SEE SHEET C6.05

WALLBROOK DRIVE
DESIGNED BY OTHERS
(60' PUBLIC R/W)

OFFSITE IMPROVEMENTS BY OTHERS (UNDER SEPARATE COVER)

EROSION CONTROL BLANKET

TEMPORARY INLET PROTECTION (TYP.)

EXISTING 20' SANITARY SEWER EASEMENT DB 10071, PG 2179 BM 2003 PG 647

50' NEUSE RIPARIAN BUFFER (MEASURED 50' FROM TOP OF BANK, EACH SIDE)

20' TYPE 'B' BUFFER

SILT FENCE (TYP.)

SILT FENCE OUTLET AT ALL LOW POINTS (TYP.)

SB-B (TO BE CONVERTED INTO PERMANENT SCM-B)

VELOCITY DISSIPATOR
NCDOT CLASS 'B' RIPRAP
18'L (MIN) X 9'W X 22" THICK

MATCH LINE 2-2, SEE INSET "B" THIS SHEET

MATCH LINE 2-2, SEE THIS SHEET

EXISTING RIPRAP

AERIAL SEWER CROSSING PER CITY OF RALEIGH DETAILS (SEE SHEET C8.06)

SS OUTFALL "A"

EX. SS

30' CITY OF RALEIGH SANITARY SEWER EASEMENT

LIMITS OF DISTURBANCE/TREE PROTECTION FENCE (TYP.)

INSET "B"
SCALE: 1" = 40'

NC GRID (NAD83)

C6.05 AREA "A"

C6.06 AREA "B"

INDEX MAP
NTS

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

FINAL DRAWING - RELEASED FOR CONSTRUCTION

EROSION CONTROL LEGEND

- SILT FENCE OUTLET
- INLET PROTECTION
- INLET PROTECTION FOR EXISTING STRUCTURES
- TEMPORARY SLOPE DRAIN
- FILTER BERM
- CHECK DAM
- SF — SF — SF — SILT FENCE
- TP — TP — TP — TREE PROTECTION FENCE
- LD — LD — LIMITS OF DISTURBANCE
- WOODED AREA
- DIVERSION DITCH
- CONSTRUCTION ENTRANCE/EXIT

EASEMENT LEGEND

- (PRDE) PRIVATE STORM DRAINAGE EASEMENT
- (DE) PUBLIC STORM DRAINAGE EASEMENT
- (UE) UTILITY EASEMENT

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28480-1709

WALLBROOK
CONSTRUCTION DRAWINGS
ROLESVILLE, NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 22630 ENGINEER WILLIAM T. O'DANIEL

W.T. O'Daniel
William T O'Daniel
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2023.03.31 13:15:59 -04'00'

REVISIONS

NO.	DATE

PLAN INFORMATION

PROJECT NO.	CPR-19100
FILENAME	CPR19100-CD-EC2
CHECKED BY	WTO
DRAWN BY	JMS
SCALE	1"=40'
DATE	03. 31. 2023

SHEET

EROSION CONTROL PLAN - STAGE 2 - AREA "B"

C6.06

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EXISTING CRESSTAR DRIVE (50' PUBLIC R/W)

EXISTING WALL CREEK DRIVE (60' PUBLIC R/W)

EXISTING GREEN TURRET DRIVE (50' PUBLIC R/W)

ANTONIO G & SHELIA B CATTARUZZA DB 8149 PG 422

CHARLES & TERESA CULBERTSON DB 17393 PG 896

JOHN DANIEL III & SABRINA MICHELE BONO DB 13369 PG 2170

RONALD G & LAURA A PATTERSON DB 10087 PG 2409

MICHAEL A & JENNIFER H HADDER DB 16143 PG 2477

VALARIE PASIECKI-REEVES KELLY PASIECKI-REEVES DB 18035 PG 2129

JOSEPH L III & SARAH E KEELEY DB 10496 PG 1314

PHILIP B & ELIZABETH J MCENANEY DB 16674 PG 2208

KATHRYN G & DONALD P MCFARLAND DB 16914 PG 210

JAMES A & PHYLLIS A WOODARD DB 9813 PG 1290

SEE SHEET C5.07 FOR SS OUTFALL "A" EROSION CONTROL MEASURES

EX. SHED

EX. TRANSFORMERS (2)
EX. CATV RISER
EX. TEL PED #37EER5-6
EX. LIGHT POLE
TO REMAIN

EX. SHED

SILT FENCE (TYP.)

50' NEUSE RIPARIAN BUFFER (MEASURED 50' FROM TOP OF BANK, EACH SIDE)

50' NEUSE RIPARIAN BUFFER (MEASURED 50' FROM TOP OF BANK, EACH SIDE)

LIMITS OF DISTURBANCE/TREE PROTECTION FENCE (TYP.)

RETAINING WALL (DESIGN BY OTHERS)

STORMWATER CONTROL MEASURE "B" (WET POND)

WALLSTONE WAY (50' PUBLIC R/W)

STORMWATER CONTROL MEASURE "A" (WET POND)

FUTURE COMMERCIAL
(REFERENCE PR 21-04 WALLBROOK PRELIMINARY PLAT AND MAIN STREET PROJECT(NCDOT U-6241))

LETTIE LN (50' PUBLIC R/W)

ZIGGY LN (20' ACCESS EASEMENT)

LETTIE LN (50' PUBLIC R/W)

US-401 BUSINESS DRIVEWAY PERMIT NUMBER 0051-092-22-00049

WALL CREEK DRIVE (60' PUBLIC R/W)

FUTURE COMMERCIAL
(REFERENCE PR 21-04 WALLBROOK PRELIMINARY PLAT AND MAIN STREET PROJECT(NCDOT U-6241))

CHIMNEY DR (50' PUBLIC R/W)

DEEP OAK DR (20' ACCESS EASEMENT)

ROLES WAY (20' ACCESS EASEMENT)

OFFSITE IMPROVEMENTS DESIGNED BY OTHERS UNDER SEPARATE COVER

WALLBROOK LANDCO, LLC DB 018103 PG 01563

EX. WELL TO BE REMOVED BY OTHERS

EX. STONE CHIMNEY TO BE RELOCATED/REMOVED BY OTHERS

WALLBROOK DRIVE DESIGNED BY OTHERS (VARIABLE WIDTH PUBLIC R/W)

LIMITS OF DISTURBANCE (TYP.)

DEEP OAK DR (20' ACCESS EASEMENT)

RANDY DR (20' ACCESS EASEMENT)

WALLSTONE WAY (50' PUBLIC R/W)

LIMITS OF DISTURBANCE/TREE PROTECTION FENCE (TYP.)

50' NEUSE RIPARIAN BUFFER (MEASURED 50' FROM TOP OF BANK, EACH SIDE)

RETAINING WALL (DESIGN BY OTHERS)

WALLBROOK LANDCO LLC DB 17801 PG 1550

WALLBROOK DRIVE DESIGNED BY OTHERS (60' PUBLIC R/W)

OFFSITE IMPROVEMENTS DESIGNED BY OTHERS UNDER SEPARATE COVER

EXISTING S. MAIN STREET (VARIABLE WIDTH PUBLIC R/W)

CARLTON GROUP OF NC LLC DB 11427 PG 882

EXISTING 20' SANITARY SEWER EASEMENT DB 10071 PG 2179 BM 2003 PG 647

50' NEUSE RIPARIAN BUFFER (MEASURED 50' FROM TOP OF BANK, EACH SIDE)

EXISTING VIRGINIA WATER DRIVE (50' PUBLIC R/W)

WALLBROOK LANDCO, LLC DB 018103 PG 01563

EROSION CONTROL LEGEND

- SILT FENCE OUTLET
- INLET PROTECTION
- INLET PROTECTION FOR EXISTING STRUCTURES
- TEMPORARY SLOPE DRAIN
- FILTER BERM
- CHECK DAM
- SF — SF — SF — SILT FENCE
- TP — TP — TP — TREE PROTECTION FENCE
- LD — LD — LIMITS OF DISTURBANCE
- WOODED AREA
- DIVERSION DITCH
- CONSTRUCTION ENTRANCE/EXIT

INDEX MAP
NTS
C6.08 AREA "A"
C6.09 AREA "B"

DISTURBED AREA = 18.5 AC.

GRAPHIC SCALE
0 30 60 120
1 inch = 60 ft.

FINAL DRAWING - RELEASED FOR CONSTRUCTION

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WALLBROOK
CONSTRUCTION DRAWINGS
ROLESVILLE, NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 22630 ENGINEER WILLIAM T O'DANIEL

William T O'Daniel
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2023.03.31 13:16:38 -04'00'

REVISIONS

NO. DATE

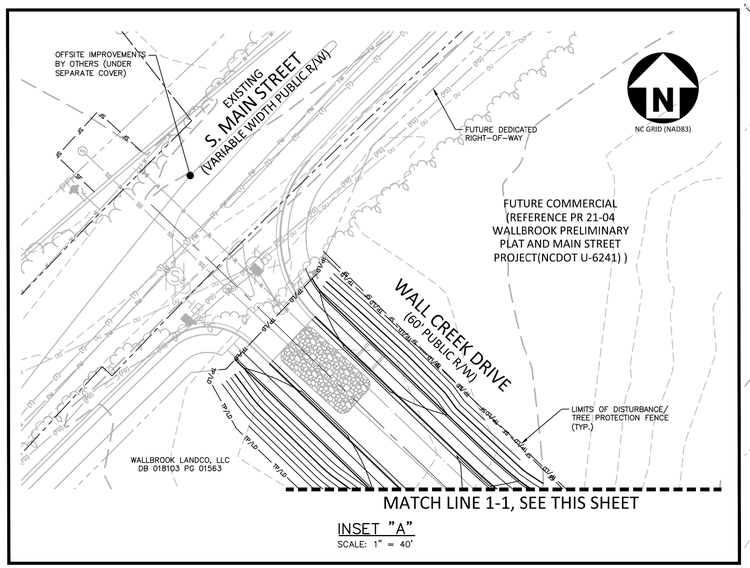
PLAN INFORMATION

PROJECT NO.	CPR-19100
FILENAME	CPR19100-CD-OAEC3
CHECKED BY	WTO
DRAWN BY	JMS
SCALE	1"=60'
DATE	03. 31. 2023

SHEET

OVERALL EROSION CONTROL PLAN - STAGE 3

C6.07



INSET "A"
SCALE: 1" = 40'

MATCH LINE 1-1, SEE INSET "A" THIS SHEET

WALL CREEK DRIVE (60' PUBLIC R/W)

EXISTING WALL CREEK DRIVE (60' PUBLIC R/W)

LETTIE LN (50' PUBLIC R/W)

CHIMNEY DR (50' PUBLIC R/W)

WALLBROOK DRIVE (DESIGNED BY OTHERS) (60' PUBLIC R/W)

ROLES WAY (70' ACCESS EASEMENT)

DEEP OAK DR (70' ACCESS EASEMENT)

FUTURE COMMERCIAL (REFERENCE PR 21-04 WALLBROOK PRELIMINARY PLAT AND MAIN STREET PROJECT(NCDOT U-6241))

OFFSITE IMPROVEMENTS BY OTHERS (UNDER SEPARATE COVER)

WALLBROOK LANDCO, LLC DB 018103 PG 01563

CHARLES & TERESA CULBERTSON DB 17393 PG 896

ANTONIO G & SHEUA B CATTARUZZA DB 8149 PG 422

JOHN DANIEL III & SABRINA MICHELE BONO DB 13369 PG 2170

RONALD G & LAURA A PATTERSON DB 10087 PG 2409

MICHAEL A & JENNIFER H HADDER DB 16143 PG 2477

EROSION CONTROL BLANKET (FOR PERMANENT SLOPES STABILIZATION)

SILT FENCE (TYP.)

LIMITS OF DISTURBANCE/ TREE PROTECTION FENCE (TYP.)

5'x5' CONCRETE BOX CULVERT (83.5 LF) INV IN: 379.50' INV OUT: 374.00'

30'Lx17'Wx18" THK CLASS B RIPRAP

VARIABLE WIDTH RETAINING WALL EASEMENT

VARIABLE WIDTH

50' NEUSE RIPARIAN BUFFER (MEASURED 50' FROM TOP OF BANK, EACH SIDE)

RETAINING WALL (DESIGN BY OTHERS)

20' TYPE 'B' BUFFER

LIMITS OF DISTURBANCE (TYP.)

IMPERVIOUS LIMIT/LOT HAS BEEN ADDED TO ALL LOTS

IMPERVIOUS LIMIT/LOT = 1,750 SF

IMPERVIOUS LIMIT/LOT = 1,765 SF

IMPERVIOUS LIMIT/LOT = 1,750 SF

IMPERVIOUS LIMIT/LOT = 1,785 SF

IMPERVIOUS LIMIT/LOT = 1,730 SF

IMPERVIOUS LIMIT/LOT = 1,520 SF

IMPERVIOUS LIMIT/LOT = 1,505 SF

IMPERVIOUS LIMIT/LOT = 1,490 SF

IMPERVIOUS LIMIT/LOT = 1,555 SF

IMPERVIOUS LIMIT/LOT = 1,540 SF

IMPERVIOUS LIMIT/LOT = 1,510 SF

IMPERVIOUS LIMIT/LOT = 1,500 SF

IMPERVIOUS LIMIT/LOT = 1,480 SF

IMPERVIOUS LIMIT/LOT = 1,470 SF

IMPERVIOUS LIMIT/LOT = 1,485 SF

CB-301, CB-302, CB-303, CB-304, CB-305, CB-306, CB-307, CB-308, CB-309, CB-310, CB-311, CB-312, CB-313, CB-314, CB-315, CB-316, CB-317, CB-318, CB-319, CB-134, CB-135, CB-157, DI-306, YI-401, YI-402, YI-403, YI-404, EW-300, OEP-400, CB-111, CB-113

VELOCITY DISSIPATOR NCDOT CLASS 'A' RIPRAP 25'L X 5'W X 12" THICK

VELOCITY DISSIPATOR NCDOT CLASS 'B' RIPRAP 15'L X 8.5'W X 18" THICK

VELOCITY DISSIPATOR NCDOT CLASS 'I' RIPRAP 24'L (MIN) X 9'W X 22" THICK

VARIABLE WIDTH RETAINING WALL EASEMENT

STORMWATER CONTROL MEASURE "A" (WET POND) (SEE "C9" SHEETS)

STORMWATER CONTROL MEASURE ACCESS AND MAINTENANCE EASEMENT

30' CITY OF RALEIGH SANITARY SEWER EASEMENT

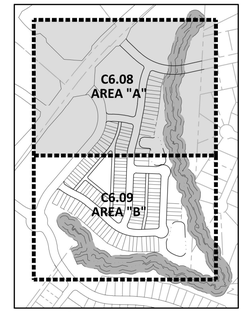
SEE SHEET C6.09

EROSION CONTROL LEGEND

- SILT FENCE OUTLET
- INLET PROTECTION
- INLET PROTECTION FOR EXISTING STRUCTURES
- TEMPORARY SLOPE DRAIN
- FILTER BERM
- CHECK DAM
- SILT FENCE (SF)
- TREE PROTECTION FENCE (TP)
- LIMITS OF DISTURBANCE (LD)
- WOODED AREA
- DIVERSION DITCH
- CONSTRUCTION ENTRANCE/EXIT
- EROSION CONTROL BLANKET

EASEMENT LEGEND

- (PRDE) PRIVATE STORM DRAINAGE EASEMENT
- (DE) PUBLIC STORM DRAINAGE EASEMENT
- (UE) UTILITY EASEMENT



INDEX MAP
NTS

NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

FINAL DRAWING - RELEASED FOR CONSTRUCTION

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William T O'Daniel
cn=William T O'Daniel, c=US, o=North Carolina, email=rodaniel@mcadamsco.com
2023.03.31 13:17:01 -04'00'

REVISIONS

NO. DATE

PLAN INFORMATION

PROJECT NO.	CPR-19100
FILENAME	CPR19100-CD-EC3
CHECKED BY	WTO
DRAWN BY	JMS
SCALE	1"=40'
DATE	03. 31. 2023

SHEET

EROSION CONTROL PLAN - STAGE 3 - AREA "A"

C6.08

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SEE SHEET C6.08

SEE SHEET C6.08 FOR PERMANENT EROSION CONTROL MEASURES INFORMATION

WALLBROOK DRIVE
DESIGNED BY OTHERS
(60' PUBLIC R/W)

WALLSTONE WAY
(50' PUBLIC R/W)

DEER OAK DR.
(20' ACCESS EASEMENT)

RANDY DR.
(20' ACCESS EASEMENT)

ROLESWAY
(20' ACCESS EASEMENT)

JETTIE LN
(50' PUBLIC R/W)

ZIGGY LN
(20' ACCESS EASEMENT)

OFFSITE IMPROVEMENTS BY OTHERS (UNDER SEPARATE COVER)

30' CITY OF RALEIGH SANITARY SEWER EASEMENT

RETAINING WALL (DESIGN BY OTHERS)

VARIABLE WIDTH RETAINING WALL EASEMENT

50' NEUSE RIPARIAN BUFFER (MEASURED 50' FROM TOP OF BANK, EACH SIDE)

EXISTING 20' SANITARY SEWER EASEMENT DB 10071, PG 2179 BM 2003 PG 647

20' TYPE 'B' BUFFER

SILT FENCE (TYP.)

SILT FENCE OUTLET AT ALL LOW POINTS (TYP.)

TEMPORARY INLET PROTECTION (TYP.)

VELOCITY DISSIPATOR NCDOT CLASS 'A' RIPRAP 5'L X 5'W X 12" THICK

VELOCITY DISSIPATOR NCDOT CLASS 'B' RIPRAP 15'L X 8.5'W X 18" THICK

STORMWATER CONTROL MEASURE "B" (WET POND) (SEE "C9" SHEETS)

30' TOWN OF ROLESVILLE SCM ACCESS EASEMENT AND CITY OF RALEIGH SANITARY SEWER EASEMENT

STORMWATER CONTROL MEASURE ACCESS AND MAINTENANCE EASEMENT

VELOCITY DISSIPATOR NCDOT CLASS 'B' RIPRAP 18'L (MIN) X 9'W X 22" THICK

MATCH LINE 2-2, SEE INSET "B" THIS SHEET

MATCH LINE 2-2, SEE THIS SHEET

AERIAL SEWER CROSSING PER CITY OF RALEIGH DETAILS (SEE SHEET C8.06)

SS OUTFALL "A"

EX. SS

INSET "B"
SCALE: 1" = 40'

NC GRID (NADB3)

C6.08 AREA "A"

C6.09 AREA "B"

INDEX MAP
NTS

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

EROSION CONTROL LEGEND

- SILT FENCE OUTLET
- INLET PROTECTION
- INLET PROTECTION FOR EXISTING STRUCTURES
- TEMPORARY SLOPE DRAIN
- FILTER BERM
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William T O'Daniel
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2023.03.31 13:17:20 -04'00'

REVISIONS

NO.	DATE

PLAN INFORMATION

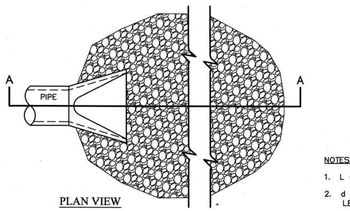
PROJECT NO.	CPR-19100
FILENAME	CPR19100-CD-EC3
CHECKED BY	WTO
DRAWN BY	JMS
SCALE	1"=40'
DATE	03. 31. 2023

SHEET

EROSION CONTROL PLAN - STAGE 3 - AREA "B"

C6.09

X:\Projects\CPR\CPR-19100\04-Production\Engineering\Site Plan-Construction Drawings\Current Drawings\CPR19100-CD-EC3.dwg, 3/31/2023 11:13:58 AM, Julia Shutt



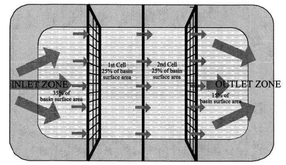
NOTES:

1. L = THE LENGTH OF THE RIPRAP APRON.
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6" (INCHES).
3. IN A WELL-DEFINED CHANNEL EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION OF 6" (INCHES) ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK, WHICHEVER IS LESS.
4. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION.

