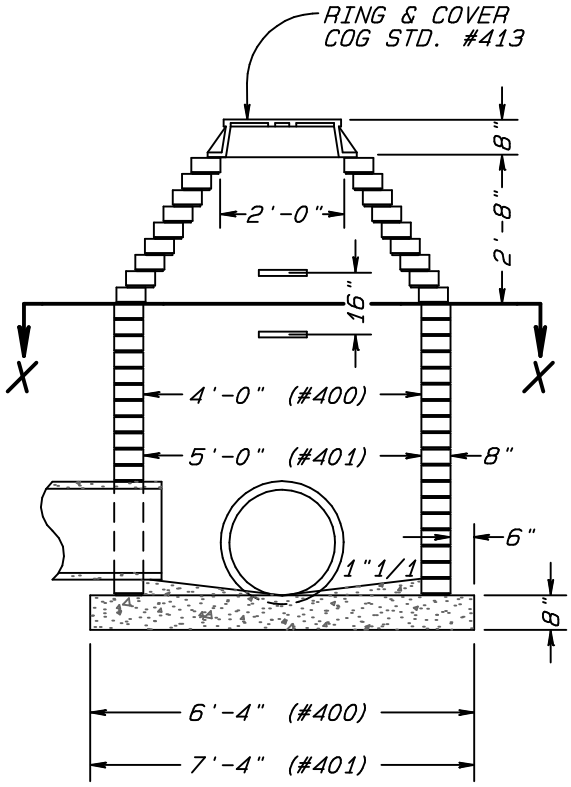
Roadway Standard Drawings - Index to Drawings

No.	Description	Revised
400	4' Diameter Brick Masonry Storm Sewer Manhole	Aug 2014
401	5' Diameter Brick Masonry Storm Sewer Manhole	Aug 2014
402	4'-6" Brick Masonry Curb Inlet	Dec 2009
403	6' Brick Masonry Curb Inlet	Dec 2009
404	Offset Curb Inlet	June 2008
405	20" x 26" Grate and Frame (Heavyweight)	Aug 2008
406	24" x 24" Grate and Frame (Lightweight)	Aug 2008
407	24" x 24" Grate and Frame (Heavyweight)	Aug 2008
408	5" x 12" Steel Flume	June 1999
409	Brick Masonry Drop Inlet for 20" x 26" Grate	Dec 2007
410	Brick Masonry Drop Inlet for 24" x 24" Grate	Dec 2007
411	Inlet Ring and Cover	Mar 2008
412	Pre-cast Concrete Curb Inlet Top	Sept 2008
412-A	Reinforced Nose Plate for Curb Inlet Top	n/a
413	Manhole Ring and Cover	Jun 2013
414	Plastic Step for Brick Masonry Structures	Mar 2001
415	Concrete Encasement for Manhole and Valve Castings in Pavement	June 2004
416	Typical Walk And Residential Driveway Section For Curb And Gutter Streets	Mar 2020
416-A	Driveway Section, Commercial	Dec 2012
416-B	Driveway – Commercial Street Type	Dec 2012
417	Concrete Steps And Buttress Walls	n/a
418	Concrete Curb Ramp	Mar 2012
418-A	Sidewalk Standard For Use With Typical Street Sections	Jun 2013
419	Pipe Collar	n/a
420	Conversion Top Curb And Drop Inlets To Junction Box	Sept 2011
420-A	Conversion For Curb Inlet To Junction Box	Mar 2001
420-B	Inlet Conversion For Drive Entrance Storm Sewer Pipe Parallel To Curb	n/a

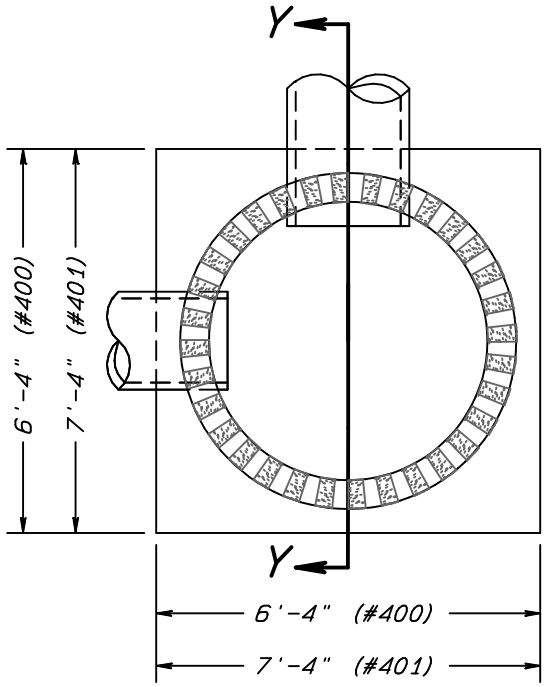
Roadway Standard Drawings - Index to Drawings		
No.	**Description**	**Revised**
420-C	Inlet Conversion For Drive Entrance Storm Sewer Pipe Perpendicular to Curb	n/a
421	Dead End Street Erosion Control Device	Sept 2010
422	Pipe Outlet Erosion Control Device	March 1997
423	Pavement Repair For Pipe/Utility Placed Under Existing Pavement (Roadway)	Mar 2018
423-A	Pavement Repair For Pipe/Utility Placed Under Existing Pavement (Asphalt Drives)	Mar 2018
424	4' x 4' Brick Masonry Yard Inlet	Dec 2007
425	4' x 4' Pre-cast Concrete Yard Inlet Cover With Ring & Cover	Dec 2007
426	Sub-drain Fabric Installation	Aug 2002
427	Brick Masonry Curb Inlet For Medians	Aug 2002
428	Pre-cast Concrete Curb Inlet Top To Be Used With Cog Std. #427	n/a
429	Brick Masonry Pipe Plug	n/a
430	Silt Fence Detail	Mar 2009
431	Stormwater Inlet Protection Measures	Dec 2006
432	Temporary Stone Ditch Check	Sept 2010
433	Temporary Silt Check Dam, Type A	Sept 2010
434	24" x 36" Grate And Frame (Heavyweight)	Aug 2008
435	Brick Masonry Drop Inlet For 24" X 36" Grate	Dec 2007
436	Temporary Construction Entrance Detail (City Requirements)	Mar 2009
436-A	Temporary Construction Entrance Detail (State Requirements)	Mar 2009
436-B	Temporary Construction Entrance Detail (Residential Sites)	Mar 2009
437	Pipe Under-drain	n/a
438	6' x 6' Brick Masonry Yard Inlet	Dec 2007
439	6' x 6' Pre-cast Concrete Yard Inlet Cover With Ring & Cover	Dec 2007
440	Temporary Earth Berm	n/a
441	5' x 5' Brick Masonry Yard Inlet	Dec 2007
442	5' x 5' Pre-cast Concrete Yard Inlet Cover With Ring & Cover	Dec 2007
443	Partially Installed Storm Sewer Protection	June 2005

Roadway Standard Drawings - Index to Drawings		
No.	**Description**	**Revised**
443-A	Inlet Protection For F.E.S.	June 2005
444	Typical Under Drain Detail for Grass Median	June 2007
446	Safety Fence for Pedestrians with Handrail Option	Mar 2015
446-A	Safety Fence for Pedestrians with Handrail Option (for use in areas with line of sight issues)	Mar 2015
447	Concrete Gravity Retaining Wall	Mar 2012
448	Tree Protection Detail	Mar 2010
449	Storm Drainage Pipe Reinforced Concrete	Sept 2008
450	Sediment Control Log for Existing Curb Inlet Next to Traffic	Mar 2009
451	Bus Stop Detail – With Shelter	Dec 2011
452	Bus Stop Detail – Without Shelter	Dec 2011
453	Rock Pipe Inlet Protection	June 2009
454	Water Bar Detail (Right-of-Way Diversion)	June 2009
455	Connection for HDPE Pipe to RC Flared End Sections	Mar 2010
456	Soil Tight Connection for HDPE Pipe to Drainage Structures	Mar 2010
457	Wattle with Polyacrylamide (PAM)	Dec 2010
458	Water Valve Box and Extension in Roadway	Mar 2015
459	Greenway Trail – Asphalt	Jan 2019
460	Greenway Trail – Concrete	June 2016
461	Accessible Passenger Loading Zone for Mailbox Cluster Box Units	Sep 2020
500	6" x 12" Concrete Parking Curb	n/a
501	Concrete Curb And Gutter	March 2001
502	Turn Around Area For Dead End Street	Mar 2018
502-A	Turn Around Area For Dead End Street (Alternate)	Mar 2018
503	Cul-De-Sacs	Jan 1991
504	Cold Milling Section (Curb Reveal)	n/a
600	Street Section 24' Face To Face	Mar 2018
601	Street Section 26' Face To Face	Mar 2018
603	Street Section 30' Face To Face	Mar 2018
605	Street Section 36' Face To Face	Mar 2018

Roadway Standard Drawings - Index to Drawings		
No.	**Description**	**Revised**
606	Street Section 40' Face To Face	Mar 2018
608	Street Section 48' Face To Face Street Section	Mar 2018
609	Typical Non-Curb And Gutter Subdivision Street	Mar 2018
610	Street Widening Sections, 30’ to 60’ Face to Face	Mar 2018
610-A	Street Widening Sections, Curb and Gutter One Side Only	Mar 2018
611	Typical Residential Street Section Ribbon Pavement With Sidewalk	Mar 2018



SECTION ON CENTERLINE



SECTION X-X

NOTES:

THIS STANDARD DRAWING APPLIES TO BOTH BRICK AND PRECASE CONCRETE MANHOLES.

COG STD. #400 MANHOLE IS FOR PIPE SIZES 12" THRU 30" (DIA.) .

COG STD. #401 MANHOLE IS FOR PIPE SIZES 36" & 42" (DIA.).

FOR PIPE SIZES 48" DIA. OR LARGER, BRICK OR PRECAST CONCRETE MANHOLES ARE TO BE OF ADEQUATE DIAMETER TO ACCEPT THE PIPE SIZES. CALLOUT THE DIAMETER ON THE PLAN & PROFILE DWG.

WITHIN THE RIGHT OF WAY, BRICK CORBELLING OR PRECAST CONCRETE CONE SECTIONS ARE TO BE USED. FLAT TOP MANHOLES ARE NOT ALLOWED IN THE RIGHT OF WAY. OUTSIDE THE RIGHT OF WAY, FLAT TOPS ARE ALLOWED ONLY IF NECESSARY BECAUSE OF UNAVOIDABLE SHALLOW PIPE DEPTH.

COG STD #411 OR #413 RING AND COVERS ARE REQUIRED ON ALL MANHOLES ON PUBLIC LINES.

ALL MORTAR JOINTS ARE TO BE 1/2"± 1/8".

CONCRETE IS TO BE CLASS B, 2500 PSI FOR BASE.

JUMBO BRICK WILL BE PERMITTED. CONCRETE BRICK OR 4" SOLID CONCRETE BLOCKS MAY BE USED IN LIEU OF CLAY BRICK.

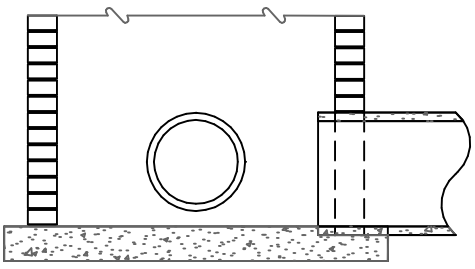
MANHOLES OVER 3'-6" IN DEPTH SHALL BE PROVIDED WITH STEPS 16" ON CENTERS. STEPS SHALL BE IN ACCORDANCE WITH COG STD. #414.

FOR MANHOLES WITH A VERTICAL WALL DEPTH LESS THAN 12'-0", BRICK MASONRY WALL THICKNESS SHALL BE 8".

FOR MANHOLES OVER 12'-0" VERTICAL WALL DEPTH, BRICK MASONRY WALL THICKNESS SHALL BE 1'-0" BEGINNING AT 12'-0" DEPTH.

WHEN CONSTRUCTING THIS STRUCTURE OVER AN EXISTING PIPE LINE, SAW CUT AND REMOVE A SECTION OF PIPE EQUAL TO THE INSIDE DIAMETER OF THE STRUCTURE. POUR A NEW BOTTOM AS SHOWN AND CONSTRUCT THE NEW STRUCTURE. NEW STRUCTURES ARE NOT TO BE BUILT ON TOP OF THE PIPE.

SPECIAL SITUATIONS OTHER THAN DESCRIBED ON THIS DRAWING ARE TO BE APPROVED BY THE STORMWATER MANAGEMENT DIVISION OR THE ENGINEERING DIVISION.

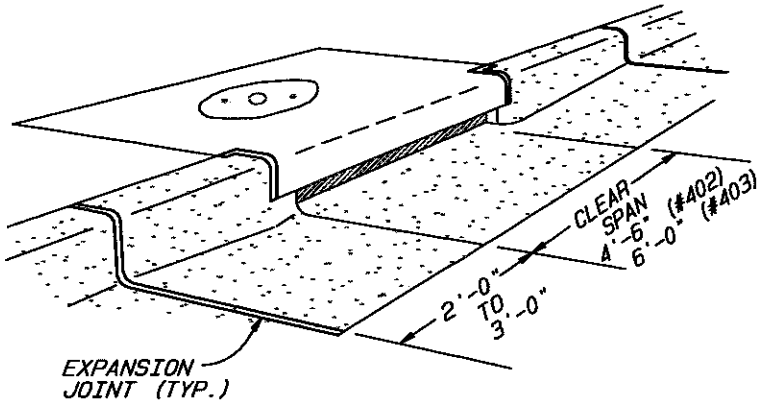


PART SECTION Y-Y

CITY OF GREENSBORO

STANDARD BRICK MASONRY STORM SEWER MANHOLE

STD. NO.	REV.
400 / 401	09-95 06-07 06-99 08-14 08-02



NOTES:

ALL MORTAR JOINTS ARE TO BE 1/2" ± 1/8".

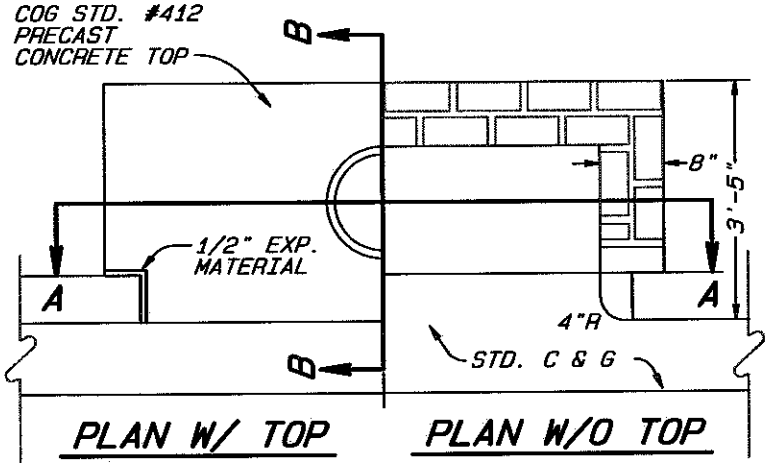
BRICK MASONRY CAN BE STANDARD CLAY BRICK, JUMBO BRICK OR CONCRETE BRICK.

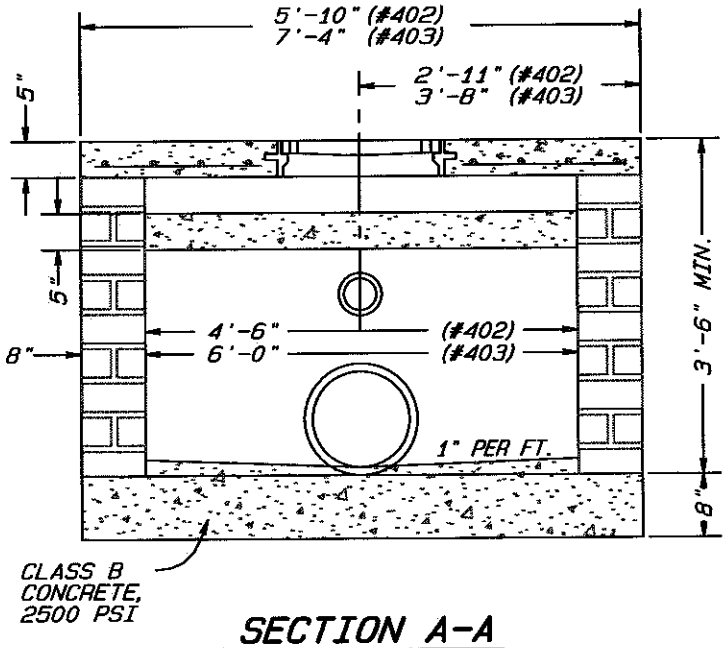
FOR DEPTHS OVER 3'-6" USE STEPS ON 16" CENTERS. STEPS SHALL BE IN ACCORDANCE WITH COG STD. #414.

WHEN CONSTRUCTING THE STRUCTURE OVER AN EXISTING PIPE LINE, SAW CUT AND REMOVE A SECTION OF PIPE EQUAL TO THE INSIDE DIAMETER OF THE STRUCTURE. POUR A NEW BOTTOM AS SHOWN AND CONSTRUCT THE NEW STRUCTURE. NEW STRUCTURES ARE NOT TO BE BUILT ON TOP OF THE PIPE.

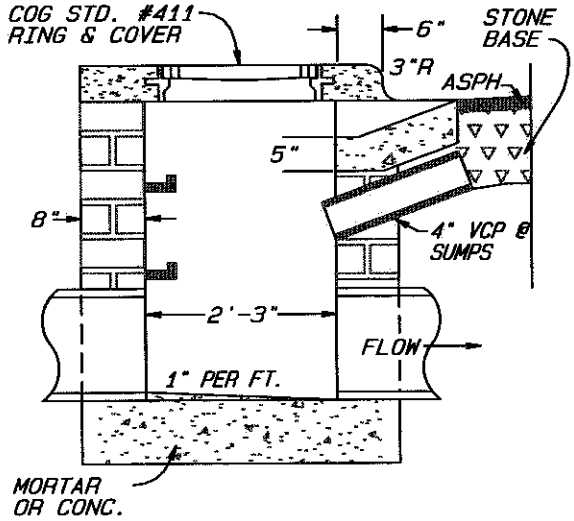
THIS STANDARD DRAWING ALSO APPLIES TO PRECAST CONCRETE CURB INLETS. THE USE OF PRECAST CONCRETE INLETS IS SUBJECT TO THE "POLICY STATEMENT FOR THE USE OF PRECAST CONCRETE DRAINAGE STRUCTURES IN CITY MAINTAINED STORM SEWER SYSTEMS" AVAILABLE IN THE REVISED "2007 STORM DRAINAGE DESIGN MANUAL" ON THE STORMWATER MANAGEMENT WEBSITE.

FOR PRECAST CONCRETE MODELS OF THIS STRUCTURE, THE MANUFACTURER SHALL STAMP OR STENCIL ITS LOGO OR NAME ON THE INSIDE AND OUTSIDE OF THE STRUCTURE.





SECTION A-A

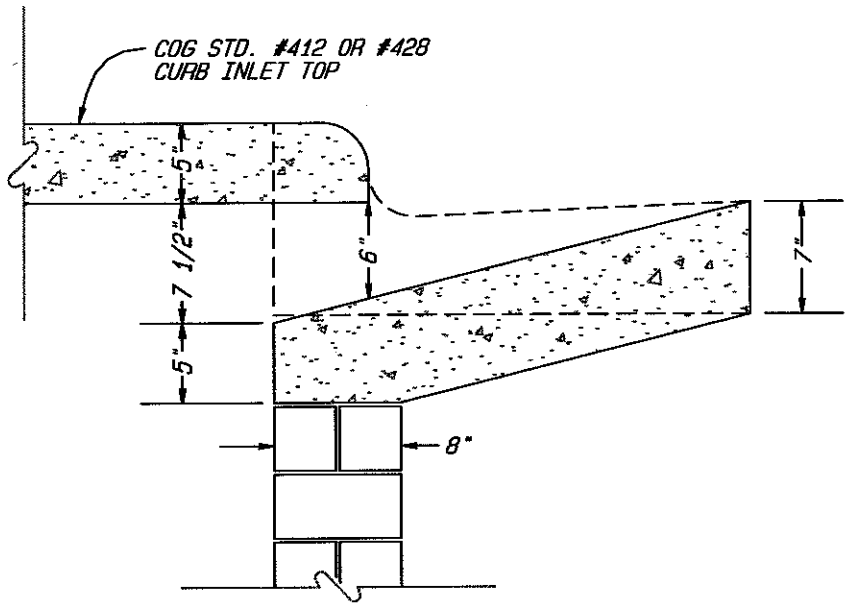


SECTION B-B

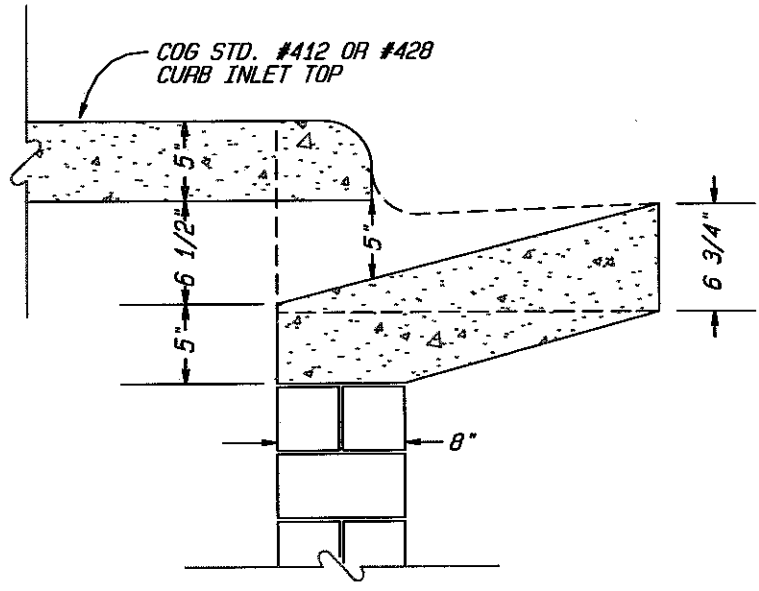
CITY OF GREENSBORO

STANDARD BRICK MASONRY CURB INLET

STD. NO.	REV.
402 / 403	06-99 12-07 08-02 3-08 06-07 12-09



STANDARD CURB INLET THROAT
FOR 2'-6" CURB & GUTTER



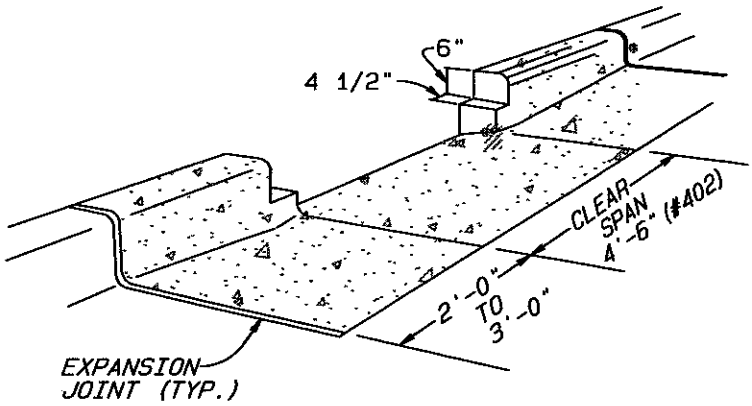
STANDARD CURB INLET THROAT
FOR 2'-0" CURB & GUTTER

CITY OF GREENSBORO

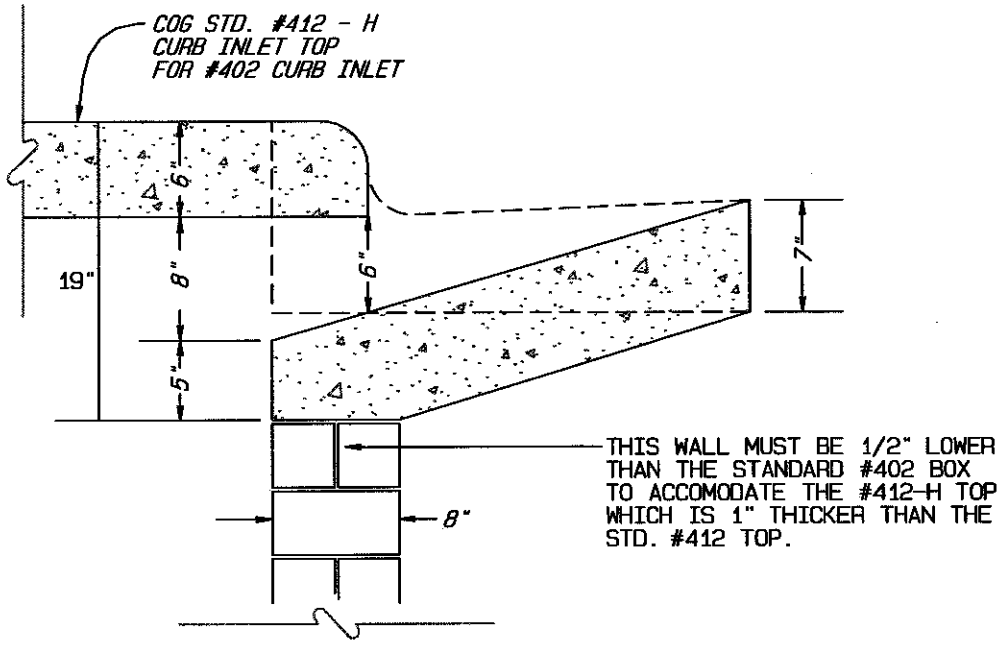
STANDARD BRICK MASONRY CURB INLET (THROAT)

STD. NO.	REV.
402/403	06-99 12-07 08-02 3-08 06-07 12-09

REQUIRED MODIFICATIONS TO COG #402 CURB INLET TO ACCOMODATE COG #412-H TOP



CURB NOTCH MODIFICATIONS FOR 412-H TOP

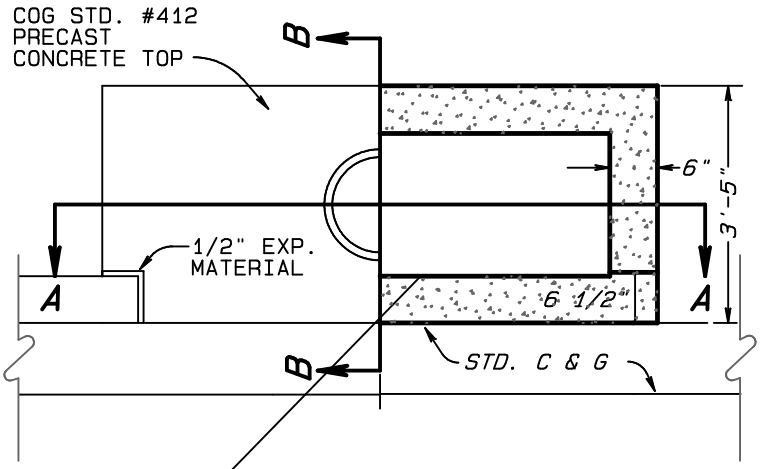


#402 CURB INLET THROAT MODIFICATIONS TO ACCOMODATE THE #412-H TOP

412-H IS FOR USE AT COMMERCIAL AND INDUSTRIAL INTERSECTIONS WHERE THERE IS THE POTENTIAL FOR HEAVY TRUCK TRAFFIC.
BECAUSE OF THE THICKER TOP, THIS DETAIL SHOWS MODIFICATIONS THAT MUST BE MADE TO STD. #402 AND CURB AND GUTTER TO ACCOMODATE THE THICKER TOP.

CITY OF GREENSBORO

STANDARD BRICK MASONRY CURB INLET (THROAT)	STD. NO.	REV.
	402 / 403	06-99 12-07 08-02 3-08 06-07 12-09



WHEN INSTALLING THE INLET BOX, THE INSIDE FACE OF THE FRONT WALL IS TO LINE UP WITH THE BACK OF CURB.

NOTES:

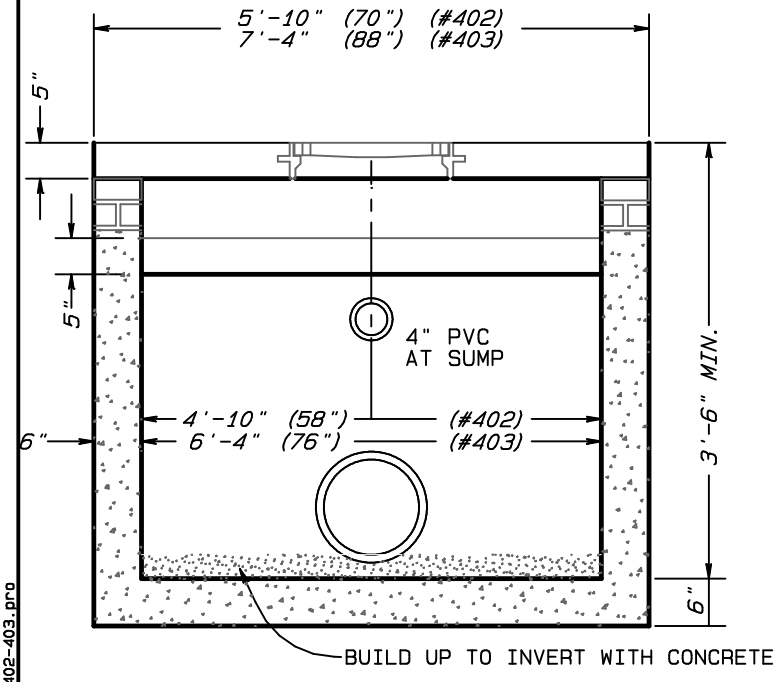
THE USE OF PRECAST CONCRETE CURB INLETS IS SUBJECT TO THE "POLICY STATEMENT FOR THE USE OF PRECAST CONCRETE DRAINAGE STRUCTURES IN CITY MAINTAINED STORM DRAINAGE SYSTEMS" AVAILABLE IN THE REVISED "2007 STORM DRAINAGE DESIGN MANUAL" ON THE STORMWATER MANAGEMENT WEBSITE.

CONSTRUCTION AND USE OF PRECAST CONCRETE STRUCTURES SHALL ADHERE TO ALL PERTINENT REQUIREMENTS OF THE STANDARD #402/403 BRICK MASONRY STRUCTURES.

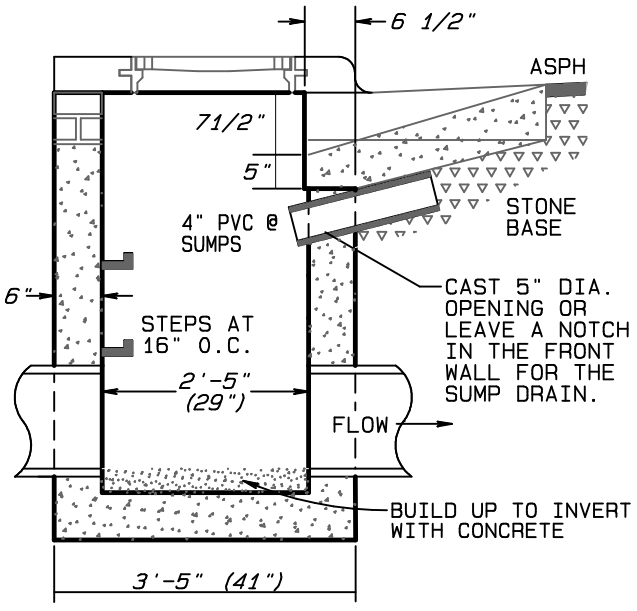
STEEL DESIGN IS NOT SHOWN ON THIS DRAWING. STEEL DESIGN IS THE RESPONSIBILITY OF THE MANUFACTURERS ENGINEER AND SHALL BE SHOWN ON SEALED SHOP DRAWINGS SUBMITTED FOR APPROVAL FOR USE IN THE CITY OF GREENSBORO DRAINAGE INFRASTRUCTURE.

FOR PRECAST CONCRETE MODELS OF THIS STRUCTURE, THE MANUFACTURER SHALL STAMP OR STENCIL ITS LOGO OR NAME ON THE INSIDE AND OUTSIDE OF THE STRUCTURE.

PRECAST STRUCTURE SHOULD BE SET APPROXIMATELY 2 FT LOW AND BROUGHT UP TO FINAL GRADE USING BRICK MASONRY.



SECTION A-A

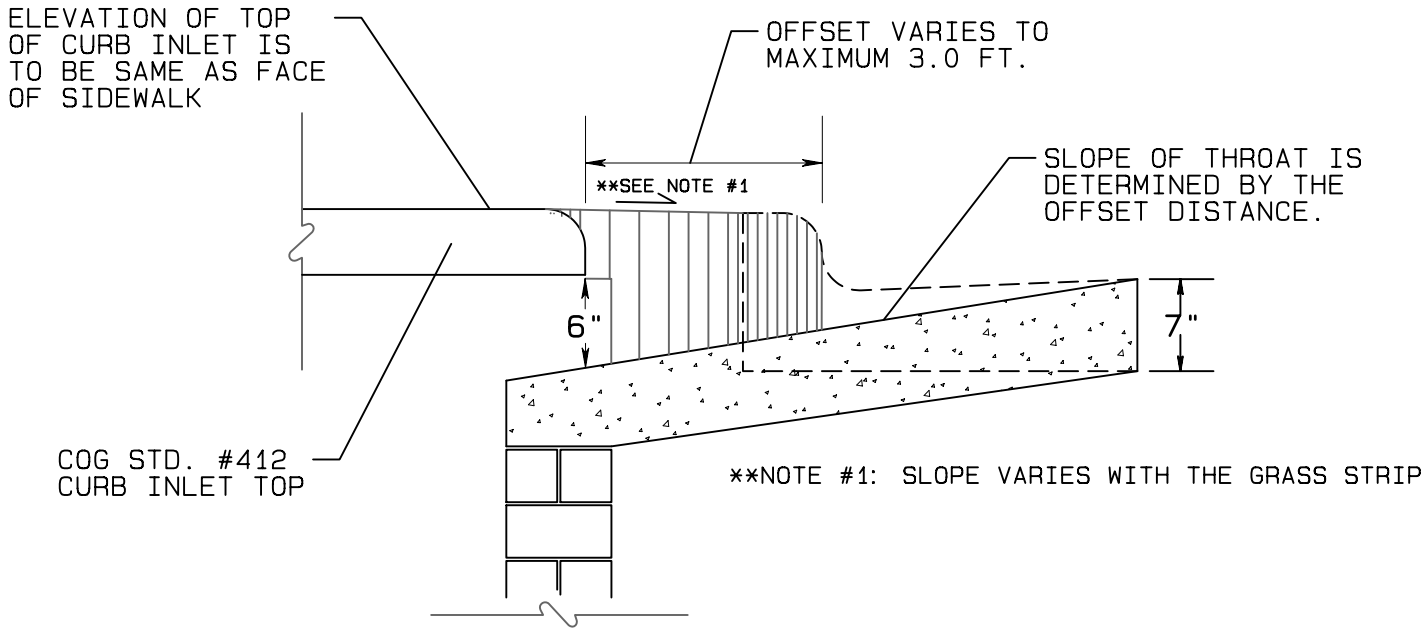


SECTION B-B

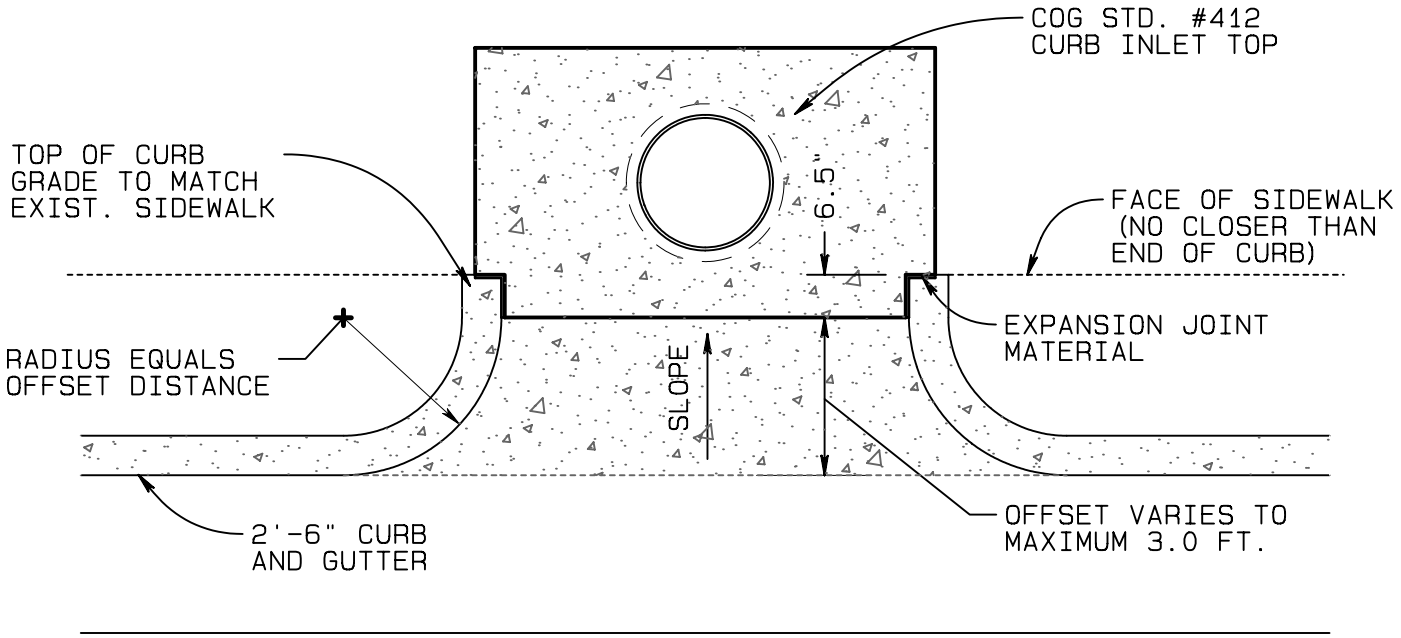
CITY OF GREENSBORO

STANDARD PRECAST CONCRETE CURB INLET

STD. NO.	REV.
402 / 403	06-99 12-07 08-02 3-08 06-07 12-09



TYPICAL CROSS SECTION



PLAN VIEW

NOTES:

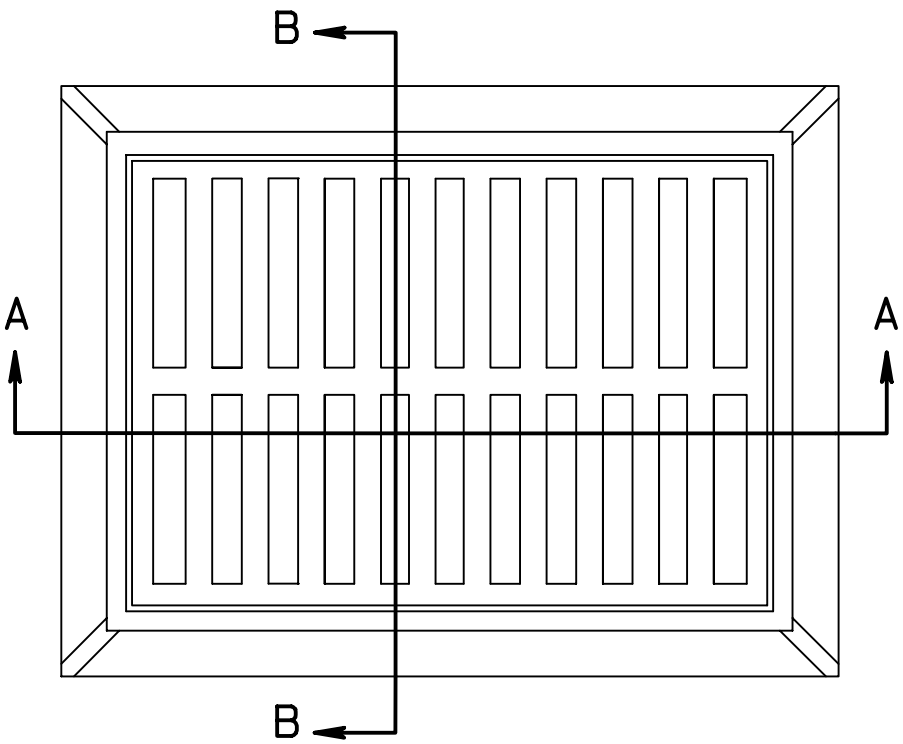
1. *THIS STANDARD SHALL ONLY BE USED WHEN THERE ARE UNDERGROUND UTILITIES THAT PROHIBIT THE STANDARD PLACEMENT OF THE CURB INLET.*
2. *PRIOR APPROVAL BY THE CITY OF GREENSBORO STORMWATER MANAGEMENT DIVISION OR ENGINEERING DIVISION IS REQUIRED FOR THE USE OF THIS STANDARD.*

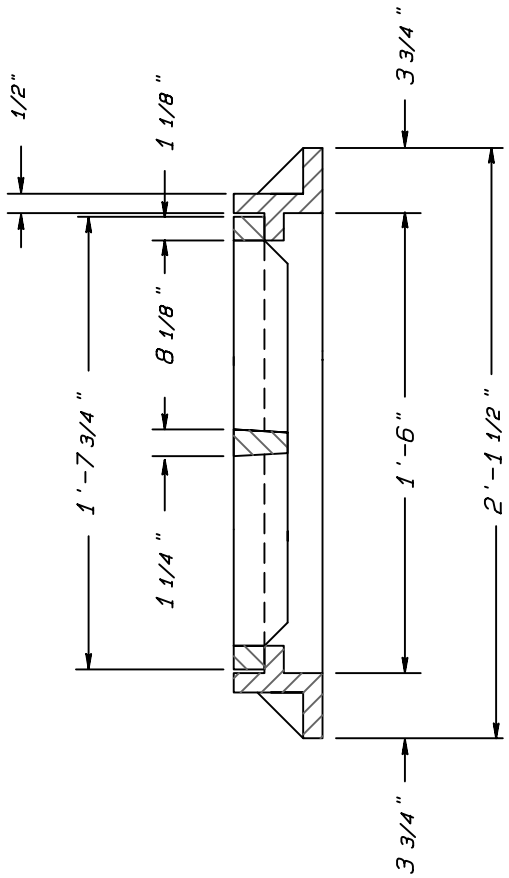
CITY OF GREENSBORO

OFFSET CURB INLET

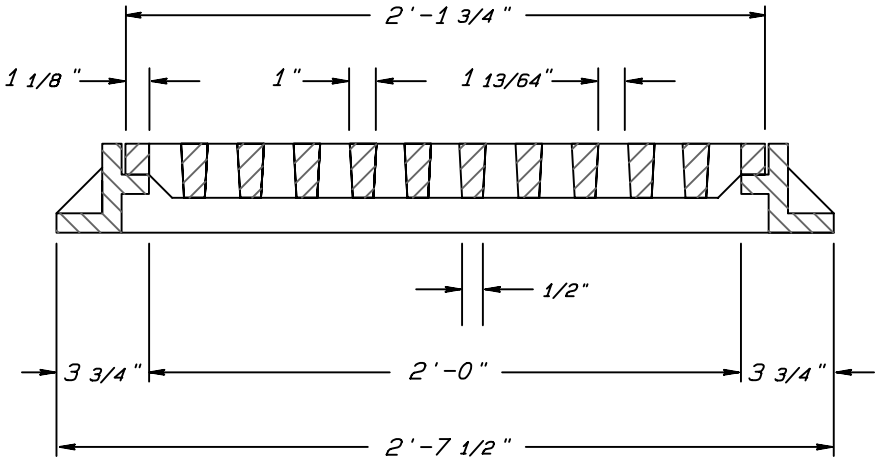
STD. NO.	REV.
404	06-08

FRAME = 240 lbs.
GRATE = 110 lbs.

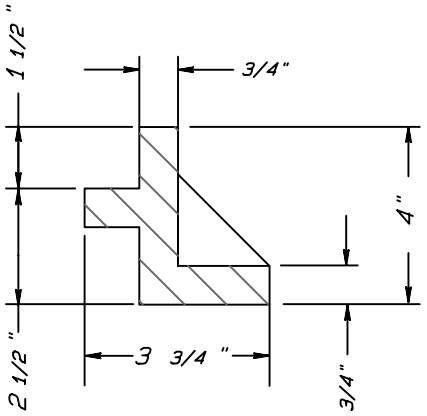




SECTION B-B



SECTION A-A



FRAME DETAIL

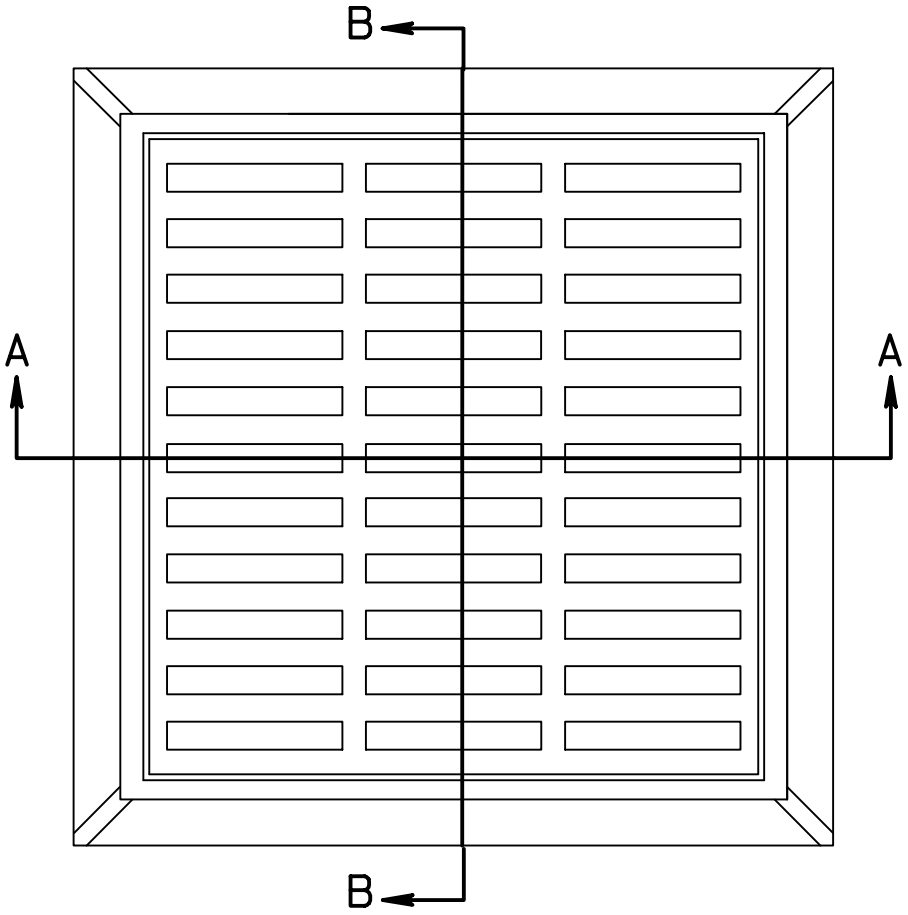
HEAD	CAPACITY
1"	1.4 cfs
3"	2.4 cfs
6"	3.4 cfs
9"	4.2 cfs
12"	4.8 cfs

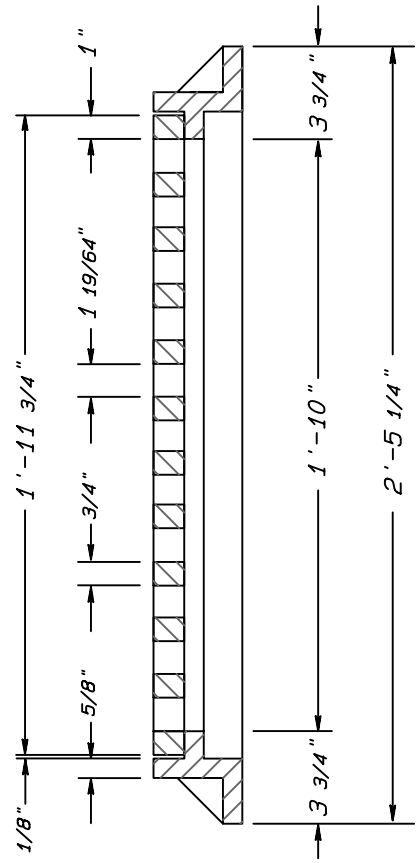
V-5654

CITY OF GREENSBORO

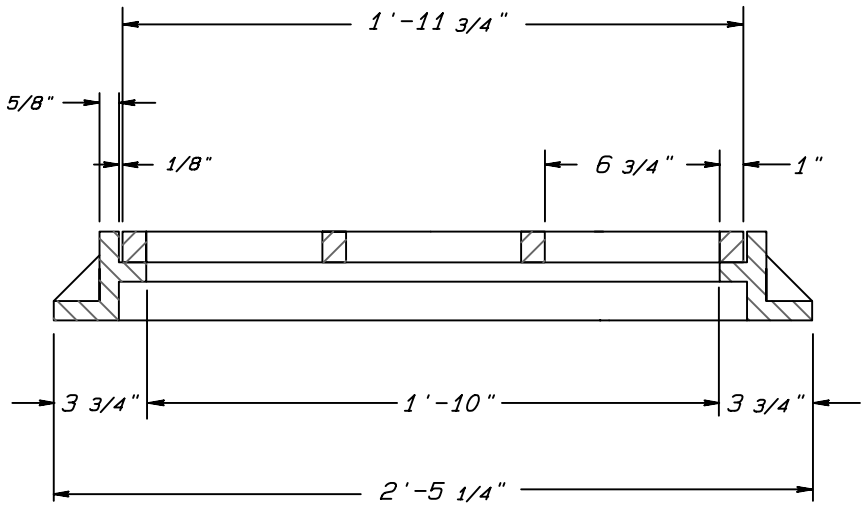
STANDARD 20" X 26" GRATE AND FRAME (HEAVYWEIGHT)

STD. NO.	REV.
405	01-97 08-08

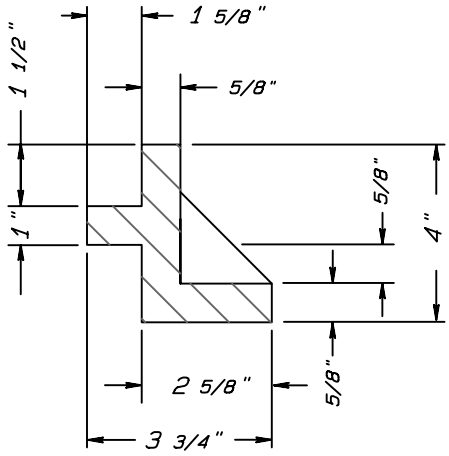




SECTION B-B



SECTION A-A



FRAME DETAIL

HEAD	CAPACITY
1"	1.75 cfs
3"	3.1 cfs
6"	4.3 cfs
9"	5.3 cfs
12"	6.1 cfs

CB-3A
V-5622-80, V-5622
USF 6259/4134

NOTES:

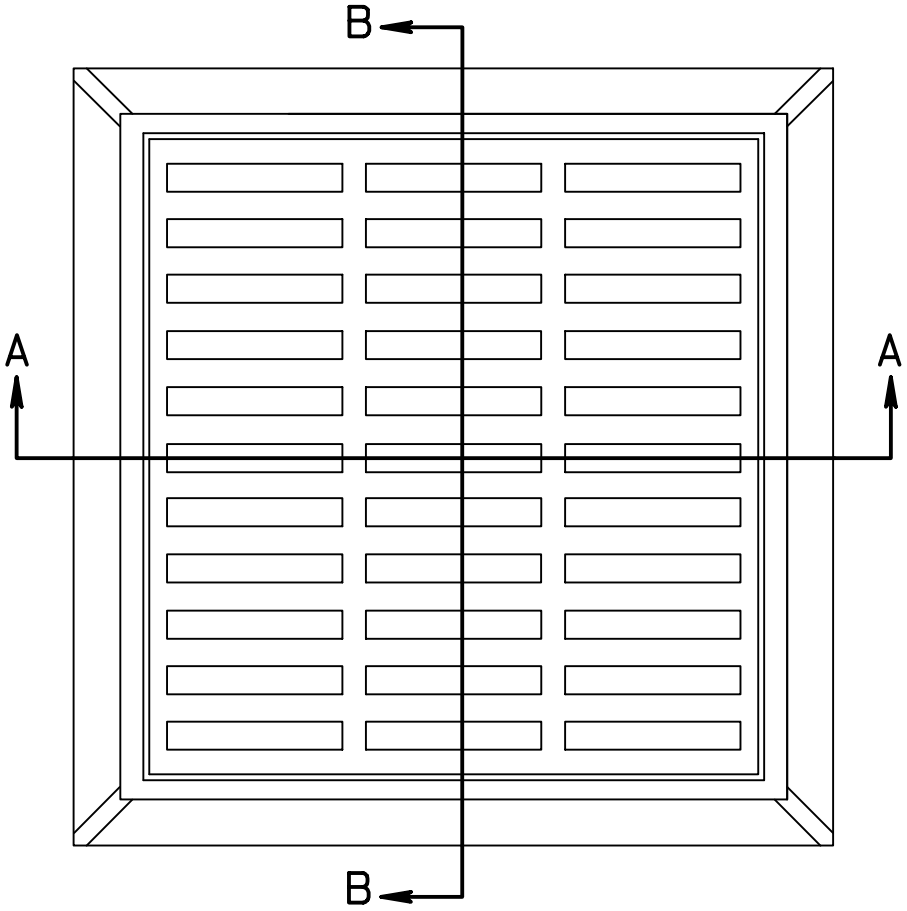
1/4" FILLET ON ALL INSIDE CORNERS
FRAME CAN BE USED WITH FLANGE UP.

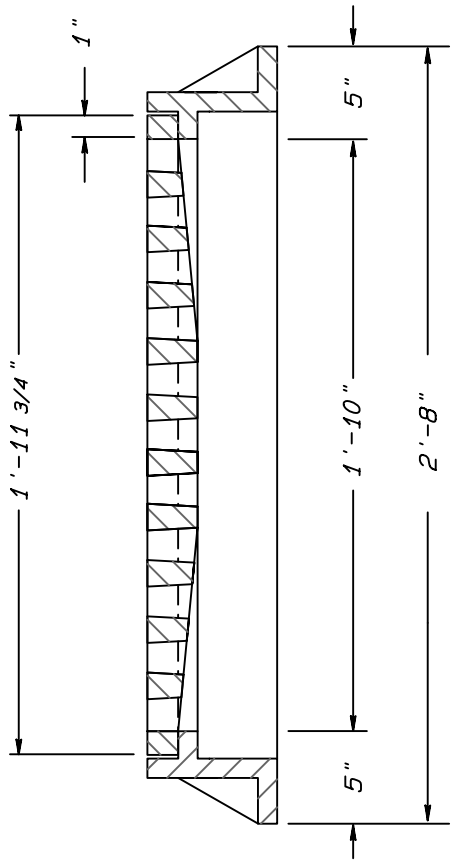
THIS GRATE & FRAME NOT TO BE USED
IN LOCATIONS SUBJECT TO TRAFFIC.

CITY OF GREENSBORO

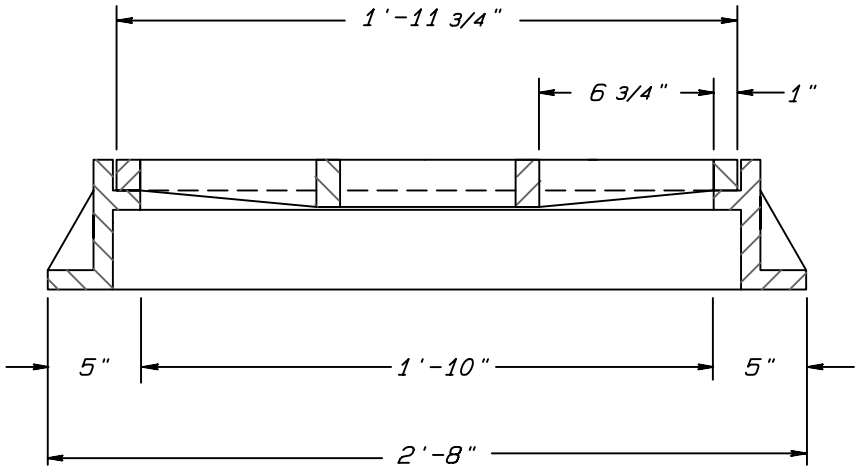
STANDARD 24" X 24" GRATE AND FRAME (LIGHTWEIGHT)

STD. NO.	REV.
406	01-97 03-98 08-08

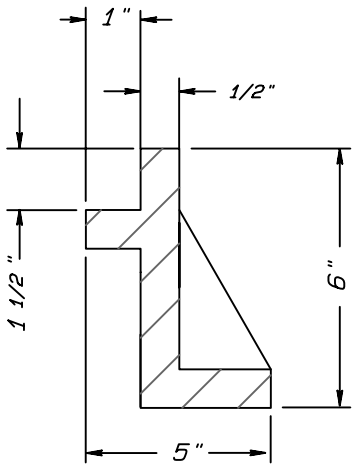




SECTION B-B



SECTION A-A



FRAME DETAIL

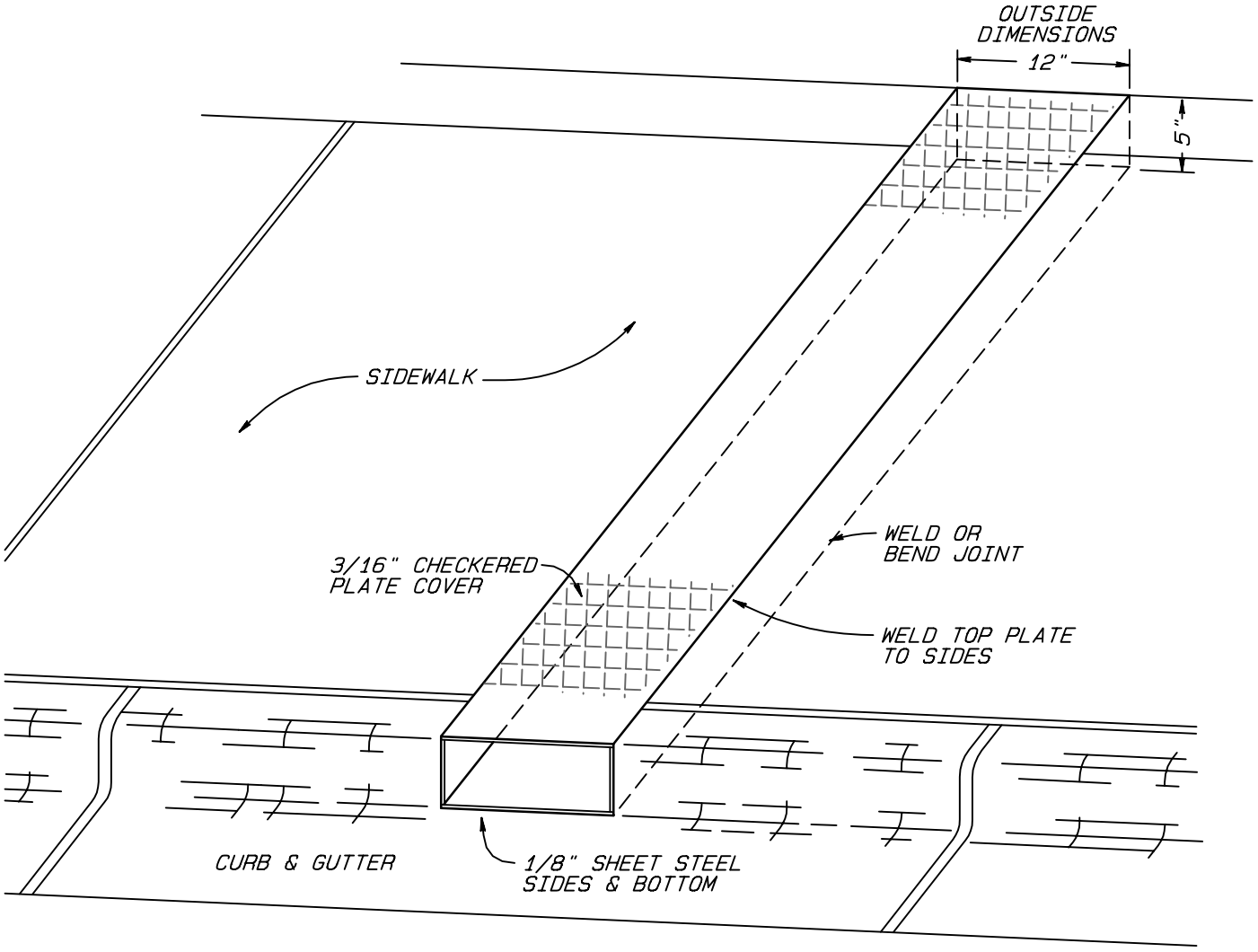
HEAD	CAPACITY
1"	1.8 cfs
3"	3.1 cfs
6"	4.4 cfs
9"	5.4 cfs
12"	6.3 cfs

CB-3A
V-4875-1 (FLAT)
V-4875-2 (CONCAVE)
USF 6259/4134

CITY OF GREENSBORO

STANDARD 24" X 24" GRATE AND FRAME (HEAVYWEIGHT)

STD. NO.	REV.
407	01-97 08-08 10-97 03-98



RIBBON PAVEMENT

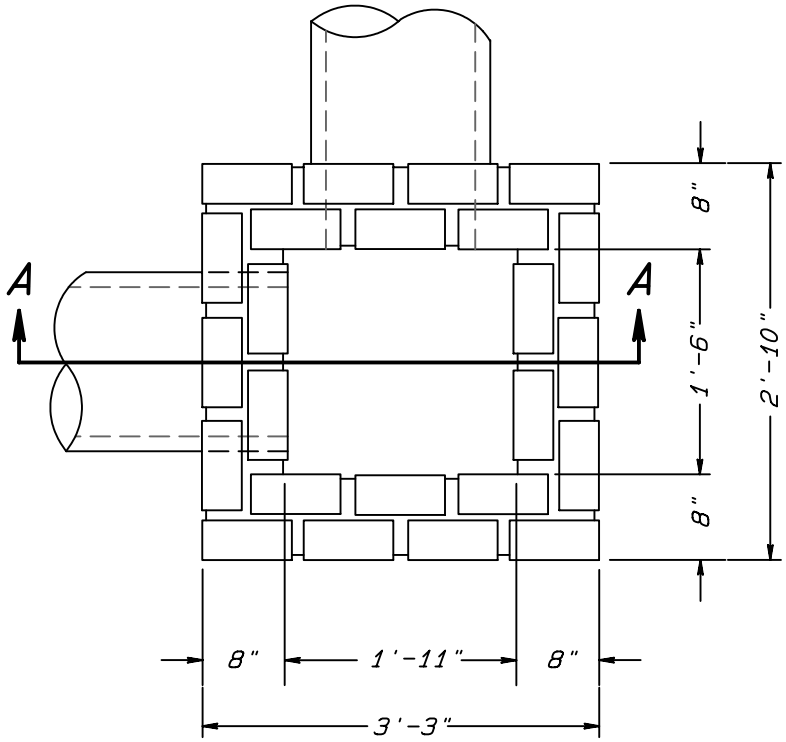
NOTES:

END OF FLUME AT CURB TO BE CUT TO FIT CONTOUR OF CURB.

THE MAXIMUM CAPACITY FOR EACH FLUME INSTALLED IS 0.8 CFS.

CITY OF GREENSBORO

STANDARD 5" X 12" STEEL FLUME	STD. NO.	REV.
	408	03-97 06-99



PLAN

NOTES:

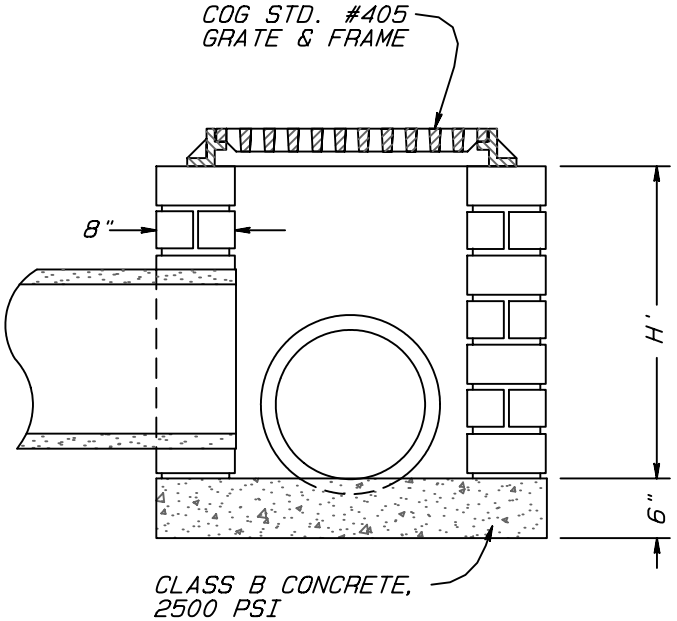
BRICK MASONRY CAN BE COMMON CLAY BRICK, JUMBO BRICK, OR CONCRETE BRICK.

CONCRETE BOTTOMS SHALL BE PAID AS BRICK MASONRY.

ALL MORTAR JOINTS ARE TO BE 1/2" + 1/8".

FOR DEPTHS OVER 3'-6" USE STEPS ON 16" CENTERS. STEPS SHALL BE IN ACCORD-ANCE WITH COG STD. #414.

FOR PRECAST CONCRETE MODELS OF THIS STRUCTURE, THE MANUFACTURER SHALL STAMP OR STENCIL ITS LOGO OR NAME ON THE INSIDE AND OUTSIDE OF THE STRUCTURE.



SECTION A-A

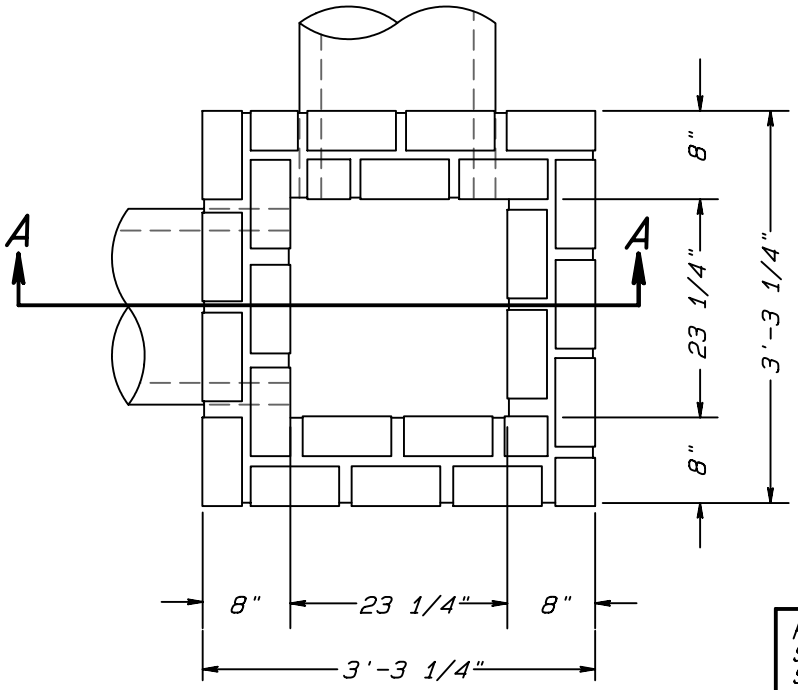
QUANTITIES	
BASE (C.Y.)	H' (PER FT. HEIGHT)
0.190	0.242

DEDUCTIONS FOR ONE PIPE		
PIPE SIZE	C.M.	R.C.
12"	0.020	0.032
15"	0.031	0.047
18"	0.044	0.065

CITY OF GREENSBORO

STANDARD BRICK MASONRY DROP INLET 20" X 26" GRATE

STD. NO.	REV.
409	09-95 08-02 12-07



PLAN

NOTES:

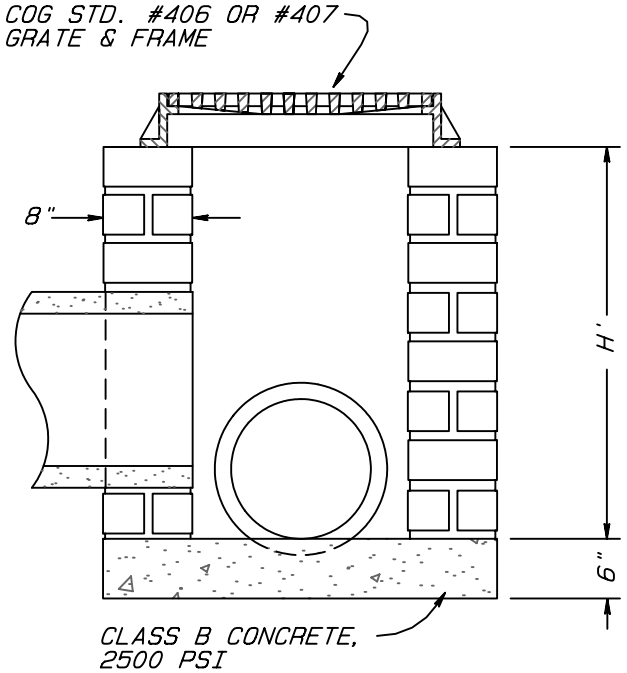
BRICK MASONRY CAN BE COMMON CLAY BRICK, JUMBO BRICK, OR CONCRETE BRICK.

CONCRETE BOTTOMS SHALL BE PAID AS BRICK MASONRY.

ALL MORTAR JOINTS ARE TO BE 1/2" ± 1/8".

FOR DEPTHS OVER 3'-6" USE STEPS ON 16" CENTERS. STEPS SHALL BE IN ACCORD-ANCE WITH COG STD. #414.

FOR PRECAST CONCRETE MODELS OF THIS STRUCTURE, THE MANUFACTURER SHALL STAMP OR STENCIL ITS LOGO OR NAME ON THE INSIDE AND OUTSIDE OF THE STRUCTURE.



