	1.00	5.50	2.0	2.0	R-4
#4	1.50	1.00	5.50	2.0	2.0	R-4

SWALE INSTALLATION*:

- Begin vegetated swale construction only when the upgradient temporary erosion and sediment measures are in place. Vegetated swales should be constructed and stabilized early in the construction schedule, preferably before mass earthwork and paving increase the rate and volume of runoff. Erosion and sediment control methods shall adhere to the Pennsylvania Department of Environmental Protection's latest edition of the E45 Control Manual.
- Rough grade the vegetated swale. Equipment shall avoid excessive compaction and/or land disturbance. Excavating equipment should operate from the side of the swale and never on the bottom. If excavation leads to substantial compaction of the subgrade (where an infiltration trench is not proposed), 10" shall be removed and replaced with a blend of topsoil and sand to promote infiltration and biological growth. As the very least, topsoil shall be thoroughly deep plowed into the subgrade in order to penetrate the compacted zone and promote aeration and the formation of macropores. Following this, the area should be disked prior to final grading of topsoil.
- Final grade the vegetated swale and install swales temporary lining. Accurate grading is crucial for swales. Even the smallest nonconformities may compromise flow conditions.
- Seed, vegetate and install protective lining as per approved plans and according to final planting list. Plant the swale at a time of the year when successful establishment without irrigation is most likely. However, temporary irrigation may be needed in periods of little rain or drought. Vegetation should be established as soon as possible to prevent erosion and scour.
- Once all tributary areas are sufficiently stabilized, remove temporary erosion and sediment controls. It is very important that the swale be stabilized before receiving upland stormwater flow.
- Follow maintenance guidelines discussed below.

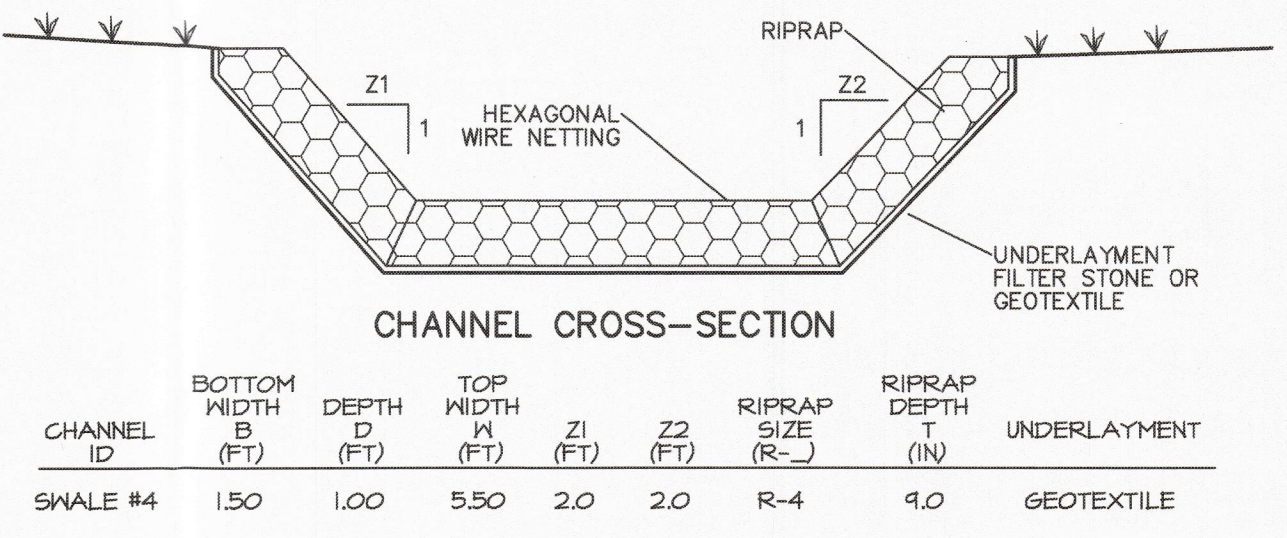
Note: If a vegetated swale is used for runoff conveyance during construction, it should be regraded and reseeded immediately after construction and stabilization has occurred. Any damaged areas should be fully restored to ensure future functionality of the swale.

