TOWNSHIP OF CRANFORD
UNION COUNTY, NEW JERSEY

NORTHEAST QUADRANT STORMWATER MANAGEMENT PROJECT
RIVERSIDE DRIVE NORTH AND SOUTH
GRAVITY STORM SEWER INTERCONNECTIONS
CONTRACT – 2B

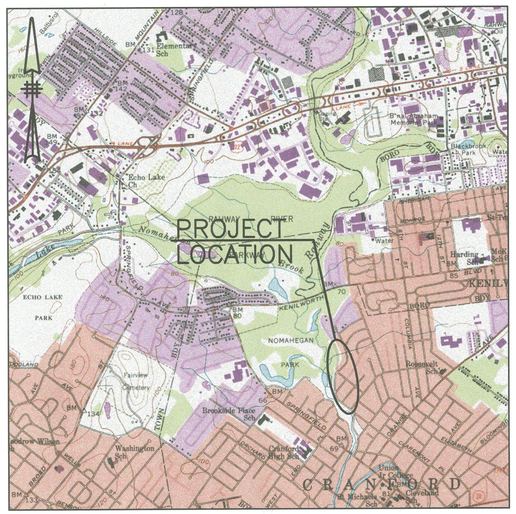
TOWNSHIP COMMITTEE
THOMAS H. HANNEN, JR., MAYOR
ANN DOOLEY, DEPUTY MAYOR
PATRICK GIBLIN
JEAN MAISONNEUVE
MARY O'CONNOR

TOWNSHIP ATTORNEY
RYAN J. COOPER, ESQ.

BUSINESS ADMINISTRATOR
TERENCE WALL, MPA, RMC, QPA

TOWNSHIP ENGINEER
WILLIAM E. MASOL, P.E., C.M.E., C.F.M.

TOWNSHIP CLERK
PATRICIA DONAHUE



LOCATION PLAN

2000 0 2000 4000
SCALE IN FEET

SOURCE: U.S.G.S. ROSELLE, NEW JERSEY QUADRANGLE, 7.5 MINUTE SERIES TOPOGRAPHIC MAPPING, PHOTO REVISED 1981

JANUARY 2016
REVISED MARCH 2018

MOTT MACDONALD
Certificate No. 24GA28016600

INDEX

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UTILITIES

ELECTRIC
PUBLIC SERVICE ELECTRIC AND GAS COMPANY
ELECTRIC DIVISION
472 WESTON CANAL ROAD
SOMERSET, NEW JERSEY 08873
(908) 558–7524

WATER
ELIZABETHTOWN WATER COMPANY
1341 NORTH AVENUE
PLAINFIELD, NEW JERSEY 07062
(908) 791–3465

COUNTY ROADS AND BRIDGES
UNION COUNTY DEPARTMENT OF PUBLIC WORKS
2371 SOUTH AVENUE
SCOTCH PLAINS, NEW JERSEY 07076
(908) 789–3675

TELEPHONE
VERIZON TELEPHONE COMPANY
445 GEORGES ROAD
NORTH BRUNSWICK, NEW JERSEY 08902
(732) 418–5601

CABLE
COMCAST CABLEVISION OF NEW JERSEY
800 RAHWAY AVENUE
UNION, NEW JERSEY 07083
(732) 602–7444

GAS
ELIZABETHTOWN GAS COMPANY
UNION DIVISION HEADQUATERS
520 GREEN LANE
UNION, NEW JERSEY 07083
(908) 289–5000
(908) 289–5000

SANITARY SEWER
TOWNSHIP OF CRANFORD
PUBLIC WORKS DEPARTMENT
MUNICIPAL BUILDING
8 SPRINGFIELD AVENUE
CRANFORD, NJ 07016
(908) 709–7217

RVSA
RAHWAY VALLEY SEWERAGE AUTHORITY
1050 EAST HAZELWOOD AVENUE
RAHWAY, NEW JERSEY 07065
(732) 388–0868

John Ruschke
JOHN K. RUSCHKE
Professional Engineer–N.J. Lic. No. 37148

Contract – 2B

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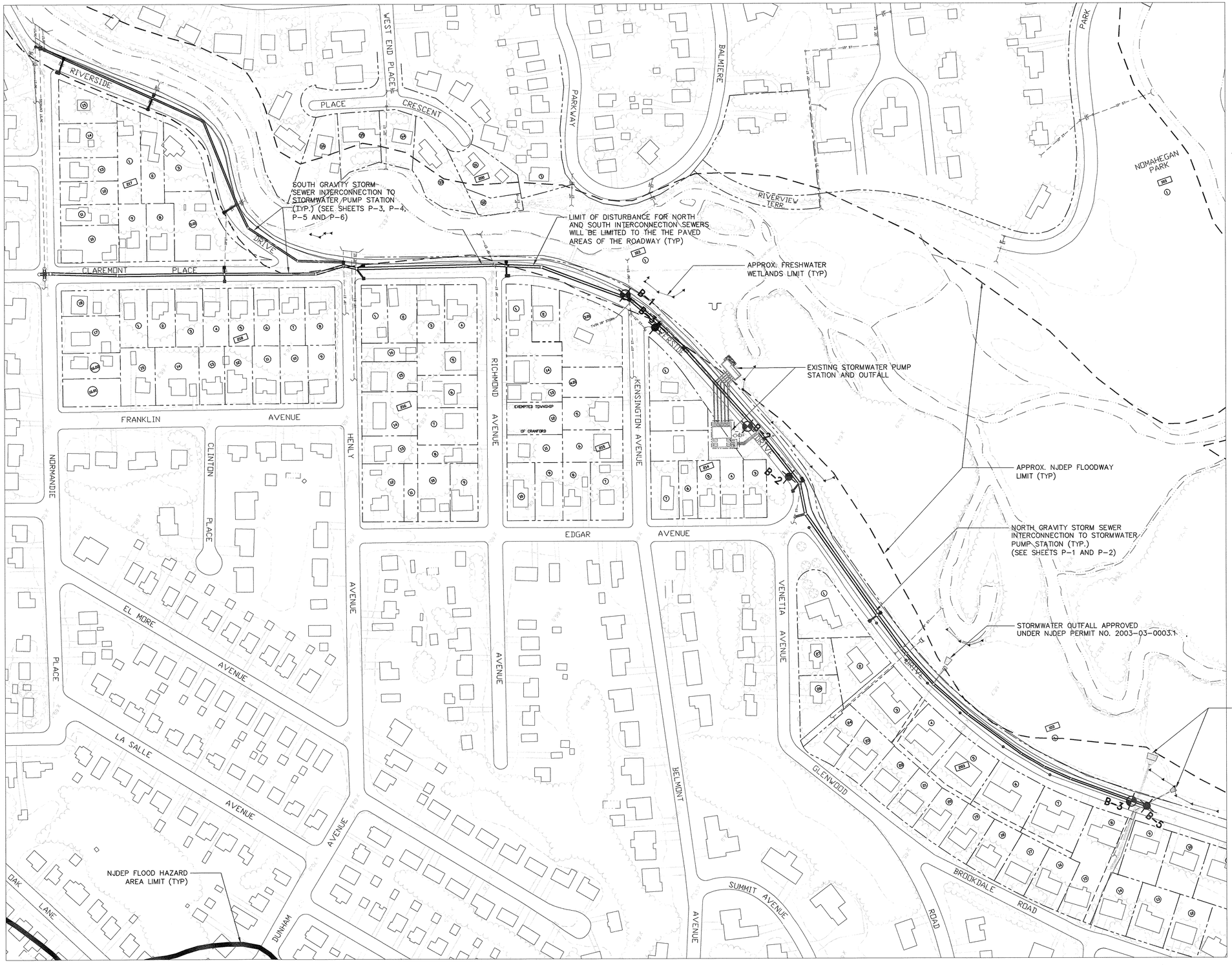

LEGEND

- NEW DRAIN INLET
- NEW STORM MANHOLE
- NEW STORM SEWER PIPE
- NEW TEMPORARY SHEETING
- EXISTING DRAIN INLET
- EXISTING SEWER MANHOLE
- 8"SAN — EXISTING SANITARY
- 30"STORM — EXISTING STORM
- 6"W — EXISTING WATER
- 8"G — EXISTING GAS
- UTILITY POLE
- FIRE HYDRANT
- TREE LINE
- FENCE
- PROPERTY BOUNDARY
- WETLANDS
- APPROX. NJDEP FLOODWAY LIMIT
- 216 — BLOCK
- (15) — LOT
- APPROXIMATE LOCATIONS OF BORINGS TAKEN IN NOVEMBER 2003
- APPROXIMATE LOCATIONS OF BORINGS TAKEN IN JANUARY 2000

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS AND DEPTHS OF ALL EXISTING UTILITY LINES AT PROPOSED SEWER CROSSINGS SHOWN ON THIS PLAN PRIOR TO SUBMITTAL OF SHOP DRAWINGS.
2. DATUM: ALL ELEVATIONS REFERRED TO NGVD OF 1929
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PLAN– NORTHEAST QUADRANT STORMWATER MANAGEMENT PROJECT – CONTRACT 2B
RIVERSIDE DRIVE NORTH AND SOUTH
GRAVITY STORM SEWER INTERCONNECTIONS

100 0 100 200
SCALE IN FEET

Revision	Date
REVISED AS PER SOMERSET-UNION SCD	3/12/18
REVISED AS PER CRANFORD TWP.	2/2/18
REVISED AS PER NJDEP COMMENTS	1/6/17

JOHN K. RUSCHKE
PROFESSIONAL ENGINEER - N.J. LIC. NO. 37148

Designed	Drawn	Checked	Approved	Date
KKN	SJA	DJH	JKR	1/25/16

MOTT MACDONALD
Certificate No. 24GA28016600
412 Mount Kemble Avenue
Suite G22
Morristown, New Jersey 07960
Tel: 908.7305600 Fax: 973.267.2880

TOWNSHIP OF CRANFORD
UNION COUNTY, NEW JERSEY

NORTHEAST QUADRANT
STORMWATER MANAGEMENT PROJECT - CONTRACT 2B
RIVERSIDE DRIVE NORTH AND SOUTH GRAVITY STORM
SEWER INTERCONNECTIONS

GENERAL SITE PLAN

File CRANFORD RIVERSIDE DR

Book	Page

Job	No.
363145	S-1

Scale	B/O	Total
AS_NTD	2	13

Drawing No.

Cadd: L:\municipal\Cranford Township\363145 Phase 2B NE Quad\S\S-1.dwg

LEGEND

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- NEW STORM MANHOLE
- NEW STORM SEWER PIPE
- EXISTING DRAIN INLET
- EXISTING SEWER MANHOLE
- 8"SAN — EXISTING SANITARY
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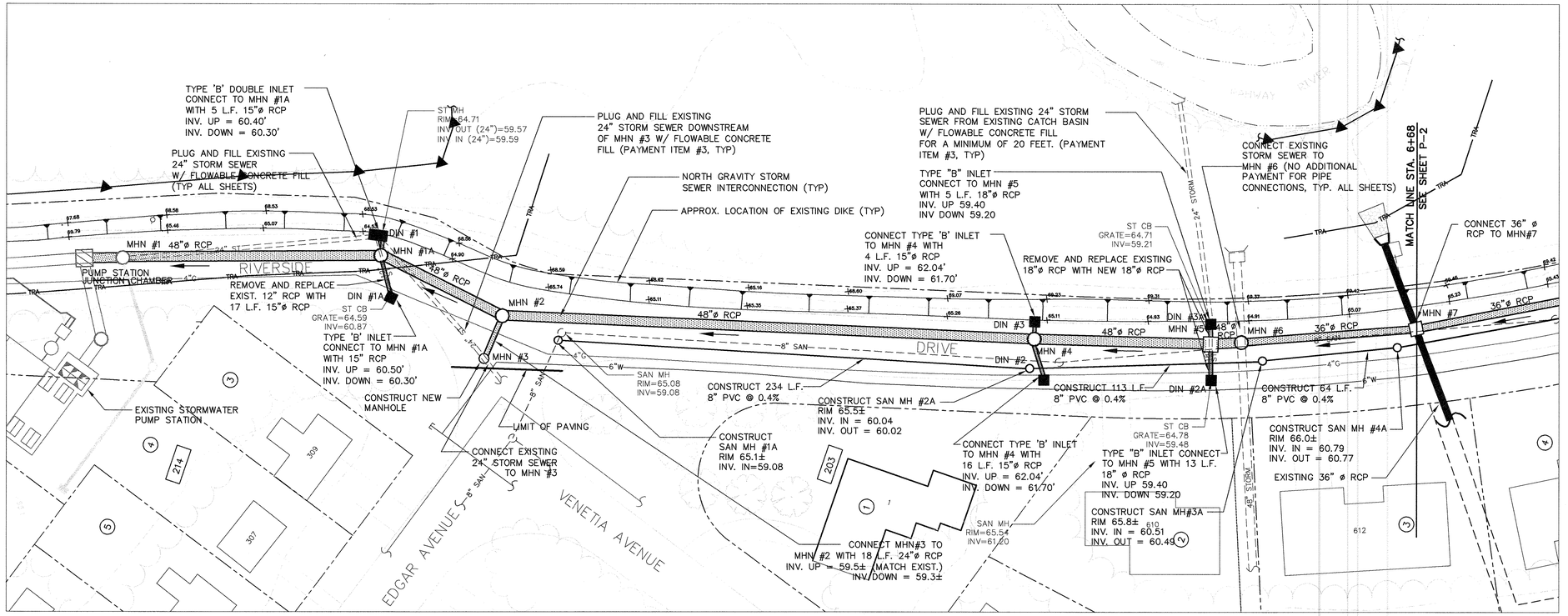
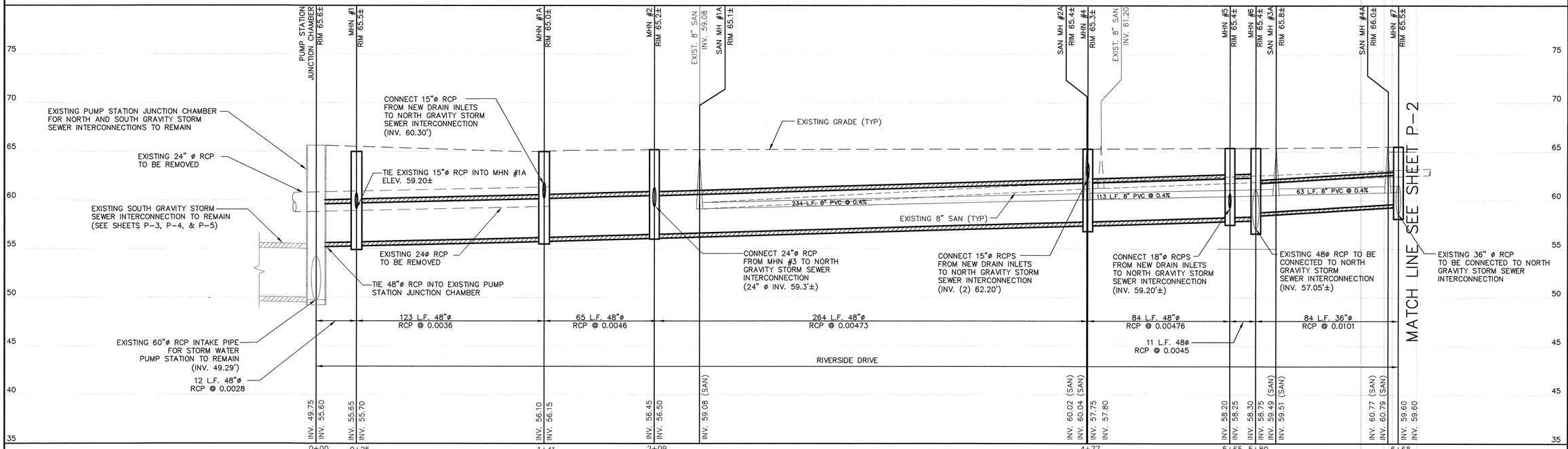


PLAN – NORTH GRAVITY STORM SEWER INTERCONNECTIONS

SCALE IN FEET: 30 0 30 60



PROFILE – NORTH GRAVITY STORM SEWER INTERCONNECTIONS

SCALE IN FEET: 30 0 30 60 (HORIZONTAL); 5 0 5 10 (VERTICAL)

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MOTT MACDONALD
Certificate No. 24GA28016600
412 Mount Kemble Avenue
Suite G22
Morristown, New Jersey 07960
Tel: 908.730.8000 Fax: 973.267.2980

TOWNSHIP OF CRANFORD
UNION COUNTY, NEW JERSEY

NORTHEAST QUADRANT
STORMWATER MANAGEMENT PROJECT - CONTRACT 2B
RIVERSIDE DRIVE NORTH AND SOUTH GRAVITY STORM SEWER INTERCONNECTIONS

PLAN AND PROFILE - NORTH INTERCONNECTION

File CRANFORD RIVERSIDE DR	
Book	Page
Job 363145	No. P–1
Scale AS_NTD	B/O 3 / Total 13

Drawing No.

Cadd: L:\municipal\Cranford Township\363145 Phase 2B NE Quad\P\P–1.dwg

LEGEND

- NEW DRAIN INLET
- NEW STORM MANHOLE
- NEW STORM SEWER PIPE
- EXISTING DRAIN INLET
- EXISTING SEWER MANHOLE
- 8"SAN — EXISTING SANITARY
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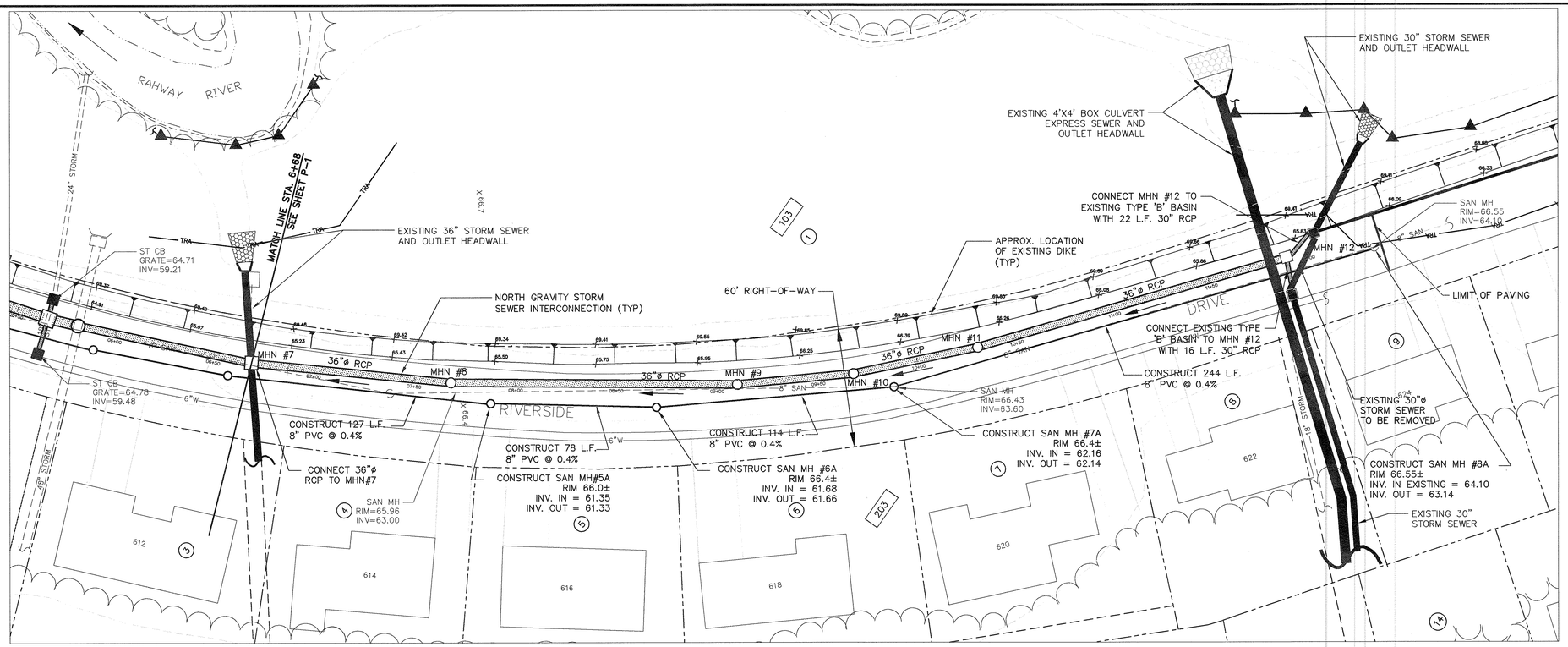
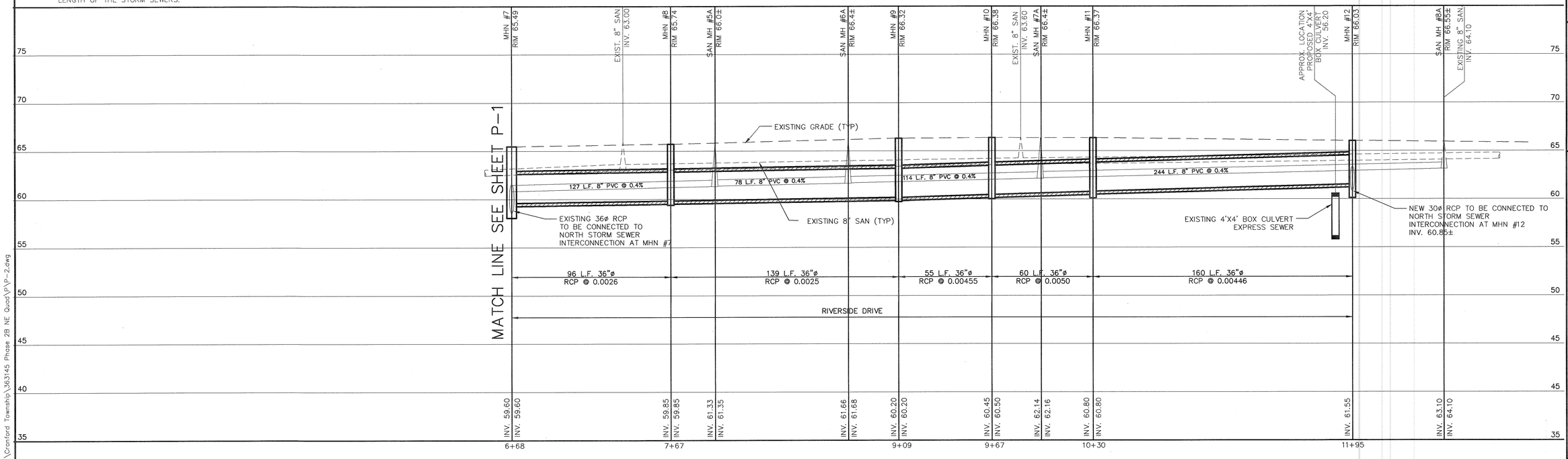


PLAN – NORTH GRAVITY STORM SEWER INTERCONNECTIONS

SCALE IN FEET HORIZONTAL: 30 0 30 60



PROFILE – NORTH GRAVITY STORM SEWER INTERCONNECTIONS

SCALE IN FEET HORIZONTAL: 30 0 30 60
SCALE IN FEET VERTICAL: 5 0 5 10

Revision	Date
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Designed KKN | Drawn SJA | Checked DJH | Approved JKR | Date 1/25/16

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UNION COUNTY, NEW JERSEY

NORTHEAST QUADRANT
STORMWATER MANAGEMENT PROJECT - CONTRACT 2B
RIVERSIDE DRIVE NORTH AND SOUTH GRAVITY STORM SEWER INTERCONNECTIONS

PLAN AND PROFILE - NORTH INTERCONNECTION

File CRANFORD RIVERSIDE DR
Book | Page
Job 363145 | No. P–2
Scale AS_NTD | B/O 4 | Total 13

Drawing No.

