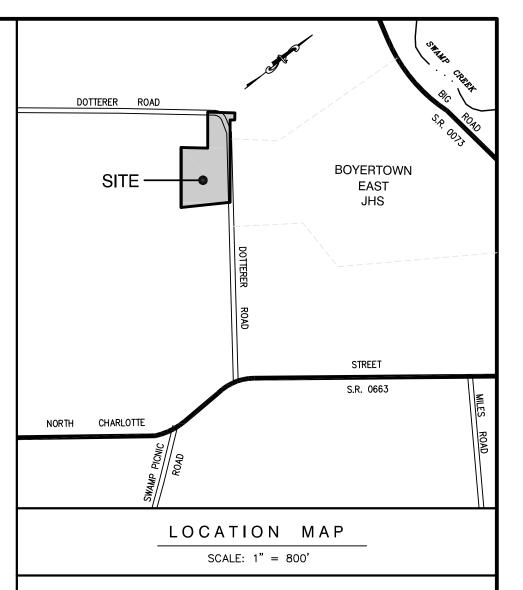


# MIKELEN, LLC. 'PACER'S GAIT'

# RESIDENTIAL SUBDIVISION

NEW HANOVER TOWNSHIP MONTGOMERY COUNTY, PENNSYLVANIA



### TABULATION OF SHEETS

| NAGEMENT PL                                |
|--|
| MANAGEMENT<br>PROVEMENT PL<br>OVEMENT PLAN |
|  |

\* - SHEETS 2, 8, 10, 11, 12 & 13 - (TO BE RECORDED)



LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE—GROUND INSPECTION OF THE SIT COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA ONE CALL (DIAL 811) THREE DAYS PRIOR TO EXCAVATION. REFERENCE NUMBER: 20170472165 (DOTTERER ROAD)

| REVISIONS |   |  |  |  |  |  |  |
|-----------|---|--|--|--|--|--|--|
| DATE      | DESCRIPTION   |  |  |  |  |  |  |
|           |   |  |  |  |  |  |  |
| 7-17-17   | NEW OWNER AND UPDATE LAYOUT                             |  |  |  |  |  |  |
| 10-27-08  | TWP. ENGR. LTR. 10-1-08, TWP PLANNER LTR 10-1-08 &      |  |  |  |  |  |  |
|           | MCCD LTR. 9-25-08                                       |  |  |  |  |  |  |
| 8-25-08   | TWP. ENGR. LTR. 3-26-08, TWP PLANNER LTR 3-31-08        |  |  |  |  |  |  |
|           | TWP. SWR. ENGR. LTR. 4-1-08, FIRE CHIEF LTR. 4-2-08 &   |  |  |  |  |  |  |
|           | MCCD LTR. 6-12-08                                       |  |  |  |  |  |  |
| 10-15-07  | TWP. ENGR. LTR. 8-30-07, TWP PLANNER LTR 9-4-07         |  |  |  |  |  |  |
|           | TWP. SWR. ENGR. LTR. 8-31-07, TRAFFIC ENGR. LTR. 8-28-0 |  |  |  |  |  |  |

TITLE SHEET
' PACER'S GAIT '

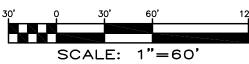
PREPARED FOR

# MIKELEN, LLC.

SITUATE IN

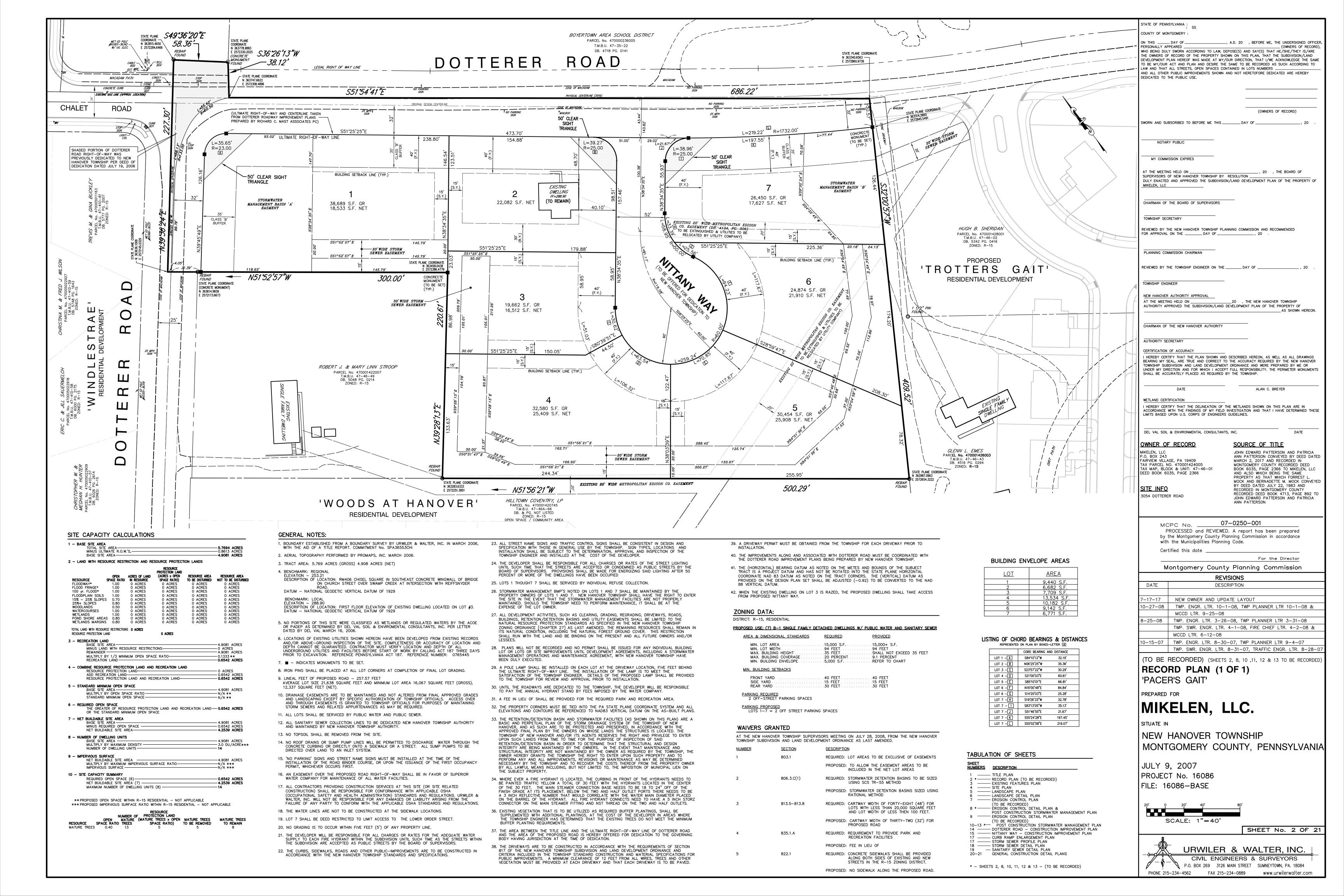
NEW HANOVER TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA

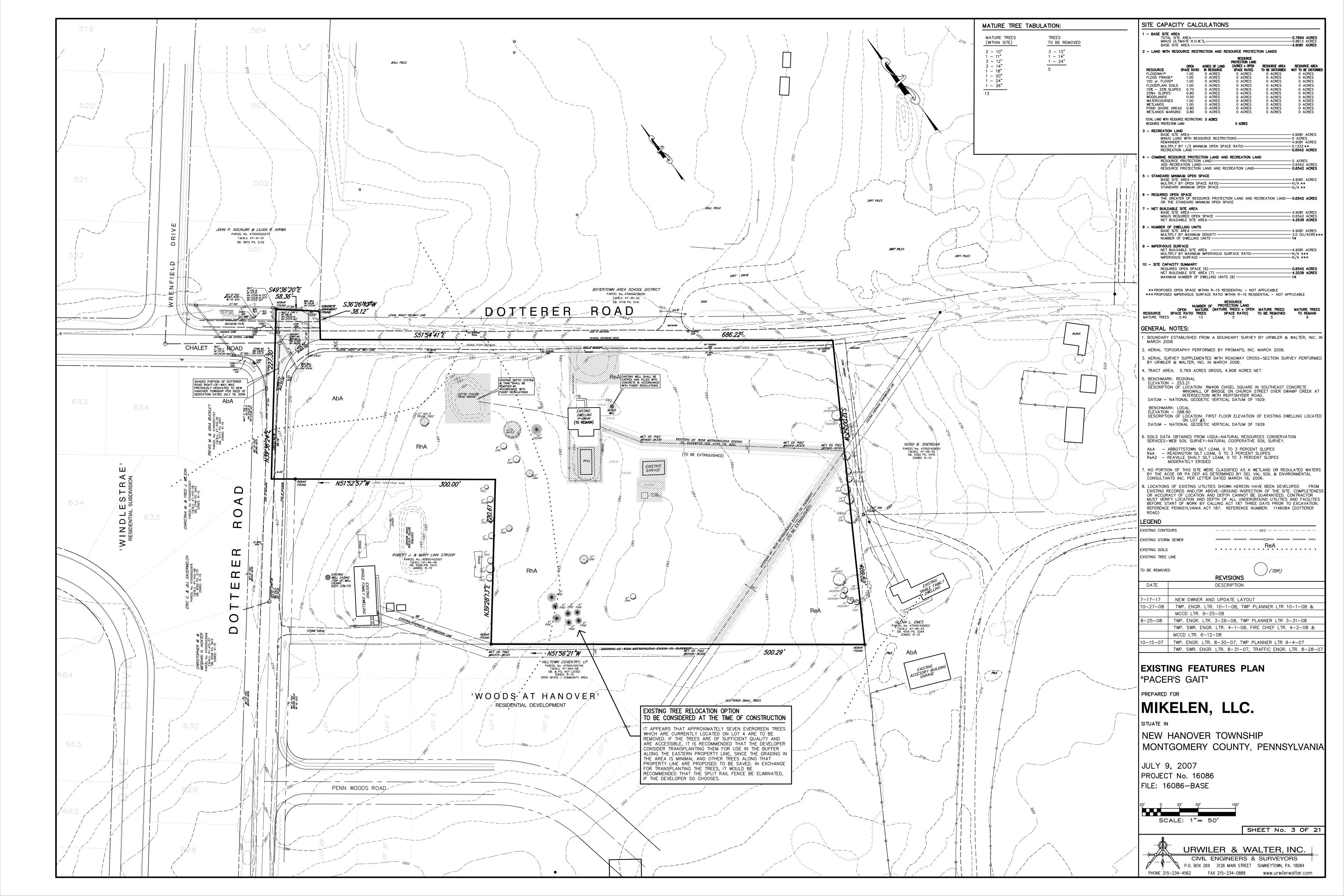
JULY 9, 2007 PROJECT No. 16086 FILE: 16086-BASE

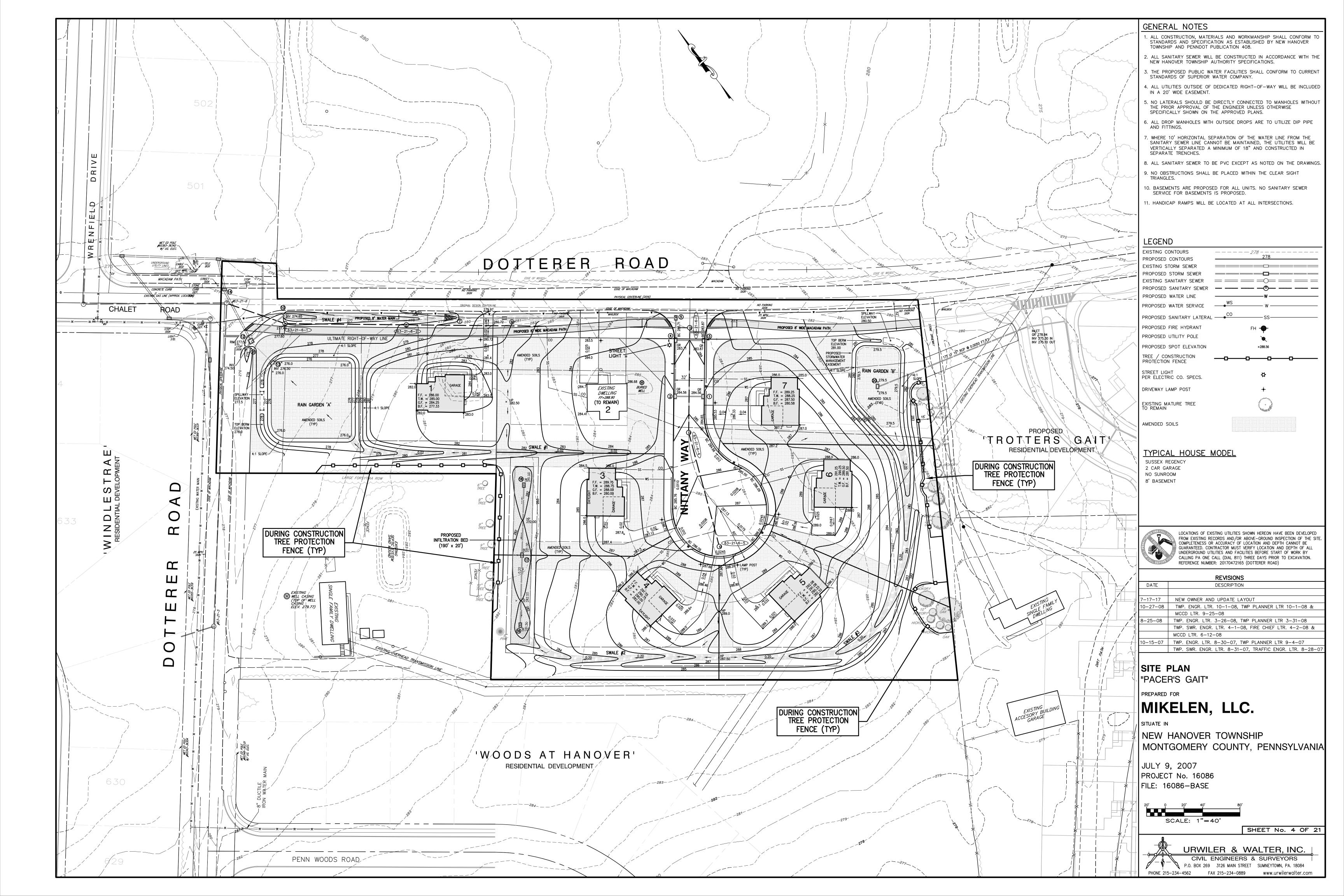


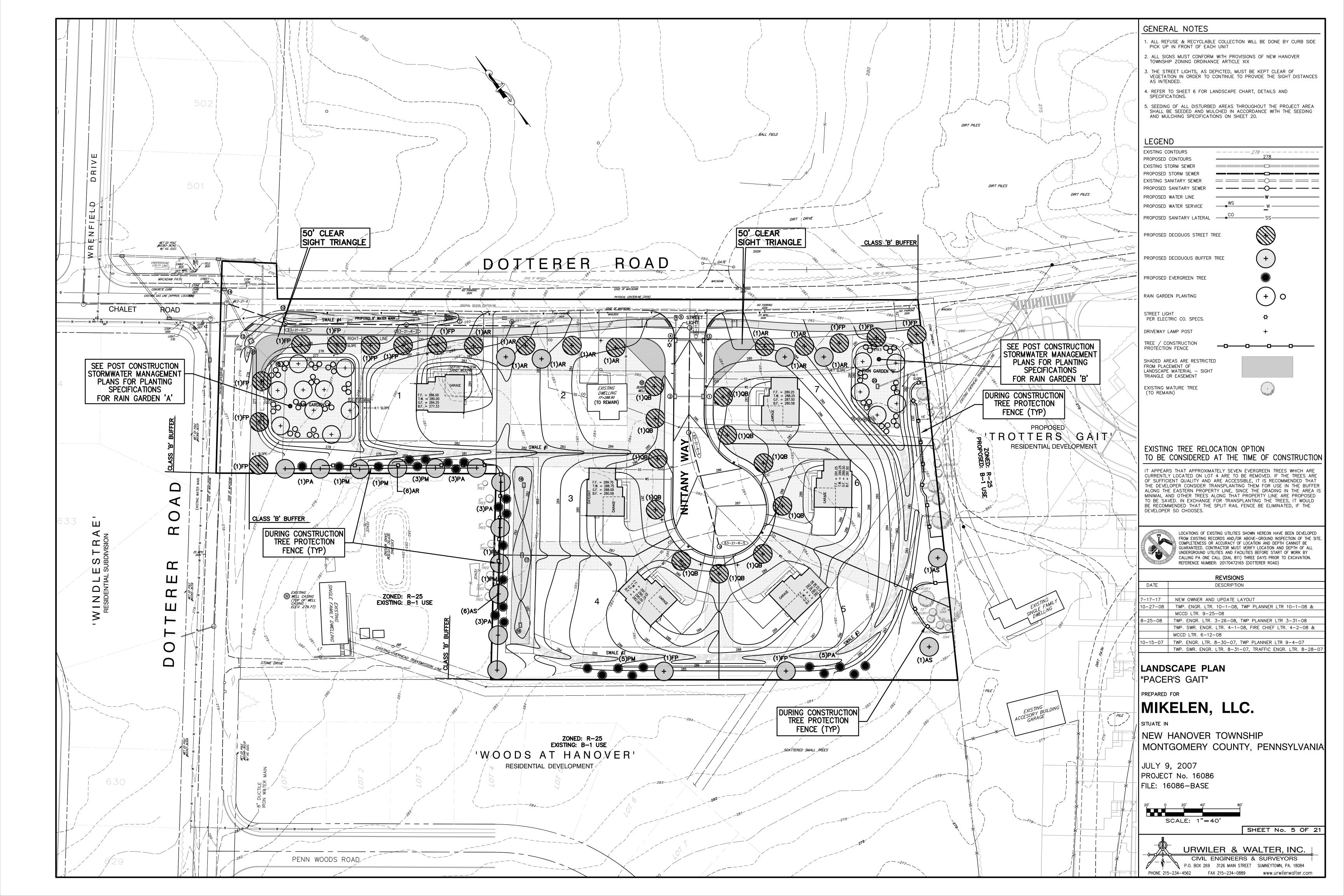
SHEET No. 1 OF 21

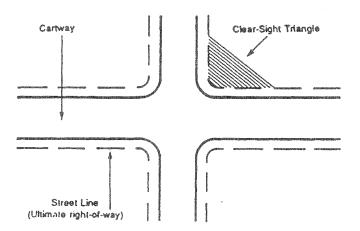






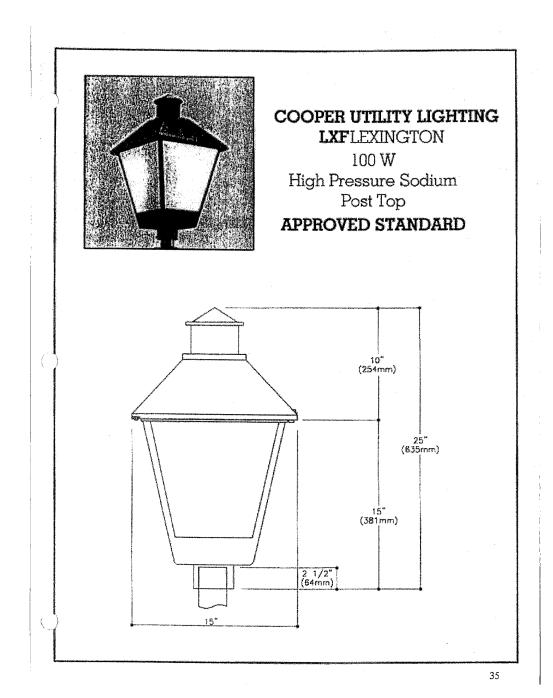


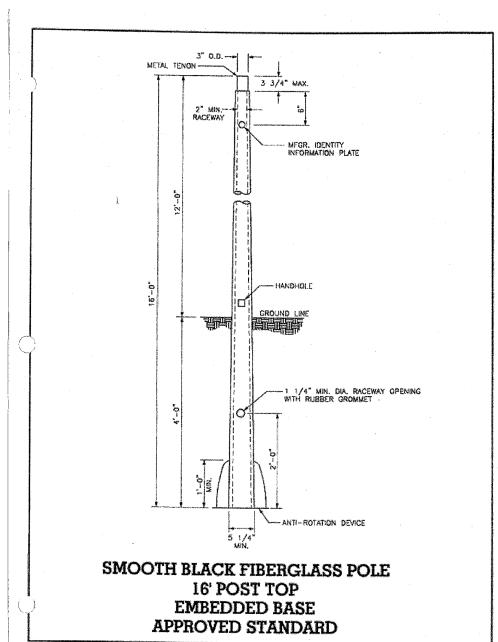


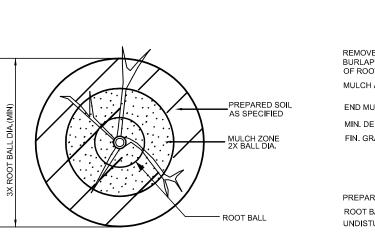


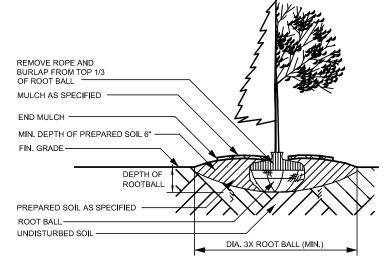
### CLEAR SIGHT TRIANGLE DETAIL NTS

1. No structure, fence, planting or other obstruction shall be maintained between a vertical plane 2 feet above curb level and a plane 7 feet above curb level so as to interfere with traffic visibility across the corner within that part of the required yard which is within a horizontal clear-sight triangle boundary by the two street lines and a straight line drawn between points on each such line 25 feet from the intersection of said lines or extensions thereof. When one or both streets which form the intersection are classified as collector or arterial highways, the clear-sight triangle bounded by the two street lines and a straight line drawn between points on such line shall be 50 feet from the intersection of said lines or extension thereof.



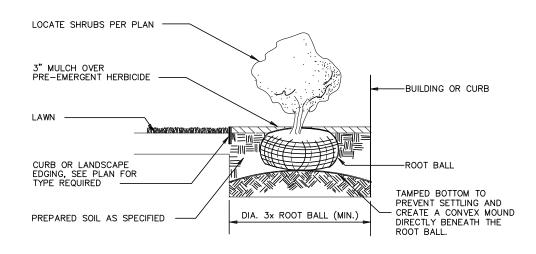






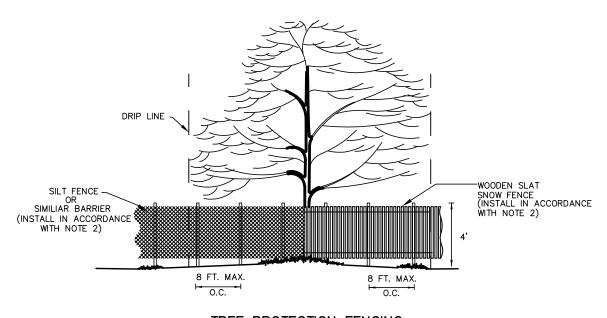
### TREE PLANTING DETAIL NTS

- 1. SET TREE IN THE CENTER OF THE PIT ON UNDISTURBED GROUND. 2. REMOVE ALL TREATED OR PLASTIC-COATED BURLAP, WIRE, NYLON
- OR TWINE FROM PLANT. DISPOSE OF DEBRIS OFF SITE. 3. PLANT TREES TO THE SAME DEPTH AS EXISTED AT THE NURSERY.
- 4. SOAK PLANT BALL AND PIT IMMEDIATELY AFTER INSTALLATION. 5. PRUNE ONLY DEAD OR DAMAGED BRANCHES.
- 6. MULCH AS SPECIFIED TO A WIDTH OF 2 X BALL DIAMETER. KEEP MULCH
- 7. "TREE STAKING AND GUYING IS NOT REQUIRED; HOWEVER, THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR ASSURING THAT TREES ARE MAINTAINED STRAIGHT AND UPRIGHT THROUGHOUT THE GUARANTEE PERIOD, IF TREE STAKES OR GUYS ARE USED, IT IS THE CONTRACTOR'S RESPONSIBILITY TO REMOVE STAKES AND GUYS, INCLUDING WIRES AFTER ONE YEAR. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO PLACE AND MAINTAIN WARNING DEVISEES ON



### SHRUB PLANTING DETAIL NTS

1. FLOOD PLANTING PIT WITH WATER TWICE WITHIN 24 HOURS OF PLANTING. 2. MULCH IS NOT TO TOUCH THE MAIN STEMS OF SHRUBS.



- TREE PROTECTION FENCING NOTES:
- 1. BOX TREES WITHIN 25 FEET OF BUILDING SITE TO PREVENT MECHANICAL
- 2. THE MINIMUM SETBACK DISTANCE FOR TREE PROTECTION FENCE FROM A TREE SHALL BE 15 FEET OR THE DISTANCE FROM THE TRUNK TO THE DRIPLINE, WHICH EVER IS GREATER.
- 3. BOARDS MAY NOT BE NAILED TO TREES AT ANY TIME.
- 4. FEEDER ROOTS IN THE TREE PROTECTION ZONE SHALL NOT BE CUT OR OTHERWISE DISTURBED.
- 5. DAMAGED ROOTS OR BRANCHES OF TREES TO REMAIN ARE TO BE TREATED IMMEDIATELY BY A CERTIFIED ARBORIST IN ACCORDANCE WITH ACCEPTED HORTICULTURAL PRACTICES.
- NO MATERIALS, EQUIPMENT OR VEHICLES ARE PERMITTED WITHIN THE TREE PROTECTION ZONE.
- 7. NO GRADING OR EARTH DISTURBANCE IS PERMITTED WITHIN THE TREE
- 8. POST SPACING FOR TREE PROTECTION FENCE MAY NOT EXCEED EIGHT (8) FEET.

### **PLANTING NOTES:**

### TOPSOIL

- A. USE AVAILABLE ON-SITE MATERIAL, WHICH IS FRIABLE, FREE OF CLUMPS OF CLAY, SOD, STONES AND OTHER DELETERIOUS MATTER AND PLACE TO THE GRADES REQUIRED ON THE PLANS.

  B. IF ON SITE MATERIAL IS UNAVAILABLE OR IN INSUFFICIENT QUANTITY, PROVIDE TOPSOIL WHICH CONFORMS TO (OR IS MODIFIED TO MEET) THE FOLLOWING REQUIREMENTS:

  1. LOOSE, FRIABLE, FREE OF STONES, STICKS, CLUMPS OF CLAY AND OTHER DELETERIOUS DEBRIS;

  2. FREE OF HAZARDOUS MATERIALS OR WASTES
- 2. FREE OF MAZARDOUS MATERIALS OR WASTES
  3. HAS A PH 6.0-6.8
  4. ORGANIC CONTENT 5% MINIMUM.
  C. PROVIDE SAMPLES OF TOPSOIL FOR ANALYSIS AS FOLLOWS:
  1. TAKE AT LEAST ONE SOIL SAMPLE (ONE FOR EACH TWO ACRES OF SITE AREA) OF THE ON-SITE TOPSOIL FROM DIFFERENT AREAS OF THE SITE TO OBTAIN REPRESENTATIVE RESULTS. RECORD
- SOIL AMENDMENTS AND NUTRIENTS ARE APPLIED,
  ADDITIONALLY, PROVIDE SEPARATE SOIL SAMPLES FOR EACH SOURCE OF FURNISHED TOPSOIL.
  OBTAIN A SOIL TEST KIT FROM THE STATE COOPERATIVE EXTENSION SERVICE FOR EACH SOIL SAMPLE
  REQUIRED AND FOLLOW THE INSTRUCTIONS. REQUEST RECOMMENDATIONS FOR TURF GRASS
- SUBMIT SOIL SAMPLES TO RUTGERS UNIVERSITY, OR THE PENNSYLVANIA STATE UNIVERSITY OR THE UNIVERSITY OF DELAWARE AS DESCRIBED IN THE KIT.
- 5. SUBMIT TWO COPIES OF THE SOIL REPORT TO THE OWNER'S AGENT FOR REVIEW PRIOR TO PLACING D. PROVIDE LABOR AND MATERIALS NEEDED TO AMEND TOPSOIL TO THE MINIMUM LEVELS REQUIRED BELOW,

### I. SOIL AMENDMENTS:

- THOROUGHLY INCORPORATED TO A DEPTH OF AT LEAST 4", UNLESS OTHERWISE SPECIFIED. A. LIMESTONE: GROUND OR PELLETIZED AGRICULTURAL DOLOMITIC LIMESTONE, WHICH HAS A MINIMUM 10% MAGNESIUM CONTENT.
- B. BASIC FERTILIZER CONFORMING TO THE FOLLOWING:
- FORMULA: 0-46-0
   STARTER FERTILIZER CONFORMING TO THE FOLLOWING: 1. FORMULA: 2-1-1 N-P-K RATIO, OR AS RECOMMENDED IN THE SOIL REPORT(S) TO ACHIEVE THE PROPER LEVEL OF NUTRIENTS.
- 2. NITROGEN: 50% (MINIMUM) SLOW RELEASE NITROGEN SOURCE.
  . PRE-EMERGENT HERBICIDE: BALAN, GALLERY, PENDULUM OR OTHER SUITABLE PRODUCT.
  . ORGANIC MATTER: LEAF MOLD WHICH HAS BEEN AGED AT LEAST ONE YEAR; OR, WOODCHIPS
- THOROUGHLY BLENDED WITH A WELL BALANCED (10-10-10 FORMULATION) FERTILIZER AT THE RATE OF 5
  LBS. N PER CUBIC YARD AND THEN AGED FOR A MINIMUM OF 90 DAYS.

  NOTE: IF WOODCHIPS ARE USED IN PLACE OF LEAF MOLD, PROVIDE A LAYER OF WOOD CHIPS THAT IS 4
  TIMES THE THICKNESS SPECIFIED FOR LEAF MOLD.

### III. BED PREPARATION

- A. SPREAD A 1/2" THICK LAYER OF ORGANIC MATTER OVER SUBGRADE. MODIFY ORGANIC MATTER AND FERTILIZER QUANTITIES TO COMPLY WITH RECOMMENDATIONS CONTAINED IN THE SOIL REPORT.
- B. ROTOVATE OR OTHERWISE LOOSEN SUBGRADE TO A MINIMUM DEPTH OF 4", THOROUGHLY INCORPORATING ORGANIC MATTER AND FERTILIZER. . HAND OR MACHINE RAKE SOIL (WITH A LIGHTWEIGHT MACHINE) TO A SMOOTH, EVEN GRADE AS SHOWN ON
- THE PLANS LESS 4" UNLESS OTHERWISE INSTRUCTED.

  D. REMOVE ROCKS, STONES AND DEBRIS LARGER THAN 1" IN DIMENSION. SPREAD TOPSOIL TO A MINIMUM THICKNESS OF 4" AS REQUIRED TO MEET THE GRADES SHOWN ON THE
- F. SPREAD A 1/2" THICK LAYER OF ORGANIC MATTER AFTER PLACING TOPSOIL.
  G. PLACE BASIC FERTILIZER AND LIMESTONE, TO THE FOLLOWING LEVELS, UNLESS OTHERWISE RECOMMENDED IN THE SOIL REPORT. BASIC FERTILIZER: 2 LBS. 1,000 S.F. (88 LBS./ACRE)
- 2. LIMESTONE: 50 LBS. PER 1,000 S.F. (2,200 LBS./ACRE)

  1. EVENLY SPREAD BASIC FERTILIZER, LIMESTONE AND ORGANIC MATTER AND THOROUGHLY INCORPORATE
- HAND OR MACHINE RAKE WITH A LIGHTWEIGHT MACHINE SOIL TO A SMOOTH, EVEN GRADE AS SHOWN ON THE PLANS OR OTHERWISE INSTRUCTED.

  ROLL WITH A LIGHTWEIGHT ROLLER TO FIRM. DO NOT COMPACT WITH HEAVY EQUIPMENT.
- L. SPREAD STARTER FERTILIZER AT THE RATE OF 2 LBS. N/1,000 SQ. FT. (85 LBS. N/ACRE)
  M. PLACE SEED, SOD OR PLANTINGS AS SHOWN ON THE PLANS.
  N. ROLL A SECOND TIME WITH A LIGHTWEIGHT ROLLER TO ASSURE COMPLETE CONTACT BETWEEN SEED OR SOD AND SOIL, EXCEPT IN WETLAND AREAS. DO NOT COMPACT WITH HEAVY EQUIPMENT.

### IV. SEED AND SEEDING

- A. PERMANENT GRASS SEED MIX: PRIMARY BLEND FOR HIGH QUALITY LAWN AREAS
- 60% IMPROVED KENTUCKY BLUEGRASS VARIETIES (PROVIDE A MINIMUM OF 2 AND MAXIMUM OF 5 VARIETIES, WITH NO MORE THAN 50% OF THE SEED BEING FROM ONE VARIETY) 25% IMPROVED CHEWINGS TYPE FESCUE VARIETIES (PROVIDE A MINIMUM OF 1 AND A MAXIMUM OF 15% IMPROVED PERENNIAL RYEGRASS VARIETIES (PROVIDE A MINIMUM OF 1 AND A MAXIMUM OF 3
- VARIETIES)
  ALTERNATE BLEND FOR LOW MAINTENANCE AREAS
  60% RELIANT HARD FESCUE
  25% JAMESTOWN II CHEWINGS TYPE FESCUE
  15% REPELL II PERENNIAL RYEGRASS
  B. PROVIDE CERTIFIED SEED WHICH IS ENDOPHYTE ENHANCED AND HAS A MINIMUM PURITY RATIO AND GERMINATION RATE OF 95%. SPREAD AT 4 LBS./1,000 SQ. FT. (175 LBS./ACRE) C. SUBMIT SEED BAG LABELS OR SUPPLIER'S CERTIFICATION OF MIX FOR APPROVAL PRIOR TO SEEDING. D. APPLY SEED BY EITHER BROADCAST OR HYDRAULIC METHOD CONFORMING TO AMERICAN LAWN CARE
- ASSOCIATION STANDARDS E. AFTER SPREADING SEED, THOROUGHLY MULCH SEEDED AREAS WITH SALT HAY TO A 1" DEPTH. PLACE TACKIFIER AFTER SPREADING HAY IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. F. USE TEMPORARY SEED MIX CONTAINING 100% KENTUCKY 31 TALL FESCUE (100% ANNUAL RYEGRASS (LOLIUM MULTIFLORUM) IN AREAS DESIGNATED FOR WILDFLOWER SEEDING) ON DISTURBED AREAS THAT WILL NOT BE FINAL GRADED AND/OR STABILIZED WITHIN 30 DAYS. TALL FESCUE SEED RATE: 8 LBS./1,000 SQ. FT. (350 LBS./ACRE) ANNUAL RYE SEED RATE: 6 LBS./1,000 SQ. FT. (250 LBS./ACRE)
- G. NOTES:

  1. DO NOT USE PRE-EMERGENT HERBICIDES. 2. MIX FERTILIZER, LIMESTONE, FIBER MULCH AND TACKIFIER IN THE SLURRY IF SEED IS HYDRAULICALLY 3. MAKE SEPARATE LIMESTONE AND FERTILIZER APPLICATIONS IF SEED IS BROADCAST.

### V. SOD INSTALLATION PROCEDURES

- A. PREPARE SOIL (SOD BED) AS DESCRIBED ABOVE FOR SEEDING, EXCEPT THAT AN APPROVED PRE-EMERGENT HERBICIDE IS TO BE PLACED AS INSTRUCTED BY THE MANUFACTURER.

  B. PROVIDE CERTIFIED SOD COMPRISED OF ENDOPHYTE-ENHANCED SEED WHICH IS AT LEAST 18 MONTHS OLD AT THE TIME OF CUTTING. USE SOD FROM LOCAL SOURCES HAVING SIMILAR SOIL AND GROWING CONDITIONS. MATCH THE FOLLOWING MIX AS CLOSELY AS POSSIBLE: PRIMARY BLEND FOR HIGH QUALITY LAWN AREAS
- 60% IMPROVED KENTUCKY BLUEGRASS VARIETIES (PROVIDE A MINIMUM OF 2 AND MAXIMUM OF 5 VARIETIES. WITH NO MORE THAN 50% OF THE SEED BEING FROM ONE VARIETY) 25% IMPROVED CHEWINGS TYPE FESCUE VARIETIES (PROVIDE A MINIMUM OF 1 AND A MAXIMUM OF 3
- 15% IMPROVED PERENNIAL RYEGRASS VARIETIES (PROVIDE A MINIMUM OF 1 AND A MAXIMUM OF 3
- C. USE FRESHLY CUT SOD WITH A ROOT MAT AT LEAST 1/2 INCH THICK. LAY SOD WITHIN 24 HOURS OF CUTTING. ASSURE THAT SOD PIECES ARE BUTTED TIGHTLY ON SIDES SO THAT THERE ARE NO GAPS OR VOIDS. SOD PIECES WHICH ARE BROKEN, HAVE VOIDS, TEARS OR OTHER DEFICIENCIES WILL NOT BE
- D. ROLL SOD TO FIRM AND ASSURE COMPLETE CONTACT WITH THE SOIL. THOROUGHLY WATER AFTER PLACING. MAINTAIN ADEQUATE WATER LEVELS FOR SOD WHILE ON THE JOB, AND INSTRUCT THE OWNER
- IN PROPER AFTER CARE.

  E. PROTECT AFTER PLACING TO PREVENT DAMAGE TO FINISHED AREAS.

### PLANTING NOTES:

DIMENSIONS FOR PLANTING BEDS, IF PROVIDED, ARE APPROXIMATE AND MAY REQUIRE MINOR ADJUSTMENT TO PROVIDE A SMOOTH BED EDGE. PLACE PLANTS WITHIN MULCHED BEDS UNLESS OTHERWISE SHOWN.

SYMBOL

STREET TREE

CANOPY TREE

EVERGREEN TRE

INDICATES NATIVE

ABBREV.

\*FP

\*QB

BOTANICAL NAME

ACER SACCHARUM

LANCEOLATA

PICEA ABIES

FRAXINUS PENNSYLVANICA

PSEUDOTSUGA MENZIESII

'MARSHALL'S SEEDLESS

QUERCUS BOREALIS

2. WHERE INDICATED, REMOVE EXISTING PLANTS, INCLUDING ROOTS.

INTO THE SOIL. DISPOSE OF DEBRIS OFF SITE, UNLESS OTHERWISE APPROVED.

- 3. REMOVE INVASIVE VINES FROM EXISTING TREES DESIGNATED "TO REMAIN" STRIP SOD, WHERE NECESSARY, USING SUITABLE EQUIPMENT; DO NOT ROTOVATE EXISTING VEGETATION
- ROTOVATE OR OTHERWISE LOOSEN EXISTING SUBGRADE IN PLANTING AREAS TO A MINIMUM DEPTH OF SIX INCHES (6"). REMOVE ROCKS, STONES AND DEBRIS WITH DIMENSION EXCEEDING TWO INCHES (2"). PROVIDE AND THOROUGHLY INCORPORATE ORGANIC MATTER (A 1/2" THICK LAYER OF WELL-AGED LEAF MOLD [OR ?" THICK LAYER OF TREATED WOODCHIPS] — THROUGHOUT PRIOR TO PLACING TOPSOIL. RAKE SUBGRADE O A SMOOTH, EVEN GRADE CONFORMING TO THE REQUIREMENTS OF THE GRADING PLANS, LESS SIX
- 6. PLACE TOPSOIL TO A DEPTH OF 6" AS NEEDED TO BRING LAWNS, AND PLANTING BEDS AND MOUND AREAS TO THE GRADES AS SHOWN ON THE PLANS. RAKE TO A SMOOTH, EVEN GRADE CONFORMING TO THE REQUIREMENTS OF THE GRADING PLANS. REMOVE ROCKS, STONES AND DEBRIS WITH DIMENSION

INCHES (6") TO ALLOW FOR THICKNESS OF TOPSOIL. LIGHTLY ROLL TO FIRM - NOT COMPACT - THE SOIL.

