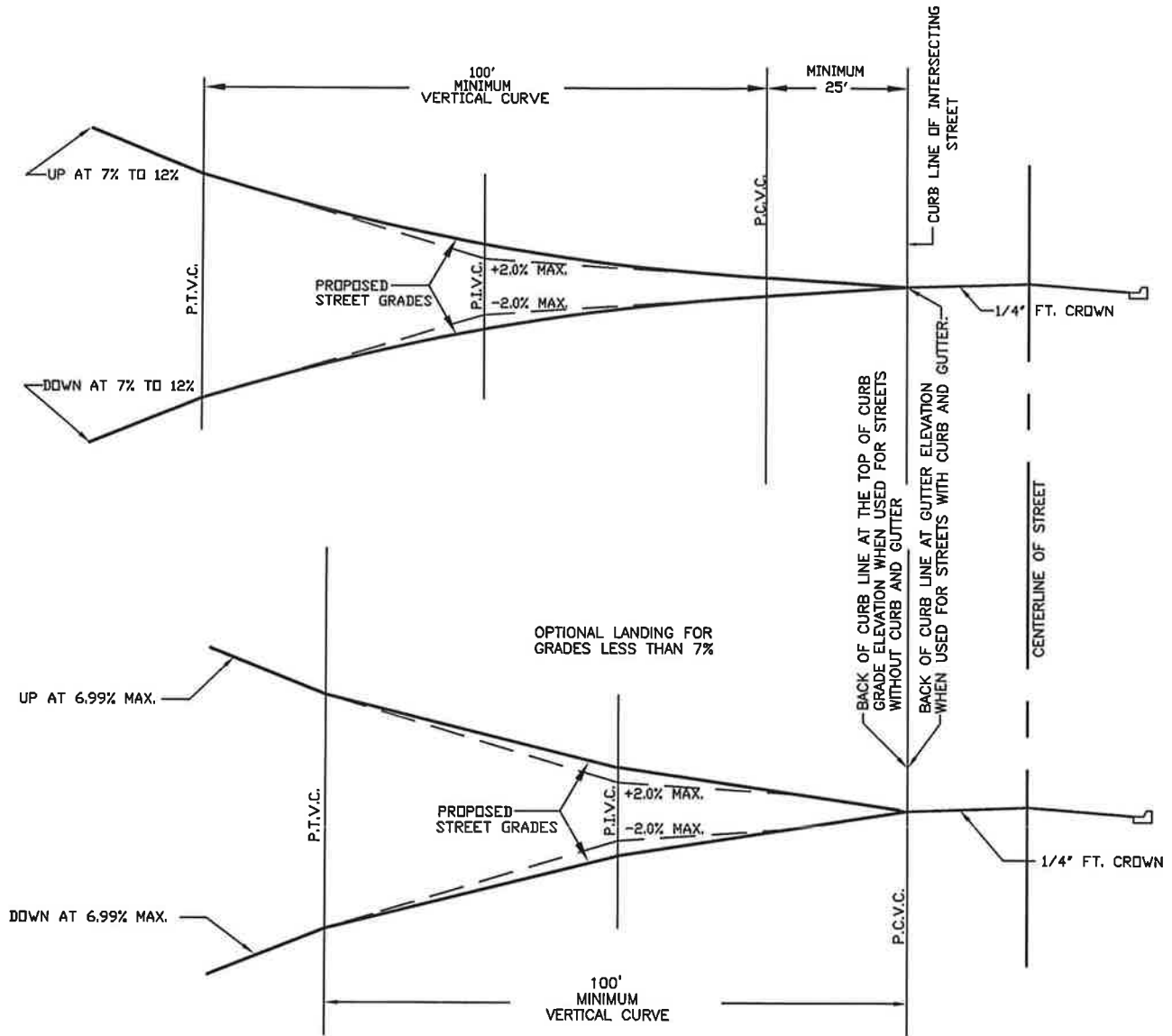


FORSYTH COUNTY DEPARTMENT OF ENGINEERING
STANDARD DETAILS

Std. No. 100 - Standard Landing Requirements
Std. No. 110 - Underground Utilities Placement for Subdivisions
Std. No. 115 - Underground Utilities Placement for 50' R/W with 5' Utility Easement
Std. No. 120 - Typical Roadway Specifications (1 of 5)
Std. No. 121 - Typical Roadway Specifications (2 of 5)
Std. No. 122 - Typical Roadway Sections (3 of 5)
Std. No. 123 - Typical Roadway Sections (4 of 5)
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Std. No. 125 - Deceleration Lane
Std. No. 126 - Left Turn Lane Design
Std. No. 127 - Intersection Sight Distance Requirements
Std. No. 130 - Concrete Valley Gutter
Std. No. 140 - Typical Section of a 5'-0" Sidewalk
Std. No. 150 - Private Driveway Entrance with Sidewalk
Std. No. 151 - Standard Private Entrance
Std. No. 160 - Minimum Requirements for Standard Cul-de-Sacs
Std. No. 161 - Minimum Requirements for Oversized Cul-de-Sacs
Std. No. 162 - Minimum Requirements for Standard Eyebrows
Std. No. 170 - Monuments or Street Name Signs
Std. No. 171 - Street Sign Location & Specification
Std. No. 172 - Street Sign Location & Specification
Std. No. 173 - Standard Road Barricade
Std. No. 174 - Pavement Marking Hatching Details
Std. No. 175 - Pavement Marking Hatching Details
Std. No. 176 - Pavement Marking Details (Words)
Std. No. 177 - Detail of Pavement Marking Arrows
Std. No. 180 - Standard for Backfilling & Pavement Cut Repairs - Type B & C
Std. No. 190 - Standard Construction Details - Curbing
Std. No. 191 - Curb Transition at Catch Basin
Std. No. 200 - Cast Concrete Headwall (1 of 3)
Std. No. 201 - Cast Concrete Headwall (2 of 3)
Std. No. 202 - Cast Concrete Headwall (3 of 3)
Std. No. 210 - Location of Catch Basins
Std. No. 220 - Brick Catch Basin (1 of 4)
Std. No. 221 - Standard Catch Basin (2 of 4)
Std. No. 222 - Brick Catch Basin (3 of 4)
Std. No. 223 - Standard Catch Basin (4 of 4)
Std. No. 230 - Standard Double Wing Brick Catch Basin (1 of 3)
Std. No. 231 - Standard Double Wing Brick Catch Basin (2 of 3)
Std. No. 232 - Standard Double Wing Brick Catch Basin (3 of 3)
Std. No. 240 - Round Precast Concrete Catch Basins 1033 & 1034 (1 of 2)
Std. No. 241 - Round Precast Concrete Catch Basins 1033 & 1034 (2 of 2)
Std. No. 250 - Standard Concrete Drop Inlet
Std. No. 251 - Standard Brick Drop Inlet
Std. No. 252 - Drop Inlet Dimensions
Std. No. 253 - Standard Round Precast Drop Inlet & Junction Box Systems
Std. No. 254 - Weir Inlet Detail (Pedestal Inlet)
Std. No. 300 - Corrugated Metal Pipe Arch
Std. No. 305 - Pipe Culvert Material Alternates
Std. No. 310 - Metal and Concrete Circular Pipe (1 of 3)
Std. No. 311 - Metal and Concrete Circular Pipe (2 of 3)
Std. No. 312 - Metal and Concrete Circular Pipe (3 of 3)
Std. No. 320 - Pipe Bedding Methods



NOTES:

THIS STANDARD IS INTENDED TO BE A MINIMUM DESIGN STANDARD FOR CONTROL OF GRADES AT INTERSECTIONS. ON COLLECTOR STREETS OR ON STREETS EXPECTED TO CARRY HIGH TRAFFIC VOLUMES, OR ON STREETS ENTERING A MAJOR OR MINOR COUNTY THOROUGHFARE, THE VERTICAL CURVE MAY BE LENGTHENED AND THE GRADES ALTERED AT THE DISCRETION OF THE PUBLIC WORKS ENGINEER.

DESIGN GRADES FOR CURB AND GUTTER SHALL BE AT TOP OF PROPOSED FINISHED CURB.
 MAXIMUM STREET GRADE ANY STREET SHALL BE 14%
 MINIMUM STREET GRADE ANY STREET SHALL BE 1.0%.

AT STREET INTERSECTIONS, A MINIMUM OF 150 FEET CLEAR SIGHT DISTANCE (HORIZONTAL) IN EACH DIRECTION FROM THE INTERSECTION WILL BE PROVIDED FOR INTERNAL SUBDIVISION STREETS. ALL OTHER INTERSECTIONS WILL PROVIDE A CLEAR SIGHT DISTANCE (HORIZONTAL) BASED ON CURRENT AASHTO DESIGN CRITERIA.

NOT TO SCALE

STANDARD LANDING REQUIREMENTS

REV: 06-19-08

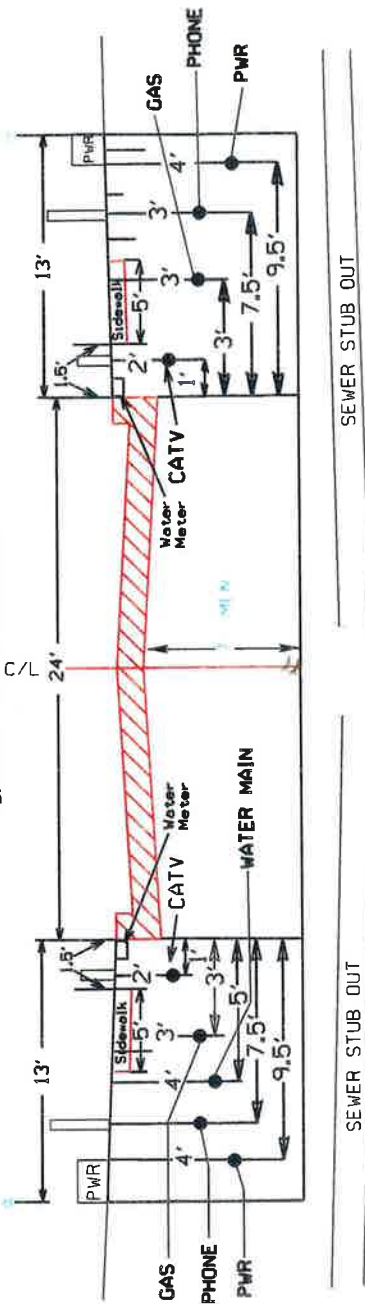
FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 100

50' RIGHT OF WAY

REVISED 02/28/07

Typical Cross-Section



SEWER

- BEFORE ANY UTILITIES ARE INSTALLED, REQUIRED WIDTH OF THE ROADWAY SHALL BE ROUGH GRADED AND ALL CONCRETE CURBING SET AT FINAL GRADES. FOR UNDERGROUND POWER THE MINIMUM SHOULDER SHALL BE 12'.
- IN GENERAL, THE SEWER/WATER MAINS SHOULD BE INSTALLED FIRST, FOLLOWING INSTALLATION. UTILITIES ARE TO BE INSTALLED IN THIS ORDER:
 - ELECTRIC POWER
 - GAS
 - TELEPHONE
 - CABLE TV
- ON THOSE SUBDIVISION STREETS WHERE NO CURB IS CALLED FOR ON THE PLANS, MEASUREMENTS SHALL BE FROM THE EDGE OF PAVEMENT.
- EACH UTILITY SHALL BE RESPONSIBLE FOR REPAIRS OF ANY DAMAGE THEY CREATE TO OTHER UTILITIES, OR TO STREET IMPROVEMENTS WITHIN THE R/W.
- MINIMUM COVER SHALL BE 4'0" FOR ALL WATER MAINS.
- HORIZONTAL TOLERANCES ARE +/- 6".
- ALL PERMANENT ABOVE GROUND INSTALLATIONS WILL BE INSTALLED ON COMMON PROPERTY LINES. COORDINATION BETWEEN POWER, PHONE, AND CATV WILL BE REQUIRED TO COLLOCATE THIS ABOVE GROUND EQUIPMENT. INDIVIDUAL UTILITY DESIGN SPECIFICATIONS MAY BE CONSIDERED IF COLLOCATION CANNOT BE ACHIEVED IN ISOLATED INSTANCES. (BONDING AGREEMENT REQUIRED BETWEEN UTILITIES). **IF NO BONDING AGREEMENT EXISTS, SEPARATION BETWEEN ABOVE GROUND UTILITIES MUST MEET NECESSARY STANDARDS.
- WATER METERS ARE TO BE LOCATED WITHIN 1'0" +/- (ONE FOOT) BACK FROM CURB.
- ELECTRICAL MAINLINES ARE TO BE INSTALLED AT MINIMUM DEPTH OF 3' (THREE FEET).
- JOINT TRENCH APPLICATIONS BETWEEN POWER, PHONE, AND CATV SHOULD BE PLACED IN POWER'S CORRIDOR AS SHOWN ON DRAWING.
- UTILITY INSTALLATIONS ALONG ANY MULTI-LANE FACILITY OR NON-SUBDIVISION STREET WILL BE PLACED IN THE BACK 5' OF THE R/W.
- OVERHEAD UTILITY LINES WILL NOT BE ALLOWED IN ANY SUBDIVISION.

NOT TO SCALE

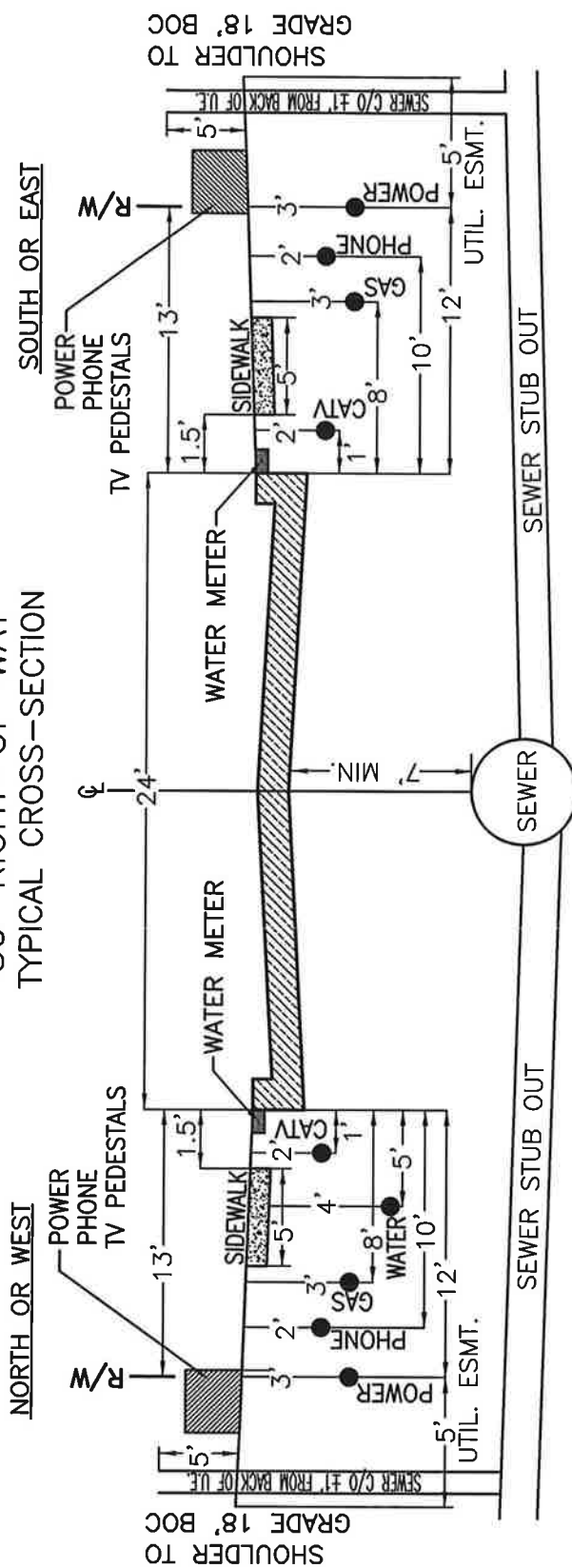
UNDERGROUND UTILITIES PLACEMENT FOR SUBDIVISIONS

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 110

50' RIGHT-OF-WAY TYPICAL CROSS-SECTION



NOT TO SCALE

1. BEFORE ANY UTILITIES ARE INSTALLED, REQUIRED WIDTH OF THE ROADWAY SHALL BE ROUGH GRADED AND ALL CONCRETE CURBING SET AT FINAL GRADES. FOR UNDERGROUND POWER THE MINIMUM SHOULDER SHALL BE 18'.

2. IN GENERAL THE WATER MAINS SHOULD BE INSTALLED FIRST. FOLLOWING INSTALLATION, UTILITIES ARE TO BE INSTALLED IN THIS ORDER:

- 1) ELECTRIC POWER
- 2) GAS
- 3) TELEPHONE
- 4) CABLE T.V.

3. ON THOSE SUBDIVISION STREETS WHERE NO CURB IS CALLED FOR ON THE PLANS, MEASUREMENTS SHALL BE FROM THE EDGE OF PAVEMENT.

4. EACH UTILITY SHALL BE RESPONSIBLE FOR REPAIRS OF ANY DAMAGE THEY CREATE TO OTHER UTILITIES, OR TO STREET IMPROVEMENTS WITHIN THE R/W.

5. MINIMUM COVER SHALL BE 4'-0" FOR ALL WATER MAINS.

6. HORIZONTAL TOLERANCES ARE $\pm 6"$.

7. ALL ABOVE GROUND INSTALLATIONS WILL BE INSTALLED MOSTLY IN THE 5' UTILITY EASEMENT SHOWN IN THIS STANDARD. COORDINATION BETWEEN POWER, PHONE AND CATV WILL BE REQUIRED TO COLLOCATE ABOVE GROUND EQUIPMENT ON COMMON PROPERTY LINES. INDIVIDUAL UTILITY DESIGN SPECIFICATIONS MAY BE CONSIDERED IF COLLOCATION CANNOT BE ACHIEVED IN ISOLATED INSTANCES. (BONDING AGREEMENT REQUIRED BETWEEN UTILITIES.

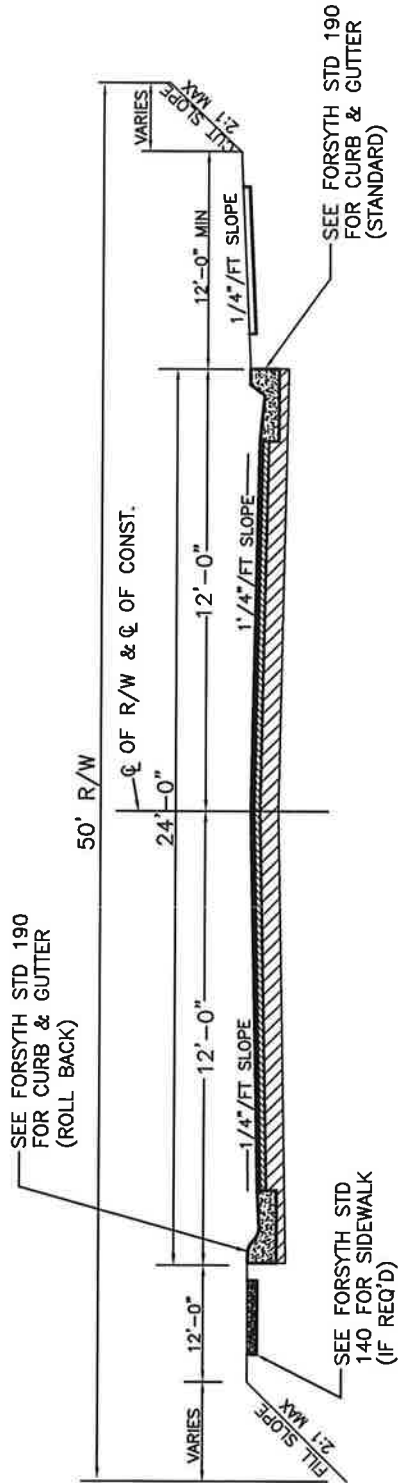
**IF NO BONDING AGREEMENT EXISTS: THEN ABOVE GROUND POWER EQUIPMENT SHOULD BE LOCATED MOSTLY IN THE UTILITY EASEMENT AND PHONE AND CATV ABOVE GROUND EQUIPMENT SHOULD BE INSTALLED DIRECTLY OVER THE UNDERGROUND INSTALLATIONS. SEPERATION BETWEEN ABOVE GROUND UTILITIES MUST MEET NESC STANDARDS.

8. WATER METERS ARE TO BE LOCATED WITHIN $\pm 1'0"$ (ONE FOOT) FROM THE BACK OF CURB.

9. ELECTRICAL MAINLINES ARE TO BE INSTALLED AT MINIMUM DEPTH OF 3' (THREE FEET).

10. JOINT TRENCH APPLICATIONS BETWEEN POWER, PHONE, AND CATV SHOULD BE PLACED IN POWER'S CORRIDOR AS SHOWN ON THE DRAWING.

UNDERGROUND UTILITIES PLACEMENT FOR 50' R/W WITH 5' UTILITY EASEMENT



24' RESIDENTIAL STREET

1.25" ASPHALTIC CONCRETE TYPE "F" (9.5 mm)

TACK COAT REQUIRED ON ALL PAVING

2" ASPHALTIC CONCRETE TYPE "E" (12.5 mm)

8" GRADED AGGREGATE BASE COURSE

MINIMUM SPECIFICATIONS REQUIRED

- * 12 FT. SHOULDER IF UNDERGROUND POWER IS TO BE INSTALLED.
- * ALL ASPHALT MIX MUST HAVE A MINIMUM 5% ASPHALT CEMENT CONTENT.
- * 44' U.E./INGRESS/EGRESS MAY BE USED WHEN PRIVATE STREETS ARE APPROVED.

NOT TO SCALE

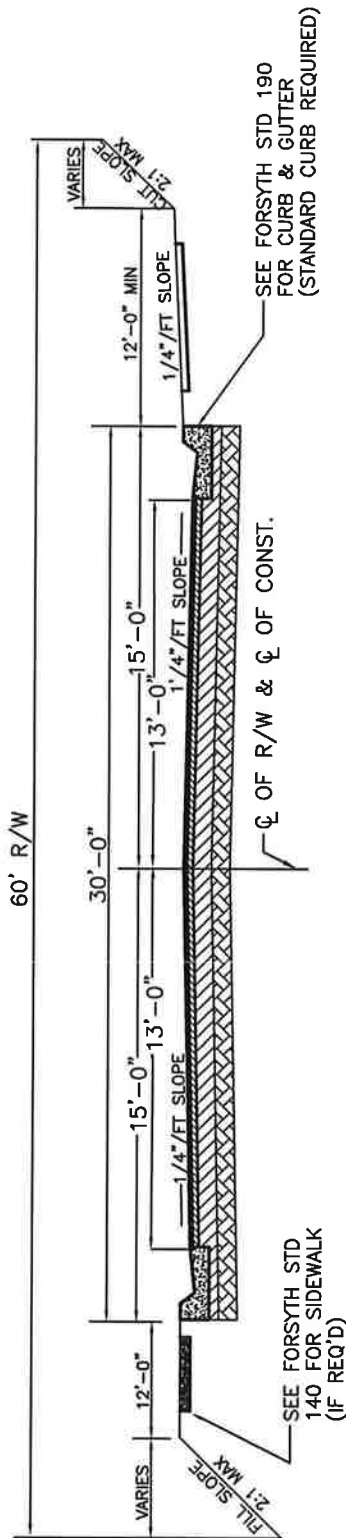
SHEET 1 OF 5

TYPICAL ROADWAY SPECIFICATIONS

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 120



30' COMMERCIAL STREET

1.25" ASPHALTIC CONCRETE "F" (9.5 mm)

TACK COAT REQUIRED ON ALL PAVING

2" ASPHALTIC CONCRETE "B" OR "E" (19mm OR 12.5mm)

8" GRADED AGGREGATE BASE COURSE

6" SUBGRADE STABILIZED WITH 150 LBS. OF STONE PER SQ. YD. (UNLESS MATERIAL IN PLACE WEIGHS 95 LBS. PER CU. FT.)

- * 12 FT. SHOULDER IF UNDERGROUND POWER IS TO BE INSTALLED.
- * STANDARD CURB AND GUTTER REQUIRED
- * ALL ASPHALT MIX MUST HAVE A MINIMUM 5% ASPHALT CEMENT CONTENT.

MINIMUM SPECIFICATIONS REQUIRED

NOT TO SCALE

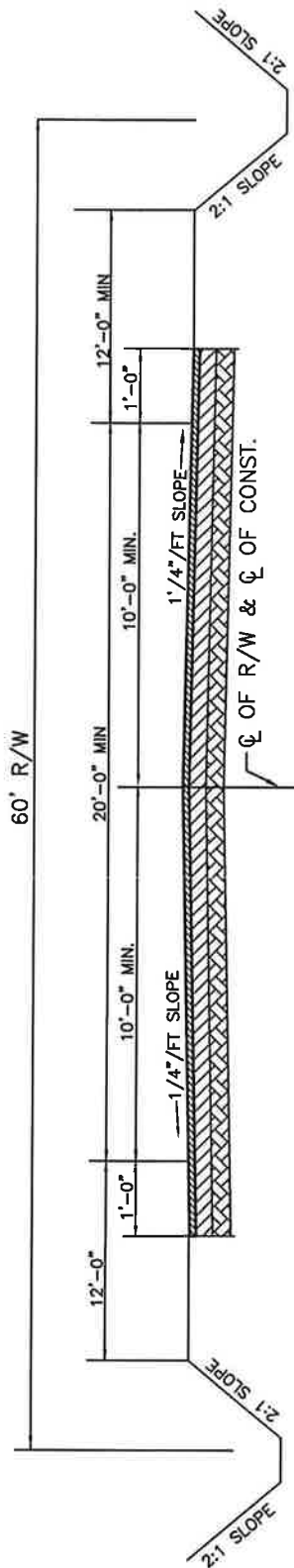
SHEET 2 OF 5

TYPICAL ROADWAY SPECIFICATIONS

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 121



RESIDENTIAL (LOTS 2 ACRES AND LARGER)

1.25" ASPHALTIC CONCRETE "F" (9.5 mm)

2" ASPHALTIC CONCRETE "E" (12.5 mm)

TACK COAT REQUIRED ON ALL PAVING

6" GRADED AGGREGATE BASE COURSE, SHALL EXTEND 1' BEYOND PAVEMENT.

6" SUBGRADE STABILIZED WITH 150 LBS. OF STONE PER SQ. YD. (UNLESS MATERIAL IN PLACE WEIGHS 95 LBS. PER CU. FT.)

- * 12 FT. SHOULDER IF UNDERGROUND POWER IS TO BE INSTALLED.
- * 10 FT. DRAINAGE EASEMENT OUTSIDE R/W MAY BE REQUIRED
- * ALL ASPHALT MIX MUST HAVE A MINIMUM 5% ASPHALT CEMENT CONTENT.

NOT TO SCALE

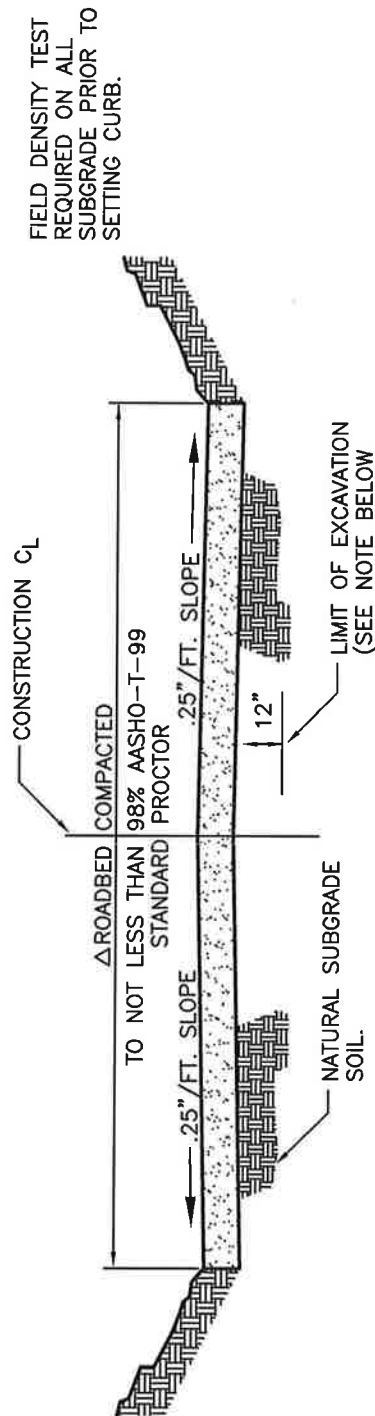
SHEET 3 OF 5

TYPICAL ROADWAY SECTIONS

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 122



NOTE:
LIMIT OF EXCAVATION - WHERE UNSATISFACTORY MATERIAL IS ENCOUNTERED, INCLUDING ROCK, EXCAVATE AN ADDITIONAL 12" BELOW THE SUBGRADE AND BACKFILL WITH A SELECT MATERIAL APPROVED BY THE DEPARTMENT OF ENGINEERING.