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LEGEND

- NEW DRAIN INLET
- NEW STORM MANHOLE
- NEW STORM SEWER PIPE
- EXISTING DRAIN INLET
- EXISTING SEWER MANHOLE
- 8"SAN — EXISTING SANITARY
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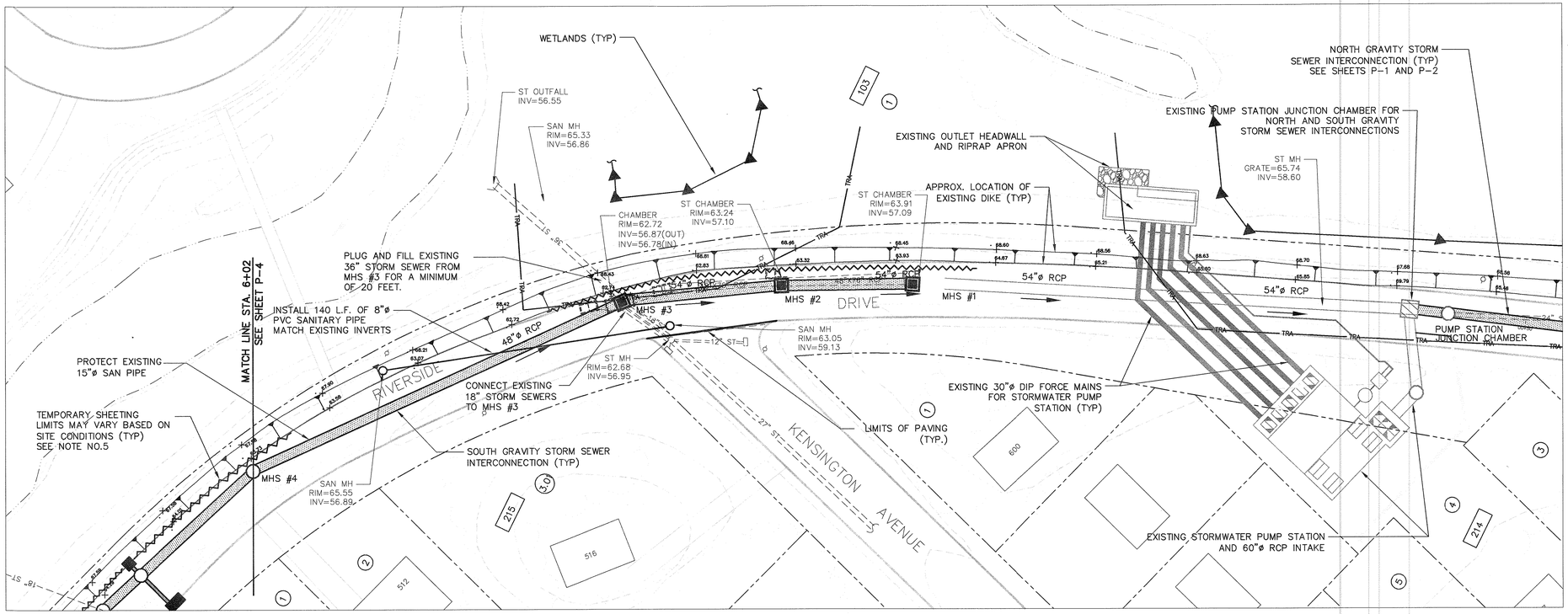
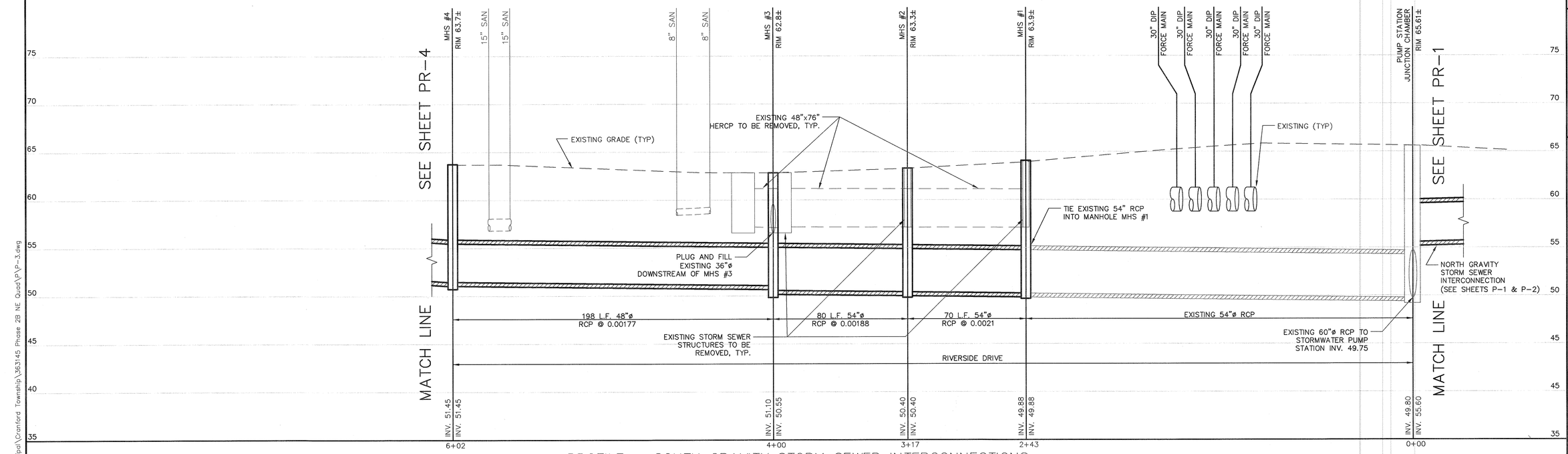


PLAN – SOUTH GRAVITY STORM SEWER INTERCONNECTIONS

SCALE IN FEET: 30 0 30 60



PROFILE – SOUTH GRAVITY STORM SEWER INTERCONNECTIONS

SCALE IN FEET: 30 0 30 60 — HORIZONTAL

SCALE IN FEET: 5 0 5 10 — VERTICAL

Revision	Date
REVISED AS PER SOMERSET-UNION SCD	3/12/18
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Designed KKN | Drawn SJA | Checked DJH | Approved JKR | Date 1/25/16

JOHN K. RUSCHKE
PROFESSIONAL ENGINEER – N.J. LIC. NO. 37148

MOTT MACDONALD
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TOWNSHIP OF CRANFORD
UNION COUNTY, NEW JERSEY

NORTHEAST QUADRANT
STORMWATER MANAGEMENT PROJECT - CONTRACT 2B
RIVERSIDE DRIVE NORTH AND SOUTH GRAVITY STORM SEWER INTERCONNECTIONS

PLAN AND PROFILE - SOUTH INTERCONNECTION

File CRANFORD_RIVERSIDE_DR | Book | Page

Job 363145 | No. P-3

Scale AS_NTD | B/O 5 | Total 13

Drawing No.

Cadd: L:\municipal\Cranford Township\363145 Phase 2B NE Quad\P\P-3.dwg

LEGEND

- NEW DRAIN INLET
- NEW STORM MANHOLE
- NEW STORM SEWER PIPE
- EXISTING DRAIN INLET
- EXISTING SEWER MANHOLE
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- (15) LOT

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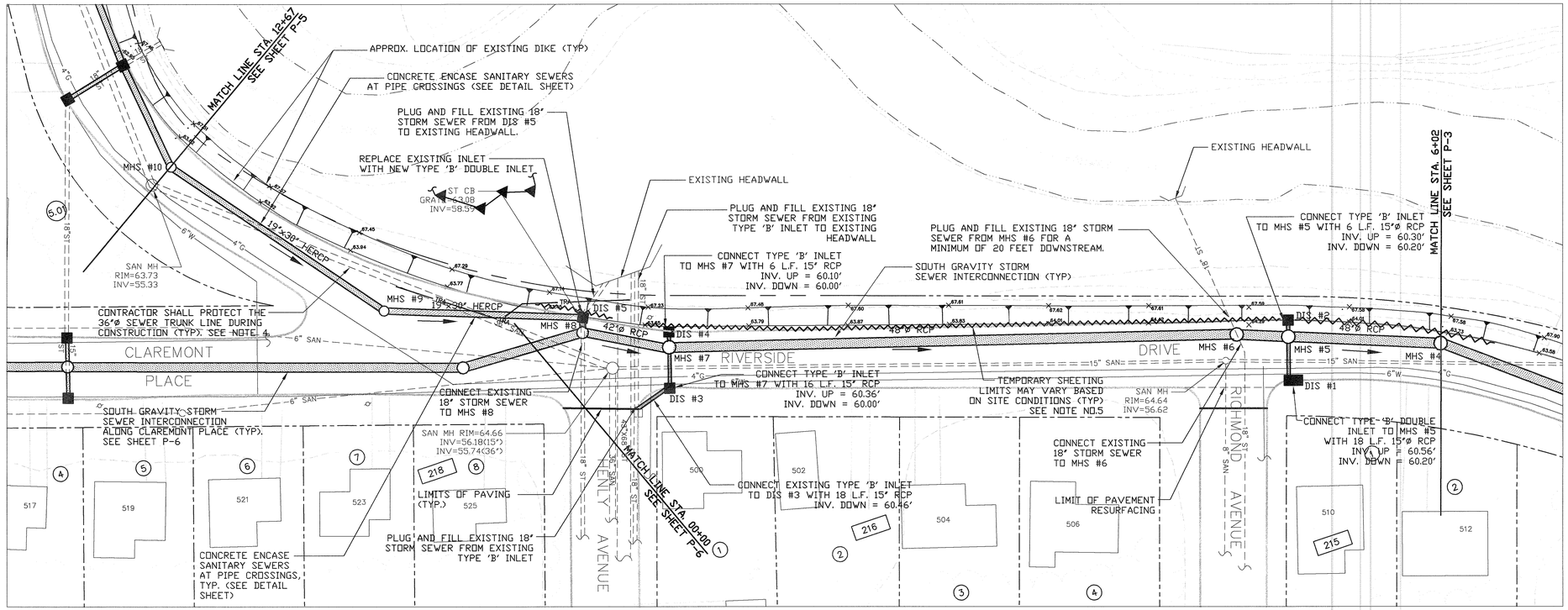
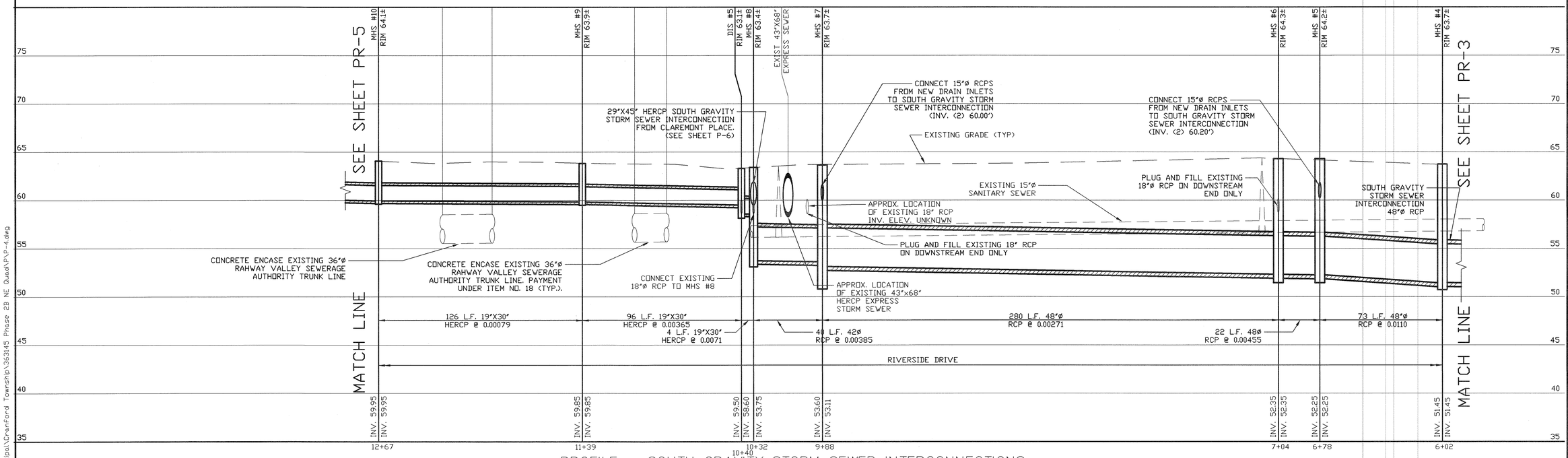


PLAN – SOUTH GRAVITY STORM SEWER INTERCONNECTIONS

SCALE IN FEET: 30 0 30 60



PROFILE – SOUTH GRAVITY STORM SEWER INTERCONNECTIONS

SCALE IN FEET: 30 0 30 60 — HORIZONTAL

SCALE IN FEET: 5 0 5 10 — VERTICAL

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NORTHEAST QUADRANT
STORMWATER MANAGEMENT PROJECT - CONTRACT 2B
RIVERSIDE DRIVE NORTH AND SOUTH GRAVITY STORM SEWER INTERCONNECTIONS
PLAN AND PROFILE - SOUTH INTERCONNECTION

File CRANFORD RIVERSIDE DR
Book | Page
Job 363145 | No. P-4
Scale AS_NTD | B/D 6 | Total 13
Drawing No.

Cadd: L:\municipal\Cranford Township\363145 Phase 2B NE Quad\PVP-4.dwg

LEGEND

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- NEW STORM MANHOLE
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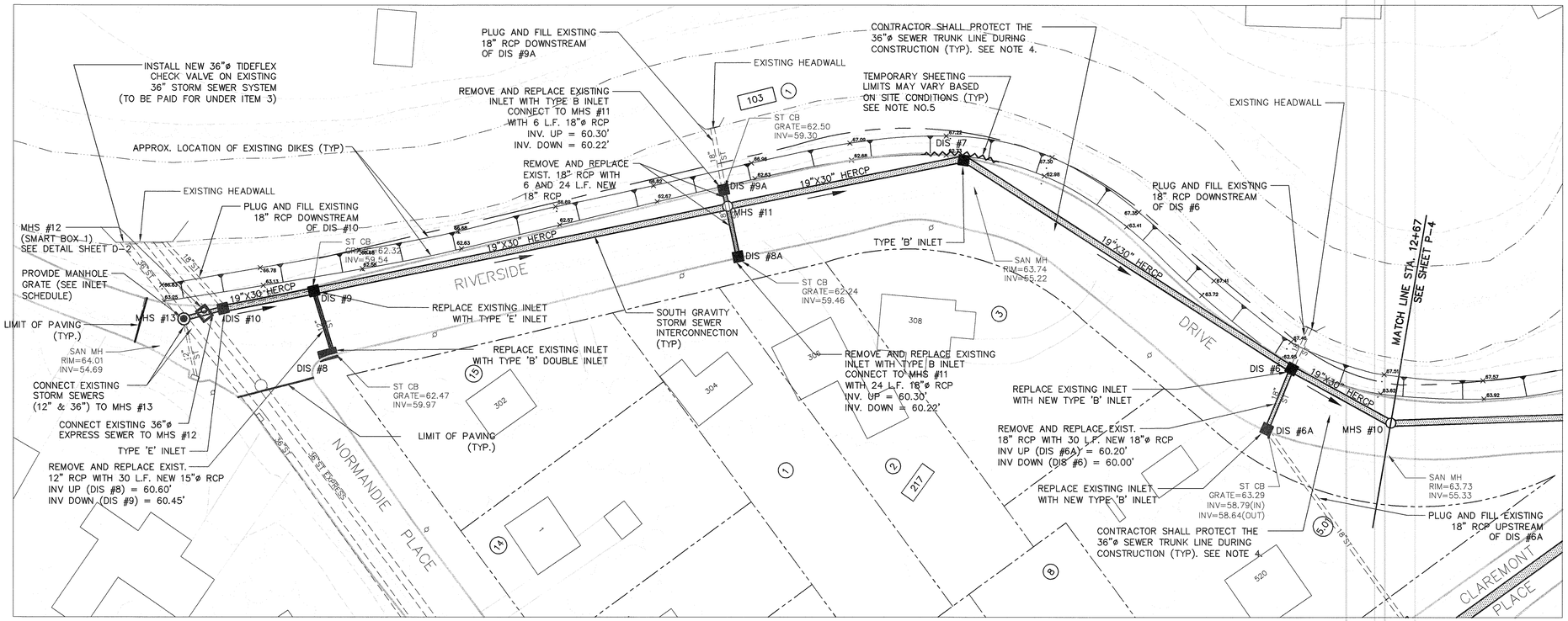

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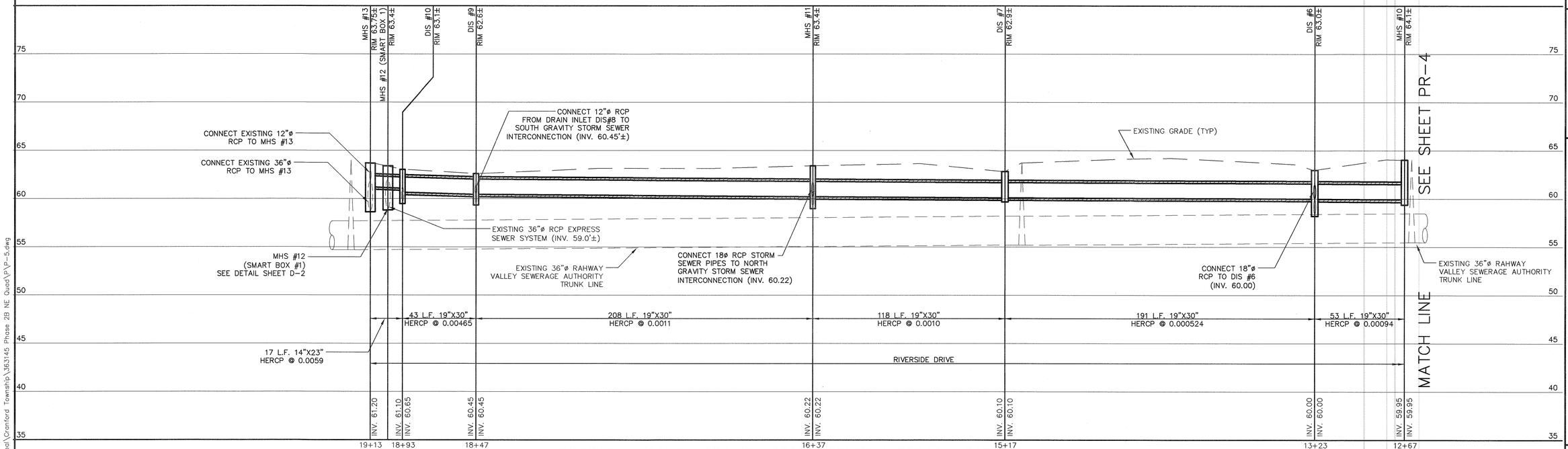
30 0 30 60
SCALE IN FEET



PROFILE – SOUTH GRAVITY STORM SEWER INTERCONNECTIONS

30 0 30 60
SCALE IN FEET
HORIZONTAL

5 0 5 10
SCALE IN FEET
VERTICAL

Date	Revision
3/12/18	REVISED AS PER SOMERSET-UNION SCD
2/2/18	REVISED AS PER CRANFORD TWP.
1/6/17	REVISED AS PER NJPEP COMMENTS

JOHN K. RUSCHKE
PROFESSIONAL ENGINEER – N.J. LIC. NO. 37148

Designed	Drawn	Checked	Approved	Date
KKN	SJA	DJH	JKR	1/25/16

MM MOTT MACDONALD
Certificate No. 24GA28016600
412 Mount Kemble Avenue
Suite G22
Morristown, New Jersey 07960
Tel: 908.730.6000 Fax: 973.267.2890

TOWNSHIP OF CRANFORD
UNION COUNTY, NEW JERSEY
NORTHEAST QUADRANT
STORMWATER MANAGEMENT PROJECT - CONTRACT 2B
RIVERSIDE DRIVE NORTH AND SOUTH GRAVITY STORM SEWER INTERCONNECTIONS
PLAN AND PROFILE - SOUTH INTERCONNECTION

File	CRANFORD RIVERSIDE DR	
Book		Page
Job	363145	No. P-5
Scale	AS_NTD	B/O 7 / Total 13

Drawing No.