- EXCEEDING ONE INCH. PROVIDE AND INCORPORATE ORGANIC MATTER THROUGHOUT PRIOR TO PLANTING. WHEN INSUFFICIENT QUANTITIES OF ON-SITE TOPSOIL EXIST, PROVIDE AND PLACE TOPSOIL CONFORMING TO THE REQUIREMENTS IN THE "LAWN SEEDING AND TOPSOIL SPECIFICATIONS" AS NEEDED TO BRING PLANTING BEDS TO THE GRADES AS SHOWN ON THE PLANS. PROVIDE A "PER CUBIC YARD" PRICE FOR TOPSOIL PLACED, SPREAD AND READY FOR SEED, SOD OR PLANTING, AS SHOWN. PAYMENT WILL BE BASED UPON THE UNIT PRICE ALONG WITH EVIDENCE OF DELIVERY TICKETS.
- AFTER SPREADING TOPSOIL, PROVIDE AND PLACE ORGANIC MATTER (1" LEAF MOLD OR 4" WOODCHIPS) OVER THE ENTIRE PLANTING AREA. ROTOVATE OR OTHERWISE INCORPORATE ORGANIC MATTER TO A MINIMUM DEPTH OF 12" THROUGHOUT. LIGHTLY ROLL TO FIRM - NOT COMPACT - PRIOR TO PLANTING,
- PROVIDE NURSERY GROWN PLANT MATERIALS MEETING THE SIZE, QUALITY AND HANDLING STANDARDS DEFINED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION AND PUBLISHED IN THE CURRENT
- EDITION OF ANSI Z60.1 AMERICAN STANDARD FOR NURSERY STOCK. 10. GUARANTEE THAT PLANT MATERIALS ARE TRUE TO NAME, SPECIES AND VARIETY; TYPICAL OF THEIR TYPE; HAVE NORMAL GROWTH AND DENSE, FIBROUS ROOT SYSTEMS; AND CERTIFIED TO BE FREE OF DISEASE
- 11. DO NOT PLACE TREES OR SHRUBS IN THE FLOW AREA OF SWALE. ADJUST PLANT LOCATIONS AS NEEDED TO ELIMINATE SUCH ENCROACHMENT.
- 12. PROVIDE AND ROTOVATE OR OTHERWISE THOROUGHLY INCORPORATE TERRA-SORB? AG. OR APPROVED EQUAL, THROUGHOUT THE TOP 12" OF SOIL IN LANDSCAPED AREAS PRIOR TO PLANTING AT THE RATE OF
- 13. PRIOR TO PLANTING, DIP BARE ROOT MATERIAL IN A SOLUTION OF TERRA-SORB? GB, OR APPROVED
- EQUAL AT THE RATE OF 1LB./25 GAL. WATER AS RECOMMENDED BY THE MANUFACTURER. 14. PRIOR TO PLANTING, STAKE THE LOCATIONS OF TREES AND MARK THE OUTLINES OF SHRUB BEDS FOR
- APPROVAL. NOTIFY THE TOWNSHIP ENGINEER AT LEAST THREE BUSINESS DAYS IN ADVANCE TO PERMIT PROMPT REVIEW OF PLANT LOCATIONS.
- PERFORM PLANTING (TREES, SHRUBS AND LAWNS) OPERATIONS IN ACCORDANCE WITH THE CURRENT RECOMMENDATIONS OF THE USDA COOPERATIVE EXTENSION SERVICE AND THE DETAILS ON THESE PLANS.
- 16. STAKING AND GUYING OF TREES IS NOT REQUIRED. DO NOT USE TREE WRAPPING PAPER ON PLANTS.
- 17. REMOVE ROPES AND BURLAP FROM THE TOPS OF ROOT BALLS AFTER PLANTING. BURLAP MAY BE PLACED IN THE PLANTING HOLE. REMOVE "NO-ROT" BURLAP AND SYNTHETIC WRAPPING MATERIALS ENTIRELY FROM BALLS AND DISPOSE OF OFF SITE. CUT GALVANIZED WIRE BASKETS; BASKETS MAY BE LEFT IN
- 18. EXCEPT TO REMOVE DEAD OR BROKEN BRANCHES, DO NOT PRUNE OR FERTILIZE TREES OR SHRUBS AT THE TIME OF PLANTING. RETURN TO THE SITE ONE YEAR AFTER COMPLETION TO PERFORM THE PRUNING
- PRIOR TO PLACING SOD OR MULCH, APPLY A PRE-EMERGENCE HERBICIDE (SURFLAN, RONSTAR, OR OTHER
- SUITABLE PRODUCT) AS INSTRUCTED BY THE MANUFACTURER TO CONTROL THE GERMINATION OF NOXIOUS
- 20. PROVIDE AND PLACE SUFFICIENT DOUBLE-GROUND HARDWOOD BARK MULCH TO CREATE A LAYER OF MULCH NOT LESS THAN THREE INCHES DEEP ON PLANTINGS AND PLANTING BEDS. DO NOT PILE MULCH AGAINST THE BARK, TRUNK OR MAIN STEMS OF PLANT.
- SOD AREAS NOT OTHERWISE TREATED WITH SOD AS SPECIFIED. GRADE TO 1" BELOW THE TOP OF ADJACENT CURBS, PAVING, SEEDED AREAS OR PLANTING BEDS AT EDGES TO COMPENSATE FOR SOD THICKNESS. SLOPE TO A GENTLE CROWN IN THE CENTER FOR DRAINAGE, OR MOUND AS SHOWN ON THE
- 22. SEED AREAS NOT OTHERWISE TREATED WITH PERMANENT SEED MIX AS SPECIFIED. GRADE TO EVEN WITH THE TOP OF CURBS OR ADJACENT PAYING AT EDGES. SLOPE TO A GENTLE CROWN IN THE CENTER FOR
- DRAINAGE, OR MOUND AS SHOWN ON THE PLANS. 23. OVERSEED DAMAGED EXISTING LAWN AREAS WITH THE SAME SEED MIX USED FOR NEW SEEDING. APPLY SEED AS SPECIFIED FOR NEW SEEDING. USE 1/2 THE SEED RATE USED FOR NEW SEEDING. PRIOR TO
- SEEDING, PROPERLY DE-THATCH AREAS TO BÉ SEEDED. STRAW AND/OR MULCH WILL NOT BE REQUIRED . ADEQUATELY MAINTAIN LANDSCAPE MATERIALS UNTIL ACCEPTED BY THE OWNER OR TOWNSHIP.
- MAINTENANCE INCLUDES: WATERING, REMOVAL OF WEEDS AND DEBRIS, AND REMOVING DEAD OR DISEASED 25. PROVIDE A EIGHTEEN MONTH GUARANTEE FOR PLANTS AND PLANTINGS (EXCEPT SEASONAL PLANTINGS AND TRANSPLANTED PLANTS). REPLACE PLANTS NOT IN A SATISFACTORY GROWING CONDITION EIGHTEEN
- PLANTING GUARANTEE COMMENCES UPON NOTICE OF ACCEPTANCE BY THE TOWNSHIP. 26. PLACE STREET TREES 10' (TEN FEET) FROM THE BACK OF RIGHT-OF-WAY UNLESS OTHERWISE SHOWN. 27. PLACE STREET TREES AT LEAST 15' (FIFTEEN FEET) FROM EITHER OVERHEAD OR UNDERGROUND UTILITY MAIN AND LATERAL LINES, UNLESS OTHERWISE SHOWN.
- 28. STREET TREES ARE TO BE BRANCHED AT LEAST 7' (SEVEN FEET ABOVE FINISHED GRADE.

WITH THE LANDSCAPE DESIGN CONSULTANT WHO PREPARED THE PLAN.

### MISCELLANEOUS NOTES:

- 29. WHERE INDICATED, REMOVE EXISTING PLANTS AND ROOTS TO A DEPTH OF AT LEAST 12" BELOW EXISTING GRADE. DISPOSE OF DEBRIS OFF SITE. MATERIAL WHICH IS NOT DISEASED MAY BE CHIPPED AND LEFT ON SITE FOR USE AS THE REQUIRED ORGANIC MATTER. TREAT WOOD CHIPS WITH 5 LBS. GENERAL PURPOSE 10-10-10) FERTILIZER PER CUBIC YARD OF CHIPS. LEAVE CHIPS IN NEAT PILES IN LOCATION(S) AS APPROVED BY THE OWNER'S REPRESENTATIVE.
- 30. REMOVE INVASIVE VINES, INCLUDING GRAPE AND POISON IVY COMPLETELY FROM EXISTING TREES. THOROUGHLY GRUB OUT ROOT SYSTEMS OF INVASIVE VINES WHILE AVOIDING DAMAGE TO ROOT SYSTEMS OF TREES THAT ARE TO REMAIN. DISPOSE OF DEBRIS OFF SITE.
- 31. SUBSTITUTIONS ARE TO BE APPROVED IN WRITING BY THE TOWNSHIP'S REPRESENTATIVE IN CONCURRENCE
- 32. "PLANT MATERIALS NO PLANTED THE DAY OF DELIVERY ARE TO BE MULCHED SO THAT ROOT SYSTEMS ARE PROTECTED FROM THE DRYING FORCES OF THE WIND AND SUN. TEMPORARY WATERING SYSTEMS ARE TO B PROVIDED AND USED FOR PLANT MATERIALS WHICH WILL BE STORED FOR MORE THAN ONE WEEK"
- 33. "PLANTS WITH DAMAGED OR BROKEN ROOT BALLS OR EXCESSIVE DAMAGE TO THE CROWN AS DETERMINED
- BY THE TOWNSHIP'S REPRESENTATIVE WILL NOT BE ACCEPTED AND ARE TO BE REMOVED FROM THE SITE AND REPLACE WITH ACCEPTABLE MATERIAL"
- 34. "THE CONTRACTOR IS RESPONSIBLE FOR ASSURING THAT APPLICATIONS OF HERBICIDES AND OTHER PESTICIDES ARE IN COMPLIANCE WITH STATE LAWS AND HANDLED IN ACCORDANCE WITH U.S. EPA GUIDELINES AND MANUFACTURES' INSTRUCTIONS. PESTICIDES ARE TO BE APPLIED ONLY WHEN WEATHER CONDITIONS ARE APPROPRIATE AND ONLY UNDER THE DIRECT SUPERVISION OF A LICENSED PESTICIDE

### LANDSCAPING REQUIREMENTS

### 1. STREET TREES

LANDSCAPING CHART

COMMON NAME

OCTOBER GLORY RED MAPLE

MARSHALL'S SEEDLESS ASH

SUGAR MAPLE

NORWAY SPRUCE

DOUGLAS FIR

QUANTITY

13

A. REQUIRED: (FOR LOTS GREATER THAN 15,000 SF IN AREA) (1) CANOPY TREE PER 50 LF ROAD FRONTAGE

SIZE

FINISHED GRADE

MIN. 4' HT.

MIN. 4' HT.

AT INSTALLATION | CONDITION

ROOT

- 1. DOTTERER ROAD: 802LF/50 = 16 TREES 2. PROPOSED NITTANY WAY: 582LF/50 = 12 TREES

### B. PROPOSED/PROVIDED

- 1. DOTTERER ROAD: 16 TREES
- 2. PROPOSED NITTANY WAY: 12 TREES

### 2. BUFFERS

- A. REQUIRED:
- 1. DOTTERER ROAD (MINOR COLLECTOR ROAD):
- A. PROPOSED USE B-1 ALONG MINOR COLLECTOR ROAD: CLASS B BUFFER (OPTION 2):
- 1 CANOPY TREE PÈR 40 FEÉT + 1 EVERGREEN TREE PER 30 FEET 802LF/40 = 20 CANOPY TREE & 27 EVERGREEN TREES

### B. PROPOSED/PROVIDED:

1. 20 CANOPY TREES & 27 EVERGREEN TREES TO BE DISTRIBUTED ALONG DOTTERER ROAD AND THE TRACT PROPERTY LINES TO BUFFER THE EXISTING B-1 DWELLING PROPERTY AND SUPPLEMENT EXIISTING PERMITER TREES



LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND INSPECTION OF THE SITE COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA ONE CALL (DIAL 811) THREE DAYS PRIOR TO EXCAVATION. REFERENCE NUMBER: 20170472165 (DOTTERER ROAD)

|          | REVISIONS  |  |  |  |  |  |  |  |
|----------|--|--|--|--|--|--|--|--|
| DATE     | DESCRIPTION  |  |  |  |  |  |  |  |
|          |  |  |  |  |  |  |  |  |
| 7-17-17  | NEW OWNER AND UPDATE LAYOUT                              |  |  |  |  |  |  |  |
| 10-27-08 | TWP. ENGR. LTR. 10-1-08, TWP PLANNER LTR 10-1-08 &       |  |  |  |  |  |  |  |
|          | MCCD LTR. 9-25-08  |  |  |  |  |  |  |  |
| 8-25-08  | TWP. ENGR. LTR. 3-26-08, TWP PLANNER LTR 3-31-08         |  |  |  |  |  |  |  |
|          | TWP. SWR. ENGR. LTR. 4-1-08, FIRE CHIEF LTR. 4-2-08 &    |  |  |  |  |  |  |  |
|          | MCCD LTR. 6-12-08  |  |  |  |  |  |  |  |
| 10-15-07 | TWP. ENGR. LTR. 8-30-07, TWP PLANNER LTR 9-4-07          |  |  |  |  |  |  |  |
|          | TWP. SWR. ENGR. LTR. 8-31-07, TRAFFIC ENGR. LTR. 8-28-07 |  |  |  |  |  |  |  |

LANDSCAPE DETAIL PLAN "PACER'S GAIT"

PREPARED FOR

# MIKELEN, LLC.

NEW HANOVER TOWNSHIP MONTGOMERY COUNTY, PENNSYLVANIA

JULY 9, 2007 PROJECT No. 16086 FILE: 16086-BASE

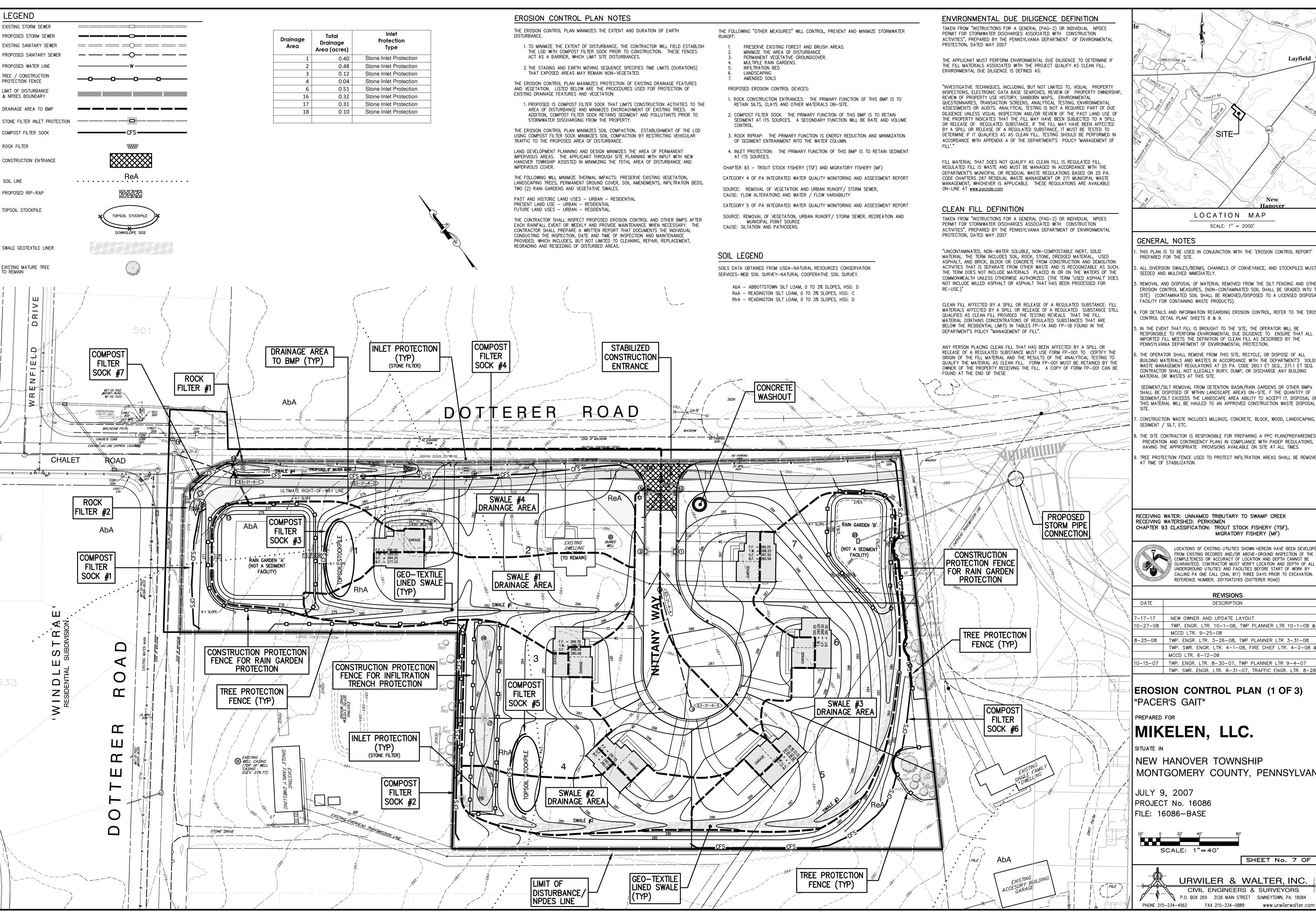


SHEET No. 6 OF 2



PHONE 215-234-4562 FAX 215-234-0889 www.urwilerwalter.com





LOCATION MAP

### GENERAL NOTES

THIS PLAN IS TO BE USED IN CONJUNCTION WITH THE 'EROSION CONTROL REPORT' PREPARED FOR THE SITE.

SCALE: 1" = 2000'

ALL DIVERSION SWALES/BERMS, CHANNELS OF CONVEYANCE, AND STOCKPILES MUST BE SEEDED AND MULCHED IMMEDIATELY.

REMOVAL AND DISPOSAL OF MATERIAL REMOVED FROM THE SILT FENCING AND OTHER EROSION CONTROL MEASURES, (NON-CONTAMINATED SOIL SHALL BE GRADED INTO THE SITE) (CONTAMINATED SOIL SHALL BE REMOVED/DISPOSED TO A LICENSED DISPOSAL FACILITY FOR CONTAINING WASTE PRODUCTS).

FOR DETAILS AND INFORMATION REGARDING EROSION CONTROL, REFER TO THE 'EROSION CONTROL DETAIL PLAN' SHEETS 8 & 9.

IN THE EVENT THAT FILL IS BROUGHT TO THE SITE, THE OPERATOR WILL BE RESPONSIBLE TO PERFORM ENVIRONMENTAL DUE DILIGENCE TO ENSURE THAT ALL IMPORTED FILL MEETS THE DEFINITION OF CLEAN FILL AS DESCRIBED BY THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION.

BUILDING MATERIALS AND WASTES IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1 ET SEQ. THE CONTRACTOR SHALL NOT ILLEGALLY BURY, DUMP, OR DISCHARGE ANY BUILDING MATERIAL OR WASTES AT THIS SITE.

SEDIMENT/SILT EXCEEDS THE LANDSCAPE AREA ABILITY TO ACCEPT IT, DISPOSAL OF THIS MATERIAL WILL BE HAULED TO AN APPROVED CONSTRUCTION WASTE DISPOSAL

CONSTRUCTION WASTE INCLUDES MILLINGS, CONCRETE, BLOCK, WOOD, LANDSCAPING, SEDIMENT / SILT, ETC.

THE SITE CONTRACTOR IS RESPONSIBLE FOR PREPARING A PPC PLAN(PREPAREDNESS, PREVENTION AND CONTINGENCY PLAN) IN COMPLIANCE WITH PADEP REGULATIONS, AND HAVING THE APPROPRIATE PROVISIONS AVAILABLE ON SITE AT ALL TIMES.

TREE PROTECTION FENCE USED TO PROTECT INFILTRATION AREAS SHALL BE REMOVED AT TIME OF STABILIZATION.

RECEIVING WATER: UNNAMED TRIBUTARY TO SWAMP CREEK RECEIVING WATERSHED: PERKIOMEN CHAPTER 93 CLASSIFICATION: TROUT STOCK FISHERY (TSF) MIGRATORY FISHERY (MF)



COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE UARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA ONE CALL (DIAL 811) THREE DAYS PRIOR TO EXCAVATION. REFERENCE NUMBER: 20170472165 (DOTTERER ROAD)

| ATE   | DESCRIPTION                                      |
|-------|--|
|       |  |
| 7–17  | NEW OWNER AND UPDATE LAYOUT                      |
| 27-08 | TWP. ENGR. LTR. 10-1-08, TWP PLANNER LTR 10-1-08 |
|       | MCCD LTR. 9-25-08                                |
| 5-08  | TWP. ENGR. LTR. 3-26-08, TWP PLANNER LTR 3-31-08 |

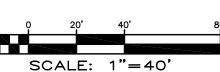
REVISIONS

MCCD LTR. 6-12-08 -15-07 | TWP. ENGR. LTR. 8-30-07, TWP PLANNER LTR 9-4-07 TWP. SWR. ENGR. LTR. 8-31-07, TRAFFIC ENGR. LTR. 8-28-

# MIKELEN, LLC.

**NEW HANOVER TOWNSHIP** MONTGOMERY COUNTY, PENNSYLVANIA

JULY 9, 2007 PROJECT No. 16086



SHEET No. 7 OF 2

URWILER & WALTER, INC. CIVIL ENGINEERS & SURVEYORS P.O. BOX 269 3126 MAIN STREET SUMNEYTOWN, PA. 18084

| Soil Amendment      | Per Acre  | Per 1,000 sq. ft. | Per 1,000 sq. yd. | Notes  |
|---------------------|-----------|-------------------|-------------------|--|
| Agricultural lime   | 6 tons    | 240 lb.           | 2,480 lb.         | Or as per so<br>test; may not<br>required in<br>agricultural fie |
| 10-10-20 fertilizer | 1,000 lb. | 25 lb.            | 210 lb.           | Or as per so<br>test; may not<br>required in<br>agricultural fie |
|                     | Tempo     | rary Seeding App  | lication Rate     |  |
| Agricultural lime   | 1 ton     | 40 lb.            | 410 lb.           | Typically no required for topsoil stockpi                        |
| 10-10-10 fertilizer | 500 lb.   | 12.5 lb.          | 100 lb.           | Typically no required for  |

Adapted from Penn State, "Erosion Control and Conservation Plantings on Noncropland" NOTE: A compost blanket which meets the standards of this chapter may be substituted for the soil amendments shown in Table 11.2.

### **TABLE 11.6 Mulch Application Rates**

|            | Į.         |                   |                   |  |
|------------|------------|-------------------|-------------------|--|
| Mulch Type | Per Acre   | Per 1,000 sq. ft. | Per 1,000 sq. yd. | Notes  |
| Straw      | 3 tons     | 140 lb.           | 1,240 lb.         | Either wheat or oat straw, free of weeds, not chopped or finely broken |
| Hay        | 3 tons     | 140 lb.           | 1,240 lb.         | Timothy, mixed clover and timothy or other native forage grasses       |
| Wood Chips | 4 - 6 tons | 185 - 275 lb.     | 1,650 - 2,500 lb. | May prevent germination of grasses and legumes                         |
| Hydromulch | 1 ton      | 47 lb.            | 415               | See limitations above  |

RECOMMEND USING GUAR OR STARCH TACKIFIERS AT A RATE OF 100 TO 200 LBS PER ACRE. STRAW AND HAY MULCH SHOULD BE ANCHORED OR TACKIFIED IMMEDIATELY AFTER APPLICATION TO PREVENT BEING WINDBLOWN. A TRACTOR-DRAWN IMPLEMENT MAY BE USED TO "CRIMP" THE STRAW OR HAY INTO THE SOIL - ABOUT 3 INCHES. THIS METHOD SHOULD BE LIMITED TO SLOPES NO GREATER THAT 3'H:1'V. THE MACHINERY SHOULD BE

POLYMERIC OR GUM TACKIFIERS MIXED AND APPLIED ACCORDING TO MANUFACTURES RECOMMENDATIONS MAY BE USED TO TACK MULCH. AVOID APPLICATION DURING RAIN AND WINDY DAYS. A 24 HOUR CURING PERIOD AND A SOIL TEMPERATURE HIGHER THAN 45'F ARE TYPICALLY REQUIRED. APPLICATION SHOULD BE HEAVIEST AT EDGES OF SEEDED AREAS AND AT THE CREST OF RIDGES AND BANKS. THE REMAINDER OF THE AREA SHOULD HAVE BINDER APPLIED UNIFORMLY. BINDERS MAY BE APPLIED AFTER MULCH IS SPREAD OR SPRAYED ONTO THE MULCH AS IT IS

### RECOMMENDED SEEDING MIXTURES:

 TEMPORARY SEEDING: ANNUAL RYE GRASS (40 LBS/ACRE)

2. PERMANENT SEEDING:

SEED MIXTURE: TALL FESCUE (PLS - 60 LBS/ACRE)

FINE FESCUE (PLS - 35 LBS/ACRE)

KENTUCKY BLUEGRASS (PLS - 25 LBS/ACRE) AND REDTOP (PLS - 3 LBS/ACRE)

PERENNIAL RYE GRASS (PLS - 15 LBS/ACRE)

(PLS - PURE LIVE SEED)

FEBRUARY 15 TO MAY 1 AND AUGUST 15 TO OCTOBER 15

- SEEDING NOTES:
- A. THE LIMESTONE, FERTILIZER AND MULCHING INFORMATION APPLIES TO BOTH TEMPORARY AND PERMANENT SEEDING.
- B. ANY DISTURBED AREA ON WHICH ACTIVITY HAS CEASED SHALL BE MULCHED IMMEDIATELY. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE RECOMMENDED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN 1 YEAR MAY BE SEEDED AND MULCHED WITH A QUICK GROWING TEMPORARY SEEDING MIXTURE AND MULCH. DISTURBED AREAS WHICH ARE EITHER AT FINISHED GRADE OR WILL NOT BE REDISTURBED WITHIN 1 YEAR MUST BE SEEDED AND MULCHED WITH A PERMANENT SEED MIXTURE AND MULCH.
- . SWALES, DETENTION BASINS, SEDIMENT TRAPS, STOCKPILES AND OTHER STRUCTURAL EROSION CONTROL DEVICES MUST BE SEEDED AND MULCHED IMMEDIATELY.

### SOIL LEGEND

SOILS DATA OBTAINED FROM USDA-NATURAL RESOURCES CONSERVATION SERVICES-WEB SOIL SURVEY-NATURAL COOPERATIVE SOIL SURVEY.

AbA - ABBOTTSTOWN SILT LOAM, 0 TO 3% SLOPES, HSG: D ReA - READINGTON SILT LOAM, 0 TO 3% SLOPES, HSG: C

RhA - READINGTON SILT LOAM, 0 TO 3% SLOPES, HSG: D

### LIMITATIONS OF PENNSYLVANIA SOILS PERTAINING TO EARTHMOVING PROJECTS

THIS IS NOT AN ALL-INCLUSIVE LIST ABSENCE OF AN X DOSE NOT MEAN "NO POTENTIAL LIMITATION" FOR MORE COMPREHENSIVE LIST OF SOIL LIMITATIONS, LOG ONTO THE NRCS WEBSITE AT: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.

| SOIL NAME   | CUTBANKS CAVE | CORROSIVE TO CONCRETE/STEEL | DROUGHTY | EASILY ERODED | FLOODING | DEPTH TO SATURATED ZONE/SEASONAL HIGH WATER TABLE | HYDRIC/HYDRIC INCLUSIONS | LOW STRENGTH/<br>LANDSLIDE PRONE | SLOW<br>PERCOLATION | PIPING | POOR SOURCE OF<br>TOPSOIL | FROST ACTION | SHRINK-SWELL | POTENTIAL SINKHOLE | PONDING | WETNESS |
|-------------|---------------|-----------------------------|----------|---------------|----------|---|--------------------------|----------------------------------|---------------------|--------|---------------------------|--------------|--------------|--------------------|---------|---------|
| ABBOTTSTOWN | Х             | C/S                         |          | Χ             |          | Х   | Х                        | Х                                | Х                   | Х      | Х                         | Х            |              |                    |         | Х       |
| READINGTON  | Х             | C/S                         |          | Х             |          | Х   | Х                        | Х                                | Х                   | Х      | Х                         | Х            |              |                    |         | Х       |
| REAVILLE    | Х             | C/S                         | Х        | Х             |          | Х   | Х                        |                                  | Х                   | Х      | Х                         | Х            |              |                    |         | Х       |

### SOIL RESOLUTIONS

CUTBANKS CAVE - GRADE ALL SLOPES TO 4:1 OR FLATTER.

CORROSIVE TO CONCRETE / STEEL - PROVIDE POLYMERS TO PROTECT CONCRETE AND

DROUGHTY - IRRIGATE SOILS TO PREVENT WILTING.

EASILY ERODIBLE - STABILIZE DISTURBED AREAS WITH TEMPORARY OR PERMANENT VEGETATION OR PROVIDE EROSION AND SEDIMENTATION CONTROL DEVICES AND FACILITIES TO RETAIN ENTRAINED SEDIMENT ON-SITE.

FLOODING - MINIMIZE OR ELIMINATE CONSTRUCTION WITHIN MAPPED AND ALLUVIAL SOILS.

DEPTH TO SATURATION ZONE / SEASONAL HIGH WATER TABLE - PROVIDE UNDERDRAINS TO ELIMINATE A PERSISTENT HIGH WATER TABLE. FOR OCCASIONAL HIGH WATER TABLE, PUMP

WATER FROM TRENCHES / FOOTINGS TO A PUMP WATER FILTER BAG.

HYDRIC / HYDRIC INCLUSIONS - HYDRIC SOILS HAVE BEEN MAPPED BY NOVA CONSULTANTS, INC.. NO WETLAND IMPACTS ARE PROPOSED FOR THIS PROJECT.

LOW STRENGTH / LANDSLIDE PRONE - GRADE SOILS TO 4:1 OR FLATTER. SLOW PERCOLATION - ADD SAND OR ORGANICS TO INCREASE SOIL PERCOLATION RATES.

PIPING - USE ANTI-SEEP COLLARS TO ELIMINATE PIPING.

POOR SOURCE OF TOPSOIL - IMPORT ADEQUATE TOPSOIL OR ADD ORGANIC MATERIAL (MULCH) TO CREATE A SUITABLE TOPSOIL.

FROST ACTION - MINIMIZE OR ELIMINATE COLD WEATHER CONSTRUCTION. IF POSSIBLE, ADD EXPANSION JOINTS TO MINIMIZE FROST ACTION IMPACTS.

SHRINK / SWELL - MINIMIZE CONTACT WITH WATER.

POTENTIAL SINKHOLE - PERFORM GEOLOGIC EVALUATION FOR KARST GEOLOGY AND KARST

PONDING - PROVIDE POSITIVE GRADING WITH A 2% SLOPE, UNDERDAINS OR A STORM SEWER

TEMPORARY CONTROL MEASURES

THE DRIP LINE OF THE TREE BRANCHES.

A. FOLLOW THE PROCEDURE OUTLINED IN "STAGING OF EARTHMOVING ACTIVITIES".

- 2. TREES TO BE SAVED WILL BE ROPED OFF WITH SNOW FENCE OR EQUIVALENT TO PROTECT THEM FROM DAMAGE. INSTALL FENCING AT
- 3. ONLY THE AREA WHICH IS NECESSARY FOR CONSTRUCTION WILL BE EXPOSED AT ONE TIME.
- 4. AS MUCH AS POSSIBLE, CONSTRUCTION WILL TAKE PLACE FROM THE HIGH TO LOW AREAS TO FULLY UTILIZE THE EXISTING VEGETATION AS AN EROSION CONTROL DEVICE.
- 5. ALL TOPSOIL FROM THE OVERALL SITE PREPARATIONS WILL BE STOCKPILED AND REDISTRIBUTED UNIFORMLY AT THE TIME OF FINAL GRADING. ALL STOCKPILES SHALL HAVE PERIMETER SILT FENCE INSTALLED AND BE SEEDED AND MULCHED IMMEDIATELY. STOCKPILE HEIGHT SHALL NOT EXCEED 35 FEET. SEE PLAN FOR LOCATION OF TOPSOIL STOCKPILES.
- 6. TEMPORARY SEEDING AND MULCHING SHALL BE APPLIED IMMEDIATELY TO ALL DISTURBED AREAS.
- 7. SEEDING AREAS THAT WASH OUT SHALL BE REGRADED, RESEEDED AND A NETTING USED TO HOLD THE SEED AND MULCH IN PLACE. THIS IS IMPORTANT AROUND STEEP SLOPES, WATER COURSES, SWALES AND AREAS OF CONCENTRATED FLOWS.
- 8. STEEP SLOPE PROTECTION IN THE FORM OF GEOJUTE NETTING OR APPROVED EQUAL SHALL BE USED TO HOLD MULCH IN PLACE. STEEP SLOPES ARE CUT SLOPES STEEPER THAN 3:1 AND FULL SLOPES STEEPER THAN 4:1.
- 9. AREAS THAT FAIL TO GERMINATE MUST BE RESEEDED.

SPECIFIED.

- 10. RIP-RAP WILL BE APPLIED TO ALL AREAS WHERE HEAVY CONCENTRATIONS OF DRAINAGE ARE PREVALENT. THIS WOULD BE IN CERTAIN SWALES, AT CULVERT OUTLETS, WHERE WATER IS IN TRANSITION FROM AN OPEN CHANNEL INTO A CULVERT OR AS
- 11. ALL EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE INSPECTED DAILY AND AFTER EACH STORM EVENT. NECESSARY REPAIRS, REPLACEMENT, REGRADING, RESEEDING, REMULCHING, RENETTING AND CLEANINGS SHALL BE PERFORMED IMMEDIATELY
- 12. ROCK FILTER OUTLETS MUST BE PROVIDED IMMEDIATELY WHERE SILT FENCING HAS BEEN UNDERMINED OR OVERTOPPED.
- 13. EROSION CONTROL FACILITIES MUST DISCHARGE INTO ADEQUATE STORM SEWERS, NATURAL WATERWAYS OR STABLE EROSION RESISTANT AREAS.
- 14. IF AT ANY TIME PRIOR TO SITE STABILIZATION, ANY EROSION AND SEDIMENT PROBLEMS OCCUR WHICH REQUIRE (ADDITIONAL) CONTROLS,
- 15. NO SEDIMENT OR SEDIMENT LADEN WATER MUST BE ALLOWED TO LEAVE THE SITE/PROPERTY WITHOUT FIRST BEING FILTERED.

IMMEDIATE ACTION MUST BE TAKEN TO CORRECT THE PROBLEMS.

- 16. ANY SEDIMENT OR MUD THAT IS TRACKED ONTO THE PUBLIC ROADWAY MUST BE CLEANED OFF IMMEDIATELY BY BROOMING TO THE SATISFACTION OF THE TOWNSHIP AT THE EXPENSE OF THE DEVELOPER AND/OR RESPONSIBLE CONTRACTOR.
- 17. ANY ADDITIONAL MEASURES, REPAIRS OR REPLACEMENTS DETERMINED BY FIELD INSPECTION BY THE MONTGOMERY COUNTY CONSERVATION DISTRICT OR THE TOWNSHIP ENGINEER SHALL BE COMPLETED IMMEDIATELY.

### PERMANENT CONTROL MEASURES

CHANCE TO ROOT PROPERLY.

- 1. GRADE ALL CUT AND FILL SLOPES TO 3 FOOT HORIZONTAL FOR EVERY 1 FOOT VERTICAL OR FLATTER, AND APPLY A CRITICAL AREA SEEDING
- 2. ALL ENDWALL OUTLETS WILL HAVE ENERGY DISSIPATING DEVICES INSTALLED TO REDUCE THE OUTFLOW VELOCITY. RIP-RAP OR OTHER
- METHODS WILL BE USED 3. PERMANENT GRASS SHALL BE ESTABLISHED BY SEEDING AND MULCHING OR SODDING FOLLOWING FINAL GRADING. PRIOR TO
- APPLIED ACCORDING TO THE SEEDING AND MULCHING CHART BELOW. 4. SEEDED AREAS THAT HAVE WASHED AWAY SHALL BE FILLED AND GRADED AS NECESSARY AND THEN RESEEDED. A BURLAP OR STRAW COVER WILL BE APPLIED TO RETAIN THE SEED UNTIL IT HAS A

FSTABLISHMENT OF PERMANENT VEGETATION, FERTILIZER SHALL BE

- 5. THE ABOVE PROCEDURE SHALL BE REPEATED AFTER EACH SIZABLE STORM UNTIL NO MORE SIGNS OF EROSION ARE EVIDENT. AT MONTHLY INTERVALS THEREAFTER, INSPECTIONS AND NECESSARY CLEANING WILL BE DONE. TRASH THAT IS REMOVED FROM ANY OF THE CONTROL DEVICES SHALL BE DISPOSED OF AT AN APPROVED DISPOSAL AREA. SILT THAT HAS ACCUMULATED SHALL BE REMOVED AND ALLOWED TO DRY AND USED AS FILL WHEREVER REQUIRED ON
- AFTER CONSTRUCTION, THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE FACILITIES. THIS MAINTENANCE WILL INCLUDE, BUT IS NOT RESTRICTED TO: GRASS MOWING. WEED AND BRUSH CONTROL, PEST AND DISEASE CONTROL, FIRE HAZARD CONTROL. RODENT CONTROL AND EROSION DAMAGE REPAIR. THESE FEATURES SHOULD BE CHECKED SEMI- ANNUALLY AND AFTER EACH HEAVY

### APPENDIX C - STANDARD E&S PLAN NOTES

THE FOLLOWING NOTES SHOULD BE PLACED ON THE E&S PLAN DRAWINGS.

- 1. ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL BE DONE IN ACCORDANCE WITH THE APPROVED E&S PLAN. A COPY OF THE APPROVED DRAWINGS (STAMPED, SIGNED AND DATED BY THE REVIEWING AGENCY) MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. THE REVIEWING AGENCY SHALL BE NOTIFIED OF ANY CHANGES TO THE APPROVED PLAN PRIOR TO IMPLEMENTATION OF THOSE CHANGES. THE REVIEWING AGENCY MAY REQUIRE A WRITTEN SUBMITTAL OF THOSE CHANGES
- 2. AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING PLAN PREPARER, THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL
- 3. AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED. THE PENNSYLVANIA ONE CALL SYSTEM INC. SHALL
- BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES. 4. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED
- 5. AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL.
- 6. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR
- 7. AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE

CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN.

- 8. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATION(S) SHOWN ON THE PLAN MAPS(S) IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS. STOCKPILE HEIGHTS SHALL NOT EXCEED 35 FEET. STOCKPILE SLOPES SHALL BE 2H:1V OR
- 9. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE LOCAL CONSERVATION DISTRICT AND/OR THE
- 10. ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT. REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1, AND 287.1 ET. SEQ. NO BUILDING MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED,
- 11. ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT FULLY IMPLEMENTED PRIOR TO BEING
- 12. 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
- 13. ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE
- PROCEDURE DESCRIBED IN THIS PLAN, OVER UNDISTURBED VEGETATED AREAS. 14. VEHICLES AND EQUIPMENT MAY NEITHER ENTER DIRECTLY NOR EXIT DIRECTLY FROM LOTS
- 15. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS SHALL BE MAINTAINED AFTER FACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING. RESEEDING. REMULCHING AND RENETTING MUST BE PERFORMED IMMEDIATELY. IF THE E&S BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED WILL
- 16. A LOG SHOWING DATES THAT E&S BMPS WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE
- MADE AVAILABLE TO REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION. 17. SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE BY THE END OF EACH WORK DAY AND DISPOSED IN THE MANNER
- 18. ALL SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS.
- 19. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5
- SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING. FILL OUTSLOPES SHALL HAVE A MINIMUM OF 2 INCHES OF TOPSOIL.
- REQUIREMENTS OR CODES. 21. ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED 9 INCHES IN
- 22. FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT
- 23. FROZEN MATERIALS OR SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE
- 24. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES.
- 25. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER
- FINISHED GRADE. CUT SLOPES IN COMPETENT BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. SEEDED AREAS WITHIN 50 FEET OF A SURFACE WATER, OR AS OTHERWISE
- 27. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE IN ANY AREA OR SUBAREA OF THE PROJECT, THE OPERATOR SHALL STABILIZE ALL DISTURBED AREAS. DURING NON-GERMINATING MONTHS, MULCH OR PROTECTIVE BLANKETING SHALL BE APPLIED AS DESCRIBED IN THE PLAN. AREAS NOT AT FINISHED GRADE, WHICH WILL BE REACTIVATED WITHIN 1 YEAR, MAY BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY STABILIZATION SPECIFICATIONS. THOSE AREAS WHICH WILL NOT BE REACTIVATED WITHIN 1 YEAR SHALL BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION SPECIFICATIONS.
- COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION. CUT AND FILL SLOPES SHALL BE CAPABLE OF RESISTING FAILURE DUE TO SLUMPING, SLIDING, OR OTHER MOVEMENTS.
- 29. E&S BMPS SHALL REMAIN FUNCTIONAL AS SUCH UNTIL ALL AREAS TRIBUTARY TO THEM ARE PERMANENTLY STABILIZED OR UNTIL THEY ARE REPLACED BY ANOTHER BMP APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT
- CONSERVATION DISTRICT FOR AN INSPECTION PRIOR TO REMOVAL/CONVERSION OF THE E&S 31. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMPS MUST BE REMOVED OR CONVERTED TO PERMANENT POST CONSTRUCTION STORMWATER MANAGEMENT BMPS. AREAS DISTURBED DURING REMOVAL OR CONVERSION OF THE BMPS
- 32. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT TO SCHEDULE A FINAL INSPECTION
- FROM LEAVING THE CONSTRUCTION SITE, OR FAILURE TO TAKE IMMEDIATE CORRECTIVE \$10,000 PER DAY IN CIVIL PENALTIES, UP TO \$10,000 IN SUMMARY CRIMINAL PENALTIES, AND UP TO \$25,000 IN MISDEMEANOR CRIMINAL PENALTIES FOR EACH VIOLATION.

### STAGING OF EARTHMOVING ACTIVITIES

STORMWATER MANAGEMENT SYSTEM AND ASSOCIATED UTILITIES.

- CONSTRUCTION SHALL BE DONE IN ONE (1) PHASE. (TOTAL DISTURBANCE: 5.5 ACRES). A. THE ACTIVITIES TO BE PERFORMED ARE THE CONSTRUCTION OF 6 SINGLE FAMILY DETACHED DWELLINGS, ROAD, DRIVEWAYS,
- B. THE APPLICANT OR ASSIGNS SHALL BE RESPONSIBLE FOR THE PROPER CONSTRUCTION, STABILIZATION AND MAINTENANCE OF ALL TEMPORARY AND PFRMANENT EROSION AND SEDIMENTATION CONTROLS FOR ALL PROPOSED CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE.
- C. LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND INSPECTION OF THE SITE, COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING ACT 187 THREE DAYS PRIOR TO EXCAVATION. REFERENCE PENNSYLVANIA ACT 187. REFERENCE NUMBER: 20170472165 - DOTTERER ROAD
- D. 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.
- E. PERFORM CONSTRUCTION AS FOLLOWS: NOTE IN ALL CASES, LOGICAL AND PROPER CONSTRUCTION AND EROSION CONTROL TECHNIQUES SHALL BE FOLLOWED AND ALL CHANGES TO THE APPROVED PLAN SHALL BE SUBMITTED FOR REVIEW TO THE COUNTY CONSERVATION DISTRICT.
- 1. CONDUCT PRE-CONSTRUCTION CONFERENCE.
- 2. INSTALL STABILIZED CONSTRUCTION ENTRANCE AS SHOWN. ERECT SIGNAGE AT THE SAME LOCATION WITH WORDING "CONSTRUCTION ENTRANCE".
- 3. INSTALL COMPOST FILTER SOCK FOR PROTECTION AS NOTED ON PLAN.
- 4. INSTALL TREE/CONSTRUCTION PROTECTION FENCE AT LOCATIONS OF ALL INFILTRATION BED, RAIN GARDENS, & TREES AS NOTED ON THE PLAN.
- GENERAL SITE, ROADWAY AND UTILITY CONSTRUCTION
- 5. PROVIDE GENERAL SITE LAYOUT. 6. ALL EROSION CONTROL DEVICES SHALL BE STABILIZED AND IN WORKING ORDER
- 7. SEED IMMEDIATELY WITH TEMPORARY SEEDING AND MULCHING ALL DISTURBED
- 8. CLEAR, GRUB AND STRIP TOPSOIL FROM THE SITE STOCKPILE AS NOTED. STOCKPILES ARE TO RECEIVE TEMPORARY SEEDING AND MULCHING AND ARE SURROUNDED BY FILTER FABRIC FENCE OR COMPOST FILTER SOCK (AS
- 9. PROVIDE LAYOUT OF THE PROPOSED NITTANY WAY.