SECTION A-A

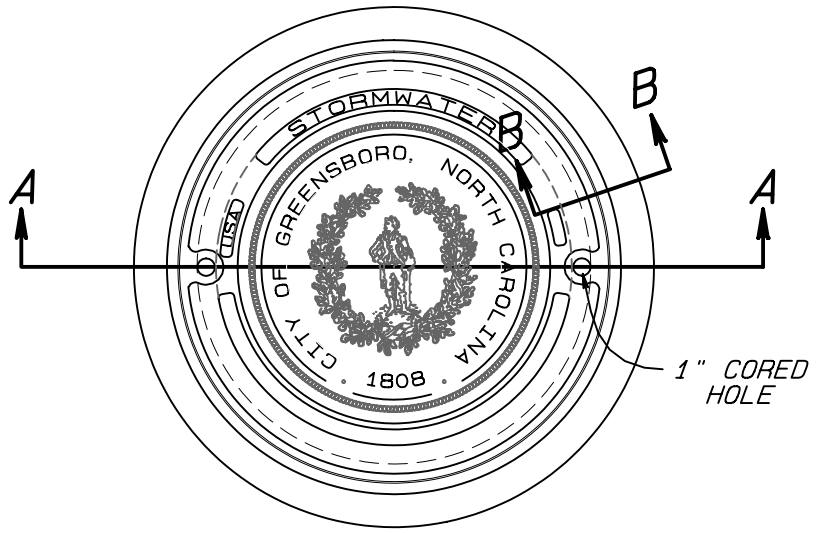
QUANTITIES	
BASE (C.Y.)	H' (PER FT. HEIGHT)
0.198	0.256

DEDUCTIONS FOR ONE PIPE		
PIPE SIZE	C.M.	R.C.
12"	0.020	0.032
15"	0.031	0.047
18"	0.044	0.065

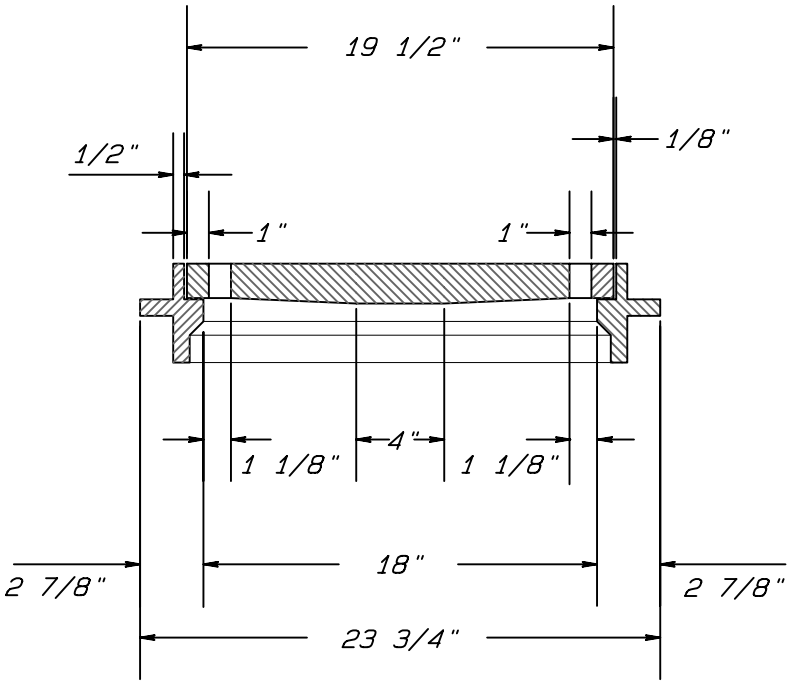
CITY OF GREENSBORO

STANDARD BRICK MASONRY DROP INLET FOR 24"x 24" GRATE

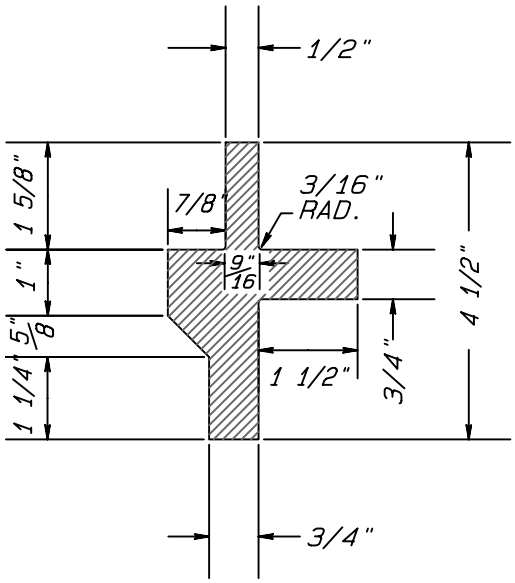
STD. NO.	REV.
410	09-95 08-02 12-07



PLAN



SECTION A-A



SECTION B-B

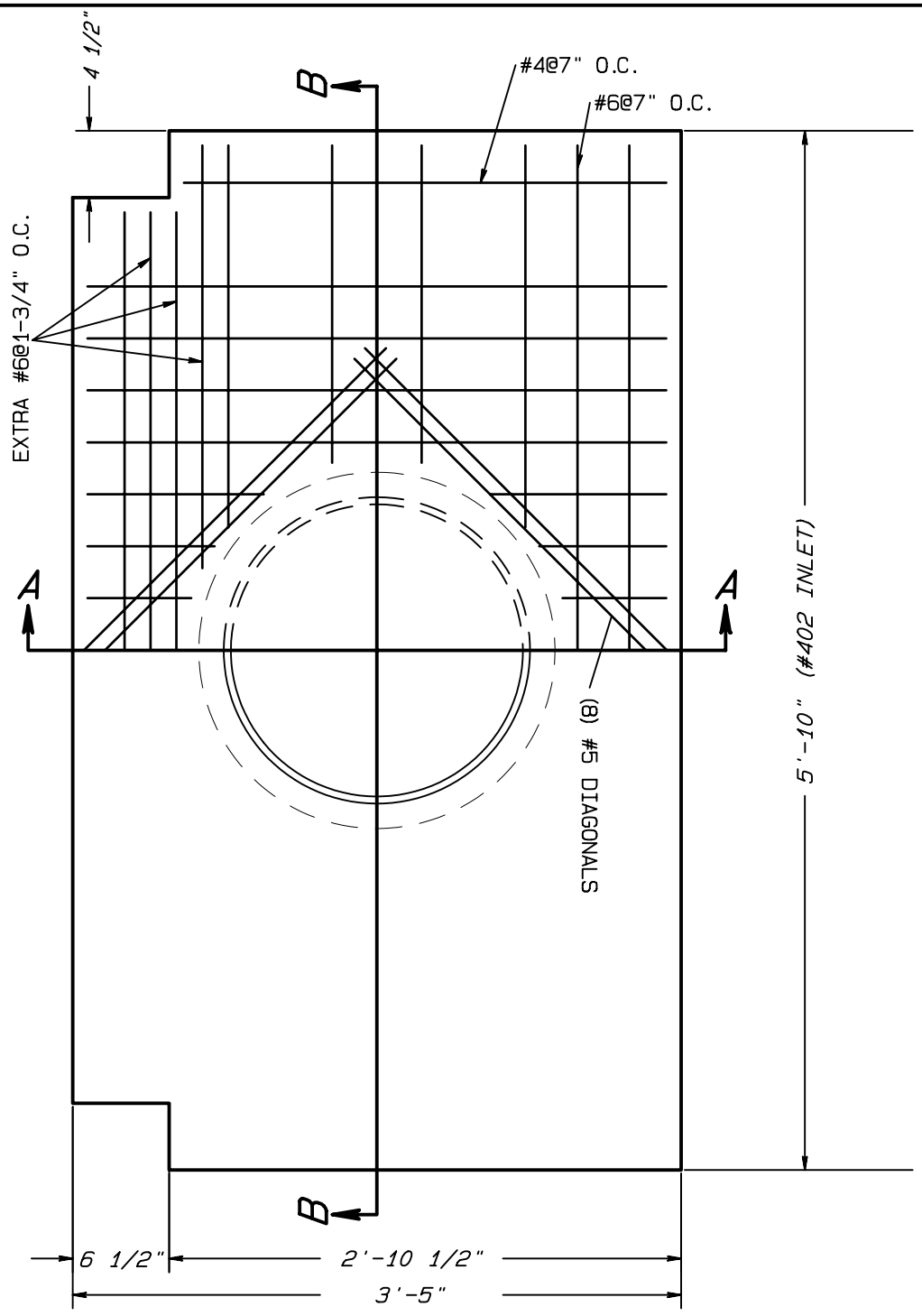
MH-RCR 47L
CAPITAL - 1662L
US FOUNDRY A5098
US FOUNDRY A5117

NOTE:
THE CITY OF GREESBORO LOGO SHALL BE CAST INTO ALL LIDS

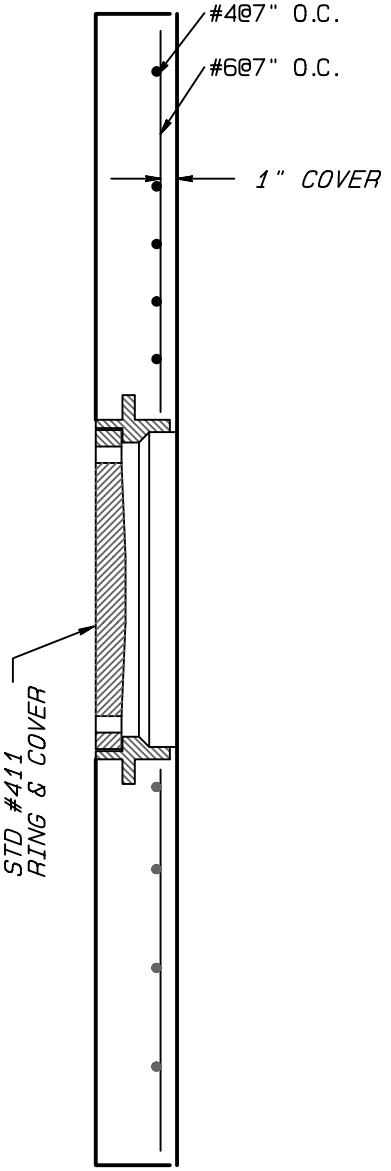
CITY OF GREENSBORO

STANDARD INLET RING AND COVER

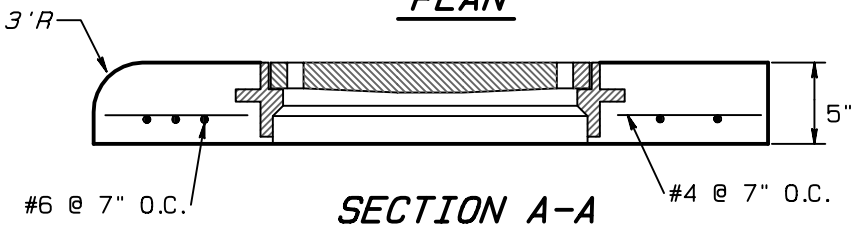
STD. NO.	REV.
411	03-97 06-99 10-97 03-01 03-98 03-08



PLAN



SECTION B-B



SECTION A-A

NOTES:
1. CONCRETE: 28 DAY COMPRESSIVE STRENGTH f'c = 4,500 psi
2. REINFORCING: ASTM A-615, GRADE 60
3. ALL COVER TO REINFORCING IS 1"
4. ALL STEEL CUT OUT FOR OPENINGS WILL BE REPLACED, 1/2 THE REINFORCING ON EACH SIDE OF OPENING.
5. FOR COMMERCIAL AND INDUSTRIAL INTERSECTIONS USE STD. #412-H

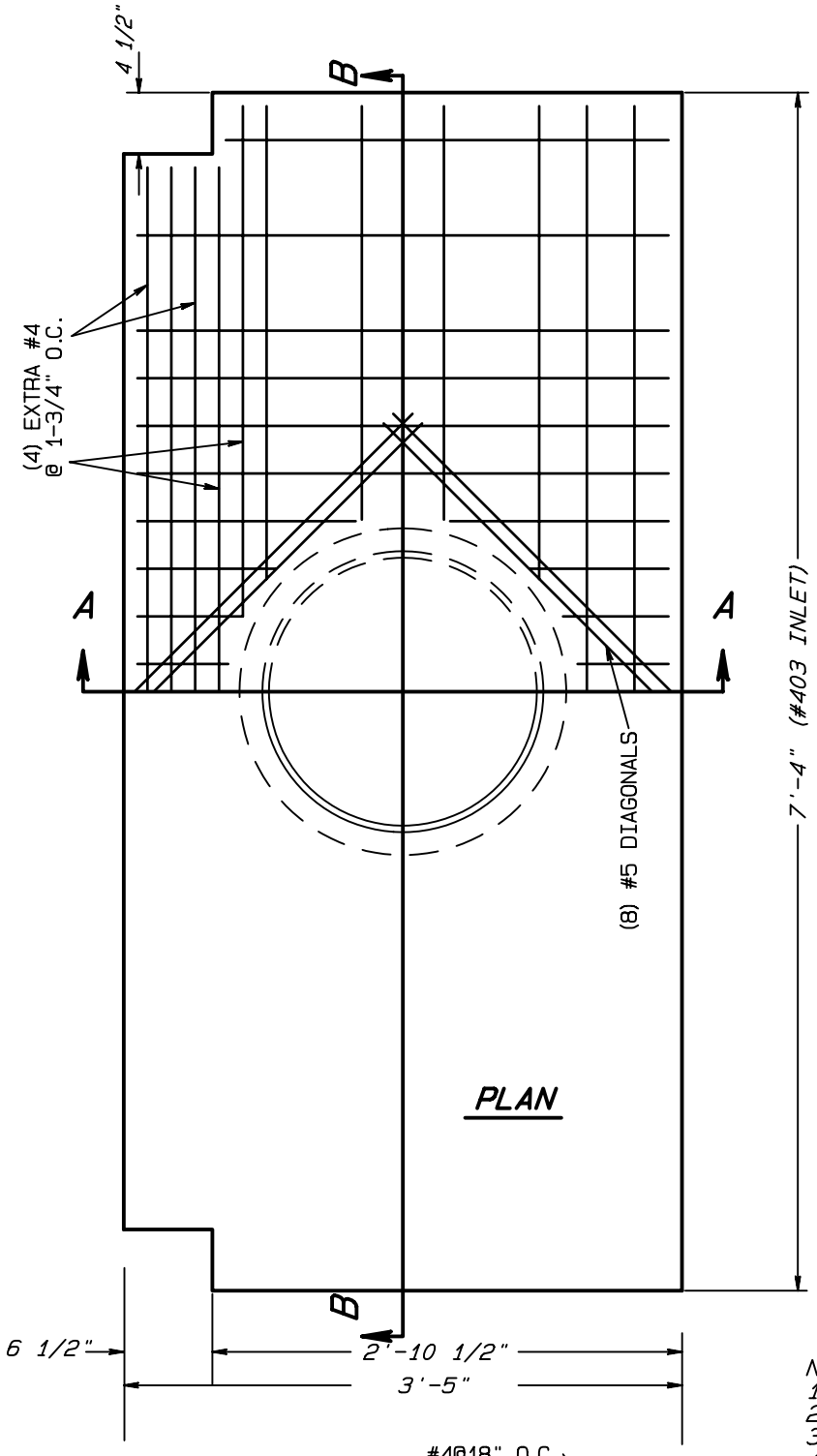
THE MANUFACTURER SHALL STAMP OR STENCIL ITS LOGO OR NAME IN TWO LOCATIONS ON THE SIDE OR REAR EDGES OF THE TOP.

FOR USE ON #402 INLET BOX

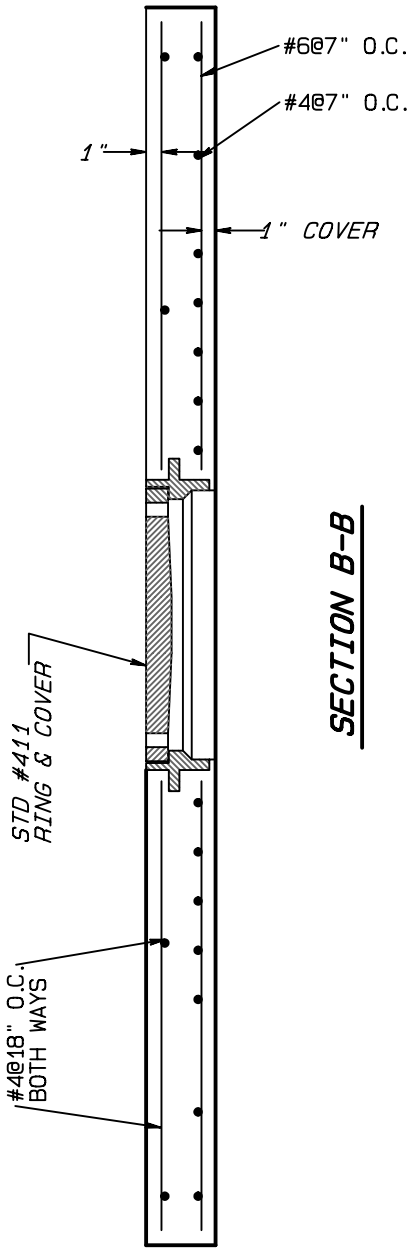
CITY OF GREENSBORO

STANDARD PRECAST CONCRETE CURB INLET TOP FOR STD. #402 CURB INLET

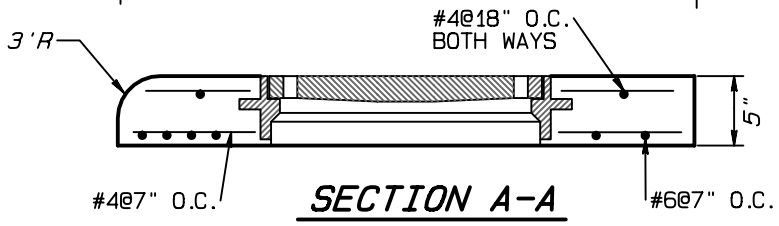
STD. NO.	REV.
412	12-07 03-08 08-08



PLAN



SECTION B-B



SECTION A-A

NOTES:
1. CONCRETE: 28 DAY COMPRESSIVE STRENGTH f'c = 4,500 psi
2. REINFORCING: ASTM A-615, GRADE 60
3. ALL COVER TO REINFORCING IS 1" ALL STEEL CUT OUT FOR OPENINGS WILL BE REPLACED, 1/2 THE REINFORCING ON EACH SIDE OF OPENING.
4. FOR COMMERCIAL AND INDUSTRIAL INTERSECTIONS USE STD. #412-H.
5. STD. #403 IS NOT ALLOWED AT COMMERCIAL AND INDUSTRIAL INTERSECTIONS.

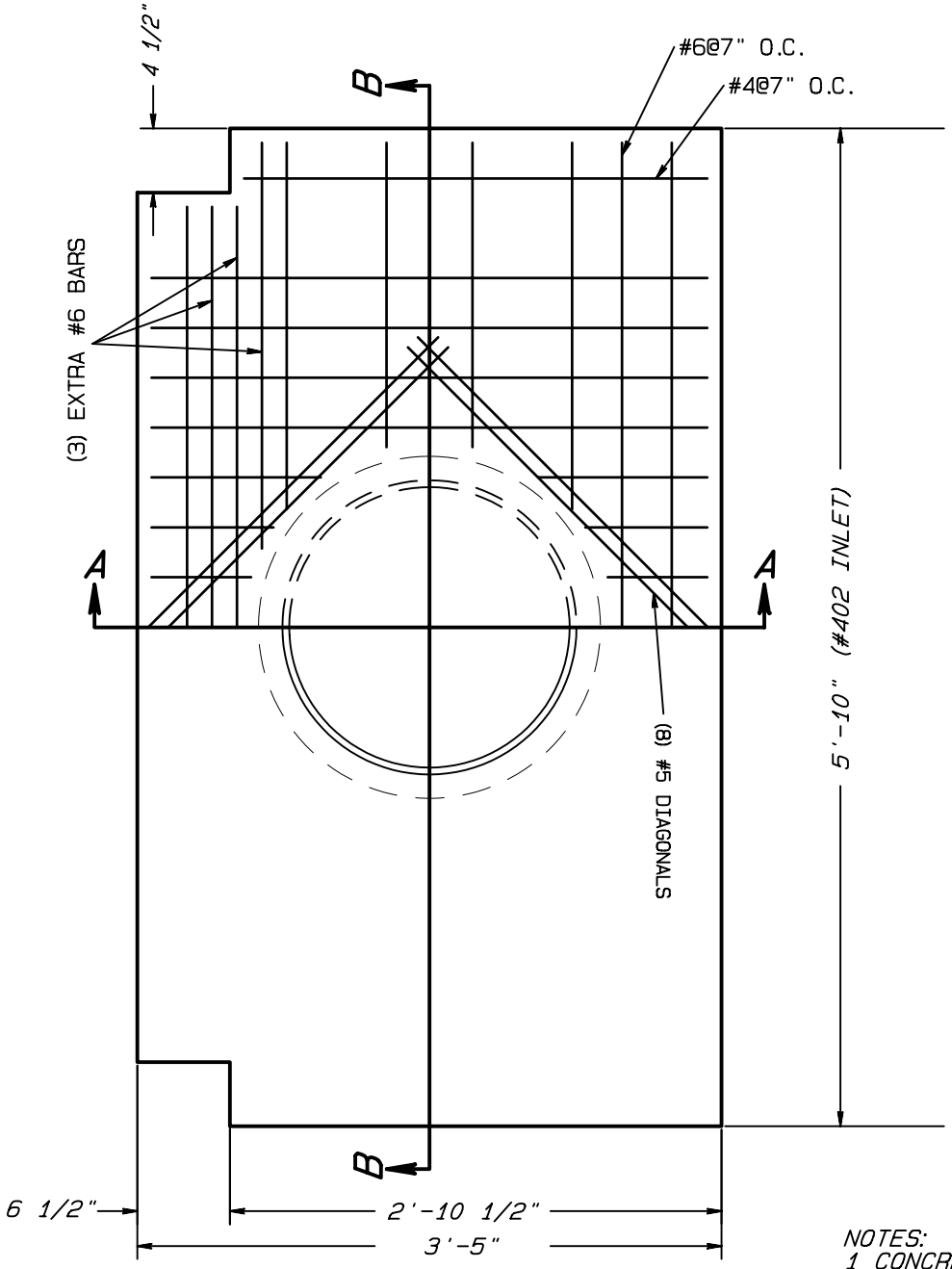
THE MANUFACTURER SHALL STAMP OR STENCIL ITS LOGO OR NAME IN TWO LOCATIONS ON THE SIDE OR REAR EDGES OF THE TOP.

FOR USE ON #403 INLET BOX

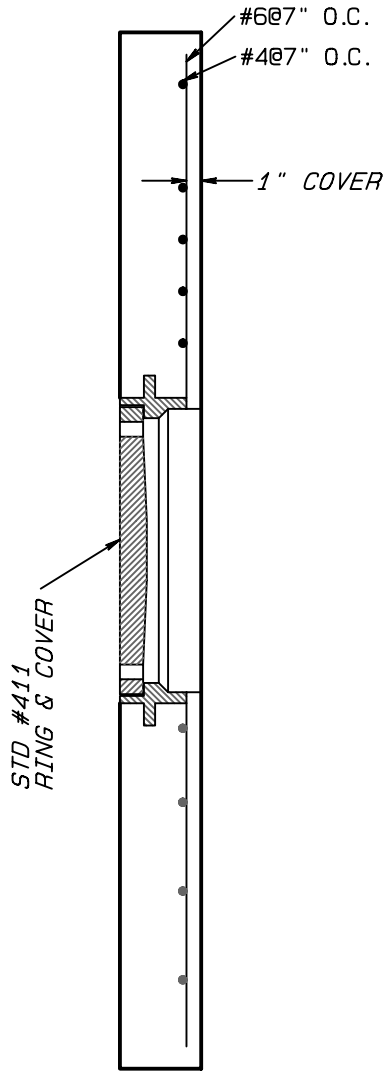
CITY OF GREENSBORO

STANDARD PRECAST CONCRETE CURB INLET TOP FOR STD. #403 CURB INLET

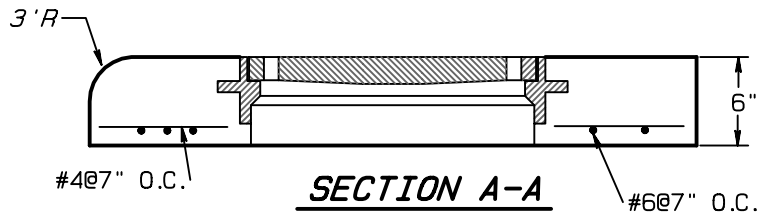
STD. NO.	REV.
412	12-07 03-08 08-08



PLAN



SECTION B-B



SECTION A-A

NOTES:
1 CONCRETE: 28 DAY COMPRESSIVE
2 STRENGTH f'c = 4,500 psi
3 REINFORCING: ASTM A-615, GRADE 60
4 ALL COVER TO REINFORCING IS 1"
5 ALL STEEL CUT OUT FOR OPENINGS WILL BE REPLACED, 1/2 THE REINFORCING ON EACH SIDE OF OPENING.
6 STD #412-H IS TO BE USED AT COMMERCIAL AND INDUSTRIAL INTERSECTIONS WHERE THERE IS A POTENTIAL FOR TRUCK TRAFFIC.
7 IN SOME CASES, THE INLETS WILL BE MOVED AWAY FROM THE PCR TO AVOID TRUCK TRAFFIC. LOCATION WILL BE NOTED ON THE CONSTRUCTION PLANS

THE MANUFACTURER SHALL STAMP OR STENCIL ITS LOGO OR NAME IN TWO LOCATIONS ON THE SIDE OR REAR EDGES OF THE TOP.

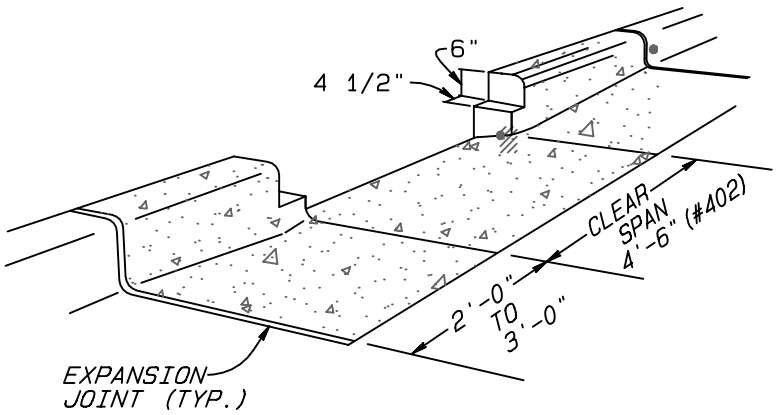
FOR USE ON #402 INLET BOX IN AREAS WHERE HEAVY TRAFFIC WILL EXIST.

CITY OF GREENSBORO

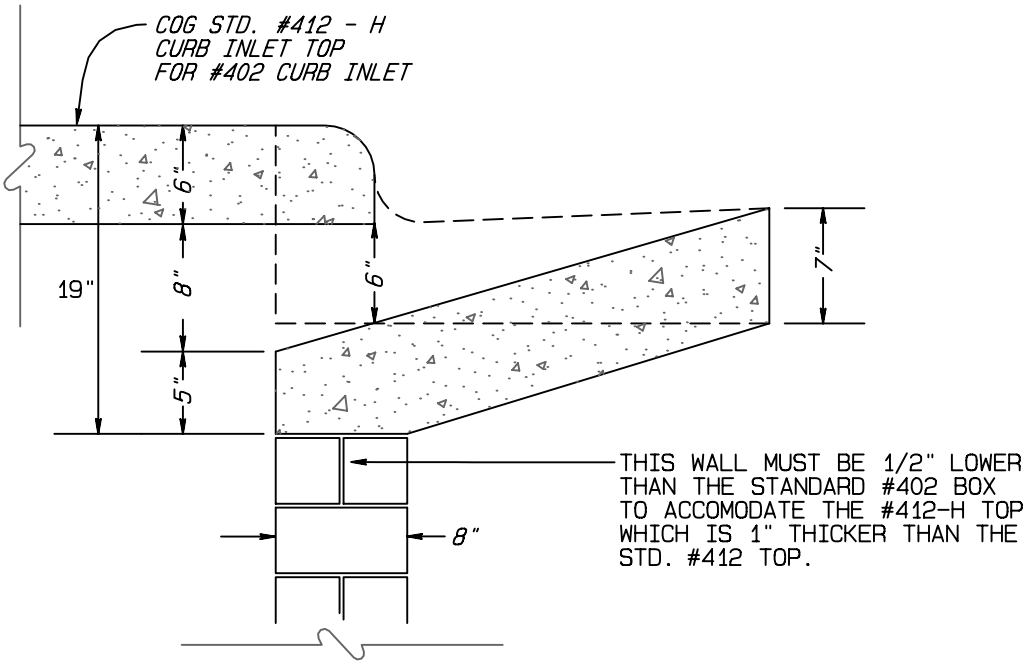
STANDARD PRECAST CONCRETE CURB INLET TOP FOR SPECIAL TRAFFIC AREAS

STD. NO.	REV.
412-H	12-07 03-08 08-08

REQUIRED MODIFICATIONS TO COG #402 CURB INLET TO ACCOMODATE COG #412-H TOP



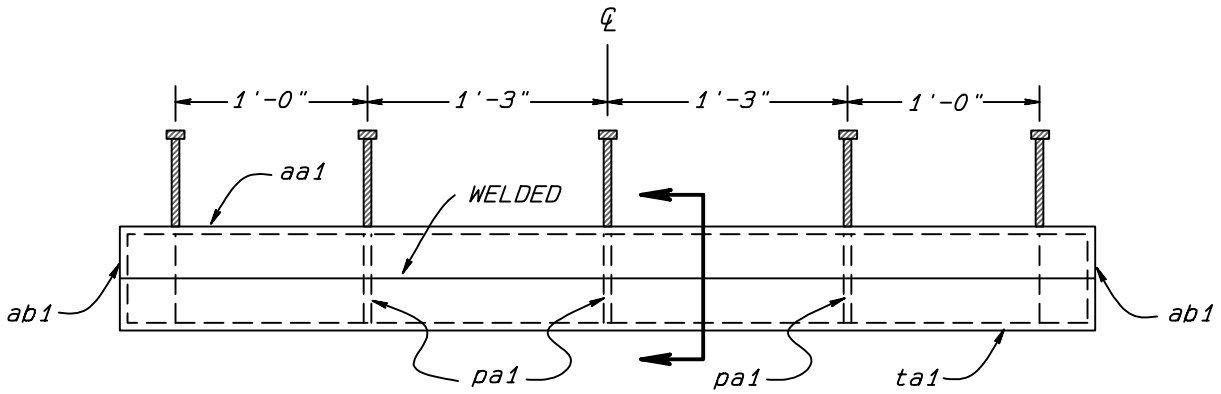
CURB NOTCH MODIFICATIONS FOR 412-H TOP



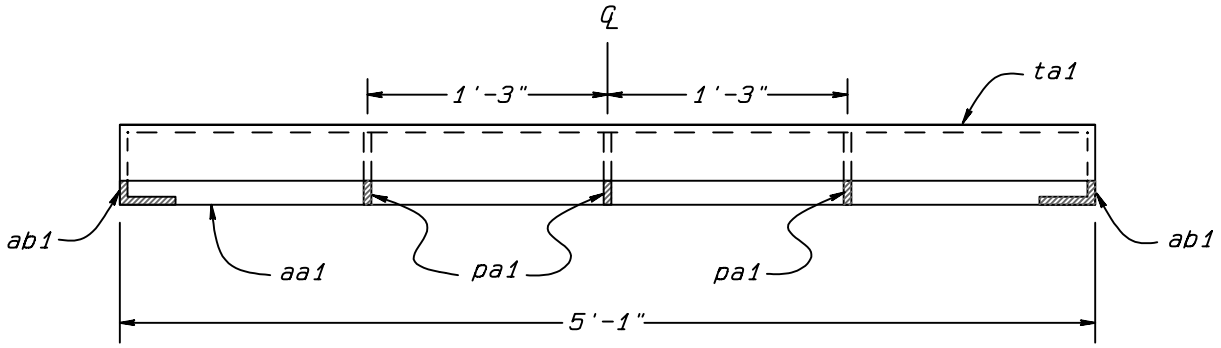
#402 CURB INLET THROAT MODIFICATIONS
TO ACCOMODATE THE #412-H TOP

412-H IS FOR USE AT COMMERCIAL AND INDUSTRIAL INTERSECTIONS WHERE THERE IS THE POTENTIAL FOR HEAVY TRUCK TRAFFIC.
BECAUSE OF THE THICKER TOP, THIS DETAIL SHOWS MODIFICATIONS THAT MUST BE MADE TO STD. #402 AND CURB AND GUTTER TO ACCOMODATE THE THICKER TOP.

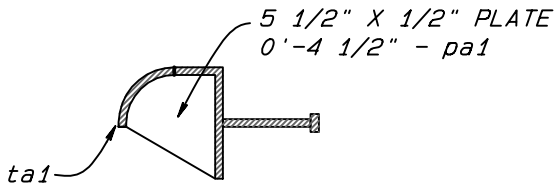
CITY OF GREENSBORO		
STANDARD PRECAST CONCRETE CURB INLET TOP FOR SPECIAL TRAFFIC AREAS	STD. NO. 412-H	REV. 12-07 03-08 08-08



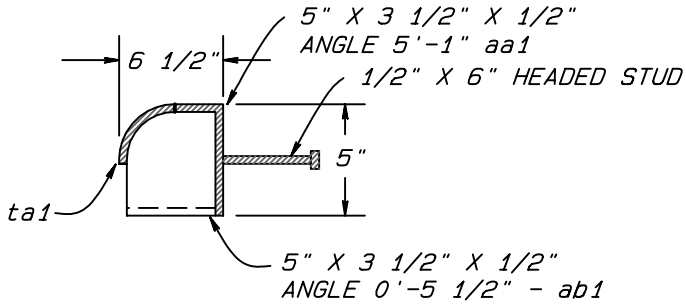
TOP VIEW



FRONT VIEW



SECTION VIEW



END VIEW

NO. PCS.	MATERIAL	LENGTH	PART MARK
1	6" SCH 80 PIPE	5' - 1"	ta1
1	5" X 3 1/2" X 1/2" ANGLE	5' - 1"	aa1
2	5" X 3 1/2" X 1/2" ANGLE	5 1/2"	ab1
3	5 1/2" X 1/2" PLATE	4 1/2"	pa1
5	1/2" X 6" HEADED STUDS		

NOTE: PAINT EQUAL TO BLACK ASPHALTIC PAINT.

VULCAN GBSP-1

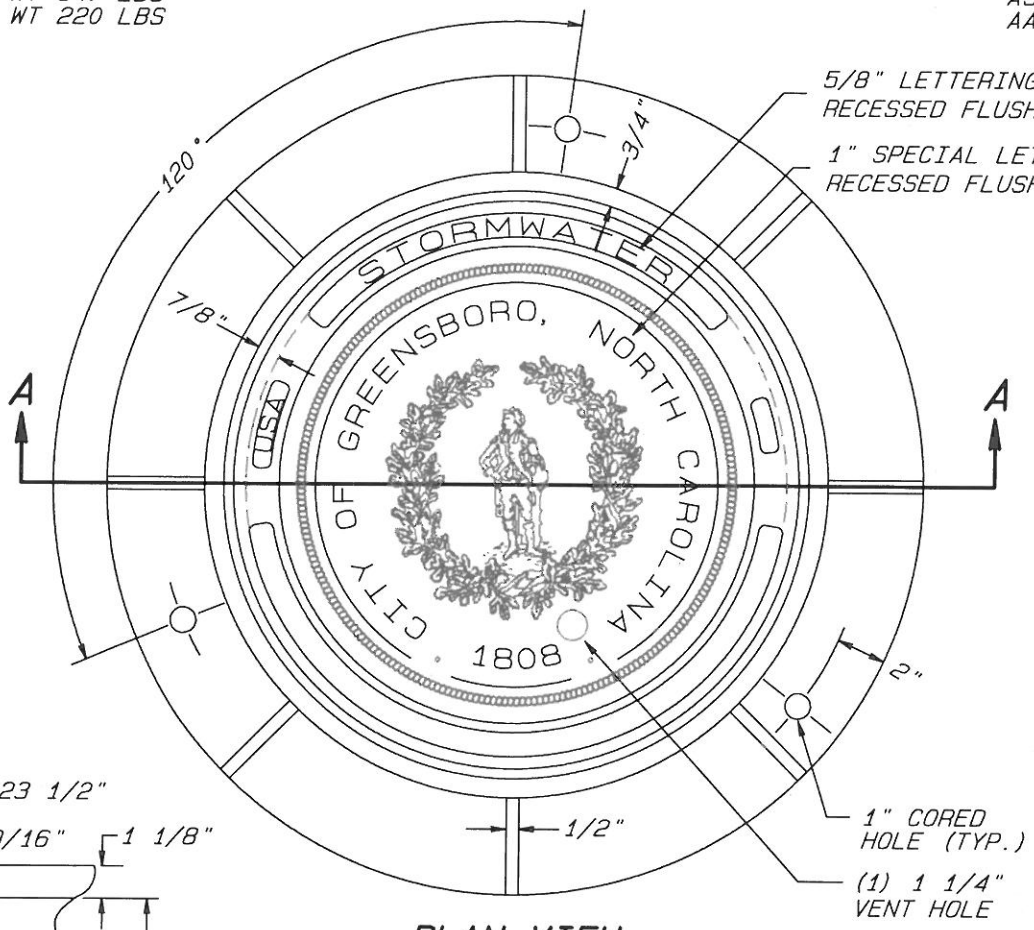
CITY OF GREENSBORO

STANDARD REINFORCED NOSE PLATE FOR CURB INLET TOP

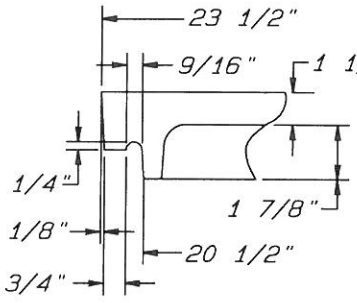
STD. NO.	REV.
412-A	

COVER = MIN WT 147 LBS
FRAME = MIN WT 220 LBS

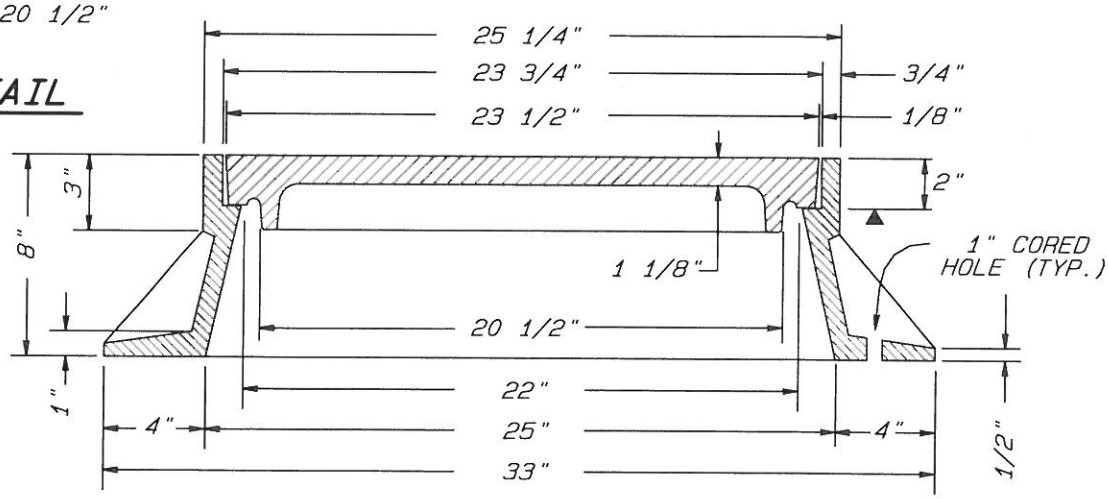
ASTM A48-CL35
AASHTO M306



PLAN VIEW



DETAIL



SECTION A-A

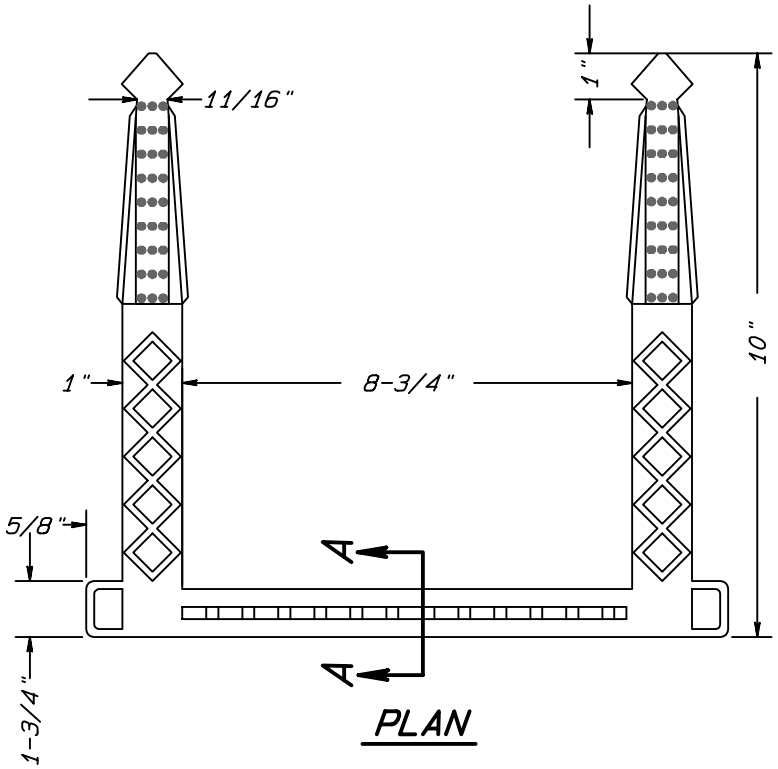
NOTES:
1. ALL DIMENSIONS AND TOLERANCES ARE TO BE CONCENTRIC AND WILL SUPERSEDE ANY ASTM STANDARDS WITH A MAXIMUM VARIATION ± 1/16" ON ALL DIMENSIONS.
2. MANHOLE RING TO BE ANCHORED WITH 1/2" REDHEAD STAINLESS STEEL ANCHORS AND SEALED BETWEEN RING AND CONE WITH BITUMASTIC SEALER.
3. THE CITY OF GREENSBORO LOGO SHALL BE CAST INTO ALL LIDS.

▼ MACHINED BEARING SURFACE

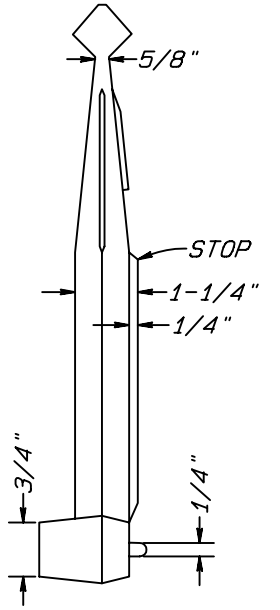
CITY OF GREENSBORO

STANDARD MANHOLE RING AND COVER

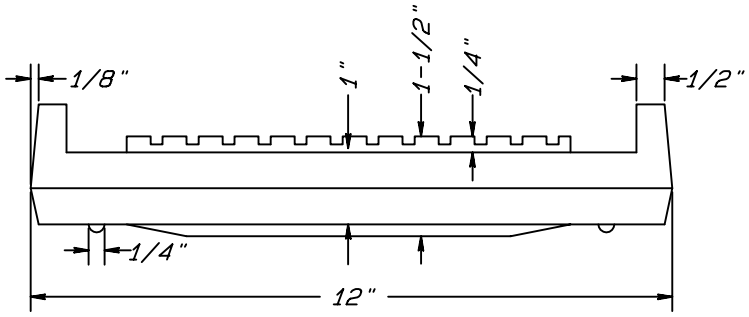
STD. NO.	REV.
413	03-01 03-08 08-02 06-13 12-05



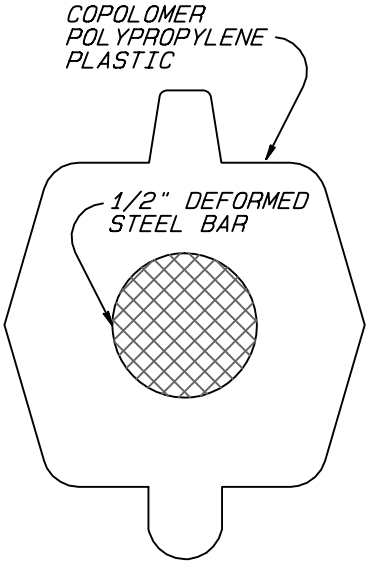
PLAN



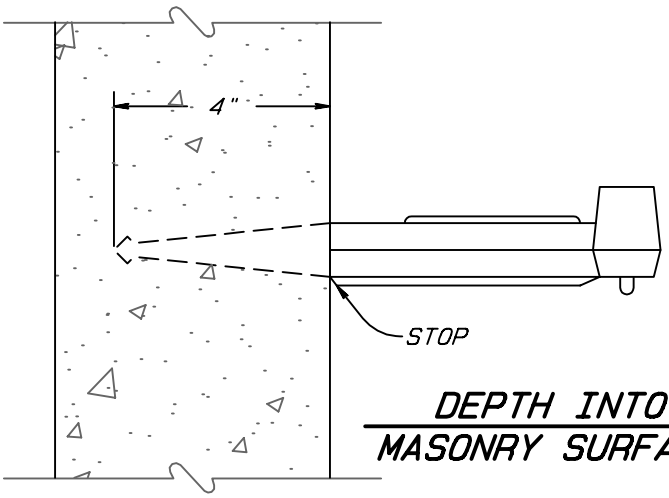
SIDE ELEVATION
COMPOSITE



ELEVATION



SECTION A-A

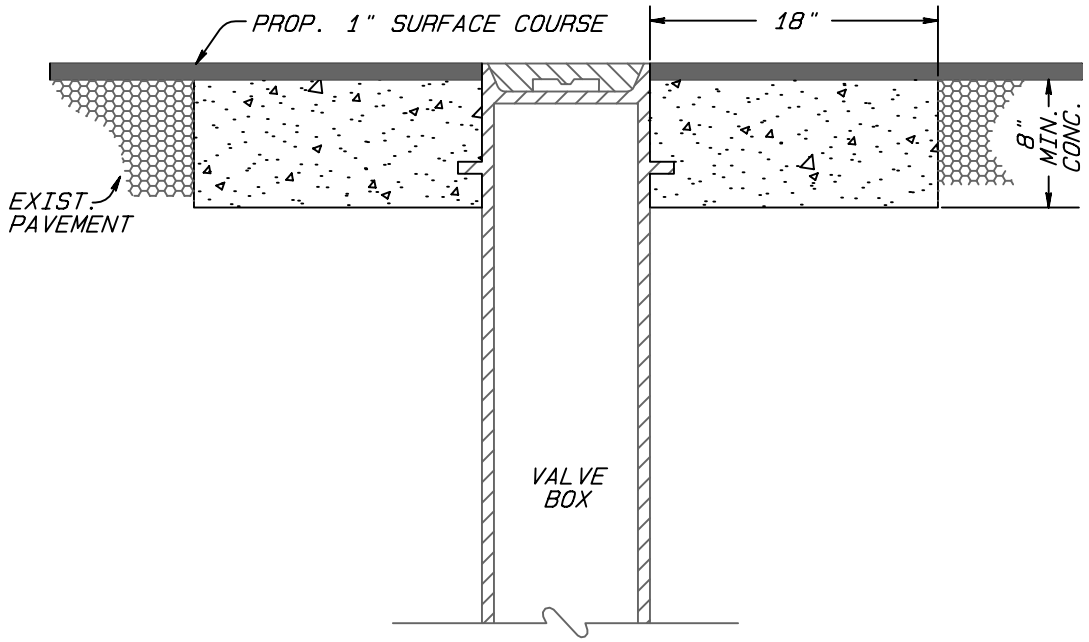


DEPTH INTO
MASONRY SURFACE

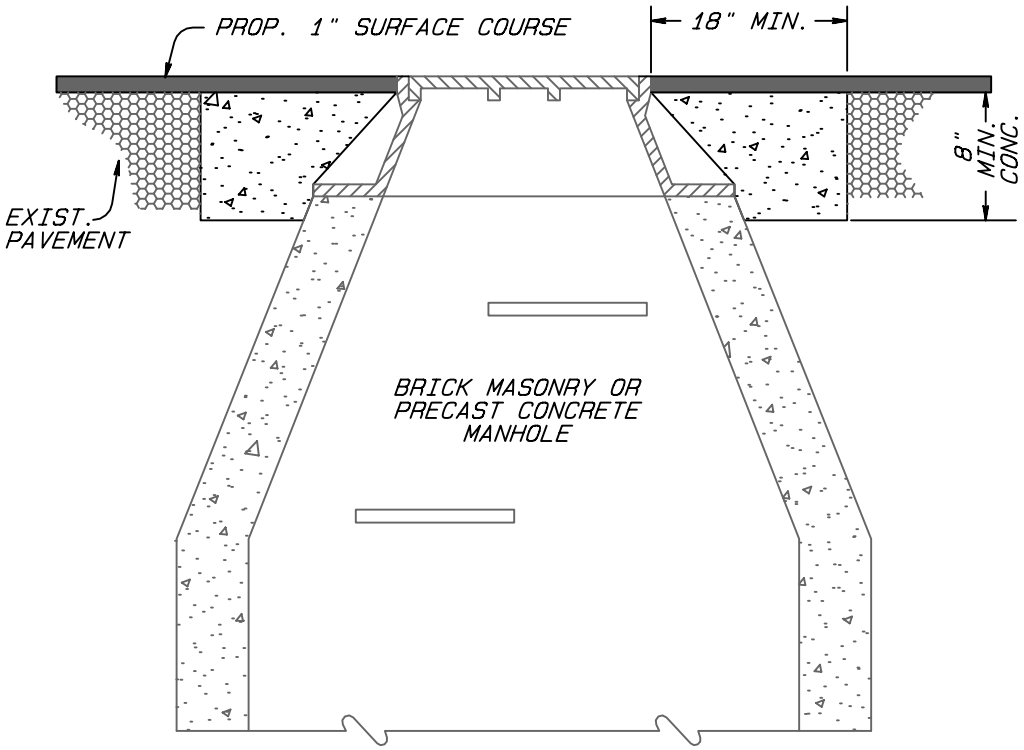
CITY OF GREENSBORO

STANDARD PLASTIC STEP FOR BRICK MASONRY STRUCTURES

STD. NO.	REV.
414	03-01



VALVE BOX



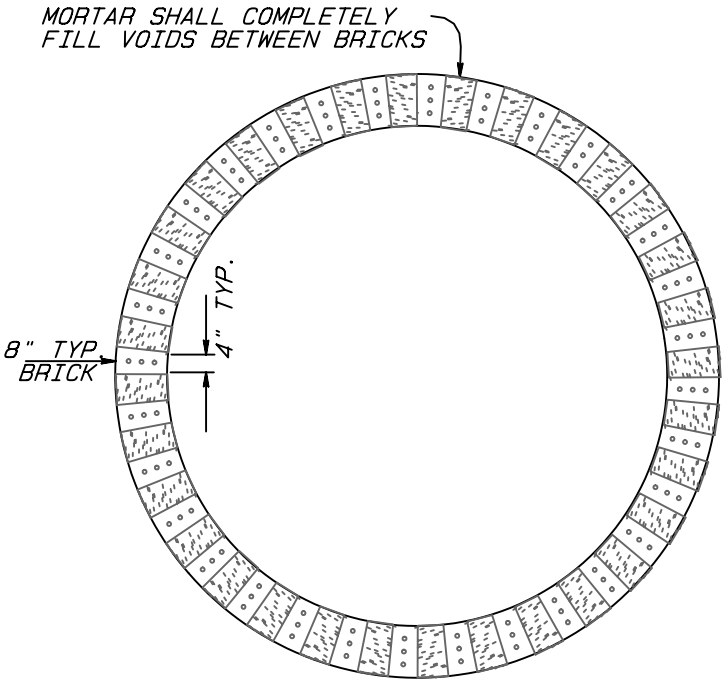
MANHOLE

NOTE:

CONCRETE SHALL BE CLASS B, 2500 PSI.

CITY OF GREENSBORO

STANDARD CONCRETE ENCASEMENT FOR MANHOLE & VALVE CASTINGS IN PAVEMENT	STD. NO.	REV.
	415	06-04



SECTION X-X

NOTES:

BRICK AND CONCRETE MORTAR SHALL BE USED FOR ADJUSTMENT HEIGHT.

MORTAR LAYER SHALL NOT EXCEED 3/4" IN HEIGHT AFTER RING AND COVER ARE PLACED.

NO WOOD WEDGES OR BRICK BATTS WILL BE ALLOWED.

JUMBO BRICK WILL BE PERMITTED. CONCRETE BRICK OR 4" SOLID CONCRETE BLOCKS MAY BE USED IN LIEU OF CLAY BRICK.

1040-8 MORTAR

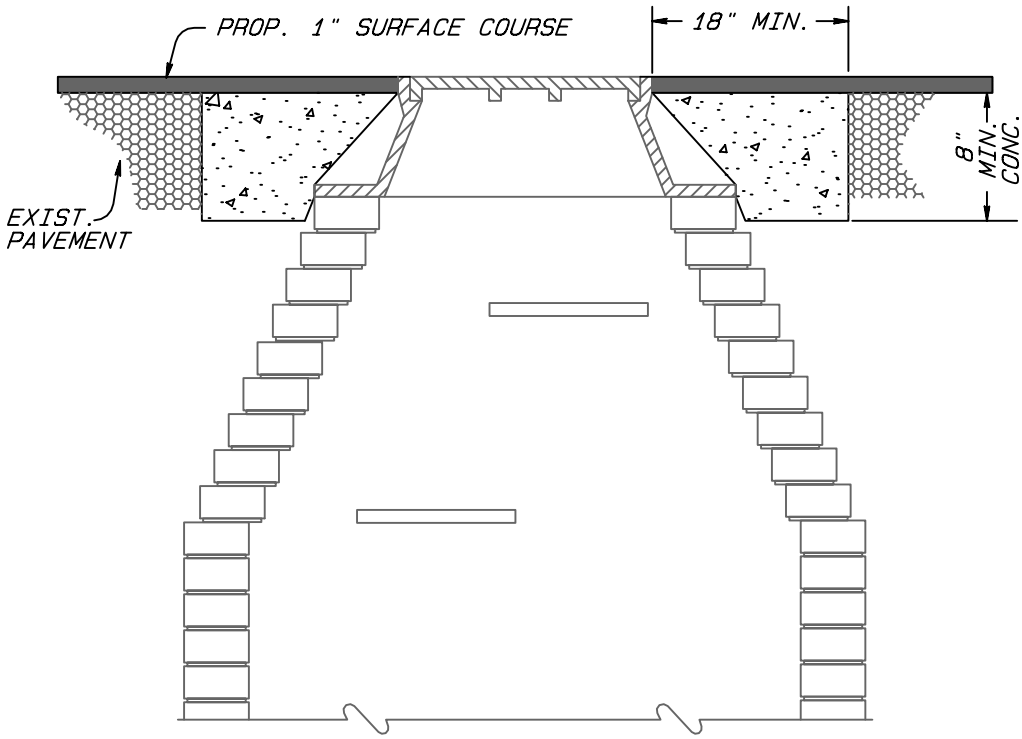
MOTAR USED IN ALL BRICK MASONARY AND BLOCK MASONARY SHALL BE PROPORTIONED AS SHOWN BELOW FOR EITHER MIX NO. 1 OR NO.2.

ALL PROPORTIONS ARE BY VOLUME.

NO MORE WATER SHALL BE ADDED THAN IS NECESSARY TO MAKE A WORKABLE MIXTURE.

NO. 1: 1 PART PORTLAND CEMENT
1/4 PART HYDRATED LIME
3 3/4 PARTS MORTAR SAND (MAX.)

NO. 2: 1 PART PORTLAND CEMENT
1 PART MASONRY CEMENT
6 PARTS SAND (MAX.)



MANHOLE

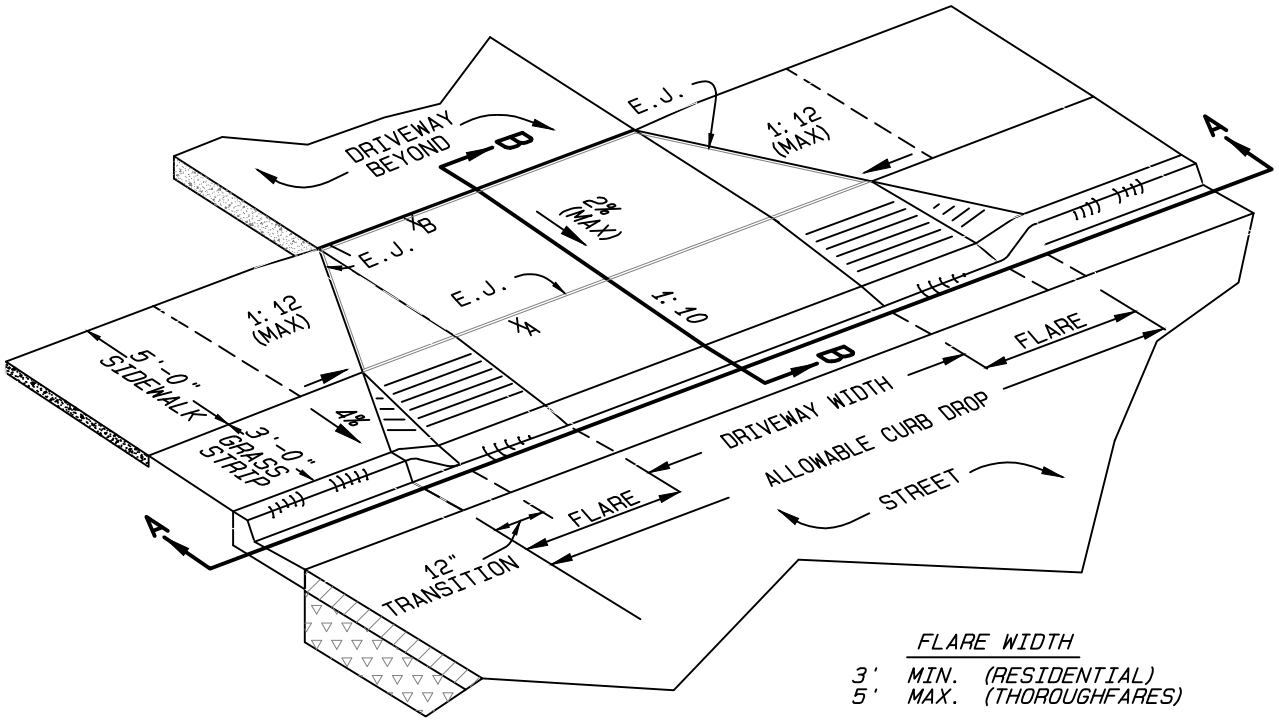
CITY OF GREENSBORO

STANDARD CONCRETE ENCASEMENT FOR MANHOLE & VALVE CASTINGS IN PAVEMENT

STD. NO.	REV.
415	06-04

GRADE POINT

(A) 1 1/4" BELOW TOP OF CURB
(B) LEVEL WITH TOP OF CURB



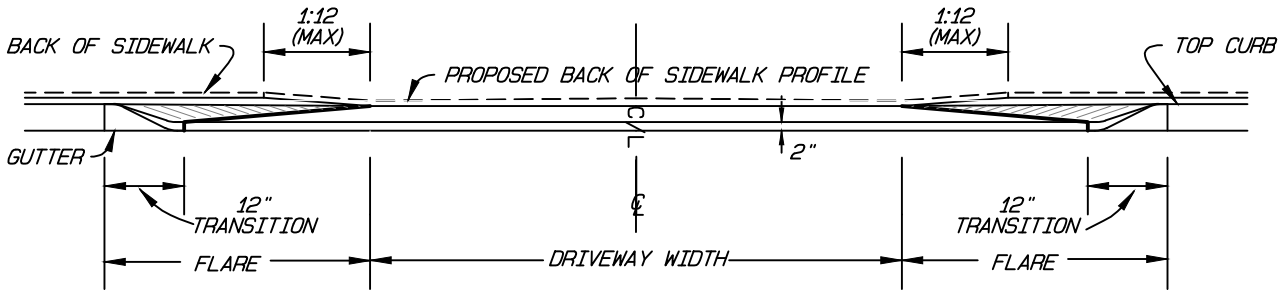
FLARE WIDTH

3' MIN. (RESIDENTIAL)
5' MAX. (THOROUGHFARES)

ISOMETRIC VIEW WITH GRASS STRIP

*NOTE:

EXPANSION JOINT (E.J.) MATERIAL TO BE
1/2" BITUMINOUS FIBRE EXPANSION JOINT MATERIAL
1:10 (10%) 1 1/4" /FT
1:12 (8%) 1"/FT

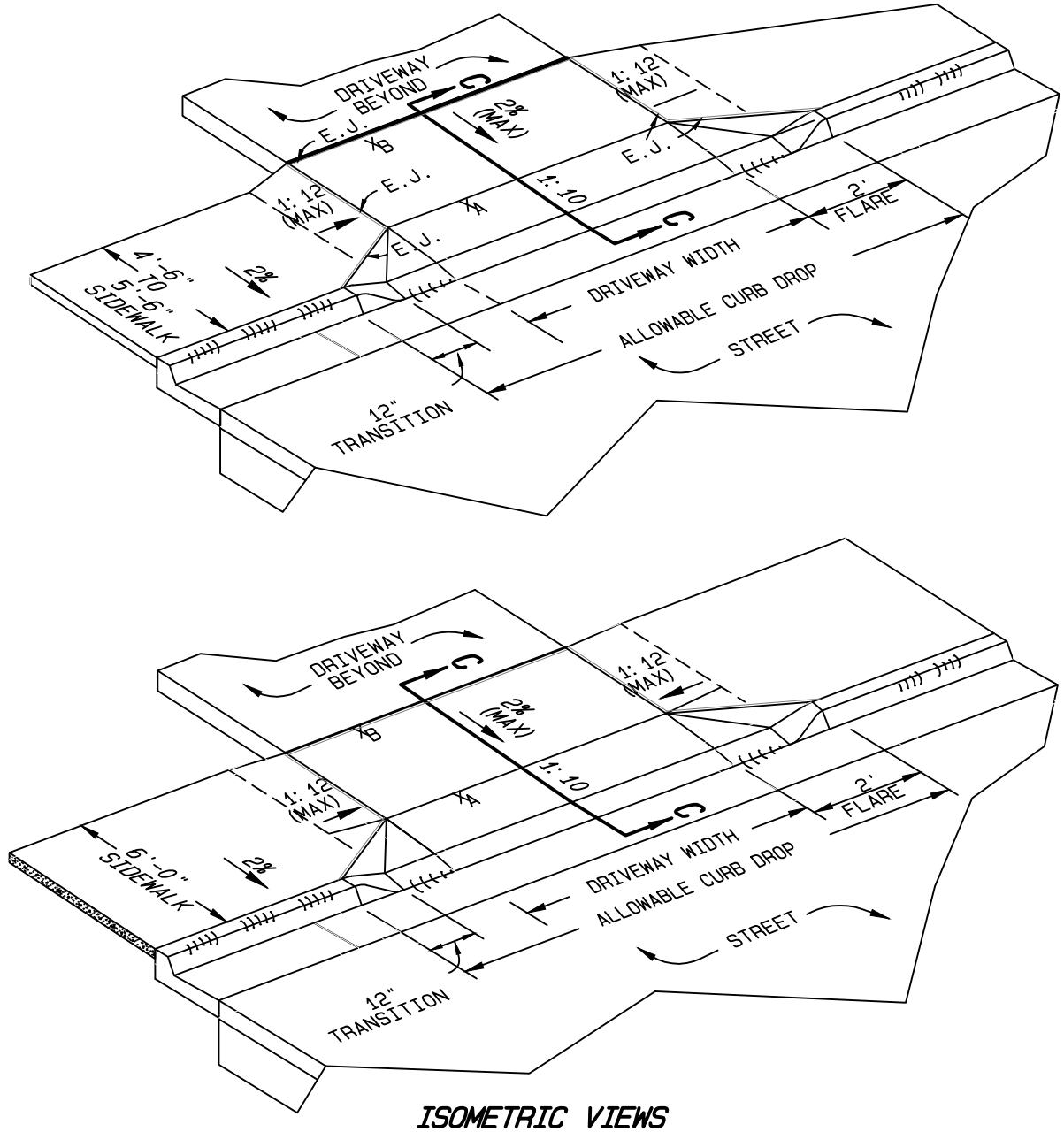


SECTION A-A

CITY OF GREENSBORO		
DRIVEWAY AND SIDEWALK SECTION FOR CURB & GUTTER STREETS (RESIDENTIAL)	STD. NO.	REV.
	416	01-96 06-04 09-03 03-11 03-04 03-20

GRADE POINT

(A) 1 3/4" BELOW TOP OF CURB
(B) 1/2" BELOW TOP OF CURB



ISOMETRIC VIEWS
DRIVEWAY APRON DETAIL

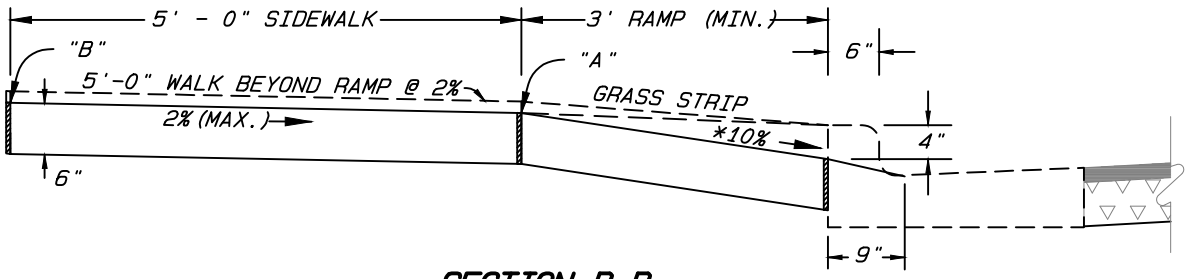
*NOTE:
EXPANSION JOINT (E.J.) MATERIAL TO BE
1/2" BITUMINOUS FIBRE EXPANSION JOINT MATERIAL
1: 10 (10%) 1 1/4" /FT
1: 12 (8%) 1"/FT

CITY OF GREENSBORO		
DRIVEWAY AND SIDEWALK SECTION FOR CURB & GUTTER STREETS (RESIDENTIAL)	STD. NO. 416	REV. 01-96 06-04 09-03 03-11 03-04 03-20

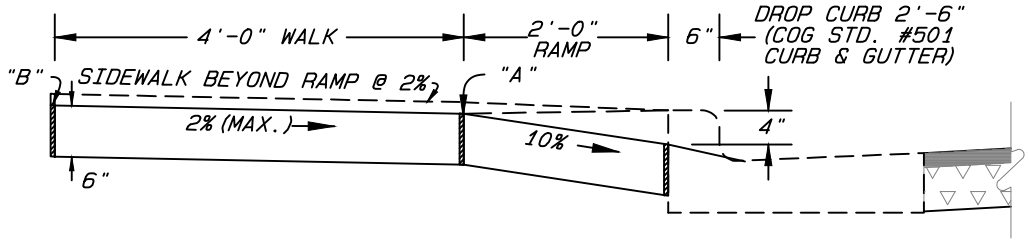
GRADE POINT

(A) 1 1/4" BELOW GRADE POINT "B"
(B) LEVEL WITH TOP OF CURB

* MAY REDUCE GRADE IF PT "B" IS ABOVE TOP OF CURB



SECTION B-B
MINIMUM DRIVEWAY APRON REQUIREMENTS
SIDEWALK WITH GRASS PLOT



SECTION C-C
SIDEWALK @ BACK OF CURB

ABSOLUTE MINIMUM APRON WIDTH DUE TO R/W RESTRICTIONS

CITY OF GREENSBORO		
DRIVEWAY AND SIDEWALK SECTION FOR CURB & GUTTER STREETS (RESIDENTIAL)	STD. NO. 416	REV. 01-96 06-04 09-03 03-11 03-04 03-20

NOTE:

DRIVEWAY GRADES AND/OR ALGEBRAIC DIFFERENCES IN GRADES EXCEEDING THE ACCEPTABLE GRADES SHOWN WILL REQUIRE PRIOR APPROVAL FROM THE CITY ENGINEER.

