

PENNEAST PIPELINE COMPANY, LLC

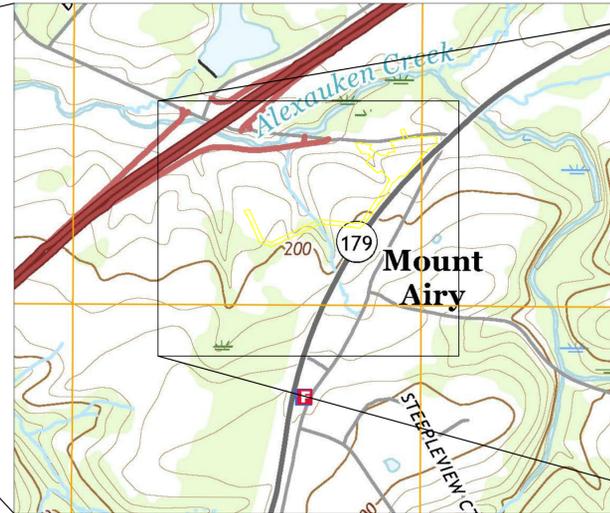
LAMBERTVILLE INTERCONNECT

WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY

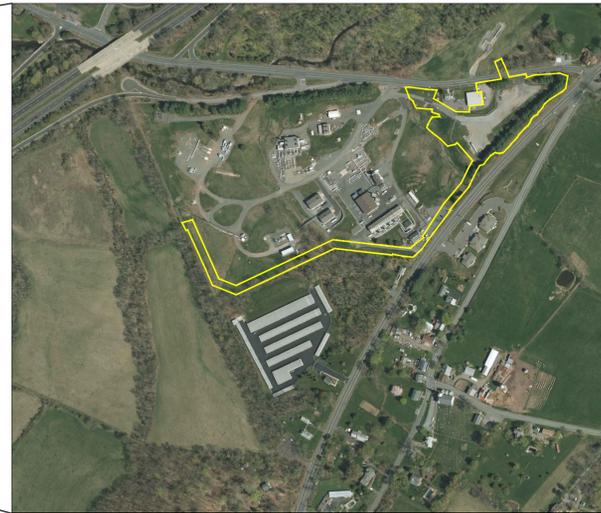
STORMWATER MANAGEMENT PLANS



NEW JERSEY



HUNTERDON COUNTY MAP



SITE LOCATION

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|------------------|--|
| Sheet Number | Sheet Title |
| C-100 | COVER SHEET |
| C-101 | EXISTING CONDITIONS PLAN |
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| C-103B | SOIL EROSION AND SEDIMENT CONTROL PLAN-AREA B |
| C-103C | SOIL EROSION AND SEDIMENT CONTROL PLAN-AREA C |
| C-103D | SOIL EROSION AND SEDIMENT CONTROL PLAN-AREA D |
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| C-106 | ENLARGED LANDSCAPING PLAN-BIORETENTION BASIN 2 |
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| C-111 | CONSTRUCTION DETAILS SHEET 4 |
| C-112 | CONSTRUCTION DETAILS SHEET 5 |
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| C-115 | CONSTRUCTION DETAILS SHEET 8 |
| C-116 | CONSTRUCTION DETAILS SHEET 9 |
| C-117 | SESC DETAILS SHEET 1 |
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GENERAL NOTES:

- PLANS ARE FOR PERMITTING PURPOSES ONLY NOT CONSTRUCTION. ADDITIONAL PLANS AND DOCUMENTS WILL BE REQUIRED FOR CONSTRUCTION OF THE PROPOSED PROJECT.

EXHIBIT A

PLANT W.B.S. NO. CE.000147.001
 PIPE LINE W.B.S. NO. N/A
 YEAR 2020

TRC Engineers, Inc.
 ENGINEER IN RESPONSIBLE CHARGE OF THE WORK SHOWN ON THIS DRAWING
 DATE: 6/28/2019 SIGNATURE *Barry J. Sutherland*
 PROFESSIONAL ENGINEER: BARRY J. SUTHERLAND
 LIC. # 24GE02913500



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PREPARED BY:



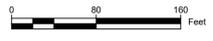
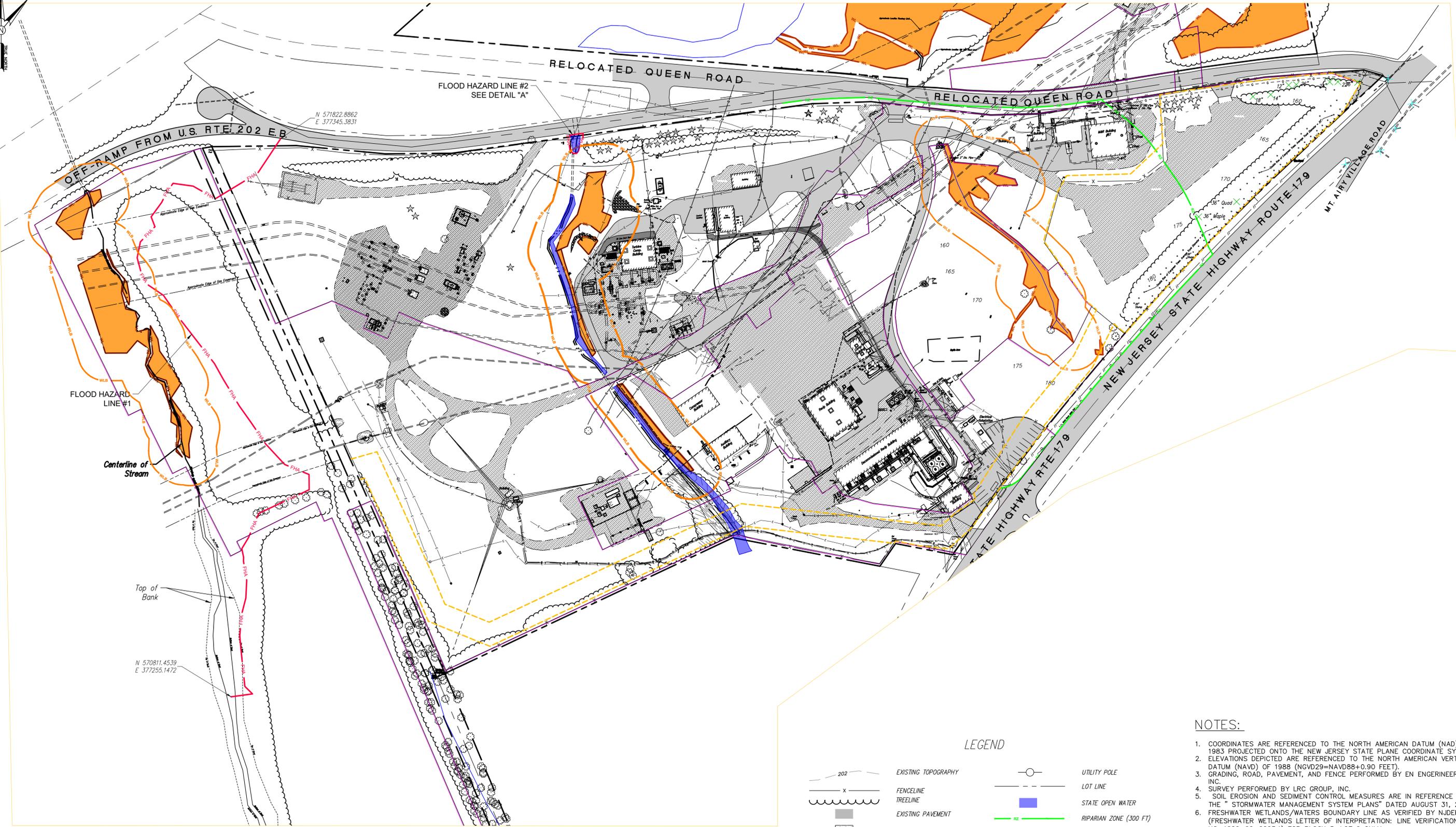
41 SPRING STREET, SUITE 102
 NEW PROVIDENCE, NEW JERSEY

Certificate of Authorization #24GA28080500



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LEGEND

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|--|---------------------|--|-------------------------|
| | EXISTING TOPOGRAPHY | | UTILITY POLE |
| | FENCELINE | | LOT LINE |
| | TREELINE | | STATE OPEN WATER |
| | EXISTING PAVEMENT | | RIPIARIAN ZONE (300 FT) |
| | EXISTING GRAVEL | | WETLAND AREA |
| | DECIDUOUS TREE | | WETLANDS BUFFER (50 FT) |
| | CONIFER TREE | | FLOOD HAZARD AREA |
| | | | PROJECT SITE |

NOTES:

- COORDINATES ARE REFERENCED TO THE NORTH AMERICAN DATUM (NAD) OF 1983 PROJECTED ONTO THE NEW JERSEY STATE PLANE COORDINATE SYSTEM.
- ELEVATIONS DEPICTED ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 (NGVD29=NAVD88+0.90 FEET).
- GRADING, ROAD, PAVEMENT, AND FENCE PERFORMED BY EN ENGINEERING, INC.
- SURVEY PERFORMED BY LRC GROUP, INC.
- SOIL EROSION AND SEDIMENT CONTROL MEASURES ARE IN REFERENCE TO THE "STORMWATER MANAGEMENT SYSTEM PLANS" DATED AUGUST 31, 2018.
- FRESHWATER WETLANDS/WATERS BOUNDARY LINE AS VERIFIED BY NJDEP (FRESHWATER WETLANDS LETTER OF INTERPRETATION: LINE VERIFICATION FILE NO. 1026-02-0003.1) FOR BLOCK 5, LOT 6 ONLY.
- WETLANDS AND WATERS BOUNDARY LINE(S) FOR BLOCK 5, LOT 6 ONLY AS SHOWN ON THE MAP ENTITLED: "NJDEP LETTER OF INTERPRETATION, LINE VERIFICATION - ENTIRE SITE, MARCELLUS TO MARKET PROJECT, LAMBERTVILLE COMPRESSOR STATION, HUNTERDON COUNTY, NEW JERSEY", CONSISTING OF THREE SHEETS, DATED OCTOBER 2016, LAST REVISED JANUARY 20, 2017, AND PREPARED BY BARRY A. GLEISSNER, P.L.S. OF AECOM.
- WETLANDS AND WATERS BOUNDARY LINES DEPICTED ON BLOCK 5, LOT 5 DELINEATED BY TRC ENVIRONMENTAL CORPORATION ON AUGUST 11, 2017.
- RIPIARIAN ZONES ARE 300 FOOT OFFSETS FROM EITHER TOP OF BANK OR STREAM CENTERLINES, AS APPROPRIATE.

TRC Engineers, Inc.
 ENGINEER IN RESPONSIBLE CHARGE OF THE WORK SHOWN ON THIS DRAWING
 DATE: 6/29/2019 SIGNATURE:
 PROFESSIONAL ENGINEER: BARRY J. SUTHERLAND
 LIC. # 24GE02913500



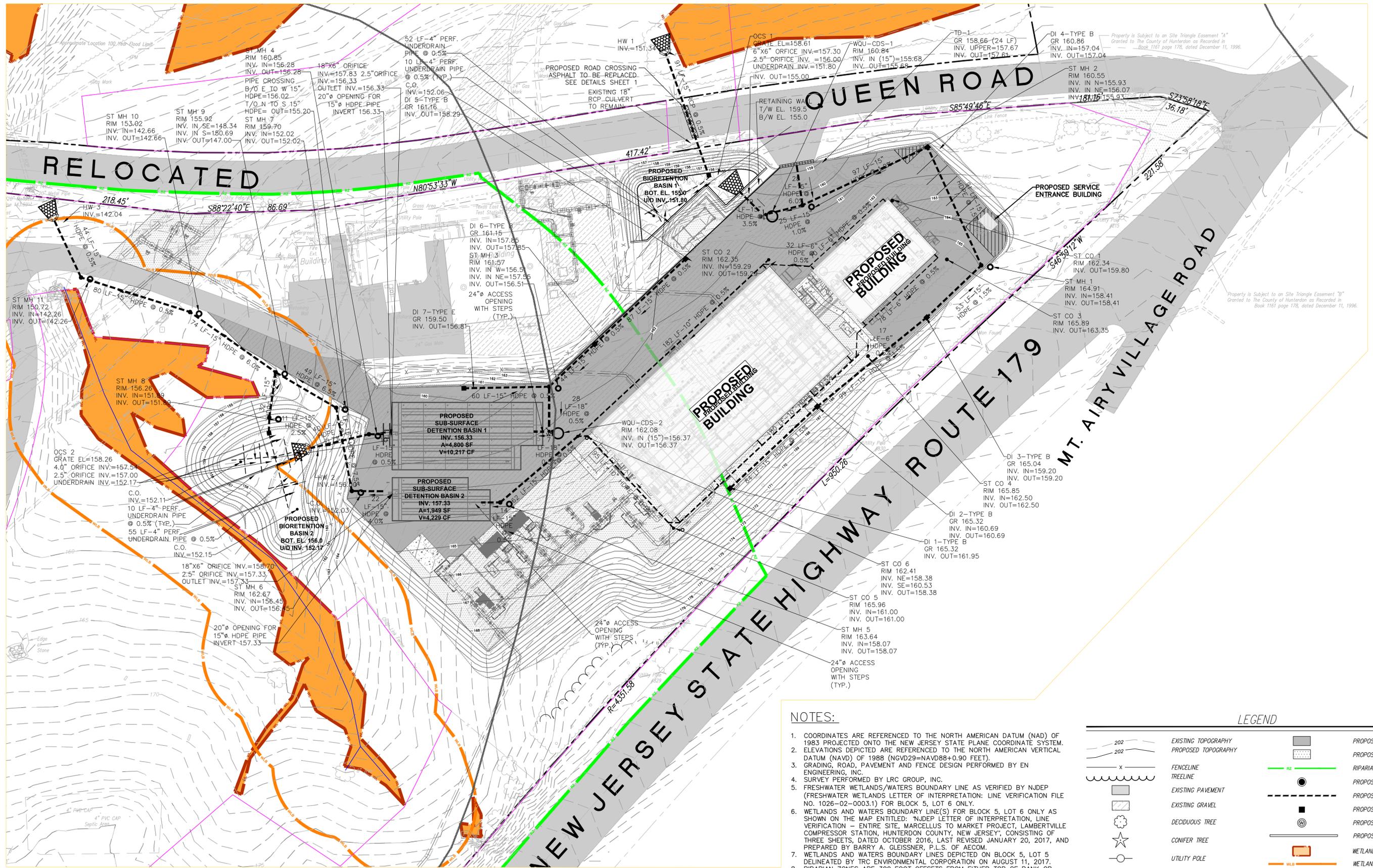
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TRC Engineers, Inc.
 41 SPRING STREET
 NEW PROVIDENCE, NEW JERSEY 07974
 PHONE NO. (908) 988-1700
 FAX NO. (973) 564-6442
 Certificate of Authorization #24GA28047100

PENNEAST PIPELINE PROJECT
 LAMBERTVILLE INTERCONNECT
 EXISTING CONDITIONS PLAN
 LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY
 YEAR: 2020 W.B.S. CE.000147.001 SCALE: AS SHOWN DWG. C-101 REV. 0



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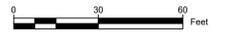


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- RIPARIAN ZONES ARE 300 FOOT OFFSETS FROM EITHER TOP OF BANK OR STREAM CENTERLINES, AS APPROPRIATE.

LEGEND

| | | | |
|--|---------------------|--|-----------------------------|
| | EXISTING TOPOGRAPHY | | PROPOSED PAVED AREAS |
| | PROPOSED TOPOGRAPHY | | PROPOSED GRAVEL AREAS |
| | FENCELINE | | RIPARIAN ZONE (300 FT) |
| | TREELINE | | PROPOSED MANHOLE |
| | EXISTING PAVEMENT | | PROPOSED PIPE |
| | EXISTING GRAVEL | | PROPOSED INLET |
| | DECIDUOUS TREE | | PROPOSED WATER QUALITY UNIT |
| | CONIFER TREE | | PROPOSED CURB |
| | UTILITY POLE | | WETLAND AREA |
| | LOT LINE | | WETLANDS BUFFER (50 FT) |
| | STATE OPEN WATER | | PROJECT SITE |



TRC Engineers, Inc.
 ENGINEER IN RESPONSIBLE CHARGE OF THE WORK SHOWN ON THIS DRAWING
 DATE: 6/29/19 SIGNATURE: *Barry J. Sutherland*
 PROFESSIONAL ENGINEER: BARRY J. SUTHERLAND
 LIC. # 246E02913500

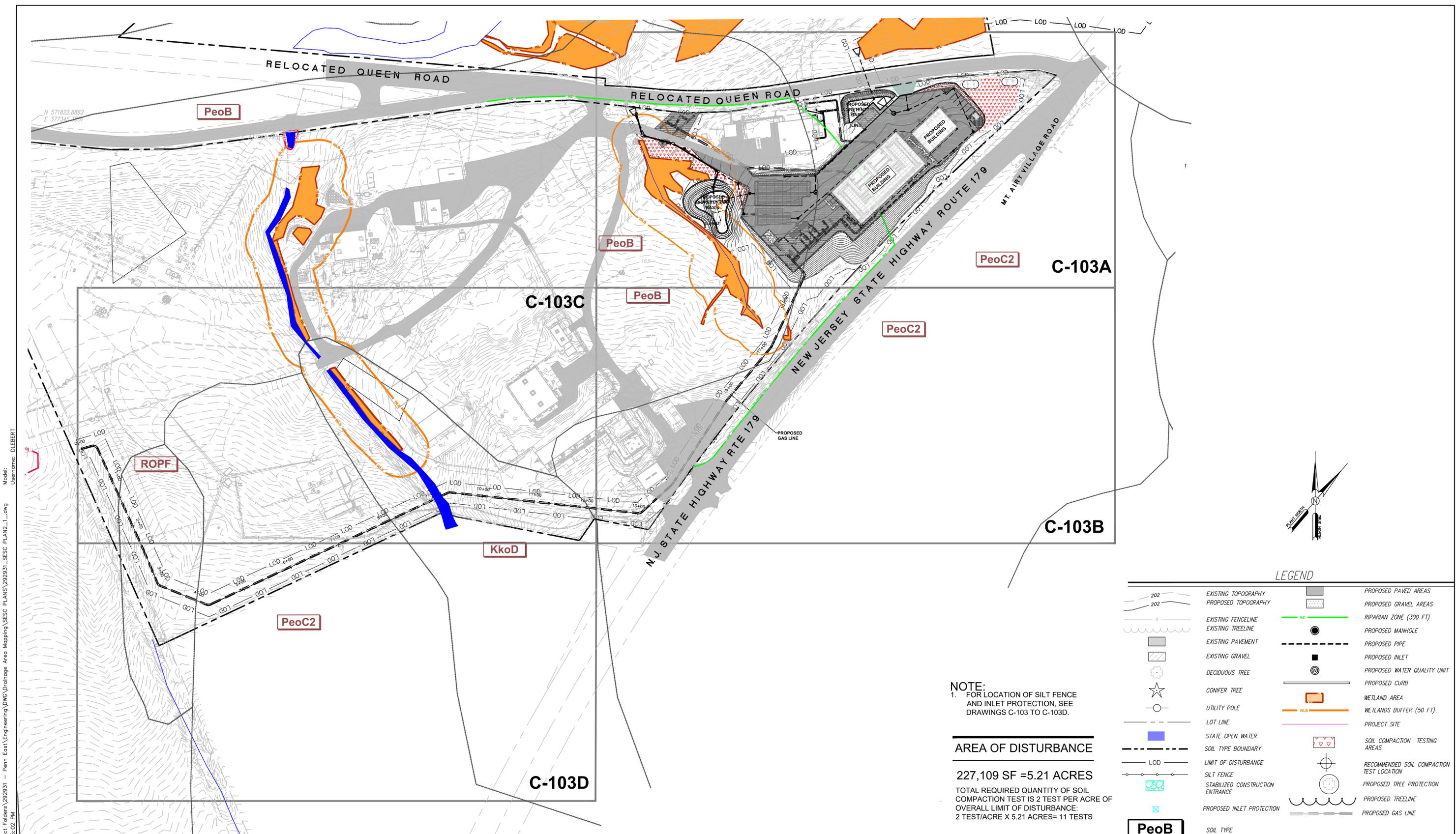


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TRC Engineers, Inc.
 41 Spring Street, Suite 102
 New Providence, New Jersey 07974
 Phone No. 908-988-1700
 Certificate of Authorization #24GA28047100

PENNEAST PIPELINE PROJECT
 LAMBERTVILLE INTERCONNECT
 PROPOSED STORMWATER MANAGEMENT PLAN
 LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY





NOTE:
 1. FOR LOCATION OF SILT FENCE AND INLET PROTECTION, SEE DRAWINGS C-103 TO C-103D.

AREA OF DISTURBANCE

227,109 SF = 5.21 ACRES
 TOTAL REQUIRED QUANTITY OF SOIL COMPACTION TEST IS 2 TEST PER ACRE OF OVERALL LIMIT OF DISTURBANCE:
 2 TEST/ACRE X 5.21 ACRES = 11 TESTS

LEGEND

- EXISTING TOPOGRAPHY
- PROPOSED TOPOGRAPHY
- EXISTING FENCELINE
- EXISTING TREELINE
- EXISTING PAVEMENT
- EXISTING GRAVEL
- DECIDUOUS TREE
- CONIFER TREE
- UTILITY POLE
- LOT LINE
- STATE OPEN WATER
- SOIL TYPE BOUNDARY
- LIMIT OF DISTURBANCE
- SILT FENCE
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED INLET PROTECTION
- PROPOSED PAVED AREAS
- PROPOSED GRAVEL AREAS
- RIPARIAN ZONE (300 FT)
- PROPOSED MANHOLE
- PROPOSED PIPE
- PROPOSED INLET
- PROPOSED WATER QUALITY UNIT
- PROPOSED CURB
- WETLAND AREA
- WETLANDS BUFFER (50 FT)
- PROJECT SITE
- SOIL COMPACTION TESTING AREAS
- RECOMMENDED SOIL COMPACTION TEST LOCATION
- PROPOSED TREE PROTECTION
- PROPOSED TREELINE
- PROPOSED GAS LINE

PeoB

| Symbol | Description |
|--------|---|
| KkoD | Klinesville channery loam, 12 to 18 percent slopes |
| PeoB | Penn channery silt loam, 2 to 6 percent slopes |
| PeoC2 | Penn channery silt loam, 6 to 12 percent slopes, eroded |
| ROPF | Rough broken land, shale |

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 Username: DLEBERT

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 DATE: 6/29/2019 SIGNATURE: *Barry J. Sutherland*
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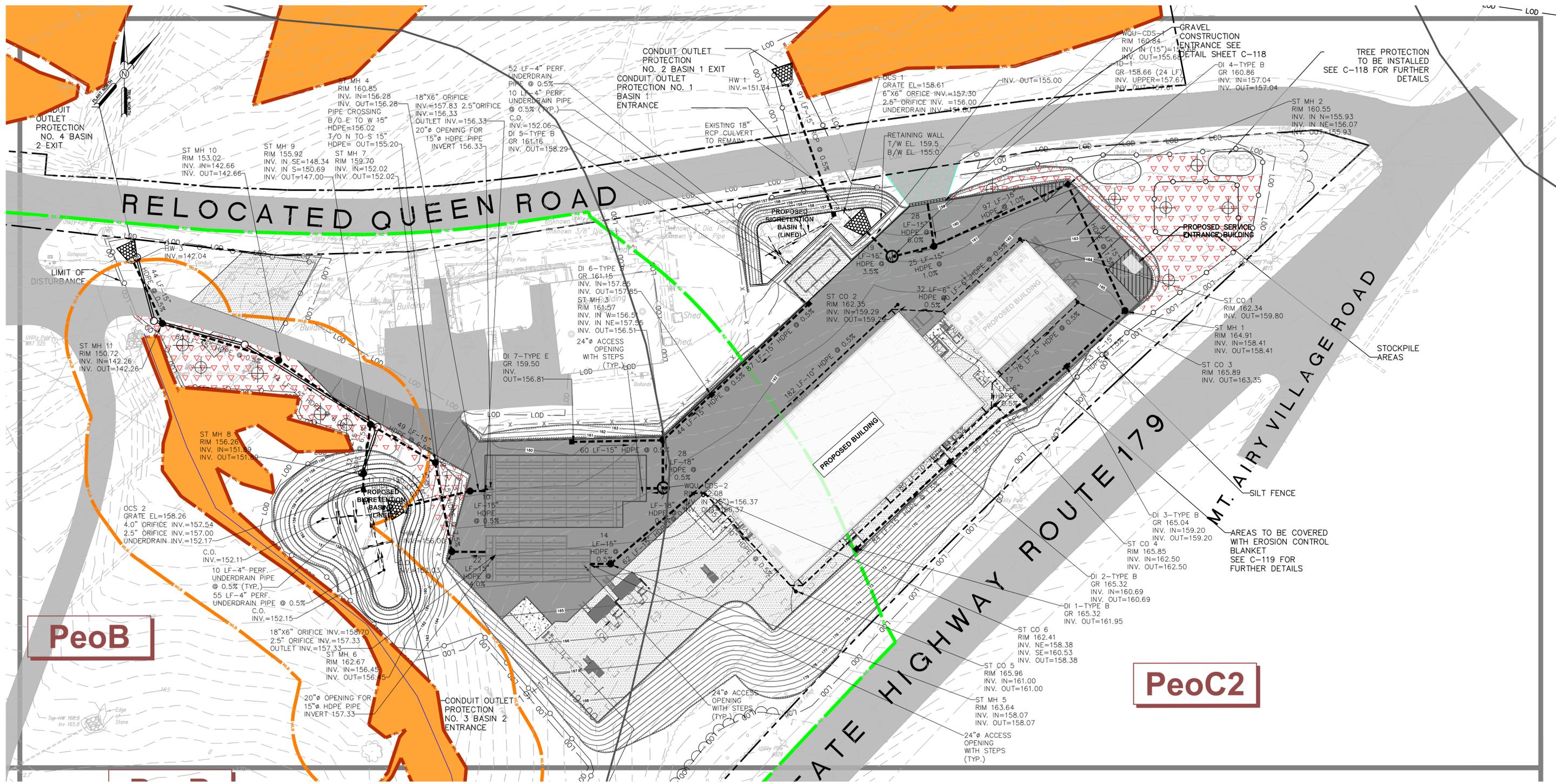


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PENNEAST PIPELINE PROJECT
 LAMBERTVILLE INTERCONNECT
 OVERALL SOIL EROSION AND SEDIMENT CONTROL PLAN
 LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY
 YEAR: 2020 W.B.S. CE.000147.001 SCALE: AS SHOWN DWG. C-103 REV. 0





PeoB

PeoC2

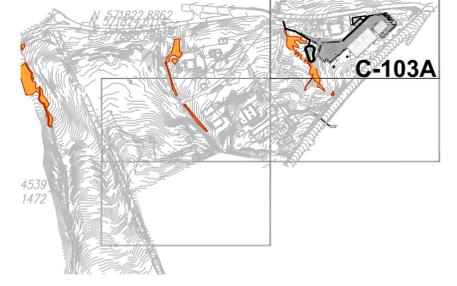
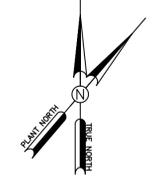
LEGEND

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|--|---------------------|--|-----------------------------|--|----------------------------------|
| | EXISTING TOPOGRAPHY | | PROPOSED PAVED AREAS | | STATE OPEN WATER |
| | PROPOSED TOPOGRAPHY | | PROPOSED GRAVEL AREAS | | LIMIT OF DISTURBANCE |
| | FENCE LINE | | RIPIARIAN ZONE (300 FT) | | SOIL COMPACTION TESTING AREAS |
| | TREELINE | | PROPOSED MANHOLE | | SOIL TYPE BOUNDARY |
| | EXISTING PAVEMENT | | PROPOSED PIPE | | PeoB |
| | EXISTING GRAVEL | | PROPOSED INLET | | SOIL TYPE |
| | DECIDUOUS TREE | | PROPOSED WATER QUALITY UNIT | | STABILIZED CONSTRUCTION ENTRANCE |
| | CONIFER TREE | | PROPOSED CURB | | PROPOSED INLET PROTECTION |
| | UTILITY POLE | | WETLAND AREA | | SILT FENCE |
| | LOT LINE | | WETLANDS BUFFER (50 FT) | | PROPOSED TREELINE |
| | | | PROJECT SITE | | PROPOSED GAS LINE |