WAKE COUNTY NORTH CAROLINA

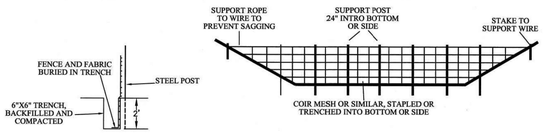
EFFECTIVE: 01/31/08

STANDARD PIPE OUTLET TO WELL-DEFINED CHANNEL



NOTES:

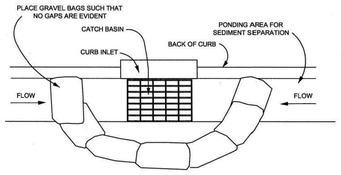
1. BAFFLE MATERIAL SHOULD BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR SILT FENCE.
2. MOST OF THE SEDIMENT WILL ACCUMULATE IN THE 1ST BAY, WHICH SHOULD BE READILY ACCESSIBLE FOR MAINTENANCE.
3. PROVIDE 3 BAFFLES (USE TWO IF LESS THAN 20 FEET IN LENGTH). PROVIDE 5 BAFFLES FOR DRAINAGE AREAS GREATER THAN 10 ACRES.
4. BAFFLE SHALL BE 700 G/M2 COIR EROSION BLANKET.
5. TOPS OF BAFFLES SHOULD BE 2 INCHES LOWER THAN THE TOP OF THE BERMS
6. INSPECT BAFFLES FOR REPAIR ONCE A WEEK AND AFTER EACH RAINFALL



WAKE COUNTY NORTH CAROLINA

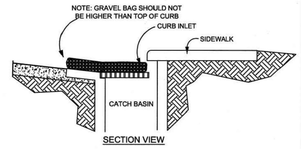
EFFECTIVE: 01/31/08

STANDARD BAFFLES DETAIL



NOTES:

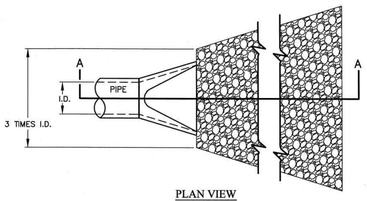
1. PLACE GRAVEL BAG BARRIER ON GENTLY SLOPING STREET, WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE FROM RUNNOFF.
2. USE SAND BAGS OF WOVEN GEOTEXTILE FABRIC (NOT BURLAP) AND FILL WITH ¾ INCH (OR SMALLER) GRAVEL. BAGS MUST BE LAYERED SUCH THAT NO GAPS ARE EVIDENT.
3. INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT. SEDIMENT AND GRAVEL MUST BE REMOVED FROM THE TRAVELED WAY IMMEDIATELY.
4. WHEN INSTALLING CURB INLET PROTECTION DEVICES, **NEVER** BLOCK THE CURB INLET.



WAKE COUNTY NORTH CAROLINA

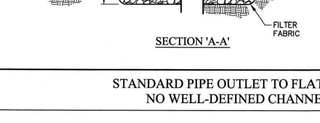
EFFECTIVE: 01/31/08

STANDARD GRAVEL BAG CURB INLET PROTECTION



NOTES:

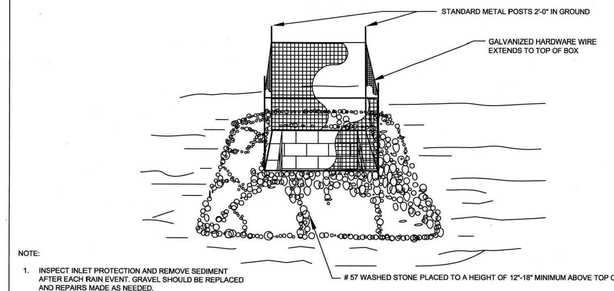
1. L = THE LENGTH OF THE RIPRAP APRON.
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6" (INCHES).
3. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION.



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD PIPE OUTLET TO FLAT AREA
NO WELL-DEFINED CHANNEL



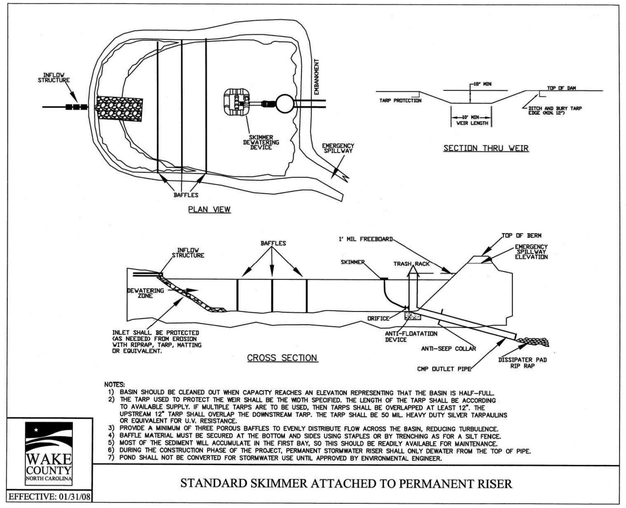
NOTE:

1. INSPECT INLET PROTECTION AND REMOVE SEDIMENT AFTER EACH RAIN EVENT. GRAVEL SHOULD BE REPLACED AND REPAIRS MADE AS NEEDED.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD GRAVEL YARD INLET PROTECTION



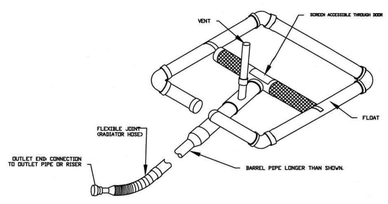
NOTES:

1) BASIN SHOULD BE CLEANED OUT WHEN CAPACITY REACHES AN ELEVATION REPRESENTING THAT THE BASIN IS HALF-FULL.
2) THE TARP USED TO PROTECT THE WEIR SHALL BE THE WIDTH SPECIFIED. THE LENGTH OF THE TARP SHALL BE ACCORDING TO AVAILABLE SUPPLY. IF MULTIPLE TARPS ARE TO BE USED, THEN TARPS SHALL BE OVERLAPPED AT LEAST 12". THE UPSTREAM 12" TARP SHALL OVERLAP THE DOWNSTREAM TARP. THE TARP SHALL BE 50 MIL. HEAVY DUTY SILVER TARPAULINS OR EQUIVALENT FOR U.V. RESISTANCE.
3) PROVIDE A MINIMUM OF THREE POROUS BAFFLES TO EVENLY DISTRIBUTE FLOW ACROSS THE BASIN, REDUCING TURBULENCE.
4) BAFFLE MATERIAL MUST BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR A SILT FENCE.
5) MOST OF THE SEDIMENT WILL ACCUMULATE IN THE FIRST BAY, SO THIS SHOULD BE READILY AVAILABLE FOR MAINTENANCE.
6) DURING THE CONSTRUCTION PHASE OF THE PROJECT, PERMANENT STORMWATER RISER SHALL ONLY DEWATER FROM THE TOP OF PIPE.
7) POND SHALL NOT BE CONVERTED FOR STORMWATER USE UNTIL APPROVED BY ENVIRONMENTAL ENGINEER.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

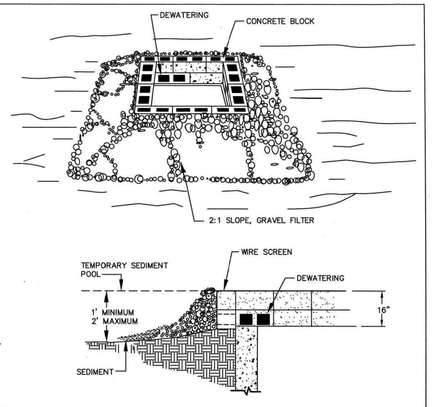
STANDARD SKIMMER ATTACHED TO PERMANENT RISER



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD SKIMMER DETAIL



CONSTRUCTION SPECIFICATIONS

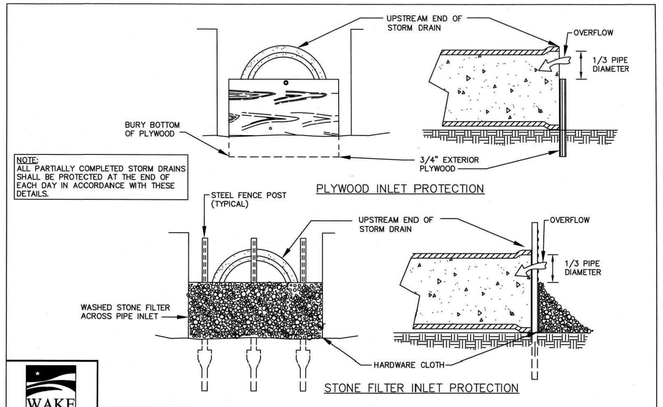
1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE IN THE BOTTOM ROW TO ALLOW POOL DRAINAGE. THE FOUNDATION SHOULD BE EXCAVATED AT LEAST 2 INCHES BELOW THE CREST OF THE STORM DRAIN. PLACE THE BOTTOM ROW OF BLOCKS AGAINST THE EDGE OF THE STORM DRAIN FOR LATERAL SUPPORT AND TO AVOID WASHOUTS WHEN OVERFLOW OCCURS. IF NEEDED, GIVE LATERAL SUPPORT TO SUBSEQUENT ROWS BY PLACING 2x4 WOOD STUDS THROUGH BLOCK OPENINGS.
2. CAREFULLY FIT HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2 INCH OPENINGS OVER ALL BLOCK OPENINGS TO HOLD GRAVEL IN PLACE.
3. USE CLEAN GRAVEL, 3/4 TO 1/2 INCH IN DIAMETER, PLACED 2 INCHES BELOW THE TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER AND SMOOTH IT TO AN EVEN GRADE. DOT #57 WASHED STONE IS RECOMMENDED.

MAINTENANCE: INSPECT INLET PROTECTION AND REMOVE SEDIMENT AFTER EACH RAIN EVENT. GRAVEL SHOULD BE REPLACED AND REPAIRS MADE AS NEEDED.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD BLOCK & GRAVEL DROP INLET PROTECTION



NOTE:
ALL PARTIALLY COMPLETED STORM DRAINS SHALL BE PROTECTED AT THE END OF EACH DAY IN ACCORDANCE WITH THESE DETAILS.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD PIPE INLET PROTECTION (PLYWOOD & STONE)

McADAMS
The John R. McAdams Company, Inc.
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Suite 500
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phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293, C-187
www.mcadamsco.com

WALLBROOK LANDCO, LLC
3 KEEL STREET, SUITE 2
WRIGHTSVILLE BEACH, NORTH CAROLINA
28480-1709

WALLBROOK
CONSTRUCTION DRAWINGS
ROLESVILLE, NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 22630 ENGINEER WILLIAM T. O'DANIEL

William T O'Daniel
cn=William T O'Daniel, c=US, o=North Carolina, email=wodaniel@mcadamsco.com
2023.03.31 13:17:42 -04'00'

REVISIONS

NO.	DATE

PLAN INFORMATION

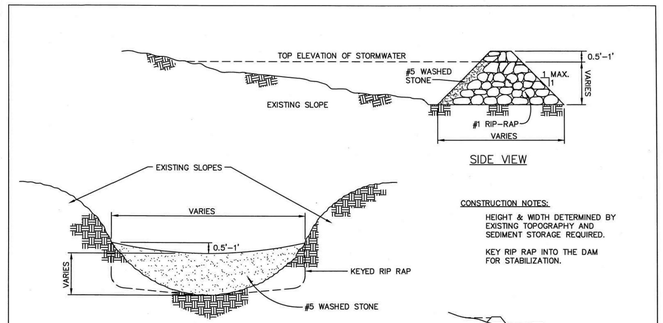
PROJECT NO.	CPR-19100
FILENAME	CPR19100-CD-EC-D1
CHECKED BY	WTO
DRAWN BY	---
SCALE	---
DATE	03. 31. 2023

SHEET

EROSION CONTROL DETAILS

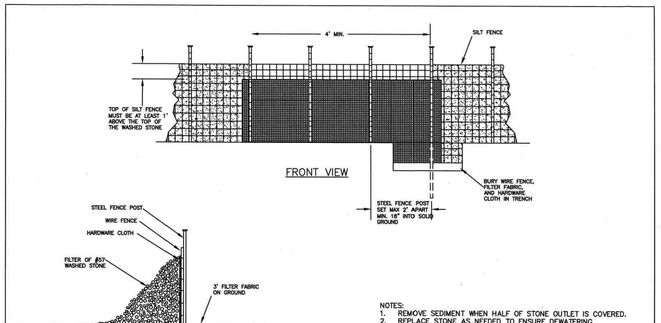
C6.10

FINAL DRAWING - RELEASED FOR CONSTRUCTION



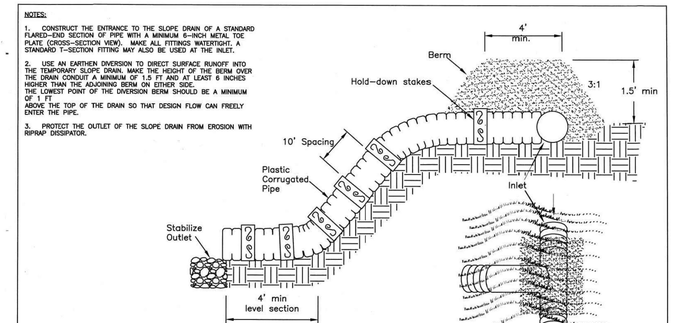
STANDARD CHECK DAM

EFFECTIVE: 01/31/08



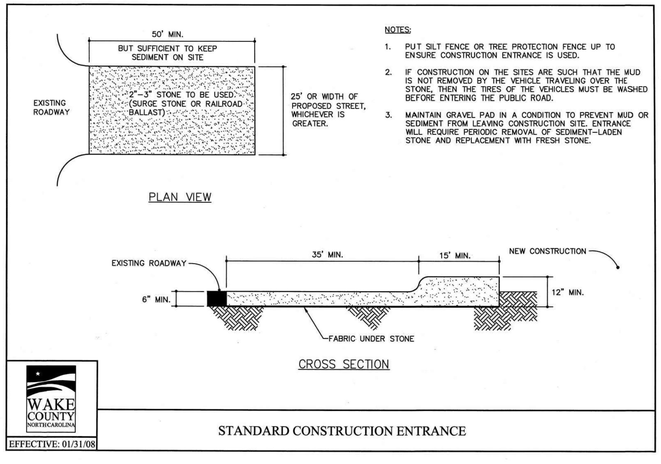
STANDARD SILT FENCE OUTLET

EFFECTIVE: 01/31/08



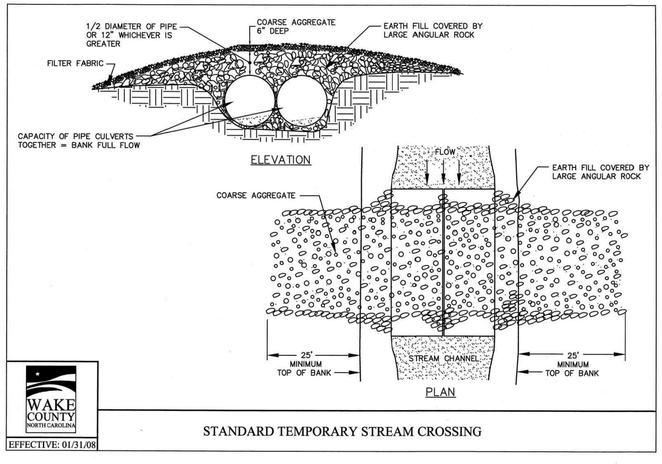
STANDARD TEMPORARY SLOPE DRAIN

EFFECTIVE: 01/31/08



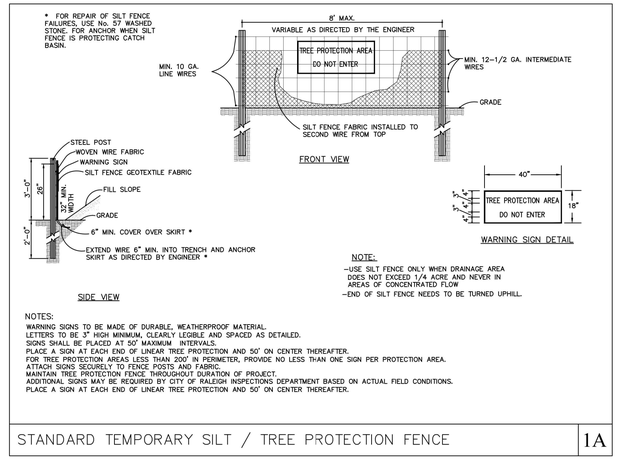
STANDARD CONSTRUCTION ENTRANCE

EFFECTIVE: 01/31/08



STANDARD TEMPORARY STREAM CROSSING

EFFECTIVE: 01/31/08



STANDARD TEMPORARY SILT / TREE PROTECTION FENCE

1A

FINAL DRAWING - RELEASED FOR CONSTRUCTION

McADAMS
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fax 919. 361. 2269
license number: C-0293, C-187
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WALLBROOK LANDCO, LLC
3 KEEL STREET, SUITE 2
WRIGHTSVILLE BEACH, NORTH CAROLINA
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WALLBROOK
CONSTRUCTION DRAWINGS
ROLESVILLE, NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 22630 ENGINEER WILLIAM T. O'DANIEL

William T O'Daniel
cn=William T O'Daniel, c=US, o=North Carolina, email=wodaniel@mcadamsco.com
2023.03.31 13:19:10 -04'00'

REVISIONS

NO.	DATE

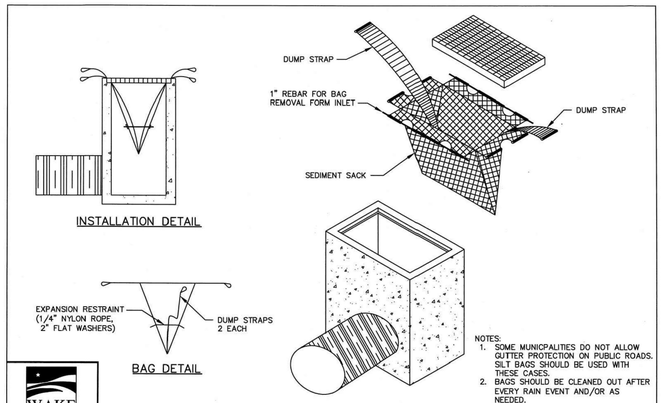
PLAN INFORMATION

PROJECT NO.	CPR-19100
FILENAME	CPR19100-CD-EC-D1
CHECKED BY	WTO
DRAWN BY	---
SCALE	---
DATE	03. 31. 2023

SHEET

EROSION CONTROL DETAILS

C6.11



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD SILT BAG - INLET SEDIMENT CONTROL DEVICE

Channel Installation

The following channel installation guide outlines our general recommendations for installing Tensar RollMax™ temporary and/or permanent RECPs in high flow applications. Consult the peg pattern guide (Fig 1) for fastener spacing recommendations based on the channel severity. Drawings not to scale.