DRIVEWAY WITH SIDEWALK & A 3 FT OR WIDER GRASS STRIP

CITY OF GREENSBORO

DRIVEWAY AND SIDEWALK SECTION FOR CURB & GUTTER STREETS (RESIDENTIAL)	STD. NO.	REV.	
	416	01-96	06-04
		09-03	03-11
		03-04	03-20

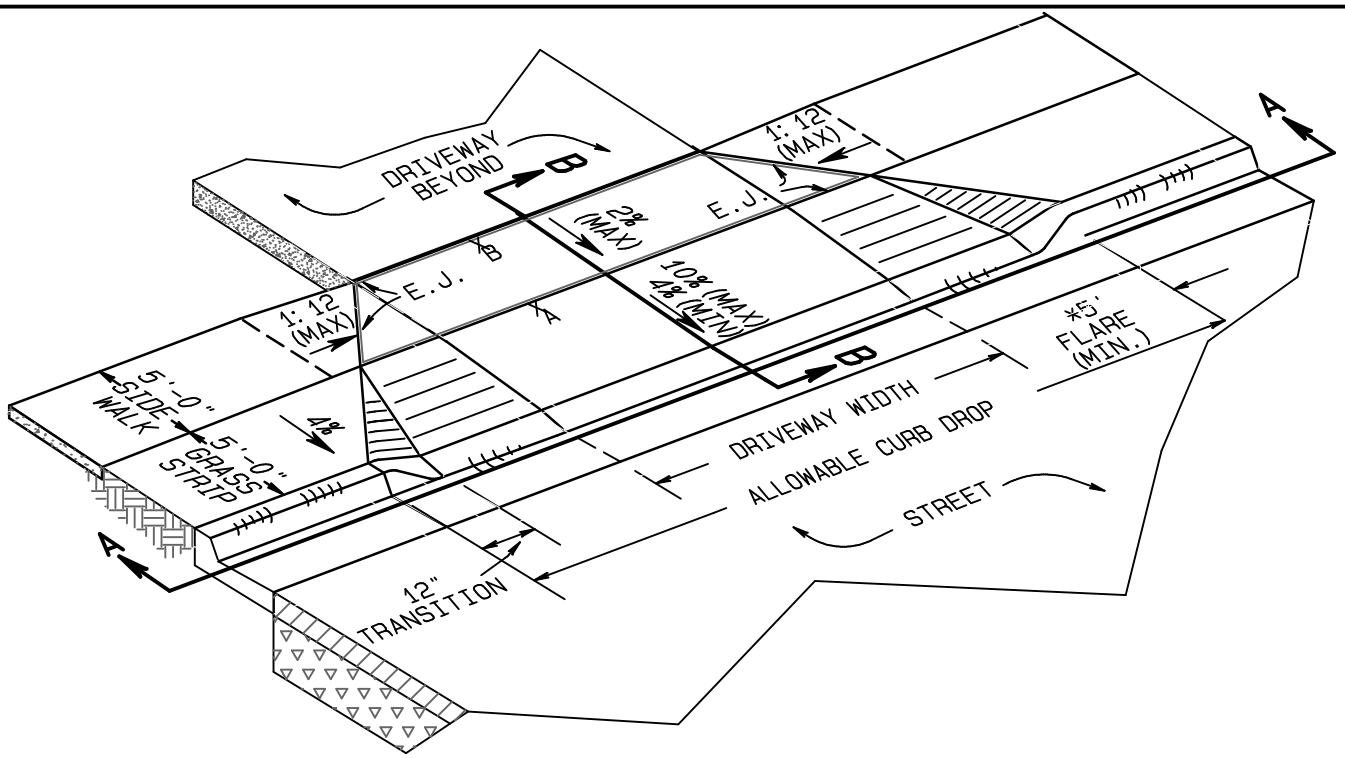
NOTE:

DRIVEWAY GRADES AND/OR ALGEBRAIC DIFFERENCES IN GRADES EXCEEDING THE ACCEPTABLE GRADES SHOWN WILL REQUIRE PRIOR APPROVAL FROM THE CITY ENGINEER.

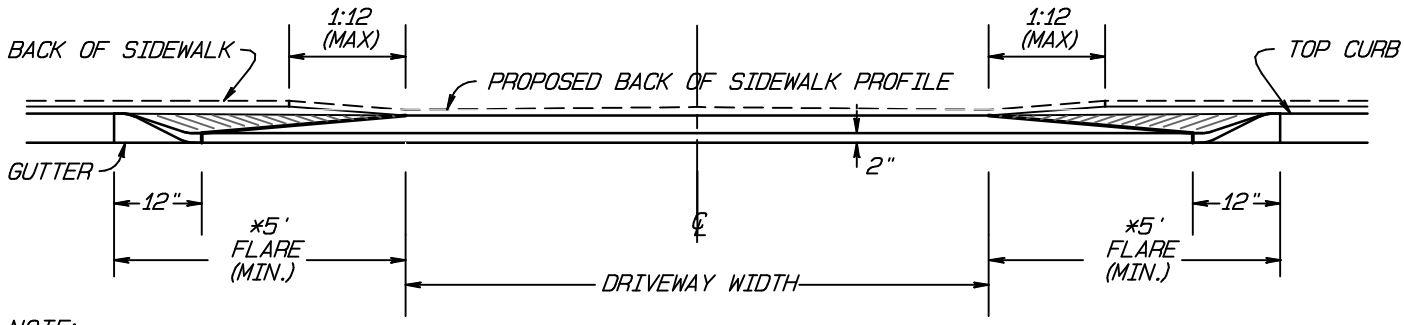
DRIVEWAY WITH SIDEWALK & LESS THAN 3 FT GRASS STRIP OR NO GRASS STRIP

CITY OF GREENSBORO

DRIVEWAY AND SIDEWALK SECTION FOR CURB & GUTTER STREETS (RESIDENTIAL)	STD. NO.	REV.	
	416	01-96 09-03 03-04	06-04 03-11 03-20

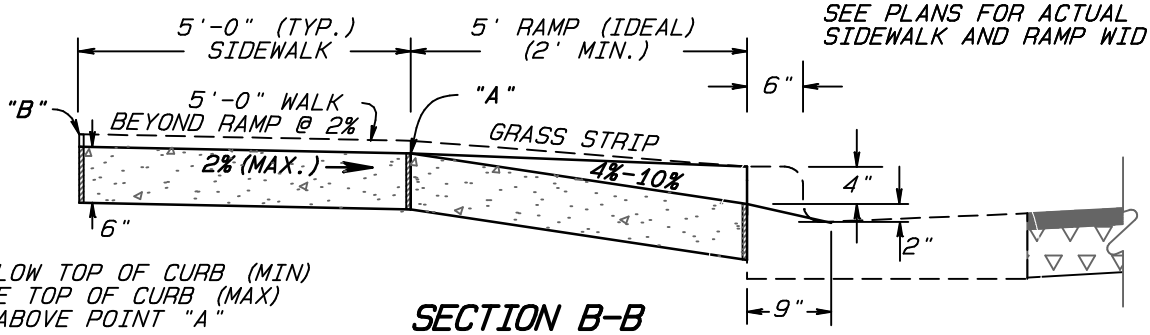


ISOMETRIC VIEW WITH GRASS STRIP



SECTION A-A

NOTE:
*FLARE WIDTH
5' (MIN.)
10' (MAX.)



SEE PLANS FOR ACTUAL SIDEWALK AND RAMP WIDTHS

GRADE POINT
(A) 1 1/2" BELOW TOP OF CURB (MIN)
2" ABOVE TOP OF CURB (MAX)
(B) 1 1/4" ABOVE POINT "A"

SECTION B-B

MINIMUM DRIVEWAY APRON REQUIREMENTS SIDEWALK WITH GRASS PLOT

*NOTE:
EXPANSION JOINT (E.J.) MATERIAL TO BE
1/2" BITUMINOUS FIBRE EXPANSION JOINT MATERIAL
1:10 (10%) 1 1/4" /FT
1:12 (8%) 1"/FT

CITY OF GREENSBORO

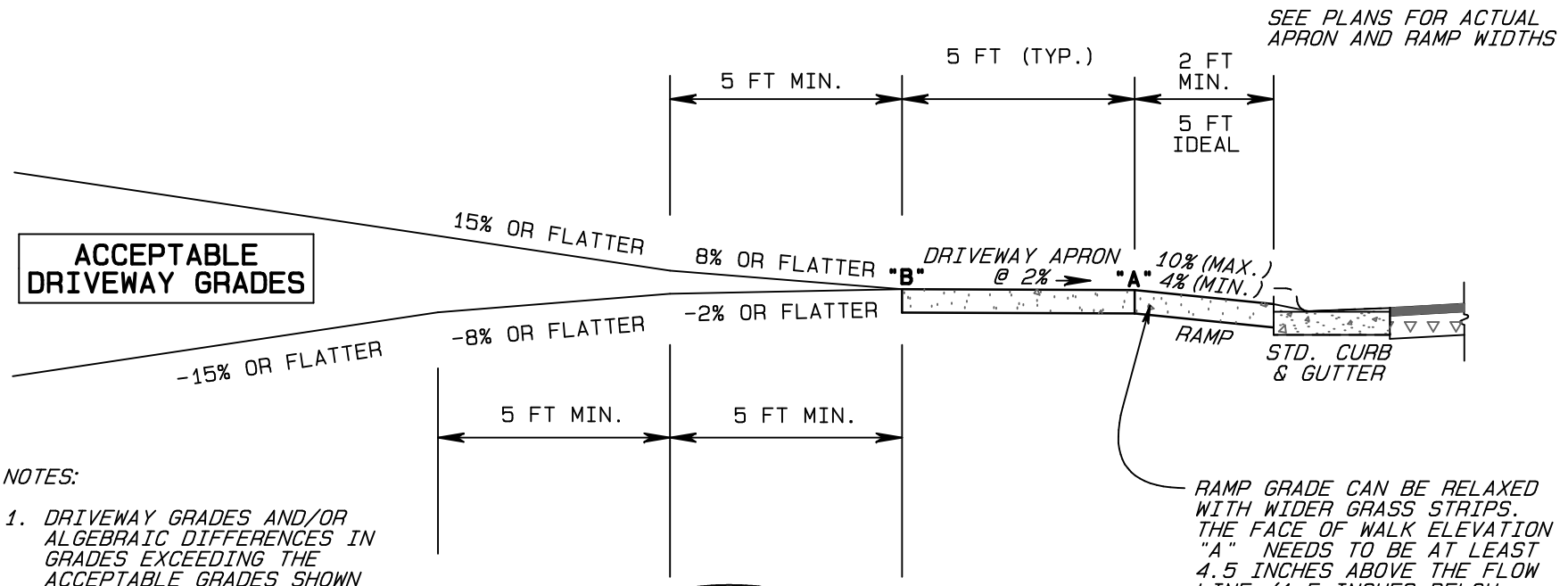
DRIVEWAY SECTION, COMMERCIAL	STD. NO.	REV.
	416-A	06-04 12-12

CITY OF GREENSBORO

DRIVEWAY SECTION, COMMERCIAL

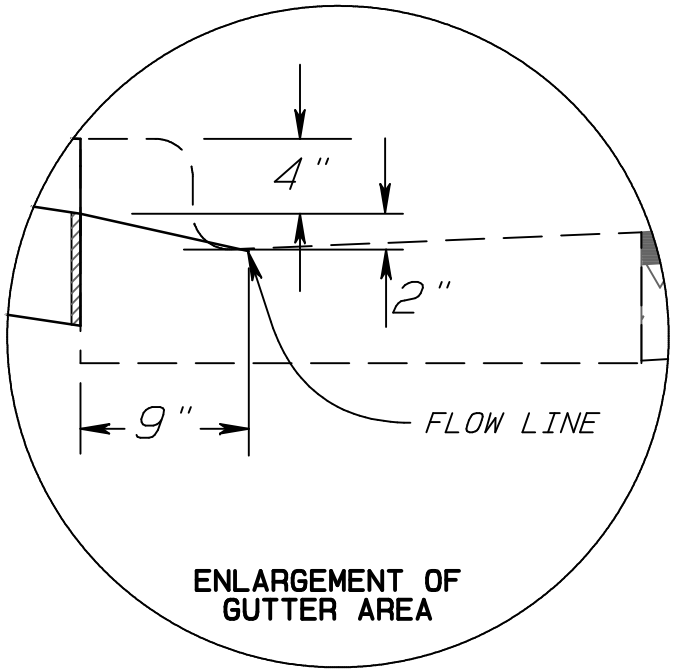
STD. NO.	REV.
416-A	06-04 12-12

ACCEPTABLE DRIVEWAY GRADES



NOTES:

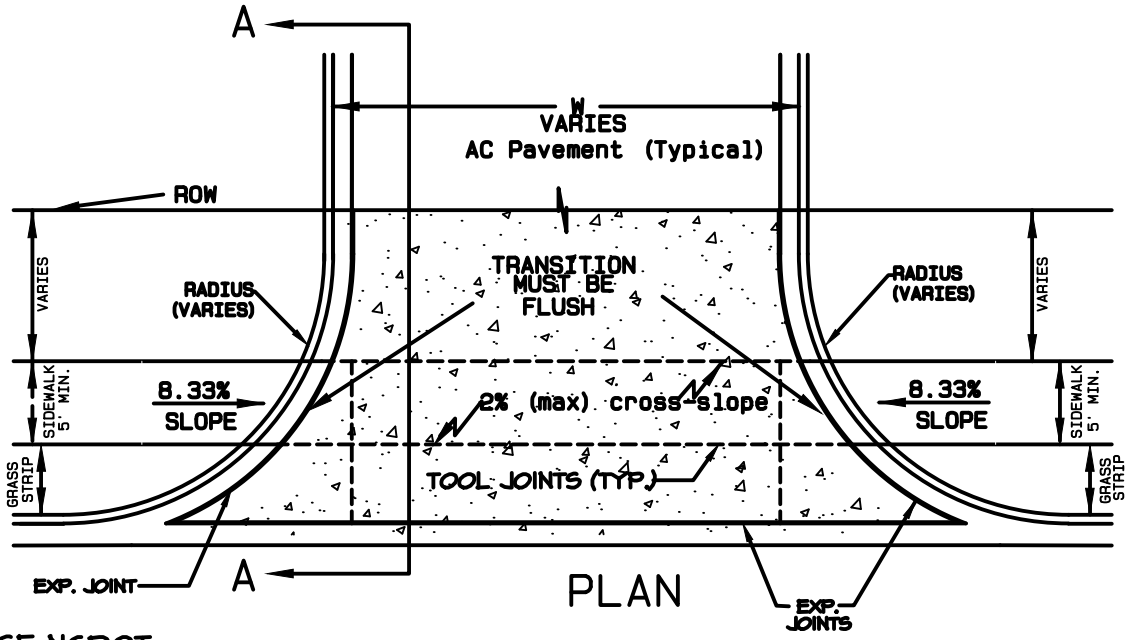
1. DRIVEWAY GRADES AND/OR ALGEBRAIC DIFFERENCES IN GRADES EXCEEDING THE ACCEPTABLE GRADES SHOWN WILL REQUIRE PRIOR APPROVAL FROM THE CITY ENGINEER.
2. STREET CROSS SLOPES IN EXCESS OF 2% MAY REQUIRE A REDUCTION IN THE DRIVEWAY RAMP GRADE TO PREVENT VEHICLE DRAGGING. THE ENGINEER SHALL EVALUATE THE SURVEY DATA AND DECIDE WHETHER A REDUCED GRADE IS WARRANTED.



ENLARGEMENT OF GUTTER AREA

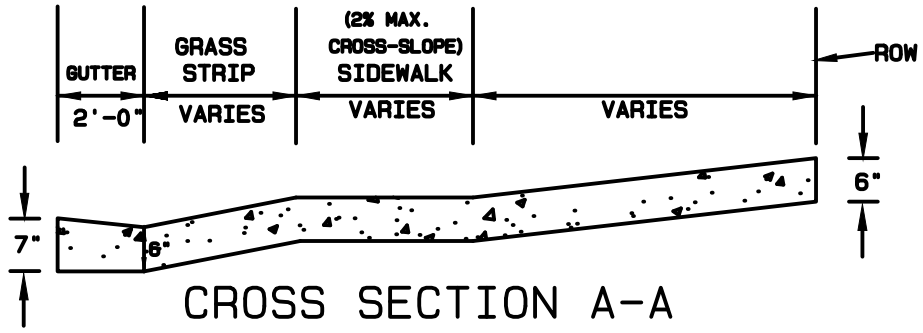
GRADE POINT

(A) 1 1/2" BELOW TOP OF CURB (MIN)
2" ABOVE TOP OF CURB (MAX)
(B) 2% MAX. SLOPE FROM A TO B



PLAN

USE NCDOT CLASS "B" CONCRETE



CROSS SECTION A-A

MINIMUM REQUIREMENTS**

	LOCAL	COLLECTOR	THOROUGHFARE
RADIUS (R)	15'	20'	25'
GRASS STRIP	3'	3'	5'
MINIMUM DRIVEWAY WIDTH (W)	24'	24'	24'

**SEE COG DRIVEWAY MANUAL FOR DETAILED INFORMATION

-NO DRIVEWAY SHALL BE LOCATED WITHIN 5' (AS MEASURED ALONG THE STREET CURB STARTING AT THE DRIVEWAY RADIUS) OF ANY MUNICIPAL OR STATE OWNED FEATURE (I.E. CURB INLETS, FIRE HYDRANTS, UTILITY POLES OR SIMILAR STRUCTURES)

-STREET TYPE DRIVEWAY SHALL BE USED ON ALL COMMERCIAL DRIVEWAYS LOCATED ON THOROUGHFARES. STREET TYPE DRIVEWAYS MAY ALSO BE REQUIRED ON COLLECTOR STREETS BASED ON BUSINESS TYPE AND TRAFFIC VOLUME. SUCH DETERMINATION WILL BE MADE DURING THE COMMERCIAL DRIVEWAY PERMITTING PROCESS.

CITY OF GREENSBORO

DRIVEWAY-COMMERCIAL STREET TYPE	STD. NO.	REV.
	416-B	09-11 12-12

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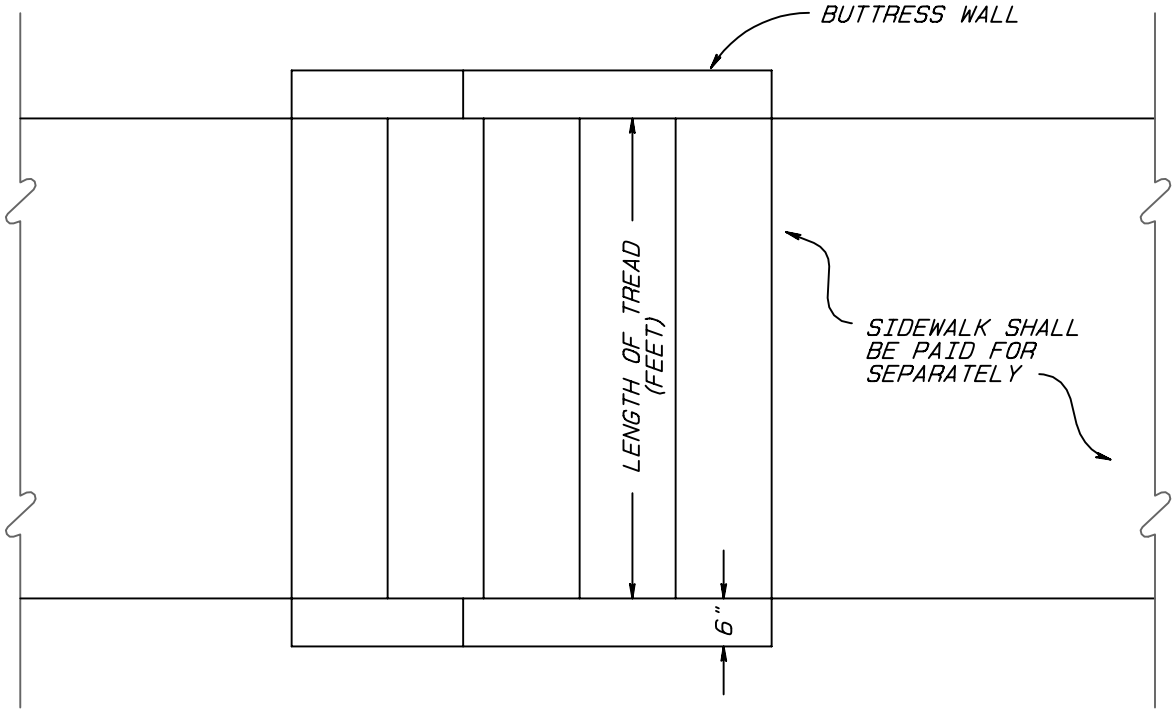
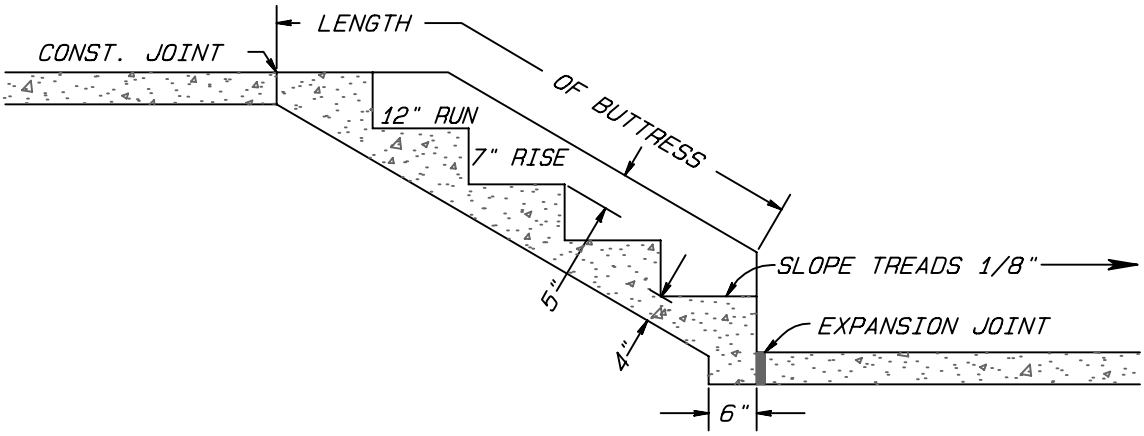


PLAN



SECTION

NOTES:

ONE & TWO RISER STEPS WILL NOT HAVE A BUTTRESS WALL UNLESS DIRECTED BY ENGINEER.

TREAD & RISER DIMENSIONS MAY VARY SLIGHTLY TO ACCOMODATE FIELD CONDITIONS.

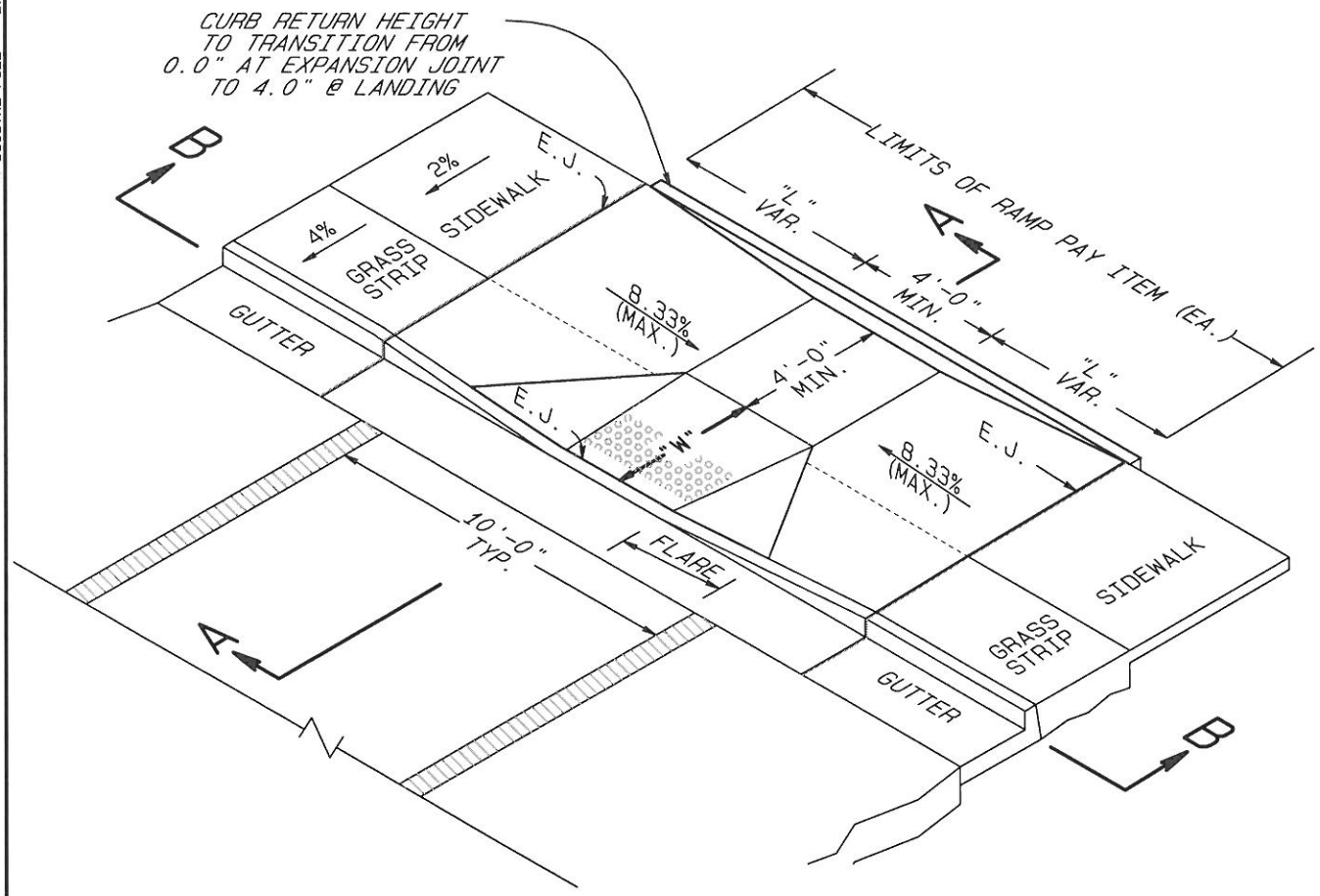
CONCRETE SHALL BE CLASS A, 3000 PSI AIR ENTRAINED.

STEPS AND BUTTRESS WALLS WILL BE MEASURED FOR PAYMENT AS FOLLOWS:

1) LENGTH OF TREAD MULTIPLIED BY NUMBER OF RISERS EQUALS LINEAR FEET OF CONCRETE STEP TREADS.

2) LENGTH OF EACH BUTTRESS WALL MEASURED AS SHOWN ABOVE EQUALS LINEAR FEET OF CONCRETE BUTRESS WALL.

CITY OF GREENSBORO		
STANDARD CONCRETE STEPS AND BUTTRESS WALLS	STD. NO.	REV.
	417	



ISOMETRIC VIEW

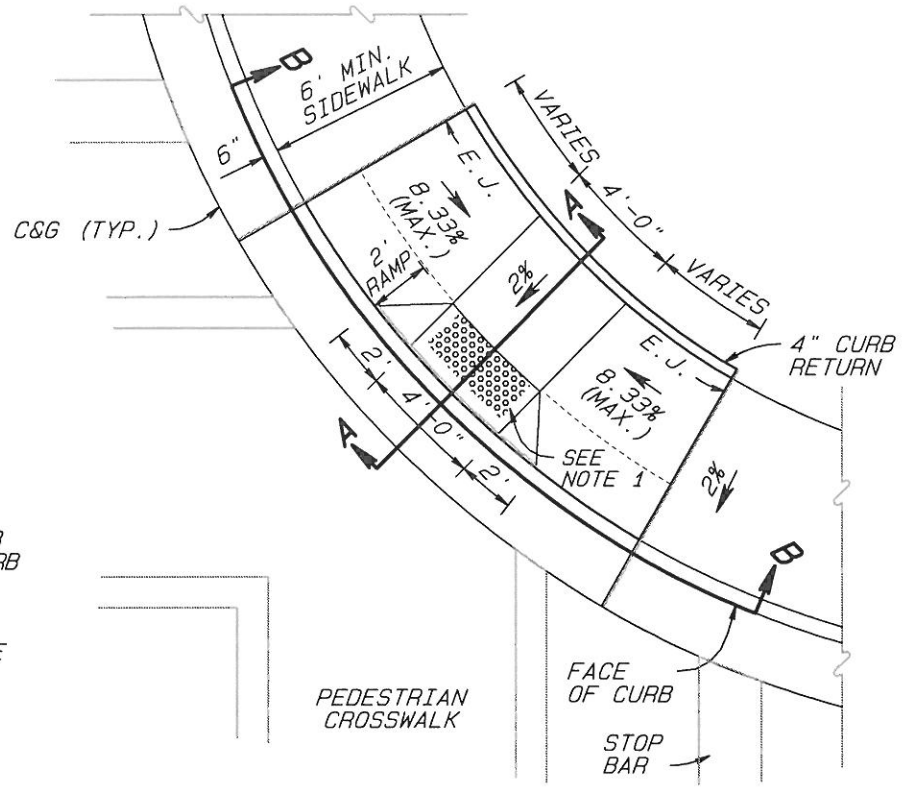
GRASS STRIP WIDTH PLUS S/W WIDTH	GRASS STRIP WIDTH	S/W WIDTH	RAMP WIDTH "W"	CURB RETURN HEIGHT	FLARE WIDTH	MIN. S/W SLOPE LENGTH "L"
6'-0"	0'-0"	6'-0"	2'-0"	4"	2'-0"	4'-0"
6'-6"	1'-6"	5'-0"	2'-6"	4"	2'-6"	4'-0"
7'-0"	2'-0"	5'-0"	3'-0"	4"	3'-0"	4'-0"
7'-6"	2'-6"	5'-0"	3'-6"	4"	3'-6"	3'-6"
8'-0"	3'-0"	5'-0"	4'-0"	4"	4'-0"	3'-0"
8'-6"	3'-6"	5'-0"	4'-6"	N/A	4'-6"	3'-0"
9'-0"	4'-0"	5'-0"	5'-0"	N/A	5'-0"	2'-6"
9'-6"	4'-6"	5'-0"	5'-6"	N/A	5'-6"	2'-6"
10'-0"	5'-0"	5'-0"	6'-0"	N/A	6'-0"	2'-6"

NOTES:
1. LENGTH OF "W" IS VARIABLE. THE CONTROLLING FACTOR IS THE SLOPE OF "W", WHICH IS 5.0% MIN. AND 8.33% MAX.
2. MAX. SLOPE ON THE FLARES ARE 10% (10:1)
3. TRUNCATED DOMES WITH VISUAL CONTRAST TO BE PLACED FROM BACK OF CURB TO 2FT FROM BACK OF CURB
4. THE ENTIRE CURB RAMPS, FROM EXPANSION JOINT TO EXPANSTION JOINT, SHALL BE 6" THICK CONCRETE.

CITY OF GREENSBORO

STANDARD CONCRETE CURB RAMP

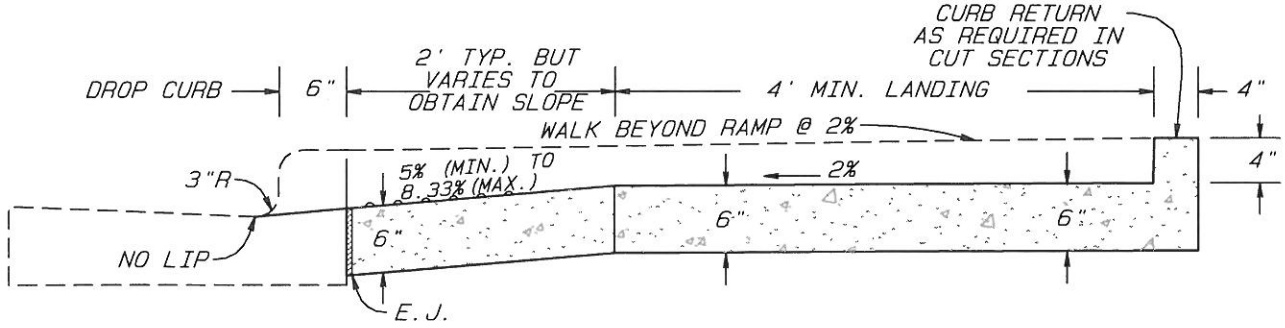
STD. NO.	REV.
418	03-04 03-12 09-05 09-07



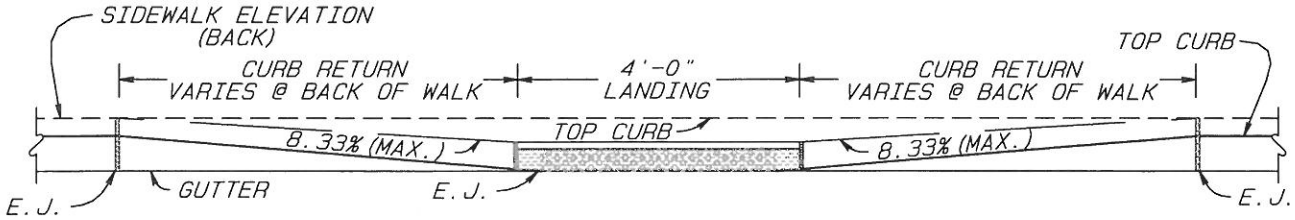
NOTES:

1. TRUNCATED DOMES WITH VISUAL CONTRAST TO BE PLACED FROM BACK OF CURB TO 2 FT FROM BACK OF CURB
2. THE ENTIRE CURB RAMP, FROM EXPANSION JOINT TO EXPANSION JOINT, SHALL BE 6" THICK CONCRETE.

TYPICAL LOCATION DETAIL



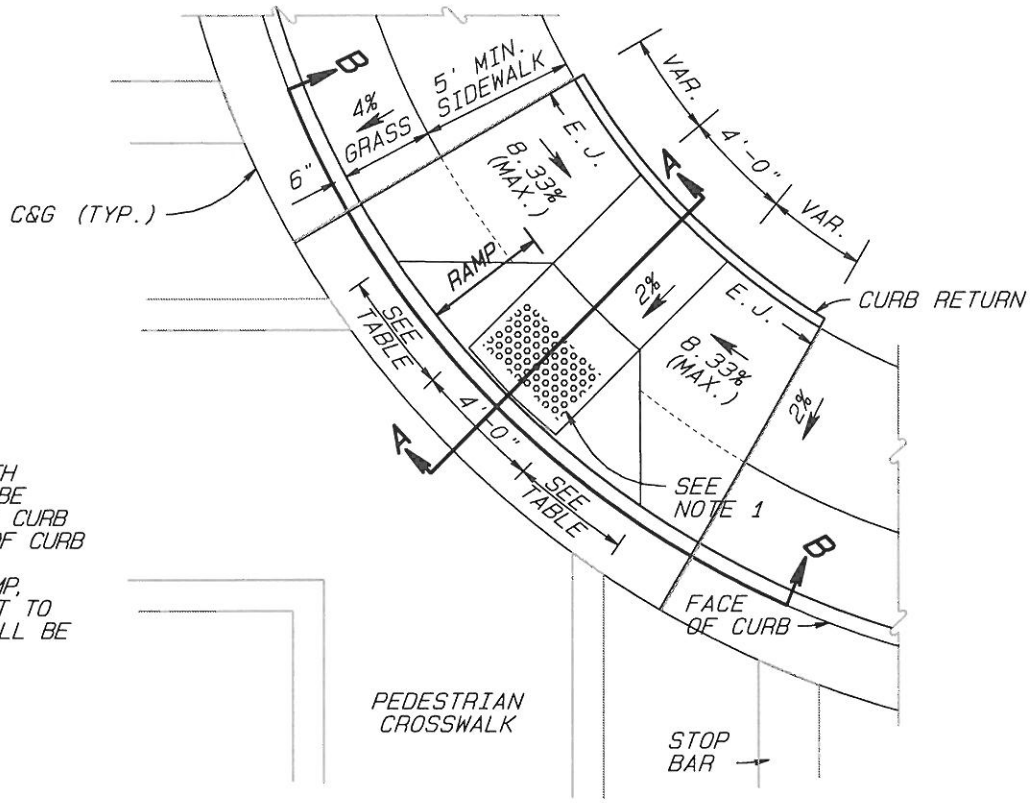
SECTION A-A



SECTION B-B

CITY OF GREENSBORO

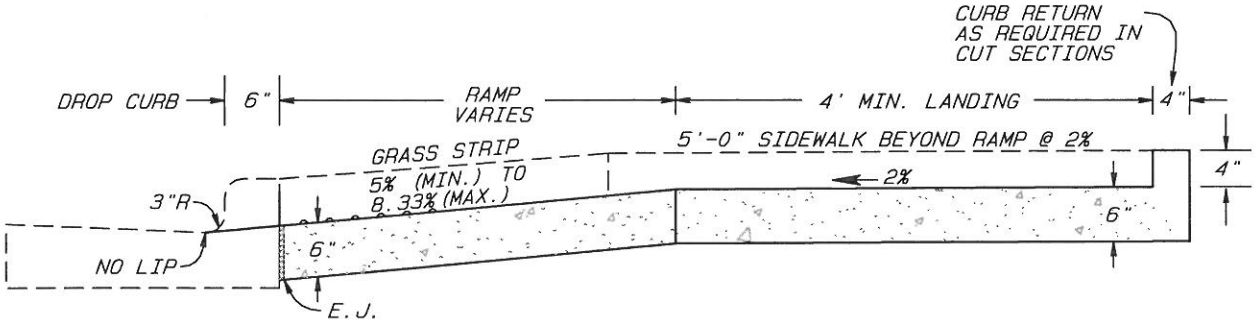
STANDARD CONCRETE CURB RAMP (NO GRASS STRIP)	STD. NO.	REV.
	418	03-04 03-12 09-05 09-07



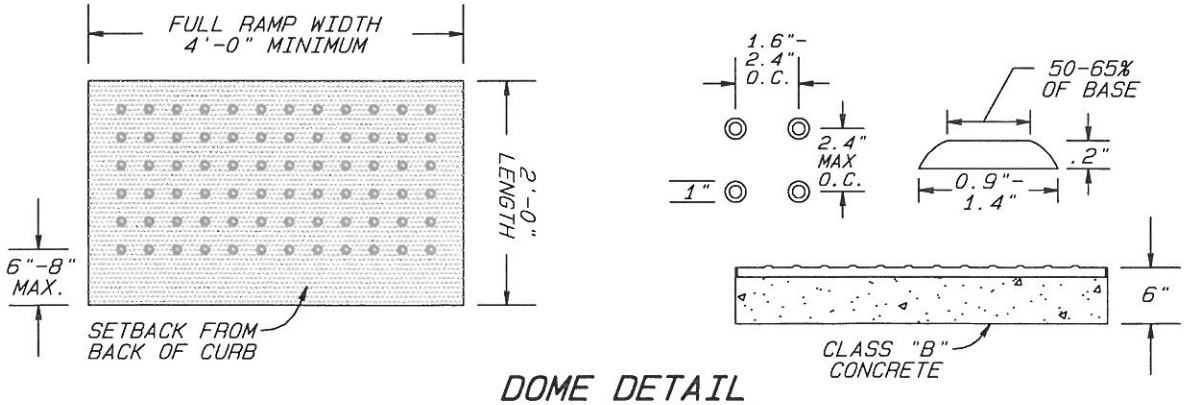
NOTES:

1. TRUNCATED DOMES WITH VISUAL CONTRAST TO BE PLACED FROM BACK OF CURB TO 2 FT FROM BACK OF CURB
2. THE ENTIRE CURB RAMP, FROM EXPANSION JOINT TO EXPANSION JOINT, SHALL BE 6" THICK CONCRETE.

TYPICAL LOCATION DETAIL



SECTION A-A

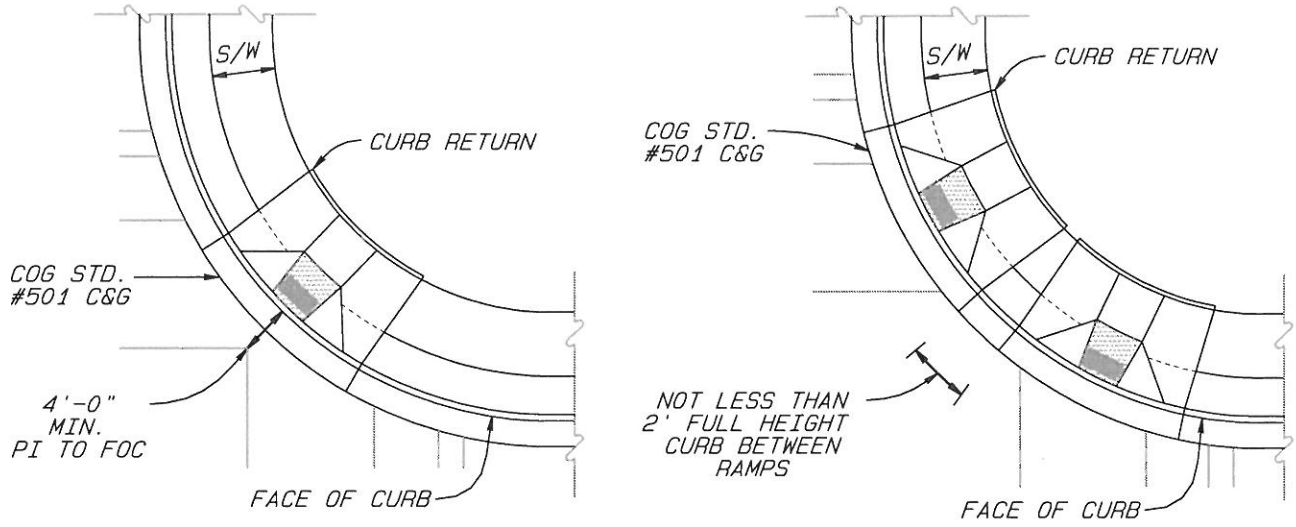


DOME DETAIL

CITY OF GREENSBORO

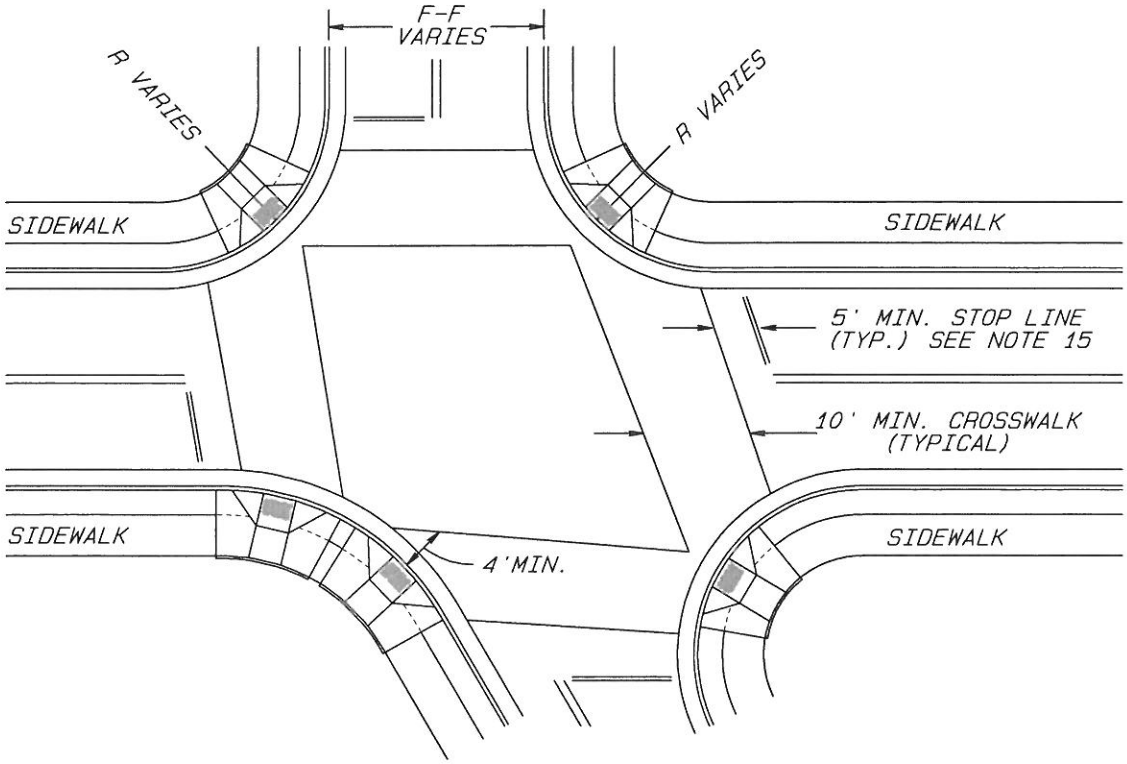
STANDARD CONCRETE CURB RAMP (WITH GRASS STRIP)

STD. NO.	REV.
418	03-04 03-12 09-05 09-07



PLAN VIEW

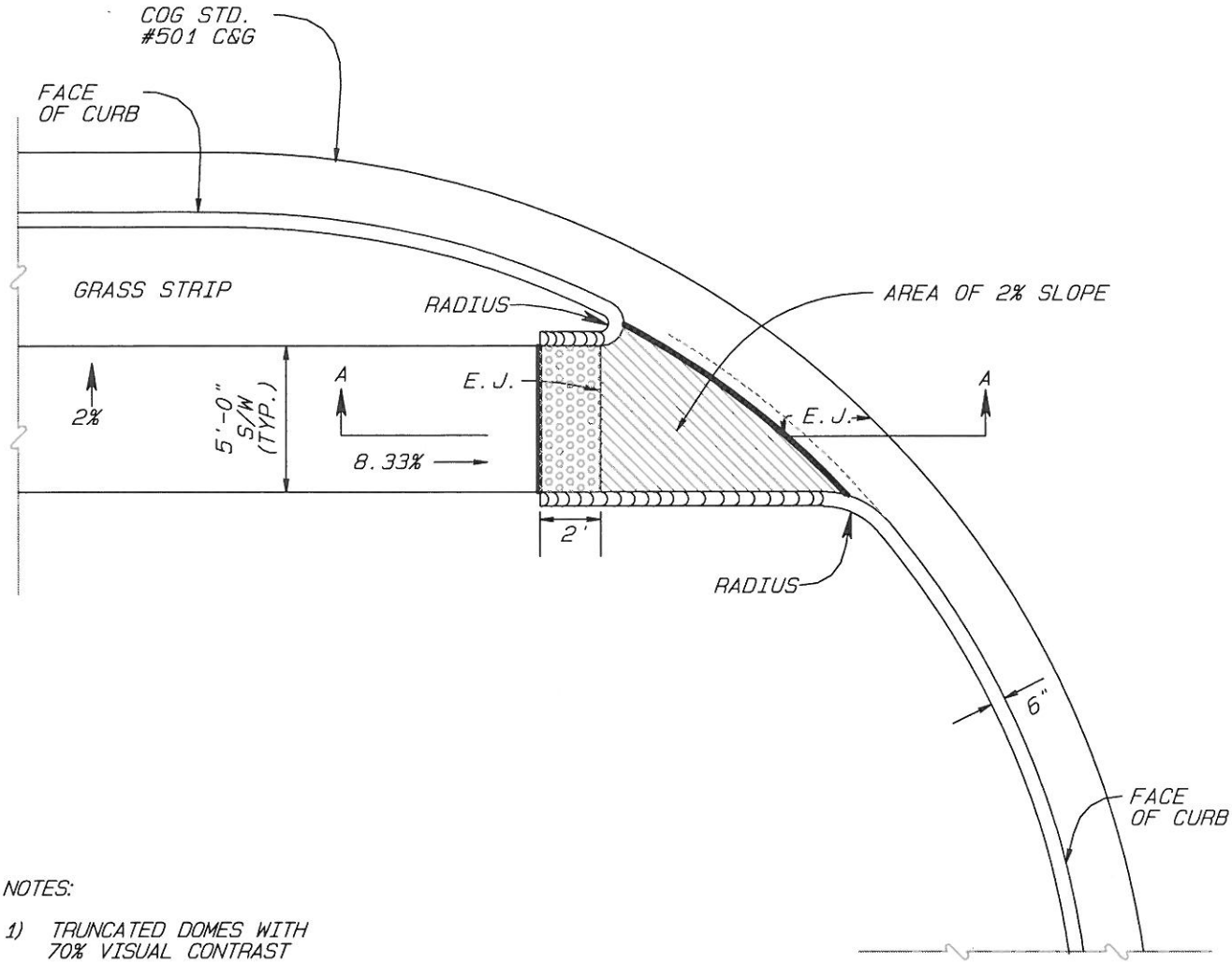
THE CURB CUT AND THE PEDESTRIAN CROSSWALK LINES SHALL BE COORDINATED SO THE FLOOR OF THE WHEELCHAIR RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES. DUAL RAMPS WITH FLARED SIDES SHALL BE PLACED SO 24" OF FULL CURB HEIGHT FALLS BETWEEN FLARES.



TYPICAL LOCATION DETAIL

CITY OF GREENSBORO

STANDARD CONCRETE CURB RAMP	STD. NO.	REV.
	418	03-04 03-12 09-05 09-07

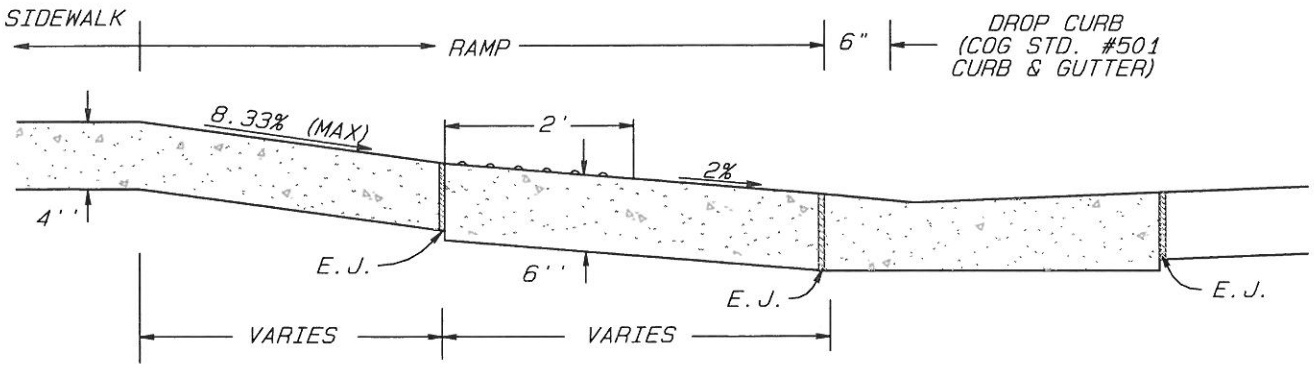


NOTES:

1) TRUNCATED DOMES WITH 70% VISUAL CONTRAST

2) SLOPES 12:1 (8.33%) (MAX)

TYPICAL LOCATION DETAIL



SECTION A-A

E.J. = EXPANSION JOINT

CITY OF GREENSBORO

STANDARD CONCRETE CURB RAMP (PARALLEL TO STREET)	STD. NO.	REV.
	418	03-04 03-12 09-05 09-07

NOTES:

1. DETECTABLE WARNING SURFACES ARE REQUIRED AT THE BOTTOM OF CURB RAMPS, BORDERS OF MEDIANS AND ISLANDS AND AT RAILROAD CROSSINGS FOR THE FULL WIDTH OF THE RAMP OR SIDEWALK. THE DETECTABLE WARNING SURFACE WILL PROVIDE A 70% CONTRAST TO THE SURROUNDING SURFACE. THE DETECTABLE WARNING SURFACE WILL BE A VITRIFIED POLYMER COMPOSITE (VPC) INSERT WITH TRUNCATED DOMES AS PER THIS STANDARD FOR SIZE AND SPACING REQUIREMENTS. MASONRY INSERTS MAY BE SUBSTITUTED FOR VPC DETECTABLE SURFACES PROVIDED CONSTRUCTION PROVISIONS ARE DETAILED AND APPROVED IN THE CONSTRUCTION PLAN REVIEW. SUBSTITUTE INSERTS SHALL CONFORM TO THE SAME SPACING AND DIMENSIONING REQUIREMENTS.

   A MINIMUM 48" X 48" LANDING IS REQUIRED AT THE TOP OF EACH CURB RAMP. THE MAXIMUM CROSS SLOPE ON THIS LANDING IS 2% IN EACH DIRECTION. WARNING SURFACES SHALL MEET OR EXCEED ASTM D 695-072 FOR COMPRESSIVE STRENGTH, ASTM D 638-03 FOR TENSILE STRENGTH, AND ASTM D 790-03 FOR FLEXURAL STRENGTH. WEATHERING OF SURFACE SHALL MEET ASTM D S420 WITH NO FADING OR CHALKING.

2. CURB RAMPS SHALL BE PROVIDED AT LOCATIONS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. CURB RAMPS SHALL BE LOCATED AS DIRECTED BY THE ENGINEER WHERE EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. DO NOT AFFECT PLACEMENT. WHERE TWO RAMPS ARE INSTALLED ADJOINING, NOT LESS THAN 2 FEET OF FULL HEIGHT CURB SHALL BE PLACED BETWEEN THE RAMPS.

3. NO SLOPE ON THE CURB RAMP SHALL EXCEED 1"/1' (12:1) IN RELATIONSHIP TO THE GRADE OF THE STREET.

4. IN NO CASE SHALL THE WIDTH OF THE CURB RAMP BE LESS THAN 48" (4'-0") HOWEVER, WIDTH MAY EXCEED 48".

5. USE CLASS "B" CONCRETE WITH A SIDEWALK FINISH IN ORDER TO OBTAIN A ROUGH NON-SKID TYPE SURFACE.

6. A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE CONCRETE CURB RAMP JOINS THE CURB AND AS SHOWN ON THIS STANDARD.

7. THE MINIMUM WIDTH OF THE PEDESTRIAN CROSSWALK SHALL BE 10 FEET.

8. STOP LINES, NORMALLY PERPENDICULAR TO THE LANE LINES, SHALL BE USED WHERE IT IS IMPORTANT TO INDICATE THE POINT BEHIND WHICH VEHICLES ARE REQUIRED TO STOP IN COMPLIANCE WITH A TRAFFIC SIGNAL, STOP SIGN OR OTHER LEGAL REQUIREMENT. AN UNUSUAL APPROACH SKEW MAY REQUIRE THE PLACEMENT OF THE STOP LINE PARALLEL TO THE INTERSECTING ROADWAY.

9. PARKING SHALL BE ELIMINATED A MINIMUM OF 20 FEET BACK OF PEDESTRIAN CROSSWALK.

10. ALL PAVEMENT MARKINGS SHALL BE DESIGNED IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION AND THE NORTH CAROLINA SUPPLEMENT TO THE MUTCD.

11. LOCATIONS FOR CURB DROPS OF PROPOSED AND FUTURE CURB RAMPS WILL BE DIMENSIONED ON ALL INTERSECTION IMPROVEMENT PLANS.

12. GAPS DUE TO JOINTS, ETC. SHALL NOT EXCEED 1/2".

CITY OF GREENSBORO

STANDARD CONCRETE CURB RAMP	STD. NO.	REV.
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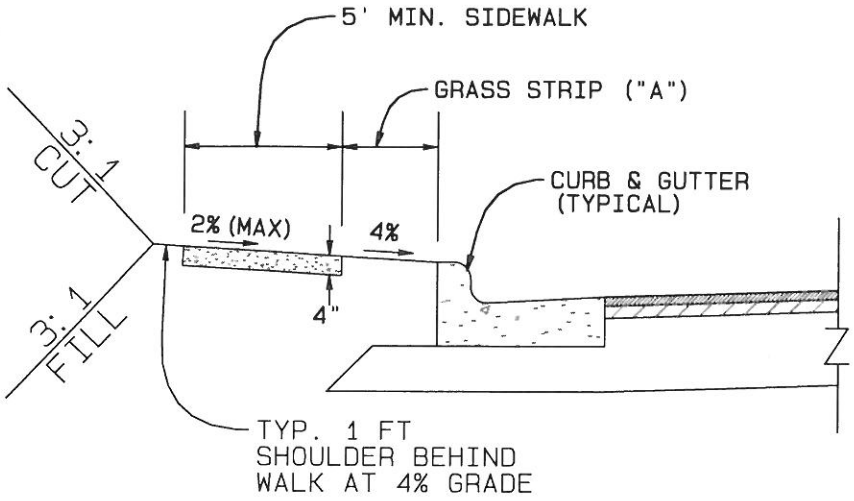
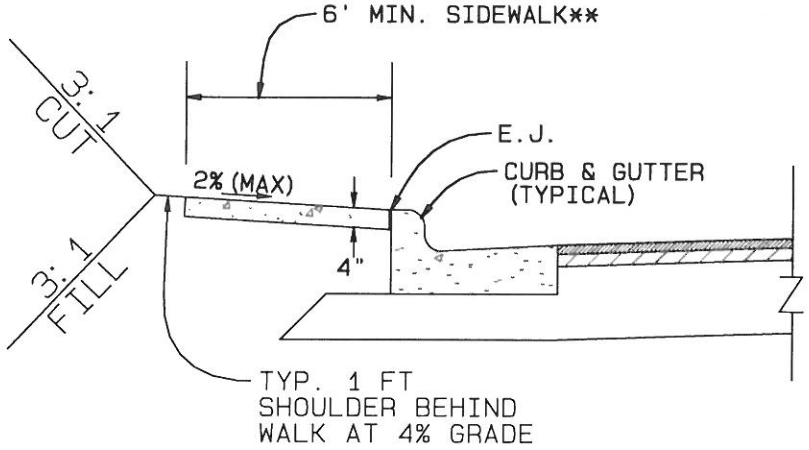


NOTE: SLOPE OF GRASS STRIP MAY BE VARIED IF CONSTRAINTS WARRANT SUCH. ENGINEER'S APPROVAL WILL BE REQUIRED.

TYPICAL SECTION WITH GRASS STRIP



TYPICAL SECTION WITHOUT GRASS STRIP

*** MINIMUM SIDEWALK WIDTH IS 6' WHEN VARIOUS CONSTRAINTS MAKE A GRASS STRIP ("A") NOT FEASIBLE. ALL CASES WHERE A GRASS STRIP IS LESS THAN THE MINIMUM STATED IN THE CHART ON SHEET 2 OR IS NONEXISTENT MUST BE APPROVED BY THE GREENSBORO DEPT. OF TRANSPORTATION.*

NOTE:
GRASS STRIP WIDTH, SIDEWALK WIDTH & SIDEWALK LOCATION MUST CONFORM TO THE TABLE SHOWN ON SHEET 2 BASED ON THE STREET'S CLASSIFICATION. ANY EXCEPTIONS MUST BE APPROVED BY THE GREENSBORO DEPT. OF TRANSPORTATION

CITY OF GREENSBORO

SIDEWALK STANDARD FOR USE WITH TYPICAL STREET SECTIONS	STD. NO.	REV.
	418-A	09-11 12-11 06-13

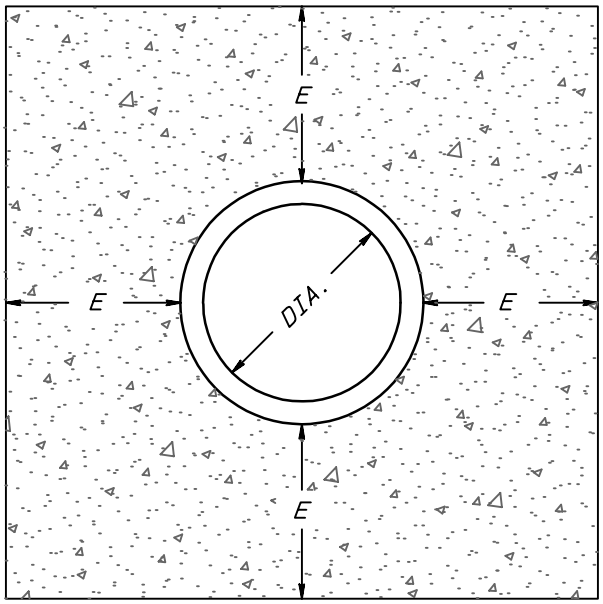
STREET CLASSIFICATION	GRASS STRIP "A"	SIDEWALK LOCATION
LOW DENSITY LOCAL	3'MIN.	MIN. 1 SIDE
MEDIUM DENSITY LOCAL	3'MIN.	MIN. 1 SIDE
HIGH DENSITY LOCAL RESIDENTIAL	3'MIN.	BOTH SIDES
HIGH DENSITY LOCAL NON-RESIDENTIAL	3'MIN.	BOTH SIDES
RESIDENTIAL COLLECTOR	3'MIN.	MIN. 1 SIDE
NON-RESIDENTIAL COLLECTOR	3'MIN.	MIN. 1 SIDE
MINOR THOROUGHFARE	5'MIN.	BOTH SIDES
MAJOR THOROUGHFARE	5'MIN.	BOTH SIDES

NOTES:

1. *SIDEWALK WIDTH IS **5' MIN.** FOR ALL STREET CLASSIFICATIONS.*
2. *ALL ROADWAY PROJECTS MUST CONFORM TO THE STANDARDS FOUND IN TABLES 5.1 - 5.6 IN THE "STREET DESIGN STANDARDS MANUAL" PUBLISHED BY THE CITY OF GREENSBORO'S DEPT. OF TRANSPORTATION.*
3. *THIS STANDARD, #418-A, IS A SUMMARY OF THOSE DESIGN GUIDELINES AS THEY RELATE TO SIDEWALK LOCATION, SIDEWALK WIDTH AND GRASS STRIP WIDTH AS A FUNCTION OF STREET CLASSIFICATION.*
4. *ANY EXCEPTIONS TO THE GUIDELINES CONTAINED IN THIS STANDARD MUST BE APPROVED IN ADVANCE BY THE GREENSBORO DEPT. OF TRANSPORTATION.*
5. *A 1/2" EXPANSION JOINT WILL BE REQUIRED AT THE END OF ALL CONCRETE CURB RAMPS AND EVERY 30 FT. THROUGHOUT THE SIDEWALK. TOOL JOINTS WILL BE REQUIRED FOR EVERY 5 FT. FOR 5 FT. WIDE SIDEWALKS AND EVERY 6 FT. FOR 6 FT. WIDE SIDEWALKS. EXPANSION AND TOOL JOINTS SHALL NOT EXCEED 1/2". WHEN SIDEWALKS INTERSECT A CURB LINE OR DRIVEWAY, AN EXPANSION JOINT SHALL BE INSTALLED.*
6. *USE CLASS "B" CONCRETE; SIDEWALKS ARE TO BE 4" THICK*
7. *SIDEWALK CROSS SLOPE TARGET IS 2%. CROSS SLOPE CANNOT BE GREATER THAN 2% AND CANNOT BE LESS THAN 1%.*

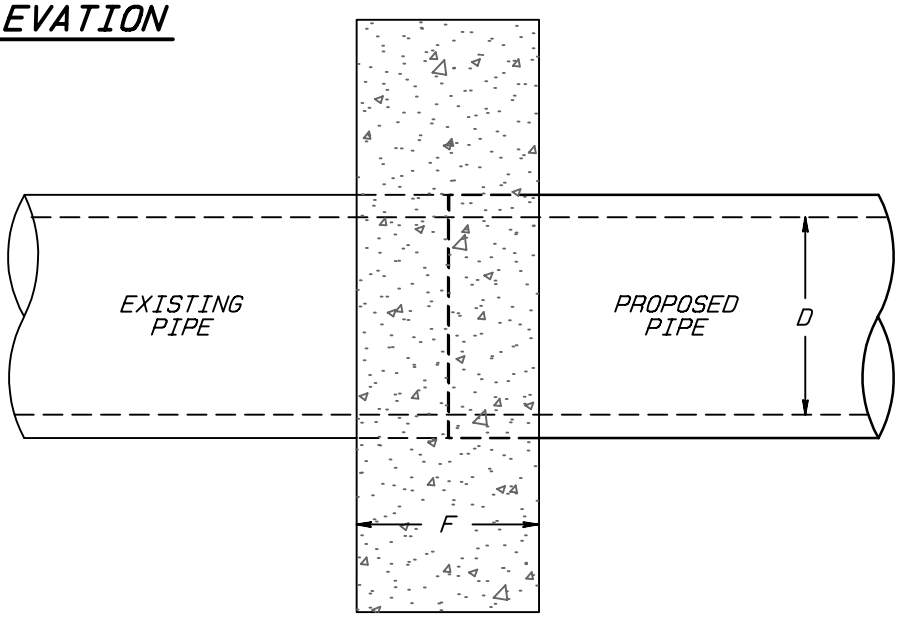
CITY OF GREENSBORO

SIDEWALK STANDARD FOR USE WITH TYPICAL STREET SECTIONS	STD. NO.	REV.
	418-A	09-11 12-11 06-13



D	E	F	CU. YD.
12"	12"	12"	0.3528
15"	12"	12"	0.3990
18"	12"	12"	0.4465
24"	12"	12"	0.5526
30"	12"	12"	0.6560
36"	12"	12"	0.7640
42"	12"	12"	0.8856
48"	12"	12"	1.0126
54"	18"	18"	2.5793
60"	18"	18"	2.8506
66"	18"	18"	3.1307
72"	18"	18"	3.4176

ELEVATION



SIDE ELEVATION

NOTES:

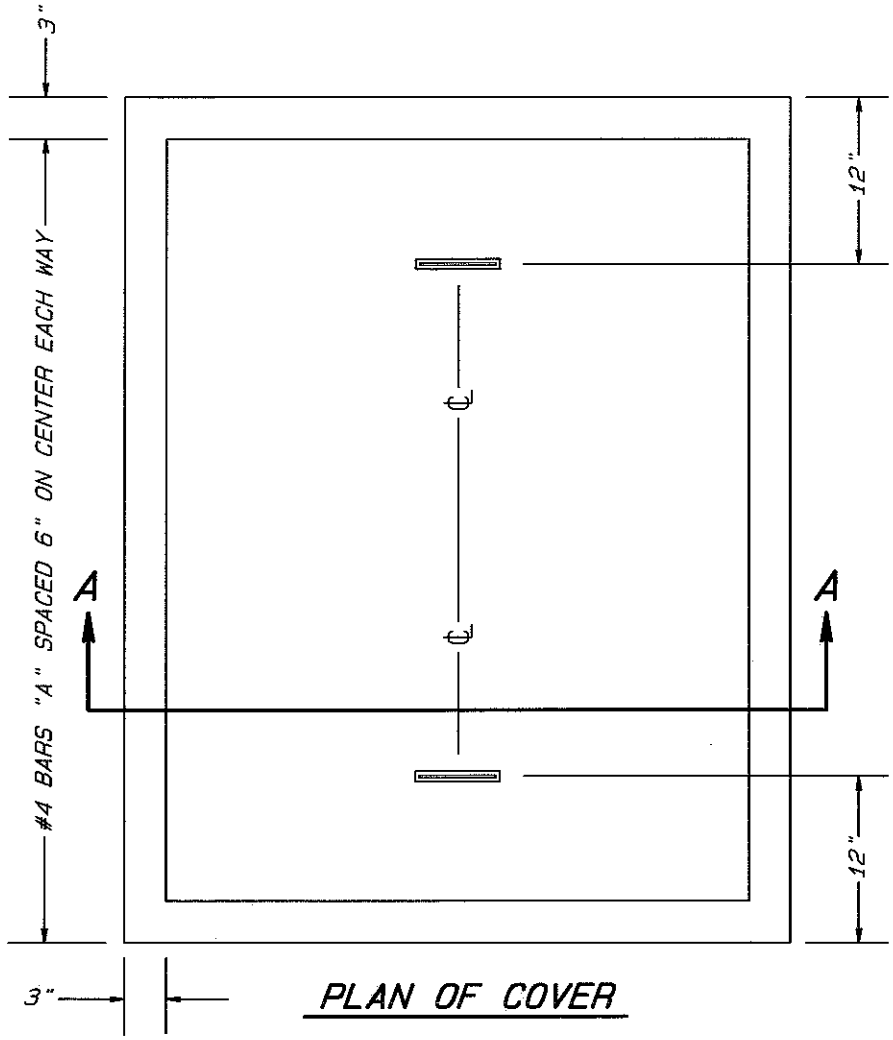
USE PIPE COLLARS FOR EXTENDING EXISTING PIPE CULVERTS AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER. THIS INCLUDES EXTENDING EXISTING PIPES WITH PIPES OF DIFFERENT MATERIALS OR WHEN INADEQUATE COVER PROHIBITS THE USE OF A PROPER DRAINAGE STRUCTURE. THE TWO PIPES MUST BE THE SAME DIAMETER.

THE PIPE COLLAR SHALL BE CONSTRUCTED OF CLASS "B" , 2500 PSI OR BETTER CONCRETE.

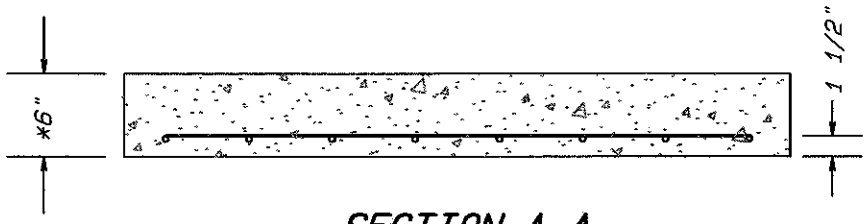
USE 12 INCH DIAMETER VALUES FOR PIPE DIAMETERS LESS THAN 12 INCH.

CITY OF GREENSBORO

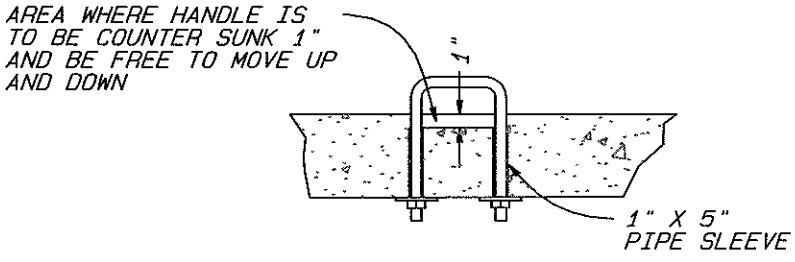
STANDARD PIPE COLLAR	STD. NO.	REV.
	419	



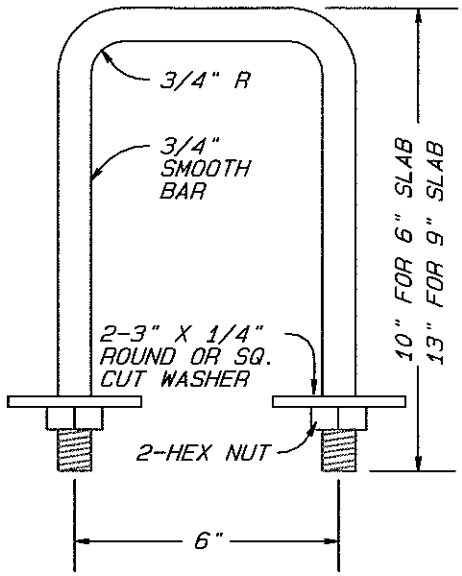
PLAN OF COVER



SECTION A-A



PART SECTION



HANDLE DETAIL

NOTES:

ALL EXPOSED CONCRETE CORNERS TO BE CHAMFERED 1 INCH.

A MINIMUM OF 4000 PSI COMPRESSIVE STRENGTH WILL BE REQUIRED.

COST OF ALL LABOR AND MATERIAL REQUIRED TO CONSTRUCT THIS COVER SHALL BE INCLUDED IN THE UNIT PRICE BID PER EACH "CONVERT EX. CURB INLET TO JUNCTION BOX."