PCSM SWALE OPERATION & MAINTENANCE PLAN:

The property owner is responsible for long-term operation and maintenance of the PCSM BMPs.

Maintenance activities to be done annually and within 48 hours after every major storm events (> 1 inch rainfall depth).

- Inspect and correct erosion problems, damage to vegetation, and sediment and debris accumulation, (address when > 3 inches at any spot or covering vegetation).
- Inspect vegetation on side slopes for erosion and formation of rills or gullies, correct as needed.
- Inspect for pools of standing water; divert and discharge to an approved location and restore to design grade.
- Mow and trim vegetation to ensure safety, aesthetics, proper swale operation, or to suppress weeds and invasive vegetation; dispose of cuttings in a local composting facility; mow only when swale is dry to avoid rutting.
- Inspect for litter; remove prior to mowing.
- Inspect for uniformity in cross-section and longitudinal slope, correct as needed.
- Inspect swale inlet (curb cuts, pipes, etc.) and outlet for signs of erosion or blockage, correct as needed.
- Plant alternative grass species in the event of unsuccessful establishment.
- Reseed bare areas; install appropriate erosion control measures when native soil is exposed or erosion channels are forming.
- Water during dry periods, fertilize, and apply pesticide only when absolutely necessary.
- Inspect swale immediately after the spring melt; remove residuals (e.g. sand) and replace damaged vegetation without disturbing remaining vegetation.
- Use nontoxic, organic, deicing agents, applied either as blended, magnesium chloride-based liquid products or as pre-treated soil.
- Use salt-tolerant vegetation in swales.



CHANNEL CROSS-SECTION

NOTE: FILTER STONE UNDERLAYMENT FOR BED SLOPES > 0.10 FT/FT (10%) SHALL BE USED.

CHANNEL DIMENSIONS ARE FOR THE COMPLETED CHANNEL AFTER ROCK PLACEMENT. CHANNEL MUST BE OVER-EXCAVATED A SUFFICIENT AMOUNT TO ALLOW FOR THE VOLUME OF ROCK PLACED WITHIN THE CHANNEL WHILE PROVIDING THE SPECIFIED FINISHED DIMENSIONS.

CHANNEL DIMENSIONS SHALL BE CONSTANTLY MAINTAINED. CHANNEL SHALL BE CLEANED WHENEVER TOTAL CHANNEL DEPTH IS REDUCED BY 25% AT ANY LOCATION. SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY OR AS SOON AS SOIL CONDITIONS PERMIT ACCESS TO CHANNEL WITHOUT FURTHER DAMAGE.

DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.

THE MINIMUM ROCK THICKNESS (T) SHALL BE 1.5 TIMES THE MAX ROCK SIZE.

STANDARD CONSTRUCTION DETAIL #6-3 RIPRAP CHANNEL
 NOT TO SCALE

HILLCREST ASSOCIATES
 ARCHITECTURE • ENGINEERING • LAND PLANNING • SURVEYING
 P.O. BOX 1180
 ROCKESBIE, DE 19707
 PHONE: 610.274.8613
 FAX: 610.274.6587