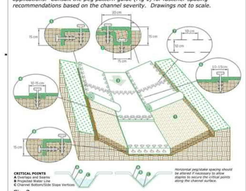


Fig 3

STEP 1 - Prepare soil before installing RECP, including any necessary application of lime, fertilizer and seed.
STEP 2 - Begin at the top of the channel by anchoring the RECP in a 15cm deep x 15cm wide trench with 30 cm of RECP extended beyond the upslope portion of the trench. Use Tensar ShoreMax® mat at the channel/culvert outlet as supplemental scour protection as needed. Anchor the RECP with a row of pegs/stakes approximately 30cm apart in the bottom of the trench. Backfill and compact the trench after pegging. Apply seed to the compacted soil and fold the remaining 30 cm portion of RECP back over the seed and compacted soil. Secure RECP over compacted soil with a row of pegs spaced approximately 30cm apart across the width of the RECP.
STEP 3 - roll centre width of RECP in the bottom of channel in direction of water flow. RECPs will unroll with the correct side against the soil surface. All RECP lengths must be securely fastened to soil surface by placing pegs in appropriate locations as shown in the staple pattern guide. Place consecutive RECP lengths overlapping end-over-end (shingle style) with a 10-15cm overlap. Use a double row of pegs staggered 4-10cm apart and 10cm on centre to secure RECP lengths.
STEP 4 - Full-length edge of RECP at top of side slopes must be anchored with a row of pegs approximately 30cm apart in a 15cm deep x 15cm wide trench. Backfill and compact the trench after pegging.
STEP 5 - Adjacent RECP lengths must be overlapped approximately 5-15cm (depending on RECP type) and pegged.*
STEP 6 - In high flow channel applications Use a double row of pegs every 9-12m staggered 10cm apart and 10cm on centre over entire width of the channel (As additional pegging to secure the RECP).
STEP 7 - The terminal end of the RECP lengths must be anchored with a row of pegs approximately 30cm apart in a 15cm deep x 15 m wide trench. Backfill and compact the trench after pegging.
** Note: In adverse soil conditions longer staples/stakes or earth anchors may be necessary to properly secure the RECPs.*

Installation Guide

RollMax Rolled Erosion Control

Tensar installation guide
Issue date: 03/07/2014
SD_ROLLMAX_RECP

Installation Guidelines

When under the pressure of severe conditions, even the best erosion control products can't function to their full potential without proper installation and anchoring.

Proper peg patterns must be used to achieve optimal results in Rolled Erosion Control Product (RECP) installation. Tensar recommends the following general peg patterns as guidance for use with our RECPs (fig 1). Site-specific peg pattern recommendations based on soil type and severity of application may be acquired through our authorised Tensar distributors worldwide.

PEG PATTERN GUIDE

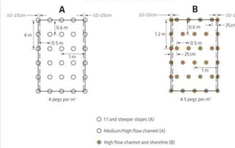


Fig 1 - The information presented herein is general design information only. For specific applications, consult an independent professional for further design guidance.

Slope Installation

The following slope installation guide outlines our general recommendations for installing Tensar RollMax™ temporary and/or permanent RECPs on sloping applications. Consult the peg pattern guide (Fig 1) for peg spacing recommendations based on the slope severity. Drawings not to scale.

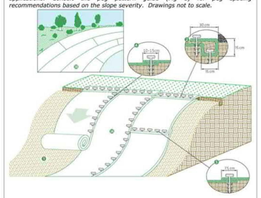
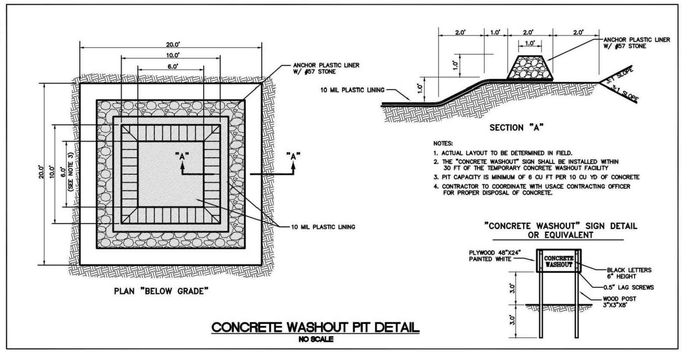


Fig 2

STEP 1 - Prepare soil before installing RECP, including any necessary application of lime, fertilizer and seed.
STEP 2 - Begin at the top of the slope by anchoring the RECP in a 15cm deep x 15cm wide trench with approximately 30cm of RECP extended beyond the upslope portion of the trench. Anchor the RECP with a row of pegs approximately 30cm apart in the bottom of the trench. Backfill and compact the trench after pegging. Apply seed to the compacted soil and fold the remaining 30cm portion of RECP back over the seed and compacted soil. Secure RECP over compacted soil with a row of pegs spaced approximately 30 cm apart across the width of the RECP.
STEP 3 - Roll the RECP (Fig 2 -3A) down or (Fig 2 -3B) horizontally across the slope. RECPs will unroll with the correct side against the soil surface. All RECPs must be securely fastened to soil surface by placing pegs in appropriate locations as shown in the peg pattern guide.
STEP 4 - The edges of parallel RECP panels must be pegged with approximately 5-15cm overlap depending on the RECP type.
STEP 5 - Consecutive RECP lengths spliced down the slope must be overlapped end-over-end (shingle style) with an approximate 7.5cm overlap. Peg through overlapped area, approximately 30cm apart across entire RECP width.*
**Note: In adverse soil conditions longer pegs/stakes or earth anchors may be necessary to properly secure the RECP.*



CONCRETE WASHOUT PIT DETAIL
NO SCALE

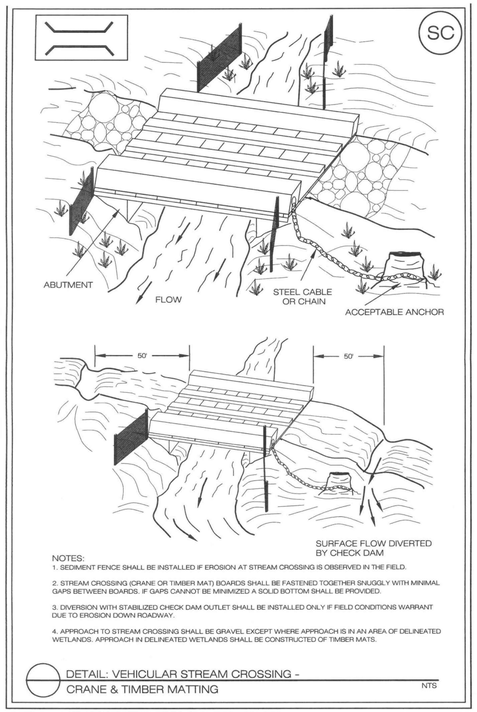
Seeding Schedule

For Shoulders, Side Ditches, Slopes (Max 3:1):

Date	Type	Planting Rate
Aug 15–Nov 1	Tall Fescue	300 lbs/acre
Nov 1–Mar 1	Tall Fescue & Abruzzi Rye	300 lbs/acre
Mar 1–Apr 15	Tall Fescue	300 lbs/acre
Apr 15–Jun 30	Hulled Common Bermudagrass	25 lbs/acre
Jul 1–Aug 15	Tall Fescue AND Browntop Millet or Sorghum-Sudan Hybrids***	125 lbs/acre (Tall Fescue); 35 lbs/acre (Browntop Millet); 30 lbs/acre (Sorghum-Sudan Hybrids)

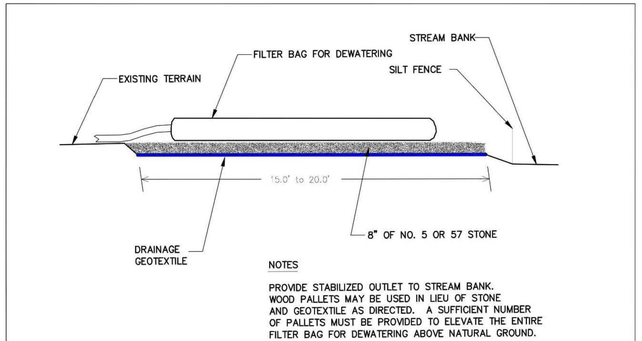
For Shoulders, Side Ditches, Slopes (3:1 to 2:1):

Date	Type	Planting Rate
Mar 1–Jun 1	Sericea Lespedeza (scarified) and use the following combinations:	50 lbs/acre (Sericea Lespedeza);
Mar 1–Apr 15	Add Tall Fescue	120 lbs/acre
Mar 1–Jun 30	Or add Weeping Love grass	10 lbs/acre
Mar 1–Jun 30	Or add Hulled Common Bermudagrass	25 lbs/acre
Jun 1–Sept 1	Tall Fescue AND Browntop Mullet or Sorghum-Sudan Hybrids***	120 lbs/acre (Tall Fescue); 35 lbs/acre (Browntop Mullet); 30 lbs/acre (Sorghum-Sudan Hybrids)
Sept 1–Mar 1	Sericea Lespedeza (unhulled – unscarified) AND Tall Fescue	70 lbs/acre (Sericea Lespedeza); 120 lbs/acre (Tall Fescue)
Nov 1–Mar 1	AND Abruzzi Rye	25 lbs/acre



NOTES:
1. SEDIMENT FENCE SHALL BE INSTALLED IF EROSION AT STREAM CROSSING IS OBSERVED IN THE FIELD.
2. STREAM CROSSING (CRANE OR TIMBER MAT) BOARDS SHALL BE FASTENED TOGETHER SNUGGLY WITH MINIMAL GAPS BETWEEN BOARDS. IF GAPS CANNOT BE MINIMIZED A SOLID BOTTOM SHALL BE PROVIDED.
3. DIVERSION WITH STABILIZED CHECK DAM OUTLET SHALL BE INSTALLED ONLY IF FIELD CONDITIONS WARRANT DUE TO EROSION DOWN ROADWAY.
4. APPROACH TO STREAM CROSSING SHALL BE GRAVEL EXCEPT WHERE APPROACH IS IN AN AREA OF DELINEATED WETLANDS. APPROACH IN DELINEATED WETLANDS SHALL BE CONSTRUCTED OF TIMBER MATS.

DETAIL: VEHICULAR STREAM CROSSING - CRANE & TIMBER MATTING
NTS



NOTES

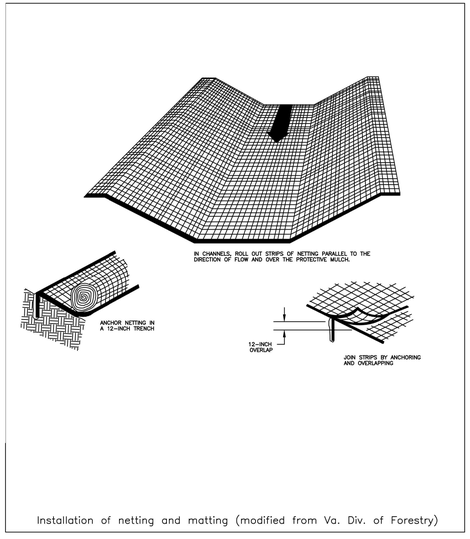
PROVIDE STABILIZED OUTLET TO STREAM BANK. WOOD PALLETS MAY BE USED IN LIEU OF STONE AND GEOTEXTILE AS DIRECTED. A SUFFICIENT NUMBER OF PALLETS MUST BE PROVIDED TO ELEVATE THE ENTIRE FILTER BAG FOR DEWATERING ABOVE NATURAL GROUND.

NOT TO SCALE

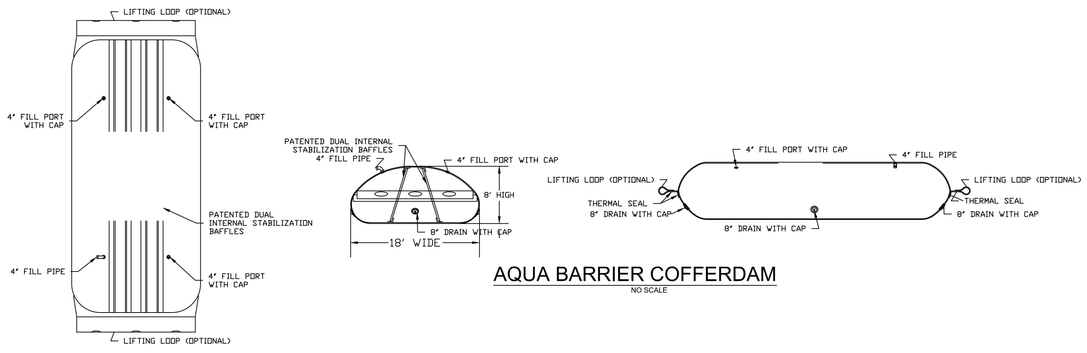
WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

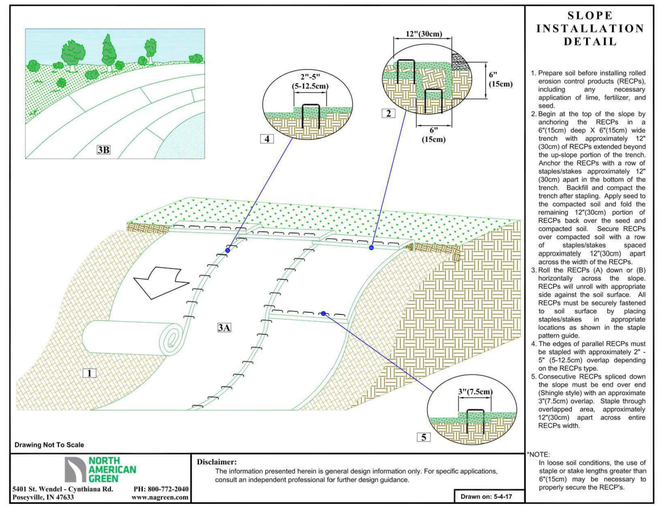
STANDARD FILTER BAG FOR DEWATERING ACTIVITIES



Installation of netting and matting (modified from Va. Div. of Forestry)



AQUA BARRIER COFFERDAM
NO SCALE



Drawing Not To Scale

SLOPE INSTALLATION DETAIL

1. Prepare soil before installing rolled erosion control products (RECPs), including any necessary application of lime, fertilizer, and seed.
2. Begin at the top of the slope by anchoring the RECPs in a 6"(15cm) deep X 6"(15cm) wide trench with approximately 12" (30cm) of RECPs extended beyond the up-slope portion of the trench. Anchor the RECPs with a row of staples/stakes approximately 12" (30cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12"(30cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12"(30cm) apart across the width of the RECPs.
3. Roll the RECPs (A) down or (B) horizontally across the slope. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.
4. The edges of parallel RECPs must be stapled with approximately 2" - 5" (5-12.5cm) overlap depending on the RECPs type.
5. Consecutive RECPs spliced down the slope must be end over end (Shingle style) with an approximate 3"(7.5cm) overlap. Staple through overlapped area, approximately 12"(30cm) apart across entire RECPs width.

*NOTE:
In loose soil conditions, the use of staple or stake lengths greater than 6"(15cm) may be necessary to properly secure the RECP's.

NORTH AMERICAN GREEN
5401 St. Wendel - Cynthiana Rd.
Poseyville, IN 47633
PH: 800-772-2040
www.nagreen.com

Disclaimer:
The information presented herein is general design information only. For specific applications, consult an independent professional for further design guidance.

Drawn on: 5-4-17

FINAL DRAWING - RELEASED FOR CONSTRUCTION

McADAMS
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WALLBROOK
CONSTRUCTION DRAWINGS
ROLESVILLE, NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 22630 ENGINEER WILLIAM T. O'DANIEL

William T O'Daniel
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2023.06.02 13:12:28 -04'00'

REVISIONS

NO. DATE

PLAN INFORMATION

PROJECT NO.	CPR-19100
FILENAME	CPR19100-CD-EC-D1
CHECKED BY	WTO
DRAWN BY	---
SCALE	---
DATE	05. 22. 2023

SHEET

EROSION CONTROL DETAILS
C6.12

X:\Projects\CPR\CPR-19100\04-Production\Engineering\Site Plan-Construction Drawings\Current Drawings\CPR19100-CD-EC-D1.dwg, 6/2/2023 1:03:38 PM, Juan Montes

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes

Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
• Temporary grass seed covered with straw or other mulches and tackifiers • Hydroseeding • Rolled erosion control products with or without temporary grass seed • Appropriately applied straw or other mulch • Plastic sheeting	• Permanent grass seed covered with straw or other mulches and tackifiers • Geotextile fabrics such as permanent soil reinforcement matting • Hydroseeding • Shrubs or other permanent plantings covered with mulch • Uniform and evenly distributed ground cover sufficient to restrain erosion • Structural methods such as concrete, asphalt or retaining walls • Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

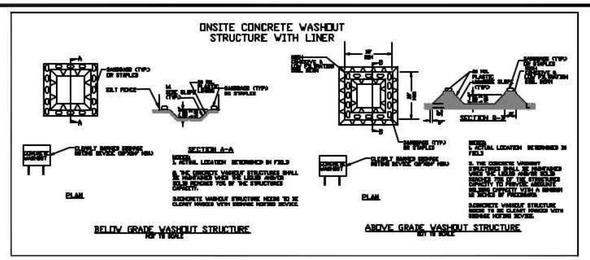
PORTABLE TOILETS

1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT

1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.

NORTH CAROLINA Environmental Quality



CONCRETE WASHOUTS

1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
5. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
6. Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
4. Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

1. Create designated hazardous waste collection areas on-site.
2. Place hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.

For questions and assistance, please contact NCDEQ at 919-707-3639.