PLUGGING OF EXISTING OPENING TO CURB INLET WITH BRICK MASONRY IS PERMITTED SO LONG AS FINISHED STRUCTURE IS COVERED SUFFICIENTLY AS DETERMINED BY THE ENGINEER.

*WHEN JUNCTION BOX IS UNDER PROPOSED PAVEMENT, THE COVER DEPTH IS TO BE 9 INCHES IN LIEU OF 6 INCHES AND #5 BARS TO BE USED IN LIEU OF #4 BARS.

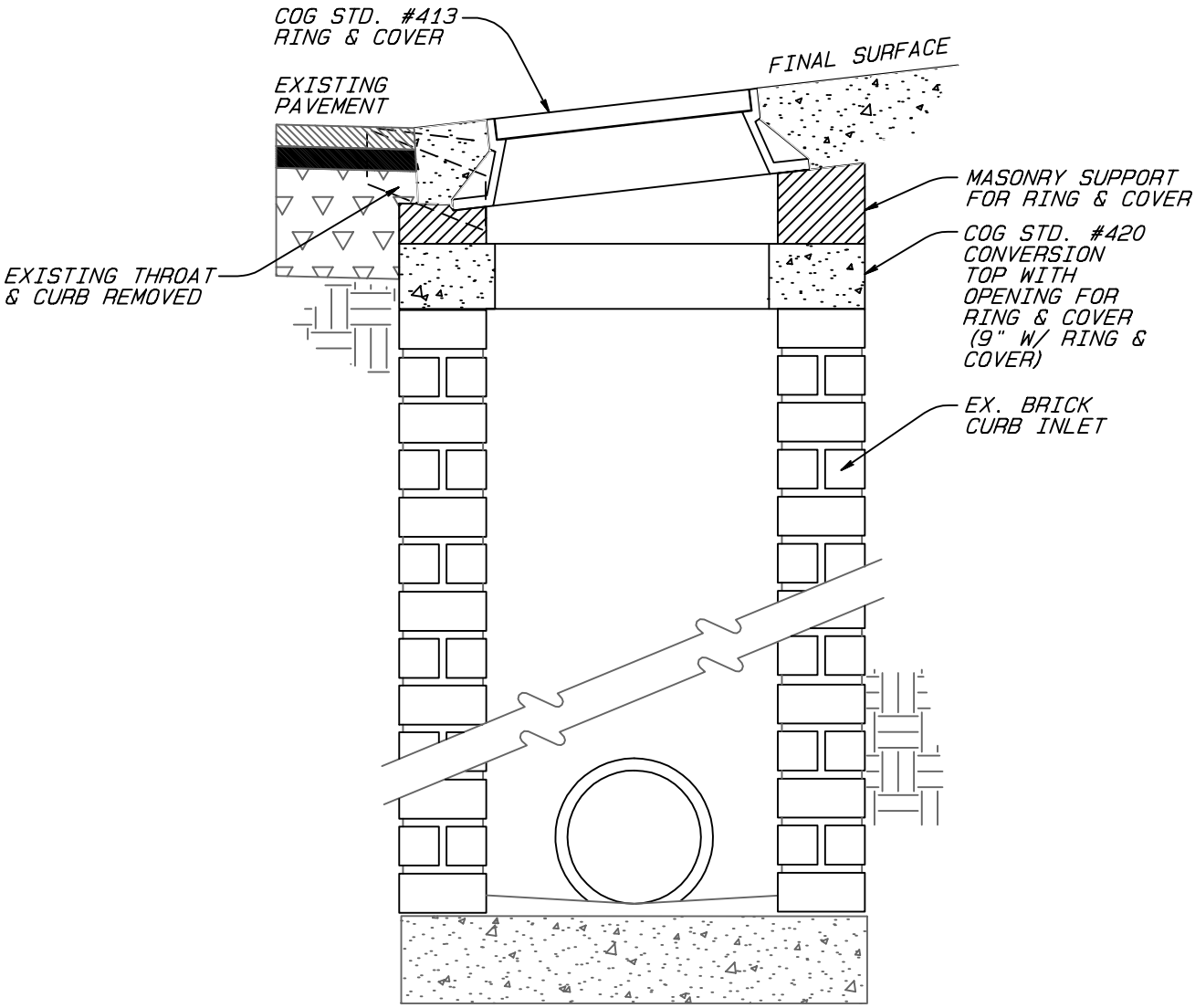
OUTSIDE DIMENSIONS OF TOP TO MATCH OUTSIDE DIMENSIONS OF BOX BEING CONVERTED.

TOPS THAT ARE TO BE BURIED CAN HAVE LIFT HANDLES MADE FROM BENT OVER REBAR.

CITY OF GREENSBORO

STANDARD CONVERSION TOP CURB AND DROP INLETS TO JUNCTION BOX

STD. NO.	REV.
420	03-01 09-11



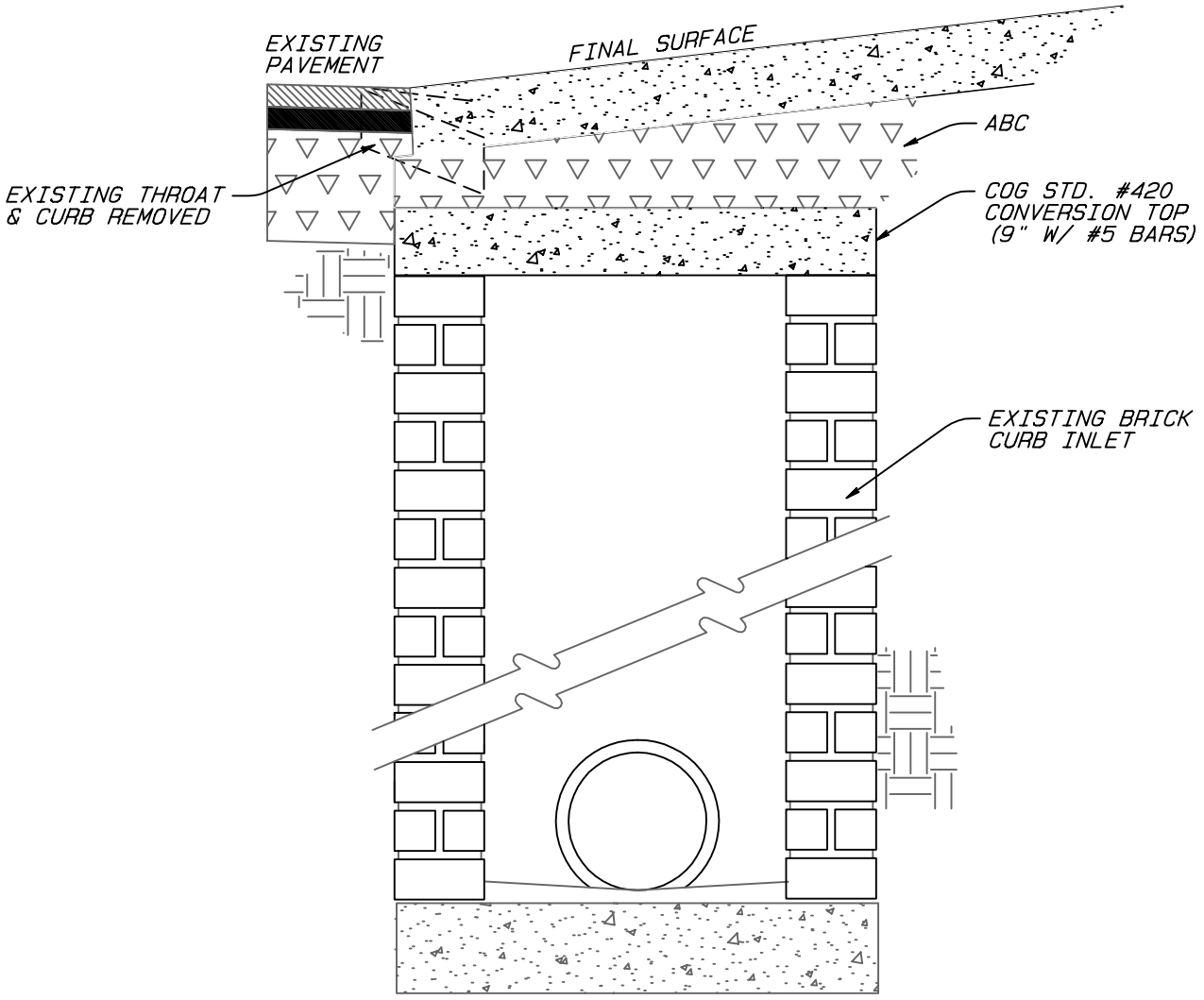
JUNCTION BOX W/ RING & COVER

NOTES:

CONVERSION TOPS WITH OPENINGS FOR COG STD. #413 RING & COVER MAY BE USED TO ALLOW ACCESS TO THE JUNCTION BOX.

IN SUCH CASES THE CONVERSION TOP WILL BE SET ON TOP OF THE BOX AT A SLOPE SUCH THAT THE RING & COVER WILL BE FLUSH WITH THE FINISH SURFACE.

CITY OF GREENSBORO		
STANDARD CONVERSION OF CURB INLET TO JUNCTION BOX	STD. NO.	REV.
	420-A	03-01



BLIND JUNCTION BOX

NOTES:

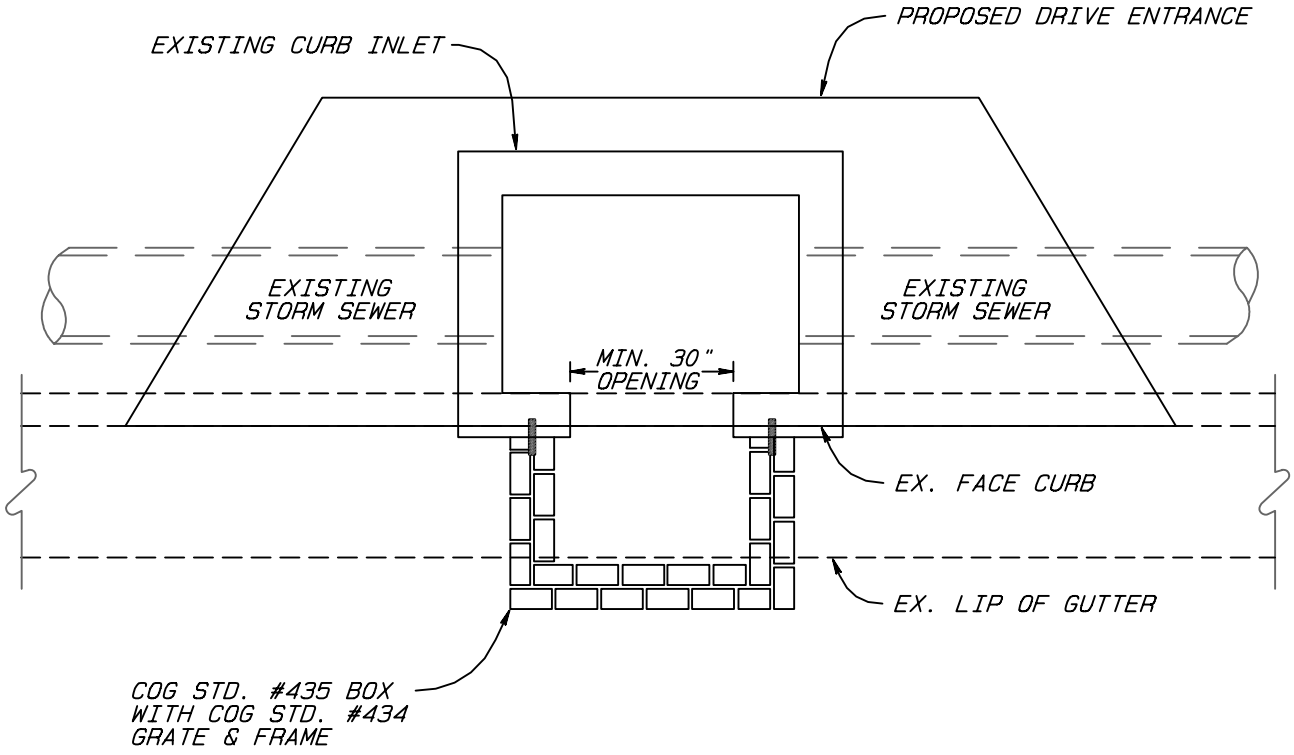
DEMOLISH EXISTING CURB INLET TO BELOW CONCRETE THROAT, LEAVING A FLAT LEVEL SURFACE FOR CONVERSION TOP TO REST ON.

PLUGGING OF THE EXISTING OPENING WITH BRICK MASONRY IS ALLOWED BY PERMISSION OF THE CITY INSPECTOR.

CITY OF GREENSBORO

STANDARD CONVERSION OF CURB INLET TO JUNCTION BOX	STD. NO.	REV.
	420-A	03-01

SEE COG STD. #420-B
SHEET 2 & 3 OF 3 FOR
CONSTRUCTION DETAILS



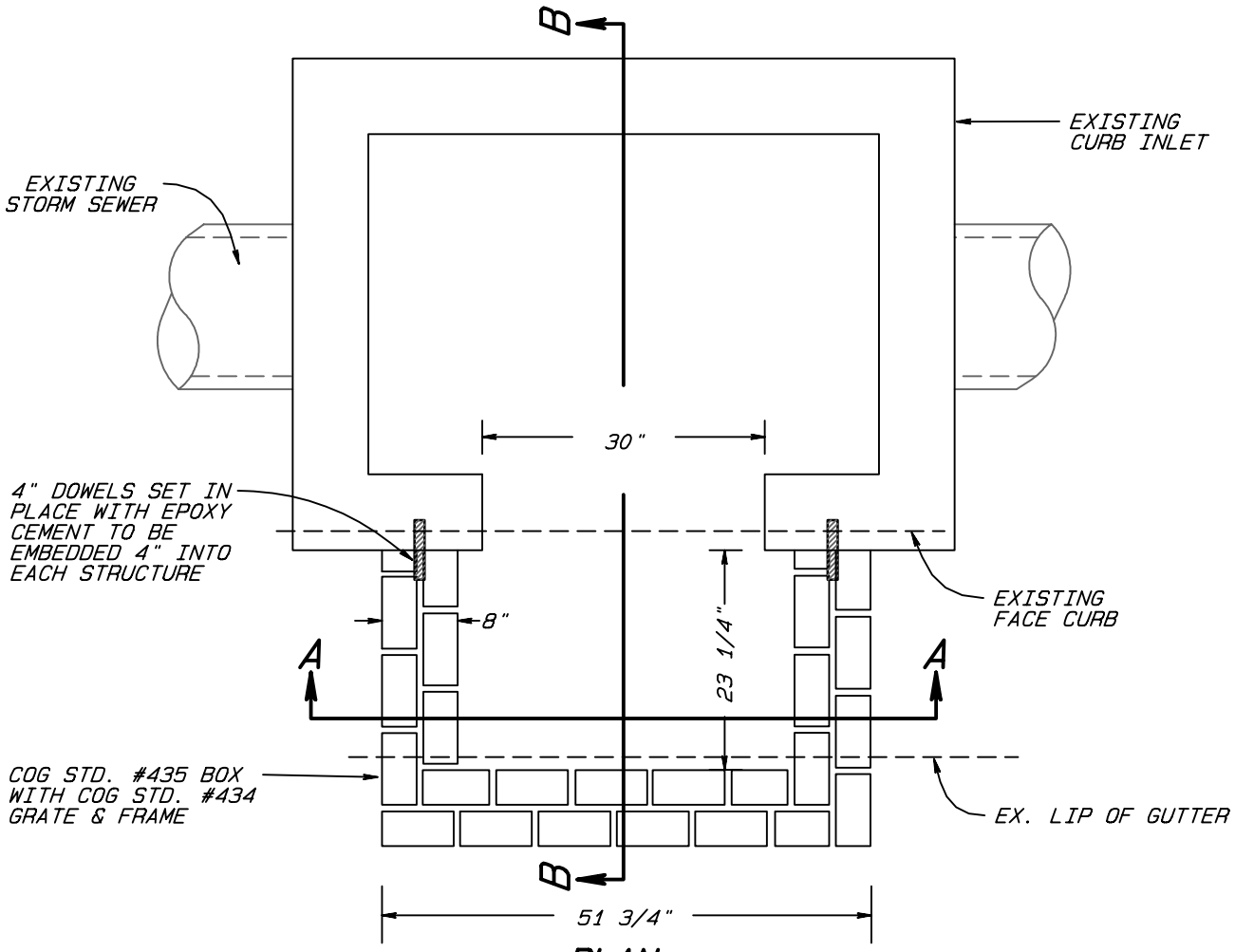
PLAN

NOTES:

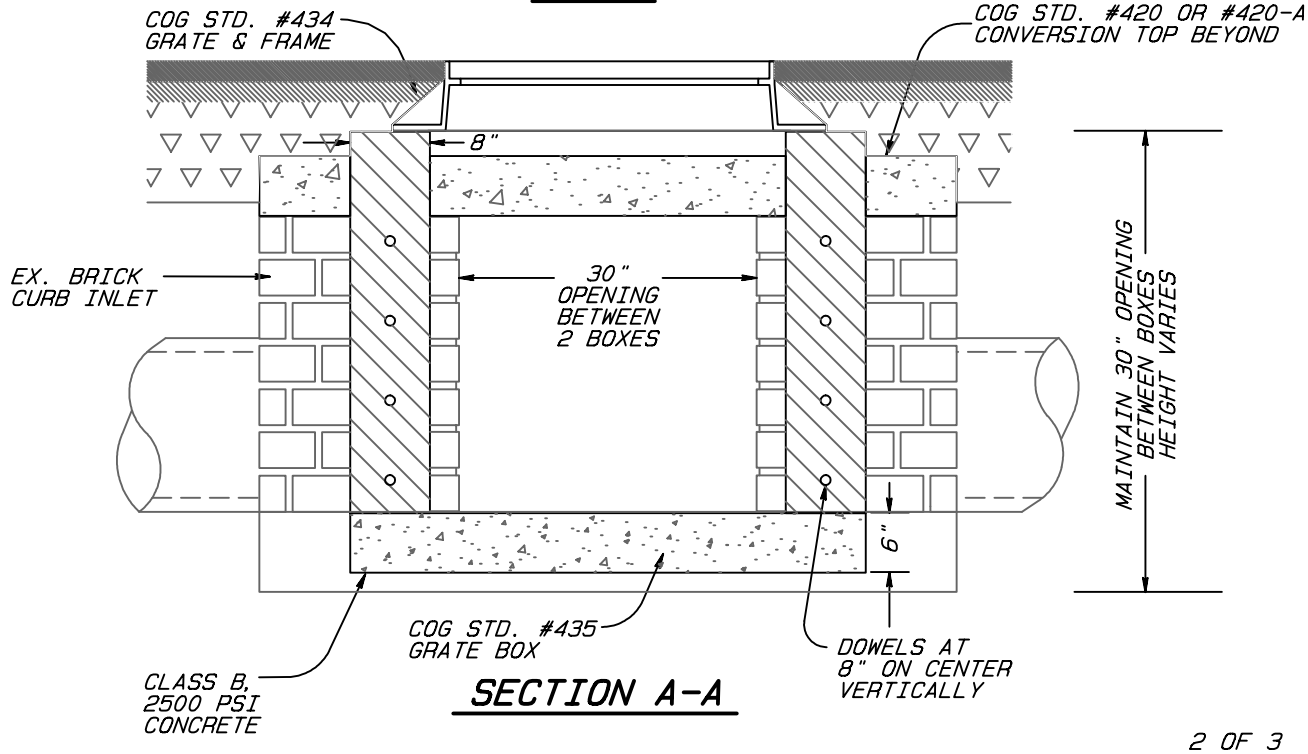
1. REMOVE THE DEPRESSED GUTTER SECTION & THROAT IN FRONT OF THE EXISTING CURB INLET.
2. EXCAVATE FOR THE PROPOSED COG STD. #435 GRATE BOX.
3. CUT A MINIMUM 30" SECTION OUT OF THE FRONT WALL OF THE CURB INLET. THE GAP SHALL BE CUT FROM THE TOP OF THE WALL TO THE INVERT ELEVATION OF THE NEW BOX. THIS GAP WILL SERVE AS ACCESS BETWEEN THE TWO BOXES.
4. CONSTRUCT COG STD. #435 GRATE BOX IN FRONT OF THE EXISTING CURB INLET. THE FRONT WALL OF THE EXISTING CURB INLET WILL BE A COMMON WALL BETWEEN THE TWO BOXES. THE GRATE BOX SHALL BE BUILT TO AN ELEVATION WHERE THE COG STD. #434 GRATE WILL BE FLUSH WITH THE GUTTER SECTION WHEN REPLACED.
5. THE SIDE WALLS OF THE NEW BOX WILL BE ATTACHED TO THE EXISTING FRONT WALL USING DOWELS EVERY 8" VERTICALLY.
6. LOWER THE WALLS OF THE EXISTING CURB INLET TO ALLOW A COG STD. #420 CONVERSION TO BE INSTALLED ON TOP OF THE BOX AND BELOW THE PROPOSED DRIVE APRON.

CITY OF GREENSBORO

INLET CONVERSION FOR DRIVE ENTRANCE STORM SEWER PIPE PARALLEL TO CURB	STD. NO.	REV.
	420-B	



PLAN

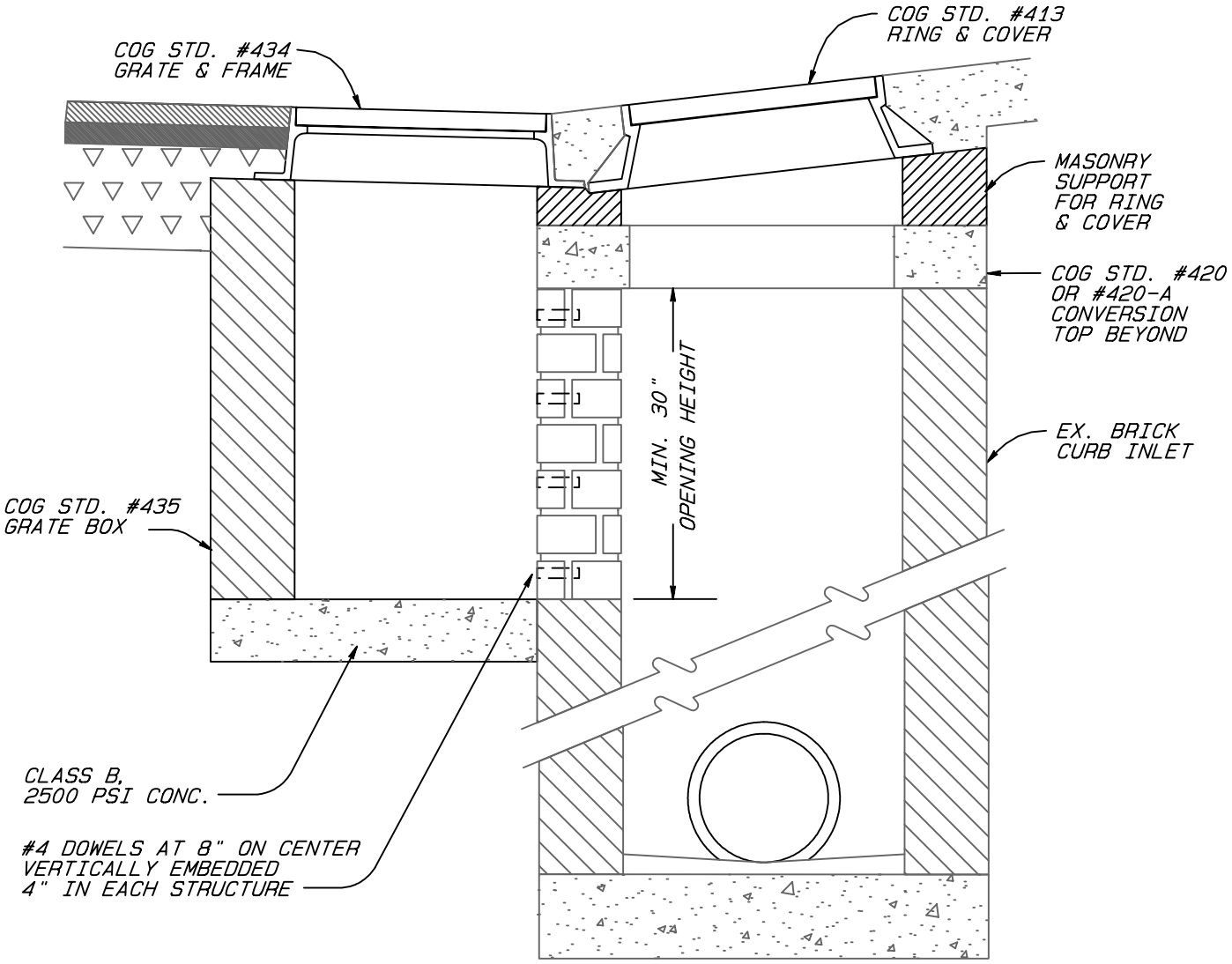


SECTION A-A

CITY OF GREENSBORO

INLET CONVERSION FOR DRIVE ENTRANCE STORM SEWER PIPE PARALLEL TO CURB

STD. NO.	REV.
420-B	



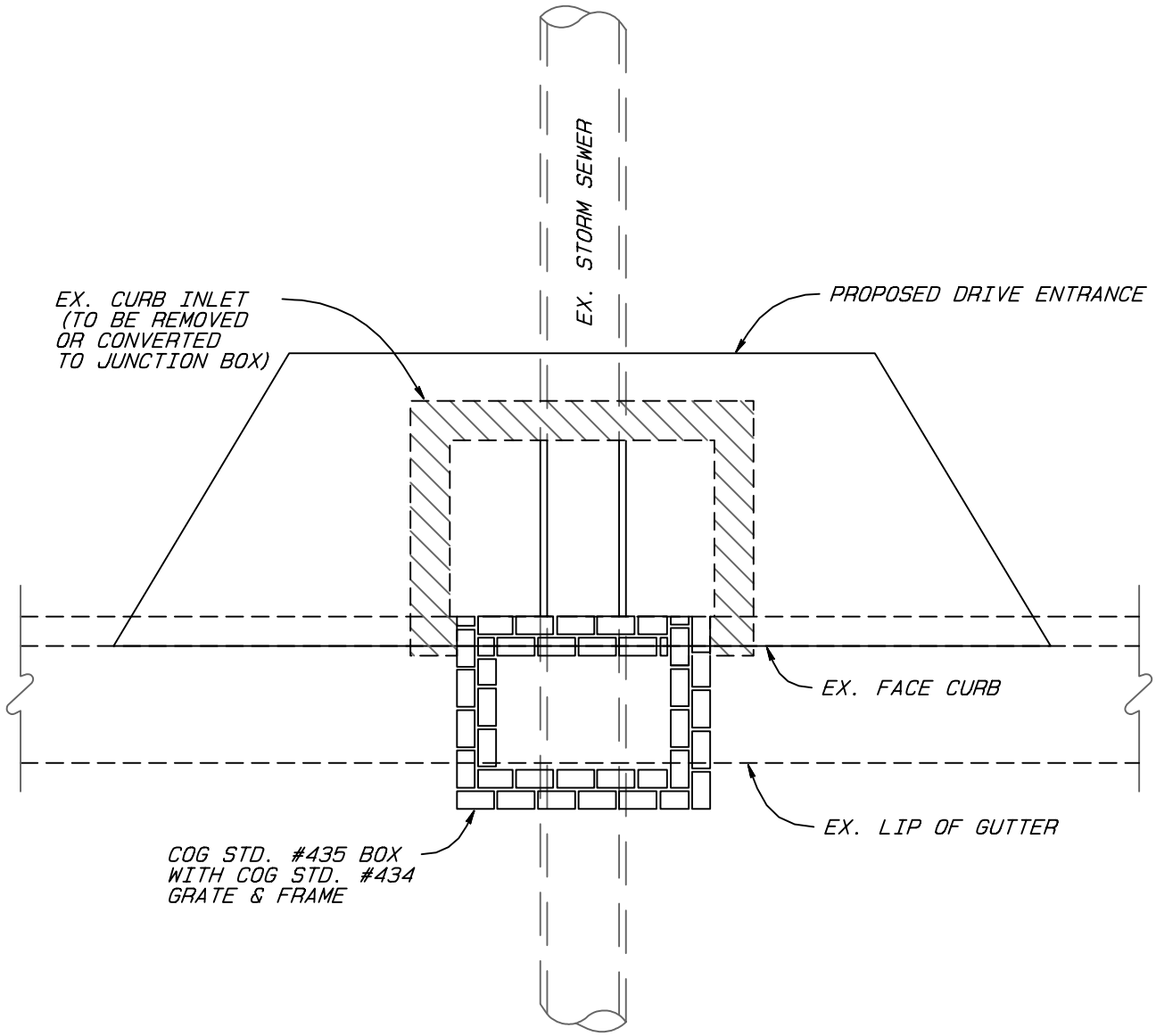
SECTION B-B

NOTES:

1. LOWER TOP OF EXISTING CURB INLET TO BELOW GRADE OF PROPOSED DRIVEWAY APRON. INSTALL COG STD. #420 OR #420-A CONVERSION TOP.
2. EXISTING CURB INLET'S OVER 4 FEET DEEP MUST HAVE COG STD. #420-A CONVERSION TOP WITH COG STD. #413 RING & COVER INSTALLED FLUSH WITH SURFACE OF DRIVEWAY APRON.
3. CONSTRUCT A 30" WIDE X 30" HIGH OPENING BETWEEN THE TWO BOXES.
4. INSTALL COG STD. #434 GRATE & FRAME IN LINE WITH GUTTER SECTION OF EXISTING CURB & GUTTER.

CITY OF GREENSBORO

INLET CONVERSION FOR DRIVE ENTRANCE STORM SEWER PIPE PARALLEL TO CURB	STD. NO.	REV.
	420-B	

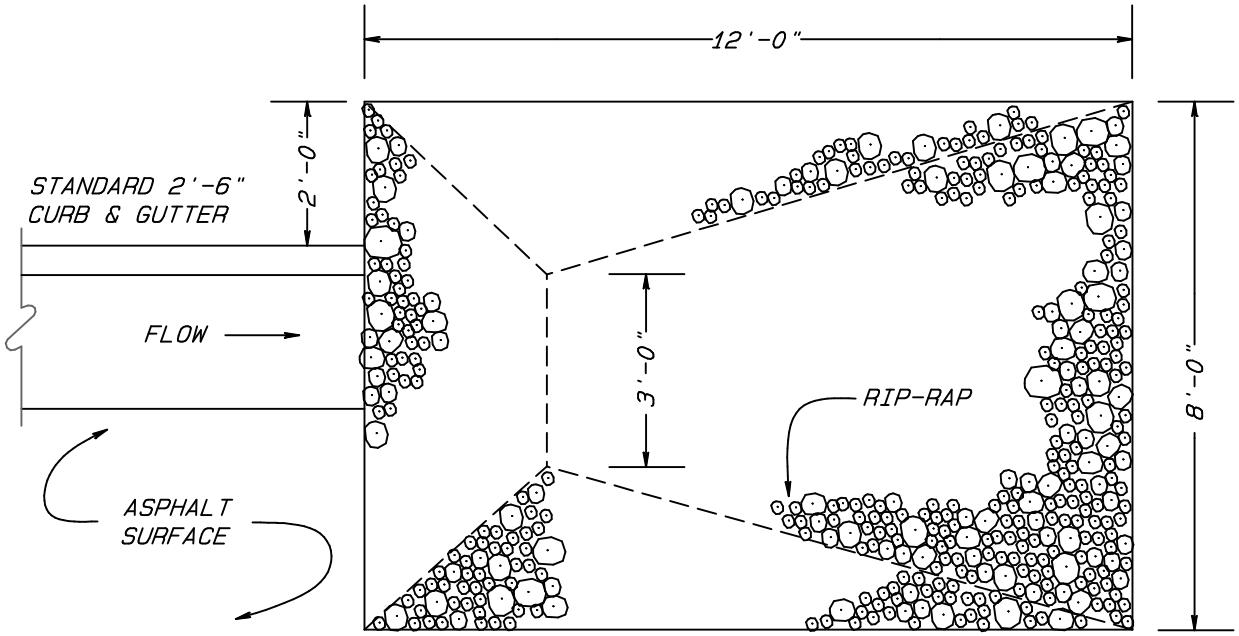


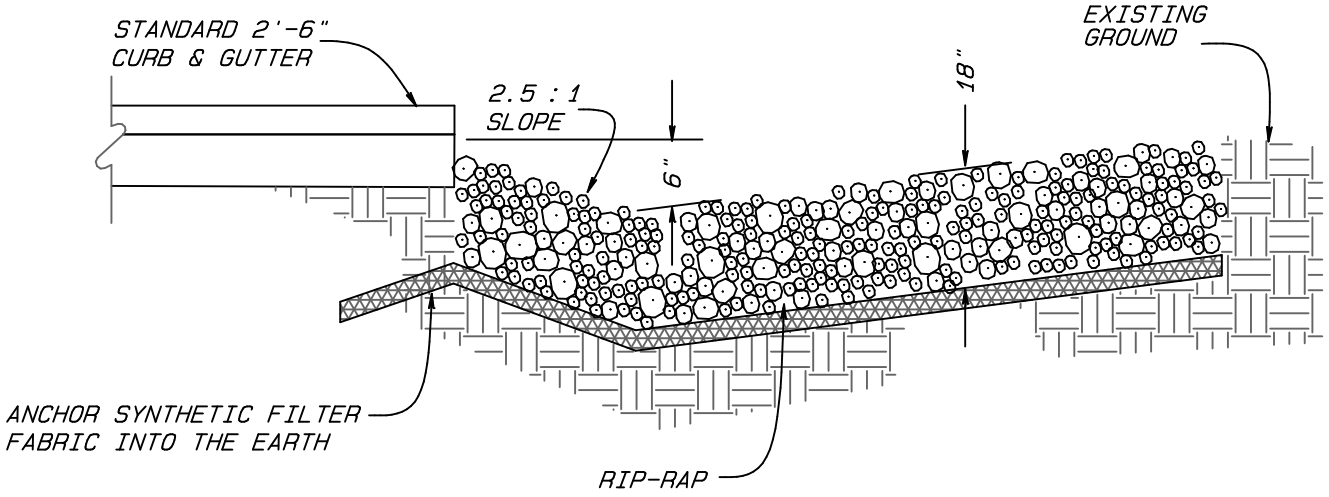
PLAN

NOTES:

1. REMOVE THE DEPRESSED GUTTER SECTION & THROAT IN FRONT OF THE EXISTING CURB INLET.
2. REMOVE THE EXISTING CURB INLET & EXCAVATE FOR THE PROPOSED COG STD. #435 GRATE BOX.
3. EXTEND THE EXISTING PIPE TO THE PROPOSED COG STD. #435 BOX.
4. CONSTRUCT COG STD. #435 GRATE BOX IN THE GUTTER FLOW LINE. THE BOX SHALL BE BUILT TO AN ELEVATION WHERE THE COG STD. #434 GRATE WILL BE FLUSH WITH THE GUTTER SECTION WHEN REPLACED.
5. IF THE EXISTING CURB INLET & PIPE ARE TOO DEEP TO REMOVE, THE CURB INLET CAN BE LOWERED AND CONVERTED TO A JUNCTION BOX AS SHOWN IN COG STD. #420-B. THE CURB INLET WILL THEN FUNCTION AS A MANHOLE WITH ACCESS TO THE STORM SEWER PIPE. THE NEW GRATE BOX WILL BE ATTACHED TO THE CURB INLET AS SHOWN IN COG STD. #420-B.

CITY OF GREENSBORO		
INLET CONVERSION FOR DRIVE ENTRANCE STORM SEWER PIPE PERPENDICULAR TO CURB	STD. NO.	REV.
	420-C	





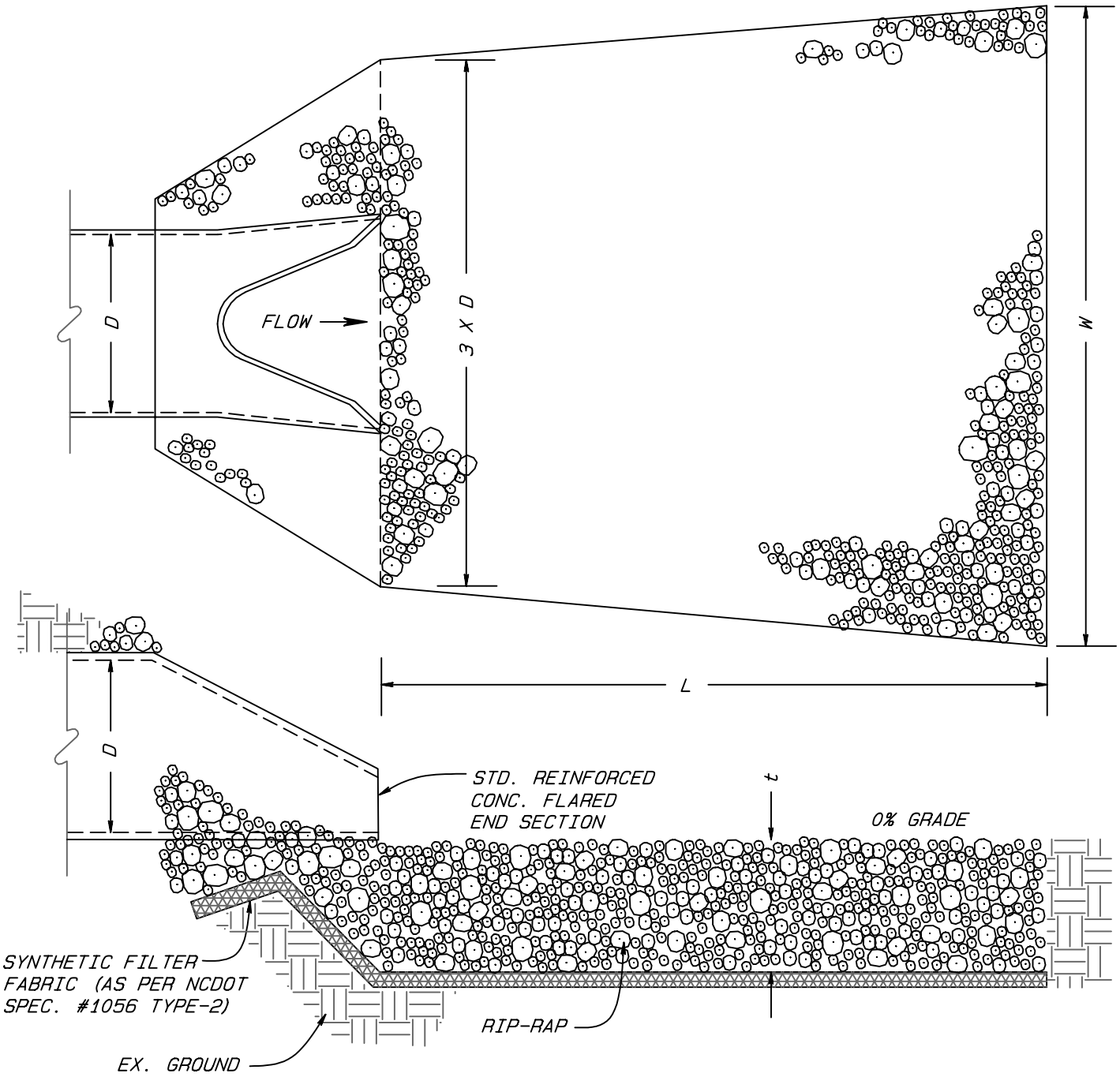
NOTES:

CLASS I RIP-RAP TO BE USED.

ESTIMATED QUANTITY OF RIP-RAP REQUIRED FOR ONE GUTTER IS 12 TONS.

CITY OF GREENSBORO

STANDARD DEAD END STREET EROSION CONTROL DEVICE	STD. NO.	REV.
	421	03-97 09-10



LEGEND	
D	= OUTLET PIPE DIAMETER
d_{50}	= MEDIAN STONE SIZE IN A WELL GRADED APRON
d_{max}	= 1.5 X d_{50} = MAXIMUM STONE DIAMETER
t	= APRON THICKNESS = 1.5 X d_{max}
L	= LENGTH (DETERMINED FROM SECT. 8.06)
W	= WIDTH @ END OF APRON (DETERMINED IN SECT. 8.06 DEPENDING ON TAILWATER CONDITIONS) WIDTH @ OUTLET = 3D

NOTES:

RIP-RAP PIPE OUTLET PROTECTION APRONS ARE TO BE DESIGNED ACCORDING TO THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL, SECTION 8.06.1 - 8.06.4

PLACE RIP-RAP AROUND PIPE AS DIRECTED BY THE FIELD ENGINEER.

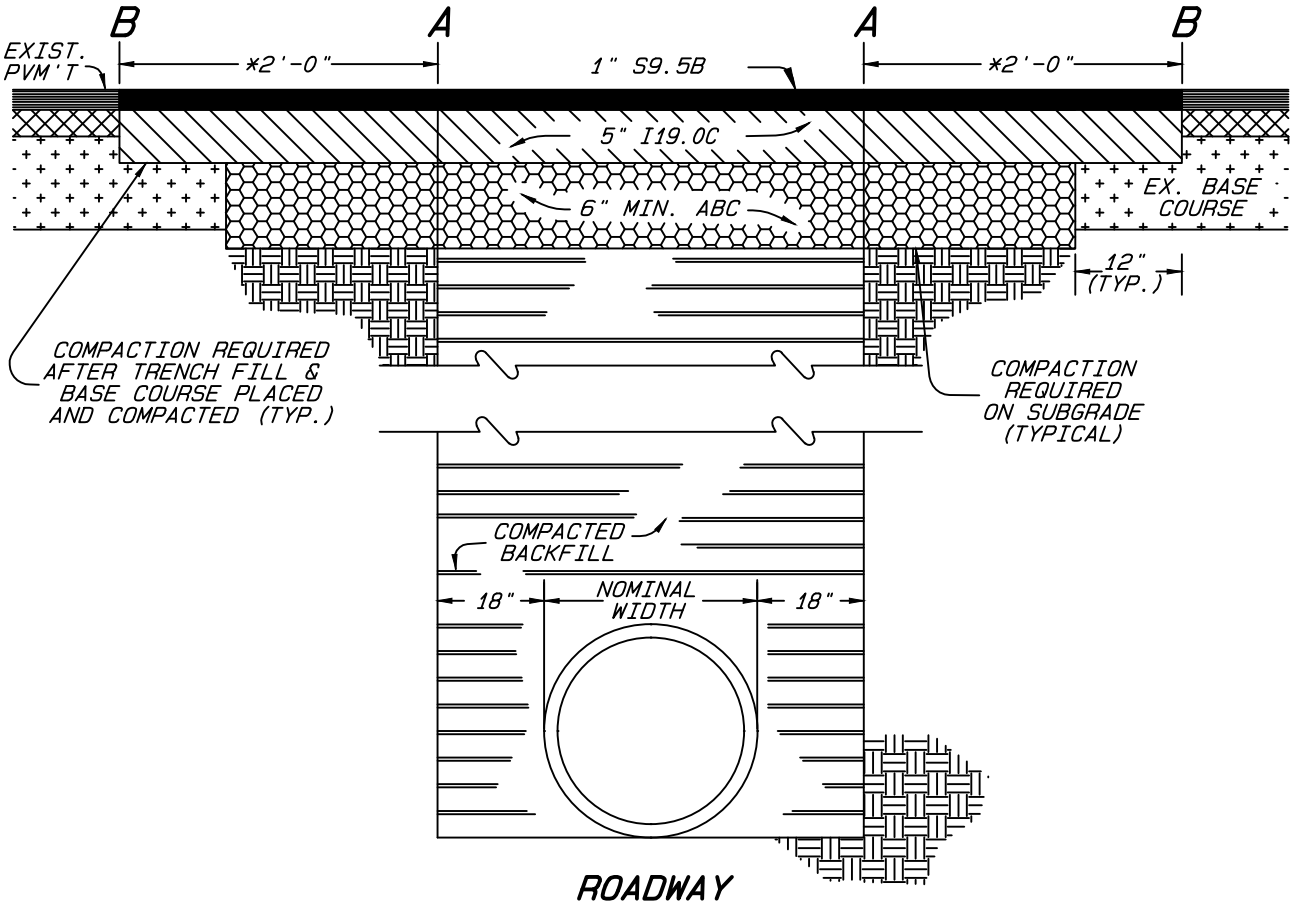
CITY OF GREENSBORO

STANDARD PIPE OUTLET EROSION CONTROL DEVICE

STD. NO.	REV.
422	03-97

* 2'-0" OR TO LIP OF GUTTER, CURB, PAVEMENT PATCH OR EDGE OF PAVEMENT WITHIN 5'-0" OF SECOND SAW CUT
NOTE: 1) FULL LANE RESURFACING AND/OR MILLING MAY BE REQUIRED
2) 3'-0" MAY BE REQUIRED AT THE DISCRETION OF THE CITY ENGINEER OR DESIGNEE.

A-A = INITIAL CUT
B-B = SECOND SAW CUT



ROADWAY

INSTALLATION NOTES:

I19.0C INSTALLED IN TWO LIFTS OF 2-1/2".

MATERIAL DEPTHS SHOULD EQUAL EXISTING, PLUS 1", OR MINIMUMS SHOWN (WHICH EVER IS GREATER).

FILL MATERIAL COMPACTED TO 95% STANDARD PROCTOR LIFTS NOT TO EXCEED 8 INCHES.

PROVIDE TACK COAT TO ALL VERTICAL PAVEMENT SURFACES.

SECOND PAVEMENT REMOVAL LINE B-B TO BE SAW CUT ONLY.

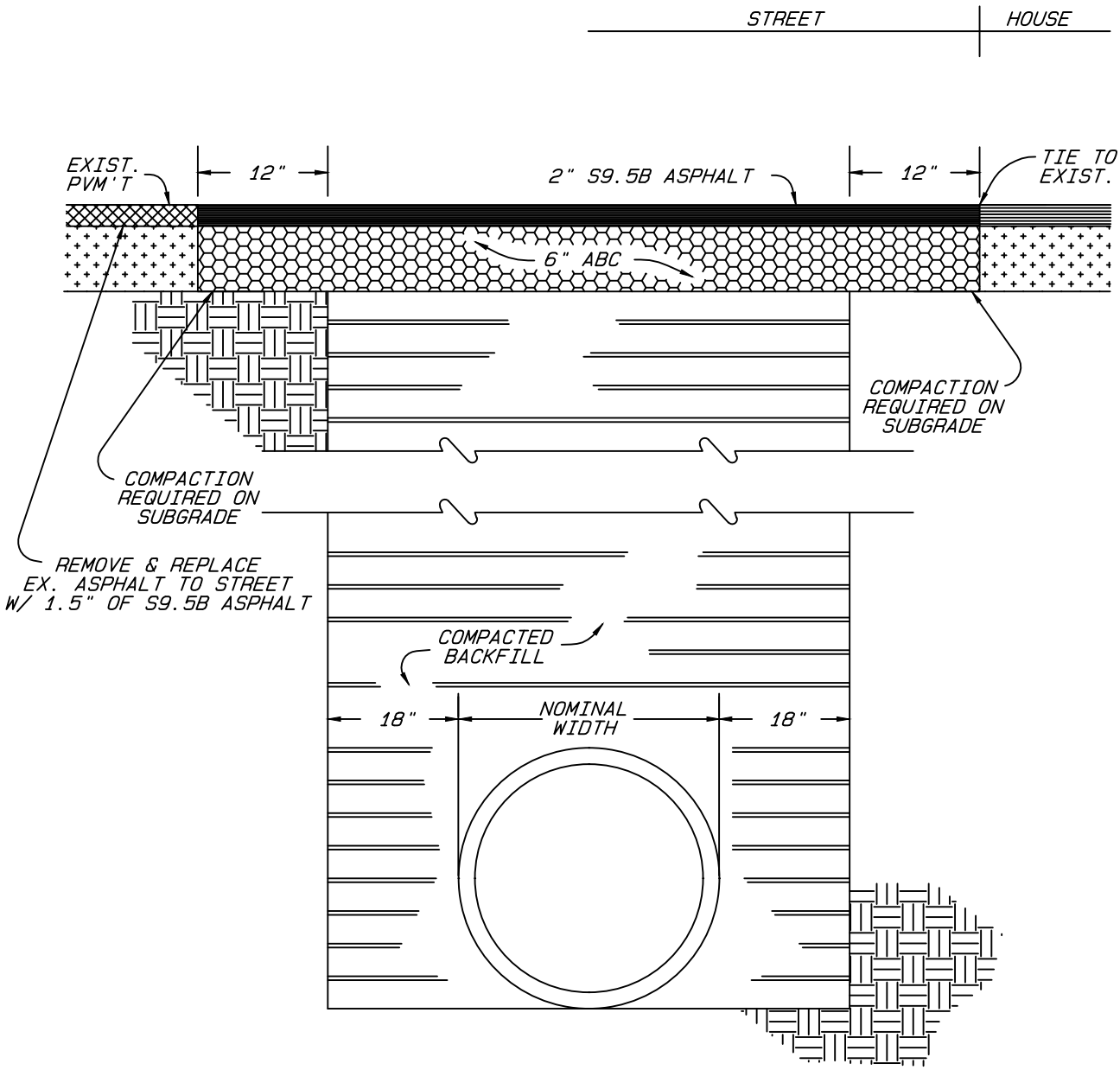
MAY VARY BASED ON FIELD CONDITIONS AT DISCRETION OF FIELD INSPECTOR.

ADDITIONAL NOTES:

1. TEMPORARY STEEL PLATES ARE ALLOWED TO BE INSTALLED OVER A TRENCH OPENING.
2. EDGES OF STEEL PLATE MUST BE MILLED TO ALLOW THE PLATE TO SIT FLUSH WITH THE ADJACENT ASPHALT SURFACE OR ASPHALT COLD PATCH MATERIAL MUST BE PLACED AT THE EDGES OF THE PLATE.
3. ANCHORS ARE REQUIRED TO TEMPORARILY FASTEN THE STEEL PLATE TO THE ASPHALT TO PREVENT SLIDING OF THE PLATE.
4. STEEL PLATE SHALL BE MAINTAINED UNTIL THE AREA IS READY FOR A PERMANENT ASPHALT REPAIR.
5. STEEL PLATES ARE NOT TO BE USED DURING THE WINTER MONTHS.
6. ADVANCE WARNING SIGNS INDICATING "BUMP AHEAD" OR "UNEVEN PAVEMENT AHEAD" SHALL BE UTILIZED WHEN STEEL PLATES ARE USED.

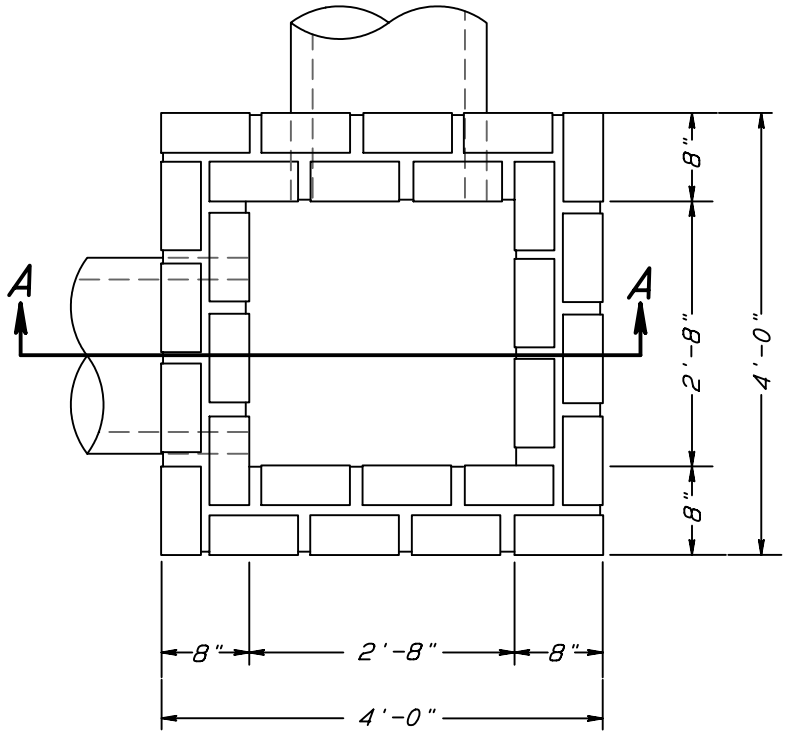
CITY OF GREENSBORO

PAVEMENT REPAIR FOR PIPE/UTILITY PLACED UNDER EXISTING PAVEMENT (ROADWAY)	STD. NO.	REV.
	423	03-12 03-18 03-15 06-15



ASPHALT DRIVEWAYS

CITY OF GREENSBORO		
PAVEMENT REPAIR FOR PIPE/UTILITY PLACED UNDER EXISTING PAVEMENT (ASPHALT DRIVEWAYS)	STD. NO. 423-A	REV. 08-02 03-15 03-03 03-18 09-03



PLAN

NOTES:

BRICK MASONRY CAN BE COMMON CLAY BRICK, JUMBO BRICK, OR CONCRETE BRICK.

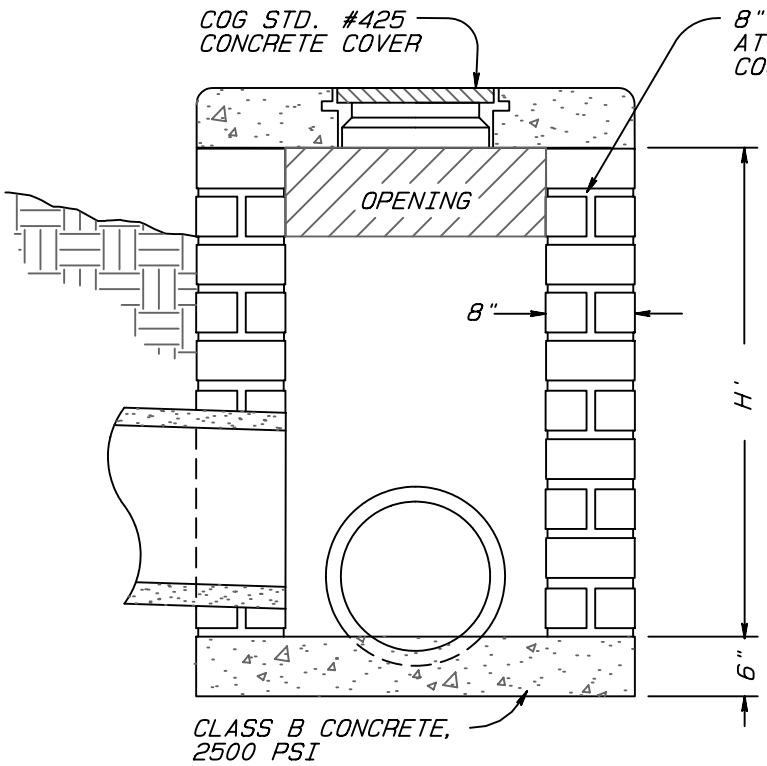
CONCRETE BOTTOMS SHALL BE PAID AS BRICK MASONRY.

ALL MORTAR JOINTS ARE TO BE 1/2" ± 1/8".

CONCRETE COVER TO BE PAID FOR UNDER THE PAY ITEM 4'X4' PRECAST CONCRETE YARD INLET COVER.

FOR DEPTHS OVER 4'-0" USE STEPS ON 16" CENTERS. STEPS SHALL BE IN ACCORDANCE WITH COG STD. #414.

FOR PRECAST CONCRETE MODELS OF THIS STRUCTURE, THE MANUFACTURER SHALL STAMP OR STENCIL ITS LOGO OR NAME ON THE INSIDE AND OUTSIDE OF THE STRUCTURE.



SECTION A-A

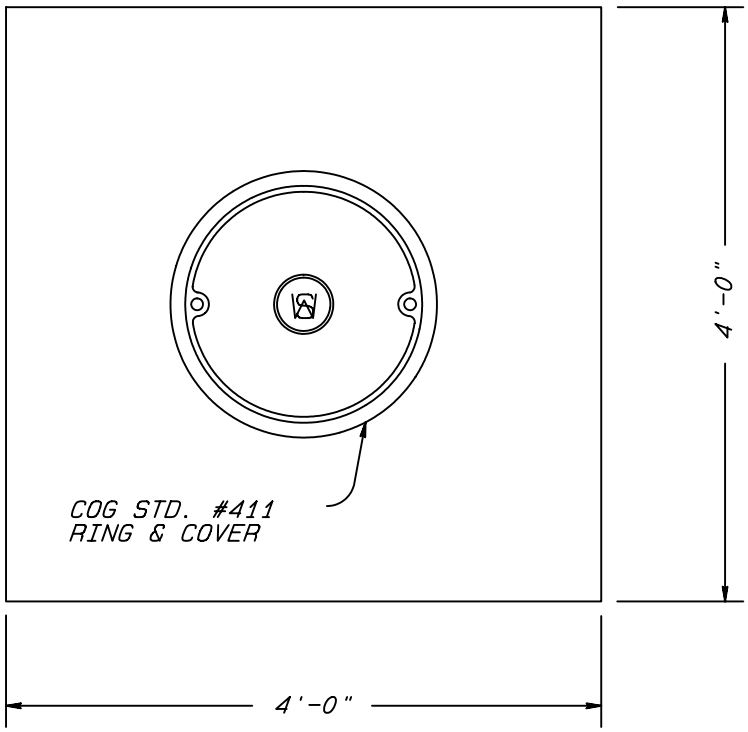
DEDUCTIONS FOR ONE PIPE		
PIPE SIZE	C.M.	R.C.
12"	0.020	0.032
15"	0.031	0.047
18"	0.044	0.065

QUANTITIES		
BASE (C.Y.)	H (PER FT. HEIGHT)	PIERS (C.Y. EACH)
0.296	0.330	0.006

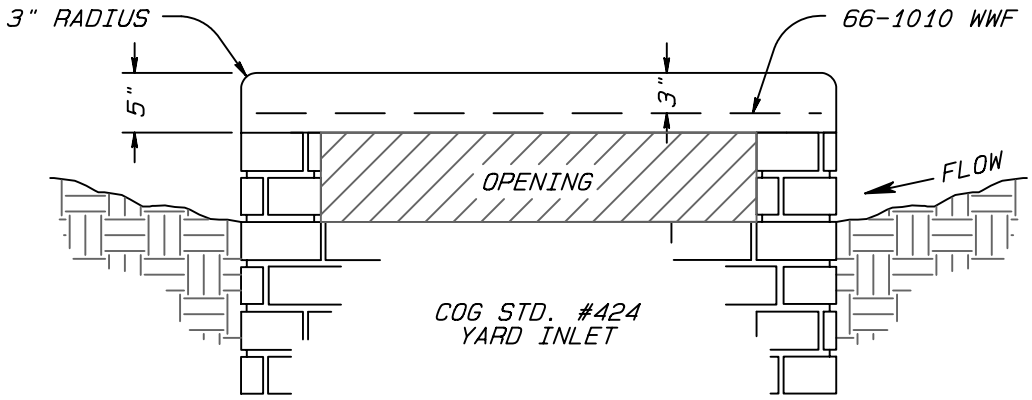
CITY OF GREENSBORO

STANDARD 4' X 4' BRICK MASONRY YARD INLET

STD. NO.	REV.
424	08-02 12-07



PLAN



SECTION

NOTES:

CONCRETE SHALL BE CLASS A, 3000 PSI.

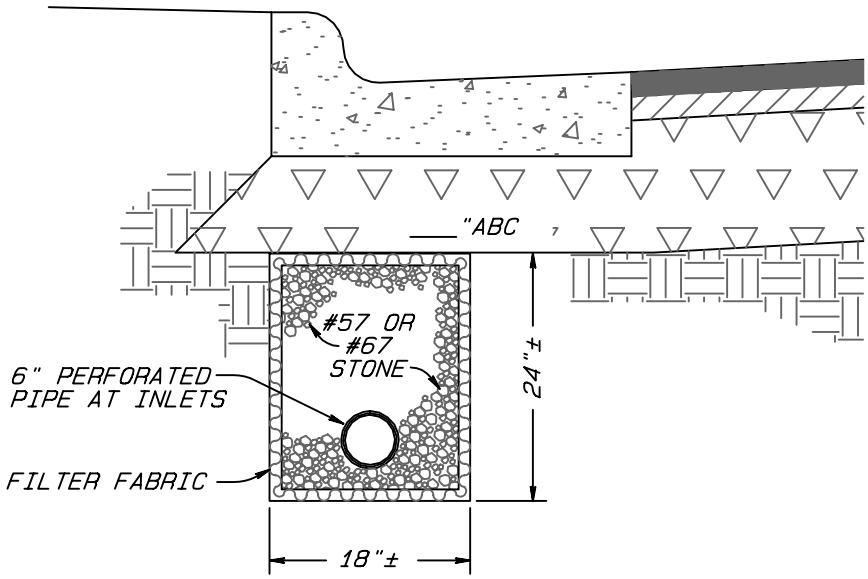
TOP SHALL HAVE SMOOTH FINISH.

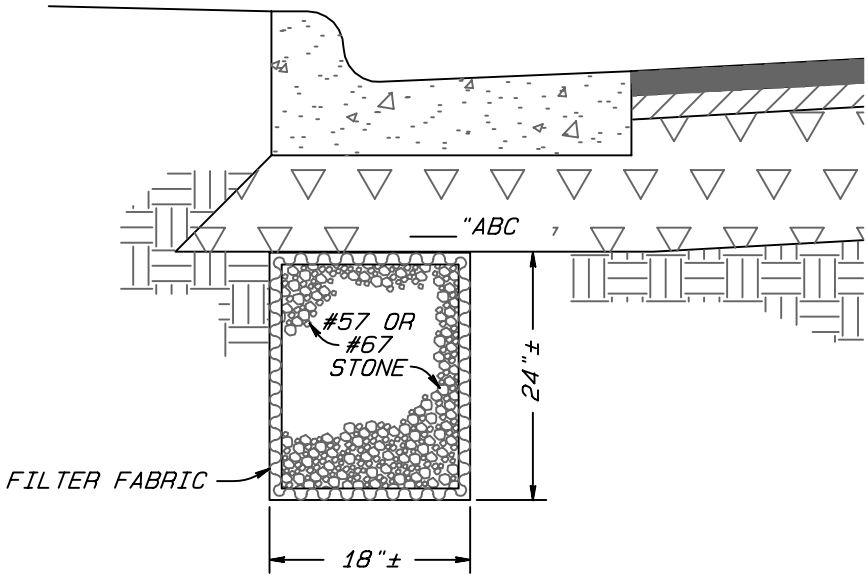
THE MANUFACTUER SHALL STAMP OR STENCIL ITS LOGO OR NAME ON AT LEAST ONE EDGE OF THE TOP.

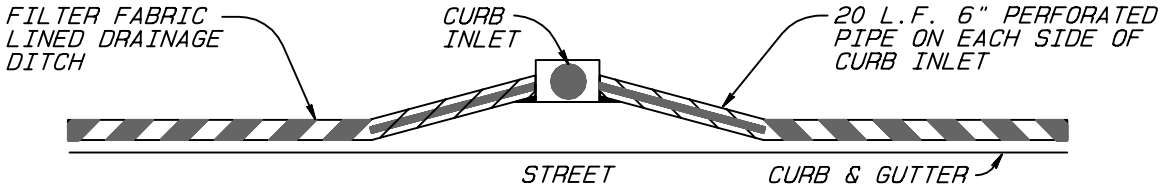
CITY OF GREENSBORO

STANDARD 4' X 4' PRECAST CONCRETE YARD INLET COVER WITH RING & COVER

STD. NO.	REV.
425	12-07





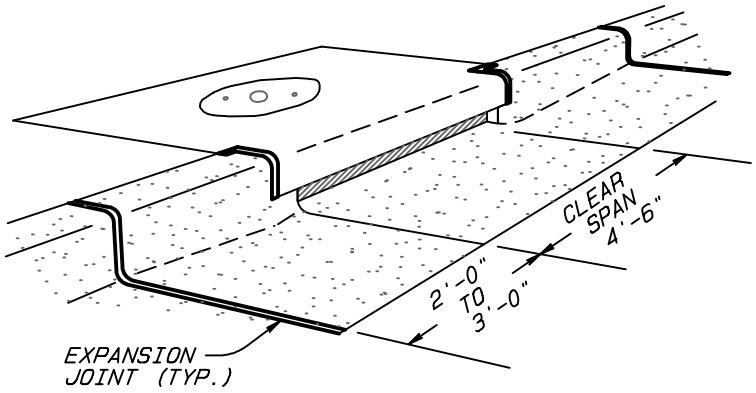


PLAN

CITY OF GREENSBORO

STANDARD SUBDRAIN FABRIC INSTALLATION

STD. NO.	REV.
426	03-88 08-02

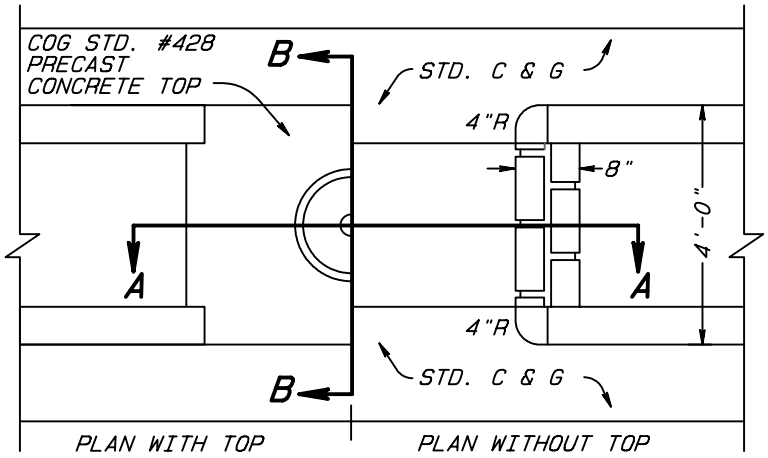


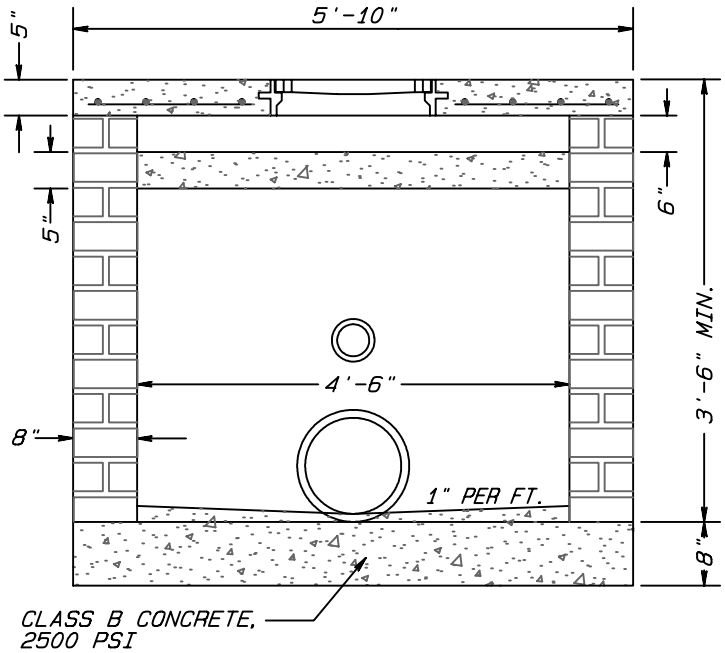
NOTES:

ALL MORTAR JOINTS ARE TO BE 1/2" ± 1/8".

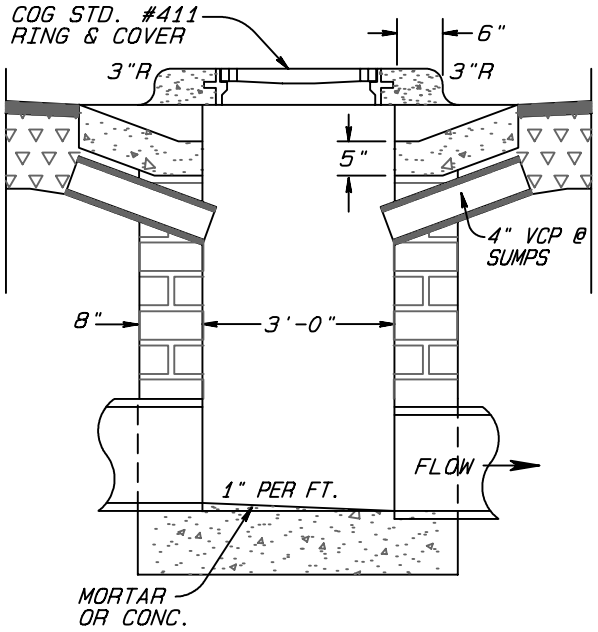
BRICK MASONRY CAN BE STANDARD CLAY BRICK, JUMBO BRICK OR CONCRETE BRICK.

FOR DEPTHS OVER 4'-0" USE STEPS ON 16" CENTERS. STEPS SHALL BE IN ACCORDANCE WITH COG STD. #414.





