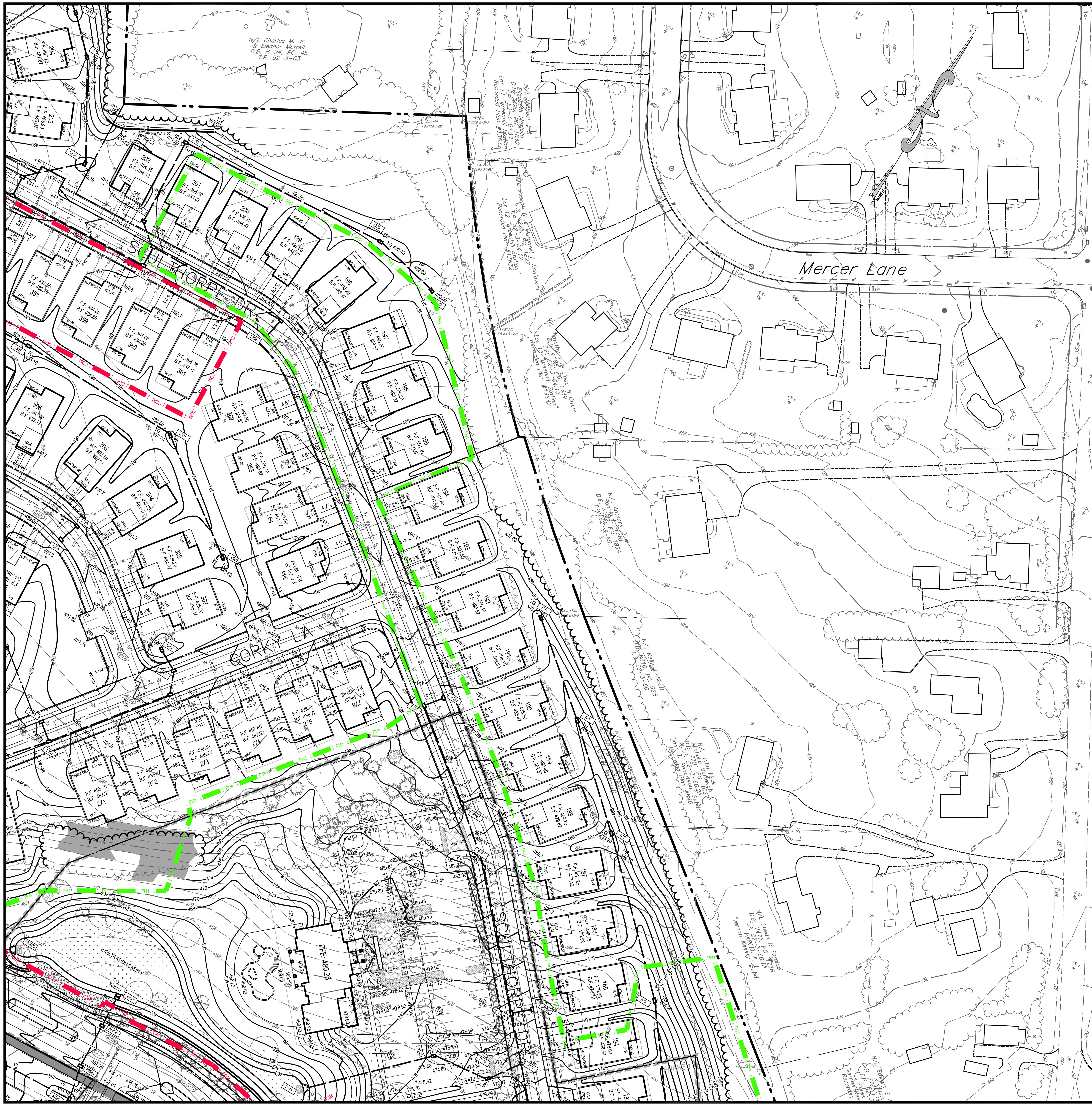
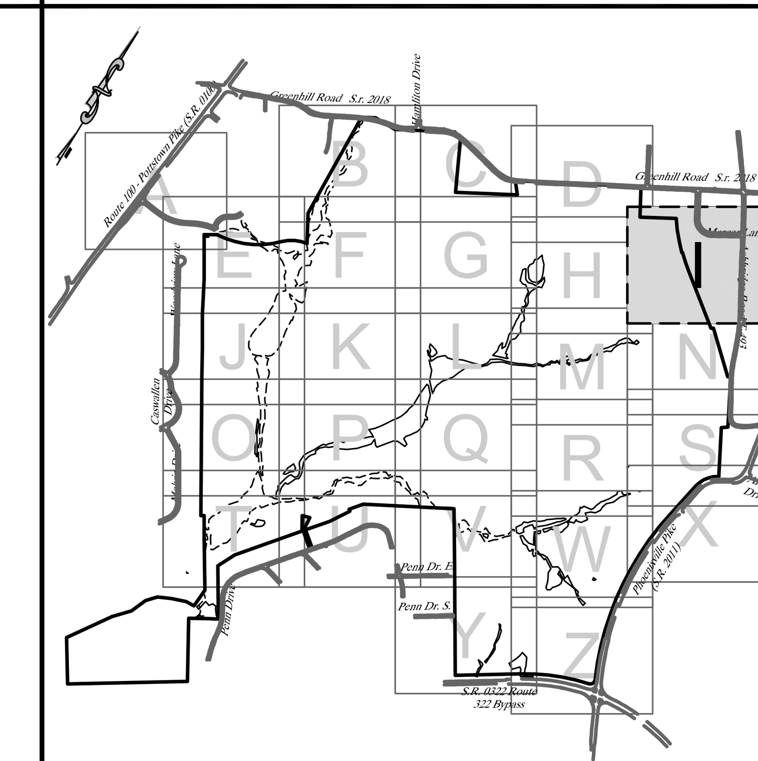