STD. NO. 120: $\Delta = 28'-0"$
 STD. NO. 121: $\Delta = 33'-0"$
 STD. NO. 122: $\Delta = 22'-0"$

SUBGRADE SHALL BE COMPACTED TO 98% WITHIN THE TOP 12", AND 95% TO ALL DEPTHS GREATER THAN 12". COMPACTION AROUND MAJOR DRAINAGE STRUCTURES SHALL BE 100% WITHIN 10' OF THAT STRUCTURE, IE. BRIDGE CULVERTS AND ANY STORM DRAINS OVER 36" IN DIAMETER.

NOT TO SCALE

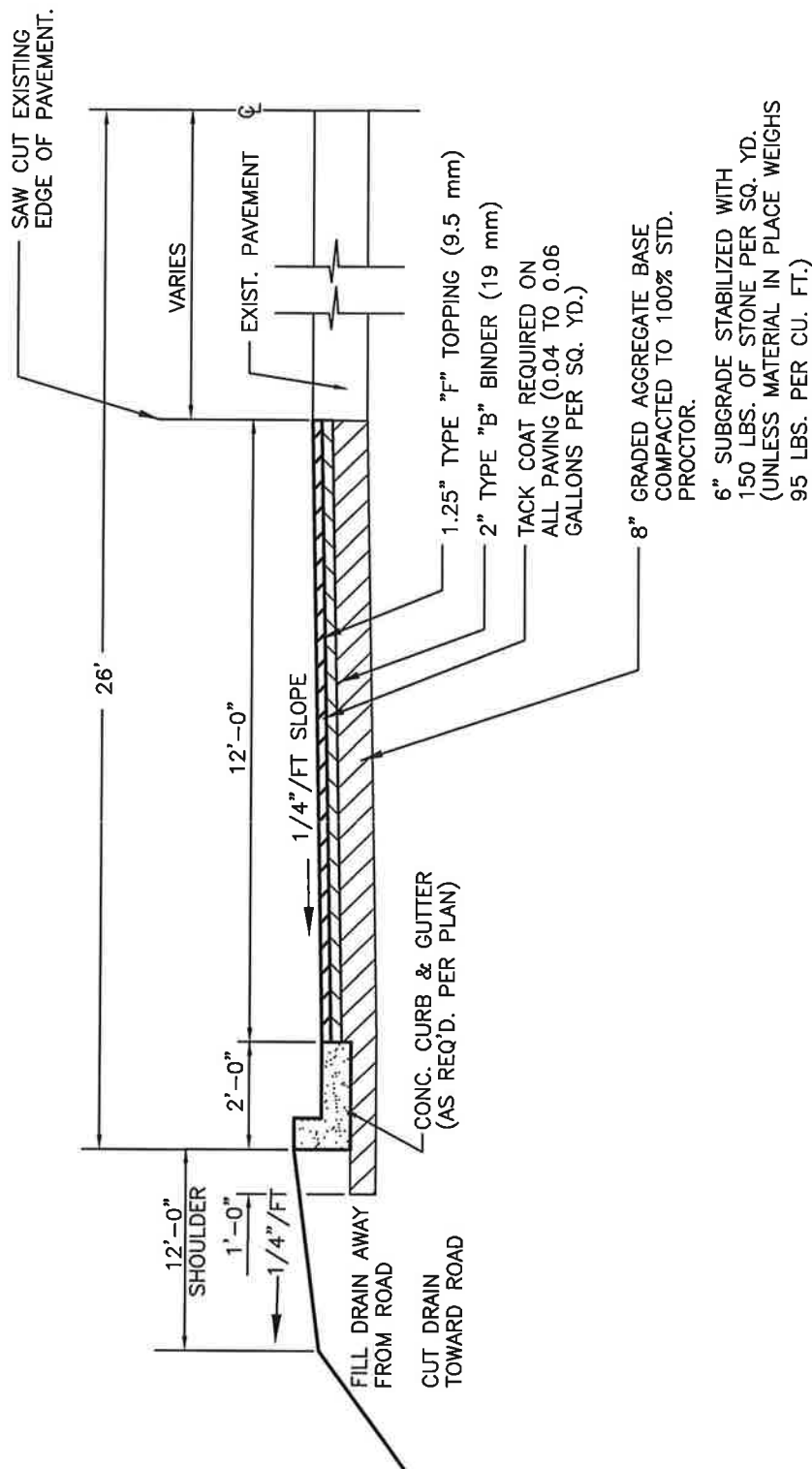
SHEET 4 OF 5

TYPICAL ROADWAY SECTIONS

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 123



DECELERATION LANE TYPICAL SECTION

NOTE: ALL ASPHALT MIX MUST HAVE A MINIMUM 5% ASPHALT CEMENT CONTENT.
 NOTE: DIVIDED HIGHWAYS OR MAJOR COLLECTOR ROADS WILL REQUIRE MATCHING MAIN LINE TYPICAL SECTION OF 10" GAB, 4" ASPHALT BASE, 2" ASPHALT BINDER, 1.5" (12.5 mm) TOPPING.

NOT TO SCALE

SHEET 5 OF 5

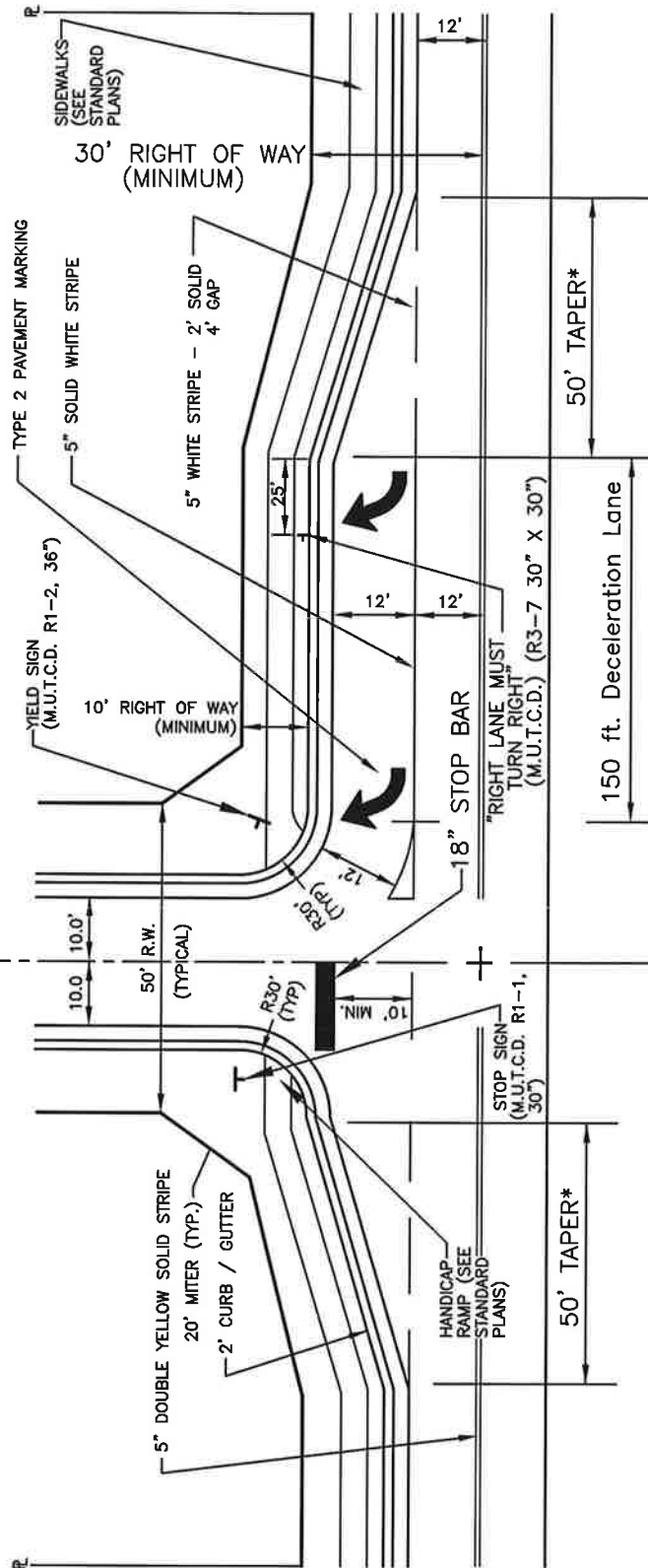
TYPICAL ROADWAY SECTIONS

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 124

(SEE FORSYTH CO. STANDARD PLANS FOR DIVIDED ENTRANCE AND DRIVEWAY DETAILS)



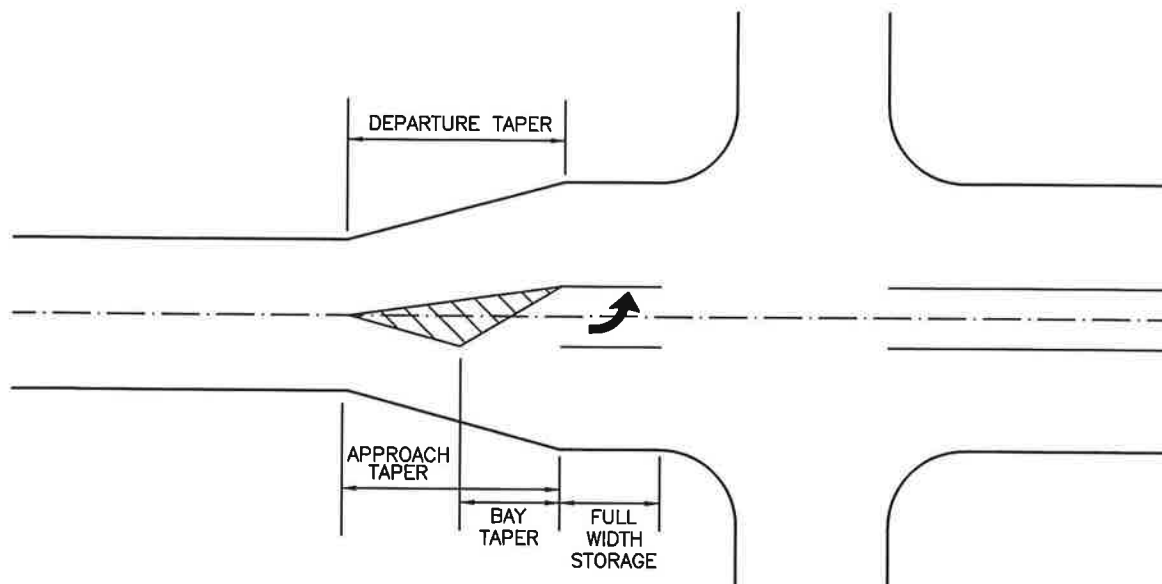
***NOTE: TAPERS ARE NOT CURBED WHEN JOINING AN UNCURBED ROAD**

SHOW THE FOLLOWING NOTES ON THE APPROVED PLAN:

- (A) SIGNED, STRIPING, MARKING, AND HIGH LEVEL WARNING DEVICES TO BE PLACED AS SHOWN AND/OR AS DIRECTED BY THE FORSYTH COUNTY TRAFFIC ENGINEER AND/OR FORSYTH COUNTY INSPECTOR. THIS TRAFFIC CONTROL PLAN IS SUBJECT TO CHANGE BY THE FORSYTH COUNTY TRAFFIC ENGINEER.
- (B) WARNING DEVICES SHALL BE PLACED PRIOR TO THE COMMENCEMENT OF ANY ROAD IMPROVEMENT WORK ON COUNTY ROADS AND SHALL REMAIN IN PLACE UNTIL THE CONCLUSION OF FALL SIGNING AND STRIPING WORK.
- (C) ALL WARNING DEVICES SHALL BE EITHER TYPE I BARRICADES OR DRUMS WITH WARNING LIGHTS ON EVERY OTHER DEVICE, AND SHALL CONFORM WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS AND FORSYTH COUNTY FOR COLOR, SIZE, REFLECTIVITY, HEIGHT, AND PLACEMENT.
- (D) MAXIMUM SPACING OF WARNING DEVICES SHALL BE EQUAL TO THE POSTED SPEED OF THE ROAD IN M.P.H. (i.e., 30 FOOT SPACING FOR 30 M.P.H. SPEED LIMIT)
- (E) ALL SIGNS SHALL CONFORM WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS FOR COLOR, SIZE, REFLECTIVITY, HEIGHT AND PLACEMENT.
- (F) STRIPING (WHITE AND YELLOW) AND ARROW MARKING SHALL BE APPLIED USING FORSYTH COUNTY OR GEORGIA D.O.T. STANDARD THERMOPLASTIC.
- (G) CONFLICTING STRIPING SHALL BE REMOVED BY GRINDING, OR OVERLAY AS SPECIFIED BY THE FORSYTH COUNTY TRAFFIC ENGINEER.
- (H) ALL SIGNS MUST BE INSTALLED CONCURRENTLY WITH THE PERFORMANCE OF THE STRIPING WORK.

NOT TO SCALE

DECELERATION LANE



N.T.S.

POSTED SPEED LIMIT, MPH	APPROACH TAPER, Ft		BAY TAPER, Ft	FULL WIDTH STORAGE * MINIMUM
	6' Shift	12' Shift		
30	90	180	50	135
35	125	250	50	160
40	160	320	50	210
45	270	540	100	235
50	300	600	100	285
55	330	660	100	310
60	360	720	100	360
65	390	780	100	410

TAPER FORMULAS:

45 MPH AND UP: $W \times S$

40 MPH AND LESS: $\frac{W \times S^2}{60}$

WHERE W = WIDTH OF SHIFT AND S = SPEED LIMIT

NOTE:

TYPICAL SECTIONS MINIMUM:

8" GAB, 4" ASPHALT BASE (25MM), 2" ASPHALT BINDER (19MM),

1.5" ASPHALT TOPPING (9.5MM), OR MATCH TYPICAL SECTION WHICHEVER IS GREATER.

* SIZE BASED ON ACTUAL NUMBER OF
LOTS AND LEFT TURN MOVEMENT USING
I.T.E. AND A.A.S.H.T.O. REQUIREMENTS

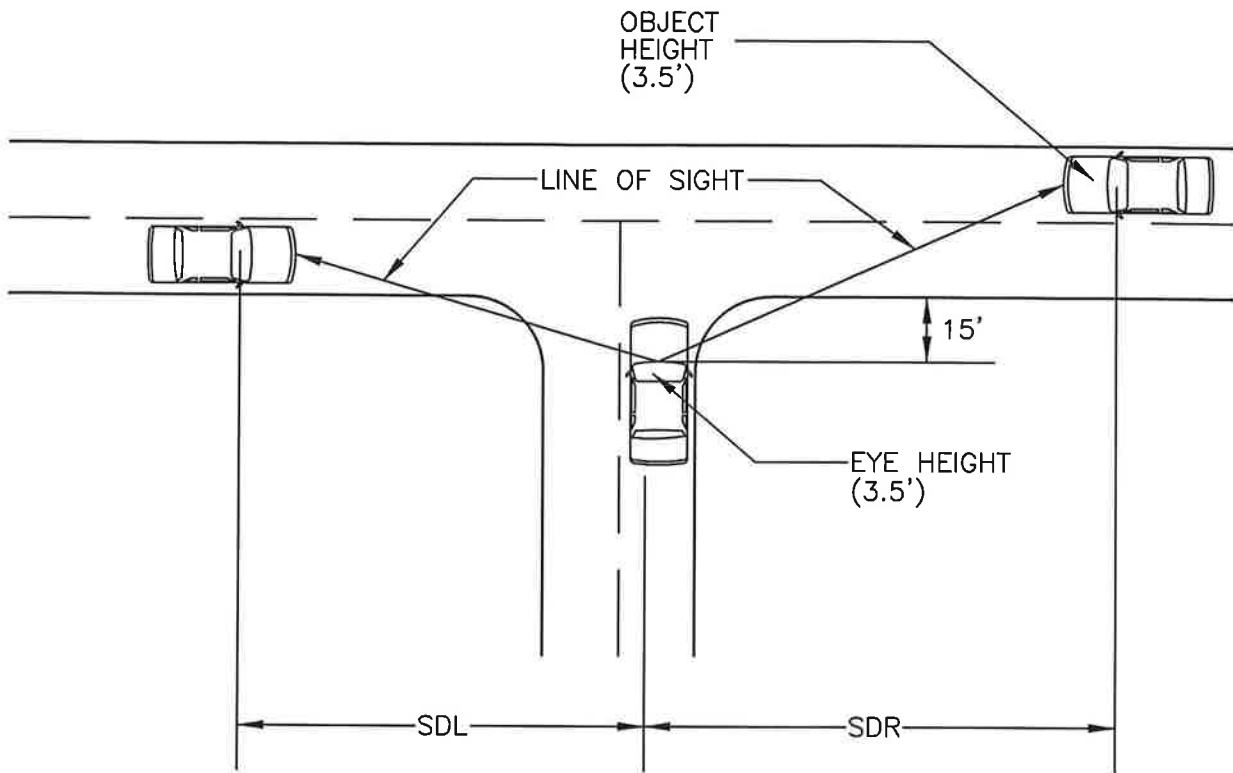
NOT TO SCALE

LEFT TURN LANE DESIGN

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 126



ARTERIAL SPEED, MPH	SIGHT DISTANCE, Ft				
	2 LANE	3 AND 4 LANES		5 AND 6 LANES	
	SDL=SDR	SDL	SDR	SDL	SDR
30	335	350	375	400	420
35	390	410	440	465	490
40	445	470	500	530	560
45	500	530	560	595	630
50	555	590	625	660	700
55	610	650	685	730	770
60	665	705	750	795	840
65	720	765	810	860	910

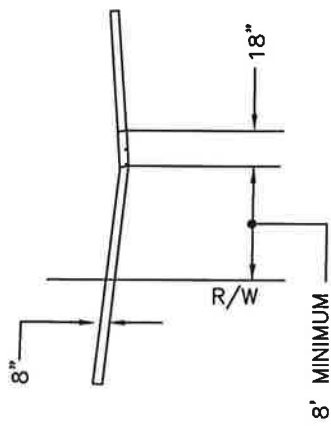
NOT TO SCALE

INTERSECTION SIGHT DISTANCE REQUIREMENTS

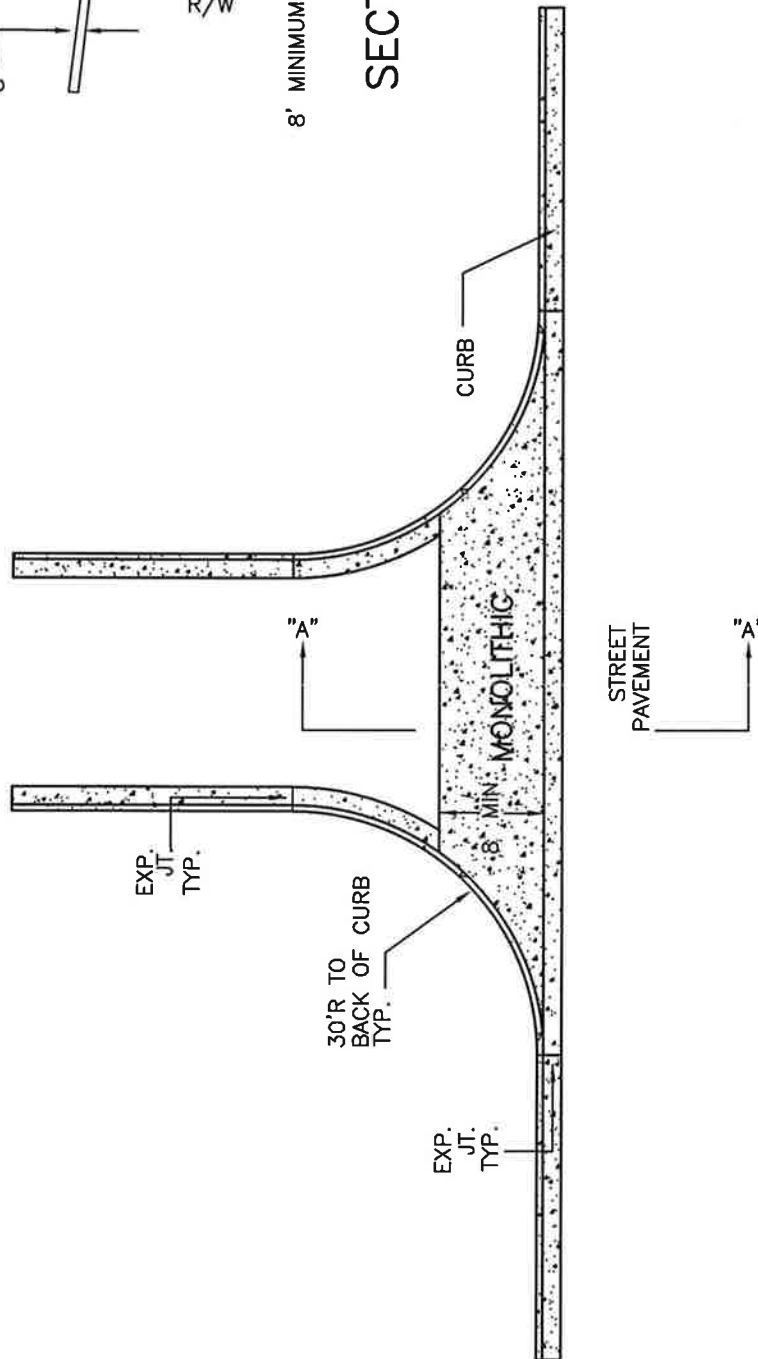
REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 127



SECTION "A-A"



- .5" EXPANSION JOINT REQUIRED AT THE END OF EACH CURB RADIUS.
- REVERSE SLOPE ON HIGH SIDE TO PREVENT PONDING OF WATER.
- REINFORCE WITH 6" X 6" WIRE MESH, NO. 4 GAUGE.
- ALL CONCRETE SHALL BE CLASS "A", 3000 P.S.I. VALLEY GUTTER TO BROOM FINISHED. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE CURRENT G.D.O.T.
- ALL CONCRETE SHALL BE CURED IN ACCORDANCE WITH THE CURRENT SPECIFICATIONS OF G.D.O.T.

ALL CONCRETE TO BE 8" WITH 6" X 6" WWM (NO. 4 GAUGE)

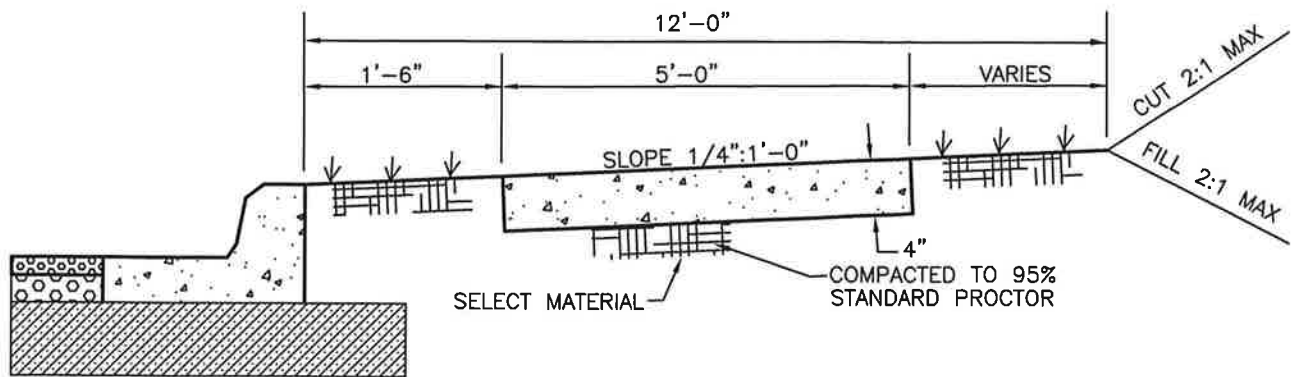
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CONCRETE VALLEY GUTTER

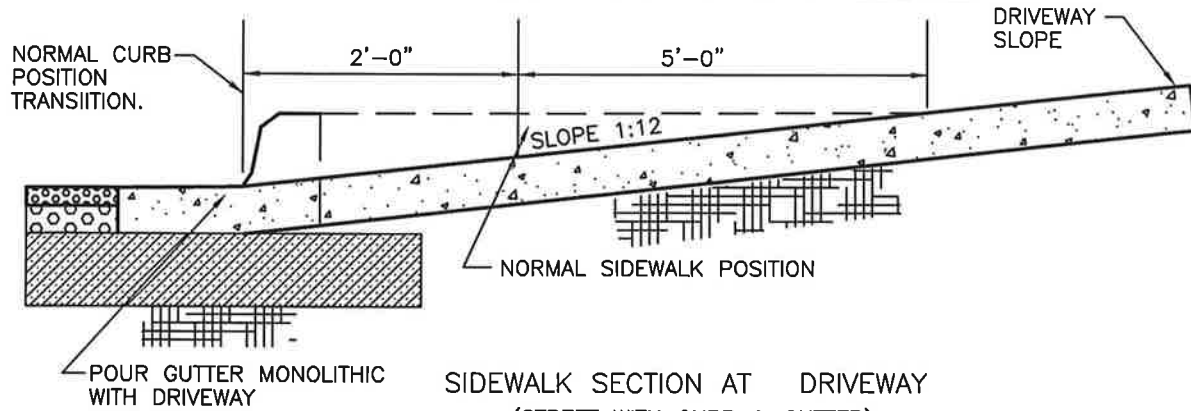
REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 130



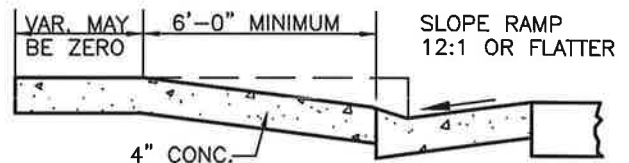
TYPICAL SECTION OF 5'-0" SIDEWALK



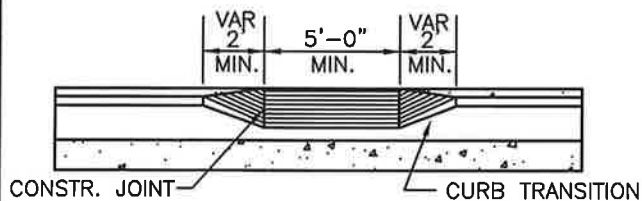
SIDEWALK SECTION AT DRIVEWAY
(STREET WITH CURB & GUTTER)

NOTES:

1. 1/2" PREMOULDED EXPANSION JOINT AT DRIVEWAYS, CURBS AND AT MIN. 40'-0" O.C. HORIZONTALLY.
2. MATERIAL OF 95#/CU. FT. OR BETTER OF SELECT MATERIAL.
3. ALL EXPOSED UNPAVED AREAS TO BE COVERED WITH A STAND OF GRASS.
4. SIDEWALK TO BE CONSTRUCTED OF CLASS "A" 3000 P.S.I. CONCRETE.
5. ALL CURB CUTS AREA TO BE SAW CUT PERPENDICULAR TO CURB LINE.