SECTION A-A

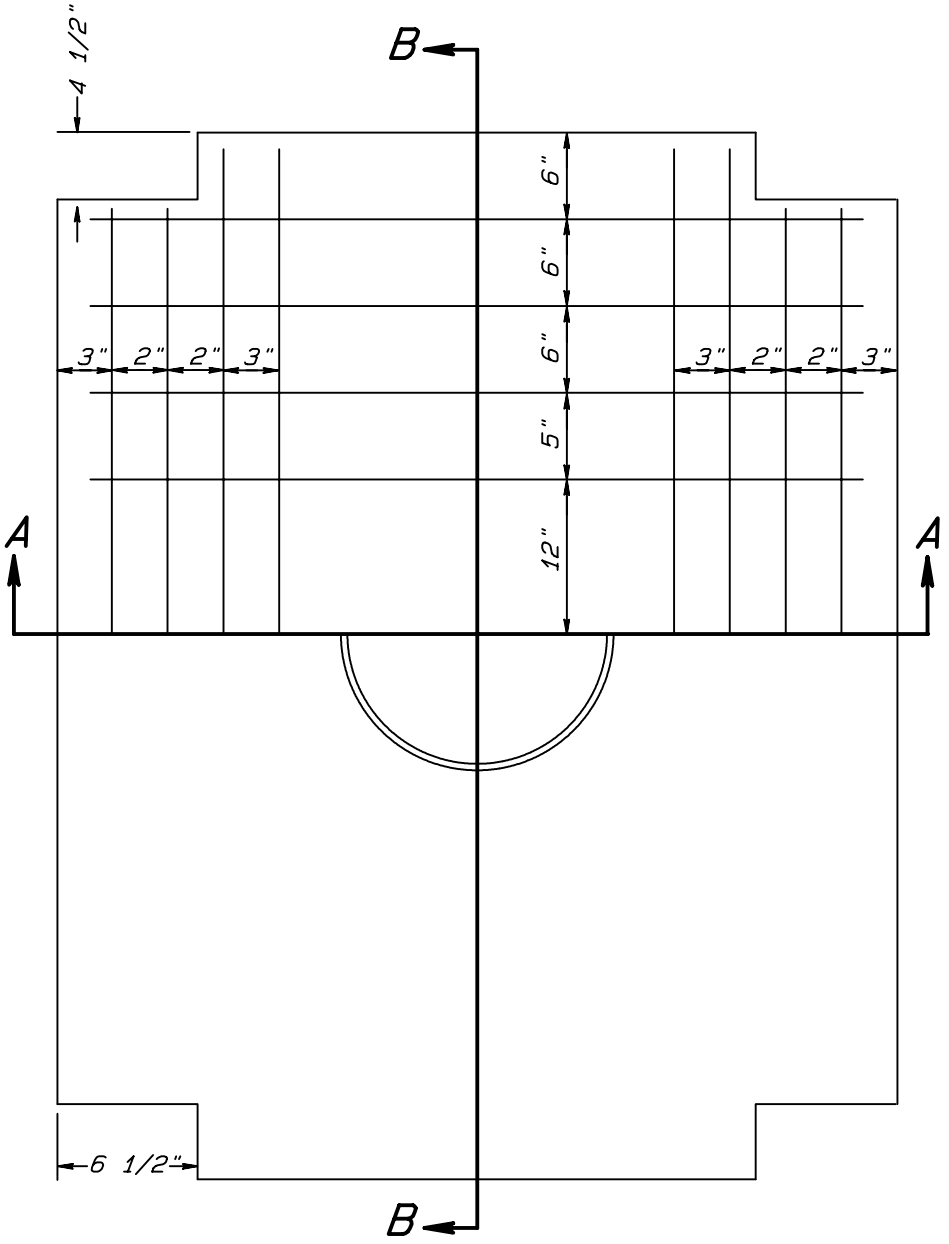


SECTION B-B

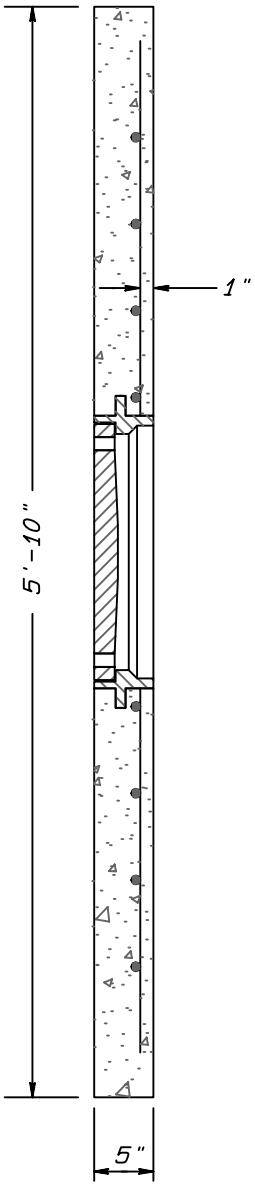
CITY OF GREENSBORO

STANDARD BRICK MASONRY CURB INLET FOR MEDIANS

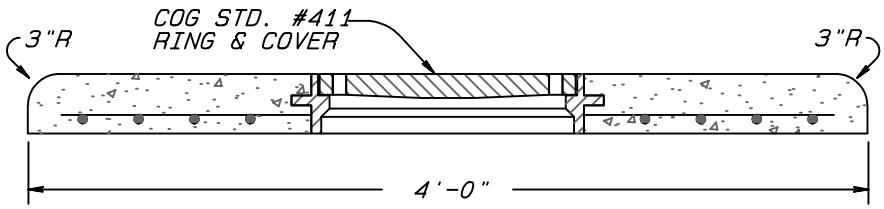
STD. NO.	REV.
427	08-02



PLAN



SECTION B-B



SECTION A-A

NOTES:

CONCRETE SHALL BE CLASS A, 3000 PSI, AIR ENTRAINED. TOP SHALL HAVE A SMOOTH FINISH.

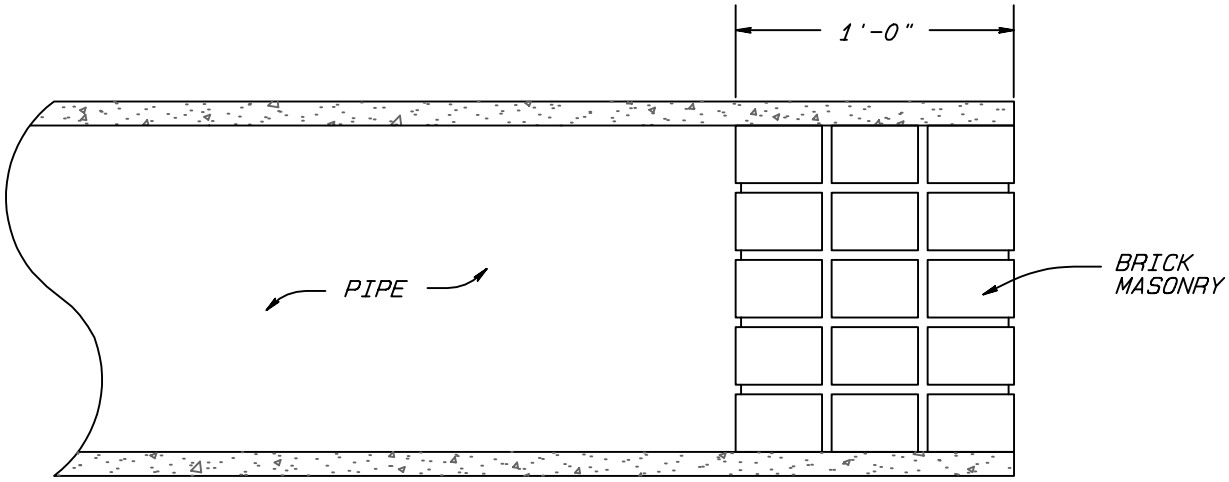
INLET TOP REQUIRES 4-#4 BARS IN EACH STREET FACE.

ALL OTHER REIFORCING STEEL SHALL BE #4 BARS.

CITY OF GREENSBORO

STANDARD PRECAST CONCRETE CURB INLET TOP TO BE USED WITH COG STD. #427

STD. NO.	REV.
428	

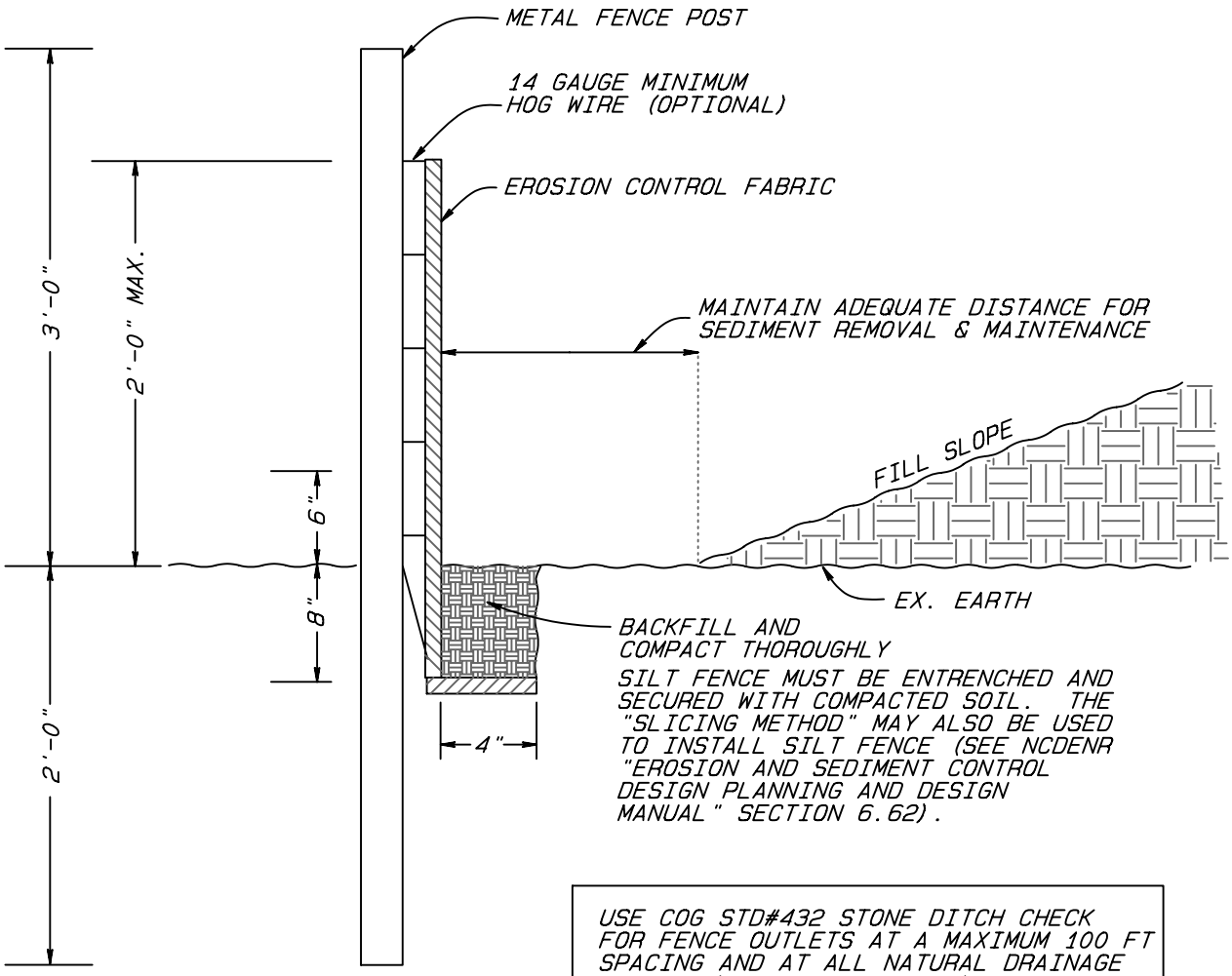


QUANTITIES	
PIPE SIZE	CUBIC YARDS
6"	0.007
8"	0.013
10"	0.020
12"	0.029
15"	0.045
18"	0.065
24"	0.116
30"	0.182
36"	0.262
42"	0.356
48"	0.465
54"	0.589
60"	0.727
66"	0.880

CITY OF GREENSBORO

STANDARD BRICK MASONRY PIPE PLUG

STD. NO.	REV.
429	



SILT FENCE MUST BE ENTRENCHED AND SECURED WITH COMPACTED SOIL. THE "SLICING METHOD" MAY ALSO BE USED TO INSTALL SILT FENCE (SEE NCDENR "EROSION AND SEDIMENT CONTROL DESIGN PLANNING AND DESIGN MANUAL" SECTION 6.62).

USE COG STD#432 STONE DITCH CHECK FOR FENCE OUTLETS AT A MAXIMUM 100 FT SPACING AND AT ALL NATURAL DRAINAGE AREAS. (SEE SHEET 2 OF 2).

NOTES:

-SPACING OF POSTS USING HOG WIRE WITH APPROVED EROSION CONTROL FABRICS TO BE 8'-0" ON CENTER.
-SPACING OF POSTS WITHOUT HOG WIRE USING APPROVED EROSION CONTROL FABRICS TO BE 6'-0" ON CENTER.

POST: METAL T-POST 5'-0" OR 6'-0" IN HEIGHT DEPENDING ON FILL SLOPE (MIN. 1.33 LB/LF STEEL CONSTRUCTION).
FABRIC: 3'-0" IN WIDTH (MUST BE STANDARD SPECIFICATIONS FOR SILT FENCE - ASTM D) WITH 12" BURIED IN TRENCH.
STONE: (IF USED) #4 WASHED STONE PLACED 1'-0" DEEP AT SILT FENCE.

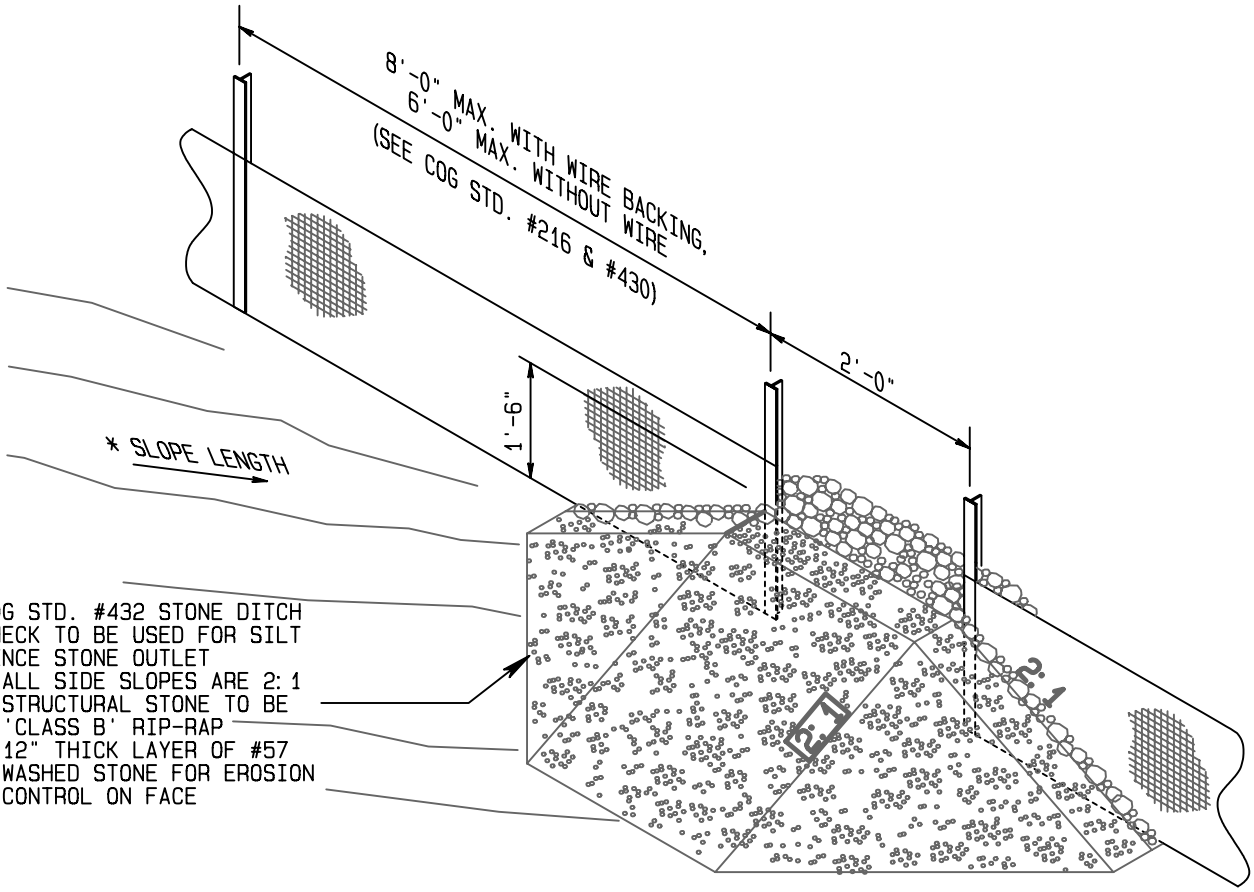
-SPLICES IN FABRIC SHOULD BE OVERLAPPED A MIN. OF 4 FT.
-MAXIMUM DRAINAGE AREA = 1/4 ACRE PER 100 FT OF FENCE FOR 2% OR LESS SLOPE.
-SILT FENCE TO BE REMOVED AFTER CONSTRUCTION IS COMPLETE AS DIRECTED BY THE CONSTRUCTION INSPECTOR.

CITY OF GREENSBORO

SILT FENCE DETAIL

STD. NO.	REV.
430	12/06 03/08 03/09

MAXIMUM AREA TO BE RETAINED BY SILT FENCE		
GROUND SLOPE (%)	SLOPE LENGTH (ft.) *	MAXIMUM DRAINAGE AREA (SQ. FT.)
<2%	100	10,000
2%-5%	75	7,500
5%-10%	50	5,000
10%-20%	25	2,500
>20%	15	1,500

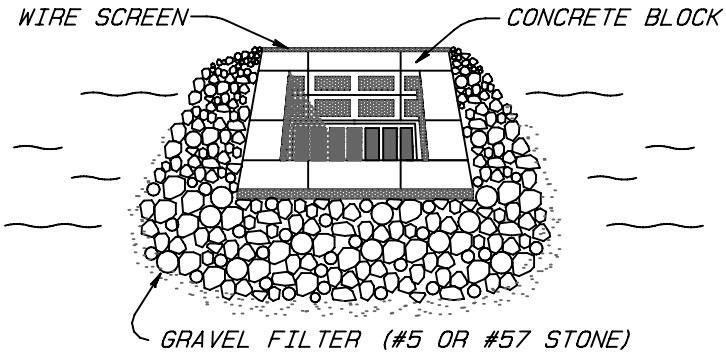


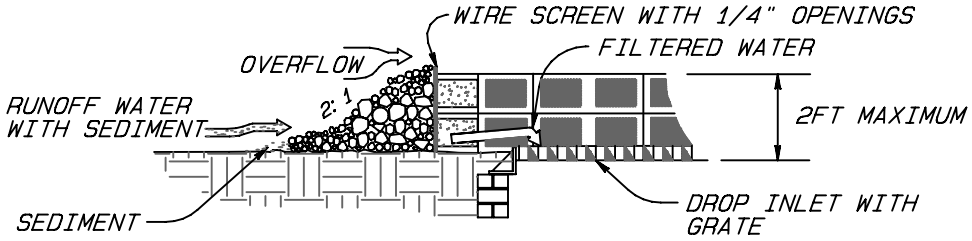
NOTES:

1. *NON-EROSIVE OUTLETS ARE TO BE PLACED IN THE SILT FENCE AS SHOWN ON THE PROJECT PLANS AND AS DIRECTED BY THE CONSTRUCTION INSPECTOR.*
2. *NON-EROSIVE OUTLETS ARE TO BE LOCATED AT ALL NATURAL DRAINAGE AREAS AND DEPRESSIONS, WITH THE EXCEPTION OF PERENNIAL STREAMS.*
3. *THE MAXIMUM DRAINAGE AREA IMPOUNDED AT EACH OUTLET MUST NOT EXCEED 1/4 ACRE.*

CITY OF GREENSBORO

SILT FENCE DETAIL	STD. NO.	REV.
	430	12/06 03/08 03/09

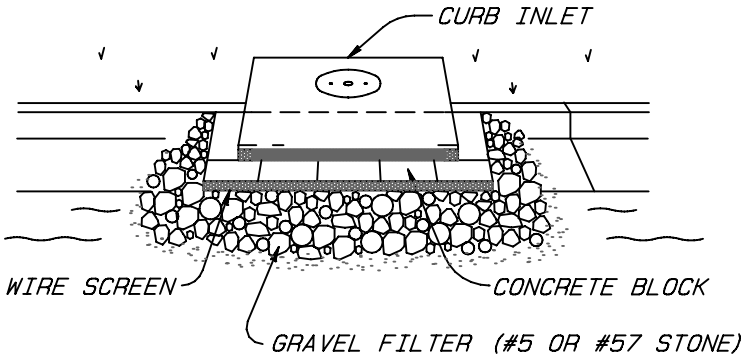


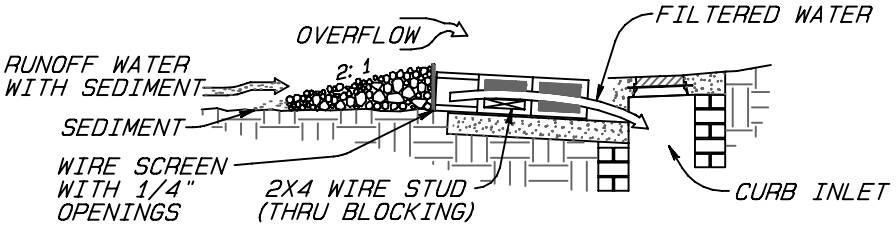


SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY FLOWS ARE EXPECTED AND WHERE AN OVERFLOW CAPACITY IS NECESSARY TO PREVENT EXCESSIVE PONDING AROUND THE STRUCTURE.

BLOCK AND GRAVEL DROP INLET SEDIMENT FILTER





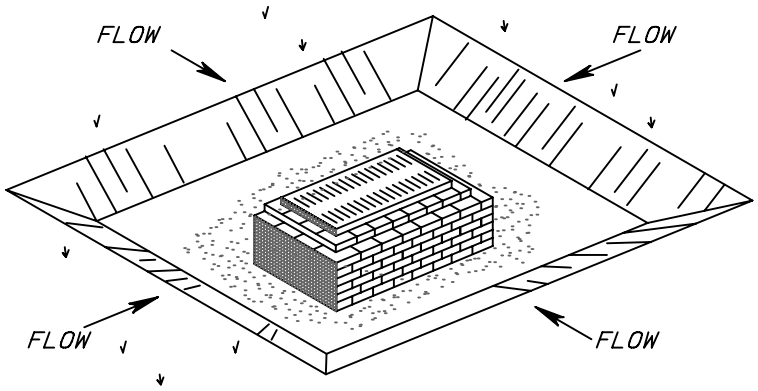
SPECIFIC APPLICATION

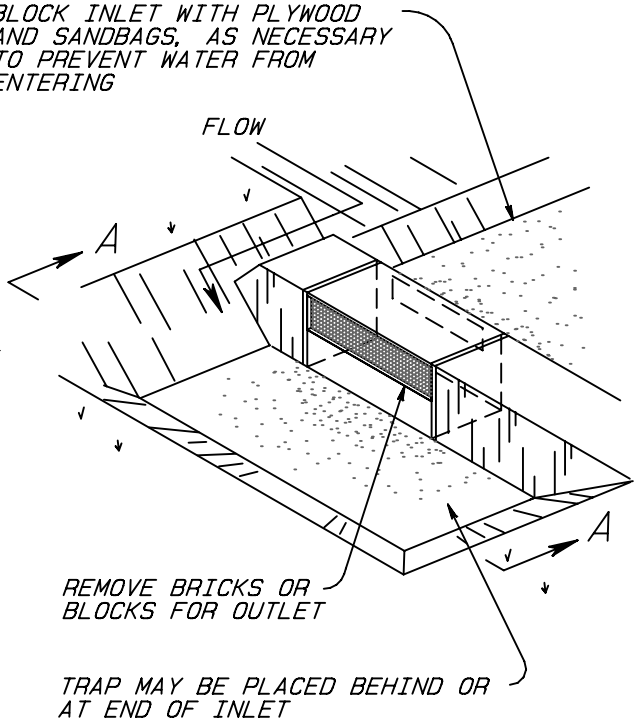
THIS METHOD OF INLET PROTECTION IS APPLICABLE AT CURB INLET WHERE AN OVERFLOW CAPABILITY IS NECESSARY TO PREVENT EXCESSIVE PONDING IN FRONT OF THE STRUCTURE. MAXIMUM DRAINAGE AREA = 1 ACRE

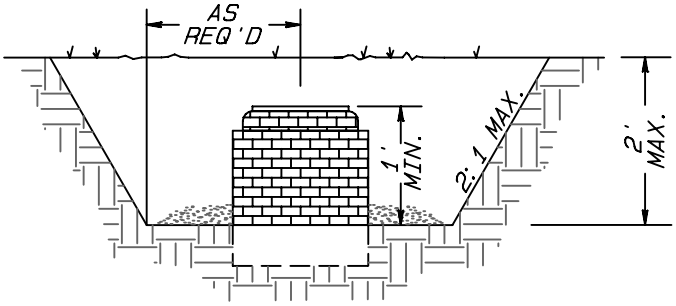
BLOCK AND GRAVEL CURB INLET SEDIMENT FILTER

CITY OF GREENSBORO

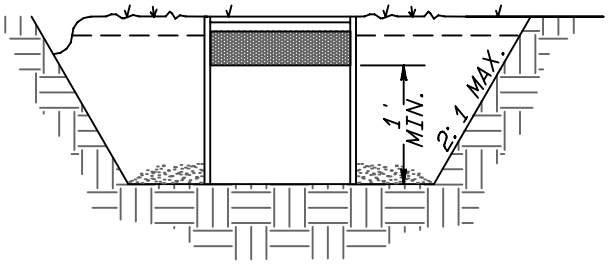
STANDARD STORMWATER INLET PROTECTION MEASURES	STD. NO.	REV.
	431	DEC 2006







CROSS-SECTION
YARD DRAIN



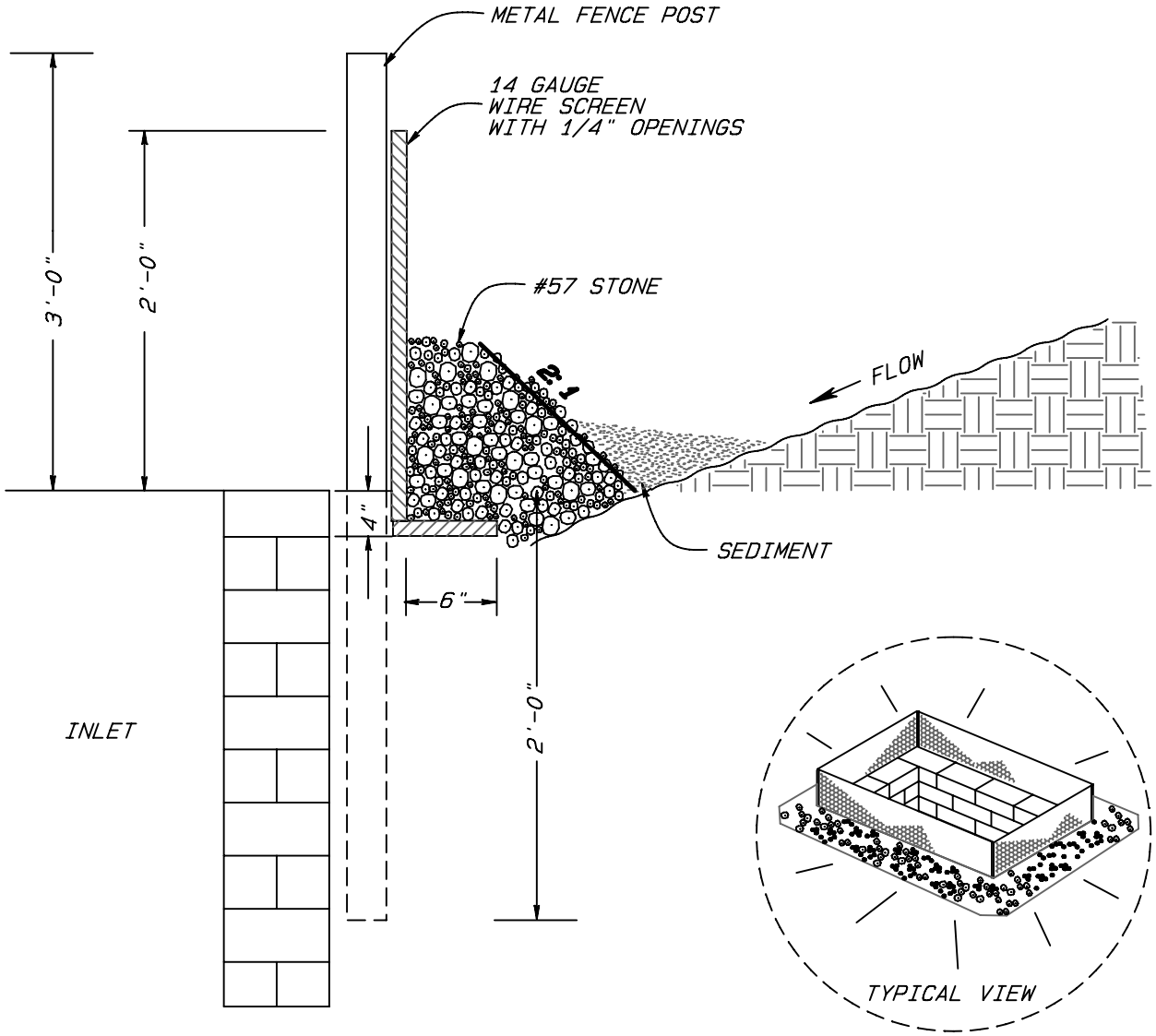
SECTION A-A
CURB DRAIN

NOTE:

- WHERE CURB IS IN PLACE, PROVIDE A 1'-0" WIDE OPENING IN THE CURB OR USE A SANDBAG DAM TO FORCE WATER OVER THE CURB TO THE TRAP.
- MINIMUM STORAGE VOLUME = 1800 CU.FT PER ACRE DISTURBED WITH MAXIMUM DRAINAGE AREA OF 1 ACRE.

CITY OF GREENSBORO

STANDARD STORMWATER INLET PROTECTION MEASURES	STD. NO.	REV.
	431	DEC 2006



STONE / WIRE INLET PROTECTION

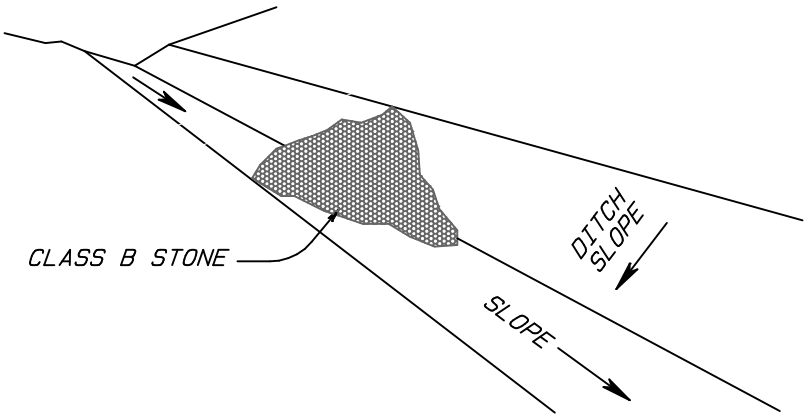
NOTES:

POST TO BE SET AT EACH CORNER OF INLET. IN ANY CASE THERE IS TO BE NO MORE THAN 6'-0" BETWEEN POSTS.

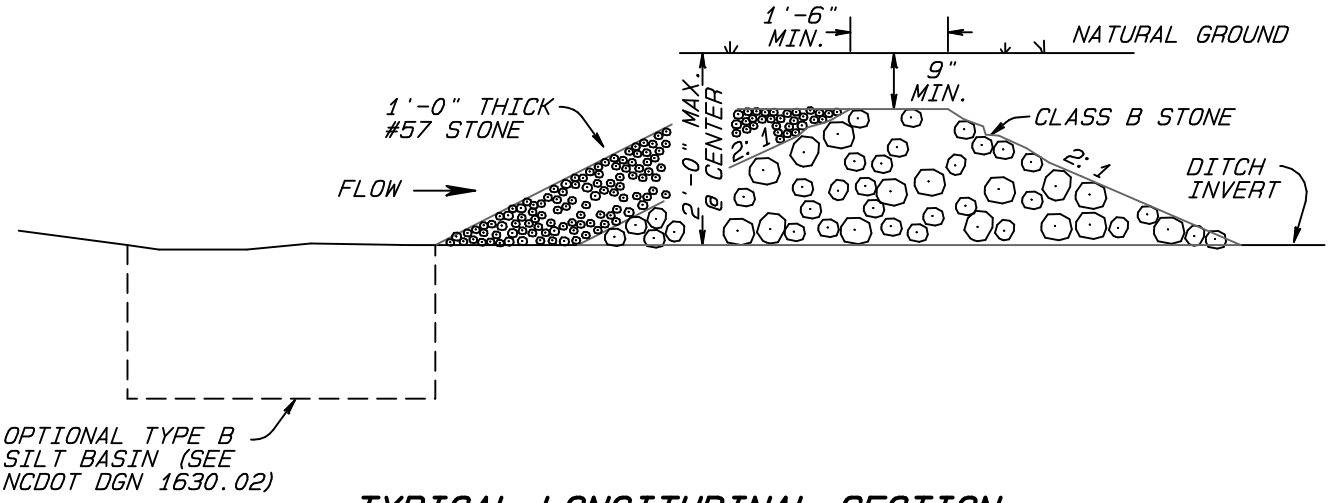
POST	METAL T-POST 5'-0" IN HEIGHT, 4 FT MAXIMUM SPACING
WIRE SCREEN	3'-0" IN WIDTH WITH 1/4" OPENINGS
STONE	#57 STONE TO BE PLACED 16" DEEP AT WIRE SCREE

CITY OF GREENSBORO

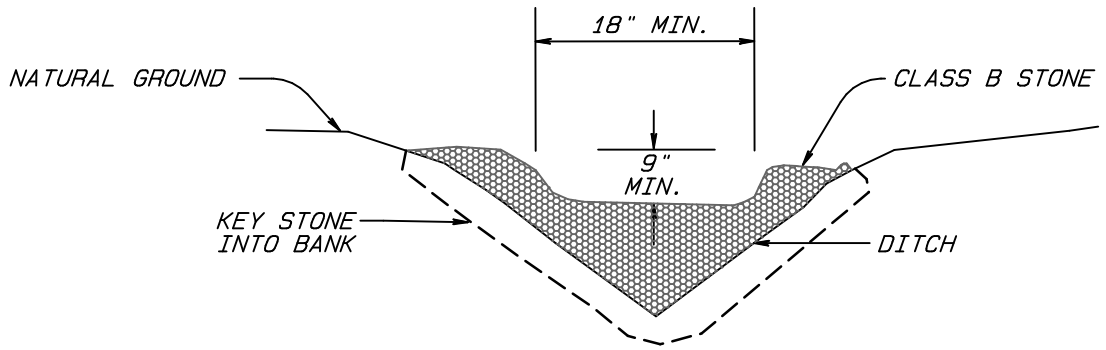
STANDARD STORMWATER INLET PROTECTION MEASURES	STD. NO.	REV.
	431	DEC 2006



ISOMETRIC VIEW



TYPICAL LONGITUDINAL SECTION



TYPICAL CROSS SECTION

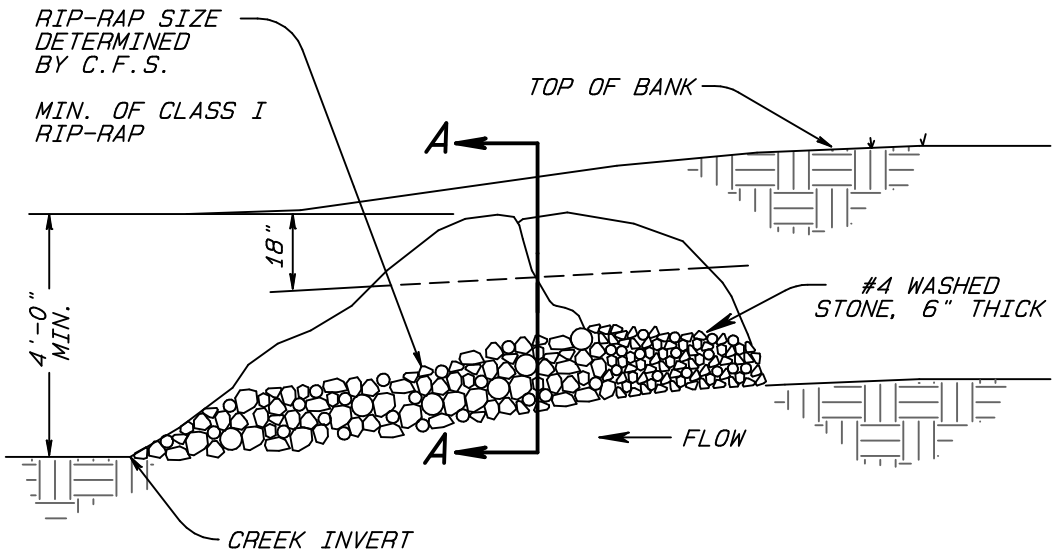
NOTES:

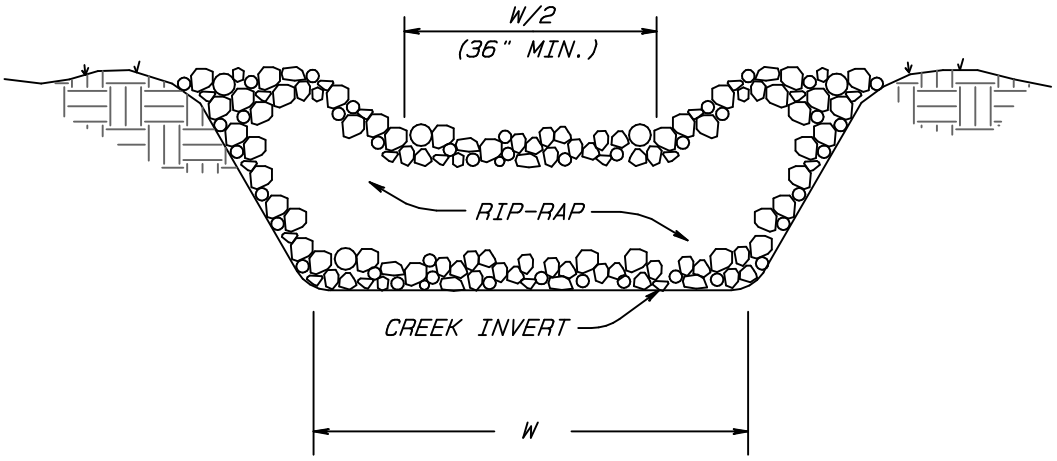
ENSURE THAT THE DRAINAGE AREA ABOVE THE CHECK DAM DOES NOT EXCEED 1/4 ACRE WITHOUT TYPE B BASIN (2 ACRES MAXIMUM)

STABILIZE OVERFLOW AREAS ALONG THE CHANNEL TO RESIST EROSION CAUSED BY CHECK DAMS.

CITY OF GREENSBORO

STANDARD TEMPORARY STONE DITCH CHECK	STD. NO.	REV.
	432	12/06 09/10 06/09 12/09





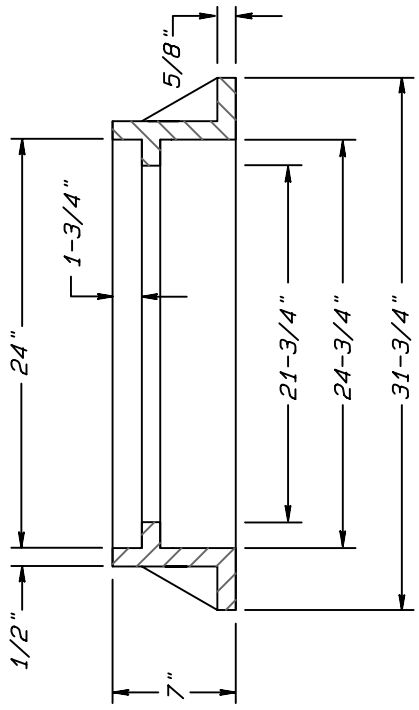
SECTION A-A

NOTE:

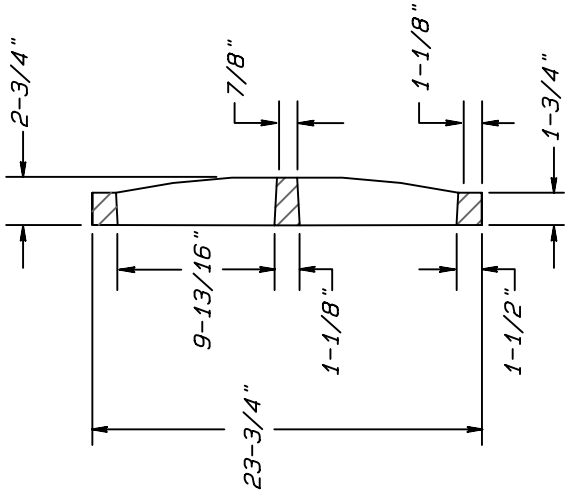
THIS DEVICE IS TYPICALLY USED 15' AWAY FROM PIPE OUTLETS LATER TO BE SPREAD INTO A RIP-RAP APRON.

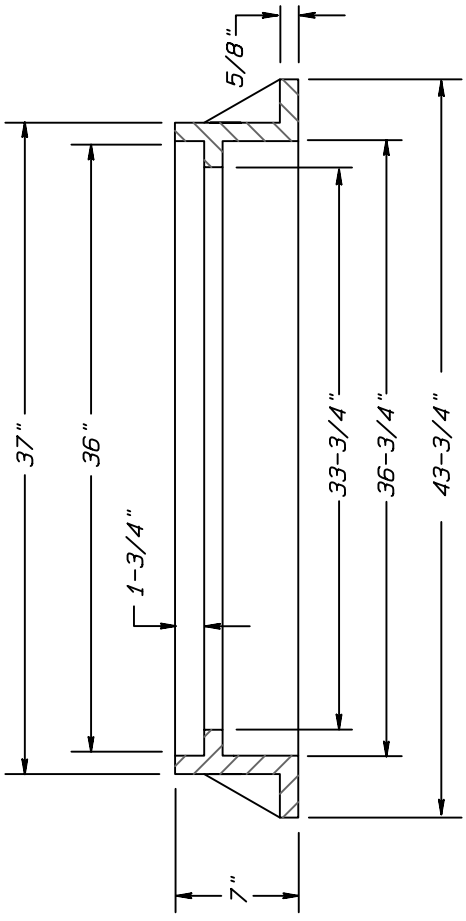
THIS DEVICE TO BE CONSIDERED FOR 36" CULVERTS OR LARGER.

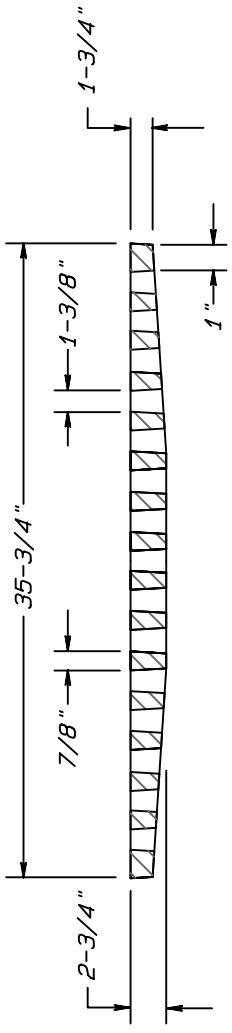
CITY OF GREENSBORO		
STANDARD TEMPORARY SILT CHECK DAM, TYPE A	STD. NO.	REV.
	433	03-97 09-10

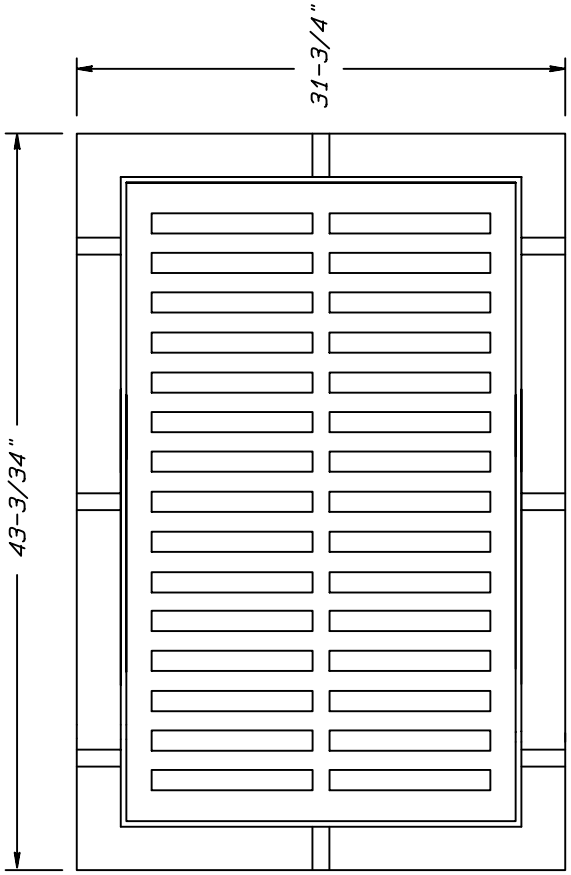


FRAME = 240 lbs.
GRATE = 216 lbs.









HEAD	CAPACITY
1"	2.6 cfs
3"	4.5 cfs
6"	6.4 cfs
9"	7.85 cfs
12"	9.0 cfs

USF-4137-6237
CB-2000
V-4867

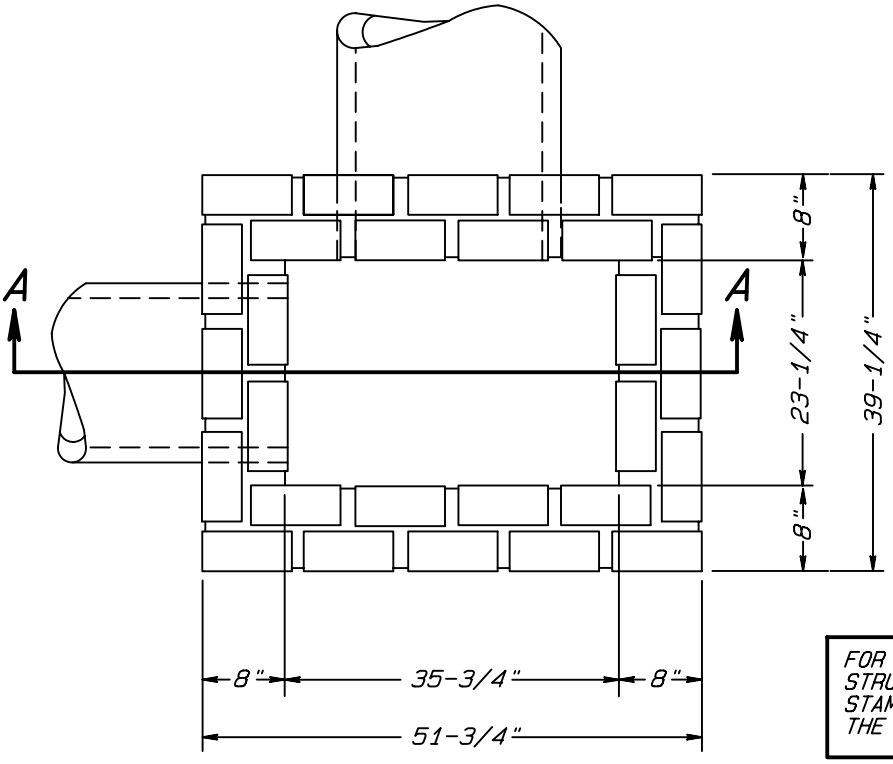
CITY OF GREENSBORO

STANDARD 24" X 36" GRATE AND FRAME (HEAVYWEIGHT)

STD. NO.	REV.
434	08-08

* DIGITAL FILE 26 Aug 2008

G:\Standard Drawings\Roadway\CO6434.pro



PLAN

NOTES:

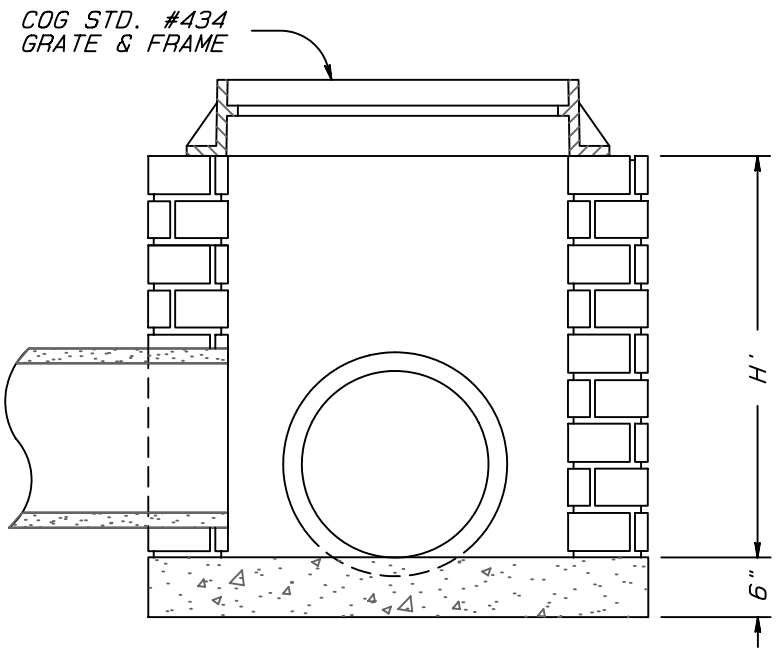
BRICK MASONRY SHALL BE COMMON CLAY BRICK, JUMBO BRICK, OR CONCRETE BRICK.

CONCRETE BOTTOMS SHALL BE PAID AS BRICK MASONRY.

ALL MORTAR JOINTS ARE TO BE 1/2" + 1/8".

FOR DEPTHS OVER 3'-6" USE STEPS ON 16" CENTERS. STEPS SHALL BE IN ACCORDANCE WITH COG STD. #414.

FOR PRECAST CONCRETE MODELS OF THIS STRUCTURE, THE MANUFACTURER SHALL STAMP OR STENCIL ITS LOGO OR NAME ON THE INSIDE AND OUTSIDE OF THE STRUCTURE.



SECTION A-A

QUANTITIES	
BASE (C.Y.)	H' (PER FT. HEIGHT)
0.261	0.310 CY

DEDUCTIONS FOR ONE PIPE		
PIPE SIZE	C.M.P.	R.C.P.
12"	0.020	0.032
15"	0.031	0.047
18"	0.044	0.065
24"	0.078	0.122

CITY OF GREENSBORO

STANDARD BRICK MASONRY DROP INLET FOR 24" X 36" GRATE

STD. NO.	REV.
435	08-02 12-07

DEFINITION: GRAVELED AREA TO BE LOCATED AT POINTS WHERE VEHICLES ENTER AND LEAVE A CONSTRUCTION SITE.

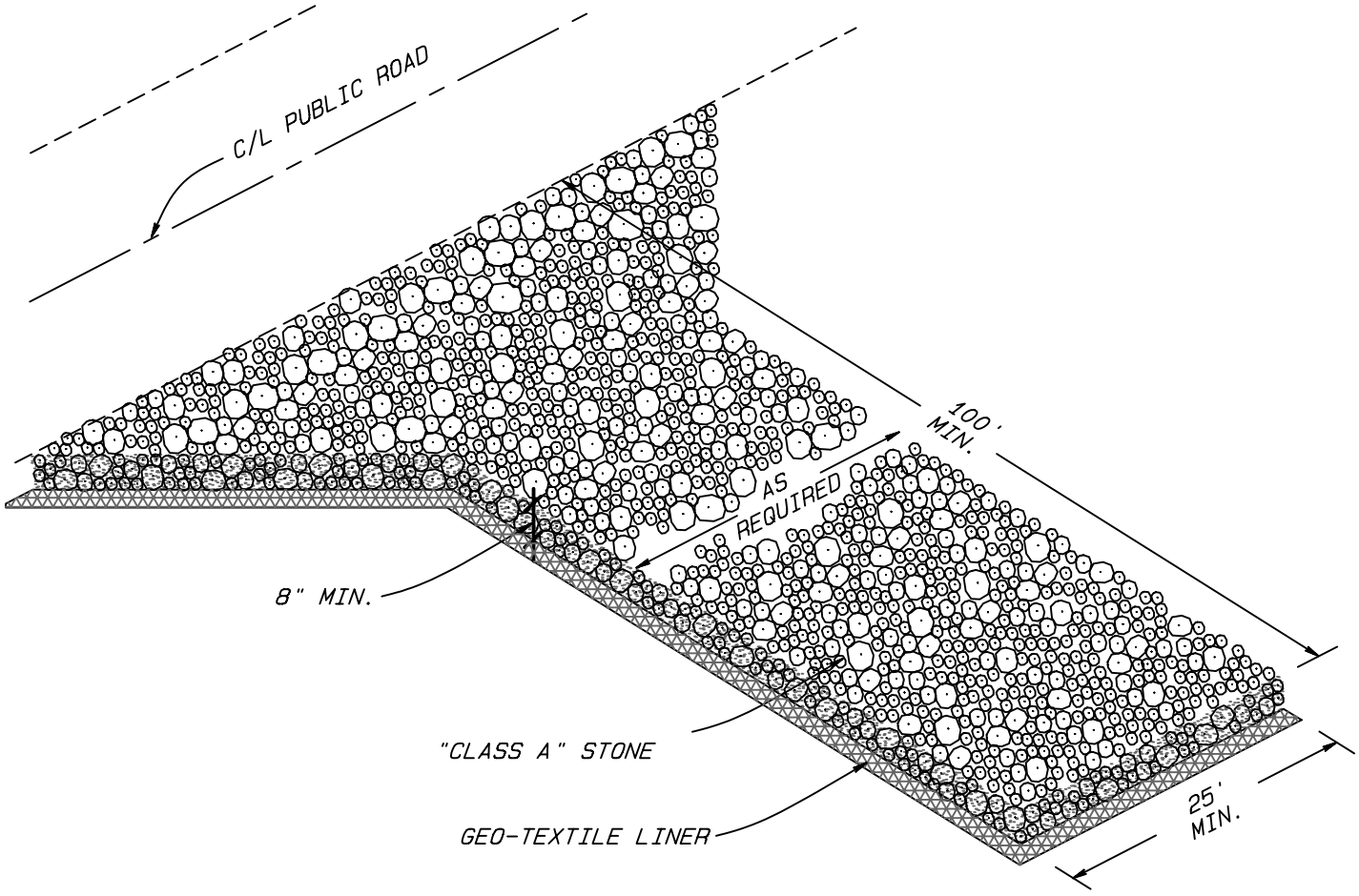
PURPOSE: TO PROVIDE A BUFFER AREA WHERE VEHICLES CAN DROP THEIR MUD AND SEDIMENT TO AVOID TRANSPORTING IT ONTO PUBLIC ROADS, TO CONTROL EROSION FROM SURFACE RUNOFF, AND TO HELP CONTROL DUST.

CONDITIONS: TO BE USED WHEREVER TRAFFIC WILL BE LEAVING A CONSTRUCTION SITE AND MOVING DIRECTLY ONTO A PUBLIC ROAD OR OTHER PAVED OFF-SITE AREA. CONSTRUCTION PLANS SHOULD LIMIT TRAFFIC TO PROPERLY CONSTRUCTED ENTRANCES.

DESIGN CRITERIA: AGGREGATE SIZE - USE "CLASS A" STONE WITH GEO-TEXTILE LINER.

DIMENSIONS OF GRAVEL PAD - THICKNESS = 8" MINIMUM
WIDTH = 25' MINIMUM OF FULL WIDTH AT ALL POINTS OF THE VEHICULAR ENTRANCE AND EXIT AREA, WHICHEVER IS GREATER
LENGTH = 100' MINIMUM WITH GEO-TEXTILE LINER
LOCATION = LOCATE CONSTRUCTION ENTRANCES AND EXITS TO LIMIT SEDIMENT FROM LEAVING THE SITE AND TO PROVIDE FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES. AVOID STEEP GRADES AND ENTRANCES AT CURVES IN PUBLIC ROADS.

NOTE: SITE CONDITIONS MAY REQUIRE VARIATIONS FROM THESE DESIGN CRITERIA. VARIATIONS WILL BE DETERMINED OR APPROVED BY THE APPROPRIATE CITY EROSION CONTROL AUTHORITY.



CONSTRUCTION ENTRANCE DETAIL

NOTE:

IN ADDITION THIS TEMPORARY GRAVEL ENTRANCE WILL REDUCE IMPACT OF STREET FLUSHING FEE EFFECTIVE JULY 1, 1997. CITY OF GREENSBORO ORDINANCE SECT. 26-27, "STREET FLUSHING FEES".

CITY OF GREENSBORO		
TEMPORARY CONSTRUCTION ENTRANCE DETAIL (CITY REQUIREMENTS)	STD. NO.	REV.
	436	9/06 3/09

DEFINITION: GRAVELED AREA TO BE LOCATED AT POINTS WHERE VEHICLES ENTER AND LEAVE A CONSTRUCTION SITE.

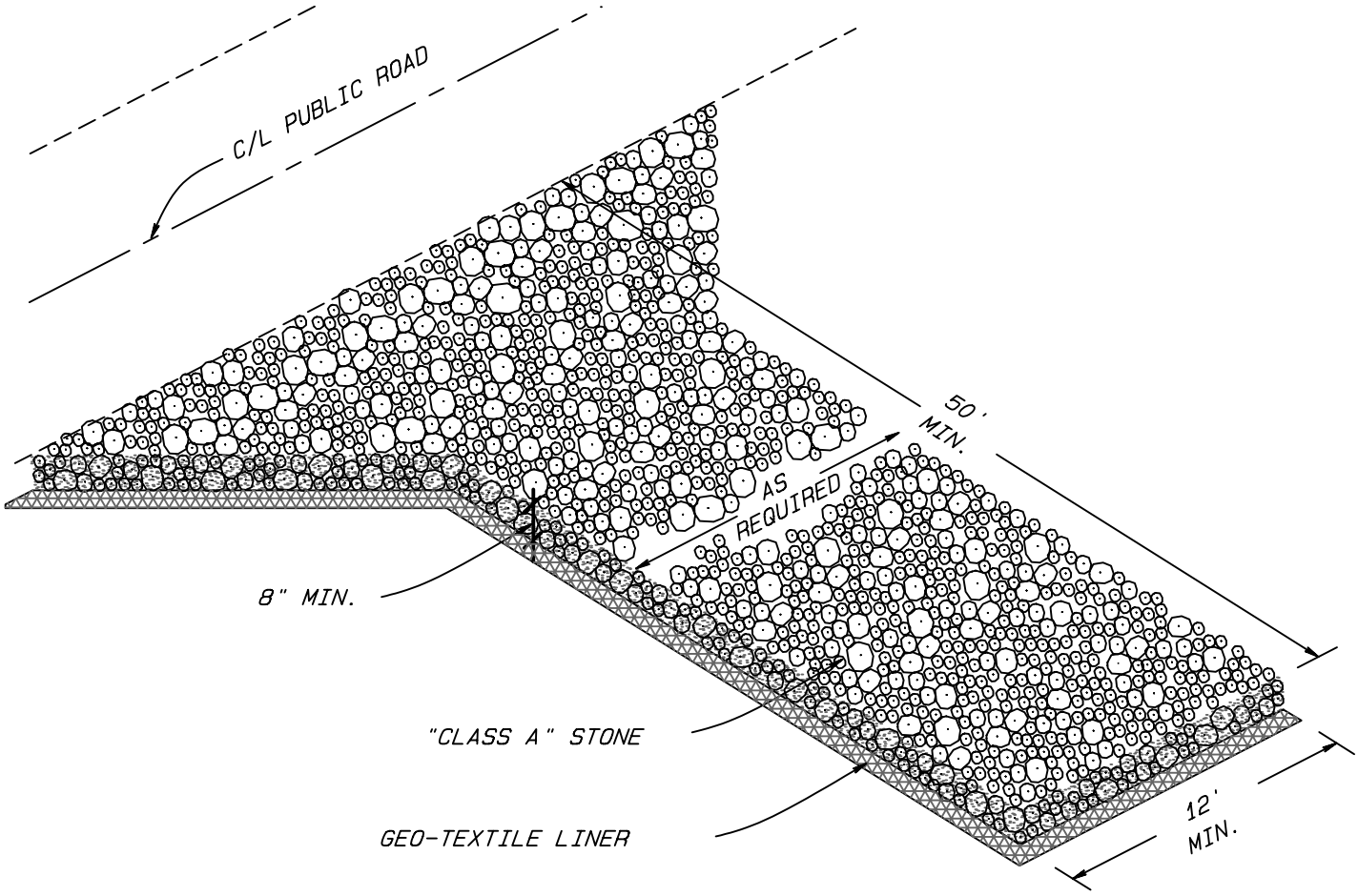
PURPOSE: TO PROVIDE A BUFFER AREA WHERE VEHICLES CAN DROP THEIR MUD AND SEDIMENT TO AVOID TRANSPORTING IT ONTO PUBLIC ROADS, TO CONTROL EROSION FROM SURFACE RUNOFF, AND TO HELP CONTROL DUST.

CONDITIONS: TO BE USED WHEREVER TRAFFIC WILL BE LEAVING A CONSTRUCTION SITE AND MOVING DIRECTLY ONTO A PUBLIC ROAD OR OTHER PAVED OFF-SITE AREA. CONSTRUCTION PLANS SHOULD LIMIT TRAFFIC TO PROPERLY CONSTRUCTED ENTRANCES.

DESIGN CRITERIA: AGGREGATE SIZE - USE "CLASS A" STONE WITH GEO-TEXTILE LINER.

DIMENSIONS OF GRAVEL PAD - THICKNESS = 8" MINIMUM
WIDTH = 12' MINIMUM OF FULL WIDTH AT ALL POINTS OF THE VEHICULAR ENTRANCE AND EXIT AREA, WHICHEVER IS GREATER
LENGTH = 50' MINIMUM WITH GEO-TEXTILE LINER
LOCATION = LOCATE CONSTRUCTION ENTRANCES AND EXITS TO LIMIT SEDIMENT FROM LEAVING THE SITE AND TO PROVIDE FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES. AVOID STEEP GRADES AND ENTRANCES AT CURVES IN PUBLIC ROADS.

NOTE: SITE CONDITIONS MAY REQUIRE VARIATIONS FROM THESE DESIGN CRITERIA. VARIATIONS WILL BE DETERMINED OR APPROVED BY THE APPROPRIATE CITY EROSION CONTROL AUTHORITY.



CONSTRUCTION ENTRANCE DETAIL

NOTE:

IN ADDITION THIS TEMPORARY GRAVEL ENTRANCE WILL REDUCE IMPACT OF STREET FLUSHING FEE EFFECTIVE JULY 1, 1997. CITY OF GREENSBORO ORDINANCE SECT. 26-27, "STREET FLUSHING FEES".

CITY OF GREENSBORO		
TEMPORARY CONSTRUCTION ENTRANCE DETAIL (STATE REQUIREMENTS)	STD. NO.	REV.
	436-A	09/06 03/09

DEFINITION: GRAVELED AREA TO BE LOCATED AT POINTS WHERE VEHICLES ENTER AND LEAVE A CONSTRUCTION SITE.

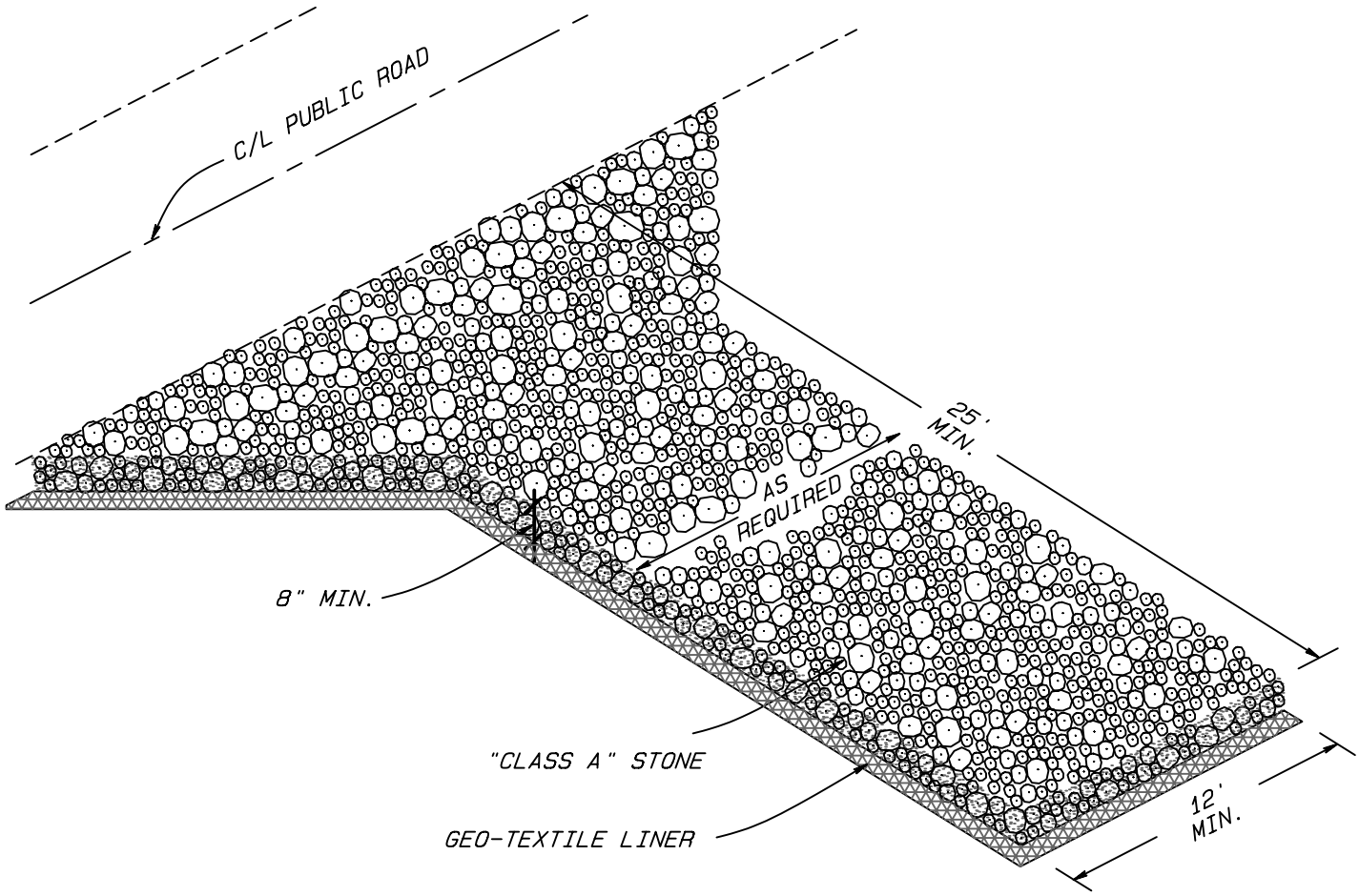
PURPOSE: TO PROVIDE A BUFFER AREA WHERE VEHICLES CAN DROP THEIR MUD AND SEDIMENT TO AVOID TRANSPORTING IT ONTO PUBLIC ROADS, TO CONTROL EROSION FROM SURFACE RUNOFF, AND TO HELP CONTROL DUST.

CONDITIONS: TO BE USED WHEREVER TRAFFIC WILL BE LEAVING A CONSTRUCTION SITE AND MOVING DIRECTLY ONTO A PUBLIC ROAD OR OTHER PAVED OFF-SITE AREA. CONSTRUCTION PLANS SHOULD LIMIT TRAFFIC TO PROPERLY CONSTRUCTED ENTRANCES.

DESIGN CRITERIA: AGGREGATE SIZE - USE "CLASS A" STONE, WITH GEO-TEXTILE LINER.

DIMENSIONS OF GRAVEL PAD - THICKNESS = 8" MINIMUM
WIDTH = 12' MINIMUM OF FULL WIDTH AT ALL POINTS OF THE VEHICULAR ENTRANCE AND EXIT AREA, WHICHEVER IS GREATER
LENGTH = 25' MINIMUM WITH GEO-TEXTILE LINER
LOCATION = LOCATE CONSTRUCTION ENTRANCES AND EXITS TO LIMIT SEDIMENT FROM LEAVING THE SITE AND TO PROVIDE FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES. AVOID STEEP GRADES AND ENTRANCES AT CURVES IN PUBLIC ROADS.

SITE CONDITIONS MAY REQUIRE VARIATIONS FROM THESE DESIGN CRITERIA. VARIATIONS WILL BE DETERMINED OR APPROVED BY THE APPROPRIATE CITY EROSION CONTROL AUTHORITY.



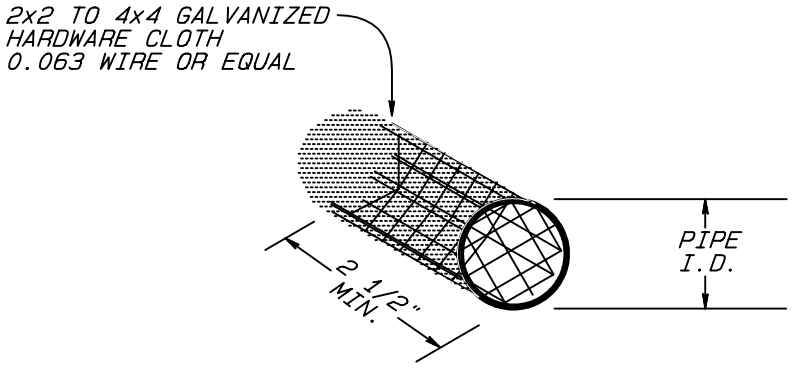
RESIDENTIAL CONSTRUCTION ENTRANCE DETAIL

NOTE:

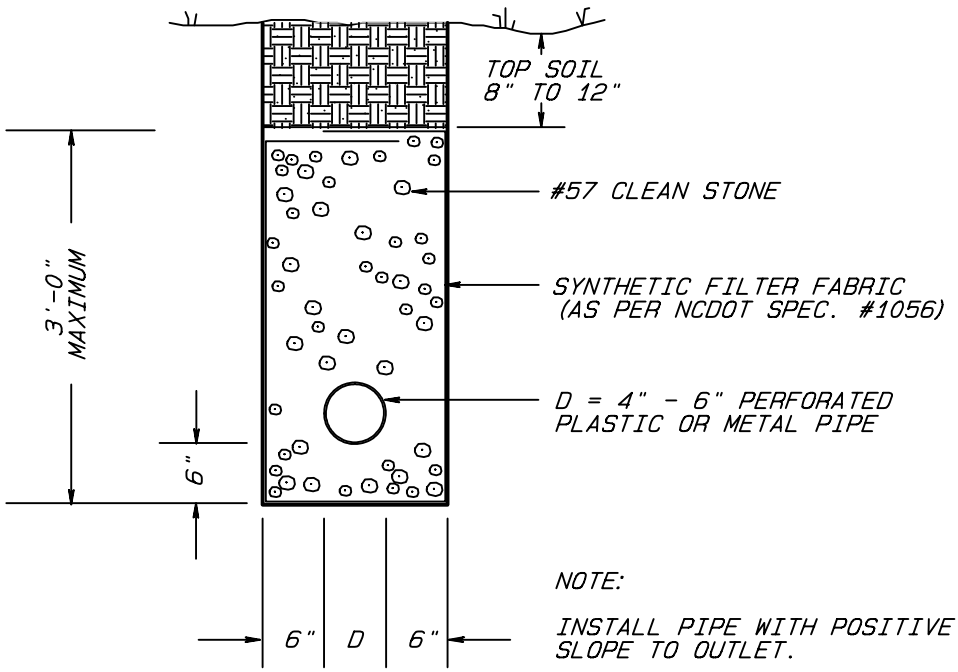
IN ADDITION THIS TEMPORARY GRAVEL ENTRANCE WILL REDUCE IMPACT OF STREET FLUSHING FEE EFFECTIVE JULY 1, 1997. CITY OF GREENSBORO ORDINANCE SECT. 26-27, "STREET FLUSHING FEES".