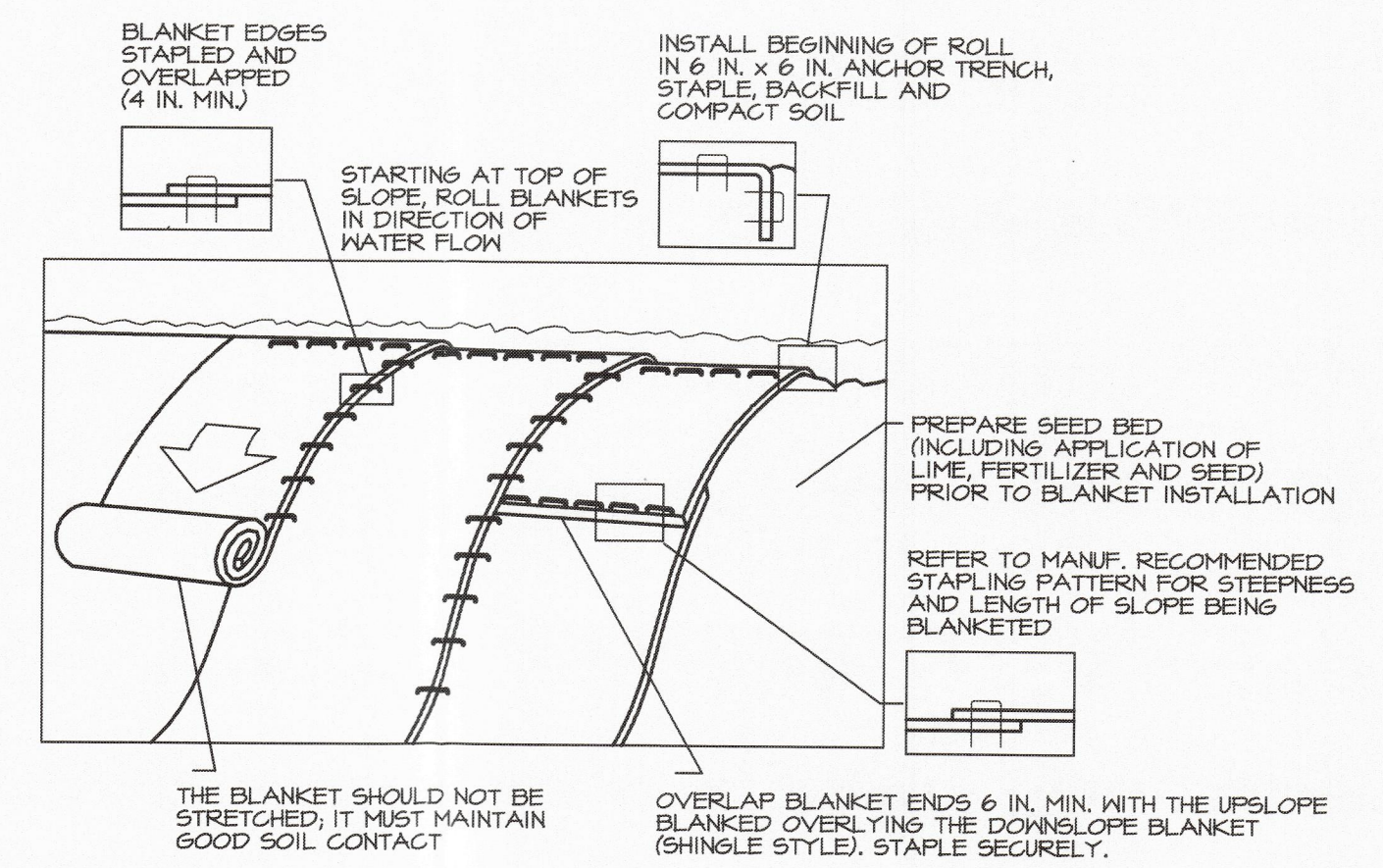
SEAL
 COMMONWEALTH OF PENNSYLVANIA
 COUNTY OF FRANKLIN
 REGISTERED PROFESSIONAL ENGINEER
 IN CIVIL ENGINEERING
 NO. 1000000000