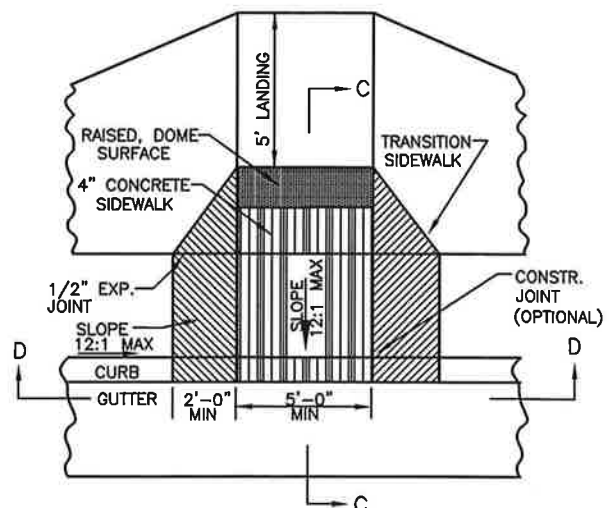


SECTION C-C



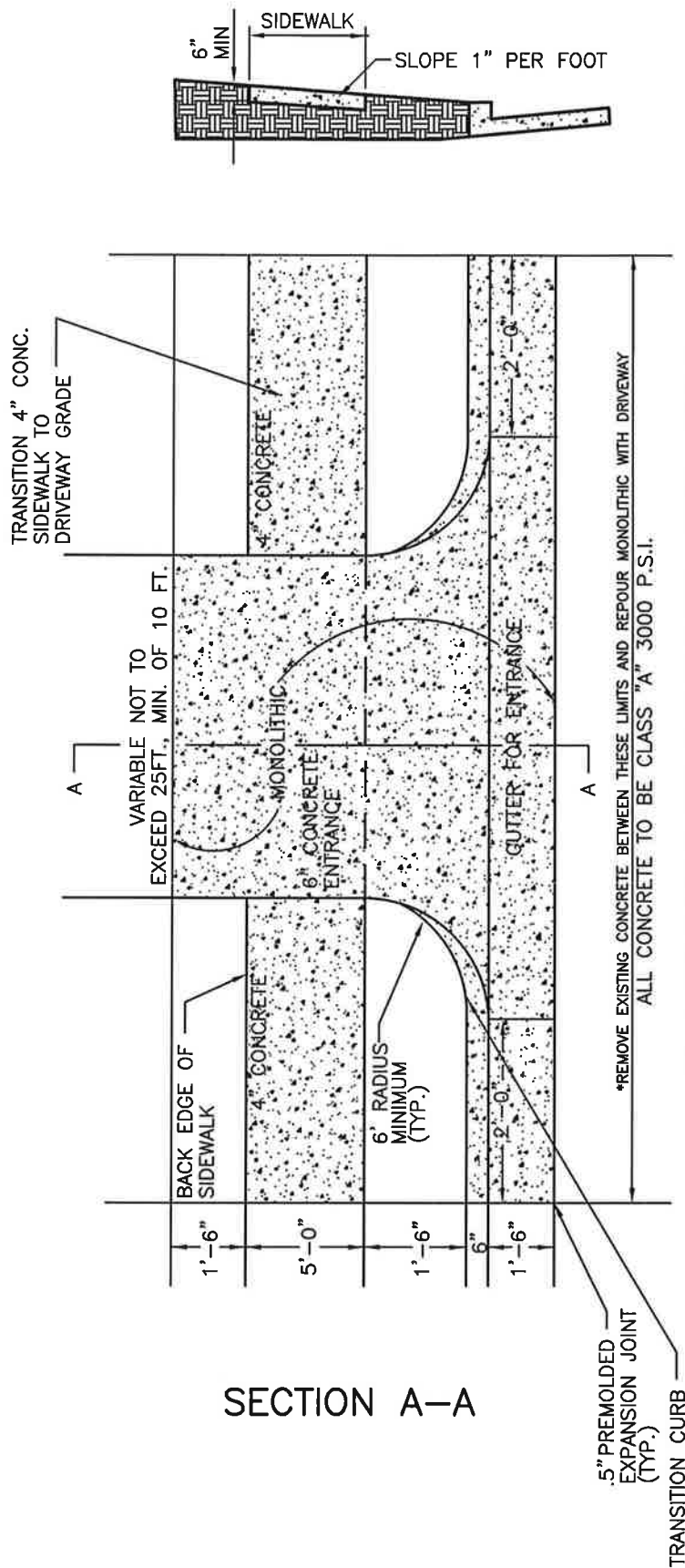
SECTION D-D

TYPICAL SIDEWALK TO CURB TRANSITION DETAILS
(MODIFY AS NECESSARY FOR CURVE)



NOT TO SCALE

TYPICAL SECTION OF A 5'-0" SIDEWALK



*GUTTER CAN REMAIN IF CURB IS REMOVED WITH A FORSYTH COUNTY ENGINEERING APPROVED SAW CUTTING METHOD THAT PRODUCES AN ACCEPTABLE FINISHED SURFACE.

NOT TO SCALE

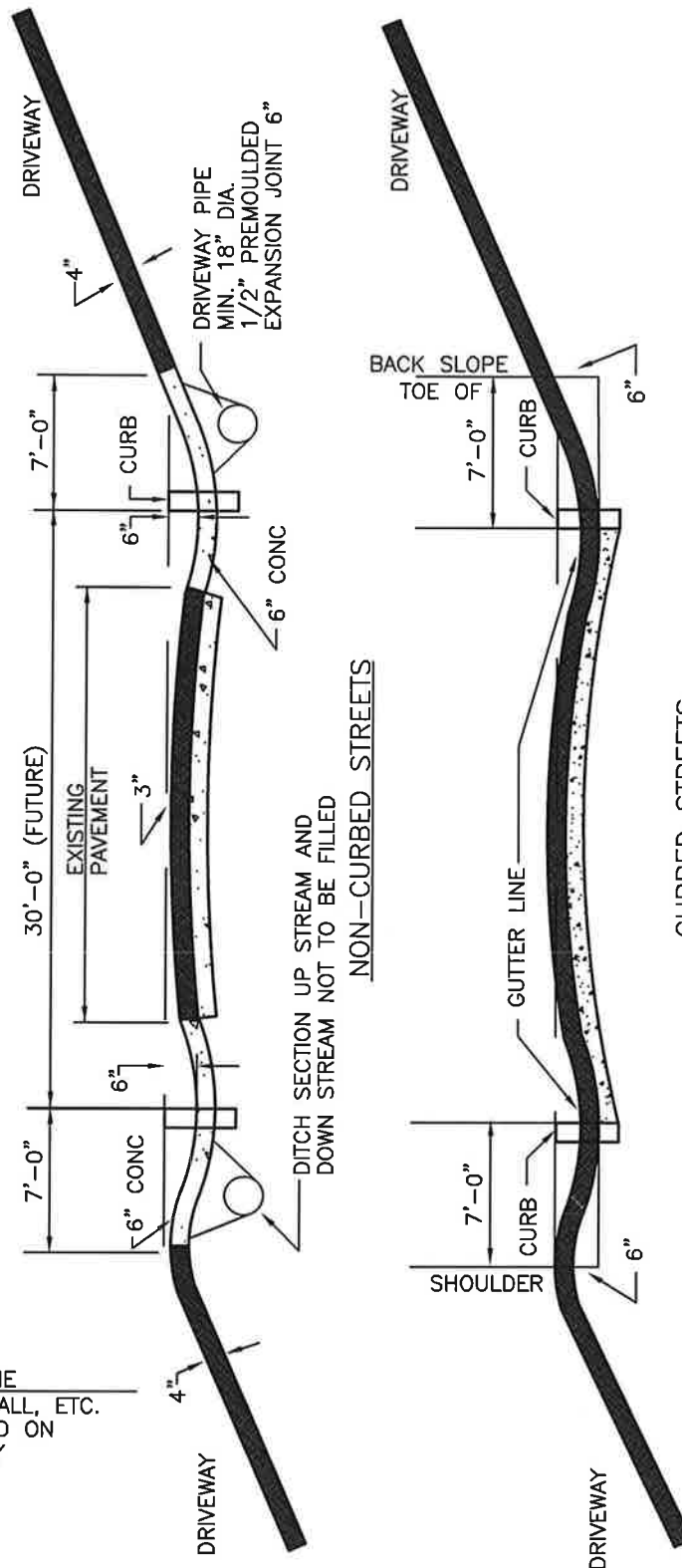
PRIVATE DRIVEWAY ENTRANCE WITH SIDEWALK

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 150

NO FENCE, WALL, ETC.
PROPERTY LINE



PROPERTY LINE
NO FENCE, WALL, ETC.
TO BE PLACED ON
RIGHT OF WAY

DRIVEWAYS FOR LOTS ABOVE OR BELOW STREET LEVEL. WHEN STREETS HAVE CURB,
DRIVEWAYS SHALL BE CONSTRUCTED TO AN ELEVATION 6" ABOVE THE GUTTER LINE AT THE
NORMAL SHOULDER LINE, OR TOE OF BACK SLOPE AS INDICATED.

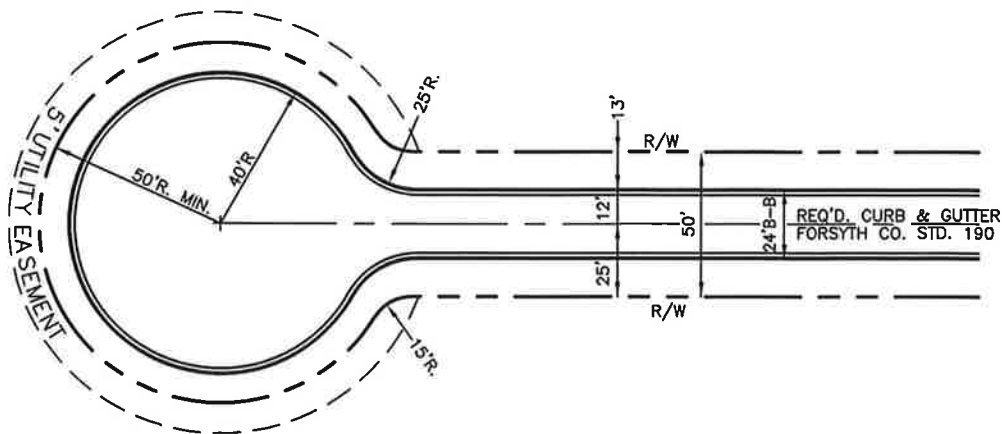
NOT TO SCALE

STANDARD PRIVATE ENTRANCE

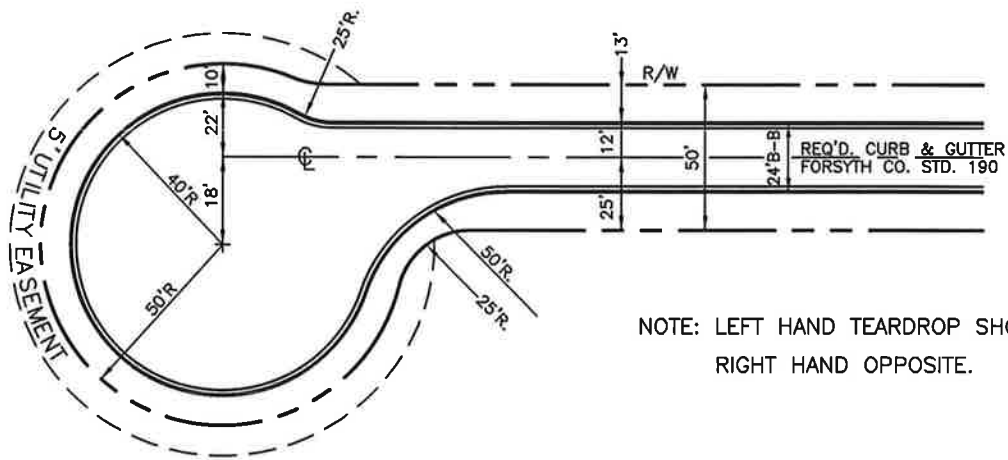
REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 151



STANDARD OR REGULAR (SYMMETRICAL)



NOTE: LEFT HAND TEARDROP SHOWN.
RIGHT HAND OPPOSITE.

TEARDROP

IN ALL CASES WHERE UNDERGROUND UTILITIES ARE TO BE INSTALLED,
ADEQUATE RIGHT OF WAY AND /OR UTILITY EASEMENTS SHALL BE
PROVIDED. A UTILITY EASEMENT SHOULD BE A MIN. OF 10' FOOT WIDE.

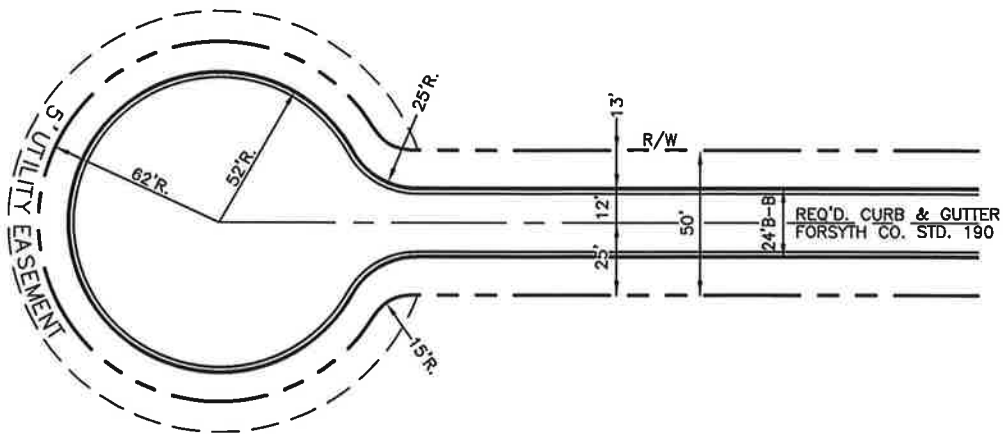
NOT TO SCALE

MINIMUM REQUIREMENTS FOR STANDARD CUL-DE-SACS

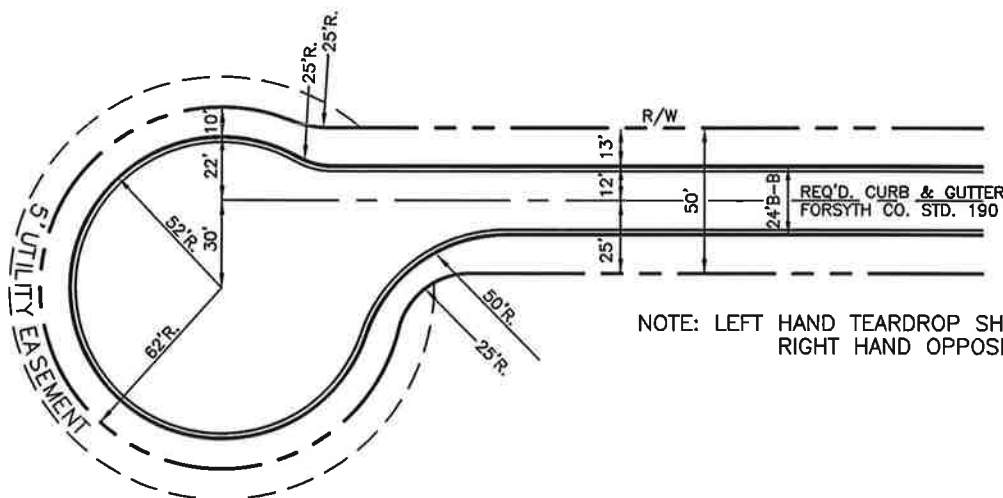
REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 160



OVERSIZE
(SYMMETRICAL)



NOTE: LEFT HAND TEARDROP SHOWN.
RIGHT HAND OPPOSITE.

OVERSIZE TEARDROP

NOTE:
OVERSIZED CUL-DE-SACS SHALL BE INSTALLED ON ALL
DEAD END STREETS THAT ARE OVER 800 FT. IN LENGTH IN
RESIDENTIAL SUBDIVISIONS, AND ALL DEAD END INDUSTRIAL
STREETS THAT ARE OVER 500 FT. IN LENGTH OR WHERE
REQUIRED.

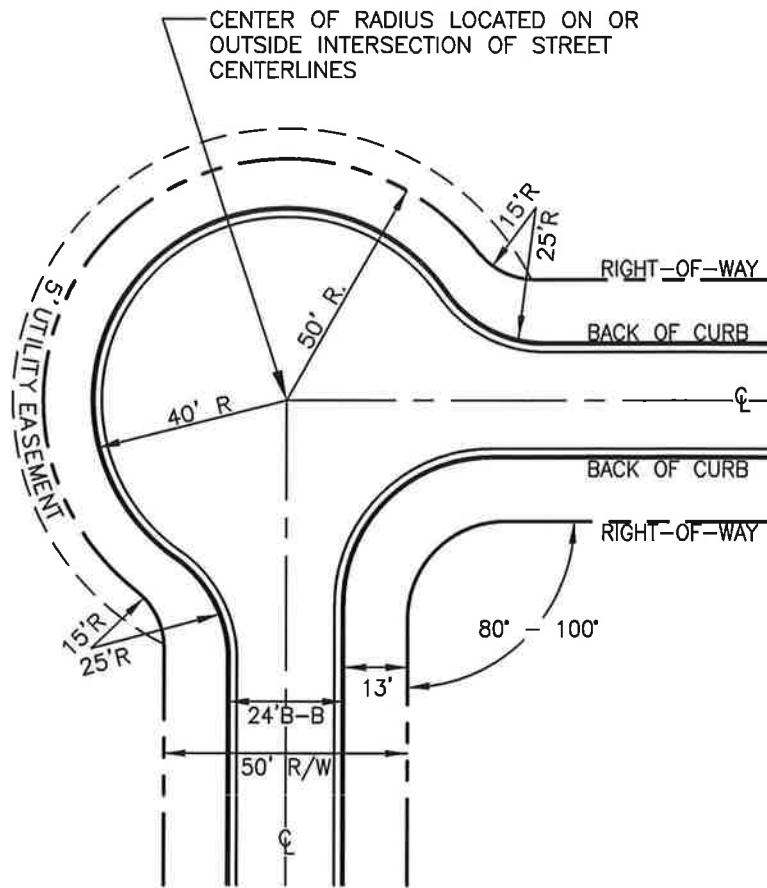
NOT TO SCALE

MINIMUM REQUIREMENTS FOR OVERSIZED CUL-DE-SACS

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 161



EYEBROW

LOCAL RESIDENTIAL STREETS ONLY

NOTE:
OVERSIZED CUL-DE-SACS SHALL BE INSTALLED ON ALL DEAD END STREETS THAT ARE OVER 800 FT. IN LENGTH IN RESIDENTIAL SUBDIVISIONS.

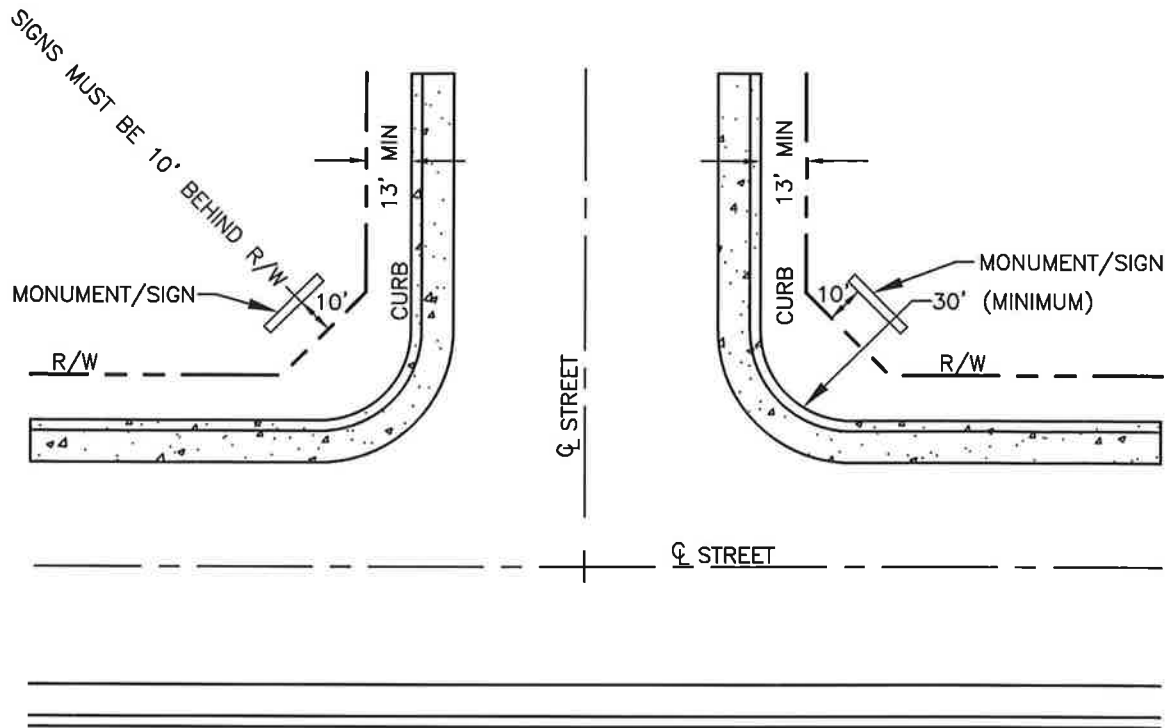
NOT TO SCALE

MINIMUM REQUIREMENTS FOR STANDARD EYEBROWS

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 162



1. PREPARE A SKETCH OF THE MONUMENT OR SIGN SHOWING THE PROPOSED DESIGN AND LOCATION.
2. OBTAIN AND SUBMIT WRITTEN PERMISSION FROM ADJOINING PROPERTY OWNERS.
3. NO STRUCTURE OR SHRUB IN EXCESS OF 30 INCHES HIGH SHALL BE PLACED WITHIN THIRTEEN (13) FEET OF THE CURB LINE AT THE CORNER OR LINE OF SIGHT, WHICH EVER IS GREATER, NOR SHALL CREATE ANY SIGHT DISTANCE OR TRAFFIC HAZARD. NO STRUCTURE OF ANY SIZE SHALL BE PLACED WITHIN EIGHT (8) FEET OF THE CURB.
4. FORSYTH COUNTY ASSUMES NO LIABILITY FOR PLANTER OR MAINTENANCE OF SAME.
5. IN THE EVENT OF ROAD WIDENING OR OTHER COUNTY PROJECTS, FORSYTH COUNTY MAY REQUIRE REMOVAL OF ANY OBSTRUCTIONS.
6. 150' MINIMUM HORIZONTAL SIGHT DISTANCE WILL BE PROVIDED AT ALL TIMES
7. COMPLETED SKETCHES AND LETTERS OF PERMISSION SHOULD BE SENT TO:

FORSYTH COUNTY
DEPARTMENT OF ENGINEERING

*SIGNS MUST BE PERMITTED THROUGH THE FORSYTH COUNTY PLANNING DEPARTMENT

* STREET/ROAD NAME AND TRAFFIC CONTROL SIGNS WILL BE PAID FOR AND INSTALLED BY THE DEVELOPER AND IN ACCORDANCE WITH THE CURRENT EDITION OF THE MANUAL FOR TRAFFIC CONTROL DEVICES.

NOT TO SCALE

MONUMENTS OR STREET NAME SIGNS

SUBDIVISION STREET

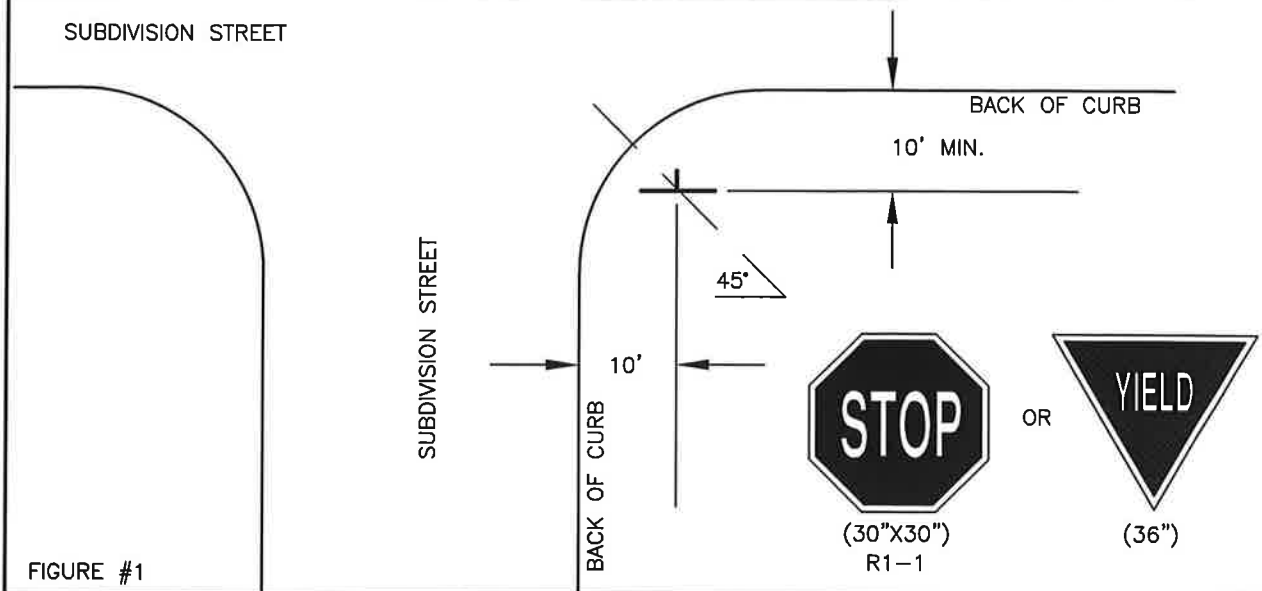


FIGURE #1

STREET

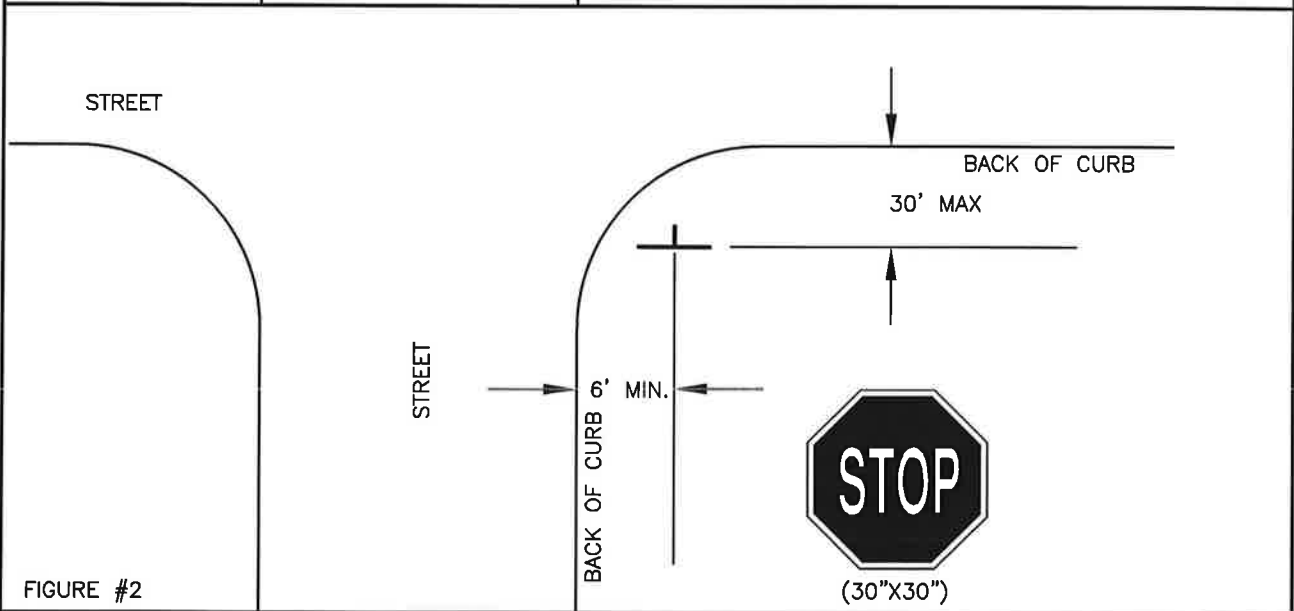
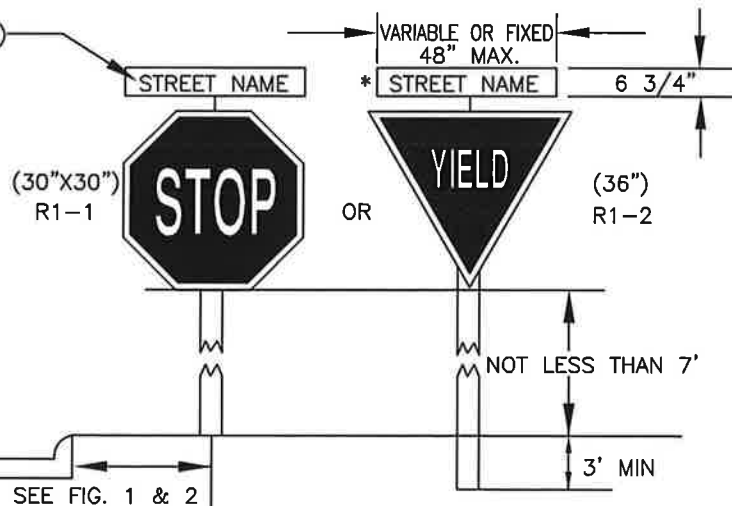


FIGURE #2

4" BLOCK "B" LETTERS (TYP.)