INDICATED ON PLAN) ON THE DOWNSLOPE SIDE.

10. INSTALL CONCRETE WASHOUT.

PRIOR TO SITE GRADING.

- 11. START PROPOSED NITTANY WAY CONSTRUCTION.
- 12. EXCAVATE AND ROUGH GRADE OVERALL SITE AREA, CONSTRUCTION SHALL
- TAKE PLACE FROM HIGH TO LOW AREAS AS MUCH AS POSSIBLE. 13. ROUGH GRADE BUILDING AREAS DURING OVERALL SITE EXCAVATION, SEED, MULCH AND STABILIZE ANY DISTURBED SOIL IMMEDIATELY. (REFER TO THE SEEDING AND MULCHING RATES).
- 14. CONSTRUCT AND INSTALL UTILITY IMPROVEMENTS INCLUDING, BUT NOT LIMITED TO STORM PIPING/INLETS, SANITARY SEWER, WATER SYSTEM, ELECTRIC, TELEPHONE, CABLE TV, AS NOTED.
- IMMEDIATELY INSTALL ALL REQUIRED INLET FILTER PROTECTION AT INLETS ALONG DOTTERER ROAD AND WITHIN PROPOSED NITTANY WAY, AS NOTED ON
- 15. IMMEDIATELY REPLACE ALL EROSION CONTROL DEVICES THAT ARE REMOVED
- FOR THE CONSTRUCTION OF THE UTILITY LINES.
- 16. INSTALL CONCRETE CURBING. 17. WHEN ROADWAY AND UTILITY INSTALLATION HAS BEEN COMPLETED INSTALL
- BITUMINOUS BASE COURSE FOR PROPOSED DRIVEWAYS. 18. CONSTRUCT AND INSTALL OFF-SITE UTILITY IMPROVEMENT CONNECTIONS IE,

STORM SEWER PIPE TO INLET IN TROTTERS GAIT SUBDIVISION.

- 19. IMMEDIATELY REPLACE ALL EROSION CONTROL DEVICES THAT ARE REMOVED FOR THE CONSTRUCTION OF THE UTILITY LINES.
- 20. WHEN ROADWAY WIDENING AND UTILITY INSTALLATION HAS BEEN COMPLETED

## INSTALL WALKING TRAIL ALONG DOTTERER ROAD FRONTAGE.

- SINGLE FAMILY DWELLING LOT CONSTRUCTION 21. INSTALL ANY ADDITIONAL SILT FENCING AND OR COMPOST FILTER SOCK ON
- BUILDING LOTS FOR PROTECTION AS NEEDED. 22. PROVIDE LAYOUT OF PROPOSED DWELLING, UTILITY SERVICES AND DRIVEWAYS.
- 23. EXCAVATE AND ROUGH GRADE SITE, CONSTRUCTION SHALL TAKE PLACE FROM HIGH TO LOW AREAS AS MUCH AS POSSIBLE.
- 24. BEGIN CONSTRUCTION OF DWELLINGS. 25. CONSTRUCT AND INSTALL REMAINING UTILITY IMPROVEMENTS FROM UTILITY STUBS INCLUDING, BUT NOT LIMITED TO, SANITARY SEWER, WATER, ELECTRIC,
- TELEPHONE, CABLE TV, ETC. 26. AS DWELLINGS ARE CONSTRUCTED INSTALL DRIVEWAY DRIVEWAY BASE
- 27. INSTALL BITUMINOUS BASE COURSE FOR THE PROPOSED DRIVEWAYS.
- 28. FINAL GRADE AREAS AND LANDSCAPE ALL AREAS. (TOPSOIL ARE TO BE REDISTRIBUTED TO A DEPTH OF EIGHT (8) INCHES & SOIL AMENDMENTS TO A DEPTH AS NOTED IN THE SOIL AMENDMENT DETAIL.

THEN PERMANENT SEEDING AND MULCHING SHALL BE APPLIED AT THE

(A LICENSED PROFESSIONAL OR THEIR DESIGNEE SHALL INSPECT THE SOIL AMENDMENTS.)

SPECIFIED RATES OR GROUND COVER PLANTINGS INSTALLED AS APPROPRIATE).

### FINAL STABILIZATION

TRIBUTARY TO EACH BMP.

CONDITIONS HAVE BEEN MET.

SPECIFICATIONS.

E&SPCPM P. 168.

- 29. FINAL GRADE ALL REMINING AREAS AND LANDSCAPE ALL AREAS. (TOPSOIL ARE TO BE REDISTRIBUTED TO A DEPTH OF EIGHT (8) INCHES & SOIL AMENDMENTS TO A DEPTH AS NOTED IN THE SOIL AMENDMENT DETAIL.
- THEN PERMANENT SEEDING AND MULCHING SHALL BE APPLIED AT THE SPECIFIED RATES OR GROUND COVER PLANTINGS INSTALLED AS APPROPRIATE).

### (A LICENSED PROFESSIONAL OR THEIR DESIGNEE SHALL INSPECT THE SOIL AMENDMENTS.) ). CONDITIONS OR STABILIZATION WILL BE ACHIEVED WHEN A MINIMUM OF 70%

PERENNIAL VEGETATIVE COVER OF THE ENTIRE DISTURBED AREA. ROADWAY

- AREA SHOULD HAVE AT LEAST CLEAN SUBBASE IN PLACE. ONCE 70% UNIFORM GROUND COVER IS ACHIEVED COMMENCE CONSTRUCTION OF INFILTRATION BED AND THE TWO (2) RAIN GARDENS FOLLOWING REMOVAL OF TEMPORARY E&S BMP'S AND STABILIZATION OF DISTURBED AREAS
- (A LICENSED PROFESSIONAL OR THEIR DESIGNEE SHALL INSPECT THE CONSTRUCTION OF THE RAIN GARDENS, AND INFILTRATION BED)
- 31. FINAL STABILIZATION SHALL HAVE OCCURRED WHEN THE FOLLOWING
- A. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE, THE OPERATOR SHALL STABILIZE ANY AREAS DISTURBED BY THE ACTIVITIES. DURING NON-GERMINATING PERIODS. MUI CH MUST BE APPLIED AT THE SPECIFIED. RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN ONE YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY VEGETATIVE STABILIZATION SPECIFICATIONS. DISTURBED AREAS WHICH ARE AT FINISHED GRADE OR WHICH WILL NOT BE REDISTURBED WITHIN ONE YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE PERMANENT VEGETATIVE STABILIZATION
- B. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70 PERCENT 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. C. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMP CONTROLS MUST BE REMOVED. AREAS DISTURBED DURING REMOVAL OF THE BMP'S MUST BE STABILIZED IMMEDIATELY,
- 32. AFTER ALL CONSTRUCTION WORK IS COMPLETED, INCLUDING BUILDINGS THE OWNER/DEVELOPER MAY REQUEST INSTALLATION OF WEARING COURSE. AFTER WEARING COURSE INSTALLATION, INSTALL ALL PERMANENT STRIPING AND COMPLETE ALL SIGNAGE.
- 33. REFER TO THE TEMPORARY EROSION CONTROL NOTES AND GENERAL EROSION CONTROL NOTES INCLUDED ON THE PLANS FOR ADDITIONAL SPECIFICATION AND REQUIREMENTS.

'NOTICE OF TERMINATION' WITH THE COUNTY CONSERVATION DISTRICT UPON

34. THE NPDES (PERMITEE) AND OR (CO-PERMITTEE) IS RESPONSIBLE TO FILE A

COMPLETION AND STABILIZATION OF ALL EARTHMOVING ACTIVITIES.

- - TAKEN FROM "INSTRUCTIONS FOR A GENERAL (PAG-2) OR INDIVIDUAL NPDES PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES". PREPARED BY THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, DATED MAY 2007

CLEAN FILL DEFINITION

- "UNCONTAMINATED, NON-WATER SOLUBLE, NON-COMPOSABLE, 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.)"
- CLEAN FILL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE: FILL MATERIALS AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE STILL QUALIFIES AS CLEAN FILL PROVIDED THE TESTING REVEALS THAT THE FILL MATERIAL CONTAINS CONCENTRATIONS OF REGULATED". SUBSTANCES THAT ARE BELOW THE RESIDENTIAL LIMITS IN TABLES FP-1A
- AND FP-1B FOUND IN THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL ANY PERSON PLACING CLEAN FILL THAT HAS BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE MUST USE FORM FP-001 TO CERTIFY THE ORIGIN OF THE FILL MATERIAL AND THE RESULTS OF THE ANALYTICAL TESTING TO QUALIFY THE MATERIAL AS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE OWNER OF THE PROPERTY RECEIVING THE FILL. A COPY OF FORM FP-001 CAN BE FOUND AT THE END OF THESE INSTRUCTIONS.

### ENVIRONMENTAL DUE DILIGENCE DEFINITION TAKEN FROM "INSTRUCTIONS FOR A GENERAL (PAG-2) OR INDIVIDUAL

NPDES PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES", PREPARED BY THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, DATED MAY 2007

THE APPLICANT MUST PERFORM ENVIRONMENTAL DUE DILIGENCE 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 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 AS CLEAN FILL. TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH APPENDIX A OF THE DEPARTMENT'S POLICY 'MANAGEMENT OF FILL'."

REGULATED FILL IS WASTE AND MUST BE MANAGED IN ACCORDANCE WITH THE DEPARTMENT'S MUNICIPAL OR RESIDUAL WASTE REGULATIONS BASED ON 25 PA. CODE CHAPTERS 287 RESIDUAL WASTE MANAGEMENT OR 271 MUNICIPAL WASTE MANAGEMENT, WHICHEVER IS APPLICABLE. THESE REGULATIONS ARE AVAILABLE ON-LINE AT www.pacode.com

FILL MATERIAL THAT DOES NOT QUALIFY AS CLEAN FILL IS REGULATED FILL.

SITE CONTRACTOR IS RESPONSIBLE FOR PREPARING A PPC PLAN (PREPAREDNESS, PREVENTION AND CONTINGENCY PLAN) IN COMPLIANCE WITH PADER REGULATIONS AND HAVING THE APPROPRIATE PROVISIONS AVAILABLE ON SITE AT ALL TIMES.



LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND INSPECTION OF THE SITE. OMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA ONE CALL (DIAL 811) THREE DAYS PRIOR TO EXCAVATION.

# REVISIONS

DATE DESCRIPTION NEW OWNER AND UPDATE LAYOUT

MCCD LTR. 6-12-08

TWP. ENGR. LTR. 10-1-08, TWP PLANNER LTR 10-1-08 & MCCD LTR 9-25-08 TWP. ENGR. LTR. 3-26-08, TWP PLANNER LTR 3-31-08

0-15-07 TWP. ENGR. LTR. 8-30-07, TWP PLANNER LTR 9-4-07

TWP. SWR. ENGR. LTR. 4-1-08, FIRE CHIEF LTR. 4-2-08 &

TWP. SWR. ENGR. LTR. 8-31-07, TRAFFIC ENGR. LTR. 8-28-0

REFERENCE NUMBER: 20170472165 (DOTTERER ROAD)

MANAGEMENT PLAN (5 OF 5) EROSION CONTROL DETAIL PLAN (2 of 3)

POST CONSTRUCTION STORMWATER

"PACER'S GAIT"

PREPARED FOR MIKELEN, LLC.

(TO BE RECORDED)

NEW HANOVER TOWNSHIP MONTGOMERY COUNTY, PENNSYLVANIA

FILE: 16086-BASE

PROJECT No. 16086

JULY 9, 2007

SCALE: AS SHOWN

URWILER & WALTER, INC. CIVIL ENGINEERS & SURVEYORS P.O. BOX 269 3126 MAIN STREET SUMNEYTOWN, PA. 18084

P - 6

SHEET No. 8 OF 2

PHONE 215-234-4562 FAX 215-234-0889 www.urwilerwalter.com

WETNESS - PROVIDE POSITIVE GRADING OR UNDERDRAINS.

1. EXISTING TREES AND OTHER EXISTING VEGETATION WILL BE DISRUPTED AS LITTLE AS POSSIBLE. FOR REVIEW AND APPROVAL AT ITS DISCRETION.

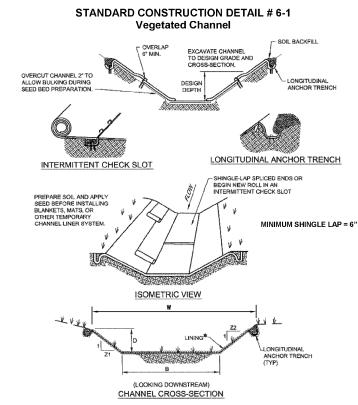
CLEARING AND GRUBBING. THE OWNER AND OR OPERATOR SHALL INVITE ALL CONTRACTORS. THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, THE PCSM STAGES OF IMPLEMENTATION OF THE PCSM PLAN, AND A REPRESENTATIVE FROM THE LOCAL CONSERVATION DISTRICT TO AN ON-SITE PRECONSTRUCTION MEETING.

IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION.

GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.

- REGIONAL OFFICE OF THE DEPARTMENT.
- DUMPED, OR DISCHARGED AT THE SITE.

- (SPECIFY LOT NUMBERS) ONTO (SPECIFY ROAD NAMES) 363-2134-008 / MARCH 31, 2012 I PAGE 394 PROPERLY, MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT BMPS
- DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEPT INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER.
- 12 INCHES ON COMPACTED SOILS PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED
- 20. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL
- CONSTRUCTION OF SATISFACTORY FILLS. INCORPORATED INTO FILLS.
- 26. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING SHOWN ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF
- 28. PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM, PERENNIAL 70% VEGETATIVE
- 30. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL
- SHALL BE STABILIZED IMMEDIATELY. IN ORDER TO ENSURE RAPID REVEGETATION OF DISTURBED AREAS, SUCH REMOVAL/CONVERSIONS ARE TO BE DONE ONLY DURING THE GERMINATING SEASON.
- 33. FAILURE TO CORRECTLY INSTALL E&S BMPS, FAILURE TO PREVENT SEDIMENT-LADEN RUNOFF ACTION TO RESOLVE FAILURE OF E&S BMPS MAY RESULT IN ADMINISTRATIVE. CIVIL. AND /OR CRIMINAL PENALTIES BEING INSTITUTED BY THE DEPARTMENT AS DEFINED IN SECTION 602 OF THE PENNSYLVANIA CLEAN STREAMS LAW. THE CLEAN STREAMS LAW PROVIDES FOR UP TO



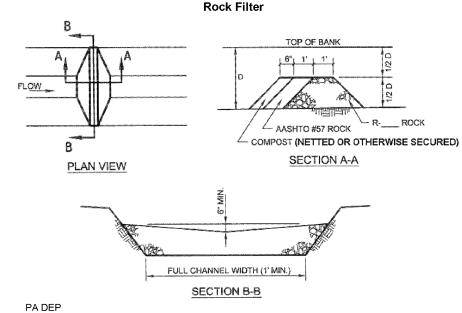
| A       | Adapted from Salix Applie | d Earthcare - E | rosion Draw 5.0 |           |            |            |           |
|---------|---------------------------|-----------------|-----------------|-----------|------------|------------|-----------|
| CHANNEL | STATIONS                  | B<br>(FT)       | D<br>(FT)       | W<br>(FT) | Z1<br>(FT) | Z2<br>(FT) | LINING    |
| 1       | _                         | 2               | 1.25            | 9.5       | 3          | 5          | NAG P300* |
| 2       | _                         | 2               | 1.25            | 9.5       | 3          | 3          | NAG P300* |
| 3       | _                         | 4               | 1.25            | 11.5      | 3          | 3          | NAG P300* |
| 4       | _                         | 3               | 1.25            | 10.5      | 3          | 3          | NAG P300* |
|         |                           |                 |                 |           |            |            |           |

\*NORTH AMERICAN GREEN P300 TURF REINFORCEMENT MAT

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. -INSPECT SWALE AFTER EACH RAINFALL EVENT-

### STANDARD CONSTRUCTION DETAIL # 4-14



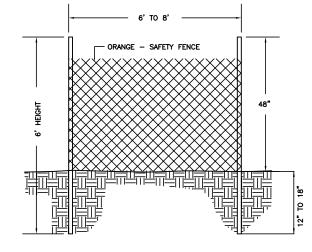
FOR  $2' \le D < 3'$  USE R-3 NOT APPLICABLE FOR D < 2'

### NOTE: This table is intentionally blank and should be filled in by the plan preparer.

| ROCK       |             |         | RIPRAP |
|------------|-------------|---------|--------|
| FILTER NO. | LOCATION    | D (FT.) | SIZE   |
| 1          | ENDWALL #10 | 1       | R-3    |
| 2          | ENDWALL #11 | 1       | R-3    |
|            | "           |         |        |
|            |             |         |        |
|            |             |         |        |

Sediment shall be removed when accumulations reach 1/2 the height of the filter. Immediately upon stabilization of each channel, installer shall remove accumulated sediment, remove rock filter, and stabilize disturbed areas.

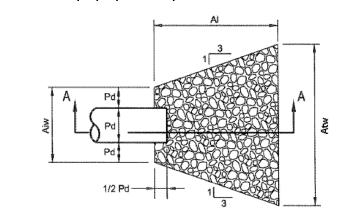
-INSPECT ROCK FILTERS AFTER EACH RAINFALL EVENT-



### TREE/INFILTRATION PROTECTION FENCE DETAIL NTS

- . IT IS RECOMMENDED THAT A CONVENTIONAL METAL "T" OR "U" POST BE DRIVEN INTO THE GROUND TO A DEPTH OF 12 TO 18 INCHES. POSTS SHOULD BE SPACED EVERY 6 TO 8 FEET. NOTE: NOTCHED POSTS ARE IDEAL TO PREVENT THE FENCE FROM
- THREE WIRE TIES, WRAPPED AROUND A FENCE STRAND AND THE POST, ARE IDEAL IN SECURING THE FENCE TO THE POST. TENSION WIRE OR ROPE MAY BE USED AS A TOP STRINGER AND WOVEN THROUGH THE TOP ROW OF STRANDS TO PREVENT POTENTIAL SAGGING.
- TWO ROLLS OF SAFETY FENCE MAY BE OVERLAPPED AT THE INTERSECTION OF A POST AND SECURED WITH WIRE TIES. 4. DAILY INSPECT AND REPAIR TREE/CONSTRUCTION PROTECTION FENCE IN ACCORDANCE WITH MANUFACTURES SPECIFICATIONS.

### STANDARD CONSTRUCTION DETAIL # 9-2 Riprap Apron at Pipe Outlet without Flared Endwall



PLAN VIEW ORIGINAL GROUND

|      |                            |   |                            |                          | SECTION    | <u> </u>    |                |            |            |             |             |
|------|----------------------------|---|----------------------------|--------------------------|------------|-------------|----------------|------------|------------|-------------|-------------|
|      | Ad                         | apted from                                | USDOT, FH                  | IA HEC-14                |            |             |                |            |            |             |             |
| NO.  | PIPE<br>DIA.<br>Do<br>(in) | TAIL<br>WATER<br>COND.<br>(Max OR<br>Min) | MAN.<br>"n"<br>FOR<br>PIPE | PIPE<br>SLOPE<br>(FT/FT) | Q<br>(CFS) | V*<br>(FPS) | RIPRAP<br>SIZE | Rt<br>(in) | Al<br>(ft) | AiW<br>(ft) | Atw<br>(ft) |
| ES 7 | 15                         | Min                                       | 0.012                      | 0.005                    | 5.58       | 5.64        | R-4            | 18         | 8          | 3.75        | 9.25        |
|      |                            |   |                            |                          |            |             |                |            |            |             |             |
|      |                            |   |                            |                          |            |             |                |            |            |             |             |
|      |                            |   |                            |                          |            |             |                |            |            |             |             |
|      |                            |   |                            |                          |            |             |                |            |            |             |             |

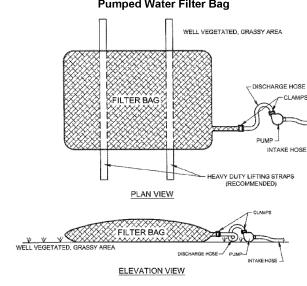
All aprons shall be constructed to the dimensions shown. Terminal widths shall be adjusted as necessary to match receiving channels.

All aprons shall be inspected at least weekly and after each runoff event. Displaced riprap within the apron shall be replaced immediately

Extend riprap on back side of apron to at least ½ depth of pipe on both sides to prevent scour

\*INSPECT ROCK RIP ON A BI-ANNUAL BASIS. REPLACE STONE & GEOTEXTILE IF 50% OR MORE STONE IS DISPLACED BY FLOOD WATER OR THE ROCK RIPRAP SETTLES DUE TO UNDERMINING.

### STANDARD CONSTRUCTION DETAIL # 3-16 Pumped Water Filter Bag



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

PA DEP

| 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.

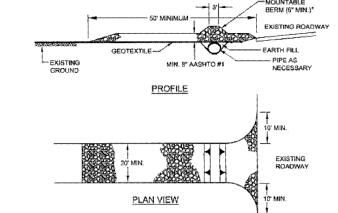
Bags shall be located in well-vegetated (grassy) area, and discharge onto stable, erosion resistant areas. Where this is not possible, a geotextile underlayment and flow path shall be provided. Bags may be placed on filter stone to increase discharge capacity. Bags shall not be placed on slopes greater 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 ½ 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 # 3-1 **Rock Construction Entrance**



MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIF Modified from Maryland DOE

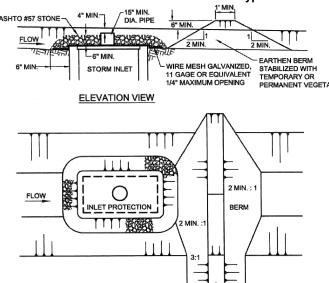
Remove topsoil prior to installation of rock construction entrance. Extend rock over full width

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 # 4-20 Stone Inlet Protection and Berm - Type M Inlet



PLAN VIEW

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.

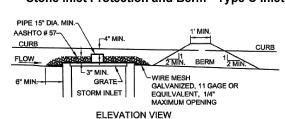
Rolled earthen berm in roadway shall be provided and maintained immediately down gradient of the protected inlet until roadway is stoned. Road subbase berm on roadway shall be maintained until roadway is paved. Earthen berm in channel shall be maintained until permanent stabilization is completed or to remain permanently

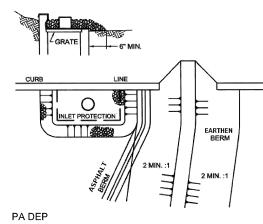
Stone inlet protection and berm for a Type M Inlet can be used in one acre maximum drainage area with 15" overflow pipe and 4" head. A perforated plate welded to a metal riser may not be substituted for the wire mesh. A slotted plate welded to the riser may be used in conjunction with the wire mesh if 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 inch thick compost layer shall be securely anchored on outside and over top of stone. Compost shall meet the standards in Table 4.2.

-INSPECT INLET PROTECTION AFTER EACH RAINFALL EVENT--REPLACE STONE IF SYSTEM IS CLOGGED OR SEDIMENT REACHES HALF THE HEIGHT OF THE STONE-

### STANDARD CONSTRUCTION DETAIL # 4-19 Stone Inlet Protection and Berm - Type C Inlet





Inlet protection shall not be required for inlet tributary to sediment basin or trap. Berms shall be required for all installations

Rolled earthen berm shall be provided and maintained immediately down gradient of the protected inlet until roadway is stoned. Road subbase berm shall be maintained until roadway is paved. A 6" minimum height asphalt berm shall be maintained until roadway surface receives

Stone inlet protection and berm for a Type C inlet can be used in one acre maximum drainage area with 15" overflow pipe and 4" 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.

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" thick compost layer shall be securely

anchored on outside and over top of stone. Compost shall meet the standards in Table 4.2. DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC

-INSPECT INLET PROTECTION AFTER EACH RAINFALL EVENT--REPLACE STONE IF SYSTEM IS CLOGGED OR SEDIMENT REACHES HALF THE HEIGHT OF THE STONE-

# **Typical Compost Sock Washout Installation**

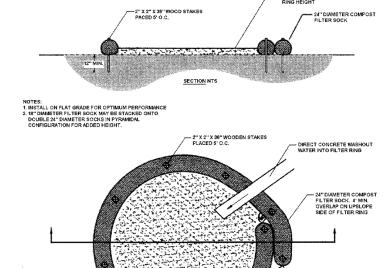
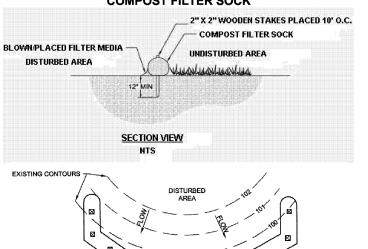


FIGURE 3.18

A suitable impervious geomembrane shall be placed at the location of the washout prior to installing the socks.

-INSPECT DAILY--CLEAN OUT WHEN CONCRETE WASHOUT MATERIAL EXCEEDS HALF THE HEIGHT OF THE COMPOST FILTER SOCK-

### STANDARD CONSTRUCTION DETAIL #4-1 COMPOST FILTER SOCK



PLAN VIEW

Sock fabric shall meet standards of Table 4.1. Compost shall meet the standards of Table 4.2. Compost filter sock shall be placed at existing level grade. Both ends of the sock shall be extended at least 8 feet up slope at 45 degrees to the main sock alignment (Figure 4.1). Maximum slope length above any sock shall not exceed that shown on Figure 4.2. Stakes may be installed immediately downslope of the sock if so specified by the manufacturer. Traffic shall not be permitted to cross filter socks.

Accumulated sediment shall be removed when it reaches half the aboveground height of the sock and disposed in the manner described elsewhere in the plan.

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 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.

| SOCK<br>NO. | DIA.<br>(in) | LOCATION                       | SLOPE<br>PERCENT | SLOPE LENGTH<br>ABOVE<br>BARRIER (ft) |
|-------------|--------------|--------------------------------|------------------|---------------------------------------|
| 1           | 24           | WESTERN PROPERTY BOUNDAY LINE  | 5                | 500                                   |
| 2           | 24           | WESTERN PROPERTY BOUNDAY LINE  | 5                | 500                                   |
| 3           | 12           | TOPSOIL PILE, LOT 1            | 25               | 50                                    |
| 4           | 12           | WESTERN PROPERTY BOUNDAY LINE  | 2.5              | 225                                   |
| 5           | 12           | TOPSOIL PILE, LOT 4            | 25               | 50                                    |
| 6           | 12           | EASTERN PROPERTY BOUNDAY LINE  | 2                | 250                                   |
| 7           | 12           | NORTHERN PROPERTY BOUNDAY LINE | 12               | 100                                   |

### -INSPECT COMPOST FILTER SOCK AFTER EACH RAINFALL EVENT-

### TABLE 4.1 Compost Sock Fabric Minimum Specification

|  | Compos                              | t Sock Fabric      | Minimum Spe | ecifications                              |  |  |  |
|--|-------------------------------------|--------------------|-------------|---|--|--|--|
| Material Type                                      | Material Type 3 mil HDPE 5 mil HDPE |                    | 5 mil HDPE  | Multi-Filament<br>Polypropylene<br>(MFPP) | Heavy Duty Multi-Filament Polypropylene (HDMFPP) |  |  |
| Material   | Photo-                              | Photo-             | Bio-        | Photo-                                    | Photo-   |  |  |
| Characteristics                                    | degradable                          | degradable         | degradable  | degradable                                | degradable                                       |  |  |
|  |                                     | 12"                | 12"         | 12"                                       | 12"  |  |  |
| Sock   | 12"                                 | 18"                | 18"         | 18"                                       | 18"  |  |  |
| Diameters  | 18"                                 | 24"                | 24"         | 24"                                       | 24"  |  |  |
|  |                                     | 32"                | 32"         | 32"                                       | 32"  |  |  |
| Mesh Opening                                       | 3/8"                                | 3/8"               | 3/8"        | 3/8"                                      | 1/8"   |  |  |
| Tensile<br>Strength                                |                                     | 26 psi             | 26 psi      | 44 psi                                    | 202 psi  |  |  |
| Ultraviolet<br>Stability %<br>Original<br>Strength | 23% at<br>1000 hr.                  | 23% at<br>1000 hr. |             | 100% at<br>1000 hr.                       |  |  |  |
| (ASTM G-155)                                       |                                     |                    |             |   |  |  |  |
| Minimum<br>Functional<br>Longevity                 | 6 months                            | 9 months           | 6 months    | 1 year                                    | 2 years  |  |  |
|  |                                     | Two-ply            | y systems   |   |  |  |  |
|  |                                     |                    |             | HDPE biaxial n                            |  |  |  |
|  |                                     |                    |             | Continuously wo                           |  |  |  |
| Inner C  | ontainment Ne                       | tting              |             | usion-welded jund                         |  |  |  |
|  |                                     |                    |             | " X 3/4" Max. apert                       |  |  |  |
|  |                                     |                    |             | posite Polypropyle n layer and non-w      |  |  |  |

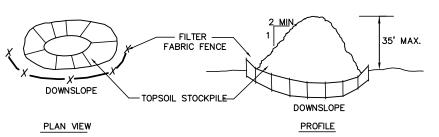
### mechanically fused via needle punch) **Outer Filtration Mesh** 3/16" Max. aperture size Sock fabrics composed of burlap may be used on projects lasting 6 months or less.

### **TABLE 4.2**

| Compost Standards          |                               |  |  |  |  |  |
|----------------------------|-------------------------------|--|--|--|--|--|
| Organic Matter Content     | 80% - 100% (dry weight basis) |  |  |  |  |  |
| Organic Portion            | Fibrous and elongated         |  |  |  |  |  |
| рН                         | 5.5 - 8.0                     |  |  |  |  |  |
| Moisture Content           | 35% - 55%                     |  |  |  |  |  |
| Particle Size              | 98% pass through 1" screen    |  |  |  |  |  |
| Soluble Salt Concentration | 5.0 dS/m (mmhos/cm) Maximum   |  |  |  |  |  |

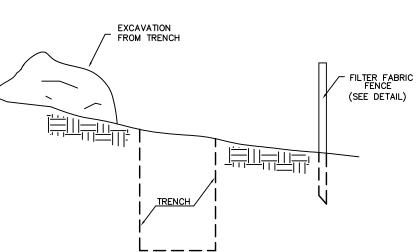
# PLAN VIEW

### FILTER FABRIC FENCE INSTALLATION DETAIL



TOPSOIL STOCKPILE DETAIL

1. SILT FENCE MUST BE PLACED ON THE DOWNSLOPE SIDE OF ALL STOCKPILES.



EROSION CONTROL FOR TRENCH CONSTRUCTION NTS

INSTALL SILT FENCE
 EXCAVATE TRENCH AND PLACE EXCAVATION MATERIAL UPHILL OF TRENCH
 CONSTRUCT UTILITY LINE
 BACKFILL TRENCH IMMEDIATELY
 SEED AND MULCH DISTURBED AREAS.

THE SITE CONTRACTOR IS RESPONSIBLE FOR PREPARING A PPC PLAN (PREPAREDNESS, PREVENTION AND CONTINGENCY PLAN) IN COMPLIANCE WITH PADEP REGULATIONS, AND HAVING THE APPROPRIATE PROVISIONS



AVAILABLE ON SITE AT ALL TIMES.

LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA ONE CALL (DIAL 811) THREE DAYS PRIOR TO EXCAVATION. REFERENCE NUMBER: 20170472165 (DOTTERER ROAD)

|          | REVISIONS   |
|----------|---|
| DATE     | DESCRIPTION   |
|          |   |
| 7-17-17  | NEW OWNER AND UPDATE LAYOUT                           |
| 10-27-08 | TWP. ENGR. LTR. 10-1-08, TWP PLANNER LTR 10-1-08 &    |
|          | MCCD LTR. 9-25-08                                     |
| 8-25-08  | TWP. ENGR. LTR. 3-26-08, TWP PLANNER LTR 3-31-08      |
|          | TWP. SWR. ENGR. LTR. 4-1-08, FIRE CHIEF LTR. 4-2-08 & |
|          | MCCD LTR. 6-12-08                                     |
|          |   |

10-15-07 | TWP. ENGR. LTR. 8-30-07, TWP PLANNER LTR 9-4-07

EROSION CONTROL DETAIL PLAN (3 of 3) "PACER'S GAIT"

TWP. SWR. ENGR. LTR. 8-31-07, TRAFFIC ENGR. LTR. 8-28-07

PREPARED FOR

# MIKELEN, LLC.

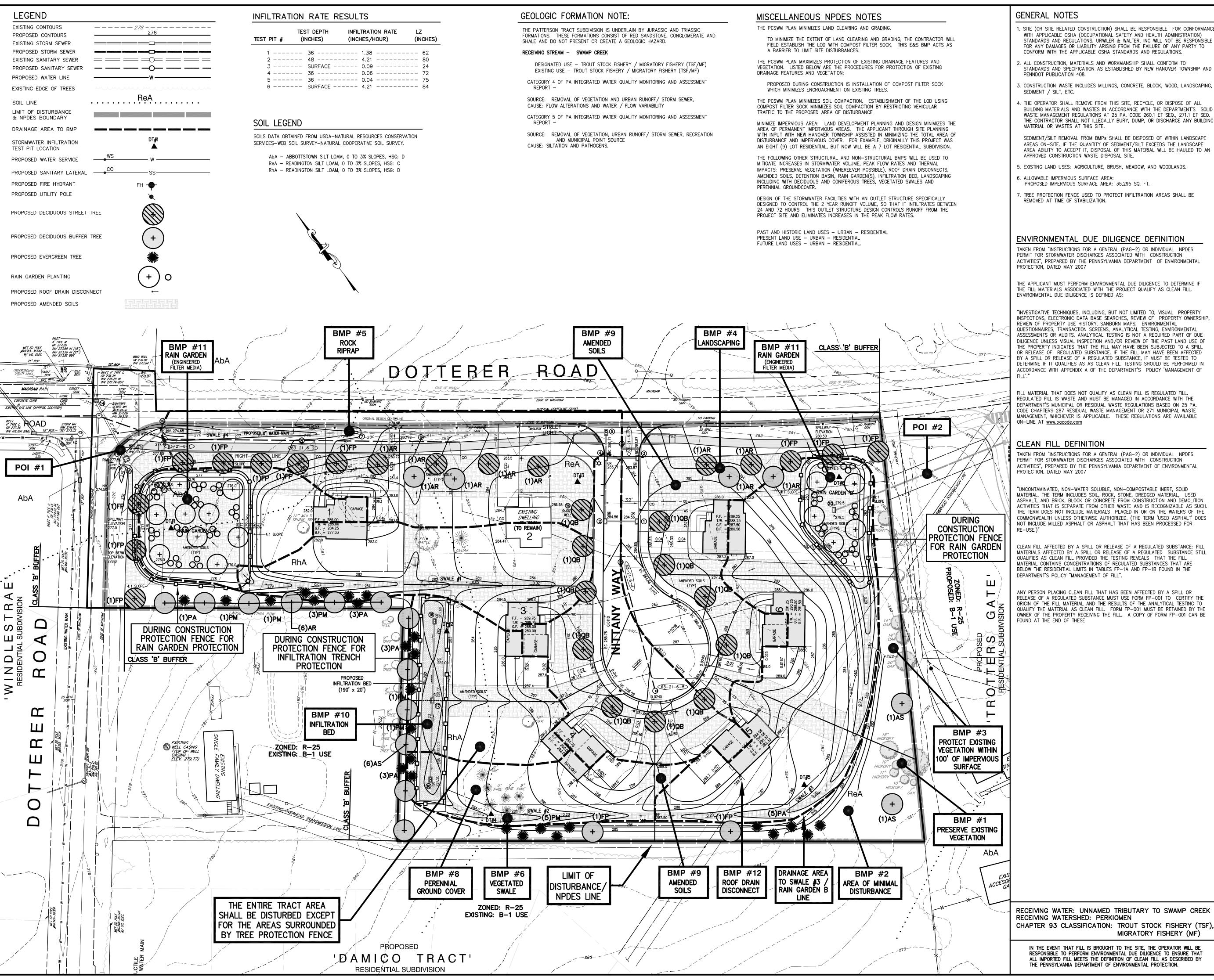
NEW HANOVER TOWNSHIP MONTGOMERY COUNTY, PENNSYLVANIA

JULY 9, 2007 PROJECT No. 16086 FILE: 16086-BASE

SCALE: AS SHOWN

SHEET No. 9 OF 21





### GENERAL NOTES

- 1. SITE (OR SITE RELATED CONSTRUCTION) SHALL BE RESPONSIBLE FOR CONFORMANCE WITH APPLICABLE OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION) STANDARDS AND REGULATIONS. URWILER & WALTER, INC WILL NOT BE RESPONSIBLE FOR ANY DAMAGES OR LIABILITY ARISING FROM THE FAILURE OF ANY PARTY TO CONFORM WITH THE APPLICABLE OSHA STANDARDS AND REGULATIONS.
- ALL CONSTRUCTION, MATERIALS AND WORKMANSHIP SHALL CONFORM TO STANDARDS AND SPECIFICATION AS ESTABLISHED BY NEW HANOVER TOWNSHIP AND PENNDOT PUBLICATION 408.
- 3. CONSTRUCTION WASTE INCLUDES MILLINGS, CONCRETE, BLOCK, WOOD, LANDSCAPING,
- 4. THE OPERATOR SHALL REMOVE FROM THIS SITE, RECYCLE, OR DISPOSE OF ALL BUILDING MATERIALS AND WASTES IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1 ET SEQ. THE CONTRACTOR SHALL NOT ILLEGALLY BURY, DUMP, OR DISCHARGE ANY BUILDING
- SEDIMENT/SILT REMOVAL FROM BMPs SHALL BE DISPOSED OF WITHIN LANDSCAPE AREAS ON-SITE. IF THE QUANTITY OF SEDIMENT/SILT EXCEEDS THE LANDSCAPE AREA ABILITY TO ACCEPT IT, DISPOSAL OF THIS MATERIAL WILL BE HAULED TO AN
- 5. EXISTING LAND USES: AGRICULTURE, BRUSH, MEADOW, AND WOODLANDS.
- 6. ALLOWABLE IMPERVIOUS SURFACE AREA: PROPOSED IMPERVIOUS SURFACE AREA: 35,295 SQ. FT.
- '. TREE PROTECTION FENCE USED TO PROTECT INFILTRATION AREAS SHALL BE REMOVED AT TIME OF STABILIZATION.

### ENVIRONMENTAL DUE DILIGENCE DEFINITION

TAKEN FROM "INSTRUCTIONS FOR A GENERAL (PAG-2) OR INDIVIDUAL NPDES PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES", PREPARED BY THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL

THE APPLICANT MUST PERFORM ENVIRONMENTAL DUE DILIGENCE 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 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 AS CLEAN FILL. TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH APPENDIX A OF THE DEPARTMENT'S POLICY 'MANAGEMENT OF

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

### CLEAN FILL DEFINITION

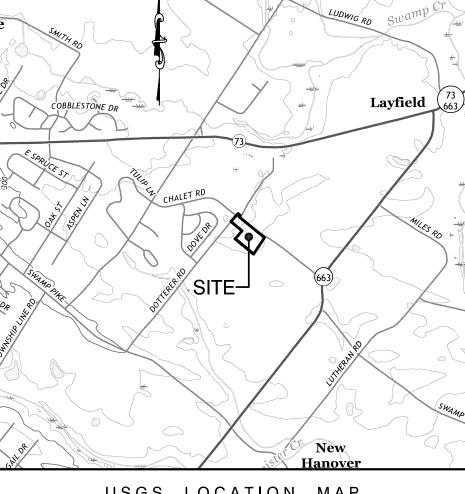
TAKEN FROM "INSTRUCTIONS FOR A GENERAL (PAG-2) OR INDIVIDUAL NPDES PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES", PREPARED BY THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, DATED MAY 2007

"UNCONTAMINATED, NON-WATER SOLUBLE, NON-COMPOSTABLE 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

CLEAN FILL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE: FILL MATERIALS AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE STILL QUALIFIES AS CLEAN FILL PROVIDED THE TESTING REVEALS THAT THE FILL MATERIAL CONTAINS CONCENTRATIONS OF REGULATED SUBSTANCES THAT ARE BELOW THE RESIDENTIAL LIMITS IN TABLES FP-1A AND FP-1B FOUND IN THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL".

ANY PERSON PLACING CLEAN FILL THAT HAS BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE MUST USE FORM FP-001 TO CERTIFY THE ORIGIN OF THE FILL MATERIAL AND THE RESULTS OF THE ANALYTICAL TESTING TO QUALIFY THE MATERIAL AS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE OWNER OF THE PROPERTY RECEIVING THE FILL. A COPY OF FORM FP-001 CAN BE

MIGRATORY FISHERY (MF)



USGS LOCATION MAP SCALE: 1" = 2000'

### CRITICAL STAGE NOTE:

ESTABLISH LIMIT OF DISTURBANCE AND PRESERVATION OF FOREST. INSTALLATION OF INFILTRATION BED. RAIN GARDENS. AMENDED SOILS. ENGINEERED FILTER MEDIA, AND LANDSCAPING.

### OWNER OF RECORD / APPLICANT

MIKELEN, LLC P.O. BOX 243 FAIRVIEW VILLAGE, PA 19409 TAX PARCEL NO. 470001424005 TAX MAP, BLOCK & UNIT: 47-46-01 DEED BOOK 6035, PAGE 2366

### RESPONSIBLE PARTY

MIKELEN, LLC

### BMP (O&M) OPERATIONS AND MAINTENANCE OF STORMWATER CONTROLS STATEMENT

ACKNOWLEDGE THAT ANY REVISIONS TO THE APPROVED POST-CONSTRUCTION STORMWATER MANAGEMENT PLAN MUST BE APPROVED BY NEW HANOVER TOWNSHIP (AND THE CONSERVATION DISTRICT AND / OR DEP) AND THAT A REVISED EROSION AND SEDIMENT CONTROL PLAN MUST BE SUBMITTED TO THE CONSERVATION DISTRICT FOR DETERMINATION OF ADEQUACY. AS APPLICABLE. THE STORMWATER CONTROLS AND BMP'S ARE FIXTURES THAT CAN NOT BE ALTERED OR REMOVED WITHOUT THE APPROVAL BY THE MUNICIPALITY.