L&G / SWM O&M DETAILS
 552 CHESTERTOWN RD
 FRANKLIN TOWNSHIP
 CHESTER COUNTY, PENNSYLVANIA

DATE	REVISION
9-1-21 <td>DBH</td>	DBH
1-4-22 <td>REV PER TOWNSHIP ENG</td>	REV PER TOWNSHIP ENG

DATE: 9-1-21
 DRAWN BY: DBH
 CHECKED BY: CMK
 PROJ. NO.: 2871-552
 SCALE: AS NOTED
 CAD FILE NAME: 2871-552-G-PRO

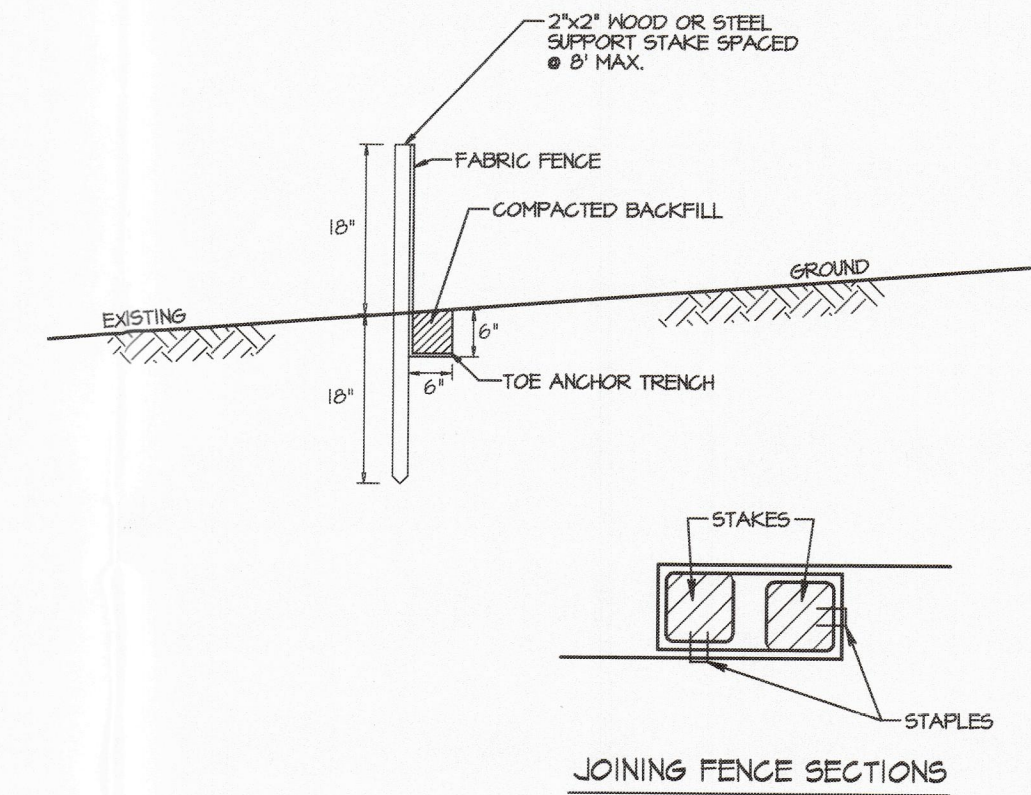
DWG. NO. 3 of 4



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 10% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 DAYS.

**STANDARD CONSTRUCTION DETAIL #11-1
 EROSION CONTROL BLANKET INSTALLATION**

NOT TO SCALE



NOTES: FILTER FABRIC FENCE MUST BE PLACED AT LEVEL GRADE. BOTH ENDS OF THE BARRIER MUST BE EXTEND AT LEAST 6 FEET UPSLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT.
 SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.
 ANY SECTION OF FILTER FABRIC FENCE WHICH HAS BEEN UNDERMINED OR TOPPED MUST BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET. (SEE ROCK FILTER OUTLET DETAIL.)

STANDARD FILTER FABRIC FENCE DETAIL

PERMANENT SEEDING SPECIFICATIONS:

The specifications below are general in nature and acceptable for most soil types. It is still recommended to obtain soil samples from the site and test them at a qualified laboratory to determine the most suitable species and application rates for the seed, lime and fertilizer in accordance with Penn State Erosion Control and Conservation Planting in Non-Cropland.