AREA OF DISTURBANCE
 226,772 SF = 5.21 ACRES

TOTAL REQUIRED QUANTITY OF SOIL COMPACTION TEST IS 2 TEST PER ACRE OF OVERALL LIMIT OF DISTURBANCE:
 2 TEST/ACRE X 5.21 ACRES = 11 TESTS

| Symbol | Description |
|--------|---|
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| ROPF | Rough broken land, shale |



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 Date: 2/13/2018 11:52:02 PM

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PENNEAST PIPELINE PROJECT
 LAMBERTVILLE INTERCONNECT
 SOIL EROSION AND SEDIMENT CONTROL
 PLAN-AREA A
 LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY



YEAR: 2020 W.B.S. CE.000147.001 SCALE: 1:30 DWG. C-103A REV. 0

PeoB

PeoC2

NEW JERSEY STA

STATE HIGHWAY RTE 179

PROPOSED GAS LINE

LEGEND

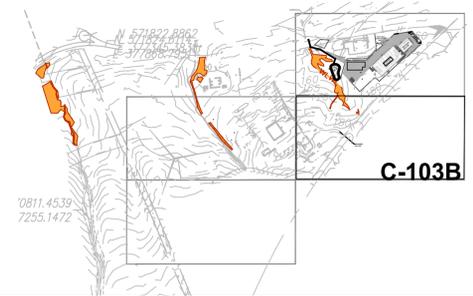
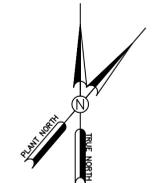
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| | EXISTING TOPOGRAPHY | | PROPOSED PAVED AREAS | | STATE OPEN WATER |
| | PROPOSED TOPOGRAPHY | | PROPOSED GRAVEL AREAS | | LIMIT OF DISTURBANCE |
| | FENCELINE | | RIPIARIAN ZONE (300 FT) | | SOIL COMPACTION TESTING AREAS |
| | TREELINE | | PROPOSED MANHOLE | | SOIL TYPE BOUNDARY |
| | EXISTING PAVEMENT | | PROPOSED PIPE | | SOIL TYPE |
| | EXISTING GRAVEL | | PROPOSED INLET | | STABILIZED CONSTRUCTION ENTRANCE |
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| Symbol | Description |
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| ROPF | Rough broken land, shale |

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C-103B

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TRC Engineers, Inc.
ENGINEER IN RESPONSIBLE CHARGE OF THE WORK SHOWN ON THIS DRAWING
DATE: 6/29/2019 SIGNATURE:



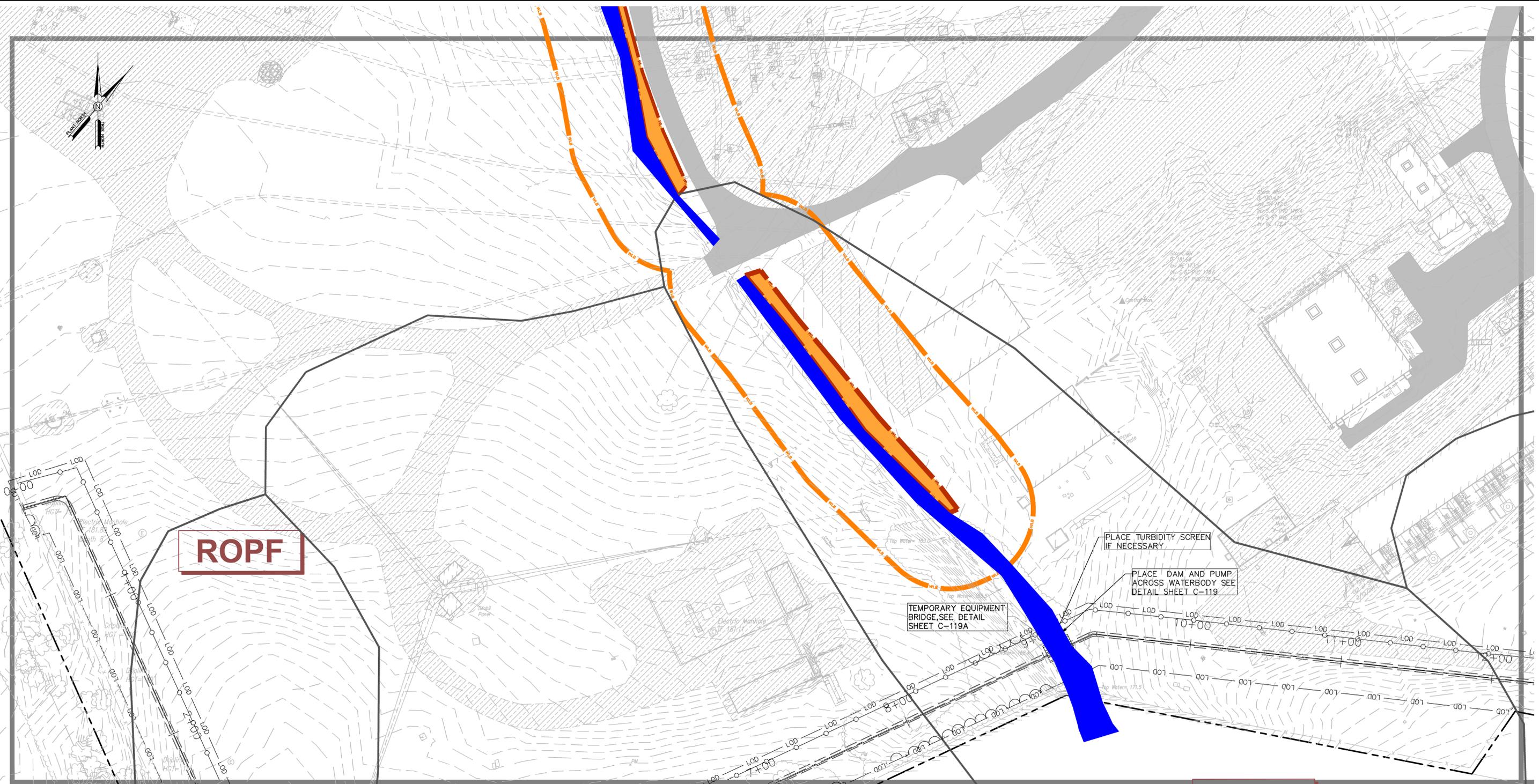
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PLAN-AREA B
LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY
YEAR: 2020 W.B.S. CE.000147.001 SCALE: AS SHOWN DWG. C-103B REV. 0



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ROPF

TEMPORARY EQUIPMENT BRIDGE, SEE DETAIL SHEET C-119A

PLACE TURBIDITY SCREEN IF NECESSARY

PLACE DAM AND PUMP ACROSS WATERBODY SEE DETAIL SHEET C-119

LEGEND

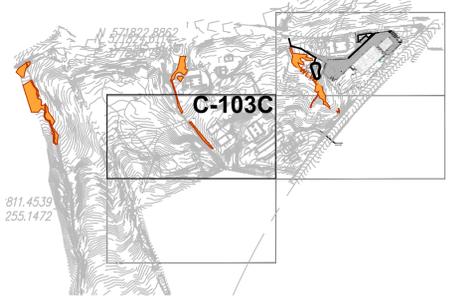
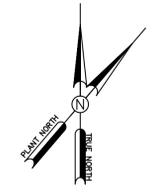
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| | LOT LINE | | PROJECT SITE | | PROPOSED TREELINE |
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 LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY
 YEAR: 2020 W.B.S. CE.000147.001 SCALE: 1:30 DWG. C-103C REV. 0



KkoD

N/F
DAVID W. & DIANE P.
SIGLIN
Block 5 Lot 7

N/F
AFFORDABLE SELF
STORAGE, INC.
BK1158 P703
Block 5 Lot 8

PeoC2

N/F
AFFORDABLE SELF
STORAGE, INC.
BK1158 P703
Block 5 Lot 8

LEGEND

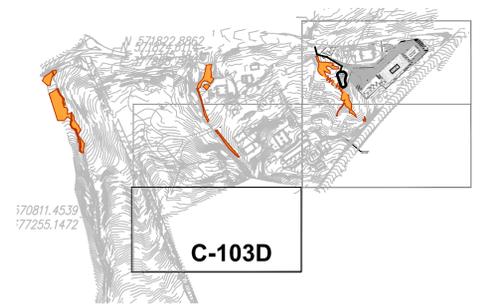
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|--|---------------------|--|-----------------------------|--|-------------------------------|--|---|
| | EXISTING TOPOGRAPHY | | PROPOSED PAVED AREAS | | STATE OPEN WATER | | PROPOSED TREE PROTECTION |
| | PROPOSED TOPOGRAPHY | | PROPOSED GRAVEL AREAS | | LIMIT OF DISTURBANCE | | RECOMMENDED SOIL COMPACTION TEST LOCATION |
| | EXISTING FENCELINE | | RIPARIAN ZONE (300 FT) | | SOIL COMPACTION TESTING AREAS | | SOIL TYPE BOUNDARY |
| | EXISTING TREELINE | | PROPOSED MANHOLE | | SOIL TYPE | | STABILIZED CONSTRUCTION ENTRANCE |
| | EXISTING PAVEMENT | | PROPOSED PIPE | | SILT FENCE | | PROPOSED INLET PROTECTION |
| | EXISTING GRAVEL | | PROPOSED INLET | | PROPOSED TREELINE | | PROPOSED GAS LINE |
| | DECIDUOUS TREE | | PROPOSED WATER QUALITY UNIT | | WETLAND AREA | | |
| | CONIFER TREE | | PROPOSED CURB | | WETLANDS BUFFER (50 FT) | | |
| | UTILITY POLE | | WETLAND AREA | | | | |
| | LOT LINE | | WETLANDS BUFFER (50 FT) | | | | |
| | | | PROJECT SITE | | | | |

| Symbol | Description |
|--------|---|
| KkoD | Klinesville channery loam, 12 to 18 percent slopes |
| PeoB | Penn channery silt loam, 2 to 6 percent slopes |
| PeoC2 | Penn channery silt loam, 6 to 12 percent slopes, eroded |
| ROPF | Rough broken land, shale |

AREA OF DISTURBANCE

226,772 SF =5.21 ACRES

TOTAL REQUIRED QUANTITY OF SOIL COMPACTION TEST IS 2 TEST PER ACRE OF OVERALL LIMIT OF DISTURBANCE:
2 TEST/ACRE X 5.21 ACRES= 11 TESTS



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Username: DLEBERT

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DATE: 6/29/2019 SIGNATURE



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TRC Engineers, Inc.
41 SPRING STREET
NEW PROVIDENCE, NEW JERSEY 07974
PHONE NO. (908) 988-1700
FAX NO. (973) 564-6442
Certificate of Authorization #24GA28047100

PENNEAST PIPELINE PROJECT
LAMBERTVILLE INTERCONNECT
SOIL EROSION AND SEDIMENT CONTROL
PLAN-AREA D
LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY
YEAR: 2020 W.B.S. CE.000147.001 SCALE: AS SHOWN DWG. C-103D REV. 0



LEGEND

LANDSCAPE PLANTING SCHEDULE – SMALL BASIN

TREES

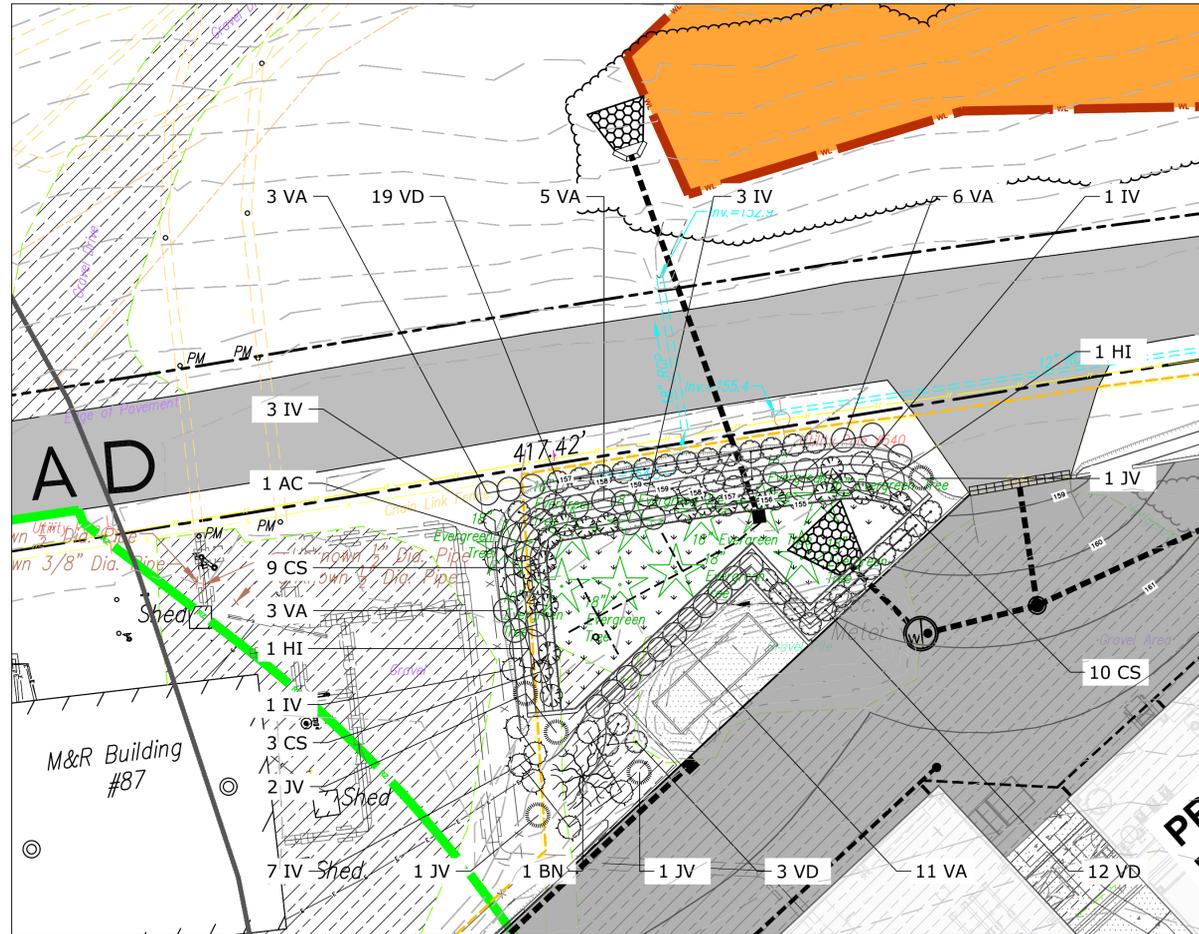
| SYMBOL | BOTANICAL NAME/ COMMON PLANT NAME | QUANTITY | SIZE | ROOT |
|--------|---|----------|--------------------|------|
| AC | AMELANCHIER CANADENSIS SHADBLOW SERVICEBERRY | 1 | 6'-8" HT. CLUMP | B&B |
| BN | BETULA NIGRA 'HERITAGE' HERITAGE RIVERBIRCH | 1 | 6'-8" HT. CLUMP | B&B |
| JV | JUNIPERUS VIRGINIANA EASTERN RED CEDAR | 5 | 6'-7" HT. | B&B |

SHRUBS/EVERGREENS AND ORNAMENTAL TREES

| SYMBOL | BOTANICAL NAME/ COMMON PLANT NAME | QUANTITY | SIZE | ROOT |
|--------|---|----------|----------------|------------|
| CS | CORNUS STOLONIFERA REDTWIG DOGWOOD | 22 | 30"-36" HT. | #3/5 CONT. |
| HI | HAMAMELIS x INTERMEDIA 'DIANE' DIANE WITCH HAZEL | 2 | 3'-4' HT. | B&B |
| IV | ILEX VERTICILLATA COMMON WINTERBERRY | 15 | 30"-36" HT. | #3/5 CONT. |
| VA | VACCINIUM ANGUSTIFOLIUM LOWBUSH BLUEBERRY | 28 | 24"-30" HT. | #3/5 CONT. |
| VD | VIBURNUM DENTATUM ARROWOOD VIBURNUM | 34 | 30"-36" HT. | #3/5 CONT. |

NOTES:

- PLANT HARDINESS ZONE 6b (0 to -5)
- PHYSIOGRAPHIC PROVINCE-PIEDMONT
- 300 FOOT RIPARIAN ZONES SHALL BE MAINTAINED



NOTES:

- COORDINATES ARE REFERENCED TO THE NORTH AMERICAN DATUM (NAD) OF 1983 PROJECTED ONTO THE NEW JERSEY STATE PLANE COORDINATE SYSTEM.
- ELEVATIONS DEPICTED ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 (NGVD29=NAVD88+0.90 FEET).
- GRADING, ROAD, PAVEMENT AND FENCE DESIGN PERFORMED BY EN ENGINEERING, INC.
- SURVEY PERFORMED BY LRC GROUP, INC.
- FRESHWATER WETLANDS/WATERS BOUNDARY LINE AS VERIFIED BY NJDEP (FRESHWATER WETLANDS LETTER OF INTERPRETATION: LINE VERIFICATION FILE NO. 1026-02-0003.1) FOR BLOCK 5, LOT 6 ONLY.
- WETLANDS AND WATERS BOUNDARY LINE(S) FOR BLOCK 5, LOT 6 ONLY AS SHOWN ON THE MAP ENTITLED: "NJDEP LETTER OF INTERPRETATION, LINE VERIFICATION - ENTIRE SITE, MARCELLUS TO MARKET PROJECT, LAMBERTVILLE COMPRESSOR STATION, HUNTERDON COUNTY, NEW JERSEY", CONSISTING OF THREE SHEETS, DATED OCTOBER 2016, LAST REVISED JANUARY 20, 2017, AND PREPARED BY BARRY A. GLEISSNER, P.L.S. OF AECOM.
- WETLANDS AND WATERS BOUNDARY LINES DEPICTED ON BLOCK 5, LOT 5 DELINEATED BY TRC ENVIRONMENTAL CORPORATION ON AUGUST 11, 2017.
- RIPIARIAN ZONES ARE 300 FOOT OFFSETS FROM EITHER TOP OF BANK OR STREAM CENTERLINES, AS APPROPRIATE.

LEGEND

| | | | |
|--|---------------------|--|-----------------------------|
| | EXISTING TOPOGRAPHY | | PROPOSED PAVED AREAS |
| | PROPOSED TOPOGRAPHY | | PROPOSED GRAVEL AREAS |
| | FENCELINE | | RIPIARIAN ZONE (300 FT) |
| | TREELINE | | PROPOSED MANHOLE |
| | EXISTING PAVEMENT | | PROPOSED PIPE |
| | EXISTING GRAVEL | | PROPOSED INLET |
| | DECIDUOUS TREE | | PROPOSED WATER QUALITY UNIT |
| | CONIFER TREE | | PROPOSED CURB |
| | UTILITY POLE | | WETLAND AREA |
| | LOT LINE | | WETLANDS BUFFER (50 FT) |
| | STATE OPEN WATER | | PROJECT SITE |

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 Date: 1/9/2018 3:15:26 PM

TRC Engineers, Inc.
 ENGINEER IN RESPONSIBLE CHARGE OF THE WORK SHOWN ON THIS DRAWING
 DATE: 6/29/2019 SIGNATURE: *Barry J. Sutherland*
 PROFESSIONAL ENGINEER: BARRY J. SUTHERLAND
 LIC. # 24GE02913500



| NO. | BY | DATE | REVISION | APP'D. |
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TRC Engineers, Inc.
 41 SPRING STREET
 NEW PROVIDENCE, NEW JERSEY 07974
 PHONE NO. (908) 988-1700
 FAX NO. (973) 564-6442
 Certificate of Authorization #24GA28047100

PENNEAST PIPELINE PROJECT
 LAMBERTVILLE INTERCONNECT
 ENLARGED LANDSCAPING PLAN -
 BIORETENTION BASIN 1
 LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY
 YEAR: 2020 W.B.S. CE.000147.001 SCALE: 1:20 DWG. C-105 REV. 0



LEGEND

LANDSCAPE PLANTING SCHEDULE – LARGE BASIN

TREES

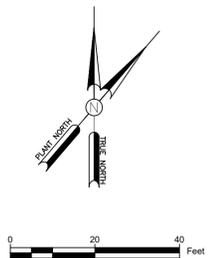
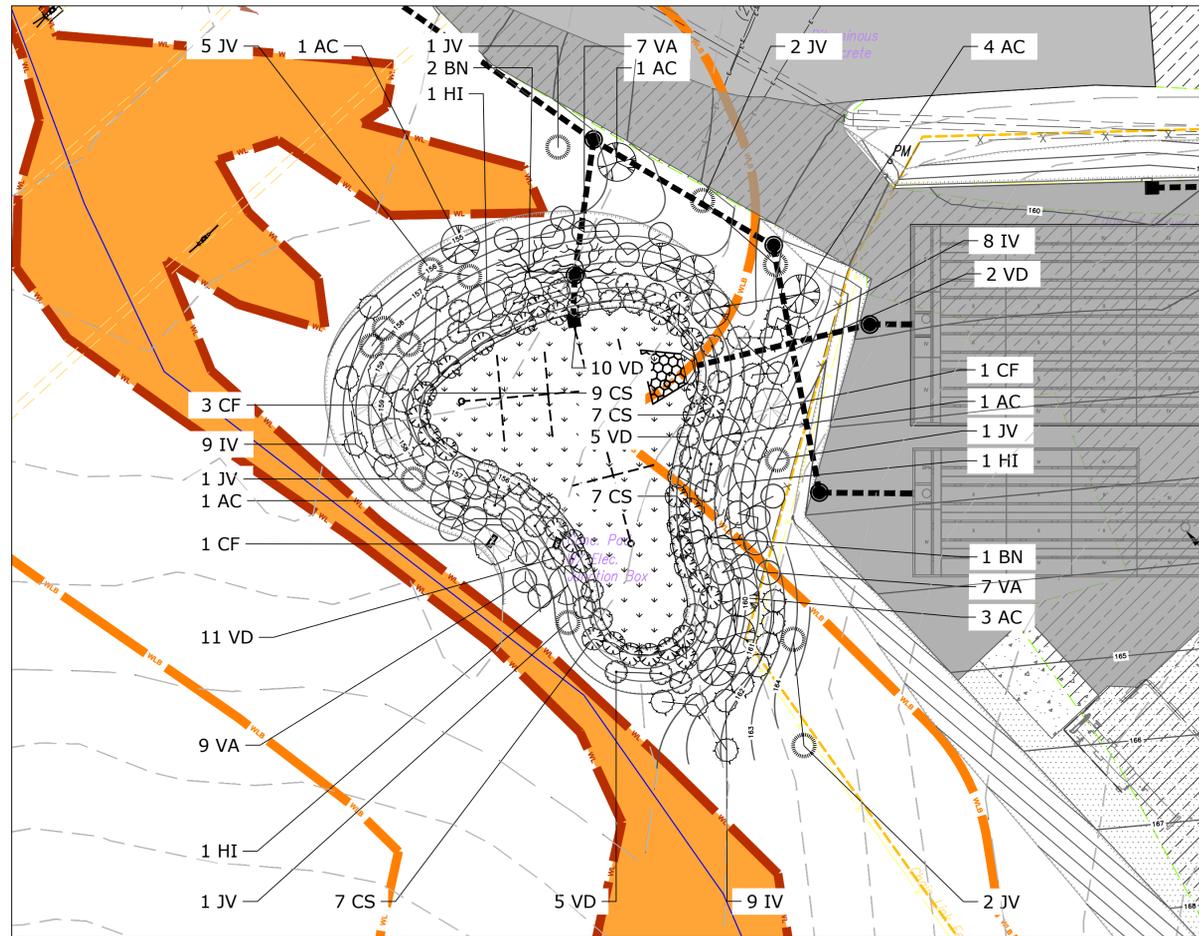
| SYMBOL | BOTANICAL NAME/ COMMON PLANT NAME | QUANTITY | SIZE | ROOT |
|--------|---|----------|--------------------|------|
| AC | AMELANCHIER CANADENSIS SHADBLOW SERVICEBERRY | 11 | 6'-8" HT. CLUMP | B&B |
| BN | BETULA NIGRA 'HERITAGE' HERITAGE RIVERBIRCH | 3 | 6'-8" HT. CLUMP | B&B |
| CF | CORNUS FLORIDA FLOWERING DOGWOOD | 5 | 2" CAL. MIN. | B&B |
| JV | JUNIPERUS VIRGINIANA EASTERN RED CEDAR | 13 | 6'-7" HT. | B&B |

SHRUBS/EVERGREENS AND ORNAMENTAL TREES

| SYMBOL | BOTANICAL NAME/ COMMON PLANT NAME | QUANTITY | SIZE | ROOT |
|--------|---|----------|----------------|------------|
| CS | CORNUS STOLONIFERA REDTWIG DOGWOOD | 30 | 30"-36" HT. | #3/5 CONT. |
| HI | HAMAMELIS x INTERMEDIA 'DIANE' DIANE WITCH HAZEL | 3 | 3'-4" HT. | B&B |
| IV | ILEX VERTICILLATA COMMON WINTERBERRY | 26 | 30"-36" HT. | #3/5 CONT. |
| VA | VACCINIUM ANGUSTIFOLIUM LOWBUSH BLUEBERRY | 23 | 24"-30" HT. | #3/5 CONT. |
| VD | VIBURNUM DENTATUM ARROWOOD VIBURNUM | 33 | 30"-36" HT. | #3/5 CONT. |

NOTES:

- PLANT HARDINESS ZONE 6b (0 to -5)
- PHYSIOGRAPHIC PROVINCE- PIEDMONT
- 300 FOOT RIPARIAN ZONES SHALL BE MAINTAINED



NOTES:

1. COORDINATES ARE REFERENCED TO THE NORTH AMERICAN DATUM (NAD) OF 1983 PROJECTED ONTO THE NEW JERSEY STATE PLANE COORDINATE SYSTEM. ELEVATIONS DEPICTED ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 (NGVD29=NAVD88+0.90 FEET).
2. GRADING, ROAD, PAVEMENT AND FENCE DESIGN PERFORMED BY EN ENGINEERING, INC.
3. SURVEY PERFORMED BY LRC GROUP, INC.
4. FRESHWATER WETLANDS/WATERS BOUNDARY LINE AS VERIFIED BY NJDEP (FRESHWATER WETLANDS LETTER OF INTERPRETATION: LINE VERIFICATION FILE NO. 1026-02-0003.1) FOR BLOCK 5, LOT 6 ONLY.
5. WETLANDS AND WATERS BOUNDARY LINE(S) FOR BLOCK 5, LOT 6 ONLY AS SHOWN ON THE MAP ENTITLED: "NJDEP LETTER OF INTERPRETATION, LINE VERIFICATION - ENTIRE SITE, MARCELLUS TO MARKET PROJECT, LAMBERTVILLE COMPRESSOR STATION, HUNTERDON COUNTY, NEW JERSEY", CONSISTING OF THREE SHEETS, DATED OCTOBER 2016, LAST REVISED JANUARY 20, 2017, AND PREPARED BY BARRY A. GLEISSNER, P.L.S. OF AECOM.
6. WETLANDS AND WATERS BOUNDARY LINES DEPICTED ON BLOCK 5, LOT 5 DELINEATED BY TRC ENVIRONMENTAL CORPORATION ON AUGUST 11, 2017.
7. RIPARIAN ZONES ARE 300 FOOT OFFSETS FROM EITHER TOP OF BANK OR STREAM CENTERLINES, AS APPROPRIATE.