SIGNATURE

(DESIGN ENGINEER) \_ , ON THIS DATE HÈREBY CERTIFY THAT THE DRAINAGE PLAN MEETS ALL DESIGN STANDARDS AND CRITERIA OF THE NEW HANOVER TOWNSHIP STORMWATER MANAGEMENT ORDINANCE.

SIGNATURE



DATE

LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND INSPECTION OF THE SITI OMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE CUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA ONE CALL (DIAL 811) THREE DAYS PRIOR TO EXCAVATION. REFERENCE NUMBER: 20170472165 (DOTTERER ROAD)

\_17\_17 NEW OWNER AND UPDATE LAYOUT TWP. ENGR. LTR. 10-1-08, TWP PLANNER LTR 10-1-08 & MCCD LTR. 9-25-08 TWP. ENGR. LTR. 3-26-08, TWP PLANNER LTR 3-31-08 TWP. SWR. ENGR. LTR. 4-1-08, FIRE CHIEF LTR. 4-2-08 & MCCD LTR. 6-12-08

REVISIONS

DESCRIPTION

TWP. SWR. ENGR. LTR. 8-31-07, TRAFFIC ENGR. LTR. 8-28-(TO BE RECORDED)

TWP. ENGR. LTR. 8-30-07, TWP PLANNER LTR 9-4-07

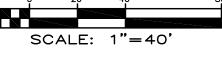
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN (1 OF 5) "PACER'S GAIT"

PREPARED FOR

# MIKELEN, LLC.

NEW HANOVER TOWNSHIP MONTGOMERY COUNTY, PENNSYLVANIA

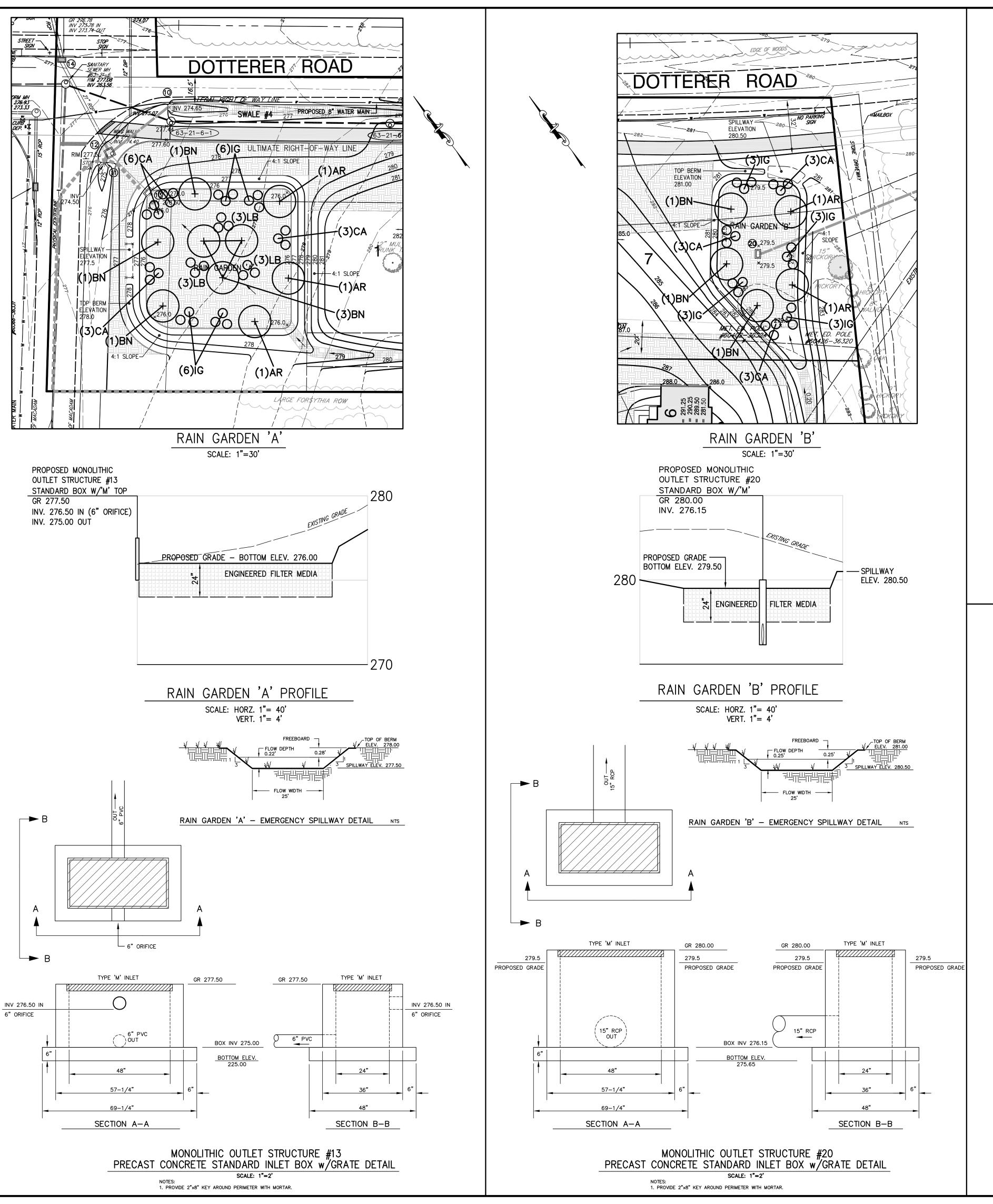
JULY 9, 2007 PROJECT No. 16086 FILE: 16086-BASE

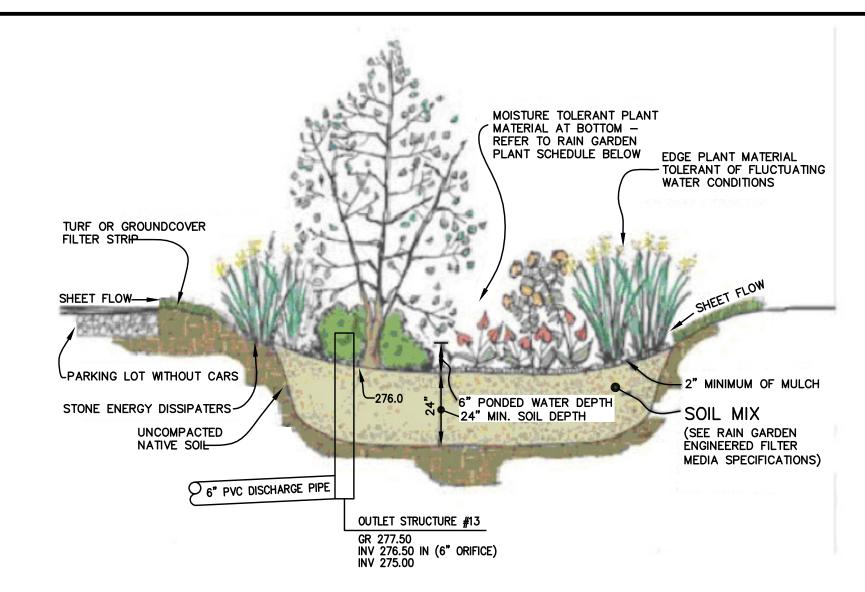


SHEET No. 10 OF 2 URWILER & WALTER, INC. CIVIL ENGINEERS & SURVEYORS

P - 2

P.O. BOX 269 3126 MAIN STREET SUMNEYTOWN, PA. 18084 FAX 215-234-0889 www.urwilerwalter.com





### BMP #11 - RAIN GARDEN A DETAIL / CROSS-SECTION DETAIL NTS

1. RAIN GARDEN DETAIL TAKEN FROM THE 'PENNSYLVANIA STORMWATER BEST MANAGEMENT PRACTICES MANUAL' 2. A LICENSED PROFESSIONAL OR THEIR DESIGNEE SHALL INSPECT THE CONSTRUCTION OF THE RAIN GARDENS.

### RAIN GARDEN 'A' CHART

| MIN. SURFACE AREA             | 7,000 S.F. @ ELEV. 276.0 |
|-------------------------------|--------------------------|
| MIN. VOLUME                   | 7,685 @ ELEV. 277.00     |
| BERM ELEVATION                | 278.0                    |
| BERM WIDTH                    | 3 FEET MIN.              |
| MIN. SIDE SLOPES              | 4 : 1                    |
| INVERT/TOP OF MULCH ELEVATION | 276.0                    |
| PONDING DEPTH                 | 6 INCHES                 |
| PLANTING SPEC'S               | 10 TREES<br>23 SHRUBS    |
| SOIL MIX DEPTH                | 24 INCHES                |
| DISCHARGE TO                  | INLET                    |

RAIN GARDEN AMENDED SOIL MIX

50% SOIL BASE (TOPSOIL) 20% SAND 30% ORGANIC MATERIAL (COMPOST OR MUSHROOM SOIL)

### RAIN GARDEN PLANTINGS

RAIN GARDEN LANDSCAPING REQUIREMENTS: RAIN GARDEN = 1432 SQUARE FEET 23 SHRUBS

(TREE AND SHRUB PLACEMENT TO BE FIELD SET BY LANDSCAPE CONTRACTOR)

### PLANTINGS LEGEND - PER RAIN GARDEN



(3) AR - OCTOBER GLORY RED MAPLE (6) BN - RIVER BIRCH

(12) CA - SUMMERSWEET (12) IG – INKBERRY (9) LB - SPICE BUSH



LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE—GROUND INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA ONE CALL (DIAL 811) THREE DAYS PRIOR TO EXCAVATION.

|          | REVISIONS  |
|----------|--|
| DATE     | DESCRIPTION  |
|          |  |
| 7–17–17  | NEW OWNER AND UPDATE LAYOUT                              |
| 10-27-08 | TWP. ENGR. LTR. 10-1-08, TWP PLANNER LTR 10-1-08 &       |
|          | MCCD LTR. 9-25-08  |
| 8-25-08  | TWP. ENGR. LTR. 3-26-08, TWP PLANNER LTR 3-31-08         |
|          | TWP. SWR. ENGR. LTR. 4-1-08, FIRE CHIEF LTR. 4-2-08 &    |
|          | MCCD LTR. 6-12-08  |
| 10-15-07 | TWP. ENGR. LTR. 8-30-07, TWP PLANNER LTR 9-4-07          |
|          | TWP. SWR. ENGR. LTR. 8-31-07, TRAFFIC ENGR. LTR. 8-28-07 |

REFERENCE NUMBER: 20170472165 (DOTTERER ROAD)

RAIN GARDEN CONSTRUCTION SEQUENCE

SOIL SURFACES, (DO NOT COMPACT EXISTING SOILS).

D. UPON COMPLETION OF SUB-GRADE WORK, THE ENGINEER (OR THEIR

A. INSTALL CONSTRUCTION SAFETY / TREE PROTECTION FENCING SURROUNDING RAIN

B. INITIAL EXCAVATION CAN BE PERFORMED DURING ROUGHSITE GRADING BUT SHALL

C. EXCAVATE RAIN GARDEN TO PROPOSED INVERT DEPTH AND SCARIFY THE EXISTING

REPRESENTATIVE) SHALL BE NOTIFIED AND SHALL INSPECT AT THEIR DISCRETION BEFORE PROCEEDING WITH THE RAIN GARDEN INSTALLATION.

F. BACKFILL RAIN GARDEN WITH AMENDED SOIL (ENGINEERED FILTER MEDIA) AS

ACCOUNT FOR SETTLEMENT, LIGHT HAND TAMPING IS ACCEPTABLE IF

H. COMPLETE FINAL GRADING TO ACHIEVE PROPOSED DESIGN ELEVATIONS, LEAVING

J. MULCH AND INSTALL EROSION PROTECTION AT SURFACE FLOW ENTRANCES WHERE

K. WATER VEGETATION AT THE END OF EACH DAY FOR TWO WEEKS AFTER PLANTING IS COMPLETED, OR AS DETERMINED NECESSARY PER SITE AND OR WEATHER

SPACE FOR UPPER LAYER OF MULCH, COMPOST OR TOPSOIL AS SPECIFIED ON

G. PRESOAK THE PLANTING SOIL PRIOR TO PLANTING VEGETATION TO AID IN

I. PLANT VEGETATION ACCORDING TO PLANTING PLAN / SCHEDULE.

SHOWN ON PLANS AND SPECIFICATIONS, OVERFILLING IS RECOMMENDED TO

BE CARRIED TO WITHIN ONE (1) FOOT OF THE THE FINAL BOTTOM ELEVATION.

AND INSTALLATION:

GARDEN AREA.

E. INSTALL OUTLET STRUCTURES.

SETTLEMENT.

(TO BE RECORDED) POST CONSTRUCTION STORMWATER MANAGEMENT PLAN (2 OF 5) "PACER'S GAIT"

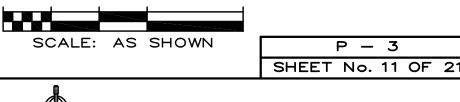
PREPARED FOR

# MIKELEN, LLC.

SITUATE IN

NEW HANOVER TOWNSHIP MONTGOMERY COUNTY, PENNSYLVANIA

JULY 9, 2007 PROJECT No. 16086 FILE: 16086-BASE



URWILER & WALTER, INC.

MOISTURE TOLERANT PLANT MATERIAL AT BOTTOM – REFER TO RAIN GARDEN PLANT SCHEDULE BELOW EDGE PLANT MATERIAL

TOLERANT OF FLUCTUATING WATER CONDITIONS TURF OR GROUNDCOVER FILTER STRIP SHEET FLOW-PARKING LOT WITHOUT CARS 6" PONDED WATER DEPTH STONE ENERGY DISSIPATERS -SOIL MIX UNCOMPACTED NATIVE SOIL ÈNGINEERED FILTER MEDIA SPECIFICATIONS) 15" SLCPP DISCHARGE PIPE

> BMP #11 - RAIN GARDEN B DETAIL / CROSS-SECTION DETAIL NTS

OUTLET STRUCTURE #20

23 SHRUBS

PROPOSED CANOPY TREE

GR 280.0 INV 276.15

1. RAIN GARDEN DETAIL TAKEN FROM THE 'PENNSYLVANIA STORMWATER BEST MANAGEMENT PRACTICES MANUAL'. 2. A LICENSED PROFESSIONAL OR THEIR DESIGNEE SHALL INSPECT THE CONSTRUCTION OF THE RAIN GARDENS.

RAIN GARDEN PLANTINGS

RAIN GARDEN = 1432 SQUARE FEET 10 TREES

RAIN GARDEN LANDSCAPING REQUIREMENTS:

PLANTINGS LEGEND - PER RAIN GARDEN

### RAIN GARDEN 'B' CHART

| 117.111 07.1112               | DEN B SIMINI             |
|-------------------------------|--------------------------|
| MIN. SURFACE AREA             | 3,335 S.F. @ ELEV. 279.5 |
| MIN. VOLUME                   | 3,742 @ ELEV. 280.50     |
| BERM ELEVATION                | 281.0                    |
| BERM WIDTH                    | 3 FEET MIN.              |
| MIN. SIDE SLOPES              | 4 : 1                    |
| INVERT/TOP OF MULCH ELEVATION | 279.5                    |
| PONDING DEPTH                 | 6 INCHES                 |
| PLANTING SPEC'S               | 10 TREES<br>23 SHRUBS    |
| SOIL MIX DEPTH                | 24 INCHES                |
|                               |                          |

DISCHARGE TO

INLET RAIN GARDEN AMENDED SOIL MIX

50% SOIL BASE (TOPSOIL) 20% SAND 30% ORGANIC MATERIAL (COMPOST OR MUSHROOM SOIL)

(TREE AND SHRUB PLACEMENT TO BE FIELD SET BY LANDSCAPE CONTRACTOR)

(9) CA - SUMMERSWEET (12) IG – INKBERRY

(2) AR - OCTOBER GLORY

(3) BN - RIVER BIRCH

RED MAPLE





### FloGard®+PLUS Catch Basin Insert Filter

GENERAL FILTER CONFIGURATION FloGard®+PLUS catch basin insert filter shall provide solids filtration through a filter screen or filter liner, and hydrocarbon capture shall be effected using a non-leaching absorbent material contained in a pouch or similar removable restraint. Hydrocarbon absorbent shall not be placed at an exposed location at the entry to the filter that would allow blinding by debris and sediment without provision for self-cleaning in operation.

Filter shall conform to the dimensions of the inlet in which it is applied, allow removal and replacement of all internal components, and allow complete inspection and cleaning in the field.

Filter shall provide two internal high-flow bypass locations that in total exceed the inlet peak flow capacity. Filter shall provide filtered flow capacity in excess of the required "first flush" treatment flow. Unit shall not impede flow into or through the catch basin when properly sized and installed.

Filter support frame shall be constructed of type 304 stainless steel. Filter screen, when used in place of filter liner,

shall be type 304 or 316 stainless steel, with an apparent opening size of not less than 4 U.S. mesh. Filter liner, when used in place of filter screen, shall be woven polypropylene geotextile fabric liner with an apparent opening size (AOS) of not less than 40 U.S. mesh as determined by ASTM D 4751. Filter liner shall include a support basket of polypropylene geogrid with stainless steel cable reinforcement.

Filter frame shall be rated at a minimum 25-year service life. All other materials, with the exception of the hydrocarbon

• Minimizes vector, bacteria and odor problems absorbent, shall have a rated service life in excess of 2 years

### FloGard®+PLUS TEST RESULTS SUMMARY

| Testing Agency   | % TSS Removal | % Oil and Grease Removal | % PAH Removal |
|--|---------------|--------------------------|---------------|
| UCLA   | 80            | 70 to 80                 |               |
| U of Auckland<br>Tonking & Taylor Ltd.<br>(for city of Auckland) | 78 to 95      |                          |               |
| U of Hawaii<br>(for city of Honolulu)                            | 80            |                          | 20 to 40      |



 Catches pollutants where they are easiest to catch (at the inlet) No standing water – minimizes vector, bacteria and odor problems

Can be incorporated as part of a "Treatment Train"

 Lower installation, inspection and maintenance costs Versatile installation applications

 Higher return on investment Allows for installation on small and confined sites Allows user to target specific pollutants





and the little of

INSTALLATION AND MAINTENANCE

Filter shall provide 80% removal of total suspended solids (TSS) from treated flow with a particle size distribution consistent with typical urban street deposited sediments. Filter shall capture at least 70% of oil and grease and 40%

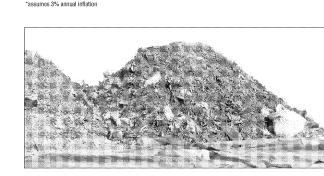
of total phosphorus (TP) associated with organic debris from treated flow. Unit shall provide for isolation of trapped pollutants, including debris, sediments, and floatable trash and hydrocarbons, from bypass flow such that re-suspension and loss of pollutants is minimized during peak flow events.

Filter shall be installed and maintained in accordance with manufacturer's general instructions and recommendations.

### FloGard®+PLUS COMPETITIVE FEATURE COMPARISON

| Evaluation of FloGard+PLUS Units (Based on flow-comparable units) (Scale 1-10, 10 being best) | FloGard+PLUS | Other Insert Filte |
|---|--------------|--------------------|
| Flow Rate   | 10           | 7                  |
| Removal Efficiency*   | 80%          | 45%                |
| Capacity - Sludge and Oil   | 7            | 7                  |
| Service Life  | 10           | 3                  |
| Installation – Ease of Handling / Installation  | 8            | 6                  |
| Ease of Inspections & Maintenance   | 7            | 7                  |
| Value   | 10           | 2                  |

(Scale 1-10, 10 being lowest cost, higher number being bea Unit cost — initial (\$/cfs treated) Installation cost (\$/cfs treated) dsorbent replacement (annual avg \$/cfs treate Unit materials replacement (annual avg \$/cfs treated Vlaintenance cost (annual avg \$/cfs treated) Total first yr (\$/cfs treated) Total Annual Avg (\$/cfs treated, avg over 20 yrs)\*



SCOPE:







KriStar Enterprises, Inc. 360 Sutton Place Santa Rosa, CA 95407

PH: 800-579-8819 FAX: 707-524-8186

www.kristar.com

### GENERAL SPECIFICATIONS FOR MAINTENANCE OF FLO-GARD+PLUS® CATCH BASIN INSERT FILTERS

Federal, State and Local Clean Water Act regulations and those of insurance carriers require that stormwater filtration systems be maintained and serviced on a recurring basis. The intent of the regulations is to ensure that the systems, on a continuing basis, efficiently remove pollutants from stormwater runoff thereby preventing pollution of the nation's water resources. These specifications apply to the FloGard+Plus<sup>®</sup> Catch Basin Insert Filter.

### RECOMMENDED FREQUENCY OF SERVICE:

Drainage Protection Systems (DPS) recommends that installed Flo-Gard+Plus® Catch Basin Insert Filters be serviced on a recurring basis. Ultimately, the frequency depends on the amount of runoff pollutant loading and interference from debris (leaves, vegetation, cans, paper, etc.); however, it is recommended that each installation be serviced a minimum of three times per year, with a change of filter medium once per year. DPS technicians are available to do an on-site evaluation, upon request.

### RECOMMENDED TIMING OF SERVICE:

- DPS guidelines for the timing of service are as follows: 1. For areas with a definite rainy season: Prior to, during and following the rainy season. 2. For areas subject to year-round rainfall: On a recurring basis (at least three times per year).
- 3. For areas with winter snow and summer rain: Prior to and just after the snow season and during the summer rain season. 4. For installed devices not subject to the elements (washracks, parking garages, etc.): On a recurring

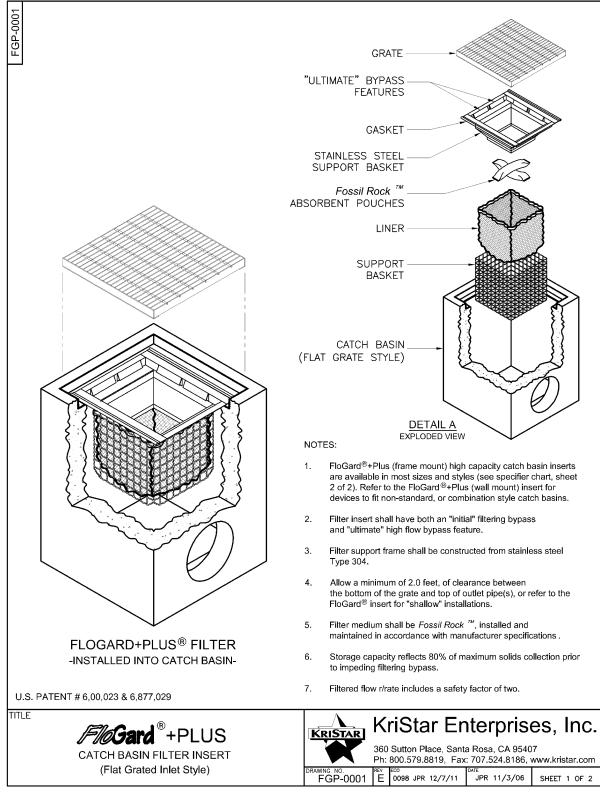
### basis (no less than three times per years). SERVICE PROCEDURES:

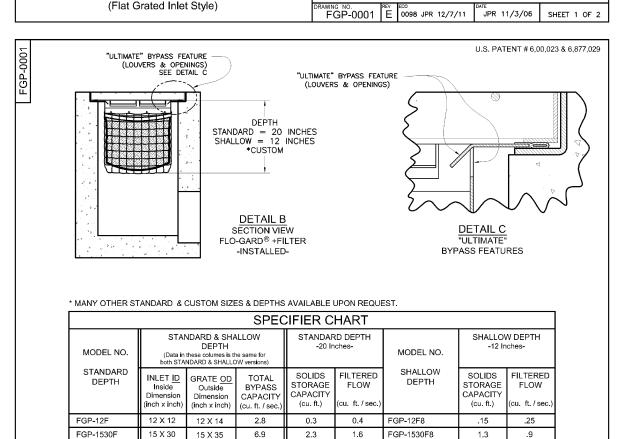
- 1. The catch basin grate shall be removed and set to one side. The catch basin shall be visually inspected for defects and possible illegal dumping. If illegal dumping has occurred, the proper authorities and property owner representative shall be notified as soon as practicable.
- 2. Using an industrial vacuum, the collected materials shall be removed from the liner. (Note: DPS a truck-mounted vacuum for servicing Flo-Gard+Plus® catch basin inserts.) 3. When all of the collected materials have been removed, the filter medium pouches shall be removed by unsnapping the tether from the D-ring and set to one side. The filter liner, gaskets, stainless steel frame and mounting brackets, etc. shall be inspected for continued serviceabilit
- Minor damage or defects found shall be corrected on-the-spot and a notation made on the Maintenance Record. More extensive deficiencies that affect the efficiency of the filter (torn liner, etc.), if approved by the customer representative, will be corrected and an invoice submitted to the representative along with the Maintenance Record.
- 4. The filter medium pouches shall be inspected for defects and continued serviceability and replaced as necessary and the pouch tethers re-attached to the liner's D-ring. See below.

### REPLACEMENT AND DISPOSAL OF EXPOSED FILTER MEDIUM AND COLLECTED

The frequency of filter medium pouch exchange will be in accordance with the existing DPS-Customer Maintenance Contract, DPS recommends that the medium be changed at least once per year. During the appropriate service, or if so determined by the service technician during a non-scheduled service, the filter medium pouches will be replaced with new pouches. Once the exposed pouches and debris have been removed, DPS has possession and must dispose of it in accordance with local, state and federal agency

DPS also has the capability of servicing all manner of catch basin inserts and catch basins without inserts, underground oil/water separators, stormwater interceptors and other such devices All DPS personnel are highly qualified technicians and are confined space trained and certified. Call us at (888) 950-8826 for further information and assistance.





| MODEL NO.         | (Data in  | NDARD & SHA<br>DEPTH<br>these columes is the<br>NDARD & SHALLO | ne same for                                     |  | RD DEPTH<br>iches-                 | MODEL NO.        | SHALLOW DEPTH<br>-12 Inches-               |                                  |  |
|-------------------|---|--|---|--|------------------------------------|------------------|--|----------------------------------|--|
| STANDARD<br>DEPTH | INLET <u>ID</u><br>Inside<br>Dimension<br>(inch x inch) | GRATE <u>OD</u><br>Outside<br>Dimension<br>(inch x inch)       | TOTAL<br>BYPASS<br>CAPACITY<br>(cu. ft. / sec.) | SOLIDS<br>STORAGE<br>CAPACITY<br>(cu. ft.) | FILTERED<br>FLOW<br>(cu. ft./sec.) | SHALLOW<br>DEPTH | SOLIDS<br>STORAGE<br>CAPACITY<br>(cu. ft.) | FILTERED<br>FLOW<br>(cu. ft./sec |  |
| FGP-12F           | 12 X 12   | 12 X 14  | 2.8   | 0.3  | 0.4                                | FGP-12F8         | .15  | .25                              |  |
| FGP-1530F         | 15 X 30   | 15 X 35  | 6.9   | 2.3  | 1.6                                | FGP-1530F8       | 1.3  | .9                               |  |
| FGP-16F           | 16 X 16   | 16 X 19  | 4.7   | 0.8  | 0.7                                | FGP-16F8         | .45  | .4                               |  |
| FGP-1624F         | 16 X 24   | 16 X 26  | 5.0   | 1.5  | 1.2                                | FGP-1624F8       | .85  | .7                               |  |
| FGP-18F           | 18 X 18   | 18 X 20  | 4.7   | 0.8  | 0.7                                | FGP-18F8         | .45  | .4                               |  |
| FGP-1820F         | 16 X 19   | 18 X 21  | 5.9   | 2.1  | 1.4                                | FGP-1820F8       | 1.2  | .8                               |  |
| FGP-1824F         | 16 X 22   | 18 X 24  | 5.0   | 1.5  | 1.2                                | FGP-1824F8       | .85  | .7                               |  |
| FGP-1836F         | 18 X 36   | 18 X 40  | 6.9   | 2.3  | 1.6                                | FGP-1836F8       | 1.3  | .9                               |  |
| FGP-2024F         | 18 X 22   | 20 X 24  | 5.9   | 1.2  | 1.0                                | FGP-2024F8       | .7   | .55                              |  |
| FGP-21F           | 22 X 22   | 22 X 24  | 6.1   | 2.2  | 1.5                                | FGP-21F8         | 1.25                                       | .85                              |  |
| FGP-2142F         | 21 X 40   | 24 X 40  | 9.1   | 4.3  | 2.4                                | FGP-2142F8       | 2.45                                       | 1.35                             |  |
| FGP-2148F         | 19 X 46   | 22 X 48  | 9.8   | 4.7  | 2.6                                | FGP-2148F8       | 2.7  | 1.5                              |  |
| FGP-24F           | 24 X 24   | 24 X 27  | 6.1   | 2.2  | 1.5                                | FGP-24F8         | 1.25                                       | .85                              |  |
| FGP-2430F         | 24 X 30   | 26 X 30  | 7.0   | 2.8  | 1.8                                | FGP-2430F8       | 1.6  | 1.05                             |  |
| FGP-2436F         | 24 X 36   | 24 X 40  | 8.0   | 3.4  | 2.0                                | FGP-2436F8       | 1.95                                       | 1.15                             |  |
| FGP-2448F         | 24 X 48   | 26 X 48  | 9.3   | 4.4  | 2.4                                | FGP-2448F8       | 2.5  | 1.35                             |  |
| FGP-28F           | 28 X 28   | 32 X 32  | 6.3   | 2.2  | 1.5                                | FGP-28F8         | 1.25                                       | .85                              |  |
| FGP-2440F         | 24 X 36   | 28 X 40  | 8.3   | 4.2  | 2.3                                | FGP-2440F8       | 2.4  | 1.3                              |  |
| FGP-30F           | 30 X 30   | 30 X 34  | 8.1   | 3.6  | 2.0                                | FGP-30F8         | 2.05                                       | 1.15                             |  |
| FGP-36F           | 36 X 36   | 36 X 40  | 9.1   | 4.6  | 2.4                                | FGP-36F8         | 2.65                                       | 1.35                             |  |
| FGP-3648F         | 36 X 48   | 40 X 48  | 11.5  | 6.8  | 3.2                                | FGP-3648F8       | 3.9  | 1.85                             |  |
| FGP-48F           | 48 X 48   | 48 X 54  | 13.2  | 9.5  | 3.9                                | FGP-48F8         | 5.45                                       | 2.25                             |  |
| FGP-SD24F         | 24 X 24   | 28 X 28  | 6.1   | 2.2  | 1.5                                | FGP-SD24F8       | 1.25                                       | .85                              |  |

WING NO. REV | ECO | DATE | FGP-0001 | E | 0098 JPR 12/7/11 | JPR 11/3/06 | SHEET 2 OF 2

# INLET FILTER DETAILS

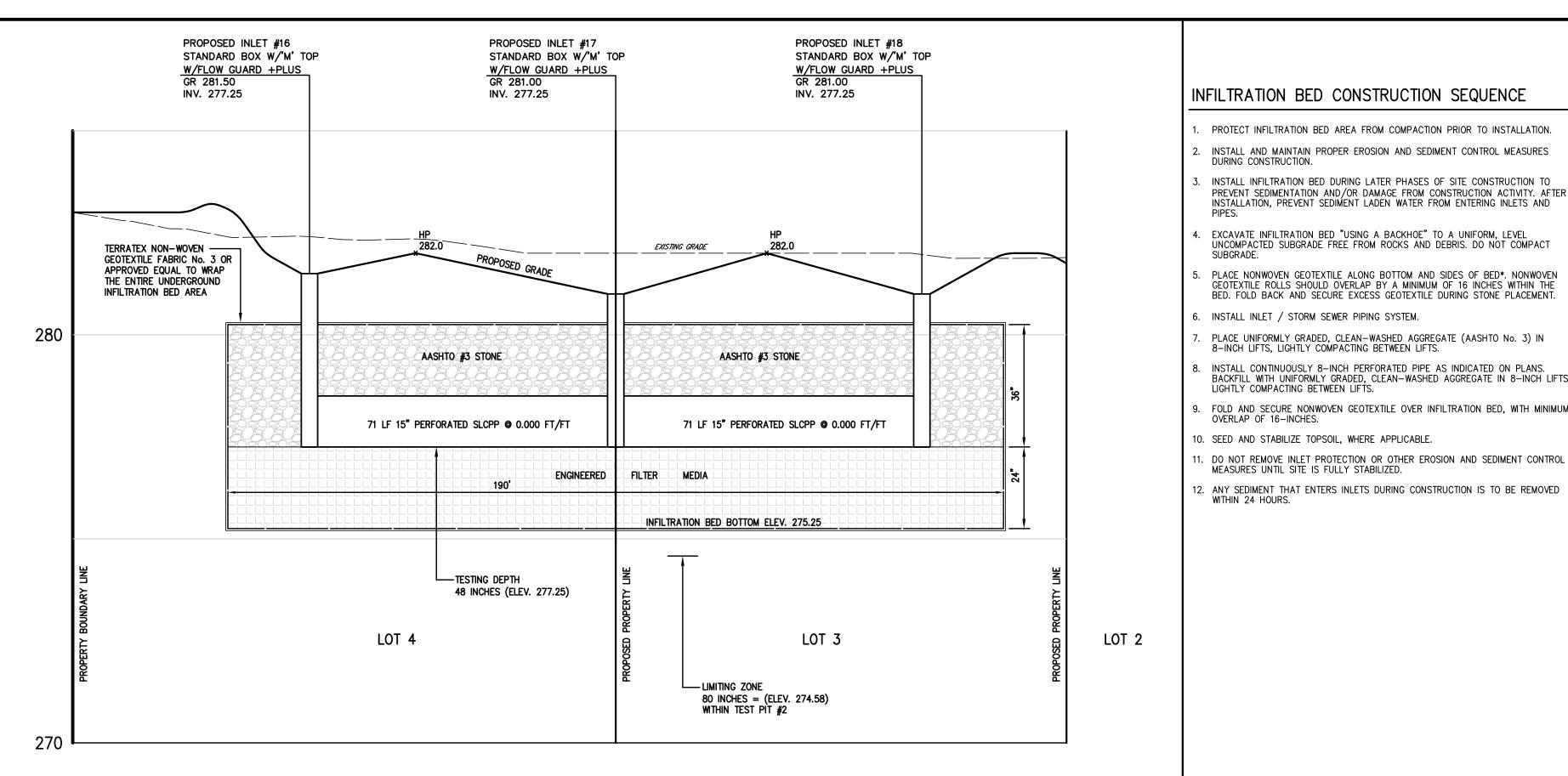
INSTALLED IN INLET BOXES 16, 17, & 18

\* CONTRACTOR TO VERIFY PRIOR TO INSTALLATION OF INLET THE CORRECT INLET BOX SIZE FOR REQUIRED FLOWGUARD +PLUS INSERT.

\*\* OR APPROVED EQUAL

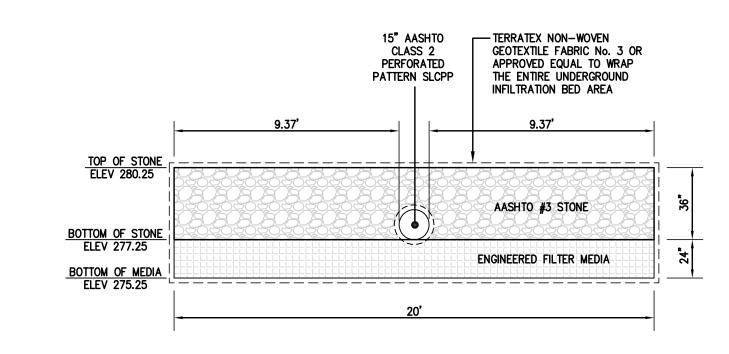
CATCH BASIN FILTER INSERT

(Flat Grated Inlet Style)

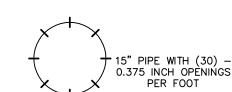


# PROPOSED INFILTRATION BED #1

SCALE: HORZ: 1"=20' VERT: 1"=2'



SECTION VIEW INFILTRATION BED #1 DETAIL SCALE: HORZ: 1"=4' VERT: 1"=4'



PERFORATED PIPE DETAIL

|   |   |   | Sto                 | mwate                                     | r BMP                                   | Informa  | ation C                                       | hart 5.E   | 3 revise                                       | d Marc   | h 15. 2   | 016   |  |  |  |                           |   |   |
|---|---|---|---------------------|---|---|--|---|--|--|--|---|---|--|--|--|---------------------------|---|---|
|   |   |   |                     | ation Info                                |   |  |   |  | Drainage In                                    |  |   |   |  |  | BMP In   | formation                 |   |   |
|   | Proposed Structural BMPs<br>(site specific)   | Measured<br>Infiltration<br>Rate <sup>9</sup> | Factor of<br>Safety | Design<br>Infiltration<br>Rate<br>in./hr. | Dewatering<br>Time <sup>1</sup><br>hrs. | Elevation of<br>Limiting<br>Zone -<br>Water<br>Table,<br>Bedrock,<br>etc. <sup>2</sup> | Total<br>Drainage<br>Area to<br>BMP<br>sg. ft | Total<br>Impervious<br>Drainage<br>Area to<br>BMP<br>sq. ft. | Infiltration<br>BMP<br>Surface Area<br>sq. ft. | Total<br>Drainage<br>Area<br>Loading<br>Ratio <sup>6</sup> | Impervious<br>Area<br>Loading<br>Ratio <sup>7</sup> | Volume of<br>Runoff<br>Tributary to<br>BMP During<br>the 2yr/24hr<br>Design<br>Storm <sup>5</sup> | Calculated<br>Infiltration<br>Volume<br>(from<br>storms up<br>to and<br>including<br>2yr/24hr) | Calculated<br>Managed<br>Volume<br>(from<br>storms up<br>to and<br>including<br>2yr/24hr) <sup>8</sup> | Maximum<br>water<br>surface<br>elevation<br>in BMP<br>from 2yr<br>storm <sup>3</sup> | Infiltration<br>Elevation | Elevation of<br>Infiltration<br>Test <sup>4</sup> | Elevation of<br>E&S Sedimen<br>Basin Bottom<br>(if applies) |
| BMP 6.4.1   | Pervious Pavement w/ Infiltration Bed   |   | William Of E        |   | 77707                                   |  | og, n   | og it  | oq 10  |  |   | 0,  | - 01   | - Oi   |  |                           |   |   |
| BMP 6.4.2   | Infiltration Basin  |   |                     |   |   |  |   |  |  |  |   |   |  |  |  |                           |   |   |
| BMP 6.4.3   | Subsurface Infiltration Bed   | 4.21  | 2                   | 2.1                                       | 6                                       | 278.50   | 31,363  | 2920   | 3800   | 8.25   | 0.80  | 6,316.0   | 6,316  |  | 0.38   | 277.25                    | 277.25  |   |
| BMP 6.4.4   | Infiltration Trench   | 1   | 1                   | <br>                                      |   | <br>   |   | 1  | <br>   |  |   | <br>  |  | <br>   | <br>   | <br>                      | <br>  | l   |
| BMP 6.4.5   | Rain Garden/Bioretention#1<br>Rain Garden/Bioretention#3                              | 1.38<br>4.21                                  | 2 2                 | 0.69<br>2.1                               | 18<br>6                                 | 272.8<br>278.8   | 40,075<br>41,817                              | 3485<br>4792   | 7030<br>5725                                   | 5.70<br>7.3  | 0.50<br>0.84  | 6,230<br>3485   | 6,230<br>1916  |  | 0.36<br>0.21   | 276.0<br>279.5            | 275.0<br>281.5                                    | <br>  |
| BMP 6.4.6   | Dry Well / Seepage Pit  |   |                     |   |   |  |   |  |  |  |   |   |  |  |  |                           |   |   |
| Other   |   |   |                     |   |   |  |   |  |  |  |   |   |  |  |  |                           |   |   |
| BMP 6.4.7<br>BMP 6.4.8<br>BMP 6.4.9<br>BMP 6.4.10 | Constructed Filter Vegetated Swale Vegetated Filter Strip Infilt. Berm & Ret. Grading |   |                     |   |   |  |   |  |  |  |   |   |  |  |  |                           |   |   |

All information should be based on the 2-year/24-hour storm Provide page numbers from the stormwater narrative identifying the location of the above information.

<sup>1</sup> Can include active infiltration time - dewatering time should not exceed 72 hours after the 2-year/24-hour storm <sup>2</sup> Depth to limiting zone is recommended to be at least 2 ft below infiltration testing elevation/proposed infiltration elevation.

<sup>3</sup> A maximum of 2 feet of Hydraulic head is recommended. <sup>4</sup> Provide supporting field notes/documenation from soil evaluation

<sup>5</sup> This value should be greater than or equal to the Volume to be Infiltrated or Managed by the BMP. <sup>6</sup> A maximum of 8:1 is recommended.

<sup>7</sup> A maximum of 5:1 is recommended; however, in carbonate geology areas, a maximum of 3:1 is recommended. <sup>8</sup> Calculated runoff volume that is managed in ways other than infiltration to address 25 PA Code Ch 102.8(g)(2)

9 The infiltration testing information should be located on the plan view of the PCSM Plan and should include infiltration test elevation and rate. Any deviations from the recommendations above should be adequately justified by a qualified professional and included with the application.

NOTE: This chart is for summary purposes only and should be consistent with all design calculations and worksheets



LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND INSPECTION OF THE SITE COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA ONE CALL (DIAL 811) THREE DAYS PRIOR TO EXCAVATION. REFERENCE NUMBER: 20170472165 (DOTTERER ROAD)

REVISIONS DATE DESCRIPTION

'-17-17 | NEW OWNER AND UPDATE LAYOUT TWP. ENGR. LTR. 10-1-08, TWP PLANNER LTR 10-1-08 &

PROTECT INFILTRATION BED AREA FROM COMPACTION PRIOR TO INSTALLATION. INSTALL AND MAINTAIN PROPER EROSION AND SEDIMENT CONTROL MEASURES

INSTALL INFILTRATION BED DURING LATER PHASES OF SITE CONSTRUCTION TO

EXCAVATE INFILTRATION BED "USING A BACKHOE" TO A UNIFORM, LEVEL UNCOMPACTED SUBGRADE FREE FROM ROCKS AND DEBRIS. DO NOT COMPACT

PLACE NONWOVEN GEOTEXTILE ALONG BOTTOM AND SIDES OF BED\*. NONWOVEN

GEOTEXTILE ROLLS SHOULD OVERLAP BY A MINIMUM OF 16 INCHES WITHIN THE

BED. FOLD BACK AND SECURE EXCESS GEOTEXTILE DURING STONE PLACEMENT.