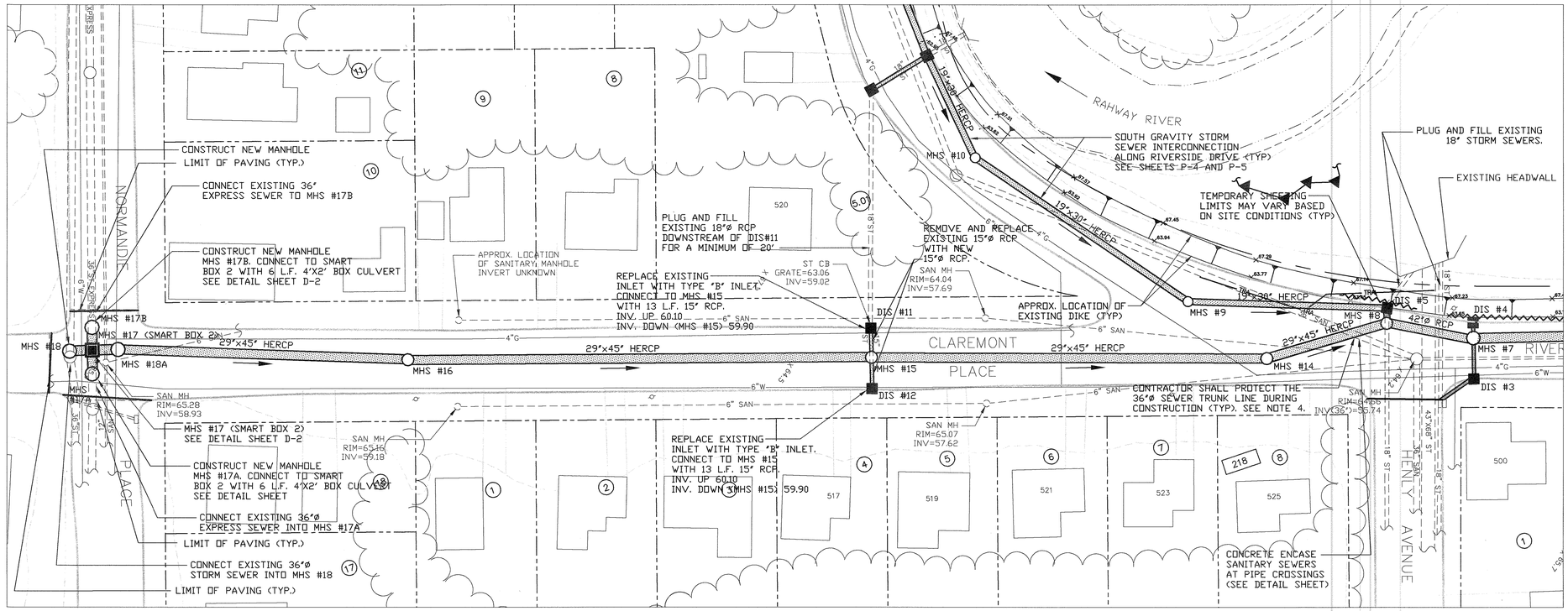
Cadd: L:\municipal\Cranford Township\363145 Phase 2B NE Quad\P\P-5.dwg

LEGEND

- NEW DRAIN INLET
- NEW STORM MANHOLE
- NEW STORM SEWER PIPE
- EXISTING DRAIN INLET
- EXISTING SEWER MANHOLE
- 8"SAN — EXISTING SANITARY
- 30"STORM — EXISTING STORM
- 6"W — EXISTING WATER
- 8"G — EXISTING GAS
- UTILITY POLE
- FIRE HYDRANT
- TREE LINE
- FENCE
- PROPERTY BOUNDARY
- 216 — BLOCK
- (15) — LOT

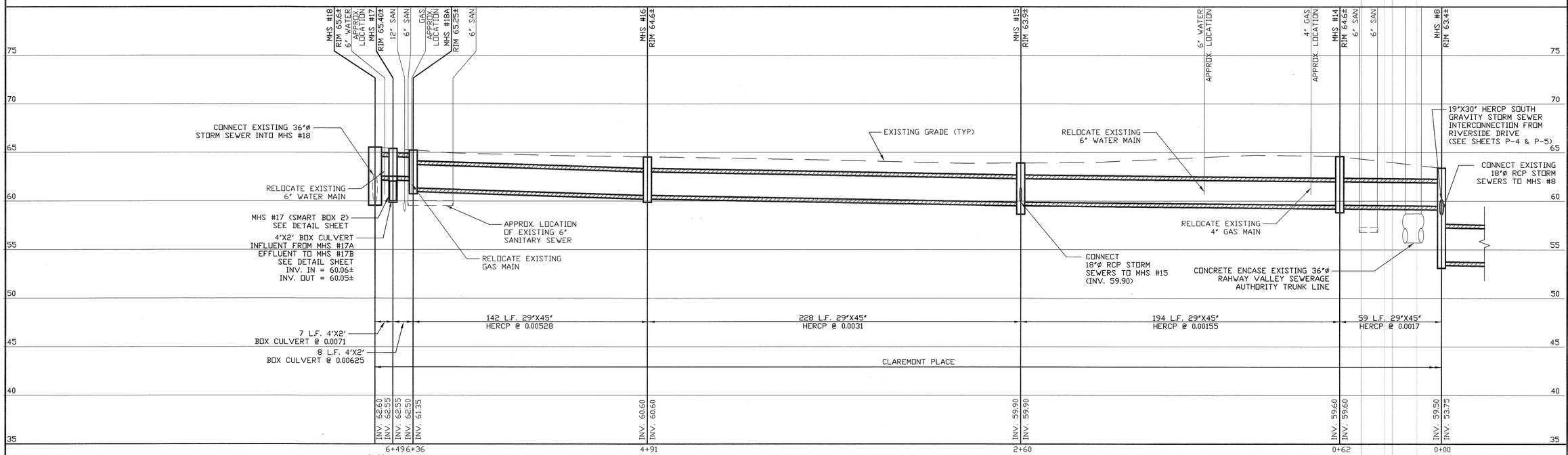
NOTES:

1. CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS AND DEPTHS OF ALL EXISTING UTILITY LINES AT PROPOSED SEWER CROSSINGS SHOWN ON THIS PLAN PRIOR TO SUBMITTAL OF SHOP DRAWINGS.
2. DATUM: ALL ELEVATIONS REFERRED TO NGVD OF 1929
3. PROPERTY LINES AND LOT AND BLOCK NUMBERS TAKEN FROM TOWNSHIP OF CRANFORD TAX MAPS PREPARED BY LITTON AERO SERVICE, DATED 1977
4. CONTRACTOR SHALL PROTECT SEWER TRUNK LINE AND LOCAL SEWER SYSTEMS DURING CONSTRUCTION. ANY DAMAGE INCURRED TO THE 36"ø SANITARY SEWER OR THE LOCAL SEWER SYSTEMS DURING CONSTRUCTION SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST. ALL WORK TO THE SEWER SYSTEMS SHALL BE APPROVED BY THE RAHWAY VALLEY SEWERAGE AUTHORITY AND/OR THE TOWNSHIP.
5. CONTRACTOR TO INSTALL TEMPORARY SHEETING TO PROTECT THE EXISTING DIKE AS REQUIRED OR AS ORDERED BY THE ENGINEER. TYPICAL FOR THE ENTIRE LENGTH OF THE STORM SEWERS.
6. ONCE STAGING AREAS ARE ESTABLISHED, CONTRACTOR SHALL NOTIFY THE SOMERSET-UNION SOIL CONSERVATION DISTRICT OF THEIR LOCATION.
7. ALL STORM DRAIN INLETS SHALL BE PROTECTED WITH AN INLET SEDIMENT CONTROL DEVICE TO PREVENT ENTRY OF SEDIMENTS.



PLAN – SOUTH GRAVITY STORM SEWER INTERCONNECTIONS

SCALE IN FEET: 30 0 30 60



PROFILE – SOUTH GRAVITY STORM SEWER INTERCONNECTIONS

HORIZONTAL SCALE IN FEET: 30 0 30 60

VERTICAL SCALE IN FEET: 5 0 5 10

Revision	Date
REVISED AS PER SOMERSET-UNION SCD	3/12/18
REVISED AS PER CRANFORD TWP.	2/2/18
REVISED AS PER NJPEP COMMENTS	1/6/17

JOHN K. RUSCHKE
PROFESSIONAL ENGINEER - N.J. LIC. NO. 37148

Designed KKN | Drawn SJA | Checked DJH | Approved JKR | Date 1/25/16

MOTT MACDONALD
Certificate No. 24GA28016600
412 Mount Kemble Avenue
Suite C22
Morristown, New Jersey 07960
Tel: 908.285.0600 Fax: 973.257.2888

TOWNSHIP OF CRANFORD
UNION COUNTY, NEW JERSEY

NORTHEAST QUADRANT
STORMWATER MANAGEMENT PROJECT - CONTRACT 2B
RIVERSIDE DRIVE NORTH AND SOUTH GRAVITY STORM SEWER INTERCONNECTIONS

PLAN AND PROFILE - SOUTH INTERCONNECTION

File CRANFORD RIVERSIDE DR | Book | Page
Job 363145 | No. P-6
Scale AS_NTD | B/O 8 | Total 13

Drawing No.

Cadd: L:\municipal\Cranford Township\363145 Phase 2B NE Quad\PVP-6.dwg

LEGEND

- NEW DRAIN INLET
- NEW STORM MANHOLE
- NEW STORM SEWER PIPE
- NEW TEMPORARY SHEETING
- EXISTING DRAIN INLET
- EXISTING SEWER MANHOLE
- 8"SAN — EXISTING SANITARY
- 30"STORM — EXISTING STORM
- 6"W — EXISTING WATER
- 8"G — EXISTING GAS
- UTILITY POLE
- FIRE HYDRANT
- TREE LINE
- FENCE
- PROPERTY BOUNDARY
- 216 BLOCK
- (15) LOT

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS AND DEPTHS OF ALL EXISTING UTILITY LINES AT PROPOSED SEWER CROSSINGS SHOWN ON THIS PLAN PRIOR TO SUBMITTAL OF SHOP DRAWINGS.

2. DATUM: ALL ELEVATIONS REFERRED TO NGVD OF 1929

3. PROPERTY LINES AND LOT AND BLOCK NUMBERS TAKEN FROM TOWNSHIP OF CRANFORD TAX MAPS PREPARED BY LITTON AERO SERVICE, DATED 1977

4. CONTRACTOR SHALL PROTECT SEWER TRUNK LINE AND LOCAL SEWER SYSTEMS DURING CONSTRUCTION. ANY DAMAGE INCURRED TO THE 36"ø SANITARY SEWER OR THE LOCAL SEWER SYSTEMS DURING CONSTRUCTION SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST. ALL WORK TO THE SEWER SYSTEMS SHALL BE APPROVED BY THE RAHWAY VALLEY SEWERAGE AUTHORITY AND/OR THE TOWNSHIP.

5. CONTRACTOR TO INSTALL TEMPORARY SHEETING TO PROTECT THE EXISTING DIKE AS REQUIRED OR AS ORDERED BY THE ENGINEER. TYPICAL FOR THE ENTIRE LENGTH OF THE STORM SEWERS.

6. ONCE STAGING AREAS ARE ESTABLISHED, CONTRACTOR SHALL NOTIFY THE SOMERSET-UNION SOIL CONSERVATION DISTRICT OF THEIR LOCATION.

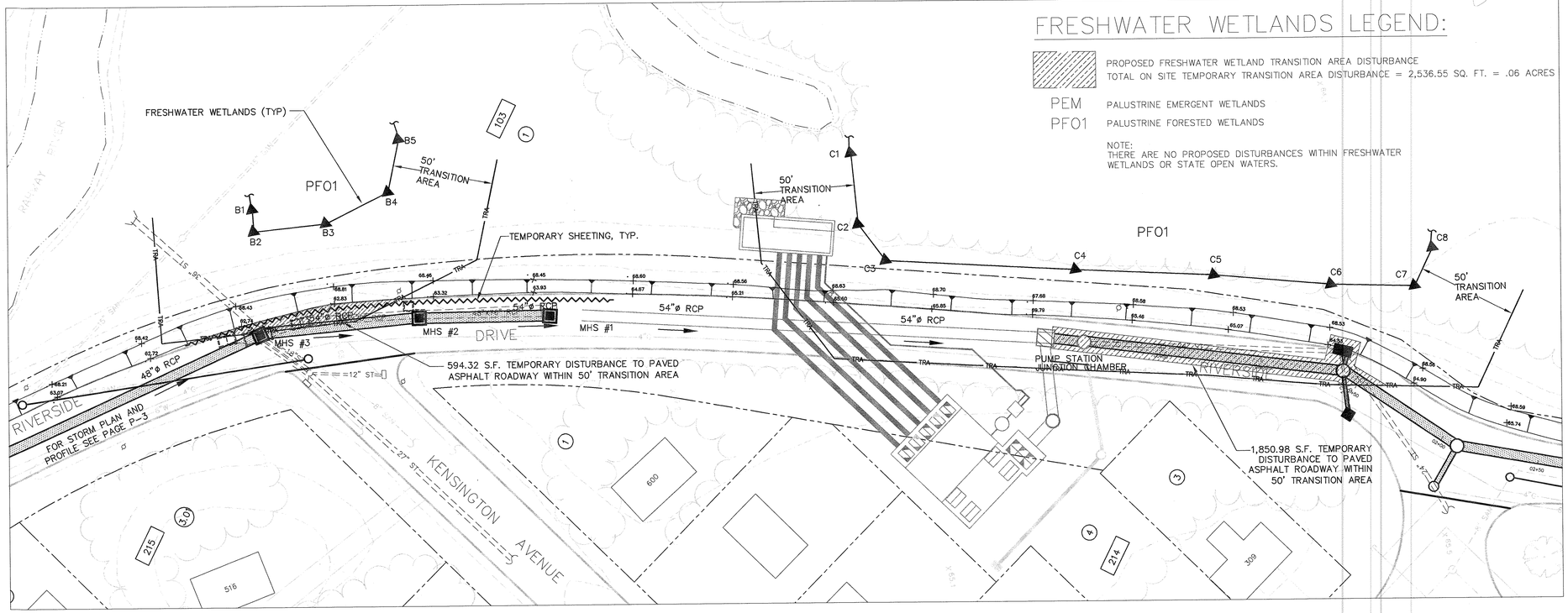
7. ALL STORM DRAIN INLETS SHALL BE PROTECTED WITH AN INLET SEDIMENT CONTROL DEVICE TO PREVENT ENTRY OF SEDIMENTS.

FRESHWATER WETLANDS LEGEND:

PROPOSED FRESHWATER WETLAND TRANSITION AREA DISTURBANCE
TOTAL ON SITE TEMPORARY TRANSITION AREA DISTURBANCE = 2,536.55 SQ. FT. = .06 ACRES

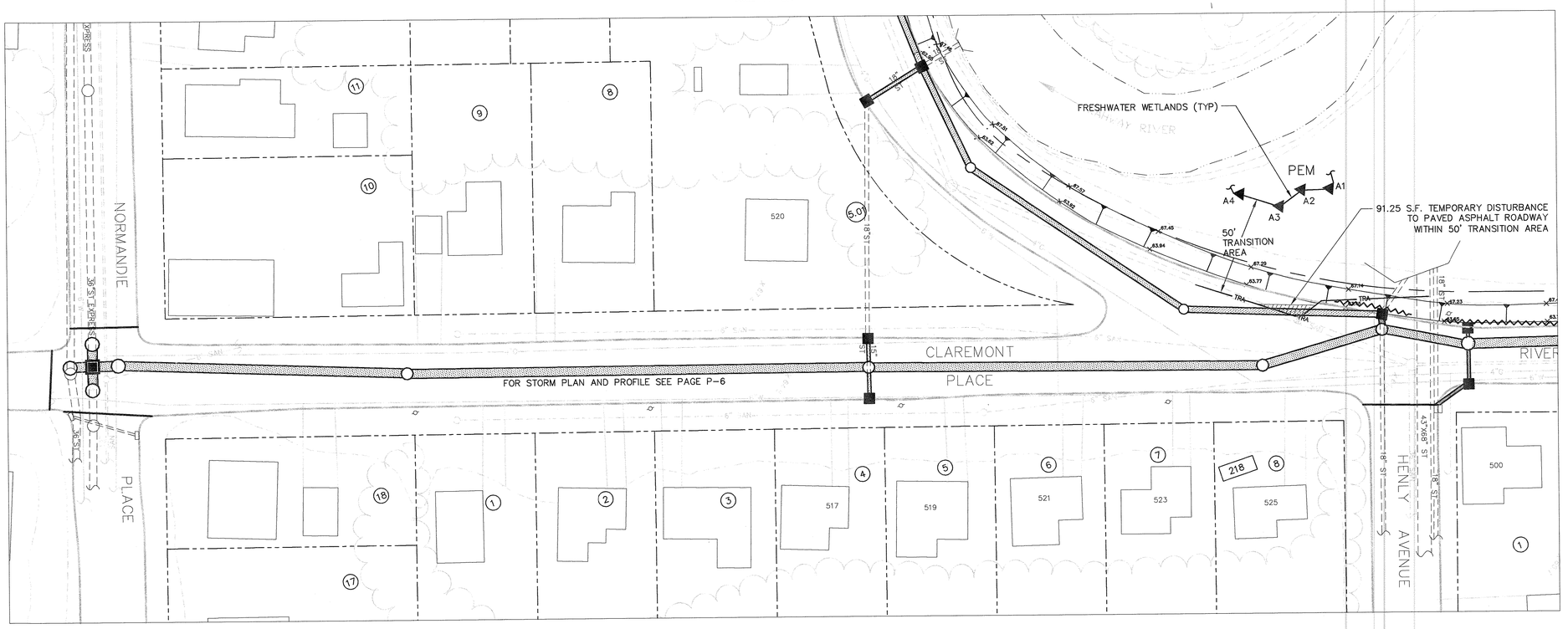
PEM PALUSTRINE EMERGENT WETLANDS
PFO1 PALUSTRINE FORESTED WETLANDS

NOTE:
THERE ARE NO PROPOSED DISTURBANCES WITHIN FRESHWATER WETLANDS OR STATE OPEN WATERS.



PLAN – FRESHWATER WETLANDS GENERAL PERMIT NO. 2

30 0 30 60
SCALE IN FEET



Revision	Date
REVISED AS PER SOMERSET-UNION SCD	3/12/18
REVISED AS PER DEP COMMENTS	1/6/17

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TOWNSHIP OF CRANFORD
UNION COUNTY, NEW JERSEY

NORTHEAST QUADRANT
STORMWATER MANAGEMENT PROJECT - CONTRACT 2B
RIVERSIDE DRIVE NORTH AND SOUTH GRAVITY STORM
SEWER INTERCONNECTIONS

FRESHWATER WETLANDS GENERAL PERMIT NO. 2

File CRANFORD RIVERSIDE DR	
Book	Page
Job 363145	No. W-1
Scale AS_NTD	B/O 9 / Total 13

Drawing No.

Cadd: L:\municipal\Cranford Township\363145 Phase 2B NE Quad\P\W-1 Wetlands.dwg

LEGEND

- NEW DRAIN INLET
- NEW STORM MANHOLE
- NEW STORM SEWER PIPE
- NEW TEMPORARY SHEETING
- EXISTING DRAIN INLET
- EXISTING SEWER MANHOLE
- 8"SAN — EXISTING SANITARY
- 30"STORM — EXISTING STORM
- 6"W — EXISTING WATER
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- 216 BLOCK
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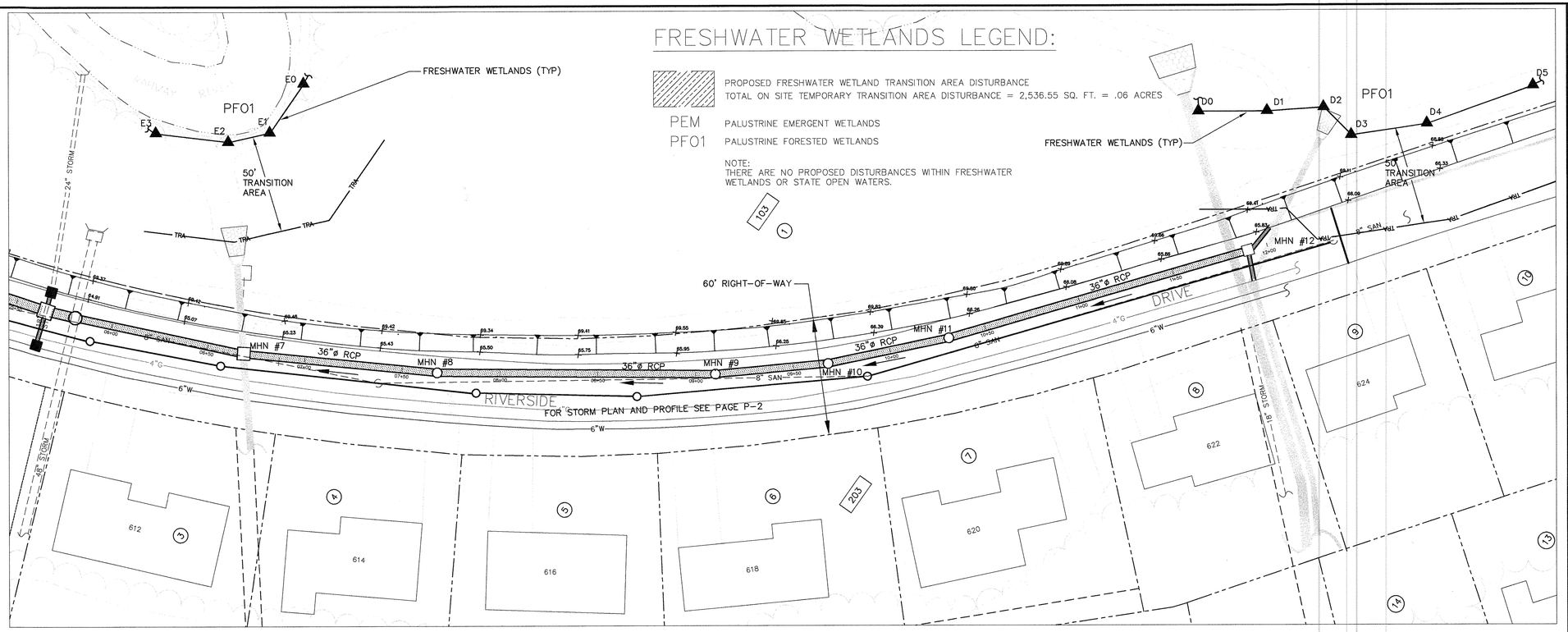

PLAN – FRESHWATER WETLANDS GENERAL PERMIT NO. 2

30 0 30 60
SCALE IN FEET

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UNION COUNTY, NEW JERSEY

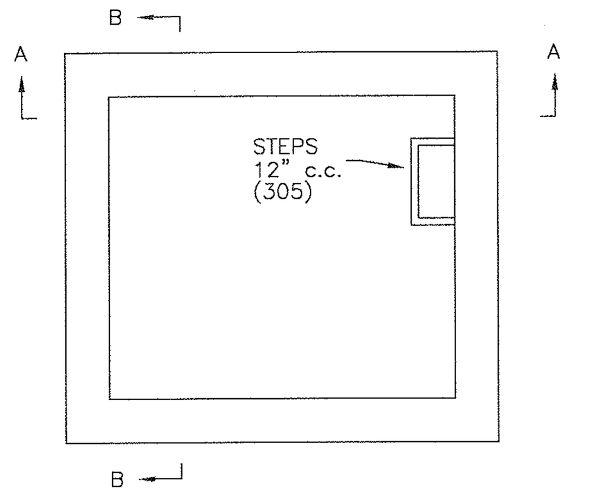
NORTHEAST QUADRANT
STORMWATER MANAGEMENT PROJECT - CONTRACT 2B
RIVERSIDE DRIVE NORTH AND SOUTH GRAVITY STORM SEWER INTERCONNECTIONS

FRESHWATER WETLANDS GENERAL PERMIT NO. 2

File CRANFORD RIVERSIDE DR		
Book	Page	
Job 363145	No. W-2	
Scale AS_NTD	B/O 10	Total 13

Drawing No.

