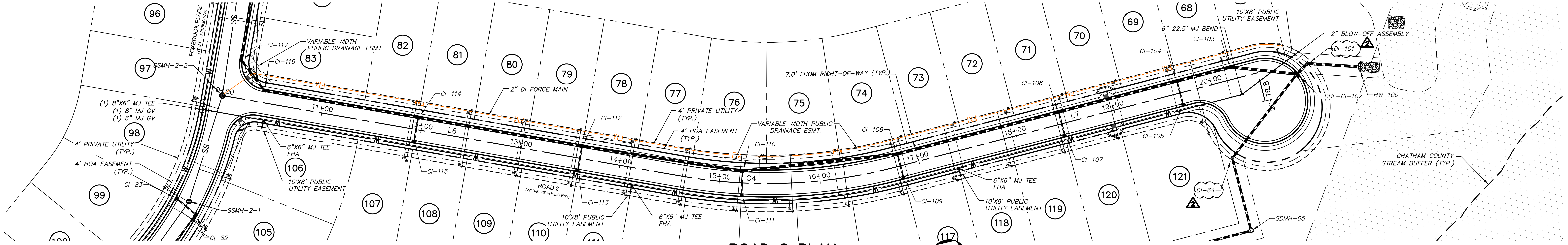
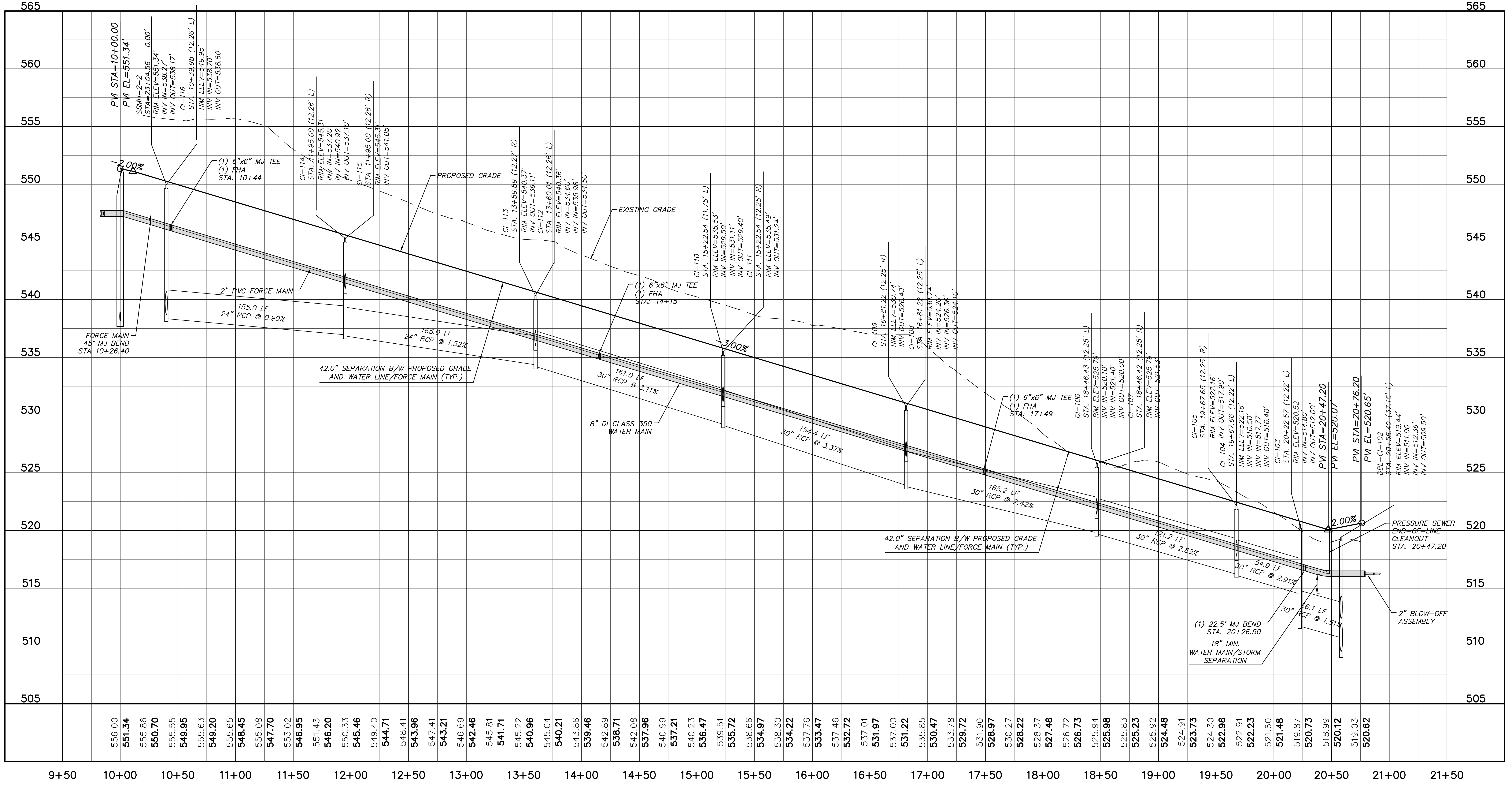


# ROAD 2 PLAN

## (27'B/B, 40' R/W, STA. 10+00.00 TO 20+76.20)

## SCALE: 1"=50'



# ROAD 2 PROFILE

## (STA. 10+00.00 TO 20+76.20)

## SCALE: (Horiz.) 1"=50'; (Vert.) 1"=5'

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| 2 | REVISED PER NCDOT COMMENTS | 2018.05.07 |
| 1 | REVISED PER CHATHAM COUNTY EROSION CONTROL AND STORMWATER | 2018.05.04 |
| 0 | INITIAL SUBMITTAL | 2018.04.11 |

REVISIONS

SEAL

SEAL

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036348
05/04/2018
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BRIAR CHAPEL™
by
Newland COMMUNITIES

BRIAR CHAPEL
US STEEL - SECTION 2
CHATHAM COUNTY, NORTH CAROLINA

PLAN & PROFILE
ROAD 2, STA. 10+00.00 TO STA. 20+76.20

| | |
|---|---|
| DATE: | APRIL 11, 2018 |
| MCE PROJ. # | 02735-0206 |
| DRAWN | LEG |
| DESIGNED | LEG |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

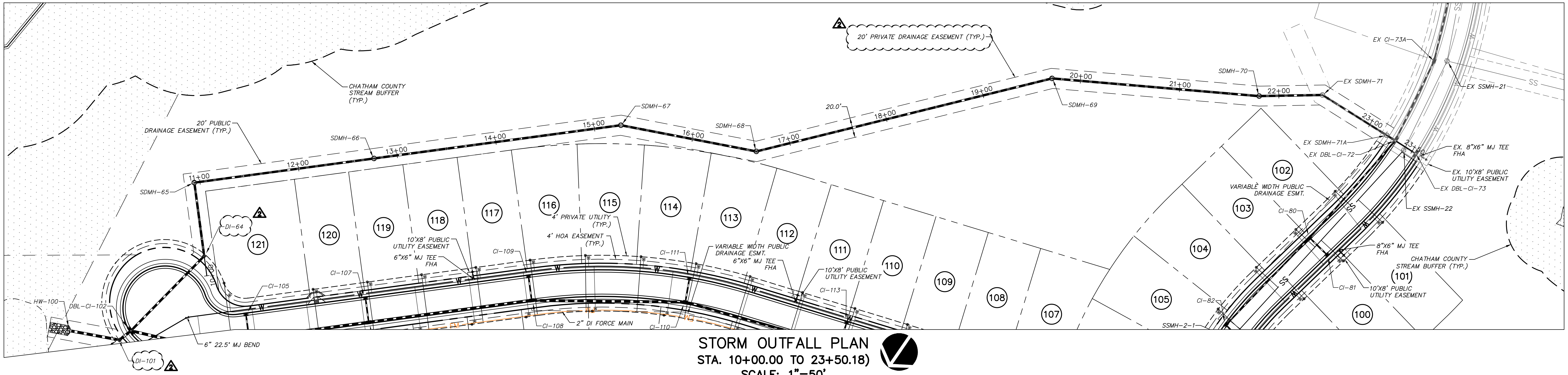
SCALE
HORIZONTAL:
1" = 50'
VERTICAL:
1" = 5'

M&C FILE NUMBER
C4.X

DRAWING NUMBER
C4.2

STATUS:
FINAL DRAWINGS
FOR REVIEW PURPOSES ONLY

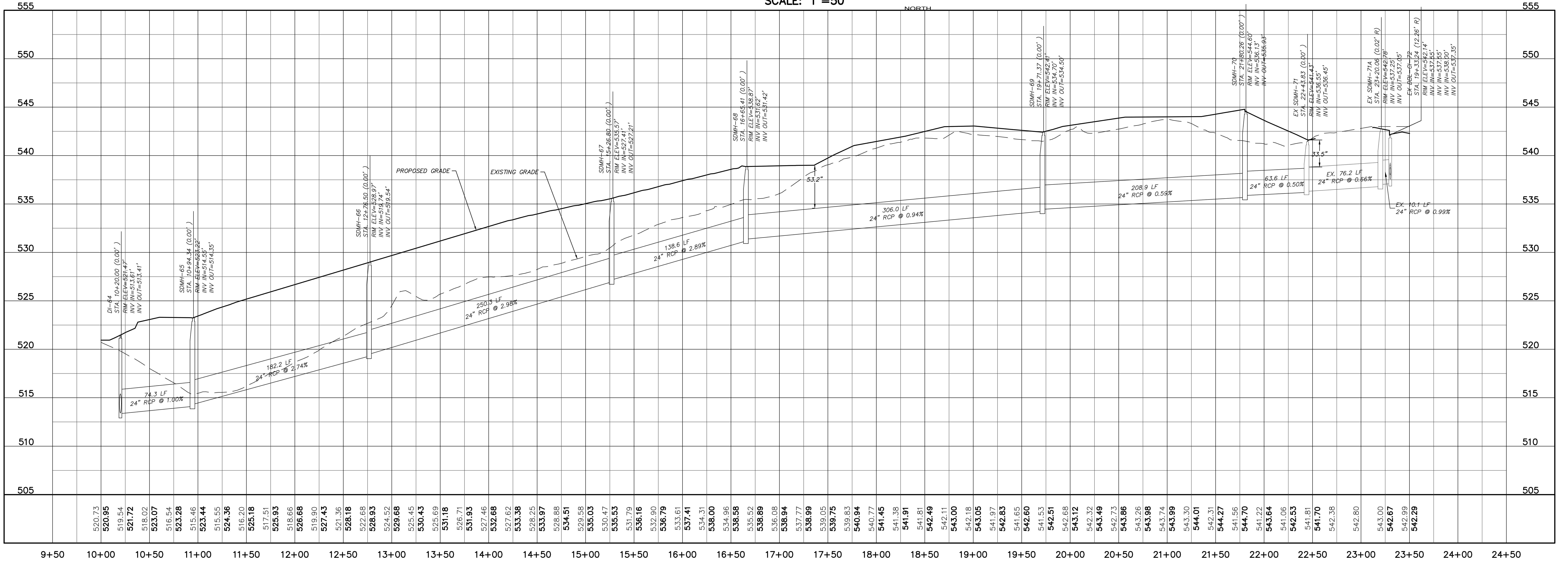
REVISION
2



# STORM OUTFALL PLAN

**STA. 10+00.00 TO 23+50.18)**

**SCALE: 1"=50'**



# STORM OUTFALL PROFILE

**(STA. 10+00.00 TO 23+50.18)**

**SCALE: (Horiz.) 1"=50'; (Vert.) 1"=5'**

| REV.NO. | DESCRIPTIONS | DATE |
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## BRIAR CHAPEL
## US STEEL - SECTION 2
## CHATHAM COUNTY, NORTH CAROLINA

## PLAN & PROFILE
## STORM OUTFALL, STA. 10+00.00 TO STA. 23+50.18

| | |
|---|---|
| DATE: | APRIL 11, 2018 |
| MCE PROJ. # | 02735-0206 |
| DRAWN | LEG |
| DESIGNED | LEG |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL:
1" = 50'
VERTICAL:
1" = 5'

M&C FILE NUMBER
C4.X
DRAWING NUMBER
C4.3

STATUS:
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REVISION
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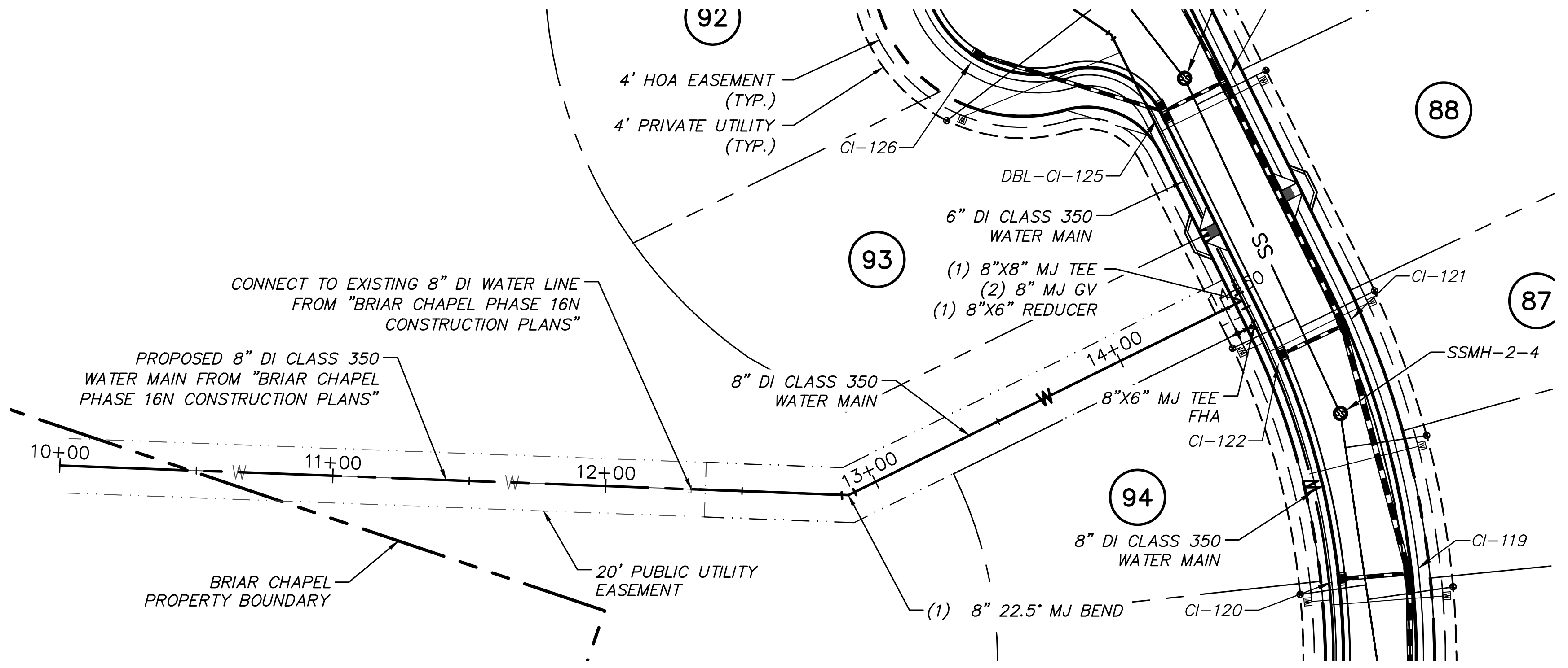
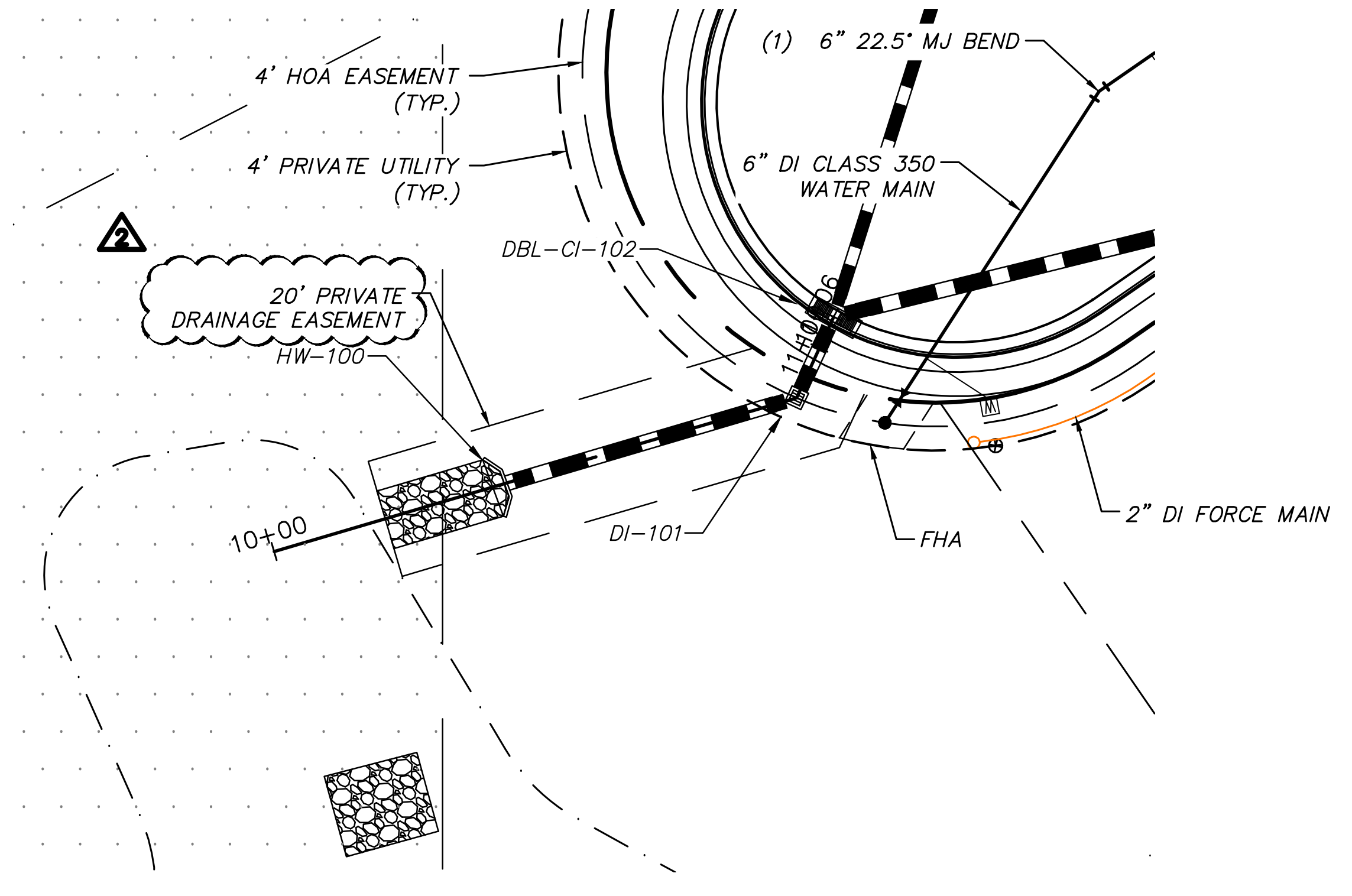
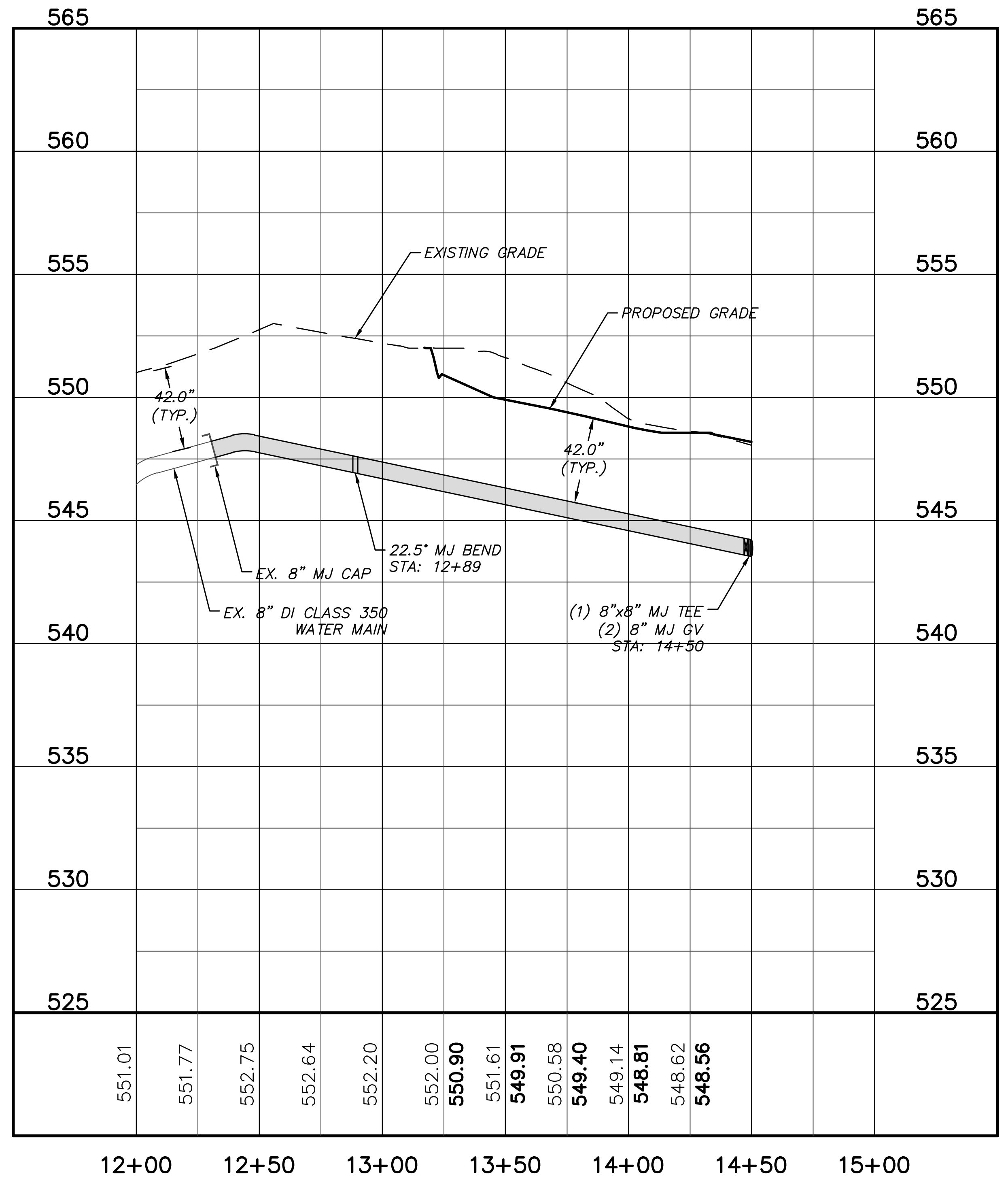