CITY OF GREENSBORO

TEMPORARY CONSTRUCTION ENTRANCE DETAIL (RESIDENTIAL SITES)	STD. NO.	REV.
	436-B	09/06 03/09

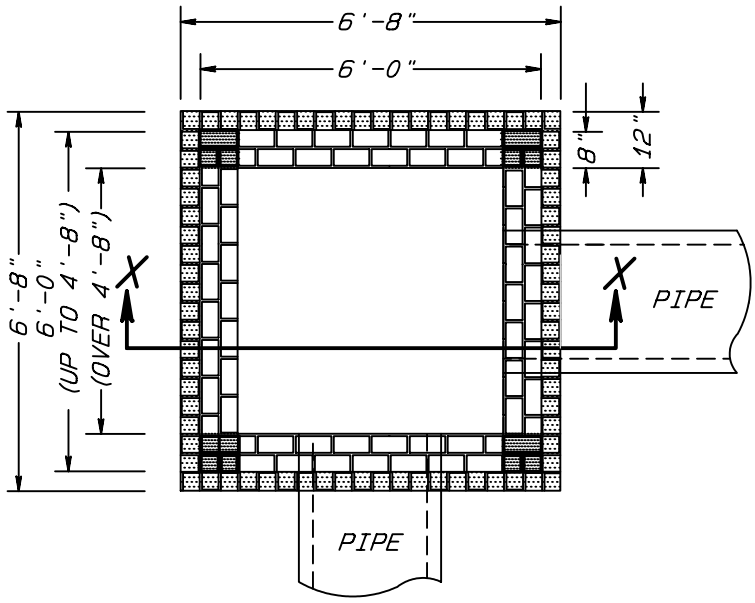


RODENT SCREEN @ OUTLET



PIPE UNDERDRAIN

CITY OF GREENSBORO		
STANDARD PIPE UNDERDRAIN	STD. NO.	REV.
	437	

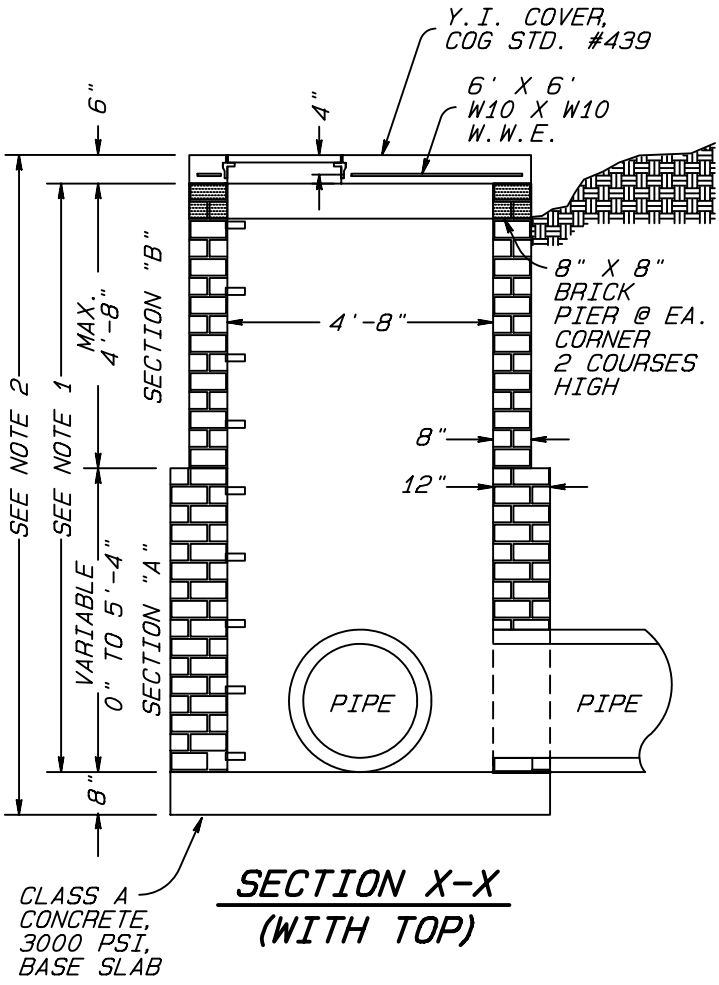


PLAN
(WITHOUT TOP)

8" WALL DEDUCTIONS FOR (1) PIPE CY		
PIPE SIZE	CM	RC
42"	0.262	0.352
48"	0.338	0.455

12" WALL DEDUCTIONS FOR (1) PIPE CY		
PIPE SIZE	CM	RC
42"	0.356	0.523
48"	0.465	0.681

QUANTITIES		
BASE (CY)	H (CY PER FT HT)	PIERS (CY EA)
0.893	8"wall (.529)	0.006
	12"wall (.839)	



SECTION X-X
(WITH TOP)

NOTES:

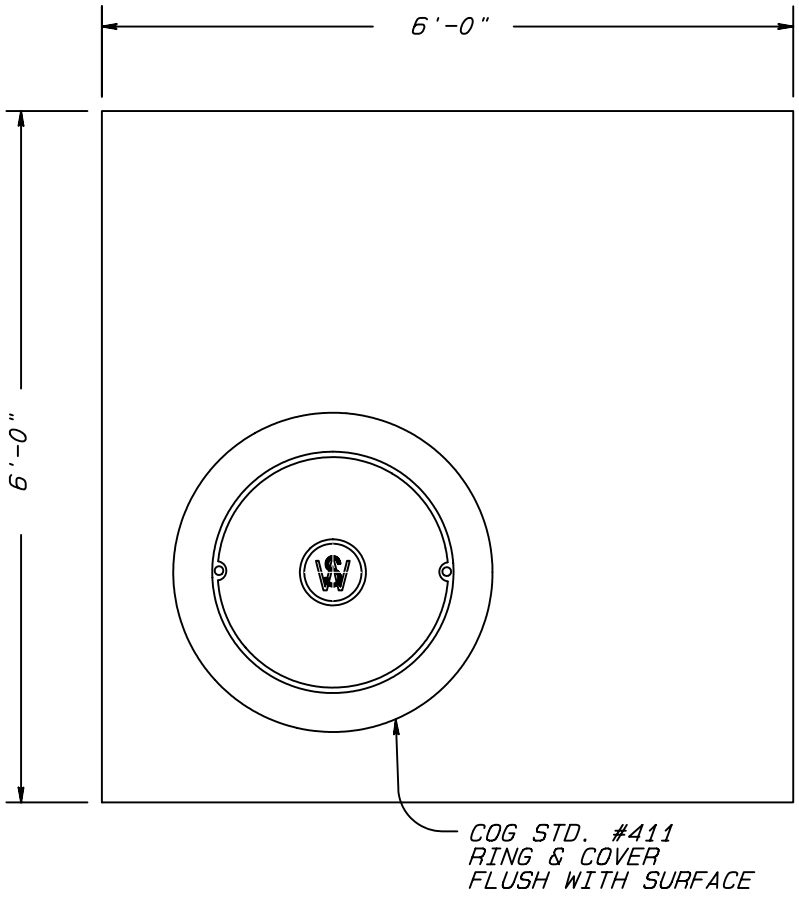
1. FOR YARD INLETS OVER 4'-8" VERTICAL WALL DEPTH, THE BRICK MASONRY WALL THICKNESS WILL BE 12" BEGINNING AT 4'-8" DEEP.
2. SECTION "B" OF THE PROPOSED WALL SHALL BE 8" THICK. SECTION "A" SHALL BE 12" THICK.
3. IF PROP. STRUCTURE EXCEEDS 12'-0" VERT. HEIGHT A DESIGN WILL BE REQ. FOR APPROVAL.
4. BRICK MASONRY CAN BE COMMON CLAY BRICK, JUMBO BRICK OR CONC. BRICK.
5. ALL MORTAR JOINTS ARE TO BE 1/2".
6. CONC. BOTTOMS, WALLS, & PIERS SHALL BE PAID AS MASONRY DRAIN. STRUCTURE.
7. CONC. COVER TO BE PAID AS FURNISH & INSTALL 6' X 6' YARD INLET COVER, SEE COG STD. #439.
8. YARD INLETS OVER 3'-6" IN DEPTH SHALL PROVIDE STEPS 16" ON CENTER. STEPS SHALL BE IN ACCORDANCE WITH COG STD. #414. STEPS WILL BE IN ALIGNMENT WITH THE LOCATION OF THE RING & COVER IN THE COG STD. #439 YARD INLET COVER.
9. WHEN CONSTRUCTING THIS STRUCTURE OVER AN EXIST. PIPE LINE, SAW CUT & REMOVE A SECTION OF PIPE EQUAL TO THE INSIDE DIAMETER OF THE STRUCTURE. POUR A NEW BOTTOM AS SHOWN AND CONSTRUCT THE NEW STRUCTURE. NEW STRUCTURES ARE NOT TO BE BUILT ON TOP OF THE PIPE.

FOR PRECAST CONCRETE MODELS OF THIS STRUCTURE, THE MANUFACTURER SHALL STAMP OR STENCIL ITS LOGO OR NAME ON THE INSIDE AND OUTSIDE OF THE STRUCTURE.

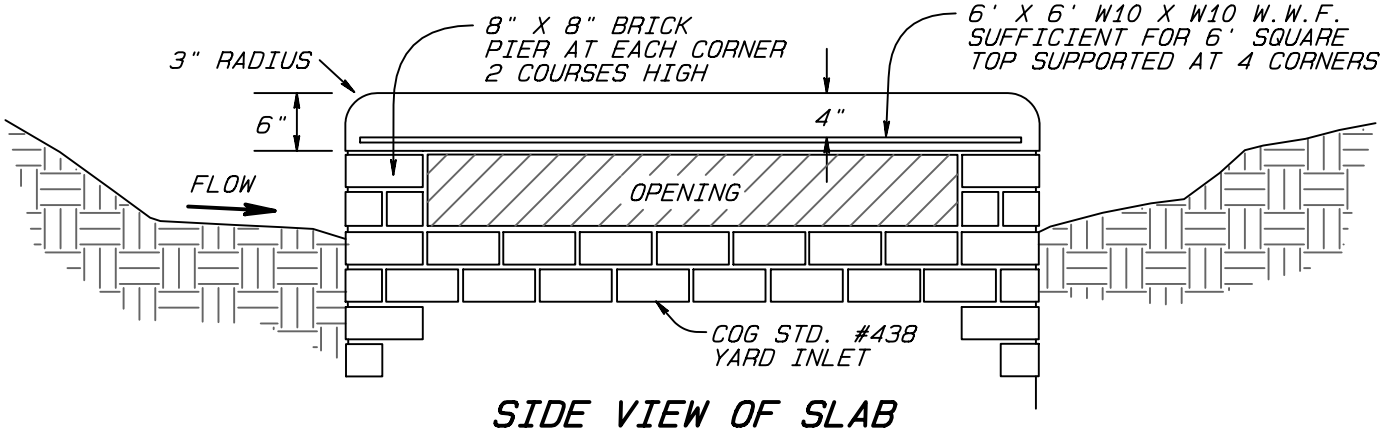
CITY OF GREENSBORO

STANDARD 6' X 6' BRICK MASONRY YARD INLET

STD. NO.	REV.
438	10-01 08-02 12-07



PLAN OF TOP SLAB



SIDE VIEW OF SLAB

NOTES:

CONCRETE SHALL BE CLASS A, 3000 PSI.

TOP SHALL HAVE A SMOOTH FINISH.

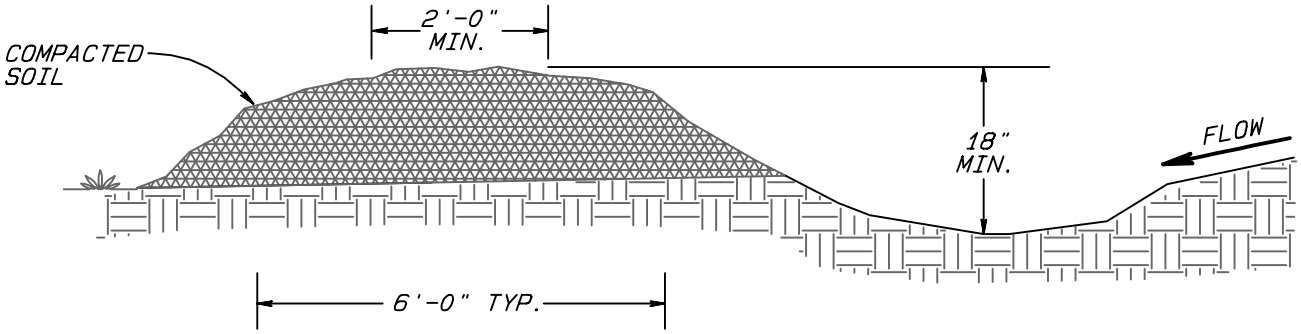
YARD INLET COVER TO BE PAID AS FURNISH & INSTALL 6' X 6' YARD INLET COVER, COG STD. #439

THE MANUFACTUER SHALL STAMP OR STENCIL ITS LOGO OR NAME ON AT LEAST ONE EDGE OF THE TOP.

CITY OF GREENSBORO

STANDARD 6' X 6' PRECAST CONCRETE YARD INLET COVER WITH RING & COVER

STD. NO.	REV.
439	10-01 12-07



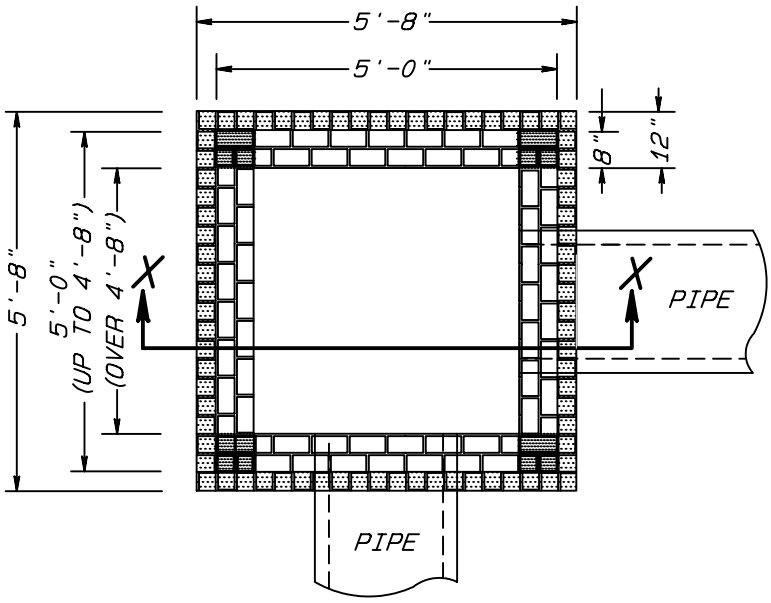
CONSTRUCTION SPECIFICATIONS

1. REMOVE AND PROPERLY DISPOSE OF ALL TREES, BRUSH, STUMPS, AND OTHER OBJECTIONAL MATERIAL.
2. ENSURE THAT THE MINIMUM CONSTRUCTED CROSS SECTION MEETS ALL DESIGN REQUIREMENTS.
3. ENSURE THAT THE TOP OF THE BERM IS NOT LOWER AT ANY POINT THAN THE DESIGN ELEVATION PLUS THE SPECIFIED SETTLEMENT.
4. PROVIDE SUFFICIENT ROOM AROUND DIVERSIONS TO PERMIT MACHINE REGRADING AND CLEANOUT.
5. VEGETATE THE BERM IMMEDIATELY AFTER CONSTRUCTION, UNLESS IT WILL REMAIN IN PLACE LESS THAN 30 WORKING DAYS.

MAINTENANCE

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

CITY OF GREENSBORO		
TEMPORARY EARTH BERM	STD. NO.	REV.
	440	

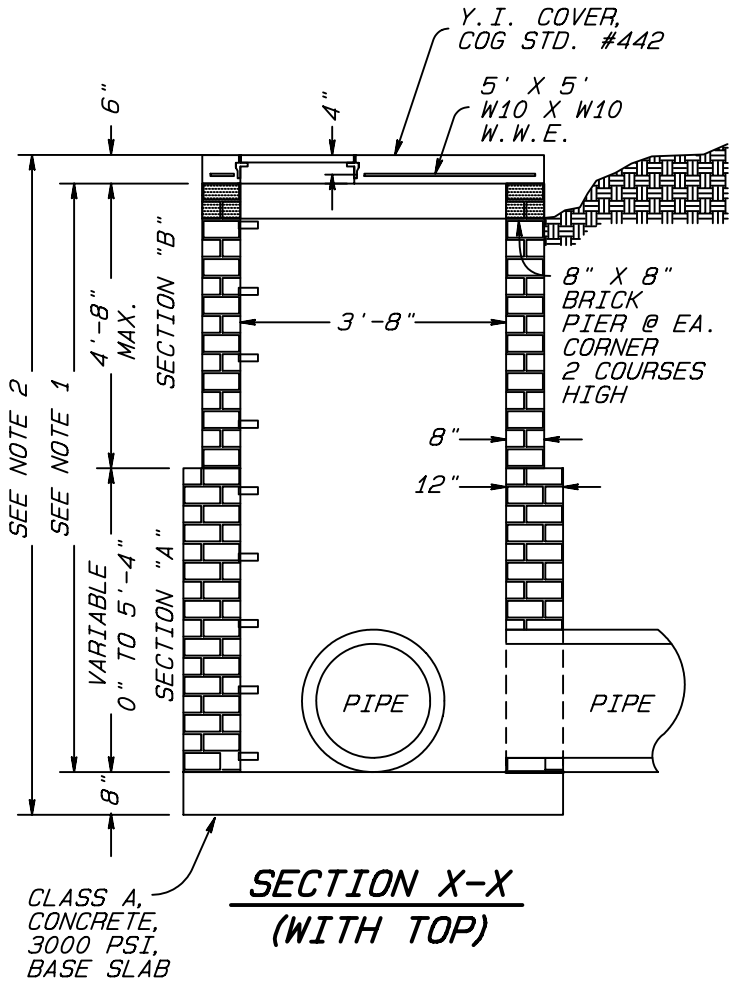


PLAN
(WITHOUT TOP)

8" WALL DEDUCTIONS FOR (1) PIPE CY		
PIPE SIZE	CM	RC
30"	0.139	0.185
36"	0.195	0.263

12" WALL DEDUCTIONS FOR (1) PIPE CY		
PIPE SIZE	CM	RC
30"	0.181	0.279
36"	0.261	0.390

QUANTITIES		
BASE (CY)	H (CY PER FT HT)	PIERS (CY EA)
0.620	8"wall (.430)	0.006
	12"wall (.642)	



SECTION X-X
(WITH TOP)

NOTES:

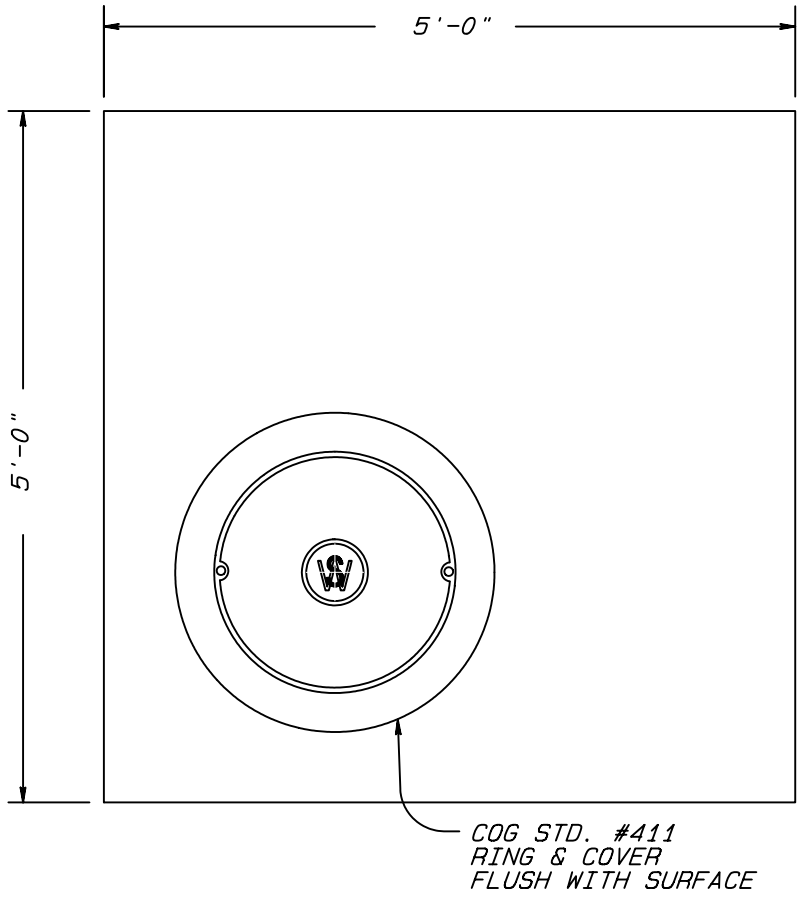
1. FOR YARD INLETS OVER 4'-8" VERTICAL WALL DEPTH, THE BRICK MASONRY WALL THICKNESS WILL BE 12" BEGINNING AT 4'-8" DEEP.
2. SECTION "B" OF THE PROPOSED WALL SHALL BE 8" THICK. SECTION "A" SHALL BE 12" THICK.
3. IF PROP. STRUCTURE EXCEEDS 12'-0" VERT. HEIGHT A DESIGN WILL BE REQ. FOR APPROVAL.
4. BRICK MASONRY CAN BE COMMON CLAY BRICK, JUMBO BRICK OR CONC. BRICK.
5. ALL MORTAR JOINTS ARE TO BE 1/2".
6. CONC. BOTTOMS, WALLS, & PIERS SHALL BE PAID AS MASONRY DRAIN. STRUCTURE.
7. CONC. COVER TO BE PAID AS FURNISH & INSTALL 5' X 5' YARD INLET COVER, SEE COG STD. #442.
8. YARD INLETS OVER 3'-6" IN DEPTH SHALL PROVIDE STEPS 16" ON CENTER. STEPS SHALL BE IN ACCORDANCE WITH COG STD. #414. STEPS WILL BE IN ALIGNMENT WITH THE LOCATION OF THE RING & COVER IN THE COG STD. #442 YARD INLET COVER.
9. WHEN CONSTRUCTING THIS STRUCTURE OVER AN EXIST. PIPE LINE, SAW CUT & REMOVE A SECTION OF PIPE EQUAL TO THE INSIDE DIAMETER OF THE STRUCTURE. POUR A NEW BOTTOM AS SHOWN AND CONSTRUCT THE NEW STRUCTURE. NEW STRUCTURES ARE NOT TO BE BUILT ON TOP OF THE PIPE.

FOR PRECAST CONCRETE MODELS OF THIS STRUCTURE, THE MANUFACTURER SHALL STAMP OR STENCIL ITS LOGO OR NAME ON THE INSIDE AND OUTSIDE OF THE STRUCTURE.

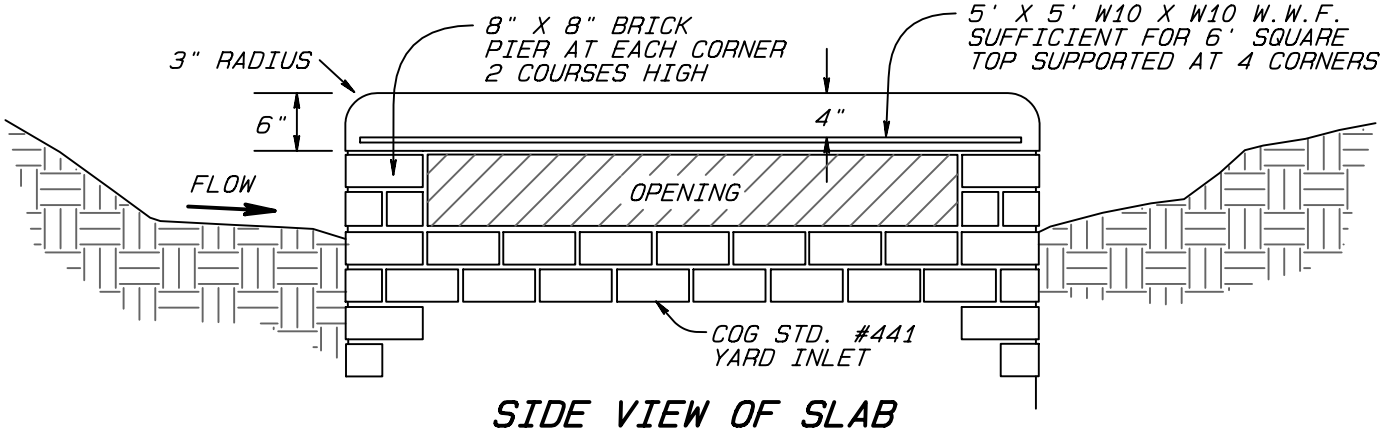
CITY OF GREENSBORO

STANDARD 5' X 5' BRICK MASONRY YARD INLET

STD. NO.	REV.
441	08-02 12-07



PLAN OF TOP SLAB



SIDE VIEW OF SLAB

NOTES:

CONCRETE SHALL BE CLASS A, 3000 PSI.

TOP SHALL HAVE A SMOOTH FINISH.

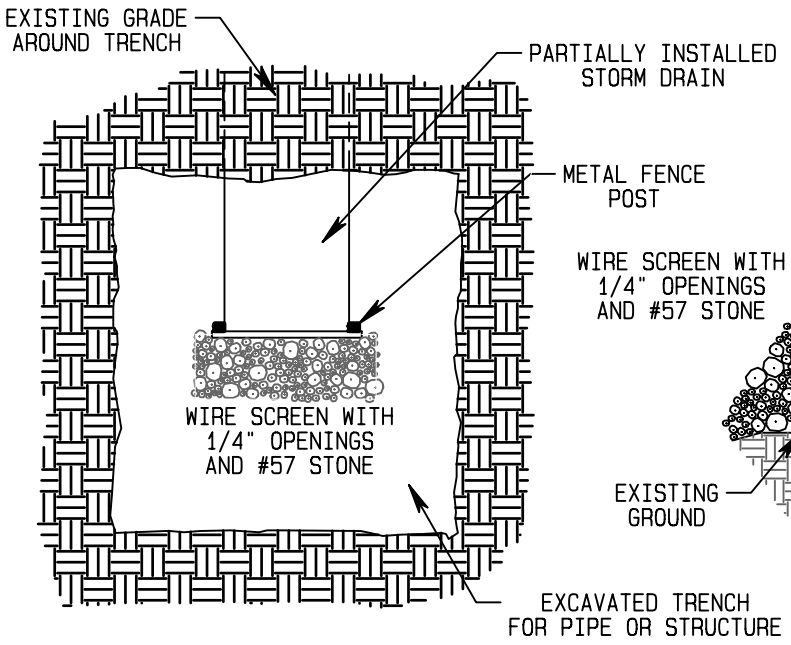
YARD INLET COVER TO BE PAID AS FURNISH & INSTALL 5' X 5' YARD INLET COVER, COG STD. #442

THE MANUFACTUER SHALL STAMP OR STENCIL ITS LOGO OR NAME ON AT LEAST ONE EDGE OF THE TOP.

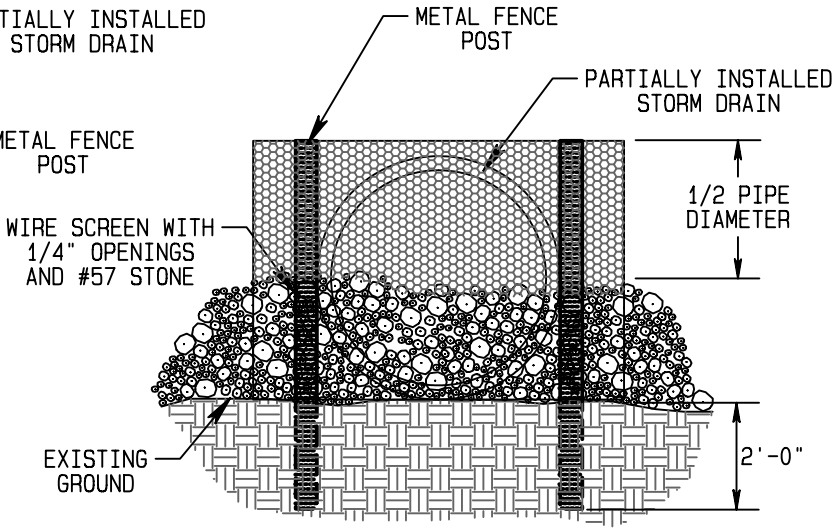
CITY OF GREENSBORO

STANDARD 5' X 5' PRECAST CONCRETE YARD INLET COVER WITH RING & COVER

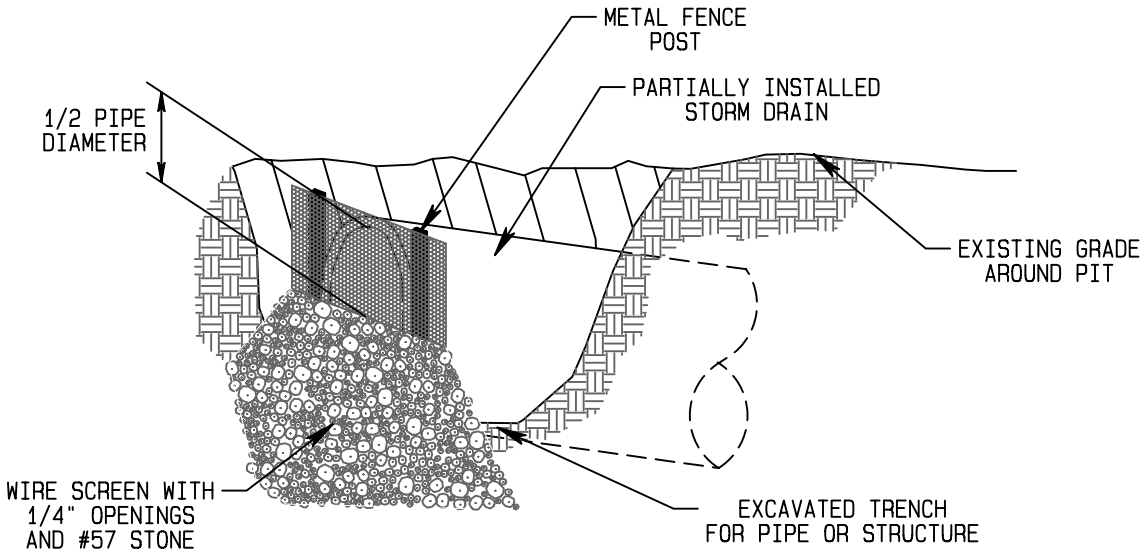
STD. NO.	REV.
442	12-07



PLAN VIEW



SECTION VIEW



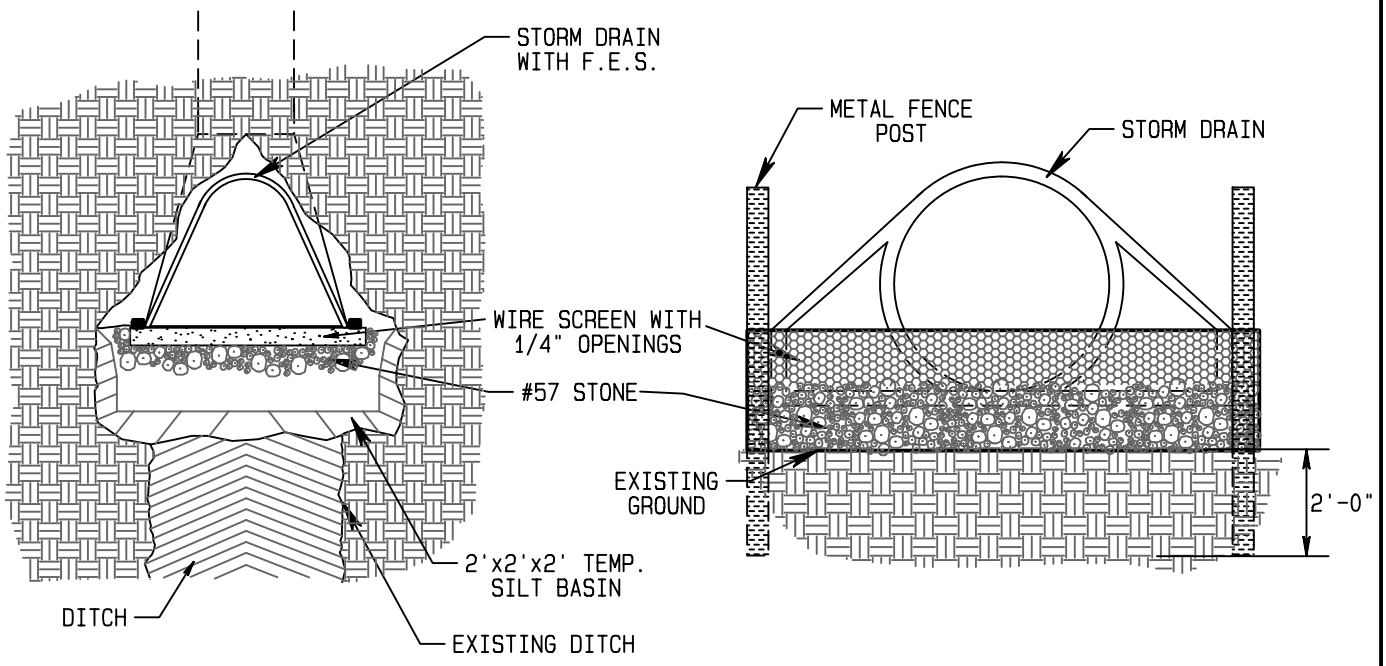
ISOMETRIC VIEW

NOTES:

1. THIS MEASURE IS BEST USED WHERE STORM DRAIN TIES INTO EXISTING STORM DRAIN SYSTEM AND FLOWS OFFSITE UNTREATED.
2. THE OVER FLOW NOT COVERED BY #57 STONE SHALL BE APPROX. 1/2 OF THE PIPE DIAMETER.
3. ATTACH WIRE SCREEN TO METAL FENCE POST ON EACH SIDE OF PIPE.

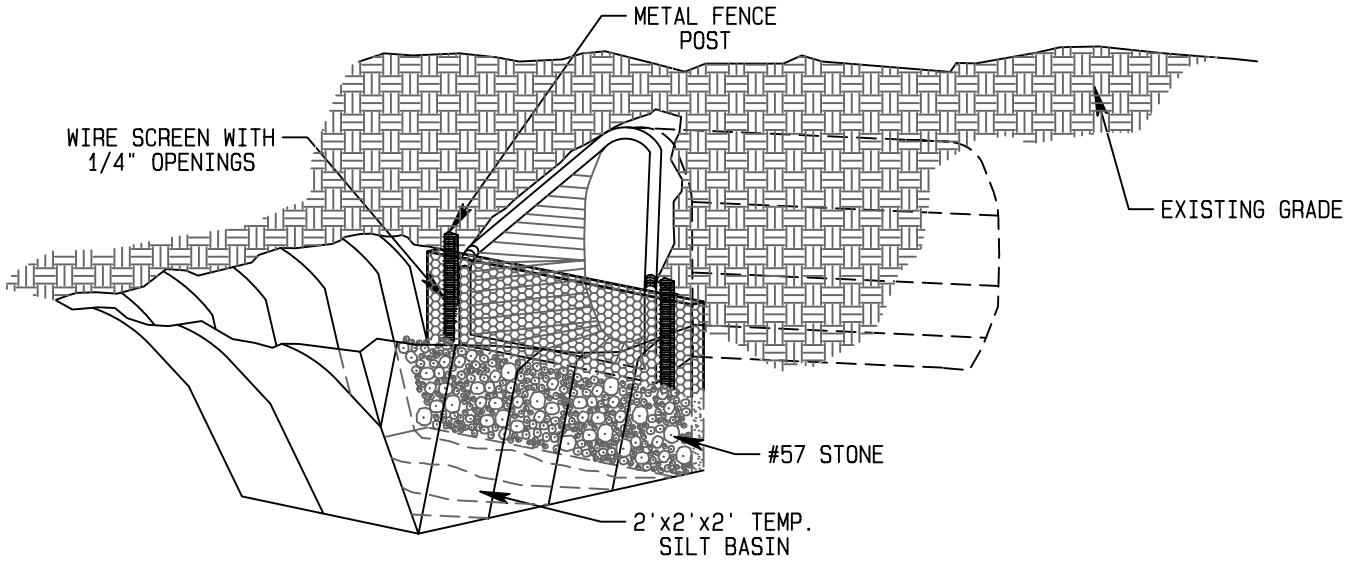
CITY OF GREENSBORO

PARTIALLY INSTALLED STORM SEWER PROTECTION	STD. NO.	REV.
	443	06-05



PLAN VIEW

SECTION VIEW



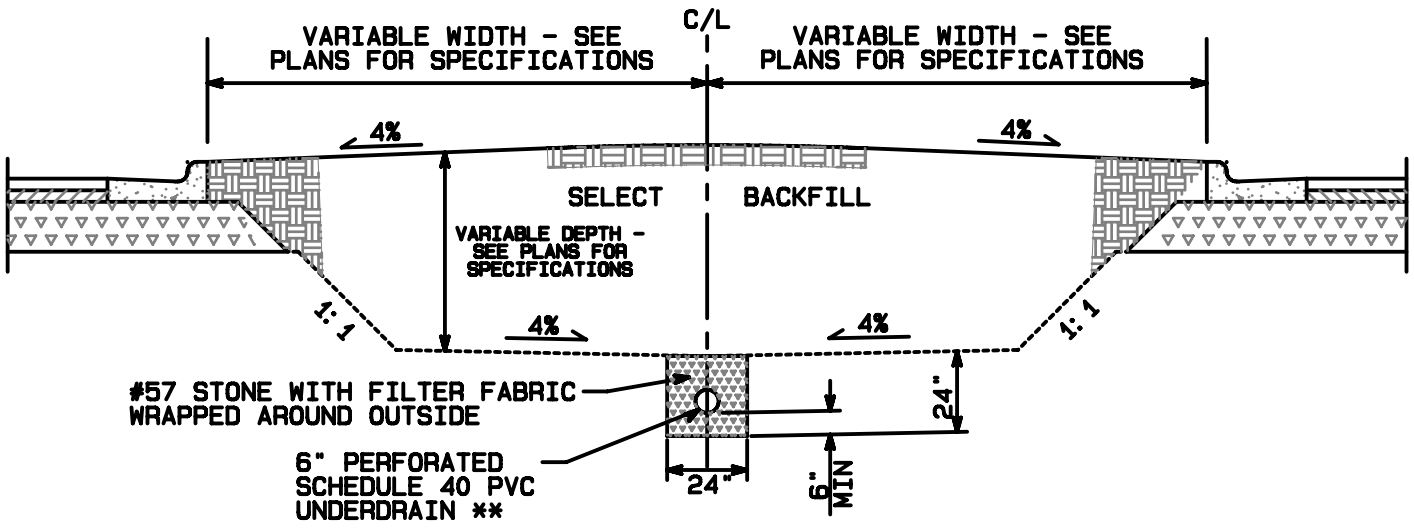
ISOMETRIC VIEW

NOTES:

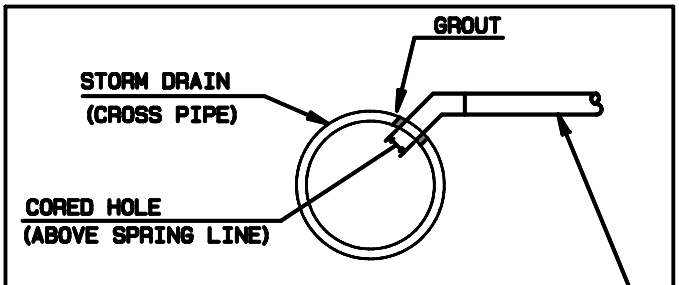
1. THIS MEASURE IS USED WHERE A DISTURBED DITCH FLOWS INTO A PROPOSED F.E.S.
2. WIRE SCREEN SHALL BE 3/4" AND THE BOTTOM SHALL BE TRENCHED A MINIMUM OF 6" INTO THE GROUND AND HELD IN PLACE WITH #57 STONE.
3. ONCE DITCH IS STABILIZED, REMOVE WIRE SCREEN AND FILL BASIN WITH SUITABLE MATERIAL. INSTALL EXCELSIOR MATTING OVER BASIN TO STABILIZE FILL.

CITY OF GREENSBORO

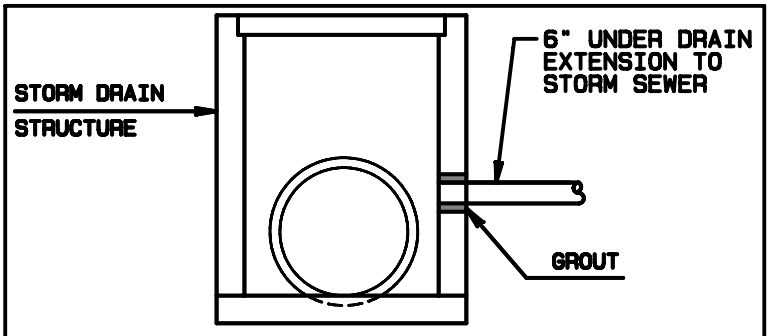
INLET PROTECTION FOR F.E.S.	STD. NO.	REV.
	443-A	06-05



** WHEN PASSING UNDERNEATH ASPHALT, THE UNDERDRAIN SHALL BE A SOLID DUCTILE IRON PIPE WITH A MINIMUM COVER OF 1.0 FT BELOW THE BASE COURSE.



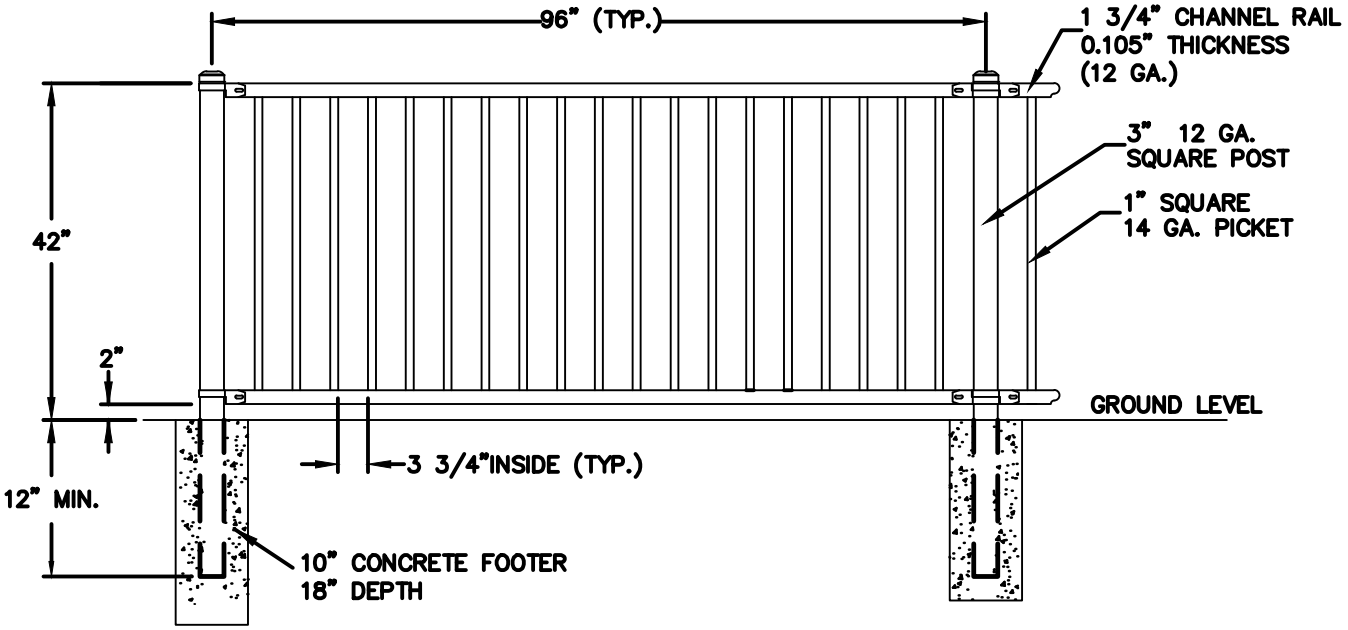
CROSS PIPE TIE-IN

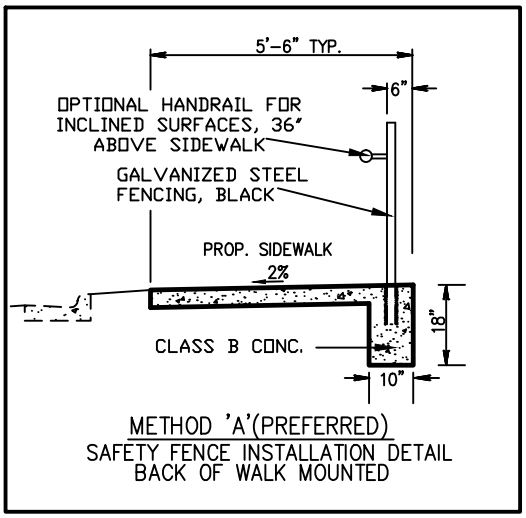


STRUCTURE TIE-IN

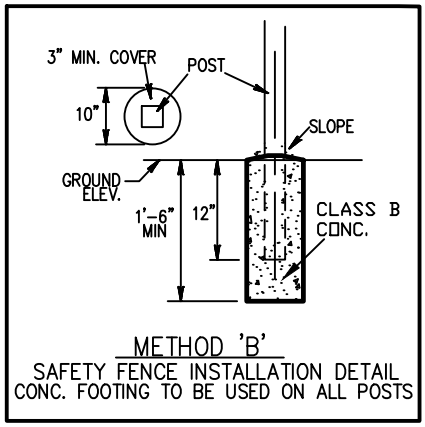
CITY OF GREENSBORO

TYPICAL UNDER DRAIN DETAIL FOR GRASS MEDIANS	STD. NO.	REV.
	444	06-07





METHOD 'A'(PREFERRED)
SAFETY FENCE INSTALLATION DETAIL
BACK OF WALK MOUNTED



METHOD 'B'
SAFETY FENCE INSTALLATION DETAIL
CONC. FOOTING TO BE USED ON ALL POSTS

NOTE: ANY AREA WHERE THIS FENCE IS PROPOSED SHALL BE EVALUATED FOR A CLEAR LINE OF SIGHT. IF THERE IS A SIGHT LINE ISSUE, USE COG STD #446-A.

SAFETY FENCE IS REQUIRED IF:

- *THERE IS A VERTICAL DROP OF 30" OR MORE WITHIN 4 FT OF THE WALK*
- *THERE IS A SLOPE OF 2:1 OR STEEPER WITHIN 4 FT OF THE BACK OF THE WALK*
- *THERE IS A SLOPE OF 3:1 OR STEEPER WITHIN 4 FT OF THE BACK OF WALK WITH A TOTAL ELEVATION CHANGE OF 6 FT OR GREATER.*

SAFETY FENCE NOTES:

1. *ALL RAILING IS TO BE GALVANIZED STEEL WITH A MINIMUM 2 MILS. TOTAL THICKNESS OF EPOXY PRIMER AND ACRYLIC TOPCOAT, COLOR BLACK.*
2. *BOTTOM OF POSTS TO BE EMBEDDED IN CONCRETE SHOULD FIRST BE PROTECTED WITH TWO-PART EPOXY DIPPING OR ZINC CHROMATE COATING TO PREVENT CORROSION.*
3. *ONLY NON-METALLIC, NON-SHRINK GROUT IS TO BE USED FOR SECURING POSTS IN CONCRETE.*
4. *THE HANDRAIL FOR INCLINED SURFACES IS REQUIRED WHEN THE RUNNING SLOPE IS 5% OR GREATER AND SHALL MEET ALL THE APPLICABLE REQUIREMENTS AND PROVISIONS OF SECTION R408 OF THE ADA ACCESSIBILITY GUIDELINES FOR PUBLIC RIGHTS-OF-WAY.*
5. *THERE ARE TO BE NO EXPOSED WELDS AND ERECTED FENCE IS TO HAVE THE SAME APPEARANCE ON BOTH SIDES.*
6. *VERTICAL PICKETS SHALL NOT EXTEND BEYOND THE TOP OR BOTTOM RAILS.*

CITY OF GREENSBORO

SAFETY FENCE FOR PEDESTRIANS WITH HANDRAIL OPTION

STD. NO.	REV.
446	06/07 12/13 03/15

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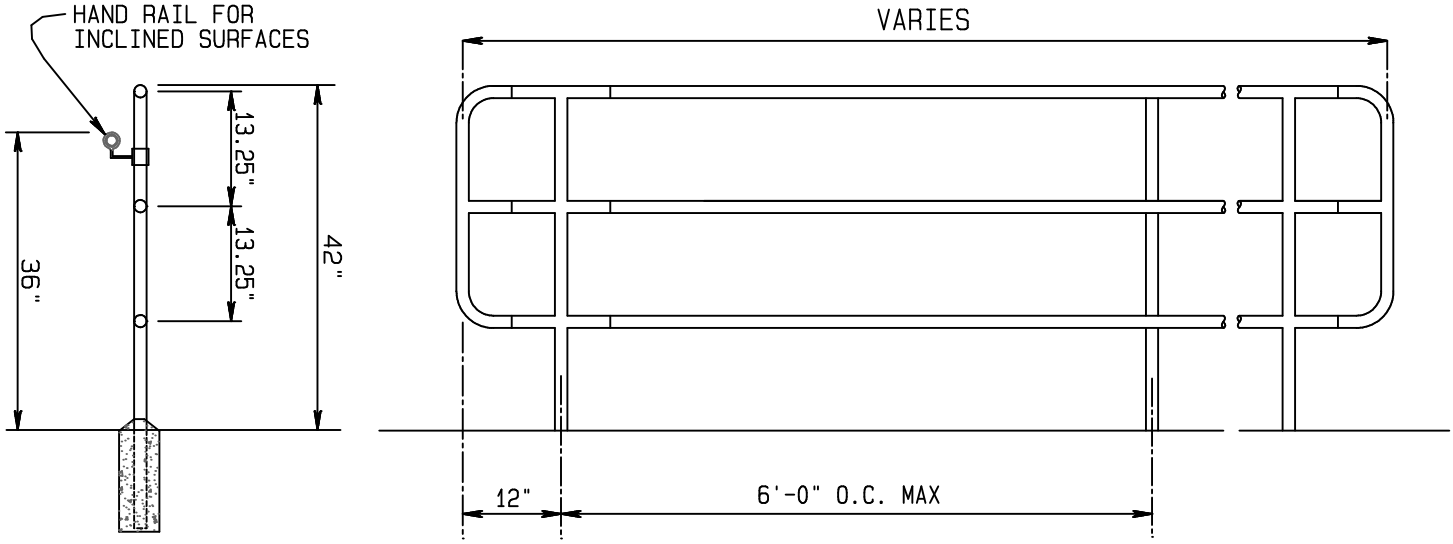
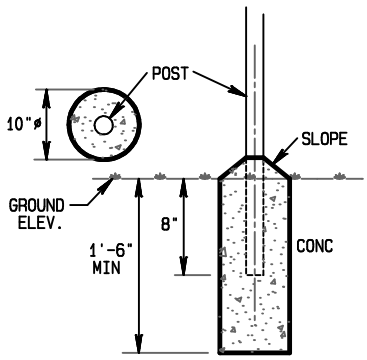
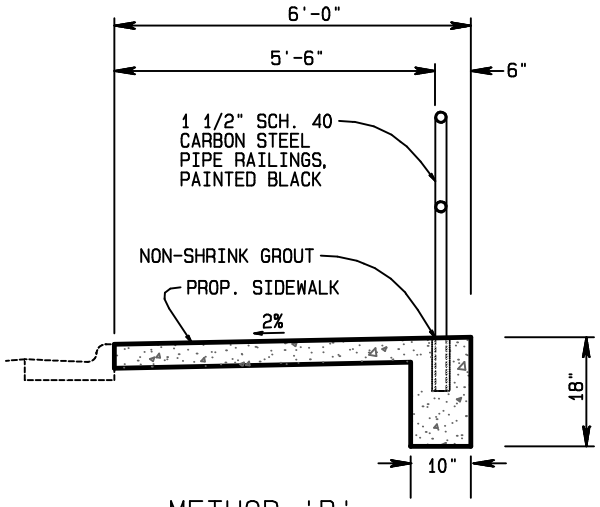


SAFETY RAIL DETAIL



METHOD 'A'

SAFETY RAIL INSTALLATION DETAIL
CONC. FOOTING TO BE USED ON ALL POSTS



METHOD 'B'

HANDRAIL INSTALLATION DETAIL
BACK OF WALK MOUNTED

SAFETY RAIL IS REQUIRED IF:

- THERE IS A VERTICAL DROP OF 30" OR MORE WITHIN 4 FT OF THE WALK
- THERE IS A SLOPE OF 2:1 OR STEEPER WITHIN 4 FT OF THE BACK OF THE WALK
- THERE IS A SLOPE OF 3:1 OR STEEPER WITHIN 4 FT OF THE BACK OF WALK WITH A TOTAL ELEVATION CHANGE OF 6 FT OR GREATER.

SAFETY RAIL NOTES:

1. *ALL RAILING IS TO BE 1 1/2" SCH. 40 CARBON STEEL TUBING.*
2. *SECTIONS TO BE JOINED, WHERE NECESSARY, WITH FRICTION-TYPE INTERNAL SPLICES SECURED WITH EPOXY. NO FIELD WELDING OR MECHANICAL FASTNERS WILL BE ALLOWED.*
3. *RAILS ARE TO BE SHOP ROLLED TO MATCH REQUIRED CURVATURE AS NECESSARY. FIELD BENDING IS NOT ALLOWED.*
4. *BOTTOM OF POSTS TO BE EMBEDDED IN CONCRETE SHOULD FIRST BE PROTECTED WITH TWO-PART EPOXY DIPPING OR ZINC CHROMATE COATING TO PREVENT CORROSION.*
5. *ONLY NON-METALLIC, NON-SHRINK GROUT IS TO BE USED FOR SECURING POSTS IN CONCRETE.*
6. *ALL EXPOSED BUTT JOINTS TO BE TIGHT AND FLUSH.*
7. *USE METHOD 'B' WHEN THE CENTER OF THE RAIL IS 6" OR LESS FROM THE BACK OF WALK.*
8. *THE HANDRAIL FOR INCLINED SURFACES IS REQUIRED WHEN THE RUNNING SLOPE IS 5% OR GRETER AND SHALL MEET ALL THE APPLICABLE REQUIREMENTS AND PROVISIONS OF SECTION R408 OF THE ADA ACCESSIBILITY GUIDELINES FOR PUBLIC RIGHTS-OF-WAY*
9. ***FINISH WITH 1 COAT OF EXPOXY PRIMER AND 2 COATS OF ALL WEATHER ENAMEL PAINT, SEMI-GLOSS, COLOR BLACK***
10. ***USE OF COG 446A IS ONLY FOR AREAS WHERE THERE ARE LINE OF SIGHT ISSUES. OTHERWISE, USE COG 446.***
11. ***ANY SUBSTITUTION OF OTHER MATERIALS MUST BE APPROVED BY THE ENGINEER.***

CITY OF GREENSBORO

SAFETY FENCE FOR PEDESTRIANS WITH HANDRAIL OPTION

STD. NO.	REV.
446-A	06/07 12/13 03/15

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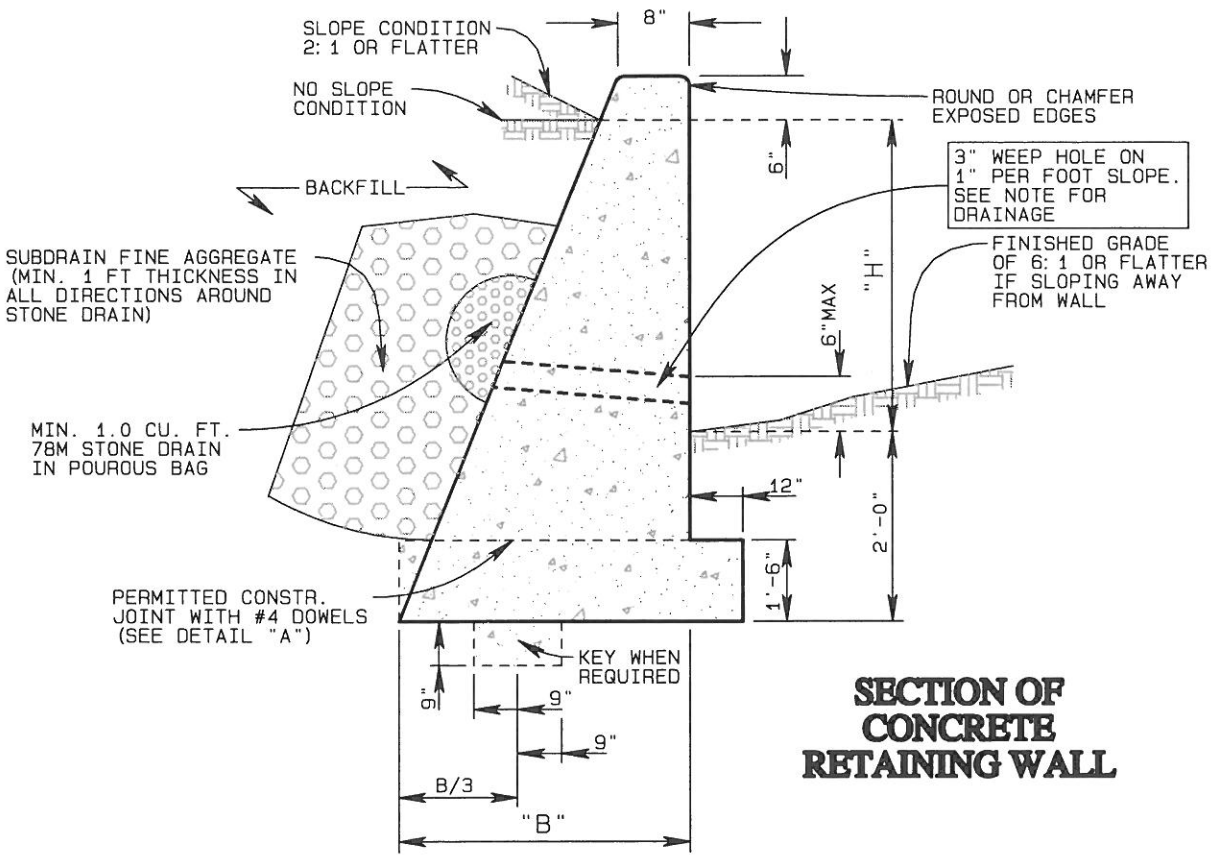


SECTION OF CONCRETE RETAINING WALL

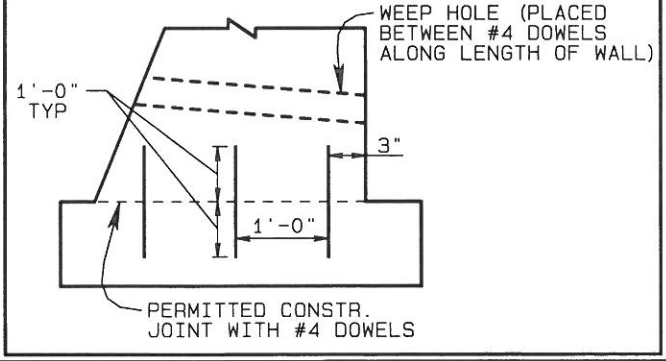
CALCULATION OF BASE (B)

VALUE OF H + 2 (FT)	(H+2) <6	6≤ (H+2) ≤9	(H+2) >9
NO SLOPE CONDITION WITHOUT TRAFFIC SURCHARGE	(.60) x (H+2)	(.60) x (H+2)	(.60) x (H+2)
NO SLOPE CONDITION WITH TRAFFIC SURCHARGE	(.80) x (H+2)	(.75) x (H+2) **	(.70) x (H+2) **
SLOPE CONDITION	(.66) x (H+2)	(.70) x (H+2) **	(.75) x (H+2) **

DO NOT EXCEED 10 FT TOTAL WALL (H+2) HEIGHT

** KEY IS REQUIRED FOR SLOPE CONDITIONS OR NO SLOPE CONDITION WITH TRAFFIC SURCHARGE WHEN (H+2) IS 6 FT OR GREATER

DETAIL "A"



CITY OF GREENSBORO

CONCRETE GRAVITY RETAINING WALL	STD. NO.	REV.
	447	09-07 03-12

NOTES:

1. THE STANDARD GRAVITY RETAINING WALL IS BASED ON THE FOLLOWING ASSUMED SOIL PARAMETERS:
- TOTAL UNIT WEIGHT = 120 PCF
- COHESION = 0 PSF
- FRICTION ANGLE = 35 DEGREES IF GROUNDWATER IS WITHIN 5 FT OF THE BOTTOM OF THE FOOTING, 30 DEGREES IF GROUNDWATER IS MORE THAN 5 FT BELOW THE BOTTOM OF THE FOOTING

2. DO NOT USE THE STANDARD GRAVITY RETAINING WALL IF THE ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR IF GROUNDWATER IS PRESENT ABOVE THE BOTTOM OF THE FOOTING.

3. DO NOT USE THE STANDARD GRAVITY RETAINING WALL WHEN VERY LOOSE, SOFT OR UNSUITABLE SOIL CONDITIONS ARE PRESENT BELOW THE WALL.

4. CONSTRUCT GRAVITY RETAINING WALLS OF CAST-IN-PLACE REINFORCED CONCRETE AND A BRICK VENEER, IF REQUIRED, IN ACCORDANCE WITH THIS STANDARD DRAWING. FURNISH AND PLACE CONCRETE, REINFORCING STEEL, BRICK MASONRY AND TIES, JOINT FILLERS AND SEALERS, CURING AGENTS, AND ALL OTHER MATERIALS AND EQUIPMENT; ERECT AND REMOVE ALL FALSEWORK AND FORMS; PROTECT CONCRETE IN WIND, RAIN, LOW HUMIDITY, HIGH TEMPERATURES, OR OTHER UNFAVORABLE WEATHER; CONSTRUCT JOINTS AND WEEP HOLES; FINISH AND CURE CONCRETE; PROTECT CONCRETE FROM RUST STAINS; PLACE STONE DRAINS AND SUBDRAIN FINE AGGREGATE; PLACE AND COMPACT BACKFILL; AND EXCAVATE FOR WALLS.

5. EXCAVATE AS NECESSARY FOR GRAVITY RETAINING WALLS. NOTIFY THE ENGINEER WHEN FOUNDATION EXCAVATION IS COMPLETE. DO NOT PLACE ANY CONCRETE UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND THE CHARACTER OF THE FOUNDATION MATERIAL. WHERE FOUNDATION MATERIAL IS FOUND TO BE UNACCEPTABLE, UNDERCUT THE FOUNDATION MATERIAL AND BACKFILL WITH AN APPROVED SELECT MATERIAL AS DIRECTED BY THE ENGINEER.

6. IF REQUIRED, INSERT SLEEVES FOR FENCE POSTS IN THE TOP OF WALL IN ACCORDANCE WITH SECTION 866 OF THE NCDOT STANDARD SPECIFICATIONS. USE CLASS A CONCRETE AND PROVIDE A CLASS 1 SURFACE FINISH FOR ALL EXPOSED SURFACES.

7. IF THE GRADE BEHIND THE WALL SLOPES TOWARD THE WALL, SEAL THE JOINT BETWEEN THE WALL AND THE ASPHALT OR CONCRETE WITH JOINT SEALER. IF A CONCRETE PAVED DITCH IS REQUIRED BEHIND THE WALL, THE SLOPING BACKWALL OF THE GRAVITY RETAINING WALL FORMS HALF THE CONCRETE PAVED DITCH.

8. IF A BRICK VENEER IS REQUIRED AS SHOWN ON THE PLANS, CONSTRUCT BRICK MASONRY IN ACCORDANCE WITH SECTION 830 OF THE NCDOT STANDARD SPECIFICATIONS. ANCHOR BRICK VENEER WITH APPROVED BRICK TO CONCRETE ANCHORS ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS WITH A MINIMUM VERTICAL SPACING OF 16" AND A MINIMUM HORIZONTAL SPACING OF 32" WITH EACH ROW STAGGERED 16" FROM THE ROW OF ANCHORS ABOVE AND BELOW.

9. FIELD DETERMINE EXACT LOCATION, QUANTITIES, BOTTOM OF FOOTING ELEVATION AND WALL HEIGHT WITH THE ENGINEER. DO NOT PLACE CONCRETE UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND SOLID PARARMETERS BY THE PROJECT ENGINEER OF RECORD.

10. USE CLASS 'A' CONCRETE AND PROVIDE CLASS I SURFACE FINISHING FOR ALL EXPOSED SURFACES.

11. PROVIDE 3" DIA. WEEPHOLES ON 10 FT CENTERS ALONG THE WALL. SLOPE WEEP HOLES ON A 1" PER FOOT SLOPE THROUGH THE WALL SO THAT WATER DRAINS OUT OF THE FRONT OF THE WALL.

CITY OF GREENSBORO

CONCRETE GRAVITY RETAINING WALL	STD. NO.	REV.
	447	09-07 03-12

12. PLACE A STONE DRAIN CONSISTING OF 1 CU. FT. OF #78M STONE CONTAINED IN A BAG OF POUROUS FABRIC AT EACH WEEP HOLE. PLACE SUBDRAIN FINE AGGREGATE BENEATH, AROUND AND OVER THE STONE DRAIN SO THAT THE STONE DRAIN IS COVERED BY A LAYER OF SUBDRAIN FINE AGGREGATE AT LEAST 1 FT THICK. PLACE A HORIZONTAL DRAIN OF SUBDRAIN FINE AGGREGATE AT LEAST 1 FT SQUARE IN CROSS SECTION TO CONNECT ALL STONE DRAINS.

13. PLACE A VERTICAL DRAIN OF SUBDRAIN FINE AGGREGATE AT LEAST 1 FT SQUARE IN CROSS SECTION AT EACH WEEP HOLE TO AN ELEVATION OF 2 FT BELOW THE SURFACE OF THE EMBANKMENT.

14. PROVIDE GROOVED CONTRACTION JOINT EVERY 10 FT AND EXPANSION JOINTS EVERY 30 FT ALONG THE WALL.

15. DO NOT BACKFILL BEHIND THE WALL UNTIL CONCRETE DEVELOPS A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI. COMPACT BACKFILL IN ACCORDANCE WITH SUBARTICLE 235-4(C) OF THE NCDOT STANDARD SPECIFICATIONS. PLACE BACKFILL WITHIN 3 FT OF THE BACK OF THE WALL WITH HAND OPERATED EQUIPMENT. DO NOT OPERATE HEAVY EARTH MOVING EQUIPMENT WITHIN 10 FT OF THE BACK OF THE WALL.

16. WHEN A CONSTRUCTION JOINT IS LOCATED AT THE BASE OF THE WALL, IN SECTION, PROVIDE A MINIMUM OF 3-#4 DOWELS AT AN EQUAL SPACING. SPACE ALL DOWELS AT 1.5 FT CENTERS ALONG THE LENGTH OF THE WALL. WHEN A PERMITTED CONSTRUCTION JOINT IS UTILIZED AS SHOWN ON SHEET 1, THE #4 DOWELS TO BE INSTALLED SHALL BE GRADE 60.

17. THE TRAFFIC SURCHARGE CONDITION (CONSIDERED EQUIVALENT TO A 2 FT SURCHARGE ACCORDING TO AASHTO 3.20.3) REPRESENTS A LIVE LOAD FROM TRUCK TRAFFIC.

18. INSTALL COG STANDARD #445 HANDRAIL OR COG STANDARD #446 SAFETY RAIL AS SPECIFIED ON THE PLANS. WHEN HANDRAIL OR SAFETY RAIL IS REQUIRED, INSERT SLEEVES IN THE TOP OF THE GRAVITY WALL FOR PLACEMENT OF POSTS.