* STREET NAME BLADES SHALL BE EXTRUDED 0.08" OR FLAT 0.10" ALUMINUM IF INSTALLED ON CROSS BRACKETS. CUSTOM SIGNS AND POSTS MUST BE APPROVED BY THE FORSYTH COUNTY DEPARTMENT OF ENGINEERING.

POST TO BE 3LB/FT U-CHANNEL

DIAGRAM "A"

NOT TO SCALE

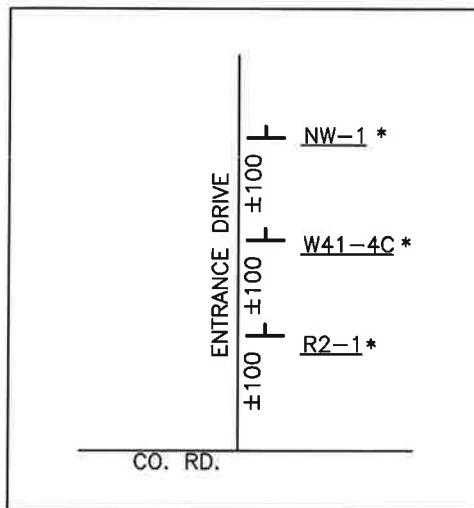
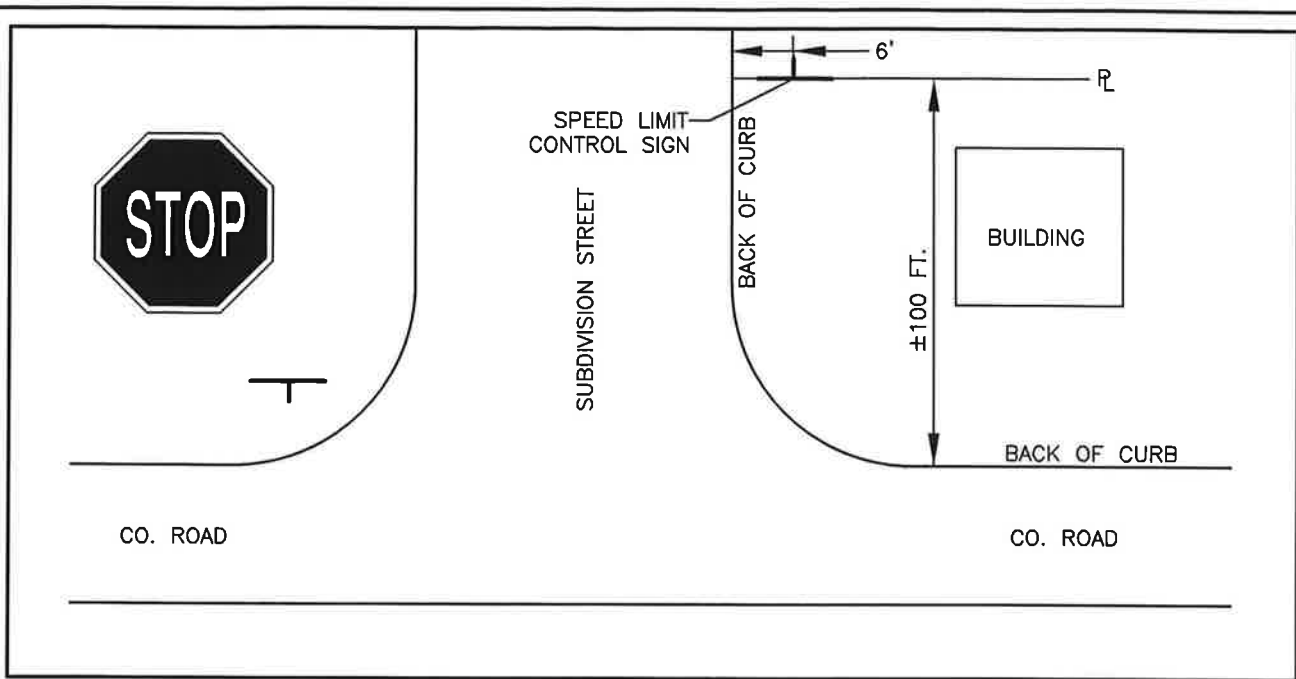
NOTE: ALL SIGNS MUST CONFORM TO ALL REQUIREMENTS OF THE CURRENT M.U.T.C.D.

STREET SIGN LOCATION & SPECIFICATION

REV: 06-19-08

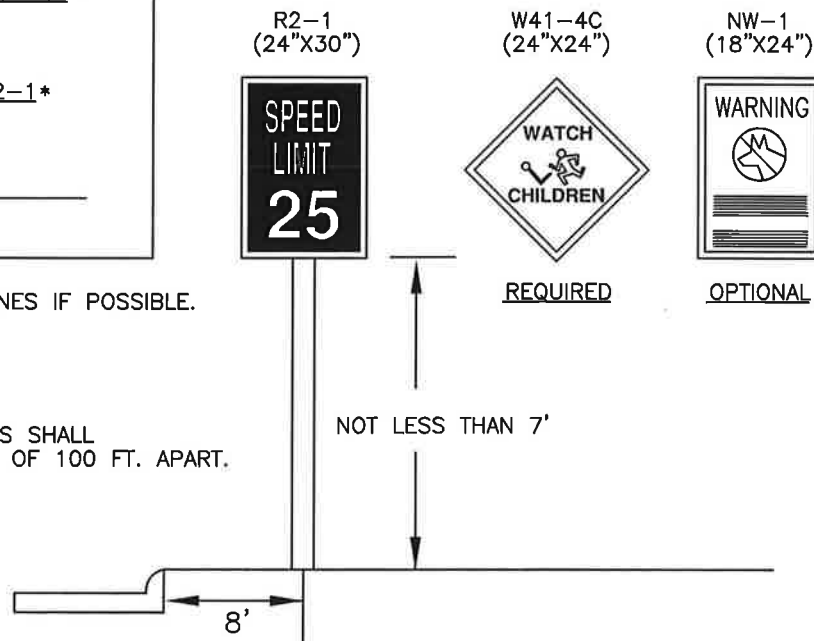
FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 171



* PLACE AT OR NEAR LOT LINES IF POSSIBLE.

NOTE: ADDITIONAL SIGNS SHALL BE PLACED A MINIMUM OF 100 FT. APART.



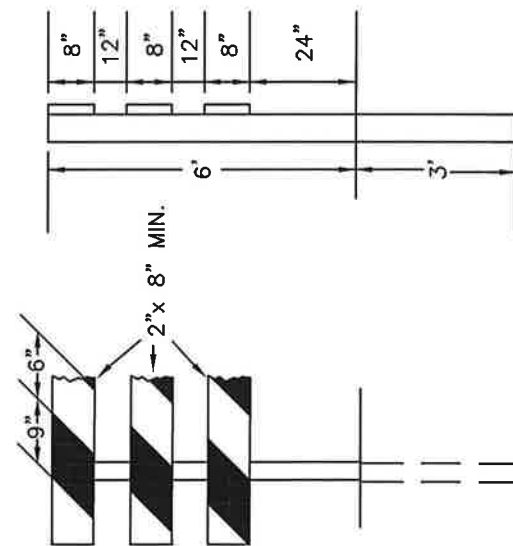
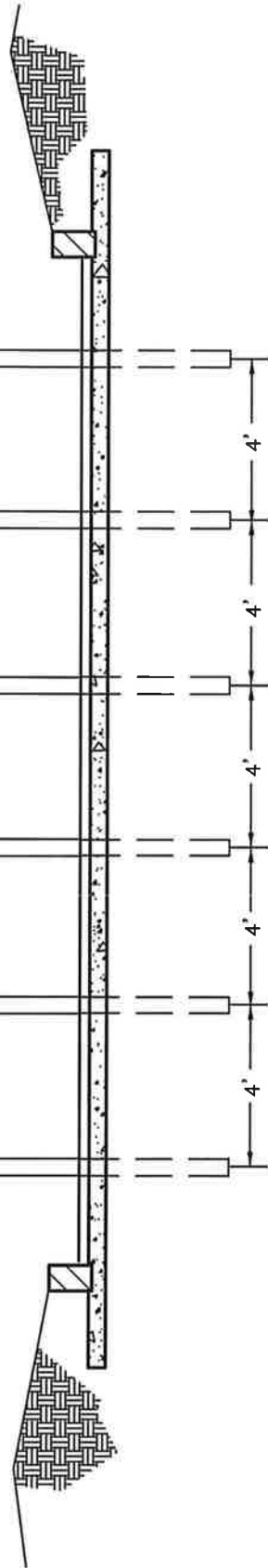
NOT TO SCALE

NOTE: ALL SIGNS MUST CONFORM TO ALL REQUIREMENTS OF THE CURRENT M.U.T.C.D.

STREET SIGN LOCATION & SPECIFICATION

FOR BOARD SPACING
SEE ILLUSTRATION
BELOW.

POSTS AND PLANKS
SHALL BE OF LONG
LEAF SOUTHERN
YELLOW PINE, FREE
FROM KNOTS AND
SHAKES.



NOTE:

1. BARRICADES MAY BE VARIABLE LENGTH AS DETERMINED BY STREET WIDTH. THE CLASS "A" BARRICADE IS THE TYPE NORMALLY REQUIRED FOR MAJOR OPERATIONS, WHERE THE BARRICADE MUST REMAIN IN PLACE FOR EXTENDED PERIODS.
2. HOWEVER, IN ANY LENGTH BARRICADE 10 FT OR LONGER, VERTICAL UPRIGHTS SHOULD NOT EXCEED A CENTER DIMENSION OF 4 FT., WITH A ONE FOOT OVERHANG ON EACH END.
3. THE DIRECTION OF SLOPE OF THE STRIPES CANNOT ALWAYS SLANT DOWNWARD TOWARD THE SIDE ON WHICH TRAFFIC IS TO PASS, AS MANY BARRICADES MUST NOT BE PASSED ON EITHER SIDE. WHERE A BARRICADE EXTENDS ENTIRELY ACROSS A ROADWAY, IT IS SUGGESTED THAT THE STRIPES SLOPE DOWNWARD IN THE DIRECTION TOWARD WHICH THE TRAFFIC MUST TURN IN DETOURING. WHERE BOTH RIGHT AND LEFT TURNS ARE PROVIDED FOR, THE STRIPES SHOULD SLOPE DOWNWARD IN BOTH DIRECTIONS FROM THE CENTER. SLOPE ANGLE OF THE STRIPES SHOULD ALWAYS BE 45°.

4. COLORS:

PERMANENT BARRICADE: SHALL BE TYPE 1, LEVEL "A" REFLECTIVE SHEETING RED AND WHITE.
TEMPORARY BARRICADE: SHALL BE ORANGE AND WHITE, REFLECTORIZED IN ACCORDANCE WITH THE CURRENT EDITION OF M.U.T.C.D.

5. ALL LUMBER (PLANKS & BOARDS) TO BE TREATED MATERIAL I.E. CHROMATED ZINC CHLORIDE (C.Z.C.) OR WOLMAN SALTS. "TREATED MATERIAL" TO BE CONSTRUED AS "PRESSURE TREATED".

*FOR OTHER TRAFFIC CONTROL DEVICES, REFER TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

NOT TO SCALE

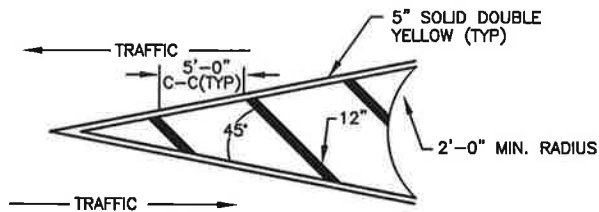
STANDARD ROAD BARRICADE

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

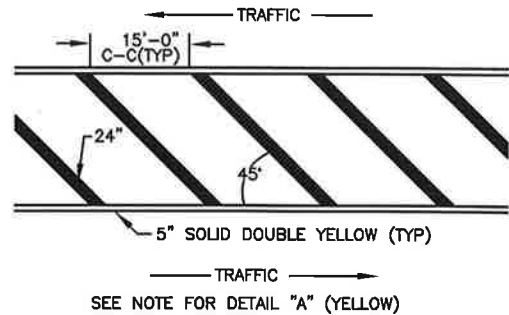
STD. NO. 173

DETAIL "A" (YELLOW)

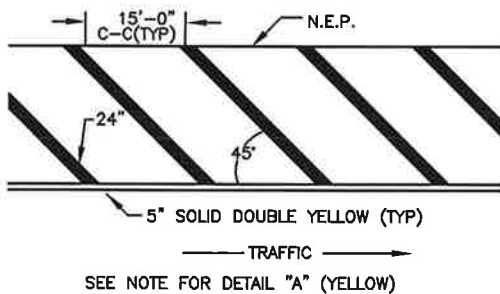


NOTE:
SQUARE YARDS OF STRIPING SHOWN ON PLAN, SUMMARY AND
DETAILED ESTIMATE SHEETS INCLUDES THE AREA WITHIN THE
BORDERS. THE 5" SOLID DOUBLE YELLOW BORDERS SHALL BE
PAID FOR SEPARATELY.

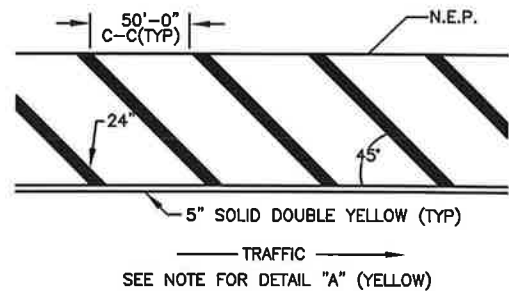
DETAIL "B" (YELLOW)



DETAIL "C" (YELLOW)



DETAIL "D" (YELLOW)



NOT TO SCALE

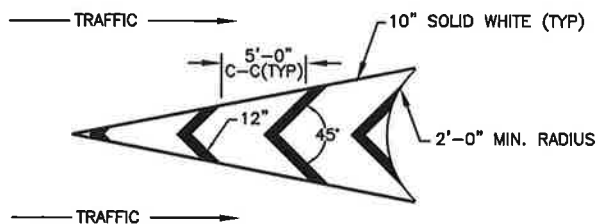
PAVEMENT MARKING HATCHING DETAILS

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

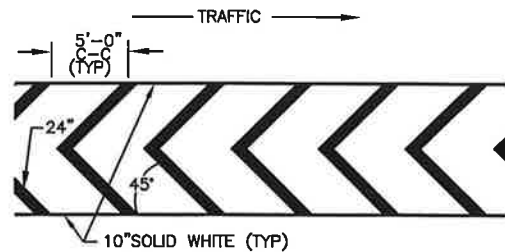
STD. NO. 174

DETAIL "A" (WHITE)



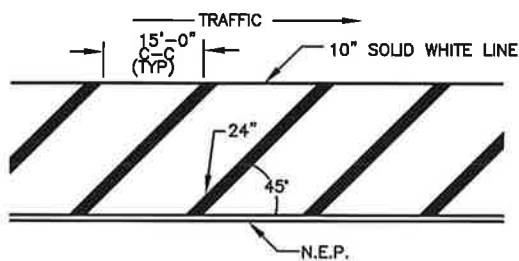
NOTE:
SQUARE YARDS OF STRIPING SHOWN ON PLAN, SUMMARY AND
DETAILED ESTIMATE SHEETS INCLUDES THE AREA WITHIN THE
BORDERS, AS WELL AS THE 10" SOLID WHITE BORDER.

DETAIL "B" (WHITE)



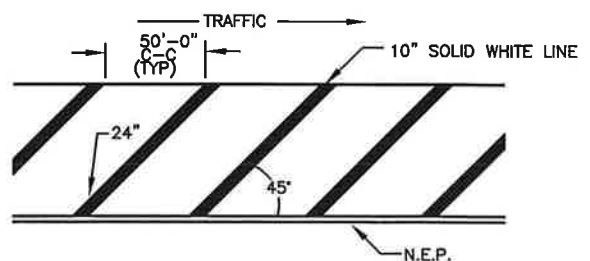
SEE NOTE FOR DETAIL "A" (WHITE)

DETAIL "C" (WHITE)



SEE NOTE FOR DETAIL "A" (WHITE)

DETAIL "D" (WHITE)

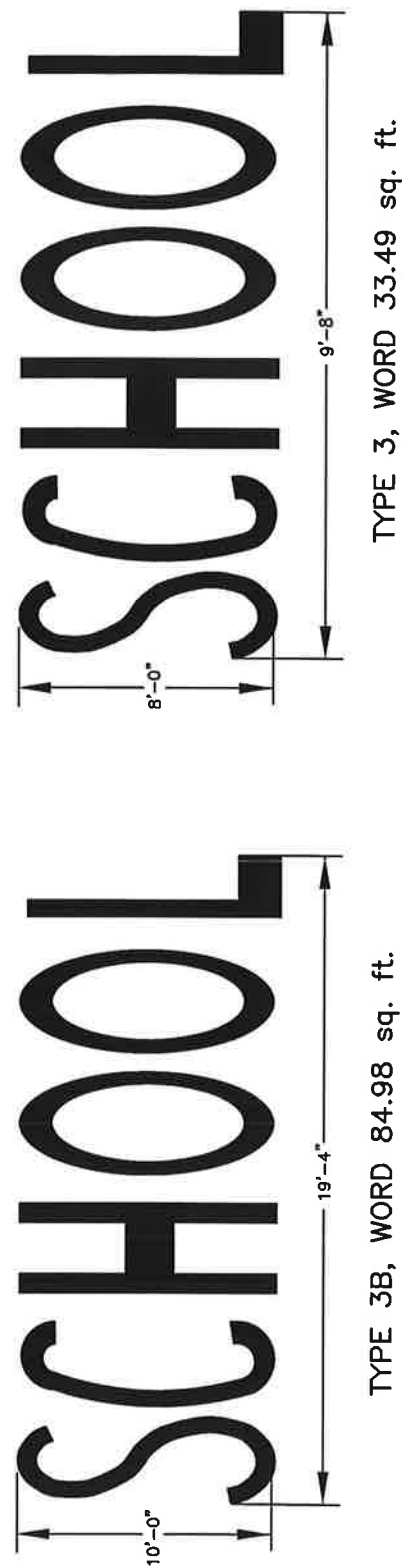
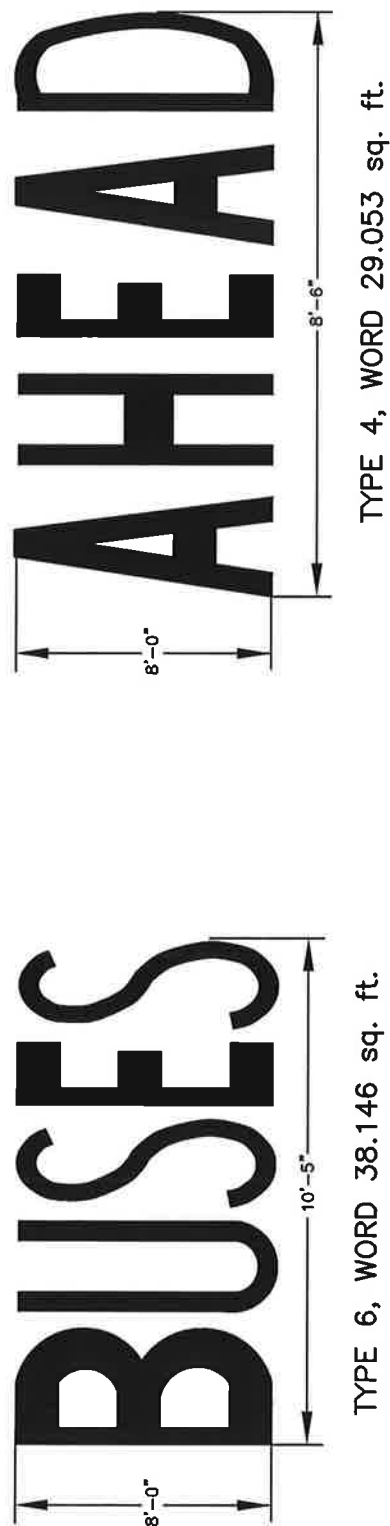
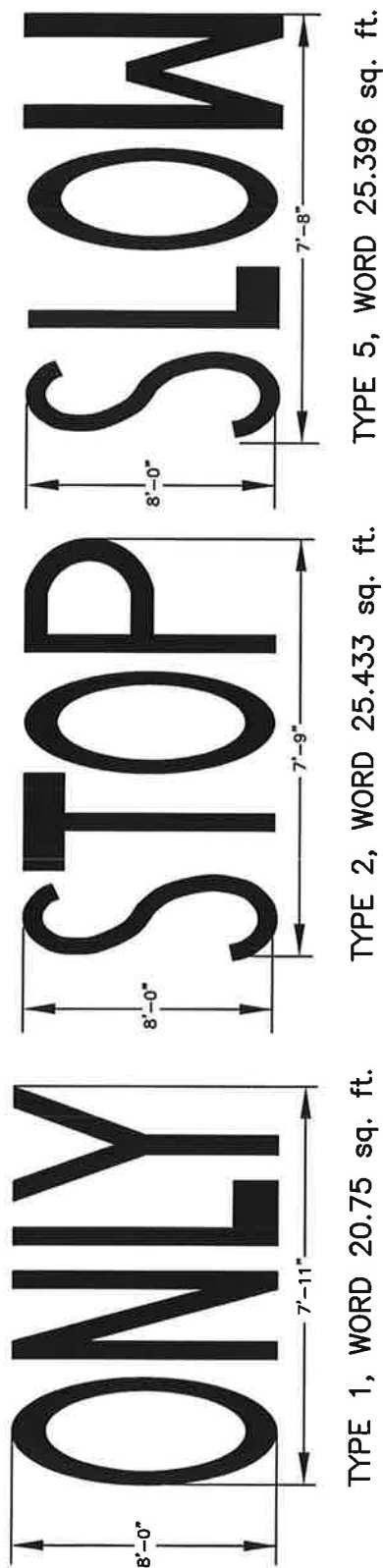


SEE NOTE FOR DETAIL "A" (WHITE)

NOT TO SCALE

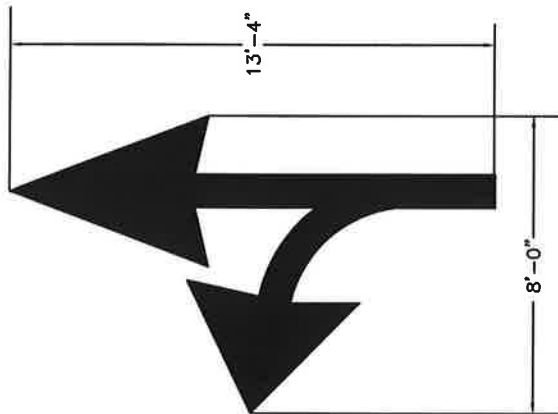
PAVEMENT MARKING HATCHING DETAILS

NOT TO SCALE

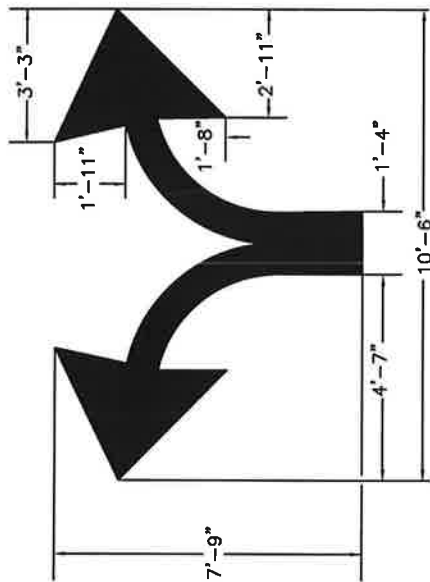


PAVEMENT MARKING DETAILS (WORDS)

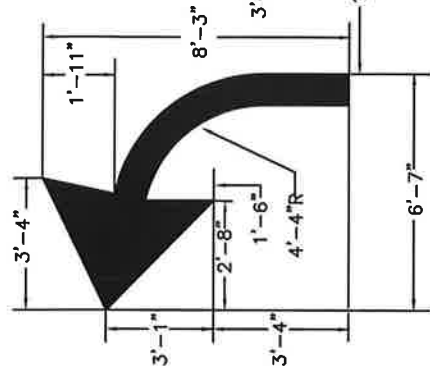
NOT TO SCALE



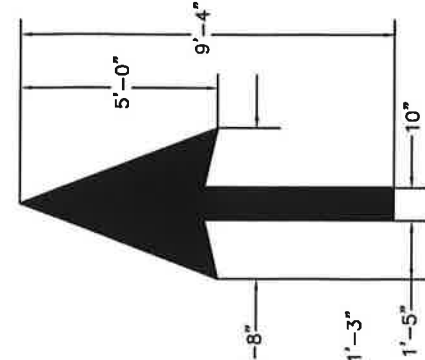
TYPE 3, ARROW
28.5 sq. ft.



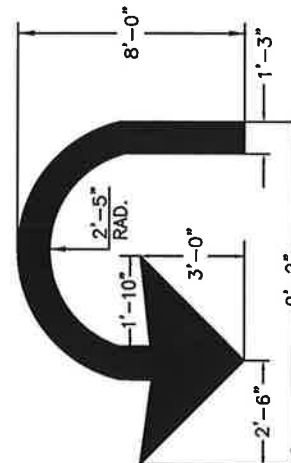
TYPE 5, ARROW
25.5 sq. ft.



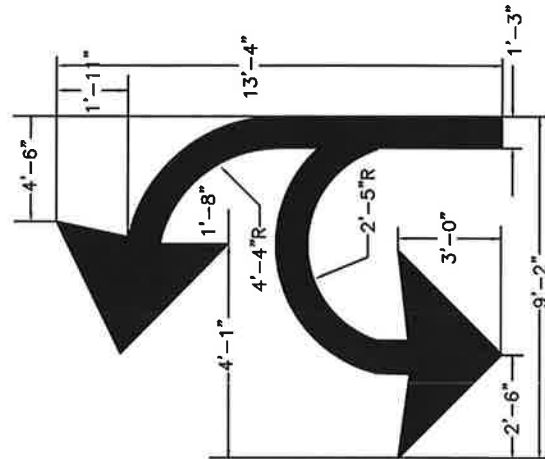
TYPE 2, ARROW
16.0 sq. ft.



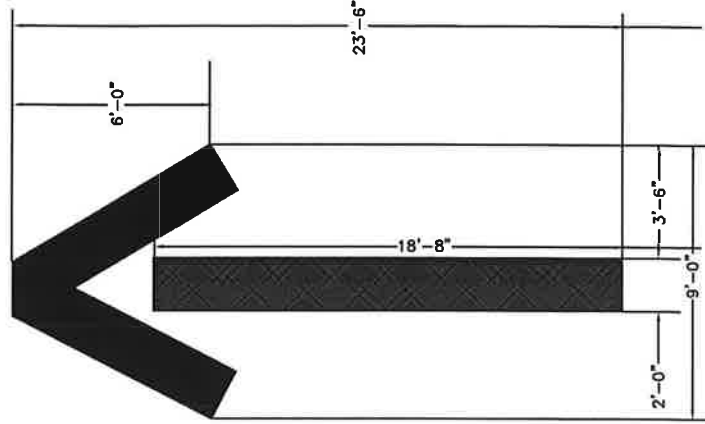
TYPE 1, ARROW
12 sq. ft.