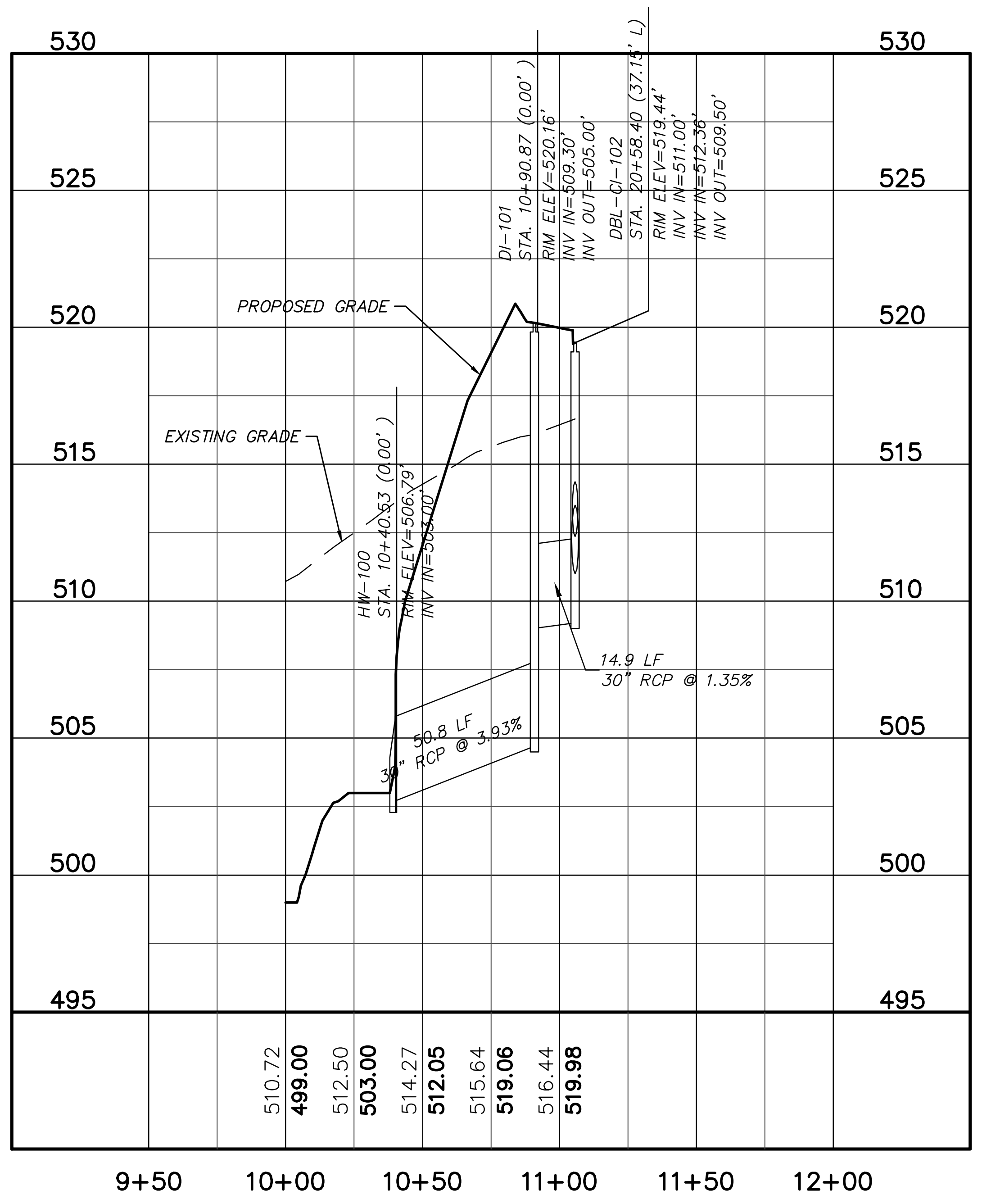
**WATER LINE CONNECTION**
**TO PHASE 16N PLAN**
**STA. 10+00.00 TO 14+49.92)**
**SCALE: 1"=50'**



**BMP #37 OUTFALL PLAN**
**(STA. 10+00.00 TO 11+05.72)**
**SCALE: 1"=30'**



**WATER LINE CONNECTION**
**TO PHASE 16N PROFILE**
**(STA. 10+00.00 TO 14+49.92)**
**SCALE: (Horiz.) 1"=50'; (Vert.) 1"=5'**



**BMP #37 OUTFALL PROFILE**
**(STA. 10+00.00 TO 11+05.72)**
**SCALE: (Horiz.) 1"=50'; (Vert.) 1"=5'**

| REV.NO. | DESCRIPTIONS | DATE |
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CHATHAM COUNTY, NORTH CAROLINA

PLAN & PROFILE
WATER LINE CONNECTION TO PHASE 16N,
STA. 10+00.00 TO STA.14+49.92
STORM OUTFALL, STA. 10+00.00 TO 11+05.72

| | |
|---|---|
| DATE: | APRIL 11, 2018 |
| MCE PROJ. # | 02735-0206 |
| DRAWN | LEG |
| DESIGNED | LEG |
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| PROJ. MGR. | CHS |

SCALE
HORIZONTAL: 1" = 50'
VERTICAL: 1" = 5'

M&C FILE NUMBER: C4.X
DRAWING NUMBER: C4.4

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION: 2

### RECOMMENDATIONS FOR LATE WINTER AND EARLY SPRING

SEEDING MIXTURE

| SPECIES | RATE (lb/acre) |
|---|---|
| TALL FESCUE | 80 |
| KOBE LESPEDEZA | 40 |

NURSE PLANTS:
BETWEEN MAY 1 AND AUG. 15, ADD 10 lb/acre GERMAN MILLET OR 15 lb/acre SUDANGRASS. PRIOR TO MAY 1 OR AFTER AUG. 15, ADD 40 lb/ac RYE (GRAIN)

SEEDING DATES:

| | BEST | POSSIBLE |
|---|---|---|
| FALL | AUG. 15 – SEPT. 15 | AUG. 20 – OCT. 25 |
| LATE WINTER: | FEB. 15 – MAR. 21 | FEB. 1 – APR. 15. |

FALL IS BEST FOR TALL FESCUE AND LATER WINTER FOR LESPEDEZAS. OVERSEEDING OF KOBE LESPEDEZA OVER FALL–SEEDED TALL FESCUE IS VERY EFFECTIVE.

SOIL AMENDMENTS:
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 lb/acre GROUND AGRICULTURAL LIMESTONE AND 750 lb/acre 10–10–10 FERTILIZER

MULCH:
APPLY 4.000 lb/acre STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE:
REFERTILIZE IN THE SECOND YEAR UNLESS GROWTH IS FULLY ADEQUATE. MAY BE MOWED ONCE OR TWICE A YEAR, BUT MOWING IS NOT NECESSARY. RESEED, FERTILIZE AND MULCH DAMAGED AREAS IMMEDIATELY.

### RECOMMENDATIONS FOR GRASS–LINED CHANNELS

SEEDING MIXTURE

| SPECIES | RATE (lb/acre) |
|---|---|
| TALL FESCUE | 200 |

NURSE PLANTS:
BETWEEN MAY 1 AND AUG. 15, ADD 10 lb/acre SUDANGRASS OR 15 lb/acre GERMAN MILLET. PRIOR TO MAY 1 OR AFTER AUG. 15, ADD 40 lb/ac RYE (GRAIN)

SEEDING DATES:
BEST: AUG. 25 – OCT.
POSSIBLE: FEB. – APR. 15

AVOID SEEDING FROM NOV. TO JAN. IF SEEDING MUST BE DONE AT THIS TIME, ADD 40 lb/acre RYE GRAIN AND USE A CHANNEL LINING THAT OFFERS MAXIMUM PROTECTION

SOIL AMENDMENTS:
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 4,000 lb/acre GROUND AGRICULTURAL LIMESTONE AND 1,000 lb/acre 10–10–10 FERTILIZER

MULCH:
USE ROLLED EROSION CONTROL PRODUCT TO COVER THE BOTTOM OF THE CHANNELS AND DITCHES, AND STAPLE SECURELY. THE LINING SHOULD EXTEND ABOVE THE HIGHEST CALCULATED DEPTH OF FLOW. ON CHANNEL SIDE SLOPES ABOVE THIS HEIGHT, AND IN DRAINAGES NOT REQUIRING TEMPORARY LININGS, APPLY 4,000 lb/acre GRAIN STRAW, AND ANCHOR STRAW BY STAPLING NETTING OVER THE TOP.

MULCH AND ANCHORING MATERIALS MUST NOT BE ALLOWED TO WASH DOWN SLOPES WHERE THEY CAN CLOG DRAINAGE DEVICES.

MAINTENANCE:
INSPECT AND REPAIR MULCH FREQUENTLY. REFERTILIZE IN LATE WINTER OF THE FOLLOWING YEAR; USE SOIL TESTS OR APPLY 150 lb/acre 10–10–10. MOW REGULARLY TO A HEIGHT OF 2–4 INCHES.

**NOTE:**
**SEE NCDENR'S EROSION AND SEDIMENT CONTROL PLANNING DESIGN MANUAL SECTION 6.11 FOR ADDITIONAL PERMANENT SEEDING OPTIONS.**

## PERMANENT SEEDING SCHEDULE
**NTS**

1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
2. RIP THE ENTIRE AREA TO 6 INCHES DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW*).
5. CONTINUE TILLAGE UNTIL A WELL – PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 60% DAMAGED REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
9. CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

* APPLY: AGRICULTURAL LIMESTONE – 2 TONS/ACRE OR 3 TONS/ACRE IN CLAY SOILS
FERTILIZER – 1000 LBS/ACRE (10–10–10)
SUPERPHOSPHATE – 500 LBS/ACRE (20%)
MULCH – 2 TONS/ACRE (SMALL GRAIN STRAW)ANCHOR – ASPHALT EMULSION AT 450 GAL./ACRE

## SEEDBED PREPARATION
**NTS**

### RECOMMENDATIONS FOR LATE WINTER AND EARLY SPRING

SEEDING MIXTURE

| SPECIES | RATE (lb/acre) |
|---|---|
| RYE (GRAIN) | 120 |
| ANNUAL LESPEDEZA (KOBE IN PIEDMONT & COASTAL PLAIN, KOREAN IN MOUNTAINS | 50 |

OMIT ANNUAL LESPEDEZA WHEN DURATION OF TEMPORARY COVER IS NOT TO EXTEND BEYOND JUNE

SEEDING DATES:

| | | |
|---|---|---|
| MOUNTAINS | (ABOVE 2,500'): | FEB. 15 – MAY 15 |
| | (BELOW 2,500'): | FEB. 1 – MAY 1 |
| PIEDMONT: | | JAN. 1 – MAY 1 |
| COASTAL PLAIN: | | DEC. 1 – APR. 15 |

SOIL AMENDMENTS:
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 lb/acre GROUND AGRICULTURAL LIMESTONE AND 750 lb/acre 10–10–10 FERTILIZER

MULCH:
APPLY 4.000 lb/acre STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE:
REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

### RECOMMENDATIONS FOR SUMMER

SEEDING MIXTURE

| SPECIES | RATE (lb/acre) |
|---|---|
| GERMAN MILLET | 40 |

IN THE PIEDMONT AND MOUNTAINS, A SMALL–STEMMED SUDANGRASS MAY BE SUBSTITUTED AT A RATE OF 50 lb/acre.

SEEDING DATES:

| | |
|---|---|
| MOUNTAINS | MAY 15 – AUG. 15 |
| PIEDMONT: | MAY 1 – AUG. 15 |
| COASTAL PLAIN: | APR. 15 – AUG. 15 |

SOIL AMENDMENTS:
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 lb/acre GROUND AGRICULTURAL LIMESTONE AND 750 lb/acre 10–10–10 FERTILIZER

MULCH:
APPLY 4.000 lb/acre STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE:
REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

### RECOMMENDATIONS FOR FALL

SEEDING MIXTURE

| SPECIES | RATE (lb/acre) |
|---|---|
| RYE (GRAIN) | 120 |

SEEDING DATES:

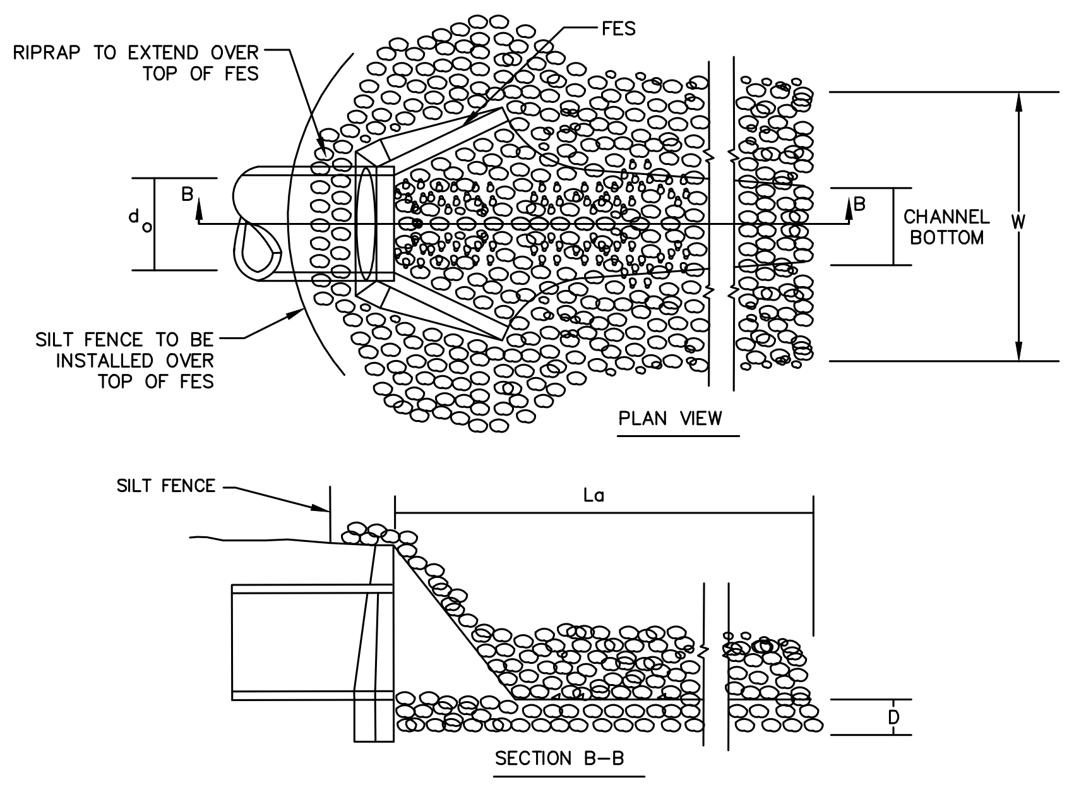
| | |
|---|---|
| MOUNTAINS: | AUG. 15 – DEC. 15 |
| COASTAL PLAIN AND PIEDMONT: | AUG. 15 – DEC. 30 |

SOIL AMENDMENTS:
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 lb/acre GROUND AGRICULTURAL LIMESTONE AND 750 lb/acre 10–10–10 FERTILIZER

MULCH:
APPLY 4.000 lb/acre STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE:
REPAIR AND REFERTILIZE DAMAGED AREAS IMMEDIATELY. TOPDRESS WITH 50 lb/acre OF NITROGEN IN MARCH. IF IT IS NECESSARY TO EXTEND TEMPORARY COVER BEYOND JUNE 15, OVERSEED WITH 50 lb/acre KOBE (PIEDMONT AND COASTAL PLAIN) OR KOREAN (MOUNTAINS) LESPEDEZA IN LATE FEBRUARY OR EARLY MARCH.

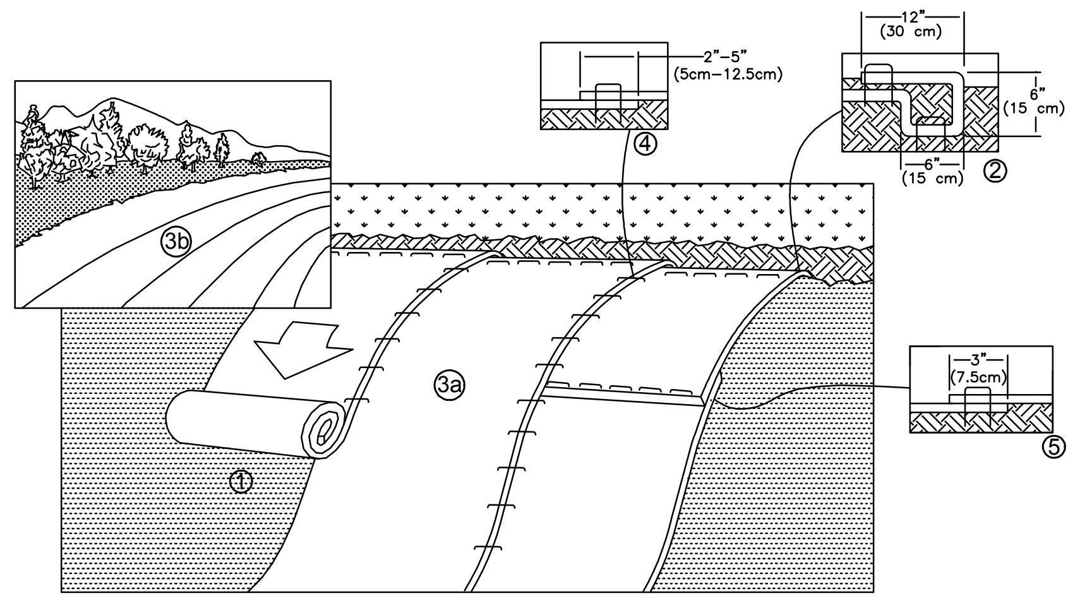
## TEMPORARY SEEDING SCHEDULE
**NTS**



| OUTLET NO. | Do (IN.) | La (FT.) | W (FT.) | DEPTH (IN.) | LINING CLASSIFICATION |
|---|---|---|---|---|---|
| HW–100 | 36 | 24.0 | 9.0 | 24 | CLASS 1 |
| HW–1 | 30 | 20.0 | 8.0 | 24 | CLASS 1 |

STONE CLASSIFICATIONS OF CLASS B REQUIRE A SUBLAYER OF FILTER FABRIC OR FS–2 FILTER STONE WITH A BEDDING THICKNESS OF 6".