LEGEND

| | | | |
|--|---------------------|--|-----------------------------|
| | EXISTING TOPOGRAPHY | | PROPOSED PAVED AREAS |
| | PROPOSED TOPOGRAPHY | | PROPOSED GRAVEL AREAS |
| | FENCELINE | | RIPARIAN ZONE (300 FT) |
| | TREELINE | | PROPOSED MANHOLE |
| | EXISTING PAVEMENT | | PROPOSED PIPE |
| | EXISTING GRAVEL | | PROPOSED INLET |
| | DECIDUOUS TREE | | PROPOSED WATER QUALITY UNIT |
| | CONIFER TREE | | PROPOSED CURB |
| | UTILITY POLE | | WETLAND AREA |
| | LOT LINE | | WETLANDS BUFFER (50 FT) |
| | STATE OPEN WATER | | PROJECT SITE |

Drawing: W:\Vision Project Folders\292931 - Penn East\Engineering\DWG\Drainage Area Mapping - PS&S Final Draft\SESC PLANS\292931_PR-LAMB\Proposed Landscape.dwg
User: DLEBERT
Time: 1/9/2018 3:15:26 PM

TRC Engineers, Inc.
ENGINEER IN RESPONSIBLE
CHARGE OF THE WORK SHOWN
ON THIS DRAWING
DATE: 6/29/2019 SIGNATURE *Barry J. Sutherland*
PROFESSIONAL
ENGINEER: BARRY J. SUTHERLAND
LIC. # 24GE02913500



| NO. | BY | DATE | REVISION | APP'D. |
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TRC Engineers, Inc.
41 SPRING STREET
NEW PROVIDENCE, NEW JERSEY 07974
PHONE NO. (908) 988-1700
FAX NO. (973) 564-6442
Certificate of Authorization #24GA28047100

PENNEAST PIPELINE PROJECT
LAMBERTVILLE INTERCONNECT
ENLARGED LANDSCAPING PLAN-
BIORETENTION BASIN 2
LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY
YEAR: 2020 W.B.S.CE.000147.001 SCALE: 1:20 DWG. C-106 REV. 0



LEGEND

LANDSCAPE PLANTING SCHEDULE - EMBANKMENT

TREES

| SYMBOL | BOTANICAL NAME/ COMMON PLANT NAME | QUANTITY | SIZE | ROOT |
|--------|---|----------|--------------------|------|
| AB | ABIES BALSAMEA BALSAM FIR | 10 | 7'-8' HT. | B&B |
| AC | AMELANCHIER CANADENSIS SHADBLow SERVICEBERRY | 8 | 6'-8' HT. CLUMP | B&B |
| CF | CORNUS FLORIDA FLOWERING DOGWOOD | 4 | 2" CAL. MIN. | B&B |
| IA | ILEX x ATTENUATA 'FOSTERI' FOSTER'S HOLLY | 21 | 5'-6' HT. | B&B |
| TP | THUJA PLICATA GREEN GIANT ARBORVITAE | 34 | 6'-7' HT. | B&B |

SHRUBS/EVERGREENS AND ORNAMENTAL TREES

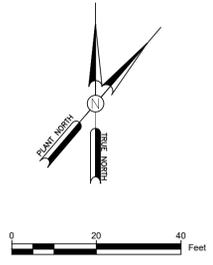
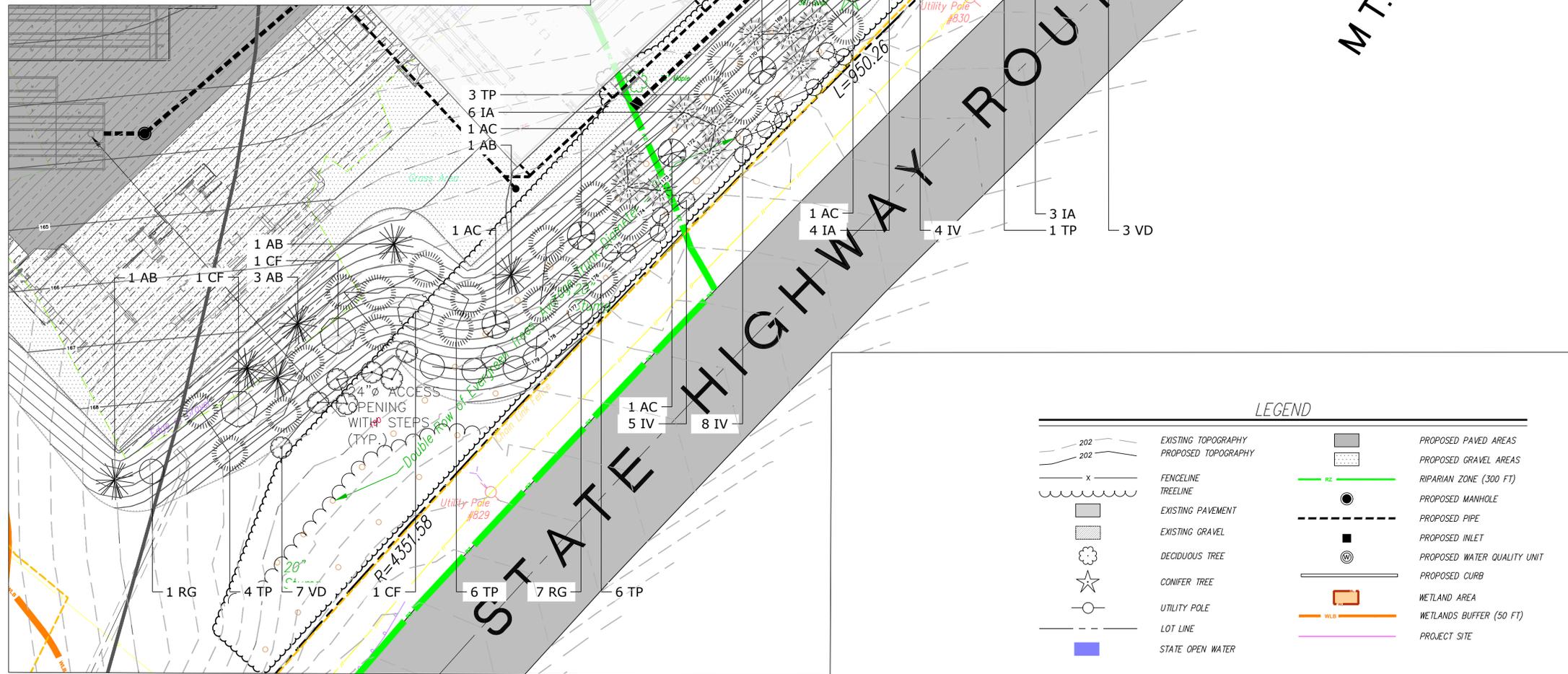
| SYMBOL | BOTANICAL NAME/ COMMON PLANT NAME | QUANTITY | SIZE | ROOT |
|--------|---|----------|----------------|------------|
| IV | ILEX VERTICILLATA COMMON WINTERBERRY | 20 | 30"-36" HT. | #3/5 CONT. |
| RG | RHUS GLABRA SMOOTH SUMAC | 9 | 30"-36" HT. | #3/5 CONT. |
| VD | VIBURNUM DENTATUM ARROWOOD VIBURNUM | 10 | 30"-36" HT. | #3/5 CONT. |

NOTES:

- PLANT HARDINESS ZONE 6b (0 to -5)
- PHYSIOGRAPHIC PROVINCE- PIEDMONT
- 300 FOOT RIPARIAN ZONES SHALL BE MAINTAINED

NOTES:

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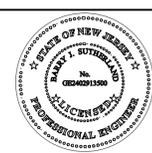


LEGEND

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|--|---------------------|--|-----------------------------|
| | EXISTING TOPOGRAPHY | | PROPOSED PAVED AREAS |
| | PROPOSED TOPOGRAPHY | | PROPOSED GRAVEL AREAS |
| | FENCELINE | | RIPARIAN ZONE (300 FT) |
| | TREELINE | | PROPOSED MANHOLE |
| | EXISTING PAVEMENT | | PROPOSED PIPE |
| | EXISTING GRAVEL | | PROPOSED INLET |
| | DECIDUOUS TREE | | PROPOSED WATER QUALITY UNIT |
| | CONIFER TREE | | PROPOSED CURB |
| | UTILITY POLE | | WETLAND AREA |
| | LOT LINE | | WETLANDS BUFFER (50 FT) |
| | STATE OPEN WATER | | PROJECT SITE |

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TRC Engineers, Inc.
 ENGINEER IN RESPONSIBLE
 CHARGE OF THE WORK SHOWN
 ON THIS DRAWING
 DATE: 8/31/18 SIGNATURE:
 PROFESSIONAL
 ENGINEER: BARRY J. SUTHERLAND
 LIC. # 24602913500



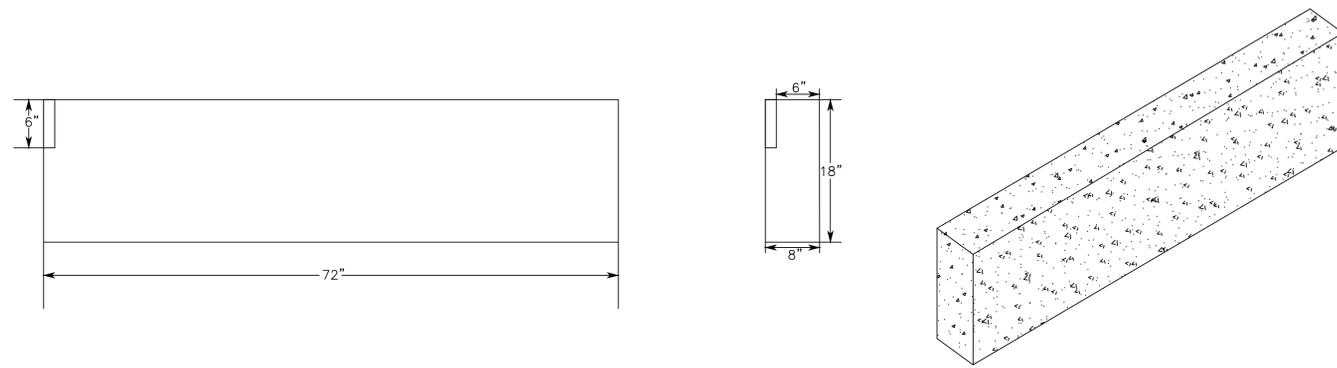
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TRC Engineers, Inc.
 41 SPRING STREET
 NEW PROVIDENCE, NEW JERSEY 07974
 PHONE NO. (908) 988-1700
 FAX NO. (973) 564-6442
 Certificate of Authorization #24GA28047100

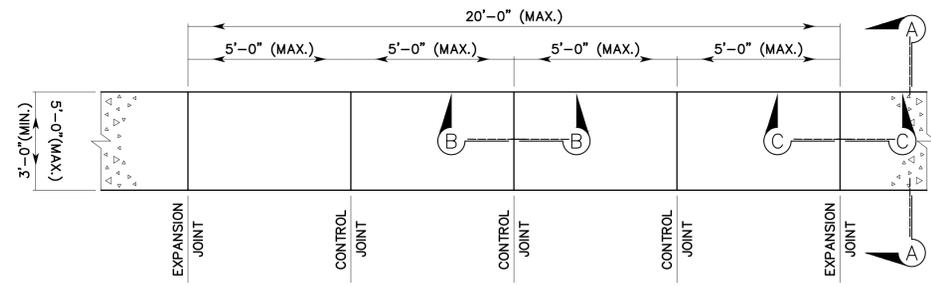
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 LAMBERTVILLE INTERCONNECT
 ENLARGED LANDSCAPING PLAN -
 SOUTH BUILDING AREA
 LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY
 YEAR: 2020 W.B.S. CE.001147.001 SCALE: 1:20 DWG. C-107 REV. 0



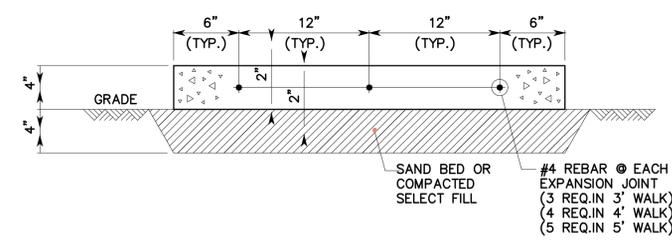
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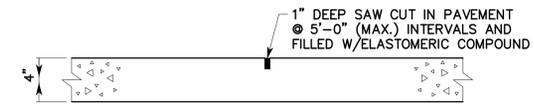
PRE CAST CURB DETAIL
N.T.S.



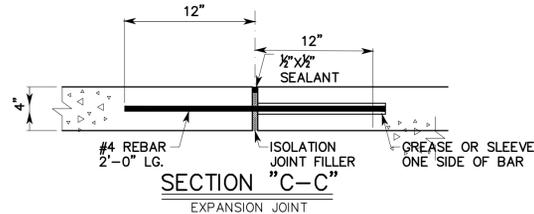
TYPICAL SIDEWALK PLAN
N.T.S.



SECTION "A-A"
3'-0" WIDE WALK SHOWN



SECTION "B-B"
CONTROL JOINT



SECTION "C-C"
EXPANSION JOINT

CONCRETE SIDEWALK DETAILS
N.T.S.

- GENERAL NOTES:**
- CONTRACTOR SHALL FURNISH ALL MATERIAL.
 - CONCRETE SHALL TEST A MINIMUM OF 3000# AT THE END OF 28 DAYS.
 - SAW CUT CONTROL JOINTS 1" DEEP SHALL BE PLACED IN PAVEMENT AT 5'-0" (MAX.) INTERVALS & FILLED WITH AN ELASTOMERIC COMPOUND.
 - EXPANSION JOINTS SHALL BE PLACED AT 20'-0" (MAX.) INTERVALS USING #4 REBAR AS SHOWN TO PREVENT DIFFERENTIAL SETTLEMENT.
 - CONTRACTOR SHALL ADD TO THE CONCRETE MIX 1 1/2" "FIBERMESH" FIBRILLATED POLYPROPYLENE FIBER AS MANUFACTURED BY:
SYNTHETIC INDUSTRIES
4019 INDUSTRY DRIVE
CHATTANOOGA, TN 37416
PHONE (615) 892-7243
 - CONTRACTOR SHALL USE 1 1/2 LBS. OF "FIBERMESH" SYNTHETIC FIBER PER EACH CUBIC YARD OF CONCRETE MIX.
 - THE WATER/CEMENT RATIO OF THE CONCRETE MIX SHALL NOT EXCEED .45.
 - MIXING AND PLACING CONCRETE SHALL COMPLY WITH ASTM C 1116.

TRC Engineers, Inc.
 ENGINEER IN RESPONSIBLE CHARGE OF THE WORK SHOWN ON THIS DRAWING
 DATE: 6/20/2019 SIGNATURE: *Barry J. Sutherland*
 PROFESSIONAL ENGINEER: BARRY J. SUTHERLAND
 LIC. # 24GE02913500



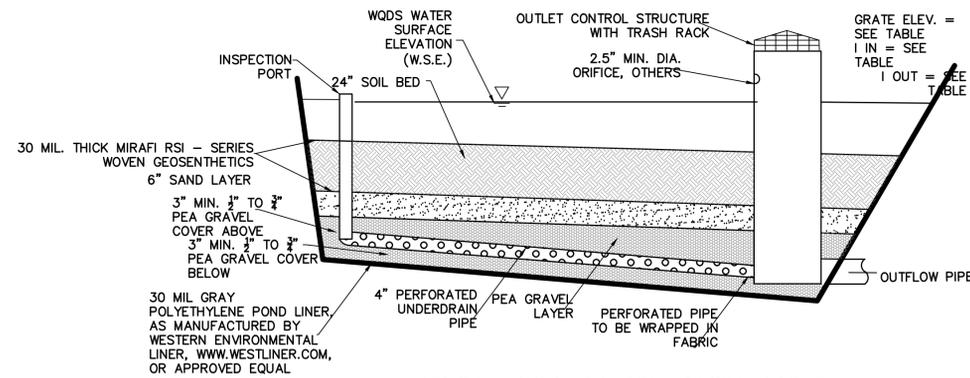
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 FAX NO. (973) 564-6442
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PENNEAST PIPELINE PROJECT
 LAMBERTVILLE INTERCONNECT
 CONSTRUCTION DETAILS SHEET 1
 LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY
 YEAR: 2020 W.B.S. CE.000147.001 SCALE: AS SHOWN DWG. C-108 REV. 0

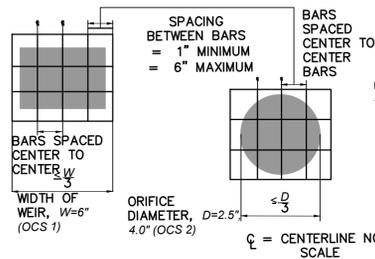
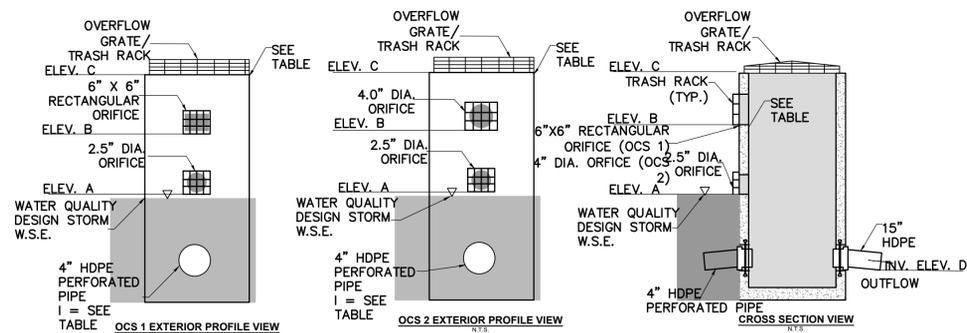


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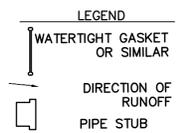
TYPICAL BIORETENTION BASIN PROFILE

N.T.S.



DETAIL: TRASH RACK-FOR WEIRS & ORIFICES LOCATED ABOVE THE WATER QUALITY DESIGN STORM ELEVATION

| OCS_NO | A | B | C | D |
|--------|--------|--------|--------|--------|
| 1 | 156.00 | 157.30 | 158.61 | 151.80 |
| 2 | 157.00 | 157.54 | 158.26 | 152.17 |



BIORETENTION BASIN OUTLET CONTROL STRUCTURE

N.T.S.

TRC Engineers, Inc.
 ENGINEER IN RESPONSIBLE CHARGE OF THE WORK SHOWN ON THIS DRAWING
 DATE: 6/20/2019 SIGNATURE: *Barry J. Sutherland*
 PROFESSIONAL ENGINEER: BARRY J. SUTHERLAND
 LIC. # 24GE02913500



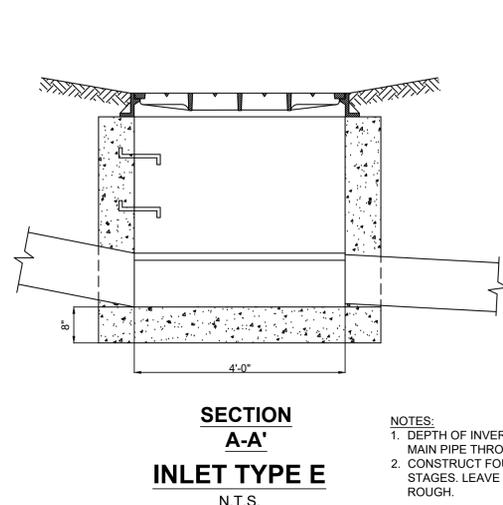
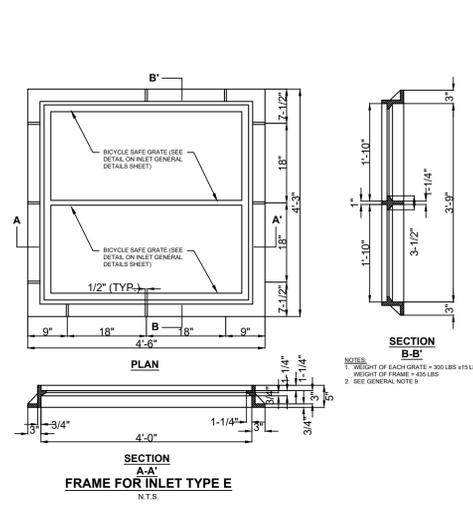
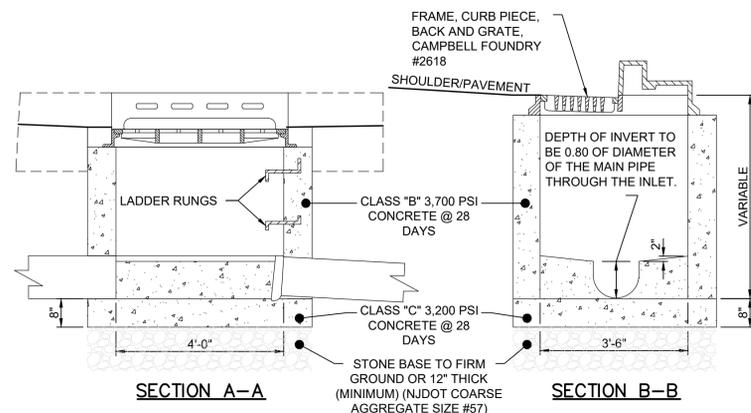
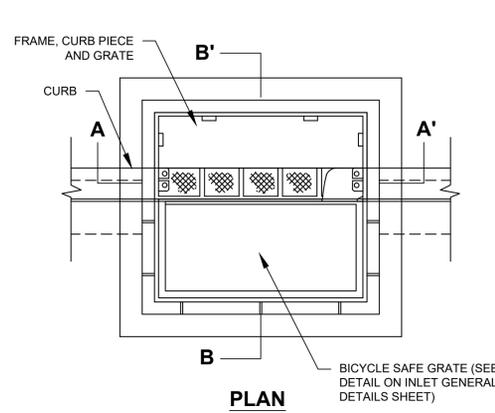
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TRC Engineers, Inc.
 41 SPRING STREET
 NEW PROVIDENCE, NEW JERSEY 07974
 PHONE NO.: (908) 988-1700
 FAX NO.: (973) 564-6442
 Certificate of Authorization #24GA28047100

PENNEAST PIPELINE PROJECT
 LAMBERTVILLE INTERCONNECT
 CONSTRUCTION DETAILS SHEET 2



| | | | | |
|---|----------------------|-----------------|------------|--------|
| LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY | | | | |
| YEAR: 2020 | W.B.S. CE.000147.001 | SCALE: AS SHOWN | DWG. C-109 | REV. 2 |



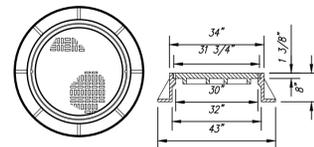
NOTES:
1. DEPTH OF INVERT TO BE 0.80 THE DIAMETER MAIN PIPE THROUGH THE INLET.
2. CONSTRUCT FOUNDATION AND INVERT IN 2 STAGES. LEAVE TOP SURFACE OF STAGE 1 ROUGH.

TYPE "B" NJDOT INLET DETAIL

N.T.S.

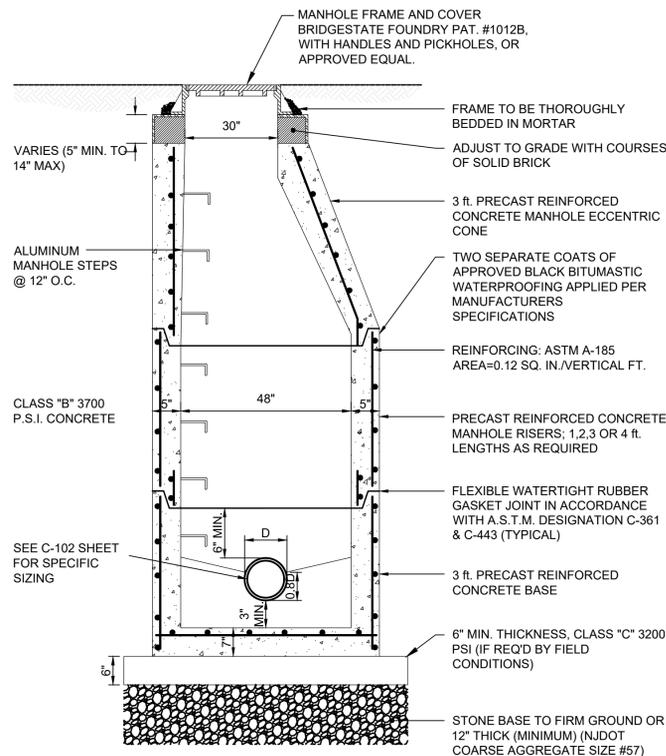
TYPE "E" NJDOT INLET DETAIL

N.T.S.



MANHOLE RIM DETAIL

N.T.S.

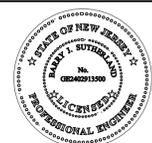


NOTES:
1. ALL MANHOLES SHALL BE CONSTRUCTED WATERTIGHT.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTING ADEQUATE BALLAST TO OFFSET FLOATATION FORCES ACTING ON MANHOLES CONSTRUCTED IN WET AREAS.

STORM SEWER MANHOLE DETAIL

N.T.S.

TRC Engineers, Inc.
ENGINEER IN RESPONSIBLE CHARGE OF THE WORK SHOWN ON THIS DRAWING
DATE: 8/31/18 SIGNATURE: Barry J. Sutherland
PROFESSIONAL ENGINEER: BARRY J. SUTHERLAND
LIC. # 24GE02913500



| NO. | BY | DATE | REVISION | APPD. |
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TRC Engineers, Inc.
41 SPRING STREET
NEW PROVIDENCE, NEW JERSEY 07974
PHONE NO. (908) 988-1700
FAX NO. (973) 564-6442
Certificate of Authorization #24GA28047100

PENNEAST PIPELINE PROJECT
LAMBERTVILLE INTERCONNECT
CONSTRUCTION DETAILS SHEET 3



| | |
|---|----------------------|
| LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY | |
| YEAR: 2020 | W.B.S. CE.000147.001 |
| SCALE: AS SHOWN | DWG. C-110 |
| REV. 0 | |

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 Date: 1/9/2018 3:15:26 PM
 Time:

WATER QUALITY TREATMENT UNIT 1 (CDS-1)
N.T.S.

GENERAL NOTES:

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.conteches.com
- CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
- STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0'-2" AND GROUNDWATER ELEVATION AT OR BELOW THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M250 AND BE CAST WITH THE CONTECH LOGO.
- IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
- CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES:

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
- CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

STRUCTURE WEIGHT:
APPROXIMATE HEAVIEST PICK = 12500 LBS.
STRUCTURE IS DELIVERED IN 4 PIECES

MATERIAL LIST (PROVIDED BY CONTECH)

| COUNT | DESCRIPTION | INSTALLED BY |
|-------|---|--------------|
| 1 | FIBERGLASS INLET AND CYLINDER | CONTECH |
| 1 | 2400 micron, 3.5' O.D. x 2.25' SEP. SCREEN | CONTECH |
| 1 | SEALANT FOR JOINTS (BY PRECASTER) | CONTRACTOR |
| 1 | Ø30" x 4" FRAME & COVER, EJ#41600494, OR EQUIV. | CONTRACTOR |

SITE DESIGN DATA

| | |
|----------------------------|----------|
| WATER QUALITY FLOW RATE | 1.16 CFS |
| PEAK FLOW RATE | 3.30 CFS |
| RETURN PERIOD OF PEAK FLOW | 25 YRS |

CONTECH PROPOSAL DRAWING

DATE: 08/23/18
SCALE: 1/4" = 1'-0"
DESIGNED: TKM
CHECKED: TKM
PROJECT NO.: 596999
SHEET: 1 OF 1

WATER QUALITY TREATMENT UNIT 2 (CDS-2)
N.T.S.

GENERAL NOTES:

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.conteches.com
- CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
- STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0'-2" AND GROUNDWATER ELEVATION AT OR BELOW THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M250 AND BE CAST WITH THE CONTECH LOGO.
- IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
- CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES:

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
- CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

STRUCTURE WEIGHT:
APPROXIMATE HEAVIEST PICK = 23000 LBS.
STRUCTURE IS DELIVERED IN 5 PIECES

MATERIAL LIST (PROVIDED BY CONTECH)

| COUNT | DESCRIPTION | INSTALLED BY |
|-------|---|--------------|
| 1 | FIBERGLASS INLET AND CYLINDER | CONTECH |
| 1 | 2400 micron, 3.5' O.D. x 3.58' SEP. SCREEN | CONTECH |
| 1 | SEALANT FOR JOINTS (BY PRECASTER) | CONTRACTOR |
| 2 | Ø24" x 4" FRAME & COVER, EJ#41600386, OR EQUIV. | CONTRACTOR |

SITE DESIGN DATA

| | |
|----------------------------|----------|
| WATER QUALITY FLOW RATE | 2.16 CFS |
| PEAK FLOW RATE | 5.49 CFS |
| RETURN PERIOD OF PEAK FLOW | 25 YRS |

CONTECH PROPOSAL DRAWING

DATE: 08/23/18
SCALE: 1/4" = 1'-0"
DESIGNED: TKM
CHECKED: TKM
PROJECT NO.: 596999
SHEET: 1 OF 1

HEADWALL 1, 2, 3 DETAIL
N.T.S.