LEGEND

- EXISTING EDGE OF PAVED ROAD
- EXISTING EDGE OF UNPAVED ROAD
- ADJOINING OWNER LOT LINES
- EXTERIOR TRACT BOUNDARY
- EXISTING BUILDING
- EXISTING EDGE OF DRIVEWAY
- EXISTING EASEMENT
- EXISTING FENCE
- FLOOD PLAIN
- RIGHT-OF-WAY
- EXISTING GAS LINE
- EXISTING STORM SEWER PIPE
- WATERS OF THE US
- TREE LINE
- EXISTING INTERMEDIATE CONTOURS
- EXISTING INDEX CONTOURS
- 50' WETLAND BUFFER
- 100' RIPARIAN BUFFER
- SERPENTINE BARRENS
- EDGE OF UNPAVED ROAD
- EDGE OF PAVED ROAD
- PROPOSED CURB
- BUILDING SETBACK LINES
- CENTERLINE OF ROAD
- PROPOSED EASEMENT
- PROPOSED LOT LINES
- PROPOSED RIGHT-OF-WAY
- PROPOSED TRAIL
- PROPOSED SANITARY SEWER PIPE
- PROPOSED SANITARY SEWER FORCE MAIN
- PROPOSED SANITARY SEWER LATERAL
- PROPOSED GRINDER PUMP SANITARY LATERAL
- PROPOSED WATER SERVICE
- PROPOSED STORM SEWER PIPE
- PROPOSED WATER PIPE
- PHASE LINE
- PROPOSED WALL
- PROPOSED INTERMEDIATE CONTOURS LINE
- PROPOSED INDEX CONTOURS LINE
- ALTERED WOODS LINE
- REGULATED STEEP SLOPE RANGE 1 15%-20%
- REGULATED STEEP SLOPE RANGE 2 > 20%

KEY MAP 1"=1500'