RIPRAP OUTLET PROTECTION
**NTS**



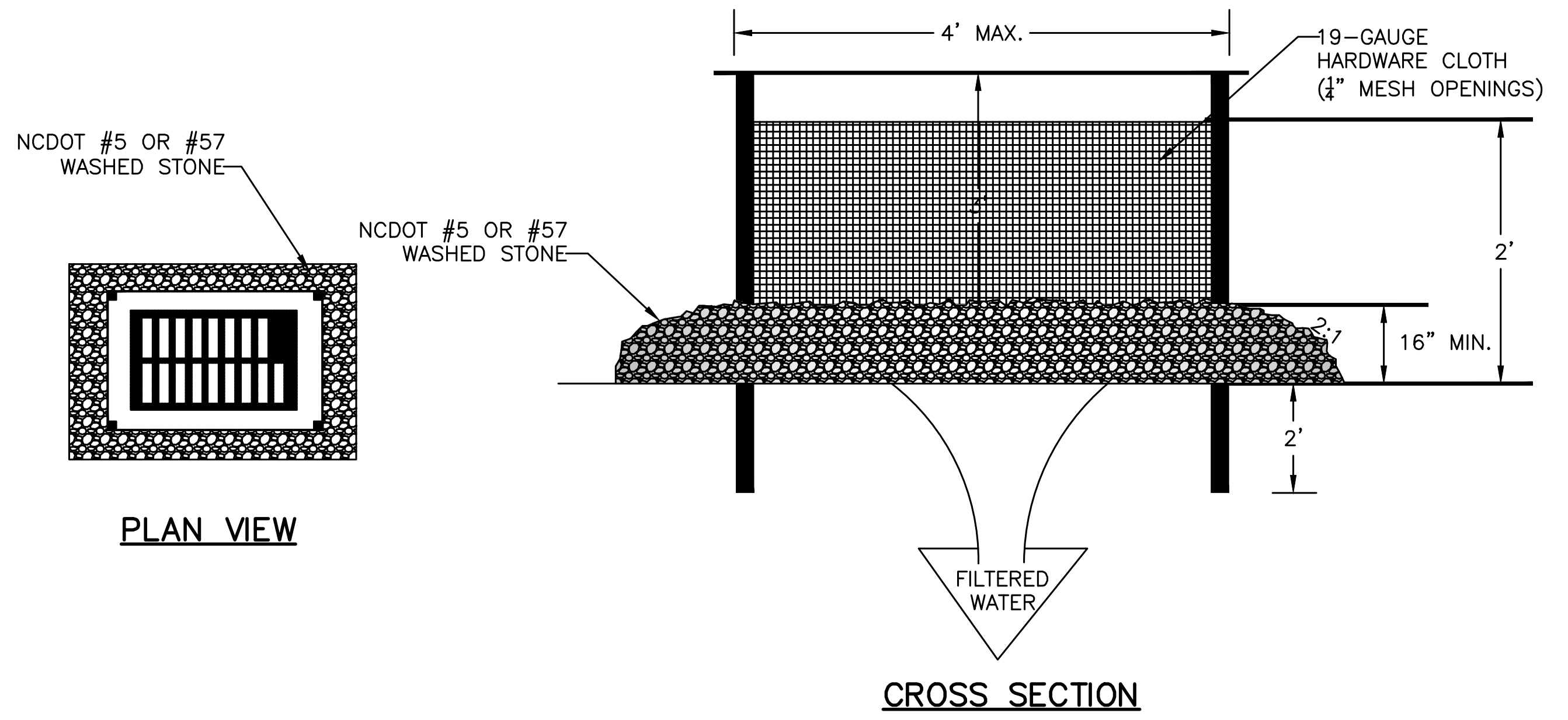
1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECPS), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECPS IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF RECPS EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE RECPS WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECPS BACK OVER SEED AND COMPACTED SOIL. SECURE RECPS OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECPS.
3. ROLL THE RECPS (A.) DOWN (FOR SLOPES 3:1 OR GREATER) OR (B.) HORIZONTALLY (FOR SLOPES LESS THAN 3:1) 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. WHEN USING THE DOT SYSTEM™, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECPS MUST BE STAPLED WITH APPROXIMATELY 2" –5" (5 CM –12.5 CM) OVERLAP DEPENDING ON RECP'S TYPE.
5. CONSECUTIVE RECPS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP'S WIDTH.

NOTE: *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECPS.

TEMPORARY STABILIZATION FOR SLOPES GREATER THAN 10 FEET
**NTS**

**NOTES:**

1. UNIFORMLY GRADE A SHALLOW DEPRESSION APPROACHING THE INLET.
2. DRIVE 5–FOOT STEEL POSTS 2 FEET INTO THE GROUND SURROUNDING THE INLET. SPACE POSTS EVENLY AROUND THE PERIMETER OF THE INLET, A MAXIMUM OF 4 FEET APART.
3. SURROUND THE POSTS WITH WIRE MESH HARDWARE CLOTH. SECURE THE WIRE MESH TO THE STEEL POSTS AT THE TOP, MIDDLE, AND BOTTOM. PLACING A 2–FOOT FLAP OF THE WIRE MESH UNDER THE GRAVEL FOR ANCHORING IS RECOMMENDED.
4. PLACE CLEAN GRAVEL (NC DOT #5 OR #57 STONE) ON A 2:1 SLOPE WITH A HEIGHT OF 16 INCHES AROUND THE WIRE, AND SMOOTH TO AN EVEN GRADE.
5. ONCE THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED, REMOVE ACCUMULATED SEDIMENT, AND ESTABLISH FINAL GRADING ELEVATIONS.
6. COMPACT THE AREA PROPERLY AND STABILIZED IT WITH GROUNDCOVER.

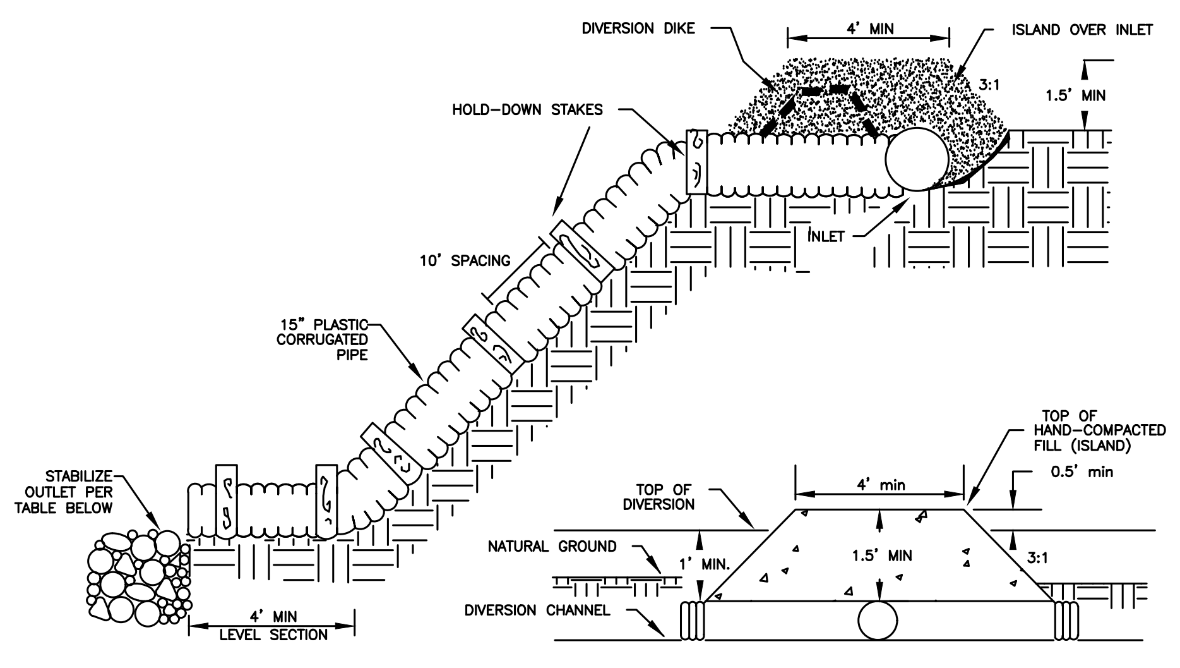

PLAN VIEW

CROSS SECTION

HARDWARE CLOTH & GRAVEL INLET PROTECTION
**NTS**

**STORM DRAINAGE NOTES:**

1. STORM DRAINAGE PIPES SHALL BE:
   - RCP/CLASS III UNLESS OTHERWISE NOTED IN THESE PLANS. ALL PIPES INSIDE THE PUBLIC RIGHT–OF–WAY SHALL ADHERE TO PIPE DEPTH, COVER AND MATERIAL REQUIREMENTS IN ACCORDANCE WITH THE NCDOT PIPE MATERIAL SELECTION GUIDE AS LOCATED ON THE NCDOT HYDRAULICS WEBSITE.
2. ALL CONCRETE SHALL MEET A MINIMUM 3,000 PSI COMPRESSIVE STRENGTH.
3. ALL PIPE IN STORM DRAIN STRUCTURES SHALL BE STRUCK EVEN WITH INSIDE WALL.
4. THE INTERIOR SURFACES OF ALL STORM DRAINAGE STRUCTURES SHALL BE POINTED UP AND SMOOTHED TO AN ACCEPTABLE STANDARD USING MORTAR MIXED TO MANUFACTURER'S SPECIFICATIONS.
5. ALL BACKFILL SHALL BE NON–PLASTIC IN NATURE, FREE FROM ROOTS, VEGETATION MATTER, WASTE CONSTRUCTION MATERIAL OR OTHER OBJECTIONABLE MATERIAL. UTILIZED MATERIAL SHALL BE CAPABLE OF BEING COMPACTED BY MECHANICAL MEANS AND SHALL HAVE NO TENDENCY TO FLOW OR BEHAVE IN A PLASTIC MANNER UNDER THE TAMPING BLOWS OR PROOF ROLLING.
6. MATERIALS DEEMED AS UNSUITABLE FOR BACKFILL PURPOSES BY THE OWNER'S REPRESENTATIVE SHALL BE REMOVED AND REPLACED WITH SUITABLE MATERIAL.
7. BACKFILLING OF TRENCHES SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PIPE IS LAID. THE FILL AROUND THE PIPE SHALL BE THOROUGHLY COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY OBTAINABLE WITH THE STANDARD PROCTOR TEST. THE TOP EIGHT (8) INCHES SHALL BE COMPACTED TO 100% STANDARD PROCTOR.
8. UNDER NO CIRCUMSTANCES SHALL WATER BE ALLOWED TO RISE IN UNBACKFILLED TRENCHES AFTER PIPE HAS BEEN PLACED.
9. ALL FLARED END SECTIONS DISCHARGING INTO WATER QUALITY PONDS WILL HAVE A CONCRETE PAD POURED UNDERNEATH THE FLARED END SECTION IN ACCORDANCE WITH PROVIDED CONSTRUCTION DETAILS.
10. RIM ELEVATIONS OF STORM DRAIN STRUCTURES SHALL BE FIELD VERIFIED.
11. STORM DRAINAGE WITHIN PRIVATE EASEMENTS TO BE OWNED, OPERATED AND MAINTAINED BY HOME OWNER'S ASSOCIATION OR AGENT THEREOF.
12. LENGTHS SHOWN FOR STORM DRAINAGE PIPES ARE MEASURED FROM CENTER OF STORM STRUCTURES AND TO ENDS OF FLARED END SECTIONS. SLOPES CALCULATED ARE BASED ON THIS LENGTH.
13. CB DENOTES CATCH BASINS TO BE INSTALLED NON–PAVED AREAS. REFER TO NCDOT DETAILS 840.18 AND 840.24 ON SHEET D–2.2.
14. CI DENOTES CURB INLETS TO BE INSTALLED IN THE CURB LINES OF ROADWAYS. REFER TO NCDOT DETAILS 840.02 AND 840.03 ON SHEET D–2.2.



OUTLET PROTECTION SIZING

| OUTLET SIZE | La (FT.) | W (FT.) | DEPTH (IN.) | LINING CLASSIFICATION |
|---|---|---|---|---|
| 12" | 6.0 | 3.0 | 22 | CLASS B |
| 15" | 7.5 | 3.75 | 22 | CLASS B |
| 18" | 9.0 | 4.5 | 22 | CLASS B |
| 24" | 12.0 | 6.0 | 22 | CLASS B |
| 30" | 15.0 | 7.5 | 22 | CLASS B |

TEMPORARY SLOPE DRAIN
**NTS**

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
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| | | |
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REVISIONS

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BRIAR CHAPEL™
by
Newland COMMUNITIES

BRIAR CHAPEL
US STEEL - SECTION 2
CHATHAM COUNTY, NORTH CAROLINA

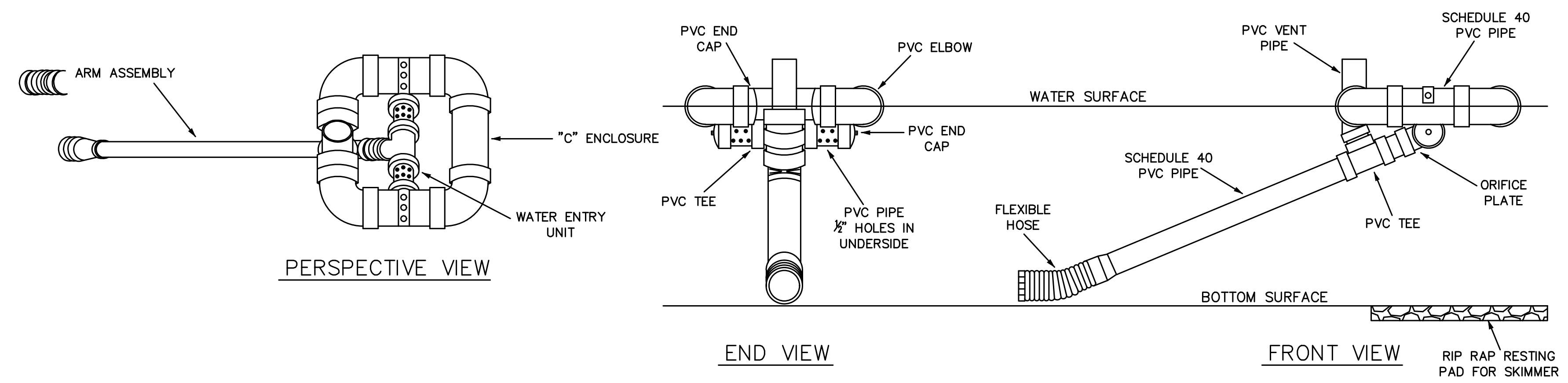
EROSION AND SEDIMENTION CONTROL
DETAILS

| | |
|---|---|
| DATE: | APRIL 11, 2018 |
| MCE PROJ. # | 02735-0206 |
| DRAWN | LEG |
| DESIGNED | LEG |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

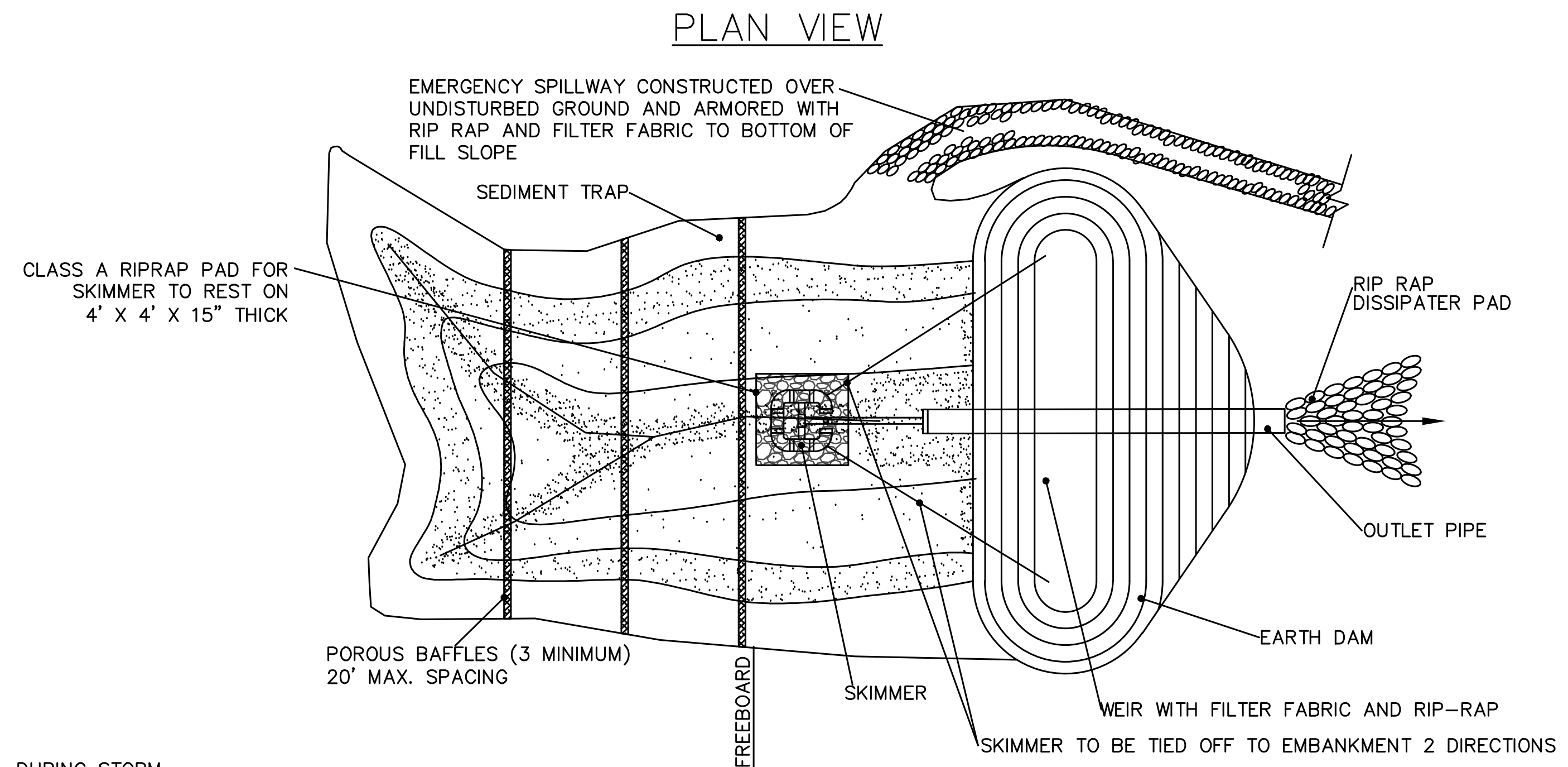
SCALE
HORIZONTAL: N/A
VERTICAL: N/A

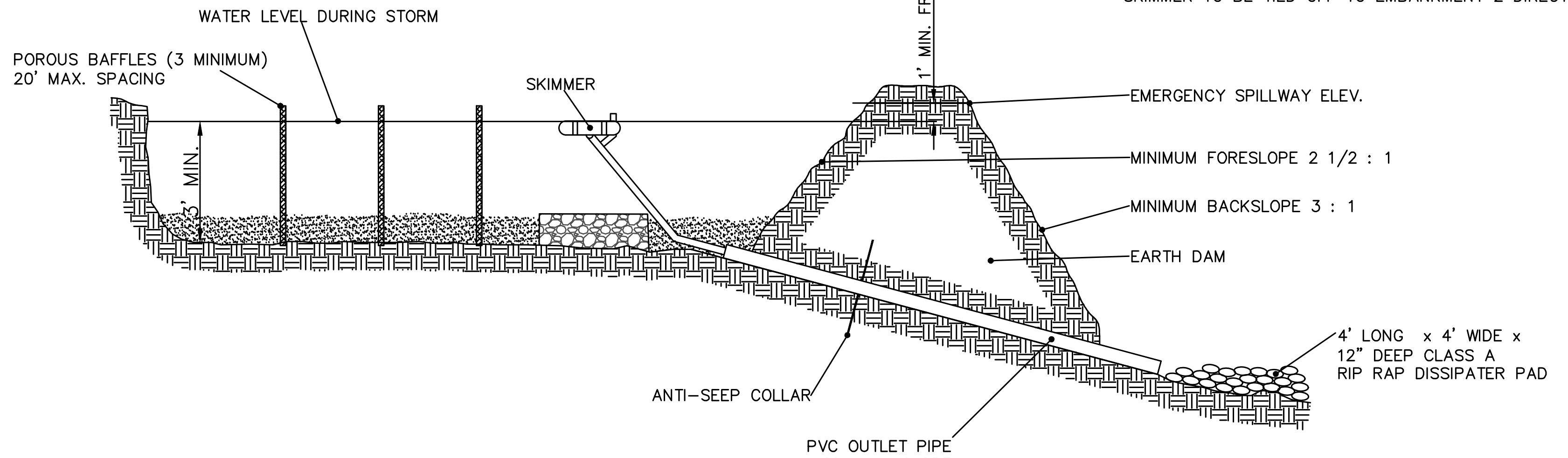
M&C FILE NUMBER
D1.X
DRAWING NUMBER
D1.1