Cadd: L:\municipal\Cranford Township\363145 Phase 2B NE Quad\P\W-2 Wetlands.dwg

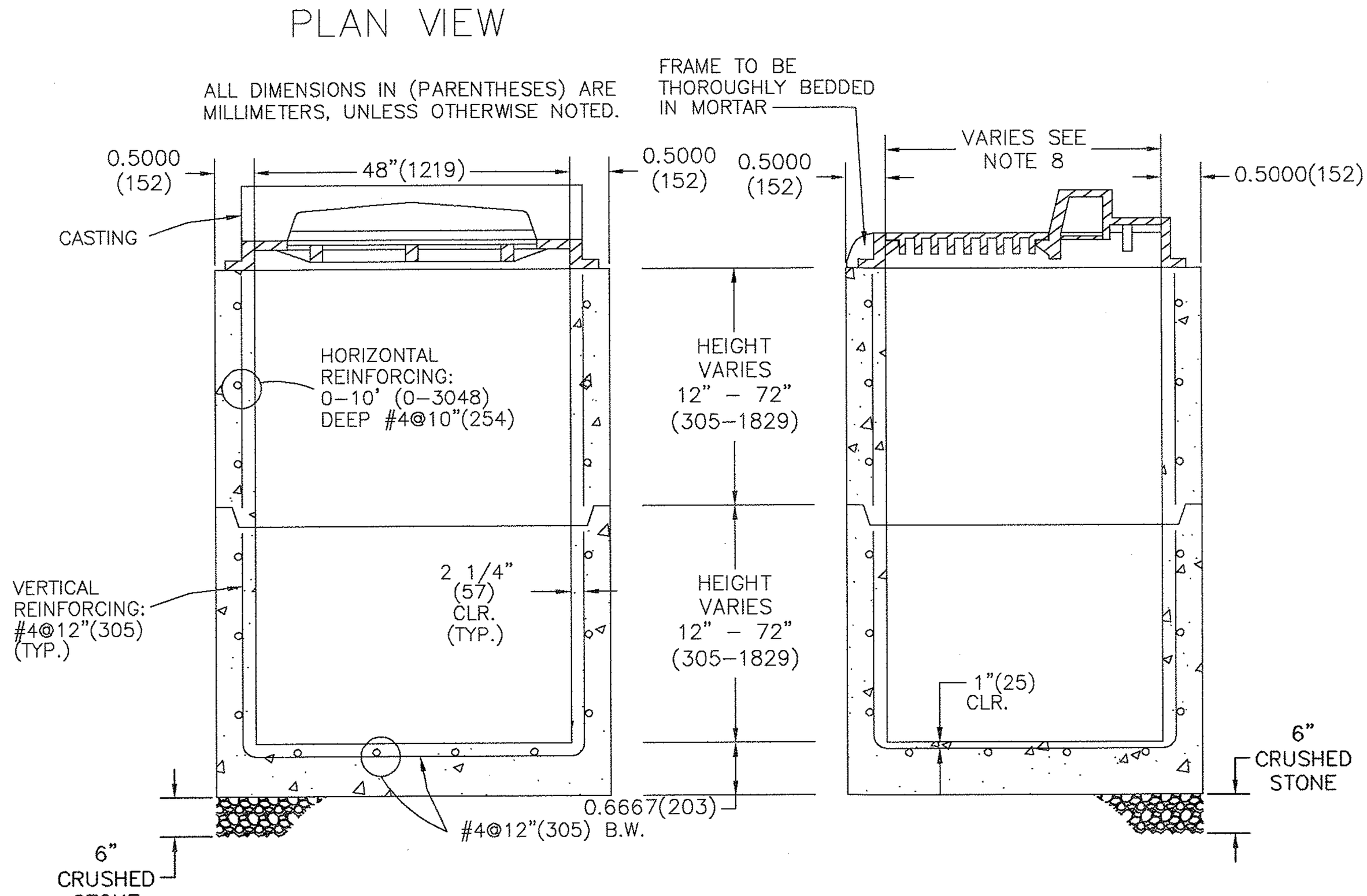


GENERAL NOTES:

1. CONCRETE IS TO OBTAIN A STRENGTH OF 4,000 PSI. (27 MPa) IN 28 DAYS.
2. REINFORCING STEEL TO HAVE A YIELD STRENGTH OF 60,000 PSI (414 MPa).
3. THE INLET TO MEET THE REQUIREMENTS OF ASTM C-913 3. "PRECAST CONCRETE WATER AND WASTEWATER STRUCTURES"
4. THE WALLS AND BASE SLAB TO BE DESIGNED FOR A MINIMUM EARTH COVER OF 10FT. (3048) (EARTH COVER = FINISH GRADE TO TOP OF BASE SLAB.
5. FRAME AND GRATE TO BE #2618-CURB INLET WITH BICYCLE SAFE GRATE AND TYPE J-ECO CURB PIECE AS MANUFACTURED BY CAMPBELL FOUNDRY CO. OR EQUAL.
6. PROVIDE ALUMINUM LADDER RINGS @ 12" CENTER TO CENTER.
7. CURB HEAD TO BE 6"

PLAN VIEW

ALL DIMENSIONS IN (PARENTHESES) ARE MILLIMETERS, UNLESS OTHERWISE NOTED.

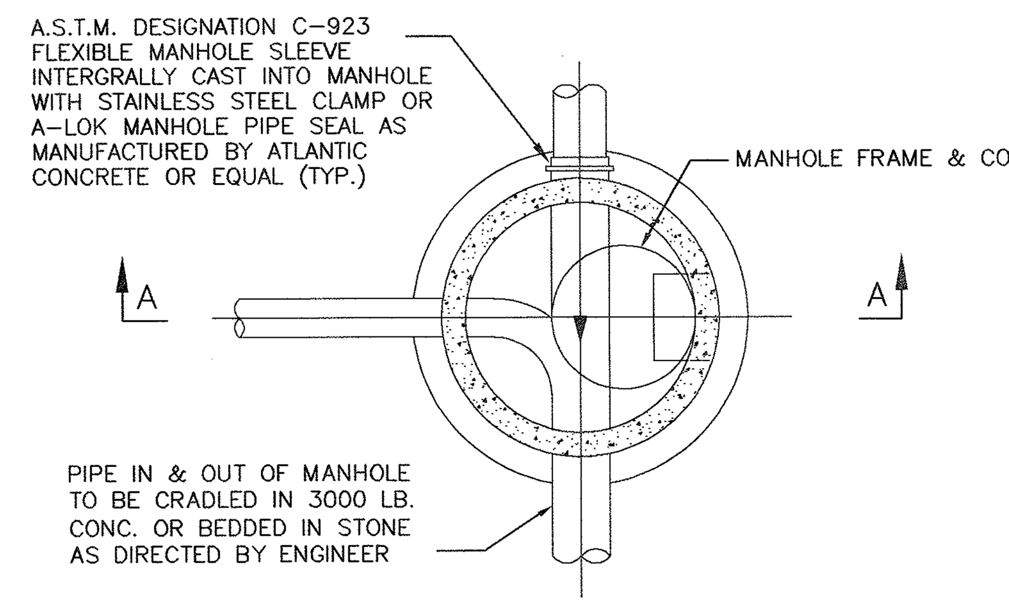


SECTION A-A SECTION B-B

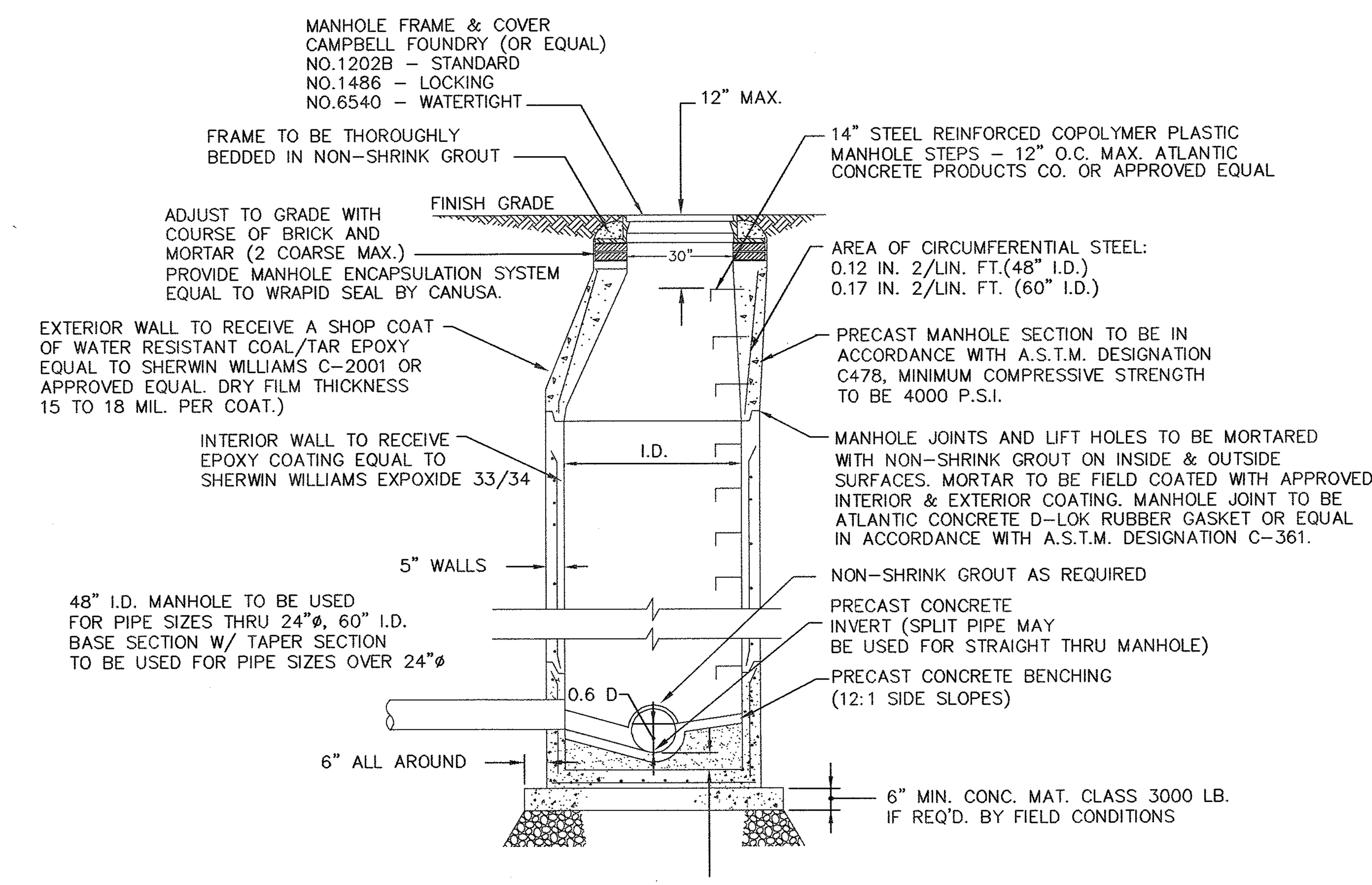
PRECAST CONCRETE INLET TYPE B

(NOT TO SCALE)

DRAIN INLET AND CHAMBER SCHEDULE				
D.I.#	INTERIOR DIMENSION**	GRATE*	GRATE TYPE	NJDOT DESIGNATION
DIN #1	102" X 42"	2618	BICYCLE TYPE	TYPE 'B' DOUBLE
DIN #2	48" X 42"	2618	BICYCLE TYPE	TYPE 'B'
DIN #3	48" X 42"	2618	BICYCLE TYPE	TYPE 'B'
MHS #1	72" X 72"	3425	BICYCLE TYPE	TYPE 'E' CHAMBER
MHS #2	72" X 72"	3425	BICYCLE TYPE	TYPE 'E' CHAMBER
MHS #3	72" X 72"	3425	BICYCLE TYPE	TYPE 'E' CHAMBER
DIS #1	102" X 42"	2618	BICYCLE TYPE	TYPE 'B' DOUBLE
DIS #2	48" X 42"	2618	BICYCLE TYPE	TYPE 'B'
DIS #3	48" X 42"	2618	BICYCLE TYPE	TYPE 'B'
DIS #4	48" X 42"	2618	BICYCLE TYPE	TYPE 'B'
DIS #5	48" X 42"	2618	BICYCLE TYPE	TYPE 'B' DOUBLE
DIS #6	48" X 45"	3425	BICYCLE TYPE	TYPE 'B'
DIS #7	48" X 45"	3425	BICYCLE TYPE	TYPE 'B'
DIS #8	102" X 42"	2618	BICYCLE TYPE	TYPE 'B' DOUBLE
DIS #9	48" X 45"	3425	BICYCLE TYPE	TYPE 'E'
DIS #10	48" X 45"	3425	BICYCLE TYPE	TYPE 'E'
MHS #13	8' DIAMETER MANHOLE	2224	MANHOLE GRATE	STORM SEWER MANHOLE
DIN #1A	48" X 42"	2618	BICYCLE TYPE	TYPE 'B'
DIN #2A	48" X 42"	2618	BICYCLE TYPE	TYPE 'B'
DIN #3A	48" X 42"	2618	BICYCLE TYPE	TYPE 'B'
DIS #8A	48" X 42"	2618	BICYCLE TYPE	TYPE 'B'
DIS #9A	48" X 42"	2618	BICYCLE TYPE	TYPE 'B'
DIS #6A	48" X 42"	2618	BICYCLE TYPE	TYPE 'B'
DIS #11	48" X 42"	2618	BICYCLE TYPE	TYPE 'B'
DIS #12	48" X 42"	2618	BICYCLE TYPE	TYPE 'B'

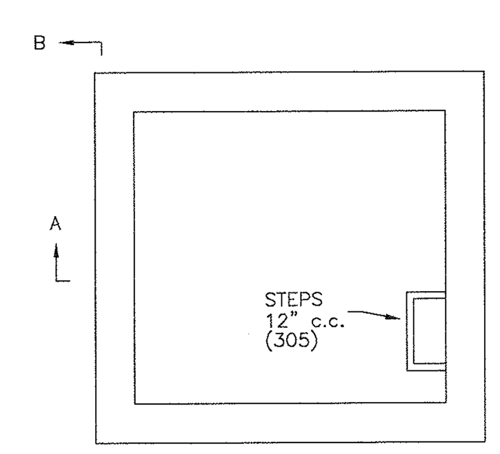


SECTIONAL PLAN



STANDARD SANITARY SEWER MANHOLE DETAIL

(NOT TO SCALE)

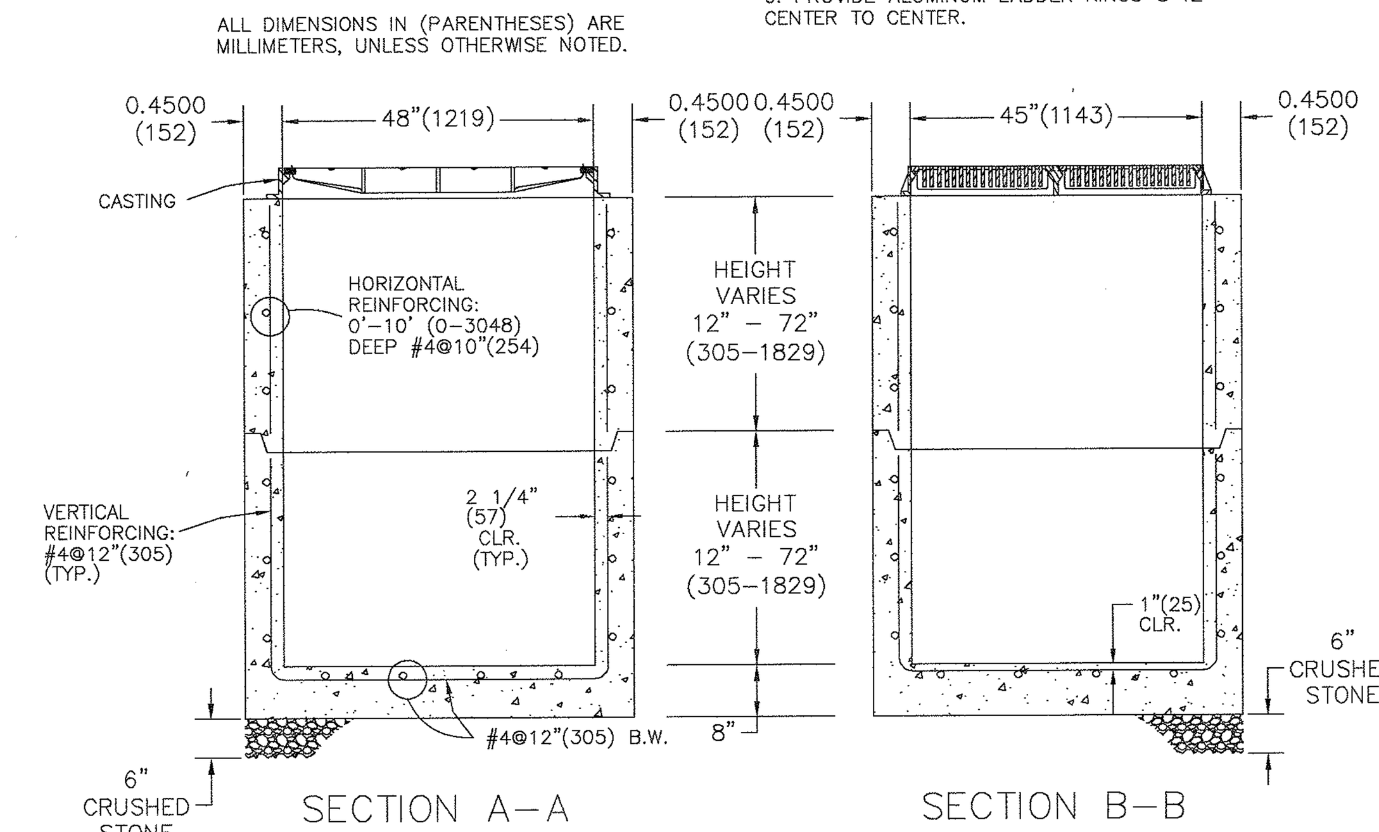


PLAN VIEW

ALL DIMENSIONS IN (PARENTHESES) ARE MILLIMETERS, UNLESS OTHERWISE NOTED.

GENERAL NOTES:

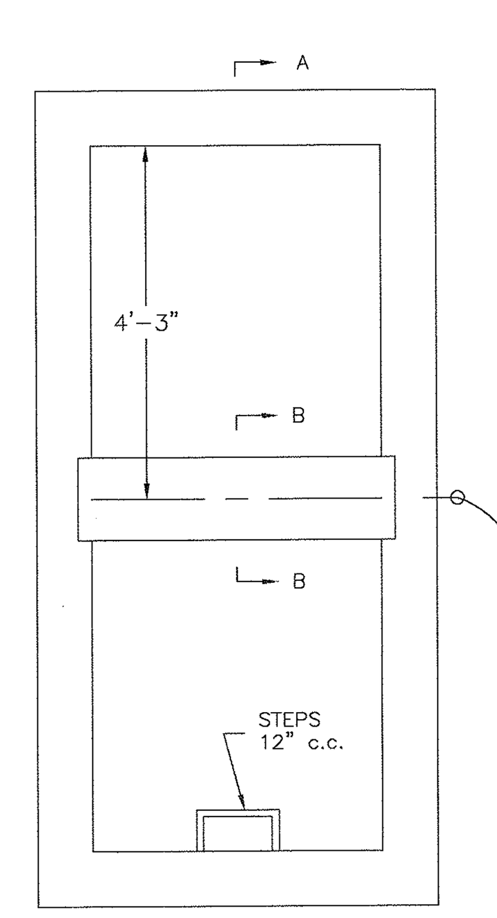
1. CONCRETE IS TO OBTAIN A STRENGTH OF 4,000 PSI. (27 MPa) IN 28 DAYS.
2. REINFORCING STEEL TO HAVE A YIELD STRENGTH OF 60,000 PSI (414 MPa).
3. THE INLET TO MEET THE REQUIREMENTS OF ASTM C-913 3. "PRECAST CONCRETE WATER AND WASTEWATER STRUCTURES"
4. THE WALLS AND BASE SLAB TO BE DESIGNED FOR A MINIMUM EARTH COVER OF 10FT. (3048) (EARTH COVER = FINISH GRADE TO TOP OF BASE SLAB.
5. FRAME AND GRATE TO BE #3425 AS MANUFACTURED BY CAMPBELL FOUNDRY CO. OR EQUAL. BICYCLE GRATE SHALL BE USED.
6. PROVIDE ALUMINUM LADDER RINGS @ 12" CENTER TO CENTER.



SECTION A-A SECTION B-B

PRECAST CONCRETE INLET TYPE E

(NOT TO SCALE)

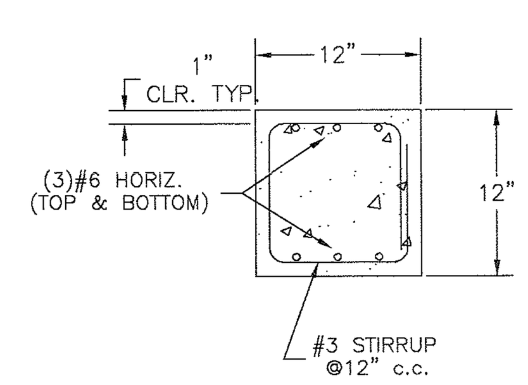


PLAN

GENERAL NOTES:

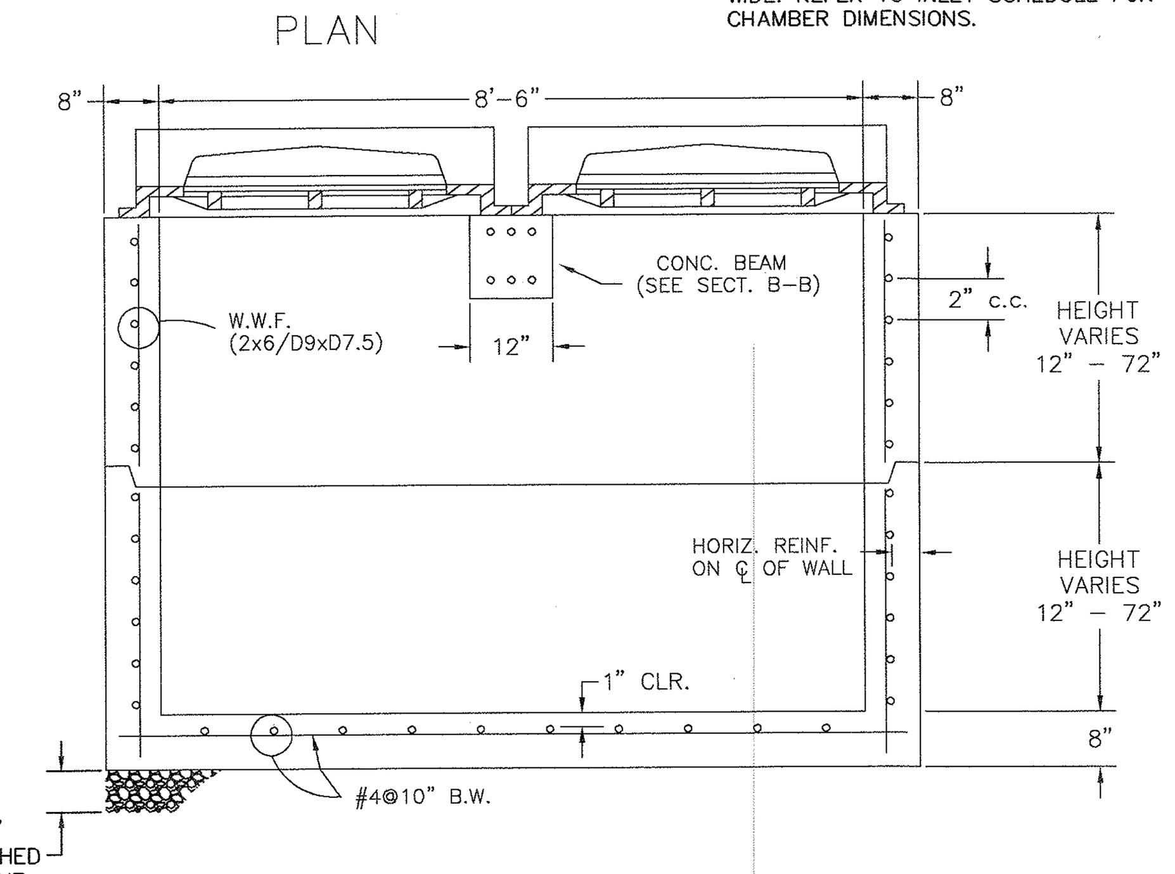
1. CONCRETE IS TO OBTAIN A STRENGTH OF 5,000 PSI. (34 MPa) IN 28 DAYS.
2. REINFORCING STEEL TO HAVE A YIELD STRENGTH OF 60,000 PSI (414 MPa).
3. W.W.F. HAS A YIELD STRENGTH OF 75,000 PSI (517 MPa)
4. THE INLET TO MEET THE REQUIREMENTS OF ASTM C-913 3. "PRECAST CONCRETE WATER AND WASTEWATER STRUCTURES"
5. THE WALLS AND BASE SLAB TO BE DESIGNED FOR A MINIMUM EARTH COVER OF 20FT. (EARTH COVER = FINISH GRADE TO TOP OF BASE SLAB.
6. FRAMES AND GRATES TO BE #2618 WITH TYPE J-ECO CURB PIECE AS MANUFACTURED BY CAMPBELL FOUNDRY CO. OR EQUAL. BICYCLE SAFE GRATE SHALL BE USED.
7. PROVIDE ALUMINUM LADDER RINGS @ 12" CENTER TO CENTER.
8. CURB HEAD TO BE 6"

13" WIDE x 12" DEEP SLOT FOR 12" WIDE x 12" THK. CONC. BEAM

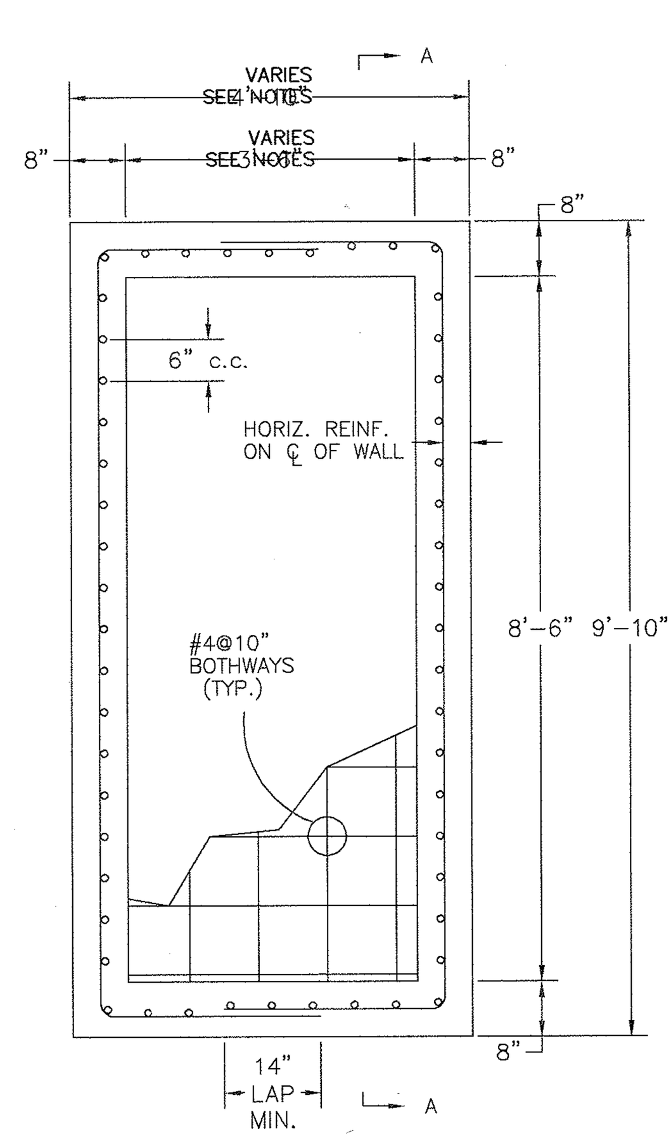


SECTION B-B

NOTE: LARGER INLET CHAMBERS (DIS#9) WILL REQUIRE A TOP SLAB WITH A 102"X42" OPENING TO ACCOMMODATE THE TYPE 'B' DOUBLE FRAME. ALL OTHER TYPE 'B' DOUBLE INLETS WILL BE 42" WIDE. REFER TO INLET SCHEDULE FOR CHAMBER DIMENSIONS.