CONSTRUCTION NOTES - STORM

STORM SEWER

1. UNLESS OTHERWISE NOTED, ALL STORM SEWER INLETS SHALL BE EITHER PENNDOT TYPE "C" OR TYPE "M" AND SHALL CONFORM TO FORM 408 (LATEST EDITION), SECTION 605.
2. UNLESS OTHERWISE NOTED, ALL STORM SEWER PIPING SHALL BE REINFORCED CONCRETE PIPE AND SHALL CONFORM TO PENNDOT FORM 408 (LATEST EDITION), SECTION 601. STORM SEWER PIPING IN LAWN AREAS MAY BE CONSTRUCTED USING HDPE PIPE, AS NOTED ON PLANS OR AS APPROVED BY THE DESIGN ENGINEER AND TOWNSHIP ENGINEER.
3. UNLESS OTHERWISE NOTED, ALL CONCRETE "DW" ENDWALLS SHALL CONFORM TO PENNDOT FORM 408 (LATEST EDITION), SECTION 605. THE TOP OF WALL ELEVATION FOR ALL ENDWALLS SHALL CONFORM TO THESE STANDARDS FOR THE ASSOCIATED PIPE SIZE. IN THE EVENT THAT A HIGHER TOP OF WALL ELEVATION IS NECESSARY FOR GRADING, THE "SPECIAL" TOP OF WALL ELEVATION SHALL BE NOTED ON THE PLANS.
4. THE TOP OF GRATE ELEVATION FOR ALL CURBSIDE STORM SEWER INLETS IS FOR THE CENTER OF THE INLET AT THE FACE OF CURB. THE CONTRACTOR SHALL PROJECT THE ROADWAY GRADE ALONG THE LENGTH OF THE INLET.
5. ALL LOTS SHALL BE PROPERLY GRADED TO ENSURE PROPER DRAINAGE AWAY FROM HOUSES TO NEAREST INLET OR WATERCOURSE WITHOUT PONDING OR OBSTRUCTION. A MIN. OF 2% SLOPE SHALL BE PROVIDED ON ALL GRASSED AREAS.
6. ANY SPRINGS ENCOUNTERED DURING ROADWAY CONSTRUCTION SHALL BE OUTLETTED BY U-DRAIN TO NEAREST STORM SEWER FACILITY OR WATERCOURSE. U-DRAIN PLACEMENT TO BE BY THE DIRECTION OF THE TOWNSHIP ENGINEER
7. ALL PROPOSED STORM PIPE LENGTHS ARE MEASURED FROM CENTER OF INLET TO CENTER OF INLET.

STORMWATER INFILTRATION BASINS

1. PRIOR TO CONSTRUCTION, INFILTRATION AREAS SHALL BE MARKED OFF IN THE FIELD. AREAS SHALL BE FULLY ENCLOSED WITH ORANGE SUPER SILT FENCE THROUGH THE ENTIRE DURATION OF CONSTRUCTION TO PREVENT ACCESS, COMPACTION OF SOILS AND ACCUMULATION OF SILT AND SEDIMENT.
2. THERE SHALL BE NO ACCESS, STORAGE OF CONSTRUCTION EQUIPMENT OR MATERIALS PERMITTED IN ANY AREA DESIGNATED AS AN INFILTRATION FACILITY.
3. CONSTRUCTION OF INFILTRATION FACILITIES SHALL BE IN ACCORDANCE WITH THE CONSTRUCTION SEQUENCE AND POST CONSTRUCTION STORMWATER BMP INSTALLATION SCHEDULE. RESTRICT CONSTRUCTION ACCESS TO REDUCE POTENTIAL SOIL COMPACTION. LIMIT ACCESS OVER THE BASE OF THE INFILTRATION FACILITY TO TRACKED VEHICLES WHENEVER POSSIBLE.
4. THE INFILTRATION SURFACE SHALL BE COMPACTED AS LITTLE AS POSSIBLE TO ALLOW FOR SURFACE PERCOLATION THROUGH THE SOIL LAYER. IF EXCAVATION IS REQUIRED, DO NOT COMPACT SUBGRADE OR TOPSOIL.
5. DIVERT RUNOFF FLOWS TO SEDIMENT BASIN / TRAP AS LONG AS POSSIBLE DURING SITE CONSTRUCTION TO BYPASS INFILTRATION FACILITY. ONLY ONCE INFILTRATION FACILITY IS FULLY VEGETATED AND STABILIZED MAY STORM FLOWS ENTER THE FACILITY.
6. PREVENT SEDIMENTATION LADEN WATER FROM ENTERING THE INFILTRATION FACILITY. ALL INLETS DRAINING TO INFILTRATION FACILITIES SHALL BE PROTECTED BY APPROPRIATE EROSION AND SEDIMENTATION CONTROL DEVICES THROUGHOUT THE ENTIRE DURATION OF CONSTRUCTION WITHIN THE TRIBUTARY INLET WATERSHED. SILT FENCING SHALL REMAIN IN PLACE FULLY ENCLOSING THE INFILTRATION FACILITY UNTIL THE UPLAND TRIBUTARY DRAINAGE SHED IS FULLY STABILIZED. SWALES DRAINING DIRECTLY TO INFILTRATION FACILITIES SHALL INCORPORATE STONE FILTERS AND/OR OTHER MEASURES TO PREVENT SILTATION OF THE INFILTRATION FACILITY.
7. FACILITIES SHALL BE ROUTINELY INSPECTED DURING SITE CONSTRUCTION TO ENSURE SEDIMENT LADEN WATER IS NOT ENTERING THE FACILITY. FOLLOWING EACH AND EVERY STORM EVENT, AN INSPECTION SHALL BE CONDUCTED BY QUALIFIED INDIVIDUAL TO IDENTIFY WHETHER SEDIMENT LADEN WATER IS REACHING THE FACILITY. IF IT IS, CORRECTIVE MEASURES MUST BE TAKEN IMMEDIATELY TO REMEDY THE DEFICIENCY THAT IS CAUSING SILTATION OF THE FACILITY. THIS MAY INCLUDE CLEANING OR ADDING ADDITIONAL UPSTREAM INLET PROTECTION, REPAIR OR INSTALLATION OF ADDITIONAL SILT FENCE, REPAIR OR INSTALLATION OF ROCK FILTERS, SEEDING AND MULCHING UPSTREAM OPEN LAND AREAS, ETC. ANY SEDIMENT THAT ENTERS AN INFILTRATION FACILITY SHALL BE CAREFULLY COLLECTED AND REMOVED–PREFERABLY BY HAND TOOLS IF POSSIBLE TO AVOID OVER COMPACTION OF SOILS–OR USING MINI TRACKED EXCAVATOR OR OTHER LIGHT WEIGHT NON-WHEELED EQUIPMENT. ACCESS BY DUMP TRUCK IS STRICTLY PROHIBITED. ACCESS BY WHEELED VEHICLE, SUCH AS A BACKHOE, IS STRONGLY DISCOURAGED.
8. ONLY ONCE THE UPLAND DRAINAGE SHED TRIBUTARY TO ANY INFILTRATION FACILITY IS FULLY STABILIZED UPON THE CONCLUSION OF CONSTRUCTION MAY THE E&S CONTROL MEASURES BE REMOVED.