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

A-12

McADAMS
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28480-1709

WALLBROOK
CONSTRUCTION DRAWINGS
ROLESVILLE, NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 22630 ENGINEER WILLIAM T. O'DANIEL

William T O'Daniel
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REVISIONS

NO. DATE

PLAN INFORMATION

PROJECT NO.	CPR-19100
FILENAME	CPR19100-CD-EC-D1
CHECKED BY	WTO
DRAWN BY	---
SCALE	---
DATE	03. 31. 2023

SHEET

EROSION CONTROL DETAILS

C6.13

FINAL DRAWING - RELEASED FOR CONSTRUCTION

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those un-attended days (and this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outfalls (SDOs)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be kept on site and available for inspection at all times during normal business hours.

Item to Document	Documentation Requirements
(a) Each E&SC measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC plan.	Initial and date each E&SC measure on a copy of the approved E&SC plan or complete, date and sign an inspection report that lists each E&SC measure shown on the approved E&SC plan. This documentation is required upon the initial installation of the E&SC measures or if the E&SC measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC plan.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance ard repair requirements for all E&SC measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC measures.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation to be Kept on Site

In addition to the E&SC plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

(a) This General Permit as well as the Certificate of Coverage, after it is received.

(b) Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

3. Documentation to be Retained for Three Years

All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

SECTION C: REPORTING

1. Occurrences that Must be Reported

Permittees shall report the following occurrences:

(a) Visible sediment deposition in a stream or wetland.

(b) Oil spills if:
- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).

(c) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.

(d) Anticipated bypasses and unanticipated bypasses.

(e) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional measures are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	• ***Within 24 hours***, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	• ***A report at least ten days before the date of the bypass, if possible***. The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days,*** a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment[40 CFR 122.41(l)(7)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6). • Division staff may waive the requirement for a written report on a case-by-case basis.

PART II, SECTION G, ITEM (4)
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

(a) The E&SC plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&SC plan authority has approved these items,
(b) The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item (2)(c) and (d) of this permit,
(c) Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems,
(d) Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above,
(e) Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and
(f) Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

NORTH CAROLINA *Environmental Quality*

For questions and assistance, please contact NCDEQ at 919-707-3639.

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

A-13

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CONSTRUCTION DRAWINGS
ROLESVILLE, NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 22630 ENGINEER WILLIAM T. O'DANIEL

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2023.03.31 13:20:48 -04'00'

REVISIONS

NO.	DATE

PLAN INFORMATION

PROJECT NO.	CPR-19100
FILENAME	CPR19100-CD-EC-D1
CHECKED BY	WTO
DRAWN BY	---
SCALE	---
DATE	03. 31. 2023

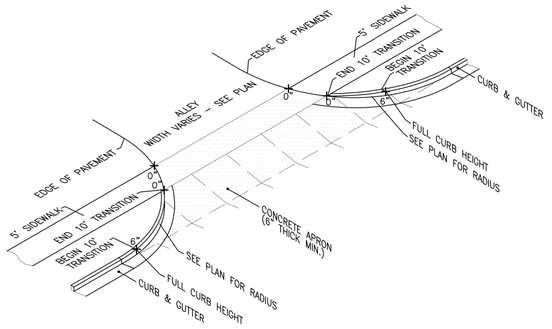
SHEET

EROSION CONTROL DETAILS

C6.14

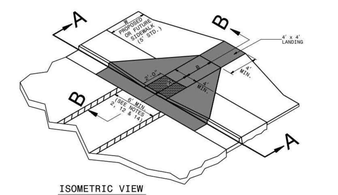
FINAL DRAWING - RELEASED FOR CONSTRUCTION

X:\Projects\CPR\CPR-19100\04-Production\Engineering\Site Plan-Construction Drawings\Current Drawing\CPR19100-CD-EC-D1.dwg, 3/31/2023 11:17:52 AM, Julia Shutt



RESIDENTIAL ALLEY ENTRANCE DETAIL

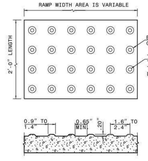
N.T.S.



ISOMETRIC VIEW

PAY LIMITS FOR CURB RAMP

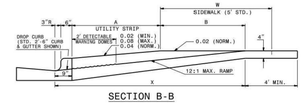
NOTES:
1. DETECTABLE WARNING DOMES WILL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.
2. DETECTABLE WARNING DOMES WILL CONTRAST VISIBILITY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.



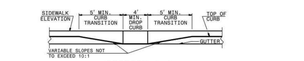
DETECTABLE WARNING DOMES

R	A	W-A=9"	X	B
4'	0.0'	9.0'	9.0'	5.0'*
6'	0.0'	9.0'	6.8'	6.0'**
7'	0.0'	7.6'	7.3'	6.0'**
8'	0.0'	9.0'	7.3'	6.5'**
4'	2.0'	7.6'	7.8'	6.0'
5'	2.5'	8.3'	8.1	4.8'
4'	3.0'	8.6'	8.3'	4.4'
5'	3.5'	9.3'	8.4'	4.1'
4'	4.0'	9.6'	8.6'	3.8'
5'	4.5'	10.3'	8.7'	3.4'
6'	5.0'	10.9'	8.9'	3.1'

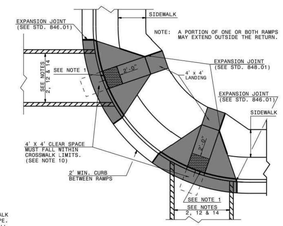
B = X-(A+9")
B = DISTANCE FROM FRONT EDGE OF SIDEWALK TO BACK POINT OF 12:1 (8.33%) SLOPE.
* BACK OF SIDEWALK DROP REQUIRED FOR ALL SIDEWALK SLOPES.
** BACK OF SIDEWALK DROP REQUIRED FOR SIDEWALK SLOPES 0.04.



SECTION B-B



SECTION A-A



PLAN VIEW

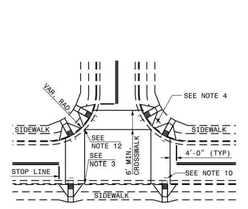
DUAL RAMPS
ANY RADII
(4' MIN. FLOOR WIDTH)

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

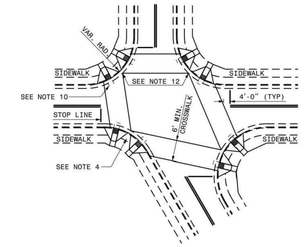
1-18

ROADWAY STANDARD DRAWING FOR
CURB RAMP
PROPOSED CURB AND GUTTER

SHEET 1 OF 3
848.05



DETAIL SHOWING TYPICAL LOCATION OF CURB RAMPS; PEDESTRIAN CROSSWALKS AND STOP LINES FOR TEE INTERSECTIONS



DETAIL SHOWING TYPICAL LOCATION OF CURB RAMPS; PEDESTRIAN CROSSWALKS AND STOP LINES

ROADWAY PLAN SYMBOL
CR
FOR PROPOSED CURB RAMP

PROPOSED CURB RAMP W/ LANDING
PROPOSED OR FUTURE SIDEWALK

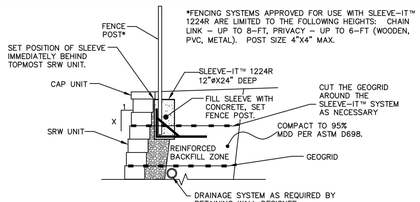
ALLOWABLE LOCATIONS
DUAL RAMP RADII.....ANY

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
CURB RAMP
PROPOSED CURB AND GUTTER

SHEET 2 OF 3
848.05

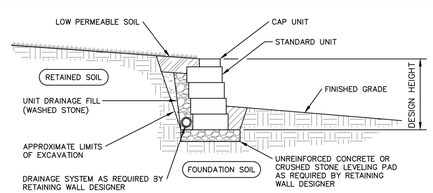


*FENCING SYSTEMS APPROVED FOR USE WITH SLEEVE-IT™ 1224R ARE LIMITED TO THE FOLLOWING HEIGHTS: CHAIN LINK – UP TO 8-FT, PRIVACY – UP TO 6-FT (WOODEN, PVC, METAL). POST SIZE 4"X4" MAX.

NOTES
1. WALLS WILL BE DESIGNED BY A STRUCTURAL ENGINEER.
2. WALL COLOR TO BE EARTH TONE OR GRAY.

INTERLOCKING BLOCK WALL WITH FENCE
(SLEEVE-IT™ OR APPROVED EQUAL)

N.T.S.



NOTES
1. WALLS WILL BE DESIGNED BY A STRUCTURAL ENGINEER.
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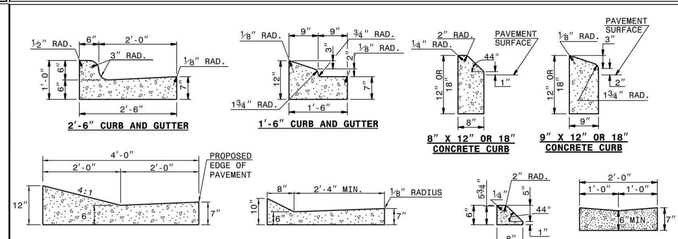
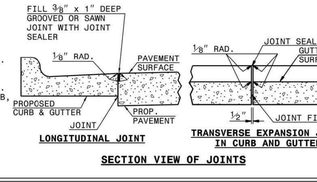
INTERLOCKING BLOCK WALL

N.T.S.



SECTION VIEW OF CURBS OR CURBS AND GUTTERS

GENERAL NOTES:
-PLACE CONTRACTION JOINTS AT 10' INTERVALS, EXCEPT THAT A 15' SPACING MAY BE USED WHEN A MACHINE IS USED OR WHEN SATISFACTORY SUPPORT FOR THE FACE FORM CAN BE OBTAINED WITHOUT THE USE OF TEMPLATES AT 10' INTERVALS.
-JOINT SPACING MAY BE ALTERED IF REQUIRED BY THE ENGINEER.
-CONTRACTION JOINTS MAY BE INSTALLED WITH THE USE OF TEMPLATES OR FORMED BY OTHER APPROVED METHODS. CONSTRUCT NON-TEMPLATE FORMED JOINTS A MIN. OF 1½" DEEP.
-FILL ALL CONSTRUCTION JOINTS, EXCEPT IN 8"x6" MEDIAN CURB, WITH JOINT FILLER AND SEALER.
-SPACE EXPANSION JOINTS AT 90' INTERVALS AND ADJACENT TO ALL RIGID OBJECTS.



LONGITUDINAL JOINT

TRANSVERSE EXPANSION JOINT IN CURB AND GUTTER

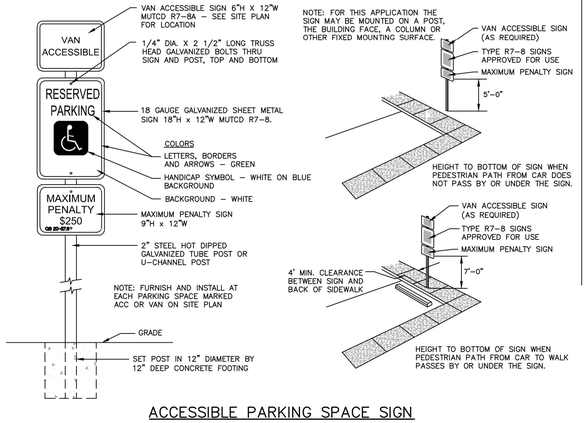
SECTION VIEW OF JOINTS

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-18

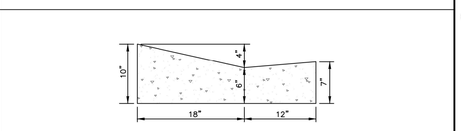
ROADWAY STANDARD DRAWING FOR
CONCRETE CURB, GUTTER AND CURB & GUTTER

SHEET 1 OF 3
846.01



ACCESSIBLE PARKING SPACE SIGN

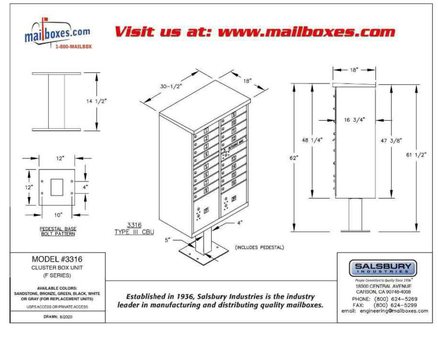
N.T.S.



NOTES:
1. 10' MAXIMUM BETWEEN DUMMY JOINTS. 15' MAXIMUM BETWEEN DUMMY JOINTS ON MACHINE POURS.
2. 1/2" EXPANSION JOINT EVERY 50'.
3. 3000 PSI CONCRETE MINIMUM, 4" SLUMP MAXIMUM.
4. LIQUID MEMBRANE CURING COMPOUND SHALL MEET THE REQUIREMENTS OF SECTION 1026-2 OF NCDOT STANDARDS AND SPECIFICATIONS FOR ROADS AND STRUCTURES.
5. ALL CONSTRUCTION JOINTS SHALL BE FILLED WITH FILLER AND SEALER IN ACCORDANCE WITH NCDOT ROADWAY STANDARD DETAIL 846.01. THE JOINT MATERIAL SHALL CONFORM TO SECTION 1028-2 OF THE NCDOT STANDARDS AND SPECIFICATIONS FOR ROADS AND STRUCTURES.
6. REFER TO NCDOT DETAIL 846.01 FOR CURB AND GUTTER SUPERELEVATION RATES.

30" VALLEY TYPE GUTTER

N.T.S.



NOTES:
1. CONSTRUCT THE RAMP SURFACE TO BE STABLE, FIRM, AND SLIP RESISTANT. CONSTRUCT THE CURB RAMP TYPE AS SHOWN IN THE PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER.
2. LOCATE CURB RAMPS AND PLACE PEDESTRIAN CROSSWALK MARKINGS AS SHOWN IN THE PAVEMENT MARKING PLANS. WHEN FIELD ADJUSTMENTS REQUIRE MOVING CURB RAMPS OR MARKINGS AS SHOWN, CONTACT THE SIGNING AND DELINEATION UNIT OR LOCATE AS DIRECTED BY THE ENGINEER.
3. COORDINATE THE CURB RAMP AND THE PEDESTRIAN CROSSWALK MARKINGS SO A 4'x4' CLEAR SPACE AT THE BASE OF THE CURB RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES.
4. SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL LANE IS 4' MINIMUM.
5. REFER TO THE PAVEMENT MARKING PLANS FOR STOP BAR LOCATIONS AT SIGNALIZED INTERSECTIONS. IF A PAVEMENT MARKING PLAN IS NOT PROVIDED, CONTACT THE SIGNAL DESIGN SECTION FOR THE STOP BAR LOCATIONS OR LOCATE AS DIRECTED BY THE ENGINEER.
6. TERMINATE PARKING A MINIMUM OF 20' BACK OF A PEDESTRIAN CROSSWALK.
7. CONSTRUCT CURB RAMPS A MINIMUM OF 4' WIDE.
8. CONSTRUCT THE RUNNING SLOPE OF THE RAMP 8.33% MAXIMUM.
9. ALLOWABLE CROSS SLOPE ON SIDEWALKS AND CURB RAMPS WILL BE 2% MAXIMUM.
10. CONSTRUCT THE SIDE FLARE SLOPE A MAXIMUM OF 10% MEASURED ALONG THE CURB LINE.
11. CONSTRUCT THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE BASE OF THE CURB RAMP A MAXIMUM OF 5% AND MAINTAIN A SMOOTH TRANSITION.
12. CONSTRUCT LANDINGS FOR SIDEWALK A MINIMUM OF 4'x4' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. CONSTRUCT LANDINGS FOR MEDIAN ISLANDS A MINIMUM OF 5'x5' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
13. TO USE A MEDIAN ISLAND AS A PEDESTRIAN REFUGE AREA, MEDIAN ISLANDS WILL BE A MINIMUM OF 6' WIDE. CONSTRUCT MEDIAN ISLANDS TO PROVIDE PASSAGE OVER OR THROUGHT THE ISLAND.
14. SMALL CHANNELIZATION ISLANDS THAT CAN NOT PROVIDE A 5'X5' LANDING AT THE TOP OF A RAMPS, WILL BE CUT THROUGH LEVEL WITH THE SURFACE STREET.
15. CURB RAMPS WITH RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP. THE ADJACENT SURFACE IS PLANTING OR OTHER NON-WALKING SURFACE OR THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED.
16. PLACE A ½" EXPANSION JOINT WHERE THE CONCRETE CURB RAMP JOINS THE CURB AS SHOWN IN ROADWAY STANDARD DRAWING 848.01
17. PLACE ALL PEDESTRIAN PUSH BUTTON ACTUATORS AND CROSSING SIGNALS AS SHOWN IN THE PLANS OR AS SHOWN IN THE MUTCD.
18. CURB RAMPS THROUGH MEDIAN ISLANDS, SINGLE RAMPS AT DUAL CROSSWALKS OR LIMITED R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR THE DETAILS OR FOR A SPECIAL DESIGN.

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
CURB RAMPS
NOTES

SHEET 3 OF 3
848.05

FINAL DRAWING - RELEASED FOR CONSTRUCTION

McADAMS
The John R. McAdams Company, Inc.
621 Hillsborough Street
Suite 500
Raleigh, NC 27603
phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293, C-187
www.mcadamsco.com

WALLBROOK LANDCO, LLC
3 KEEL STREET, SUITE 2
WRIGHTSVILLE BEACH, NORTH CAROLINA
28480-1709

WALLBROOK
CONSTRUCTION DRAWINGS
ROLESVILLE, NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 22630 ENGINEER WILLIAM T. O'DANIEL

William T O'Daniel
cn=William T O'Daniel, c=US, o=North Carolina, email=wdaniel@mcadamsco.com
2023.03.31 13:21:27 -04'00'

REVISIONS

NO.	DATE

PLAN INFORMATION

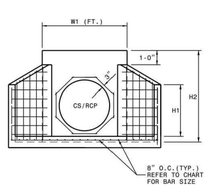
PROJECT NO.	CPR-19100
FILENAME	CPR19100-CD-D1
CHECKED BY	WTO
DRAWN BY	---
SCALE	N.T.S.
DATE	03. 31. 2023

SHEET

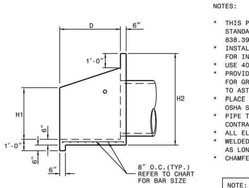
SITE DETAILS

C8.00

X:\Projects\CPR\CPR-19100\04-Production\Engineering\Site Plan-Construction Drawings\Current Drawings\CPR19100-CD-D1.dwg, 3/31/2023 11:27:05 AM, Julia Shutt



ELEVATION

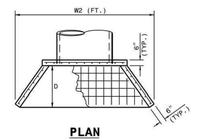


SIDE

NOTES:

* THIS PRECAST ENDWALL MAY BE USED FOR THE FOLLOWING STANDARDS: 838.01, 838.11, 838.21, 838.27, 838.33, 838.39, 838.51, 838.57, 838.63 AND 838.69.
* INSTALL PRECAST ENDWALLS WITH WINGS AND PAY FOR IN ACCORDANCE WITH SPECIFICATION SECTION 838.
* USE 4000 PSI CONCRETE.
* PROVIDE ALL REINFORCING STEEL WHICH MEETS ASTM A615 FOR GRADE 60 AND WELDED WIRE FABRIC CONFORMING TO ASTM A185 WITH 2" MIN. CLEARANCE.
* PLACE LIFT HOLES OR PINS IN ACCORDANCE WITH OSHA STANDARD 1926.704.
* PIPE TO BE GROUTED INTO HEADWALL AT JOB SITE BY CONTRACTOR
* ALL ELEMENTS PRECAST TO MEET ASTM C913.
* WELDED WIRE FABRIC MAY BE SUBSTITUTED FOR REBAR AS LONG AS THE SAME AREA OF STEEL IS PROVIDED.
* CHAMFER ALL CORNERS 1" OR HAVE A RADIUS OF 1".