INSTALL CONTINUOUSLY 8-INCH PERFORATED PIPE AS INDICATED ON PLANS.

BACKFILL WITH UNIFORMLY GRADED, CLEAN-WASHED AGGREGATE IN 8-INCH LIFTS,

. FOLD AND SECURE NONWOVEN GEOTEXTILE OVER INFILTRATION BED, WITH MINIMUM

2. ANY SEDIMENT THAT ENTERS INLETS DURING CONSTRUCTION IS TO BE REMOVED

INSTALL INLET / STORM SEWER PIPING SYSTEM.

LIGHTLY COMPACTING BETWEEN LIFTS.

MEASURES UNTIL SITE IS FULLY STABILIZED.

OVERLAP OF 16-INCHES.

8-INCH LIFTS, LIGHTLY COMPACTING BETWEEN LIFTS.

PREVENT SEDIMENTATION AND/OR DAMAGE FROM CONSTRUCTION ACTIVITY. AFTER INSTALLATION, PREVENT SEDIMENT LADEN WATER FROM ENTERING INLETS AND

DURING CONSTRUCTION.

MCCD LTR. 9-25-08 8-25-08 | TWP. ENGR. LTR. 3-26-08, TWP PLANNER LTR 3-31-08

TWP. SWR. ENGR. LTR. 4-1-08, FIRE CHIEF LTR. 4-2-08 & MCCD LTR. 6-12-08

0-15-07 TWP. ENGR. LTR. 8-30-07, TWP PLANNER LTR 9-4-07TWP. SWR. ENGR. LTR. 8-31-07, TRAFFIC ENGR. LTR. 8-28-

(TO BE RECORDED) POST CONSTRUCTION STORMWATER MANAGEMENT PLAN (3 OF 5) "PACER'S GAIT"

PREPARED FOR

MIKELEN, LLC.

NEW HANOVER TOWNSHIP MONTGOMERY COUNTY, PENNSYLVANIA

JULY 9, 2007 PROJECT No. 16086 FILE: 16086-BASE

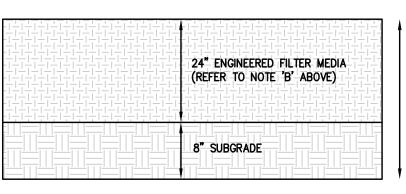


P-4SHEET No. 12 OF 2



### ENGINEERED FILTER MEDIA SPECIFICATIONS & CONSTRUCTION SEQUENCE (TO BE USED WITHIN RAIN GARDENS A & B)

- A. SOIL AMENDMENT MEDIA USUALLY CONSISTS OF COMPOST DERIVED FROM MULCH, MANURES, SAND AND MANUFACTURED MICROBIAL
- B. ENGINEERED FILTER MEDIA IS COMPOSED OF 85-95% WELL GRADED SAND (LESS THAN 5% (0.02 TO 0.2 mm) OF FINE SAND), PLUS 5 % ORGANIC MATTER AND 5 TO 10% LOAM OR SANDY LOAM TOPSOIL. AN `ALTERNATE BIORETENTION MIX FOR SITES WITH CLÂY FEXTURED TOPSOIL IS COMPOSED OF 70-85% SAND WITH 15-30% COMPOST VOLUME. THE ENGINEERED MEDIA OR THE ALTERNATIVE NEEDS TO BE AT A MINIMUM OF 24 INCHES DEEP.
- C. SOIL RESTORATION SHOULD NOT BE USED ON SLOPES GREATER THAN 30%. IN THESE AREAS, DEEP-ROOTED VEGETATION CAN BE USED TO INCREASE STABILITY.
- D. SOIL RESTORATION SHOULD NOT TAKE PLACE WITHIN THE DRIP LINE OF A TREE TO AVOID DAMAGING THE ROOT SYSTEM.
- E. ON-SITE SOILS WITH AN ORGANIC CONTENT OF AT LEAST 5 PERCENT CAN BE PROPERLY STOCKPILED (TO MAINTAIN ORGANIC CONTENT) AND REUSED.
- F. PROCEDURE: ROTOTILL, OR RIP THE SUBGRADE, REMOVE ROCKS, DISTRIBUTE THE COMPOST, SPREAD THE NUTRIENTS, ROTOTILL AGAIN. G. ONCE COMPLETE, ELIMINATE ENCROACHMENT BY VEHICLES AND CONSTRUCTION EQUIPMENT.

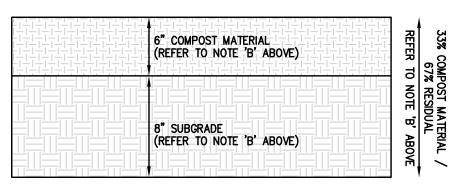


ENGINEERED FILTER MEDIA DETAIL NTS

### ON-LOT SOIL AMENDMENTS SPECIFICATIONS & CONSTRUCTION SEQUENCE

A. SOIL AMENDMENT WILL CONSIST OF SAND AND COMPOST MATERIAL. THE RATIOS OF SAND TO COMPOST WILL BE (2:1) 2 PARTS SAND AND 1 PART COMPOST AND SHALL BE UNIFORMLY MIXED. SAND SHALL HAVE A UNIFORMITY COEFFICIENT <4.0 AND AN EFFECTIVE SIZE OF 0.25 TO 0.75 MILLIMETERS.

- 1) FIRST OPTION IS TO SPREAD 6-INCHES OF COMPOST OR OTHER SOIL AMENDMENT MEDIA OVER THE AREA DESIGNATED FOR SOIL RESTORATION AND TILL TO A DEPTH OF 8-INCHES FOR MINOR COMPACTION.
- 2) SECOND OPTION IS TO USE PRE-MIXED AMENDED SOIL MEDIA, EVENLY SPREAD AMENDED SOIL MEDIA TO A DEPTH OF 6-INCHES OVER THE ENTIRE AREA DESIGNATED FOR SOIL RESTORATON.
- 3) ROTOTILL, OR RIP THE SUBGRADE, REMOVE ROCKS, DISTRIBUTE THE COMPOST, SPREAD THE NUTRIENTS, ROTOTILL AGAIN.
- C. USE A HAND TAMPER TO COMPACT AMENDED SOILS.
- D. PLANT DISTURBED SURFACES IN ACCORDANCE WITH BMP OPERATION AND MAINTENANCE NOTE #10.
- E. SOIL AMENDMENT MEDIA USUALLY CONSISTS OF COMPOST BUT CAN INCLUDE MUSHROOM SOIL, MULCH, MANURES, SAND AND MANUFACTURED MICROBIAL SOLUTIONS.
- F. SOIL RESTORATION SHOULD NOT BE USED ON SLOPES GREATER THAN 30%. IN THESE AREAS, DEEP-ROOTED VEGETATION CAN BE USED TO INCREASE STABILITY.
- G. SOIL RESTORATION SHOULD NOT TAKE PLACE WITHIN THE DRIP LINE OF A TREE TO AVOID DAMAGING THE ROOT SYSTEM.
- H. ON-SITE SOILS WITH AN ORGANIC CONTENT OF AT LEAST 5 PERCENT CAN BE PROPERLY STOCKPILED (TO MAINTAIN ORGANIC CONTENT) AND REUSED.
- I. ONCE COMPLETE, ELIMINATE ENCROACHMENT BY VEHICLES AND CONSTRUCTION EQUIPMENT.



AMENDED SOIL DETAIL NTS

### BEST MANAGEMENT PRACTICE OPERATION AND MAINTENANCE:

### BMP #1 - PRESERVE EXISTING TREES

PROPOSED DURING CONSTRUCTION IS TREE PROTECTION FENCE AND COMPOST FILTER SOCK THAT LIMIT CONSTRUCTION ACTIVITIES FROM ENCROACHING ON EXISTING TREES AND DRAINAGE FEATURES.

THE PROPERTY OWNER(S) IS TO CONDUCT BIANNUAL INSPECTION AND MAINTENANCE. MAINTENANCE INCLUDES REMOVAL OF TRASH AND DEBRIS AND PRUNE/REMOVE DEAD VEGETATION. DEPOSE OF TRASH / DEBRIS AT A DISPOSAL/RECYCLING SITES AND COMPLY WITH APPLICABLE LOCAL, STATE AND FEDERAL WASTE REGULATIONS. LISTED BELOW ARE DIRECTIONS FOR REMOVING DEAD OR DYING VEGETATION:

### LANDSCAPE MAINTENANCE AND REPLACEMENT OF DEAD OR DYING TREES.

- 1. EXISTING LANDSCAPING THAT PROVIDES A PERENNIAL COVER CAN BE EXPECTED TO REQUIRE ANNUAL MOWING IN ORDER TO CONTROL INVASIVE SPECIES. APPLICATION OF AN HERBICIDE (ROUNDUP OR SIMILAR GLYPHOSATE HERBICIDE) AROUND THE TREES MAY BE NECESSARY, REINFORCE BY SELECTIVE CUTTING /MANUAL REMOVAL, IF NECESSARY. THIS INITIAL MAINTENANCE IS NECESSARY UNTIL TREES AND TREE CANOPY BEGIN TO FORM, WHICH NATURALLY INHIBITS WEED GROUND.
- 2. DRIED LIMBS THAT SNAP WHEN TWISTED AND LACK OF LEAVES ARE AN INDICATION OF DEAD OR DYING VEGETATION. REFER TO AN ARBORIST PRIOR TO REPLACEMENT OF EXISTING TREES. REPLACEMENT SHALL BE AS FOLLOWS:
  - A. THE LIMIT OF DISTURBANCE WILL BE MARKED IN THE FIELD PRIOR WITH 18" SILT FENCE OR 12" COMPOSED FILTER SOCK ALONG THE PERIMETER OF THE AREA OF DISTURBANCE.
  - B. CUT EXISTING TREE(S) COMMENCING DEAD LIMBS STARTING WITH THE SMALL LIMBS AND BRANCHES AND TERMINATE WITH THE TRUNK. C. COMMENCE INSTALLATION OF REPLACEMENT TREE(S).

### BMP #2 - MINIMIZE THE AREA OF DISTURBANCE, GRADING AND COMPACTION

MINIMIZE GRADING AND DISTURBANCE. THE PROJECT AREA ENCOMPASSES 5.77 ACRES WITH TOTAL DISTURBANCE OF 5.5 ACRES. THE LIMIT OF DISTURBANCE WILL BE MARKED IN THE FIELD PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

### BMP #3 - PROTECT EXISTING VEGETATION 100' OF IMPERVIOUS SURFACES

PROPOSED DURING CONSTRUCTION IS TREE PROTECTION FENCE AND COMPOST FILTER SOCK THAT LIMIT CONSTRUCTION ACTIVITIES FROM ENCROACHING ON EXISTING TREES AND DRAINAGE FEATURES.

THE PROPERTY OWNER(S) IS TO CONDUCT BIANNUAL INSPECTION AND MAINTENANCE. MAINTENANCE INCLUDES REMOVAL OF TRASH AND DEBRIS AND PRUNE/REMOVE DEAD VEGETATION. DEPOSE OF TRASH / DEBRIS AT A DISPOSAL/RECYCLING SITES AND COMPLY WITH APPLICABLE LOCAL, STATE AND FEDERAL WASTE REGULATIONS. LISTED BELOW ARE DIRECTIONS FOR REMOVING DEAD OR DYING VEGETATION:

LANDSCAPE MAINTENANCE AND REPLACEMENT OF DEAD OR DYING TREES.

- 1. EXISTING LANDSCAPING THAT PROVIDES A PERENNIAL COVER CAN BE EXPECTED TO REQUIRE ANNUAL MOWING IN ORDER TO CONTROL INVASIVE SPECIES. APPLICATION OF AN HERBICIDE (ROUNDUP OR SIMILAR GLYPHOSATE HERBICIDE) AROUND THE TREES MAY BE NECESSARY, REINFORCE BY SELECTIVE CUTTING /MANUAL REMOVAL, IF NECESSARY. THIS INITIAL MAINTENANCE IS NECESSARY UNTIL TREES AND TREE CANOPY BEGIN TO FORM, WHICH NATURALLY INHIBITS WEED GROUND.
- 2. DRIED LIMBS THAT SNAP WHEN TWISTED AND LACK OF LEAVES ARE AN INDICATION OF DEAD OR DYING VEGETATION. REFER TO AN ARBORIST PRIOR TO REPLACEMENT OF EXISTING TREES. REPLACEMENT SHALL BE AS FOLLOWS:
  - A. THE LIMIT OF DISTURBANCE WILL BE MARKED IN THE FIELD PRIOR WITH 18" SILT FENCE OR 12" COMPOSED FILTER SOCK ALONG THE PERIMETER OF THE AREA OF DISTURBANCE.
  - B. CUT EXISTING TREE(S) COMMENCING DEAD LIMBS STARTING WITH THE SMALL LIMBS AND BRANCHES AND TERMINATE WITH THE TRUNK.
- C. COMMENCE INSTALLATION OF REPLACEMENT TREE(S).

### BMP #4 - LANDSCAPING

THE PROPERTY OWNER(S) SHALL CONDUCT BIANNUAL INSPECTION IN THE SPRING AND FALL OF EACH YEAR OF EXISTING ON-SITE LANDSCAPING AND PERFORM ROUTINE MAINTENANCE AS FOLLOWS:

- 1. LANDSCAPING RESTORATION PLANTED AS A PERENNIAL COVER CAN BE EXPECTED TO REQUIRE ANNUAL MOWING IN ORDER TO CONTROL INVASIVE SPECIES. APPLICATION OF AN HERBICIDE (ROUNDUP OR SIMILAR GLYPHOSATE HERBICIDE) AROUND THE PROTECTIVE TREE SHELTER / TUBES MAY BE NECESSARY, REINFORCE BY SELECTIVE CUTTING/MANUAL REMOVAL, IF NECESSARY. THIS INITIAL MAINTENANCE ROUTING IS NECESSARY FOR THE FIRST 2 TO 3 YEARS OF GROWTH AND MAY BE NECESSARY FOR UP TO 5 YEAR UNTIL TREE GROWTH AND TREE CANOPY BEGINS TO FORM, NATURALLY INHIBITING WEED GROWTH (ONCE SHADING IS ADEQUATE, GROWTH OF INVASIVE SPECIES AND OTHER WEEDS WILL BE NATURALLY PREVENTED.
- 2. DRIED LIMBS THAT SNAP WHEN TWISTED AND LACK OF LEAVES ARE AN INDICATION OF DEAD OR DYING VEGETATION. REFER TO AN ARBORIST PRIOR TO REPLACEMENT OF EXISTING TREES. IF NECESSARY TO REMOVE AND REPLACE THE TREE, FOLLOW THE PROCEDURES BELOW:
- A. THE LIMIT OF DISTURBANCE WILL BE MARKED IN THE FIELD WITH 18" SILT FENCE OR 12" COMPOSED FILTER SOCK ALONG THE PERIMETER OF THE AREA OF
- B. CUT EXISTING TREE(S) COMMENCING DEAD LIMBS STARTING WITH THE SMALL LIMBS AND BRANCHES AND TERMINATE WITH THE TRUNK.
- C. COMMENCE INSTALLATION OF REPLACEMENT TREE(S).

OF EROSIONAL FEATURES BY REPLACEMENT OF ROCK RIPRAP WITH LARGER STONE.

### BMP #5 - ROCK RIPRAP

THE PROPERTY OWNER(S) SHALL CONDUCT BIANNUAL INSPECTION OF ROCK RIPRAP INSTALLATION IN THE SPRING AND FALL OF EACH YEAR AND PERFORM MAINTENANCE AS DESCRIBED BELOW: INSTALL ROCK RIPRAP AT POINTS OF CONCENTRATED DISCHARGE POINTS. THE INTENT OF THIS BMP IS TO DISSIPATE CONCENTRATED FLOW TO ELIMINATE OR AT LEAST REDUCE THE WATER'S ABILITY TO ENTRAIN AND CONVEY PARTICULATE MATTER. MAINTENANCE INCLUDES THE REMOVAL OF TRASH, DEBRIS AND SEDIMENT AND REPAIR

IF THE ROCK RIPRAP FAILS, WHICH IS INDICATED BY PARTICLE EROSION, SLIDING, SLUMPING; THE ROCK RIPRAP BED NEEDS REPLACEMENT. LISTED BELOW IS THE PROCEDURE TO FOLLOW CONCERNING REPLACEMENT OF ROCK RIPRAP.

- MARK LIMIT OF DISTURBANCE IN THE FIELD. INSTALL TEMPORARY CONSTRUCTION ENTRANCE. THE CONSTRUCTION FENCE SHOULD ORIGINATE FROM EITHER A MACADAM OR GRAVEL ROAD AND MINIMIZE
- DISTURBANCES TO EXISTING VEGETATION AND SPECIAL VALUE FEATURES. INSTALL COMPOST SILT SOCK OR SILT FENCE DOWNSLOPE OF THE AREA OF DISTURBANCE.
- COMMENCE EXCAVATION OF ROCK RIPRAP AND SUBBASE MATERIAL FROM MAY THROUGH SEPTEMBER. IF NECESSARY, DIVERT STORMWATER AROUND THE CONSTRUCTION AREA USING FIGURE 3.9 OR 3.11 OF THE EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL, MARCH 2012.
- PREPARE THE SUBBASE BY COMPACTING EXISTING SOIL OR PROVIDING 2A MODIFIED STONE TO A LEVEL GRADE WITH A LONGITUDINAL SLOPE LESS THAN 1%
- AND A 0% CROSS SLOPE. 6. LINE THE SUBBASE WITH CLASS I GEOTEXTILE.

USE SALT-TOLERANT VEGETATION IN SWALES.

VEGETATED SWALE RESTORATION / REPAIR.

7. APPLY ROCK RIPRAP TO THE ORIGINAL SPECIFICATIONS, (SIZE, WIDTH, DEPTH AND LENGTH).

### BMP #6 - VEGETATED SWALES

IN GENERAL, MAINTENANCE STRATEGIES FOR SWALES SHOULD FOCUS ON SUSTAINING THE HYDRAULIC AND POLLUTANT REMOVAL EFFICIENCY OF THE CHANNEL, AS WELL AS MAINTAINING A DENSE VEGETATIVE COVER. THE FOLLOWING SCHEDULE OF INSPECTION AND MAINTENANCE ACTIVITIES ARE RECOMMENDED:

THE PROPERTY OWNER(S) SHALL CONDUCT INSPECTION AND MAINTENANCE ACTIVITIES ANNUALLY AND WITHIN 48 HOURS FOLLOWING A MAJOR STORM EVENT (> 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 AND GULLIES, CORRECT AS NEEDED.

- INSPECT FOR POOLS OF STANDING WATER; DEWATER 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 OUTLETS FOR SIGNS FOR SIGNS OF EROSION OR BLOCKAGE, CORRECT AS NEEDED.
- MAINTENANCE ACTIVITIES TO BE DONE 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. ROTOTILL AND REPLANT SWALE IF DRAW DOWN TIME IS MORE THAN 48 HOURS. INSPECT AND CORRECT CHECK DAMS WHEN SIGNS OF ALTERED WATER FLOW (CHANNELIZATION, OBSTRUCTIONS, EROSION, ETC) ARE IDENTIFIED.
- WATER DURING DRY PERIODS, FERTILIZE, AND APPLY PESTICIDES ONLY WHEN ABSOLUTELY NECESSARY. WINTER CONDITIONS ALSO NECESSITATE ADDITIONAL MAINTENANCE CONCERNS.
- INSPECT SWALE IMMEDIATELY AFTER THE SPRING MELT, REMOVE RESIDUAL (E.G. SAND) AND REPLACE DAMAGED VEGETATION WITHOUT DISTURBING REMAINING
- IF ROADSIDE OR PARKING LOT RUNOFF IS DIRECTED TO THE SWALE, MULCHING AND OR SOIL AERATION MANIPULATION MAY BE REQUIRED IN THE SPRING TO RESTORE SOIL STRUCTURE AND MOISTURE CAPACITY AND TO REDUCE THE IMPACTS OF DEICING AGENTS. USE NONTOXIC, ORGANIC DEICING AGENTS, APPLIED EITHER AS BLENDED, MAGNESIUM CHLORIDE-BASED LIQUID PRODUCTS OR AS PRETREATED SALT.

IF AT SOME FUTURE DATE, THE SWALES FAIL AS A RESULT OF EROSION OR INABILITY TO INFILTRATE STORMWATER, THE PROPERTY OWNER(S) IS RESPONSIBLE TO REPLACE / REPAIR EITHER THE INEFFECTIVE AREA OR THE ENTIRE SWALE BMP. THE FOLLOWING SEQUENCE SHALL BE USED FOR REPAIR / REPLACEMENT OF THE

- 1. INSTALL TEMPORARY SEDIMENT CONTROL BMPS INCLUDING CONSTRUCTION ENTRANCE(S) AND 18-INCH SILT FENCE. THE CONSTRUCTION ENTRANCE SHALL BE AT
- THE ACCESS POINT FROM A PUBLIC ROAD OR DRIVEWAY. SILT FENCE SHALL BE DOWN SLOPE OF DISTURBED AREAS. 2. REMOVE DEAD OR DYING VEGETATION, EXCAVATE THE SWALE TO THE PROPOSED DEPTH AND HAUL ALL WASTE MATERIAL TO AN APPROVED CONSTRUCTION
- WASTE MATERIAL SITE.
- 3. SCARIFY EXISTING SOIL SURFACES. DO NOT COMPACT IN-SITU SOILS. 4. BACKFILL THE SWALE AS SHOWN ON THE PLANS AND SPECIFICATIONS, OVERFILLING IS RECOMMENDED TO ACCOUNT FOR SETTLEMENT. LIGHT HAND TAMPING IS
- ACCEPTABLE, IF NECESSARY 5. REESTABLISH DESIGN ELEVATIONS WITH MISCELLANEOUS GRADING. LEAVE SPACE FOR UPPER LAYER OF TOPSOIL AS SPECIFIED ON THE PLANS.
- 6. APPLY GEOTEXTILE TO DISTURBED AREAS AND VEGETATE AS A TURF LAWN.
- 7. AFTER THE SWALE(S) STABILIZE (70% VEGETATION COVER), REMOVE TEMPORARY EROSION CONTROL BMPS AND RE VEGETATE ANY REMAINING DISTURBED AREAS.

### BMP #8 - PERENNIAL GROUND COVER

PERENNIAL GROUND COVER SHALL BE PROPERLY MAINTAINED BY THE PROPERTY OWNER(S) TO ENSURE PROPER EFFECTIVENESS. IN PARTICULAR, IT IS CRITICAL THAT SHEET FLOW CONDITIONS AND INFILTRATION ARE SUSTAINED THROUGHOUT THE PROJECT LIFE. EFFECTIVENESS OF PERENNIAL GROUND COVER CAN DETERIORATE DUE TO LACK OF MAINTENANCE AND POOR VEGETATIVE COVER.

PERENNIAL GROUND COVER THAT RECEIVES OR TRAPS SEDIMENT AND DEBRIS SHOULD BE INSPECTED FOR CLOGGING, DENSITY OF VEGETATION, DAMAGE BY FOOT OR VEHICULAR TRAFFIC, EXCESSIVE ACCUMULATIONS, AND CHANNELIZATION, INSPECTION SHOULD BE MADE ON A QUARTERLY BASIS FOR THE FIRST TWO YEARS FOLLOWING INSTALLATION, AND THEN ON A BIANNUAL BASIS THEREAFTER. INSPECTIONS SHOULD ALSO BE MADE AFTER EVERY STORM EVENT GREATER THAN 1-INCH DURING THE ESTABLISHMENT PERIOD

SEDIMENT AND DEBRIS SHOULD BE ROUTINELY REMOVED (BUT NEVER LESS THAN BIANNUALLY) OR UPON OBSERVATION, WHEN BUILDUP EXCEEDS 2-INCHES IN DEPTH IN PERENNIAL GROUND COVER AREAS. RILLS AND GULLIES OBSERVED ALONG THE STRIP MAY BE FILLED WITH TOPSOIL, STABILIZED WITH EROSION CONTROL MATTING, AND EITHER SEEDED OR SODDED AS DESIRED. FOR CHANNELS LESS THAN 12-INCHES WIDE, FILLING WITH CRUSHED GRAVEL, WHICH ALLOWS GRASS TO CREEP IN OVER TIME, IS ACCEPTABLE. FOR WIDER CHANNELS, I.E. GREATER THAN 12-INCHES, REGRADING AND RESEEDING MAY BE NECESSARY.

SMALL BARE AREAS MAY ONLY REQUIRE OVER SEEDING, REGRADING MAY ALSO BE REQUIRED WHEN POOLS OF STANDING WATER ARE OBSERVED.

SEDIMENT SHOULD BE REMOVED WHEN PERENNIAL GROUNDCOVER AREAS ARE THOROUGHLY DRY. TRASH AND DEBRIS REMOVED FROM THE SITE SHOULD BE DEPOSITED ONLY AT THE SUITABLE DISPOSAL/RECYCLING SITES AND MUST COMPLY WITH APPLICABLE LOCATE, STATE AND FEDERAL WASTE REGULATIONS. IF PERENNIAL LAWN AREAS WILL PROVIDE SEDIMENT CONTROL, THEY SHOULD BE REGARDED AND RESEEDED IMMEDIATELY AFTER CONSTRUCTION HAS CONCLUDED.

MAINTAINING A VIGOROUS PERENNIAL GROUND COVER IS CRITICAL FOR MAXIMIZING POLLUTANT REMOVAL EFFICIENCY AND EROSION PREVENTION. GRASS COVER SHOULD BE MOWED, WITH LOW GROUND PRESSURE EQUIPMENT, AS NEEDED TO MAINTAIN A HEIGHT OF 4-6 INCHES. MOWING SHOULD BE DONE ONLY WHEN THE SOIL IS DRY, IN ORDER TO PREVENT TRACKING DAMAGE TO VEGETATION, SOIL COMPACTION AND FLOW CONCENTRATIONS. GRASSES SHOULD BE ALLOWED TO GROW AS HIGH AS POSSIBLE, BUT MOWED FREQUENTLY ENOUGH TO AVOID TROUBLESOME INSECTS OR NOXIOUS WEEDS.

IF VEGETATIVE COVER IS NOT FULLY ESTABLISHED WITH THE DESIGNATED TIME, IT SHOULD BE REPLACED WITH AN ALTERNATIVE SPECIES. UNWANTED OR INVASIVE GROWTH SHOULD BE REMOVED ON AN ANNUAL BASIS. VEGETATIVE COVER SHOULD BE SUSTAINED AT 85% AND REESTABLISHED IF GREATER DAMAGE IS OBSERVED. IF PERENNIAL GROUNDCOVER EXHIBITS SIGNS OF POOR DRAINAGE AND/OR VEGETATIVE COVER, PERIODIC SOIL AERATION AND LIMING MAY BE NECESSARY.

### GROUNDCOVER REVEGETATION PROCEDURES:

- 1. REMOVE EXISTING DEAD OR DYING VEGETATION.
- 2. SCARIFY THE SOIL SURFACE TO A DEPTH OF ONE-HALF INCH. 3. APPLY SEED AND APPLY STRAW OR HAY TO HOLD IN PLACE.
- 4. WATER AS NECESSARY.

BMP #9 - AMENDED SOILS

SPILLS.

THE PROPERTY OWNER(S) SHALL PROVIDE BI-ANNUAL INSPECTION AND MAINTENANCE. MAINTENANCE WILL IN ACCORDANCE WITH BMP #8, PERENNIAL GROUND COVER. IF SOIL RESTORATION FAILS DUE TO COMPACTION, THE PROPERTY OWNER MAY NEED TO INSTALL ADDITIONAL ON-LOT AMENDED SOILS.

### BMP #10 - STORMWATER MANAGEMENT INFILTRATION BED

INSPECTION AND MAINTENANCE BY THE PROPERTY OWNER(S) IS NECESSARY TO ENSURE PROPER FUNCTIONALITY OF THIS BMP AND SHOULD TAKE PLACE ON A QUARTERLY BASIS. MAINTENANCE WILL BE AS FOLLOWS:

CATCH BASINS / INLETS (UP GRADIENT OF INFILTRATION BEDS) SHOULD BE INSPECTED BY THE PROPERTY OWNER AND CLEANED AT LEAST TWO TIMES PER YEAR AND AFTER RUNOFF EVENTS. CLEANING INCLUDES USING A VACUUM TO COLLECT ALL PARTICIAL MATERIAL THAT SETTLED AT THE BOTTOM OF INLETS/CATCH BASINS.

VEGETATION ALONG THE SURFACE OF THE SUBSURFACE INFILTRATION BED SHOULD BE MAINTAINED IN GOOD CONDITION, AND ANY BARE SPOTS VEGETATED AS SOON AS POSSIBLE. REFER TO BMP #8 FOR MORE INFORMATION.

INSPECT THE SUBSURFACE INFILTRATION BED AFTER RUNOFF EVENTS AND MAKE SURE THAT RUNOFF DRAINS DOWN WITHIN 72 HOURS. MOSQUITO'S SHOULD NOT BE A PROBLEM IF THE WATER DRAINS IN 72 HOURS. MOSQUITOES REQUIRE A CONSIDERABLY LONG BREEDING PERIOD WITH RELATIVELY STATIC WATER LEVELS. ALSO, INSPECT FOR ACCUMULATION OF SEDIMENT, DAMAGE TO OUTLET CONTROL STRUCTURES, EROSION CONTROL MEASURES, SIGNS OF WATER CONTAMINATION /

IF AT SOME FUTURE DATE, THE SUBSURFACE INFILTRATION TRENCH FAILS TO EMPTY WITHIN 72 HOURS, THE PROPERTY OWNER(S) IS RESPONSIBLE TO REPLACE /

- REPAIR EITHER THE INEFFECTIVE AREA OR THE ENTIRE BMP. THE FOLLOWING SEQUENCE SHALL BE USED FOR REPAIR / REPLACEMENT OF INFILTRATION BMPS: 1. INSTALL TEMPORARY SEDIMENT CONTROL BMPS INCLUDING CONSTRUCTION ENTRANCE(S) AND 18-INCH SILT FENCE. THE CONSTRUCTION ENTRANCE SHALL BE AT THE ACCESS POINT FROM THE DRIVEWAY OR PARKING AREA. SILT FENCE LOCATION SHALL BE DOWN SLOPE OF DISTURBED AREAS.
- 2. REMOVE THE SUBSURFACE INFILTRATION BED TO PROPOSED DEPTH AND HAUL ALL WASTE MATERIAL TO AN APPROVED CONSTRUCTION WASTE DISPOSAL SITE. 3. RETEST THE SOIL TO CONFIRM HYDRAULIC CAPACITY. 4. CONFIRM THROUGH INFILTRATION TESTING THAT THE SUBGRADE MATERIAL HAS ADEQUATE POROSITY AND INFILTRATIVE CAPACITY. IF TESTING INDICATES THAT
- THE SUBGRADE INFILTRATIVE CAPACITY IS DIMINISHED THE PROPERTY OWNER(S) WILL USE AMENDED SOILS TO REESTABLISH INFILTRATIVE CAPACITY. A SECOND SET OF SOIL TEST WILL BE NECESSARY TO RECONFIRM THAT INFILTRATION HAS BEEN ESTABLISH AT AN ACCEPTABLE RATE. 5. SCARIFY EXISTING SOIL SURFACES. DO NOT COMPACT IN-SITU SOILS.
- 6. BACKFILL WITH SAND, AASHTO #3 STONE AND CLASS I GEOTEXTILE AS SHOWN ON PLANS AND SPECIFICATIONS. LIGHT HAND TAMPING IS ACCEPTABLE, IF
- 7. REESTABLISH DESIGN ELEVATION WITH MISCELLANEOUS GRADING.
- 8. PLANT DISTURBED AREAS ACCORDING TO THE PLANTING PLAN, 9. AFTER DISTURBED AREAS STABILIZES (70% VEGETATION COVER), REMOVE TEMPORARY EROSION CONTROL BMPS AND VEGETATE REMAINING DISTURBED AREAS.

STORMWATER PIPING SYSTEM SHOULD BE INSPECTED BIANNUALLY AND THE FOLLOWING MAINTENANCE PROVIDED: THE PROPERTY OWNER(S) IS RESPONSIBLE FOR INSPECTION AND MAINTENANCE. BIANNUAL INSPECTION SHALL BE IN THE SPRING AND FALL AND THE APPROPRIATE MAINTENANCE PROVIDED. MAINTENANCE INCLUDES REMOVAL OF DEBRIS, STICKS, LEAVES AND INCLUDING SEDIMENT, IF NECESSARY.

### <u>BMP #11 — RAIN GARDEN MAINTENANCE NOTES</u>

BY THE PROPERTY OWNER(S), RAIN GARDENS, CATCH BASINS, DRAINS, INLETS AND YARD AREAS (UPGRADIENT OF THE RAIN GARDEN) SHOULD BE INSPECTED AND CLEANED AT LEAST TWO TIMES PER YEAR AND AFTER RUNOFF EVENTS.

VEGETATION ALONG THE SURFACE OF THE RAIN GARDEN SHOULD BE MAINTAINED IN GOOD CONDITION, AND ANY BARE SPOTS VEGETATED AS SOON AS POSSIBLE.

VEHICLES SHOULD NOT BE PARKED OR DRIVEN ON OR WITHIN THE RAIN GARDEN, AND CARE SHOULD BE TAKEN TO AVOID EXCESSIVE COMPACTION BY MOWERS. INSPECT THE RAIN GARDEN AFTER RUNOFF EVENTS AND MAKE SURE THAT RUNOFF DRAINS DOWN WITHIN 72 HOURS. MOSQUITO'S SHOULD NOT BE A PROBLEM IF THE

WATER DRAINS IN 72 HOURS. MOSQUITOES REQUIRE A CONSIDERABLY LONG BREEDING PERIOD WITH RELATIVELY STATIC WATER LEVELS. 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.

REMOVE ACCUMULATED SEDIMENT FROM THE RAIN GARDEN AS REQUIRED. RESTORE ORIGINAL CROSS SECTION AND INFILTRATION RATE. PROPERLY DISPOSE OF

ALL RAIN GARDEN STRUCTURES EXPECTED TO RECEIVE AND/OR TRAP DEBRIS AND SEDIMENT SHOULD BE INSPECTED FOR CLOGGING AND EXCESSIVE DEBRIS AND SEDIMENT ACCUMULATION AT LEAST FOUR TIMES PER YEAR, AS WELL AS AFTER EVERY STORM GREATER THAN 1-INCH. STRUCTURES INCLUDE RAIN GARDEN BOTTOMS, TRASH RACKS, OUTLET STRUCTURES, RIPRAP OR GABION STRUCTURES AND INLETS.

SEDIMENT REMOVAL SHOULD BE CONDUCTED WHEN THE BASIN IS COMPLETELY DRY. SEDIMENT SHOULD BE DISPOSED OF PROPERLY AND ONCE SEDIMENT IS REMOVED, DISTURBED AREAS NEED TO BE IMMEDIATELY STABILIZED AND REVEGETATED.

MOWING AND/OR TRIMMING OF VEGETATION SHOULD BE PERFORMED AS NECESSARY TO SUSTAIN THE SYSTEM, BUT ALL DETRITUS SHOULD BE REMOVED FROM THE

VEGETATED AREAS SHOULD BE INSPECTED ANNUALLY FOR EROSION.

VEGETATED AREAS SHOULD BE INSPECTED ANNUALLY FOR UNWANTED GROWTH OF EXOTIC / INVASIVE SPECIES. VEGETATIVE COVER SHOULD BE MAINTAINED AT A MINIMUM OF 95 PERCENT. IF VEGETATIVE COVER HAS BEEN REDUCED BY 10%, VEGETATION SHOULD BE REESTABLISHED. IF AT SOME FUTURE DATE, THE RAIN GARDEN FAILS TO EMPTY WITHIN 72 HOURS, THE PROPERTY OWNER IS RESPONSIBLE TO REPLACE / REPAIR

EITHER THE INEFFECTIVE AREA OR THE ENTIRE BMP. THE FOLLOWING SEQUENCE SHALL BE USED FOR REPAIR / REPLACEMENT OF INFILTRATION BMPS:

- 1. INSTALL TEMPORARY SEDIMENT CONTROL BMPS INCLUDING CONSTRUCTION ENTRANCE(S) AND 18-INCH SILT FENCE. THE CONSTRUCTION ENTRANCE SHALL BE AT THE ACCESS POINT FROM A DRIVEWAY OR MACADAM ROAD. SILT FENCE LOCATION SHALL BE DOWN SLOPE OF DISTURBED AREAS. 2. REMOVE DEAD OR DYING VEGETATION, EXCAVATE THE RAIN GARDEN(S) TO PROPOSED DEPTH AND HAUL ALL WASTE MATERIAL TO AN APPROVED CONSTRUCTION WASTE DISPOSAL SITE.
- 3. SCARIFY EXISTING SOIL SURFACES. DO NOT COMPACT IN-SITU SOILS. 4. BACKFILL WITH AMENDED SOIL (ENGINEERED FILTER MEDIA) AS SHOWN ON PLANS AND SPECIFICATIONS. OVERFILLING IS RECOMMENDED TO ACCOUNT FOR SETTLEMENT. LIGHT HAND TAMPING IS ACCEPTABLE, IF NECESSARY. CONFIRM THROUGH INFILTRATION TESTING THAT THE SUBGRADE MATERIAL HAS ADEQUATE POROSITY AND INFILTRATIVE CAPACITY. IF TESTING INDICATES THAT THE SUBGRADE INFILTRATIVE CAPACITY IS DIMINISHED THE PROPERTY OWNER(S) WILL USE AMENDED SOILS TO REESTABLISH INFILTRATIVE CAPACITY. A SECOND SET OF SOIL TEST WILL BE NECESSARY TO RECONFIRM THAT INFILTRATION HAS BEEN
- 5. REESTABLISH DESIGN ELEVATION WITH MISCELLANEOUS GRADING. LEAVE SPACE FOR UPPER LAYER OF COMPOST, MULCH OR TOPSOIL AS SPECIFIED ON PLANS. 6. PRESOAK THE PLANTING SOIL PRIOR TO PLANTING VEGETATION TO AID IN SETTLEMENT.
- 7. PLANT VEGETATION ACCORDING TO THE PLANTING PLAN AND APPLY MULCH,
- 8. AFTER THE RAIN GARDENS STABILIZES (70% VEGETATION COVER), REMOVE TEMPORARY EROSION CONTROL BMPS AND VEGETATE REMAINING DISTURBED AREAS.

### OUTLET STRUCTURE REPLACEMENT IF NECESSARY, REPLACE THE OUTLET STRUCTURE WITH A PRECAST CONCRETE STRUCTURE.

- 1. INSTALL CONSTRUCTION ENTRANCE AND COMPOST FILTER SOCK OR 18INCH SILT FENCE.
- 2. USE A BACKHOE TO LIFT THE EXISTING STRUCTURE FROM ITS FOUNDATION. 3. INSTALL NEW STRUCTURE PER DETAIL ON SHEET P-6. USE NON-SHRINK GROUT FOR ALL CONNECTIONS.
- 4. REPLACE / REPAIR DISTURBED AREAS AS SPECIFIED IN BMP #8. 5. REMOVE EROSION CONTROL BMPS. VEGETATE ANY REMAINING DISTURBED AREAS.

### BMP #12 - ROOF DRAIN DISCONNECTS

ESTABLISH AT AN ACCEPTABLE RATE.

INSPECT AFTER EACH RAINFALL EVENT, ENSURE THAT PIPE BLOCKAGES DON'T EXIST, THAT WATER IS NOT PONDING ADJACENT TO ANY STRUCTURES AND THE FLOW PATH IS AT A MINIMUM 90% PERENNIAL GROUND COVER.

- INSPECTIONS AND MAINTENANCE SHALL BE PERFORMED 4 TIMES PER YEAR.

### ENVIRONMENTAL DUE DILIGENCE DEFINITION

TAKEN FROM "INSTRUCTIONS FOR A GENERAL (PAG-2) OR INDIVIDUAL NPDES PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES", PREPARED BY THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, DATED MAY 2007

THE APPLICANT MUST PERFORM ENVIRONMENTAL DUE DILIGENCE 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 OUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS. ANALYTICAL TESTING IS NOT A REQUIRED PART OF DUE DILIGENCE UNLESS VISUAL INSPECTION AND/OR REVIEW OF THE PAST LAND USE OF THE PROPERTY INDICATES THAT THE FILL MAY HAVE BEEN SUBJECTED TO A SPILL OR RELEASE OF REGULATED SUBSTANCE. 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 AS CLEAN FILL. TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH APPENDIX A OF THE DEPARTMENT'S POLICY 'MANAGEMENT OF

FILL MATERIAL THAT DOES NOT QUALIFY AS CLEAN FILL IS REGULATED FILL. REGULATED FILL IS WASTE AND MUST BE MANAGED IN ACCORDANCE WITH THE DEPARTMENT'S MUNICIPAL OR RESIDUAL WASTE REGULATIONS BASED ON 25 PA. CODE CHAPTERS 287 RESIDUAL WASTE MANAGEMENT OR 271 MUNICIPAL WASTE MANAGEMENT, WHICHEVER IS APPLICABLE. THESE REGULATIONS ARE AVAILABLE ON-LINE AT <u>www.pacode.com</u>

### CLEAN FILL DEFINITION

TAKEN FROM "INSTRUCTIONS FOR A GENERAL (PAG-2) OR INDIVIDUAL NPDES PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES". PREPARED BY THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, DATED MAY 2007

"UNCONTAMINATED, NON-WATER SOLUBLE, NON-COMPOSTABLE 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.)"

CLEAN FILL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE: FILL MATERIALS AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE STILL QUALIFIES AS CLEAN FILL PROVIDED THE TESTING REVEALS. THAT THE FILL MATERIAL CONTAINS CONCENTRATIONS OF REGULATED SUBSTANCES THAT ARE BELOW THE RESIDENTIAL LIMITS IN TABLES FP-1A AND FP-1B FOUND IN THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL".