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION 2



SKIMMER DETAIL





CROSS SECTION

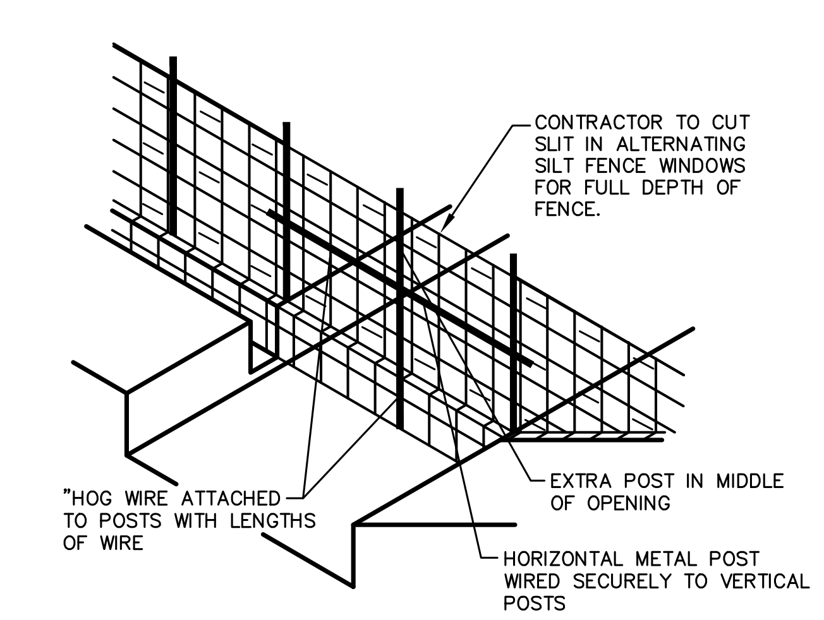
## TEMPORARY SKIMMER SEDIMENT BASIN

NTS

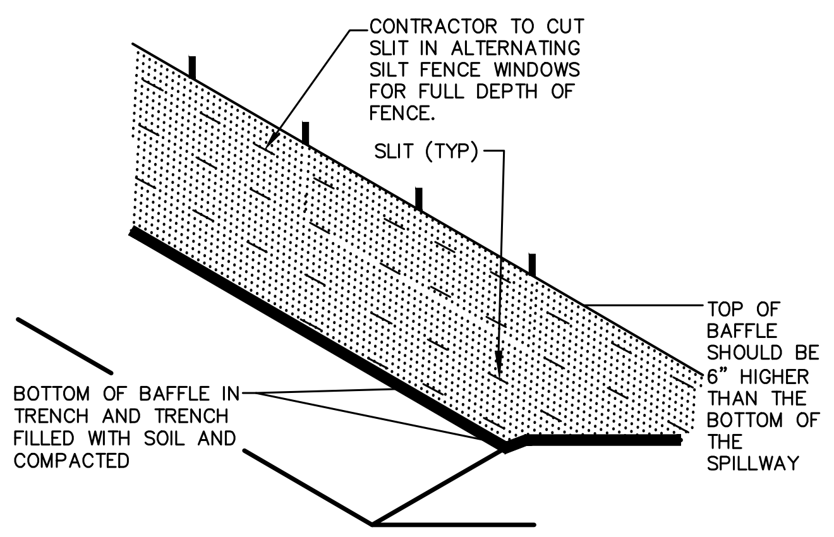
| BASIN # | DISTURBED AREA (ac) | TOTAL DRAINAGE AREA (ac) | REQUIRED STORAGE | REQUIRED SURFACE AREA | MINIMUM DEPTH | BOTTOM ELEVATION | TOP WIDTH | TOP LENGTH | PROVIDED STORAGE | PROVIDED SURFACE AREA | STORAGE/ SPILLWAY ELEVATION | SPILLWAY WIDTH | TOP OF DAM ELEVATION | SKIMMER SIZE | SKIMMER ORIFICE DIAMETER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.64 | 2.77 | 9,500 CF | 4,530 SF | 3.5' | 533.5' | PER PLAN | PER PLAN | 10,903 CF | 4,746 SF | 537.0' | 12.0' | 539.0' | 2.5" | 1.9" |
| 2 | 2.13 | 2.73 | 7,670 CF | 4,470 SF | 3.0' | 540.0' | 50' | 90' | 8,892 CF | 4,500 SF | 543.0' | 12.0' | 545.0' | 2.0" | 1.8" |
| 3 | 2.69 | 2.69 | 9,680 CF | 4,400 SF | 3.5' | 531.5' | 50' | 90' | 9,972 CF | 4,500 SF | 535.0' | 12.0' | 537.0' | 2.5" | 1.8" |
| 4 | 3.68 | 3.68 | 13,250 CF | 6,020 SF | 3.0' | 510.0' | PER PLAN | PER PLAN | 15,640 CF | 6,369 SF | 513.0' | 16.0' | 538.0' | 2.5" | 2.3" |
| 5 | 6.41 | 6.41 | 23,080 CF | 10,490 SF | PER PLAN | 498.0' | PER PLAN | PER PLAN | 110,933 CF | 11,055 SF | 507.0' | 27.0' | 509.0' | 6.0 | 5.1" |

1

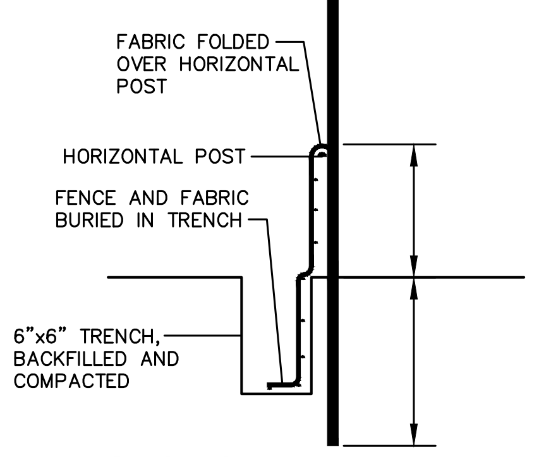
### BAFFLE INSTALLATION DETAIL



### BAFFLE INSTALLATION - STEP 1



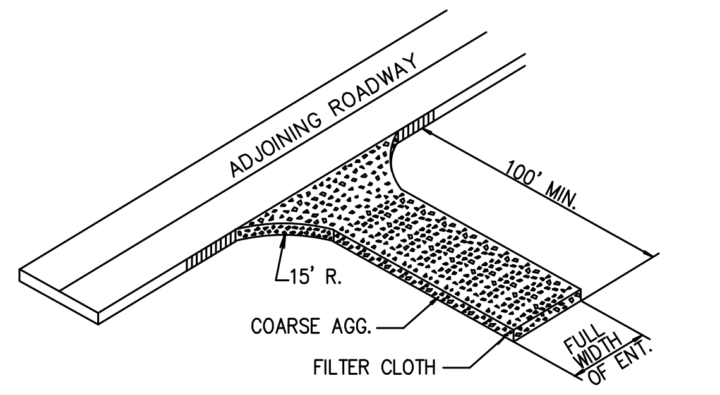
### BAFFLE INSTALLATION - STEP 2



### SECTION AT OPENING

NOTES:

1. DRIVE STEEL FENCE POST AT LEAST 18" INTO SOLID GROUND
2. WOOD POSTS ARE NOT ACCEPTABLE
3. USE STAPLES 1' APART TO ATTACH FABRIC TO "HOG WIRE"
4. BAFFLE SPACED AS PER APPROVED PLAN.



A. COARSE AGGREGATE (2"–3" STONE) SHALL BE USED. PAD TO BE 100'L X 25'W X 6"D MIN. PLACE A MINIMUM OF 3" OF STONE IN A CUT SECTION TO HELP SECURE FILTER CLOTH.

B. TURNING RADIUS SUFFICIENT TO ACCOMMODATE LARGE TRUCKS IS TO BE PROVIDED.

C. ENTRANCES SHOULD BE LOCATED TO PROVIDE FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES.

D. MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF MUD ONTO STREETS. PERIODIC TOP DRESSING MAY BE NECESSARY. AFTER EACH RAINFALL, INSPECT ANY STRUCTURE USED TO TRAP SEDIMENT AND CLEAN IT OUT AS NECESSARY. IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS.

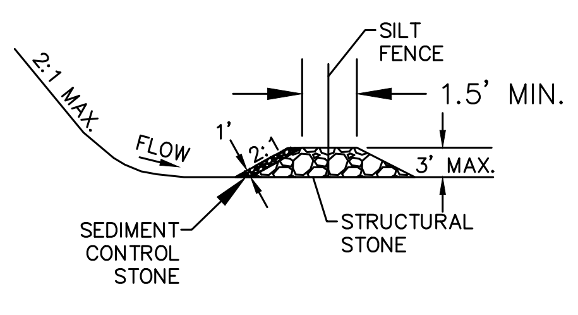
E. TEMPORARY PADS MUST BE LOCATED ON EACH SIDE OF ADJOINING ROADWAY.

## TEMPORARY CONSTRUCTION ENTRANCE

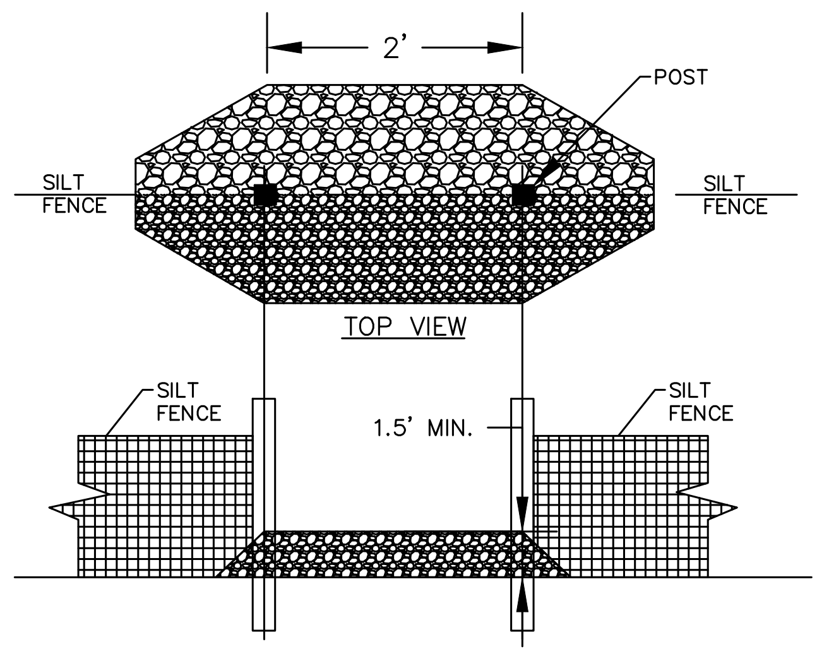
NTS

NOTE:
STRUCTURAL STONE SHALL BE CLASS B STONE FOR EROSION CONTROL PURPOSES.

SEDIMENT CONTROL STONE SHALL BE NO. 5 OR NO. 57 STONE.



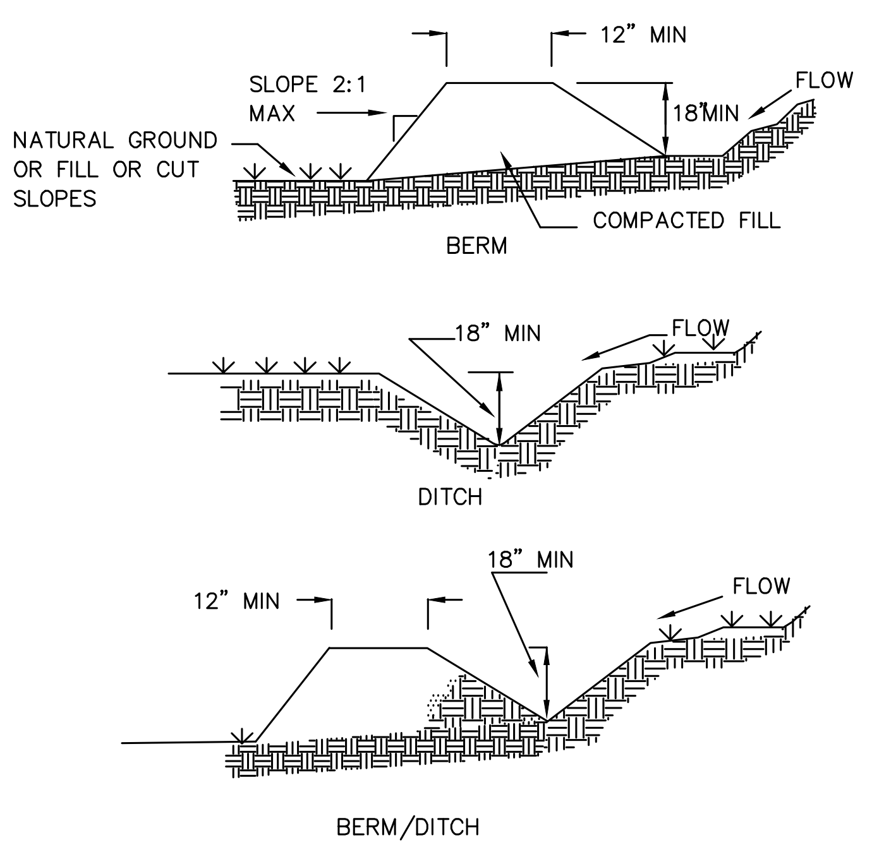
CROSS SECTION



FRONT VIEW

## SILT FENCE OUTLET

NTS



NOTES:

POSITIVE GRADE MUST BE PROVIDED TO ASSURE DRAINAGE. IF SLOPE EXCEEDS 2%, SEED AND MULCH DIVERSION. TRY NOT TO EXCEED 5%.
MAXIMUM D.A.= 5 ACRES WITHOUT SUPPORTING CALCS..
DIVERSIONS AT THE TOP OF SLOPES MUST EMPTY INTO AN APPROVED SLOPE DRAIN. BERM/DITCH IS MOST COMMONLY USED.

a. MACHINE COMPACTION OF ALL FILL IS REQUIRED. DIVERSIONS SUFFICIENT TO DIRECT ALL SEDIMENT– LADEN STORMWATER INTO A SEDIMENT CONTROL DEVICE MUST BE INSTALLED PRIOR TO CLEARING AND GRUBBING OF THE AREA (OR IN CONJUNCTION WITH THIS OPERATION) IF SEDIMENT CONTROLS AND DIVERSIONS ARE INSTALLED AS EACH CRITICAL POINT IS REACHED).
b. DIVERSIONS SHOULD BE LOCATED TO MINIMIZE DAMAGES BY CONSTRUCTION OPERATIONS.
c. DIVERSIONS SHOULD BE SEEDED AND MULCHED IF THEY ARE TO REMAIN IN PLACE OVER 30 DAYS.
d. CHECK DEVICE AFTER EACH RAIN, BUT ONCE A WEEK REGARDLESS. REPAIR AS NECESSARY.

MAINTENANCE

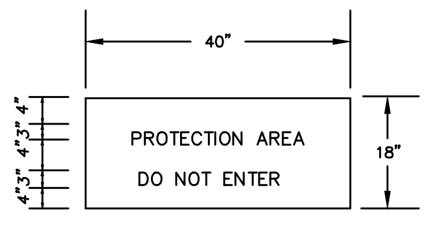
1. INSPECT TEMPORARY DIVERSIONS ONCE A WEEK AND AFTER EVERY RAINFALL. IMMEDIATELY REMOVE SEDIMENT FROM THE FLOW AREA AND REPAIR THE DIVERSION RIDGE. CAREFULLY CHECK OUTLETS AND MAKE TIMELY REPAIRS AS NEEDED. WHEN THE AREA PROTECTED IS PERMANENTLY STABILIZED, REMOVE THE RIDGE AND THE CHANNEL TO BLEND WITH THE NATURAL GROUND LEVEL AND APPROPRIATELY STABILIZE IT.

2. ALL TEMPORARY DIVERSION AND CLEAN WATER DITCHES SHALL BE MAINTAINED PER THEIR ORIGINAL DESIGN DIMENSIONS DURING CONSTRUCTION ACTIVITIES. ANY DITCHES THAT REQUIRE REMOVAL OR RELOCATION SHALL RECEIVE APPROVAL FROM CHATHAM COUNTY EROSION CONTROL INSPECTOR.

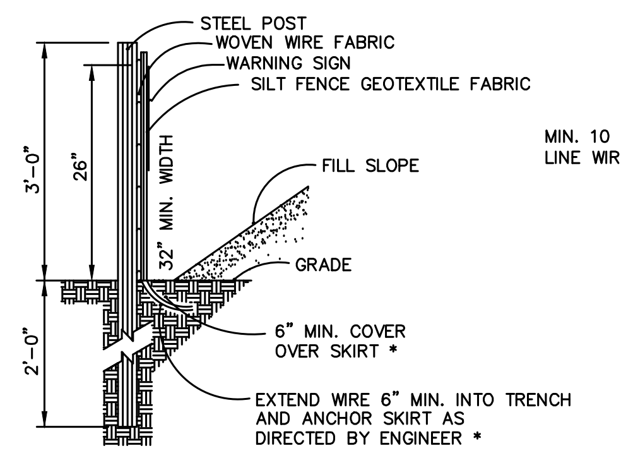
## TEMPORARY DIVERSION/CLEAN WATER DIVERSION DITCH

NTS

| TDD # | TOTAL LENGTH | SLOPE (%) | LINER | RECEIVING SLOPE DRAIN SIZE (IN.) |
|---|---|---|---|---|
| STAGE 1 DIVERSIONS | | | | |
| 1 | 422 | 3.20 | STRAW W/ NET | 18 |
| 2 | 92 | 2.70 | STRAW W/ NET | 18 |
| 3 | 360 | 3.70 | SYNTHETIC MAT | 18 |
| 4 | 359 | 2.10 | STRAW W/ NET | 24 |
| 5 | 103 | 8.30 | STRAW W/ NET | 24 |
| 6 | 247 | 0.80 | STRAW W/ NET | 24 |
| 7 | 186 | 5.50 | STRAW W/ NET | 24 |
| 8 | 142 | 4.90 | SC250 | 24 |
| 9 | 58 | 7.80 | STRAW W/ NET | 12 |
| 10 | 212 | 5.00 | STRAW W/ NET | 12 |
| 11 | 542 | 6.30 | SC250 | 24 |
| 12 | 77 | 11.00 | SYNTHETIC MAT | 24 |
| 13 | 216 | 4.20 | STRAW W/ NET | 18 |
| 14 | 158 | 0.60 | STRAW W/ NET | 18 |
| 15 | 226 | 1.80 | STRAW W/ NET | 15 |
| 16 | 157 | 3.30 | STRAW W/ NET | 15 |
| 17 | 113 | 4.20 | STRAW W/ NET | 30 |
| 18 | 1275 | 3.20 | SC250 | 30 |
| STAGE 2 DIVERSIONS | | | | |
| 201 | 115 | 1.70 | STRAW W/ NET | 18 |
| 202 | 122 | 4.30 | STRAW W/ NET | 18 |
| 203 | 344 | 3.80 | STRAW W/ NET | 18 |
| 204 | 236 | 0.80 | STRAW W/ NET | 24 |
| 205 | 664 | 4.40 | STRAW W/ NET | 15 |
| 206 | 829 | 3.00 | STRAW W/ NET | 30 |

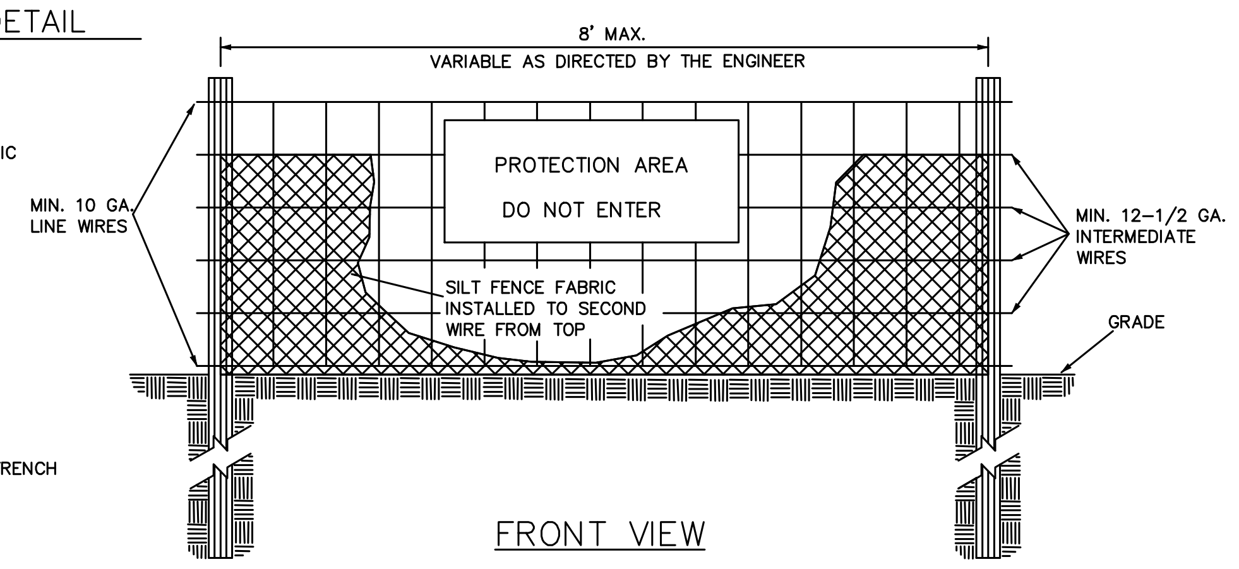


WARNING SIGN DETAIL



SIDE VIEW

*FOR REPAIR OF SILT FENCE FAILURES, USE No. 57 WASHED STONE. FOR ANCHOR WHEN SILT FENCE IS PROTECTING CATCH BASIN.