NOTE:
ALL CONCRETE TO BE CLASS "B" CONCRETE AIR ENTRAINED 3500 PSI MIN. ALL REINFORCED SHALL HAVE 2 INCHES ON COVER TO FACE OF WALL AS DIRECTED BY THE TOWNSHIP ENGINEER.

| | D | E | F | G | H |
|-----|-------|-------|-------|-------|-------|
| 15" | 2'-5" | 3'-2" | 2'-3" | 2'-9" | 1'-1" |
| 16" | 2'-6" | 3'-7" | 2'-6" | 3'-0" | 1'-2" |
| 24" | 3'-6" | 5'-0" | 3'-6" | 3'-6" | 1'-4" |

PRE-CAST TRENCH DRAIN DETAIL
N.T.S.

ACO PRECAST CONCRETE TRENCH DRAIN WITH CAST IRON FRAME AND GRATE BY ACO OR APPROVED EQUAL

PRECAST POLYMER TRENCH DRAIN WITH CAST IRON FRAME BY ACO OR APPROVED EQUAL

12" DIA. HDPE FLUMED BOTTOM OUTLET

ACO CHANNEL OR APPROVED EQUAL (39.37" TYPICAL)

NEUTRAL CHANNEL TO BE PLACED IN THE CENTER OF TRENCH DRAIN

GRATES (3) TO DECREASE

NOTES:

- IT IS NECESSARY TO ENSURE MINIMUM DIMENSIONS SHOWN ARE SUITABLE FOR EXISTING GROUND CONDITIONS. **ENGINEERING ADVICE MAY BE REQUIRED.**
- MINIMUM CONCRETE STRENGTH OF 4,000 PSI IS RECOMMENDED. CONCRETE SHOULD BE VIBRATED TO ELIMINATE AIR POCKETS.
- EXPANSION AND CONTRACTION CONTROL JOINTS AND REINFORCEMENT ARE RECOMMENDED TO PROTECT CHANNEL AND CONCRETE SURROUND. **ENGINEERING ADVICE MAY BE REQUIRED.**
- THE FINISHED LEVEL OF THE CONCRETE SURROUND MUST BE APPROX. 1/8" (3mm) ABOVE THE TOP OF THE CHANNEL EDGE.
- CONCRETE BASE THICKNESS SHOULD MATCH SLAB THICKNESS. **ENGINEERING ADVICE MAY BE REQUIRED TO DETERMINE PROPER LOAD CLASS.**
- REFER TO ACO'S LATEST INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS.

SPECIFICATIONS

S300K POWERDRAIN - LOAD CLASS F

GENERAL
THE SURFACE DRAINAGE SYSTEM SHALL BE POLYMER CONCRETE S300K CHANNEL SYSTEM WITH DUCTILE IRON EDGE RAILS AS MANUFACTURED BY ACO POLYMER PRODUCTS, INC.

MATERIALS
CHANNELS SHALL BE MANUFACTURED FROM POLYESTER RESIN POLYMER CONCRETE WITH AN INTEGRALLY CAST-IN DUCTILE IRON EDGE RAIL. MINIMUM PROPERTIES OF POLYMER CONCRETE WILL BE AS FOLLOWS:

| | |
|-----------------------------------|------------|
| COMPRESSIVE STRENGTH: | 14,000 PSI |
| FLEXURAL STRENGTH: | 4,000 PSI |
| TENSILE STRENGTH: | 1,500 PSI |
| WATER ABSORPTION: | 0.07% |
| FROST PROOF: | YES |
| DILUTE ACID AND ALKALI RESISTANT: | YES |
| B117 SALT SPRAY TEST COMPLIANT: | YES |

THE SYSTEM SHALL BE 12" (300mm) NOMINAL INTERNAL WIDTH WITH A 14.2" (390mm) OVERALL WIDTH AND A BUILT-IN SLOPE OF 0.5%. CHANNEL INVERT SHALL HAVE DEVELOPED "V" SHAPE. ALL CHANNELS SHALL BE INTERLOCKING WITH A MALE/FEMALE JOINT.

THE COMPLETE DRAINAGE SYSTEM SHALL BE BY ACO POLYMER PRODUCTS, INC. ANY DEVIATION OR PARTIAL SYSTEM DESIGN AND/OR IMPROPER INSTALLATION WILL VOID ANY AND ALL WARRANTIES PROVIDED BY ACO POLYMER PRODUCTS, INC.

CHANNEL SHALL WITHSTAND LOADING TO PROPER LOAD CLASS AS OUTLINED BY EN 1433. GRATE TYPE SHALL BE APPROPRIATE TO MEET THE SYSTEM LOAD CLASS SPECIFIED AND INTENDED APPLICATION. GRATES SHALL BE SECURED USING "POWERLOK" BOLTLESS LOCKING SYSTEM. CHANNEL AND GRATE SHALL BE CERTIFIED TO MEET THE SPECIFIED EN 1433 LOAD CLASS. THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.

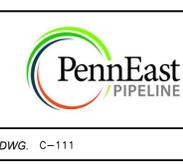
TRC Engineers, Inc.
ENGINEER IN RESPONSIBLE CHARGE OF THE WORK SHOWN ON THIS DRAWING
DATE: 8/31/18 SIGNATURE: *Barry J. Sutherland*
PROFESSIONAL ENGINEER: BARRY J. SUTHERLAND
LIC. # 24GE02913500



| NO. | BY | DATE | REVISION | APP'D. |
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TRC Engineers, Inc.
41 SPRING STREET
NEW PROVIDENCE, NEW JERSEY 07974
PHONE NO. (908) 988-1700
FAX NO. (973) 664-6442
Certificate of Authorization #24GA28047100

PENNEAST PIPELINE PROJECT
LAMBERTVILLE INTERCONNECT
CONSTRUCTION DETAILS SHEET 4
LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY



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STRUCTURAL DESIGN LOADING CRITERIA

LIVE LOADING: ASHTO HS-20 HIGHWAY LOADING
 GROUND WATER TABLE: BELOW INVERT OF SYSTEM
 SOIL BEARING CAPACITY: 4000 PSF
 SOIL DENSITY: 120 PCF
 EQUIVALENT UNSATURATED: 35 PSF / FT.
 LATERAL ACTIVE EARTH PRESSURE: 80 PSF/FT. (IF WATER TABLE PRESENT)
 EQUIVALENT SATURATED: ASHTO AC-119
 APPLICABLE CODES: ASHTO AC-119
 BACKFILL TYPE: 2" STONE AGGREGATE

STORMTRAP SYSTEM INFORMATION

WATER STORAGE PROVIDED: 10,314.91 CUBIC FEET
 UNIT HEADROOM: 2' - 6" SINGLETRAP
 UNIT QUANTITY: 41 TOTAL PIECES

SITE SPECIFIC DESIGN CRITERIA

- STORMTRAP UNITS SHALL BE MANUFACTURED AND INSTALLED ACCORDING TO SHOP DRAWINGS APPROVED BY THE INSTALLING CONTRACTOR AND ENGINEER OF RECORD. THE SHOP DRAWINGS SHALL INDICATE SIZE AND LOCATION OF ROOF OPENINGS AND INLET/OUTLET PIPE TYPES, SIZES, INVERT ELEVATIONS AND SIZE OF OPENINGS.
- COVER RANGE: MIN. 0.50' MAX. 6.00' CONSULT STORMTRAP FOR ADDITIONAL COVER OPTIONS.
- ALL DIMENSIONS AND SOIL CONDITIONS, INCLUDING BUT NOT LIMITED TO GROUNDWATER AND SOIL BEARING CAPACITY ARE REQUIRED TO BE VERIFIED IN THE FIELD BY OTHERS PRIOR TO STORMTRAP INSTALLATION.
- FOR STRUCTURAL CALCULATIONS THE GROUND WATER TABLE IS ASSUMED TO BE BELOW INVERT OF SYSTEM. IF WATER TABLE IS DIFFERENT THAN ASSUMED, CONTACT STORMTRAP.

2' - 6" SINGLETRAP

StormTrap
 1287 WINDHAM PARKWAY
 ROMEOVILLE, IL 60446
 P:815-941-4549 / F:331-318-5347

ENGINEER INFORMATION:
 TRC COMPANIES, INC
 41 SPRING ST
 SUITE 102
 NEW PROVIDENCE, NJ
 908-988-1700

PROJECT INFORMATION:
 PENN EAST
 MODERNIZATION
 BASIN 1
 STONE BASE OPTION
 WEST AMWELL, NJ

CURRENT ISSUE DATE:
 8/21/2018

ISSUED FOR:
 PRELIMINARY

| REV. | DATE: | ISSUED FOR: | OWN BY: |
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8/21/2018 PRELIMINARY KW

SCALE:
 NTS

SHEET TITLE:
 SINGLETRAP
 DESIGN
 CRITERIA

SHEET NUMBER:
1.0

BILL OF MATERIALS

| QTY. | UNIT | DESCRIPTION | WEIGHT |
|------|------------|--------------------|--------|
| 0 | I | 2' - 6" SINGLETRAP | 14606 |
| 22 | II | 2' - 6" SINGLETRAP | 14606 |
| 0 | III | 2' - 6" SINGLETRAP | 12569 |
| 18 | IV | 2' - 6" SINGLETRAP | 12569 |
| 0 | V | 2' - 6" SINGLETRAP | 10532 |
| 3 | SPV | 2' - 6" SINGLETRAP | 1493 |
| 5 | PANEL | 8" THICK PANELS | 1493 |
| 8 | JOINT WRAP | 1.50' PER SOIL | |

LOADING DISCLAIMER:

STORMTRAP IS NOT DESIGNED TO ACCEPT ANY ADDITIONAL LOADINGS FROM NEARBY STRUCTURES NEXT TO OR OVER THE TOP OF STORMTRAP. IF ADDITIONAL LOADING CONSIDERATIONS ARE REQUIRED FOR STRUCTURAL DESIGN OF STORMTRAP, PLEASE CONTACT STORMTRAP IMMEDIATELY.

DESIGN CRITERIA

ALLOWABLE MAX GRADE = 155.33
 ALLOWABLE MIN GRADE = 159.83
 INSIDE HEIGHT ELEVATION = 158.83
 SYSTEM INVERT = 156.33

NOTES:

- DIMENSIONING OF STORMTRAP SYSTEM SHOWN BELOW ALLOW FOR A 3/4" GAP BETWEEN EACH MODULE.
- ALL DIMENSIONS TO BE VERIFIED IN THE FIELD BY OTHERS.
- SEE SHEET 3.0 FOR INSTALLATION SPECIFICATIONS.
- SP - INDICATES A MODULE WITH MODIFICATIONS.
- P - INDICATES A MODULE WITH A PANEL ATTACHMENT.
- CONTRACTORS RESPONSIBILITY TO ENSURE CONSISTENCY/ACCURACY TO FINAL ENGINEER OF RECORD PLAN SET.
- IF A WATER TIGHT SOLUTION IS REQUIRED FOR THIS OUTLET CONTROL STRUCTURE, STORMTRAP RECOMMENDS THE USE OF XYPEX OR SIKAFLEX MATERIALS (OR APPROVED EQUIVALENT). WATERPROOFING MATERIALS TO BE SUPPLIED AND INSTALLED BY THE INSTALLING CONTRACTOR. CONTACT STORMTRAP FOR A LIST OF APPROVED APPLICATORS.

SCALE:
 NTS

SHEET TITLE:
 SINGLETRAP
 LAYOUT DETAILS

SHEET NUMBER:
2.0

StormTrap
 1287 WINDHAM PARKWAY
 ROMEOVILLE, IL 60446
 P:815-941-4549 / F:331-318-5347

ENGINEER INFORMATION:
 TRC COMPANIES, INC
 41 SPRING ST
 SUITE 102
 NEW PROVIDENCE, NJ
 908-988-1700

PROJECT INFORMATION:
 PENN EAST
 MODERNIZATION
 BASIN 1
 STONE BASE OPTION
 WEST AMWELL, NJ

CURRENT ISSUE DATE:
 8/21/2018

ISSUED FOR:
 PRELIMINARY

| REV. | DATE: | ISSUED FOR: | OWN BY: |
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8/21/2018 PRELIMINARY KW

SCALE:
 NTS

SHEET TITLE:
 SINGLETRAP
 LAYOUT DETAILS

SHEET NUMBER:
2.0

STORMTRAP INSTALLATION SPECIFICATIONS

- STORMTRAP SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C891 STANDARD PRACTICE FOR INSTALLATION OF UNDERGROUND PRE-CAST CONCRETE UTILITY STRUCTURES. THE FOLLOWING ADDITIONS AND/OR EXCEPTIONS SHALL APPLY:
- IT IS THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR TO ENSURE THAT PROPER/ADEQUATE EQUIPMENT IS USED TO SET/INSTALL THE MODULES.
- THE AGGREGATE FOUNDATION HAS BEEN DESIGNED BASED ON THE FOLLOWING ASSUMPTIONS. THESE ASSUMPTIONS WILL NEED TO BE VERIFIED BY A QUALIFIED GEOTECHNICAL ENGINEER WHICH WILL NEED TO BE EMPLOYED BY THE OWNER.
 - A QUALIFIED GEOTECHNICAL ENGINEER WILL BE EMPLOYED, BY OWNER, TO PROVIDE ASSISTANCE IN EVALUATING THE EXISTING SOIL CONDITIONS BELOW THE PROPOSED ENGINEERED STONE FOUNDATION. IF A STONE FOUNDATION DESIGN IS TO BE USED, THE BEARING PRESSURE OF THE SOILS BELOW THE STONE WILL NEED TO MEET OR EXCEED ALLOWABLE CAPACITY. IF THIS IS NOT POSSIBLE, THE STONE FOUNDATION MAY NOT BE AN OPTION FOR THIS LOCATION.
 - A QUALIFIED GEOTECHNICAL ENGINEER WILL BE EMPLOYED, BY OWNER, TO EVALUATE A SOURCE OF STONE AGGREGATES THAT WILL BE PLACED ON PROPERLY COMPACTED SOILS (SEE SHEET 1.0 FOR SOIL BEARING CAPACITY REQUIREMENTS). THE AGGREGATE BASE COURSE FOR WHICH THE STORMTRAP SYSTEM WILL BEAR DIRECTLY ON SHALL CONSIST OF A 3" THICK BED OF 2" DIAMETER ANGULAR STONE, WELL COMPACTED AND SEATED, WITH NO FINES, AND A 15" THICK BED OF 3" DIAMETER STONE AGGREGATE (SEE SHEET 4.0 FOR FURTHER DESCRIPTION/EXPLANATION). PLEASE NOTE THAT THESE ARE ONLY MINIMUM RECOMMENDATIONS AND A QUALIFIED GEOTECHNICAL ENGINEER SHALL BE USED TO DETERMINE THE EXACT REQUIREMENTS FOR THE LOCATIONS THAT THE STORMTRAP SYSTEM IS TO BE LOCATED.
 - THE CONTRACTOR SHALL REMOVE ANY AND ALL EXPANDABLE OR COLLAPSIBLE SOILS AT THE DIRECTION OF A QUALIFIED GEOTECHNICAL ENGINEER.
 - THE AGGREGATE FOUNDATION SHALL BE INSTALLED SUCH THAT THE AGGREGATE EXTENDS A MINIMUM OF 2'-0" PAST THE OUTSIDE OF THE SYSTEM (SEE DETAIL 1).
 - THE 3" AGGREGATE SHALL BE COMPACTED USING A VIBRATING ROLLER WITH ITS FULL DYNAMIC FORCE APPLIED TO ACHIEVE A FLAT SURFACE.
 - DISK, DRY AND COMPACT THE TOP 8" OF THE SUBGRADE SOILS TO 95% OF THE STANDARD DRY DENSITY AND 110% OPTIMUM MOISTURE CONTENT.
 - AGGREGATE SHALL BE GRADED WITHIN +/- 1" OF THE GRADE SHOWN ON THE PLANS.
 - MINIMUM SOIL BEARING CAPACITY LISTED ON SHEET 1.0 SHALL BE VERIFIED IN FIELD BY OTHERS.
- THE STORMTRAP MODULES SHALL BE PLACED SUCH THAT THE MAXIMUM SPACE BETWEEN ADJACENT MODULES DOES NOT EXCEED 3" (SEE DETAIL 2). IF THE SPACE EXCEEDS 3", THE MODULES SHALL BE RESET WITH APPROPRIATE ADJUSTMENT MADE TO LINE AND GRADE TO BRING THE SPACE INTO SPECIFICATION.
- STORMTRAP MODULES ARE NOT WATER TIGHT. IF A WATER TIGHT SOLUTION IS REQUIRED, CONTACT STORMTRAP FOR RECOMMENDATIONS. THE WATER TIGHT APPLICATION IS TO BE PROVIDED AND IMPLEMENTED BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THE SELECTED WATER TIGHT SOLUTION PERFORMS AS SPECIFIED BY THE MANUFACTURER.
- ALL EXTERIOR JOINTS BETWEEN ADJACENT STORMTRAP MODULES SHALL BE SEALED WITH 8" WIDE PRE-FORMED, COLD-APPLIED, SELF-ADHERING ELASTOMERIC RESIN, BONDED TO A WOVEN, HIGHLY PUNCTURE RESISTANT POLYMER WRAP, CONFORMING TO ASTM C893 AND SHALL BE INTEGRATED WITH PRIMER SEALANT AS APPROVED BY STORMTRAP (SEE DETAILS 3 & 4). THE JOINT WRAP DOES NOT PROVIDE A WATER TIGHT SEAL. THE SOLE PURPOSE OF THE JOINT WRAP IS TO PROVIDE A SILT AND SOIL TIGHT SYSTEM. THE ADHESIVE EXTERIOR JOINT WRAP SHALL BE INSTALLED ACCORDING TO THE FOLLOWING INSTALLATION INSTRUCTIONS:
 - USE A BRUSH OR WET CLOTH TO THOROUGHLY CLEAN THE OUTSIDE SURFACE AT THE POINT WHERE THE JOINT WRAP IS TO BE APPLIED.
 - A RELEASE PAPER PROTECTS THE ADHESIVE SIDE OF THE JOINT WRAP. PLACE THE ADHESIVE TAPE (ADHESIVE SIDE DOWN) AROUND THE STRUCTURE, REMOVING THE RELEASE PAPER AS YOU GO. PRESS THE JOINT WRAP FIRMLY AGAINST THE STORMTRAP MODULE SURFACE WHEN APPLYING.
 - IF THE CONTRACTOR NEEDS TO CANCEL ANY SHIPMENTS, THEY MUST DO SO 48 HOURS PRIOR TO THEIR SCHEDULED ARRIVAL AT THE JOB SITE. IF CANCELED AFTER THAT TIME, PLEASE CONTACT THE PROJECT MANAGER.
 - IF THE STORMTRAP MODULE(S) IS DAMAGED IN ANY WAY PRIOR, DURING, OR AFTER INSTALL, STORMTRAP, MUST BE CONTACTED IMMEDIATELY TO ASSESS THE DAMAGE AND TO DETERMINE WHETHER OR NOT THE MODULE(S) WILL NEED TO BE REPLACED. IF ANY MODULE ARRIVES AT THE JOB SITE DAMAGED DO NOT UNLOAD IT. CONTACT STORMTRAP, IMMEDIATELY. ANY DAMAGE NOT REPORTED BEFORE THE TRUCK IS UNLOADED WILL BE THE CONTRACTOR'S RESPONSIBILITY.
- STORMTRAP MODULES CANNOT BE ALTERED IN ANY WAY AFTER MANUFACTURING WITHOUT WRITTEN CONSENT FROM STORMTRAP.

DETAIL 1

DETAIL 2

DETAIL 3

DETAIL 4

StormTrap
 1287 WINDHAM PARKWAY
 ROMEOVILLE, IL 60446
 P:815-941-4549 / F:331-318-5347

ENGINEER INFORMATION:
 TRC COMPANIES, INC
 41 SPRING ST
 SUITE 102
 NEW PROVIDENCE, NJ
 908-988-1700

PROJECT INFORMATION:
 PENN EAST
 MODERNIZATION
 BASIN 1
 STONE BASE OPTION
 WEST AMWELL, NJ

CURRENT ISSUE DATE:
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8/21/2018 PRELIMINARY KW

SCALE:
 NTS

SHEET TITLE:
 SINGLETRAP
 INSTALLATION
 SPECIFICATIONS

SHEET NUMBER:
3.0

END PANEL ERECTION/INSTALLATION NOTES

- END PANELS WILL BE SUPPLIED TO CLOSE OFF OPEN ENDS OF ROWS.
- PANELS SHALL BE INSTALLED IN A TILT UP FASHION DIRECTLY ADJACENT TO OPEN END OF MODULE (REFER TO SHEET 2.0 FOR END PANEL LOCATIONS).
- CONNECTION HOOKS WILL BE SUPPLIED WITH END PANELS TO SECURELY CONNECT PANEL TO ADJACENT STORMTRAP MODULE (SEE PANEL CONNECTION ELEVATION VIEW).
- ONCE CONNECTION HOOK IS ATTACHED, LIFTING CLUTCHES MAY BE REMOVED.
- JOINT WRAP SHALL BE PLACED AROUND PERIMETER JOINT PANEL (SEE SHEET 3.0).

MODULE LIFTING DETAIL

END PANEL LIFTING DETAIL

PANEL CONNECTION ELEVATION VIEW

STEP 1

STEP 2

DETAIL 6

StormTrap
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SHEET TITLE:
 SINGLETRAP
 INSTALLATION
 SPECIFICATIONS

SHEET NUMBER:
3.1

STORMTRAP BASIN 1
 N.T.S.

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PROFESSIONAL
 ENGINEER: **BARRY J. SUTHERLAND**
 LIC. # 24GE02913500

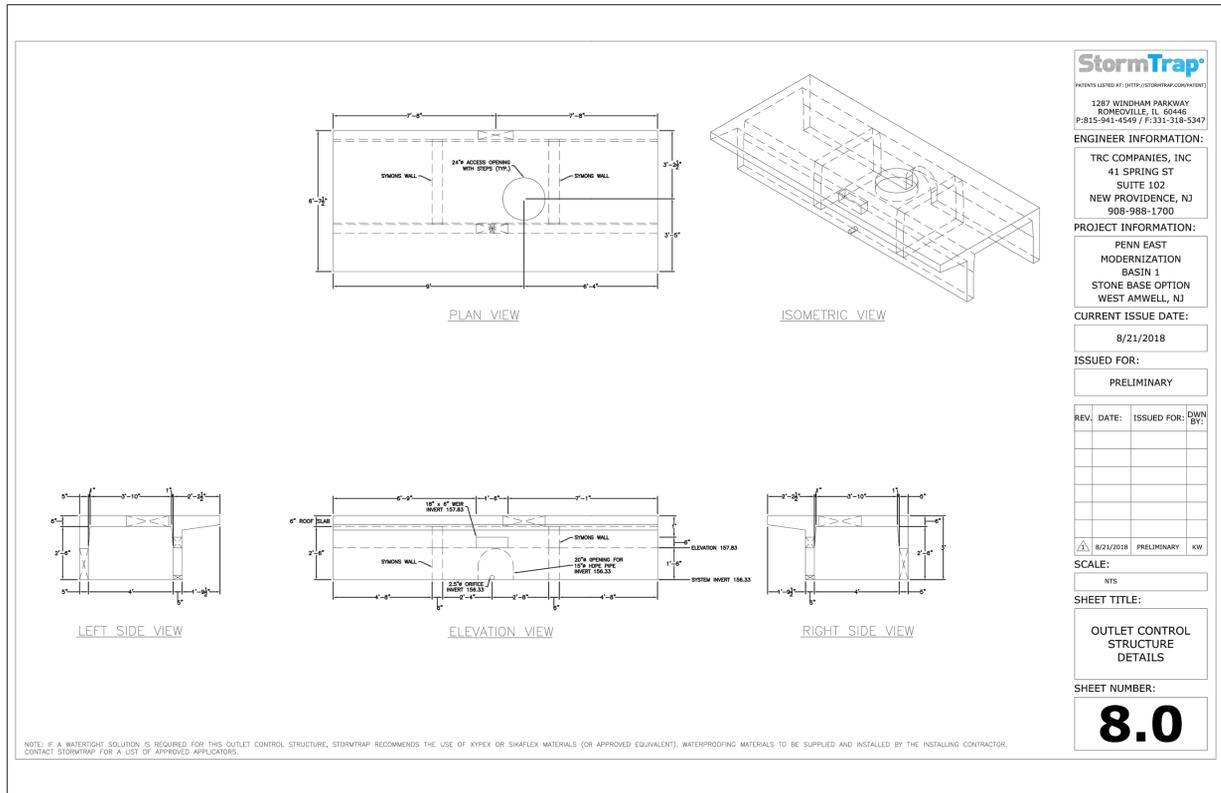
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 Certificate of Authorization #24GA28047100

PENNEAST PIPELINE PROJECT
 LAMBERTVILLE INTERCONNECT
 CONSTRUCTION DETAILS SHEET 5

LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY

YEAR: 2020 W.B.S. CE.000147.001 SCALE: AS SHOWN DWG. C-112 REV. 2

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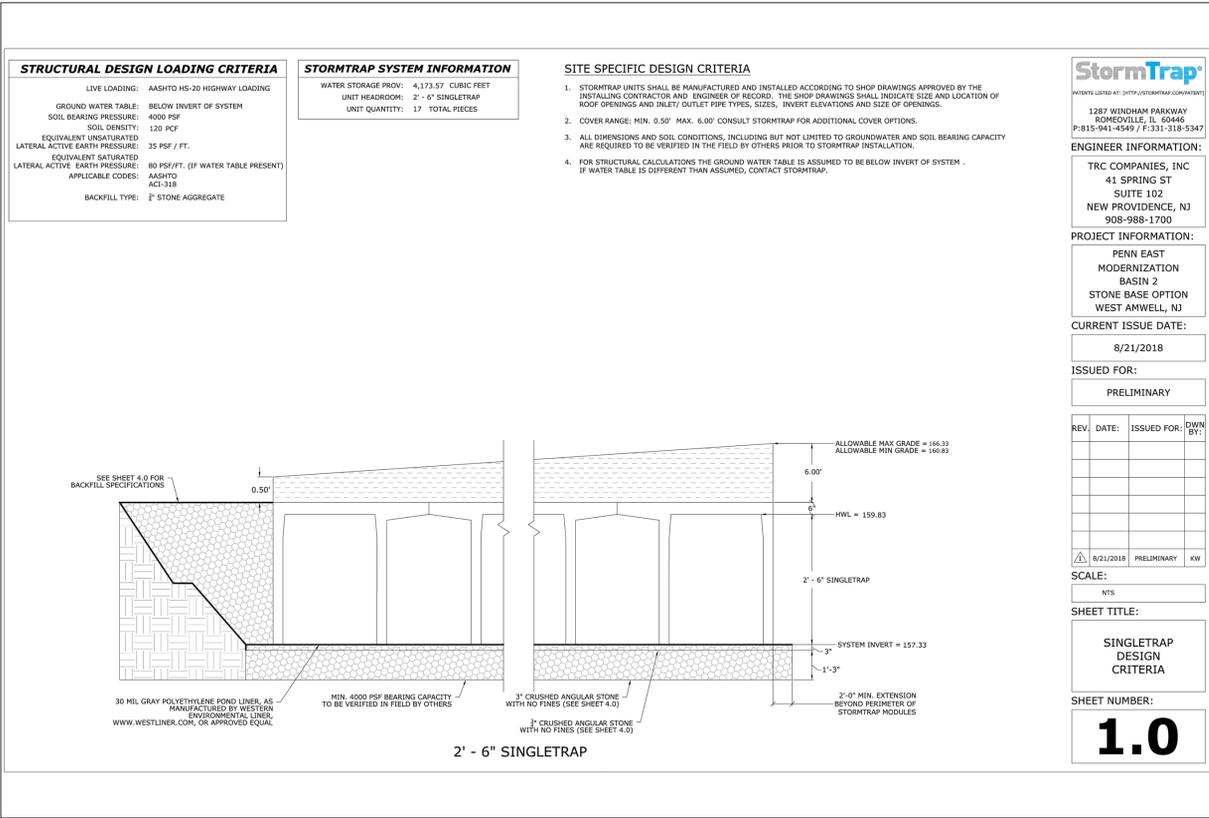
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SHEET TITLE:
 OUTLET CONTROL
 STRUCTURE
 DETAILS

SHEET NUMBER:
8.0

NOTE: IF A WATER-TIGHT SOLUTION IS REQUIRED FOR THIS OUTLET CONTROL STRUCTURE, STORMTRAP RECOMMENDS THE USE OF XYPEX OR SIKAFLEX MATERIALS (OR APPROVED EQUIVALENT). WATERPROOFING MATERIALS TO BE SUPPLIED AND INSTALLED BY THE INSTALLING CONTRACTOR. CONTACT STORMTRAP FOR A LIST OF APPROVED APPLICATORS.