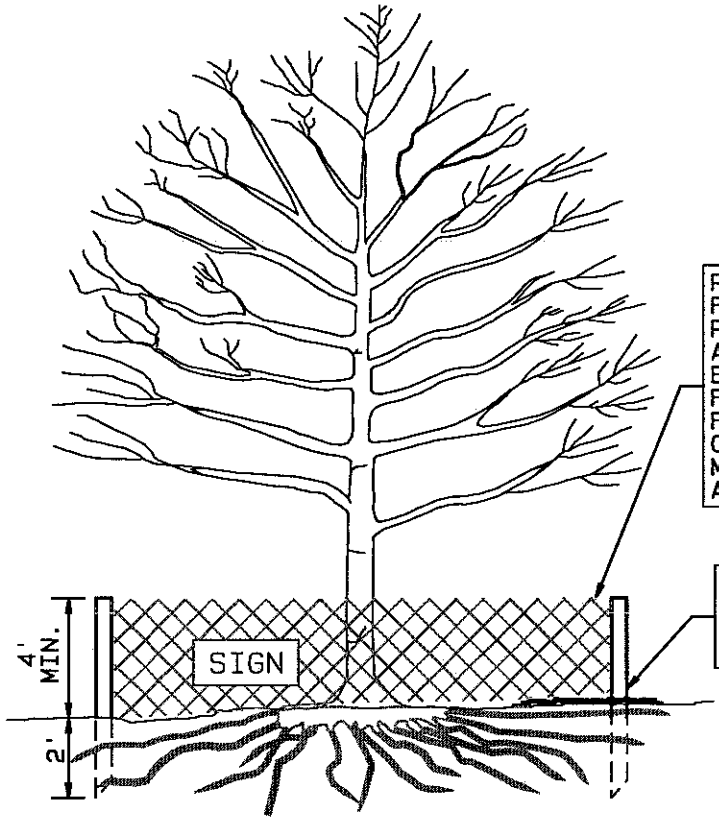
19. REMOVAL OF FORMS SHALL BE PERMITTED ANY TIME AFTER 3 HOURS IF THE CONCRETE IS SUFFICIENTLY SET TO ENABLE FORM REMOVAL WITHOUT DAMAGE TO THE WALL.

20. THE ENGINEER ON RECORD FOR THE PROJECT SHALL REVIEW CLASS A CONCRETE MIX DESIGNS PROVIDED BY ALL CONCRETE SUPPLIERS UTILIZED FOR THE PROJECT. THE COG SHALL RECEIVE A COPY OF THE APPROVED CONCRETE MIX DESIGN FROM THE CONTRACTOR PRIOR TO PLACEMENT OF CONCRETE. IF A GENERIC NCDOT APPROVED CONCRETE MIX IS TO BE USED, ALL REQUIRED NCDOT CONCRETE DOCUMENTATION AND APPLICABLE FORMS ARE TO BE DELIVERED WITH EACH LOAD OF CONCRETE AND PROVIDED TO THE COG CONSTRUCTION INSPECTOR ON SITE FOR ACCEPTANCE. CONCRETE MIXES DELIVERED TO THE PROJECT THAT DO NOT MEET THESE REQUIREMENTS WILL BE REJECTED. WHEN A GENERIC NCDOT APPROVED CONCRETE MIX IS USED, AN APPROVED CONCRETE MIX DESIGN FROM THE ENGINEER ON RECORD WILL NOT BE REQUIRED.

21. GRAVITY RETAINING WALLS WILL BE MEASURED AND PAID FOR AS THE ACTUAL NUMBER OF SQUARE FEET OF EXPOSED FACE AREA INCORPORATED INTO THE COMPLETED AND ACCEPTED WALL. THE WALL HEIGHT IS MEASURED AS THE DIFFERENCE BETWEEN THE TOP AND BOTTOM OF THE WALL. THE BOTTOM OF THE WALL IS DEFINED AS THE POINT WHERE THE FINISHED GRADE INTERSECTS THE FRONT OF THE WALL. THE TOP OF THE WALL IS DEFINED AS THE TOP ELEVATION OF THE COMPLETED WALL, INCLUDING BRICK VENEER IF APPLICABLE. IF A CONCRETE PAVED DITCH IS REQUIRED BEHIND THE WALL, NO PAYMENT WILL BE MADE FOR THE PORTION OF THE DITCH FORMED BY THE SLOPING BACK WALL OF GRAVITY RETAINING WALL. THE PRICE AND PAYMENT WILL BE FULL COMPENSATION FOR ALL ITEMS REQUIRED TO PROVIDE GRAVITY RETAINING WALLS INCLUDING BUT NOT LIMITED TO PORTLAND CEMENT CONCRETE, CURING AGENTS, JOINT FILLERS, JOINT SEALERS, REINFORCING STEEL, SUBDRAIN FINE AGGREGATE, #78M STONE, BRICK AND MORTAR.

CITY OF GREENSBORO

CONCRETE GRAVITY RETAINING WALL	STD. NO.	REV.
	447	09-07 03-12



NOTES:

1. *SEE PLANS FOR LOCATION OF ALL TREE PROTECTION FENCES.*
2. *ALL TREE PROTECTION DEVICES MUST BE INSTALLED PRIOR TO LAND DISTURBANCE, INCLUDING THE CUTTING OF ANY TREES, AND MUST BE INSPECTED BY THE URBAN FORESTER OR HIS DESIGNEE.*
3. *NO GRADING, TRENCHING, FILLING OR STORING OF MATERIALS IS TO OCCUR IN THE TREE PROTECTION AREA.*
4. *TREE PROTECTION FENCE MAY NOT BE REMOVED WITHOUT THE APPROVAL OF THE URBAN FORESTER OR HIS DESIGNEE.*
5. *THE TREE CONSERVATION AREA SHOULD BE DESIGNATED WITH "TREE CONSERVATION AREA" SIGNS POSTED VISIBLY ON THE OUTSIDE OF THE FENCED-IN AREA. SIGNS MAY NOT BE POSTED ON THE TREES. SEE EXAMPLE BELOW.*

TREE CONSERVATION AREA

ZONA DE CONSERVACION DE ARBOL

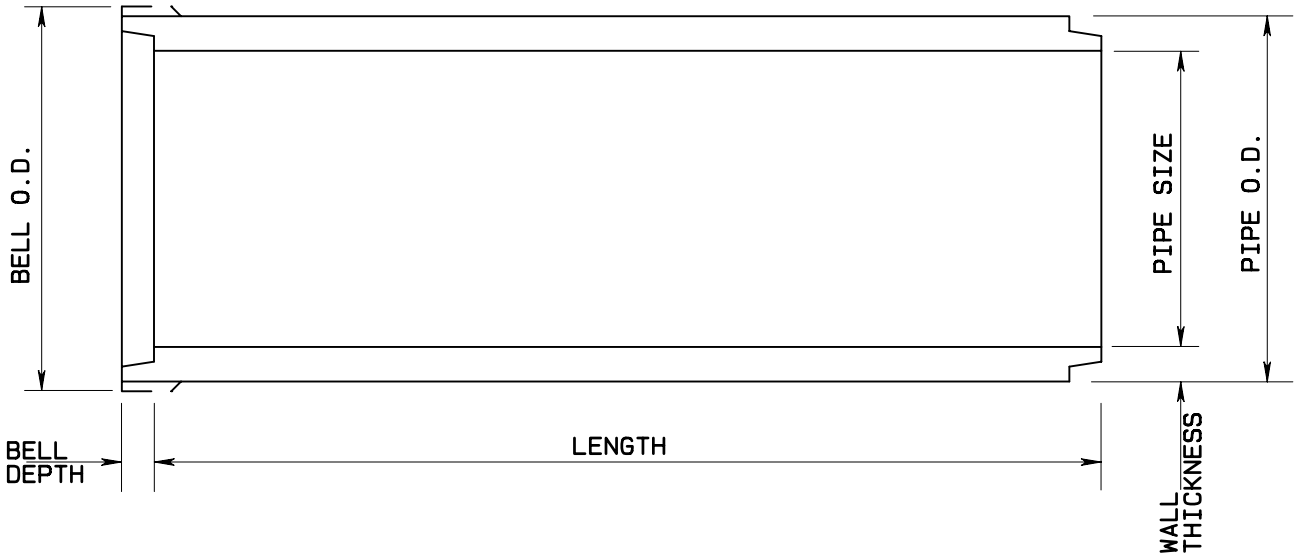
EXAMPLE SIGN

16" X 12" SIGN
1" BLOCK LETTERS
BLACK LETTERS ON WHITE BACKGROUND
1/4" BLACK BORDER
ALL WEATHER MEDIA
100' SUGGESTED SPACING BETWEEN SIGNS

CITY OF GREENSBORO

STANDARD TREE PROTECTION DETAIL	STD. NO.	REV.
	448	03-08 06-08 03-10

TONGUE AND GROOVE PIPE



PIPE SIZE	WALL	BELL DEPTH	PIPE O.D.	BELL O.D.	LENGTH	LB / FT
12"	2"	1 3/4"	16"	17 1/2"	4' & 8'	100
15"	2 1/4"	2 1/4"	19 1/2"	20 1/2"	4' & 8'	135
18"	2 1/2"	2 1/4"	23"	24"	4' & 8'	175
21"	2 3/4"	2 1/4"	26 1/2"	27 1/4"	4' & 8'	225
24"	3"	3"	30"	30 1/2"	4' & 8'	275
30"	3 1/2"	3 1/4"	37"	37"	4' & 8'	395
36"	4"	3 3/4"	44"	44"	4' & 8'	540
42"	4 1/2"	4 1/4"	51"	51"	4' & 8'	620
48"	5"	3 3/4"	58"	58"	4' & 8'	895
54"	5 1/2"	4 3/4"	65"	65"	4' & 8'	1105
60"	6"	5"	72"	72"	4' & 8'	1340
66"	6 1/2"	5 1/4"	79"	79"	6' & 8'	1595
72"	7"	5 1/4"	86"	86"	8'	1870
78"	7 1/2"	5 1/4"	93 1/2"	93"	8'	2170
84"	8"	5 1/4"	100"	100"	8'	2490

WEIGHT CAN VARY

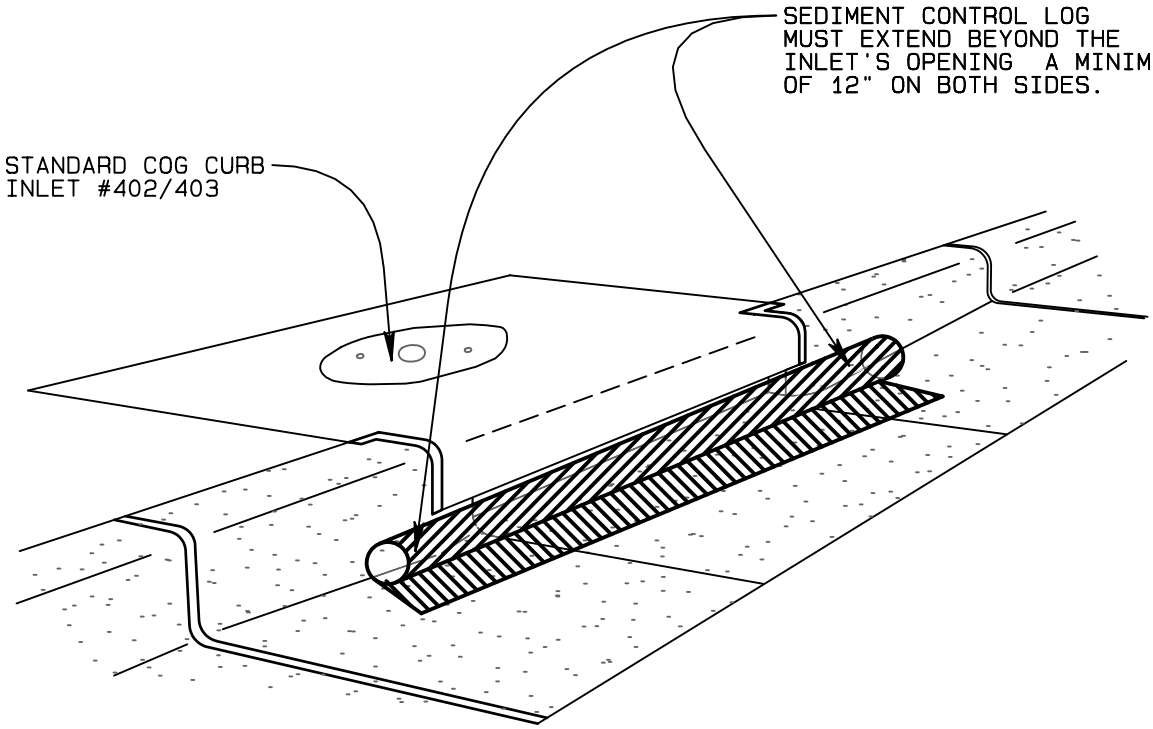
LIFT HOLES AS ALLOWED PER SPECIFICATIONS

SPECIFICATIONS:

ASTM C76 - WALL "B" - LATEST
AASHTO M170 - LATEST

CITY OF GREENSBORO

STORM DRAINAGE PIPE REINFORCED CONCRETE	STD. NO.	REV.
	449	08-08



NOTES:

1. SEDIMENT CONTROL LOGS ARE TO BE USED ON EXISTING CURB INLETS WHICH ARE LOCATED ADJACENT TO OCCUPIED TRAVEL LANES WITHIN THE DISTURBED LIMITS OF A PROJECT AS SHOWN ON THE PLANS.

2. SEDIMENT CONTROL LOGS ARE TO BE INSTALLED AND MAINTAINED PER THE MANUFACTURER'S INSTRUCTIONS AND PROPERLY WEIGHTED IN ORDER TO REMAIN SECURELY IN PLACE. INSTALLATION MUST MEET THE CONSTRUCTION INSPECTOR'S APPROVAL.

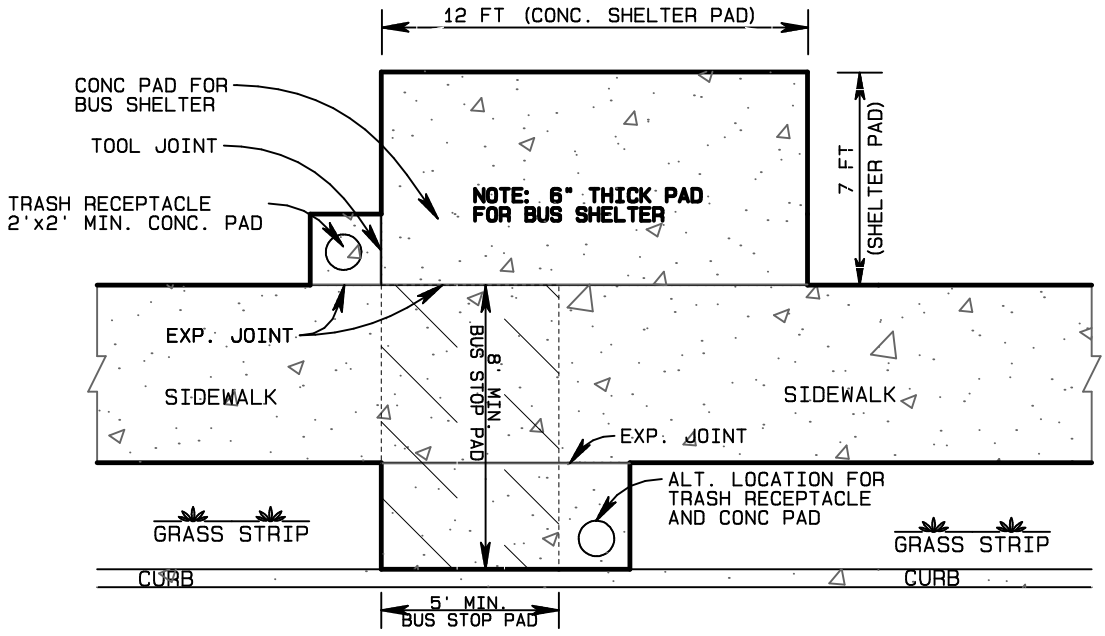
3. SEDIMENT CONTROL LOGS ARE TO BE CONSTRUCTED OF WOOD FIBERS, SYNTHETIC FIBERS OR OTHER SUITABLE MATERIAL SUFFICIENT TO RETAIN ITS SHAPE AND ENCASED IN A UV STABILIZED FILTERING MEDIA OF SUFFICIENT STRENGTH TO RETAIN SEDIMENT.

4. SEDIMENT CONTROL LOGS ARE TO BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

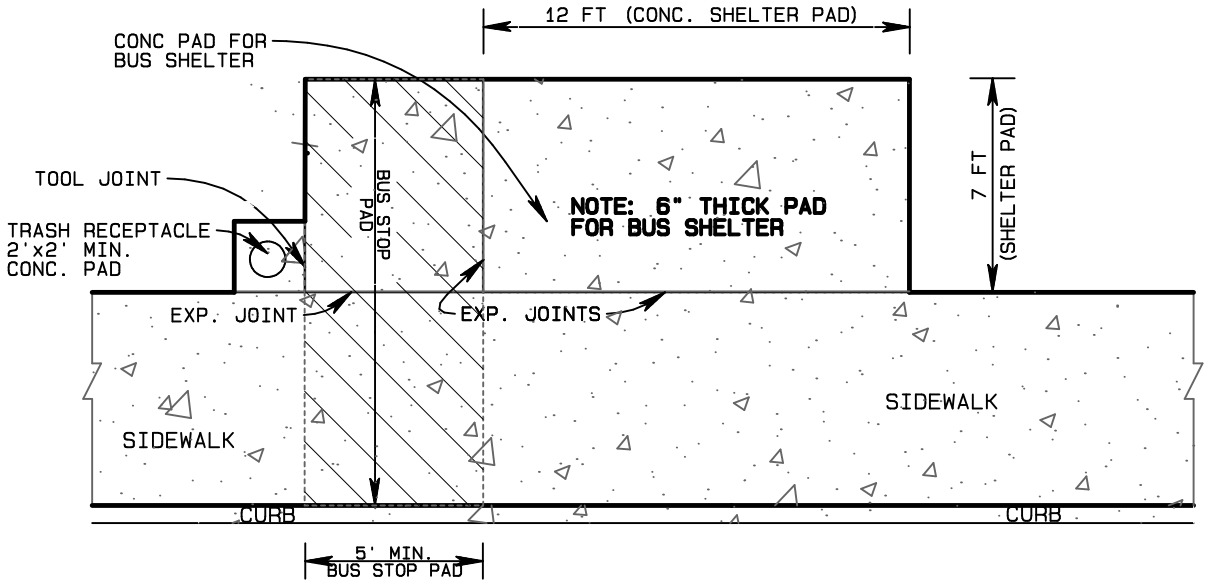
5. SEDIMENT CONTROL LOGS ARE TO BE USED ONLY ON COG 402/403 STANDARD CURB INLETS; THEY ARE NOT AN ADQUATE SEDIMENT CONTROL DEVICE FOR NCDOT 840.01 CATCH BASINS.

CITY OF GREENSBORO		
SEDIMENT CONTROL LOG INSTALLATION FOR EXISTING CURB INLETS NEXT TO TRAFFIC	STD. NO.	REV.
	450	03/09

BUS STOP DETAIL WITH SHELTER - PREFERRED CONFIGURATION



ALTERNATE CONFIGURATION



THIS ALTERNATE CONFIGURATION APPLIES WHEN THERE IS INSUFFICIENT SPACE FOR THE BUS STOP PAD IN FRONT OF THE BUS SHELTER PAD.

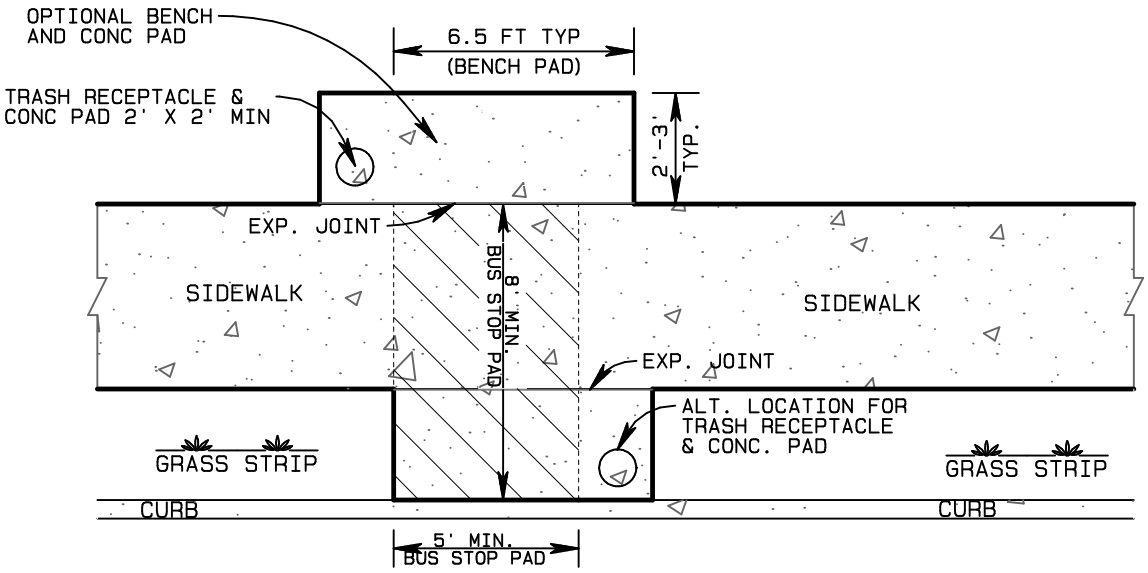
NOTES:

1. *2% MAX. CROSS SLOPE ON ALL CONCRETE SURFACES.*
2. *DEVIATION FROM THESE TYPICAL CONFIGURATIONS MAY BE NECESSARY DEPENDING ON FIELD CONDITIONS. ANY DEVIATIONS MUST BE APPROVED BEFOREHAND BY THE GREENSBORO DEPARTMENT OF TRANSPORTATION.*
3. ***BOTH THE CROSS SLOPE AND THE RUNNING SLOPE FOR THE BUS SHELTER PAD TO BE 2% MAX.***
4. ***BOTH THE CROSS SLOPE AND THE RUNNING SLOPE FOR THE A.D.A. ACCESSIBLE AREA (INDICATED BY THE DIAGONAL LINE HATCH) IS TO BE 2% MAX.***

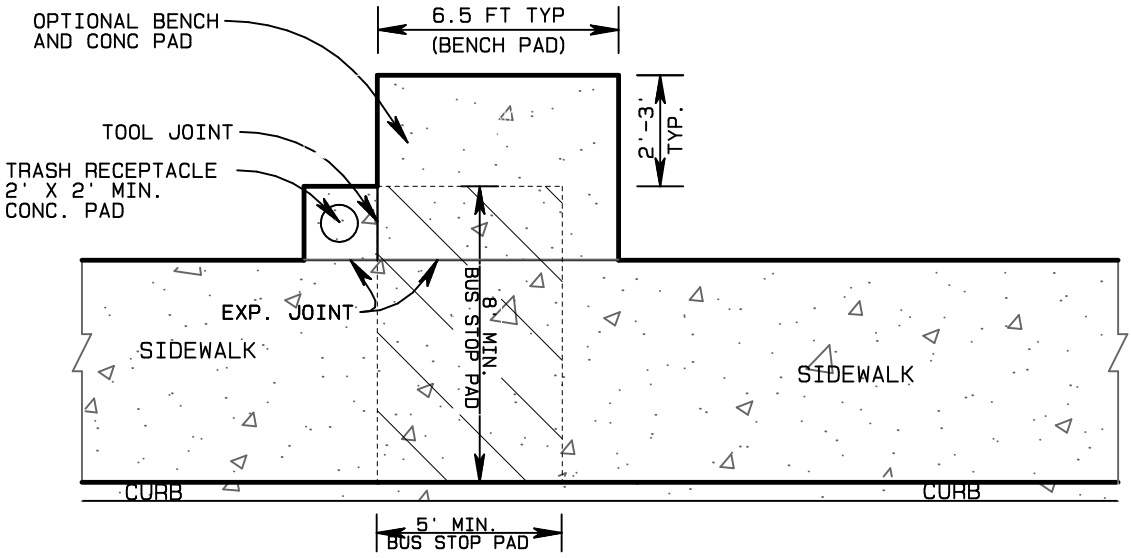
CITY OF GREENSBORO

BUS STOP DETAIL - WITH SHELTER PAD	STD. NO.	REV.
	451	06-09 12-11

BUS STOP DETAIL WITHOUT SHELTER - PREFERRED CONFIGURATION



ALTERNATE CONFIGURATION



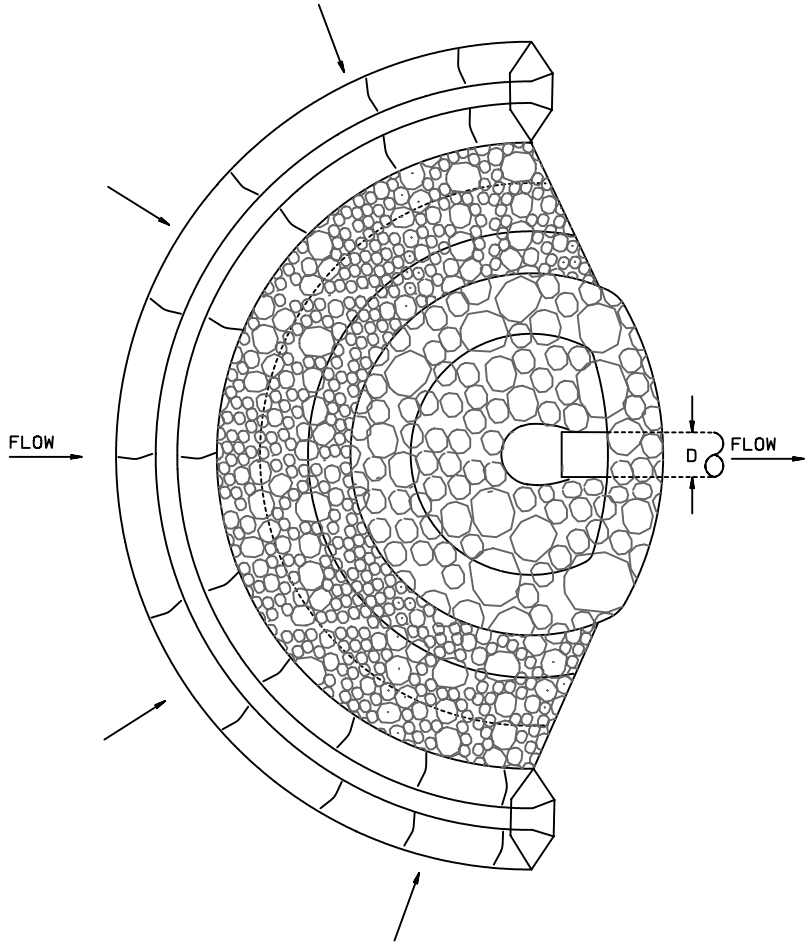
THIS ALTERNATE CONFIGURATION APPLIES WHEN THERE IS NOT A SHELTER AND THERE IS INSUFFICIENT SPACE FOR THE BUS STOP PAD IN FRONT. IF A BENCH IS INCLUDED, THE LOCATION OF THE BENCH AND CONC. PAD MAY BE SHIFTED AS NEEDED WITHIN THE BUS STOP AREA.

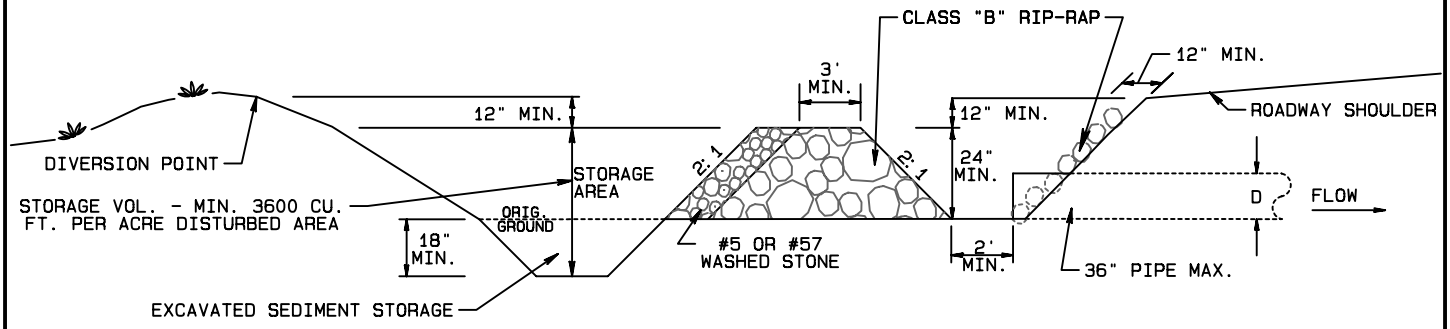
NOTES:

1. *2% MAX. CROSS SLOPE ON ALL CONCRETE SURFACES.*
2. *DEVIATION FROM THESE TYPICAL CONFIGURATIONS MAY BE NECESSARY DEPENDING ON FIELD CONDITIONS. ANY DEVIATIONS MUST BE APPROVED BEFOREHAND BY THE GREENSBORO DEPARTMENT OF TRANSPORTATION.*
3. ***BOTH THE CROSS SLOPE AND THE RUNNING SLOPE FOR THE BENCH PAD TO BE 2% MAX.***
4. ***BOTH THE CROSS SLOPE AND THE RUNNING SLOPE FOR THE A.D.A. ACCESSIBLE AREA (INDICATED BY THE DIAGONAL LINE HATCH) IS TO BE 2% MAX.***

CITY OF GREENSBORO

BUS STOP DETAIL - WITHOUT SHELTER	STD. NO.	REV.
	452	06-09 12-11





PROFILE VIEW

NOTES:

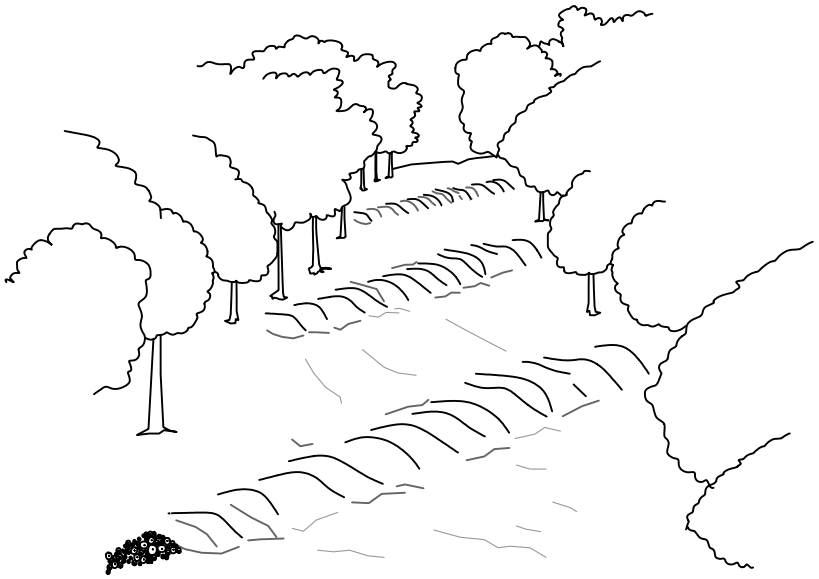
1. *INSTALL CLASS B RIP-RAP IN A SEMI-CIRCLE AROUND THE PIPE INLET. BUILD UP THE STONE HIGHER ON EACH END WHERE IT TIES TO THE EMBANKMENT. THE MINIMUM CREST WIDTH OF THE RIP-RAP SHOULD BE 3 FT, THE MINIMUM BOTTOM WIDTH SHOULD BE 11 FT, AND A MINIMUM HEIGHT OF 2 FEET - BUT SHOULD ALSO BE 1 FT LOWER THAN THE SHOULDER OF THE EMBANKMENT.*
2. *A 1 FT THICK LAYER OF #5 OR #57 WASHED STONE SHOULD BE PLACED ON THE OUTSIDE SLOPE OF THE RIP-RAP.*
3. *THE SEDIMENT STORAGE AREA SHOULD BE EXCAVATED AROUND THE OUTSIDE OF THE STONE SEMI-CIRCLE 18" BELOW GRADE.*
4. *INSPECT EROSION CONTROL DEVICES AT LEAST ONCE WEEKLY AND AFTER EACH RAINFALL PRODUCING EVENT OF 1/2" OR GREATER. EXCAVATE SEDIMENT FROM THE DEPRESSION ONCE ACCUMULATED DEPTH HAS REACHED 1/2 THE DESIGN DEPTH OF THE TRAP TO MAINTAIN ADEQUATE STORAGE AREA. REPLACED ANY CONTAMINATED STONE.*
5. *ANY RIP-RAP DISPLACED FROM ITS ORIGINAL LOCATION SHOULD BE REPLACED IMMEDIATELY.*
6. *ONCE DISTURBED AREAS HAVE BEEN STABILIZED, FILL THE DEPRESSION AND ESTABLISH FINAL GRADE AND STABILIZE WITH GROUND COVER.*
7. *THE STORAGE VOLUME REQUIRED IS 3600 CUBIC FT PER ACRE OF DISTURBED AREA.*

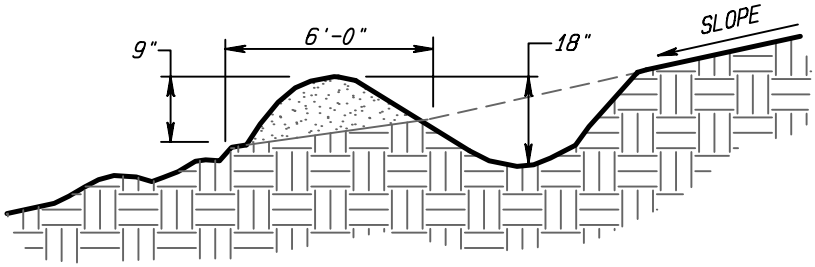
CITY OF GREENSBORO

ROCK PIPE INLET PROTECTION

STD. NO.	REV.
453	06/09

SPACING OF WATER BARS	
SLOPE (%)	SPACING (FT.)
<5	125
5 TO 10	100
10 TO 20	75
20 TO 35	50
>35	25





SECTION VIEW OF WATER BAR

NOTES:

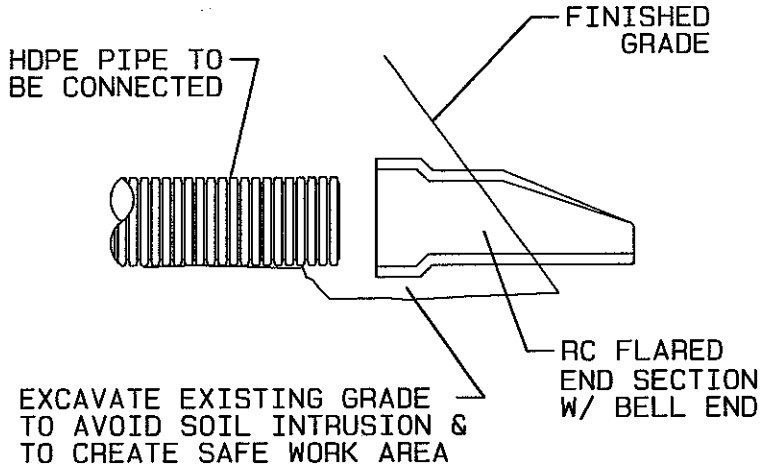
1. INSTALL WATER BARS IMMEDIATELY AFTER CLEARING OPERATIONS.
2. DISK OR ROUGHEN THE SURFACE PRIOR TO PLACEMENT OF FILL FOR THE BERM.
3. TRACK OR TAMP THE RIDGE TO COMPACT IT TO THE DESIGN CROSS SECTION.
4. DIVERSIONS SHOULD BE INSTALLED SUCH THAT THE SLOPE IN THE CHANNEL SECTION DOES NOT EXCEED 2%.
5. LOCATE THE OUTLET OF WATER BARS TO UNDISTURBED AREAS. IF THE AREA IS NOT ADEQUATE TO RESIST EROSION, STABILIZE THE AREA WITH RIP-RAP (REFER TO COG STD. #422).
6. IMMEDIATELY SEED AND MULCH AREAS THAT WILL NOT BE SUBJECT TO CONSTRUCTION TRAFFIC. IF EQUIPMENT WILL BE CROSSING THE DIVERSION, STABILIZE WITH STONE OF ADEQUATE SIZE TO WITHSTAND THE TRAFFIC.
7. PROVIDE EXCAVATED SEDIMENT STORAGE AND COG STD. #432 DITCH CHECK AT THE OUTLET OF DIVERSIONS UNTIL DISTURBED AREAS ARE ADEQUATELY STABILIZED. 3,600 CU. FT. OF STORAGE VOLUME IS TO BE PROVIDED FOR EACH ACRE OF DISTURBED AREA DRAINING TO THE DIVERSION.
8. PERIODICALLY INSPECT RIGHT-OF-WAY DIVERSIONS FOR WEAR AND AFTER EVERY RAINFALL OF ONE HALF INCH OR GREATER. IMMEDIATELY REMOVE SEDIMENT FROM THE FLOW AREA AND REPAIR THE BERM. CHECK OUTLET AREAS AND MAKE TIMELY REPAIRS AS NEEDED.
9. WHEN ALL AREAS ABOVE THE DIVERSION HAVE BEEN ADEQUATELY STABILIZED, REMOVE THE BERM AND STONE / RIP-RAP AND FILL THE CHANNEL TO BLEND WITH THE NATURAL GROUND. SEED AND MULCH ALL REMAINING DISTURBED AREAS.

CITY OF GREENSBORO

WATER BAR DETAIL (RIGHT-OF-WAY DIVERSION)

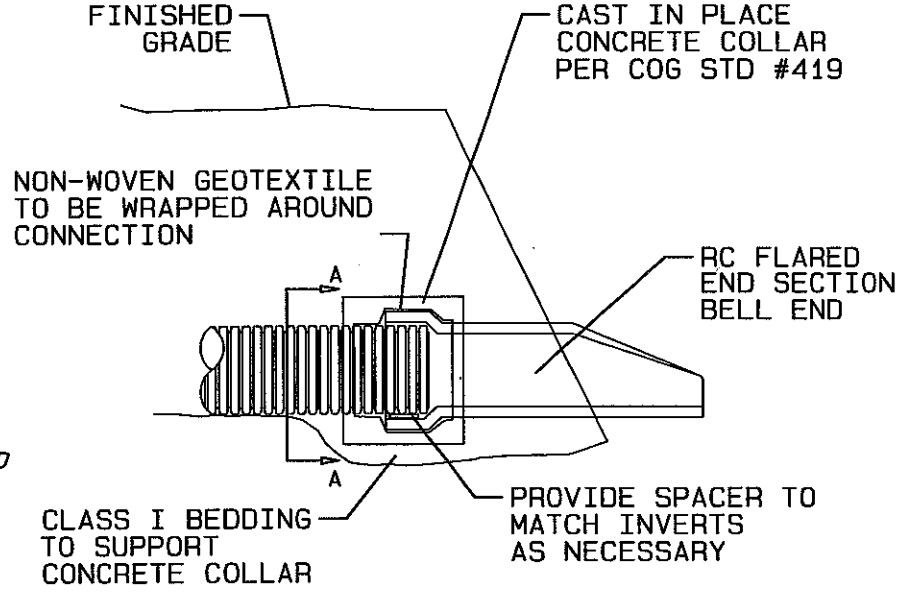
STD. NO.	REV.
454	06/09

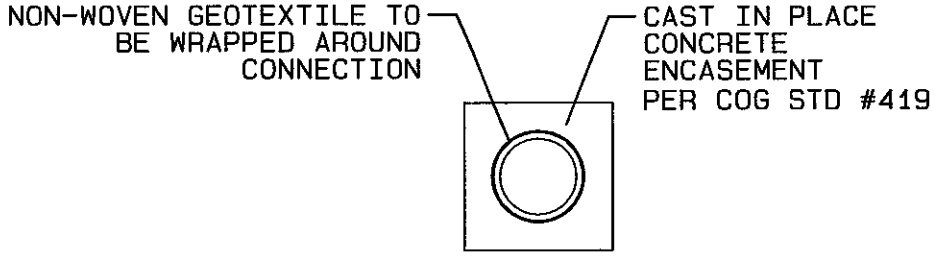
CONNECTION DETAIL FOR HDPE PIPE TO RC FLARED END SECTION BELL END



NOTES:

1. *CONNECTION AND PIPE TO BE BACKFILLED PER NCDOT STD. DRAWING 300D01*
2. *HDPE PIPE SYSTEMS CAN BE CONNECTED TO RC FLARED END SECTIONS USING THIS METHOD. CHANGE OF MATERIAL IN A PIPE RUN IS NOT ALLOWED. MATERIAL CHANGES ARE ALLOWED ONLY AT MANHOLES OR INLET STRUCTURES.*
3. *HDPE FLARED END SECTIONS ARE NOT ALLOWED.*
4. *GEOTEXTILE FABRIC SHALL MEET REQUIREMENTS OF TYPE 4 ENGINEERED FABRICS UNDER SECTION 1056 OF NCDOT STANDARD SPECIFICATIONS.*



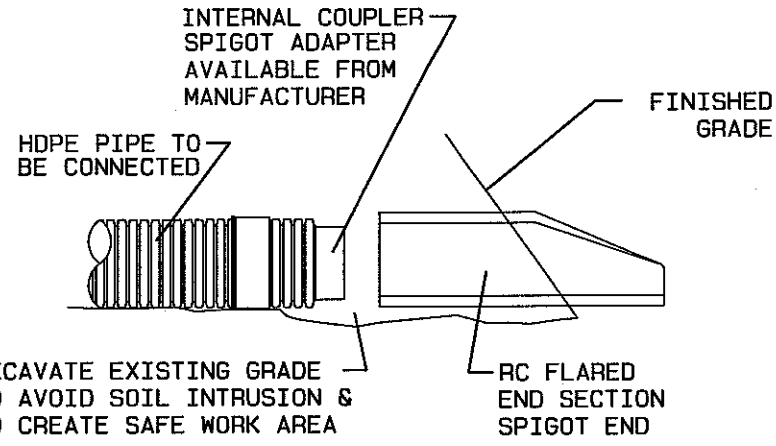


SECTION "A-A"

CITY OF GREENSBORO

CONNECTION FOR HDPE PIPE TO RC FLARED END SECTIONS	STD. NO.	REV.
	455	03-10

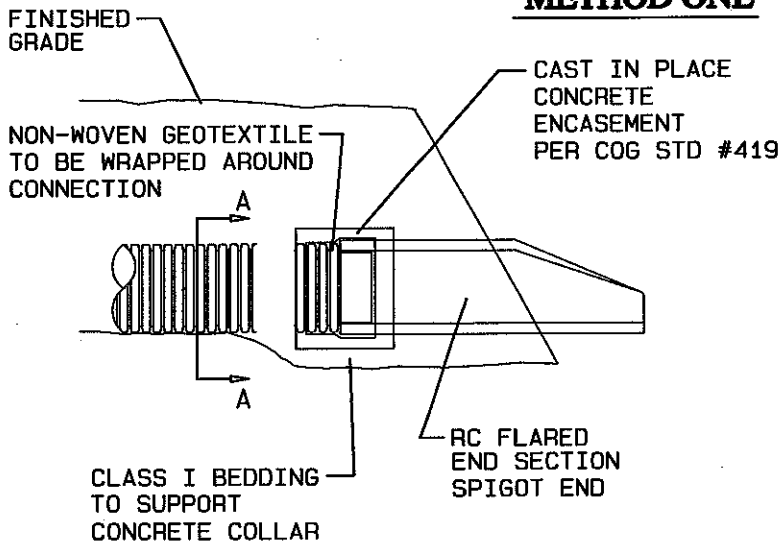
CONNECTION DETAIL FOR HDPE PIPE TO RC FLARED END SECTION SPIGOT END

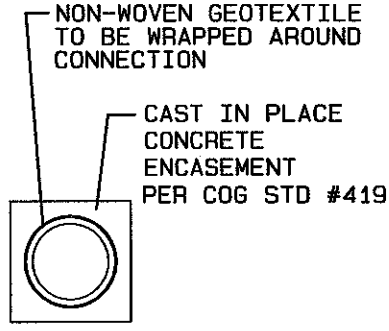


NOTES:

1. *CONNECTION AND PIPE TO BE BACKFILLED PER NCDOT STANDARD DRAWING 300D01.*
2. *HDPE PIPE SYSTEMS CAN BE CONNECTED TO RC FLARED END SECTIONS USING THIS METHOD. CHANGE OF MATERIAL IN A PIPE RUN IS NOT ALLOWED. MATERIAL CHANGES ARE ALLOWED ONLY AT MANHOLES OR INLET STRUCTURES.*
3. *HDPE FLARED END SECTIONS ARE NOT ALLOWED.*
4. *GEOTEXTILE FABRIC SHALL MEET REQUIREMENTS OF TYPE 4 ENGINEERED FABRICS UNDER SECTION 1056 OF NCDOT STANDARD SPECIFICATIONS.*
5. *THE INTERNAL COUPLER SPIGOT ADAPTER IS AVAILABLE FROM THE HDPE PIPE MANUFACTURER.*
6. *USE EITHER METHOD ONE OR METHOD TWO.*

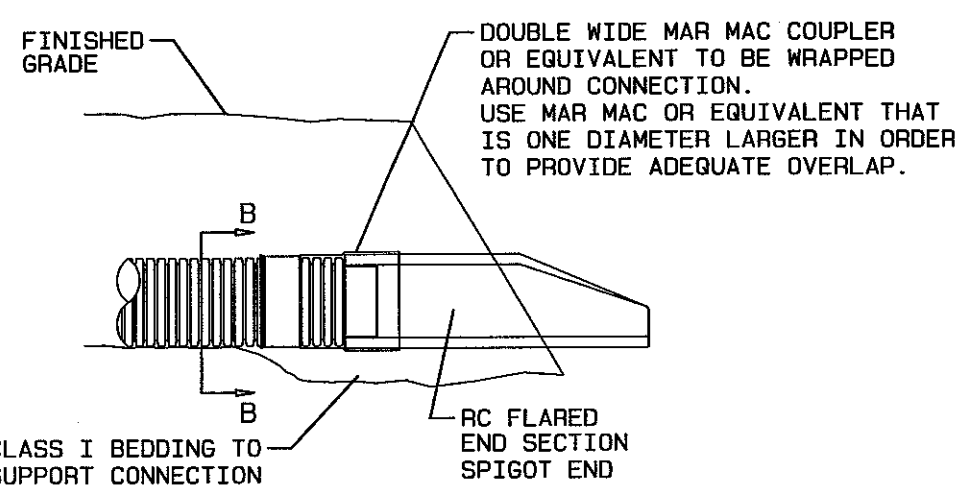
METHOD ONE

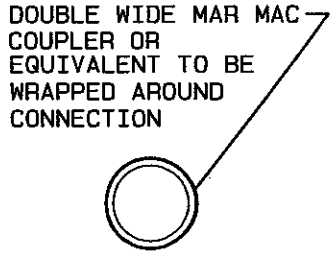




SECTION "A-A"

METHOD TWO

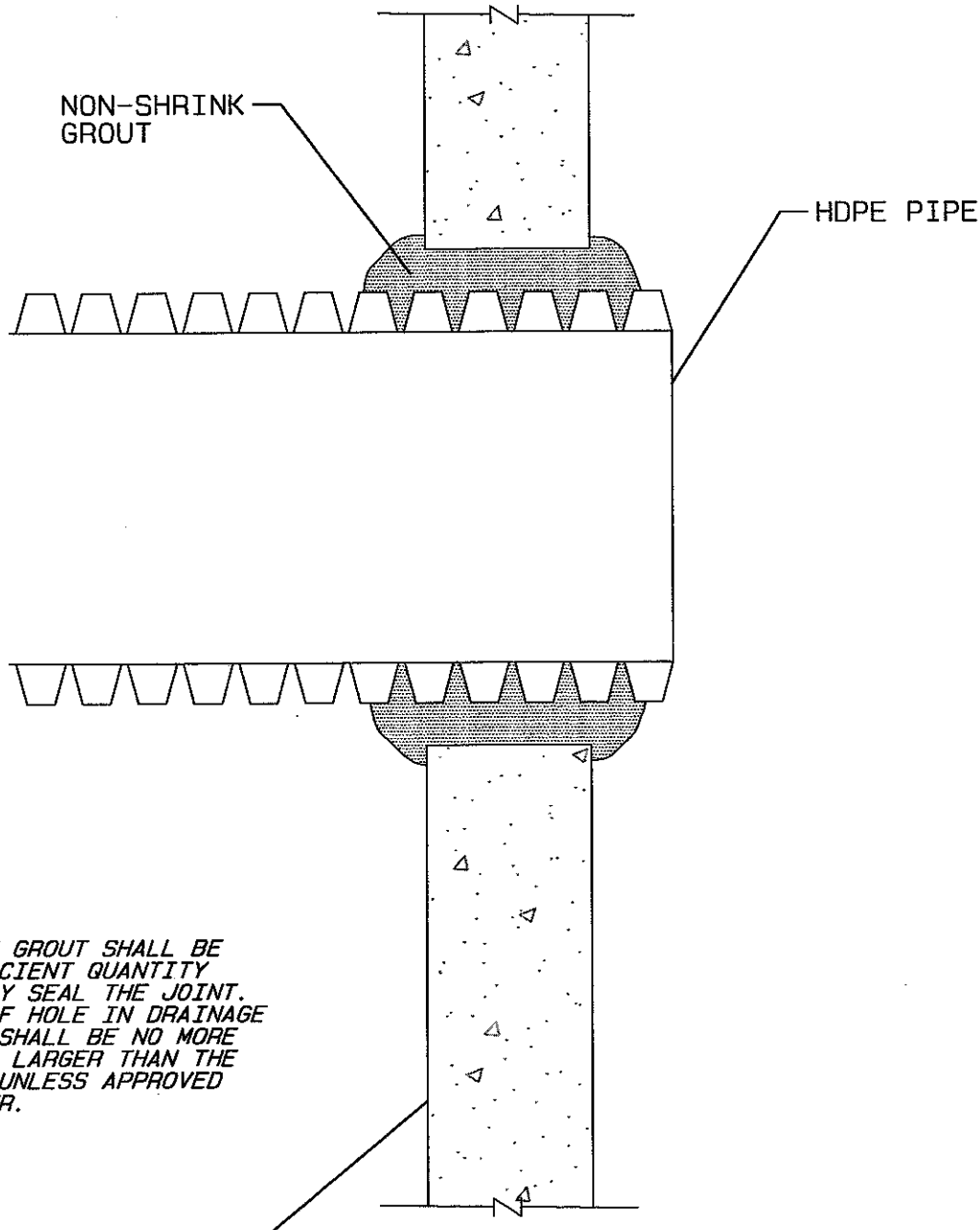




SECTION "B-B"

CITY OF GREENSBORO

CONNECTION FOR HDPE PIPE TO RC FLARED END SECTIONS	STD. NO.	REV.
	455	03-10



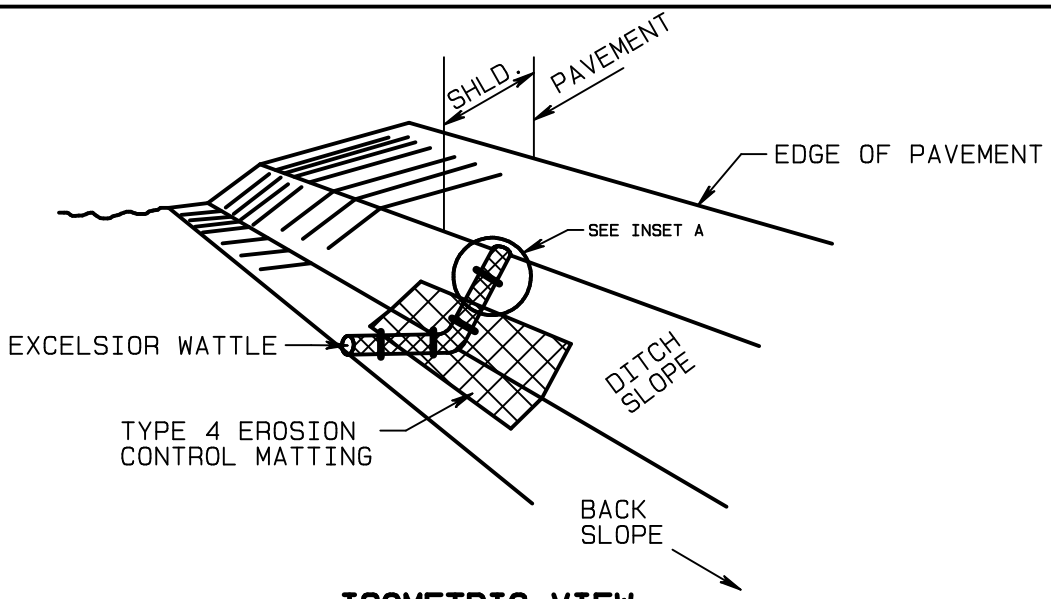
NOTES

1. *NON-SHRINK GROUT SHALL BE IN A SUFFICIENT QUANTITY TO PROPERLY SEAL THE JOINT.*
2. *DIAMETER OF HOLE IN DRAINAGE STRUCTURE SHALL BE NO MORE THAN 3 IN. LARGER THAN THE PIPE O.D. UNLESS APPROVED BY ENGINEER.*

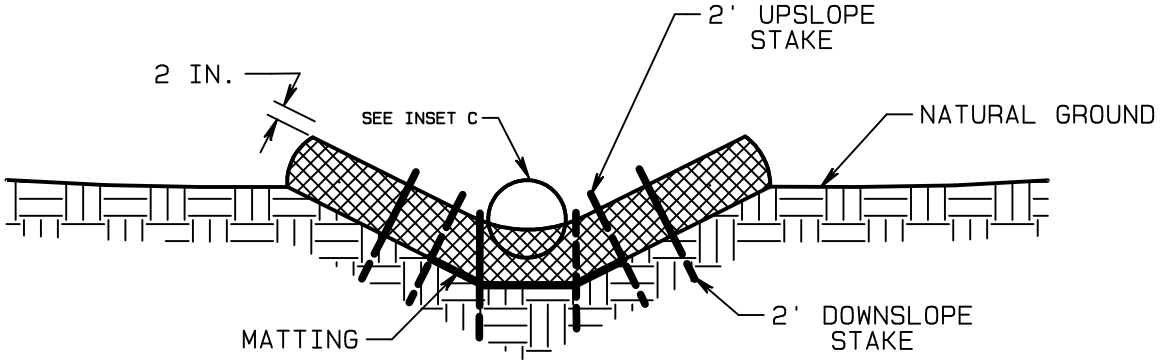
CITY OF GREENSBORO

SOIL TIGHT CONNECTION FOR HDPE PIPE TO DRAINAGE STRUCTURES

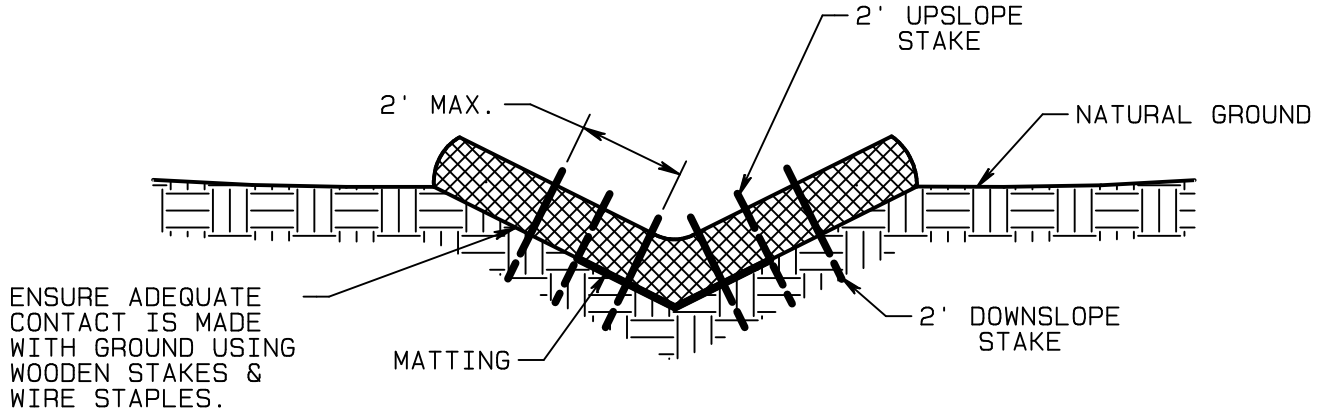
STD. NO.	REV.
456	03-10



ISOMETRIC VIEW

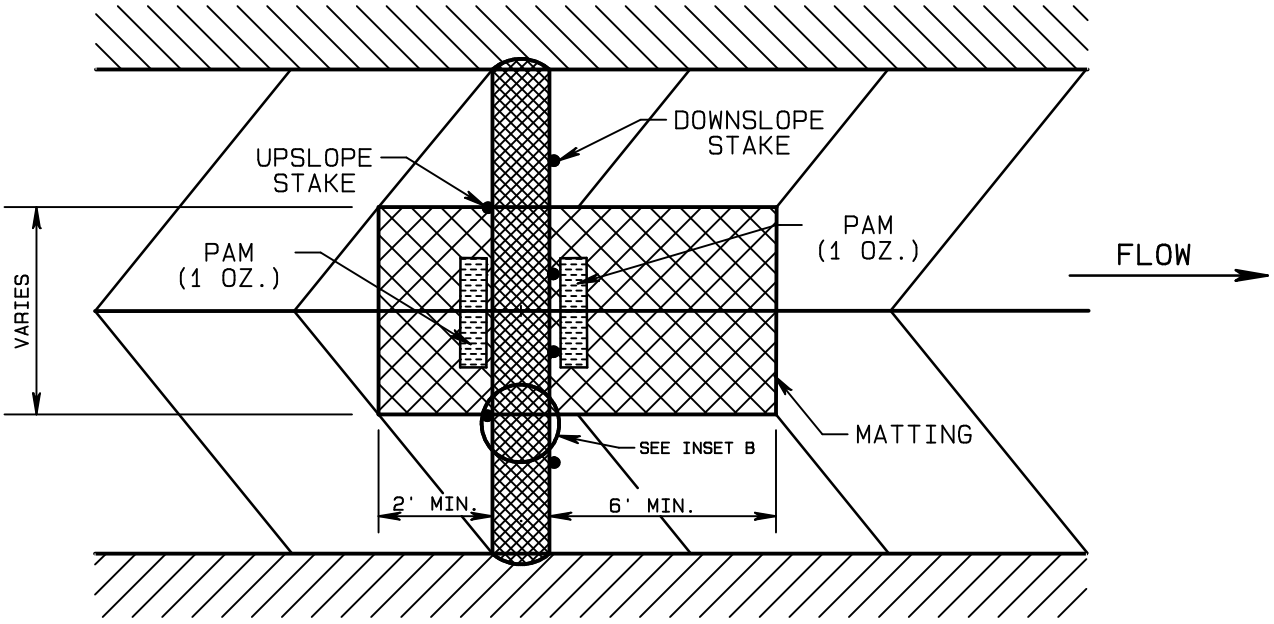


CROSS SECTION - TRAPEZOIDAL DITCH

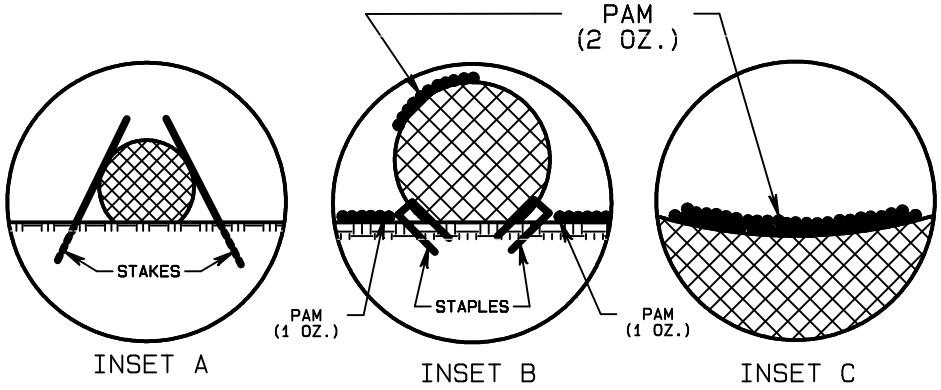


CROSS SECTION - VEE DITCH

CITY OF GREENSBORO		
WATTLE WITH POLYACRYLAMIDE (PAM)	STD. NO.	REV.
	457	12/10



TOP VIEW

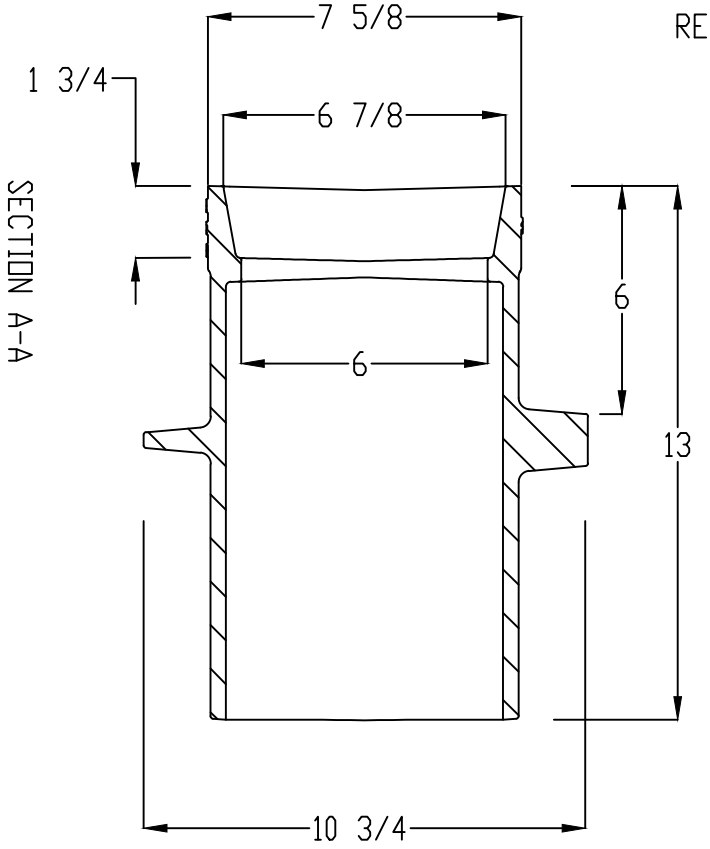


NOTES:

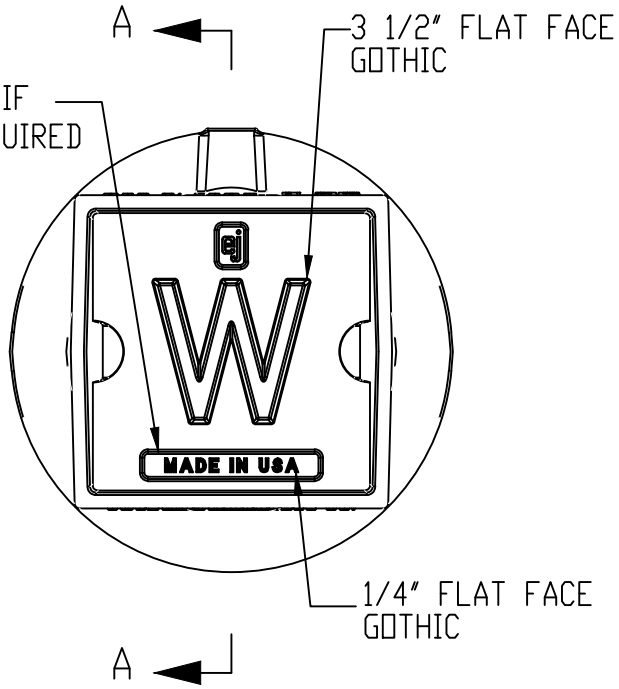
1. *USE MINIMUM 12" DIA. EXCELSIOR WATTLE*
2. *USE 2 FT WOODEN STAKES WITH A 2" X 2" NOMINAL CROSS SECTION.*
3. *ONLY INSTALL WATTLE(S) IN DITCH SUCH THAT FLOW PASSES OVER THE WEIR FORMED IN THE CENTER OF THE WATTLE AND NOT AROUND THE WATTLE TO PREVENT BANK EROSION.*
4. *INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.*
5. *PROVIDE STAPLES MADE OF 0.125" DIA. STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.*
6. *INSTALL STAPLES APPROXIMATELY EVERY 1 LF ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.*
7. *INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.*
8. *PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION AND FROM ANY OFFSITE BORROW MATERIAL. ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.*
9. *INTIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50".*
10. *ONLY POLYACRYLAMIDES FROM THE NC-DWQ APPROVED LIST ARE TO BE USED. ANY OTHER PROPOSED FLOCCULANT REQUIRES REVIEW & APPROVAL BY THE DWQ AQUATIC TOXICOLOGY UNIT.*
11. *WATTLES SHOULD BE SPACED IN DITCH USING THE FORMULA: [WATTLE DIA. (FT) X 100] / SLOPE (%)*
12. *WATTLE MATTING IS NOT REQUIRED ON DITCH LINES WHERE COMPLETE MATTING INSTALLATION IS INDICATED ON THE PLANS.*

CITY OF GREENSBORO

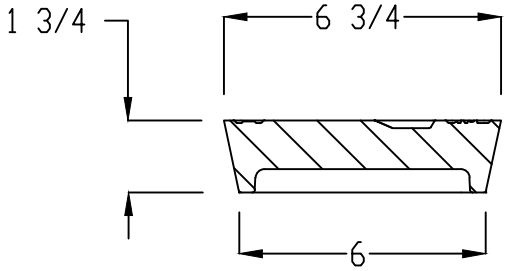
WATTLE WITH POLYACRYLAMIDE (PAM)	STD. NO.	REV.
	457	12/10



SECTION A–A VIEW
OF VALVE BOX



TOP VIEW

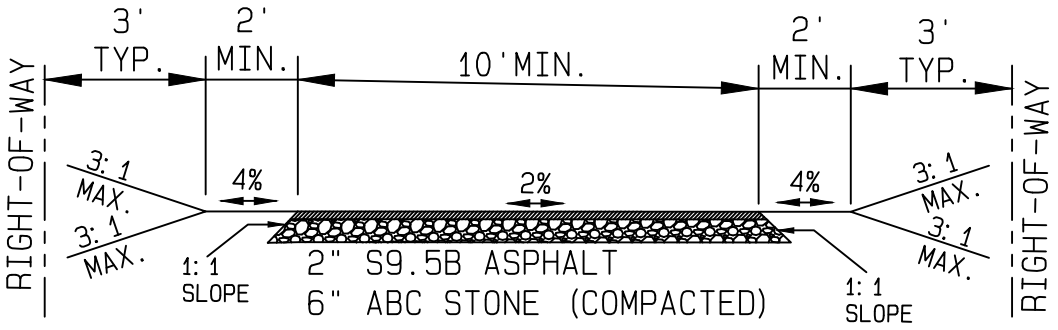


SECTION VIEW OF
VALVE BOX COVER

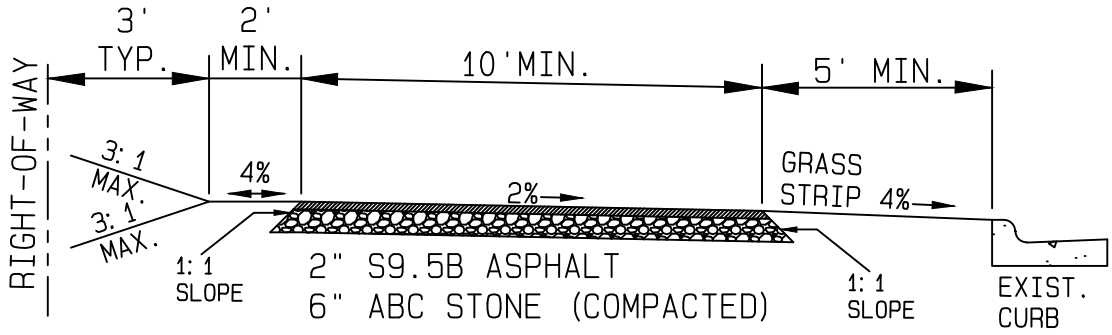
NOTES:

1. *VALVE BOX EXTENSION SHALL BE EITHER 6" DIA. SOIL PIPE OR SCH. 40 PVC PIPE.*
2. *EXTENSION TO BE ONE SOLID PIECE OF PIPE UNLESS BURIAL DEPTYH IS GREATER THAN STANDARD LENGTH OF PIPE. A BELL OR COUPLING SHALL BE UTILIZED AT THE TOP OF VALVE CONNECTION (SEE COG STD #101)*
3. *LETTER HEIGHT 3–1/2"*
4. *COUNTERSINK LETTER 3/16"*
5. *TO BE USED IN PAVED OR NON–PAVED AREAS.*
6. *ALL CASTINGS SHALL MEET THE REQUIREMENTS OF AASHTO M306.*
7. *DUE TO VARIATIONS IN CASTINGS OF DIFFERENT MANUFACTURER'S, DIMENSIONS SHALL BE WITHIN REASONABLE TOLERANCES AS PRE–APPROVED BY GREENSBORO WATER RESOURCES DEPARTMENT AND/OR FIELD INSPECTOR PRIOR TO INSTALLATION.*
8. *VALVE BOX MAY BE REQUIRED TO BE "MADE IN U.S.A." IF FEDERAL FUNDS ARE INVOLVED*