FRONT VIEW

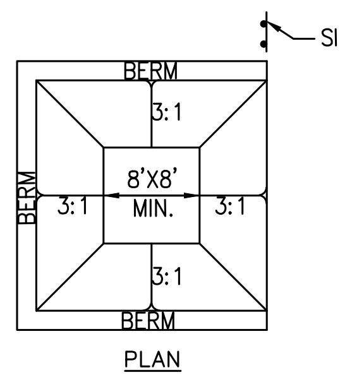
## COMBINATION SILT/TREE PROTECTION FENCE

NTS

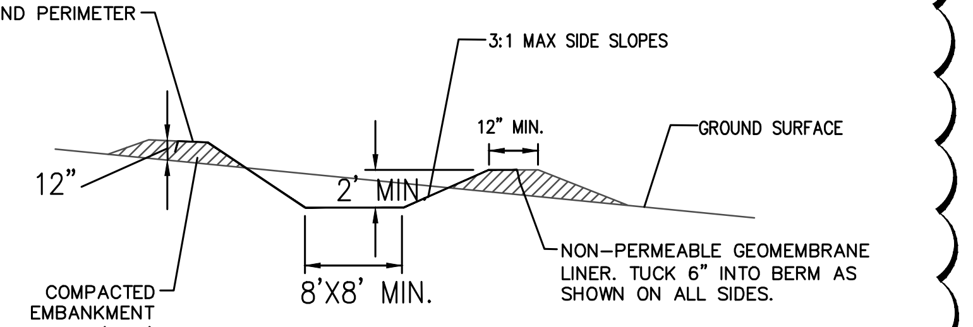
NOTES:

1. WARNING SIGNS TO BE MADE OF DURABLE, WEATHERPROOF MATERIAL.
2. LETTERS TO BE 3" HIGH MINIMUM, CLEARLY LEGIBLE AND SPACED AS DETAILED.
3. SIGNS SHALL BE PLACED AT 50' MAXIMUM INTERVALS.
4. PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER.
5. FOR TREE PROTECTION AREAS LESS THAN 200' IN PERIMETER, PROVIDE NO LESS THAN ONE SIGN PER PROTECTION AREA.
6. ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC.
7. MAINTAIN TREE PROTECTION FENCE THROUGHOUT DURATION OF PROJECT.
8. ADDITIONAL SIGNS MAY BE REQUIRED BY CHATHAM COUNTY BASED ON ACTUAL FIELD CONDITIONS.
9. PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER.
10. FLOW SHALL NOT RUN PARALLEL WITH THE FENCE.
11. END OF SILT FENCE NEEDS TO BE TURNED UPHILL.
12. SEE NCDENR PRACTICE & SPECIFICATIONS MANUAL SEDIMENTS FENCE SECTION FOR CONDITIONS WHERE PRACTICE APPLIES AND DESIGN CRITERIA.

1



PLAN



SECTION

CONCRETE WASHOUT AREA INSTALLATION NOTES:

1. SEE PLAN FOR LOCATION OF CONCRETE WASHOUT AREA. (TO BE PLACED A MINIMUM OF 50 FT FROM INLETS, BODIES OF WATER, AND DRAINAGEWAYS.)
2. THE CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
3. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
4. EXCAVATED MATERIAL SHALL BE USED IN PERIMETER BERM CONSTRUCTION.

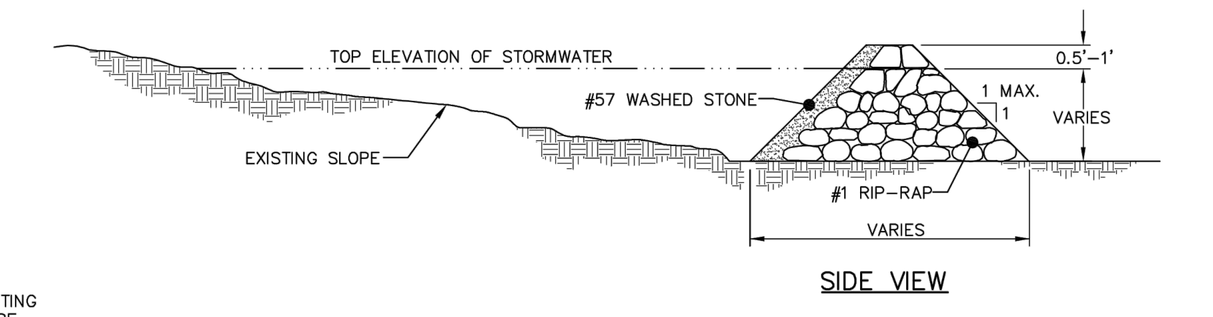
CONCRETE WASHOUT AREA MAINTENANCE NOTES:

1. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
2. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED AND DISPOSED OF AT APPROVED WASTE SITE.
3. AFTER REMOVAL OF CONCRETE WASHOUT AREA, SEED DISTURBED AREA.
4. INSPECT WEEKLY, DURING AND AFTER ANY STORM EVENT.

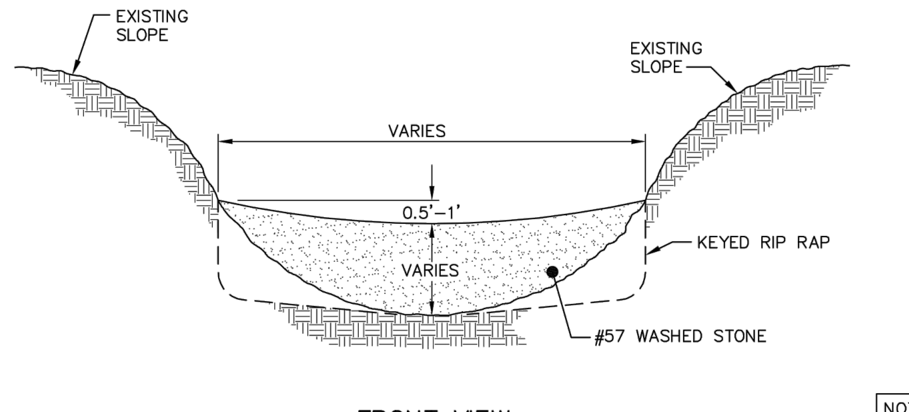
## CONCRETE WASHOUT AREA

SCALE: NOT TO SCALE

1



SIDE VIEW



FRONT VIEW

| DESIGN OF SPILLWAYS | |
|---|---|
| DRAINAGE AREA (ACRES) | WEIR LENGTH[1] (FT) |
| 1 | 4.0 |
| 2 | 6.0 |
| 3 | 8.0 |
| 4 | 10.0 |
| 5 | 12.0 |

[1] DIMENSIONS SHOWN ARE MINIMUM

NOTES:

1. HEIGHT & WIDTH DETERMINED BY EXISTING TOPOGRAPHY AND SEDIMENT STORAGE REQUIRED.
2. KEY RIP RAP INTO THE DAM FOR STABILIZATION.

CHATHAM COUNTY
NORTH CAROLINA
WATERSHED PROTECTION DIVISION

## STANDARD ROCK CHECK DAM

DETAIL NUMBER
2018-002
SHEET 1 of 1

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| 2 | REVISED PER NCDOT COMMENTS | 2018.05.07 |
| 1 | REVISED PER CHATHAM COUNTY EROSION CONTROL AND STORMWATER | 2018.05.04 |
| 0 | INITIAL SUBMITTAL | 2018.04.11 |

REVISIONS

SEAL

SEAL

Gareth C. Avant
SEAL 036348
05/04/2018

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CHATHAM COUNTY, NORTH CAROLINA

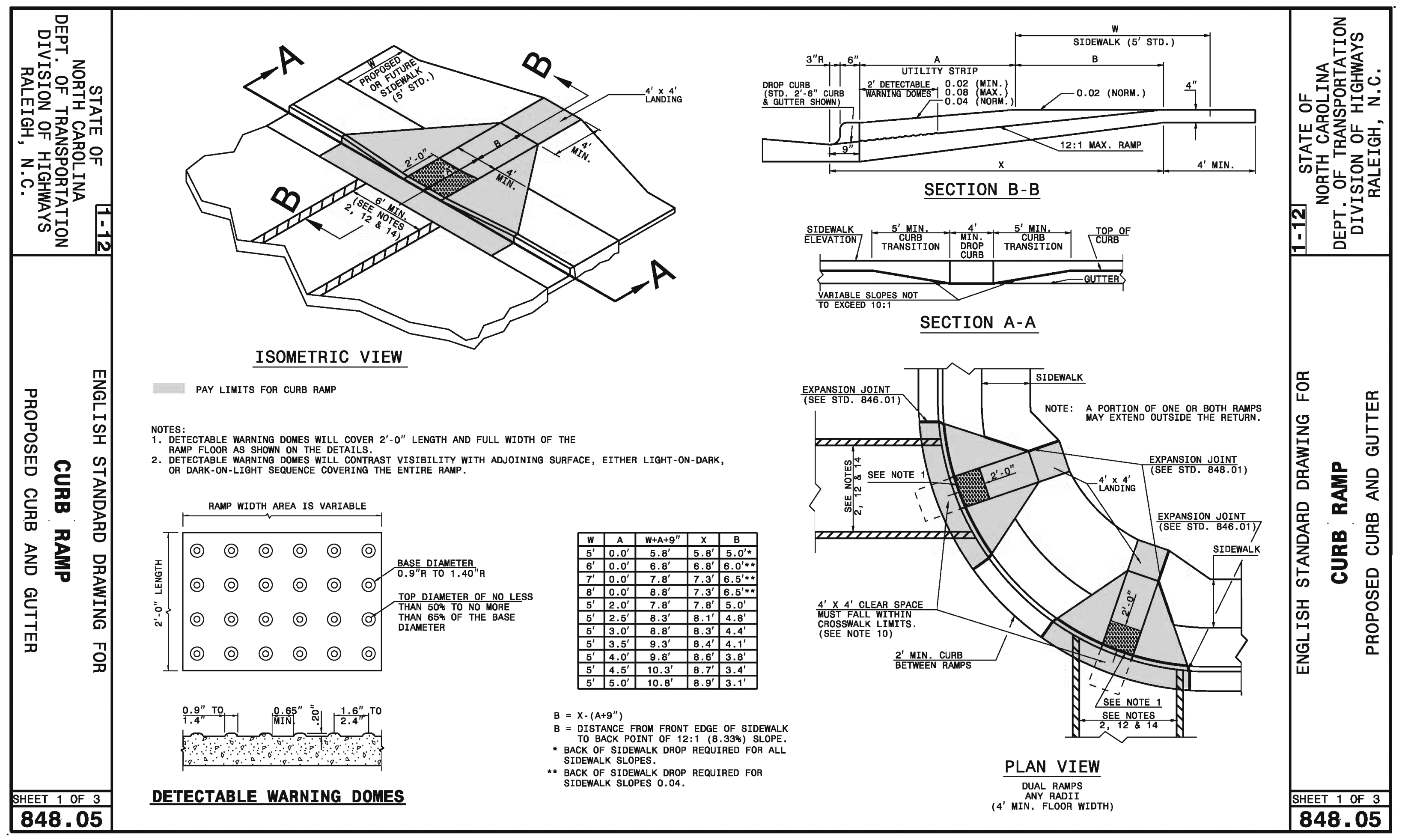
EROSION AND SEDIMENTION CONTROL
DETAILS

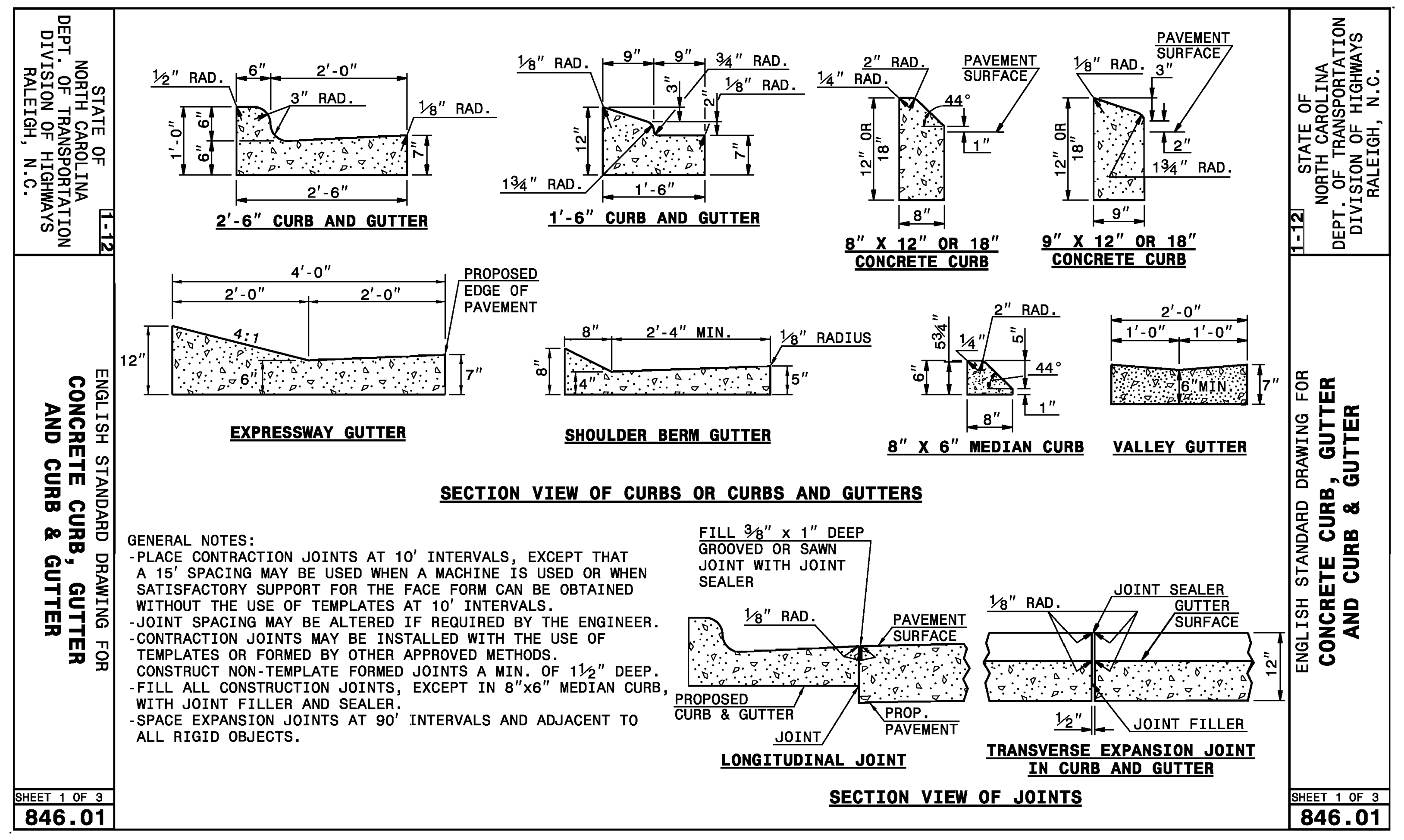
DATE: APRIL 11, 2018
MCE PROJ. # 02735-0206
DRAWN LEG
DESIGNED LEG
CHECKED GCA
PROJ. MGR. CHS

SCALE
HORIZONTAL: N/A
VERTICAL: N/A

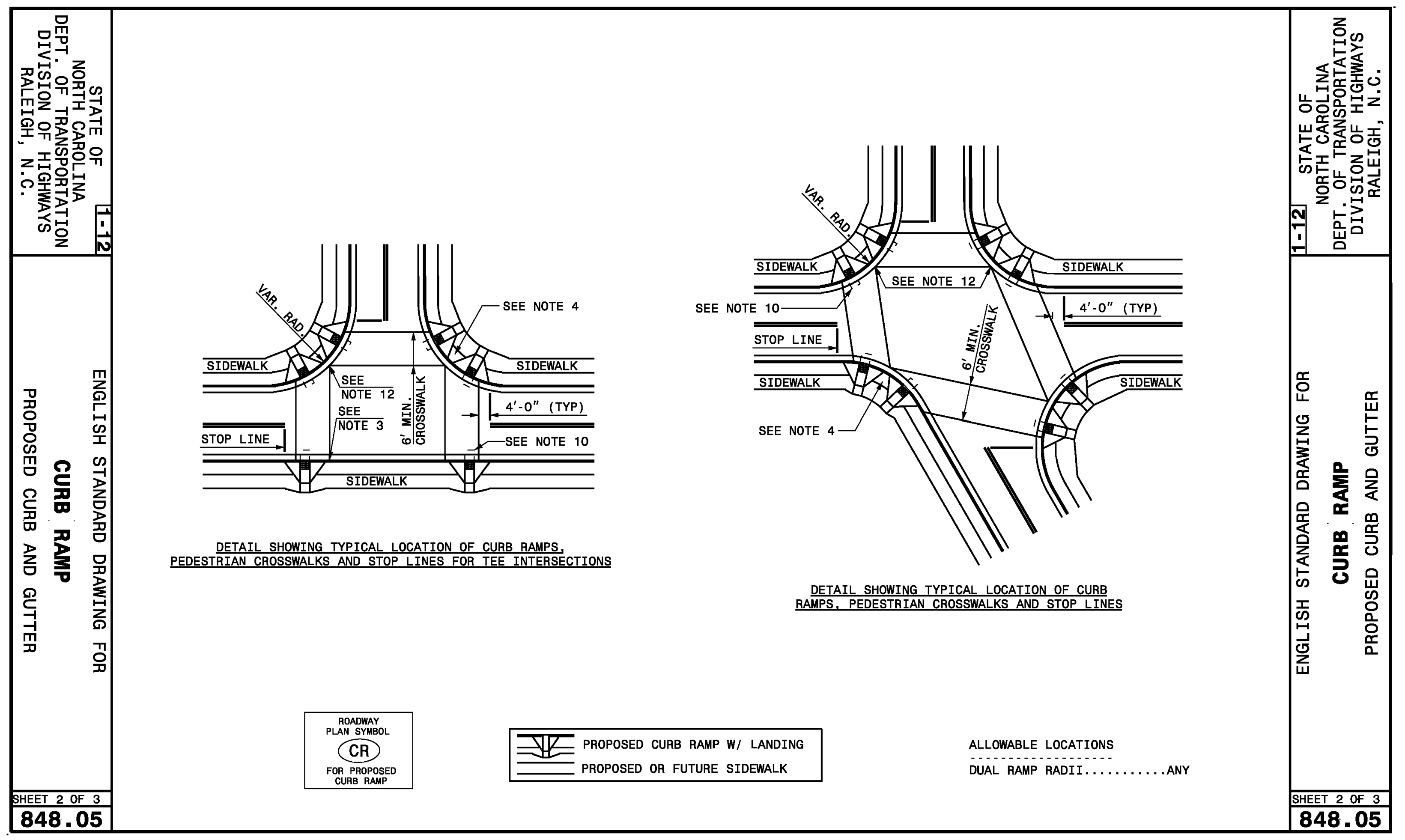
M&C FILE NUMBER D1.X
DRAWING NUMBER D1.2

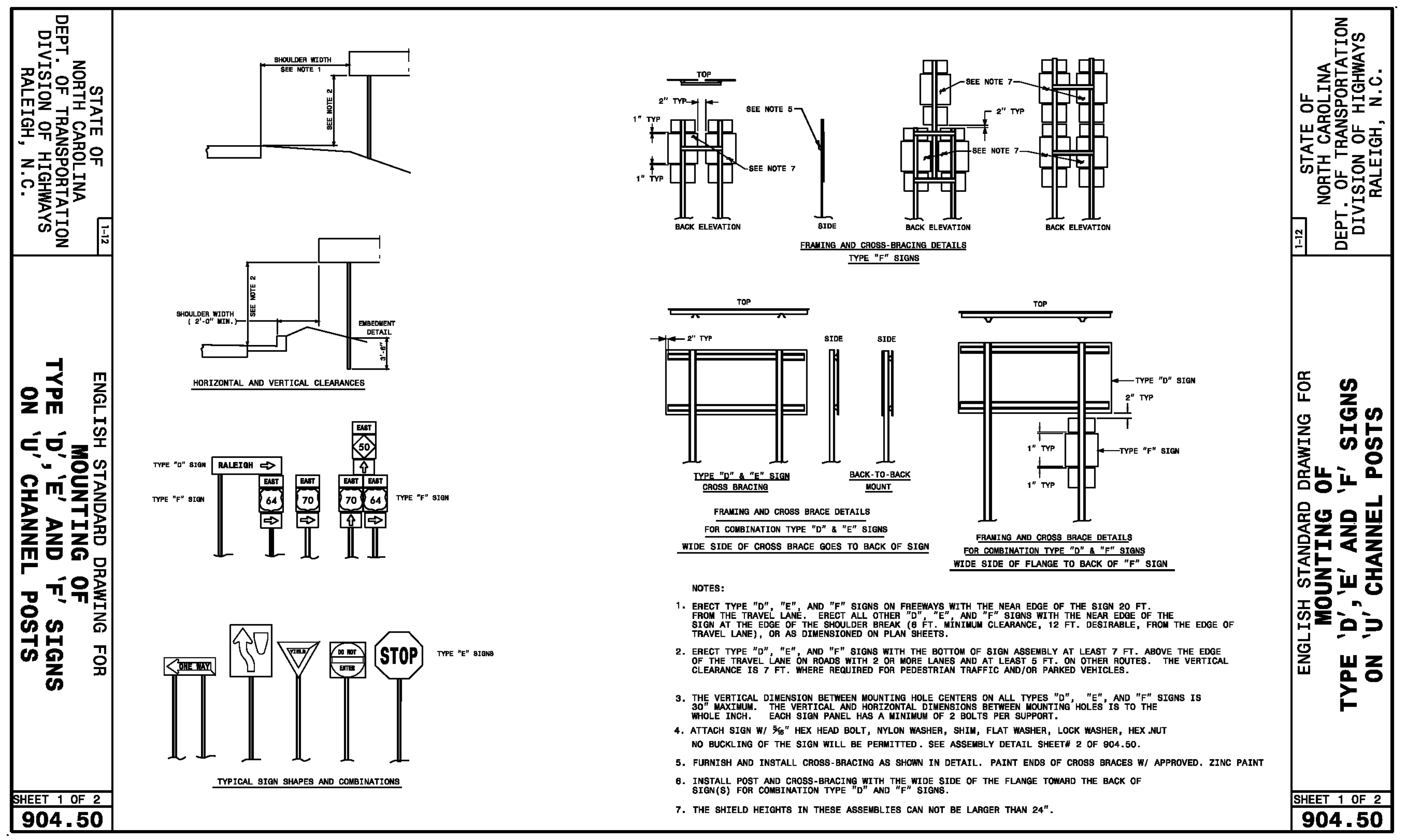
STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION 2