TYPE 7, ARROW

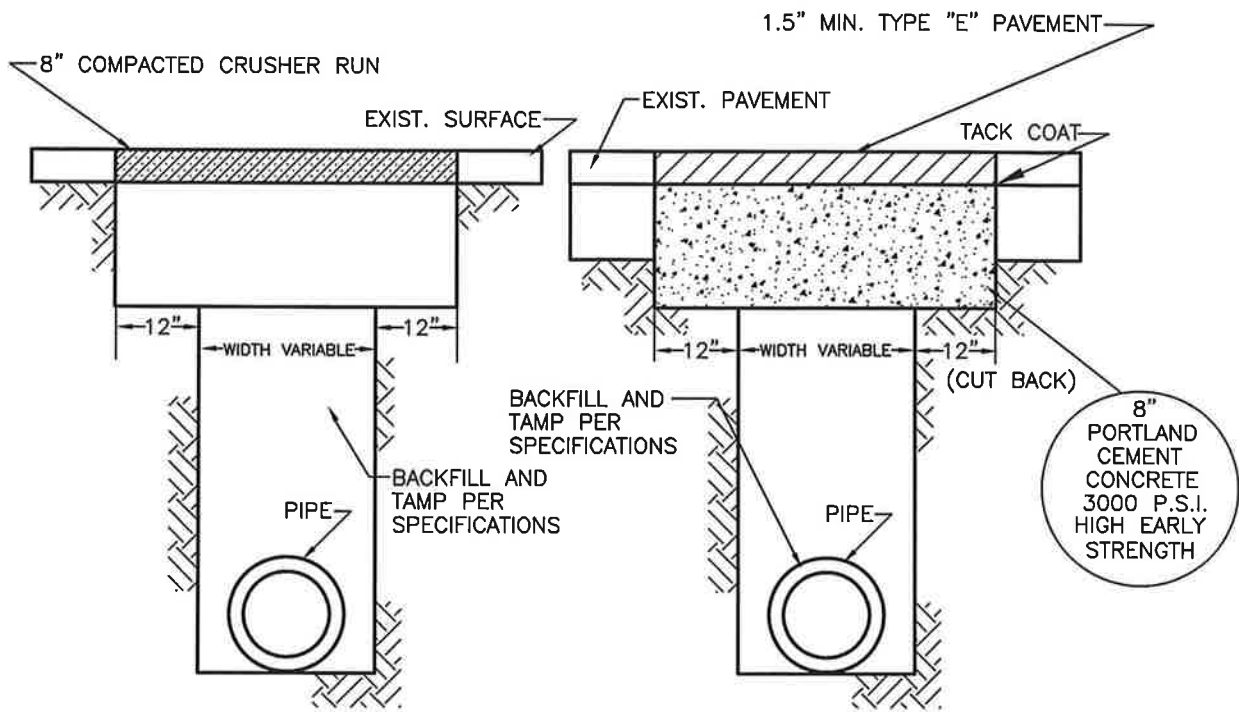


TYPE 6, ARROW



TYPE 4, ARROW

DETAIL OF PAVEMENT MARKING ARROWS



TYPE "A" CUT REPAIR DETAIL
DIRT OR GRAVEL RDS.

TYPE "B" PAVEMENT CUT
GEORGIA D.O.T. AND FORSYTH CO.

TYPE "B"

TYPE "C"

NOTES:

1. ALL MATERIALS AND METHODS OF INSTALLATION SHALL COMPLY WITH THE GA. D.O.T.'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2001 EDITION OR LATEST REVISION THERETO.
2. FOR TYPE "C", THE CONTRACTOR SHALL COVER THE POURED CONCRETE WITH STEEL PLATES A MINIMUM OF 24 HOURS TO ALLOW ADEQUATE SET-UP.
3. CONTRACTOR'S TRAFFIC CONTROL PLAN MUST BE APPROVED BY THE AUTHORITY HAVING JURISDICTION BEFORE WORK BEGINS.
4. FINAL APPROVAL OF CONTRACTOR'S PAVEMENT CUT REPAIRS RESIDES WITH THE AUTHORITY HAVING JURISDICTION. CONTRACTOR SHALL MEET ALL REQUIREMENTS OF SAID AUTHORITY.

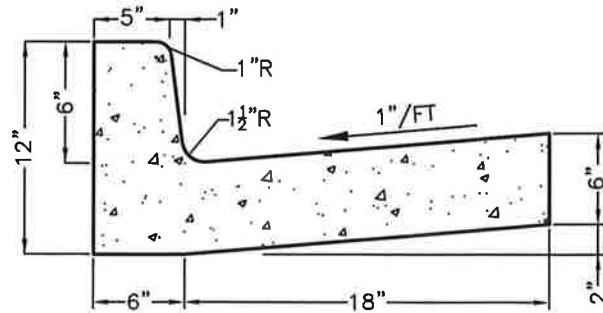
NOT TO SCALE

STANDARD FOR BACKFILLING & PAVEMENT CUT REPAIRS – TYPE B & C

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 180



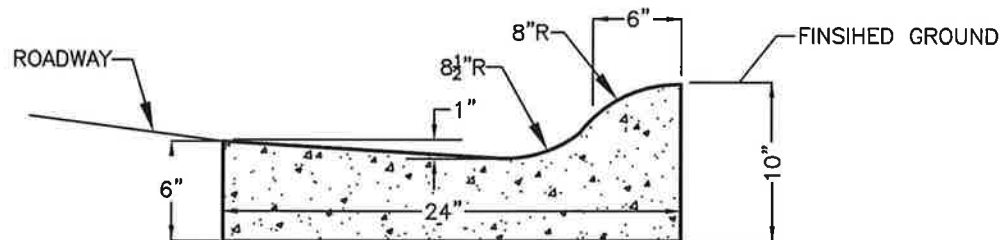
24" STANDARD CURB

6" x 24" x 12"
3000 P.S.I. CONC. @ 28 DAYS

1/2" EXPANSION JOINTS OR PREMOLDED BITUMINOUS
EXPANSION JOINT MATERIAL SHALL BE PROVIDED AT ALL
STRUCTURES AND RADIUS POINTS & AT INTERVALS NOT TO
EXCEED 200' IN THE REMAINDER OF THE CURB & GUTTER.

*REQUIRED FOR COMMERCIAL USE AND NEGATIVE GRADE CUL-DE-SACS.

NOTE: CONTRACTION JOINTS SHALL BE INSTALLED 1/2" DEEP AT 10' INTERVALS.



TYPICAL ROLL CURB

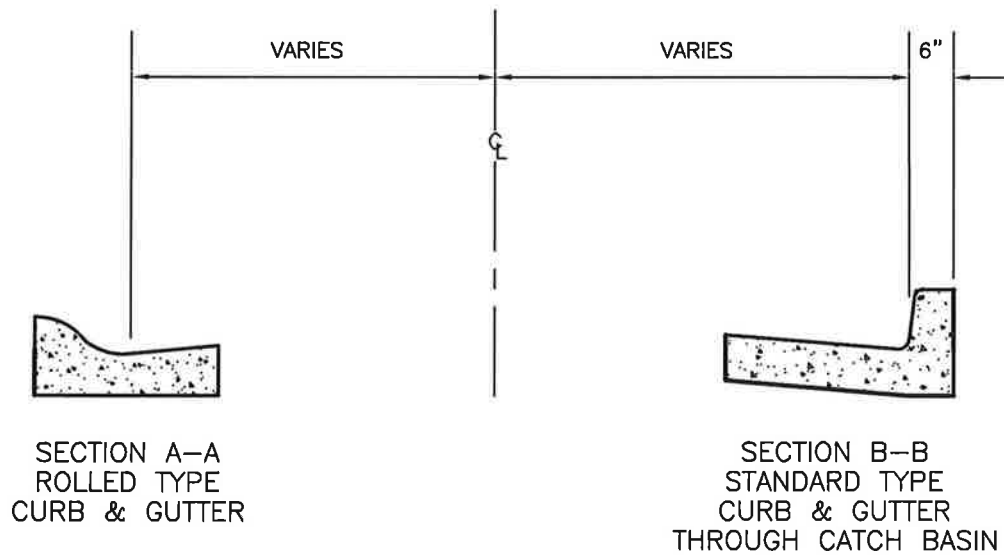
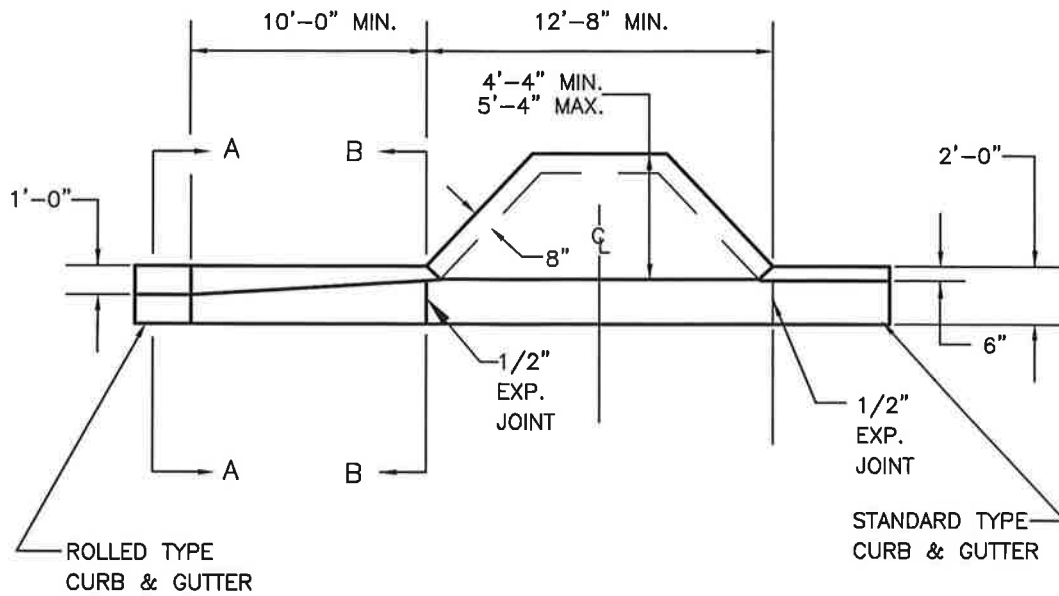
3000 P.S.I. CONC. @ 28 DAYS

1/2" EXPANSION JOINTS OR PREMOLDED BITUMINOUS
EXPANSION JOINT MATERIAL SHALL BE PROVIDED AT ALL
STRUCTURES AND RADIUS POINTS & AT INTERVALS NOT TO
EXCEED 200' IN THE REMAINDER OF THE CURB & GUTTER.

NOTE: CONTRACTION JOINTS SHALL BE INSTALLED 1/2" DEEP AT 10' INTERVALS.

NOT TO SCALE

STANDARD CONSTRUCTION DETAILS – CURBING



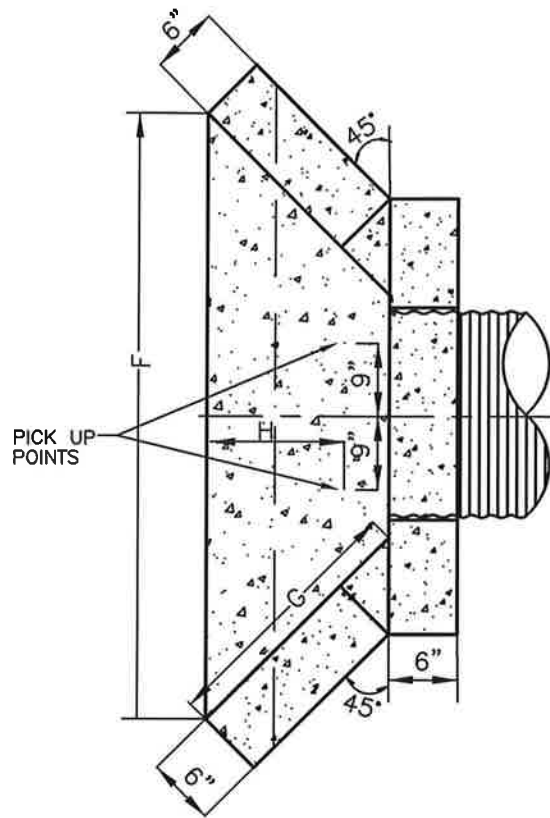
NOT TO SCALE

CURB TRANSITION AT CATCH BASIN

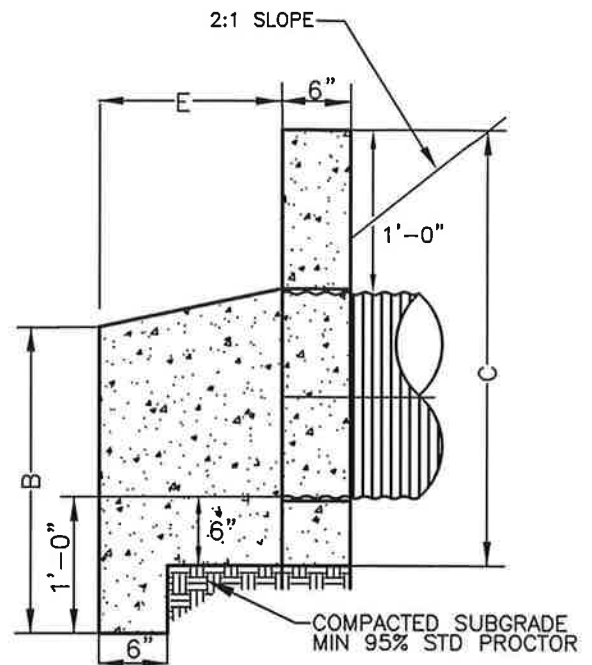
REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

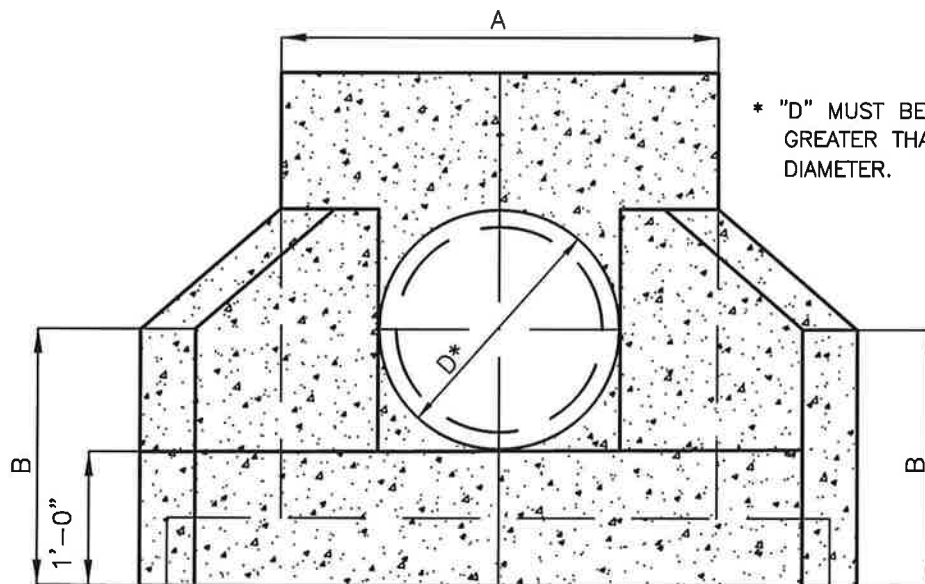
STD. NO. 191



PLAN VIEW



SIDE ELEVATION



FRONT ELEVATION

TABLE OF DIMENSIONS
A-H

NOT TO SCALE

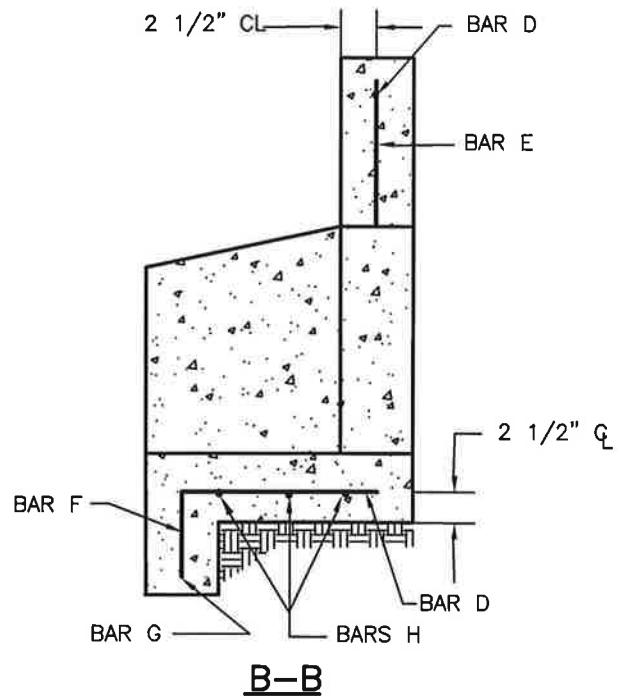
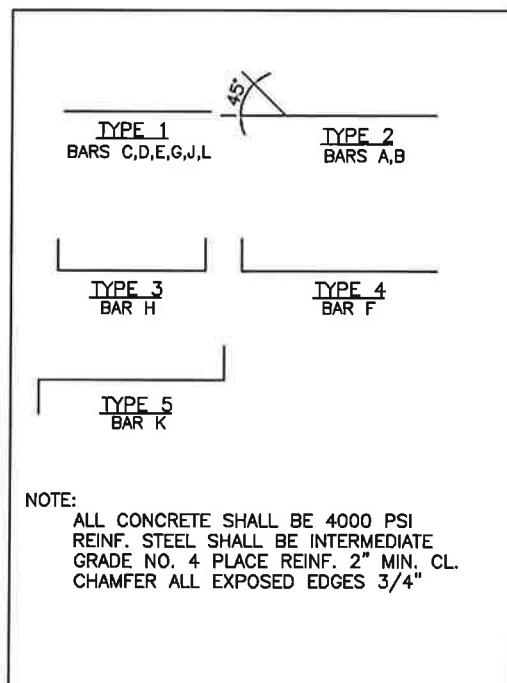
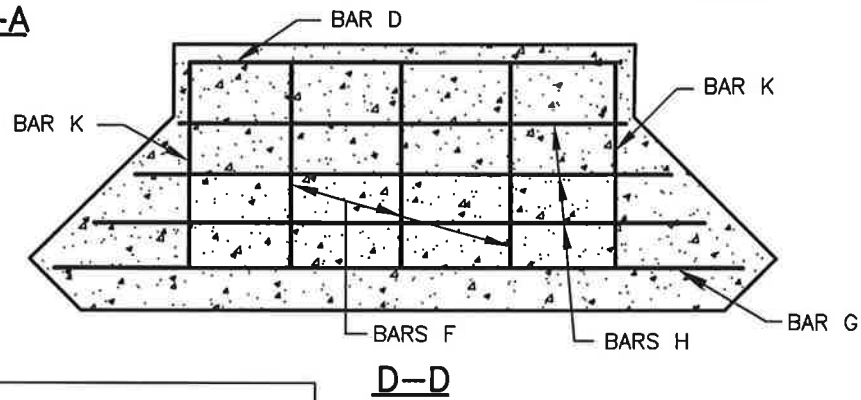
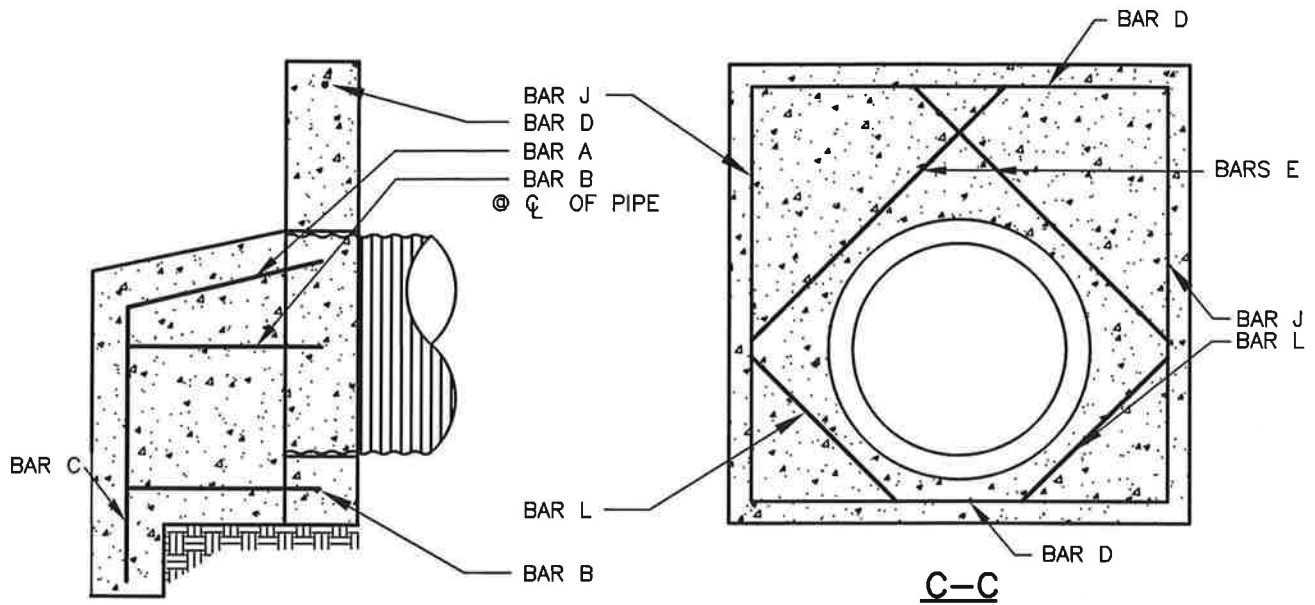
SHEET 1 OF 3

CAST CONCRETE HEADWALL

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 200



NOT TO SCALE

SHEET 2 OF 3

CAST CONCRETE HEADWALL

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 201

VARIABLE DIMENSIONS (CONCRETE PIPE)												
CU. YDS. CONC.	INSIDE DIA. PIPE	AREA PIPE OPENING	A	B	C	D	E	F	G	H	WT.	BASE AREA
.43	18"	1.76	3'-5"	2'-4"	3'-4.5"	2'-0"	1'-5"	4'-10"	2'-0"	1'--.25"	1753	8.3
.50	21"	2.40	3'-8.5"	2'-6"	3'-8"	2'-3.5"	1'-6"	5'-3.5"	2'-1.5"	1'--.88"	2020	9.4
.51	24"	3.14	4'-0"	2'-9"	3'-11"	2'-7"	1'-8"	5'-11"	2'-4.5"	1'-1.75"	2083	11.8
.79	30"	4.91	4'-6.5"	3'-1"	4'-5.5"	3'-1.5"	2'-0"	7'-1.5"	2'-10"	1'-3.875"	3182	15.1
1.0	36"	7.07	5'-1"	3'-5"	5'-0"	3'-8"	2'-4"	8'-0"	3'-3.5"	1'-6"	4089	19.6

VARIABLE DIMENSIONS (METAL PIPE)												
CU. YDS. CONC.	INSIDE DIA. PIPE	AREA PIPE OPENING	A	B	C	D	E	F	G	H	WT.	BASE AREA
.38	18"	1.76	3'-2"	2'-3"	3'-2"	1'-9"	1'-5"	1'-4"	4'-5"	1'-10.5"	1549	7.34
.44	21"	2.40	3'-5"	2'-5"	3'-5"	2'-0"	1'-5"	4'-10"	2'-0"	1'-.25"	1778	8.32
.52	24"	3.14	3'-8"	2'-7"	3'-8"	2'-3"	1'-7"	5'-5"	2'-3"	1'-1.25"	2108	9.90
.70	30"	4.91	4'-2"	2'-11"	4'-2"	2'-9"	1'-11"	6'-7"	2'-8.5"	1'-3.25"	2834	13.5
.91	36"	7.07	4'-8"	3'-3"	4'-8"	3'-3"	2'-3"	7'-9"	3'-2.25"	1'-5.375"	3678	17.65

NOT TO SCALE

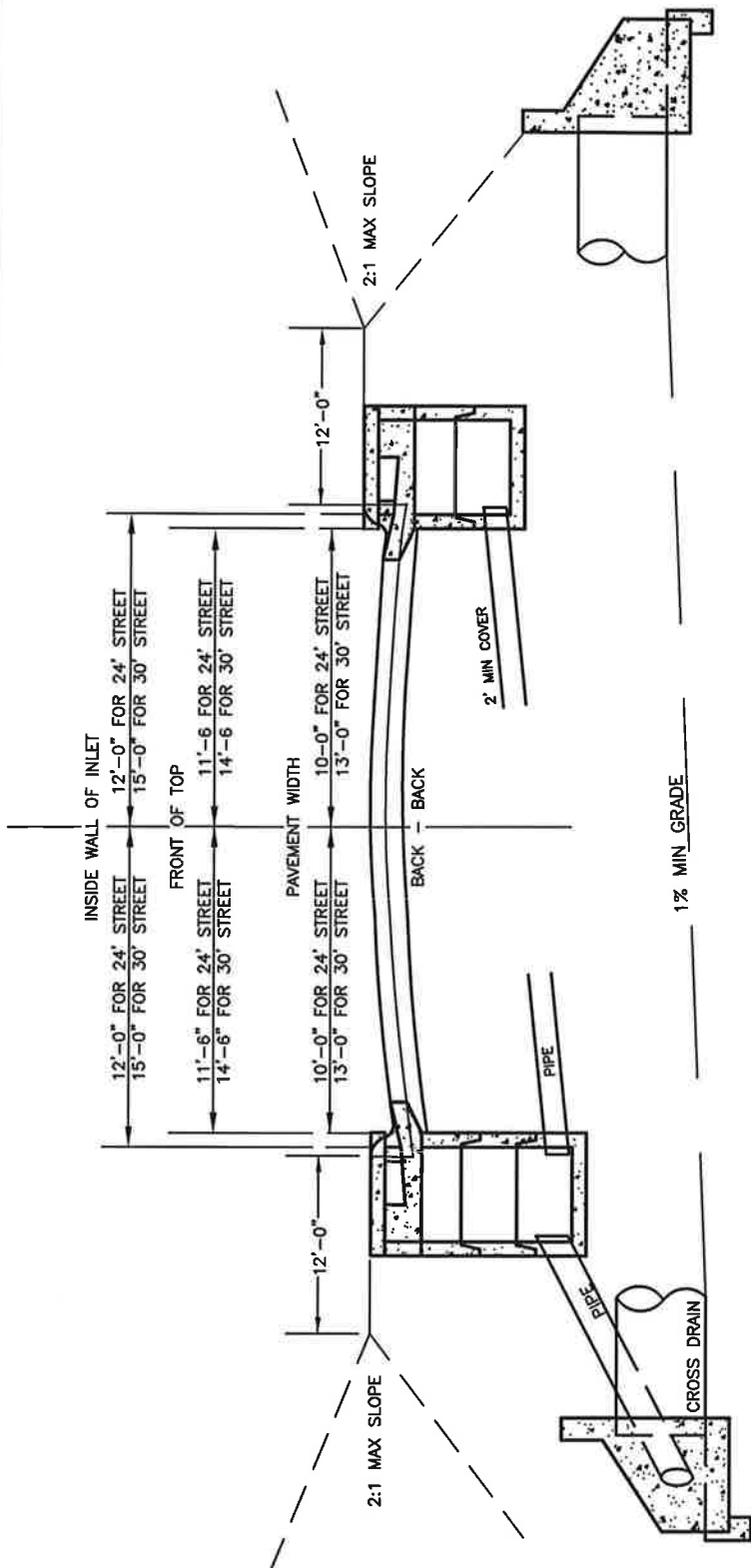
SHEET 3 OF 3

CAST CONCRETE HEADWALL

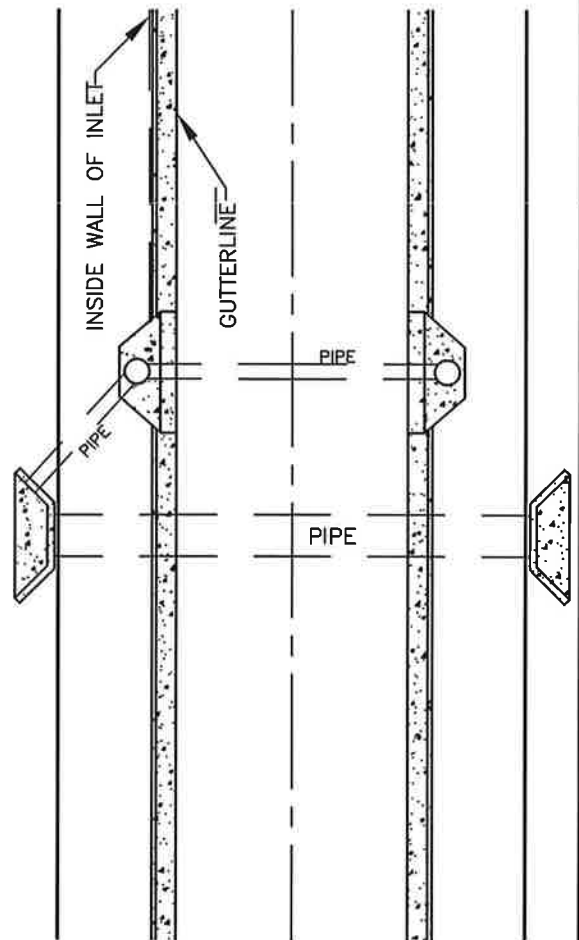
REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 202



NOTE
1. SUGGESTION: OFFSET CONSTRUCTION STAKES SHOULD BE SET TO INSIDE FRONT INLET WALL TO AVOID CONFUSION RESULTING FROM DIFFERENT THICKNESS OF WALLS ON ALTERNATE INLETS. SEE ABOVE DIMENSIONS.