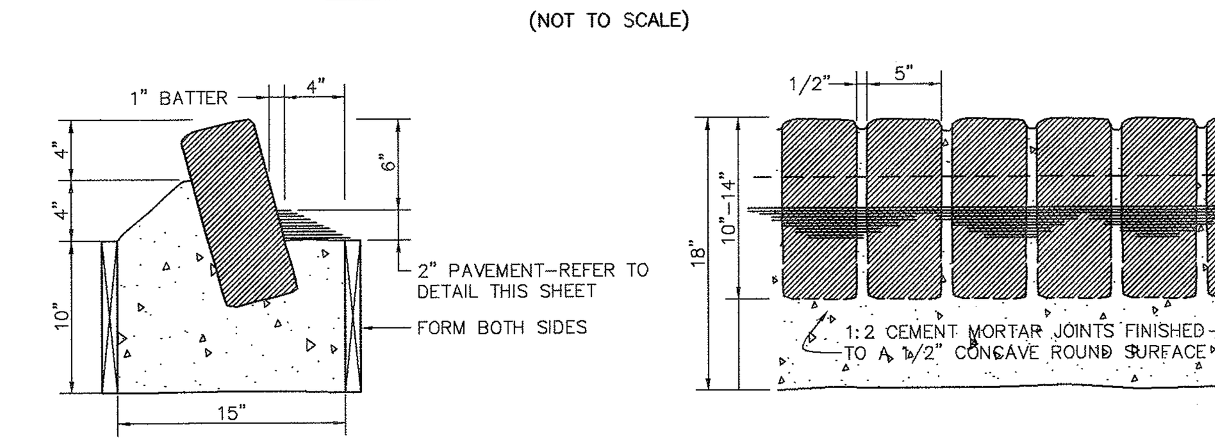
SECTION A-A



PLAN REINF.

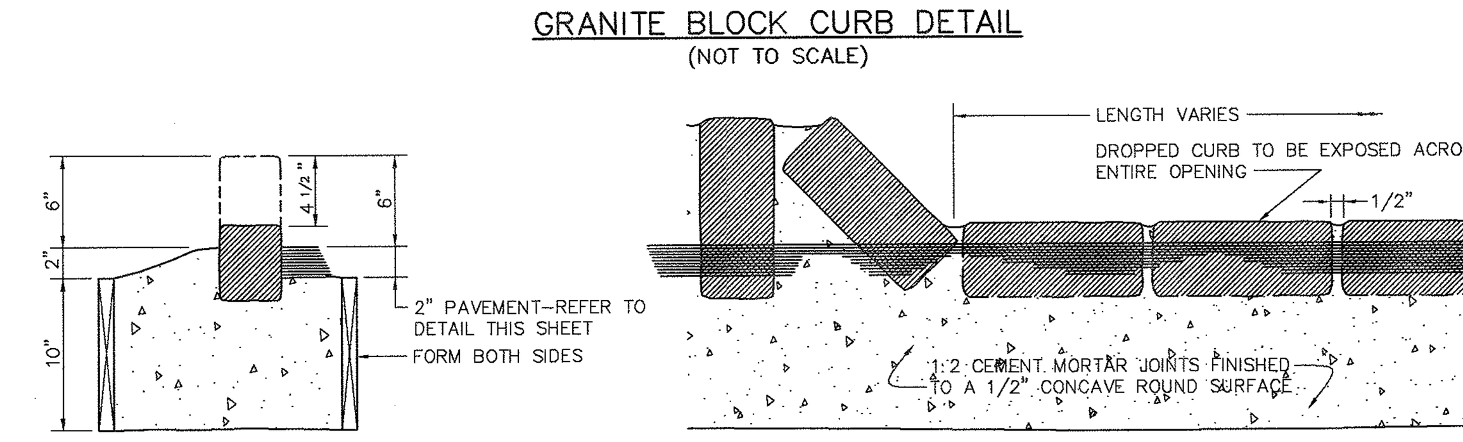
PRECAST CONCRETE INLET DOUBLE B

(NOT TO SCALE)



GRANITE BLOCK CURB DETAIL

(NOT TO SCALE)



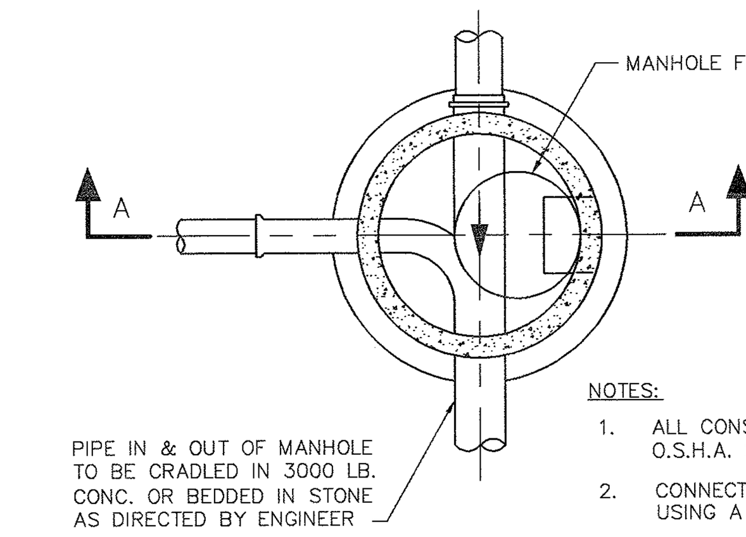
DEPRESSED GRANITE BLOCK CURB DETAIL

(NOT TO SCALE)

STORM MANHOLE SCHEDULE	
M.H.#	INTERIOR DIMENSION
MHN #1	7'
MHN #1A	8'
MHN #2	8'
MHN #3	5'
MHN #4	8'
MHN #5	8'
MHN #6	7' X 7' BOX
MHN #7	6' X 6' BOX
MHN #8	5'
MHN #9	5'
MHN #10	5'
MHN #11	5'
MHN #12	5' X 5' BOX
MHS #1	8' X 6' BOX
MHS #2	8' X 6' BOX
MHS #3	8' X 6' BOX
MHS #4	7'
MHS #5	7'
MHS #6	7'
MHS #7	7'
MHS #8	7'
MHS #9	5'
MHS #10	5'
MHS #11	5'
MHS #12	SMART BOX #1 (SEE DETAIL)
MHS #13	6'
MHS #14	6'
MHS #15	7'
MHS #16	6'
MHS #17	SMART BOX #2 (SEE DETAIL)
MHS #17A	7'
MHS #17B	7'
MHS #18	7'
MHS #18A	7'

GENERAL NOTES:

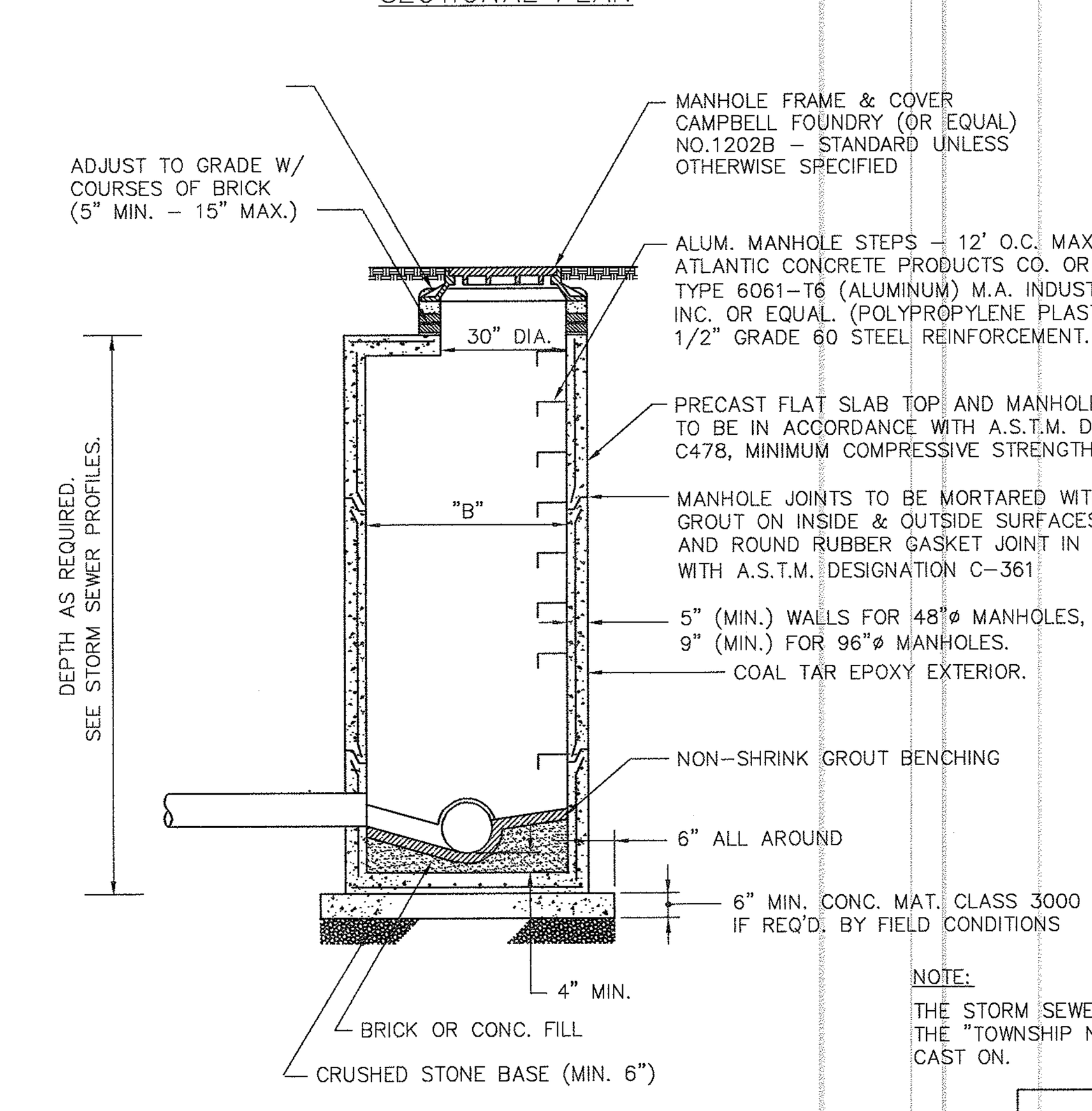
1. ALL ELEVATIONS ON DRAWINGS ARE NVGD, 1929.
2. TOPOGRAPHIC SURVEY OF TOWNSHIP OF CRANFORD, UNION COUNTY, N.J., BY ADR ASSOCIATES, INC., RIVERSIDE, N.J., APRIL, 1973, AND SUPPLEMENTED BY FIELD SURVEY DATA BY HMM FORMALLY KILLAM ASSOCIATES, 1999.
3. THE CONTRACTOR IS ALERTED THAT THE PROJECT IS SITUATED IN A FLOOD PRONE AREA AND SHALL CONDUCT AND COORDINATE CONSTRUCTION ACTIVITIES ACCORDINGLY.
4. ALL CONSTRUCTION SHALL BE WITHIN RIGHT-OF-WAY, EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT LIMITS. CONSTRUCTION ACTIVITY, STORAGE, STOCKPILING AND ACCESS SHALL NOT TAKE PLACE ON PRIVATE PROPERTY UNLESS SUCH ARRANGEMENTS HAVE BEEN MADE BY CONTRACTOR
5. THE CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING TREES IN THE PROJECT AREA FROM DAMAGE DUE TO HIS CONSTRUCTION ACTIVITIES TO THE GREATEST EXTENT POSSIBLE. THE CONTRACTOR SHALL OBTAIN WRITTEN AUTHORIZATION FROM THE OWNER AND/OR THE ENGINEER PRIOR TO REMOVAL OF ANY TREES GREATER THAN 6-INCHES IN DIAMETER OR OF SUBSTANTIAL CONCERN. THE CONTRACTOR SHALL REPLACE SELECT TREES AUTHORIZED AND REMOVED IN ACCORDANCE WITH THE SPECIFICATIONS AND AS DIRECTED BY THE OWNER AND/OR ENGINEER.
6. THE CONTRACTOR SHALL NOTIFY THE OWNER, ENGINEER AND AFFECTED PROPERTY OWNERS OF CONSTRUCTION ACTIVITIES IMPEDING ACCESS OR OPERATIONS PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.
7. THE CONTRACTOR SHALL DIG TEST PITS AS NECESSARY AND AS INDICATED ON THE PLANS WELL IN ADVANCE OF CONSTRUCTION ACTIVITY TO LOCATE EXISTING UTILITIES. THE LOCATIONS AND ELEVATIONS OF ALL EXISTING PIPES ARE ESTIMATED AND THE CONTRACTOR SHALL DIG THE NECESSARY TEST PITS TO ACCURATELY DETERMINE THE POSITION OF THE EXISTING PIPES AS REQUIRED TO COMPLETE CONSTRUCTION OF THE NEW STRUCTURES AND PIPING.
8. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES MUST BE INSTALLED PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. THE REQUIREMENTS DETAILED IN THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY SHALL BE STRICTLY COMPLIED WITH. THIS INCLUDES PROVISIONS FOR MINIMIZING EROSION, INSTALLING AND MAINTAINING SEDIMENT TRAPS AT STORM DRAIN INLETS, STREET SWEEPING AND PROTECTING STOCKPILED SOIL FROM EROSION. ALL NECESSARY EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE IN PLACE PRIOR TO COMMENCING EXCAVATION AND SHALL BE MAINTAINED DURING THE CONSTRUCTION PERIOD AND LEFT IN PLACE UNTIL THE AREA IS STABILIZED.
9. THE CONTRACTOR SHALL COORDINATE HIS CONSTRUCTION ACTIVITIES WITH THE TOWNSHIP OF CRANFORD WITH REGARD TO ANY ROAD CLOSING AND/OR TRAFFIC DETOURS AND SHALL COMPLY WITH ALL REQUIREMENTS OF THE TOWNSHIP.
10. ALL EXISTING STRUCTURES AND PIPING REMOVED, SHALL BE INSPECTED BY THE OWNER, WHO MAY DECIDE WHETHER OR NOT TO KEEP REMOVED STRUCTURES AND PIPING. THE CONTRACTOR SHALL DELIVER SUCH EQUIPMENT TO A LOCATION DESIGNATED BY THE OWNER. IF THE OWNER DECIDES SUCH MATERIALS ARE NOT SALVAGEABLE, THE CONTRACTOR SHALL DISPOSE OF SUCH MATERIALS OFF-SITE, AT NO ADDITIONAL COST TO THE OWNER. STRUCTURES AND PIPING SHALL BE REMOVED BY THE CONTRACTOR IN SUCH A MANNER TO NOT DAMAGE MATERIALS SHOULD THE OWNER DECIDE TO KEEP SUCH MATERIALS.
11. IF IN THE COURSE OF REMOVAL OF EXISTING STORM PIPING, IT IS DETERMINED BY THE ENGINEER AND/OR OWNER THAT SUCH REMOVAL WOULD DAMAGE EXISTING ADJACENT TREES AND/OR STRUCTURES, THE CONTRACTOR SHALL LEAVE IN PLACE SUCH QUANTITIES OF EXISTING PIPING AS DIRECTED BY THE ENGINEER AND/OR OWNER. THE CONTRACTOR SHALL FILL AND/OR PLUG SUCH ABANDONED EXISTING STORM SEWER PIPE WITH SUITABLE MATERIAL AS DIRECTED BY THE ENGINEER.
12. ANY EXISTING UTILITY THAT IS IN CONFLICT WITH THE NEW CONSTRUCTION SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER AND SHALL BE RELOCATED AS REQUIRED TO AVOID CONFLICT.
13. ALL PIPE LENGTHS SHOWN AND INDICATED ON THE DRAWINGS ARE APPROXIMATE. THE CONTRACTOR SHALL PROVIDE PIPING AS REQUIRED.
14. ALL RIM AND GRATE ELEVATIONS SHOWN AND INDICATED ARE APPROXIMATE AND SHALL BE ADJUSTED AS NECESSARY TO MEET ACTUAL FIELD CONDITIONS.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ARRANGING A MARKOUT OF ALL UTILITIES PRIOR TO STARTING WORK OR ORDERING MATERIALS.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LAYING OUT THE NEW STORM SEWER AND SANITARY SEWER PIPES PRIOR TO COMMENCING CONSTRUCTION OR PLACING MATERIAL ORDERS. THE CONTRACTOR IS ALERTED THAT UPON COMPLETION OF LAYOUT, FINAL ADJUSTMENTS IN THE ALIGNMENT, LENGTH AND QUANTITY OF NEW PIPING AND STRUCTURES WILL BE MADE BY THE OWNER AND/OR ENGINEER TO BEST SUIT FIELD CONDITIONS AND TO AVOID EXISTING TREES, AND STRUCTURES AS REQUIRED.
17. THE CONTRACTOR SHALL MINIMIZE DISTURBANCE IN AND AROUND EXISTING UTILITIES AND SHALL PROTECT EXISTING UTILITIES FROM DAMAGE OR SERVICE INTERRUPTION AS REQUIRED.
18. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STATE OF NEW JERSEY CONSTRUCTION SAFETY ACT, THE HIGH VOLTAGE PROXIMITY ACT AND ALL OTHER LOCAL, STATE AND FEDERAL SAFETY REGULATIONS.
19. ALL EXISTING SURFACE FEATURES DAMAGED, DISTURBED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED OR RESTORED. THIS WORK IS INCLUDED IN THE VARIOUS BID ITEMS AND NO SEPARATE PAYMENT WILL BE MADE FOR RESTORATION WORK.
20. PRIOR TO THE START OF CONSTRUCTION, A DETAILED CONSTRUCTION SCHEDULE SHALL BE SUBMITTED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
21. SHEETING MUST BE DESIGNED AND USED IN ACCORDANCE WITH APPLICABLE STANDARDS AND AS NOTED IN THE SPECIFICATIONS.
22. THE CONTRACTOR SHALL COORDINATE HIS ACTIVITIES WITH THE OWNER AND/OR ENGINEER CONCERNING STOCKPILING AND STORAGE OF MATERIALS AND EQUIPMENT FOR CONSTRUCTION.
23. THE CONTRACTOR SHALL NOT DISCHARGE SOIL, CONSTRUCTION DEBRIS OR WASTE MATERIALS INTO THE RIVER OR WATERWAY.
24. THE CONTRACTOR SHALL RESTORE DRIVEWAY PAVEMENT AND CURBING DISTURBED BY HIS CONSTRUCTION ACTIVITIES TO MEET EXISTING CONDITIONS.
25. SURFACE FEATURES, INCLUDING, BUT NOT LIMITED TO, SIDEWALKS, CURB CUTS, DRIVEWAYS, UTILITY POLES, AND SIGNS, ARE GENERALLY NOT SHOWN ON THE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL SURFACE FEATURES AS NECESSARY PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.
26. UTILITIES SHOWN ARE BASED UPON AVAILABLE INFORMATION. ACTUAL LOCATIONS MUST BE VERIFIED IN THE FIELD.
27. ALL OPEN TRENCHES MUST BE SUITABLY COVERED AT THE END OF THE DAILY CONSTRUCTION ACTIVITY AND/OR WHEN CONSTRUCTION ACTIVITY IS NOT BEING UNDERTAKEN AT THAT LOCATION, TO MEET ALL APPLICABLE SAFETY REQUIREMENTS. IF STEEL PLATES ARE USED TO TEMPORARILY COVER TRENCHES, THE STEEL PLATES SHALL BE FLUSH WITH THE ADJACENT PAVEMENT AND/OR GRADE AND SUITABLY RESTRAINED.
28. THE CONTRACTOR SHALL ADEQUATELY PROTECT ALL EXISTING PIPELINES AND STRUCTURES DURING THE INSTALLATION OF NEW WORK.



SECTIONAL PLAN

NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST O.S.H.A. STANDARDS.
2. CONNECTIONS INTO EXISTING MANHOLES SHALL BE COMPLETED USING A SUITABLE ADAPTOR AS APPROVED BY THE ENGINEER.



SECTION A - A

NOTE:

THE STORM SEWER COVERS SHALL HAVE THE "TOWNSHIP NAME AND STORM SEWER" CAST ON.