STORMTRAP BASIN 1
 N.T.S.



STRUCTURAL DESIGN LOADING CRITERIA
 LIVE LOADING: AASHTO HS-20 HIGHWAY LOADING
 GROUND WATER TABLE: BELOW INVERT OF SYSTEM
 SOIL BEARING CAPACITY: 4000 PSF
 SOIL DENSITY: 120 PCF
 EQUIVALENT UNSATURATED: EQUIVALENT SATURATED
 LATERAL ACTIVE EARTH PRESSURE: 35 PSF / FT.
 EQUIVALENT SATURATED: EQUIVALENT UNSATURATED
 LATERAL ACTIVE EARTH PRESSURE: 80 PSF/FT. (IF WATER TABLE PRESENT)
 APPLICABLE CODES: AASHTO ACI-318
 BACKFILL TYPE: 2" STONE AGGREGATE

STORMTRAP SYSTEM INFORMATION
 WATER STORAGE PROV: 4,173.57 CUBIC FEET
 UNIT HEADROOM: 2' - 6" SINGLETRAP
 UNIT QUANTITY: 17 TOTAL PIECES

SITE SPECIFIC DESIGN CRITERIA
 1. STORMTRAP UNITS SHALL BE MANUFACTURED AND INSTALLED ACCORDING TO SHOP DRAWINGS APPROVED BY THE INSTALLING CONTRACTOR AND ENGINEER OF RECORD. THE SHOP DRAWINGS SHALL INDICATE SIZE AND LOCATION OF ROOF OPENINGS AND INLET/OUTLET PIPE TYPES, SIZES, INVERT ELEVATIONS AND SIZE OF OPENINGS.
 2. COVER RANGE: MIN. 0.50' MAX. 6.00' CONSULT STORMTRAP FOR ADDITIONAL COVER OPTIONS.
 3. ALL DIMENSIONS AND SOIL CONDITIONS, INCLUDING BUT NOT LIMITED TO GROUNDWATER AND SOIL BEARING CAPACITY ARE REQUIRED TO BE VERIFIED IN THE FIELD BY OTHERS PRIOR TO STORMTRAP INSTALLATION.
 4. FOR STRUCTURAL CALCULATIONS THE GROUND WATER TABLE IS ASSUMED TO BE BELOW INVERT OF SYSTEM. IF WATER TABLE IS DIFFERENT THAN ASSUMED, CONTACT STORMTRAP.



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PROJECT INFORMATION:
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 WEST AMWELL, NJ

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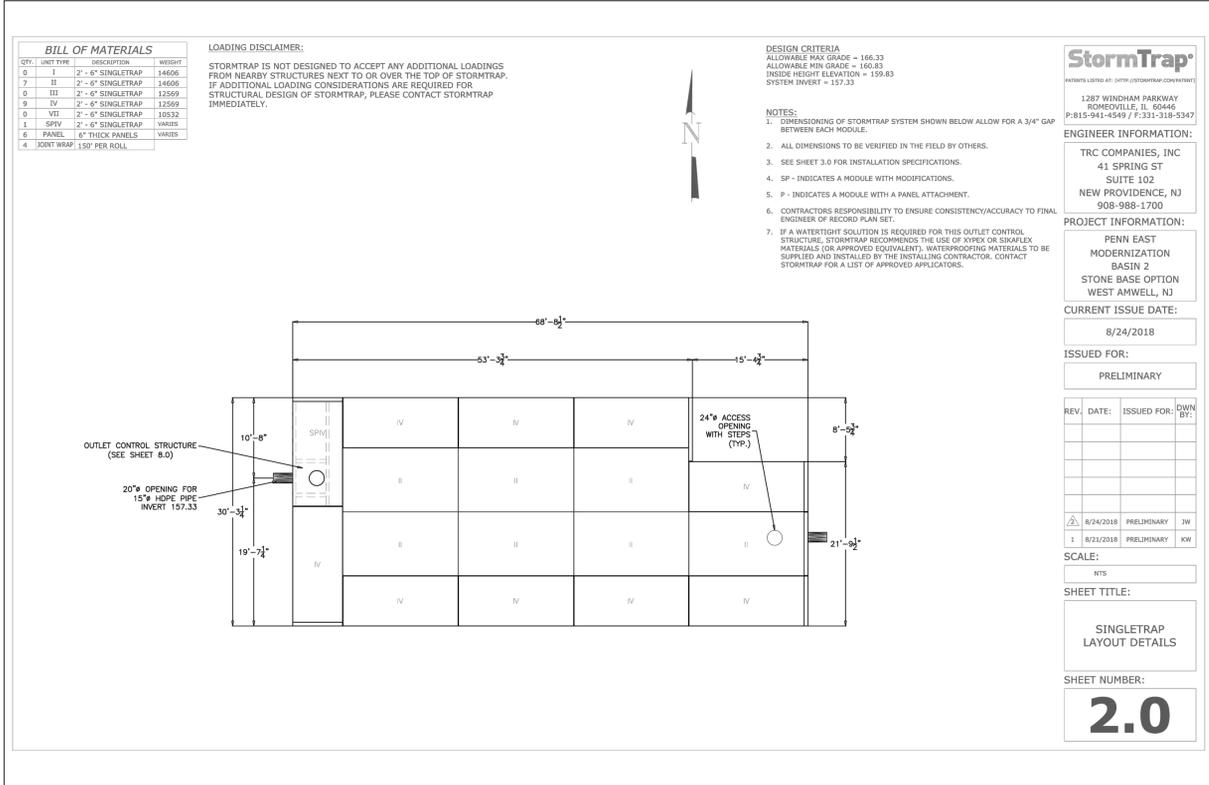
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SHEET TITLE:
 SINGLETRAP
 DESIGN
 CRITERIA

SHEET NUMBER:
1.0



BILL OF MATERIALS

| QTY. | UNIT TYPE | DESCRIPTION | WEIGHT |
|------|------------|--------------------|--------|
| 0 | I | 2' - 6" SINGLETRAP | 14606 |
| 7 | II | 2' - 6" SINGLETRAP | 14606 |
| 0 | III | 2' - 6" SINGLETRAP | 12569 |
| 9 | IV | 2' - 6" SINGLETRAP | 13269 |
| 0 | VII | 2' - 6" SINGLETRAP | 18532 |
| 1 | SPV | 6" THICK PANELS | VARIES |
| 6 | PANEL | 6" THICK PANELS | VARIES |
| 4 | JOINT WRAP | 150' PER ROLL | |

LOADING DISCLAIMER:
 STORMTRAP IS NOT DESIGNED TO ACCEPT ANY ADDITIONAL LOADINGS FROM HEAVY STRUCTURES NEXT TO OR OVER THE TOP OF STORMTRAP. IF ADDITIONAL LOADING CONSIDERATIONS ARE REQUIRED FOR STRUCTURAL DESIGN OF STORMTRAP, PLEASE CONTACT STORMTRAP IMMEDIATELY.

DESIGN CRITERIA
 ALLOWABLE MAX GRADE = 166.33
 ALLOWABLE MIN GRADE = 160.83
 INSIDE HEIGHT ELEVATION = 159.83
 SYSTEM INVERT = 157.33

- NOTES:**
- DIMENSIONING OF STORMTRAP SYSTEM SHOWN BELOW ALLOW FOR A 3/4" GAP BETWEEN EACH MODULE.
 - ALL DIMENSIONS TO BE VERIFIED IN THE FIELD BY OTHERS.
 - SEE SHEET 3.0 FOR INSTALLATION SPECIFICATIONS.
 - SP - INDICATES A MODULE WITH MODIFICATIONS.
 - P - INDICATES A MODULE WITH A PANEL ATTACHMENT.
 - CONTRACTORS RESPONSIBILITY TO ENSURE CONSISTENCY/ACCURACY TO FINAL ENGINEER OF RECORD PLAN SET.
 - IF A WATER-TIGHT SOLUTION IS REQUIRED FOR THIS OUTLET CONTROL STRUCTURE, STORMTRAP RECOMMENDS THE USE OF XYPEX OR SIKAFLEX MATERIALS (OR APPROVED EQUIVALENT). WATERPROOFING MATERIALS TO BE SUPPLIED AND INSTALLED BY THE INSTALLING CONTRACTOR. CONTACT STORMTRAP FOR A LIST OF APPROVED APPLICATORS.



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PROJECT INFORMATION:
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SHEET TITLE:
 SINGLETRAP
 LAYOUT DETAILS

SHEET NUMBER:
2.0

STORMTRAP BASIN 2
 N.T.S.

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 PROFESSIONAL
 ENGINEER: BARRY J. SUTHERLAND
 LIC. # 24GE02913500



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PENNEAST PIPELINE PROJECT
 LAMBERTVILLE INTERCONNECT
 CONSTRUCTION DETAILS SHEET 7
 LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY
 YEAR: 2020 W.B.S. CE.000147.001 SCALE: AS SHOWN DWG. C-114 REV. 0



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STORMTRAP INSTALLATION SPECIFICATIONS

- STORMTRAP SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C911 STANDARD PRACTICE FOR INSTALLATION OF UNDERGROUND PRE-CAST CONCRETE UTILITY STRUCTURES. THE FOLLOWING ADDITIONS AND/OR EXCEPTIONS SHALL APPLY TO SET/INSTALL THE MODULES.
- IT IS THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR TO ENSURE THAT PROPER/ADEQUATE EQUIPMENT IS USED TO SET/INSTALL THE MODULES.
- THE AGGREGATE FOUNDATION HAS BEEN DESIGNED BASED ON THE FOLLOWING ASSUMPTIONS. THESE ASSUMPTIONS WILL NEED TO BE VERIFIED BY A GEOTECHNICAL ENGINEER WHICH WILL NEED TO BE EMPLOYED BY THE OWNER.
 - A QUALIFIED GEOTECHNICAL ENGINEER WILL BE EMPLOYED, BY OWNER, TO PROVIDE ASSISTANCE IN EVALUATING THE EXISTING SOIL CONDITIONS BELOW THE PROPOSED ENGINEERED STONE FOUNDATION. IF A STONE FOUNDATION DESIGN IS TO BE USED, THE BEARING PRESSURE OF THE SOILS BELOW THE STONE WILL NEED TO MEET OR EXCEED ALLOWABLE CAPACITY. IF THIS IS NOT POSSIBLE, THE STONE FOUNDATION MAY NOT BE AN OPTION FOR THIS LOCATION.
 - A QUALIFIED GEOTECHNICAL ENGINEER WILL BE EMPLOYED, BY OWNER, TO EVALUATE A SOURCE OF STONE AGGREGATES THAT WILL BE PLACED ON PROPERLY COMPACTED SOILS (SEE SHEET 1.0 FOR SOIL BEARING CAPACITY REQUIREMENTS). THE AGGREGATE BASE COURSE FOR WHICH THE STORMTRAP SYSTEM WILL BEAR DIRECTLY ON SHALL CONSIST OF A 3" THICK BED OF 3/4" DIAMETER ANGULAR STONE, WELL COMPACTED AND SEATED, WITH NO FINES, AND A 1 1/2" THICK BED OF 3/4" DIAMETER STONE AGGREGATE (SEE SHEET 4.0 FOR FURTHER DESCRIPTION/EXPLANATION). PLEASE NOTE THAT THESE ARE ONLY MINIMUM RECOMMENDATIONS AND A QUALIFIED GEOTECHNICAL ENGINEER SHALL BE USED TO DETERMINE THE EXACT REQUIREMENTS FOR THE LOCATIONS THAT THE STORMTRAP SYSTEM IS TO BE LOCATED.
- THE CONTRACTOR SHALL REMOVE ANY AND ALL EXPANDABLE OR COLLAPSIBLE SOILS AT THE DIRECTION OF A QUALIFIED GEOTECHNICAL ENGINEER.
- THE AGGREGATE FOUNDATION SHALL BE INSTALLED SUCH THAT THE AGGREGATE EXTENDS A MINIMUM OF 2'-0" PAST THE OUTSIDE OF THE SYSTEM (SEE DETAIL 1).
- THE 1" AGGREGATE SHALL BE COMPACTED USING A VIBRATING ROLLER WITH ITS' FULL DYNAMIC FORCE APPLIED TO ACHIEVE A FLAT SURFACE.
- DISK, DRY AND COMPACT THE TOP 8" OF THE SUBGRADE SOILS TO 95% OF THE STANDARD DRY DENSITY AND 110% OPTIMUM MOISTURE CONTENT.
- AGGREGATE SHALL BE GRADED WITHIN +/- 1/4" OF THE GRADE SHOWN ON THE PLANS.
- MINIMUM SOIL BEARING CAPACITY LISTED ON SHEET 1.0 SHALL BE VERIFIED IN FIELD BY OTHERS.

THE STORMTRAP MODULES SHALL BE PLACED SUCH THAT THE MAXIMUM SPACE BETWEEN ADJACENT MODULES DOES NOT EXCEED 1" (SEE DETAIL 2). IF THE SPACE EXCEEDS 1", THE MODULES SHALL BE RESET WITH APPROPRIATE ADJUSTMENT MADE TO LINE AND GRADE TO BRING THE SPACE INTO SPECIFICATION.

STORMTRAP MODULES ARE NOT WATERTIGHT. IF A WATERTIGHT SOLUTION IS REQUIRED, CONTACT STORMTRAP FOR RECOMMENDATIONS. THE WATERTIGHT APPLICATION IS TO BE PROVIDED AND IMPLEMENTED BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THE SELECTED WATERTIGHT SOLUTION PERFORMS AS SPECIFIED BY THE MANUFACTURER.

ALL EXTERIOR JOINTS BETWEEN ADJACENT STORMTRAP MODULES SHALL BE SEALED WITH 8" WIDE PRE-FORMED, COLD-APPLIED, SELF-ADHERING ELASTOMERIC RESIN, BONDED TO A WOVEN, HIGH PUNCTURE RESISTANT POLYMER WRAP, CONFORMING TO ASTM C991 AND SHALL BE INTEGRATED WITH PRIMER SEALANT AS APPROVED BY STORMTRAP (SEE DETAILS 3 & 4). THE JOINT WRAP DOES NOT PROVIDE A WATERTIGHT SEAL. THE SOLE PURPOSE OF THE JOINT WRAP IS TO PROVIDE A SILT AND SOIL TIGHT SYSTEM. THE ADHESIVE EXTERIOR JOINT WRAP SHALL BE INSTALLED ACCORDING TO THE FOLLOWING INSTALLATION INSTRUCTIONS:

- USE A BRUSH OR WET CLOTH TO THOROUGHLY CLEAN THE OUTSIDE SURFACE AT THE POINT WHERE THE JOINT WRAP IS TO BE APPLIED.
- A RELEASE PAPER PROTECTS THE ADHESIVE SIDE OF THE JOINT WRAP. PLACE THE ADHESIVE TAPE (ADHESIVE SIDE DOWN) AROUND THE STRUCTURE, REMOVING THE RELEASE PAPER AS YOU GO. PRESS THE JOINT WRAP FIRMLY AGAINST THE STORMTRAP MODULE SURFACE WHEN APPLYING.
- IF THE CONTRACTOR NEEDS TO CANCEL ANY SHIPMENTS, THEY MUST DO SO 48 HOURS PRIOR TO THEIR SCHEDULED ARRIVAL AT THE JOB SITE. IF CANCELED AFTER THAT TIME, PLEASE CONTACT THE PROJECT MANAGER.
- IF THE STORMTRAP MODULE(S) IS DAMAGED IN ANY WAY PRIOR, DURING, OR AFTER INSTALL, STORMTRAP MUST BE CONTACTED IMMEDIATELY TO ASSESS THE DAMAGE AND TO DETERMINE WHETHER OR NOT THE MODULE(S) WILL NEED TO BE REPLACED. IF ANY MODULE ARRIVES AT THE JOBSITE DAMAGED DO NOT UNLOAD IT; CONTACT STORMTRAP IMMEDIATELY. ANY DAMAGE NOT REPORTED BEFORE THE TRUCK IS UNLOADED WILL BE THE CONTRACTOR'S RESPONSIBILITY.

STORMTRAP MODULES CANNOT BE ALTERED IN ANY WAY AFTER MANUFACTURING WITHOUT WRITTEN CONSENT FROM STORMTRAP.

DETAIL 1

DETAIL 2

DETAIL 3

DETAIL 4

StormTrap
FACTORY LISTED AT: (877) 510-5788 (CONTRACTOR)
 1287 WINDHAM PARKWAY
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 STONE BASE OPTION
 WEST AMWELL, NJ

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SHEET TITLE:
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 INSTALLATION
 SPECIFICATIONS

SHEET NUMBER:
3.0

END PANEL ERECTION/INSTALLATION NOTES

- END PANELS WILL BE SUPPLIED TO CLOSE OFF OPEN ENDS OF ROWS.
- PANELS SHALL BE INSTALLED IN A TILT OF FASHION DIRECTLY ADJACENT TO OPEN END OF MODULE (REFER TO SHEET 2.0 FOR END PANEL LOCATIONS).
- CONNECTION HOOPS WILL BE SUPPLIED WITH END PANELS TO SECURELY CONNECT PANEL TO ADJACENT STORMTRAP MODULE (SEE PANEL CONNECTION ELEVATION VIEW).
- ONCE CONNECTION HOOP IS ATTACHED, LIFTING CLUTCHES MAY BE REMOVED.
- JOINT WRAP SHALL BE PLACED AROUND PERIMETER JOINT PANEL (SEE SHEET 3.0).

MODULE LIFTING DETAIL

END PANEL LIFTING DETAIL

PANEL CONNECTION ELEVATION VIEW

STEP 1

STEP 2

DETAIL 6

StormTrap
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 INSTALLATION
 SPECIFICATIONS

SHEET NUMBER:
3.1

STORMTRAP ZONE INSTALLATION SPECIFICATIONS/PROCEDURES

| ZONES | ZONE DESCRIPTIONS | REMARKS |
|----------|----------------------|--|
| ZONE 1 A | FOUNDATION AGGREGATE | #5 (1" STONE AGGREGATE) (SEE NOTE 4 FOR DESCRIPTION) |
| ZONE 1 B | FOUNDATION AGGREGATE | 3" STONE AGGREGATE (SEE NOTE 5 FOR DESCRIPTION) |
| ZONE 2 | BACKFILL | #5 (1" STONE AGGREGATE) (SEE NOTE 5 FOR DESCRIPTION) |
| ZONE 3 | FINAL COVER OVERTOP | MATERIALS NOT TO EXCEED 120 Pcf |

| FILL DEPTH | TRACK WIDTH | MAX VEHICLE WEIGHT (KIPS) | MAX GROUND PRESSURE |
|------------|-------------|---------------------------|---------------------|
| 12" | 12" | 51.5 | 1690 psf |
| | 18" | 56.1 | 1219 psf |
| | 24" | 66.1 | 1111 psf |
| | 30" | 76.7 | 1000 psf |
| | 36" | 85.0 | 924 psf |

NOTE: TRACK LENGTH NOT TO EXCEED 15'-4". ONLY TWO TRACKS PER VEHICLE.

THE FILL PLACED AROUND THE STORMTRAP MODULES MUST DEPOSITED ON BOTH SIDES AT THE SAME TIME AND TO APPROXIMATELY THE SAME ELEVATION. AT NO TIME SHALL THE FILL BEHIND ONE SIDE WALL BE MORE THAN 2'-0" HIGHER THAN THE FILL ON THE OPPOSITE SIDE. BACKFILL SHALL EITHER BE COMPACTED AND/OR VIBRATED TO ENSURE THAT BACKFILL AGGREGATE/STONE MATERIAL IS WELL SEATED AND PROPERLY INTER LOCKED. CARE SHALL BE TAKEN TO PREVENT ANY WEDGING ACTION AGAINST THE STRUCTURE, AND ALL SLOPES WITHIN THE AREA TO BE BACKFILLED MUST BE STEPPED OR TERRACED TO PREVENT WEDGING ACTION. CARE SHALL ALSO BE TAKEN AS NOT TO DISRUPT THE JOINT WRAP FROM THE JOINT DURING THE BACKFILL PROCESS. BACKFILL MATERIAL SHALL BE CLEAN, CRUSHED, ANGULAR NO. 5 (ASHITO M43) AGGREGATE. IF NATIVE EARTH IS SUSCEPTIBLE TO MIGRATION, CONFORM WITH GEOTECHNICAL ENGINEER AND PROVIDE PROTECTION AS REQUIRED (PROVIDED BY OTHERS).

DURING PLACEMENT OF MATERIAL OVERTOP THE SYSTEM, AT NO TIME SHALL MACHINERY BE USED OVERTOP THAT EXCEEDS THE DESIGN LIMITATIONS OF THE SYSTEM. WHEN PLACEMENT OF MATERIAL OVERTOP, MATERIAL SHALL BE PLACED SUCH THAT THE DIRECTION OF PLACEMENT IS PARALLEL WITH THE OVERALL LONGITUDINAL DIRECTION OF THE SYSTEM WHENEVER POSSIBLE.

THE FILL PLACED OVERTOP THE SYSTEM SHALL BE PLACED AT A MINIMUM OF 6" LIFTS. AT NO TIME SHALL MACHINERY OR VEHICLES GREATER THAN THE DESIGN H-20 LOADING CRITERIA TRAVEL OVERTOP THE SYSTEM WITHOUT THE MINIMUM DESIGN COVERAGE. IF TRAVEL IS NECESSARY OVERTOP THE SYSTEM PRIOR TO ACHIEVING THE MINIMUM DESIGN COVER, IT MAY BE NECESSARY TO REDUCE THE ULTIMATE LOAD/BURDEN OF THE OPERATING MACHINERY SO AS TO NOT EXCEED THE DESIGN CAPACITY OF THE SYSTEM. IN SOME CASES, IN ORDER TO ACHIEVE REQUIRED COMPACTION, HAND COMPACTION MAY BE NECESSARY IN ORDER NOT TO EXCEED THE ALLOTTED DESIGN LOADING. SEE CHART FOR TRACKED VEHICLE WIDTH AND ALLOWABLE MAXIMUM PRESSURE PER TRACK.

FREE DRAINING AGGREGATE - 80% AGGREGATE RETAINED ON 1/2" SIEVE MAJORITY OF AGGREGATE SIZE BETWEEN 1/2" AND 1" ONLY 5% OF MATERIAL PASSING #200 SIEVE NO FINES.

FREE DRAINING, NO FINES, 3" AGGREGATE - MAJORITY OF STONE SIZE IN BETWEEN 2" AND 3" - VERY SIMILAR TO COURSE AGGREGATE GRADATION #CA1.

BACKFILL DETAIL

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SCALE:
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SHEET TITLE:
 SINGLETRAP
 BACKFILL
 SPECIFICATIONS

SHEET NUMBER:
4.0

RECOMMENDED ACCESS OPENING SPECIFICATION

- A TYPICAL ACCESS OPENING FOR THE STORMTRAP SYSTEM ARE 2'-0" IN DIAMETER. ACCESS OPENINGS LARGER THAN 3'-0" IN DIAMETER NEED TO BE APPROVED BY STORMTRAP. ALL OPENINGS MUST REMAIN AT LEAST 1'-0" OF CLEARANCE FROM THE END OF THE STORMTRAP MODULE UNLESS NOTED OTHERWISE. ALL ACCESS OPENINGS TO BE LOCATED ON THE INSIDE OF THE MODULE.
- PLASTIC COATED STEEL STEPS PRODUCED BY M.A. INDUSTRIES PART #P33-PFC OR APPROVED EQUAL (SEE STEP DETAIL) ARE PROVIDED INSIDE ANY MODULE WHERE DEEMED NECESSARY. THE HIGHEST STEP IN THE MODULE IS TO BE PLACED A DISTANCE OF 1'-0" FROM THE INSIDE EDGE OF THE STORMTRAP MODULES. ALL ENSUING STEPS SHALL BE PLACED WITH A MAXIMUM DISTANCE OF 1'-4" BETWEEN THEM. STEPS MAY BE MOVED OR ALTERED TO AVOID OPENINGS OR OTHER IRREGULARITIES IN THE MODULE.
- STORMTRAP LIFTING INSERTS MAY BE RELOCATED TO AVOID INTERFERENCE WITH ACCESS OPENINGS OR THE CENTER OF GRAVITY OF THE MODULE AS NEEDED.
- STORMTRAP ACCESS OPENINGS MAY BE RELOCATED TO AVOID INTERFERENCE WITH INLET AND/OR OUTLET PIPE OPENINGS SO PLACEMENT OF STEPS IS ATTAINABLE.
- ACCESS OPENINGS SHOULD BE LOCATED IN ORDER TO MEET THE APPROPRIATE MUNICIPAL REQUIREMENTS. STORMTRAP RECOMMENDS AT LEAST TWO ACCESS OPENINGS PER SYSTEM FOR ACCESS AND INSPECTION.
- USE PRECAST ADJUSTING RINGS AS NEEDED TO MEET GRADE. STORMTRAP RECOMMENDS FOR COVER OVER 2" TO USE PRECAST BARREL OR CONE INSPECTIONS (PROVIDED BY OTHERS).

RISER / STAIR DETAIL

PIPE CONNECTION DETAIL

STEP DETAIL

StormTrap
FACTORY LISTED AT: (877) 510-5788 (CONTRACTOR)
 1287 WINDHAM PARKWAY
 ROMEOVILLE, IL 60446
 P:815-941-4549 / F:331-318-5347

ENGINEER INFORMATION:
 TRC COMPANIES, INC
 41 SPRING ST
 SUITE 102
 NEW PROVIDENCE, NJ
 908-988-1700

PROJECT INFORMATION:
 PENN EAST
 MODERNIZATION
 BASIN 2
 STONE BASE OPTION
 WEST AMWELL, NJ

CURRENT ISSUE DATE:
 8/24/2018

ISSUED FOR:
 PRELIMINARY

| REV | DATE | ISSUED FOR: | DWN BY: |
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| | | | |

SCALE:
 NTS

SHEET TITLE:
 RECOMMENDED
 PIPE / ACCESS
 OPENING
 SPECIFICATIONS

SHEET NUMBER:
5.0

STORMTRAP BASIN 2

N.T.S.

TRC Engineers, Inc.
 ENGINEER IN RESPONSIBLE CHARGE OF THE WORK SHOWN ON THIS DRAWING
 DATE: 8/31/18 SIGNATURE: _____
 PROFESSIONAL ENGINEER: BARRY J. SUTHERLAND
 LIC. # 24GE02913500

| NO. | BY | DATE | REVISION | APPD. |
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TRC Engineers, Inc.
 41 SPRING STREET
 NEW PROVIDENCE, NEW JERSEY 07974
 PHONE NO. (908) 988-1700
 FAX NO. (973) 664-6442
 Certificate of Authorization #24GA28047100

PENNEAST PIPELINE PROJECT
 LAMBERTVILLE INTERCONNECT
 CONSTRUCTION DETAILS SHEET 8
 LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY



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 Date: 1/9/2018 3:15:26 PM

NOTES:

1. THE APPROVED GEOWEB SHALL BE PRESTO GEOWEB (GW30V3). THE GEOWEB NOMINAL DIMENSIONS SHALL BE 9'-FT X 25'-FT.
2. THE CONCRETE SPLASH PAD AND GEOWEB SHALL BE INSTALLED PRIOR TO INSTALLATION OF THE STORMTRAP MODULES.
3. THE GEOWEB INFILL MATERIAL SHALL BE #5 AGGREGATE.
4. THE CONCRETE SPLASH PAD SHALL BE INSTALLED WITHIN THE GEOWEB AND IS REQUIRED AT ALL PIPE ENTRY LOCATIONS.
5. THE GEOWEB EDGE SHALL BE INSTALLED 1'-FT BEYOND THE OUTER PERIMETER OF THE STORMTRAP SYSTEM.
6. THE GEOWEB LONGITUDINAL DIMENSION (15'-FT) SHALL BE INSTALLED PARALLEL TO THE STORMTRAP LEGS.
7. THE CONCRETE SPLASH PAD AND GEOWEB SHALL BE CENTERED AT THE PIPE PENETRATION.
8. REFER TO SPLASH PAD LAYOUT FOR CONCRETE SPLASH PAD DIMENSIONS.
9. IF ANY PRODUCT OTHER THAN PRESTO GEOWEB IS TO BE INSTALLED, THE PRODUCT MANUFACTURER IS REQUIRED TO SUBMIT A LETTER STATING THAT THE PRODUCT IS EQUAL OR BETTER THAN PRESTO GEOWEB, BOTH IN PERFORMANCE AND IN STRUCTURAL CAPACITY.
10. ALL GEOWEB AND SPLASH PADS TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
11. A CONCRETE SPLASH PAD IS REQUIRED AT ANY ACCESS OPENING THAT HAS AN OPEN GRATE FOR DRAINAGE. THE CONCRETE SPLASH PAD SHALL EXTEND BETWEEN THE UNIT LEG WALLS AND 3'-0" FROM THE CENTRAL LINE OF THE OPENING ON BOTH SIDES UNLESS SPECIFIED OTHERWISE ON THE SPLASH PAD LAYOUT. GEOWEB IS NOT REQUIRED UNDER ACCESS OPENINGS.