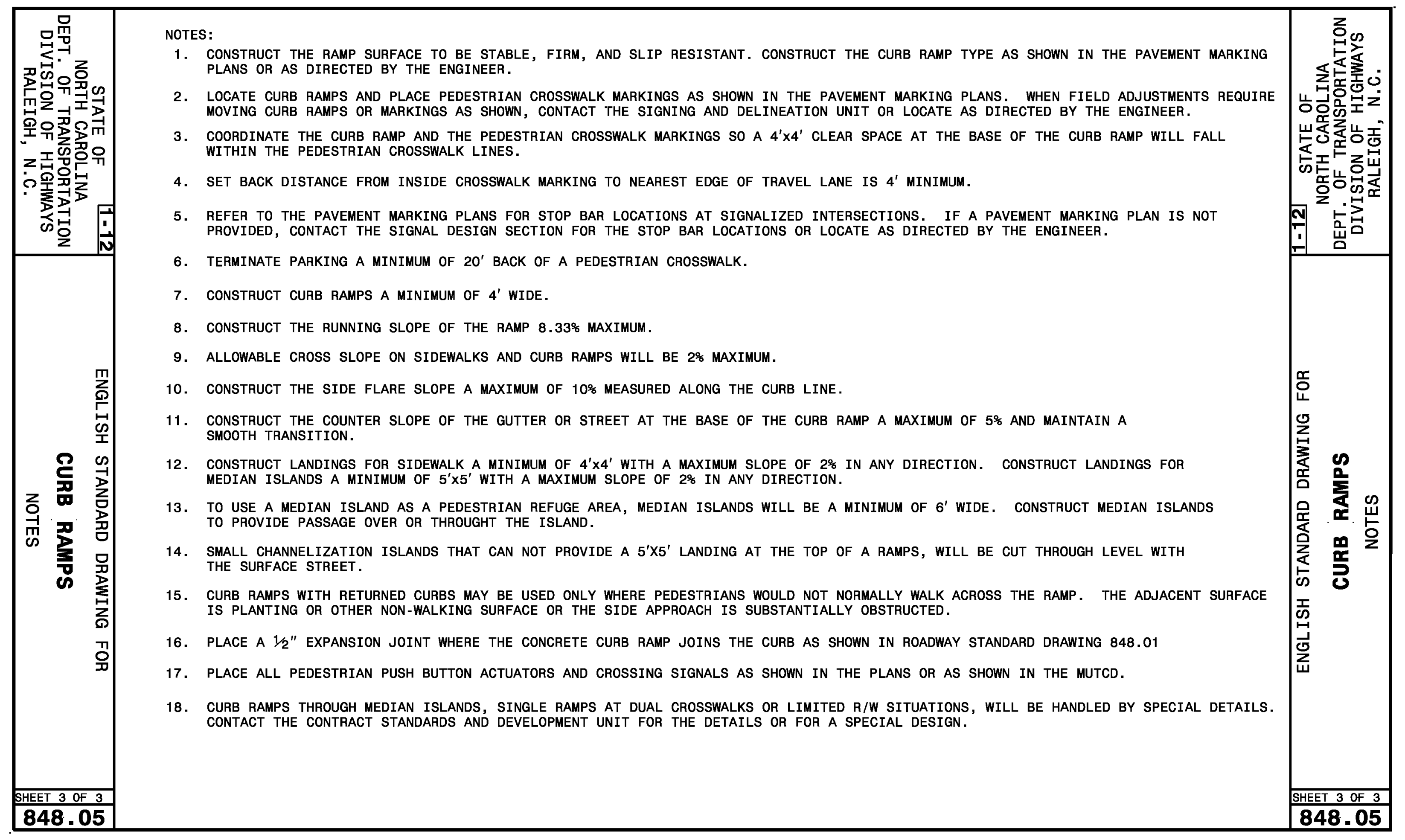




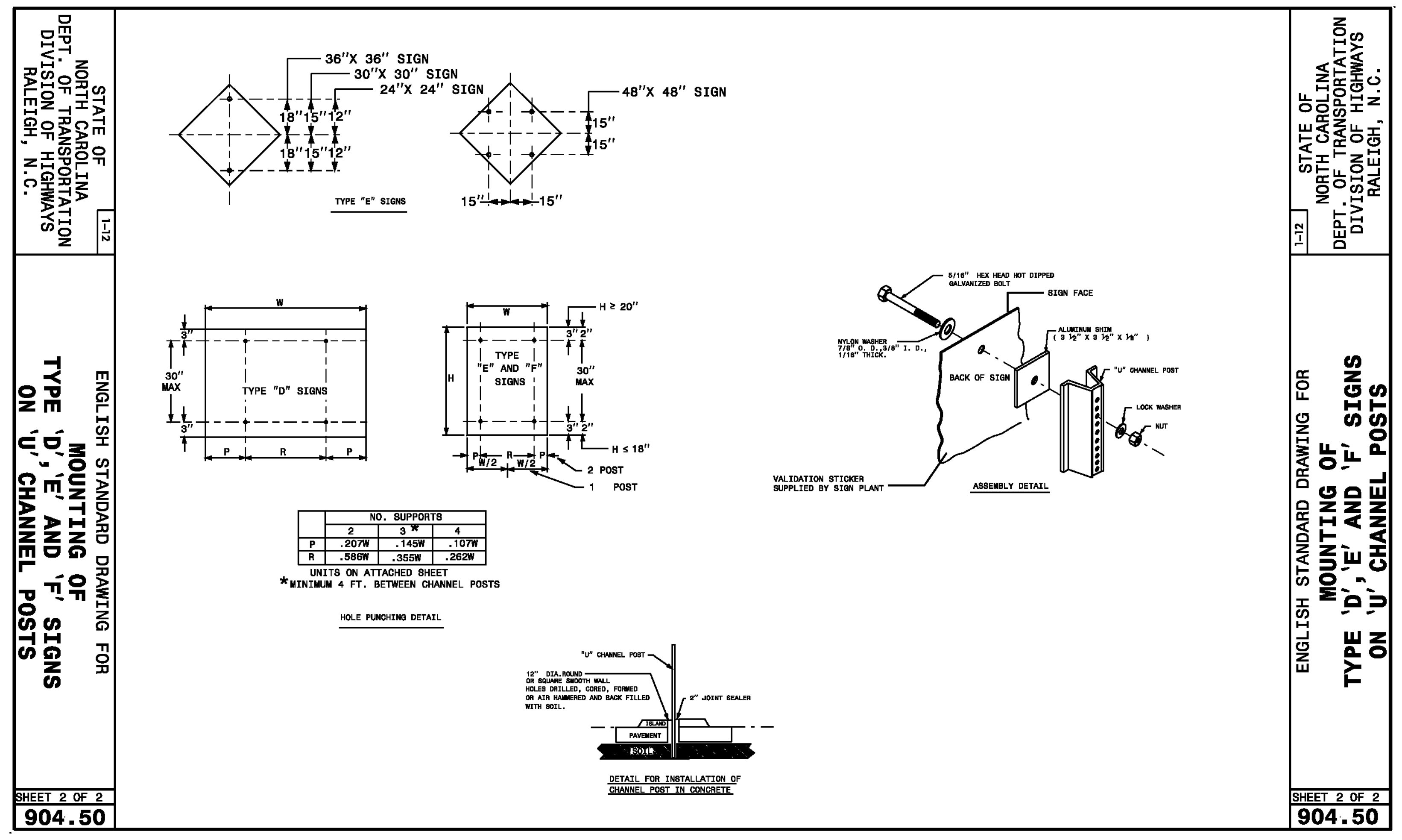
GENERAL NOTES:
-PLACE CONTRACTION JOINTS AT 10' INTERVALS, EXCEPT THAT A 15' SPACING MAY BE USED WHEN A MACHINE IS USED OR WHEN SATISFACTORY SUPPORT FOR THE FACE FORM CAN BE OBTAINED WITHOUT THE USE OF TEMPLATES AT 10' INTERVALS.
-JOINT SPACING MAY BE ALTERED IF REQUIRED BY THE ENGINEER.
-CONTRACTION 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.

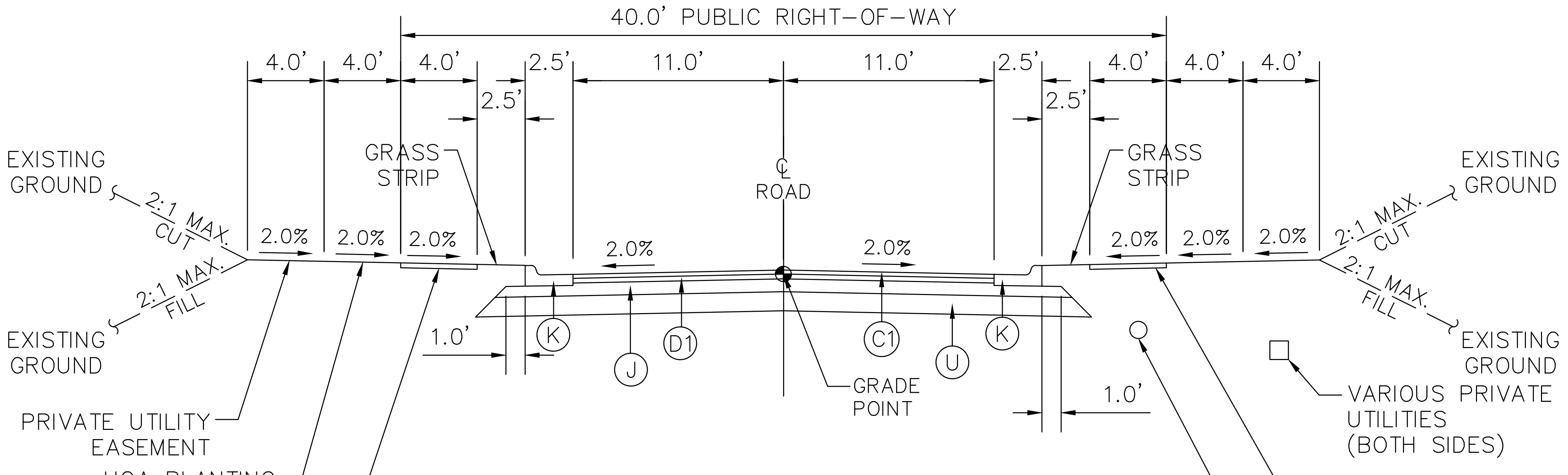






NOTES:
1. CONSTRUCT THE RAMP SURFACE TO BE STABLE, FIRM, AND SLIP RESISTANT. CONSTRUCT THE CURB RAMP TYPE AS SHOWN IN THE PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER.
2. LOCATE CURB RAMPS AND PLACE PEDESTRIAN CROSSWALK MARKINGS AS SHOWN IN THE PAVEMENT MARKING PLANS. WHEN FIELD ADJUSTMENTS 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.





## UNDIVIDED TYPICAL SECTION
## 27' BOC-BOC; 40' PUBLIC R/W
NOT TO SCALE

PAVEMENT SCHEDULE

| | |
|---|---|
| C1 | 1.0" SF9.5A ASPHALT SURFACE COURSE<br>AT AN AVERAGE RATE OF 110 LBS. PER SQ. YARD. |
| D1 | 2.0" S9.5B ASPHALT SURFACE COURSE<br>AT AN AVERAGE RATE OF 224 LBS. PER SQ. YARD. |
| J | 8" COMPACTED ABC STONE BASE COURSE |
| K | 30" CURB AND GUTTER |
| U | COMPACTED SUBGRADE |
| G | GEOTEXTILE FABRIC (IF NECESSARY)<br>COORDINATE WITH GEOTECHNICAL ENGINEER |

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| 2 | REVISED PER NCDOT COMMENTS | 2018.05.07 |
| 1 | REVISED PER CHATHAM COUNTY EROSION CONTROL AND STORMWATER | 2018.05.04 |
| 0 | INITIAL SUBMITTAL | 2018.04.11 |

REVISIONS

SEAL

SEAL
036348
05/04/2018
GARETH C. AVANT

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US STEEL - SECTION 2
CHATHAM COUNTY, NORTH CAROLINA

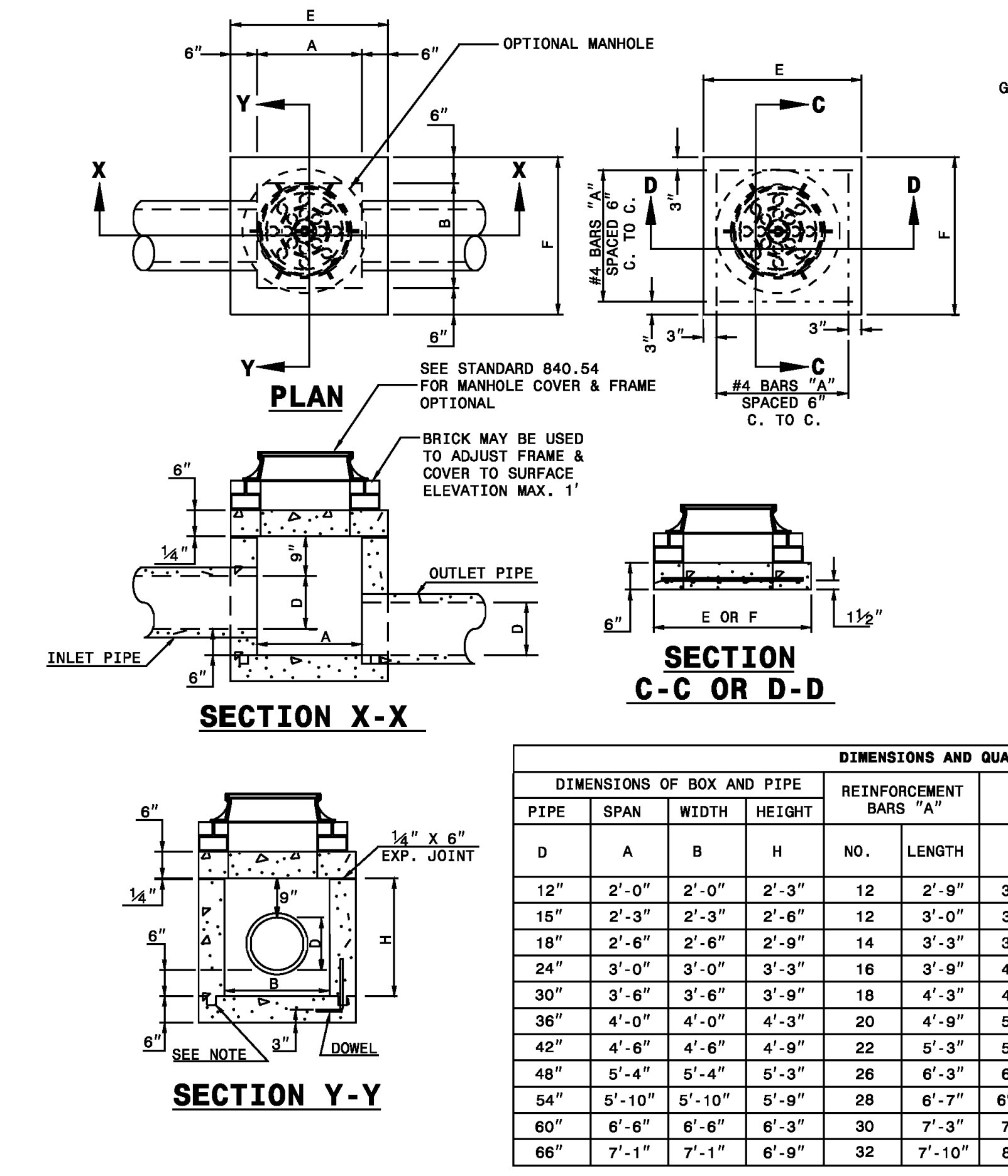
NCDOT ROADWAY DETAILS

DATE: APRIL 11, 2018
MCE PROJ. # 02735-0206
DRAWN LEG
DESIGNED LEG
CHECKED GCA
PROJ. MGR. CHS

SCALE
HORIZONTAL: N/A
VERTICAL: N/A

M&C FILE NUMBER D2.X
DRAWING NUMBER D2.1

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION 2



GENERAL NOTES:

CHAMFER ALL EXPOSED CORNERS 1".

USE CLASS "B" CONCRETE THROUGHOUT.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

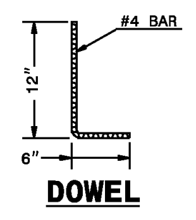
USE FORMS TO CONSTRUCT THE BOTTOM SLAB.

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 CONCRETE JUNCTION BOXES**

| DIMENSIONS OF BOX AND PIPE | | | | REINFORCEMENT BARS "A" | | TOP SLAB DIMENSIONS | | CUBIC YARDS IN BOX | | | TOTAL QUANTITIES BOX AND SLABS | | DEDUCTIONS FOR ONE PIPE CU.YDS. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIPE | SPAN | WIDTH | HEIGHT | | | | | | | | | | | |
| D | A | B | H | NO. | LENGTH | E | F | TOP SLAB | BOTTOM SLAB | WALL/ FT. OF HT. | LBS. REINF | CU. YDS. MIN. "H" | C.S. | R.C. |
| 12" | 2'-0" | 2'-0" | 2'-3" | 12 | 2'-9" | 3'-0" | 3'-0" | 0.167 | 0.167 | 0.185 | 22 | 0.750 | 0.015 | 0.024 |
| 15" | 2'-3" | 2'-3" | 2'-6" | 12 | 3'-0" | 3'-3" | 3'-3" | 0.196 | 0.196 | 0.204 | 24 | 0.902 | 0.023 | 0.036 |
| 18" | 2'-6" | 2'-6" | 2'-9" | 14 | 3'-3" | 3'-6" | 3'-6" | 0.227 | 0.227 | 0.222 | 30 | 1.065 | 0.033 | 0.049 |
| 24" | 3'-0" | 3'-0" | 3'-3" | 16 | 3'-9" | 4'-0" | 4'-0" | 0.296 | 0.296 | 0.259 | 40 | 1.434 | 0.059 | 0.085 |
| 30" | 3'-6" | 3'-6" | 3'-9" | 18 | 4'-3" | 4'-6" | 4'-6" | 0.375 | 0.375 | 0.296 | 51 | 1.860 | 0.092 | 0.127 |
| 36" | 4'-0" | 4'-0" | 4'-3" | 20 | 4'-9" | 5'-0" | 5'-0" | 0.463 | 0.463 | 0.333 | 64 | 2.341 | 0.132 | 0.178 |
| 42" | 4'-6" | 4'-6" | 4'-9" | 22 | 5'-3" | 5'-6" | 5'-6" | 0.560 | 0.560 | 0.370 | 77 | 2.878 | 0.180 | 0.243 |
| 48" | 5'-4" | 5'-4" | 5'-3" | 26 | 6'-3" | 6'-4" | 6'-4" | 0.743 | 0.743 | 0.407 | 111 | 3.623 | 0.235 | 0.317 |
| 54" | 5'-10" | 5'-10" | 5'-9" | 28 | 6'-7" | 6'-10" | 6'-10" | 0.865 | 0.865 | 0.444 | 126 | 4.283 | 0.297 | 0.401 |
| 60" | 6'-6" | 6'-6" | 6'-3" | 30 | 7'-3" | 7'-6" | 7'-6" | 1.042 | 1.042 | 0.481 | 145 | 5.090 | 0.367 | 0.495 |
| 66" | 7'-1" | 7'-1" | 6'-9" | 32 | 7'-10" | 8'-1" | 8'-1" | 1.210 | 1.210 | 0.518 | 169 | 5.917 | 0.444 | 0.589 |

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ENGLISH STANDARD DRAWING FOR
**CONCRETE JUNCTION BOX**
(WITH OPTIONAL MANHOLE)
12" THRU 66" PIPE

SHEET 1 OF 1
**840.31**

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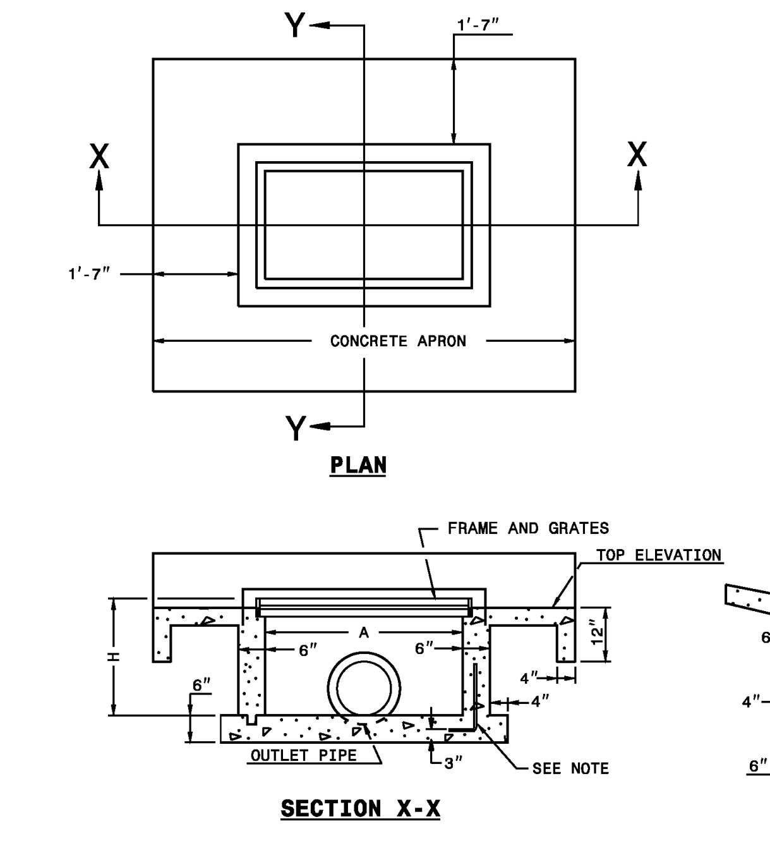


GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL GRATED DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

CONSTRUCT WITH PIPE CROWNS MATCHING.