	4'-0" MH	5'-0" MH	6'-0" MH	8'-0" MH
STRAIGHT THRU TO 45° DEFLECTION	24"ø RCP	36"ø RCP	42"ø RCP	60"ø RCP
90° DEFLECTION	18"ø RCP	27"ø RCP	30"ø RCP	42"ø RCP

STANDARD STORM SEWER MANHOLE DETAIL

(NOT TO SCALE)

TOWNSHIP OF CRANFORD
UNION COUNTY, NEW JERSEY

NORTHEAST QUADRANT
STORMWATER MANAGEMENT PROJECT - CONTRACT 2B
RIVERSIDE DRIVE NORTH AND SOUTH GRAVITY STORM
SEWER INTERCONNECTIONS

DETAILS AND NOTES

M M MOTT MACDONALD
Certificate No. 24GA28016600
412 Mount Kemble Avenue Suite G22
Morristown, New Jersey 07960
Tel: 908.730.6000 Fax: 973.267.2890

JOHN K. RUSCHKE
PROFESSIONAL ENGINEER - N.J. LIC. NO. 37148

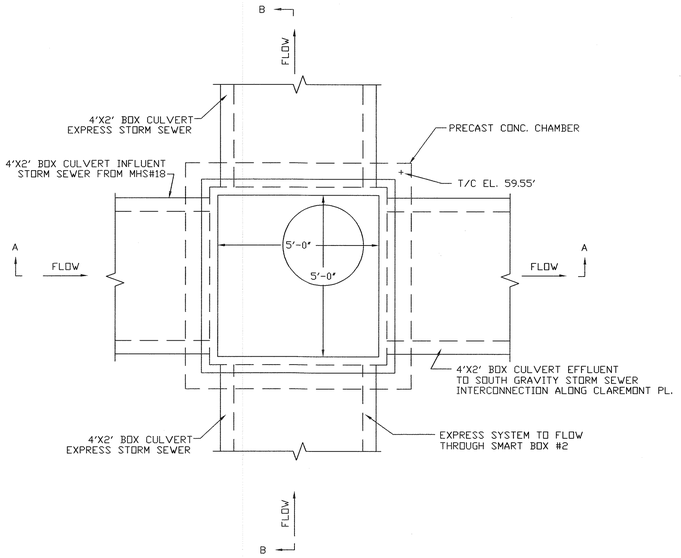
Designed	Drawn	Checked	Approved	Date
KKN	SJA	DJH	JKR	1/25/16

Date	Revision
2/2/18	REVISED AS PER CRANFORD TWP.

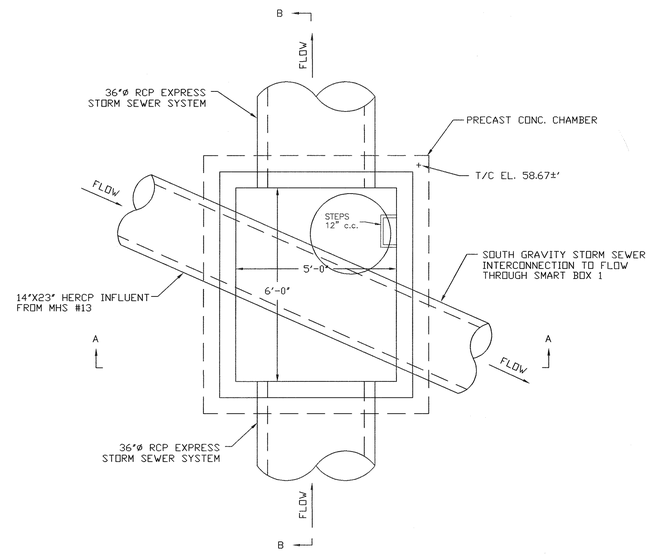
File CRANFORD RIVERSIDE DR		
Book	Page	
Job 363145	No. D-1	
Scale AS_NTD	B/O 11	Total 13

Drawing No.

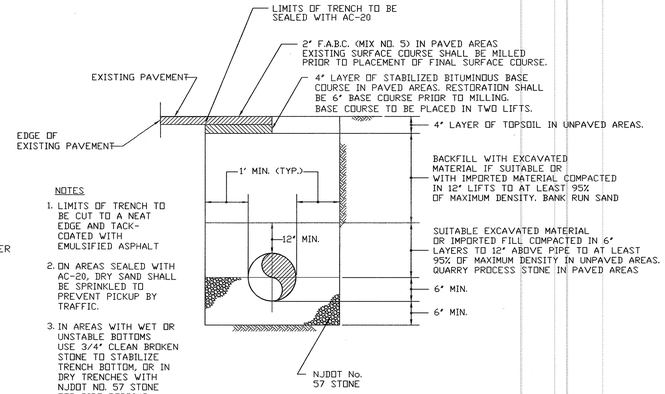
Cadd: L:\municipal\Cranford Township\363145 Phase 2B NE Quad\D\D-1.dwg



PLAN VIEW

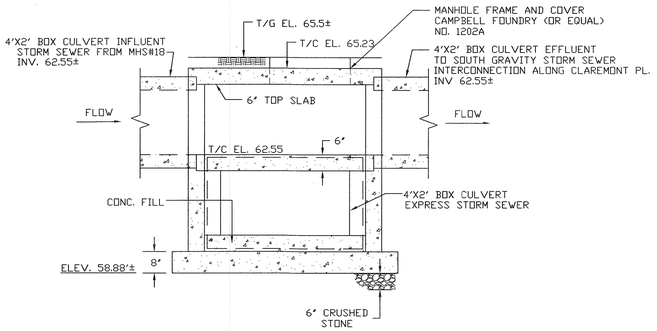


PLAN VIEW

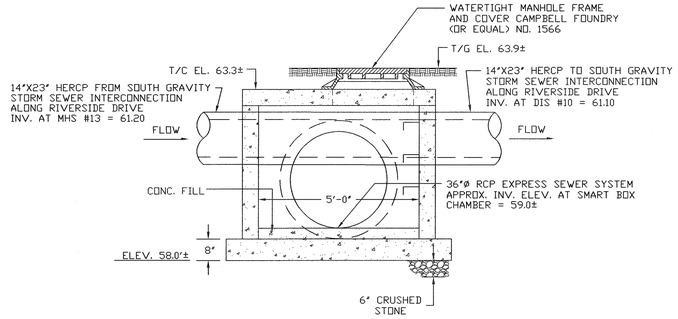


SURFACE RESTORATION AND TRENCH DETAIL

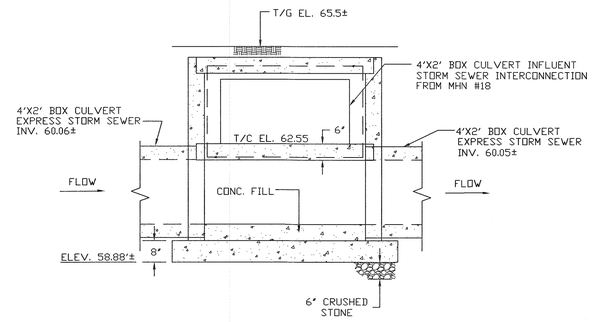
(NOT TO SCALE)



SECTION A-A



SECTION A-A



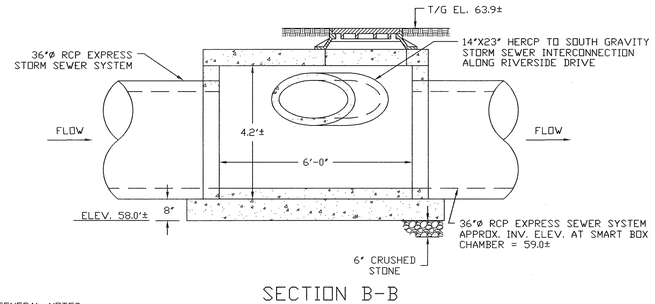
SECTION B-B

GENERAL NOTES:

1. PRECAST CONCRETE SMART BOX SHALL OBTAIN A STRENGTH OF 5,000 PSI IN 28 DAYS.
2. REINFORCING STEEL SHALL HAVE A YIELD STRENGTH OF 60,000 PSI.
3. THE WALLS AND BASE SLAB TO BE DESIGNED FOR A MINIMUM EARTH COVER OF 10FT. (EARTH COVER = FINISH GRADE TO TOP OF BASE SLAB.

SMART BOX 2 DETAIL

(NOT TO SCALE)



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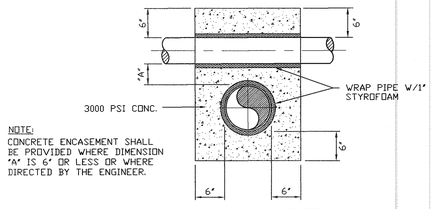
3. THE WALLS AND BASE SLAB TO BE DESIGNED FOR A MINIMUM EARTH COVER OF 10FT. (EARTH COVER = FINISH GRADE TO TOP OF BASE SLAB.
4. PRECAST CONCRETE SMART BOX CHAMBER SHALL BE WATERTIGHT WITH A WATERTIGHT ACCESS MANHOLE COVER.

SMART BOX 1 DETAIL (MHS #12)

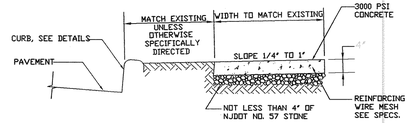
(NOT TO SCALE)



NOTE:
CONCRETE ENCASEMENT SHALL BE PROVIDED WHERE DIMENSION "A" IS 6" OR LESS OR WHERE DIRECTED BY THE ENGINEER.

PIPE CROSSING DETAIL

(NOT TO SCALE)



SIDEWALK/SIDEWALK REPLACEMENT DETAILS

(NOT TO SCALE)

NOTES:
1. SIDEWALKS SHALL BE CONSTRUCTED IN EIGHT FOOT SECTIONS WITH CLEAR SPACE OF 3/16 INCH BETWEEN ADJACENT SECTIONS, AND A FALSE JOINT ACROSS THE MIDDLE OF EACH SECTION. EXPANSION JOINTS SHALL BE PROVIDED EQUAL DISTANCES OF NOT MORE THAN 20'. JOINTS SHALL BE FILLED WITH PREFORMED BITUMINOUS CELLULAR TYPE EXPANSION JOINT FILLER 1/2" THICK.

Date	Revision
3/12/18	REVISED AS PER SOMERSET-UNION SCD
2/2/18	REVISED AS PER CRANFORD TWP.

JOHN K. RUSCHKE
PROFESSIONAL ENGINEER - N.J. LIC. NO. 37148

Designed	Drawn	Checked	Approved	Date
KKN	SJA	DJH	JKR	1/25/16

MM MOTT MACDONALD
Certificate No. 24GA28016600
412 Mount Kemble Avenue
Suite G22
Morristown, New Jersey 07960
Tel: 908.730.6000 Fax: 973.267.2890

TOWNSHIP OF CRANFORD
UNION COUNTY, NEW JERSEY

NORTHEAST QUADRANT
STORMWATER MANAGEMENT PROJECT - CONTRACT 2B
RIVERSIDE DRIVE NORTH AND SOUTH GRAVITY STORM
SEWER INTERCONNECTIONS

DETAILS AND NOTES

File	CRANFORD RIVERSIDE DR
Book	Page
Job 363145	No. D-2
Scale AS_NTD	B/O 12
	Total 13

Drawing No.

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STANDARD FOR PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION

DEFINITION
ESTABLISHMENT OF PERMANENT VEGETATIVE COVER ON EXPOSED SOILS WHERE PERENNIAL VEGETATION IS NEEDED FOR LONG TERM PROTECTION.

PURPOSE
TO PERMANENTLY STABILIZE THE SOIL, ASSURING CONSERVATION OF SOIL AND WATER, AND TO ENHANCE THE ENVIRONMENT.

WHERE APPLICABLE
ON EXPOSED SOILS THAT HAVE A POTENTIAL FOR CAUSING OFF-SITE ENVIRONMENTAL DAMAGE.

METHODS AND MATERIALS
I. SITE PREPARATION
A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION AND ANCHORING, AND MAINTENANCE. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS FOR LAND GRADING, P. 4.11.

B. INSTALL NEEDED EROSION CONTROL PRACTICES AND FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS. SEE STANDARDS 4.2 THROUGH 4.16.

II. SEEDBED PREPARATION
A. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS SUCH AS THOSE OFFERED BY RUTGERS UNIVERSITY SOIL TESTING LABORATORY. SOIL SAMPLE MAILERS ARE AVAILABLE FROM THE LOCAL COOPERATIVE EXTENSION SERVICE OFFICE. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE OR 11 POUNDS PER 1,000 SQUARE FEET OF 10-20-10 OR EQUIVALENT. IN ADDITION, 300 POUNDS 38-0-0 PER ACRE OF EQUIVALENT OF SLOW RELEASE NITROGEN MAY BE USED IN LIEU OF TOPDRESSING (SEE PAGE 3.2.7, SECTION IV). APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDES) AS FOLLOWS:

SOIL TEXTURE	TONS/ACRE	LBS./1,000 SQ. FT.
CLAY, CLAY LOAM, AND HIGH ORGANIC SOIL	4	180
SANDY LOAM, LOAM, SILT LOAM	3	135
LOAMY SAND, SAND	2	90

PULVERIZED DOLOMITIC LIMESTONE IS PREFERRED FOR MOST SOILS SOUTH OF THE NEW BRUNSWICK-TRENTON LINE.

B. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRINGTOOTH HARROW, OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM, FINE SEEDBED IS PREPARED. ALL BUT CLAY OR SILTY SOILS AND COARSE SANDS SHOULD BE ROLLED TO FIRM THE SEEDBED WHEREVER FEASIBLE.

C. REMOVE FROM THE SURFACE ALL STONES TWO INCHES OR LARGER IN ANY DIMENSION. REMOVE ALL OTHER DEBRIS, SUCH AS WIRE, CABLE, TREE ROOTS, PIECES OF CONCRETE, CLODS, LUMPS, OR OTHER UNSUITABLE MATERIAL.

D. INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RETILLED AND FIRMED AS ABOVE.

III. SEEDING
A. SELECT A MIXTURE FROM TABLE 3.2-1 OR USE MIXTURE RECOMMENDED BY THE COOPERATIVE EXTENSION SERVICE OR SOIL CONSERVATION SERVICE WHICH IS APPROVED BY THE SOIL CONSERVATION DISTRICT.

B. APPLY SEED UNIFORMLY BY HAND, CYCLONE (CENTRIFUGAL) SEEDER, DROP SEEDER, DRILL, CULTIPACKER SEEDER, OR HYDROSEEDER. THE LATTER MAY BE JUSTIFIABLE FOR LARGE, STEEP AREAS WHERE CONVENTIONAL VEHICLES CANNOT TRAVEL. MULCH SHALL NOT BE INCLUDED IN THE TANK WITH THE SEED. EXCEPT FOR DRILLED, HYDROSEEDED OR CULTIPACKED SEEDINGS, SEED SHALL BE INCORPORATED INTO THE SOIL, TO A DEPTH OF 1/4 TO 1/2 INCH, BY RAKING OR DRAGGING. DEPTH OF SEED PLACEMENT MAY BE 1/4 INCH DEEPER ON COARSE TEXTURED SOIL.

C. AFTER SEEDING, FIRMING THE SOIL WITH A CORRUGATED ROLLER WILL ASSURE GOOD SEED-TO-SOIL CONTACT, RESTORE CAPILLARITY, AND IMPROVE SEEDLING EMERGENCE. THIS IS THE PREFERRED METHOD. WHEN PERFORMED ON THE CONTOUR, SHEET EROSION WILL BE MINIMIZED AND WATER CONSERVATION ON SITE WILL BE MAXIMIZED.

IV. MULCHING
MULCHING IS REQUIRED ON ALL SEEDING. MULCH WILL INSURE AGAINST EROSION BEFORE GRASS IS ESTABLISHED AND WILL PROMOTE FASTER AND EARLIER ESTABLISHMENT. (THE EXISTENCE OF SATISFACTORY PERMANENT VEGETATION AT THE TIME OF THE PROJECT OR UNIT COMPLETION SHALL BE DEEMED AS COMPLIANCE WITH THE MULCHING REQUIREMENT.)

A. MULCH MATERIALS SHOULD BE UNROTTED SMALL GRAIN STRAW, HAY FREE OF SEEDS, OR SALT HAY TO BE APPLIED AT THE RATE OF 1-1/2 TONS PER ACRE (75 LBS. PER 1,000 SQ. FT.), EXCEPT THAT WHERE A CRIMPER IS USED INSTEAD OF A LIQUID MULCH-BINDER (TACKIFYING OR ADHESIVE AGENT), THE RATE OF APPLICATION MUST BE DOUBLE THE LOWER RATE. MULCH CHOPPER-BLOWERS MUST NOT GRIND THE MATERIAL.

B. SPREAD UNIFORMLY BY HAND OR MECHANICALLY SO THAT APPROXIMATELY 75% TO 95% OF THE SOIL SURFACE WILL BE COVERED. FOR UNIFORM DISTRIBUTION OF HAND-SPREAD MULCH, DIVIDE AREA INTO APPROXIMATELY 1,000 SQ. FT. SECTIONS AND DISTRIBUTE 70 TO 90 POUNDS WITHIN EACH SECTION.

C. MULCH ANCHORING SHOULD BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS, DEPENDING UPON THE SIZE OF THE AREA, STEEPNESS OF SLOPES, AND COSTS.

1. PEG AND TWINE - DRIVE 8 TO 10 INCH WOODEN PEGS TO WITHIN 2 TO 3 INCHES OF THE SOIL SURFACE EVERY 4 FEET IN ALL DIRECTIONS. STAKES MAY BE DRIVEN BEFORE OR AFTER APPLYING MULCH. SECURE MULCH TO SOIL SURFACE BY STRETCHING TWINE BETWEEN PEGS IN A CRISS-CROSS AND A SQUARE PATTERN. SECURE TWINE AROUND EACH PEG WITH TWO OR MORE ROUND TURNS.

2. MULCH NETTINGS - STAPLE PAPER, JUTE, COTTON, OR PLASTIC NETTINGS TO THE SOIL SURFACE. USE A DEGRADABLE NETTING IN AREAS TO BE MOWED.

3. CRIMPER (MULCH ANCHORING TOOL) - A TRACTOR-DRAWN IMPLEMENT, SOMEWHAT LIKE A DISCHARROW, ESPECIALLY DESIGNED TO PUSH OR CUT SOME OF THE BROADCAST LONG FIBER MULCH 3 TO 4 INCHES INTO THE SOIL SO AS TO ANCHOR IT AND LEAVE PART STANDING UPRIGHT. THIS TECHNIQUE IS LIMITED TO AREAS TRAVERSABLE BY A TRACTOR, WHICH MUST OPERATE ON THE CONTOUR OF SLOPES. STRAW MULCH RATE MUST BE 3 TONS PER ACRE. NO TACKIFYING OR ADHESIVE AGENT IS REQUIRED.

4. LIQUID MULCH-BINDERS - MAY BE USED TO ANCHOR SALT HAY, HAY, OR STRAW MULCHES.
A. APPLICATIONS SHOULD BE HEAVIER AT EDGES WHERE WIND CATCHES THE MULCH, IN VALLEYS, AND AT CRESTS OF BANKS. REMAINDER OF AREA SHOULD BE UNIFORM IN APPEARANCE.

B. USE ONE OF THE FOLLOWING:
1. SYNTHETIC OR ORGANIC BINDERS - BINDERS SUCH AS CURASOL, DCA-70, PETRO-SET, AND TERRA-TACK MAY BE USED AT RATES RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH MATERIALS.

NOTE: ALL NAMES GIVEN ABOVE ARE REGISTERED TRADE NAMES. THIS DOES NOT CONSTITUTE A RECOMMENDATION OF THESE PRODUCTS TO THE EXCLUSION OF OTHER PRODUCTS.

C. WOOD-FIBER OR PAPER-FIBER MULCH AT THE RATE OF 1,500 POUNDS PER ACRE MAY BE APPLIED BY A HYDROSEEDER. USE IS LIMITED TO FLATTER SLOPES AND DURING OPTIMUM SEEDING PERIODS IN SPRING AND FALL.

V. IRRIGATION (WHERE FEASIBLE)

IF SOIL MOISTURE IS DEFICIENT, AND MULCH IS NOT USED, SUPPLY NEW SEEDLINGS WITH ADEQUATE WATER (A MINIMUM OF 1/2 INCH TWICE A DAY UNTIL VEGETATION IS WELL ESTABLISHED). THIS IS ESPECIALLY TRUE WHEN SEEDLINGS ARE MADE IN ABNORMALLY DRY OR HOT WEATHER OR DROUGHTY SITES.

VI. TOPDRESSING

A. SPRING SEEDLINGS WILL REQUIRE AN APPLICATION OF FERTILIZER SUCH AS 10-10-10 OR EQUIVALENT AT 400 POUNDS PER ACRE OR 10 POUNDS PER 1,000 SQ. FT. BETWEEN SEPTEMBER 1 AND OCTOBER 15.

B. FALL SEEDINGS WILL REQUIRE THE ABOVE BETWEEN MARCH AND MAY 1.

C. MIXTURES DOMINATED BY WEEPING LOVEGRASS OR LEGUMES MAY NOT NEED TOPDRESSING.

D. BERMUDAGRASS SHOULD BE TOPDRESSED BEFORE AUGUST 15.

*IF SLOW RELEASE NITROGEN (300 POUNDS 30-0-0 PER ACRE OR EQUIVALENT) IS USED IN ADDITION TO SUGGESTED FERTILIZER, THIS FOLLOW-UP OF TOPDRESSING IS NOT MANDATORY.

NOTE: SOILS HAVING A pH OF 4 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM OF 12 INCHES OF SOIL HAVING A pH OF 5 OR MORE BEFORE SEEDBED PREPARATION. THE ADDED SOIL SHALL BE LIMED AS ABOVE.

NOTES:

THE TABLES 3.1-1 AND 3.2-1 WERE DIRECTLY TAKEN FROM SOIL EROSION & SEDIMENT CONTROL STANDARDS FOR NEW JERSEY

SOILS AND SEED MIXTURES

40% PERENNIAL RYE GRASS
30% CREEPING RED FESCUE
20% KENTUCKY BLUE GRASS
10% ALAIRE PERENNIAL RYE GRASS

TABLE 3.2-1

SOILS, SEED MIXTURES, AND DATES FOR PERMANENT SEEDINGS FOR SOIL STABILIZATION

SOILS & SITES	SEED MIXTURE 1/	MINIMUM SEEDING RATES 2/ (pounds) Per Acre	Per 1,000 Sq. Ft.	OPTIMUM SEEDING DATES Based on Plant Hardiness Zone 3/ ZONE 5	ZONE 6	ZONE 7
A. Well to Excessively Well Drained	Normal Seeding Depth is from 1/4-1/2 inch except A-3, A-4, A-7					
1. Unmowed areas, e.g. landfills, rights of way, wildlife areas	Weeping lovegrass Sericea lespedeza	2 20	0.1 0.5	--	--	3/1-8/1
2. Unmowed, coarse textured soils, wildlife areas; make good forage	Switchgrass	25	0.6	5/1-7/1	4/1-6/1	4/1-6/1
3. Unmowed areas	Weeping lovegrass 1/2-1", Crownvetch	3 12	0.1 0.3	--	--	3/1-8/1
4. Best for coarse textured soils; suppresses woody growth; unmowed areas	Weeping lovegrass 1/2-1", flatpea	3 30	0.1 0.7	--	--	3/1-8/1
5. Unmowed areas, e.g. road banks, gravel pits, etc.	Perennial ryegrass Crownvetch Spreading fescue	25 12 25	0.6 0.3 0.6	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10/15
6. Landfills, coarse textured soils; unmowed areas	Hard fescue/or Sheep fescue Perennial ryegrass	45 10	1.0 0.2	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10/15
7. Mowed areas, e.g. lawns, recreation areas	Bermudagrass Zoysiagrass	12 Bushel sprigs spaced at 2' - 3' centers		--	--	5/1-7/15
B. Moderately to Well Drained	Mixtures A-1 through A-7 and the following:					
1. Low maintenance areas, e.g. detention basins, landfills, dikes, diversions (sun to open shade)	Tall fescue Spreading fescue Kentucky bluegrass	30 30 30	0.7 0.7 0.7	3/15-5/15 8/1-9/1	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10/15
2. Unmowed areas (aesthetics not important)	Tall fescue Sericea lespedeza	25 20	0.6 0.4	3/15-6/1 --	3/1-5/15 --	2/15-5/1 8/15-10/15
3. Low maintenance areas, occasional mowing only	Tall fescue Birdsfoot trefoil	45 10	1.0 0.2	3/15-6/1	3/1-5/15	--
4. Mowed areas, e.g. recreation areas, lawns, etc. (sun and shade)	Spreading fescue Red fescue Kentucky bluegrass Perennial ryegrass	15 15 25 10	0.3 0.3 0.6 0.2	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10/15 (shade and cool sites only)
5. Mowed areas, e.g. lawns (sunny sites) (high maintenance, aesthetic areas)	Kentucky bluegrass (three cultivar blend) Hard fescue Perennial ryegrass	60 20 10	1.4 0.4 0.2	3/15-6/1	3/1-5/15	--
C. Poorly to Somewhat Poorly Drained	Mixtures B-1, B-3, B-4 and B-5 and the following:					
1. Mowed and unmowed sunny wet areas, e.g. ditch banks, waterways	Reed canarygrass Redtop Perennial ryegrass	20 4 20	0.4 0.1 0.4	3/15-6/1 8/1-9/15 (Be sure that Reed canarygrass seed is from new seed crop)	3/1-5/15 8/15-10/1	1/15-5/1 8/15-10/15

NOTES:

1/ Seeding mixtures and/or rates not listed above may be used if recommended by the local Soil Conservation District, Soil Conservation Service; recommendations of the Cooperative Extension Service may be used if approved by the Soil Conservation District. Legumes (flatpea, crownvetch, trefoil, lespedeza) should be mixed with proper inoculant prior to planting.