SPLASH PAD CONFIGURATION

StormTrap
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PROJECT INFORMATION:
 PENN EAST
 MODERNIZATION
 BASIN 2
 STONE BASE OPTION
 WEST AMWELL, NJ

CURRENT ISSUE DATE:
 8/21/2018

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| REV. | DATE | ISSUED FOR: | OWN BY: |
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| 1 | 8/21/2018 | PRELIMINARY | KW |

SCALE:
 NTS

SHEET TITLE:
 SPLASH PAD & GEOWEB DETAILS

SHEET NUMBER:
6.0

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PROJECT INFORMATION:
 PENN EAST
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 BASIN 2
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 WEST AMWELL, NJ

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 8/21/2018

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| 1 | 8/21/2018 | PRELIMINARY | KW |

SCALE:
 NTS

SHEET TITLE:
 SINGLETRAP
 MODULE TYPES

SHEET NUMBER:
7.0

NOTES:

1. OPENING LOCATIONS AND SHAPES MAY VARY.
2. SP - INDICATES A MODULE WITH MODIFICATIONS.
3. P - INDICATES A MODULE WITH A PANEL ATTACHMENT.
4. POCKET WINDOW OPENINGS ARE OPTIONAL.

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ENGINEER INFORMATION:
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PROJECT INFORMATION:
 PENN EAST
 MODERNIZATION
 BASIN 2
 STONE BASE OPTION
 WEST AMWELL, NJ

CURRENT ISSUE DATE:
 8/24/2018

ISSUED FOR:
 PRELIMINARY

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| 1 | 8/24/2018 | PRELIMINARY | JW |
| 1 | 8/21/2018 | PRELIMINARY | KW |

SCALE:
 NTS

SHEET TITLE:
 OUTLET CONTROL
 STRUCTURE
 DETAILS

SHEET NUMBER:
8.0

NOTE: IF A WATERPROOF SOLUTION IS REQUIRED FOR THIS OUTLET CONTROL STRUCTURE, STORMTRAP RECOMMENDS THE USE OF XYPEX OR SIKAFLEX MATERIALS (OR APPROVED EQUIVALENT). WATERPROOFING MATERIALS TO BE SUPPLIED AND INSTALLED BY THE INSTALLING CONTRACTOR. CONTACT STORMTRAP FOR A LIST OF APPROVED APPLICATORS.

STORMTRAP BASIN 2
 N.T.S.

TRC Engineers, Inc.
 ENGINEER IN RESPONSIBLE
 CHARGE OF THE WORK SHOWN
 ON THIS DRAWING
 DATE: 6/29/2019 SIGNATURE: *Barry J. Sutherland*
 PROFESSIONAL ENGINEER: BARRY J. SUTHERLAND
 LIC. # 24GE02913500



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TRC Engineers, Inc.
 41 SPRING STREET
 NEW PROVIDENCE, NEW JERSEY 07974
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 Certificate of Authorization #24GA28047100

PENNEAST PIPELINE PROJECT
 LAMBERTVILLE INTERCONNECT
 CONSTRUCTION DETAILS SHEET 9
 LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY
 YEAR: 2020 W.B.S. CE.000147.001 SCALE: AS SHOWN DWG: C-116 REV: 0



**HUNTERDON COUNTY SOIL CONSERVATION DISTRICT
SOIL EROSION AND SEDIMENT CONTROL NOTES**

1. THE HUNTERDON COUNTY SOIL CONSERVATION DISTRICT REQUIRES AN ADVANCED 48-HOUR WRITTEN NOTIFICATION PRIOR TO THE START OF ANY LAND DISTURBANCE. A FAILURE OF THIS NOTIFICATION PRIOR TO THE START OF CONSTRUCTION WILL RESULT IN THE ISSUANCE OF A STOP CONSTRUCTION ORDER AND MAY BE CAUSE FOR LEGAL ACTION. NOTICE MAY BE FAXED TO (908) 788-0795 OR MAILED TO:

DISTRICT HUNTERDON COUNTY SOIL CONSERVATION
687 PITTSWOWN ROAD
FRENCHTOWN, NJ 08825

2. LAND DISTURBANCE AND CONSTRUCTION WORK START INCLUDES ANY DEMOLITION OR CLEARING THAT TAKES PLACE ON THE PROJECT SITE. APPROPRIATE SOIL EROSION AND SEDIMENT CONTROL MEASURES MUST BE INSTALLED AND MAINTAINED AT THE PROPOSED DEMOLITION AREAS.

3. THE PROJECT APPLICANT AND CONTRACTOR ARE TO BE AWARE THAT ADDITIONAL SOIL EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED BY THE SOIL CONSERVATION DISTRICT OR MUNICIPAL ENGINEER IF FIELD CONDITIONS OR UNFORESEEN SITUATIONS WARRANT THEM.

4. THE HUNTERDON COUNTY SOIL CONSERVATION DISTRICT ENCOURAGES THE INSTALLATION AND STABILIZATION OF PERMANENT DETENTION OR RETENTION FACILITIES FROM THE START OF THE PROJECT. THIS IS PARTICULARLY IMPORTANT ON ACCOUNT OF THE STEEP TOPOGRAPHY AND SOILS OF HUNTERDON COUNTY. PRIORITY SHOULD TO BE SET ON CONSTRUCTION OF ANY THE DETENTION BASIN OR RETENTION BASIN FACILITY PRIOR TO ANY SIGNIFICANT AMOUNT OF LAND DISTURBANCE. SEDIMENT RISERS CAN BE USED ON A DETENTION BASIN AT ANY TIME, AS LONG AS THEY MEET THE CRITERIA OF THE STATE SOIL EROSION AND SEDIMENT CONTROL STANDARDS. IF A SEDIMENT BASIN IS DESIGNED, AS EITHER WITHIN THE PERMANENT BASIN AREA OR AS A STAND-ALONE BASIN, THEY ARE TO BE DESIGN FULLY IN COMPLIANCE WITH THE STANDARDS AND ARE TO BE PROPERLY MAINTAINED DURING CONSTRUCTION. ALL DETENTION/RETENTION BASINS BE COMPLETED AND PERMANENTLY STABILIZED (ALONG WITH CONDUIT OUTLET PROTECTION AND LOW-FLOW CHANNEL) BEFORE ANY STORM DRAINAGE PIPING IS INSTALLED TO THE BASIN AND SAME PIPING IS FUNCTIONING. NO PAVING IS TO TAKE PLACE ON THE PROJECT SITE UNTIL ALL STORMWATER DETENTION/RETENTION FACILITIES ARE ADEQUATELY STABILIZED AS PER PLAN. FAILURE TO MAINTAIN A DETENTION, RETENTION, OR SEDIMENT FACILITY IN WORKING ORDER DURING CONSTRUCTION MAY BE GROUNDS FOR ISSUANCE OF A STOP CONSTRUCTION ORDER BY THE SOIL CONSERVATION DISTRICT.

5. THE HUNTERDON COUNTY SOIL CONSERVATION DISTRICT DOES NOT SUPPORT NOR ENDORSE MASS EXCAVATION. THE AMOUNT OF SOIL DISTURBED AT ONE TIME, AND SUBJECT TO EROSION, IS TO BE KEPT TO A MINIMUM. IT IS THE POLICY OF THE HUNTERDON COUNTY SOIL CONSERVATION DISTRICT THAT LARGE DISTURBANCES OF SOIL EXPOSED AT ONE TIME ON A PROJECT WILL REQUIRE A DETAILED PLAN AND TIME-LINE FOR GETTING AREAS STABILIZED. THE STANDARD FOR SEDIMENT BARRIERS WILL BE USED FOR LIMITING LARGE AREAS OF EXCAVATION. IF EXCAVATIONS ARE PROPOSED THAT EXCEED THE SEDIMENT BARRIER STANDARD, THEN ADDITIONAL MEASURES ARE TO BE DESIGNED AND DETAILED AND A DETAILED SEQUENCE OF CONSTRUCTION BE SUBMITTED FOR RE-CERTIFICATION AND APPROVAL. AS A MINIMUM, SOILS EXPOSED FOR LONGER THAN 30 DAYS WILL REQUIRE TEMPORARY STABILIZATION FOLLOWING THE AGRONOMIC SPECIFICATIONS ON THE PLAN.

6. A COPY OF THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN IS TO BE KEPT AT THE PROJECT SITE DURING CONSTRUCTION AND AVAILABLE FOR REVIEW BY THE CONTRACTOR AND SOIL CONSERVATION DISTRICT INSPECTORS.

7. THE LAND DISTURBANCE IS TO PROCEED IN ACCORDANCE WITH THE APPROVED SEQUENCE OF CONSTRUCTION AND THE CERTIFIED PLAN. ALL REQUIRED SOIL EROSION AND SEDIMENT CONTROL MEASURES MUST BE INSTALLED AND MAINTAINED AS OUTLINED IN THE PLAN

8. THE SOIL CONSERVATION DISTRICT IS TO BE NOTIFIED AND REPRESENTED AT A PRECONSTRUCTION CONFERENCE (USUALLY HELD AT THE MUNICIPAL ENGINEERS OFFICE) PRIOR TO THE START OF CONSTRUCTION OR ANY LAND DISTURBANCE.

9. ALL DISTURBED AREAS THAT ARE NOT BEING GRADED, NOT UNDER ACTIVE CONSTRUCTION, OR NOT SCHEDULED TO BE PERMANENTLY SEEDED WITHIN 30 DAYS MUST BE TEMPORARILY STABILIZED AS PER SPECIFICATIONS BELOW.

10. ALL EXPOSED AREAS WHICH ARE TO BE PERMANENTLY VEGETATED, ARE TO BE SEEDED AND MULCHED WITHIN 10 DAYS OF FINAL GRADING.

11. STRAW MULCH (HAY MULCH MAY BE SUBSTITUTED IF APPROVED BY THE DISTRICT) IS TO BE APPLIED TO ALL SEEDINGS AT A RATE OF 1-1/2 TO 2 TONS PER ACRE (APPROX. 100 TO 130 BALES PER ACRE).

12. MULCH ANCHORING IS REQUIRED AFTER MULCHING TO MINIMIZE LOSS BY WIND OR WATER. THIS IS TO BE DONE USING ONE OF THE METHODS (CRIMPING, LIQUID MULCH BINDERS, NETTINGS, ETC.) IN THE "STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY".

13. EXISTING WEEDY AND POORLY-VEGETATED AREAS WITH LESS THAN 80 PERCENT PERENNIAL GRASS COVER MUST RECEIVE PERMANENT STABILIZATION AS PER THESE SPECIFICATIONS.

14. ALL BAGS NEED TO BE SAVED FOR LIME, FERTILIZER, SEED, AND LIQUID MULCH BINDER (IF MULCH ANCHORING METHOD). SUCH PROOFS NEED TO BE SUBMITTED TO THE DISTRICT INSPECTOR FOR VERIFICATION OF MATERIALS AND QUANTITIES USED FOR ALL SEEDINGS.

15. AN ADDITIONAL FEE PER INSPECTION (AS PER THE CURRENT HUNTERDON COUNTY SOIL CONSERVATION DISTRICT FEE SCHEDULE AT THE TIME OF INSPECTION) WILL BE ASSESSED ON THOSE SITES WHERE ADDITIONAL INSPECTIONS ARE NECESSITATED AS A RESULT OF NON-COMPLIANCE WITH THE APPROVED PLAN. THIS INCLUDES ADDITIONAL INSPECTIONS PERFORMED AFTER THE FAILURE OF AN INITIAL REPORT OF COMPLIANCE INSPECTION. THE ENTIRE PROJECT SITE IS INSPECTED AT THE TIME OF A REQUEST FOR REPORT OF COMPLIANCE.

16. SOILS IN HUNTERDON COUNTY REQUIRE THAT ALL STONE TRACKING PADS (STABILIZED CONSTRUCTION ENTRANCE) BE INSTALLED AT A MINIMUM OF 100 FT. IN LENGTH FOR ROADWAY GRADES OF 0% TO 2% AND 200 FT. FOR ACCESS GRADES GREATER THAN 2%. THIS REQUIREMENT IS THE SAME, REGARDLESS IF MAIN PROJECT ENTRANCE OR INDIVIDUAL DWELLING LOT. STONE TRACKING PADS OR OTHER MEASURES APPROVED BY THE SOIL CONSERVATION DISTRICT ARE TO BE INSTALLED AT ALL CONSTRUCTION ACCESS TO PAVEMENT. SEE DETAIL PLAN SHEET C-118.

THE CONSTRUCTION ENTRANCE SHALL BE MAINTAINED IN A CONDITION

THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO ROADWAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO ROADWAYS (PUBLIC OR PRIVATE) OR OTHER IMPERVIOUS SURFACES MUST BE REMOVED IMMEDIATELY.

WHERE ACCUMULATING OF DUST/SEDIMENT IS INADEQUATELY CLEANED OR REMOVED BY CONVENTIONAL METHODS, A POWER BROOM OR STREET SWEEPER WILL BE REQUIRED TO CLEAN PAVED OR IMPERVIOUS SURFACES. ALL OTHER ACCESS POINTS, WHICH ARE NOT STABILIZED, SHALL BE ADEQUATELY BLOCKED OFF.

17. CONDUIT OUTLET PROTECTION (RIP-RAP APRONS OR SCOUR HOLES) MUST BE DESIGNED AND INSTALLED AT ALL PIPE OUTLETS AS PER THE CERTIFIED PLANS AND STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY. CONDUIT OUTLET PROTECTION MUST BE INSTALLED IMMEDIATELY FOLLOWING PIPE INSTALLATION AND PRIOR TO ANY PIPE FLOW. CONDUIT OUTLET PROTECTION MUST BE MAINTAINED AS PER DESIGN UNTIL THE COMPLETION OF THE PROJECT AND ISSUE OF FINAL REPORT OF COMPLIANCE. SEE CONDUIT OUTLET PROTECTION DETAIL AND SPECIFICATION TABLE ON PLAN SHEET C-113.

18. ALL STORMWATER INLET PROTECTION NEEDS TO BE MAINTAINED PERIODICALLY WITH FRESH HAYBALES OR CLEAN STONE BERMS (STONE SIZED 1 1/2"-2 1/2") OR APPROVED METHOD TO COMPLETELY ENIRCLE, BUT NOT BLOCK THE INLETS. SEE DETAIL ON PLAN SHEET C-113.

INSPECTIONS OF STORMWATER INLET PROTECTION SHALL BE FREQUENT. MAINTENANCE, REPAIR, AND REPLACEMENT SHALL BE MADE PROMPTLY, AS NEEDED. INLET PROTECTION NEEDS TO BE MAINTAINED UNTIL ALL AREAS OF THE SITE, OR AS A MINIMUM THE AREA DRAINING TO THE INLET, ARE PERMANENTLY STABILIZED AND APPROVED BY SOIL CONSERVATION DISTRICT INSPECTORS.

19. DUST CONTROL MEASURES ARE TO BE USED DURING ALL PHASES OF CONSTRUCTION OF THE PROJECT. SEE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY PAGES 16-1 AND 16-2. SEE DUST CONTROL MATERIALS TABLE ON PLAN SHEET C-117.

20. ALL TREES THAT ARE TO BE PROTECTED FROM ENVIRONMENTAL AND MECHANICAL INJURY DURING CONSTRUCTION ARE TO BE ADEQUATELY MARKED IN FENCED-OFF PRIOR TO CONSTRUCTION AND MAINTAINED DURING CONSTRUCTION. FOR FURTHER INFORMATION SEE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY PAGES 9-1 THROUGH 9-7. SEE PROPER TREE PROTECTION DETAIL ON PLAN SHEET C-118.

21. DEWATERING METHODS ARE TO BE FOLLOWED TO PROPERLY REMOVE SUSPENDED SEDIMENTS IN WATER FROM EXCAVATIONS AND/OR TRENCHES PRIOR TO DISCHARGE TO DOWNSTREAM AREAS AND/OR WATERCOURSES. THESE METHODS ARE TO FOLLOW THOSE FOUND IN THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY, PAGES 14-1 TO 14-7.

22. AS PER THE TRAFFIC CONTROL STANDARD IN THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY (PAGE 33-1) STEEP BANKS, WETLAND BUFFERS, WATERWAYS, AND OTHER SENSITIVE AREAS ARE TO BE AVOIDED BY CONSTRUCTION TRAFFIC. WETLAND BUFFER AND WETLAND AREAS ARE TO BE ADEQUATELY MARKED IN FIELD PRIOR TO CONSTRUCTION AND MAINTAINED DURING CONSTRUCTION.

23. ANY FORMER AGRICULTURAL CROP FIELDS THAT ARE EITHER IN CROPS, CROP RESIDUE, OR ANNUAL WEEF COVER ARE TO BE STABILIZED FOLLOWING THE AGRONOMIC SPECIFICATIONS FOR HUNTERDON COUNTY. THIS IS TO BE EITHER A COVER CROP FROM THE PERIOD OF LAST HARVEST AND CONSTRUCTION START-UP OR TEMPORARY STABILIZATION THROUGH SEEDING AND MULCHING. AREAS THAT ARE NOT GOING TO BE EITHER BUILT ON OR CONTINUED TO BE FARMED ARE TO RECEIVE PERMANENT STABILIZATION.

24. IF EXCESS FILL OR ANY OTHER MATERIAL IS TO BE REMOVED FROM THE SITE, THE PROJECT OWNER/APPLICANT SHALL BE RESPONSIBLE FOR ITS PROPER DISPOSAL AND WILL NOTIFY THE HUNTERDON COUNTY SOIL CONSERVATION DISTRICT AS TO THE PLANNED DISPOSAL SITE LOCATION. IF APPLICABLE, A SOIL EROSION AND SEDIMENT CONTROL PLAN MUST BE SUBMITTED TO, REVIEWED AND CERTIFIED BY THE HUNTERDON COUNTY SOIL CONSERVATION DISTRICT PRIOR TO ANY MATERIAL REMOVAL FROM THE PROJECT SITE. REMOVAL OF ANY SOIL MATERIAL FROM THE PROJECT SITE WITHOUT WRITTEN AUTHORIZATION FROM THE HUNTERDON COUNTY SOIL CONSERVATION DISTRICT IS A VIOLATION OF THE STATE SOIL EROSION AND SEDIMENT CONTROL ACT.

25. STOCKPILING OF FINES (SAND, QUARRY-PROCESS-BLEND, ETC.) IS NOT ALLOWED ON PAVED SURFACES OF THE PROJECT SITE.

26. ANY GABION BASKETS USED ON THE PROJECT ARE TO BE COATED WITH PLASTIC OR PVC AND FILLED WITH 4"-7" ANGULAR ROCK. THE GABION THICKNESS IS TO BE AT LEAST THE CALCULATED STONE D50 SIZE OF A REGULAR RIP-RAP APRON. FILTER FABRIC IS TO BE INSTALLED BETWEEN THE SUBGRADE AND THE GABIONS.

27. THE LIMITS OF DISTURBANCE SHOWN ON THE PLANS ARE NOT TO BE EXCEEDED UNLESS AUTHORIZED BY THE HUNTERDON COUNTY SOIL CONSERVATION DISTRICT AND A REVISED PLAN SUBMITTED FOR CERTIFICATION.

28. ALL DISTURBED ROADSIDE AREAS NEED TO BE TOPSOILED, FINAL-GRADED, LIMED, FERTILIZED, SEEDED, MULCHED, AND MULCH-ANCHORED (FOLLOWING DISTRICT AGRONOMIC SPECIFICATIONS FOR PERMANENT SEEDING) FOR A MINIMUM DISTANCE APPROVED BY THE DISTRICT BACK FROM THE CURB-LINE PRIOR TO APPROVAL OF PERMANENT IMPROVEMENT.

29. THE HUNTERDON COUNTY SOIL CONSERVATION DISTRICT DOES NOT RECOMMEND THE USE OF RIP-RAP D50 SIZES SMALLER THAN 6" FOR APRONS OR SCOUR HOLES SINCE SMALLER STONE SIZES (3" OR 4") TEND TO WASH/ERODE UNDER HIGH INTENSITY RAIN STORMS. THE HUNTERDON DISTRICT RECOMMENDS THAT THE SMALLEST D50 STONE SIZE BE SPECIFIED AS 6" WITH THICKNESS SPECIFIED AS 12" WITH FILTER FABRIC OR 18" WITHOUT FABRIC.

30. TEMPORARY DIVERSIONS TO DIRECT WATER OFF OF A GRADED RIGHT-OF-WAY ONTO A STABLE AREA ARE NEEDED DURING CONSTRUCTION. FOR FURTHER INFORMATION REFER TO THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY, (PAGE 15.3 ITEM 2 AND FIGURE 15-4) FOR THE REQUIRED DIMENSIONS AND SPACING. SEE DETAIL AND SPACING ON PLAN SHEET C-118.

31. HYDROSEEDING/HYDROMULCHING ARE NOT RECOMMENDED PRACTICES IN HUNTERDON COUNTY DUE TO THE HIGH FAILURE RATE OF SEEDINGS, STEEP

TOPOGRAPHY, POOR SEED-TO-SOIL CONTACT AND POOR GROUND SURFACE COVERAGE. ALL SEED MUST BE INCORPORATED INTO THE SOIL. HYDROSEEDING EQUIPMENT MAY BE USED IN CONJUNCTION WITH STRAW/HAY MULCH FOR THE PURPOSE OF ANCHORING THE MULCH WITH LIQUID MULCH BINDERS.

32. IF SUBSURFACE WATER PROBLEMS ARE DISCOVERED DURING CONSTRUCTION, THEY WILL BE RECTIFIED FOLLOWING THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY (SUBSURFACE DRAINAGE, PAGE 32-1 THROUGH 32-4).

33. ALL DEVELOPMENT ROADWAYS ARE TO BE KEPT SCRAPPED/SWEPT TO REMOVE SEDIMENT ACCUMULATIONS ALONG CURBS AND AROUND STORMWATER INLETS.

34. THE MAXIMUM ALLOWABLE VEGETATED SLOPE IS 2:1. SLOPES IN EXCESS OF 3:1 (BETWEEN 2:1 AND 3:1) REQUIRE TEMPORARY EROSION CONTROL MATTING, SUCH AS EXCELSIOR "CURLX" OR EQUIVALENT, FOR STABILIZATION. THE MATTING IS TO BE PROPERLY INSTALLED WITH SPECIFIED OVERLAP, CHECK SLOTS, ANCHORING SPACING, AND ANCHORING DEVICE TYPE, GAUGE, AND SIZE.

35. ALL DISTURBED AREAS THAT ARE NOT BEING GRADED, NOT UNDER ACTIVE CONSTRUCTION, OR NOT SCHEDULED TO BE PERMANENTLY SEEDED WITHIN 30 DAYS MUST BE TEMPORARILY STABILIZED AS PER THE AGRONOMIC SPECIFICATIONS.

36. PURSUANT TO THE NEW JERSEY SOIL EROSION AND SEDIMENT CONTROL ACT, CHAPTER 251, P.L. 1975, THE HUNTERDON COUNTY SOIL CONSERVATION DISTRICT HAS REVIEWED THE PLANS FOR THIS PROJECT AND CERTIFIES THE SOIL EROSION AND SEDIMENT CONTROL PLAN. THE APPROVAL OF THE SOIL EROSION AND SEDIMENT CONTROL PLANS BY THE SOIL CONSERVATION DISTRICT IS LIMITED TO THE SOIL EROSION, SEDIMENTATION, AND RELATED STORMWATER MANAGEMENT CONTROLS SPECIFIED IN THIS PLAN. IT IS NOT AUTHORIZATION TO ENGAGE IN THE PROPOSED LAND USE UNLESS THE MUNICIPALITY OR OTHER CONTROLLING AGENCY HAS PREVIOUSLY APPROVED SUCH USE.

37. PLANS SUBMITTED TO THE HUNTERDON COUNTY SOIL CONSERVATION DISTRICT MUST BE CONSISTENT WITH PLANS ANY PLANS SUBMITTED TO A REGULATORY AGENCY SUCH AS NJDEP, MUNICIPALITY, ETC. ANY REVISIONS REQUIRED BY ANY REVIEWING AUTHORITY WOULD REQUIRE A RESUBMISSION TO THE DISTRICT FOR REVIEW.

38. ALL REVISIONS AND MUNICIPAL RENEWALS OF THIS PROJECT WILL REQUIRE RESUBMISSION AND APPROVAL BY THE SOIL CONSERVATION DISTRICT.

39. REPORT OF COMPLIANCE: A REPORT OF COMPLIANCE APPROVING PERMANENT STABILIZATION MEASURES (OR A SOIL EROSION AND SEDIMENT CONTROL COMPLETION BOND AGREEMENT WITH TEMPORARY STABILIZATION FOR THE WINTER SEASON) IS TO BE ISSUED BY THE SOIL CONSERVATION DISTRICT ON ALL PROJECTS AT THEIR COMPLETION. BEFORE ANY CERTIFICATE OF OCCUPANCY (PERMANENT OR TEMPORARY) CAN BE GRANTED BY THE MUNICIPALITY OR STATE, A WRITTEN REPORT OF COMPLIANCE MUST BE ISSUED BY THE SOIL CONSERVATION DISTRICT.

40. PURSUANT TO AUTHORITY GRANTED BY N.J.S.A. 4:24-47, THE HUNTERDON COUNTY SOIL CONSERVATION DISTRICT PERIODICALLY INSPECTS THE PROJECT SITE FOR COMPLIANCE WITH THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLANS AND THE STATE SOIL EROSION AND SEDIMENT CONTROL ACT. FAILURE TO COMPLY WITH THE PLANS AND THE ACT MAY BE CAUSE FOR COURT ACTION AND PENALTIES, PURSUANT TO N.J.S.A. 4:24-53. THE MAXIMUM STATUTORY PENALTY PROVIDED BY LAW FOR VIOLATIONS OF THE SOIL EROSION AND SEDIMENT CONTROL ACT IS A FINE OF UP TO \$3,000 EACH DAY AND AN INJUNCTIVE ORDER OF THE SUPERIOR COURT.

41. IT IS POLICY OF THE HUNTERDON COUNTY SOIL CONSERVATION DISTRICT TO PERIODICALLY EVALUATE ALL PROJECTS TO DETERMINE IF THE COSTS FOR REVIEW AND INSPECTION EXCEED THE PAID FEES. PRIOR TO THE FEES BEING EXCEEDED AN ADDITIONAL FEE WILL BE ASSESSED. THIS FEE WILL BE BASED ON THE INCOMPLETE PORTION(S) OF THE PROJECT, REGARDLESS IF PRESENTLY UNDER CONSTRUCTION OR NOT, AS PER THE CURRENT HUNTERDON COUNTY SOIL CONSERVATION DISTRICT FEE SCHEDULE AT THE TIME OF EVALUATION.