DRY EXTENDED DETENTION BASINS

1. INSTALL ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS. THE AREA IMMEDIATELY ADJACENT TO THE BASIN MUST BE STABILIZED IN ACCORDANCE WITH THE PADEP'S EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL (2000 OR LATEST EDITION) PRIOR TO BASIN CONSTRUCTION
2. PREPARE SITE FOR EXCAVATION AND/OR EMBANKMENT CONSTRUCTION. EXISTING VEGETATION SHOULD ONLY BE REMOVED IN ACCORDANCE WITH THE APPROVED PLANS. CARE SHOULD BE TAKEN TO PREVENT COMPACTION OF THE BASIN BOTTOM. IF EXCAVATION IS REQUIRED, CLEAR THE AREA TO BE EXCAVATED OF ALL VEGETATION. REMOVE ALL TREE ROOTS, ROCKS, AND BOULDERS ONLY IN EXCAVATION AREA.
3. EXCAVATE BOTTOM OF BASIN TO DESIGN ELEVATION.
4. INSTALL SURROUNDING EMBANKMENTS, KEY TRENCH, ANTI-SEEP COLLARS, INLET AND OUTLET CONTROL STRUCTURES, AND SPILLWAY IN STRICT ACCORDANCE WITH DESIGN.
5. GRADE SUBSOIL IN BOTTOM OF BASIN, TAKING CARE TO PREVENT COMPACTION. COMPACT SURROUNDING EMBANKMENT AREAS AND AROUND INLET AND OUTLET STRUCTURES.
6. APPLY AND GRADE PLANTING SOIL.
7. APPLY GEO-TEXTILES AND OTHER EROSION-CONTROL MEASURES.
8. SEED, PLANT AND MULCH ACCORDING TO PLANTING PLAN.
9. INSTALL ANY ANTI-GRAZING MEASURES, IF NECESSARY.