NOTE: THE MINIMUM BAR SIZE SHALL BE #5 BARS AT 8" CTS.THE CONTRACTOR WILL HAVE THE OPTION TO INCREASE THIS BAR SIZE AS NEEDED.



PLAN

ENDWALL DIMENSIONS

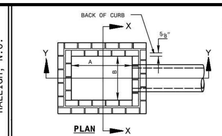
FT.	MINIMUM	MIN./MAX.	MIN./MAX.	MIN./MAX.	MIN./MAX.	MIN./MAX.
PIPE DIA.	BAR SIZE	H1(FT.)	H2(FT.)	D (FT.)	W1	W2
1.0	#5 @ 8"	1.25/2.00	2.00/3.75	1.25/1.75	3.00/3.75	5.50/6.00
1.25	#5 @ 8"	1.25/2.00	3.00/3.75	1.25/2.00	3.50/3.75	6.50/6.75
1.50	#5 @ 8"	1.25/2.00	3.00/4.25	1.50/2.50	3.50/3.75	6.50/6.75
2.0	#5 @ 8"	1.50/2.50	4.00/4.75	1.75/2.50	4.00/4.25	7.50/8.25
2.5	#5 @ 8"	2.50/3.50	4.00/6.00	2.00/3.00	4.50/5.50	10.00/11.50
3.0	#5 @ 8"	3.00/3.50	5.00/6.00	2.75/3.50	5.25/5.75	11.50/11.75
3.5	#5 @ 8"	3.25/4.50	6.00/6.75	3.25/3.50	6.00/6.75	12.00/13.25
4.0	#5 @ 8"	3.50/4.50	6.50/7.00	3.25/3.50	6.50/6.75	13.00/13.25
4.5	#5 @ 8"	4.00/5.00	6.50/8.50	3.25/4.00	7.00/9.25	13.50/15.75
5.0	#5 @ 8"	4.50/5.00	7.00/8.50	3.25/4.00	7.25/9.25	13.75/15.75
5.5	#5 @ 8"	4.50/5.00	7.50/8.50	3.25/4.00	7.25/9.25	14.00/15.75
6.0	#5 @ 8"	4.50/5.00	7.50/8.50	3.25/4.00	7.75/9.25	14.75/16.75

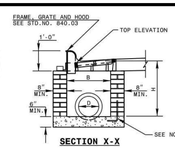
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

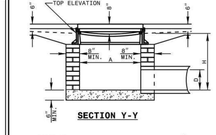
ROADWAY STANDARD DRAWING FOR
PRECAST CONCRETE ENDWALL
FOR SINGLE 12" THRU 72" PIPE - 90° SKEW

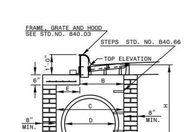
SHEET 1 OF 1
838.80

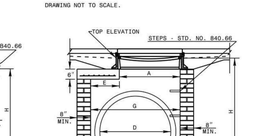


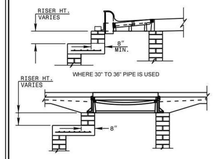


NOTES: MORTAR JOINTS ½" +/- ⅛" THICK.
USE CLASS "B" CONCRETE THROUGHOUT.
USE FORMS FOR CONSTRUCTION OF THE BOTTOM SLAB.
DEDUCT FOR PIPE(S) FROM TOTAL CU. YDS. OF BRICK MASONRY.
USE #4 BAR DOWELS AT 12" CENTERS FOR ALL PIPE SIZES.
PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.
USE BRICK OR CONCRETE BLOCK WHICH COMPLIES WITH THE REQUIREMENTS OF SECTION 840 OF THE STANDARD SPECIFICATIONS.
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
FOR 8'-0" IN HEIGHT OR LESS, USE 8" WALL. OVER 8'-0" IN HEIGHT, USE 12" WALL TO 6'-0" FROM TOP OF WALL AND 8" WALL FOR THE REMAINING 6'-0". QUANTITIES TO BE ADJUSTED ACCORDINGLY.
CONSTRUCT WITH PIPE CROWNS MATCHING.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.

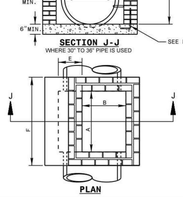


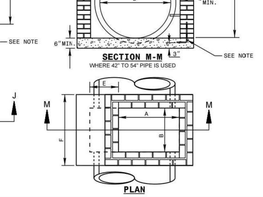






DETAIL SHOWING METHOD OF RISER CONSTRUCTION



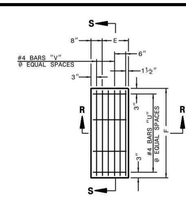


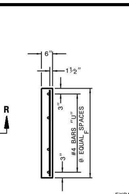
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

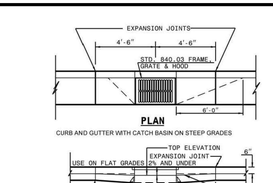
1-18

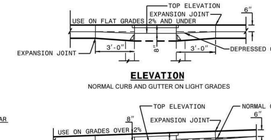
ROADWAY STANDARD DRAWING FOR
BRICK CATCH BASIN
12" THRU 54" PIPE

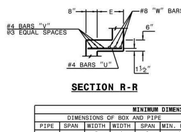
SHEET 1 OF 2
840.01

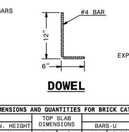


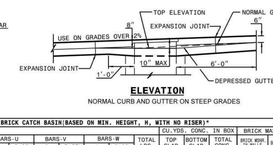












MINIMUM DIMENSIONS AND QUANTITIES FOR BRICK CATCH BASIN(BASED ON MIN. HEIGHT, H, WITH NO RISER)*

DIMENSIONS OF BOX AND PIPE					TOP SLAB DIMENSIONS			BARS-U		BARS-V		BARS-W			CU. YDS. CONC. IN BOX		BRICK MASONRY		DEDUCTIONS ONE PIPE	
PIPE	SPAN	WIDTH	WIDTH	SKEW	MIN. HEIGHT			NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	TOTAL LBS.	TOP SLAB	BOTTOM SLAB	TOTAL CONC.	WALL PER FT. HT. IN MH'S	C.S.	R.C.
D	A	B	C	G	H	E	F													
12"	3'-0"	2'-2"	--	--	2'-6"	--	--	--	--	--	--	--	--	--	--	0.281	0.281	0.883	1.164	0.020	0.042
15"	3'-0"	2'-2"			3'-0"											0.281	0.281	0.963	1.244	0.031	0.047
18"	3'-0"	2'-2"			3'-3"											0.281	0.281	1.043	1.324	0.044	0.065
24"	3'-0"	2'-2"			3'-9"											0.281	0.281	1.204	1.485	0.078	0.121
30"	3'-0"	2'-2"	3'-4"		4'-3"	1'-2"	4'-4"	4	1'-6"	3	4'-1"	3	4'-1"	45	0.147	0.374	0.521	1.606	2.217	0.122	0.184
36"	3'-0"	2'-2"	3'-10"		4'-9"	1'-8"	4'-4"	4	2'-0"	4	4'-1"	3	4'-1"	49	0.187	0.415	0.602	1.814	2.516	0.176	0.261
42"	3'-0"	2'-2"		4'-5"	5'-3"	1'-5"	3'-6"	4	1'-9"	3	3'-3"	3	3'-3"	38	0.135	0.373	0.508	2.152	2.660	0.240	0.371
48"	3'-0"	2'-2"		5'-0"	5'-9"	2'-0"	3'-6"	4	2'-4"	4	3'-3"	3	3'-3"	41	0.173	0.410	0.583	2.415	2.998	0.313	0.477
54"	3'-0"	2'-2"		5'-7"	6'-3"	2'-7"	3'-6"	4	3'-0"	6	3'-3"	3	3'-3"	47	0.211	0.448	0.659	2.806	3.465	0.398	0.595

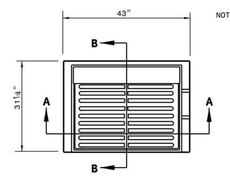
* RISER HAS .321 CUBIC YARDS OF BRICK MASONRY PER FOOT HEIGHT

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

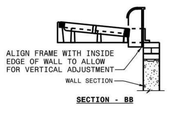
1-18

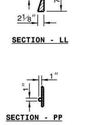
ROADWAY STANDARD DRAWING FOR
BRICK CATCH BASIN
12" THRU 54" PIPE

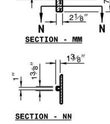
SHEET 2 OF 2
840.01

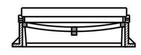


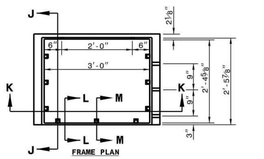
NOTE: USE TYPE "E", "F" AND "G" GRATE UNLESS OTHERWISE NOTED.

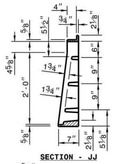


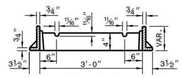




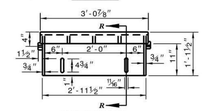

SECTION - AA

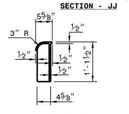






SECTION - KK



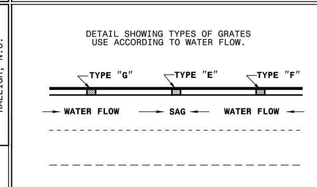


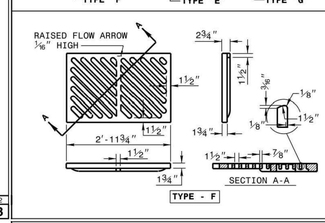
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

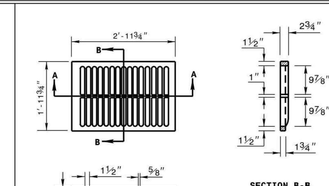
1-18

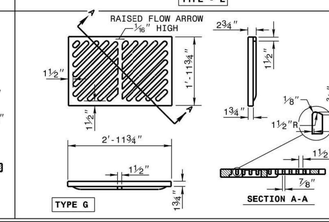
ROADWAY STANDARD DRAWING FOR
FRAME, GRATES, AND HOOD
FOR USE ON STANDARD CATCH BASIN

SHEET 1 OF 2
840.03







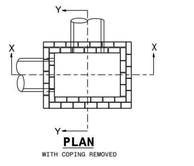


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

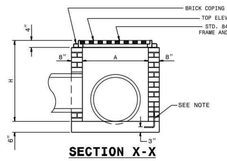
1-18

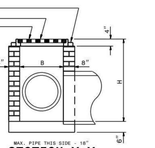
ROADWAY STANDARD DRAWING FOR
FRAME, GRATES, AND HOOD
FOR USE ON STANDARD CATCH BASIN

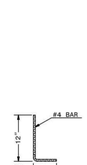
SHEET 2 OF 2
840.03



GENERAL NOTES:
MORTAR JOINTS ½" +/- ⅛" THICK.
USE CLASS "B" CONCRETE THROUGHOUT.
USE FORMS FOR CONSTRUCTION OF THE BOTTOM SLAB.
USE #4 BAR DOWELS AT 12" CENTERS.
DEDUCT FOR PIPE(S) FROM TOTAL CU. YDS. OF BRICK MASONRY.
PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
USE BRICK OR CONCRETE BLOCK WHICH COMPLIES WITH THE REQUIREMENTS OF SECTION 840 OF THE STANDARD SPECIFICATIONS.
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
FOR 8'-0" IN HEIGHT OR LESS, USE 8" WALL. OVER 8'-0" IN HEIGHT, USE 12" WALL TO 6'-0" FROM TOP OF WALL AND 8" WALL FOR THE REMAINING 6'-0". QUANTITIES TO BE ADJUSTED ACCORDINGLY.
CONSTRUCT WITH PIPE CROWNS MATCHING.
SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES.
DO NOT USE BRICK MASONRY DROP INLET IN LOCATIONS SUBJECT TO TRAFFIC.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.







DIMENSIONS AND QUANTITIES FOR DROP INLET(BASED ON MIN. HEIGHT, H)

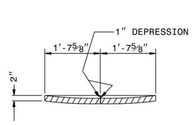
DIMENSIONS OF BOX & PIPE				CUBIC YARDS CONCRETE	CUBIC YARDS BRICK MASONRY		DEDUCTIONS FOR ONE PIPE	
PIPE	SPAN	WIDTH	MIN. HEIGHT	BOTTOM SLAB	WALL PER FOOT HT.	TOTAL BRICK MASONRY FOR MIN. HEIGHT H	C.S.	R.C.
D	A	B	H					
12"	3'-0"	2'-0"	2'-0"	0.268	0.313	0.522	0.020	0.032
15"	/	/	2'-3"	0.268	0.313	0.600	0.031	0.047
18"	/	/	2'-6"	0.268	0.313	0.678	0.044	0.065
24"	/	/	3'-0"	0.268	0.313	0.835	0.078	0.113
30"	3'-0"	2'-0"	3'-6"	0.268	0.313	0.991	0.122	0.170

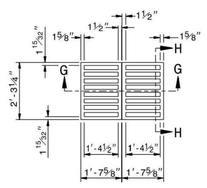
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
BRICK DROP INLET
12" THRU 30" PIPE

SHEET 1 OF 1
840.15





STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
DROP INLET FRAME AND GRATES
FOR USE WITH STD. DWG.S 840.14 AND 840.15

SHEET 1 OF 1
840.16

GENERAL NOTES:
CHAMFER ALL EXPOSED CORNERS 1".
USE CLASS "B" CONCRETE THROUGHOUT.
USE #4 BAR DOWELS AT 12" CENTERS.
MORTAR JOINTS ½" ± ⅛" THICK.
CONCAVE TOO ALL EXPOSED JOINTS.
USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
JUMBO BRICK WILL BE PERMITTED. CONCRETE BRICK OR 4" SOLID CONCRETE BLOCKS MAY BE USED IN LIEU OF CLAY BRICK.
FOR 8'-0" IN HEIGHT OR LESS, USE 8" WALL. OVER 8'-0" IN HEIGHT, USE 12" WALL TO 6'-0" FROM TOP OF WALL, AND 8" WALL FOR THE REMAINING 6'-0". ADJUST DIMENSIONS AND QUANTITIES ACCORDINGLY.
IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STANDARD NO. 840.00.
PROVIDE ALL JUNCTION BOXES OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTERS IN ACCORDANCE WITH STD. NO. 840.66.
ADJUST THE STEEL, CONCRETE AND BRICK MASONRY QUANTITIES TO INCLUDE THE ADDITION OF THE MANHOLE (I.E. DIAGONAL BARS SHORTENED AROUND OPENING IN TOP SLAB, ADDITIONAL VARIABLE HEIGHT BRICK MASONRY, OPENING IN TOP SLAB.)
MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12 FEET.

DIMENSIONS AND QUANTITIES FOR BRICK JUNCTION BOXES

DIMENSIONS OF BOX AND PIPE				REINFORCEMENT BARS		TOP SLAB DIMENSIONS		CUBIC YARDS			DEDUCTIONS FOR ONE PIPE	
								CONC.	BRICK MASONRY			
PIPE	SPAN	WIDTH	HEIGHT	NO.	LENGTH	E	F	TOP & BOTTOM CU. YD.	WIN. HEIGHT CU. YD.	WALL PER FT. HT. CU. YD.	C.S.	R.C.
D	A	B	H									
12"	2'-0"	2'-0"	2'-3"	12	3'-1"	3'-4"	3'-4"	0.412	0.591	0.263	0.020	0.032
15"	2'-0"	2'-0"	2'-6"	12	3'-1"	3'-4"	3'-4"	0.412	0.657	0.263	0.031	0.047
18"	2'-4"	2'-4"	2'-9"	14	3'-5"	3'-8"	3'-8"	0.498	0.814	0.296	0.044	0.065
24"	3'-0"	3'-0"	3'-3"	16	4'-1"	4'-4"	4'-4"	0.695	1.176	0.362	0.078	0.113
30"	3'-4"	3'-4"	3'-9"	16	4'-5"	4'-8"	4'-8"	0.807	1.481	0.395	0.122	0.170
36"	4'-0"	4'-0"	4'-3"	20	5'-1"	5'-4"	5'-4"	1.053	1.959	0.461	0.176	0.238
42"	4'-8"	4'-8"	4'-9"	22	5'-9"	6'-0"	6'-0"	1.333	2.503	0.527	0.240	0.323
48"	5'-4"	5'-4"	5'-3"	26	6'-5"	6'-8"	6'-8"	1.646	2.940	0.560	0.313	0.422
54"	5'-10"	5'-10"	5'-9"	28	6'-11"	7'-2"	7'-2"	1.902	3.502	0.609	0.396	0.535
60"	6'-6"	6'-6"	6'-3"	30	7'-7"	7'-10"	7'-10"	2.272	4.113	0.658	0.489	0.660
66"	7'-1"	7'-1"	6'-9"	32	8'-2"	8'-5"	8'-5"	2.624	4.778	0.708	0.591	0.798

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
BRICK JUNCTION BOX
(WITH OPTIONAL MANHOLE)
12" THRU 66" PIPE

SHEET 1 OF 1
840.32

McADAMS
The John R. McAdams Company, Inc.
621 Hillsborough Street
Suite 500
Raleigh, NC 27603
phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293, C-187
www.mcadamsco.com

WALLBROOK LANDCO, LLC
3 KEEL STREET, SUITE 2
WRIGHTSVILLE BEACH, NORTH CAROLINA
28480-1709

WALLBROOK
CONSTRUCTION DRAWINGS
ROLESVILLE, NORTH CAROLINA

REVISIONS

NO.	DATE

PLAN INFORMATION

PROJECT NO.	CPR-19100
FILENAME	CPR19100-CD-D1
CHECKED BY	WTO
DRAWN BY	---
SCALE	N.T.S.
DATE	03. 31. 2023

SHEET

STORM DRAINAGE DETAILS

C8.01

NORTH CAROLINA PROFESSIONAL SEAL 22630 ENGINEER WILLIAM T. O'DANIEL

William T O'Daniel
cn=William T O'Daniel, c=US, o=North Carolina, email=rodaniel@mcadamsco.com
2023.03.31 13:21:55 -04'00'

FINAL DRAWING - RELEASED FOR CONSTRUCTION

X:\Projects\CPR\CPR-19100\04-Production\Engineering\Site Plan-Construction Drawings\Current Drawings\CPR19100-CD-D1.dwg, 3/31/2023 11:27:29 AM, Julia Shutt

GENERAL NOTES:

USE STANDARD OR JUMBO BRICK FOR WALL CONSTRUCTION. SOLID CONCRETE BRICK OR BLOCK ARE OPTIONAL WALL CONSTRUCTION MATERIAL

INCLUDE ALL ADJUSTMENTS TO WALLS, SLABS OR REINFORCING MATERIAL IN THE UNIT PRICE BID FOR EACH UNIT.