SOIL COMPACTION: AREAS OF TRAVEL WITHIN A PROJECT SITE AND/OR STAGING AND PARKING AREAS MAY HAVE SOILS COMPACTED DURING THE COURSE OF PROJECT CONSTRUCTION. ALL SOIL COMPACTION IS TO BE CORRECTED PRIOR TO ANY PERMANENT STABILIZATION AND COMPLETION OF PROJECT. THE TOPSOILING STANDARD (NJ SE&S STANDARDS PAGE 8-2) STATES THAT WHERE THERE IS COMPACTION, THE SURFACE IS TO BE SCARIFIED 6" TO 12" PRIOR TO APPLYING TOPSOIL FOR PERMANENT STABILIZATION. THE SOIL CONSERVATION DISTRICT WILL BE INSPECTING FOR THIS TO BE EMPLOYED PRIOR TO ANY PERMANENT STABILIZATION AND PRIOR TO ISSUE OF ANY REPORT OF COMPLIANCE. WHERE TOPSOIL IS NOT BEING STRIPPED DURING CONSTRUCTION, PRE AND POST COMPACTION TEST MAY BE USED TO VERIFY THAT CONSTRUCTION TRAFFIC HAS NOT CAUSED A SOIL COMPACTION PROBLEM TO THE SITE.

DETAILED CONSTRUCTION SEQUENCE

- STAKE LIMIT OF DISTURBANCE IN THE FIELD PRIOR TO ANY CLEARING, GRUBBING OR EARTH MOVING ACTIVITIES. ALSO STAKE THE LIMIT OF EXCAVATION. (1 DAY)
- INSTALL REQUIRED SOIL EROSION AND SEDIMENT CONTROL MEASURES. (5 DAYS)
 - PLACE STABILIZED CONSTRUCTION ENTRANCE WHERE INDICATED ON PLAN.
 - PLACE SILT FENCE WHERE INDICATED ON PLAN.
 - INSTALL INLET PROTECTION WHERE INDICATED ON PLAN.
- CLEAR AND GRUB CONSTRUCTION AREA. (3 DAYS)
- PERFORM WORK TO INSTALL UNDERGROUND UTILITIES, CONSTRUCT BUILDING FOUNDATION, PAVEMENT, AND ACCESS ROADS. (3 MONTHS)
- REMOVE STABILIZED CONSTRUCTION ENTRANCE. ESTABLISH PERMANENT COVER AS PER PERMANENT VEGETATION COVER NOTES. (1 DAYS)

TEMPORARY STABILIZATION WITH MULCH ONLY

Straw mulch (hay mulch may be substituted if approved by the District) is to be spread uniformly at the rate of 2 to 2-1/2 tons per acre (total ground surface coverage). This practice is limited to periods when vegetative cover cannot be established due to the season or other conditions. Mulch must be anchored in accordance with New Jersey Standards for Soil Erosion and Sediment Control. Mulch alone can only be used for short periods and will require maintenance and renewal. Other mulch materials may be utilized if approved by the District

TEMPORARY SEEDING

Temporary seeding is to be used on all disturbed areas where permanent stabilization will not be accomplished for a period of up to 6 months.

| Product | Rate | Recommended optimum seeding dates |
|----------------------------|-------------------|-----------------------------------|
| Perennial ryegrass | 100 lbs. per acre | 3/15-5/15 & 8/15-10/1 |
| Spring Oats | 86 lbs. per acre | 3/15-6/1 & 8/1-10/1 |
| Winter Cereal Rye | 112 lbs. per acre | 8/1-11/15 |
| Winter Barley | 96 lbs. per acre | 8/15-10/1 |
| Pearl Millet | 20 lbs. per acre | 5/15-8/15 |
| German or Hungarian Millet | 30 lbs. per acre | 5/15-8/15 |

STABILIZATION WITH SOD

Stabilization with sod is permitted in areas where maintenance and irrigation are adequate to insure proper establishment and longevity. Seedbed preparation is to be consistent with any other stabilization requirements. (Lime and fertilizer bags are to be retained for District inspection.) On slopes greater than 3 to 1, sod must be properly anchored to the slope in accordance with the NJ Standards for Soil Erosion and Sediment Control.

PERMANENT SEEDING

- Seed is to be incorporated into the soil to a depth of 1/4" - 1/2".
- Lawn seedings are to be a mixture of bluegrasses, turf-type fescues, and turf-type perennial ryegrasses to insure longevity, tolerance, and durability. No seed shall be accepted with a germination test date of more than 12 months old unless retested.
- Professional seed mixtures are recommended rather than mixing seeds yourself.
- Seed mixture (as specified below) is to be applied at a minimum rate of 200 lbs. per acre of perennial seed.
- Optimum seeding period for Hunterdon County is from March 1 to May 15 and August 15 to October 1. Outside of those periods, the seeding rates are to be increased by 50% (i.e.: 300 lbs. per acre of perennial seed instead of the required 200 lbs. per acre during optimum periods).
- Seedings should receive an application of fertilizer such as 10-10-10 or equivalent at 400 lbs. per acre approximately 6 months after first application.

SEEDING MIXTURE FOR GENERAL SEEDING - (example: lawns)

| | | |
|----------------------------------|----|----------------------------------|
| 40% turf-type tall fescue | OR | 60% Kentucky bluegrass |
| 10% creeping red fescue | | 20% turf-type perennial ryegrass |
| 10% chewings fescue | | 20% chewings fescue |
| 10% Kentucky bluegrass | | |
| 30% turf-type perennial ryegrass | | |

SEEDING MIXTURE FOR HIGH TRAFFIC & CRITICAL AREAS

(examples: athletic fields, waterways, diversions, etc.)

| |
|----------------------------------|
| 80% turf-type tall fescue |
| 10% Kentucky bluegrass |
| 10% turf-type perennial ryegrass |

Other seed mixtures, such as blended varieties of perennial turf-type ryegrasses, turf-type tall fescues, or bluegrasses may also be acceptable if approved by the District.

Revised January 14, 2019

| MATERIAL | WATER DILUTION | TYPE OF NOZZLE | APPLY GALLONS/ACR E |
|--|----------------|---|---------------------|
| Anionic asphalt emulsion | 7:1 | Coarse Spray | 1200 |
| Latex emulsion | 12.5:1 | Fine Spray | 235 |
| Resin in water | 4:1 | Fine Spray | 300 |
| Polyacrylamide (PAM) - spray on Polyacrylamide (PAM) - dry spread | | Apply according to manufacturer's instructions. May also be used as an additive to sediment basins to flocculate and precipitate suspended colloids. See Sediment Basin standard, p. 26-1 | |
| Acidulated Soy Bean Soap Stick | None | Coarse Spray | 1200 |

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ENGINEER IN RESPONSIBLE CHARGE OF THE WORK SHOWN ON THIS DRAWING
DATE: 6/29/19 SIGNATURE: *Barry J. Sutherland*
PROFESSIONAL ENGINEER: BARRY J. SUTHERLAND
LIC. # 246E02913500



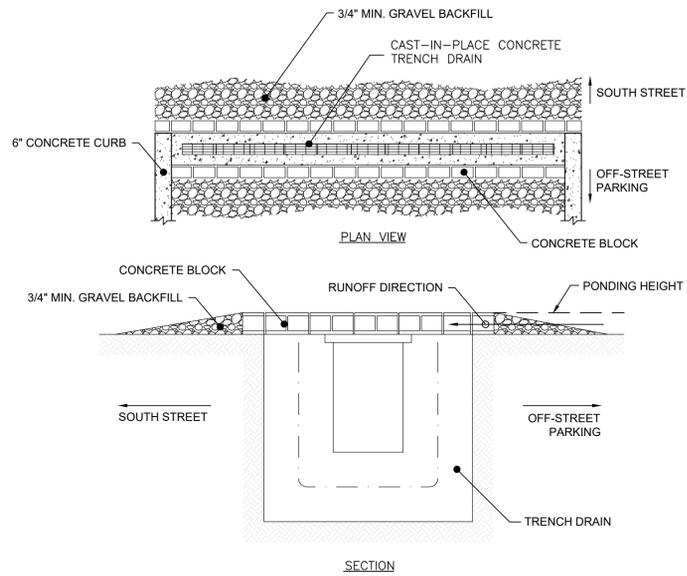
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New Providence, New Jersey 07974
Phone No. 908-988-1700
Certificate of Authorization #24GA28047100

PENNEAST PIPELINE PROJECT
LAMBERTVILLE INTERCONNECT
SESC DETAILS SHEET 1

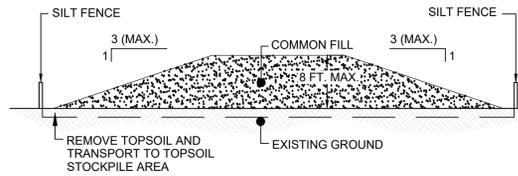
LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY

YEAR: 2020 | W.B.S. CE.00147.001 | SCALE: AS SHOWN | DWG. C-117 | REV. 0



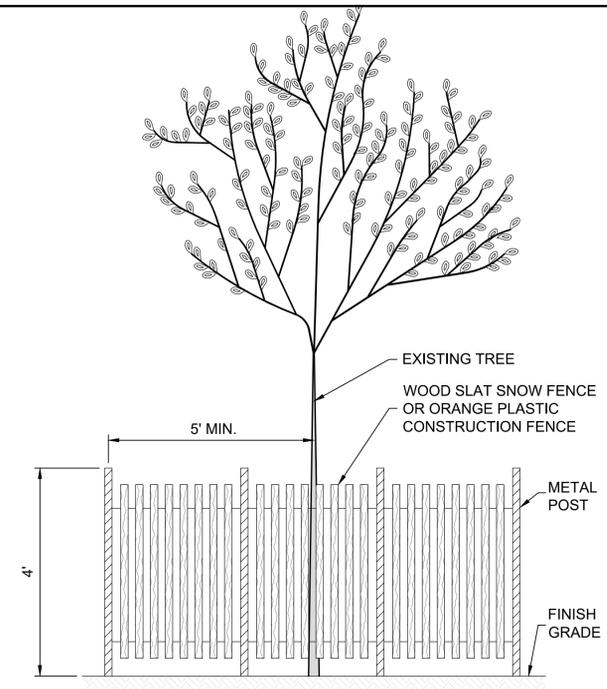
- NOTES:
- TRENCH DRAIN SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS.
 - EXCAVATE A BASIN OF SUFFICIENT SIZE ADJACENT TO THE TRENCH DRAIN.
 - THE TOP OF THE STRUCTURE (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION TO PREVENT RUNOFF FROM BYPASSING THE TRENCH DRAIN.

TRENCH DRAIN SEDIMENT BARRIER DETAIL
N.T.S.



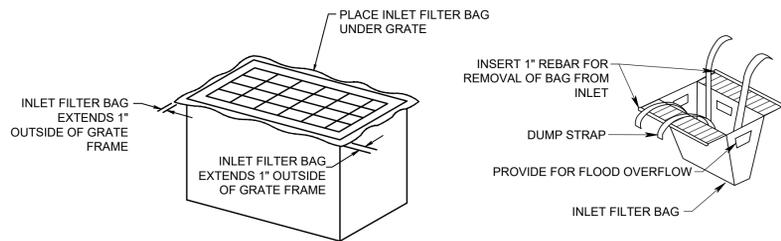
- NOTES:
- STOCKPILE SHALL BE SURROUNDED BY SILT FENCE.
 - STOCKPILE SHALL RECEIVE TEMPORARY VEGETATIVE STABILIZATION IN ACCORDANCE WITH THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY IMMEDIATELY AFTER COMPLETION OF STOCKPILE.
 - STOCKPILES ARE NOT TO BE LOCATED WITHIN FIFTY FEET OF A FLOODPLAIN, SLOPES, ROADWAY, OR DRAINAGE FACILITY.

COMMON FILL STOCKPILE DETAIL
N.T.S.



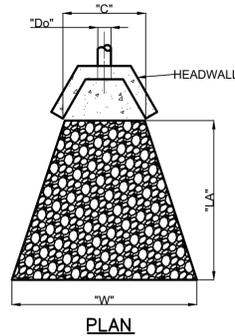
NOTE:
LOCATE FENCE AT DRIPLINE OF TREE (MIN. 5' FROM TRUNK)

TREE PROTECTION FENCE DETAIL
N.T.S.



- NOTES:
- OUTLET STRUCTURE WEIR AND ORIFICE SHALL BE PLUGGED/BLOCKED.
 - INLET FILTER BAGS MUST BE DISPOSED OF ACCORDING TO MANUFACTURER'S INSTRUCTIONS. BAGS SHALL NOT BE REUSED.

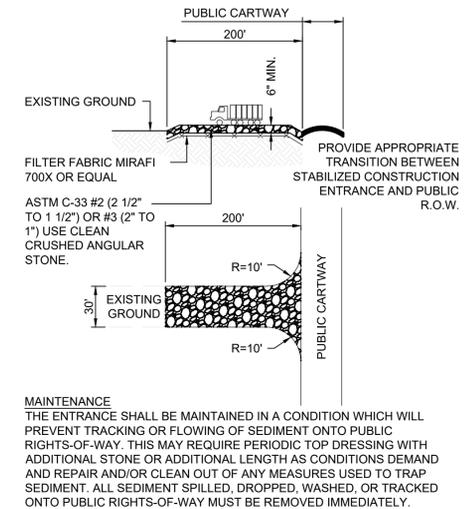
OUTLET STRUCTURE PROTECTION DETAIL
N.T.S.



| CONDUIT OUTLET PROTECTION TABLE | | | | | | |
|---------------------------------|-------|-------|------|-----------------|-----------------|-------|
| HEADWALL | LA | W | C | D ₅₀ | D ₉₀ | E |
| No. 1: Basin-1 Entrance | 13.0' | 17.0' | 4.0' | 1.25' | 1.0' | 12.0" |
| No. 2: Basin-1 Exit | 10.0' | 14.0' | 4.0' | 1.25' | 1.0' | 12.0" |
| No. 3: Basin-2 Entrance | 9.0' | 13.0' | 4.0' | 1.25' | 1.0' | 12.0" |
| No. 4: Basin-2 Exit | 10.0' | 13.0' | 4.0' | 1.25' | 1.0' | 12.0" |

- NOTES:
- SLOPE OF RIP-RAP SHALL BE 0%.
 - SIDE SLOPES SHALL BE 2:1 OR FLATTER.
 - THERE SHALL BE NO OVERFALL AT THE END OF THE APRON OR AT THE END OF THE CULVERT.
 - WHERE THERE IS A WELL DEFINED CHANNEL DOWNSTREAM OF THE APRON, THE BOTTOM WIDTH OF THE APRON SHALL BE AT LEAST EQUAL TO THE BOTTOM WIDTH OF THE CHANNEL. THE STRUCTURAL LINING SHALL EXTEND AT LEAST ONE FOOT ABOVE THE TAILWATER ELEVATION BUT NO LOWER THAN TWO-THIRDS OF THE VERTICAL CONDUIT DIMENSION ABOVE THE CONDUIT INVERT.
 - THERE SHALL BE NO BENDS OR CURVES AT THE INTERSECTION OF THE CONDUIT AND APRON.
 - FIFTY PERCENT, BY WEIGHT OF THE RIP-RAP MIXTURE SHALL BE SMALLER THAN MEDIAN STONE SIZE DESIGNATED AS D₅₀. THE LARGEST STONE SIZE IN THE MIXTURE SHALL BE 1.5 TIMES THE D SIZE. THE RIP-RAP SHALL BE REASONABLY WELL GRADED.
 - FILTER FABRIC SHALL BE PROVIDED UNDER RIP-RAP LINING. FABRIC SHALL BE MIRAFI 700X OR APPROVED EQUAL.

CONDUIT OUTLET PROTECTION DETAIL
N.T.S.



MAINTENANCE
THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.

STABILIZED CONSTRUCTION ENTRANCE DETAIL
N.T.S.

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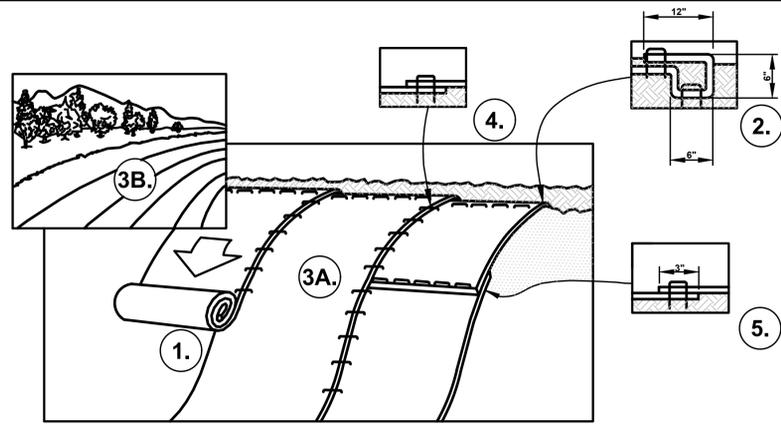


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Phone No. 908-988-1700
Certificate of Authorization #24GA28047100

PENNEAST PIPELINE PROJECT
LAMBERTVILLE INTERCONNECT
SESC DETAILS 2
LOC: WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY
YEAR: 2020 W.B.S. CE.000147.001 SCALE: AS SHOWN DWG: C-118 REV: 0



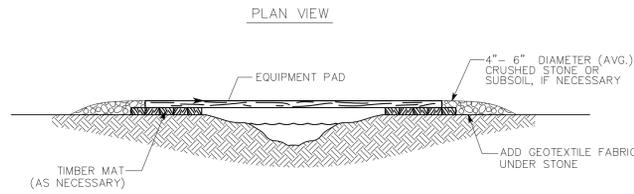
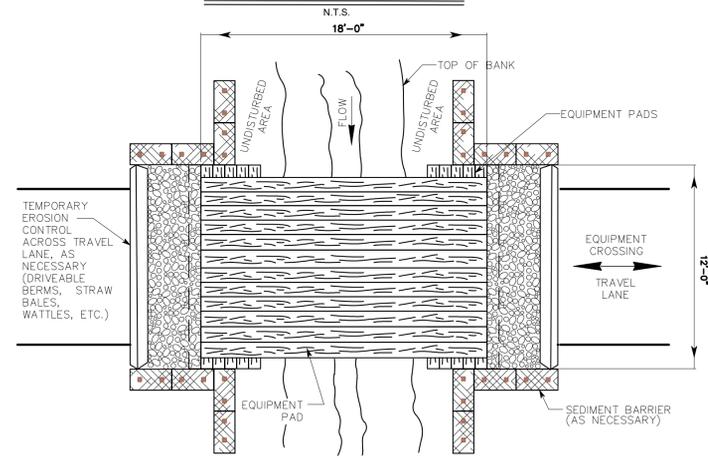


- PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
- BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
- ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
- THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
- CONSECUTIVE BLANKETS SPICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH.

NOTE:

IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

EROSION CONTROL BLANKET



NOTES:

- TEMPORARY SEDIMENT BARRIER CONSISTS OF SILT FENCE AND/OR STRAW BALES, OR OTHER APPROPRIATE MATERIAL.
- EQUIPMENT PAD, TYPICALLY CONSTRUCTED OF HARDWOOD, SHALL BE IN GOOD CONDITION AND MUST ACCOMMODATE THE LARGEST EQUIPMENT USED. ADDITIONAL EQUIPMENT PADS CAN BE PUT SIDE BY SIDE IF EXTRA WIDTH IS REQUIRED. BRIDGE MUST SPAN FROM TOP OF BANK TO TOP OF BANK.
- CRUSHED STONE OR SUBSOIL MAY BE USED AS ILLUSTRATED, IF NECESSARY, WITHIN TRAVEL LANE AS RAMP.
- CONSTRUCT AND MAINTAIN BRIDGE TO WITHSTAND THE HIGHEST EXPECTED FLOW WHILE BRIDGE IS IN USE AND PREVENT SOIL FROM ENTERING WATERBODY. DO NOT USE SOIL TO CONSTRUCT OR STABILIZE BRIDGE.

TEMPORARY EQUIPMENT BRIDGE (EQUIPMENT PADS)

N.T.S.

AGRONOMIC SPECIFICATIONS FOR LAWNS AND CONSTRUCTION SITES
GENERAL

- All disturbed areas that are not being graded, not under active construction, or not scheduled to be permanently seeded within 30 days must be temporarily stabilized as per specifications below.
- All exposed areas which are to be permanently vegetated, are to be seeded and mulched within 10 days of final grading.
- Straw mulch** (hay mulch may be substituted if approved by the District) is to be applied to all seedings at a rate of 1-1/2 to 2 tons per acre (approx. 100 to 130 bales per acre).
- Mulch anchoring is required** after mulching to minimize loss by wind or water. This is to be done using one of the methods (crimping, liquid mulch binders, nettings, etc.) in the "Standards for Soil Erosion and Sediment Control in New Jersey".
- Existing weedy and poorly-vegetated areas with less than 80 percent perennial grass cover must receive permanent stabilization (as specified on back).
- All bags need to be saved for lime, fertilizer, seed, and liquid mulch binder (if mulch anchoring method). Such proofs need to be submitted to the District inspector for verification of materials and quantities used for all seedings.
- An additional fee of **\$125.00** per inspection will be assessed on those sites where additional inspections are necessitated as a result of non-compliance with the approved plan. This includes additional inspections performed after the failure of an initial Report of Compliance inspection. The entire project site is inspected at the time of a request for Report of Compliance.

SEED-BED PREPARATION FOR ALL SEEDINGS

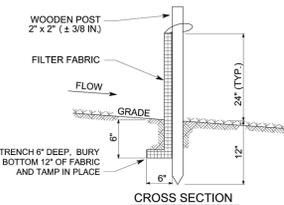
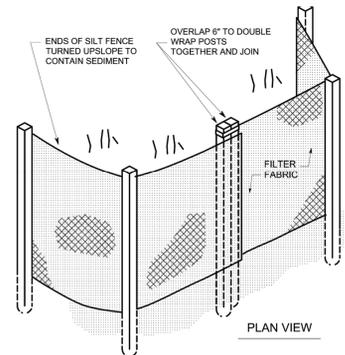
SUB-SOIL PREPARATION: Immediately prior to seeding and topsoil application, the surface should be scarified to a depth of 6" to 12" where there has been soil compaction (e.g. areas of heavy construction traffic). This practice is to be applied to all compacted areas where there is no danger to underground utilities (cables, irrigation systems, etc.).

TOPSOILING: Areas to be seeded should have a minimum of 5" of friable, loamy, topsoil free of objectionable weeds, stones and debris.

FINAL GRADING: Grading is to be smooth of ruts and free of objectionable stones, depressions, vehicle tracks, and rough edges. There is to be positive drainage away from all buildings and dwellings. Refuse from seedbed preparation (roots, sticks, stones, construction debris) must be disposed of properly.

LIMING/FERTILIZING: Apply limestone and fertilizer to soil test recommendations or as follows:

- Lime** is to be applied at the rate of **2 tons (4,000 lbs.)** per acre. Lime may be any product type as long as the CCE Calcium Carbonate Equivalency = 2 tons per acre. Pelletized and liquid products may be preferred because of their lack of dust and ease of handling but must meet the fore-mentioned criteria.
- Starter fertilizer**, specified as **10-20-10**, is to be applied at **500 lbs. per acre**
- Lime and fertilizer** are to be worked into the soil to a depth of 4 inches.



INSTALLATION REQUIREMENTS:

- WHEN USING SILT FENCE, PLACE IT:
 - BETWEEN DISTURBED AREAS AND DOWN-SLOPE ENVIRONMENTAL RESOURCE AREAS
 - AT THE BASE OF ALL SLOPES NEXT TO WETLANDS, WATERBODIES, AND ROAD CROSSINGS
 - AT THE INLET AND OUTLET OF OPEN DRAINAGE STRUCTURES
 - APPROXIMATELY 8 FEET BEYOND THE TOE OF THE SLOPE TO GIVE THE SEDIMENT ROOM TO COLLECT (IF POSSIBLE)
 - USE SANDBAGS OR BACKFILLING TO KEY IN THE BOTTOM OF THE FABRIC WHERE IT IS NOT FEASIBLE TO TRENCH IT IN (LEDGES, ROCKY SOIL, LARGE ROOTS, ETC.)

MAINTENANCE REQUIREMENTS:

- INSPECT SILT FENCE:
 - DAILY IN AREAS OF ACTIVE CONSTRUCTION
 - WEEKLY IN AREAS WITH NO CONSTRUCTION
 - WITHIN 24 HOURS FOLLOWING EACH RAINFALL EVENT OF ≥ 0.5 INCH.
- REPAIR OR REPLACE SILT FENCE AS NEEDED
- REMOVE ACCUMULATED SEDIMENTS TO AN UPLAND AREA WHEN SEDIMENT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE SILT FENCE.

SILT FENCE DETAIL

N.T.S.

Soil De-compaction and Testing Requirements

Soil Compaction Testing Requirements

- Subgrade soils **prior to the application of topsoil** (see permanent seeding and stabilization notes for topsoil requirements) shall be free of excessive compaction to a depth of 6.0 inches to enhance the establishment of permanent vegetative cover.
- Areas of the site which are subject to compaction testing and/or mitigation are **graphically denoted** on the certified soil erosion control plan.
- Compaction testing locations** are denoted on the plan. A copy of the plan or portion of the plan shall be used to mark locations of tests, and attached to the compaction remediation form, available from the local soil conservation district. This form must be filled out and submitted prior to receiving a certificate of compliance from the district.
- In the event that testing indicates compaction in excess of the maximum thresholds indicated for the simplified testing methods (see details below), the contractor/owner shall have the option to perform either (1) compaction mitigation over the entire mitigation area denoted on the plan (excluding exempt areas), or (2) perform additional, more detailed testing to establish the limits of excessive compaction whereupon only the excessively compacted areas would require compaction mitigation. Additional detailed testing shall be performed by a trained, licensed professional.

Compaction Testing Methods

- Probing Wire Test (see detail)
- Hand-held Penetrometer Test (see detail)
- Tube Bulk Density Test (licensed professional engineer required)
- Nuclear Density Test (licensed professional engineer required)

Note: Additional testing methods which conform to ASTM standards and specifications, and which produce a dry weight, soil bulk density measurement may be allowed subject to District approval.

Soil compaction testing is not required if/when subsoil compaction remediation (scarification/tillage (6" minimum depth) or similar) is proposed as part of the sequence of construction.

Procedures for Soil Compaction Mitigation

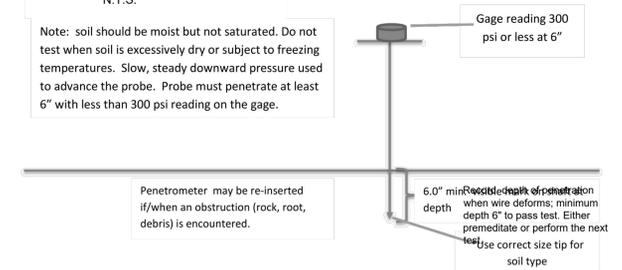
Procedures shall be used to mitigate excessive soil compaction **prior to placement of topsoil** and establishment of permanent vegetative cover.

Restoration of compacted soils shall be through deep scarification/tillage (6" minimum depth) where there is no danger to underground utilities (cables, irrigation systems, etc.). In the alternative, another method as specified by a New Jersey Licensed Professional Engineer may be substituted subject to District Approval.

Handheld Soil Penetrometer Test

N.T.S.

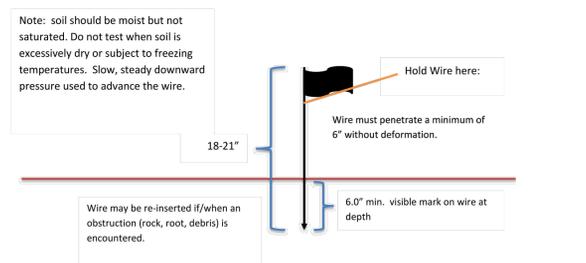
Note: soil should be moist but not saturated. Do not test when soil is excessively dry or subject to freezing temperatures. Slow, steady downward pressure used to advance the probe. Probe must penetrate at least 6" with less than 300 psi reading on the gage.



Probing Wire Test- 15.5 ga steel wire (survey flag)

N.T.S.

Note: soil should be moist but not saturated. Do not test when soil is excessively dry or subject to freezing temperatures. Slow, steady downward pressure used to advance the wire.