ANY PERSON PLACING CLEAN FILL THAT HAS BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE MUST USE FORM FP-001 TO CERTIFY THE ORIGIN OF THE FILL MATERIAL AND THE RESULTS OF THE ANALYTICAL TESTING TO QUALIFY THE MATERIAL AS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE OWNER OF THE PROPERTY RECEIVING THE FILL. A COPY OF FORM FP-001 CAN BE FOUND AT THE END OF THESE



0-15-07

LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND INSPECTION OF THE SITE COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE CUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA ONE CALL (DIAL 811) THREE DAYS PRIOR TO EXCAVATION.

REVISIONS DATE DESCRIPTION -17-17 NEW OWNER AND UPDATE LAYOUT 0-27-08 | TWP. ENGR. LTR. 10-1-08, TWP PLANNER LTR 10-1-08 & MCCD LTR. 9-25-08 TWP. ENGR. LTR. 3-26-08, TWP PLANNER LTR 3-31-08 TWP. SWR. ENGR. LTR. 4-1-08, FIRE CHIEF LTR. 4-2-08 &

TWP. ENGR. LTR. 8-30-07, TWP PLANNER LTR 9-4-07

TWP. SWR. ENGR. LTR. 8-31-07, TRAFFIC ENGR. LTR. 8-28-0

REFERENCE NUMBER: 20170472165 (DOTTERER ROAD)

(TO BE RECORDED) POST CONSTRUCTION STORMWATER MANAGEMENT PLAN (4 OF 5) "PACER'S GAIT"

PREPARED FOR

MIKELEN, LLC.

NEW HANOVER TOWNSHIP

MCCD LTR. 6-12-08

MONTGOMERY COUNTY, PENNSYLVANIA JULY 9, 2007

PROJECT No. 16086

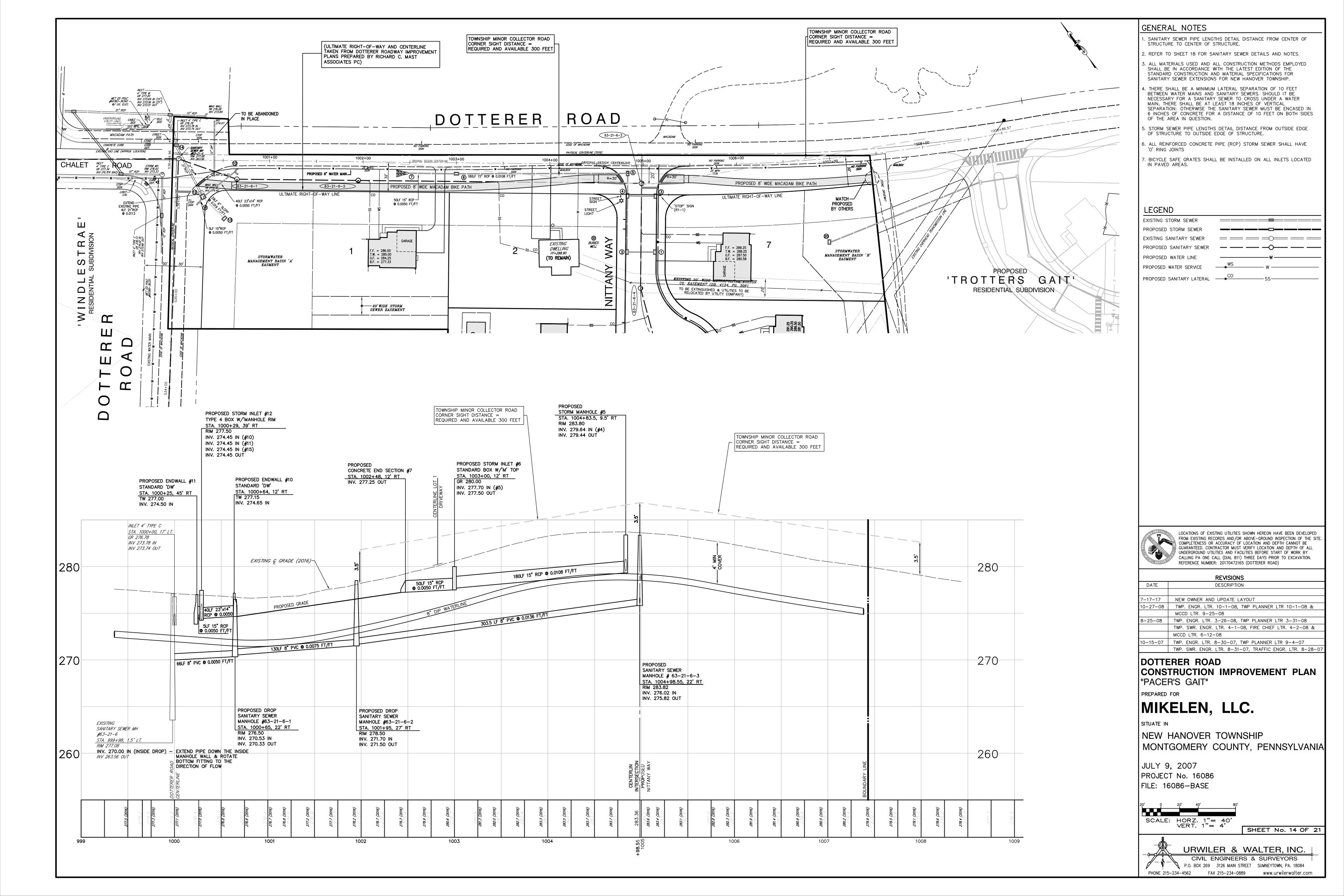
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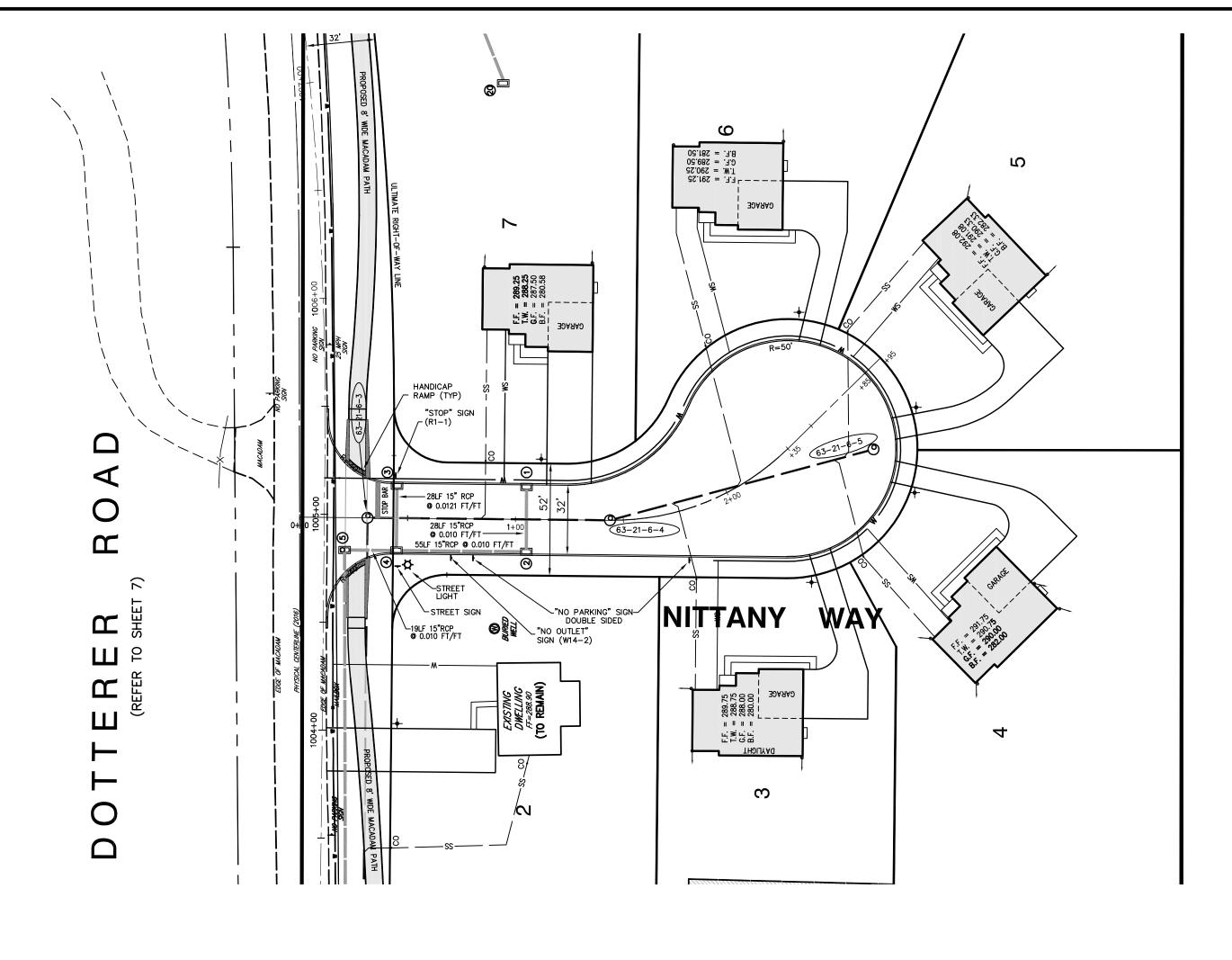


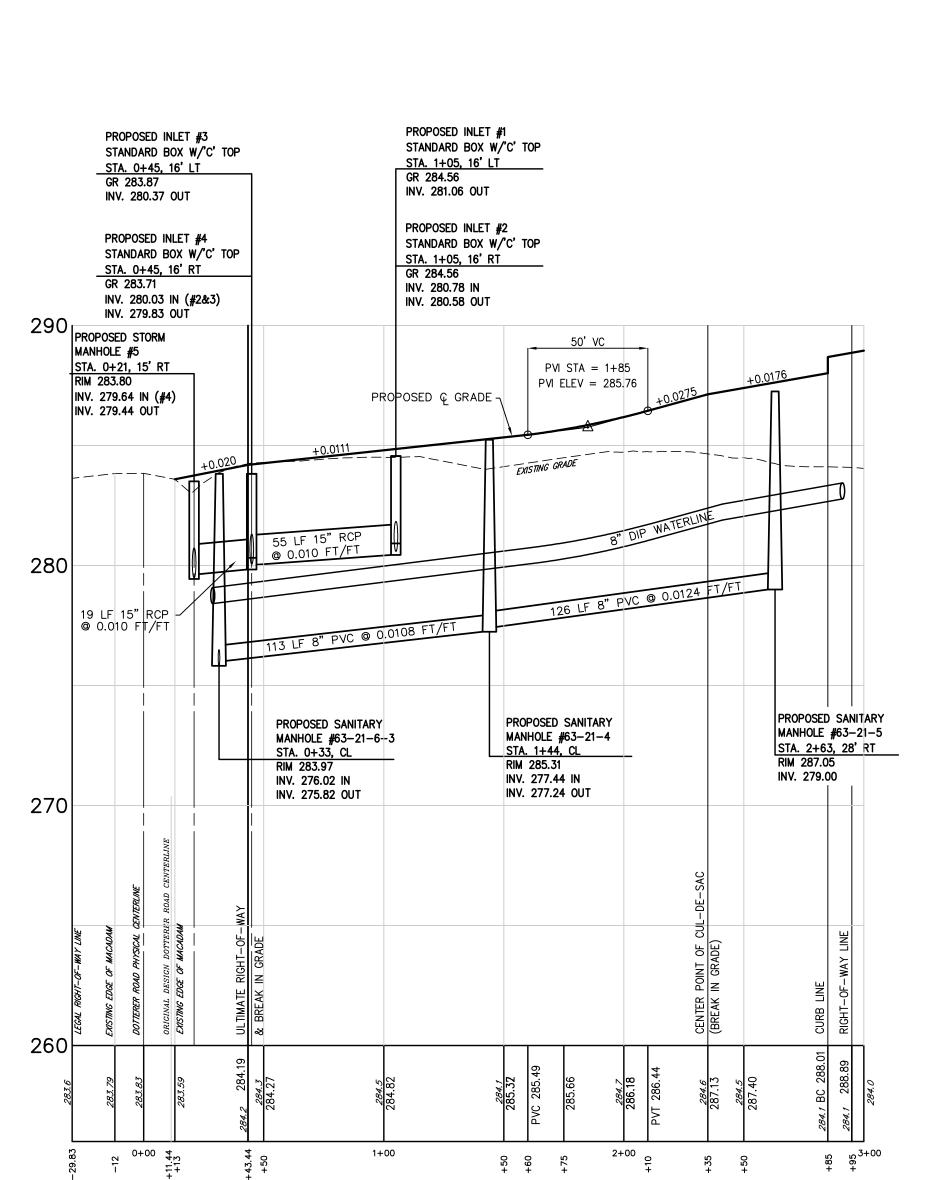
SHEET No. 13 OF 2

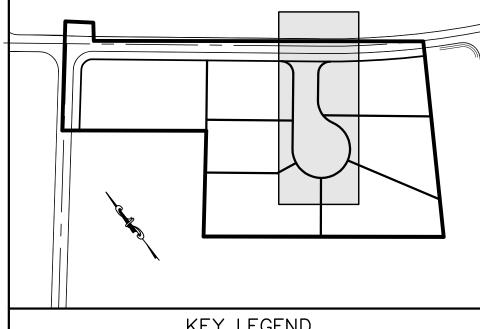
P - 5

URWILER & WALTER, INC. CIVIL ENGINEERS & SURVEYORS P.O. BOX 269 3126 MAIN STREET SUMNEYTOWN, PA. 18084 PHONE 215-234-4562 FAX 215-234-0889 www.urwilerwalter.com









KEY LEGEND SCALE: 1"=400'

### GENERAL NOTES

OF THE AREA IN QUESTION.

- SANITARY SEWER PIPE LENGTHS DETAIL DISTANCE FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
- 2. REFER TO SHEET 18 FOR SANITARY SEWER DETAILS AND NOTES. . ALL MATERIALS USED AND ALL CONSTRUCTION METHODS EMPLOYED SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE

STANDARD CONSTRUCTION AND MATERIAL SPECIFICATIONS FOR SANITARY SEWER EXTENSIONS FOR NEW HANOVER TOWNSHIP.

- . THERE SHALL BE A MINIMUM LATERAL SEPARATION OF 10 FEET BETWEEN WATER MAINS AND SANITARY SEWERS. SHOULD IT BE NECESSARY FOR A SANITARY SEWER TO CROSS UNDER A WATER MAIN, THERE SHALL BE AT LEAST 18 INCHES OF VERTICAL SEPARATION: OTHERWISE THE SANITARY SEWER MUST BE ENCASED IN 6 INCHES OF CONCRETE FOR A DISTANCE OF 10 FEET ON BOTH SIDES
- 5. STORM SEWER PIPE LENGTHS DETAIL DISTANCE FROM OUTSIDE EDGE OF STRUCTURE TO OUTSIDE EDGE OF STRUCTURE.
- S. ALL REINFORCED CONCRETE PIPE (RCP) STORM SEWER SHALL HAVE
- . BICYCLE SAFE GRATES SHALL BE INSTALLED ON ALL INLETS LOCATED IN PAVED AREAS.

### LEGEND

PROPOSED SANITARY LATERAL

EXISTING STORM SEWER PROPOSED STORM SEWER EXISTING SANITARY SEWER \_ \_ \_ \_ \_ \_ \_ \_ \_ PROPOSED SANITARY SEWER PROPOSED WATER LINE PROPOSED WATER SERVICE



LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND INSPECTION OF THE SITE. FROM EXISTING RECORDS AND/OR ABOVE—GROUND INSPECTION OF THE COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA ONE CALL (DIAL 811) THREE DAYS PRIOR TO EXCAVATION.
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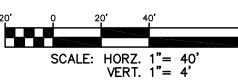
### PROPOSED NITTANY WAY CONSTRUCTION IMPROVEMENT PLAN "PACER'S GAIT"

PREPARED FOR

# MIKELEN, LLC.

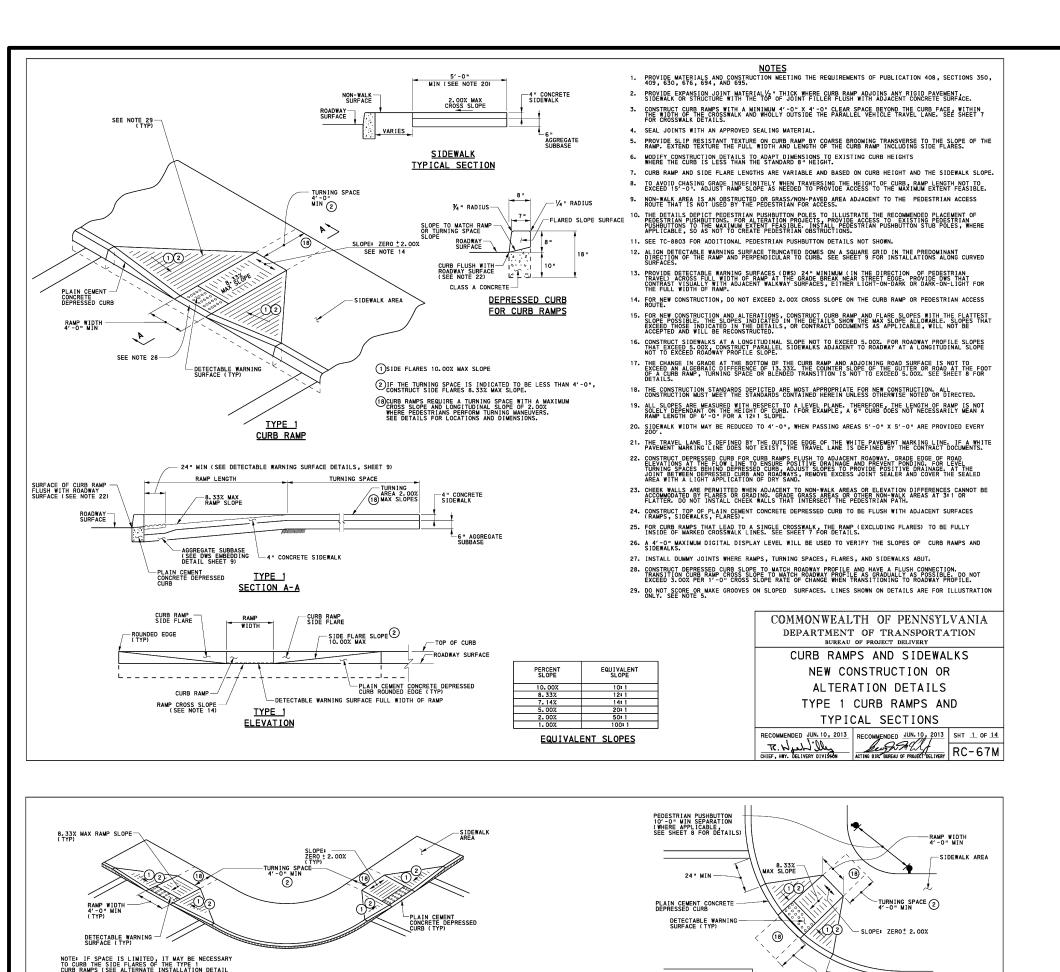
NEW HANOVER TOWNSHIP MONTGOMERY COUNTY, PENNSYLVANIA

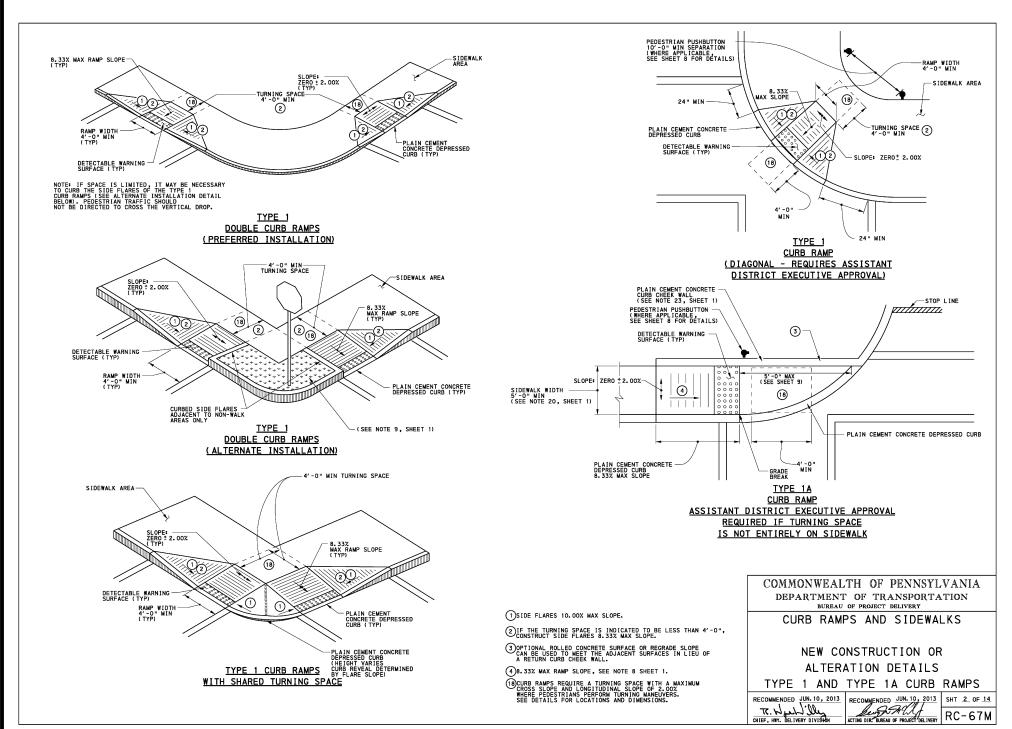
JULY 9, 2007 PROJECT No. 16086 FILE: 16086-BASE

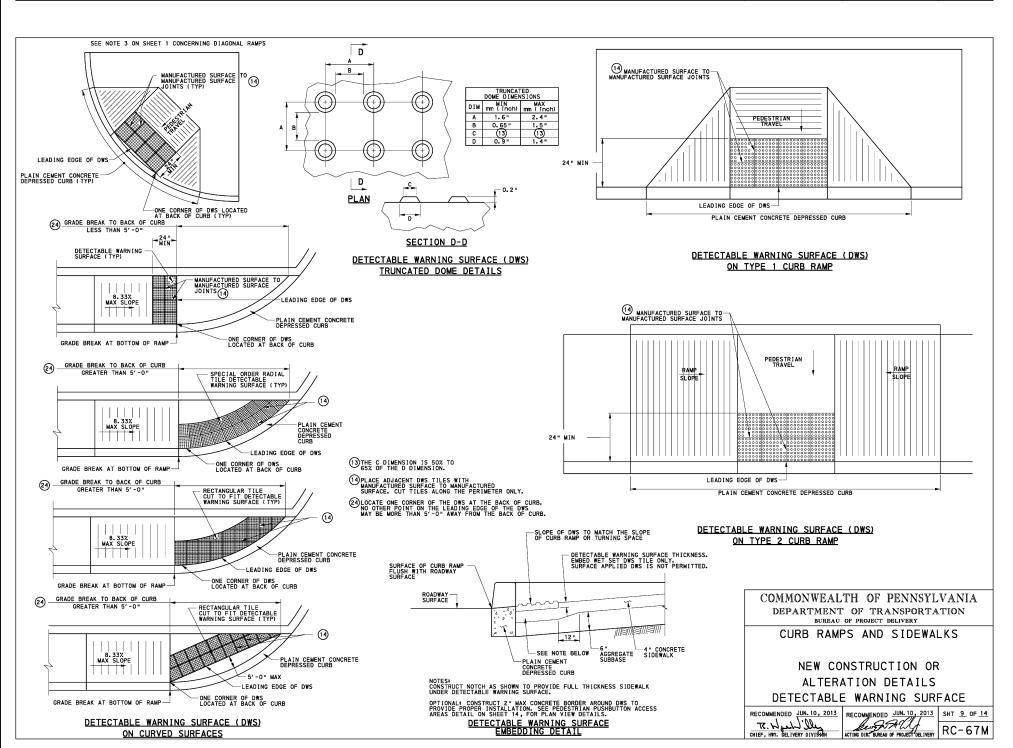


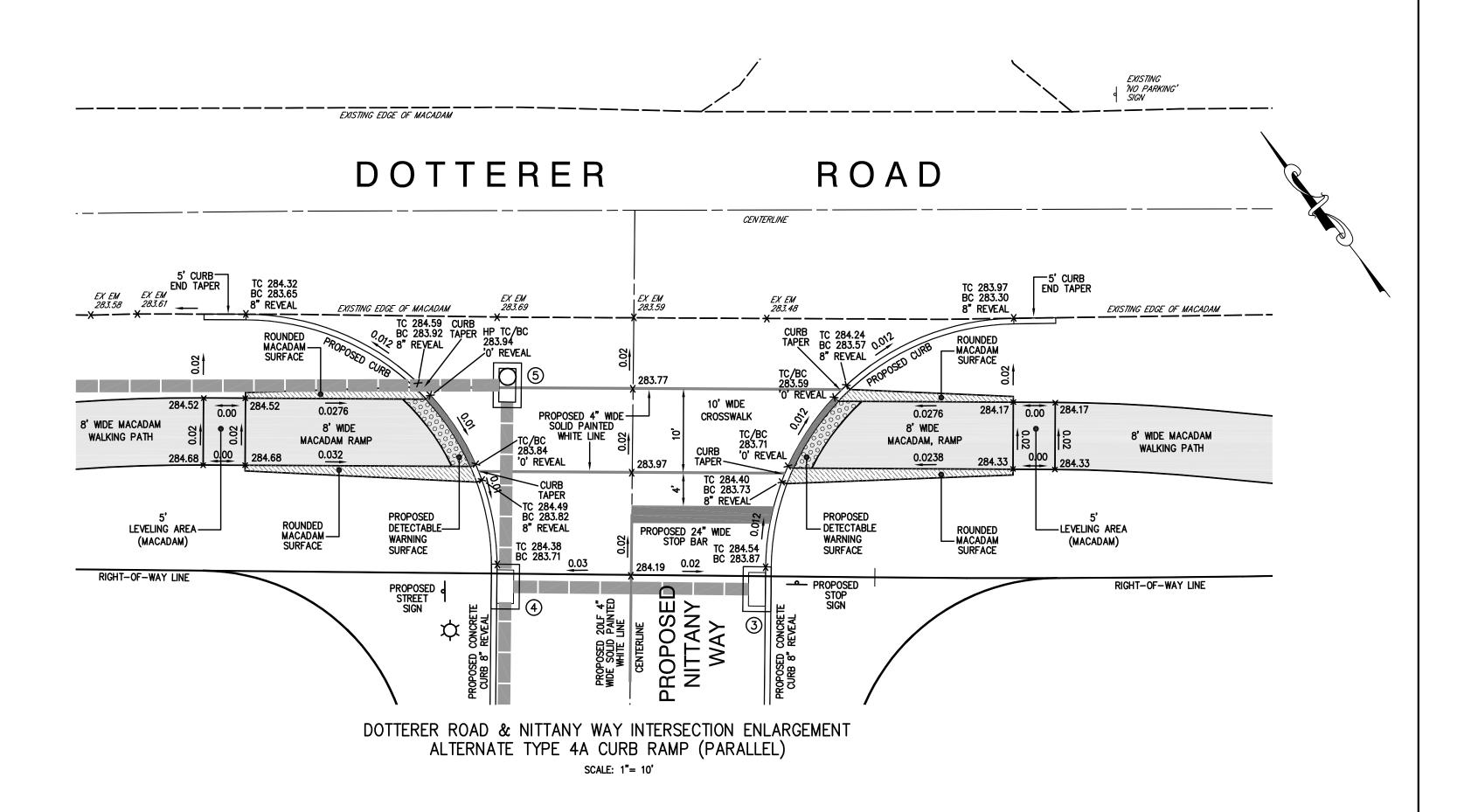
SHEET No. 15 OF 21

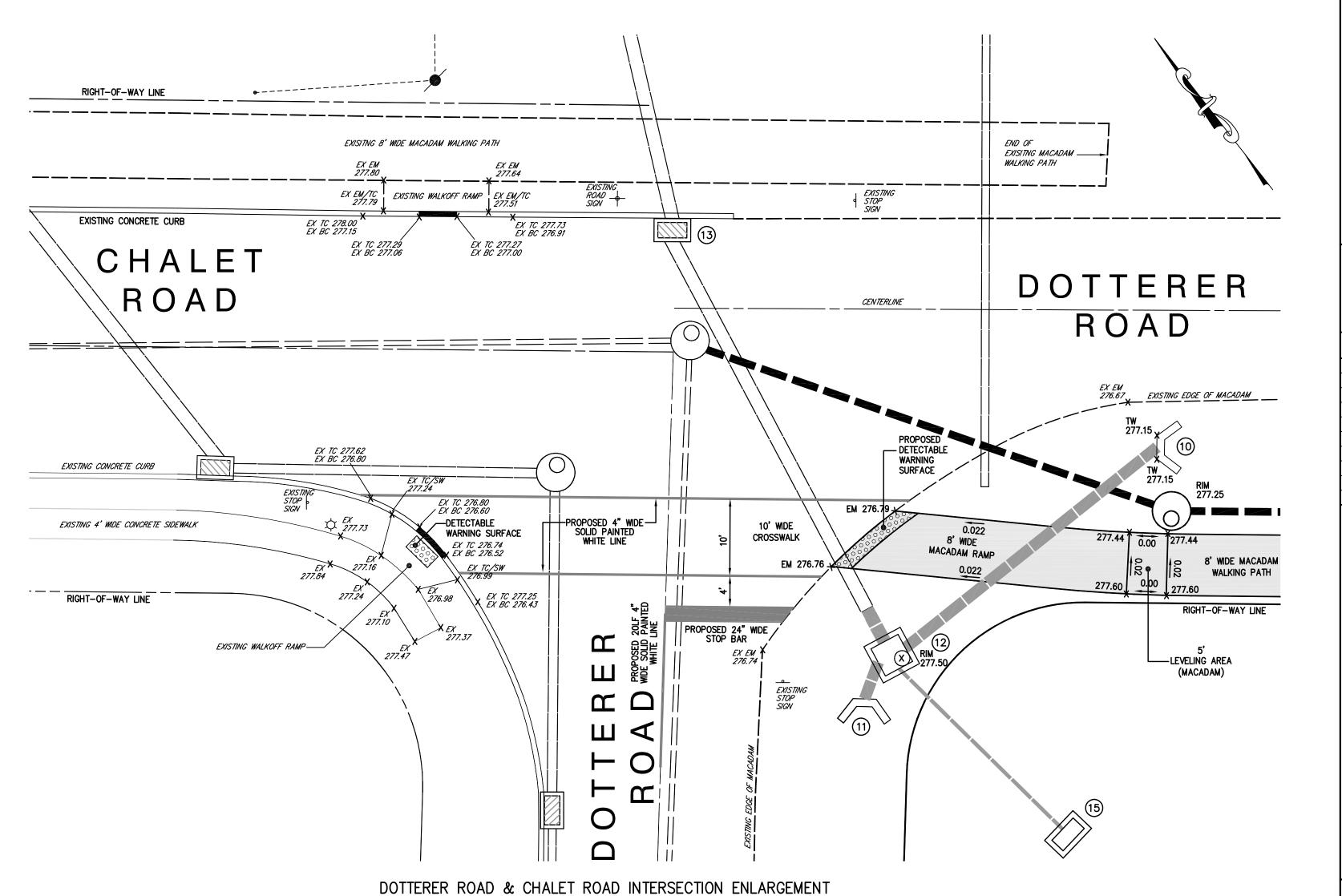












ALTERNATE TYPE 4A CURB RAMP (PARALLEL)

LEGEND

EXISTING SPOT ELEVATION
PROPOSED SPOT ELEVATION

× <sup>EX</sup> EM 283.59 **× 283.77** 

ONE CALL STORE OF

LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE—GROUND INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA ONE CALL (DIAL 811) THREE DAYS PRIOR TO EXCAVATION. REFERENCE NUMBER: 20170472165 (DOTTERER ROAD)

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CURB RAMP ENLARGEMENT PLAN
"PACER'S GAIT"

PREPARED FOR

# MIKELEN, LLC.

TUATE IN

NEW HANOVER TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA

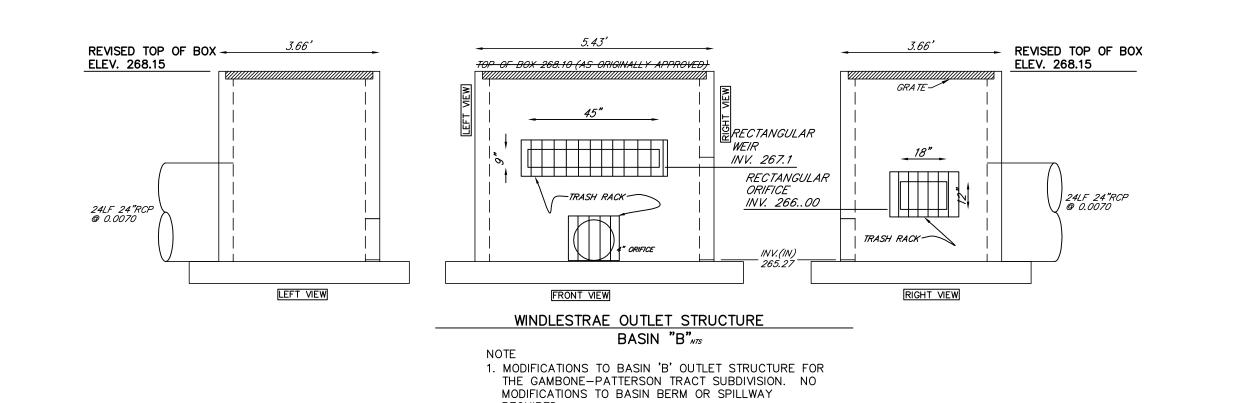
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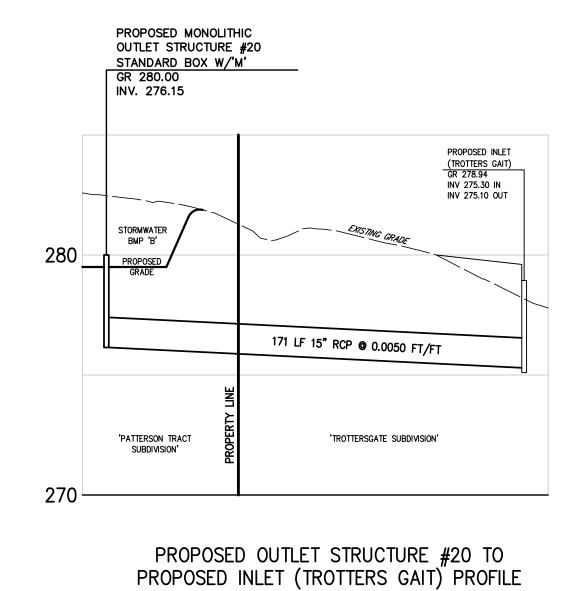
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URWILER & WALTER, INC.

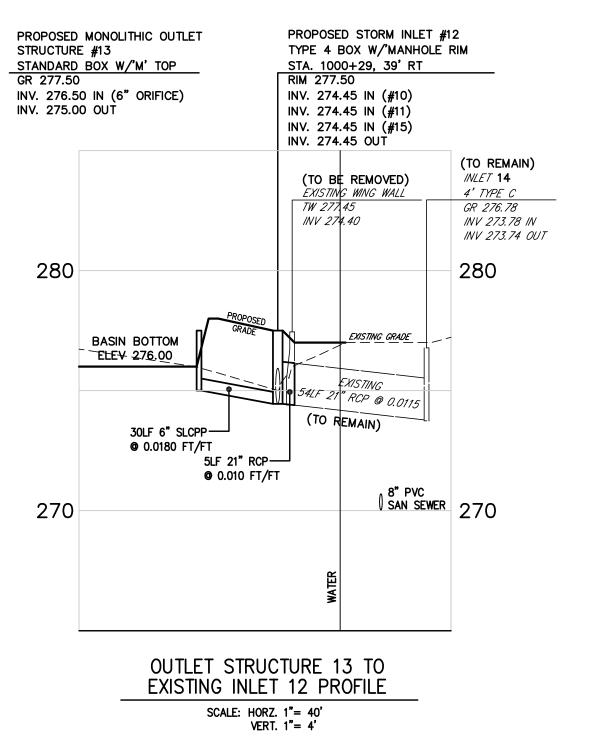
CIVIL ENGINEERS & SURVEYORS
P.O. BOX 269 3126 MAIN STREET SUMNEYTOWN, PA. 18084

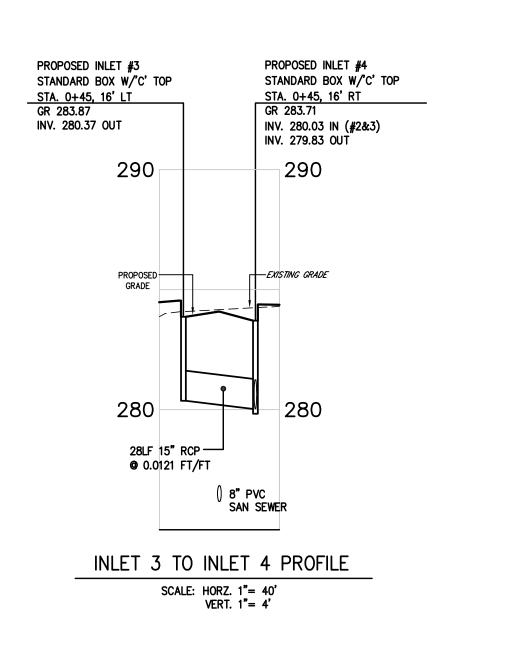


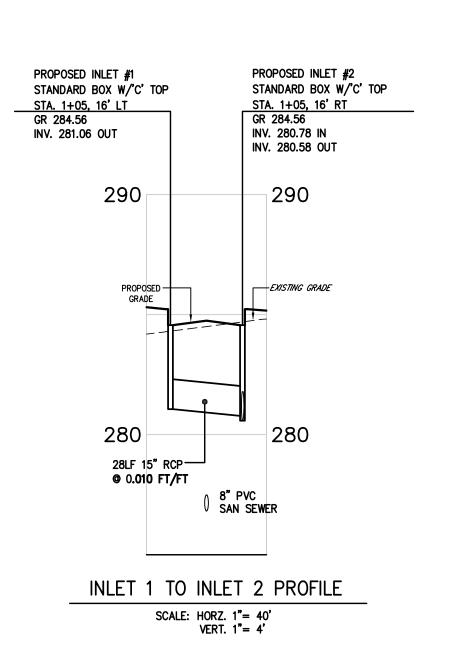
REQUIRED



SCALE: HORZ. 1"= 40' VERT. 1"= 4'





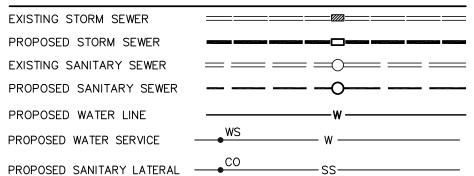


### GENERAL NOTES

1. PIPE LENGTHS DETAIL DISTANCE FROM OUTSIDE EDGE OF STRUCTURE FOR STORM SEWER.

- 2. THERE SHALL BE A MINIMUM LATERAL SEPARATION OF 10 FEET BETWEEN WATER MAINS AND SANITARY SEWERS. SHOULD IT BE NECESSARY FOR A SANITARY SEWER TO CROSS UNDER A WATER MAIN, THERE SHALL BE AT LEAST 18 INCHES OF VERTICAL SEPARATION: OTHERWISE THE SANITARY SEWER MUST BE ENCASED IN 6 INCHES OF CONCRETE FOR A DISTANCE OF 10 FEET ON BOTH SIDES OF THE AREA IN QUESTION.
- . BICYCLE SAFE GRATES SHALL BE INSTALLED ON ALL INLETS LOCATED IN PAVED AREAS.
- ALL MATERIALS USED AND ALL CONSTRUCTION METHODS EMPLOYED SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE STANDARD CONSTRUCTION AND MATERIAL SPECIFICATIONS FOR SANITARY SEWER EXTENSIONS FOR NEW HANOVER TOWNSHIP.
- 5. ALL REINFORCED CONCRETE PIPE (RCP) STORM SEWER SHALL HAVE 'O' RING JOINTS

### LEGEND





LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE—GROUND INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA ONE CALL (DIAL 811) THREE DAYS PRIOR TO EXCAVATION. REFERENCE NUMBER: 20170472165 (DOTTERER ROAD)

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# STORM SEWER PROFILE PLAN "PACER'S GAIT"

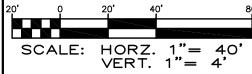
PREPARED FOR

# MIKELEN, LLC.

TUATE IN

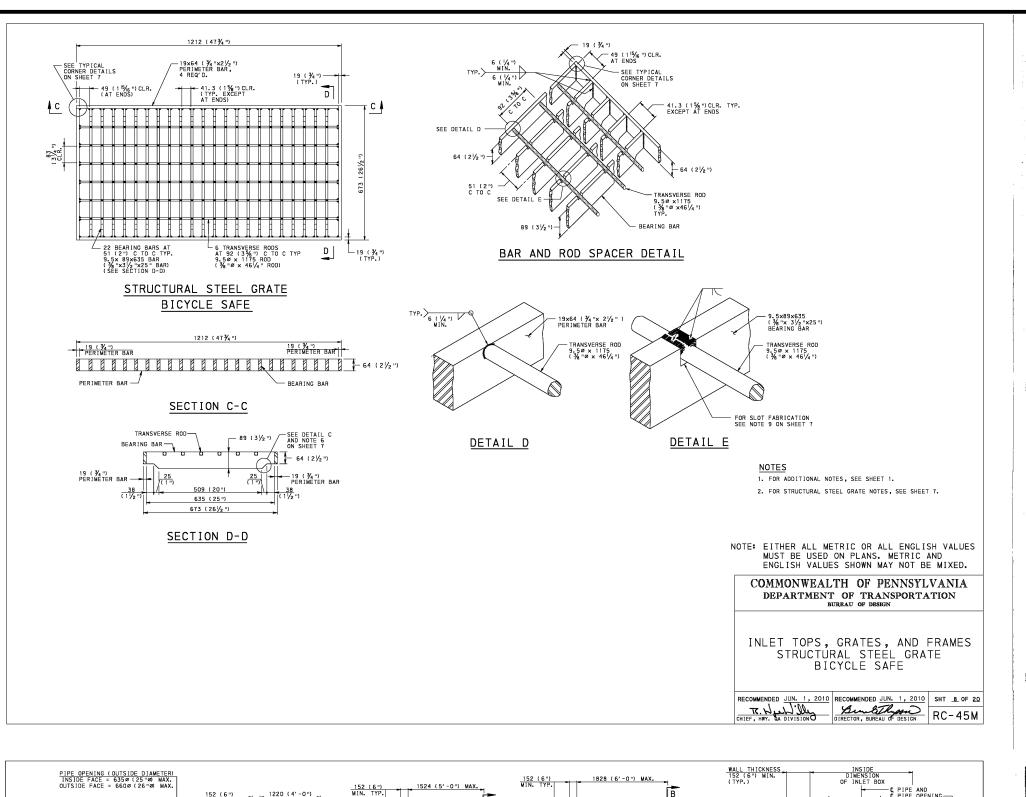
NEW HANOVER TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA

JULY 9, 2007 PROJECT No. 16086 FILE: 16086-BASE



SHEET No. 17 OF 21





152 (6") 1150 (3'-91/4")

STANDARD BOX

203 (8") 2134 (7'-0") MAX.