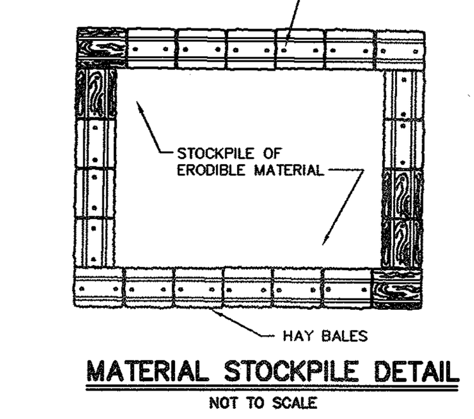
2/ Grass seed mixture checked by the chief of the Bureau of Seed Certification, New Jersey Department of Agriculture, Trenton, New Jersey, will assure the purchaser that the mixture obtained is the mixture ordered.

3/ Plant Hardiness Zone (see map, p. 3.2.6)

Zone 5 - Portions of Sussex and Warren Counties

Zone 6 - Portions of Bergen, Camden, Essex and Gloucester, all of Hunterdon, portions of Mercer and Middlesex, all of Morris and Passaic, portions of Somerset, Sussex, Union and Warren Counties

Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex, all of Monmouth, Ocean and Salem and portion of Union County



MATERIAL STOCKPILE DETAIL
NOT TO SCALE

TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION

Definition

Establishment of temporary vegetative cover on soils exposed for periods of two to 12 months.

Purpose

To temporarily stabilize the soil and reduce damage from wind and water erosion until permanent stabilization is accomplished.

Where Applicable

On exposed soils that have the potential for causing off-site environmental damage.

Methods and Materials

I. Site Preparation

A. Grade as needed and feasible to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, and mulch anchoring. All grading should be done in accordance with Standards for Land Grading, p. 4.11.

B. Install needed erosion control practices or facilities such as diversions, grade stabilization structures, channel stabilization measures, sediment basins, and waterways. See Standards 4.2 through 4.16.

II. Seedbed Preparation

A. Apply limestone and fertilizer according to soil test recommendations such as those offered by Rutgers University Soil Testing Laboratory. Soil sample mailers are available from the local Cooperative Extension Service office. If soil testing is not feasible on small or variable sites, or where timing is critical, fertilizer may be applied at the rate of 500 pounds per acre or 11 pounds per 1,000 square feet of 10-20-10 or equivalent. If seed is drilled over banded fertilizer, the rate of fertilizer is reduced 50 percent. Apply limestone (equivalent to 50 percent calcium plus magnesium oxides) as follows:

SOIL TEXTURE	TONS/ACRE	LBS./1,000 SQ. FT.
Clay, clay loam, and high organic soil	3	135
Sandy loam, loam, silt loam	2	90
Loamy sand, sand	1	45

Pulverized dolomitic limestone is preferred for most soils south of the New Brunswick-Trenton line.

B. Work lime and fertilizer into the soil as nearly as practical to a depth of 4 inches with a disc, springtooth harrow, or other suitable equipment. The final harrowing or discing operation should be on the general contour. Continue tillage until a reasonably uniform seedbed is prepared.

C. Inspect seedbed just before seeding. If traffic has left the soil compacted, the area must be retilled as above.

D. Soils high on sulfides or having a pH of 4 or less should be mulched only. See Standards for Stabilization with Mulch Only, p. 3.3.1.

III. Seeding

A. Select seed from recommendations in Table 3.1-1.

TABLE 3.1-1 TEMPORARY SEEDING RATES AND DATES

SPECIES	SEEDING RATES (pounds) Per Acre	Per 1,000 Sq. Ft.	OPTIMUM SEEDING DATE 1/ Based on Plant Hardiness Zone 3/ ZONE 5	ZONE 6	ZONE 7	OPTIMUM SEED DEPTH 2/ (Inches)
Annual ryegrass	40	1.0	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10/15	0.5
Perennial ryegrass	40	1.0	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10/15	0.5
Oats	85	2.0	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10/15	1.0
Barley	96	2.2	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10/15	1.0
Pearl millet	20	0.5	6/1-7/1	5/15-7/15	5/1-8/1	1.0
Sudangrass	30	0.7	6/1-7/1	5/15-7/15	5/1-8/1	1.0
Millet (German or (Hungarian)	30	0.7	6/1-7/1	5/15-7/15	5/1-8/1	1.0
Weeping lovegrass	5	0.2	6/1-7/1	5/15-7/15	5/1-8/1	0.25

1/ May be planted throughout summer if soil moisture is adequate or can be irrigated
2/ Twice the depth for sandy soils
3/ Plant Hardiness Zone (see map, p. 3.2.6)

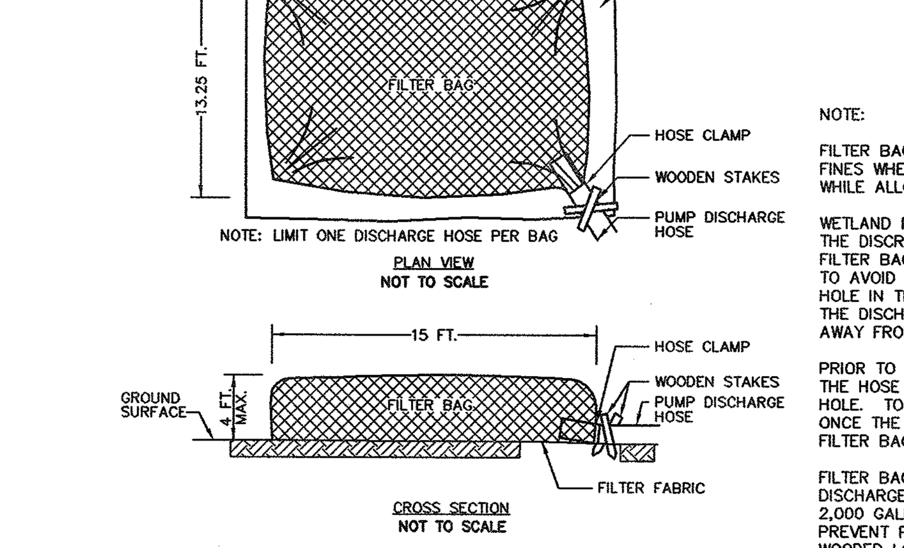
Zone 5 - Portions of Sussex and Warren Counties

Zone 6 - Portions of Bergen, Camden, Essex and Gloucester, all of Hunterdon, portions of Mercer and Middlesex, all of Morris and Passaic, portions of Somerset, Sussex, Union and Warren Counties

Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex, all of Monmouth, Ocean and Salem and portion of Union County

B. Apply seed uniformly by hand, cyclone (centrifugal) seeder, drop seeder, drill, cultipacker seeder, or hydroseeder. The latter may be justifiable for large, steep areas where conventional vehicles cannot travel. Mulch shall not be included in the tank with the seed. Except for drilled, hydroseeded or cultipacked seedings, seed shall be incorporated into the soil, to a depth of 1/4 to 1/2 inch, by raking or dragging. Depth of seed placement may be 1/4 inch deeper on coarse textured soil.

C. After seeding, firming the soil with a corrugated roller will assure good seed-to-soil contact, restore capillarity, and improve seedling emergence. This is the preferred method. When performed on the contour, sheet erosion will be minimized and water conservation on site will be maximized.



FILTER BAG DETAIL
FOR TRENCH DEWATERING OPERATIONS
NOT TO SCALE

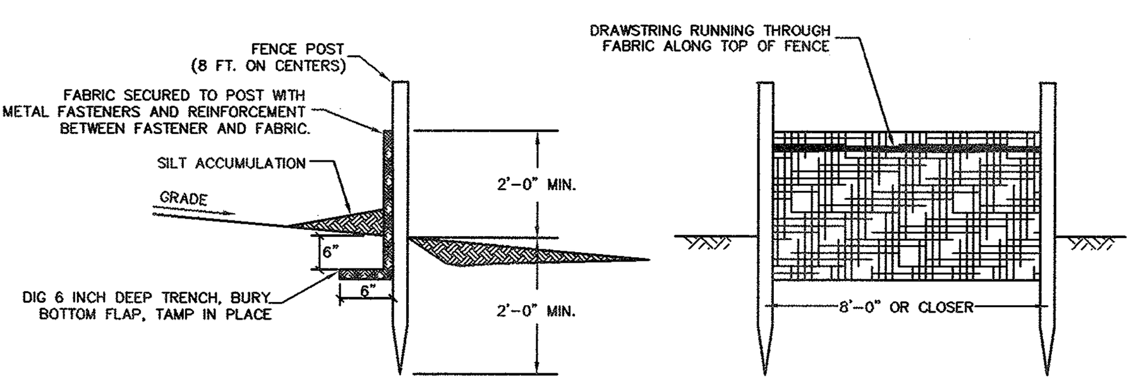
NOTE:

FILTER BAGS WILL BE USED AS AN EFFECTIVE FILTER MEDIUM TO CONTAIN SAND, SILT AND FINES WHEN TRENCH DEWATERING. THE WETLAND FILTER BAG CONTAINS THESE MATERIALS WHILE ALLOWING THE WATER TO FLOW THROUGH THE FABRIC.

WETLAND FILTER BAGS MAY REPLACE HAY BALE CORRALS DURING TRENCH DEWATERING, AT THE DISCRETION OF THE ENVIRONMENTAL INSPECTOR. TO INSURE, PROPER INSTALLATION, FILTER BAGS WILL BE PLACED ON RELATIVELY FLAT TERRAIN FREE OF BRUSH AND STUMPS TO AVOID RUPTURES AND PUNCTURES. PROPER INSTALLATION REQUIRES CUTTING A SMALL HOLE IN THE CORNER OF THE BAG, INSERTING THE PUMP DISCHARGE HOSE, AND THEN SECURING THE DISCHARGE HOSE TO THE BAG WITH A HOSE CLAMP. FILTER BAGS WILL BE PLACED AS FAR AWAY FROM FLOWING STREAMS AND WETLANDS AS POSSIBLE.

PRIOR TO REMOVING A BAG FROM THE HOSE, THE BAG WILL BE TIED OFF BELOW THE END OF THE HOSE ALLOWING THE BAG TO DRAIN. DRAINAGE WILL NOT BE ALLOWED THROUGH THE INLET HOLE. TO AVOID RUPTURE, THE BAGS WILL BE ATTENDED AND PUMPING RATES MONITORED. ONCE THE BAG IS INFLATED TO A HEIGHT OF 4 FEET, PUMPING WILL STOP TO AVOID RUPTURE. FILTER BAGS USED DURING CONSTRUCTION WILL BE BUNDLED AND REMOVED FOR PROPER DISPOSAL.

FILTER BAGS ARE CONSTRUCTED OF NON-WOVEN GEOTEXTILE FABRIC. A MAXIMUM OF ONE SIX INCH DISCHARGE HOSE WILL BE ALLOWED PER FILTER BAG. BAG CAPACITY WILL BE EXCEEDED BEYOND 2,000 GALLONS PER MINUTE. TYPICAL BAG DIMENSIONS ARE 15 FEET BY 13.25 FEET. TO HELP PREVENT PUNCTURES, GEOTEXTILE FABRIC WILL BE PLACED BENEATH THE FILTER BAG WHEN USED IN WOODED LOCATIONS. UNATTENDED FILTER BAGS WILL BE ENCIRCLED WITH A HAYBALE OR SILT FENCE CORRAL. HOSE CLAMPS WILL BE USED TO SECURE THE DISCHARGE HOSE, WIRE OR STRING WILL NOT BE USED.



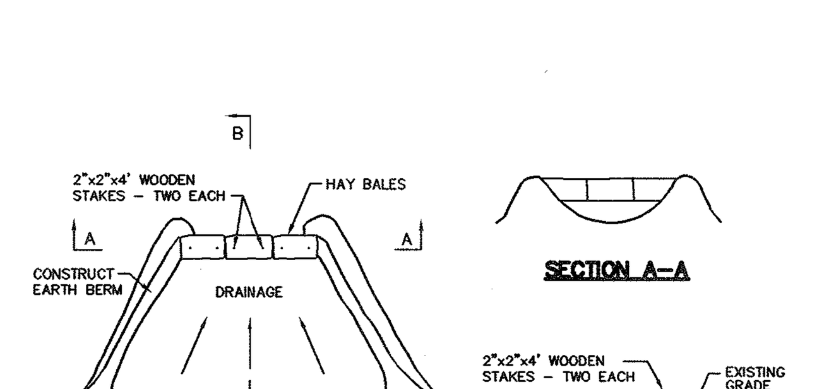
REQUIREMENTS FOR SILT FENCE:

1. FENCE POSTS SHALL BE SPACED 8 FEET CENTER-TO CENTER OR CLOSER. THEY SHALL EXTEND AT LEAST 2 FEET INTO THE GROUND AND EXTEND AT LEAST 2 FEET ABOVE GROUND. POSTS SHALL BE CONSTRUCTED OF HARDWOOD WITH A MINIMUM DIAMETER THICKNESS OF 1-1/2 INCHES.

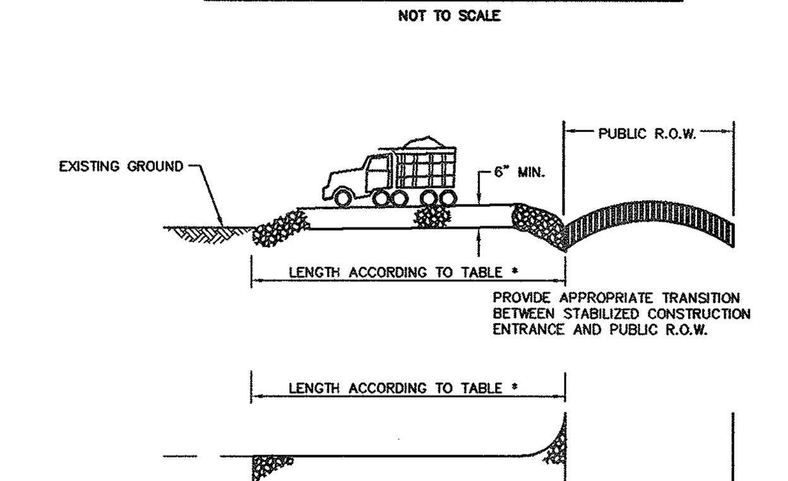
2. A METAL FENCE WITH 6 INCH OR SMALLER OPENINGS AND AT LEAST 2 FEET HIGH MAY BE UTILIZED, FASTENED TO THE FENCE POSTS, TO PROVIDE REINFORCEMENT AND SUPPORT TO THE GEOTEXTILE FABRIC WHERE SPACE FOR OTHER PRACTICES IS LIMITED AND HEAVY SEDIMENT LOADING IS EXPECTED.

3. A GEOTEXTILE FABRIC, RECOMMENDED FOR SUCH USE BY THE MANUFACTURER, SHALL BE BURIED AT LEAST 6 INCHES DEEP IN THE GROUND. THE FABRIC SHALL EXTEND AT LEAST 2 FEET ABOVE THE GROUND. THE FABRIC MUST BE SECURELY FASTENED TO THE POSTS USING A SYSTEM CONSISTING OF METAL FASTENERS (NAILS OR STAPLES) AND A HIGH STRENGTH REINFORCEMENT MATERIAL (NYLON WEBBING, GROMMETS, WASHERS, ETC.) PLACED BETWEEN THE FASTENER AND THE GEOTEXTILE FABRIC. THE FASTENING SYSTEM SHALL RESIST TEARING AWAY FROM THE POST. THE FABRIC SHALL INCORPORATE A DRAWSTRING IN THE TOP PORTION OF THE FENCE FOR ADDED STRENGTH.

SILT FENCE DETAIL
NOT TO SCALE



SEDIMENT TRAP DETAIL
FOR TRENCH DEWATERING OPERATIONS
NOT TO SCALE

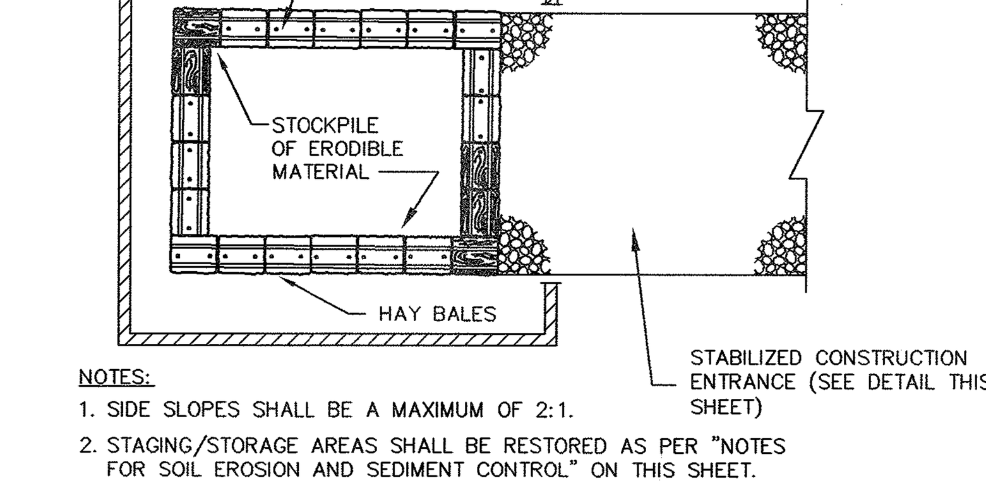


*NOTE: INDIVIDUAL LOT ACCESS POINTS MAY REQUIRE STABILIZATION. THICKNESS SHOWN IS FOR STONE CONSTRUCTION ENTRANCE ONLY (TYP.).

PERCENT SLOPE OF ROADWAY	LENGTH OF STONE REQUIRED COARSE GRAINED SOILS	FINE GRAINED SOILS
0 TO 2%	50 FT.	100 FT.
2 TO 5%	100 FT.	200 FT.
>5%	ENTIRE SURFACE STABILIZED WITH FABC BASE COURSE [1]	

1. AS PRESCRIBED BY LOCAL ORDINANCE OR OTHER GOVERNING AUTHORITY.

STABILIZED CONSTRUCTION ENTRANCE DETAIL
NOT TO SCALE



NOTES:
1. SIDE SLOPES SHALL BE A MAXIMUM OF 2:1.
2. STAGING/STORAGE AREAS SHALL BE RESTORED AS PER "NOTES FOR SOIL EROSION AND SEDIMENT CONTROL" ON THIS SHEET.
3. LIMIT OF DISTURBANCE SHALL NOT EXTEND BEYOND THE SILT FENCE.

STAGING/STORAGE AREAS DETAIL
NOT TO SCALE

STANDARDS FOR DUST CONTROL

DEFINITION - THE CONTROL OF DUST ON CONSTRUCTION SITES AND ROADS

PURPOSE - TO PREVENT BLOWING AND MOVEMENT OF DUST FROM EXPOSED SOIL SURFACES, REDUCE ON- AND OFF-SITE DAMAGE AND HEALTH HAZARDS, AND IMPROVE TRAFFIC SAFETY.

WHERE APPLICABLE - THIS PRACTICE IS APPLICABLE TO AREAS SUBJECT TO DUST BLOWING AND MOVEMENT WHERE ON- AND OFF-SITE DAMAGE IS LIKELY WITHOUT TREATMENT. CONSULT WITH LOCAL MUNICIPAL ORDINANCES ON ANY RESTRICTIONS.

PLANNING CRITERIA - THE FOLLOWING METHODS SHOULD BE CONSIDERED FOR CONTROLLING DUST:

MULCHES - SEE STANDARDS FOR STABILIZATION WITH MULCHES ONLY (P. 5-1)

VEGETATIVE COVER - SEE STANDARD FOR: TEMPORARY VEGETATIVE COVER (P. 7-1), PERMANENT VEGETATIVE COVER (P. 4-1), AND PERMANENT STABILIZATION WITH SOD (P. 6-1)

TILLAGE - TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. THIS IS A TEMPORARY EMERGENCY MEASURE WHICH SHOULD BE USED BEFORE SOIL BLOWING STARTS. BEGIN PLOWING ON WINDWARD SIDE OF SITE. CHISEL-TYPE PLOWS SPACED ABOUT 12 INCHES APART, AND SPRING-TOOTHED HARROWS ARE EXAMPLES OF EQUIPMENT WHICH MAY PRODUCE THE DESIRED EFFECT.

SPRINKLING - SITE IS SPRINKLED UNTIL THE SURFACE IS WET.

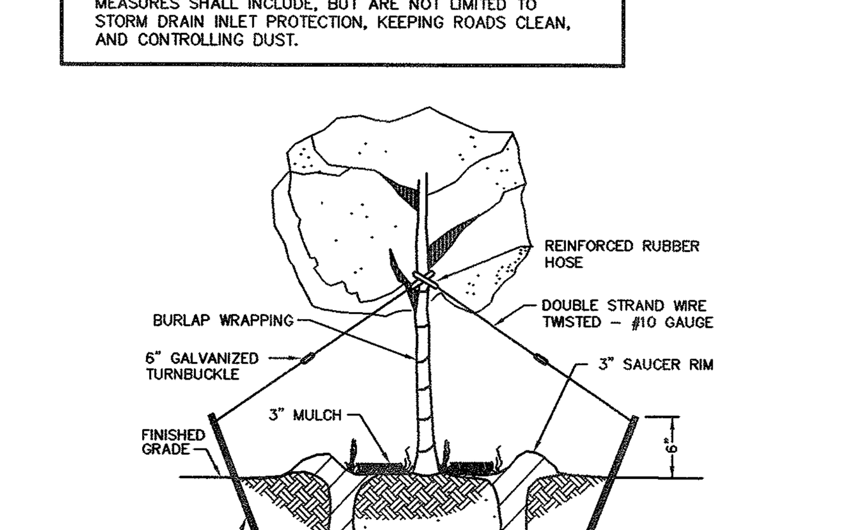
BARRIERS - SOLID BOARDS FENCES, SNOW FENCES, BURLAP FENCES, CRATE WALLS, BALES OF HAY, AND SIMILAR MATERIAL CAN BE USED TO CONTROL AIR CURRENTS AND SOIL BLOWING.