INSTALL OPTIONAL MANHOLE IN POSITION AS DIRECTED BY THE ENGINEER. CUT OR BEND ALL REBAR CROSSING THIS OPENING TO ALLOW 2" MINIMUM CONCRETE COVERAGE. ENCLOSE THE OPENING WITH 8 "A" BARS TIED TO TO THE REBAR MAT AND SET SO A MINIMUM OF 3" CONCRETE COVER IS ATTAINED. REFERENCE STD. NO. 840.54 FOR MANHOLE INFORMATION.

PROVIDE JUNCTION BOXES WITH MANHOLES OVER 3'-6" IN DEPTH WITH STEPS PLACED ON 12" CENTERS. REFERENCE STD. NO. 840.66.

SPACE DOWEL "C" BARS AT A MAXIMUM OF 12" CENTERS.

MAXIMUM DEPTH OF THIS UNIT AS SHOWN IS 12'.

CONSTRUCT THE JUNCTION BOX IN ACCORDANCE WITH SECTIONS 830, 832, 834 AND 840 OF THE STANDARD SPECIFICATIONS.

BILL OF MATERIAL

BAR	QTY.	SIZE	LENGTH	WEIGHT
A	8	#5	1'-2"	9.7
B	14	#5	5'-6"	80.3
C	26	#4	1'-6"	26.1
Y	14	#5	6'-11⅜"	101.5
		STEEL TOTAL WEIGHT		217.6
CU. YDS. CLASS "AA" CONC.				2.6
CU. YDS. BRICK/FT. HT. (8")				0.53
CU. YDS. BRICK/FT. HT. (12")				0.84

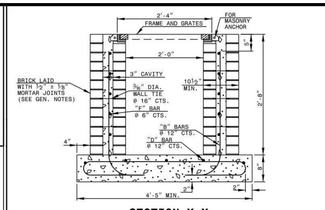
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

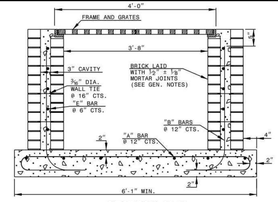
ROADWAY STANDARD DRAWING FOR
TRAFFIC BEARING JUNCTION BOX
FOR USE WITH PIPES 42" AND UNDER

SHEET 2 OF 2
840.34

BRICK ALT.

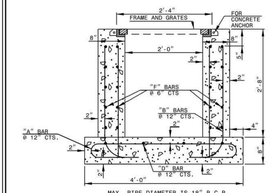


SECTION X-X

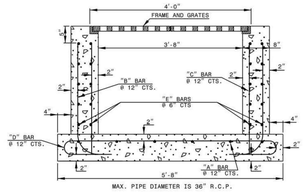


SECTION Y-Y

CONCRETE ALT.



SECTION X-X



SECTION Y-Y

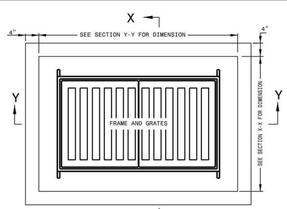
NOTES:
-HORIZONTAL AND VERTICAL DIMENSIONS MAY BE ADJUSTED AS THE FIELD CONDITIONS AND/OR ALTERNATE DESIGN REQUIRE.
-MAXIMUM HEIGHT FOR THIS STRUCTURE IS 14'-0".
-MAKE ALL ADJUSTMENTS AS DIRECTED BY THE ENGINEER.
-DEPTH OF STEEL GRATE WILL REQUIRE DEEPER SEAT ALONG SHORT WALLS.

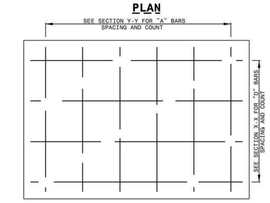
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
TRAFFIC BEARING GRATED DROP INLET
FOR CAST IRON DOUBLE FRAME AND GRATES

SHEET 1 OF 2
840.35

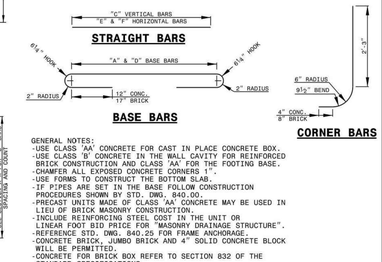




PLAN OF BASE

BILL OF MATERIALS

COMMON		CONCRETE ALT.			BRICK ALT.		
BAR	SIZE	LENGTH	QUANTITY	WEIGHT	LENGTH	QUANTITY	WEIGHT
A	#5	6'-4½"	8	39.9	6'-7½"	16	82.9
B	#5	3'-4½"	14	58.3	3'-4½"	16	56.3
C	#5	3'-4½"	14	58.3	3'-4½"	16	56.3
D	#5	8'-01⅝"	4	33.6	9'-3½"	4	38.8
E	#5	3'-0"	20	62.5	3'-0"	10	31.3
F	#5	4'-8"	20	97.3	4'-8"	10	48.7
REINF. STEEL TOTAL WEIGHT LBS.:				328.6			222.8
CONCRETE IN BASE CLASS 'AA' (CUBIC YARDS)				0.56			0.56
CONCRETE IN WALLS CLASS 'AA' (CUBIC YARDS)				0.92			-0-
CONCRETE IN WALLS CLASS 'B' (CUBIC YARDS)				-0-			0.36
BRICK IN WALLS (CUBIC YARDS)				-0-			0.91
CONCRETE TOTAL (CUBIC YARDS)				1.48			1.02
BRICK & CONCRETE TOTAL (CUBIC YARDS)				1.48			1.93
CONC. CUBIC YARDS IN WALL/FOOT OF HEIGHT				0.35			0.14
BRICK CUBIC YARDS IN WALL/FOOT OF HEIGHT				-0-			0.34
LBS. OF REINF. STEEL IN WALL/FOOT OF HEIGHT				94.9			67.6



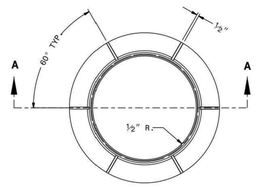
GENERAL NOTES:
-USE CLASS 'AA' CONCRETE FOR CAST IN PLACE CONCRETE BOX.
-USE CLASS 'B' CONCRETE IN THE WALL CAVITY FOR REINFORCED BRICK CONSTRUCTION AND CLASS 'AA' FOR THE FOOTING BASE.
-CHAMFER ALL EXPOSED CONCRETE CORNERS 1".
-USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
-IF PIPES ARE SET IN THE BASE FOLLOW CONSTRUCTION PROCEDURES SHOWN BY STD. DWG. 840.00.
-PRECAST UNITS MADE OF CLASS 'AA' CONCRETE MAY BE USED IN LIEU OF BRICK MASONRY CONSTRUCTION.
-INCLUDE REINFORCING STEEL COST IN THE UNIT OR LINEAR FOOT BID PRICE FOR "MASONRY DRAINAGE STRUCTURE".
-REFERENCE STD. DWG. 840.25 FOR FRAME ANCHORAGE.
-CONCRETE BRICK, JUMBO BRICK AND 4" SOLID CONCRETE BLOCK WILL BE PERMITTED.
-CONCRETE FOR BRICK BOX REFER TO SECTION 832 OF THE STANDARD SPECIFICATIONS.
-PROVIDE GRATED DROP INLETS OVER 3'-6" DEEP WITH STEPS SPACED 12" ON CENTER AS DIRECTED BY STD. DWG. 840.66.
-FRAME AND GRATES ARE SEPARATE CONTRACT ITEMS.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

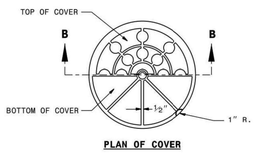
ROADWAY STANDARD DRAWING FOR
TRAFFIC BEARING GRATED DROP INLET
FOR CAST IRON DOUBLE FRAME AND GRATES

SHEET 2 OF 2
840.35

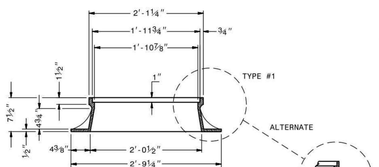


PLAN OF FRAME

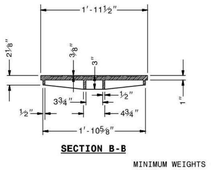
SOLID COVER SHOWN PERFORATED. PERFORATED AVAILABLE IF SPECIFIED.
STATE USE OF SYSTEM ON COVER
(I.E.: SEWER, STORM DRAIN, ELECTRICAL)



PLAN OF COVER



SECTION A-A



SECTION B-B

MINIMUM WEIGHTS - LBS.
FRAME - 180
COVER - 120
TOTAL - 300

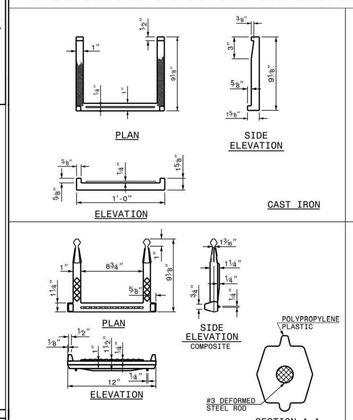
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
MANHOLE FRAME AND COVER

SHEET 1 OF 1
840.54

NOTES:
INSTALL ALL STEPS PROTRUDING 4" FROM INSIDE FACE OF STRUCTURE WALL.
STEPS DIFFERING IN DIMENSIONS, CONFIGURATION, OR MATERIALS FROM THOSE SHOWN MAY ALSO BE USED PROVIDED THE CONTRACTOR HAS FURNISHED THE ENGINEER WITH DETAILS OF THE PROPOSED STEPS AND HAS RECEIVED WRITTEN APPROVAL FROM THE ENGINEER FOR THE USE OF SUCH STEPS.



NOTE:
DO NOT USE IN SANITARY SEWER MANHOLES.

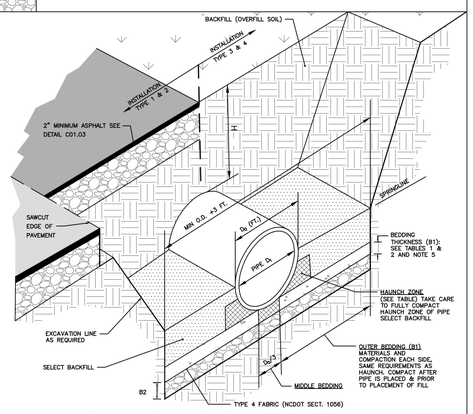
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
DRAINAGE STRUCTURE STEPS

SHEET 1 OF 1
840.66

H=	THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE EMBANKMENT AT THE POINT. DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.
	UNDISTURBED EARTH MATERIAL
	BEDDING (MIDDLE AND OUTER): LOOSELY PLACED SELECT BACKFILL MATERIAL MEETING NCDOT CLASS II, TYPE 1 (WASHED OR UNWASHED CRUSHED STONE, SCREENINGS) OR CLASS III, TYPE 1 (NCDOT 25 OR 2M5 FINE AGGREGATE). LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.
	SELECT BACKFILL (BELOW SPRINGLINE): SELECT BACKFILL MATERIAL MEETING NCDOT CLASS II, TYPES 1 OR 2 OR NCDOT CLASS III, TYPES 1 OR 2
	BACKFILL: APPROVED SUITABLE LOCAL COMPACTABLE MATERIAL ABOVE SPRINGLINE OF PIPE MEETING LOCAL MUNICIPAL SPECIFICATIONS.
	ROCK FOUNDATION OR UNSUITABLE MATERIAL FOUNDATION: SELECT MATERIAL NCDOT CLASS V (#78M STONE) OR NCDOT CLASS VI (#57 STONE) FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER: TYPE 4 SOIL STABILIZATION FABRIC (NCDOT TABLE 1056-1). OVERLAP ALL TRANSVERSE AND LONGITUDINAL JOINTS IN FABRIC AT LEAST 18 INCHES. MAINTAIN THE PIPE FOUNDATION IN A DRY CONDITION.



STORM DRAIN PIPE INSTALLATION
N.T.S.

1 OF 3

TABLE 1
EQUIVALENT USCS[a] AND AASHTO SOIL CLASSIFICATION FOR SIDD[b] SOIL DESIGNATIONS

SIDD	USCS	NCDOT/AASHTO
GRAVELLY SAND (CATEGORY I)	SW, SP, GW, GP	–NCDOT CLASS II–TYPE I (CRUSHED STONE SCREENINGS), LL<30; PI≤6 –NCDOT CLASS III, TYPE I (2S OR 2M5), LL<30; PI≤6
SANDY SILT (CATEGORY II)	GM, SM, ALSO GC, SC WITH LESS THAN 20% PASSING #200 SIEVE	–NCDOT CLASS II TYPE I (CRUSHED STONE SCREENINGS) AND CLASS II, TYPE 2 (AASHTO M145 FOR A–2–4 WITH MAX PI OF 6, A–4 W/ MAX 45% PASSING #200 SIEVE AND A MAX PI OF 6) –NCDOT CLASS III, TYPE 1 (2S OR 2M5) OR CLASS III, TYPE 2 (AASHTO M145 FOR SOIL CLASSIFICATION A–1 OR A–3)
SILTY CLAY (CATEGORY III)	CL, MH, GC, SC	A5, A6

[a] UNIFOLD SOIL CLASSIFICATION SYSTEM
[b] STANDARD INSTALLATIONS DIRECT DESIGN

TABLE 2
STANDARD INSTALLATIONS SOILS AND MINIMUM COMPACTION REQUIREMENTS

INSTALLATION TYPE	BEDDING THICKNESS	OUTER BEDDING (B1) NOTE 5 (% COMPACTION/CATEGORY)	HAUNCH ZONE & SELECT BACKFILL AREA (% COMPACTION/CATEGORY)	LOCATION
TYPE 1	B1 = D/6 (6" MIN) B2=F ROCK FOUNDATION OR OVER UNSUITABLE FOUNDATION, 3" /FT OF "H", 12" MIN/24" MAX	95% CATEGORY 1	90% CATEGORY 1 95% CATEGORY II	PAVED AREAS WITH 2' OR LESS BURY
TYPE 2	B1 = D/6 (6" MIN) B2=F ROCK FOUNDATION OR OVER UNSUITABLE FOUNDATION, 3" /FT OF "H", 12" MIN/24" MAX	90% CATEGORY 1	85% CATEGORY 1 90% CATEGORY II	PAVED AREAS WITH GREATER THAN 2' OF BURY
TYPE 3	B1 = D/6 (6" MIN) B2=F ROCK FOUNDATION OR OVER UNSUITABLE FOUNDATION, 3" /FT OF "H", 12" MIN/24" MAX	85% CATEGORY 1 90% CATEGORY II	85% CATEGORY 1 90% CATEGORY II OR 95% CATEGORY III	IN R/W OUTSIDE OF PAVEMENT
TYPE 4	B1 = D/6 (6" MIN) B2=F ROCK FOUNDATION OR OVER UNSUITABLE FOUNDATION, 3" /FT OF "H", 12" MIN/24" MAX	NO COMPACTION REQUIRED, EXCEPT IF CATEGORY III, USE 85% CATEGORY II	NO COMPACTION REQUIRED, EXCEPT IF CATEGORY III, USE 85% CATEGORY II	NATURAL AREAS

NOTES:
1. COMPACTION AND SOIL SYMBOLS – I.E. "95% CATEGORY I" – REFERS TO CATEGORY I SOIL MATERIAL WITH MINIMUM STANDARD PROCTOR COMPACTION OF 95%.
2. SOIL IN THE OUTER BEDDING, HAUNCH, AND LOWER SIDE ZONES, EXCEPT UNDER THE MIDDLE ⅓ OF THE PIPE, SHALL BE COMPACTED TO AT LEAST THE SAME COMPACTION AS THE MAJORITY OF THE SOIL IN THE OVERFILL (BACKFILL) ZONE.
3. FOR TRENCHES: THE TOP ELEVATION SHALL BE NO LOWER THAN 0.1H BELOW FINISHED GRADE OR, FOR ROADWAYS, ITS TOP SHALL BE NO LOWER THAN AN ELEVATION OF 1–FOOT BELOW THE BOTTOM OF THE PAVEMENT BASE MATERIAL.
4. FOR TRENCHES, THE WIDTH SHALL BE WIDER THAN SHOWN IF REQUIRED FOR ADEQUATE SPACE TO ATTAIN THE SPECIFIED COMPACTION IN THE HAUNCH AND BEDDING ZONES.
5. COMPACT OUTER BEDDING AFTER PIPE IS PLACED AND PRIOR TO PLACEMENT OF SELECT FILL. MIDDLE BEDDING IS UNCOMPACTED.
6. OVERFILL (BACKFILL) SOILS TO BE PLACED PER STANDARD SPECIFICATION 02700 STORM DRAINAGE FOR THE APPLICABLE BACKFILL TYPE AND BURY LIMITATIONS.
7. THESE TWO TABLES WERE MODIFIED TO GENERALLY CONFORM TO THE NCDOT STANDARDS AS SHOWN IN DETAIL 300.01 RIGID PIPE IN TRENCH CONDITION.

REFERENCE SOURCES:
1. AMERICAN CONCRETE PIPE ASSOCIATION DESIGN STANDARDS
2. 2012 NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES AND NCDOT STANDARD DETAILS 300.01 FOR RIGID PIPE, TRENCH CONDITIONS."