RAIN GARDENS / BIORETENTION

1. RAIN GARDEN / BIORETENTION AREAS SHALL BE FULLY ENCLOSED WITH ORANGE SUPER SILT FENCE AS SOON AS SITE CUT / FILL OPERATIONS AND ROUGH GRADING ARE CONCLUDED TO PREVENT ACCESS AND COMPACTION OF SOILS. SINCE RAIN GARDENS ARE LOCATED WITHIN THE CENTER OF ROAD CUL-DE-SACS, SPECIAL CARE SHALL BE EXERCISED DURING ROAD CONSTRUCTION TO NOT COMPACT THE CENTRAL AREA OF THE CUL-DE-SAC OUTSIDE THE CARTWAY.
2. EXCAVATE RAIN GARDEN TO PROPOSED DEPTH OF AMENDED SOIL AND SCARIFY EXISTING SOIL SURFACES. DO NOT COMPACT SOILS. I F CONSTRUCTION HAS CAUSED COMPACTION OF THE RAIN GARDEN SUBGRADE, ADDITIONAL SOIL BEYOND THE PROPOSED AMENDED SOIL LEVEL SHALL BE REMOVED AND AMENDED AND THE SUBGRADE TILLED AND LOOSENED UNTIL THE AREA OF COMPACTION HAS BEEN ELIMINATED.
3. BACKFILL RAIN GARDEN WITH AMENDED SOIL PER PLAN AND SPECIFICATIONS.
4. PRESOAK PLANTING SOIL IN ADVANCE OF PLANTING VEGETATION TO AID IN SETTLEMENT.
5. COMPLETE FINAL GRADING TO ACHIEVE PROP. DESIGN ELEVATIONS, LEAVING SPACE FOR UPPER LAYER OF COMPOST, MULCH OR TOPSOIL AS SPECIFIED. ENSURE UNIMPEDED POSITIVE DRAINAGE INTO THE RAIN GARDEN WILL OCCUR.
6. PLANT VEGETATION ACCORDING TO PLANTING PLAN.
7. MULCH & INSTALL EROSION PROTECTION (SUCH AS RIVER ROCK) AT SURFACE FLOW ENTRANCES WHERE NECESSARY. ENSURE POSITIVE DRAINAGE EXISTS INTO THE RAIN GARDEN AND THAT STORMWATER FLOWS ARE NOT IMPEDED.

VEGETATED SWALES

1. BEGIN CONSTRUCTION OF PERMANENT VEGETATED SWALES AS SOON AS PRACTICAL IN THE CONSTRUCTION SCHEDULE. ENSURE UPGRADIENT TEMP. E&S CONTROL MEASURES ARE IN PLACE TO LIMIT SILTATION OF THE SWALES.
2. ROUGH GRADE THE SWALE AND AVOID EXCESSIVE SOIL COMPACTION AND/OR LAND DISTURBANCE. EXCAVATION EQUIPMENT SHOULD OPERATE FROM THE SIDE OF THE SWALE AND NEVER ON THE BOTTOM. IF EXCAVATION LEADS TO SUBSTANTIAL COMPACTION OF THE SUBGRADE (WHERE AN INFILTRATION TRENCH IS NOT PROPOSED), 18 INCHES SHALL BE REMOVED AND REPLACED WITH A BLEND OF TOPSOIL AND SAND.
3. FINE GRADE THE SWALE. ACCURATE GRADING IS CRUCIAL FOR SWALES. EVEN THE SMALLEST NONCONFORMITIES MAY COMPROMISE FLOW CONDITIONS.
4. SEED, VEGETATE AND INSTALL PROTECTIVE LINING AS SPECIFIED. IDEALLY PLANT THE SWALE AT A TIME OF YEAR WHEN SUCCESSFUL ESTABLISHMENT WITHOUT IRRIGATION IS MOST LIKELY. TEMPORARY IRRIGATION MAY BE NEEDED IN PERIODS OF LITTLE RAIN OR DROUGHT. ESTABLISH VEGETATION AS SOON AS POSSIBLE TO PREVENT EROSION AND SCOUR. IT IS VERY IMPORTANT THAT THE SWALE BE STABILIZED BEFORE RECEIVING UPLAND STORMWATER FLOW.
5. REMOVE TEMPORARY E&S CONTROLS ONCE TRIBUTARY AREAS ARE STABILIZED IN ACCORDANCE WITH E&S PLAN.
6. NOTE: IF A PERMANENT VEGETATED SWALE IS USED FOR RUNOFF CONVEYANCE DURING CONSTRUCTION, IT SHOULD BE REGRADED AND SEEDED IMMEDIATELY AFTER CONSTRUCTION AND STABILIZATION HAS OCCURRED. ANY DAMAGED AREAS SHOULD BE FULLY RESTORED TO ENSURE FUTURE FUNCTIONALITY OF THE SWALE.