TYPE 7

PIPE OPENING
(OUTSIDE DIAMETER)
21340 (84"0) MAX.
OUTSIDE FACE (TYP.)

<u>TYPE 10</u>

INLET BOX

CONCRETE TOP UNIT - TYPE S

203 (8") 3048 (10'-0") MAX.

TYPE 4

203 (8") 2438 (8'-0") MAX. H

TYPE 8

PIPE OPENING (OUTSIDE DIAMETER)
2438Ø (96"Ø MAX.
OUTSIDE FACE (TYP.)

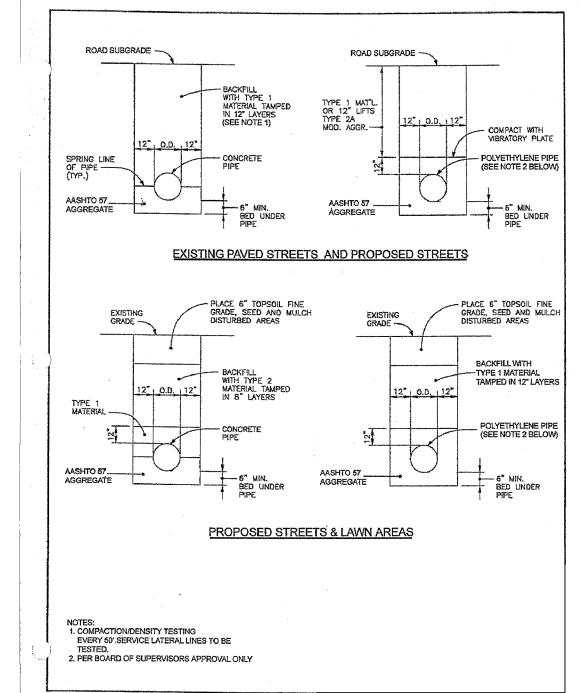
2820 (9'-3") MIN.

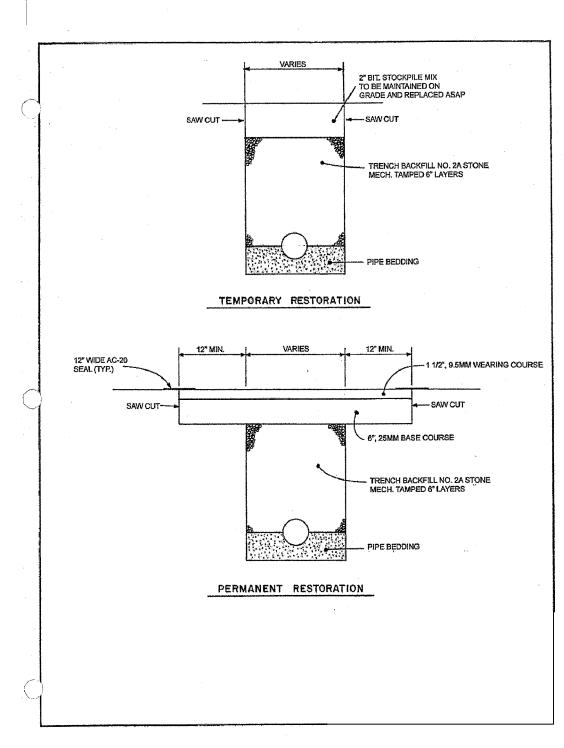
TYPE D-H

152 (6") 2516 (8'-3") IN. TYP.

TYPE 5

203 (8") MIN. TYP.





¢ PIPE AND ¢ PIPE OPENING—

2 13 ( ½ ") MAX. AT INSIDE FACE

25 (1") MAX. AT OUTSIDE FACE

PIPE OPENING (TAPERED OPENING PERMITTED WITH NO REDUCTION IN WALL THICKNESS)

PIPE OPENING — (AT OUTSIDE FACE)

OUTSIDE DIAMETER OF PIPE TO PIPE OPENING

NOTE: EITHER ALL METRIC OR ALL ENGLISH VALUES

PIPE OPENING

REDUCTION IN WALL THICKNESS DIMENSION

INSIDE FACE OF BOX WALL TO OUTSIDE DIAMETER OF

MUST BE USED ON PLANS. METRIC AND ENGLISH VALUES SHOWN MAY NOT BE MIXED.

COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

INLET BOXES

INLET ASSEMBLIES - 1

TYPE 6

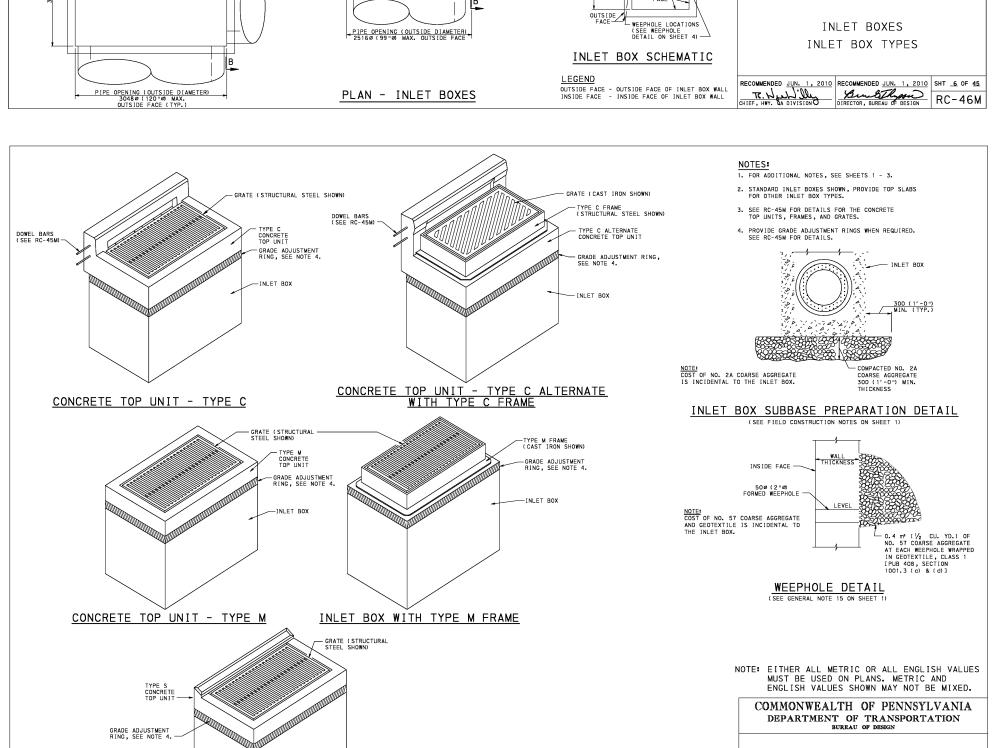
2744 (9'-0") MAX.

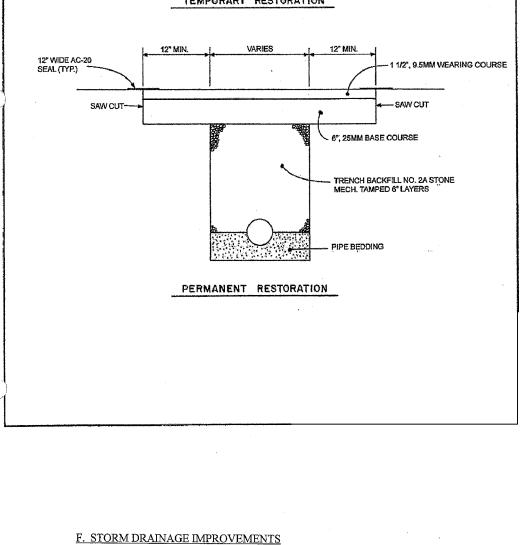
TYPE 9

PIPE OPENING (OUTSIDE DIAMETER)
2744@ (108 @) MAX.
OUTSIDE FACE (TYP.)

1. FOR ADDITIONAL NOTES, SEE SHEETS 1 - 3.

L<sub>I</sub> = INSIDE LENGTH (PARALLEL TO TRAFFIC)





1. MATERIALS

moisture content.

Publication 408, latest edition.

conforming to AASHTO M170, M198 and M207.

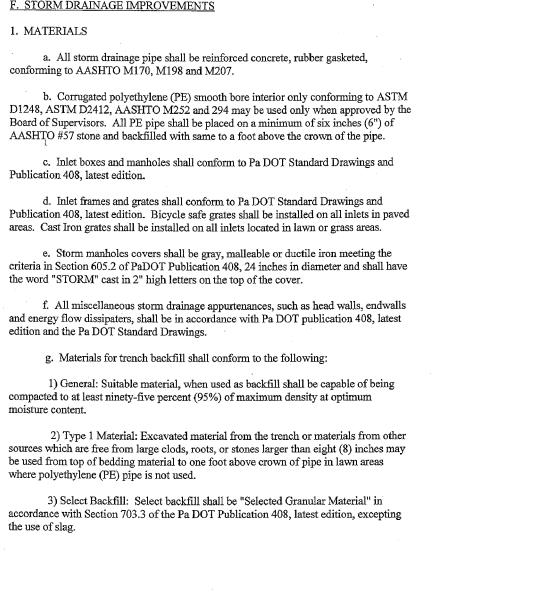
the word "STORM" cast in 2" high letters on the top of the cover.

g. Materials for trench backfill shall conform to the following:

edition and the Pa DOT Standard Drawings.

where polyethylene (PE) pipe is not used.

Standard Construction and Material Specifications for Public Improvements
June 2006



SECTION A-A DETAIL - LIFT RING STORMWATER CAST IRON MANHOLE FRAME AND COVER NTS SAFTEY GRATE TYPE D-W ENDWALL WITH SAFETY GRATE DETAIL NTS ENDWALL # 23"x14" 24" 18" 23" 20" (VERIFY ALL ENDWALL DIMENSIONS PRIOR TO MANUFACTURING ENDWALL SAFETY GRATES)

22 1/2"

TONGUE ON OUTLET END SECTIONS,

<u>PLAN</u>

REINFORCEMENT

C B

SLOPE DETAIL

CONCRETE END SECTIONS

CULVERT LENGTH END SECTION 300 (12")
TOE WALL, SEE NOTE 8.

SECTION A-A 200

- 24" DIAMETER LID

LETTERS TO BE A MINIMUM

CASTING TO BE SUPPLIED MACHINED BEARING SURFACE

AND FLAT NEOPRINE RUBBER GASKET

HEIGHT OF 2"

DETAIL A

7 SEE DETAIL A FOR ALTERNATE TREATMENT.

TOE PLATE, -/
SEE NOTE 3. HOLES @ 300 (12")

C TO C MAXIMUM

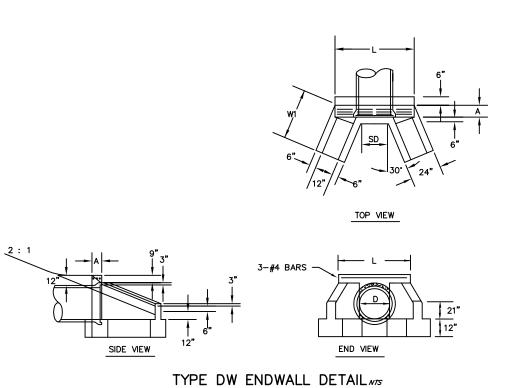
TYPICAL PLAN

TYPICAL ELEVATION

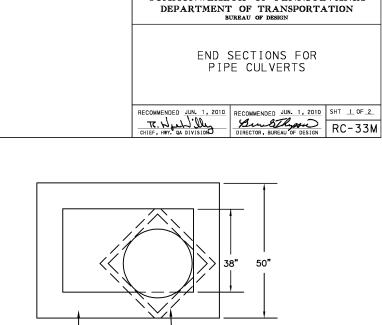
TOE PLATE

TYPICAL END SECTION

CORRUGATED METAL PIPE END SECTIONS



### TYPE DW ENDWALL DETAIL MTS



PRECAST <sup>J</sup> TYPE 1 STANDARD BOX

PROVIDE END SECTIONS MEETING THE REQUIREMENTS OF PUBLICATION 408, SECTION 616. PROVIDE GALVANIZED STEEL END SECTIONS WHEN SECTIONS ARE REQUIRED WITH ALUMINIZED STEEL PIPE OR PRECOATED GALVANIZED STEEL PIPE

PIPE 750 (30") DIAMETER OR SMALLER-W+250 (+10") PIPE 900 (36") DIAMETER OR LARGER-W+500 (+20")

LOWING SIZES:
50 (2") x 50 (2") x 6 (¼") FOR,
1500 (60") TO 1800 (72") DIAMETER PIPE,
1950 x 1320, 1850 x 1400 (77" x 52", 73" x 55") AND
2100 x 1450, 2050 x 1500 (83" x 57", 81" x 59")
PIPE-ARCH CULVERT.

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

COMMONWEALTH OF PENNSYLVANIA

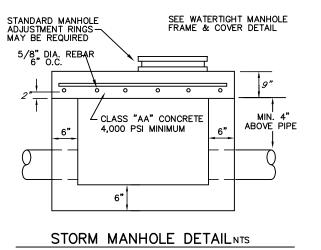
SUPPLEMENT REINFORCED EDGES WITH GALVANIZED STEEL STIFFENER ANGLES WITH GALVANIZED OR ALLUMINIZED BOLTS AND NUTS OR ALLUMINUM ALLOY STIFFENER ANGLES WITH ALUMINUM ALLOY NUTS AND BOLTS OF THE FOLLOWING SIZES:

• 63 (2 $\frac{1}{2}$ ") × 63 (2 $\frac{1}{2}$ ") × 6 ( $\frac{1}{4}$ ") FOR, 1950 TO 2100 (78" TO 84") DIAMETER PIPE.

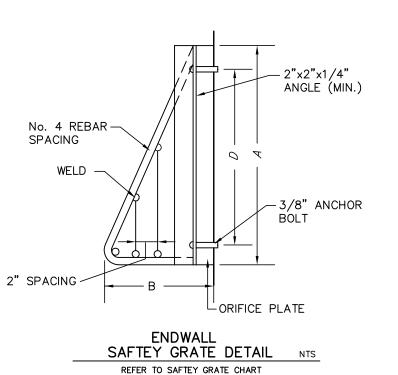
ANCHOR ALUMINUM OR STEEL END SECTIONS, THAT ARE USED ON THE INLET END OF PIPE LARGER THAN 1350 (54") DIAMETER, AS INDICATED ON THE PLAN.

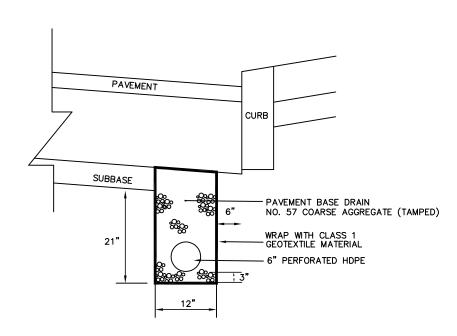
6. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. U.S. CUSTOMARY UNITS IN () PARENTHESES.

8. PROVIDE TOE WALL OF CLASS A CONCRETE.



1. UTILIZE A MODIFIED TYPE 1 CONCRETE INLET BOX 2. SEE MODIFIED TYPE 1 DETAIL FOR DIMENSIONS.





PLACEMENT AT CURB SECTION PERFORATED PVC UNDERDRAIN DETAIL NTS UNDERDRAIN SHALL BE INSTALLED AT LOCATIONS AS DETERMINED/

REQUIRED BY THE TOWNSHIP ENGINEER.

### GENERAL NOTES

- 1. ALL REINFORCED CONCRETE PIPE (RCP) STORM SEWER SHALL HAVE 'O' RING JOINTS
- 2. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE NEW HANOVER TOWNSHIP 'STANDARD CONSTRUCTION AND MATERIAL SPECIFICATIONS FOR PUBLIC IMPROVEMENTS' DATED JUNE 2006.
- 3. ALL INLETS MUST BE PROVIDED WITH A DECAL THAT READS 'DRAINS TO CREEK'



LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE CUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA ONE CALL (DIAL 811) THREE DAYS PRIOR TO EXCAVATION. REFERENCE NUMBER: 20170472165 (DOTTERER ROAD)

TWP. SWR. ENGR. LTR. 8-31-07, TRAFFIC ENGR. LTR. 8-28-0

|          | REVISIONS   |
|----------|---|
| DATE     | DESCRIPTION   |
|          |   |
| 7-17-17  | NEW OWNER AND UPDATE LAYOUT                           |
| 10-27-08 | TWP. ENGR. LTR. 10-1-08, TWP PLANNER LTR 10-1-08 &    |
|          | MCCD LTR. 9-25-08                                     |
| 8-25-08  | TWP. ENGR. LTR. 3-26-08, TWP PLANNER LTR 3-31-08      |
|          | TWP. SWR. ENGR. LTR. 4-1-08, FIRE CHIEF LTR. 4-2-08 & |
|          | MCCD LTR. 6-12-08                                     |
| 10-15-07 | TWP. ENGR. LTR. 8-30-07, TWP PLANNER LTR 9-4-07       |
|          |   |

STORM SEWER DETAIL PLAN "PACER'S GAIT"

PREPARED FOR

# MIKELEN, LLC.

# SITUATE IN

NEW HANOVER TOWNSHIP MONTGOMERY COUNTY, PENNSYLVANIA

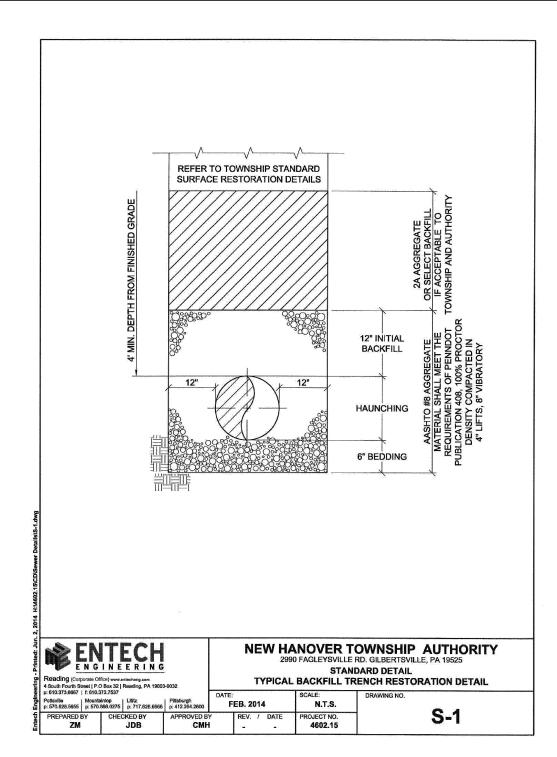
JULY 9, 2007 PROJECT No. 16086 FILE: 16086-BASE

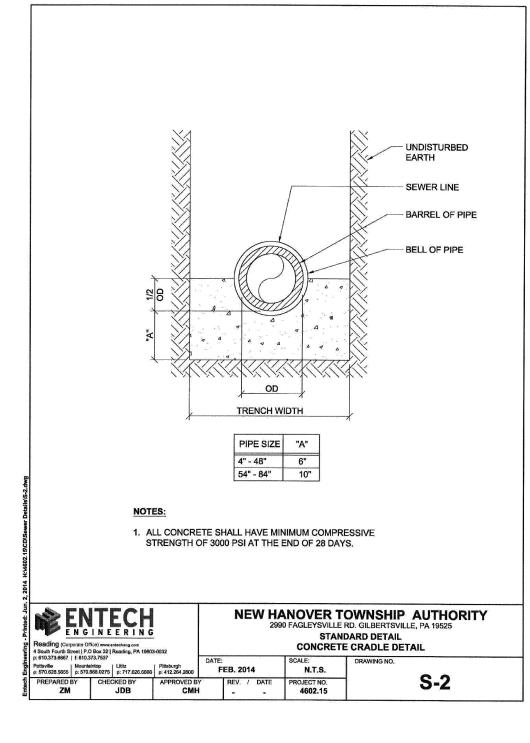


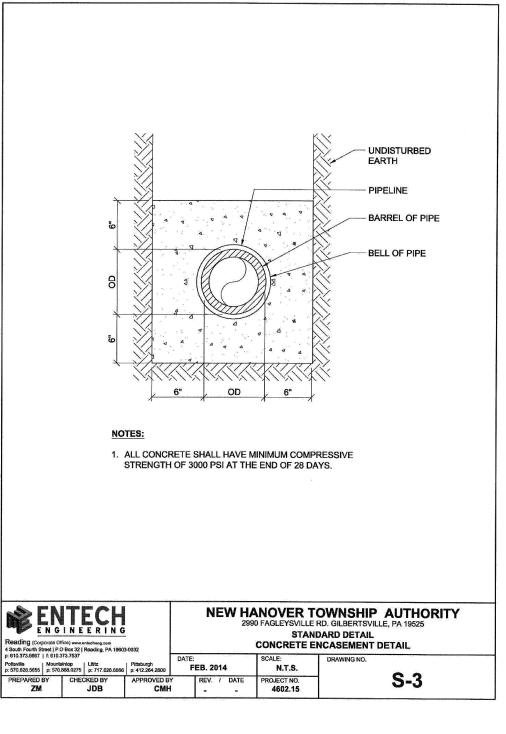
SHEET No. 18 OF 21

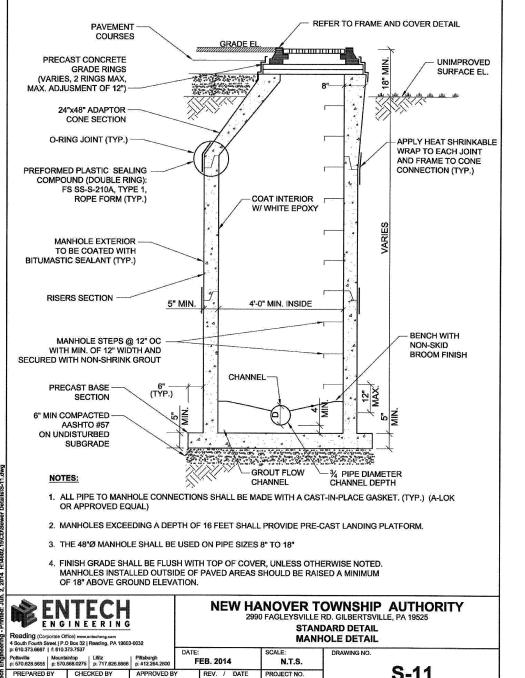


 REFER TO P.A. DOT (RC) STANDARDS, PUB. #72, DWG. RC.-31, SHEETS 1 OF 1, FOR ADDITIONAL NOTES. 2. CONSTRUCT IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATIONS 408, SECTION 605.

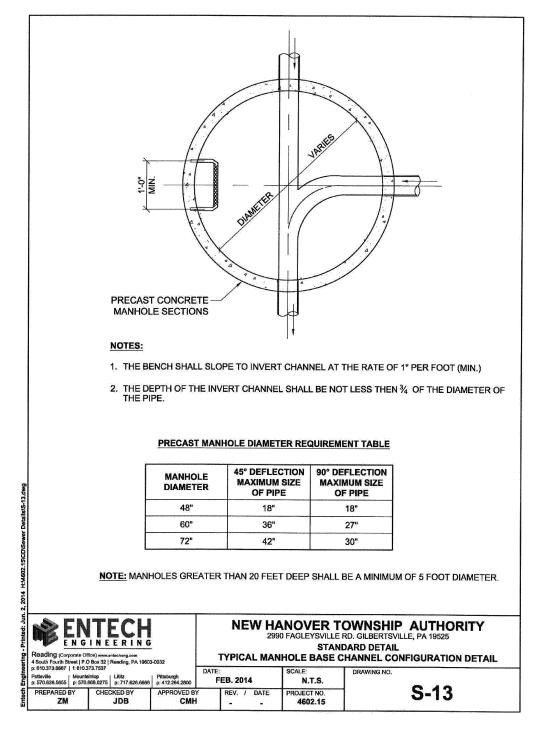


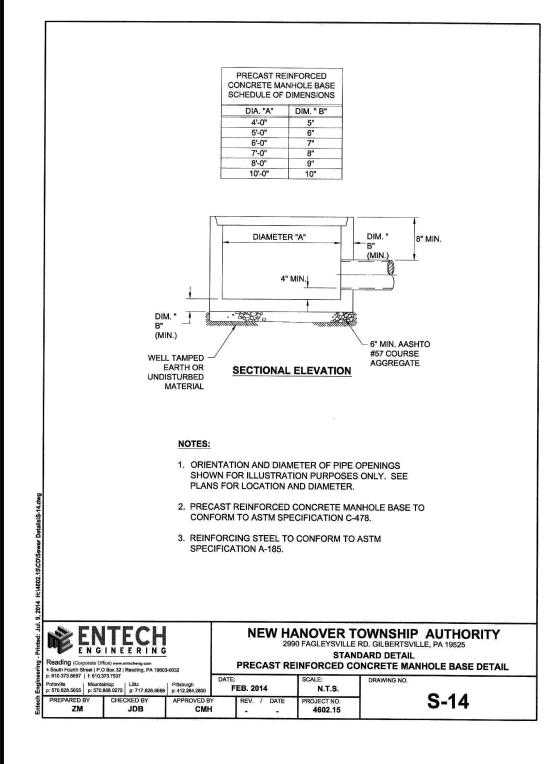


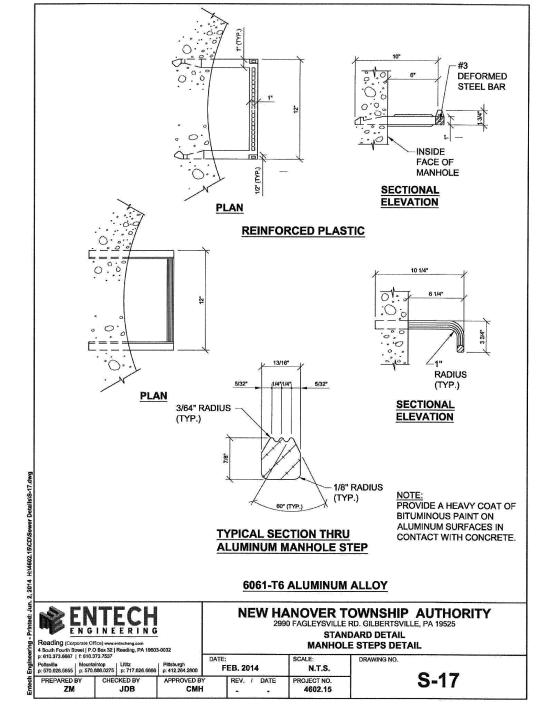


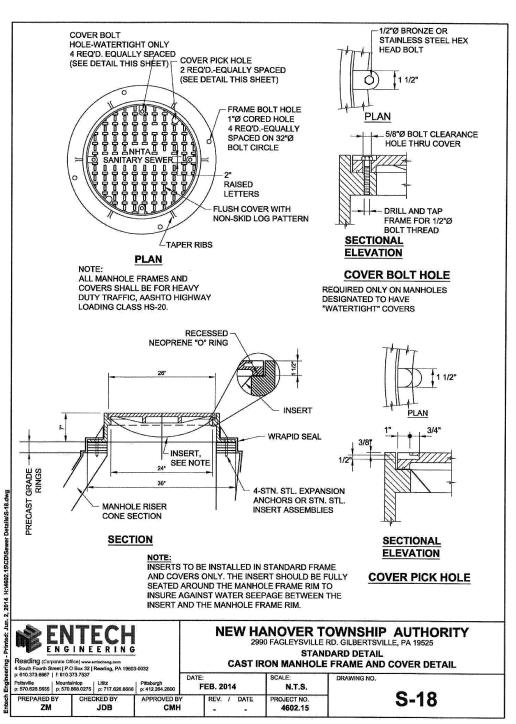


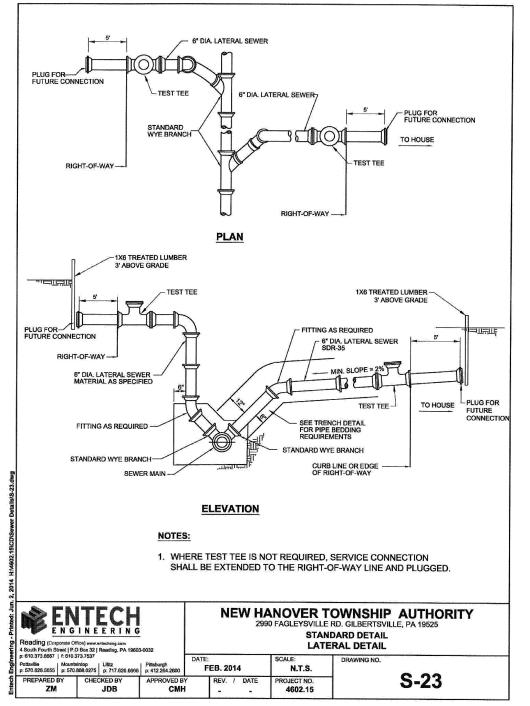
S-11

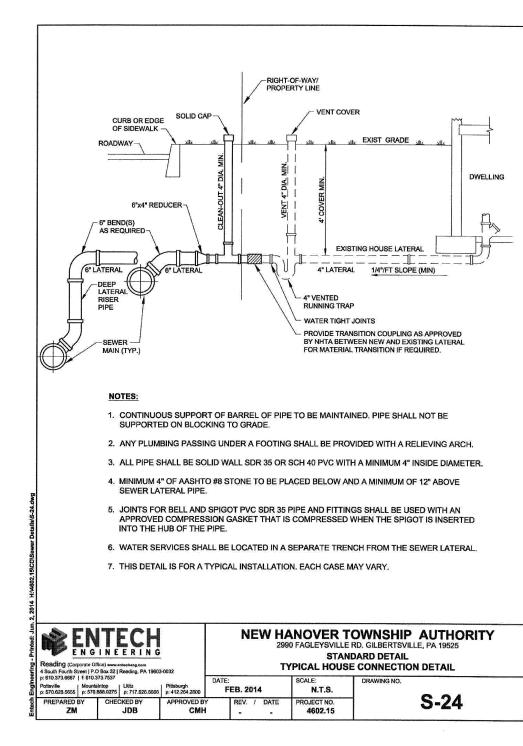


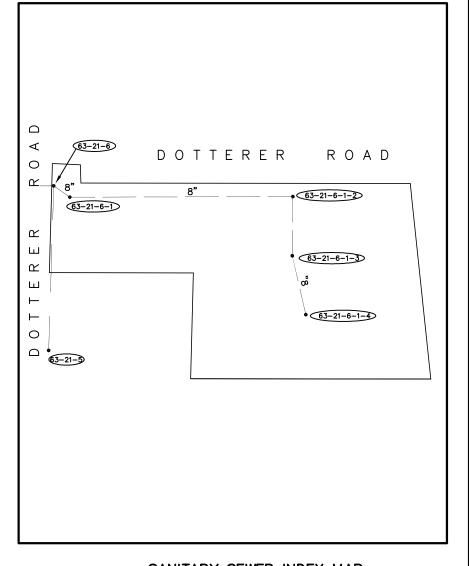












SANITARY SEWER INDEX MAP SCALE: 1" = 200'

### GENERAL NOTES

- THERE SHALL BE A MINIMUM LATERAL SEPARATION OF 10 FEET BETWEEN WATER MAINS AND SANITARY SEWERS. SHOULD IT BE NECESSARY FOR A SANITARY SEWER TO CROSS UNDER A WATER MAIN, THERE SHALL BE AT LEAST 18 INCHES OF VERTICAL SEPARATION: OTHERWISE THE SANITARY SEWER MUST BE ENCASED IN 6 INCHES OF CONCRETE FOR A DISTANCE OF 10 FEET ON BOTH SIDES OF THE AREA
- 2. ALL MATERIALS USED AND ALL CONSTRUCTION METHODS EMPLOYED SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE STANDARD CONSTRUCTION AND MATERIAL SPECIFICATIONS FOR SANITARY SEWER EXTENSIONS FOR NEW HANOVER TOWNSHIP.
- . CONNECTIONS TO EXISTING MANHOLES SHOULD BE MADE BY CUTTING REQUIRED OPENING BY SUCH METHODS SO AS TO PREVENT CRACKING AND SPALLING CONCRETE. MAKE OPENINGS SUFFICIENT SIZE TO ACCOMMODATE PIPE WITH PVC WATERSTOP INSTALLED AND ONE-INCH ANNULAR GROUT SPACE. GROUT ANNULAR SPACE USING NON-SHRINK, NON-METALLIC GROUT.
- 1. SANITARY SEWER LATERALS SHALL BE SIX INCHES (6") IN DIAMETER TO THE LIMIT OF THE RIGHT-OF-WAY.
- 5. ADJACENT LATERALS MUST BE A MINIMUM OF SIX FEET (6') APART
- 6. IN ACCORDANCE WITH SECTION 1.02(c) OF THE NEW HANOVER TOWNSHIP AUTHORITY STANDARD MATERIAL AND CONSTRUCTION SPECIFICATIONS FOR SANITARY SEWER EXTENSIONS, SHOP DRAWINGS OF ALL MATERIALS TO BE USED IN THE CONSTRUCTION OF THE SANITARY SEWER SYSTEM MUST BE SUBMITTED.
- . PRIOR TO COMMENCING CONSTRUCTION, ALL MATERIALS TO BE USED ON THE JOB MUST BE INSPECTED BY A REPRESENTATIVE OF THE NEW HANOVER TOWNSHIP AUTHORITY. THIS INSPECTION IS TO INSURE CONFORMANCE WITH THE APPROVED SHOP DRAWINGS.
- . AS PER THE AUTHORITY'S STANDARD SPECIFICATIONS "AS-BUILT" RECORD DRAWINGS MUST BE SUBMITTED AND APPROVED BEFORE ANY SEWERS ARE ACCEPTED FOR DEDICATION. A LETTER MUST ACCOMPANY THE DRAWINGS FROM THE DEVELOPER'S ENGINEER AND OR SURVEYOR ATTESTING TO THEIR CONNECTIONS.



LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE—GROUND INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA ONE CALL (DIAL 811) THREE DAYS PRIOR TO EXCAVATION. REFERENCE NUMBER: 20170472165 (DOTTERER ROAD)

TWP. SWR. ENGR. LTR. 8-31-07, TRAFFIC ENGR. LTR. 8-28-07

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| DATE     | DESCRIPTION   |
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| 10-15-07 | TWP. ENGR. LTR. 8-30-07, TWP PLANNER LTR 9-4-07       |
|          |   |

### SANITARY SEWER DETAIL PLAN "PACER'S GAIT"

PREPARED FOR

# MIKELEN, LLC.

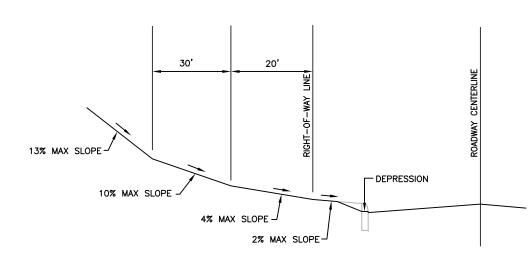
NEW HANOVER TOWNSHIP MONTGOMERY COUNTY, PENNSYLVANIA

JULY 9, 2007 PROJECT No. 16086 FILE: 16086-BASE



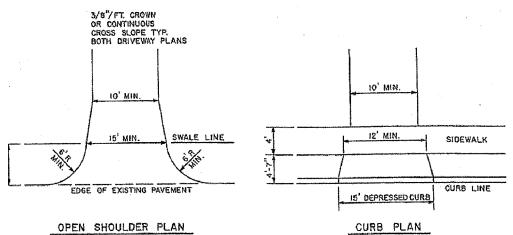
SHEET No. 19 OF 21





DRIVEWAY SLOPE DETAIL

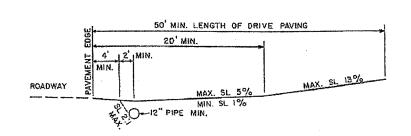
REFER TO THE NEW HANOVER TOWNSHIP 'CONSTRUCTION OF DRIVEWAYS'



OPEN SHOULDER PLAN

50' MIN. LENGTH OF DRIVE PAVING

DRIVEWAY PROFILE - SWALE



DRIVEWAY PROFILE - PIPE

### 2 EXECUTION

a. All sidewalks, driveway aprons and curbs, except as may be otherwise provided in this section, shall be constructed of monolithic concrete. Said concrete shall meet PaDOT criteria for air entrained Class AA concrete with a compressive strength of 3,500 pounds per square inch (psi) in twenty-eight (28) days. Certification of the concrete mix shall be furnished if required by the Engineer. Belgium block curb may be substituted for concrete curb at locations approved by the Board of Supervisors.

b. The concrete curbs shall have a depth of not less than eighteen inches (18") and shall be eight inches (8") thick at the base and seven inches (7") thick at the top. Curbs shall be constructed with an eight inch (8") reveal and shall rest on a compacted bed of AASHTO No. 57 (Pa DOT 2B) crushed stone of a depth of not less than four inches (4") and a width of not less than twelve inches (12").

The Belgium block curbs shall have a combined depth of block and concrete of not less than eighteen inches (18") and shall meet the dimensional standards as detailed in this section. Belgium block curbs shall be constructed with an eight inch (8") reveal and shall rest on a compacted bed of AASHTO No. 57 (Pa DOT 2B) crushed stone of a depth of not less than four inches (4").

c. Sidewalk Width and Location - The space between the street side of the curb and the street side of the paved edge of the sidewalk shall be four feet seven inches (4'-7"). The sidewalk paved width shall be four feet (4') in all new developments or street construction. The width of the sidewalk shall be increased to a minimum of eight feet (8') when it is in combination with a Bike Path. In existing developed sections of the Township, and where sidewalks have been constructed prior to the date of the sidewalk ordinance (Ordinance 95-4, enacted June 12, 1995), existing conditions shall be taken into consideration by the Township of New Hanover in applying the width and location regulations.

d. Drainage - Finished sidewalks shall have a grade from the inner edge of the sidewalk to the outer edge of the curbs of one quarter of an inch (1/4") to the foot.

e. Sidewalks shall not be less than four inches (4") in thickness and shall rest on a compacted bed of AASHTO No. 57 (Pa DOT 2B) crushed stone of a depth of not less than four inches (4"). For width and location of sidewalks see Section 3.

f. Mortar shall be used only in case of patching honeycombed concrete and then shall be one (1) part cement and two (2) parts of sand or its equal.

g. Sidewalk shall have clean cut joints, a minimum one inch (1") deep, every five (5) linear feet, and expansion joints every thirty (30) linear feet or less and at structures. Curbs shall have clean cut joints, a minimum of two inches (2") deep, every ten (10) linear feet, and expansion joints every sixty (60) linear feet or less, at structures, and at the end of a days work. Expansion joints shall be one half inches (1/2") thick with pre-

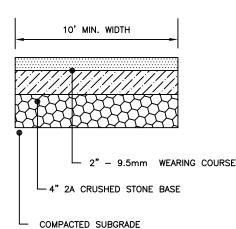
molded expansion joint filler. Expansion joint material shall also be placed between any curb and driveway apron. All sidewalks shall have a float finish except that any sidewalk on a grade of ten percent (10%) or greater shall have a broom finish.

h. Driveways over sidewalks shall be at least six inches (6") thick and shall include 6" X 6" by 10 gauge welded wire fabric. Driveways over sidewalks shall be constructed to rest on a compacted bed of AASHTO No. 57 (Pa DOT 2B) crushed stone of a depth of not less than four inches (4"). Widths shall be a minimum of ten feet (10") for single driveways and twenty feet (20') for double driveways, except as approved otherwise by the Board of Supervisors.

i. All joints between curb and bituminous pavement shall be sealed with AC-20.

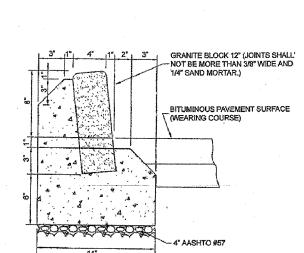
j. The surface of all sidewalks, driveway aprons and curbs shall be treated with a non-discoloration sealing compound for the prevention of damage from salt. The sealing compound shall be Seal Tight CS 309-25, as manufactured by W.R. Meadows, or an approved equal, and shall be applied in accordance with the manufacturer's specifications.

k. The curbing at fire hydrant locations must be painted yellow for a distance of 15 feet each side of the hydrant. The curbing need not be painted through driveway openings adjacent to hydrants.

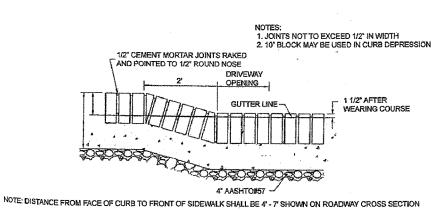


RESIDENTAIL DRIVEWAY PAVEMENT SECTION NTS

NOTE: 1. REFER TO PA. DOT PUB. 408 FOR SPECIFICATIONS



### SECTION VIEW



**ELEVATION VIEW** 

BELGIAN BLOCK CURB SHALL NOT BE INSTALLED ALONG DOTTERER ROAD AND CURB RETURNS INTO PROPOSED ROAD

### 4. BASE, BINDER AND WEARING COURSES

a. Base, binder and wearing courses shall consist of one or more layers of materials conforming to the requirement of the following section of Pa DOT Publication 408, latest edition.