STORM DRAIN PIPE INSTALLATION

2 OF 3

FILL HEIGHT TABLE[a]

INSIDE PIPE DIAMETER Di (INCHES)	TYPE 3 (BEDDING) INSTALLATION (0.01 INCH CRACK) CLASS III PIPE MAXIMUM BURY H (FEET)	TYPE 3 (BEDDING) INSTALLATION (0.01 INCH CRACK) CLASS IV PIPE MAXIMUM BURY H (FEET)	TYPE 4 (BEDDING) INSTALLATION (0.01 INCH CRACK) CLASS III PIPE MAXIMUM BURY H (FEET)	TYPE 4 (BEDDING) INSTALLATION (0.01 INCH CRACK) CLASS IV PIPE MAXIMUM BURY H (FEET)
15	2 MIN, 12 MAX	1 MIN, 20 MAX	3 MIN, 7 MAX	2 MIN, 12 MAX
18	2 MIN, 12 MAX	1 MIN, 20 MAX	3 MIN, 7 MAX	1 MIN, 13 MAX
24	1 MIN, 12 MAX	1 MIN, 20 MAX	2 MIN, 8 MAX	1 MIN, 13 MAX
30	1 MIN, 12 MAX	1 MIN, 20 MAX	1 MIN, 8 MAX	1 MIN, 13 MAX
36	1 MIN, 12 MAX	1 MIN, 20 MAX	1 MIN, 8 MAX	1 MIN, 13 MAX
42	1 MIN, 12 MAX	1 MIN, 20 MAX	1 MIN, 8 MAX	1 MIN, 13 MAX
48	1 MIN, 12 MAX	1 MIN, 19 MAX	1 MIN, 8 MAX	1 MIN, 13 MAX
54	1 MIN, 12 MAX	1 MIN, 19 MAX	1 MIN, 8 MAX	1 MIN, 13 MAX
60	1 MIN, 12 MAX	1 MIN, 19 MAX	1 MIN, 8 MAX	1 MIN, 13 MAX
72	1 MIN, 11 MAX	1 MIN, 19 MAX	1 MIN, 7 MAX	1 MIN, 13 MAX

FILL HEIGHT TABLE BASE ON:
1. Ys = 120 PCF (BACKFILL LOAD)
2. AASHTO HL–93 LIVE LOAD
3. POSITIVE PROJECTING EMBANKMENT CONDITION (THIS GIVES CONSERVATIVE RESULTS IN COMPARISON TO TRENCH CONDITIONS)
4. PIPE = REINFORCED CONCRETE PIPE MEETING ASTM C76 (AASHTO M170), WALL C THICKNESS
5. CONCRETE PIPE SHOULD BE INSTALLED IN ACCORDANCE WITH AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS SECTION 27 OR ASTM C1479.

[a] FILL HEIGHT TABLES, THE PORTION EXCERPTED HERE. WAS DEVELOPED BY THE AMERICAN CONCRETE PIPE ASSOCIATION (ACPA) USING THE INDIRECT DESIGN METHOD IN ACCORDANCE WITH SECTION 12.10.4.3 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATION, 4TH, 2007 WITH 2008 INTERIM.

NOTES:
1. GREATER BURY DEPTHS THAN THOSE SHOWN ABOVE ARE ACHIEVABLE BY EITHER USING TYPE 1 OR 2 INSTALLATION, USING CLASS V PIPE, CONTROLLING BACKFILL TYPE, CALCULATING DEPTH USING A TRENCH CONDITION, OR BY SPECIAL DESIGN. SEE ALSO DESIGN DATA 9 PUBLISHED BY THE ACPA FOR DESIGN METHODOLOGY.
2. IN LIEU OF CALCULATING BURY DEPTH FOR OTHER CONDITIONS, FIRST SEE "LRFD FILL HEIGHT TABLES FOR CONCRETE PIPE", LAST REVISED JULY 2009 OR LATER), PREPARED BY THE ACPA FOR OTHER BURY DEPTH POSSIBILITIES

STORM DRAIN PIPE INSTALLATION

3 OF 3

McADAMS
The John R. McAdams Company, Inc.
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www.mcadamsco.com

WALLBROOK LANDCO, LLC
3 KEEL STREET, SUITE 2
WRIGHTSVILLE BEACH, NORTH CAROLINA
28480-1709

WALLBROOK
CONSTRUCTION DRAWINGS
ROLESVILLE, NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 22630 ENGINEER WILLIAM T. O'DANIEL

William T O'Daniel
DN:William T O'Daniel, c=US, o=North Carolina, email=odaniel@mcadamsco.com
2023.03.31 13:22:13 -04'00'

REVISIONS

NO.	DATE

PLAN INFORMATION

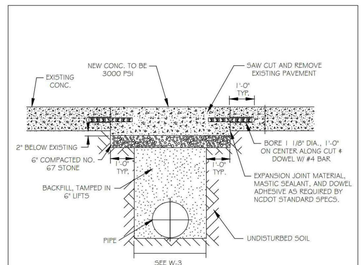
PROJECT NO.	CPR-19100
FILENAME	CPR19100-CD-D1
CHECKED BY	.
DRAWN BY	.
SCALE	N.T.S.
DATE	03. 31. 2023

SHEET

STORM DRAINAGE DETAILS
C8.02

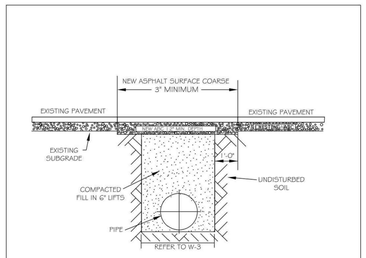
FINAL DRAWING - RELEASED FOR CONSTRUCTION

X:\Projects\CPR\CPR-19100\04-Production\Engineering\Site Plan-Construction Drawings\Current Drawings\CPR19100-CD-D1.dwg, 3/31/2023 11:27:52 AM, Julia Shutt



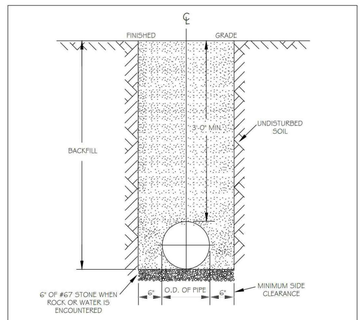
NOTES:
1. SEE CITY OF RALEIGH STANDARDS FOR TRENCHES AND PIPE BEDDING W-3 FOR ADDITIONAL DETAILS
2. PAVEMENT CUTS WITHIN NCDOT ROW SHALL CONFORM TO THE APPROVED ON SITE ENCROACHMENT PERMIT.
3. THE PAVEMENT CUT SHALL BE DEFINED BY A STRAIGHT EDGE AND CUT WITH AN APPROVED SAW CUT MACHINE.
4. THE TRENCH SUBGRADE MATERIAL SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED TO A DENSITY OF AT LEAST 95% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY NCDOT. S. THE FINAL 6" OF FILL SHALL CONSIST OF ABC MATERIAL COMPACTED TO A DENSITY EQUAL TO 100% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-180 AS MODIFIED BY NCDOT. .

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
STANDARD CONCRETE PAVEMENT PATCH DETAIL				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-1	RKH	3-31-00	A.B.B.	10-29-10
	A.B.B.	2-8-05	MAB	10-31-13



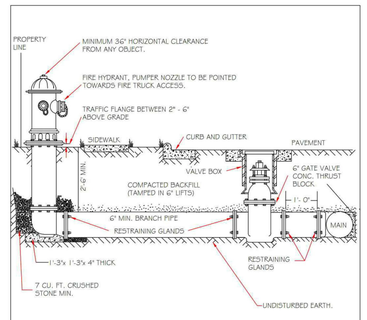
NOTES:
1. THE PAVEMENT CUT SHALL BE DEFINED BY A STRAIGHT EDGE AND CUT WITH AN APPROPRIATE SAW CUT MACHINE.
2. THE TRENCH SUBGRADE MATERIAL SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED TO A DENSITY OF AT LEAST 95% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY NCDOT.
3. THE FINAL 1' OF FILL SHALL CONSIST OF ABC MATERIAL COMPACTED TO A DENSITY EQUAL TO 100% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-180 AS MODIFIED BY NCDOT.
4. THE ENTIRE THICKNESS/ VERTICAL EDGE CUT SHALL BE TACKED.
5. THE SAME DEPTH OF PAVEMENT MATERIAL WHICH EXISTS SHALL BE REINSTALLED, BUT IN NO CASE SHALL THE ASPHALT BE LESS THAN 3" THICK.
6. THE ASPHALT PAVEMENT MATERIAL SHALL BE INSTALLED AND COMPACTED THOROUGHLY WITH A SMOOTH DRUM ROLLER TO ACHIEVE A SMOOTH LEVEL PATCH.
7. REFER TO CITY OF RALEIGH STANDARDS FOR TRENCHES AND PIPE BEDDING, W-3. FOR ADDITIONAL DETAILS.
8. NO HAND PATCHING ALLOWED.
9. PAVEMENT CUTS WITHIN NCDOT ROW SHALL CONFORM TO THE APPROVED ON SITE ENCROACHMENT PERMIT.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
STANDARD ASPHALT PAVEMENT PATCH DETAIL				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-2	RKH	3-31-00	A.B.B.	4-16-04
	D.W.C.	11-1-99	J.P.S.	10-29-10



NOTES:
1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS.
5. ACHIEVE 95% COMPACTION IN BACKFILL.

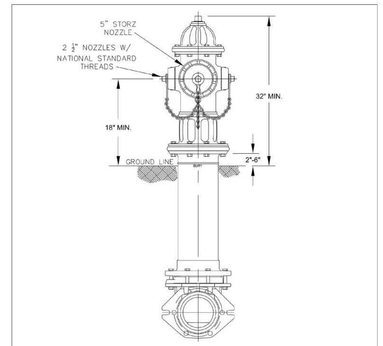
CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-3	D.W.C.	9-3-99	ABB	2-15-05
	RKH	3-31-00	J.P.S.	10-29-10



NOTES:
1. FIRE HYDRANT SHALL BE AS MANUFACTURED: MUELLER, AMERICAN DARLING, KENNEDY, M&H, WATEROUS, CLOW, EAST JORDAN IRON WORKS, OR US PIPE.
2. BRANCH PIPE SHALL BE DUCTILE IRON AWWA C150-96
3. 6" GATE VALVE SHALL BE AWWA C500-96 OPEN LEFT
4. STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED
5. FIRE HYDRANTS WILL BE INSTALLED IN TRUE VERTICAL POSITION RODS SHALL NOT BE COUPLED MORE THAN ONCE. IF THE LENGTH FROM THE VALVE TO THE HYDRANT EXCEEDS 20' THEN A MECHANICAL RESTRAINING GLAND WITH A REBAR CAGE SHALL BE INSTALLED NO MORE THAN 10' FROM HYDRANT AND POURED IN CONCRETE. FIRE HYDRANTS TO BE LOCATED IN ROW OR 2 FOOT EASEMENT ADJACENT TO ROW

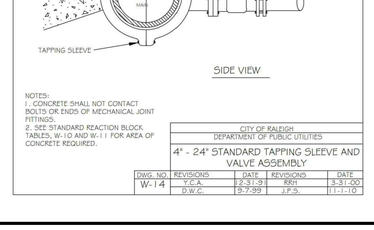
ANYTIME SITE WORK, CONSTRUCTION, ROAD WORK, OR ANY OTHER WORK CHANGES THE GRADE OF THE FIRE HYDRANT, THE PERSON RESPONSIBLE FOR THE WORK IS RESPONSIBLE FOR ADJUSTING THE FIRE HYDRANT TO STAY WITHIN COMPLIANCE.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
STANDARD FIRE HYDRANT INSTALLATION DETAIL				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-4	ABB	4-6-04	TGT	2/1/06
	DHL	2/1/06		

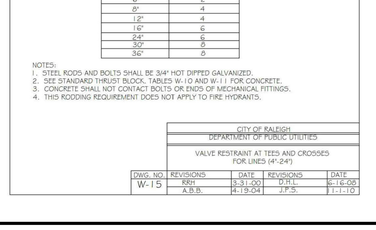


NOTES:
1. ALL PUBLIC FIRE HYDRANTS IN THE CITY OF RALEIGH AND THE MERGER TOWNS OF GARNER, ROLESVILLE, WAKE FOREST, KNIGHTDALE, WENDELL AND ZEBULON SHALL BE PAINTED CHROME YELLOW WITH HIGH REFLECTIVE ALUMINUM SILVER CAPS, BONNETS AND OPERATING NUTS.
2. ALL PRIVATE FIRE HYDRANTS SHALL BE RED.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
STANDARD FIRE HYDRANT WITH 5" STORZ PUMPER NOZZLE				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-5	MAB	9-30-16		
	KAT	9-15-17		



CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
HYDRANT OPERATING NUT AND 2 1/2" OUTLET THREADS				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-6	RKH	3-31-00	DHL	2-15-06
	A.B.B.	4-13-04	J.P.S.	11-1-10



REINFORCING REQUIREMENTS

I.D. PIPE	REBAR SIZE	"A" BAR LENGTH	"A" BAR WEIGHT	"Y" BAR LENGTH	"Y" BAR WEIGHT	NO. REQUIRED
6" - 36"	#5	2'-2"+ O.D. PIPE	1.043 LBS/FT	1'-1"	1.1 LBS. EACH	X-24, Y-12
42" & greater	#6	2'-2"+ O.D. PIPE	1.502 LBS/FT	1'-3"	1.2 LBS. EACH	X-24, Y-12

THRUST COLLAR AND THRUST SCHEDULE

I.D. PIPE	"A"	"B"	"C"	"D"
6" - 16"	1'-4"	1'-7"	2"	3.05"
20" - 24"	1'-4"	1'-7"	3"	1/2"
30" - 36"	1'-4"	1'-7"	4"	5.81"
42" & greater	1'-5"	1'-9"	6"	7.85"

NOTES:
1. SEE STANDARD DETAIL W-9 FOR THRUST BLOCK LOCATIONS.
2. CONCRETE SHALL BE 3000 PSI AND TRANSIT MIXED.
3. REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
4. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE THE MINIMUM WIDTH AS SHOWN ON STANDARD DETAIL W-3.
5. BACKFILL TAMPED IN 6" LIFTS PER STANDARD DETAIL W-3.
6. THRUST COLLAR MUST BE FACTORY WELDED ON BOTH SIDES ALONG BOTH EDGES OF COLLAR AROUND CIRCUMFERENCE.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
THRUST BLOCKING DESIGN DATA FOR WATER MAINS				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-7	RKH	3-21-00	J.P.S.	11-1-10
	D.H.L.	6-18-08		

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS
BASED ON TEST PRESSURE OF 200 P.S.I.

ALL AREAS GIVEN IN SQUARE FEET.

SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	FOUNDATION DRY CLAY, 4000 LBS/FT²	SOFT CLAY, 2000 LBS/FT²	SOFT CLAY, SATURATED GROUND WATER	SAND, COARSE, DRY OR MOIST, 4000 LBS/FT²	SAND, COMPACT, FIRM 4000 LBS/FT²	SAND, CLEAN, DRY, 3000 LBS/FT²	SOIL, 3000 LBS/FT², SATURATED, VERY POOR	ROCK, FOUR (4) 1000 LBS/FT²
6"									
11 1/4°	1,108	1	1	1	1	1	1	2	1
22 1/2°	2,207	1	2	2	1	1	1	3	1
45°	4,328	2	3	3	1	1	2	5	1
90°	7,996	2	4	5	1	1	2	6	1
PLUG	5,655	2	3	4	1	1	2	6	1
8"									
11 1/4°	1,970	1	1	2	1	1	1	2	1
22 1/2°	3,922	1	2	3	1	1	1	4	1
45°	7,694	2	4	5	1	1	2	8	1
90°	14,215	4	8	9	2	2	4	15	2
PLUG	10,053	3	5	6	2	2	3	10	1
12"									
11 1/4°	4,433	2	3	3	1	1	2	5	1
22 1/2°	8,826	3	5	6	2	2	3	9	1
45°	17,312	5	9	11	3	3	5	18	2
90°	31,983	8	16	19	4	4	8	32	4
PLUG	22,619	6	12	14	3	3	6	23	3
16"									
11 1/4°	7,861	2	4	5	1	1	2	8	1
22 1/2°	15,691	4	8	10	2	2	4	16	2
45°	30,779	8	16	19	4	4	8	31	4
90°	56,861	15	29	35	8	8	15	57	6
PLUG	40,213	10	21	25	5	5	10	41	5

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.

USE 6" - 90° BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
THRUST BLOCKING DESIGN QUANTITY TABLE				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-10	D.W.C.	6-23-99		

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS
BASED ON TEST PRESSURE OF 200 P.S.I.

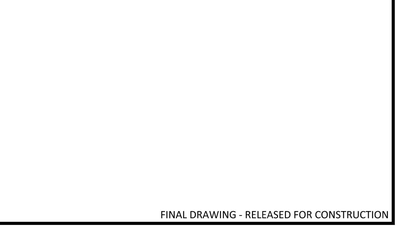
ALL AREAS GIVEN IN SQUARE FEET.

SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	FOUNDATION DRY CLAY, MOIST, 4000 LBS/FT²	SOFT CLAY, 2000 LBS/FT²	GRAVEL, COARSE, SAND DRY OR MOIST, 4000 LBS/FT²	SAND, COMPACT, FIRM 4000 LBS/FT²	SAND, CLEAN, DRY, 3000 LBS/FT²	SOIL, 3000 LBS/FT², SATURATED, VERY POOR	ROCK, FOUR (4) 1000 LBS/FT²
24"								
11 1/4°	17,734	5	9	11	3	3	5	18	2
22 1/2°	35,305	9	18	22	5	5	9	36	4
45°	69,252	18	35	42	9	9	18	70	7
90°	127,936	32	64	77	16	16	32	128	13
PLUG	90,475	23	46	55	12	12	23	91	10
30"									
11 1/4°	27,709	7	14	17	4	4	7	2	3
22 1/2°	55,163	14	28	34	7	7	14	56	6
45°	108,204	28	55	65	14	14	28	109	11
90°	199,900	50	100	120	25	25	50	200	20
PLUG	141,372	36	71	85	18	18	36	142	15
36"									
11 1/4°	39,901	10	20	24	5	5	10	40	4
22 1/2°	79,439	20	40	48	10	10	20	30	8
45°	155,814	39	78	94	20	20	39	156	16
90°	287,855	72	144	172	36	36	72	288	29
PLUG	203,575	51	102	122	26	26	51	204	21
48"									
11 1/4°	70,935	18	36	43	9	9	18	71	8
22 1/2°	141,218	36	71	85	18	18	36	142	15
45°	277,007	70	139	166	35	35	70	277	28
90°	511,742	128	256	320	64	64	128	512	52
PLUG	361,911	91	181	217	46	46	91	362	37

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.