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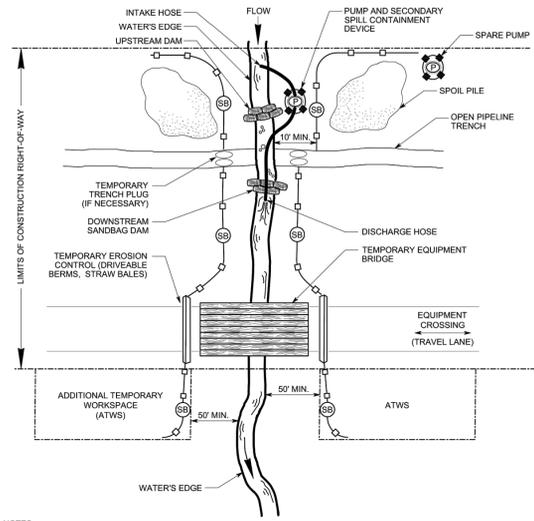
TRC Engineers, Inc.
41 Spring Street, Suite 102
New Providence, New Jersey 07974
Phone No. 908-988-1700
Certificate of Authorization #24GA28047100

PENNEAST PIPELINE PROJECT
LAMBERTVILLE INTERCONNECT
SESC DETAILS 3

LOC: WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY

YEAR: 2020 W.B.S. CE.000147.001 SCALE: AS SHOWN DWG: C-119 REV: 0





- NOTES:
1. (SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/ OR STRAW BALES, OR OTHER APPROPRIATE MATERIALS
 2. INSTALL AND SEAL SANDBAGS UPSTREAM AND DOWNSTREAM OF THE CROSSING.
 3. CREATE AN UPSTREAM SUMP USING SANDBAGS IF NATURAL SUMP IS UNAVAILABLE FOR THE INTAKE HOSE.
 4. EXCAVATE ACROSS STREAM CHANNEL FOLLOWING WATER REROUTING.
 5. DO NOT REFUEL OR STORE FUEL WITHIN 100 FEET OF THE WATERBODY. IF NOT FEASIBLE, ALTERNATIVE METHODS MUST BE APPROVED BY ENVIRONMENTAL INSPECTOR.
 6. MONITOR PUMPS AT ALL TIMES DURING STREAM CROSSING PROCEDURE.
 7. (P) USE SUFFICIENT PUMPS, INCLUDING ONSITE BACKUP PUMPS, TO MAINTAIN DOWNSTREAM FLOW.
 8. SCREEN PUMP INTAKES. PREVENT SCOURING WITHIN WATERBODY BY HOSE DISCHARGE.

TYPICAL DAM-AND-PUMP WATERBODY CROSSING

FIGURE WC-4
DWG. ES-0035 REV.

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TRC Engineers, Inc.
 ENGINEER IN RESPONSIBLE CHARGE OF THE WORK SHOWN ON THIS DRAWING
 DATE: _____ SIGNATURE: _____
 PROFESSIONAL ENGINEER: BARRY J. SUTHERLAND
 LIC. # 24GE029T3500

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PENNEAST PIPELINE PROJECT
 LAMBERTVILLE INTERCONNECT
 SESC DETAILS 4
 LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY
 YEAR: 2020 W.B.S. CE.000147.001 SCALE: AS SHOWN DWG. C-119A REV. 0



GENERAL LANDSCAPE AND SEEDING NOTES

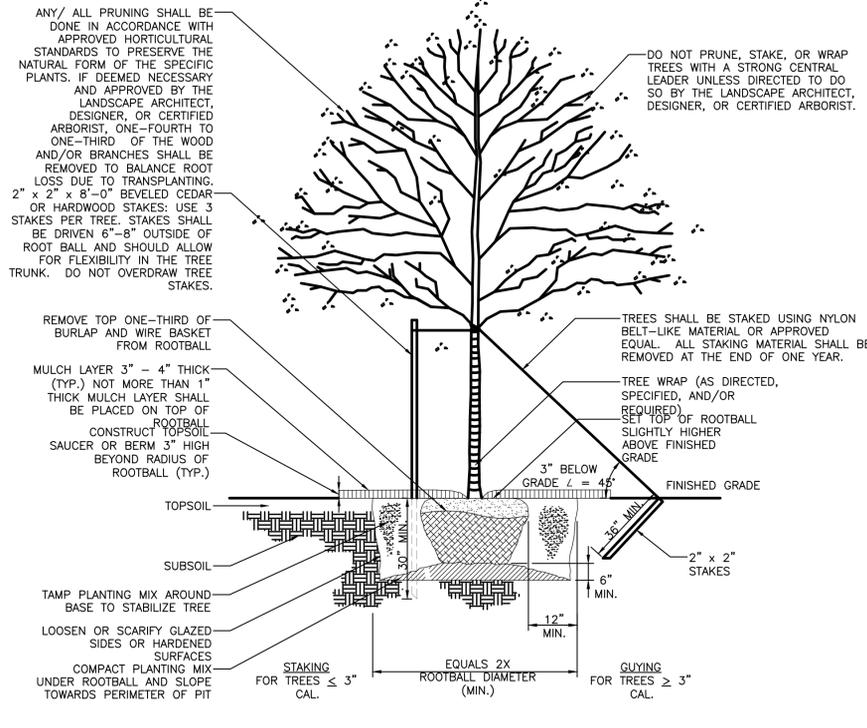
- THE LANDSCAPE PLAN AND DETAILS ARE FOR LANDSCAPING INFORMATION ONLY. PLEASE REFER TO THE SITE LAYOUT PLAN, GRADING PLAN AND/OR UTILITIES PLAN FOR ALL OTHER INFORMATION.
- THE CONTRACTOR SHALL MONITOR AND GUARANTEE THAT ALL PLANTS, TREES, AND SHRUBS SHALL BE HEALTHY AND FREE OF DISEASE FOR A PERIOD OF (1) ONE YEAR AFTER SUBSTANTIAL COMPLETION AND ACCEPTANCE BY THE OWNER. CONTRACTOR SHALL REPLACE ANY DEAD OR UNHEALTHY PLANTS AT CONTRACTOR'S EXPENSE. FINAL ACCEPTANCE SHALL BE MADE IF ALL PLANTS MEET THE GUARANTEE REQUIREMENTS INCLUDING MAINTENANCE, MAINTENANCE RESPONSIBILITIES INCLUDE INVASIVE SPECIES MONITORING, REMOVAL, AND SUPPLEMENTATION. MONITORING OF THE PROJECT SITE SHALL OCCUR IN THE SPRING AND THE FALL TO DETERMINE THE PRESENCE OF INVASIVE SPECIES. SHOULD ANY INVASIVE SPECIES BE IDENTIFIED WITHIN THE PROJECT SITE, THE INVASIVE SPECIES SHALL BE REMOVED ACCORDING TO METHODS MOST LIKELY TO BE EFFECTIVE IN CONTROLLING THAT SPECIES AND SUPPLEMENTING ITS REPLACEMENT WITH APPROPRIATE VEGETATION AND SEED MIX IDENTIFIED (AND APPROVED) ON THIS PLAN AND/OR AN APPROVED EQUAL. ADDITIONAL MAINTENANCE RESPONSIBILITIES INCLUDE: APPROVED CULTIVATING, SPRAYING, WEEDING, WATERING, TIGHTENING GUYS, PRUNING, FERTILIZING, MULCHING, AND ANY OTHER OPERATIONS NECESSARY TO MAINTAIN PLANT VIABILITY. MAINTENANCE SHALL BEGIN IMMEDIATELY AFTER PLANTING AND CONTINUE UNTIL 90 DAYS AFTER FINAL ACCEPTANCE.
- THE CONTRACTOR SHALL SUPPLY ALL LABOR, PLANTS, APPROVED SEEDING MIX, AND MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE WORK SHOWN ON THE DRAWING(S) AND LISTED IN THE PLANT SCHEDULE(S) AND/OR SEEDING TABLE. IN THE EVENT OF A DISCREPANCY BETWEEN QUANTITIES SHOWN IN THE PLANT SCHEDULE AND/OR SEEDING TABLE AND THOSE REQUIRED BY THE DRAWINGS, THE LARGER SHALL APPLY. ALL PLANTS SHALL BE ACCLIMATED BY THE SUPPLY NURSERY TO THE LOCAL HARDINESS ZONE AND BE CERTIFIED THAT THE PLANTING MATERIAL HAS BEEN GROWN FOR A MINIMUM OF (2) TWO YEARS AT THE SOURCE AND OBTAINED WITHIN 200 MILES OF PROJECT SITE UNLESS OTHERWISE APPROVED BY OWNER, CERTIFIED LANDSCAPE INSPECTOR, OR LANDSCAPE ARCHITECT.
- THE LOCATIONS FOR PLANT MATERIAL ARE APPROXIMATE AND ARE SUBJECT TO FIELD ADJUSTMENT DUE TO SLOPE, VEGETATION, AND SITE FACTORS SUCH AS THE LOCATION OF ROCK OUTCROPS. PRIOR TO PLANTING THE CONTRACTOR SHALL ACCURATELY STAKE OUT THE LOCATIONS FOR ALL PLANTS. THE OWNER, CERTIFIED LANDSCAPE INSPECTOR, OR LANDSCAPE ARCHITECT SHALL APPROVE THE FIELD LOCATIONS OR ADJUSTMENTS OF THE PLANT MATERIAL.
- ALL SHRUB MASSING SHALL BE MULCHED TO A DEPTH OF 2" AND SHREDDED HARDWOOD BARK MULCH SHALL BE USED FOR SHRUB MASSING AREAS.
- NO PLANT SHALL BE PLACED IN THE GROUND BEFORE ROUGH GRADING HAS BEEN COMPLETED AND APPROVED BY THE OWNER, CERTIFIED LANDSCAPE INSPECTOR, OR LANDSCAPE CONTRACTOR. STAKING THE LOCATION OF ALL TREES AND SHRUBS SHALL BE COMPLETED PRIOR TO PLANTING FOR APPROVAL BY THE OWNER, CERTIFIED LANDSCAPE INSPECTOR, OR LANDSCAPE ARCHITECT. STAKING OF THE INSTALLED TREE MUST BE COMPLETED THE SAME DAY AS IT IS INSTALLED. ALL TREES SHALL BE STAKED OR GUYED PER DETAIL. SEE LANDSCAPING PLAN FOR PLANTING DETAILS.
- COORDINATE PLANT MATERIAL LOCATIONS WITH SITE UTILITIES. SEE SITE LAYOUT, GRADING AND/OR UTILITY PLANS FOR STORM, SANITARY, GAS, ELECTRIC, TELEPHONE AND WATER LINES. UTILITY LOCATIONS ARE APPROXIMATE. EXERCISE CARE WHEN DIGGING IN AREAS OF POTENTIAL CONFLICT WITH UNDERGROUND OR OVERHEAD UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE DUE TO CONTRACTOR'S NEGLIGENCE AND SHALL REPLACE OR REPAIR ANY DAMAGE AT CONTRACTOR'S EXPENSE.
- LANDSCAPE PLANTING PITS MUST BE FREE DRAINING. PAVEMENT, COMPACTED SUBGRADE, AND BLASTED ROCK SHALL BE REMOVED TO A DEPTH OF 2' OR TO A GREATER DEPTH IF REQUIRED BY PLANTING DETAILS OR SPECIFICATIONS. REPLACE SOIL WITH MODERATELY COMPACTED LOAM OR SANDY LOAM FREE FROM STONES AND RUBBISH 1" OR GREATER IN DIAMETER AND ANY OTHER MATERIAL HARMFUL TO PLANT GROWTH AND DEVELOPMENT. PLANTING INSTALLATION SHALL BE AS DETAILED AND CONTAIN PLANTING MIX AS SPECIFIED.

PLANTING SOIL MIXTURE:
 2 PARTS PEAT MOSS
 5 PARTS TOPSOIL
 MYCORHIZA INOCULANT - "TRANSPLANT 1-STEP" AS MANUFACTURED BY ROOTS, INC. OR APPROVED EQUAL. USE PER MANUFACTURER'S RECOMMENDATIONS FOR TREES AND SHRUBS. FERTILIZER/LIME APPLY AS RECOMMENDED BY SOIL ANALYSIS

- TREES, AND SHRUBS: TREES AND SHRUBS SHALL BE NURSERY GROWN UNLESS OTHERWISE NOTED AND HARDY UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCATION OF THE PROJECT. THEY SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY, WITH NORMAL HABIT OF GROWTH. THEY SHALL BE SOUND, HEALTHY, VIGOROUS, WELL-BRANCHED AND DENSELY FOLIATED WHEN IN LEAF. THEY SHALL BE FREE OF DISEASE, INSECT PESTS, EGGS OR LARVAE. THEY SHALL HAVE HEALTHY AND WELL-DEVELOPED ROOT SYSTEMS. ALL TREES SHALL HAVE STRAIGHT SINGLE TRUNKS WITH THEIR MAIN LEADER INTACT UNLESS OTHERWISE STATED. THE OWNER, CERTIFIED LANDSCAPE INSPECTOR, OR LANDSCAPE ARCHITECT SHALL ONLY PERMIT SUBSTITUTIONS UPON WRITTEN APPROVAL. THEIR SIZES SHALL CONFORM TO THE MEASUREMENT SPECIFIED ON THE DRAWINGS. PLANTS LARGER THAN SPECIFIED ON THE DRAWINGS MAY BE USED IF APPROVED. THE USE OF SUCH PLANTS SHALL NOT INCREASE THE CONTRACT PRICE.
- ALL PRUNING SHALL CONFORM TO THE TREE CARE INDUSTRY ASSOCIATION (TCIA) ANSI A300 (PART 1) - 2017 PRUNING STANDARDS. PRUNING STANDARDS SHALL RECOGNIZE BUT, ARE NOT LIMITED TO, THE FOLLOWING PRUNING OBJECTIVES: MANAGE RISK, MANAGE HEALTH, DEVELOP STRUCTURE, PROVIDE CLEARANCE, MANAGE SIZE OR SHAPE, IMPROVE AESTHETICS, MANAGE PRODUCTION OF FRUIT, FLOWERS, OR OTHER PRODUCTS, AND/OR MANAGE WILDLIFE HABITAT. DEVELOPING STRUCTURE SHALL IMPROVE BRANCH AND TRUNK ARCHITECTURE, PROMOTE OR SUBORDINATE CERTAIN LEADERS, STEMS, OR BRANCHES; PROMOTE DESIRABLE BRANCH SPACING; PROMOTE OR DISCOURAGE GROWTH IN A PARTICULAR DIRECTION (DIRECTIONAL PRUNING); MINIMIZE FUTURE INTERFERENCE WITH TRAFFIC, LINES OF SIGHT, INFRASTRUCTURE, OR OTHER PLANTS; RESTORE PLANTS FOLLOWING DAMAGE; AND/OR REJUVENATE SHRUBS. PROVIDING CLEARANCE SHALL ENSURE SAFE AND RELIABLE UTILITY SERVICES; MINIMIZE CURRENT INTERFERENCE WITH TRAFFIC, LINES OF SIGHT, INFRASTRUCTURE, OR OTHER PLANTS; RAISE CROWN(S) FOR MOVEMENT OF TRAFFIC OR LIGHT PENETRATION; ENSURE LINES OF SIGHT OR DESIRED VIEWS; PROVIDE ACCESS TO SITES, BUILDINGS, OR OTHER STRUCTURES; AND/OR COMPLY WITH REGULATIONS.
- TOPSOIL SHALL BE INSTALLED AT A MINIMUM DEPTH OF 4 INCHES. CONTRACTOR SHALL SUBMIT TOPSOIL TO A CERTIFIED TESTING LABORATORY TO DETERMINE PH, FERTILITY, ORGANIC CONTENT AND MECHANICAL COMPOSITION. THE CONTRACTOR SHALL SUBMIT THE TEST RESULTS FROM REGIONAL EXTENSION OFFICE OF USDA TO THE OWNER, CERTIFIED LANDSCAPE INSPECTOR, OR LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL. CONTRACTOR SHALL INCORPORATE AMENDMENTS FOR GOOD PLANT GROWTH AND PROPER SOIL ACIDITY RECOMMENDED FROM THE TOPSOIL TEST.
- NO PHOSPHOROUS SHALL BE USED AT PLANTING TIME UNLESS SOIL TESTING HAS BEEN COMPLETED AND TESTED BY A HORTICULTURAL TESTING LAB AND SOIL TESTS SPECIFICALLY INDICATE A PHOSPHOROUS DEFICIENCY THAT IS HARMFUL, OR WILL PREVENT NEW LAWN/GRASSES AND PLANTINGS FROM ESTABLISHING PROPERLY.
- IF SOIL TESTS INDICATE A PHOSPHOROUS DEFICIENCY THAT WILL IMPACT PLANT AND LAWN ESTABLISHMENT, PHOSPHOROUS SHALL BE APPLIED AT THE MINIMUM RECOMMENDED LEVEL PRESCRIBED IN THE SOIL TEST FOLLOWING ALL APPLICABLE STANDARDS, REQUIREMENTS, AND/OR REGULATIONS.
- ALL SLOPES GREATER THAN 3:1 RECEIVING A WILDFLOWER, WETLAND, AND/OR GRASS SEEDING MIXTURE SHALL BE COVERED WITH AN EROSION CONTROL BLANKET.
- ALL WILDFLOWERS AND GRASSES SOWN SHALL BE ALLOWED TO GROW TO THEIR NATURALLY OCCURRING HEIGHTS WHENEVER POSSIBLE. NATIVE WILDFLOWERS AND/OR GRASSES CAN BE MOWED/MAINTAINED (WITHIN ACCEPTABLE AREAS IDENTIFIED AND/OR APPROVED BY APPROPRIATE REGULATORY AGENCIES) AS OFTEN AS NEEDED TO KEEP THE VEGETATION AT A DESIRED AND/OR MANAGEABLE/MANICURED HEIGHT.

NOTES:

- COORDINATES ARE REFERENCED TO THE NORTH AMERICAN DATUM (NAD) OF 1983 PROJECTED ONTO THE NEW JERSEY STATE PLANE COORDINATE SYSTEM.
- ELEVATIONS DEPICTED ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 (NGVD29+NAVD88+0.90 FEET).
- ENGINEERING AND DESIGN PERFORMED BY EN ENGINEERING, INC.
- SURVEY PERFORMED BY LRC GROUP, INC.
- FRESHWATER WETLANDS/WATERS BOUNDARY LINE AS VERIFIED BY NJDEP (FRESHWATER WETLANDS LETTER OF INTERPRETATION: LINE VERIFICATION FILE NO. 1026-02-0003.1) FOR BLOCK 5, LOT 6 ONLY.
- WETLANDS AND WATERS BOUNDARY LINE(S) FOR BLOCK 5, LOT 6 ONLY AS SHOWN ON THE MAP ENTITLED: "NJDEP LETTER OF INTERPRETATION, LINE VERIFICATION - ENTIRE SITE, MARCELLUS TO MARKET PROJECT, LAMBERTVILLE COMPRESSOR STATION, HUNTERDON COUNTY, NEW JERSEY, CONSISTING OF THREE SHEETS, DATED OCTOBER 2016, LAST REVISED JANUARY 20, 2017, AND PREPARED BY BARRY A. GLEISSNER, P.L.S. OF ACCOM.
- WETLANDS AND WATERS BOUNDARY LINES DEPICTED ON BLOCK 5, LOT 5 DELINEATED BY TRC ENVIRONMENTAL CORPORATION ON AUGUST 11, 2017.
- SOIL BOUNDARY INFORMATION OBTAINED FROM UNITED STATES GEOLOGICAL SURVEY (USGS) WEB SOIL SURVEY.



NATIVE/DECIDUOUS TREE PLANTING DETAIL
N.T.S.

NOTES:

- TREE PLANTING SHALL BEAR SAME RELATIONSHIP TO FINISH GRADE AS IT WAS PRE-DUG IN THE NURSERY.
- NEVER CUT THE PRIMARY LEADER.
- IT IS NOT RECOMMENDED TO AMEND THE EXISTING SOIL BEFORE BACKFILLING THE HOLE UNLESS SOIL CONDITIONS ARE POOR FOR PLANTING.
- WATER THOROUGHLY TO HELP ENSURE THE REMOVAL OF AIR POCKETS AND PROPERLY SET THE TREE.

LEGEND

LANDSCAPE PLANTING SCHEDULE - OVERALL SITE

TREES

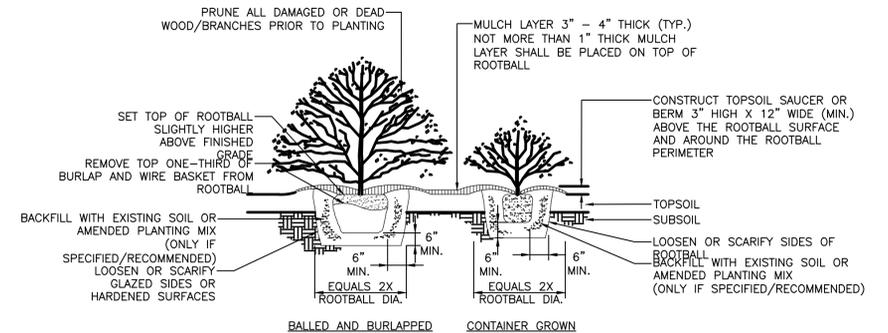
| SYMBOL | BOTANICAL NAME/ COMMON PLANT NAME | QUANTITY | SIZE | ROOT |
|--------|---|----------|--------------------|------|
| AB | ABIES BALSAMEA BALSAM FIR | 10 | 7'-8' HT. | B&B |
| AC | AMELANCHIER CANADENSIS SHADBLow SERVICEBERRY | 20 | 6'-8' HT. CLUMP | B&B |
| BN | BETULA NIGRA 'HERITAGE' HERITAGE RIVERBIRCH | 4 | 6'-8' HT. CLUMP | B&B |
| CF | CORNUS FLORIDA FLOWERING DOGWOOD | 9 | 2" CAL. MIN. | B&B |
| IA | ILEX x ATTENUATA 'FOSTER' FOSTER'S HOLLY | 21 | 5'-6' HT. | B&B |
| JV | JUNIPERUS VIRGINIANA EASTERN RED CEDAR | 18 | 6'-7' HT. | B&B |
| TP | THUJA PLICATA GREEN GIANT ARBORVITAE | 34 | 6'-7' HT. | B&B |

SHRUBS/EVERGREENS AND ORNAMENTAL TREES

| SYMBOL | BOTANICAL NAME/ COMMON PLANT NAME | QUANTITY | SIZE | ROOT |
|--------|---|----------|----------------|------------|
| CS | CORNUS STOLONIFERA REDTWIG DOGWOOD | 52 | 30"-36" HT. | #3/5 CONT. |
| HI | HAMAMELIS x INTERMEDIA 'DIANE' DIANE WITCH HAZEL | 5 | 3'-4' HT. | B&B |
| IV | ILEX VERTICILLATA COMMON WINTERBERRY | 61 | 30"-36" HT. | #3/5 CONT. |
| RG | RHUS GLABRA SMOOTH SUMAC | 9 | 30"-36" HT. | #3/5 CONT. |
| VA | VACCINIUM ANGUSTIFOLIUM LOWBUSH BLUEBERRY | 51 | 24"-30" HT. | #3/5 CONT. |
| VD | VIBURNUM DENTATUM ARROWWOOD VIBURNUM | 77 | 30"-36" HT. | #3/5 CONT. |

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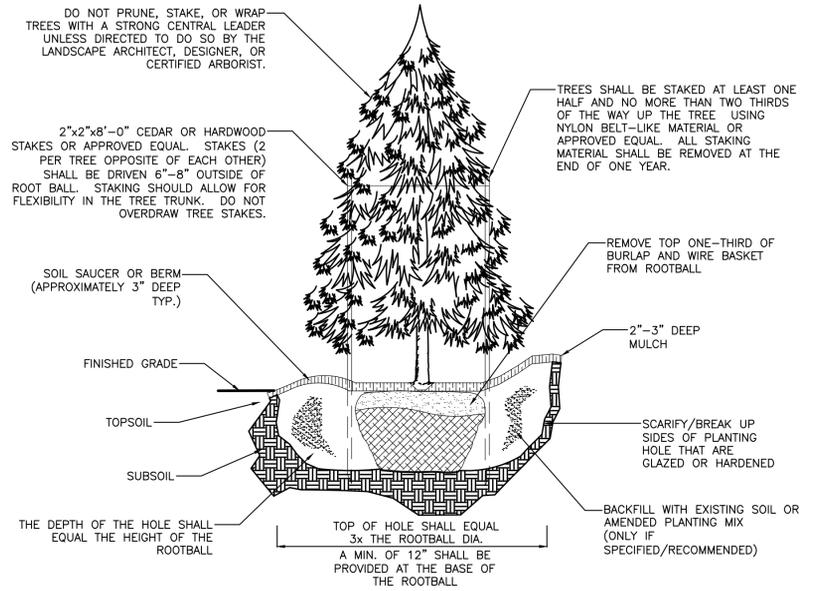
- PLANT HARDINESS ZONE 6b (to -5)
- PHYSIOGRAPHIC PROVINCE- PIEDMONT
- 300 FOOT RIPARIAN ZONES SHALL BE MAINTAINED



SHRUB PLANTING DETAIL
N.T.S.

NOTE:

- IN AREAS WITH MASS PLANTINGS, CONTINUOUS EXCAVATION AND MULCHING PRACTICES SHALL BE IMPLEMENTED WHENEVER POSSIBLE
- IT IS NOT RECOMMENDED TO AMEND THE EXISTING SOIL BEFORE BACKFILLING THE HOLE UNLESS SOIL CONDITIONS ARE POOR FOR PLANTING.
- WATER THOROUGHLY TO HELP ENSURE THE REMOVAL OF AIR POCKETS.



EVERGREEN TREE PLANTING DETAIL
N.T.S.

NOTES:

- TREE PLANTING SHALL BEAR SAME RELATIONSHIP TO FINISH GRADE AS IT WAS PRE-DUG IN THE NURSERY.
- NEVER CUT THE PRIMARY LEADER.
- IT IS NOT RECOMMENDED TO AMEND THE EXISTING SOIL BEFORE BACKFILLING THE HOLE UNLESS SOIL CONDITIONS ARE POOR FOR PLANTING.
- WATER THOROUGHLY TO HELP ENSURE THE REMOVAL OF AIR POCKETS AND PROPERLY SET THE TREE.

NATIVE DETENTION AREA SEED MIX

| BOTANICAL NAME | COMMON NAME | MIX CONCENTRATION | RATE (LBS/ACRE) | RATE (LBS/1000 FT ²) |
|-----------------------------|---------------------|-------------------|-----------------|----------------------------------|
| PANICUM CLANDESTINUM TIOGA' | TIOGA DEERTONGUE | 28% | 20 | 0.5 |
| CAREX VULPINOIDEA | FOX SEDGE | 24% | | |
| ELYMUS VIRGINICUS | VIRGINIA WILDRYE | 20% | | |
| PANICUM VIRGATUM 'SHAWNEE' | SHAWNEE SWITCHGRASS | 20% | | |
| ARGROSTIS PERENNANS | AUTUMN BENTGRASS | 4% | 20 | 0.5 |
| JUNCUS TENUIS | PATH RUSH | 3% | | |
| JUNCUS EFFUSUS | SOFT RUSH | 1% | | |

NOTE: NATIVE GRASS SEED MIXES ARE COMPRISED OF GRASSES THAT ARE NATIVE AND/OR INDIGENOUS TO THE AREA AND CONSIDERED FAVORABLE FOR WILDLIFE HABITAT. ADDITIONALLY, NATIVE GRASSES, SEDGES, AND RUSHES WILL ESTABLISH QUICKLY IN AREAS WHERE MOWING IS NOT ANTICIPATED. UTILIZING A HIGH SEED COUNT PER POUND, WILL ALLOW FOR NATIVE ESTABLISHMENT WITH MINIMUM RISK AND TOLERATE LOW-FERTILITY. THERE ARE NO WILDFLOWER OR POLLINATOR SEED SPECIES CONTAINED IN THIS NATIVE GRASS SEED MIX.

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TRC Engineers, Inc.
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 DATE: 6/20/2019 SIGNATURE
 PROFESSIONAL ENGINEER: BARRY J. SUTHERLAND
 LIC. # 246E02913500



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PENNEAST PIPELINE PROJECT
 LAMBERTVILLE INTERCONNECT
 LANDSCAPE DETAILS SHEET 1



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|---|--|------------|----------------------|-----------------|------------|--------|
| LOC. WEST AMWELL TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY | | YEAR: 2020 | W.B.S. CE.000147.001 | SCALE: AS SHOWN | DWG. C-120 | REV. 0 |
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