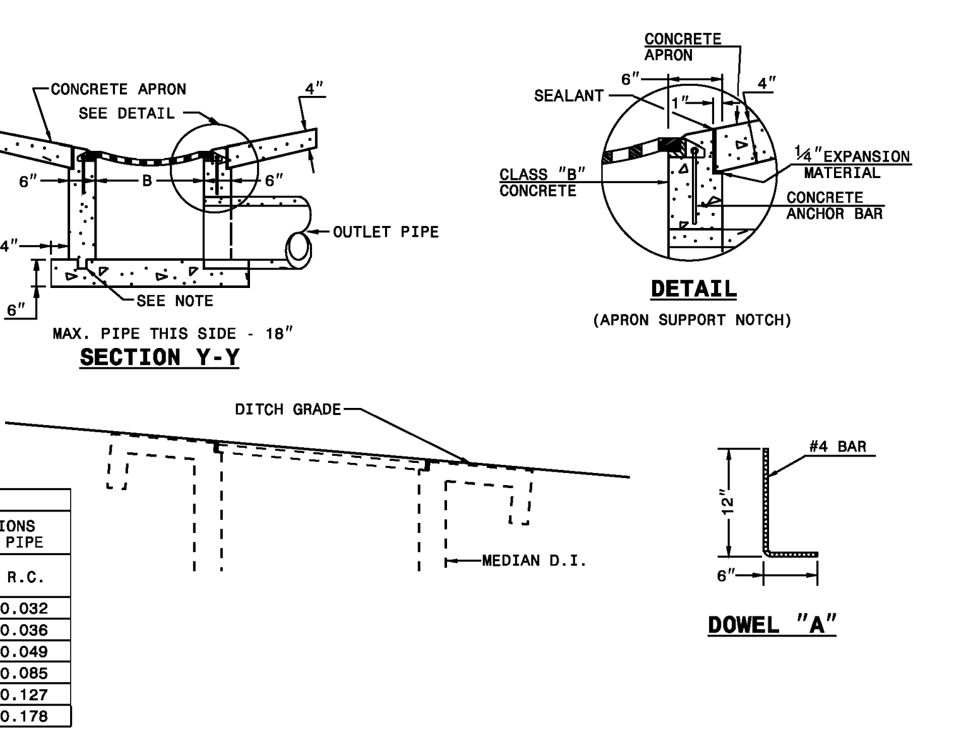
MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12 FEET.

USE STANDARD FRAMES AND GRATES 840.22 (SHOWN), 840.24(SHOWN), 840.20, 840.29, AND 840.33.

SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.

CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.



**MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE GRATED DROP INLET**

| PIPE | SPAN | WIDTH | HEIGHT | CUBIC YARDS OF CONCRETE IN BOX | | | | DEDUCTIONS FOR ONE PIPE | |
|---|---|---|---|---|---|---|---|---|---|
| D | A | B | H | BOTTOM SLAB | H PER FT. HT. | H MIN. TOTAL | TOTAL | C.S. | R.C. |
| 12" | 3'-8" | 2'-0" | 2'-6" | 0.362 | 0.247 | 0.597 | 0.958 | 0.020 | 0.032 |
| 15" | 3'-8" | 2'-0" | 2'-9" | 0.362 | 0.247 | 0.659 | 1.021 | 0.023 | 0.036 |
| 18" | 3'-8" | 2'-0" | 3'-0" | 0.362 | 0.247 | 0.720 | 1.082 | 0.033 | 0.049 |
| 24" | 3'-8" | 2'-0" | 3'-6" | 0.362 | 0.247 | 0.865 | 1.227 | 0.059 | 0.085 |
| 30" | 3'-8" | 2'-0" | 4'-0" | 0.362 | 0.247 | 0.988 | 1.350 | 0.092 | 0.127 |
| 36" | 3'-8" | 2'-0" | 4'-6" | 0.362 | 0.247 | 1.112 | 1.474 | 0.132 | 0.178 |

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ENGLISH STANDARD DRAWING FOR
**CONCRETE GRATED DROP INLET TYPE 'B'**
12" THRU 36" PIPE

SHEET 1 OF 1
**840.18**

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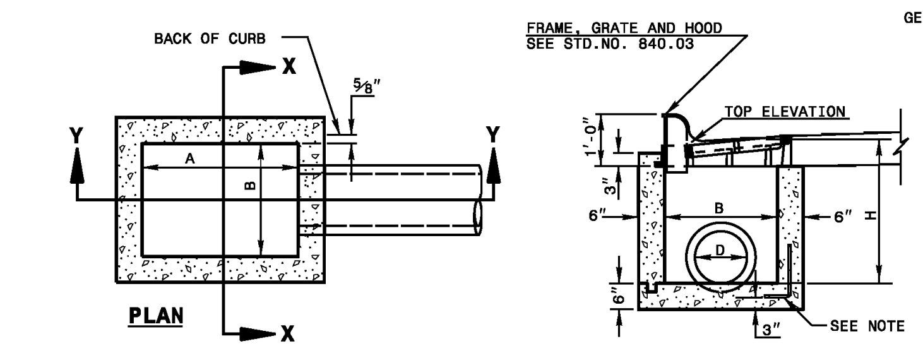


GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

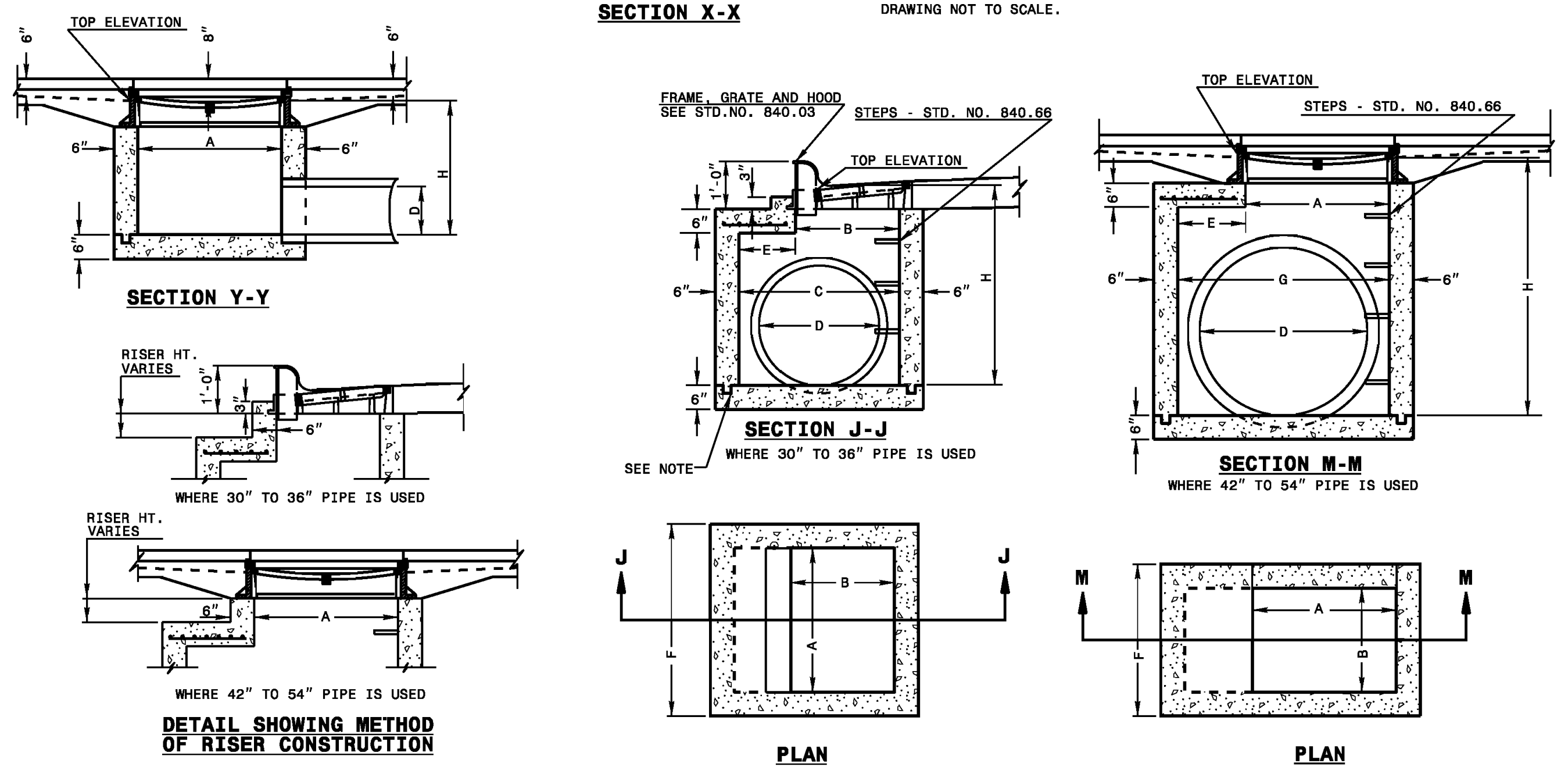
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.

FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 16'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.

CONSTRUCT WITH PIPE CROWNS MATCHING.

CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.



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ENGLISH STANDARD DRAWING FOR
**CONCRETE CATCH BASIN**
12" THRU 54" PIPE

SHEET 1 OF 2
**840.02**

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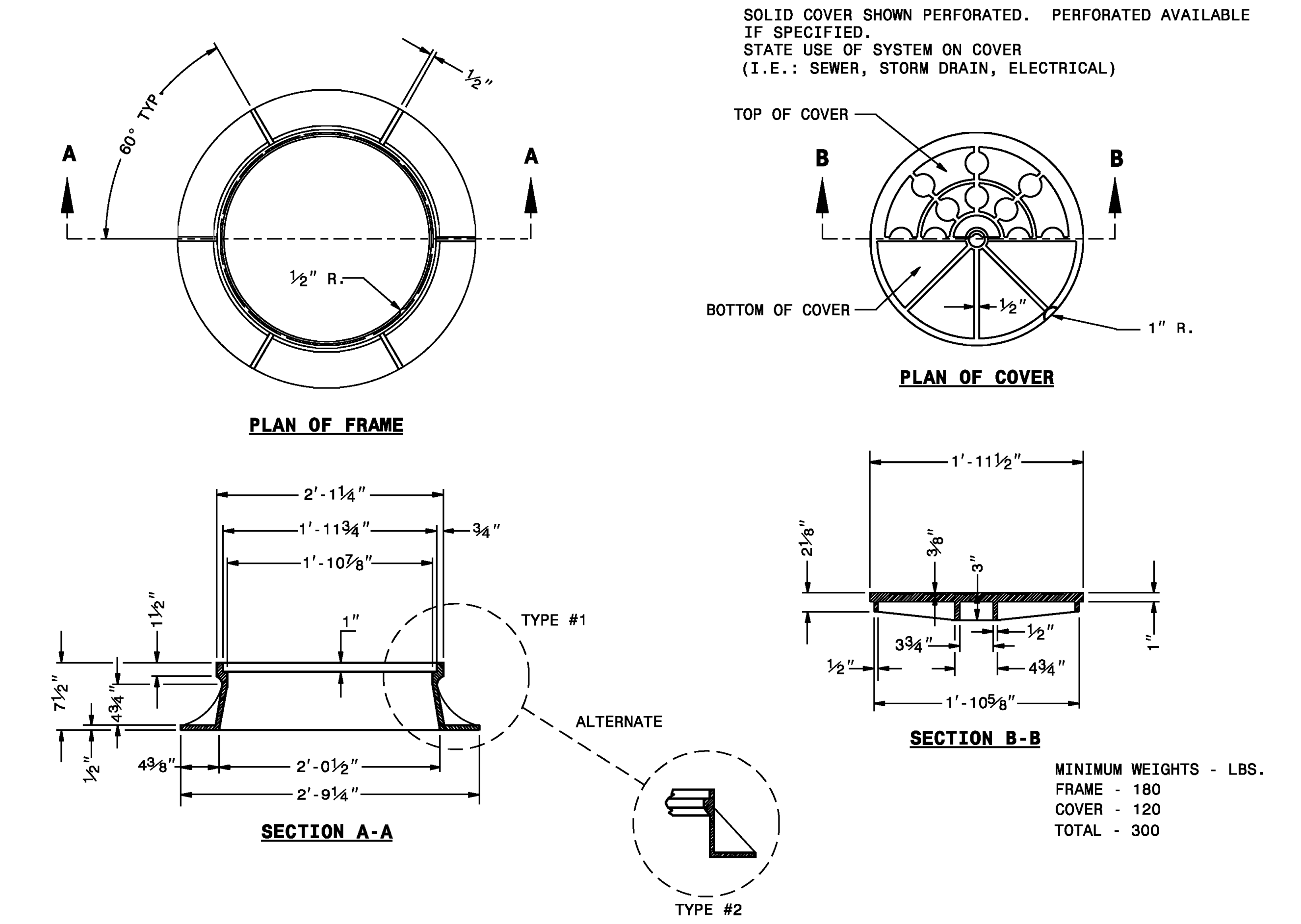

SOLID COVER SHOWN PERFORATED. PERFORATED AVAILABLE IF SPECIFIED.
STATE USE OF SYSTEM ON COVER
(I.E.: SEWER, STORM DRAIN, ELECTRICAL)

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

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ENGLISH STANDARD DRAWING FOR
**MANHOLE FRAME AND COVER**

SHEET 1 OF 1
**840.54**

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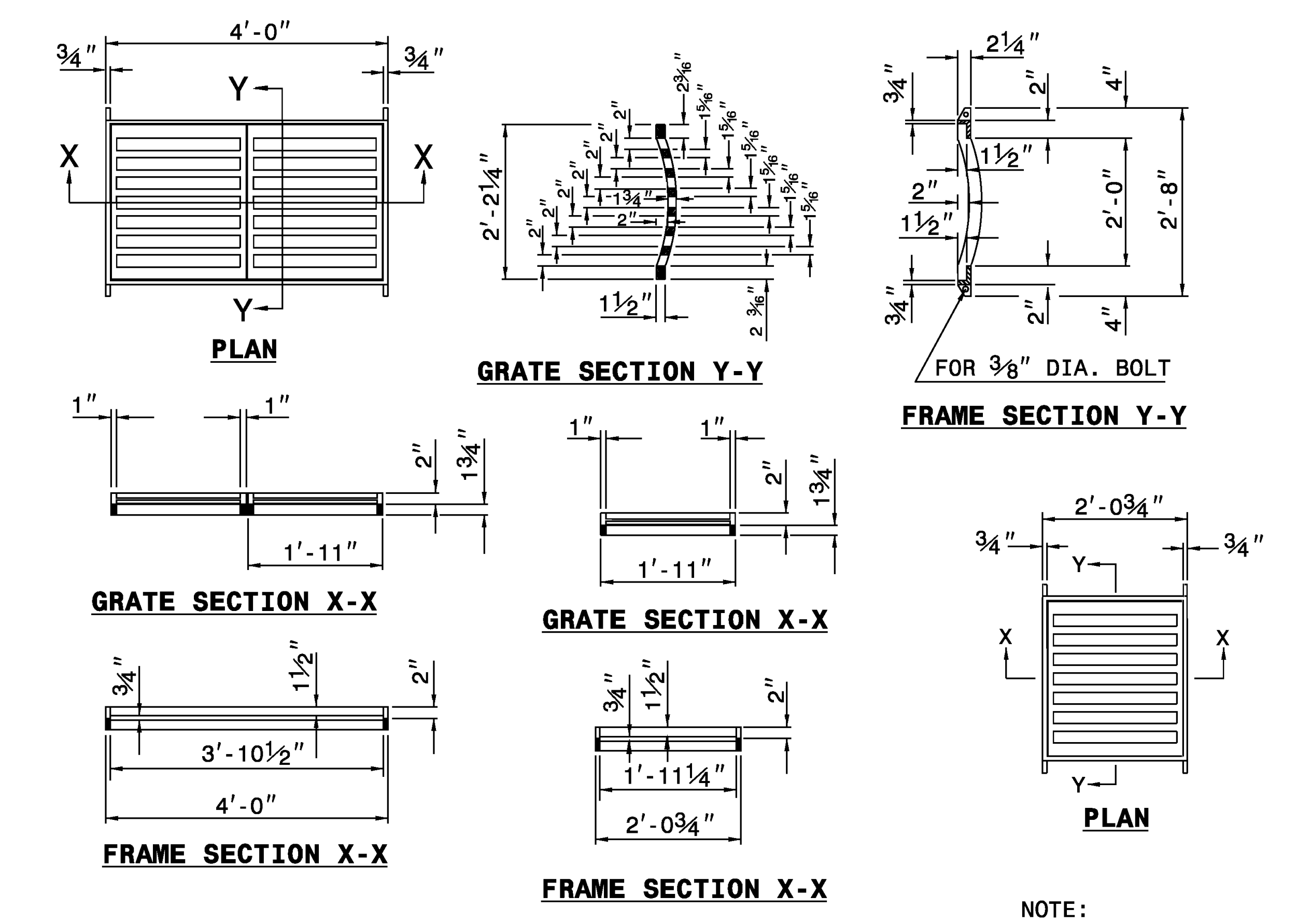

NOTE:
SEE STD. DWG. 840.25
FOR FRAME ANCHORAGE.