STONE - COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL.

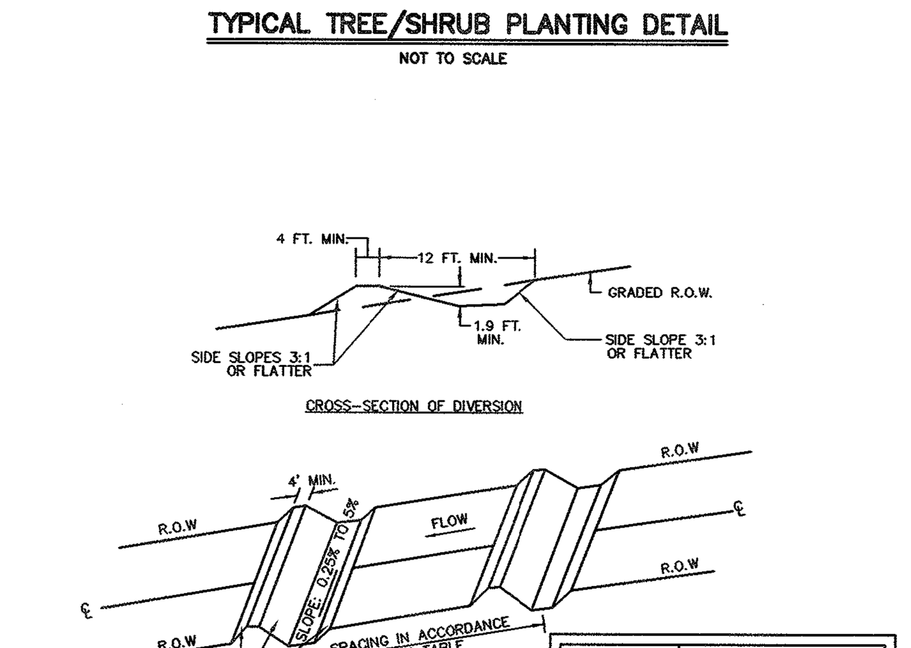
GENERAL NOTE:

IN ALL AREAS WHERE THE WORK IS OUTSIDE OF PAVED ROADS, THE CONTRACTOR SHALL INSTALL AND MAINTAIN APPROPRIATE SOIL EROSION CONTROL MEASURES IN ACCORDANCE WITH THE DETAILS ON THE DRAWINGS, REGARDLESS OF WHETHER OR NOT THE LOCATION OF SUCH MEASURES ARE SPECIFICALLY SHOWN ON THE PLANS. SUCH MEASURES SHALL INCLUDE, BUT ARE NOT LIMITED TO, SILT FENCES ALONG THE PERIMETER OF DISTURBED AREAS AND AROUND MATERIAL STOCKPILES, AND STONE CONSTRUCTION ENTRANCE PADS AT POINTS OF MAJOR INGRESS AND EGRESS FROM PAVED ROADS TO UNPAVED AREAS.

WHERE WORK IS IN PAVED ROADS, EROSION CONTROL MEASURES SHALL INCLUDE, BUT ARE NOT LIMITED TO STORM DRAIN INLET PROTECTION, KEEPING ROADS CLEAN, AND CONTROLLING DUST.



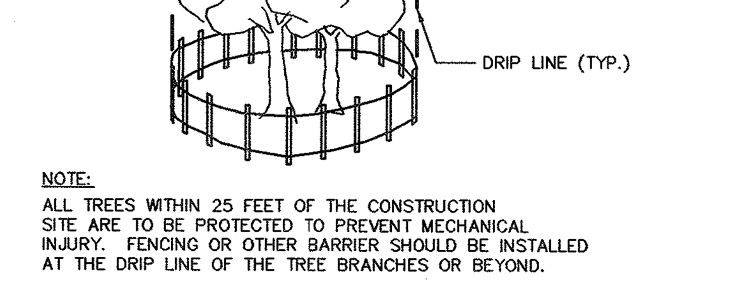
TYPICAL TREE/SHRUB PLANTING DETAIL
NOT TO SCALE



ROAD GRADE (PERCENT)	APPROXIMATE DISTANCE BETWEEN DIVERSIONS (FT.)
1	400
2	245
5	125
10	78
15	58
20	47
25	40
30	35

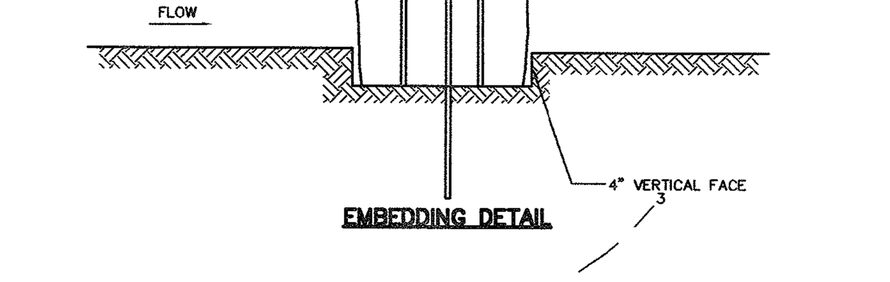
- THE CONTRACTOR SHALL INSTALL DIVERSIONS FOR ROADBED R.O.W. IN ACCORDANCE WITH THE SE&SC IN NJ, #15, JULY 1999.

DIVERSION FOR ROADBED RIGHT-OF-WAY
NOT TO SCALE

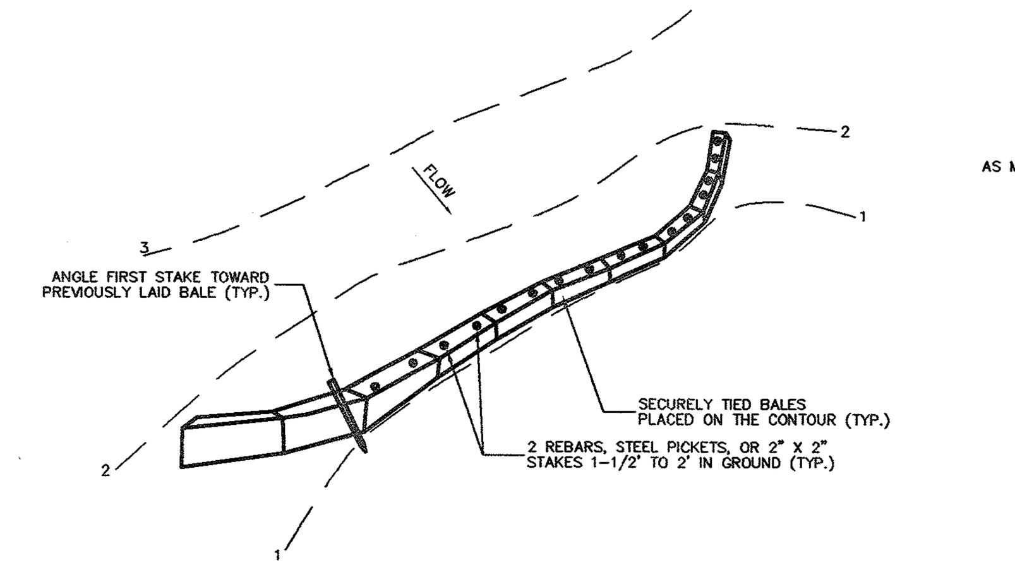


NOTE:
ALL TREES WITHIN 25 FEET OF THE CONSTRUCTION SITE ARE TO BE PROTECTED TO PREVENT MECHANICAL INJURY. FENCING OR OTHER BARRIER SHOULD BE INSTALLED AT THE DRIP LINE OF THE TREE BRANCHES OR BEYOND.

FENCING FOR TREE PROTECTION
NOT TO SCALE



EMBEDDING DETAIL



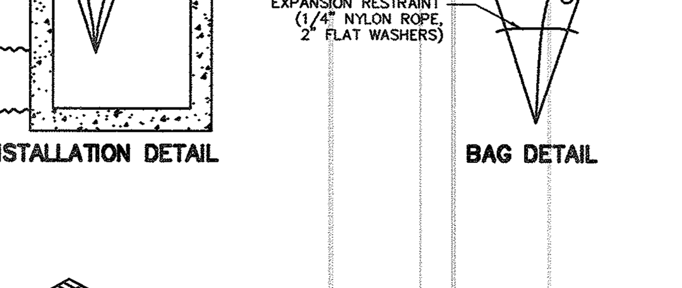
PLACEMENT AND ANCHORING DETAIL
BALE SEDIMENT BARRIERS
NOT TO SCALE

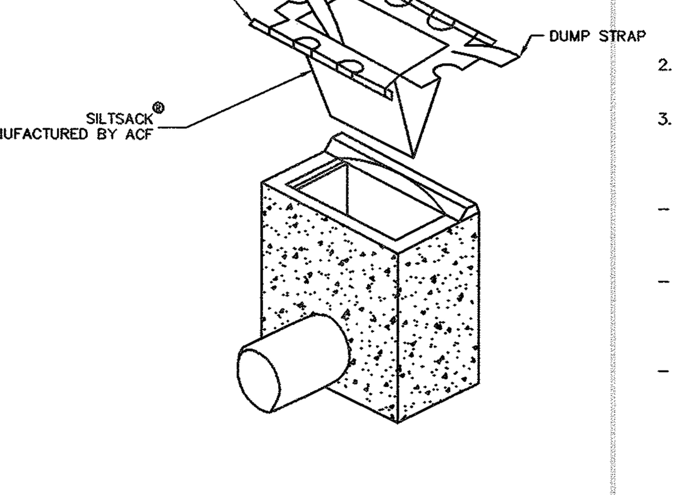
NOTES FOR SOIL EROSION AND SEDIMENT CONTROL:

1. ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES ON THIS PLAN WILL BE CONSTRUCTED IN ACCORDANCE WITH THE "NEW JERSEY STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL," (REVISED 1999) AND WILL BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCE OR IN THEIR PROPER SEQUENCE AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
2. ALL SOIL STOCKPILED FOR A PERIOD OF GREATER THAN 14 DAYS SHALL BE PROTECTED FROM WIND AND WATER EROSION.
3. DISTURBED AREAS SHALL BE MAINTAINED IN A ROUGH GRADED CONDITION AND TEMPORARILY SEEDED AND MULCHED UNTIL PROPER WEATHER CONDITIONS EXIST FOR THE ESTABLISHMENT OF PERMANENT VEGETATIVE COVER.
4. SEEDING DATES: THE FOLLOWING ARE RECOMMENDED SEEDING DATES FOR THE ESTABLISHMENT OF TEMPORARY OR PERMANENT VEGETATION.
   SPRING: (MARCH 15 - MAY 30)
   FALL: (AUGUST 15 - OCTOBER 15)
5. BERMS CONSTRUCTED OF FABRIC FENCE ARE TO REMAIN IN PLACE UNTIL ALL EARTH HAS BEEN REMOVED AND SPREAD, FINAL GRADING AND SEEDING HAS BEEN COMPLETED, AND VEGETATION HAS BEEN WELL ESTABLISHED. LOCATION OF BERMS ARE APPROXIMATE AND SHALL BE PLACED AROUND ANY STOCKPILED SOIL.
6. ALL STORM DRAINAGE INLETS SHALL BE PROTECTED WITH GRAVEL FILTERS OR FABRIC FILTER TO PREVENT ENTRY OF SEDIMENT CARRIED BY RUNOFF WATER UNTIL VEGETATION AND/OR PAVING IS ESTABLISHED.
7. MULCH MATERIALS SHALL BE UNROTTED SALT HAY OR SMALL GRAIN STRAW AT THE RATE OF 1.5 TONS PER ACRE, OR 70-90 POUNDS PER 1000 SQUARE FEET. MULCH SHALL NOT BE GROUND INTO SHORT PIECES AND IN NO CASE SHALL MORE THAN 5 DAYS ELAPSE BETWEEN SEEDING AND MULCHING.
8. ANY DAMAGE INCURRED BY EROSION SHALL BE RECTIFIED.
9. ALL SOIL EROSION AND SEDIMENT CONTROL DEVICES SHALL HAVE PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED.
10. ALL STORM DRAINAGE OUTLETS SHALL BE STABILIZED AS REQUIRED BEFORE THE DISCHARGE POINTS BECOME OPERATIONAL.
11. THE SOMERSET-UNION SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED IN WRITING 72 HOURS PRIOR TO ANY SOIL DISTURBANCE WITHIN SOMERSET COUNTY.
12. THE CONTRACTOR MUST OBTAIN A DISTRICT ISSUED "REPORT OF COMPLIANCE" PRIOR TO RECEIVING ANY CERTIFICATE OF OCCUPANCY. THE DISTRICT REQUIRES ONE WEEK'S NOTICE TO PERFORM A FINAL INSPECTION.
13. ALL PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES.
14. ALL EXPOSED SURFACES SHALL BE TREATED WITH 6" OF TOPSOIL PRIOR TO FINAL STABILIZATION.
15. ALL REVISIONS WITHIN SOMERSET COUNTY, AFTER CERTIFICATION HAS BEEN GRANTED, MUST BE FORWARDED TO THE SOMERSET-UNION SOIL CONSERVATION DISTRICT FOR REVIEW.
16. DISTURBED AREAS THAT WILL BE EXPOSED IN EXCESS OF 14 DAYS SHALL BE TEMPORARILY SEEDED AND/OR MULCHED UNTIL PROPER WEATHER CONDITIONS EXIST FOR ESTABLISHMENT OF A PERMANENT VEGETATIVE COVER.
17. A CRUSHED STONE VEHICLE WHEEL CLEANING BLANKET WILL BE INSTALLED AT THE SITE. SAID BLANKET (TRACKING PAD) WILL BE COMPOSED OF 2 1/2" CRUSHED STONE, WILL BE AT LEAST 50' LONG AND THE WIDTH OF THE EXIT ROADWAY, AND PROPERLY MAINTAINED.
18. MAXIMUM SIDE SLOPES OF ALL EXPOSED SURFACES SHALL NOT EXCEED 2:1 UNLESS OTHERWISE APPROVED BY THE DISTRICT.
19. PRIOR TO EXCAVATION, SEDIMENT BARRIERS SHALL BE CONSTRUCTED; TEMPORARY FENCING SHALL BE INSTALLED TO PROTECT THE TREES; AND A STONE PAD CONSTRUCTION ENTRANCE SHALL BE INSTALLED.
20. LOOSE STONE RIP-RAP SHALL BE PLACED OVER ALL DISTURBED PORTIONS OF THE STREAM BEDS AND BANKS IMMEDIATELY FOLLOWING BACKFILL. NATIVE EXCAVATED SOIL SHALL BE USED TO FILL VOIDS IN THE RIP-RAP.
21. TOPSOIL AND SEED SHALL BE PLACED IN ALL NONPAVED, NON-WETLAND AREAS OTHER THAN AREAS RECEIVING RIP-RAP.
22. SEDIMENT BARRIERS SHALL BE MAINTAINED UNTIL PERMANENT VEGETATIVE GROWTH IS ESTABLISHED. SNOW FENCING AND STONE PADS SHALL BE REMOVED IMMEDIATELY FOLLOWING CONSTRUCTION.
23. EXCESS EXCAVATED MATERIAL SHALL BE DISPOSED OF AT OFF-SITE UPLAND AREAS.
24. SEDIMENT BARRIERS WHICH CROSS THE PIPE TRENCH SHALL BE REMOVED ONLY AS LONG AS NECESSARY TO INSTALL THE PIPE, THEN REPLACED IMMEDIATELY FOLLOWING BACKFILL.
25. BETWEEN OCTOBER 15 AND MARCH 15, OR WHEN DISTURBED AREAS ARE SCHEDULED FOR IMMEDIATE LANDSCAPING, APPLYING THE MULCH AS IN NOTE 7 WILL BE ADEQUATE.
26. ALL DEWATERING OPERATIONS MUST DISCHARGE DIRECTLY INTO AN APPROVED SEDIMENT BASIN WHICH IS TO BE APPROVED BY THE APPROPRIATE DISTRICT.
27. ALL TREES NOT TO BE REMOVED SHALL BE PROTECTED.
28. THE SOMERSET-UNION SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED PRIOR TO REMOVAL OF EXCESS MATERIAL AND THE LOCATION OF DISPOSAL. IF NECESSARY, A SOIL EROSION AND SEDIMENT CONTROL PLAN SHALL BE PREPARED AND SUBMITTED FOR THE DISPOSAL SITE.
29. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO ANY GRADING OPERATIONS OR CONSTRUCTION OF PROPOSED FACILITIES AND SHALL BE MAINTAINED UNTIL CONSTRUCTION IS COMPLETE AND THE CONSTRUCTION AREA IS STABILIZED. AFTER RESTORATION IS COMPLETE, TEMPORARY CONTROL MEASURES SHALL BE REMOVED AND DISPOSED OF PROPERLY.
30. DISTURBED AREAS THAT WILL BE EXPOSED IN EXCESS OF 14 DAYS SHALL BE TEMPORARILY SEEDED AND/OR MULCHED UNTIL PROPER WEATHER CONDITIONS EXIST FOR ESTABLISHMENT OF A PERMANENT VEGETATIVE COVER EXCEPT IN AREAS WHERE FINAL RESTORATION IS EXPECTED TO BE COMPLETED WITHIN SEVEN DAYS AFTER THE COMPLETION OF CONSTRUCTION, IN WHICH CASE NO TEMPORARY PROTECTIVE MEASURE WILL BE REQUIRED. IF FINAL RESTORATION IS EXPECTED TO BEGIN MORE THAN SEVEN DAYS AND COMPLETED MORE THAN 30 DAYS AFTER THE START OF CONSTRUCTION, SEEDING SHALL BE REQUIRED FOR TEMPORARY PROTECTION, EXCEPT WHERE SEASONAL CONDITIONS ARE NOT SUITABLE FOR GROWING VEGETATION. IN THIS CASE, MULCH MAY BE APPLIED UNTIL CONDITIONS ARE SUITABLE FOR ESTABLISHING VEGETATIVE COVER OR UNTIL FINAL RESTORATION IS IMPLEMENTED.
31. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH REQUIREMENTS OF N.J.A.C. 7:22-10(c).

SEQUENCE OF CONSTRUCTION - PAVED AREAS	APPROX. DURATION OF ACTIVITY
1. ESTABLISH STAGING AND STORAGE AREAS; INSTALL APPROPRIATE EROSION CONTROL. NOTIFY SOMERSET-UNION SCD OF STAGING AND STORAGE AREA LOCATIONS	1 DAY
2. INSTALL EROSION CONTROL AS REQUIRED ALONG PIPE ALIGNMENT.	1 DAY
3. EXCAVATE, INSTALL PIPE, BACKFILL.	30 DAYS±
4. PLACE TEMPORARY PAVEMENT AT THE END OF EACH DAY; IF CONDITIONS DO NOT PERMIT PAVING, PLACE CLEAN STONE OVER BACKFILLED TRENCHES.	
5. REMOVE EROSION CONTROL MEASURES AFTER TEMPORARY PAVEMENT IS COMPLETE.	1 DAY
6. PLACE PERMANENT PAVEMENT AT TIMES DESIGNATED IN THE SPECIFICATIONS.	3 DAYS
7. RESTORE STAGING AND STORAGE AREAS.	3 DAYS

SEQUENCE OF CONSTRUCTION - OFF-ROAD AREAS	APPROX. DURATION OF ACTIVITY
1. PRIOR TO ANY LAND DISTURBANCE, THE CONTRACTOR SHALL INSTALL SNOW FENCING AND SEDIMENT BARRIERS AS SHOWN ON THE DRAWINGS.	2 DAYS
2. TOPSOIL, IF PRESENT, SHALL BE SCRAPED AWAY AND STOCKPILED.	1 DAY
3. EXCAVATIONS FOR AND INSTALLATION OF THE PIPELINE AND FLOW CONTROL CHAMBERS SHALL TAKE PLACE WITHOUT INTERRUPTION.	50 DAYS±
4. BACKFILLING SHALL IMMEDIATELY FOLLOW PIPELINE INSTALLATION AND AFTER 7 DAYS OF CONCRETE CURING FOR EACH FLOW CONTROL CHAMBER.	14 DAYS±
5. REMOVAL OF SNOW FENCING AND SEDIMENT BARRIERS SHALL NOT TAKE PLACE UNTIL ALL SURFACE RESTORATION IS COMPLETE AND A VEGETATIVE GROWTH HAS BEEN SUFFICIENTLY ESTABLISHED.	





DESIGN CRITERIA OF STORM SEWER INLET PROTECTION:

1. MUST SLOW THE STORM WATER, PROVIDE THE COARSE SEDIMENT PARTICLES A CHANCE TO SETTLE, AND PROVIDE AN AREA TO RETAIN THE PARTICLES THAT HAVE SETTLED.
2. IN ALL CASES, INLET PROTECTION SHOULD NOT COMPLETELY CLOSE OFF THE INLET.
3. THE PROTECTION DEVICE WILL BE DESIGNED TO CAPTURE OR FILTER RUNOFF FROM THE 1 YEAR, 24 HOUR STORM EVENT AND SHALL SAFELY CONVEY HIGHER FLOWS DIRECTLY INTO THE STORM SEWER SYSTEM.

- OTHER METHODS THAT ACCOMPLISH THE PURPOSE OF STORM SEWER INLET PROTECTION MAY BE USED IF APPROVED BY THE SOIL CONSERVATION DISTRICT.
- INSPECTIONS SHALL BE FREQUENT. MAINTENANCE, REPAIR, AND REPLACEMENT SHALL BE MADE PROMPTLY, AS NEEDED. THE BARRIER SHALL BE REMOVED WHEN THE AREA DRAINING TOWARD THE INLET HAS BEEN STABILIZED.
- THE CONTRACTOR SHALL INSTALL STORM SEWER INLET PROTECTION IN ACCORDANCE WITH THE SE&SC IN NJ, #30, JULY 1999.

INLET SEDIMENT CONTROL DEVICE DETAIL
NOT TO SCALE

Date	Revision
3/12/18	REVISED AS PER SOMERSET-UNION SCD
2/2/18	REVISED AS PER CRANFORD TWP.

JOHN K. RUSCHKE
PROFESSIONAL ENGINEER - N.J. LIC. NO. 37148

Designed	Drawn	Checked	Approved	Date
KKN	SJA	DJH	JKR	1/25/16

MOTT MACDONALD
Certificate No. 24GA28016600
412 Mount Kemble Avenue
Suite G22
Morristown, New Jersey 07960
Tel: 908.730.6000 Fax: 973.267.2890

TOWNSHIP OF CRANFORD
UNION COUNTY, NEW JERSEY

NORTHEAST QUADRANT
STORMWATER MANAGEMENT PROJECT - CONTRACT 2B
RIVERSIDE DRIVE NORTH AND SOUTH GRAVITY STORM
SEWER INTERCONNECTIONS

SOIL EROSION/SEDIMENT CONTROL PLAN

File CRANFORD RIVERSIDE DR	
Book	Page
Job 363145	No. SE-1
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Drawing No.

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