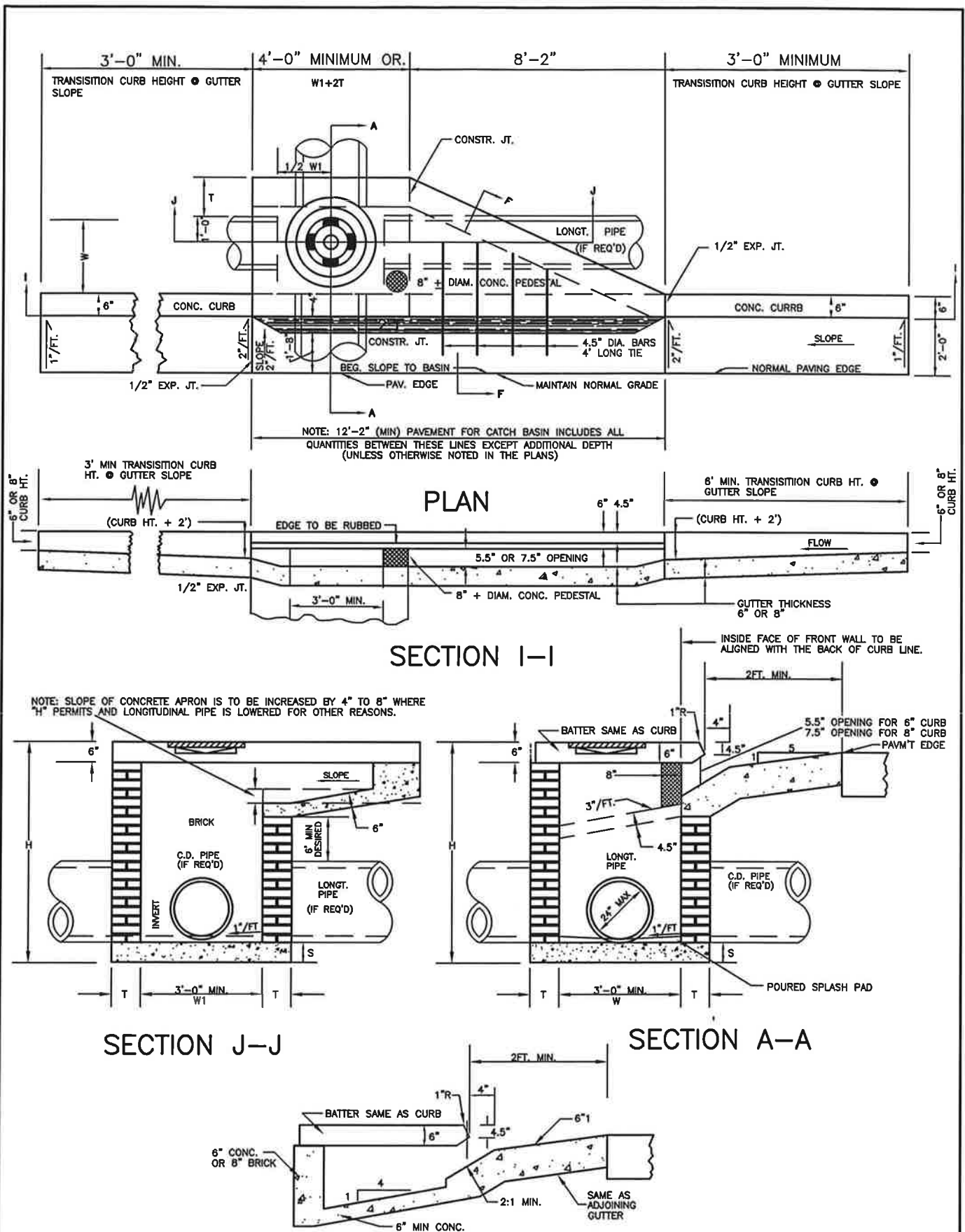
NOT TO SCALE

LOCATION OF CATCH BASINS

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 210



NOT TO SCALE

SECTION F-F

SHEET 1 OF 4

BRICK CATCH BASIN

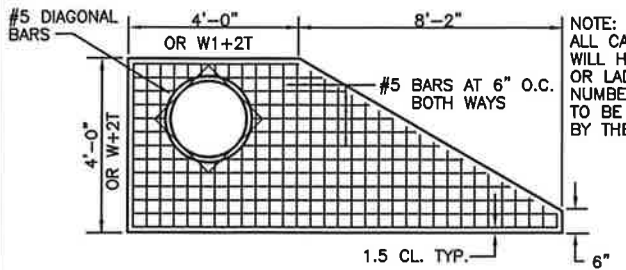
REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 220

* YARD INLET MUST HAVE PROPER CORNER SUPPORTS.

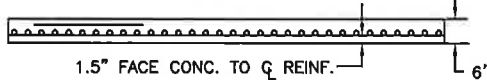
DETAIL OF TOP REINFORCED CONCRETE SLAB



NOTE: ALL BARS IN PLAN VIEW ARE SPACED AT 6" O.C.

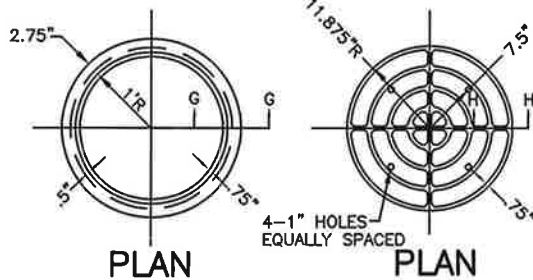
NOTE: FOR PLAN DETAIL OF REINFORCING STEEL IN TOP PORTION OF SLAB, SEE PART PLAN AT RIGHT.

PLAN



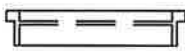
ELEVATION

CASTING DETAILS



PLAN

PLAN



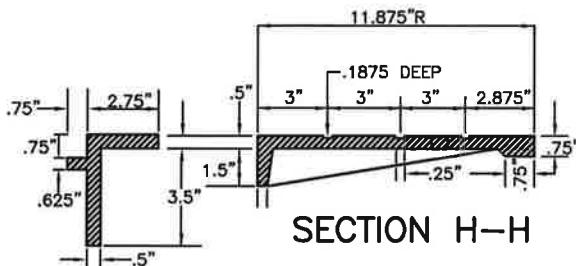
C.I. RING
APPROX. WT.
= 78 LBS.

ELEVATION



C.I. COVER
APPROX. WT.
= 63 LBS.

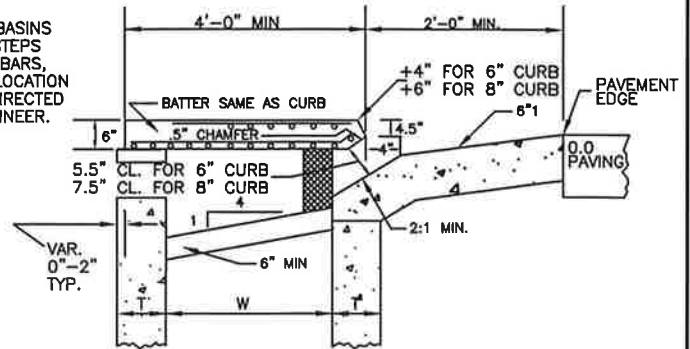
ELEVATION



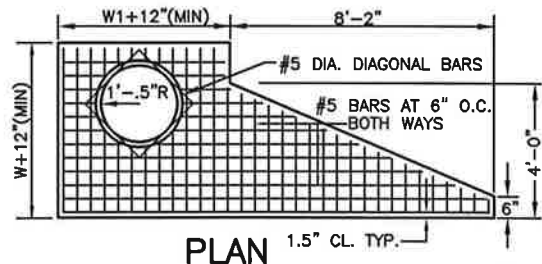
SECTION H-H

SECTION G-G

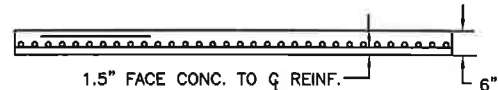
DETAIL OF TOP SLAB, REINF. STEEL @ CLEARANCES REQ'D.



DETAIL OF TOP REINFORCED CONCRETE SLAB



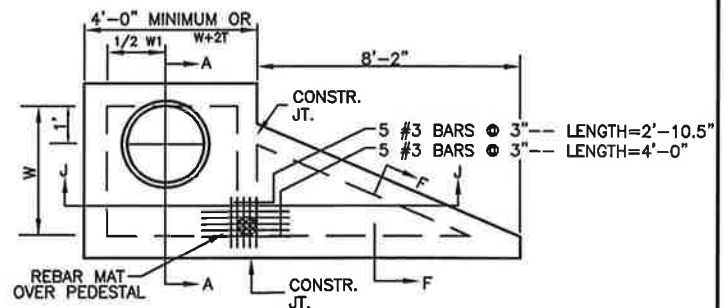
PLAN



ELEVATION

NOTE: PIPE SIZES, NUMBER, ALIGNMENT, AND INVERT SHOWN ARE ILLUSTRATIVE, SEE PLANS FOR SPECIFICS. INVERTS TO BE FORMED WITH GROUT OR CONCRETE AS DIRECTED BY THE ENGINEER OR AS SHOWN IN THE PLANS.

CATCH BASIN (WITH PROTRUDED BACK)



PART PLAN

* THE USE OF NO.1 CHAIRS (12) IS REQUIRED TO HOLD REBAR MAT EVENLY.

NOT TO SCALE

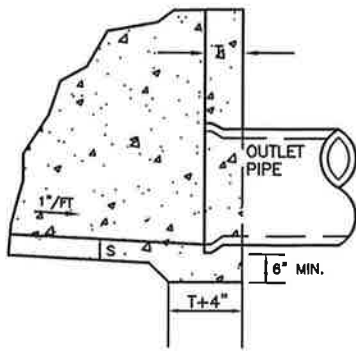
SHEET 2 OF 4

STANDARD CATCH BASIN

REV: 06-19-08

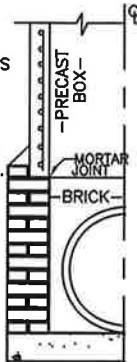
FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 221

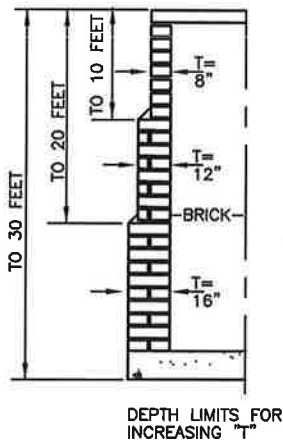


ALTERNATE TO INVERT

NOTE:
SEE SEPERATE STDS.
FOR PRECAST ALTERNATES
ADAPTORS (STD. 1040)
WILL BE REQUIRED
WITH CIRCULAR PRE-
CAST UNITS. PRECAST
BOX, CIRCULAR, AND/OR
BUILT-IN-PLACE CONSTR.
MAY BE USED IN
COMBINATIONS.



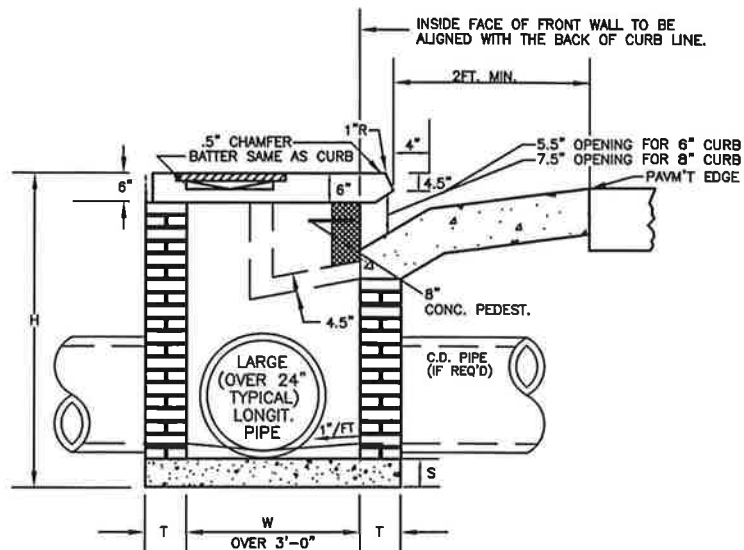
PRECAST BOX ON BRICK
(HALF-SECTION)



NOTE:
TYPICAL TREATMENTS FOR SKEWED PIPES ARE:
CIRCULAR PRECAST SWIVEL SECTIONS; PIPE ELBOWS
OR INCREASED BOW SIZE.

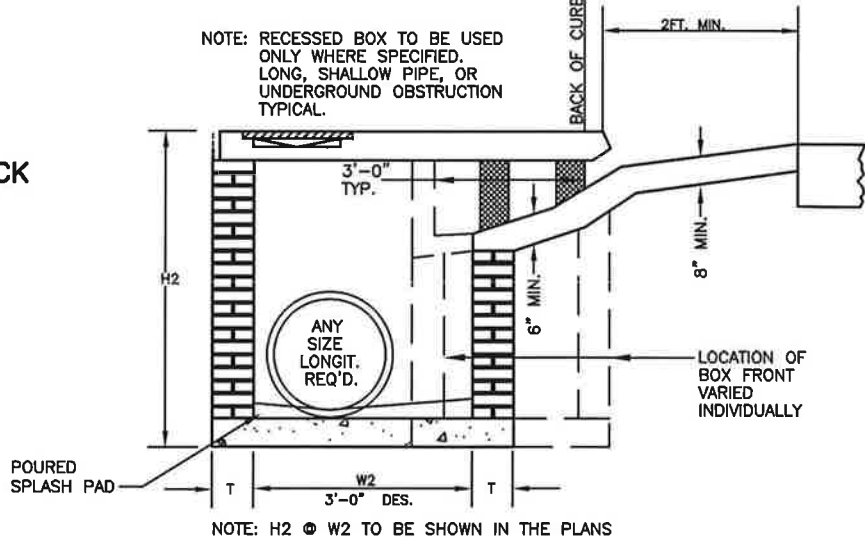
* ENSURE ALL STEPS ARE
ALIGNED AND SET AT THE
REAR OF CATCH BASIN.

* PROVIDED SQUARES ARE REQUIRED
FOR ALL DROP INLET STRUCTURES.

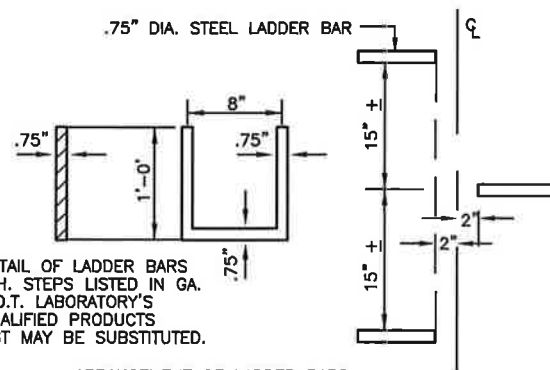


SECTION A-A
(WITH LONG LONGITUDINAL PIPE)

NOTE: RECESSED BOX TO BE USED
ONLY WHERE SPECIFIED.
LONG, SHALLOW PIPE, OR
UNDERGROUND OBSTRUCTION
TYPICAL.



SECTION A-A
(WITH RECESSED BOX)



NOTE: DETAIL OF LADDER BARS
M.H. STEPS LISTED IN GA.
D.O.T. LABORATORY'S
QUALIFIED PRODUCTS
LIST MAY BE SUBSTITUTED.

ARRANGEMENT OF LADDER BARS

NOT TO SCALE

SHEET 3 OF 4

BRICK CATCH BASIN

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 222

TYPICAL MIN. DIMENSIONS

PIPE DIA.	H (MIN)	W OR W1	ΔE (MIN)
12	4'-4"	3'-0"	3'-3"
15	4'-7"	3'-0"	3'-6"
18	4'-10"	3'-0"	3'-9"
24	5'-6"	3'-0"	4'-4"
30	6'-2"	3'-7"	5'-0"
36	6'-10"	4'-6"	5'-7"
42	7'-4"	5'-3"	5'-11"
48	8'-0"	6'-0"	6'-6"
54	8'-6"	6'-8"	7'-0"
60	9'-2"	7'-4"	7'-7"

ΔE = MINIMUM DIFFERENCE IN ELEVATION FROM PAVEMENT EDGE TO FLOW LINE OF OUTLET PIPE.

W OR W1 (MAX.)	BOTTOM SLAB	
	MATERIALS	S
TO 4'-6"	NON-REINF. CONCRETE	6"
	OR BRICK	8"
OVER 4'-6"	CONC. REINF. W1 #4 BARS 12" O.C. BOTH WAYS 2"CL FROM SLAB TOP	8"

NOTE:

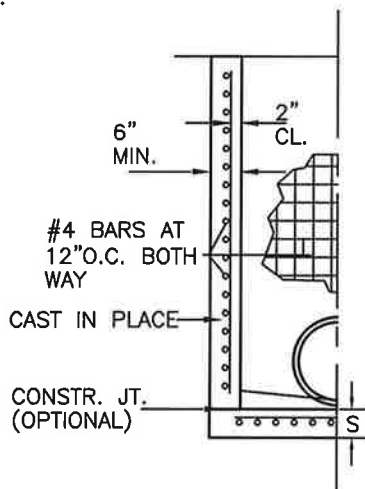
THE MIN. H @ MIN. E GIVEN IN ABOVE TABLE ARE BASED UPON THE TYPICAL OUTSIDE DIMENSIONS OF CONC. PIPE AND MAY BE VARIED IF CONDITIONS PERMIT WITH VARIED DIMENSIONS SPECIFIED IN THE PLANS OR DIRECTED BY THE ENGINEER. W. @ W. DIMENSIONS DO NOT HAVE TO BE EQUAL.

ALL RISER SEAMS, PIPE SEAMS, AND OPENINGS SHALL BE SEALED WITH NON-SHRINK HYDRAULIC CEMENT.

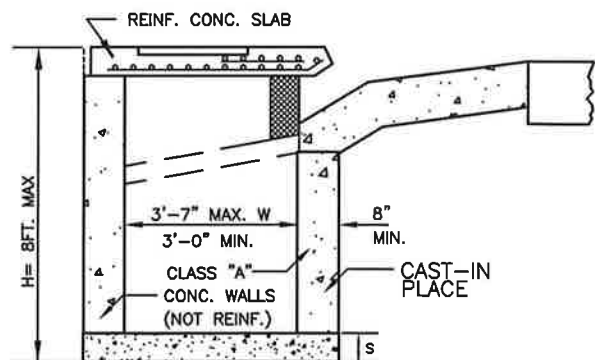
CONSTRUCTION ALTERNATES

NOTE: DETAILS NOT SHOWN ABOVE FOR CONSTRUCTION ALTERNATES WILL BE SIMILAR TO BRICK CATCH BASIN DETAILS.

SEE SEPERATE STANDARDS FOR PRECAST ALTERNATES.



REINFORCED CONCRETE (HALF SECTION)



NON-REINFORCED SMALL BASIN (W. NOT OVER 3'-7")

- * THE USE OF BROKEN OR FRACTURED STRUCTURES IS PROHIBITED.
- * ALL PIPE ENTERING STRUCTURES MUST BE DOUBLE GROUTED. (INSIDE & OUT)

NOT TO SCALE

SHEET 4 OF 4

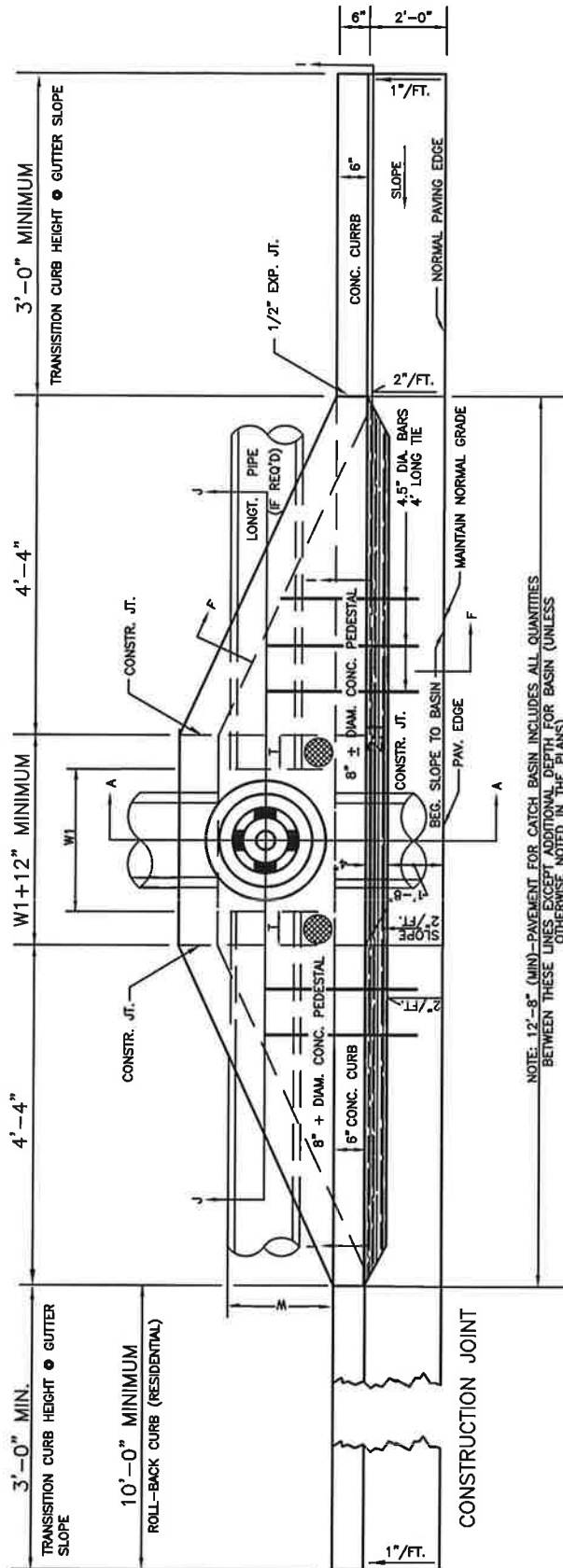
STANDARD CATCH BASIN

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

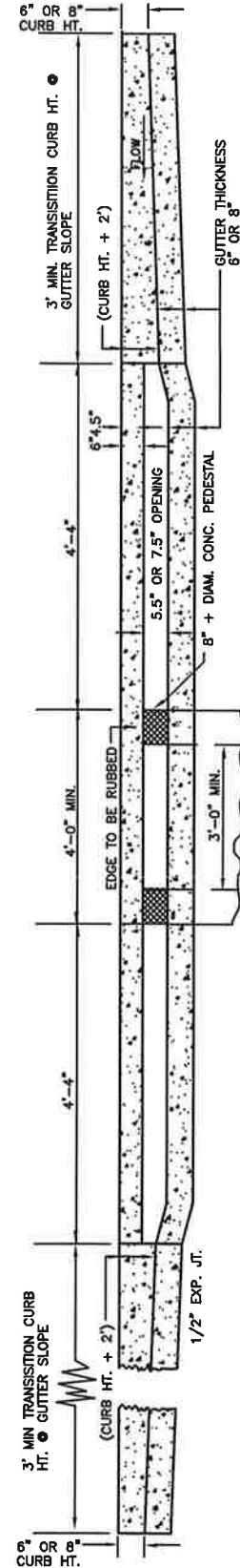
STD. NO. 223

CATCH BASIN



NOTE: 12'-8" (MIN) PAVEMENT FOR CATCH BASIN INCLUDES ALL QUANTITIES BETWEEN THESE LINES EXCEPT ADDITIONAL DEPTH FOR BASIN (UNLESS OTHERWISE NOTED IN THE PLANS)

PLAN



ELEVATION

NOT TO SCALE

SHEET 1 OF 3

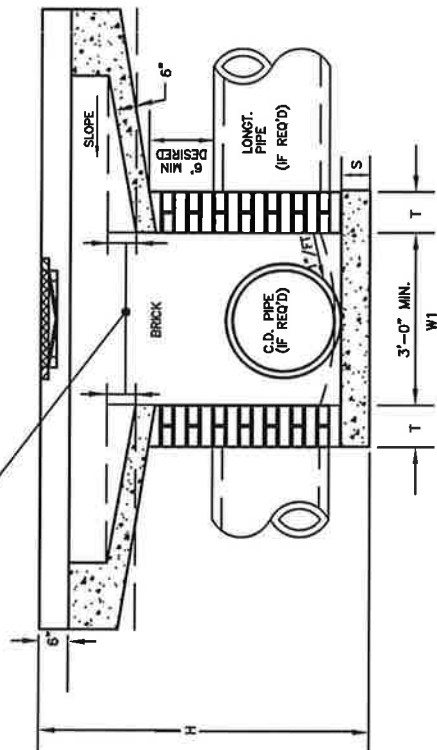
STANDARD DOUBLE WING BRICK CATCH BASIN

REV: 06-19-08

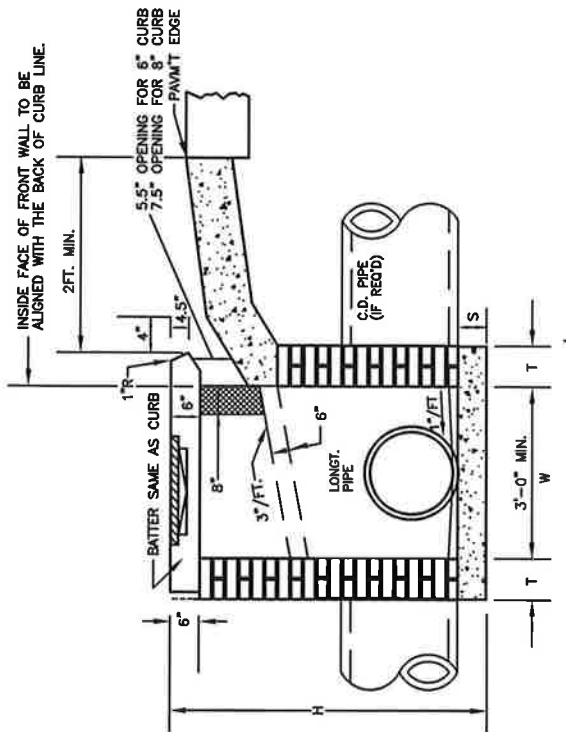
FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 230

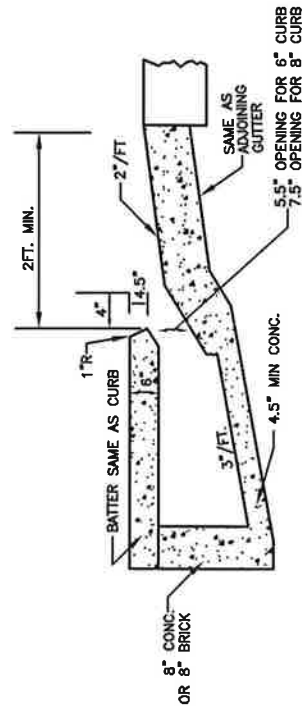
NOTE: SLOPE OF CONCRETE APRON IS TO BE INCREASED BY 4" TO 8" WHERE 1/4" PERMITS AND LONGITUDINAL PIPE IS LOWERED FOR OTHER REASONS.



SECTION J-J



SECTION A-A



SECTION F-F

NOT TO SCALE

SHEET 2 OF 3

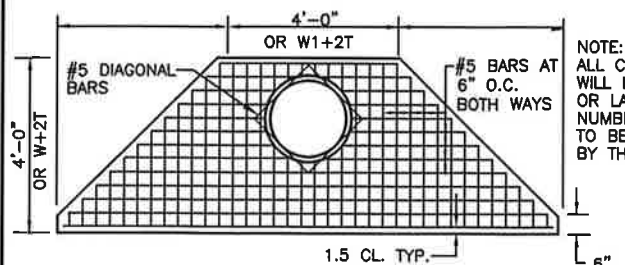
STANDARD DOUBLE WING BRICK CATCH BASIN

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 231

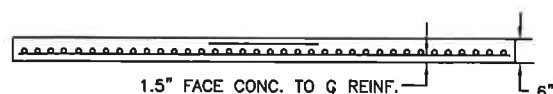
DETAIL OF TOP-REINFORCED CONCRETE SLAB FOR SMALL CATCH BASIN



NOTE: ALL BARS IN PLAN VIEW
ARE SPACED AT 6" O.C.