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ENGLISH STANDARD DRAWING FOR
**FRAMES AND NARROW SLOT SAG GRATES**

SHEET 1 OF 1
**840.24**

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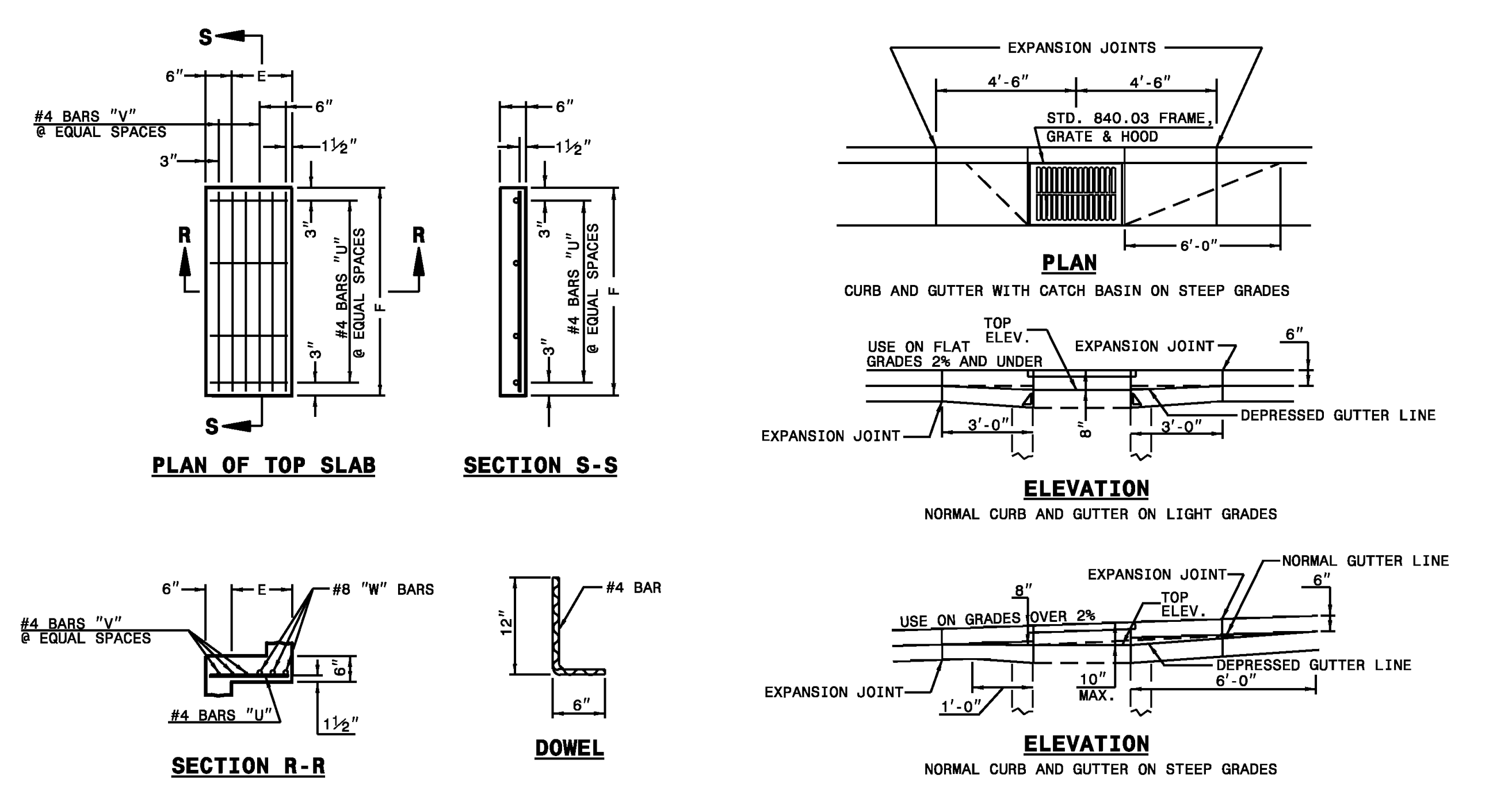

**MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN(BASED ON MIN. HEIGHT, H, WITH NO RISER) ***

| DIMENSIONS OF BOX AND PIPE | | | | | | COVER DIMENSION | | | | | | | | | CU.YDS. CONC. IN BOX | | | DEDUCTIONS ONE PIPE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIPE | SPAN | WIDTH | WIDTH | SPAN | MIN. HEIGHT | | | BARS-U | | BARS-V | | BARS-W | | TOTAL LBS. | TOP SLAB | BOTTOM SLAB | TOT. CONC. FOR MINIMUM HEIGHT, H | | |
| D | A | B | C | G | H | E | F | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH | | | | | C.M. | R.C. |
| 12" | 3'-0" | 2'-2" | -- | -- | 2'-9" | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.235 | 0.772 | 0.015 | 0.026 |
| 15" | 3'-0" | 2'-2" | | | 3'-0" | | | | | | | | | | | 0.235 | 0.829 | 0.023 | 0.036 |
| 18" | 3'-0" | 2'-2" | | | 3'-3" | | | | | | | | | | | 0.235 | 0.887 | 0.033 | 0.049 |
| 24" | 3'-0" | 2'-2" | | | 3'-9" | | | | | | | | | | | 0.235 | 1.001 | 0.059 | 0.085 |
| 30" | 3'-0" | 2'-2" | 3'-4" | | 4'-3" | 1'-2" | 4'-0" | 4 | 1'-5" | 2 | 3'-9" | 3 | 3'-9" | 39 | 0.123 | 0.321 | 1.433 | 0.092 | 0.127 |
| 36" | 3'-0" | 2'-2" | 3'-10" | | 4'-9" | 1'-8" | 4'-0" | 4 | 1'-11" | 3 | 3'-9" | 3 | 3'-9" | 43 | 0.161 | 0.358 | 1.714 | 0.132 | 0.178 |
| 42" | 3'-0" | 2'-2" | | 4'-5" | 5'-3" | 1'-5" | 3'-2" | 4 | 1'-8" | 2 | 2'-11" | 3 | 2'-11" | 32 | 0.112 | 0.318 | 1.738 | 0.180 | 0.243 |
| 48" | 3'-0" | 2'-2" | | 5'-0" | 5'-9" | 2'-0" | 3'-2" | 4 | 2'-3" | 3 | 2'-11" | 3 | 2'-11" | 35 | 0.145 | 0.352 | 2.052 | 0.235 | 0.317 |
| 54" | 3'-0" | 2'-2" | | 5'-7" | 6'-3" | 2'-7" | 3'-2" | 4 | 2'-10" | 5 | 2'-11" | 3 | 2'-11" | 41 | 0.180 | 0.386 | 2.387 | 0.297 | 0.401 |

* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

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ENGLISH STANDARD DRAWING FOR
**CONCRETE CATCH BASIN**
12" THRU 54" PIPE

SHEET 2 OF 2
**840.02**

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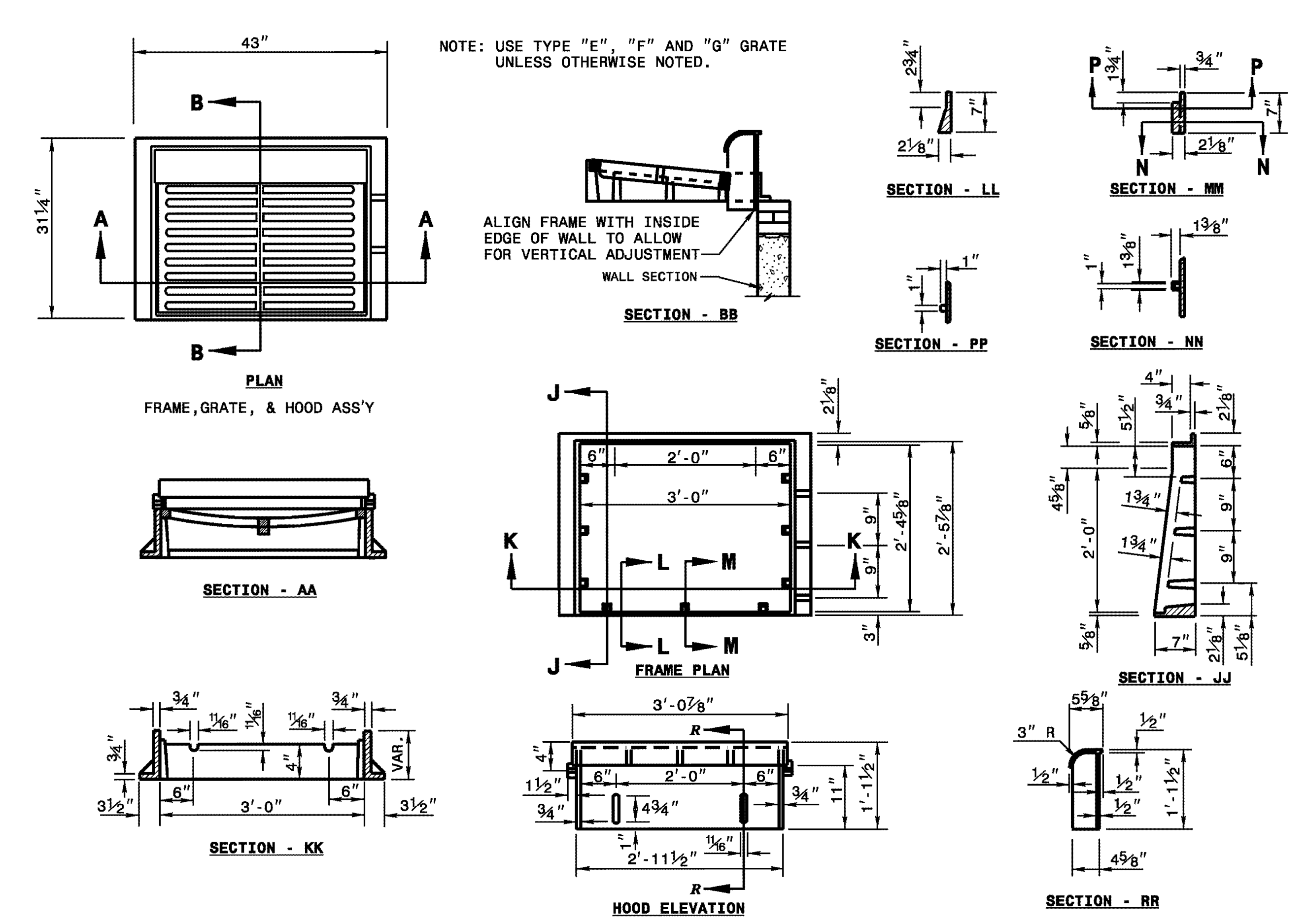

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ENGLISH STANDARD DRAWING FOR
**FRAME, GRATES, AND HOOD**
FOR USE ON STANDARD CATCH BASIN

SHEET 1 OF 2
**840.03**

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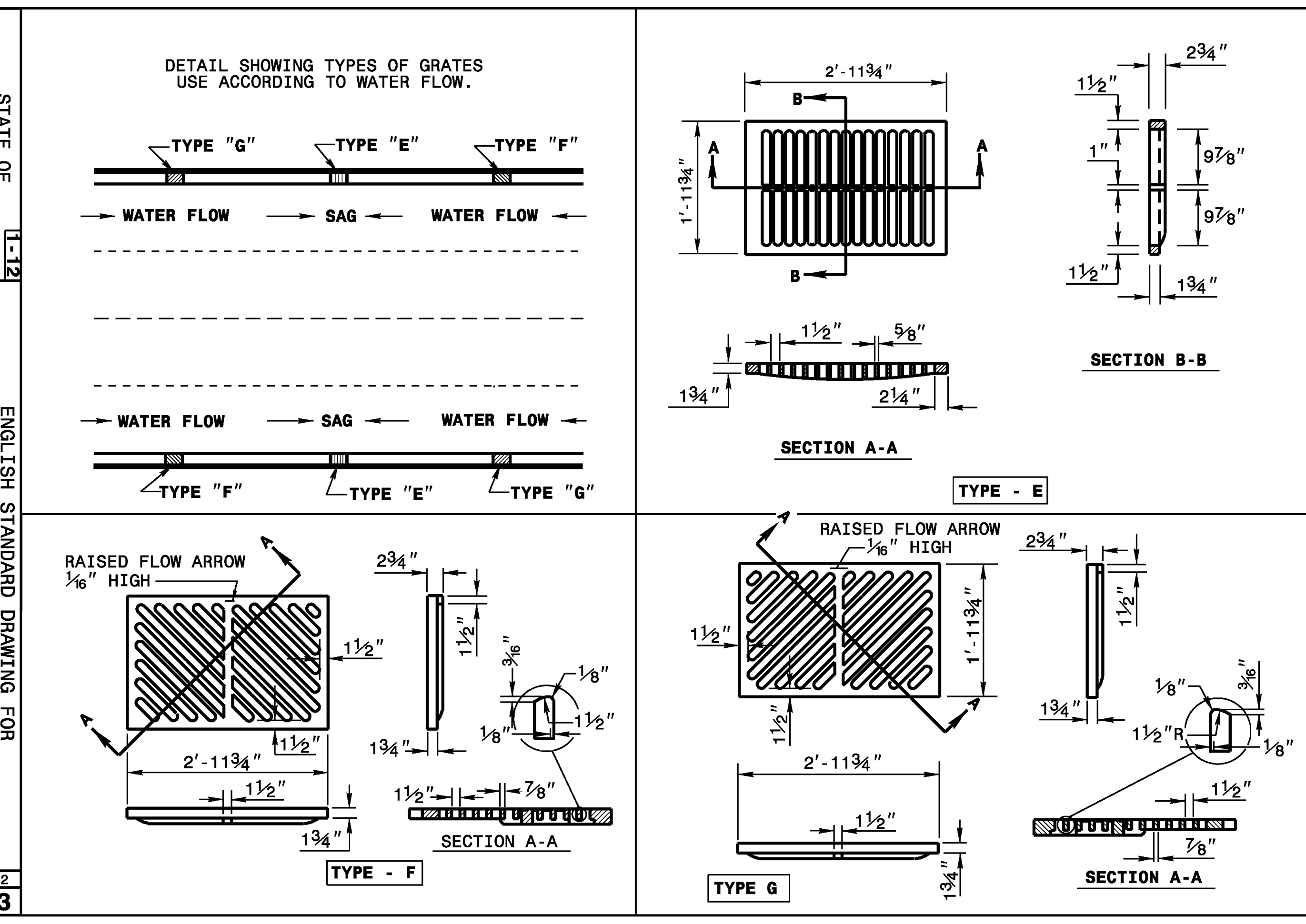

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ENGLISH STANDARD DRAWING FOR
**FRAME, GRATES, AND HOOD**
FOR USE ON STANDARD CATCH BASIN

SHEET 2 OF 2
**840.03**

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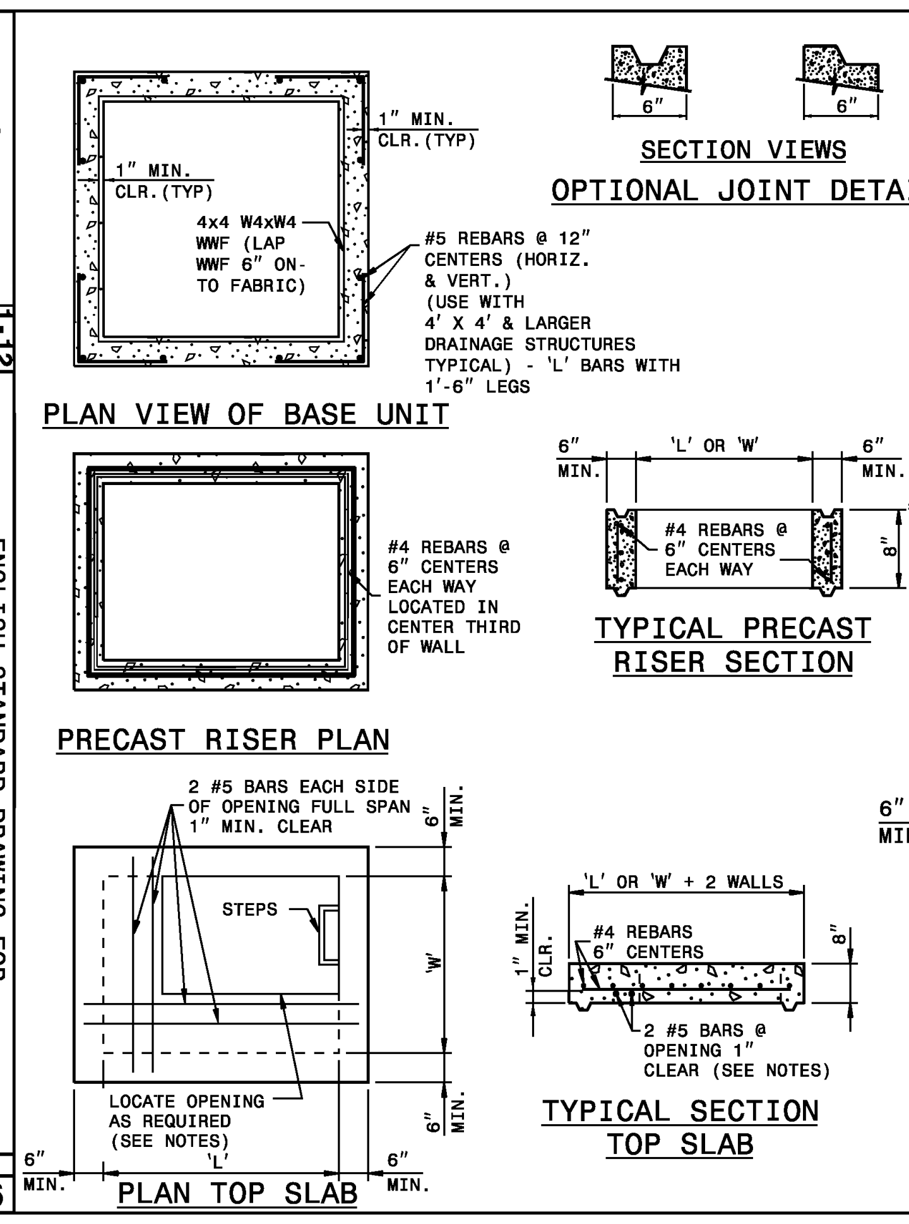
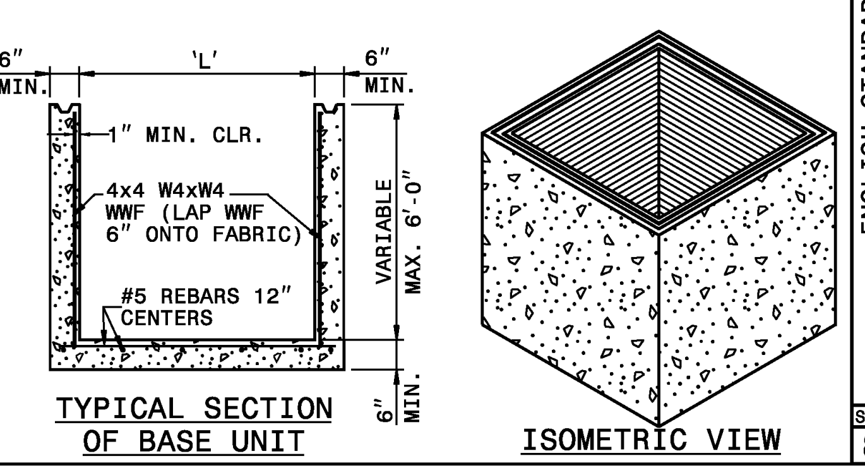


GENERAL NOTES:

- * THIS PRECAST BOX MAY BE USED FOR THE FOLLOWING STANDARDS: 840.04, 840.05, 840.14, 840.15, 840.31, 840.32, 840.34, 840.35, 840.36 AND 840.41.
- * INSTALL AND PAY FOR PRECAST DRAINAGE STRUCTURES IN ACCORDANCE WITH NCDOT STANDARD SPECIFICATION SECTION 840.
- * USE 4000 PSI MINIMUM COMPRESSIVE STRENGTH CONCRETE.
- * USE ASTM A615 GRADE 60 REINFORCING STEEL. USE ASTM A185 WELDED WIRE FABRIC (WWF).
- * LIMIT MAXIMUM DEPTH TO TOP OF BOTTOM SLAB TO 15'-0".
- * PLACE LIFT HOLES OR PINS IN ACCORDANCE WITH OSHA STANDARD 1926.704.
- * ORIENT STRUCTURES SO THAT CORNERS WILL NOT BE CUT OR MODIFIED UNLESS ALLOWED BY DETAIL IN PLANS.
- * PRECAST ALL ELEMENTS TO MEET ASTM C913.
- * FRAME AND GRATE HEIGHT MAY BE ADJUSTED WITH CONCRETE OR BRICK IN ACCORDANCE WITH STANDARD 840.25.
- * PROVIDE PRECAST STRUCTURES OVER 4'-0" IN DEPTH WITH STEPS 12" ON CENTERS IN ACCORDANCE WITH STD. NO. 840.66.
- * WELDED WIRE FABRIC MAY BE SUBSTITUTED FOR REBAR IF THE SAME MIN. AREA OF STEEL IS PROVIDED.
- * SEAL JOINTS WITH AN APPROVED SEALANT (SEE SECTION 840 OF NCDOT STANDARD SPECIFICATIONS.
- * LIMIT MAXIMUM STRUCTURE SIZE INSIDE CLEAR DIMENSIONS TO 6'-0" X 6'-0".
- * THE OUTSIDE PIPE DIAMETER PLUS 2" IS THE MINIMUM STRUCTURE SIZE OR THE OPENING REQUIRED FOR GRATE AND FRAME WHICHEVER IS GREATER.
- * ROUND MANHOLE MAY BE USED IN LIEU OF SQUARE PROVIDED 2 EXTRA #5'S ARE PLACED ON EVERY SIDE NOT ADJACENT TO A WALL. SEE STD. DWG. 840.34 FOR MANHOLE INSTALLATION.



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ENGLISH STANDARD DRAWING FOR
**TRAFFIC BEARING PRECAST DRAINAGE STRUCTURE**

SHEET 1 OF 1
**840.46**

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| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| 2 | REVISED PER NCDOT COMMENTS | 2018.05.07 |
| 1 | REVISED PER CHATHAM COUNTY EROSION CONTROL AND STORMWATER | 2018.05.04 |
| 0 | INITIAL SUBMITTAL | 2018.04.11 |

REVISIONS

SEAL

SEAL
036348
05/04/2018
GARETH C. AVANT

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# NCDOT DRAINAGE DETAILS

| | |
|---|---|
| DATE: | APRIL 11, 2018 |
| MCE PROJ. # | 02735-0206 |
| DRAWN | LEG |
| DESIGNED | LEG |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL:
N/A
VERTICAL:
N/A

M&C FILE NUMBER
D2.X
DRAWING NUMBER
D2.2

STATUS:
FINAL DRAWINGS
FOR REVIEW PURPOSES ONLY
REVISION
2