SEED: Minimum 90% Purity and 85% Germination

March 15 - May 31 & August 15 - October 15:
 60% Kentucky Bluegrass
 10% Perennial Ryegrass
 30% Pennine Fescue
 4 lbs/1000 sq. ft. Seeding Rate

June 1 - August 14 & October 16-March 14:
 See temporary seeding specifications above.
 Reseed with permanent cover March 15 - May 31 & August 15 - October 15.

FERTILIZER: Standard Quality 50-50-50
 85% minimum of carbonates

LIME: Agricultural Limestone - 1 ton/acre
 85% minimum of carbonates

MULCH: Straw or Hay - 3 tons/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 windrowed small grain straw or salt hay at a rate of 3 tons per acre. The mulch shall remain in place until seeding dates are appropriate. The mulch shall be removed, the area shall be tilled, seeded and reseeded as described above.

Areas which are to be top-soiled shall be scarified to a minimum depth of 3-5 inches (6-12 inches in compacted soils) prior to the placement of topsoil. Areas to be vegetated shall have a minimum of 4 inches of topsoil in place prior to seeding and mulching.

TEMPORARY SEEDING SPECIFICATIONS:

Where it is not possible to permanently stabilize a disturbed area upon completion or temporary cessation of the earth disturbance activity, temporary seeding shall be done using the following seeding specifications:

SEED: Minimum 90% Purity and 85% Germination

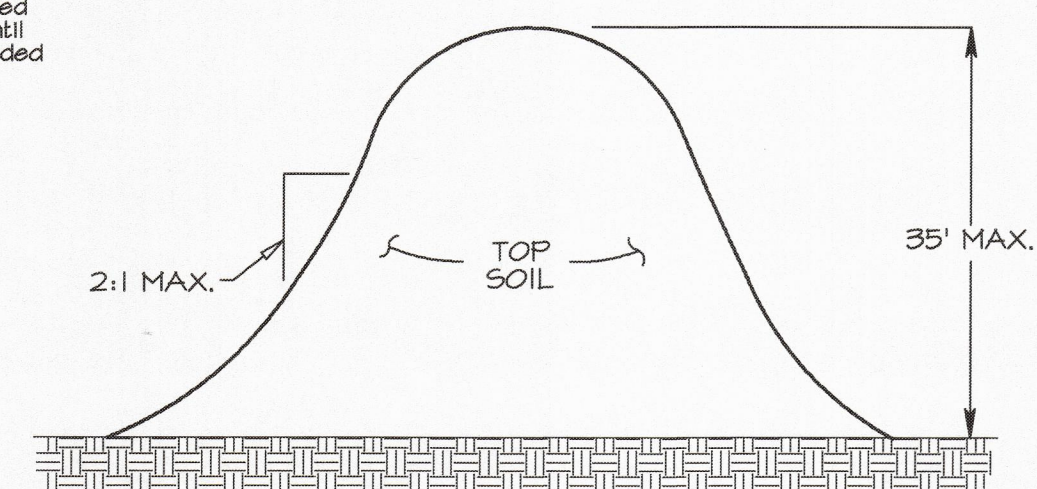
March 15 - October 15:
 50% Winter Rye
 50% Annual Rye Grass
 40 lbs/acre Seeding Rate