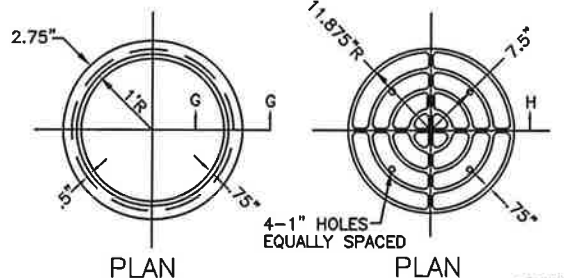
NOTE: FOR PLAN DETAIL OF
REINFORCING STEEL IN
TOP PORTION OF SLAB.
SEE PART PLAN AT RIGHT.

PLAN



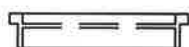
ELEVATION

CASTING DETAILS



PLAN

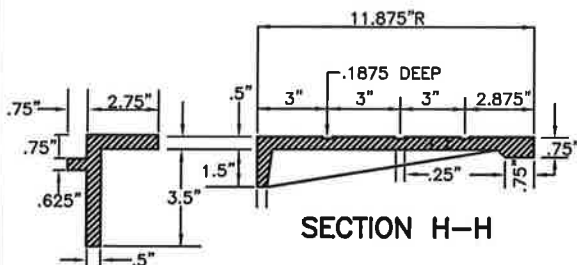
PLAN



ELEVATION



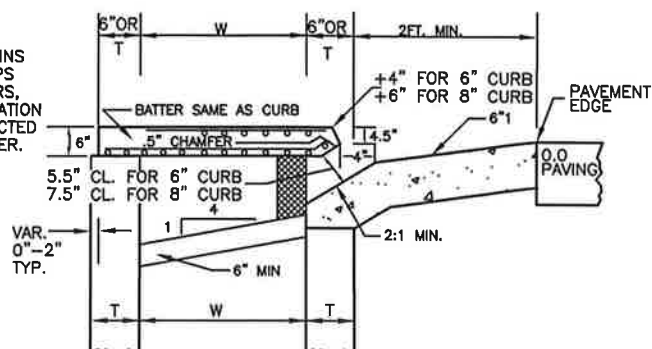
ELEVATION



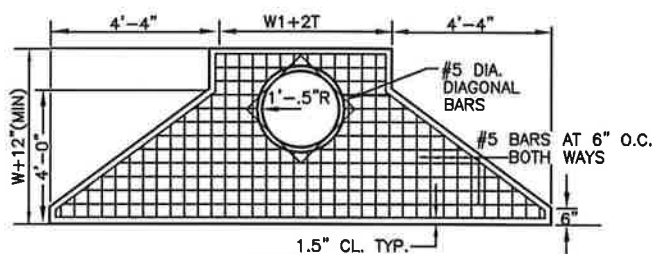
SECTION H-H

SECTION G-G

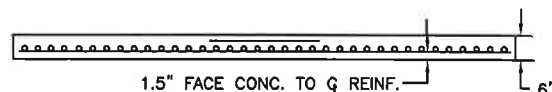
DETAIL OF TOP SLAB, REINF. STEEL • CLEARANCES REQ'D.



DETAIL OF TOP-REINFORCED CONCRETE SLAB FOR LARGE CATCH BASIN



PLAN

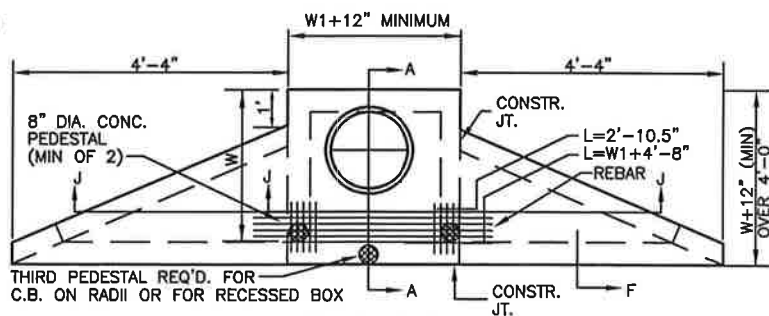


ELEVATION

NOTE: PIPE SIZES, NUMBER, ALIGNMENT, AND INVERT SHOWN ARE ILLUSTRATIVE, SEE PLANS FOR SPECIFICS. INVERTS TO BE FORMED WITH GROUT OR CONCRETE AS DIRECTED BY THE ENGINEER OR AS SHOWN IN THE PLANS.

CATCH BASIN - (WITH PROTRUDED BACK)

FOR USE WITH LONGITUDINAL PIPE OVER 24" OR FOR
USE WITH RECESSED BOX



PART PLAN

* USE NO.1 CHAIRS
(SEE 402A)

NOT TO SCALE

SHEET 3 OF 3

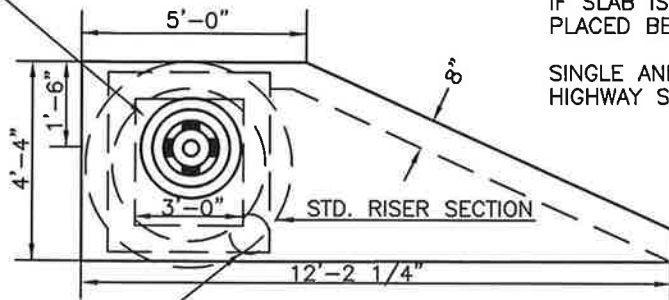
STANDARD DOUBLE WING BRICK CATCH BASIN

3'-0" X 3'-0" SQ. OPENING
FORMED IN PLACE, OR ANGLE
IRON ADAPTOR MAY BE USED.

NOTES: 1/2" EXPANSION MATERIAL SHALL BE PLACED AROUND
COVER WHERE SIDEWALK IS PLACED ADJACENT TO C.B.

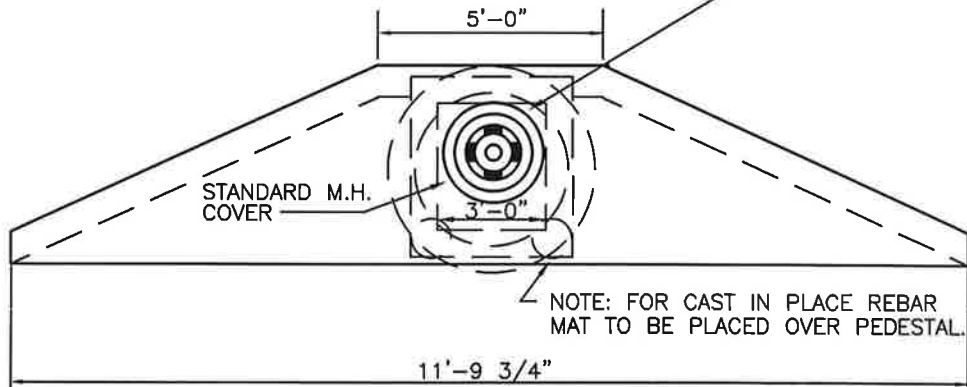
TOP SLAB MAY BE CAST IN PLACE OR PRECAST
IF SLAB IS CAST IN PLACE BUILDERS PAPER IS TO BE
PLACED BETWEEN THE CATCH BASIN AND TOP SLAB

SINGLE AND DOUBLE WING TOPS CONFORM TO STATE
HIGHWAY STANDARDS 1033 & 1034 C.

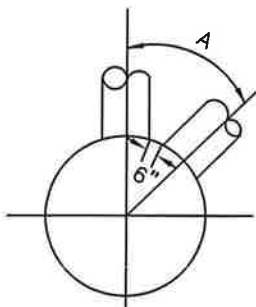


NOTE: FOR CAST IN PLACE REBAR
MAT TO BE PLACED OVER PEDESTAL.

3'-0" X 3'-0" SQ. OPENING
FORMED IN PLACE, OR ANGLE
IRON ADAPTOR MAY BE USED.



NOTE: FOR CAST IN PLACE REBAR
MAT TO BE PLACED OVER PEDESTAL.



NOTES:

SUBGRADE TO BE COMPACTED TO 95% STANDARD PROCTOR.

REINFORCEMENT STEEL TO BE PLACED TO ALLOW A MINIMUM
OF 2" CLEARANCE, EXCEPT WHERE NOTED.

REINFORCEMENT STEEL SHALL BE OF INTERMEDIATE GRADE
AND SHALL BE 0.12 SQ. IN. PER. FT. IN BOTH DIRECTIONS IN
ACCORDANCE WITH A.S.T.M. C 478-67 MANHOLE SPECIFICATIONS.

ALL CONCRETE SHALL BE 4,000 P.S.I.

CHAMFER ALL EXPOSED EDGES 3/4"

MINIMUM ANGLE-A					
4'-0" BASE		5'-0" BASE		6'-0" BASE	
PIPE SIZE	A	PIPE SIZE	A	PIPE SIZE	A
12	43°	12	40°		
15	52°	15	47°		
18	60°	18	55°		
21	67°	21	69°		
24	75°	24	70°		
		27	79°		
		30	86°		
		36	115°		
		42	140°	42	90°
				48	115°

* THE USE OF NO.1 CHAIRS
(12) IS REQUIRED TO HOLD
REBAR MAT EVENLY.

NOT TO SCALE

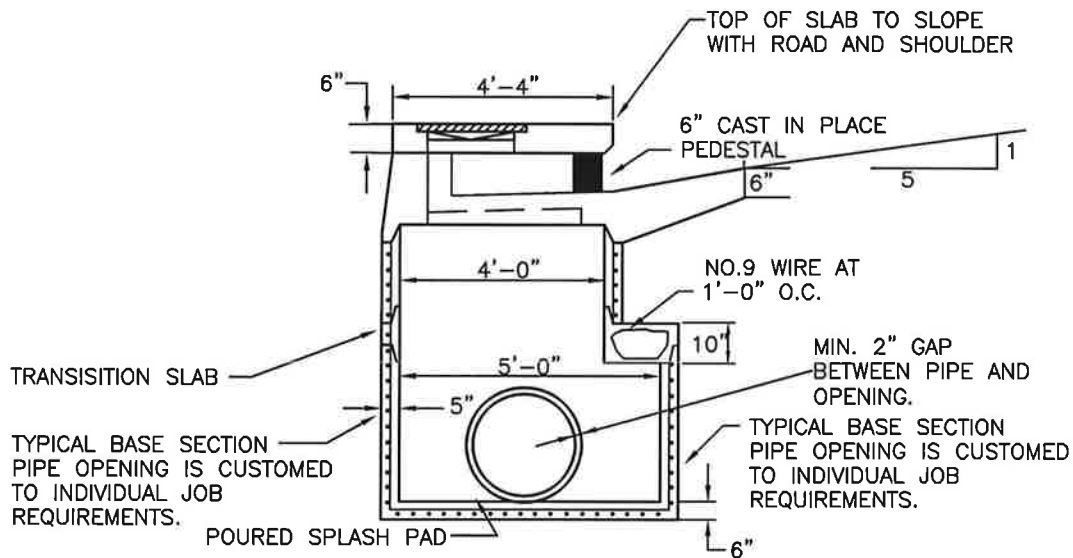
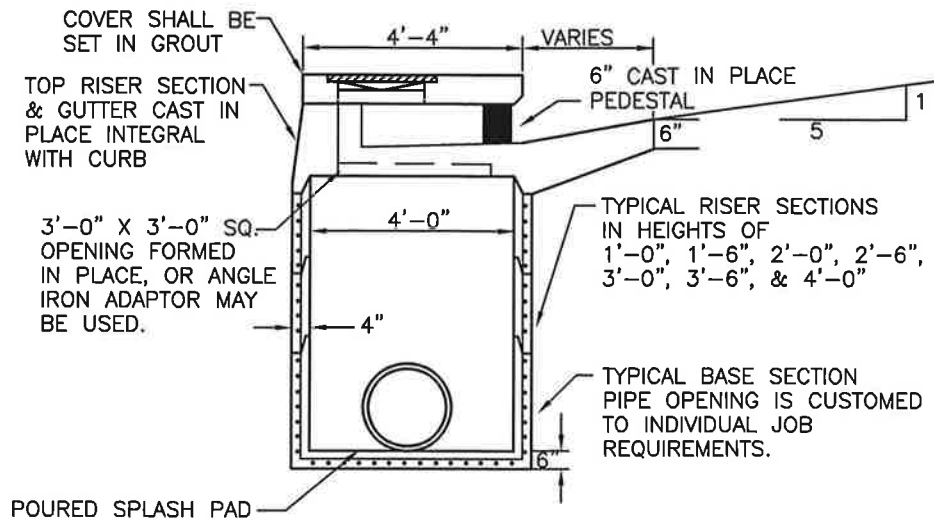
SHEET 1 OF 2

ROUND PRECAST CONCRETE CATCH BASINS 1033 & 1034

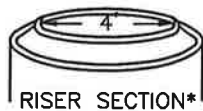
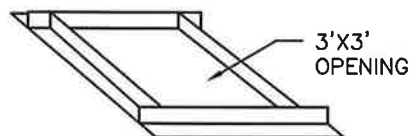
REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 240



(WHERE PIPE DIA. REQUIRES 5' DIA. BASE)



OR



ANGLE IRON ADAPTOR

ROUND TO SQUARE ADAPTOR

* RISERS SHALL BE MADE WATER TIGHT WITH RAM NECK TAR STRIPS, HYDRAULIC GROUT, AND/OR O-RINGS.

NOT TO SCALE

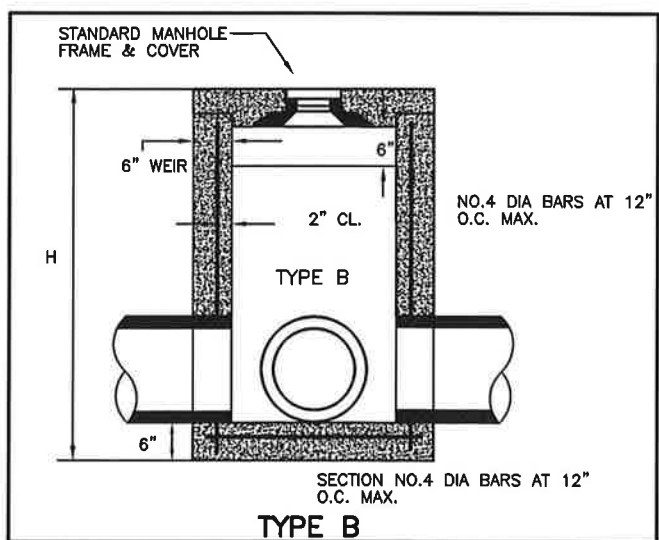
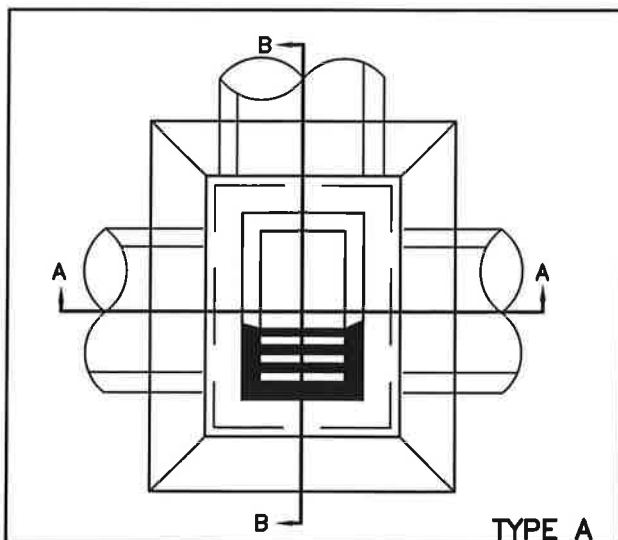
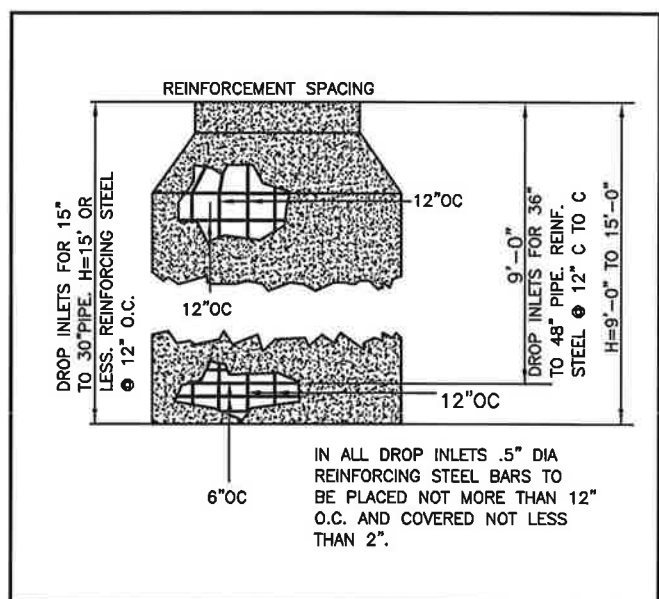
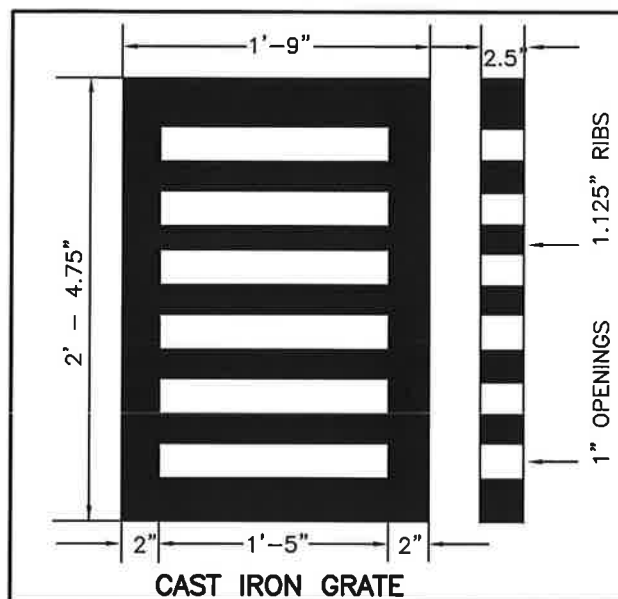
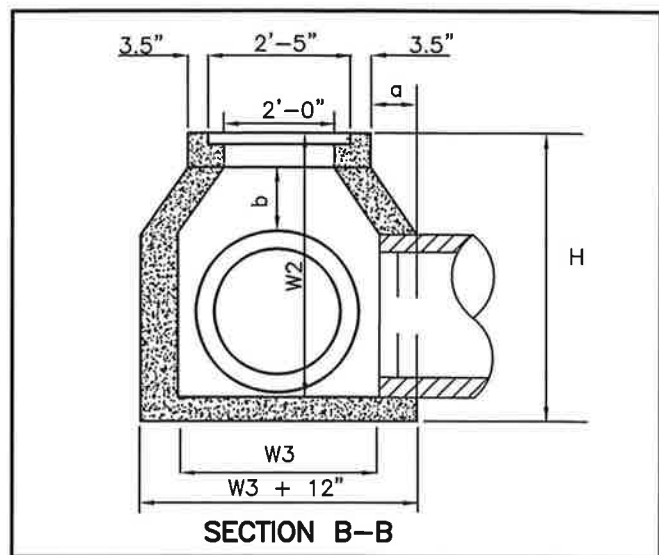
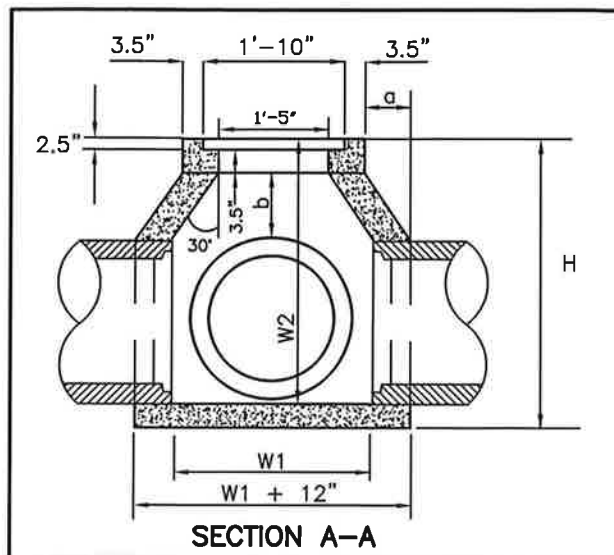
SHEET 2 OF 2

ROUND PRECAST CONCRETE CATCH BASINS 1033 & 1034

REV: 06-19-08

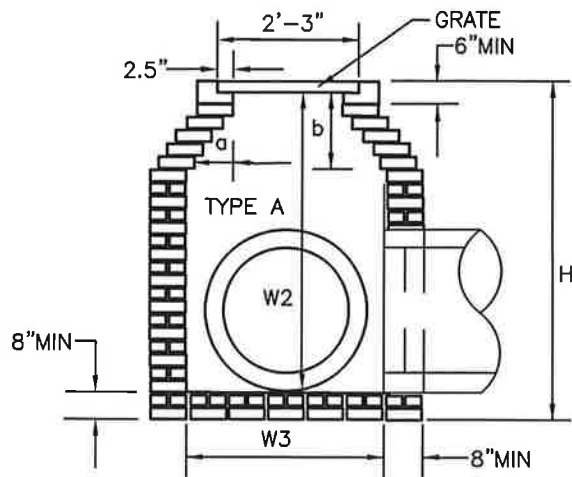
FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 241



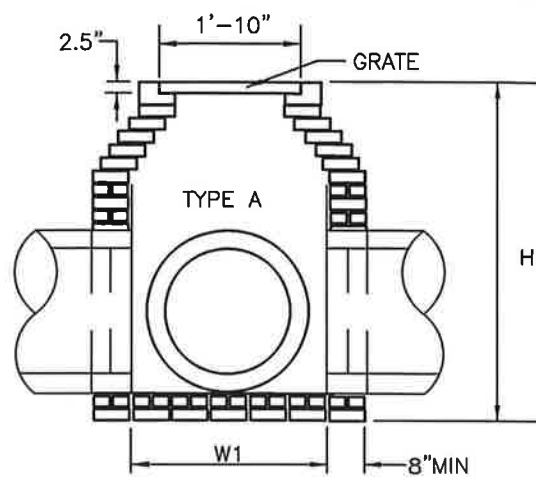
NOT TO SCALE

STANDARD CONCRETE DROP INLET

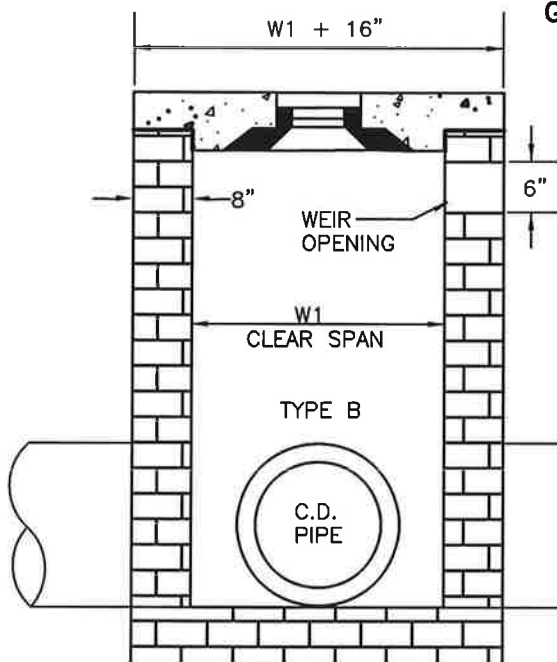


CROSS SECTION

**TYPE A
GRATE INLET**

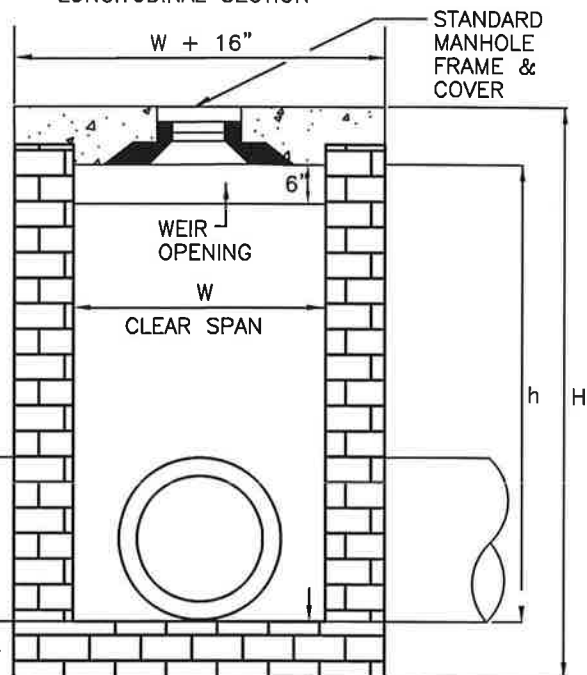


LONGITUDINAL SECTION

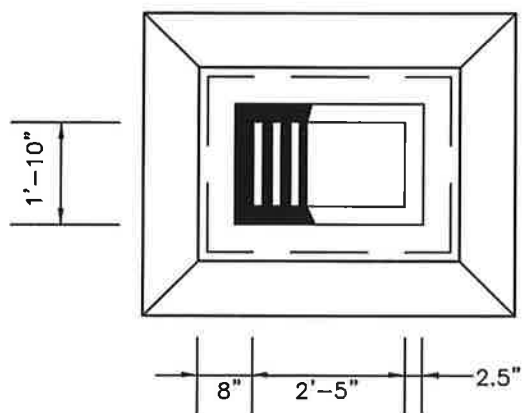


**TYPE B
MANHOLE**

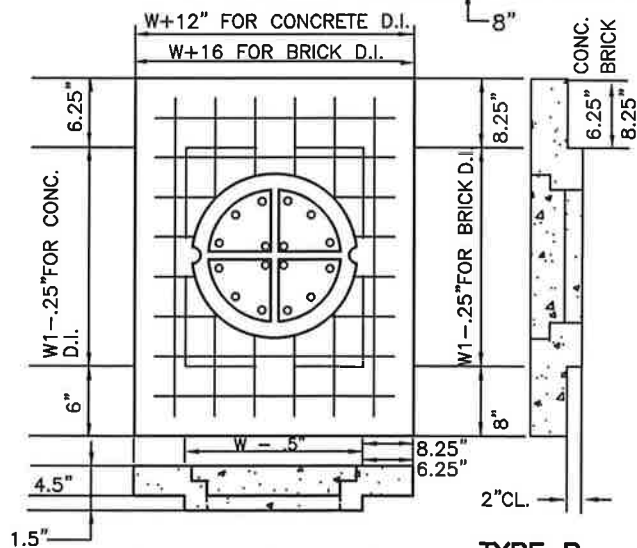
LONGITUDINAL
PIPE



*FOR DIMENSIONS REFERENCE STD. NO. 407



TYPE A



PRECAST CONCRETE COVER

TYPE B

NOT TO SCALE

STANDARD BRICK DROP INLET

CONCRETE DROP INLET

TYPE A

D	W1	MIN. W2	W3	a	b	MIN. H
15"	2'-0"	2'-6 1/2"	2'-7"	0'-3 1/2"	0'-6"	3'-3"
18"	2'-0"	2'-9 1/2"	2'-7"	0'-3 1/2"	0'-6"	3'-6"
24"	2'-8"	4'-0 1/2"	3'-3"	0'-7 1/2"	1'-1"	4'-9"
30"	3'-4"	5'-1 1/2"	3'-11"	0'-11 1/2"	1'-8"	5'-10"
36"	3'-10"	6'-1 1/2"	4'-5"	1'-2 1/2"	2'-1 1/4"	6'-10"
42"	4'-5"	7'-2 1/2"	5'-0"	1'-6"	2'-7 1/4"	7'-11"
48"	5'-0"	8'-3 1/2"	5'-7"	1'-9 1/2"	3'-1 1/4"	9'-0"
54"	5'-7"	9'-4 1/2"	6'-2"	2'-1"	3'-7 1/4"	10'-1"
60"	6'-2"	10'-5 1/2"	6'-9"	2'-4 1/2"	4'-1 1/2"	11'-2"
66"	6'-9"	11'-6 1/2"	7'-4"	2'-8"	4'-7 1/2"	12'-3"
72"	7'-4"	12'-7 1/2"	7'-11"	2'-11 1/2"	5'-1 1/2"	13'-4"

TYPE B

NORMAL W OR W1	MIN h	MIN H
2'-0"	2'-7 1/2"	3'-9 1/2"
2'-3"	2'-10"	4'-0"
3'-0"	3'-8"	4'-10"
3'-6 1/2"	4'-2 1/2"	5'-4 1/2"
4'-2"	4'-10"	6'-0"
4'-8 1/2"	5'-4 1/2"	6'-6 1/2"
5'-3 1/2"	5'-11 1/2"	7'-1 1/2"
5'-10"	6'-6"	7'-8"
6'-4 1/2"	7'-0 1/2"	8'-2 1/2"
6'-11"	7'-7"	8'-9"
7'-5 1/2"	8'-1 1/2"	9'-3 1/2"

BRICK DROP INLET

TYPE A

D	W1	MIN. W2	W3	a	b	MIN. H
15"	2'-2"	2'-11"	2'-9"	0'-4 1/2"	0'-8"	3'-9 1/2"
18"	2'-2"	3'-2 1/2"	2'-9"	0'-4 1/2"	0'-8"	4'-1"
24"	2'-8"	3'-3"	3'-3"	0'-7 1/2"	1'-1 1/4"	4'-9"
30"	3'-7 1/4"	4'-0"	3'-10"	1'-0"	1'-9"	5'-10"
36"	4'-2"	6'-0 1/2"	4'-9"	1'-4 1/2"	2'-2 1/4"	6'-11"
42"	4'-5"	7'-1 3/4"	5'-0"	1'-6"	2'-7 1/4"	8'-0 1/4"
48"	5'-0"	8'-2 3/4"	5'-7"	1'-9 1/2"	3'-1 1/4"	9'-1 1/4"
54"	5'-7"	9'-4"	6'-2"	2'-1"	3'-7 1/4"	10'-2 1/2"
60"	6'-2"	10'-5"	6'-9"	2'-4 1/2"	4'-1 1/2"	11'-3 1/4"
66"	6'-9"	11'-6"	7'-4"	2'-8"	4'-7 1/2"	12'-4 1/2"
72"	7'-4"	12'-7"	7'-11"	2'-11 1/2"	5'-2"	13'-5 1/2"

TYPE B

NORMAL W OR W1	MIN h	MIN H
2'-0"	2'-7 1/2"	3'-7 1/2"
2'-3"	2'-10"	3'-10"
3'-0"	3'-8"	4'-8"
3'-6 1/2"	4'-2 1/2"	5'-2 1/2"
4'-2"	4'-10"	5'-10"
4'-8 1/2"	5'-4 1/2"	6'-4 1/2"
5'-3 1/2"	5'-11 1/2"	6'-11 1/2"
5'-10"	6'-6"	7'-6"
6'-4 1/2"	7'-0 1/2"	8'-0 1/2"
6'-11"	7'-7"	8'-7"
7'-5 1/2"	8'-1 1/2"	9'-1 1/2"

DROP INLET DIMENSIONS

NOTES:
SUBGRADE TO BE COMPACTED TO 95% STANDARD PROCTOR
REINFORCEMENT STEEL TO BE PLACED TO ALLOW A MINIMUM
OF 2" CLEARANCE, EXCEPT WHERE NOTED.