- Section 309 - Superpave Asphalt Mixture Design, HMA base course. - Section 409 - Superpave Asphalt Mixture Design, HMA binder course.

- Section 409 - Superpave Asphalt Mixture Design, HMA wearing course. b. Plant Mixed HMA Base Course:

1) Superpave Asphalt Mixture Design HMA pavement courses shall be placed in layers as is more fully described in Pa DOT Publication 408, latest edition, for each specific design, or as may be specified otherwise by the Township.

2) The subbase shall be properly prepared and primed as may be required for base course placement according to Pa DOT Publication 408, latest edition.

3) The base course shall be properly prepared and primed as may be required to receive subsequent courses. Prior to application of additional bituminous courses, existing base courses shall be inspected by the Township representative for defects such as fracture, racking or other signs of base failure, or potential failure. All areas of failure, or potential failure, shall be removed by saw cutting, and replaced, or repaired, to the satisfaction of the Township representative.

4) Bituminous Surface Course - The surface course shall consist of two (2) courses, binder course and wearing course, of hot-mixed, hot-laid, asphaltic concrete, constructed on a prepared base course. The bituminous surface course shall have a total thickness, after final compaction, as indicated in Table 1 or as specified by the Township Engineer or other persons designated by the Township Supervisors. All street pavement cross-sections, except where super-elevated for curves, shall have a slope from the center of the road to the gutter of a minimum of one-quarter (1/4") inch per foot to a maximum of one-half (1/2") inch per foot.

i) Materials - The materials shall conform to the requirements as given in Sections 309 and 409 of the Pa DOT Specifications 408, latest edition.

ii) Construction Methods - The surface coursing shall be applied in strict accordance with the requirements of PaDOT Publication Form 408, latest edition. No visible moisture shall be present prior to the laying of each course. Road surface temperature shall be 50 degrees F. or greater prior to the laying of a bituminous surface. The air temperature shall be 40 degrees F. or greater with the temperature rising. All bituminous surface courses shall have a total thickness after compaction as indicated in Table 1 or as specified by the Township Engineer or other persons designated by the Township Supervisors. All edges shall be kept straight and sharp, forming a clean-cut line between finished road and shoulder where shoulder construction is used.

iii) The binder course shall be installed immediately following the base course installation.

iv) Delivery Slips - New Hanover Township will require delivery slips for all materials used in the construction of streets.

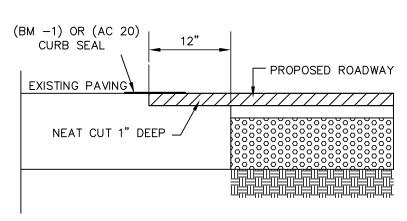
v) Joints - Joints formed by binder or surface course laid adjacent to concrete curbs or other rigid structures shall be sealed with AC-20, twelve inch (12") width as directed by the Township Engineer.

### Table 1 – Minimum Street Construction Standards

|  | Local & Residential Streets | Collector & Arterial Streets |
|--|-----------------------------|------------------------------|
| 9.5mm Surface Course                       | 1 1/2"                      | 1 1/2"                       |
| 19mm Dense Graded<br>Binder Course         | 2"                          | 2"                           |
| 25mm Bituminous Concrete                   |                             |                              |
| Base Course                                | 3**                         | 4"                           |
| PennDOT No. 2A Coarse<br>Aggregate Subbase | 4"                          | 4"                           |

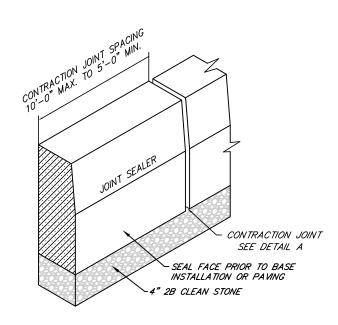
(1) All thickness specifications are for compacted materials. (2) Optional design cross-sections may be reviewed by the Township Engineer, and approved by the Township, provided the design has a Structural Number equal to or greater than that of the standard specification. (3) Permanent Cul-de-sac Street, Marginal Access Street, Service Street, and Off-Street Parking Construction shall conform to standards for Local and Residential

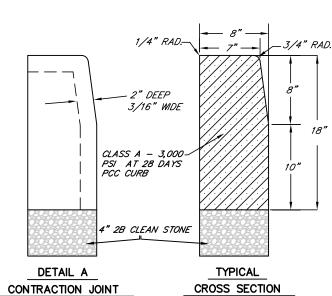
(4) Binder Course to be installed immediately following base course installation.



MACADAM NEAT CUT DETAIL NTS

8" PLAIN CEMENT CONCRETE CURE EDGE OF MACADAM ELEV BOTTOM OF CURB CURB END TREATMENT DETAIL NTS





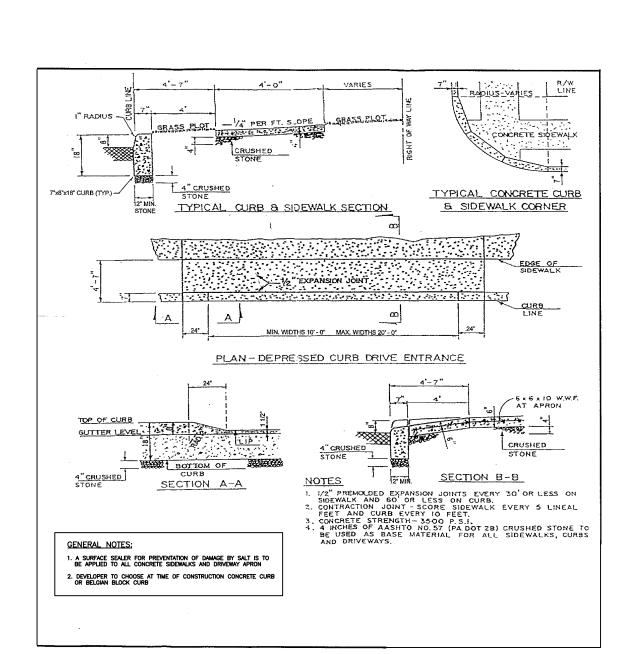
### PLAIN CEMENT CONCRETE CURB DETAIL NTS

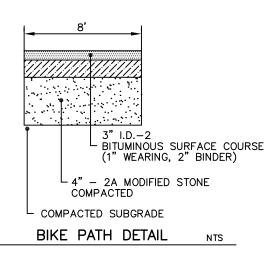
PLAIN CEMENT CONCRETE CURB NOTES: 1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PUBLICATION 408/2000, SECTION 630 FOR PLAIN CEMENT CONCRETE CURB AND DEPRESSED CURB,

2. SPACE CONTRACTION JOINTS IN UNIFORM LENGTHS OR SECTIONS.

3. PLACE (3/4") THICK PREMOLDED EXPANSION JOINT FILLER MATERIAL SHALL BE PLACED AT 30 FOOT MAXIMUM SPACING TO FULL DEPTH OF CURB.

4. CURB SHALL BE DOWELED OR PINNED INTO INLTS.





### TAKEN FROM NEW HANOVER TOWNSHIP 'STANDARD CONSTRUCTION AND MATERIAL SPECIFICATIONS FOR PUBLIC IMPROVEMENTS' DATED

E. BIKE PATHS, BIKE LANES AND BICYCLE ROUTES GENERAL

a. All subdivisions and land development projects shall be required to establish bike paths, bike lanes and bike routes, unless waived by the Board of Supervisors. b. The entire design and construction of bike paths shall be in accordance with good engineering practice and shall be subject to the approval of the Township Engineer.

a. The near edge of the bike path shall not be less than 4'-7" from the face of the curb along any street. Where this setback cannot be accomplished, a suitable physical

b. The width of the path shall be 8 feet, however, the Board of Supervisors may permit variations in this width. The Board may also permit the installation of bicycle paths in a combined structure with, or in lieu of, sidewalks.

c. Bicycle paths shall, as near as possible, follow the contour lines of the particular area where the paths are to be installed.

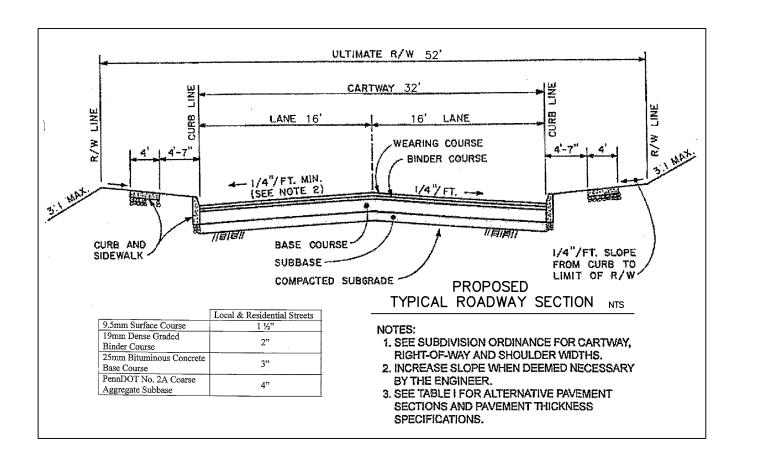
d. Curb ramps shall be installed to permit the crossing of intersecting streets. Curb ramps shall have a maximum slope of six to one with sides having maximum slope of two to one.

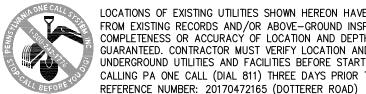
e. The vertical clearance from the bicycle path surface to overhead obstruction

f. The bicycle path shall be constructed of 4 inch Pa DOT 2A stone base with 2 inch asphalt binder course and a 1 inch wearing course.

g. All bike paths shall be constructed in such a manner to insure adequate and proper drainage and to prevent the bike path from being inundated by surface drainage. h. Unless specified otherwise all materials and construction procedures shall be

in accordance with Pa DOT Publication 408, latest edition





LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND INSPECTION OF THE SITE COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA ONE CALL (DIAL 811) THREE DAYS PRIOR TO EXCAVATION.

|          | REVISIONS  |
|----------|--|
| DATE     | DESCRIPTION  |
|          |  |
| 7-17-17  | NEW OWNER AND UPDATE LAYOUT                            |
| 10-27-08 | TWP. ENGR. LTR. 10-1-08, TWP PLANNER LTR 10-1-08 &     |
|          | MCCD LTR. 9-25-08                                      |
| 8-25-08  | TWP. ENGR. LTR. 3-26-08, TWP PLANNER LTR 3-31-08       |
|          | TWP. SWR. ENGR. LTR. 4-1-08, FIRE CHIEF LTR. 4-2-08 &  |
|          | MCCD LTR. 6-12-08                                      |
| 10-15-07 | TWP. ENGR. LTR. 8-30-07, TWP PLANNER LTR 9-4-07        |
|          | TWP. SWR. ENGR. LTR. 8-31-07, TRAFFIC ENGR. LTR. 8-28- |

GENERAL CONSTRUCTION DETAIL PLAN "PACER'S GAIT"

PREPARED FOR

# MIKELEN, LLC.

NEW HANOVER TOWNSHIP MONTGOMERY COUNTY, PENNSYLVANIA

JULY 9, 2007 PROJECT No. 16086 FILE: 16086-BASE

SCALE: AS SHOWN

SHEET No. 20 OF 21



### PATA 102 (Old PATA 7) - Notes

1. If the work space is completely within a parking lane and parking is present, the taper or shadow vehicle is

2. For operations of 15 minutes or less: a. The Road Work (W20-1) sign is not required.

b. All channelizing devices may be eliminated if a shadow vehicle is present. 3. For divided highways and one-way highways where it is physically possible, advance warning signs should

also be placed on the left-hand side of the roadway. 4. When a shadow vehicle is not used, distance E is measured from end of taper to beginning of work space.



### Distance and Spacing Quick Reference Chart Sign Spacing Chart

|                        |                    | Dist   | ance     |      | Speed | W    |      | 1/2L | 1/3L |       |        | lizing D |       | D    | Е    | Н   |
|------------------------|--------------------|--------|----------|------|-------|------|------|------|------|-------|--------|----------|-------|------|------|-----|
| Condition              | Α                  | В      | С        | F    | speed | VV   | L    | 1/2L | 1/3L | Per T | aper T | ype (Le  | ngth) | U    | C    | П   |
|                        | Feet               | Feet   | Feet     | Feet | MPH   | Feet | Feet | Feet | Feet | L     | 1/2L   | 1/3L     | 50'   | Feet | Feet | Fee |
| Urban                  |                    |        |          |      |       | 10   | 105  | 55   | 35   |       |        |          |       |      |      |     |
| 35 MPH or less         | 100                | 100    | 100      | 100  | 25    | 11   | 115  | 60   | 40   | 6     | 6      | 6        | 6     | 50   | 155  | 15  |
| 33 MPH OI less         |                    |        |          |      |       | 12   | 125  | 65   | 45   |       |        |          |       |      |      |     |
| Urban                  |                    |        |          |      |       | 10   | 150  | 75   | 50   | 6     |        |          |       |      |      |     |
| Greater than 35 MPH    | 350                | 350    | 350      | 350  | 30    | 11   | 165  | 85   | 55   | 7     | ] 6    | 6        | 6     | 60   | 200  | 15  |
| Greater trial 33 MFH   |                    |        |          |      |       | 12   | 180  | 90   | 60   | 7     |        |          |       |      |      |     |
|                        |                    |        |          |      |       | 10   | 205  | 105  | 70   | 7     |        |          |       |      |      |     |
| Rural                  | 500                | 500    | 500      | 500  | 35    | 11   | 225  | 115  | 75   | 8     | 6      | 6        | 6     | 70   | 250  | 15  |
|                        |                    |        |          |      |       | 12   | 245  | 125  | 85   | 8     |        |          |       |      |      |     |
| When multiple distance | e plac             | ues a  | re use   | d    |       | 10   | 270  | 135  | 90   | 8     |        |          |       |      |      |     |
| on advance warning s   | igns, t            | hey s  | hall all | be   | 40    | 11   | 295  | 150  | 100  | 9     | 6      | 6        | 6     | 80   | 305  | 15  |
| of the same series typ | e.                 |        |          |      |       | 12   | 320  | 160  | 110  | 9     |        |          |       |      |      |     |
| Example: either all "A | HEAD'              | " or X | XX FEE   | ET.  |       | 10   | 450  | 225  | 150  | 11    | 6      |          |       |      |      |     |
| •                      |                    |        |          |      | 45    | 11   | 495  | 250  | 165  | 12    | 7      | 6        | 6     | 90   | 360  | 15  |
| Taper Length For       |                    | _      |          |      |       | 12   | 540  | 270  | 180  | 13    | 7      |          |       |      |      |     |
| raper Length For       | muia               | 5      |          |      |       | 10   | 500  | 250  | 170  | 11    | 6      |          |       |      |      |     |
| S                      | - 1                |        |          |      | 50    | 11   | 550  | 275  | 185  | 12    | 7      | 6        | 6     | 100  | 425  | 25  |
|                        | _ W:               | c2     |          |      |       | 12   | 600  | 300  | 200  | 13    | 7      |          |       |      |      |     |
| 40 MPH or less         | $- = \frac{vv}{6}$ | 5-     |          |      |       | 10   | 550  | 275  | 185  | 11    | 6      |          |       |      |      |     |
|                        |                    | 0      |          |      | 55    | 11   | 605  | 305  | 205  | 12    | 7      | 6        | 6     | 110  | 495  | 25  |
|                        | L = W              | ic     |          |      |       | 12   | 660  | 330  | 220  | 13    | 7      |          |       |      |      |     |
| 45 MPH or more         |                    |        |          |      |       |      |      |      |      |       |        |          |       |      |      |     |

### PATA 107 (Old PATA 10a) - Notes

1. Each flagger shall be clearly visible to traffic for a minimum distance of E and shall be in constant

2. For operations of 15 minutes or less: a. The Road Work (W20-1), One Lane Road (W20-4), and Flagger Symbol (W20-7) signs are not

b. All channelizing devices may be eliminated if a shadow vehicle is present. 3. The buffer space shall be extended so that the two-way traffic taper is placed before a horizontal (or crest

4. When a shadow vehicle is not used, distance E is measured from end of taper to beginning of work space.



### Sign Spacing Chart Distance and Spacing Quick Reference Chart

| Condition   | Α                    | Dist.<br>B     | ance<br>C | ΓF   | Speed   | W     | L       | 1/2L    | 1/3L  |         | channe<br>aper T |          |          | D      | Е        | ı        |
|---|----------------------|----------------|-----------|------|---------|-------|---------|---------|-------|---------|------------------|----------|----------|--------|----------|----------|
|   | Feet                 | Feet           | Feet      | Feet | MPH     | Feet  | Feet    | Feet    | Feet  | L       | 1/2L             | 1/3L     | 50'      | Feet   | Feet     | Fe       |
| Urban   |                      |                |           |      |         | 10    | 105     | 55      | 35    |         | 1                |          |          |        |          |          |
| Ordan<br>35 MPH or less                                   | 100                  | 100            | 100       | 100  | 25      | 11    | 115     | 60      | 40    | 6       | 6                | 6        | 6        | 50     | 155      | 1        |
| 35 MPH OF IESS  |                      |                |           |      |         | 12    | 125     | 65      | 45    | 1       |                  |          |          |        |          |          |
| Urban   |                      |                |           |      |         | 10    | 150     | 75      | 50    | 6       |                  |          |          |        |          |          |
| Greater than 35 MPH                                       | 350                  | 350            | 350       | 350  | 30      | 11    | 165     | 85      | 55    | 7       | 6                | 6        | 6        | 60     | 200      | 1        |
| Greater than 55 MFTT                                      |                      |                |           |      |         | 12    | 180     | 90      | 60    | 7       |                  |          |          |        |          |          |
|   |                      |                |           |      |         | 10    | 205     | 105     | 70    | 7       |                  |          |          |        |          |          |
| Rural   | 500                  | 500            | 500       | 500  | 35      | 11    | 225     | 115     | 75    | 8       | 6                | 6        | 6        | 70     | 250      | 1        |
|   |                      |                |           |      |         | 12    | 245     | 125     | 85    | 8       |                  |          |          |        |          |          |
| When multiple distanc                                     | e plac               | ques a         | re use    | d    |         | 10    | 270     | 135     | 90    | 8       | ]                |          |          |        |          |          |
| on advance warning si                                     | gns, t               | they sl        | hall al   | l be | 40      | 11    | 295     | 150     | 100   | 9       | 6                | 6        | 6        | 80     | 305      | 1        |
| of the same series typ                                    | e.                   |                |           |      |         | 12    | 320     | 160     | 110   | 9       |                  |          |          |        |          |          |
| Example: either all "Al                                   | HEAD'                | " or X)        | XX FE     | ET.  |         | 10    | 450     | 225     | 150   | 11      | 6                |          |          |        |          |          |
|   |                      |                |           |      | 45      | 11    | 495     | 250     | 165   | 12      | 7                | 6        | 6        | 90     | 360      | 1        |
| Taper Length For  | mula                 | •              |           |      |         | 12    | 540     | 270     | 180   | 13      | 7                |          |          |        |          |          |
| raper Length For  |                      | 3              |           |      |         | 10    | 500     | 250     | 170   | 11      | 6                |          |          |        |          |          |
| S   | L                    |                |           |      | 50      | 11    | 550     | 275     | 185   | 12      | 7                | 6        | 6        | 100    | 425      | 2.       |
|   | _ w                  | S <sup>2</sup> |           |      |         | 12    | 600     | 300     | 200   | 13      | 7                |          |          |        |          |          |
| 40 MPH or less L  | . = <del>'''</del> 6 | <u></u>        |           |      |         | 10    | 550     | 275     | 185   | 11      | 6                |          |          |        |          |          |
|   |                      | _              |           |      | 55      | 11    | 605     | 305     | 205   | 12      | 7                | 6        | 6        | 110    | 495      | 2        |
| 45 MPH or more  | L = W                | IS             |           |      |         | 12    | 660     | 330     | 220   | 13      | 7                | <u> </u> | L.,      |        |          | <u> </u> |
| G = Regulatory Speed<br>W = Width of Offset<br>L = Length | Limit                |                |           |      | Note: 0 | nanne | elizing | aevices | sused | ın tape | er shall         | pe equ   | ially sp | aced a | IT 1/2 D | ма       |

### PATA 201 (Old PATA 24) - Notes

1. Traffic control devices are not required if the work space is outside the highway right-of-way, behind barrier, more than 2'-0" behind curb, or 15' or more from the edge of the roadway 2. For divided highways and one-way highways where it is physically possible, advance warning signs should also be placed on the left-hand side of the roadway. 3. When a shadow vehicle is not used, distance A is measured from sign to beginning of work space.



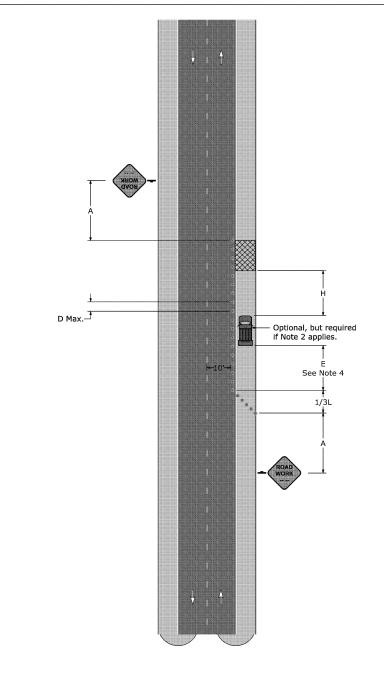
### W20-1 G20-2

S = Regulatory Speed Limit W = Width of Offset

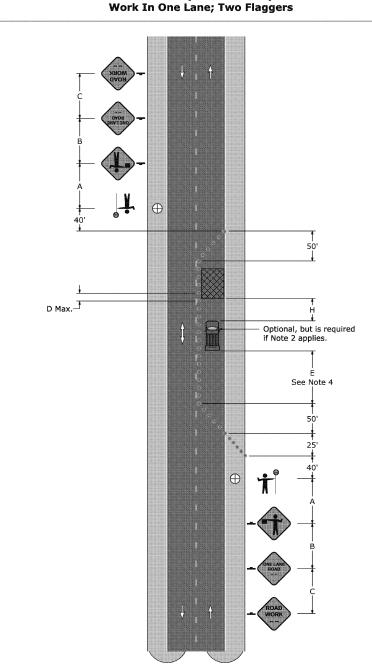
L = Length

| Sign Spa               | cing (             | Chart     |          |      |       |      | Dist | ance a | nd Sp  | acing | Quick | Refere      | ence C | hart |      |     |
|------------------------|--------------------|-----------|----------|------|-------|------|------|--------|--------|-------|-------|-------------|--------|------|------|-----|
|                        |                    |           | ance     | F    | Speed | W    | L    | 1/2L   | 1/3L   |       |       | lizing D    |        | D    | Е    | Н   |
| Condition              | A                  |           | B C      |      | •     |      |      |        | - 1,50 | Per T |       | ype (Length |        |      |      | ''  |
|                        | Feet               | Feet      | Feet     | Feet | MPH   | Feet | Feet | Feet   | Feet   | L     | 1/2L  | 1/3L        | 50'    | Feet | Feet | Fee |
| Urban                  |                    |           |          |      |       | 10   | 105  | 55     | 35     |       |       |             |        |      |      |     |
| 35 MPH or less         | 100                | 100       | 100      | 100  | 25    | 11   |      | 6      | 6      | 6     | 6     | 50          | 155    | 150  |      |     |
| 33 M M 01 1633         |                    |           |          |      |       | 12   | 125  | 65     | 45     |       |       |             |        |      |      |     |
| Urban                  |                    |           |          |      |       | 10   | 150  | 75     | 50     | 6     |       |             |        |      |      |     |
| Greater than 35 MPH    | 350                | 350       | 350      | 350  | 30    | 11   | 165  | 85     | 55     | 7     | 6     | 6           | 6      | 60   | 200  | 15  |
| Greater than 33 Min    |                    |           |          |      |       | 12   | 180  | 90     | 60     | 7     |       |             |        |      |      |     |
|                        |                    |           |          |      |       | 10   | 205  | 105    | 70     | 7     |       |             |        |      |      | 150 |
| Rural                  | 500                | 500       | 500      | 500  | 35    | 11   | 225  | 115    | 75     | 8     | 6     | 6           | 6      | 70   | 250  |     |
|                        |                    |           |          |      |       | 12   | 245  | 125    | 85     | 8     |       |             |        |      |      |     |
| When multiple distand  | e plac             | ques a    | re use   | ed   |       | 10   | 270  | 135    | 90     | 8     |       |             |        |      |      |     |
| on advance warning si  | igns, t            | hey s     | hall all | l be | 40    | 11   | 295  | 150    | 100    | 9     | 6     | 6           | 6      | 80   | 305  | 15  |
| of the same series typ | e.                 | · ·       |          |      |       | 12   | 320  | 160    | 110    | 9     |       |             |        |      |      |     |
| Example: either all "A | HEAD'              | or XX     | XX FEE   | ET.  |       | 10   | 450  | 225    | 150    | 11    | 6     |             |        |      |      |     |
| •                      |                    |           |          |      | 45    | 11   | 495  | 250    | 165    | 12    | 7     | 6           | 6      | 90   | 360  | 15  |
| Tanan Langth Fan       |                    | _         |          |      |       | 12   | 540  | 270    | 180    | 13    | 7     |             |        |      |      |     |
| Taper Length For       | muia               | 5         |          |      |       | 10   | 500  | 250    | 170    | 11    | 6     |             |        |      |      |     |
| S                      | - 1                |           |          |      | 50    | 11   | 550  | 275    | 185    | 12    | 7     | 6           | 6      | 100  | 425  | 25  |
|                        | 244                | <b>-2</b> |          |      |       | 12   | 600  | 300    | 200    | 13    | 7     | 1           |        |      |      |     |
| 40 MPH or less         | $=\frac{W_1^2}{6}$ | 5-        |          |      |       | 10   | 550  | 275    | 185    | 11    | 6     |             |        |      |      |     |
|                        | 6                  | U         |          |      | 55    | 11   | 605  | 305    | 205    | 12    | 7     | 6           | 6      | 110  | 495  | 25  |
| 45 MPH or more         | L = W              | 15        |          |      |       | 12   | 660  | 330    | 220    | 13    | 7     | 1           |        |      |      |     |

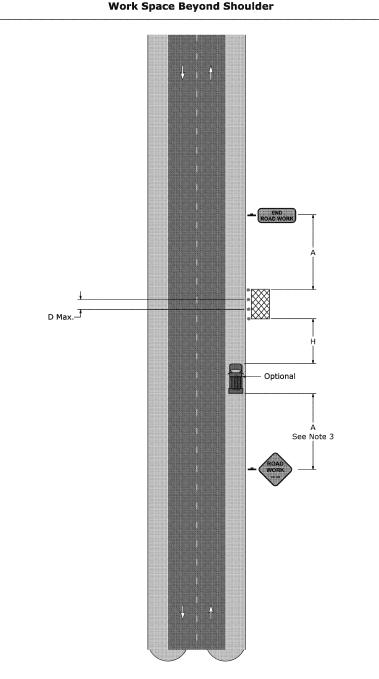
### PATA 102 (Old PATA 7) Work Space On Or Beyond The Shoulder (Minor Roadway Encroachment)



### PATA 107 (Old PATA 10a)



### PATA 201 (Old PATA 24)



### R22-1 WORK ZONE - TURN ON HEADLIGHTS SIGN

(a) Justification. The Work Zone – Turn on Headlights Sign (R22–1) shall be used in advance of work nes in accordance with Department guidelines. When used, the R22–1 sign should generally be installed the first sign approaching the work zone.

(b) Size. The 72" x 48" size should be used for long-term operations on expressways and freeways.



|                 |     |    |    |     | I   | DIMEN | ISION | S – IN |      |      |       |             |             |               |
|-----------------|-----|----|----|-----|-----|-------|-------|--------|------|------|-------|-------------|-------------|---------------|
| N SIZE<br>A x B | С   | D  | E  | F   | Н   | J     | К     | L      | М    | N    | Р     | MAR-<br>GIN | BOR-<br>DER | BLANK<br>STD. |
| 3" x 36"        | 2.1 | 6C | зс | 2.6 | 0.9 | 3     | 3.8   | 20.3   | 9.2  | 15.2 | 19.9  | 0.6         | 0.8         | B5-4836       |
| 2" x 48"        | 2.7 | 8D | 4D | 4   | 1.3 | 3.3   | 4.7   | 31.7   | 14.6 | 23.7 | 30.7* | 0.6         | 0.8         |               |

GEND AND BORDER: BLACK (NON-REFLECTORIZED) CKGROUND: TOP: ORANGE (REFLECTORIZED)

BOTTOM: WHITE (REFLECTORIZED)

APPROVED FOR THE SECRETARY OF TRANSPORTATION All C Rowe By: Date: 02-29-12 Chief, Traffic Engineering and Permits Section

### W21-19 ACTIVE WORK ZONE WHEN FLASHING SIGN

(a) Justification. The Active Work Zone When Flashing Sign (W21-19) shall be used in advance of an ive work zone" in accordance with Department guidelines to advise motorists that construction, maintenance tility workers are on the roadway, berm or shoulder, and that increased penalties apply. The W21-19 sign If be equipped with a flashing white light that is activated when workers are present and when flashing shall readily visible both day and night by an ordinarily observant person. When workers are not present for more 1 60 minutes, the flashing light shall be turned off.

(b) Placement. When used, the W21-19 sign shall be erected as close as practical to the beginning of the ve work zone, except motorists' safety should not be compromised by erecting the signs within transitions t other locations where the sign could be especially distracting. When a work zone has more than one ve work zone and the active work zones are more than 1 MILE apart, each active work zone shall be



|                    |     |      |     |    | DIME | NSION | IS - II | N    |     |      |      |             |          |
|--------------------|-----|------|-----|----|------|-------|---------|------|-----|------|------|-------------|----------|
| SIGN SIZE<br>A x A | В   | С    | D   | E  | F    | G     | Н       | J    | К   | L    | М    | MAR-<br>GIN | BO<br>DE |
| 36" x 36"          | 2.5 | 4.5C | 3   | 2C | 2    | 2.5   | 8.3     | 14.5 | 6.5 | 11.6 | 12.7 | 0.6         | 0.       |
| 48" x 48"          | 3.5 | 6C   | 3.5 | зс | 3    | 4     | 11.2    | 19.3 | 8.7 | 15.5 | 19.1 | 0.8         | 1        |

GEND AND BORDER: BLACK (NON-REFLECTORIZED) CKGROUND: ORANGE (REFLECTORIZED)

APPROVED FOR THE SECRETARY OF TRANSPORTATION De C Rome By: Date: 02-29-12
Chief, Traffic Engineering and Permits Section

### W21-20 END ACTIVE WORK ZONE SIGN

The End Active Work Zone Sign (W21-20) should be installed immediately at the end of each "active rk zone" when signs are erected at the beginning of the active work zone to advise of increased penalties. wever, the W21–20 sign is not necessary if the End Road Work Sign (G20–2) or the End Work Area Sign 20–3) is located at this location.



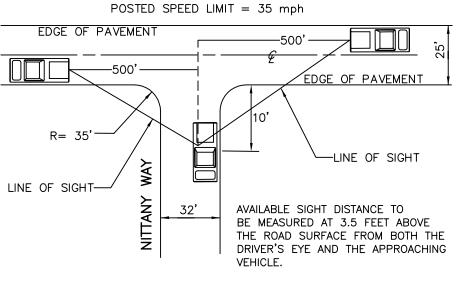
|                    |     |    | DIN | MENSI | ONS - | - IN |      |      |             |          |
|--------------------|-----|----|-----|-------|-------|------|------|------|-------------|----------|
| SIGN SIZE<br>A x A | В   | С  | D   | E     | F     | G    | Н    | J    | MAR-<br>GIN | BC<br>DE |
| 36" x 36"          | 3.5 | 5E | 3   | 3.5   | 7     | 13.2 | 10.5 | 9.6  | 0.6         | 0.       |
| 48" x 48"          | 4.5 | 6E | 5   | 4.5   | 8.4   | 16   | 12.6 | 11.6 | 0.6         | 0.       |

GEND AND BORDER: BLACK (NON-REFLECTORIZED) CKGROUND:

ORANGE (REFLECTORIZED)

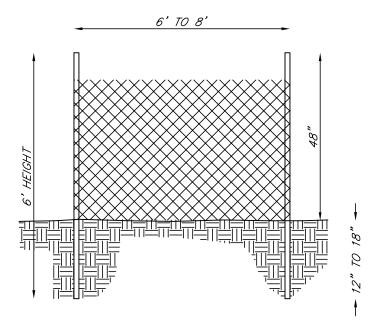
APPROVED FOR THE SECRETARY OF TRANSPORTATION By : Date : 02-29-12 Chief, Traffic Engineering and Permits Section Bureau of Maintenance and Operations

### DOTTERER ROAD



### DOTTERER ROAD - SIGHT DISTANCE DETAIL

1. ALL SIGHT DISTANCE OBSTRUCTIONS (INCLUDING BUT NOT LIMITED TO EMBANKMENTS AND VEGETATION) SHALL BE REMOVED BY THE DEVELOPER TO PROVIDE A MINIMUM OF 500 FEET OF SIGHT DISTANCE TO THE RIGHT AND 500 FEET OF SIGHT DISTANCE TO THE LEFT FOR DRIVER EXITING THE PROPOSED DRIVEWAY ONTO THE THROUGH HIGHWAY. THE DRIVER MUST BE CONSIDERED TO BE POSITIONED TEN FEET FROM THE NEAR EDGE OF THE CLOSEST HIGHWAY THROUGH TRAVEL LANE AT EYE HEIGHT OF THREE FEET SIX INCHES (3'-6") ABOVE THE PAVEMENT SURFACE. THE POINT SIGHTED BY THE EXITING DRIVER SHALL BE THREE FEET SIX INCHES (3'-6") ABOVE THE PAVEMENT SURFACE LOCATED IN THE CENTER OF THE CLOSEST HIGHWAY TRAVEL LANE DESIGNATED FOR USE BY APPROACHING TRAFFIC. THIS SIGHT DISTANCE SHALL BE MAINTAINED BY THE OWNER. (SEE DIAGRAM)



### CONSTRUCTION PROTECTION FENCE DETAIL NTS

INSTALLATION NOTES

- 1. IT IS RECOMMENDED THAT A CONVENTIONAL METAL "T" OR "U" POST BE DRIVEN INTO THE GROUND TO A DEPTH OF 12 TO 18 INCHES.
  POSTS SHOULD BE SPACED EVERY 6 TO 8 FEET. NOTE: NOTCHED POSTS ARE IDEAL TO PREVENT THE FENCE FROM SLIPPING.
- 2. THREE WIRE TIES. WRAPPED AROUND A FENCE STRAND AND THE POST, ARE IDEAL IN SECURING THE FENCE TO THE POST. TENSION WRE OF ROPE MAY BE USED AS A TOP STRINGER AND WOVEN THROUGH THE
- TWO ROLLS OF SAFETY FENCE MAY BE OVERLAPPED AT THE INTERSECTION OF A POST AND SECURED WITH WIRE TIES.

COLOR: LEGEND AND BORDER SACKGROUND SOURCE SUBJECT (NON-REFLECTORIZED)
YELLOW (REFLECTORIZED)

( R1-1 ) 'STOP' SIGN DETAIL NTS

1. REFER TO PA. DOT PUB. 68 : OFFICIAL TRAFFIC-CONTROL DEVICES -TITLE 67, CHAPTER 211 -SECTION 211.52 FOR ADDITIONAL NOTES. ALL SIGNAGE MUST BE INSTALLED ON PENNDOT STANDARD BREAKAWAY POSTS.

THIS

'NO PARKING THIS SIDE' SIGN DETAIL NTS

SIZE: 12" x 18"

1. ALL 'NO PARKING' SIGNS SHALL BE DOUBLE SIDED



### SIGNAGE - GENERAL NOTES

( W14-2 ) 'NO OUTLET' SIGN DETAIL NTS

1. REGULATORY AND ADVISORY SIGNAGE TO BE INSTALLED MUST UTILIZE HIGH INTENSITY DIAMOND GRADE REFLECTIVE MATERIAL IN ACCORDANCE WITH NEW PENNDOT STANDARDS FOR TOWNSHIP REGULATORY SIGNAGE.



PAVEMENT MARKING - GENERAL NOTES

3. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED.

SEPARATE PAYMENT SHALL BE MADE THEREFORE.

11. ALL LONG PAVEMENT MARKINGS SHALL BE EPOXY.

3. Lines forming a crosswalk shall be parallel.

4. The width of crosswalks is nor- mally 6 ft.

18. Chevrons shall be used when specified on the Plans.

STOP BARS - NOTES

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE DEPARTMENT'S SPECIFICATIONS, FORM 408.

GOVERNING THE DESIGN, LOCATION, AND OPERATION OF ALL OFFICIAL TRAFFIC SIGNS, SIGNALS, AND MARKINGS ON AND ALONG HIGHWAYS WITHIN THE COMMONWEALTH OF PENNSYLVANIA.

2. THESE PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE REGULATIONS

4. THE CONTRACTOR SHALL PREPARE THE PAVEMENT SURFACE FOR THE PROPER ADHESION. ANY SWEEPING OR REMOVAL OF DEBRIS, GRAVEL, DIRT, OR OTHER FOREIGN MATERIALS SHALL BE CONSIDERED INCEDENTAL TO THE INSTALLATION OF THE NEW PAVEMENT MARKINGS, AND NO

5. THE CONTRACTOR SHALL REMOVE ALL PREVIOUS PAVEMENT MARKINGS, WHICH IN THE OPINION OF THE ENGINEER CONFLICT WITH THE NEW PAVEMENT MARKINGS. UNLESS SPECIFICALLY STATED OTHERWISE THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE NEW PAVEMENT MARKINGS, AND NO SEPARATE PAYMENT WILL BE MADE THEREFORE.

6. THE CONTRACTOR SHALL NOTE ALL SPECIAL PROVISIONS OF THE CONTRACT AND SPECIFICALLY WITH REGARDS TO: THE RATE OF APPLICATION, MAINTENANCE OF TRAFFIC, RESTRICTED WORKING

7. UNLESS SPECIFIED OTHERWISE, THE BASIS OF MEASUREMENT SHALL BE ALONG THE LONGITUDINAL

10. WHERE BITUMINOUS SEALANTS PREVENTS OR MAKES IMPRACTICAL THE EXTENDING OF LINES TO THE FACE OF THE CURB, THE CONTRACTOR SHALL EXTEND LINES TO EDGE OF SEALANT OR WITHIN ONE FOOT OF THE FACE OF CURB, WHICHEVER IS LESS.

CENTERLINE OF PAVEMENT MARKINGS. MEASUREMENT FOR LEGENDS SHALL BE PER MESSAGE, COMPLETE AND IN PLACE

HOURS, AND/OR RESTRICTED WEATHER CONDITIONS NO DEVIATIONS WILL BE PERMITTED.

8. PRIOR TO APPLICATION, THE CONTRACTOR SHALL FIELD CHECK AND LOCATE ALL PAVEMENT MARKINGS TO THE SATISFACTION OF THE ENGINEER.

9. ALL MARKINGS IMPROPERLY APPLIED OR LOCATED SHALL BE COMPLETELY REMOVED AND CORRECTLY RE—APPLIED, AT THE SOLE EXPENSE OF THE CONTRACTOR.

12. ALL SHORT LINE AND PAVEMENT MARKING LEGENDS (SYMBOLS) ON BITUMINOUS PAVEMENT

THAN FOUR FEET (4') FROM THE NEARST EDGE OF THE INTERSECTION TRAVEL WAY.

CROSSWALK

13. STOP LINE MARKINGS SHALL BE PLACED FOUR FEET (4') IN ADVANCE OF AND PARALLEL TO THE NEAREST CROSSWALK LINE. WHERE MARKED CROSSWALKS DO NOT EXIST, THE STOP LINE SHALL

(REFER TO GENERAL NOTES 11 & 12)

1. Crosswalk lines shall be solid white lines, 6 inches wide, marking both edges of the

2. Crosswalk lines shall extend from face of curb to face of curb or edge of shoulder as

5. When specified on the Plans, 24 inch wide consecutive white rectangles 8 ft. long shall be installed perpen— dicular to the direction of vehicular travel. Spacing shall be approximately 4 ft. c—c. They shall be located so as to avoid normal wheel paths.

6. Stop bars, solid white lines being 24 inches wide, shall completely traverse all traffic lanes

Stop bars shall be located at a minimum of 4 ft. in advance of and parallel to the crosswalk lines, unless specified otherwise on the Plans.

ノWATER

PROPOSED WATER MAIN LOCATION DETAIL NTS

BE PLACED AT THE DESIRED STOPPING POINT, BUT NO MORE THAN THIRTY FEET (30'), OR LESS

STOP BAR

LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA ONE CALL (DIAL 811) THREE DAYS PRIOR TO EXCAVATION.

|          | REVISIONS   |
|----------|---|
| DATE     | DESCRIPTION   |
|          |   |
| 7-17-17  | NEW OWNER AND UPDATE LAYOUT                             |
| 10-27-08 | TWP. ENGR. LTR. 10-1-08, TWP PLANNER LTR 10-1-08 &      |
|          | MCCD LTR. 9-25-08                                       |
| 8-25-08  | TWP. ENGR. LTR. 3-26-08, TWP PLANNER LTR 3-31-08        |
|          | TWP. SWR. ENGR. LTR. 4-1-08, FIRE CHIEF LTR. 4-2-08 &   |
|          | MCCD LTR. 6-12-08                                       |
| 10-15-07 | TWP. ENGR. LTR. 8-30-07, TWP PLANNER LTR 9-4-07         |
|          | TWP. SWR. ENGR. LTR. 8-31-07, TRAFFIC ENGR. LTR. 8-28-0 |

GENERAL CONSTRUCTION DETAIL PLAN "PACER'S GAIT"

PREPARED FOR

MIKELEN, LLC.

SITUATE IN

NEW HANOVER TOWNSHIP MONTGOMERY COUNTY, PENNSYLVANIA

JULY 9, 2007 PROJECT No. 16086 FILE: 16086-BASE

> SCALE: AS SHOWN SHEET No. 21 OF 21