October 16 - March 14
 Annual Rye Grass
 40 lbs/acre Seeding Rate

FERTILIZER: Standard Quality 50-50-50

LIME: Agricultural Limestone - 1 ton/acre
 85% minimum of carbonates

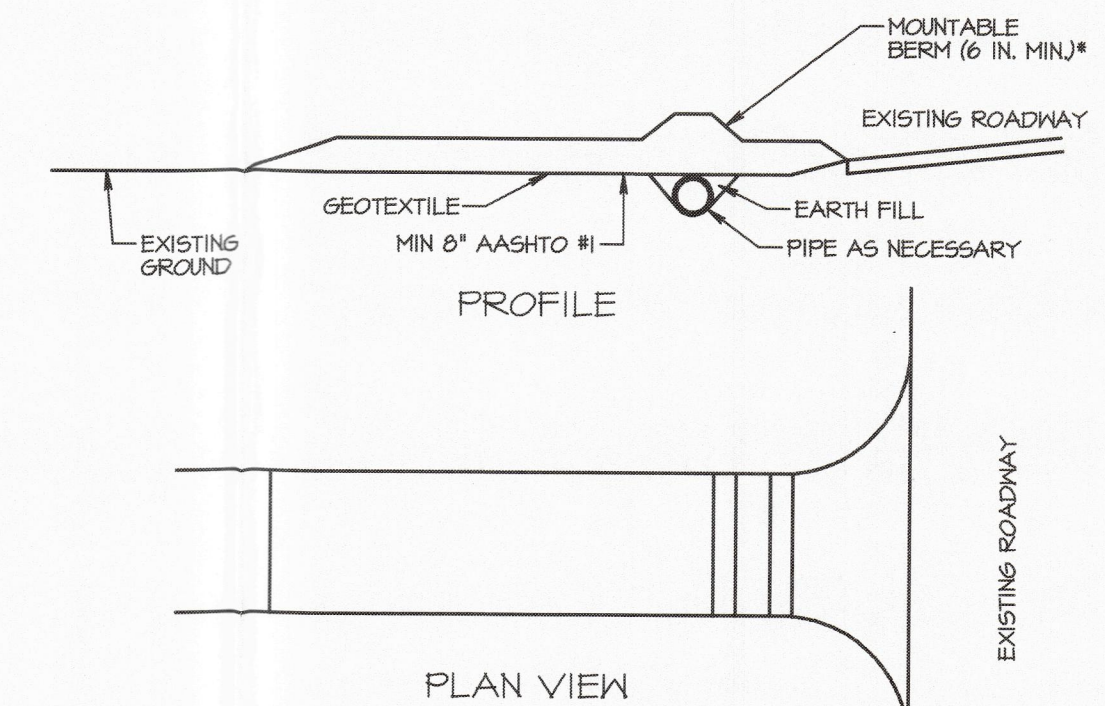
MULCH: Straw or Hay - 3 tons/acre



NOTE: STOCKPILE SHALL BE ENCIRCLED WITH 18\"/>

TYPICAL SOIL STOCKPILE CROSS SECTION

N.T.S.

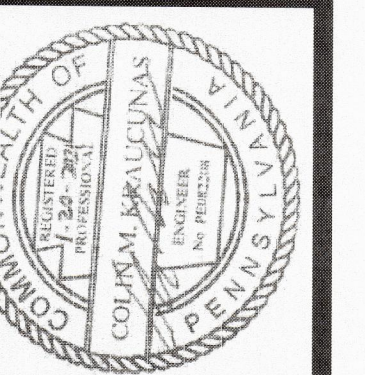


NOTES:
 REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE. EXTEND ROCK OVER FULL WIDTH OF ENTRANCE. RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.
 MOUNTABLE BERM SHALL BE INSTALLED WHEREVER OPTIONAL GULVERT PIPE 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 SKEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, GULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

ROCK CONSTRUCTION ENTRANCE

STANDARD DETAIL 3-1

NOT TO SCALE



E&S DETAILS
 552 CHESTERVILLE RD
 FRANKLIN TOWNSHIP
 CHESTER COUNTY, PENNSYLVANIA

DATE	REVISION	BY
9-1-21 <td>REV PER TOWNSHIP ENG <td>DBH</td> </td>	REV PER TOWNSHIP ENG <td>DBH</td>	DBH
1-4-22 <td> <td></td> </td>	<td></td>	

DATE:	9-1-21	DRAWN BY:	DBH
CHECKD. BY:	CMK	PROJ. NO.:	2871-552
SCALE:	AS NOTED	CAD FILE NAME:	2871-552LCPRO