REINFORCEMENT STEEL SHALL BE OF INTERMEDIATE GRADE
AND SHALL BE 0.12 SQ. IN. PER. FT. IN BOTH DIRECTIONS IN
ACCORDANCE WITH A.S.T.M. C 487-67 MANHOLE SPECIFICATIONS

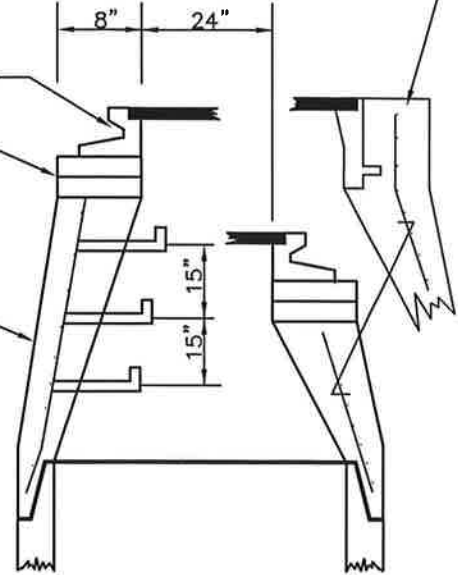
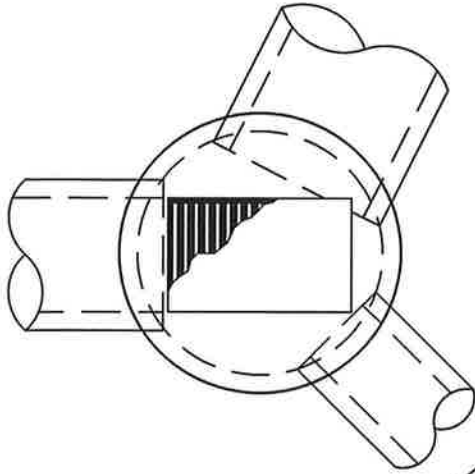
ALL CONCRETE SHALL BE 4,000 P.S.I.

STANDARD MANHOLE
FRAME AND COVER

BRICK COURSES FOR
ADJUSTMENT TO GRADE,
SHALL NOT EXCEED 3
COURSES.

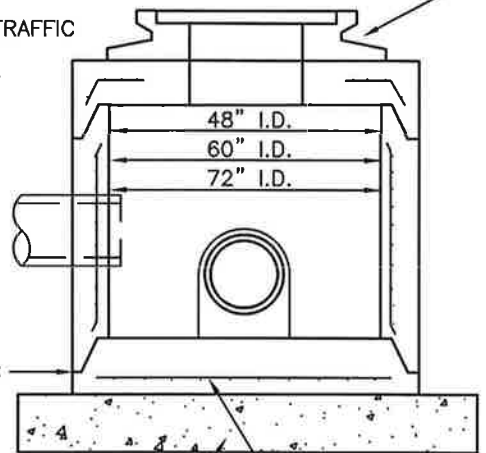
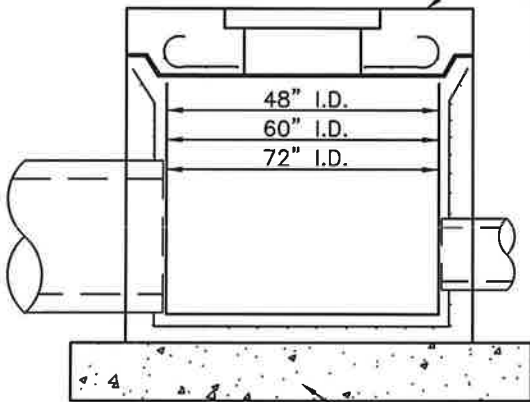
STANDARD CONE

OPTIONAL CONE WITH
CAST-IN-PLACE COVER



FLAT CONCRETE COVER
THICKNESSES
10" - HEAVY VEHICULAR TRAFFIC
8" - MODERATE TRAFFIC
6" - GRASSED OR NON-
VEHICULAR TRAFFIC.

STANDARD MANHOLE COVER
OR GRATE AND FRAME



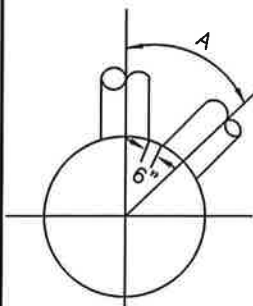
GROUT OR MASTIC
TYPE JOINT

SUBGRADE COMPACTED EARTH OR CRUSHED STONE

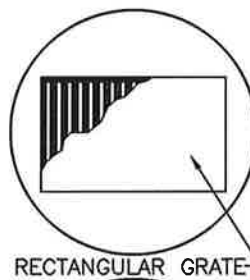
FOR USE AROUND
EXISTING PIPE

*FOR DETAILS SEE STD. NO. 405

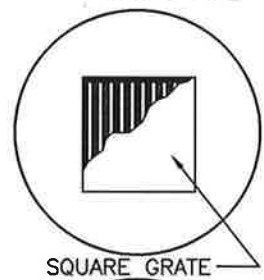
MINIMUM ANGLE-A					
4'-0" BASE		5'-0" BASE		6'-0" BASE	
PIPE SIZE	A	PIPE SIZE	A	PIPE SIZE	A
12	43°	12	40°		
15	52°	15	47°		
18	60°	18	55°		
21	67°	21	69°		
24	75°	24	70°		
		27	79°		
		30	86°		
		36	115°		
		42	140°	42	90°
				48	115°



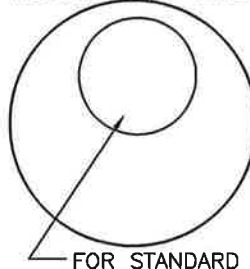
NOT TO SCALE



RECTANGULAR GRATE



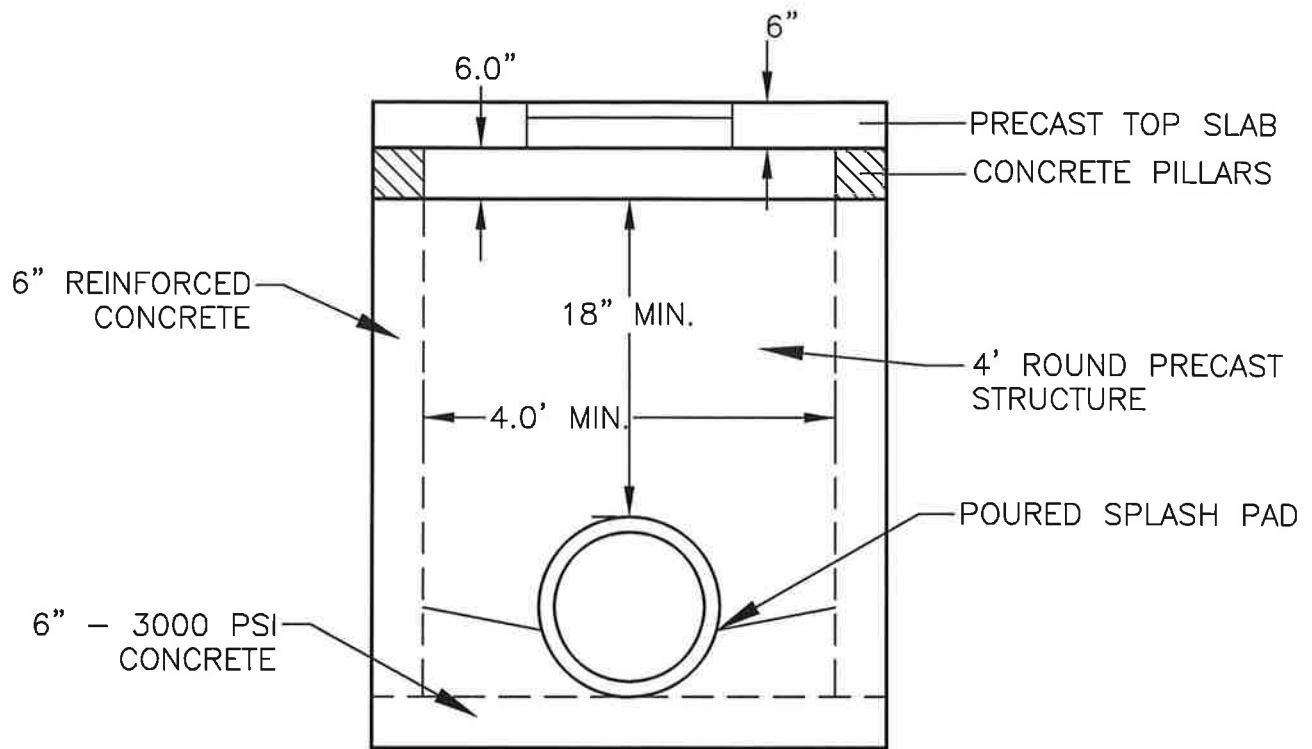
SQUARE GRATE



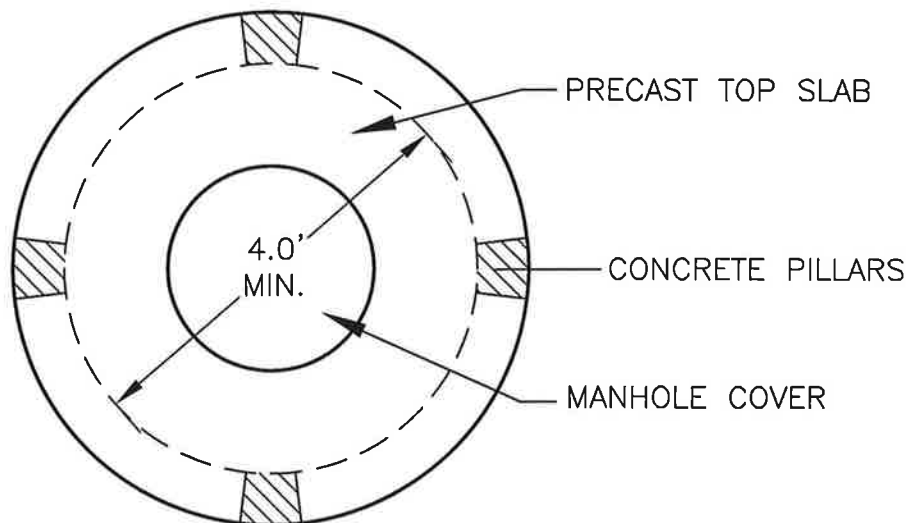
FOR STANDARD MANHOLE COVERS



STANDARD ROUND PRECAST DROP INLET & JUNCTION BOX SYSTEMS



FRONT VIEW



TOP VIEW

NOT TO SCALE

WEIR INLET DETAIL (PEDESTAL INLET)

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 254

TABLE NO. 1 (PIPE-ARCH)
TABLE SHOWING MINIMUM THICKNESS IN INCHES OF CORRUGATED STEEL AND
CORRUGATED ALUMINUM PIPE-ARCH AND MAXIMUM HEIGHTS OF FILL
ABOVE THE TOP OF THE PIPE ARCH.

DIAMETER OF PIPE OF EQUAL PERIPHERY INCH	SPAN INCH	RISE INCH	MINIMUM THICKNESS (INCHES)		MIN. COVER INCHES	MAX. HT. FILL FEET	
			COR. STEEL				CORRUGATED ALUMNIUM
			1	2			
15	17	13	0.064			18	13
					0.06	18	15
18	21	15	0.064			18	12
					0.06	18	14
21	24	18	0.064			18	10
					0.06	18	13
24	28	20	0.064			18	9
					0.06	18	11
30	35	24	0.064			18	9
					0.06	18	9
36	42	29	0.064			18	7
					0.075	18	7
	40	31		0.079		18	12
42	49	33	0.079			18	7
					0.105	18	7
	46	36	0.079	0.079		18	12
48	57	38	0.109			18	7
					0.135	18	7
	53	41		0.079		18	12
54	64	43	0.109			18	7
					0.135	18	7
	60	46		0.079		18	12
60	71	47	0.138			18	7
					0.164	18	7
	66	51		0.079		18	12
66	77	52	0.168			18	7
	73	55		0.079		18	15
72	83	57	0.168			24	8
	81	59		0.079		24	15
78	87	63		0.079		24	14
84	95	67		0.109		24	12
90	103	71		0.109		24	11

① DENOTES 2 2/3" X 1/2" CORRUGATION

② DENOTES 3" X 1" CORRUGATION -- OR 125MM X 25MM CORRUGATION.

* ALL CORRUGATED METAL PIPE MUST HAVE A BITUMINOUS OR ALUMINIZED COATING.

CORRUGATED METAL PIPE ARCH

PIPE CULVERT MATERIAL ALTERNATES

TYPE OF PIPE INSTALLATION			C O N C R E T E	CORRUGATED STEEL AASHTO M-36		PLASTIC					
				ALUM. COATED (TYPE 2) CORR. STEEL	PLAIN ZINC COATED	PLAIN UNCOATED ALUM.	CORR. POLY- ETHYLENE AASHTO M-252	CORR. POLY- ETHYLENE SMOOTHED LINED AASHTO M-S94 TYPE "S"	POLY VINYL CHLORIDE (PVC) PROFILE WALL AASHTO M-304	POLY VINYL CHLORIDE (PVC) CORRUGATED SMOOTH INTERIOR ASTM F949	
S T O R M D R A I N	LONGITUDINAL INTERSTATE AND TRAVEL BEARING		X								
	LONGITUDINAL NON- INTERSTATE AND NON-TRAVEL BEARING		X					X	X	X	
	C R O S S D R A I N	GRADE ≤ 10%	ADT<250	X					X	X	X
			250<ADT <1,500	X					X	X	X
			1,500<ADT <15,000	X					X	X	X
			ADT>15,000	X							
	GRADE >10%	ADT<250						X	X	X	
		ADT>250						X	X	X	
SIDE DRAIN			X					X	X	X	
PERMANENT SLOPE DRAIN				X	X	X		X	X	X	
PERFORATED UNDERDRAIN				X	X	X	X	X		X	

THIS TYPE PIPE CAN BE USED IF THE ADDITION OF TYPE "B" COATING (AASHTO M-190, HALF BITUMINOUS COATED WITH PAVED INVER) IS UTILIZED.

NOTE:

- 1) ALLOWABLE MATERIALS ARE INDICATED BY AN "X"
- 2) STRUCTURAL REQUIREMENTS OF STORM DRAIN PIPE WILL BE IN ACCORDANCE WITH GEORGIA STANDARD 1030-D OR 1030-P, WHICHEVER IS APPLICABLE, AND THE STANDARD SPECIFICATIONS.
- 3) GRADED AGGREGATE BACKFILL SHALL BE USED IN CROSS DRAIN APPLICATIONS FOR ALL PLASTIC PIPES (AASHTO M-294, HDPE PIPE; AASHTO M-304, PVC PIPE; ASTM F-949, PVC PIPE).

PIPE CULVERT MATERIAL ALTERNATES

TABLE NO. 2

TABLE SHOWING MINIMUM CLASSES OF CONCRETE PIPE AND THICKNESS IN INCHES OF CORRUGATED STEEL PIPE AND CORRUGATED ALUMINUM PIPE FOR VARIOUS HEIGHTS OF FILL ABOVE TOP OF PIPE

PIPE DIAMETER (INCHES)	PIPE CHARACTERISTIC		**HEIGHT (OF FILL IN FEET ABOVE TOP OF PIPE)															
			CONCRETE	COR. ST. ①	COR. ST. ②	COR. AL.	1'-10'	10'-15'	15'-20'	20'-25'	25'-30'	30'-35'	35'-40'	40'-50'	50'-60'	60'-70'	70'-80'	80'-90'
12	●		●				III	III	IV	V	V	V	V	V	V	V	V	
				●			0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079
15	●		●			●	III	III	IV	V	V	V	V	V	V	V	V	
				●			0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079	0.109
18	●		●			●	III	III	IV	V	V	V	V	V	V	V	V	
				●			0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079	0.109
24	●		●			●	III	III	IV	V	V	V	V	V	V	V	V	
				●			0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079	0.109
30	●		●			●	III	III	IV	V	V	V	V	V	V	V	V	
				●			0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079	0.109
36	●		●			●	III	III	IV	V	V	V	V	V	V	V	V	
				●			0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079	0.109
42	●		●			●	III	III	IV	V	V	V	V	V	V	V	V	
				●			0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079	0.109
48	●		●			●	III	III	IV	V	V	V	V	V	V	V	V	
				●			0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079	0.109
54	●		●			●	III	III	IV	V	V	V	V	V	V	V	V	
				●			0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079	0.109
60	●		●			●	III	III	IV	V	V	V	V	V	V	V	V	
				●			0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079	0.109

TABLE NO. 2																			
TABLE SHOWING MINIMUM CLASSES OF CONCRETE PIPE AND THICKNESS IN INCHES OF CORRUGATED STEEL PIPE AND CORRUGATED ALUMINUM PIPE FOR VARIOUS HEIGHTS OF FILL ABOVE TOP OF PIPE																			
PIPE DIAMETER (INCHES)	PIPE CHARACTERISTIC				**HEIGHT (OF FILL IN FEET ABOVE TOP OF PIPE)														
	CONCRETE	COR. ST. ①	COR. ST. ②	COR AL	1'-10'	10'-15'	15'-20'	20'-25'	25'-30'	30'-35'	35'-40'	40'-50'	50'-60'	60'-70'	70'-80'	80'-90'			
66	●				III	III	IV	V	V	V	V	V	V	V	V				
		●			0.109	0.109	0.109*	0.109*	0.138*	0.138*									
			●	●	0.064	0.064	0.079	.168-.109*	0.109*	0.109*	0.168*								
72	●				III	III	IV	V	V	V	V	V	V	V	V				
		●			0.138	0.138	0.138*	0.138*	0.168*	0.168*									
			●	●	0.079	0.079	0.079	0.109*	0.109*	0.109*									
78	●			●	0.164	0.164		V	V	V	V	V	V						
		●			III	III	IV	V	V	V	V	V	V						
			●	●	0.168	0.168	0.168*	0.168*	0.109*	0.168*									
84	●				0.079	0.079	.109-.079*	0.109*	0.109*	0.168*									
		●			III	III	IV	V	V	V	V	V	V						
			●	●	0.168	0.168	0.168*	0.109*	0.138*										
90	●				0.079	0.079													
					III	III													
			●	●	0.079	0.079	.168-.109*	0.109*	0.168*										
96	●				0.109	0.109	.168-.109*	0.109*	0.109*										
			●		III	III													
					0.109	0.109	0.109*	0.138*											
102	●				0.109	0.109													
					III	III													
			●	●	0.109	0.109	0.109*	0.138*											
108	●				0.109	0.109													
					III	III													
			●	●	0.109	0.109	0.109*	0.168*											
114					0.138	0.138	0.138*												
			●	●															
120					0.138	0.138	0.138*												
			●	●															

① DENOTES 2 3/4" (MAX.) X 7/16" (MIN.) CORRUGATION

② DENOTES 3" (MAX.) X 1" (MIN.) CORRUGATION

* DENOTES CIRCULAR CROSS SECTION FACTORY ENLONGATED ON
VERTICAL AXIS 5% + NORMAL DIAMETER

- **1. ALL CONCRETE SIDE DRAIN PIPE SHALL BE CLASS II FOR FILL UP
TO 10 FT. CLASS II PIPE FOR SIDE DRAINS MAY BE NON-REINFORCED
FOR DIAMETERS OF 12" THROUGH 24". FOR FILLS GREATER THAN 10'
USE CLASS OF PIPE SHOWN IN TABLE NO. 1 ON DWG NO. 302.
2. ONLY ONE CLASS OR THICKNESS OF PIPE WILL BE SPECIFIED FOR
INDIVIDUAL LOCATION. THE CLASS OR THICKNESS WILL BE
DETERMINED BY THE MAXIMUM HEIGHT OF FILL.
3. WHERE CONCRETE PIPE IS SPECIFIED SEE STD. 320
4. TABLE 1 APPLIES TO SLOPE DRAIN AND STORM DRAIN PIPE.
5. FORSYTH COUNTY STANDARDS PROHIBITS FILL GREATER THAN 15' ABOVE CMP.

TABLE

CONVERSION OF NORMAL GAUGE
TO THICKNESS (INCHES)

GAGE NO.	16	14	12	10	8
GALVANIZED THICKNESS*	0.064	0.079	0.109	0.138	0.168

*ALSO KNOWN AS SPECIFIED THICKNESS.

NOTE: PIPE THINNER THAN 16 GAGE IS NOT ACCEPTABLE TO FORSYTH CO. OR GA. D.O.T.

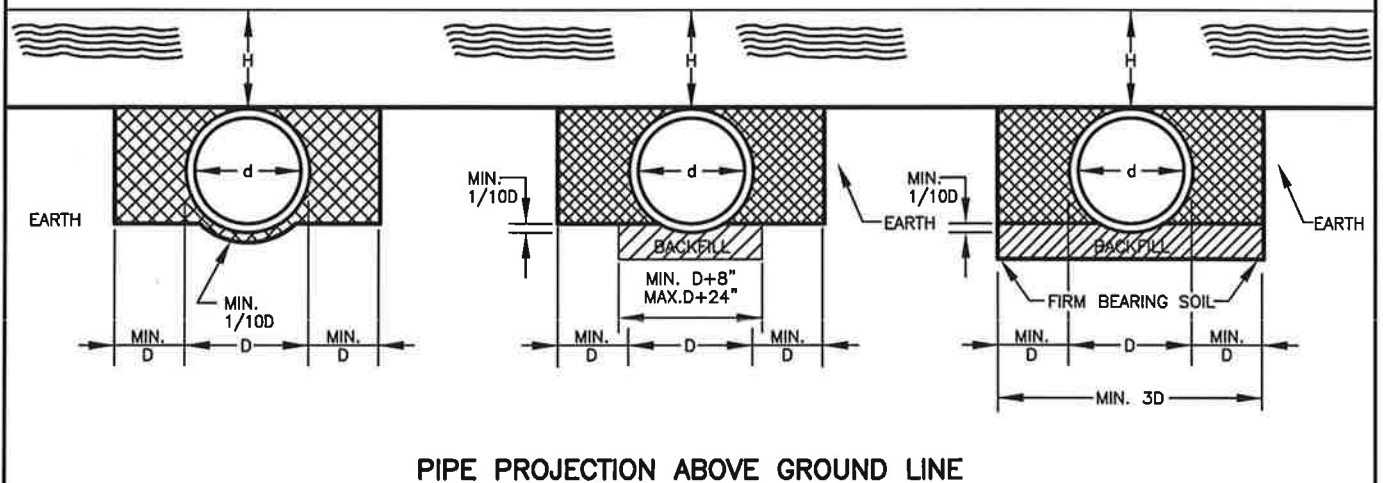
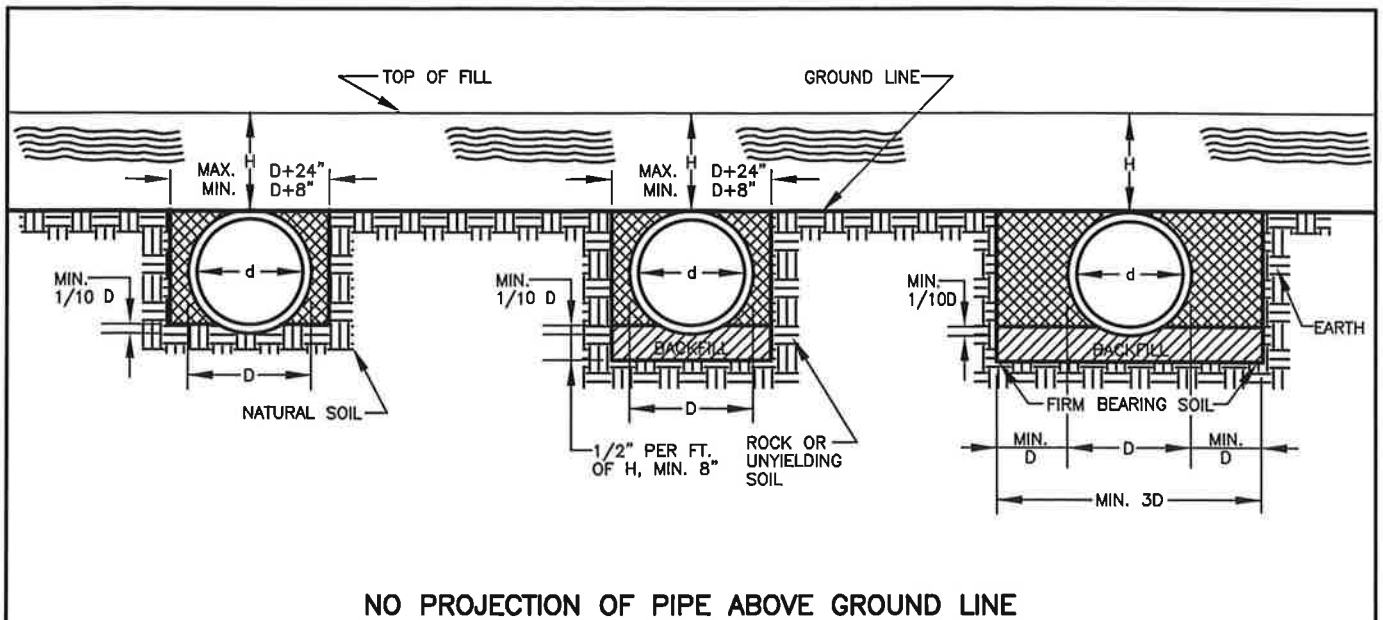
SHEET 3 OF 3

METAL AND CONCRETE CIRCULAR PIPE

REV: 06-19-08

FORSYTH COUNTY DEPARTMENT OF ENGINEERING

STD. NO. 312



NOT TO SCALE

PIPE BEDDING METHODS