WATER QUALITY FILTERS AND HYDRODYNAMIC DEVICES

1. DEVICE SIZING AND INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.

CONSTRUCTION PHASING LEGEND

- COM — LIMITS OF COMMON IMPROVEMENTS
- PH1 — LIMITS OF PHASE 1 IMPROVEMENTS

ACT 287 NOTIFICATION

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!

THE UNDERGROUND UTILITY LINE PROTECTION LAW
(ACT 287 OF 1974 AS AMENDED BY ACT 187 OF 1996
AND ACT 199 IN JANUARY 2005)

SITE SERIAL NOs. 20090851440, 20090851633, 20090851634, 20090851622, 20090851388

LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM UTILITY COMPANY RECORDS AND/OR ABOVE GROUND INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF TYPE, SIZE, DEPTH OR HORIZONTAL LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES CANNOT BE GUARANTEED. PURSUANT TO REQUIREMENTS OF PENNSYLVANIA LEGISLATIVE ACT 287 OF 1974, AS AMENDED BY ACT 187 OF 1996 AND ACT 199 IN JANUARY 2005. CONTRACTORS MUST VERIFY LOCATIONS OF UNDERGROUND UTILITIES BY NOTIFYING FACILITY OWNERS THROUGH THE ONE-CALL SYSTEM, 1-800-242-1776, NO LESS THAN 3, NOR MORE THAN 10 DAYS PRIOR TO EXCAVATION OR DEMOLITION WORK.

ENGINEERS CERTIFICATION

CYNTHIA D. SMITH PE-054227-E

SURVEYOR'S CERTIFICATION

ROBERT R. MILLER SU-028850-E

Note: These plans are not to be used for construction unless the plan contains a red stamp indicating "issued for construction" by Horizon Engineering Associates, LLC. Horizon Engineering Associates, LLC shall assume no liability for construction performed from plans not containing this stamp.

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NO.	REVISIONS	DATE
36	REVISED AMENDED FINAL PLAN SUBMISSION	03/26/19
35	REVISED SANITARY SEWER MH D1338 TO MH 230 TO C-900 PIPE / ADDED SEWER MH C1328.3 ON GERSHWIN DRIVE	03/18/19
34	AMENDED FINAL PLAN SUBMISSION	02/07/19
33	REVISED GRADING AND SERVICE LOCATIONS BASED ON HOME BUILDER UNITS	12/20/18
32	REVISION TO HDPE STORM IN LAWN AREA, SANITARY SEWER REVISIONS PER AS-BUILT AT TIE-IN LOCATIONS, ETC.	10/22/18
31	MISCELLANEOUS SANITARY SEWER REVISIONS	09/19/18
30	ADDED CRITICAL STAGES AND NOTES REGARDING CERTIFICATION, INSPECTIONS, LONG-TERM O&M TO PCSM PLANS	04/24/18
29	ADDED LIMITS OF WORK FOR COMMON IMPROVEMENTS AND PHASE 1	03/14/18
28	PER CARROLL ENGINEERING CORPORATION COMMENTS	11/30/2016
27	PER TOWNSHIP ENGINEER REVIEW	11/08/2016
26	PER CARROLL ENGINEERING CORPORATION COMMENTS DATED OCTOBER 6, 2016	11/04/2016
25	PER CARROLL ENGINEERING CORPORATION COMMENTS DATED OCTOBER 6, 2016	10/20/2016

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AMENDED FINAL SUBDIVISION / LAND DEVELOPMENT PLANS
STORM SEWER AND GRADING PLAN (I)

WOODLANDS AT GREYSTONE

RLD GREYSTONE, LLC

SITE SITUATE IN
WEST GOSHEN TOWNSHIP, CHESTER COUNTY, PENNSYLVANIA

PROJECT MANAGER	CDS
DRAWING FILE NAME	Sht_ZCI-Stm-Grade (Sheets A-I)
PLAN ORIGINATION DATE	08-04-09
PLAN SCALE	1"=50'
PROJECT NUMBER	1575
SHEET NUMBER	073 OF 252