USE 6" - 90° BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
THRUST BLOCKING DESIGN QUANTITY TABLE				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-11	D.W.C.	6-23-99		



NOTES:
1) VALVE BOX NOT TO CONTACT WATER MAIN
2) ALL TRAFFIC CASTINGS MUST BE CLASS 35 OR GREATER.
3) FOR ANY VALVES OVER 10' DEEP, A VALVE STEM EXTENSION MUST BE USED TO BRING TO A DEPTH OF 6' OR LESS. THE STEM EXTENSION MUST BE A MINIMUM OF 1" SOLID STOCK.
4) TOTAL VALVE BOX WEIGHT: MINIMUM OF 225 LBS.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
VALVE BOX INSTALLATION AND EXTENSION DETAIL				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-17	D.W.C.	9-7-99	A.B.B.	4-15-04
	RKH	3-31-00	DHL	8-16-07

NOTES:
1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
2. SEE STANDARD REACTION BLOCK TABLES, W-10 AND W-11 FOR AREA OF CONCRETE REQUIRED.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
4" - 24" STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-14	Y.C.A.	2-3-98	RKH	3-31-00
	D.W.C.	9-7-99	J.P.S.	11-1-10

ROD REQUIREMENTS

NO. OF RODS	BRANCH SIZE
4°	2
6°	2
6°	4
12°	4
16°	6
24°	6
30°	8
36°	8

NOTES:
1. STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
2. SEE STANDARD THRUST BLOCK TABLES W-10 AND W-11 FOR CONCRETE.
3. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL FITTINGS.
4. THIS RODDING REQUIREMENT DOES NOT APPLY TO FIRE HYDRANTS.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
VALVE RESTRAINT AT TEES AND CROSSES FOR LINES (4"-24")				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-15	RKH	3-31-00	D.H.L.	10-16-08
	A.B.B.	4-13-04	J.P.S.	11-1-10

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WALLBROOK LANDCO, LLC
3 KEEL STREET, SUITE 2
WRIGHTSVILLE BEACH, NORTH CAROLINA
28480-1709

WALLBROOK
CONSTRUCTION DRAWINGS
ROLESVILLE, NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 22630 ENGINEER WILLIAM T. O'DANIEL

William T O'Daniel
cn=William T O'Daniel, c=US, o=North Carolina, email=rodaniel@mcadamsco.com
2023.03.31 13:22:30 -04'00'

REVISIONS

NO.	DATE

PLAN INFORMATION

PROJECT NO.	CPR-19100
FILENAME	CPR19100-CD-D1
CHECKED BY	.
DRAWN BY	.
SCALE	N.T.S.
DATE	03. 31. 2023

SHEET

WATER DETAILS

C8.03

FINAL DRAWING - RELEASED FOR CONSTRUCTION

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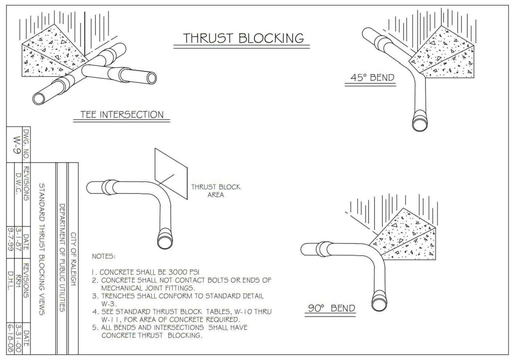

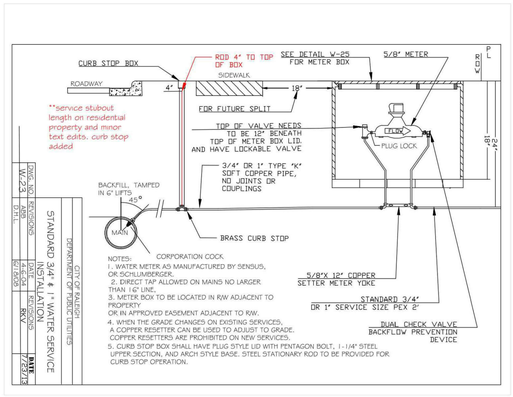

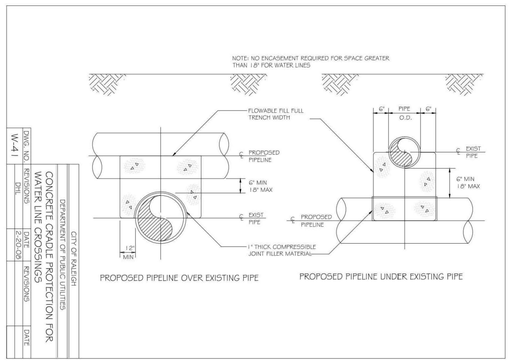

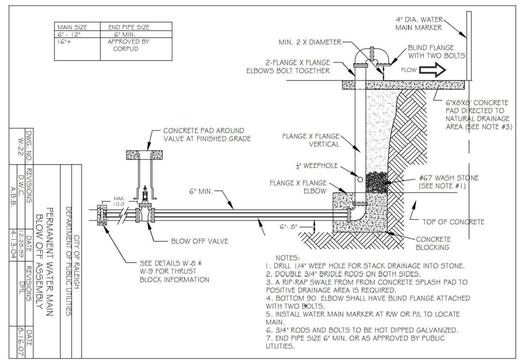

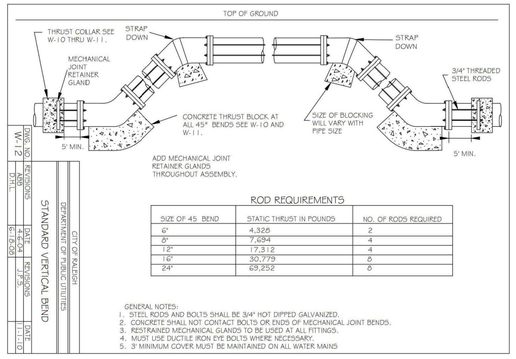

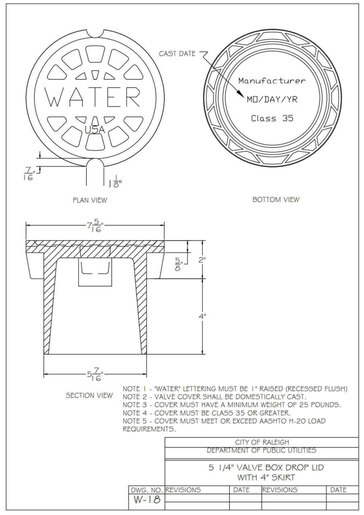

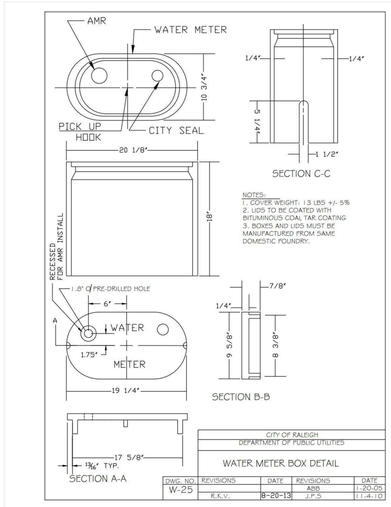

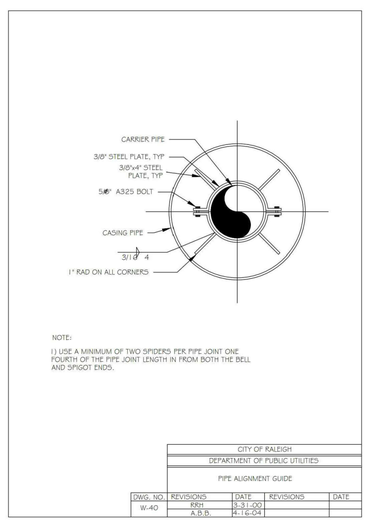

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NORTH CAROLINA PROFESSIONAL SEAL 22630 ENGINEER WILLIAM T. O'DANIEL

William T O'Daniel
cn=William T O'Daniel, c=US, o=North Carolina, email=wdaniel@mcadamsco.com
2023.03.31 13:22:48 -04'00'

REVISIONS

NO. DATE

PLAN INFORMATION

PROJECT NO.	CPR-19100
FILENAME	CPR19100-CD-D1
CHECKED BY	.
DRAWN BY	.
SCALE	N.T.S.
DATE	03. 31. 2023

SHEET

WATER DETAILS

C8.04

FINAL DRAWING - RELEASED FOR CONSTRUCTION

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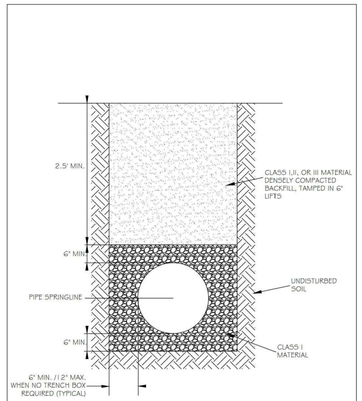
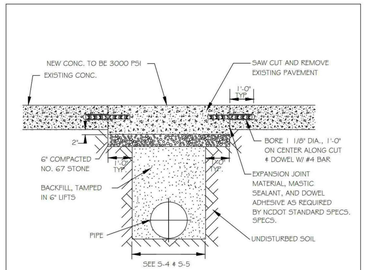


CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD BEDDING DETAILS FOR CCFRPM PIPES

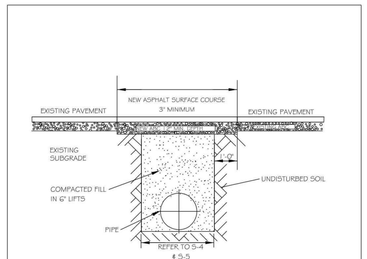
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-1	J.F.S.	10-5-10		



NOTES:
1. See City of Raleigh standards for trenches and pipe bedding (S-4 # S-5) for additional details.
2. Pavement cuts over 5'-0" in width shall be reinforced to N.C.D.O.T. standards.
3. Pavement cuts shall be made with an appropriate saw cut machine.
4. Pavement cuts within NCDOT ROW shall conform to the approved on site encroachment permit.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD CONCRETE PAVEMENT PATCH DETAIL

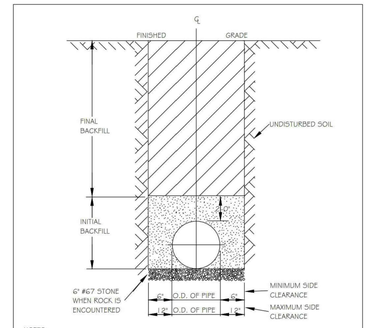
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-2	D.W.C.	6-23-99	A.B.B.	4-19-04
	KRH	3-30-00	J.F.S.	10-5-10



NOTES:
1. IN NCDOT MAINTAINED ROADWAYS ENCROACHMENT PAVEMENT PATCH REQUIREMENTS SHALL TAKE PRECEDENCE.
2. THE PAVEMENT CUT SHALL BE DEFINED BY A STRAIGHT EDGE AND CUT WITH AN APPROPRIATE SAWCUT MACHINE.
3. THE TRENCH SUBGRADE MATERIAL SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED TO A DENSITY OF AT LEAST 95% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY NCDOT.
4. THE FINAL 1' OF FILL SHALL CONSIST OF ABC MATERIAL COMPACTED TO A DENSITY EQUAL TO 100% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-180 AS MODIFIED BY NCDOT.
5. THE ENTIRE THICKNESS AND VERTICAL EDGE OF CUT SHALL BE TACKED.
6. THE SAME DEPTH OF PAVEMENT MATERIAL WHICH EXISTS SHALL BE REINSTALLED, BUT IN NO CASE SHALL THE ASPHALT BE LESS THAN 3" THICK.
7. THE ASPHALT PAVEMENT MATERIAL SHALL BE INSTALLED AND COMPACTED THOROUGHLY WITH A SMOOTH DRUM ROLLER TO ACHIEVE A SMOOTH LEVEL PATCH.
8. REFER TO CITY OF RALEIGH STANDARDS FOR TRENCHES AND PIPE BEDDING (S-4 # S-5) FOR ADDITIONAL DETAILS.
9. NO HAND PATCHING ALLOWED.
10. PAVEMENT CUTS WITHIN NCDOT ROW SHALL CONFORM TO THE APPROVED ON SITE ENCROACHMENT PERMIT.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD ASPHALT PAVEMENT PATCH DETAIL

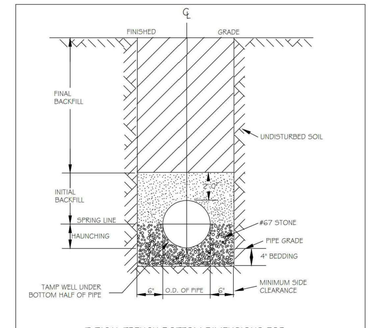
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-3	D.W.C.	11-1-99	A.B.B.	4-19-04
	KRH	3-30-00	J.F.S.	10-5-10



NOTES:
1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.
5. ACHIEVE 80% COMPACTION IN NON-TRAFFIC AREAS, AND 95% COMPACTION IN TRAFFIC AREAS.
6. 8" IN EASEMENT 4" TOPSOIL, AND 12" CLEAN SELECT FILL MAY BE REQUIRED.
7. NO BOULDERS 6" IN DIAMETER OR GREATER ALLOWED IN FINAL BACKFILL.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-4	D.W.C.	9-3-99		
	KRH	3-30-00		

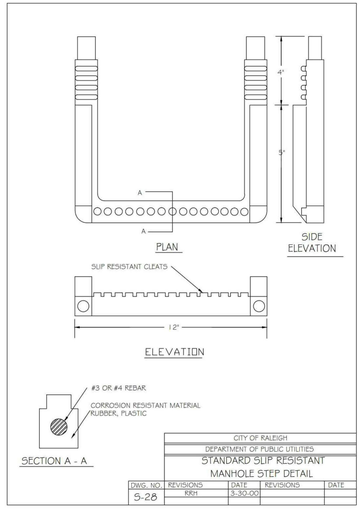


TYPICAL TRENCH BOTTOM DIMENSIONS FOR SDR 35 PVC GRAVITY PIPE

NOTES:
1. FOR TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.

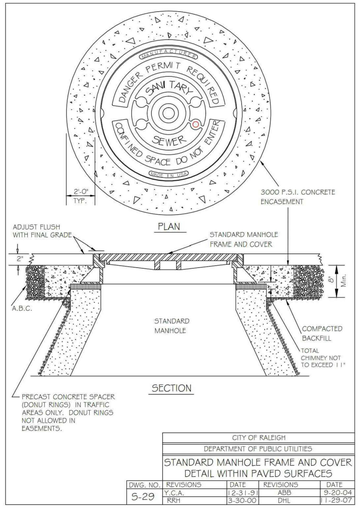
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS FOR PVC GRAVITY SEWER MAIN

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-5	TO NOTES	3-1-07	D.W.C.	9-3-99
		7-2-02	KRH	3-30-00



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD PRECAST SANITARY SEWER MANHOLE

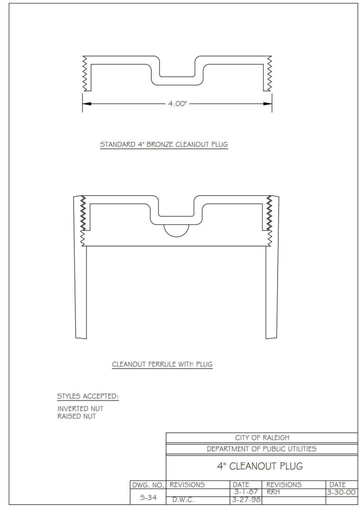
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-20	Y.C.A.	12-31-02	ABB	2-21-05
	KRH	3-30-00	D.H.L.	6-16-08



NOTES:
1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. FOR GRAVITY MAIN AND OR LATERAL INSTALLATIONS LESS THAN 8 FT., THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE. TRACER WIRE SHALL BE LAID FLAT AND SECURELY AFFIXED TO THE PIPE AT 10 FOOT INTERVALS. FOR GRAVITY MAIN AND OR LATERAL INSTALLATION DEEPER THAN 8 FT, THE TRACING WIRE SHALL BE INSTALLED AT A DEPTH OF 7-8 FT. THE WIRE SHALL BE PROTECTED FROM DAMAGE DURING THE EXECUTION OF THE WORK. NO BREAKS OF CUTS IN THE TRACER WIRE SHALL BE PERMITTED.
2. WHERE LATERAL TAPS ARE MADE BY SERVICE SADDLES, THE TRACER WIRE SHALL NOT BE ALLOWED TO TO BE PLACED BETWEEN THE SADDLE AND MAIN.
3. MANHOLE MARKERS SHALL BE PLACED ADJACENT TO MANHOLES AT THE DISCRETION OF OWNER OR OWNERS REPRESENTATIVE.

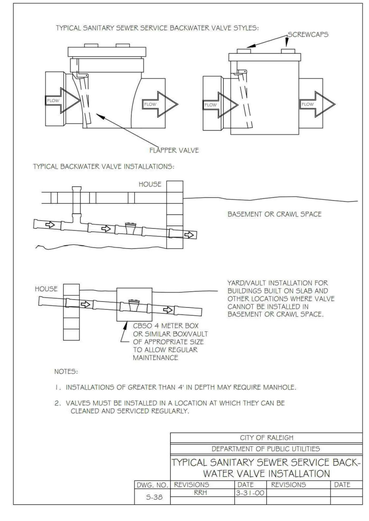
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
GRAVITY SEWER MAIN TRACER WIRE AND MANHOLE MARKER

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-20A	MID	08-14		



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
EXTENDED BASE OR CAST-IN-PLACE REINFORCED CONCRETE BASE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-21		3-1-07	ABB	2-9-05
	KRH	3-30-00		



NOTES:
1) ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST.
2) FRAME SHALL BE A MINIMUM WEIGHT OF 162 LBS. WITHIN PUBLIC ROW AND 140 LBS. WITHIN EASEMENTS.
3) COVER SHALL WEIGH A MIN. OF 120 LBS.
4) ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACES SHALL BE BOLTED TO THE CONE SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD MANHOLE COVER

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-25	3-1-07	3-1-07	A.B.B.	2-9-05
	KRH	3-30-00	D.H.L.	6-18-08

NOTES:
1. The armor for the easement shall be wide enough to encompass the entire flow across the easement.
2. Provide TenCate Mirafi 600x-series woven polypropylene Geotextiles road fabric or approved equal. See pre-approved product list.
3. Armor for the easement shall be installed even if level spreaders are installed for the storm drainage discharge.

Drawn By:	Name	Date
Checked By:		
Approved By:		
Scale: 1		

Rev.	Description	Date	Init.

JOHNSTON COUNTY
Department of Public Utilities
P.O. Box 2363
Smithfield, NC 27577

UTILITY EASEMENT ARMORING
Pipe Laying Conditions

PAGE 42

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD SLIP RESISTANT MANHOLE STEP DETAIL

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-28	KRH	3-30-00		

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD MANHOLE FRAME AND COVER DETAIL WITHIN PAVED SURFACES

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-29	Y.C.A.	12-31-02	ABB	9-20-04
	KRH	3-30-00	DHL	1-29-07

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
4" CLEANOUT PLUG

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-34	D.W.C.	3-27-96	KRH	3-30-00

NOTES:
1. INSTALLATIONS OF GREATER THAN 4' IN DEPTH MAY REQUIRE MANHOLE.
2. VALVES MUST BE INSTALLED IN A LOCATION AT WHICH THEY CAN BE CLEANED AND SERVICED REGULARLY.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TYPICAL SANITARY SEWER SERVICE BACK-WATER VALVE INSTALLATION

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-36	KRH	3-31-00		

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ROLESVILLE, NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 22630 ENGINEER WILLIAM T. O'DANIEL

William T O'Daniel
cn=William T O'Daniel, c=US, o=North Carolina, email=wdaniel@mcadamsco.com
2023.03.31 13:23:04 -04'00'

REVISIONS

NO.	DATE

PLAN INFORMATION

PROJECT NO.	CPR-19100
FILENAME	CPR19100-CD-D1
CHECKED BY	.
DRAWN BY	.
SCALE	N.T.S.
DATE	03. 31. 2023

SHEET

SEWER DETAILS

C8.05

FINAL DRAWING - RELEASED FOR CONSTRUCTION

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