C I T Y O F G R E E N S B O R O		
WATER VALVE BOX AND EXTENSION IN ROADWAY	***STD. NO.***	***REV.***
	458	12–12 03–15



TRAIL IN PARK SETTING

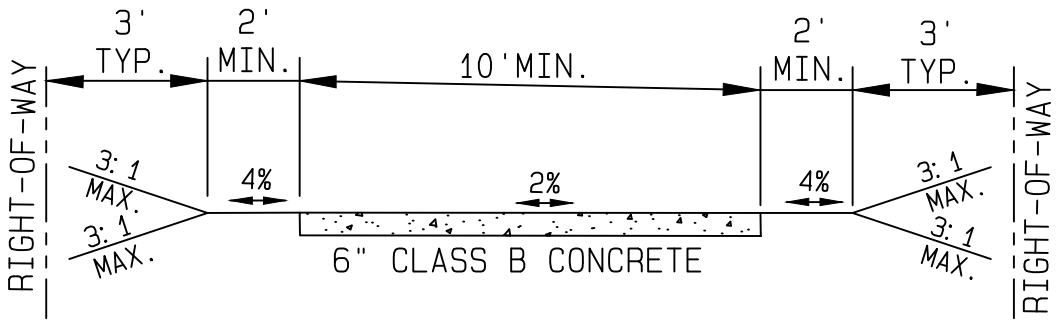


TRAIL PARALLEL TO STREET

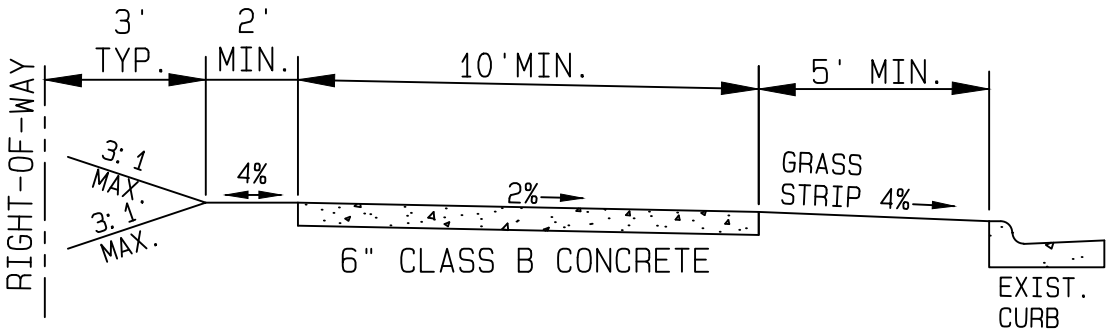
NOTES:

1. *MINIMUM WIDTH MUST BE MAINTAINED UNLESS LEGITIMATE CONSTRAINTS DICTATE OTHERWISE.*
2. *DIRECTION OF CROSS SLOPE FOR **TRAIL IN PARK SETTING** TO BE DETERMINED BY TOPOGRAPHICAL CONDITIONS.*
3. *FOR TRAIL NEXT TO ROADWAY, THE AASHTO RECOMMENDED MINIMUM GRASS STRIP BETWEEN THE TRAIL AND CURB IS 5 FT. IF CONSTRAINTS PROHIBIT A 5 FT GRASS STRIP, THEN A PHYSICAL BARRIER OR RAILING SHOULD BE PROVIDED PER AASHTO.*

CITY OF GREENSBORO		
GREENWAY TRAIL - ASPHALT	**STD. NO.**	**REV.**
	459	06-16 01-19



TRAIL IN PARK SETTING

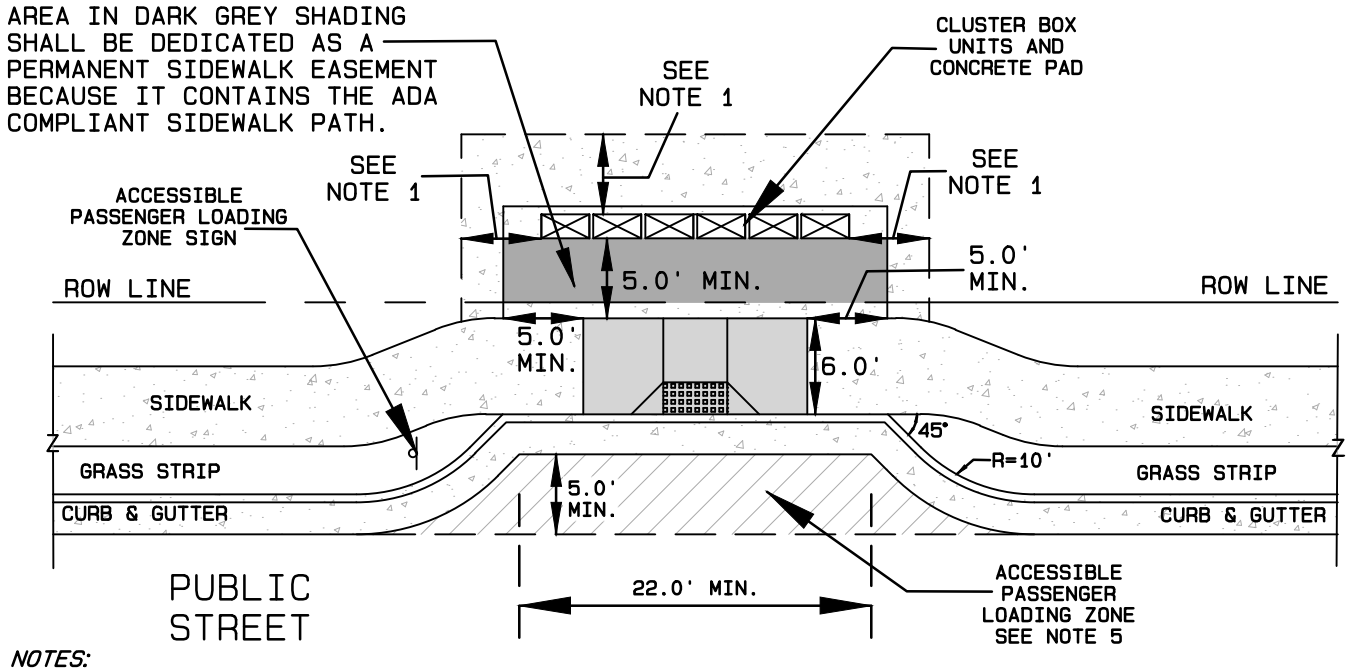


TRAIL PARALLEL TO STREET

NOTES:

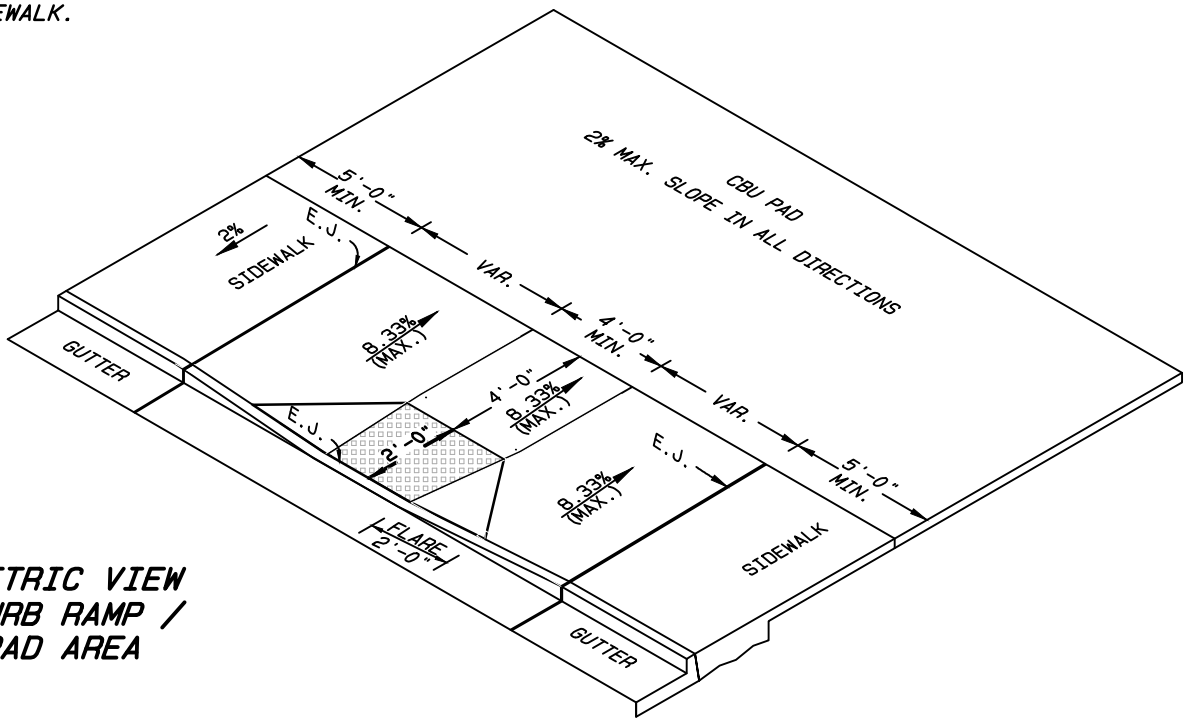
1. *MINIMUM WIDTH MUST BE MAINTAINED UNLESS LEGITIMATE CONSTRAINTS DICTATE OTHERWISE.*
2. *DIRECTION OF CROSS SLOPE FOR* ***TRAIL IN PARK SETTING*** *TO BE DETERMINED BY TOPOGRAPHICAL CONDITIONS.*
3. *CONCRETE MUST BE REINFORCED IF ANY VEHICULAR TRAFFIC FOR MAINTENANCE OR ANY OTHER PURPOSE IS ANTICIPATED.*
4. *FOR TRAIL NEXT TO ROADWAY, THE AASHTO RECOMMENDED MINIMUM GRASS STRIP BETWEEN THE TRAIL AND CURB IS 5 FT. IF CONSTRAINTS PROHIBIT A 5 FT GRASS STRIP, THEN A PHYSICAL BARRIER OR RAILING SHOULD BE PROVIDED PER AASHTO.*

CITY OF GREENSBORO		
GREENWAY TRAIL - CONCRETE	STD. NO.	REV.
	460	06-16



NOTES:

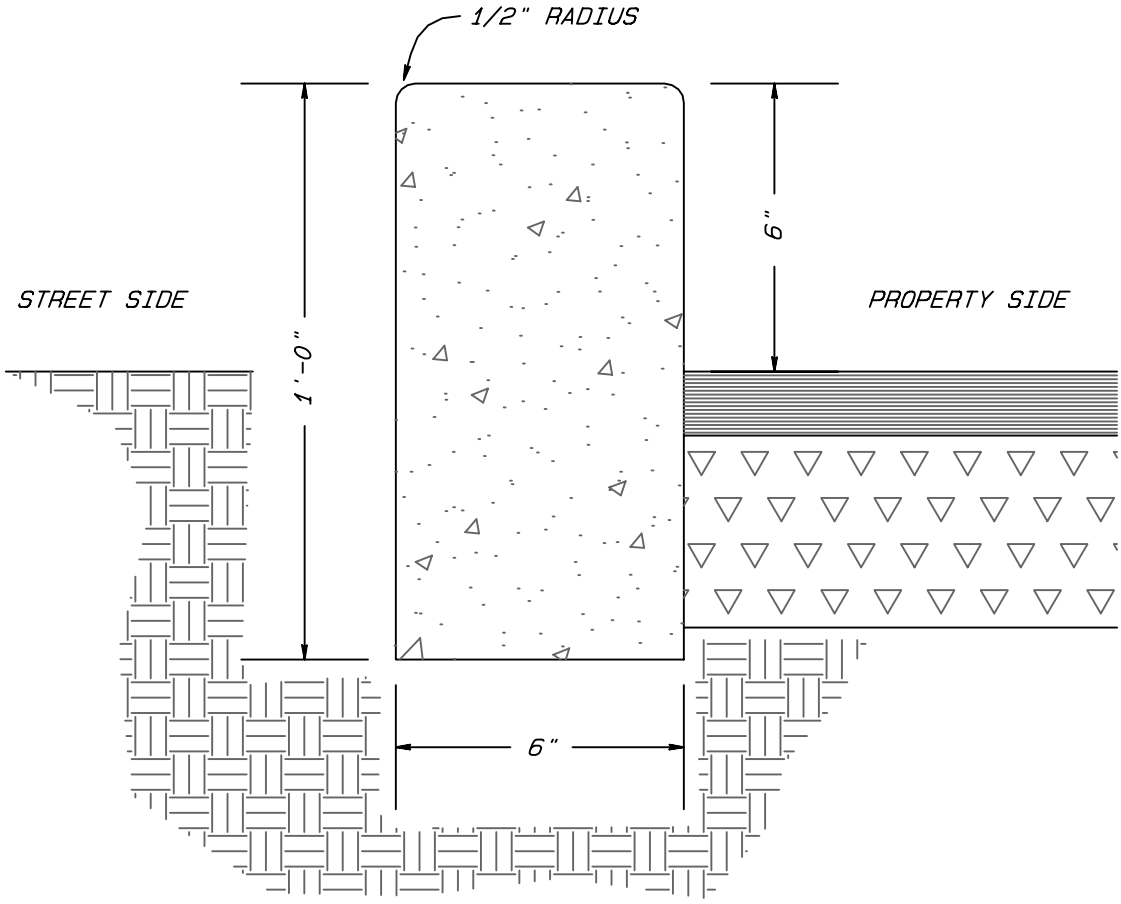
1. *CLUSTER BOX UNIT PAD MUST HAVE 5' MIN. SIDE AISLES AND BACK AISLE IF CBU'S ARE DUAL LOADING.*
2. *ACCESSIBLE PASSENGER LOADING ZONE SHALL HAVE A MAXIMUM 2% CROSS SLOPE DRAINING TO THE CURB.*
3. *CLUSTER BOX UNIT CONCRETE PAD SHALL MEET ALL THE REQUIREMENTS SET FORTH IN THE CITY OF GREENSBORO'S CLUSTER BOX UNIT DESIGN STANDARDS.*
4. *CLUSTER BOX UNIT PAD SHALL BE FLUSH WITH THE TOP OF THE CURB RAMP.*
5. *ACCESSIBLE PASSENGER LOADING ZONE SHALL BE DELINEATED BY THERMOPLASTIC PAVEMENT MARKINGS AS PER THE CITY'S CLUSTER BOX UNIT DESIGN STANDARDS.*
6. *THE CBU CONCRETE PAD ACTS AS THE LANDING AREA FOR THE CURB RAMP, SO IT MUST HAVE SLOPES NO GREATER THAN 2% IN ALL DIRECTIONS.*
7. *TRANSITION SIDEWALK ON EACH SIDE OF THE ACCESSIBLE PASSENGER LOADING ZONE TO 6 FT. WIDTH WITHOUT GRASS STRIP THROUGHOUT THE ACCESSIBLE PASSENGER LOADING ZONE.*
8. *THE CBU PAD AND MAILBOXES ARE COMMON ELEMENTS MAINTAINED BY THE HOMEOWNER'S ASSOCIATION AND ARE NOT MAINTAINED BY THE CITY OF GREENSBORO.*
9. *THE AREA BETWEEN THE ROW LINE AND THE CBU BOXES, SHOWN IN DARK GREY SHADING, MUST BE DEDICATED AS A PERMANENT SIDEWALK EASEMENT BECAUSE IT CONTAINS THE ADA COMPLIANT PATH FOR THE SIDEWALK.*



ISOMETRIC VIEW OF CURB RAMP / CBU PAD AREA

CITY OF GREENSBORO

ACCESSIBLE PASSENGER LOADING ZONE FOR MAILBOX CLUSTER BOX UNITS	STD. NO.	REV.
	461	07-20 09-20

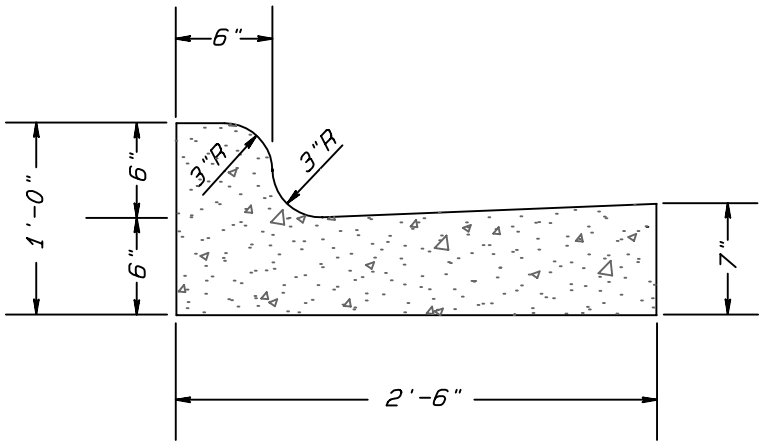


PARKING CURB

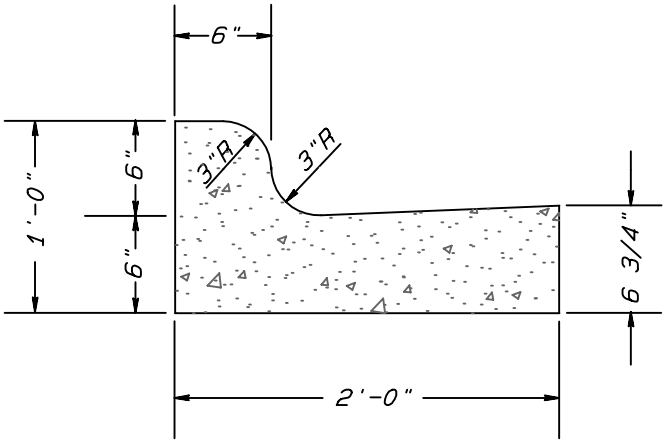
NOTE:

CONCRETE SHALL BE CLASS A, 3000 PSI AIR ENTRAINED

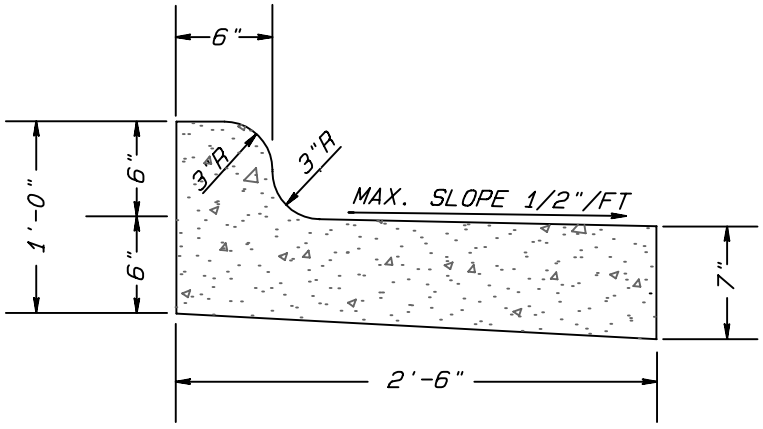
CITY OF GREENSBORO		
STANDARD 6" X 12" CONCRETE PARKING CURB	STD. NO.	REV.
	500	



2'-6" CONCRETE CURB AND GUTTER



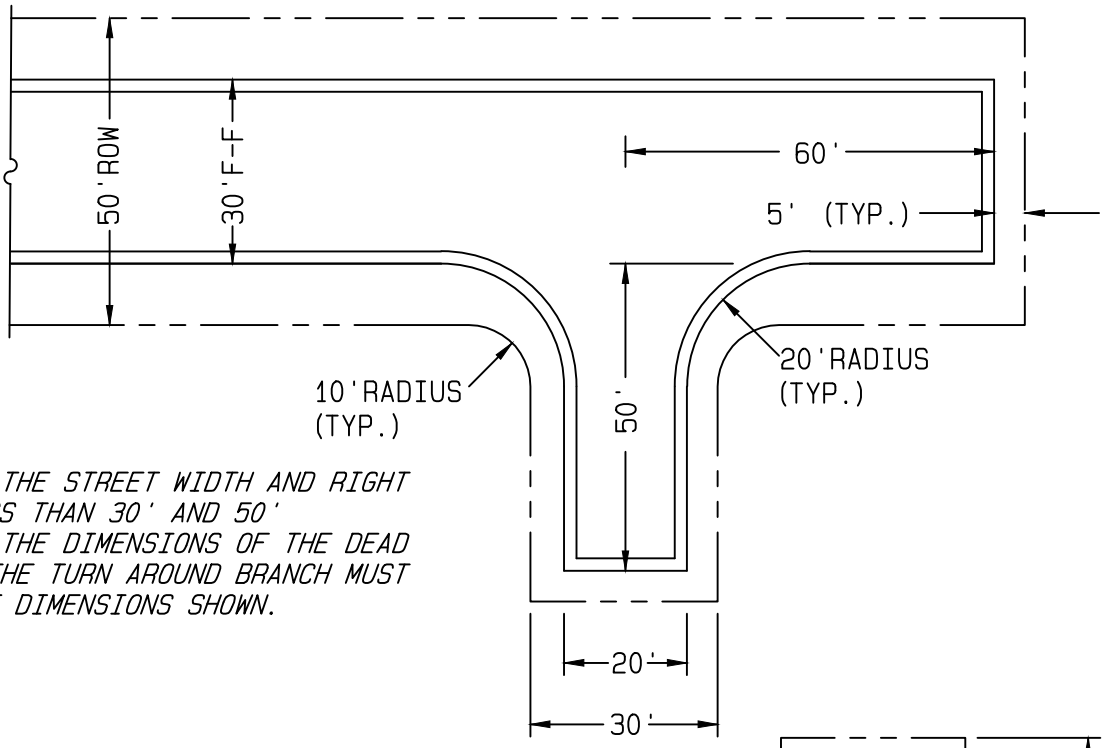
2'-0" CONCRETE CURB AND GUTTER



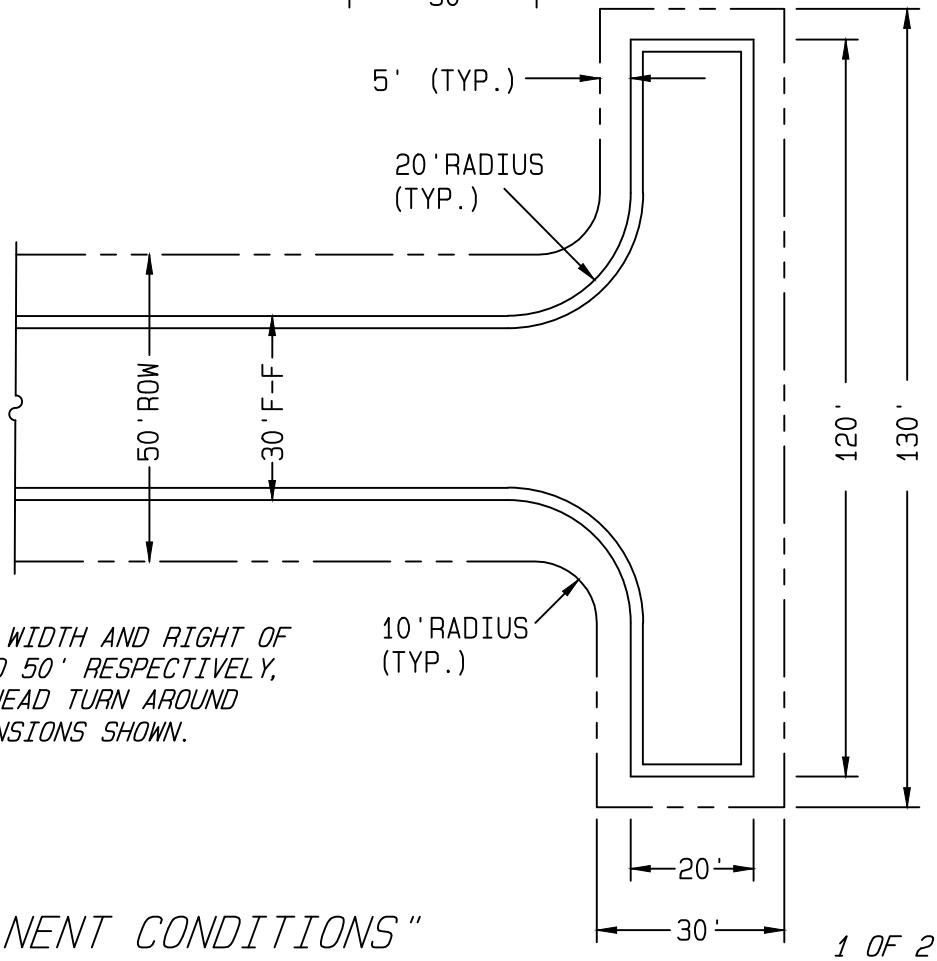
2'-6" CONCRETE SPILL CURB AND GUTTER

CITY OF GREENSBORO

STANDARD CONCRETE CURB AND GUTTER	STD. NO.	REV.
	501	03-01



NOTE: EVEN IF THE STREET WIDTH AND RIGHT OF WAY ARE LESS THAN 30' AND 50' RESPECTIVELY, THE DIMENSIONS OF THE DEAD END AREA AND THE TURN AROUND BRANCH MUST STILL MEET THE DIMENSIONS SHOWN.

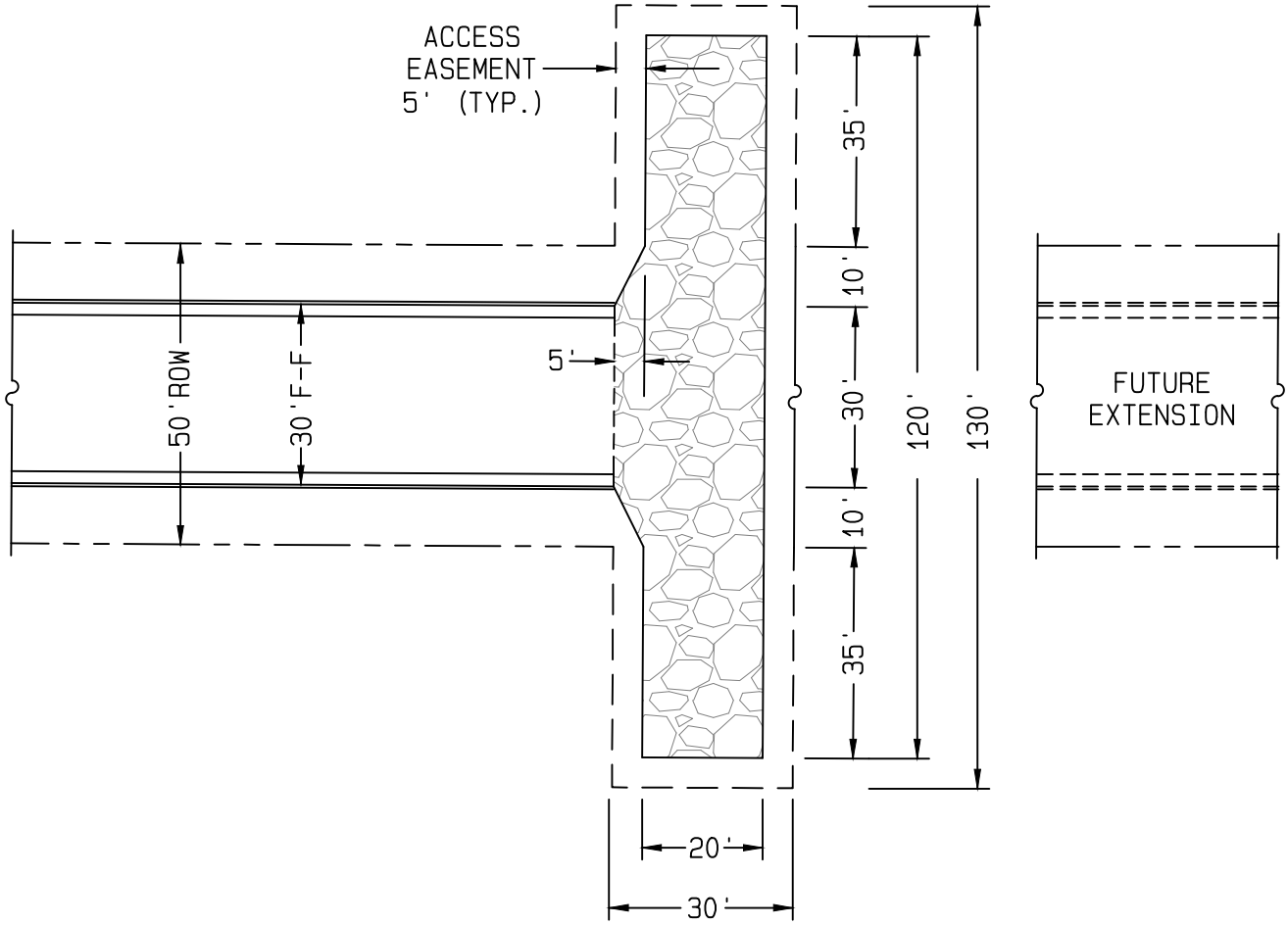


NOTE: EVEN IF THE STREET WIDTH AND RIGHT OF WAY ARE LESS THAN 30' AND 50' RESPECTIVELY, THE DIMENSIONS OF HAMMERHEAD TURN AROUND MUST STILL MEET THE DIMENSIONS SHOWN.

"PERMANENT CONDITIONS"

CITY OF GREENSBORO

TURN AROUND AREA FOR DEAD END STREET	STD. NO.	REV.
	502	01-91 05-98 03-18



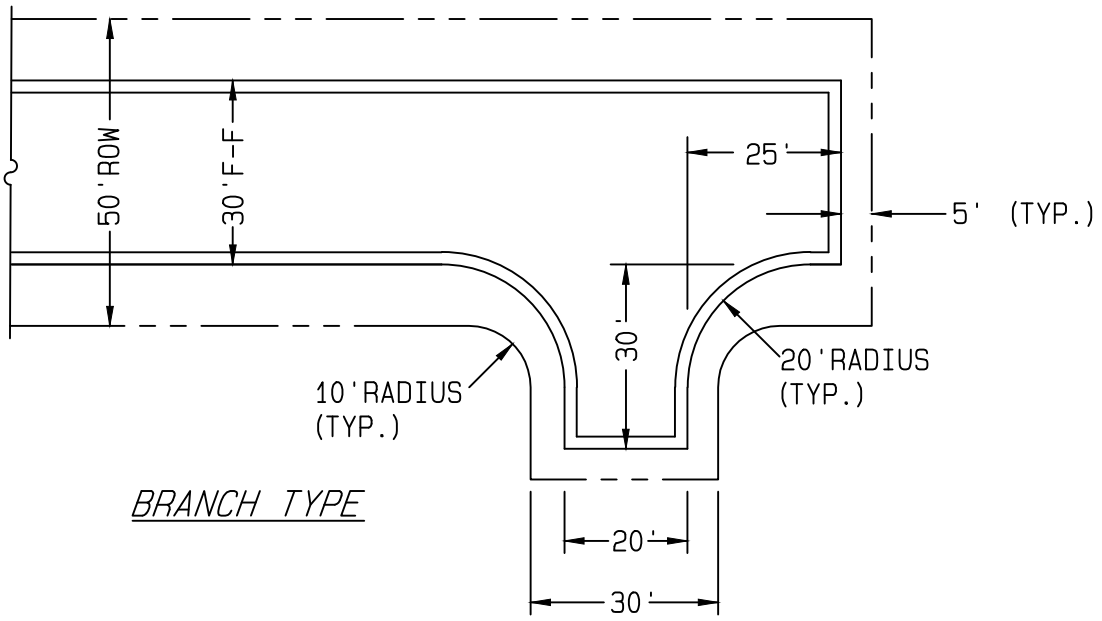
NOTE: EVEN IF THE STREET WIDTH AND RIGHT OF WAY ARE LESS THAN 30' AND 50' RESPECTIVELY, THE DIMENSIONS OF TEMPORARY TURN AROUND MUST STILL MEET THE OVERALL LENGTH AND WIDTH DIMENSIONS SHOWN.

NOTE: TEMPORARY TURN AROUND SHALL BE 7" OF ABC STONE UNLESS OTHERWISE APPROVED BY THE CITY.

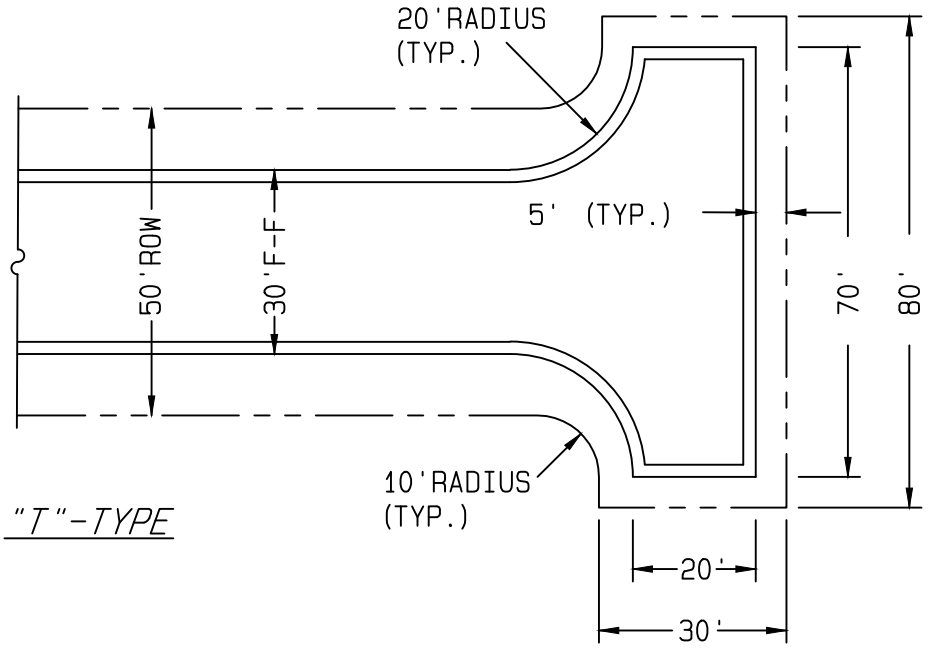
"TEMPORARY CONDITIONS"

CITY OF GREENSBORO

TURN AROUND AREA FOR DEAD END STREET	STD. NO.	REV.
	502	01-91 05-98 03-18



BRANCH TYPE



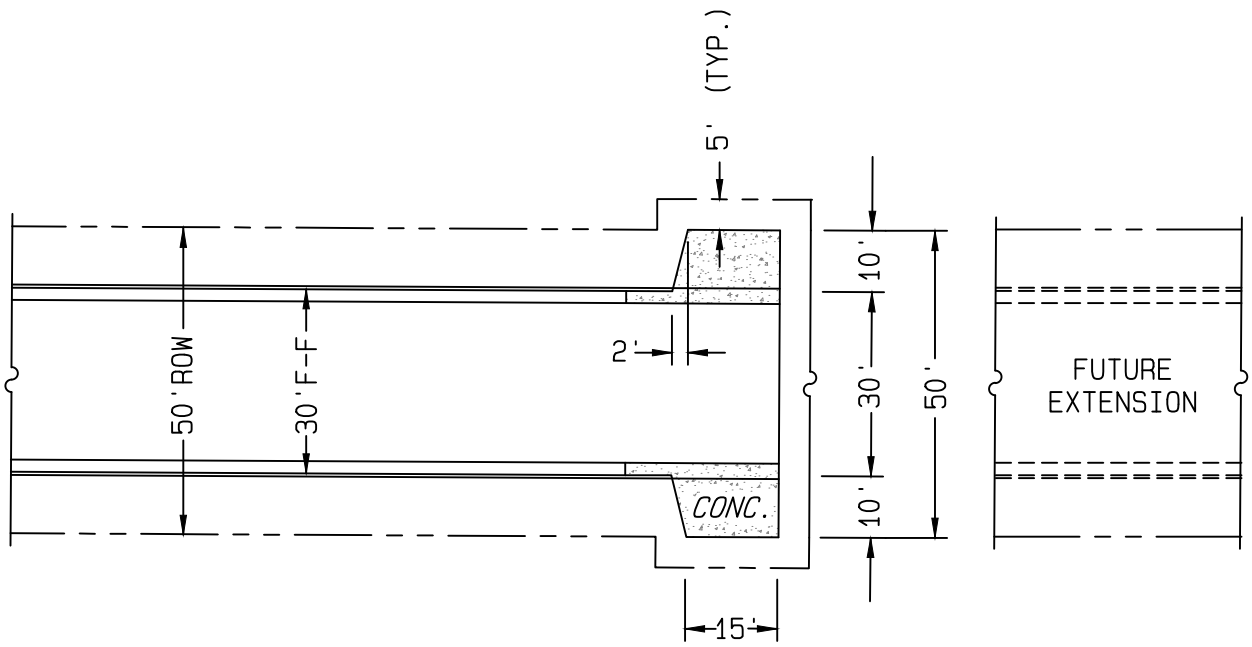
"T"-TYPE

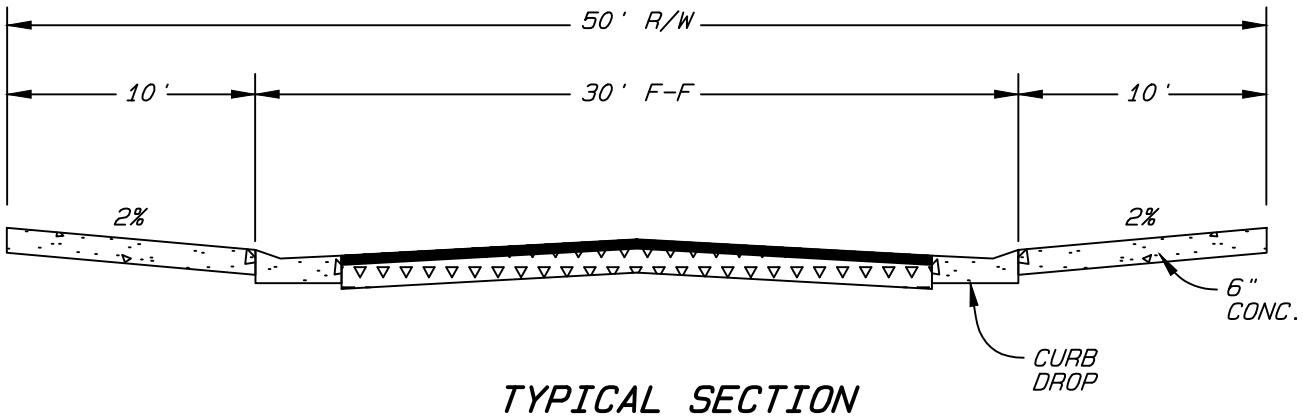
NOTE: COG 502-A CAN ONLY BE USED IN SITUATIONS WHERE THE REQUIREMENTS FOR A GREATER TURN AROUND AREA FOR EMERGENCY VEHICLES, AS SHOWN IN COG 502, IS WAIVED BY PLAN REVIEW.

"PERMANENT CONDITIONS"

CITY OF GREENSBORO

TURN AROUND AREA FOR DEAD END STREET	STD. NO.	REV.
	502-A	01-91 05-98 03-18





TYPICAL SECTION

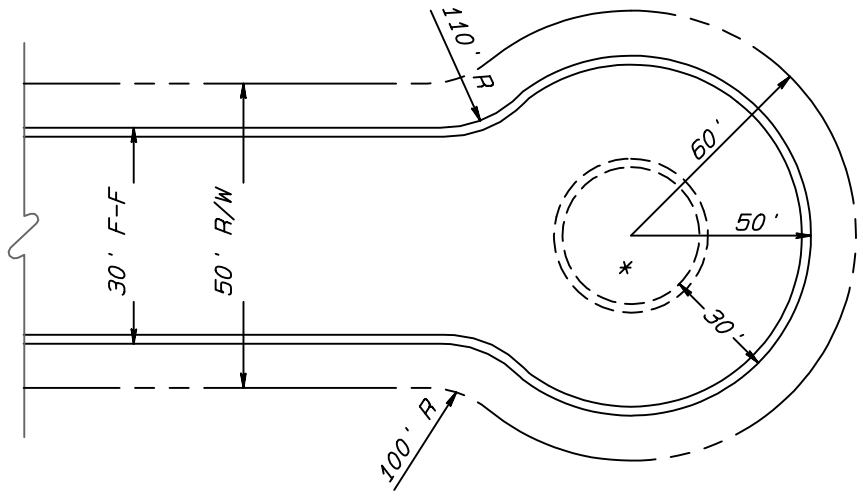
NOTE: COG 502-A CAN ONLY BE USED IN SITUATIONS WHERE THE REQUIREMENTS FOR A GREATER TURN AROUND AREA FOR EMERGENCY VEHICLES, AS SHOWN IN COG 502, IS WAIVED BY PLAN REVIEW.

"TEMPORARY CONDITIONS"

CITY OF GREENSBORO		
TURN AROUND AREA FOR DEAD END STREET	STD. NO.	REV.
	502-A	01-91 05-98 03-18

*NOTE:

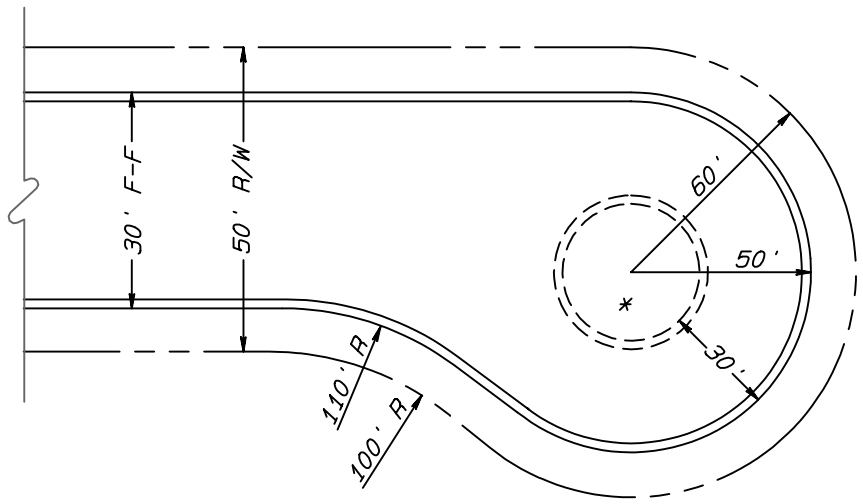
OPTIONAL ISLAND TO ME MAINTAINED BY HOMEOWNERS ASSOCIATION.



STANDARD CUL-DE-SAC

*NOTE:

OPTIONAL ISLAND TO ME MAINTAINED BY HOMEOWNERS ASSOCIATION.



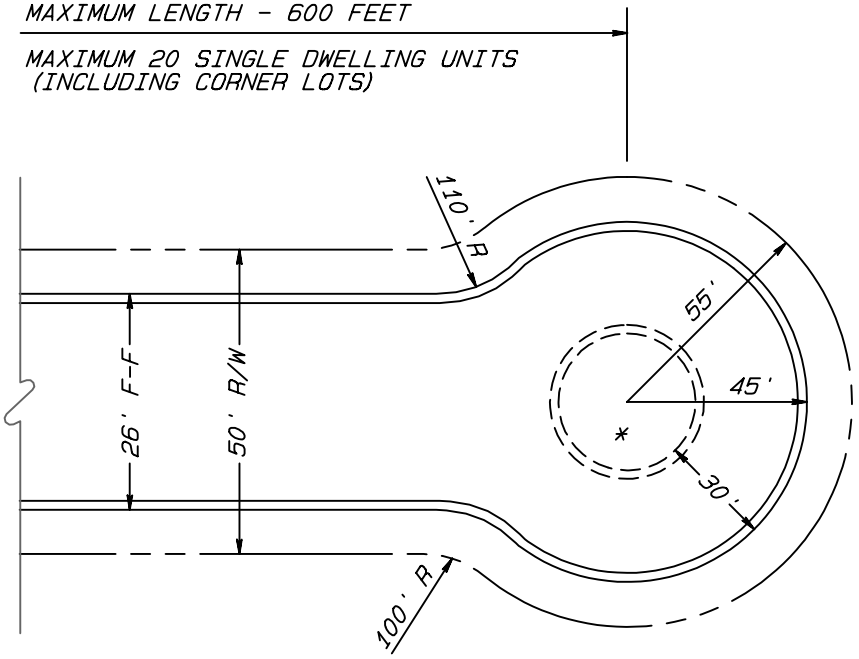
OFFSET CUL-DE-SAC

CITY OF GREENSBORO

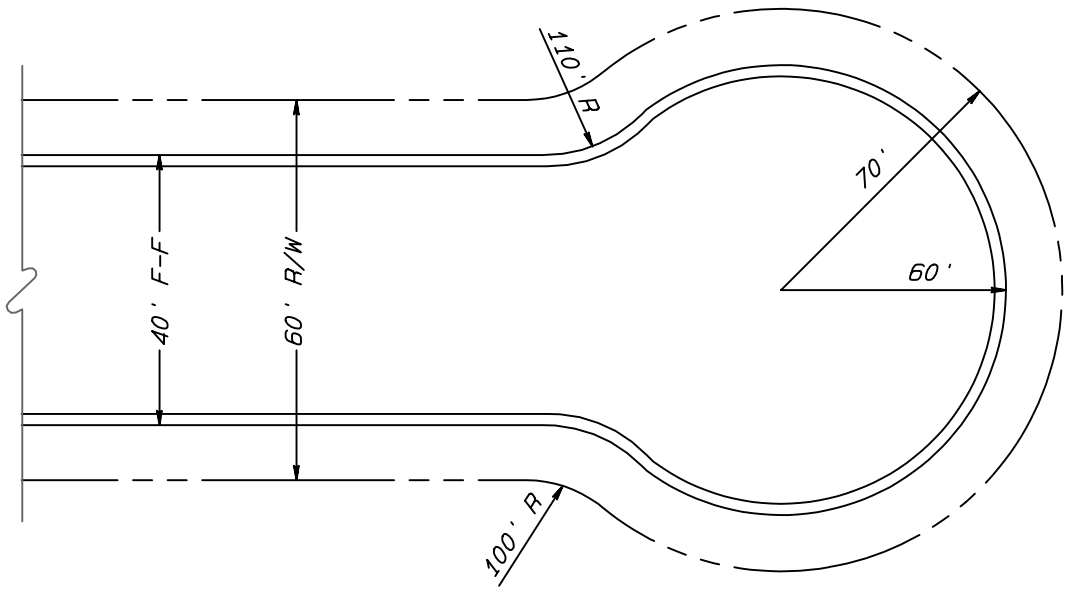
STANDARD CUL-DE-SACS	STD. NO.	REV.
	503	01-91

*NOTE:

OPTIONAL ISLAND TO ME MAINTAINED BY HOMEOWNERS ASSOCIATION.



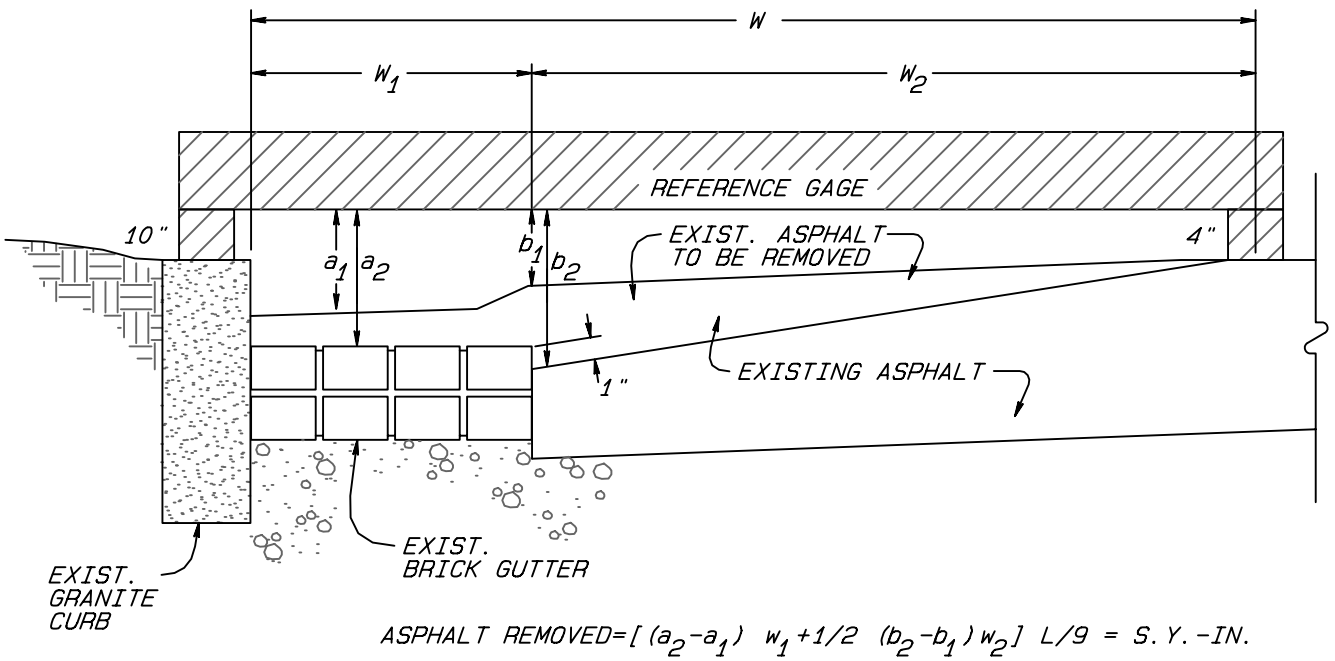
MODIFIED CUL-DE-SAC



INDUSTRIAL CUL-DE-SAC

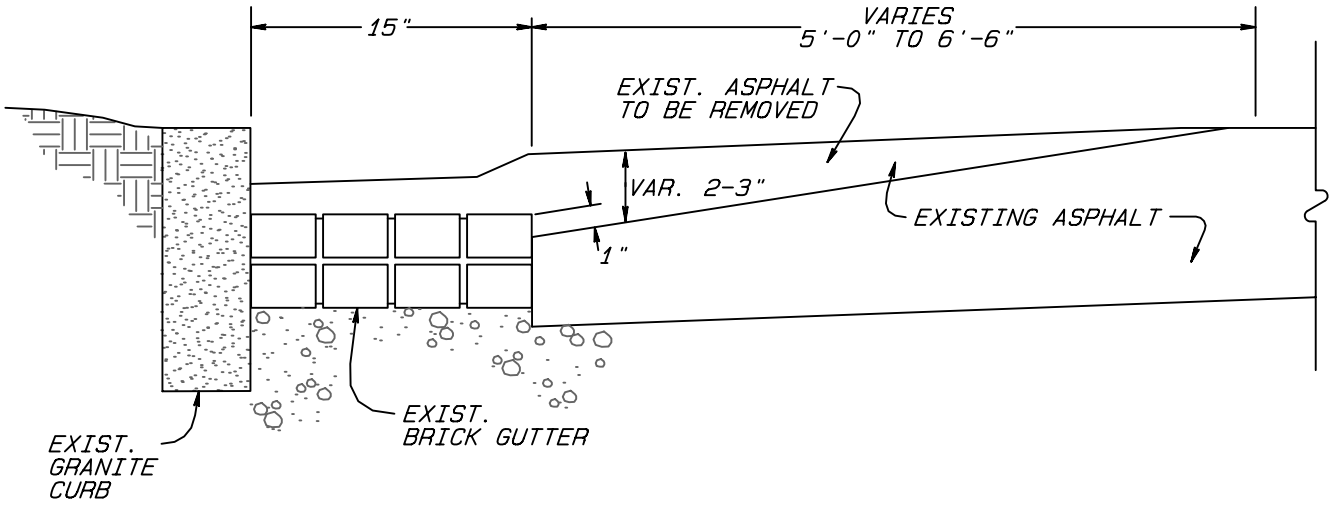
CITY OF GREENSBORO

STANDARD CUL-DE-SACS	STD. NO.	REV.
	503	01-91



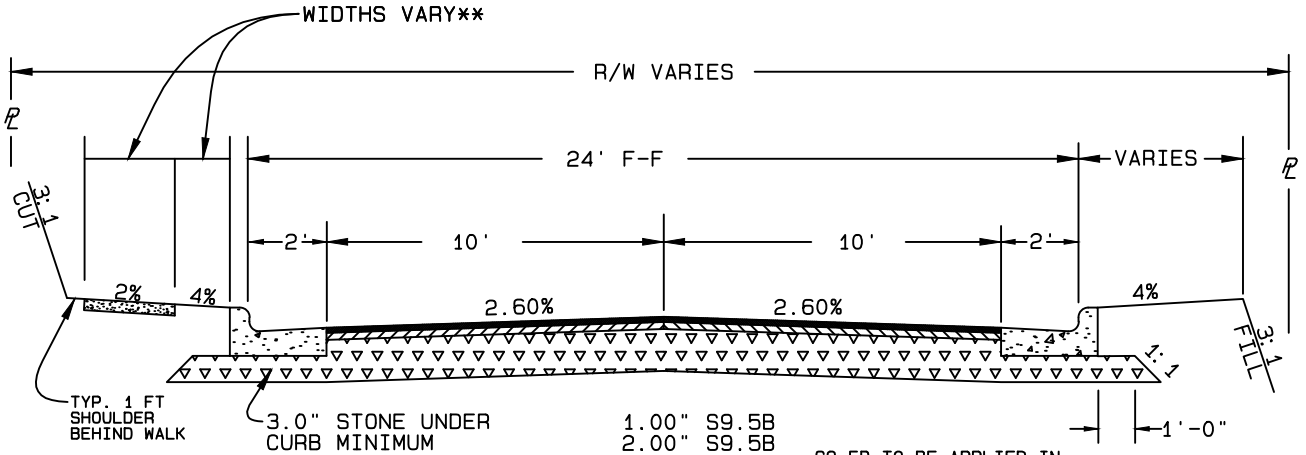
ASPHALT REMOVED=[$(a_2-a_1)\ w_1 + 1/2\ (b_2-b_1)\ w_2$] L/9 = S.Y.-IN.

MEASURING DETAIL



PAYMENT WILL BE MADE IN S.Y.-IN. UNITS BASED ON AVERAGE DEPTH OF CUT MEASURED AT 100' INTERVALS.

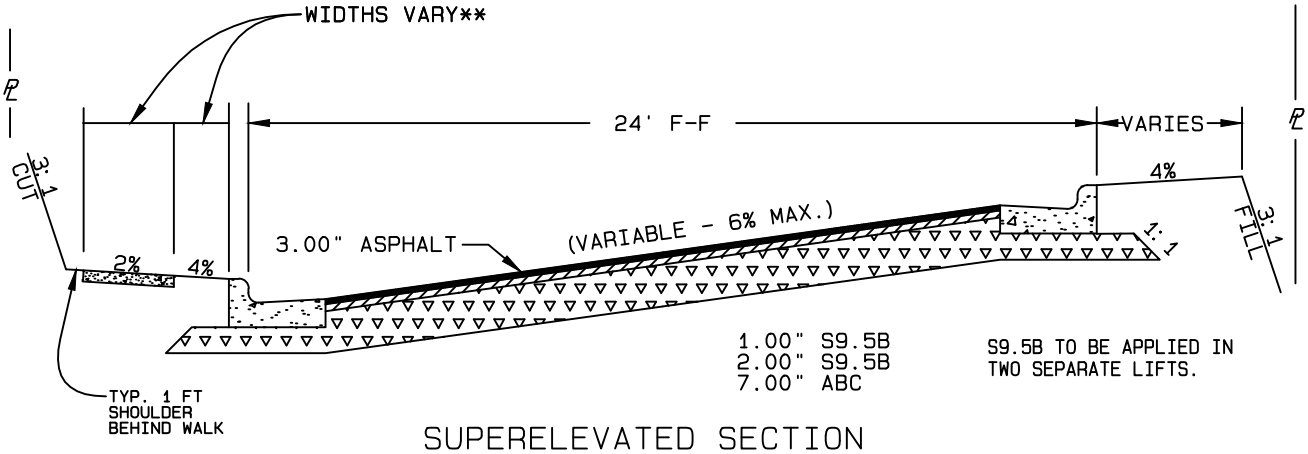
CITY OF GREENSBORO		
STANDARD COLD MILLING SECTION (CURB REVEAL)	STD. NO.	REV.
	504	



CROWN 2" BELOW TOP OF CURB

NORMAL CROWN SECTION

NOTE:
MAX. CURB ELEVATION DIFFERENTIAL FOR NORMAL CROWN SECTION IS 0.30'.



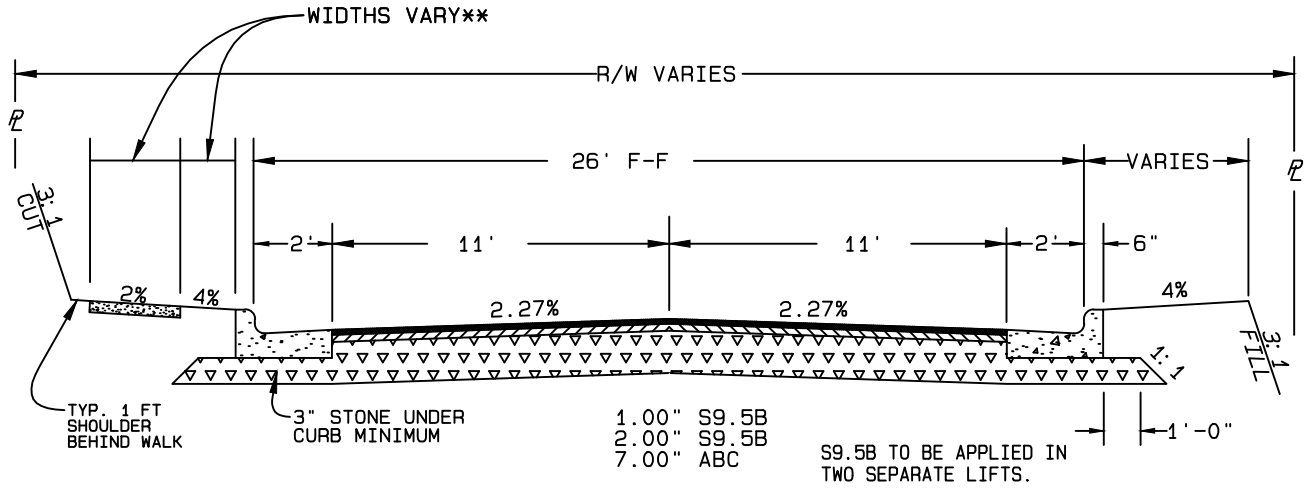
SUPERELEVATED SECTION

***NOTE:*
SEE THE "STREET DESIGN STANDARDS MANUAL" PUBLISHED BY THE CITY OF GREENSBORO'S DEPT. OF TRANSPORTATION IN ORDER TO DETERMINE THE LOCATION OF SIDEWALKS, SIDEWALK WIDTH AND GRASS STRIP WIDTH.
COG STD #418-A HAS A SUMMARY OF THEIR GUIDELINES AS THEY RELATE TO SIDEWALK LOCATION, SIDEWALK WIDTH AND GRASS STRIP WIDTH.

CURB ELEV. DIFF.	%GRADE
0.40'	2.00
0.50'	2.50
0.60'	3.00
0.70'	3.50
0.80'	4.00
0.90'	4.50
1.00'	5.00

CITY OF GREENSBORO

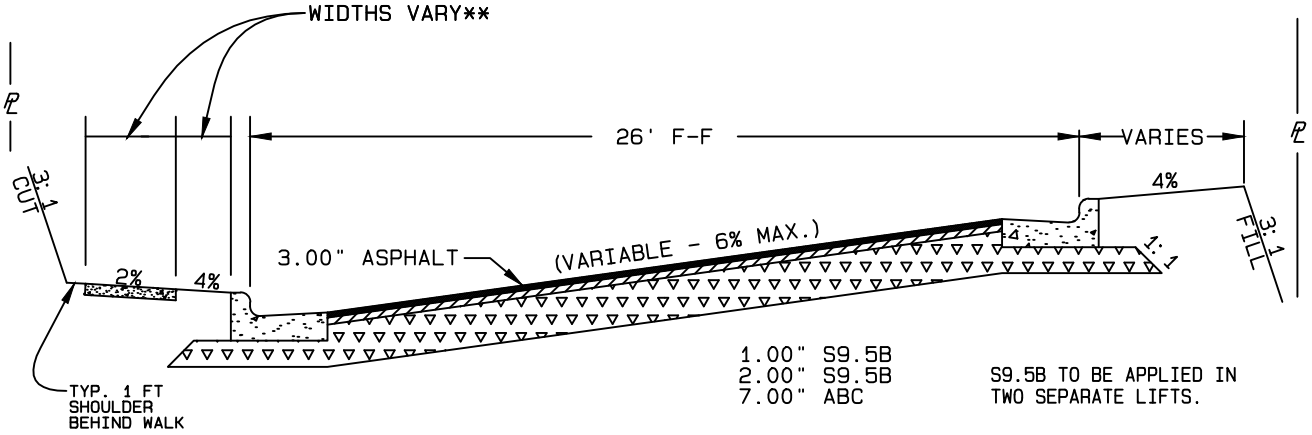
STREET SECTION, 24' FACE TO FACE	STD. NO.	REV.
	600	06-08 03-18 12-12 06-13



CROWN 2.0" BELOW TOP OF CURB

NOTE:
MAX. CURB ELEVATION DIFFERENTIAL FOR NORMAL CROWN SECTION IS 0.30'.

NORMAL CROWN SECTION



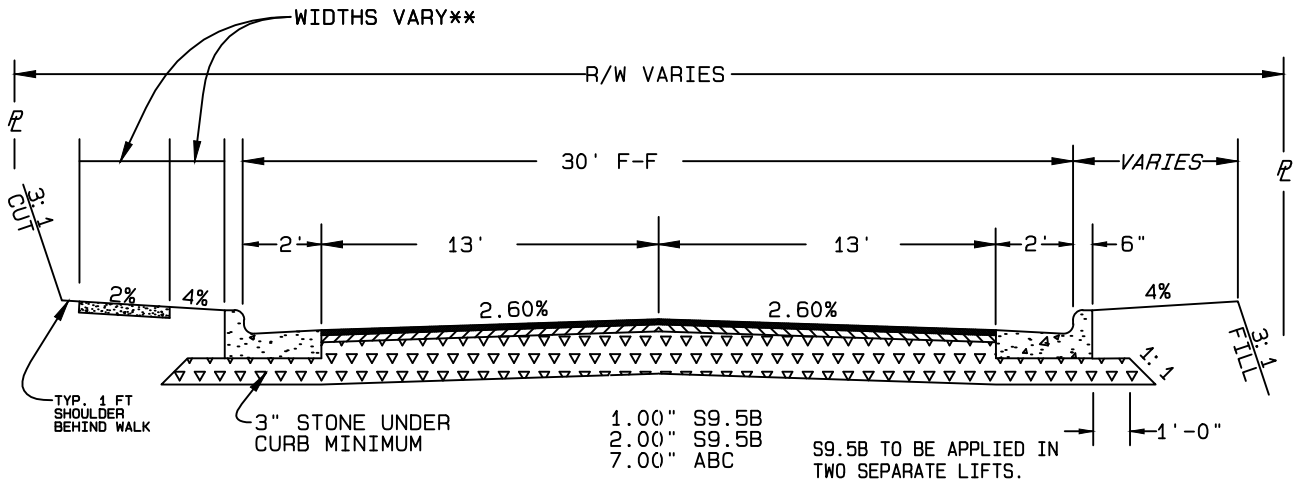
SUPERELEVATED SECTION

***NOTE:*
SEE THE "STREET DESIGN STANDARDS MANUAL" PUBLISHED BY THE CITY OF GREENSBORO'S DEPT. OF TRANSPORTATION IN ORDER TO DETERMINE THE LOCATION OF SIDEWALKS, SIDEWALK WIDTH AND GRASS STRIP WIDTH.
COG STD #418-A HAS A SUMMARY OF THEIR GUIDELINES AS THEY RELATE TO SIDEWALK LOCATION, SIDEWALK WIDTH AND GRASS STRIP WIDTH.

CURB ELEV. DIFF	%GRADE
0.40'	1.82
0.50'	2.27
0.60'	2.73
0.70'	3.18
0.80'	3.64
0.90'	4.09
1.00'	4.55

CITY OF GREENSBORO

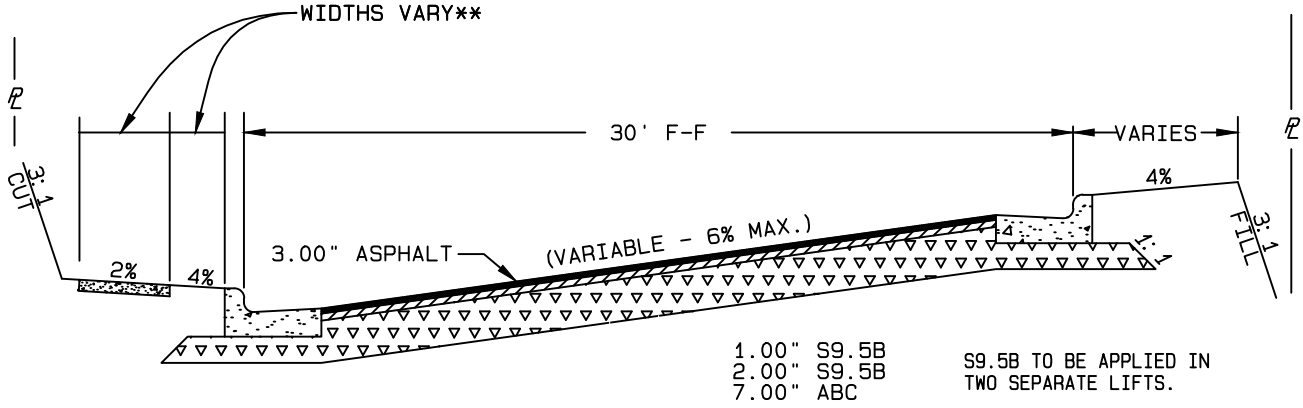
STREET SECTION, 26' FACE TO FACE	STD. NO.	REV.
	601	03-08 03-18 06-08 12-12



CROWN 1" BELOW TOP OF CURB

NOTE:
MAX. CURB ELEVATION DIFFERENTIAL FOR NORMAL CROWN SECTION IS 0.30'.

NORMAL CROWN SECTION



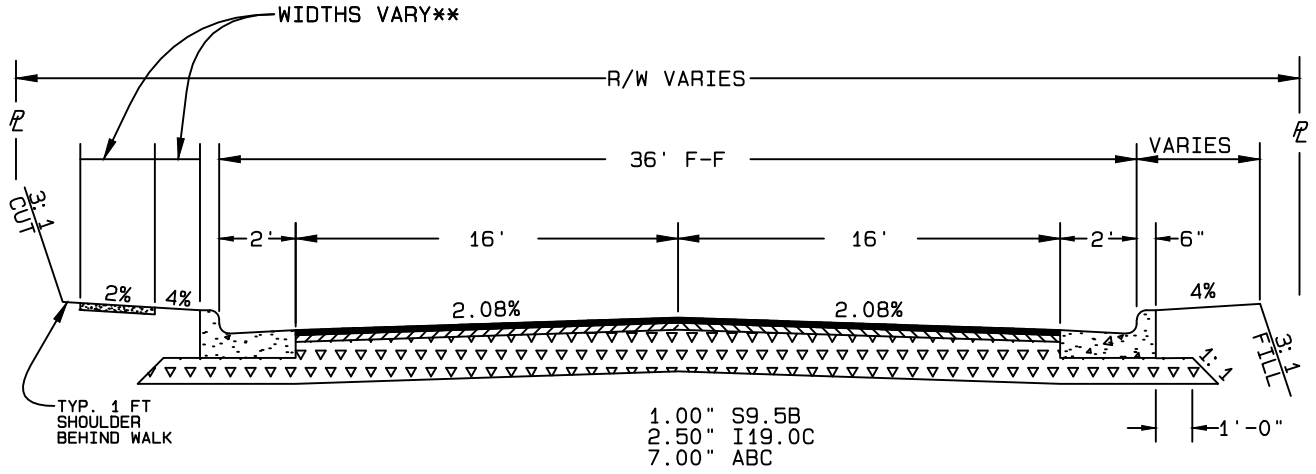
SUPERELEVATED SECTION

***NOTE:*
SEE THE "STREET DESIGN STANDARDS MANUAL" PUBLISHED BY THE CITY OF GREENSBORO'S DEPT. OF TRANSPORTATION IN ORDER TO DETERMINE THE LOCATION OF SIDEWALKS, SIDEWALK WIDTH AND GRASS STRIP WIDTH.
COG STD #418-A HAS A SUMMARY OF THEIR GUIDELINES AS THEY RELATE TO SIDEWALK LOCATION, SIDEWALK WIDTH AND GRASS STRIP WIDTH.

CURB ELEV. DIFF.	%GRADE
0.50'	1.92
0.60'	2.30
0.70'	2.60
0.80'	3.08
0.90'	3.46
1.00'	3.85

CITY OF GREENSBORO

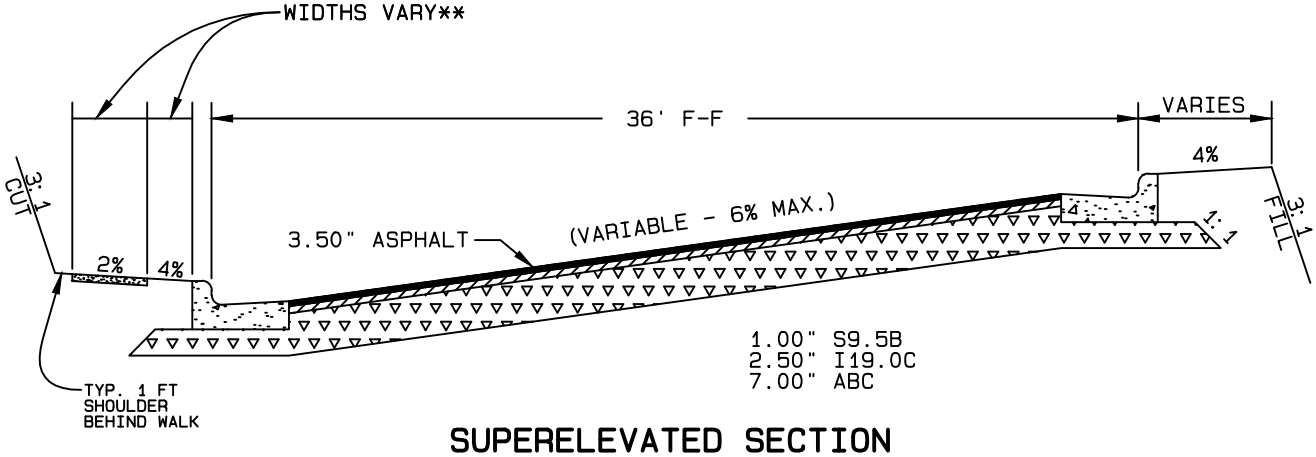
STREET SECTION, 30' FACE TO FACE	STD. NO.	REV.
	603	09-03 06-08 03-04 12-12 06-04 03-18



CROWN 1" BELOW TOP OF CURB

NOTE:
MAX. CURB ELEVATION DIFFERENTIAL FOR NORMAL CROWN SECTION IS 0.60'.

NORMAL CROWN SECTION



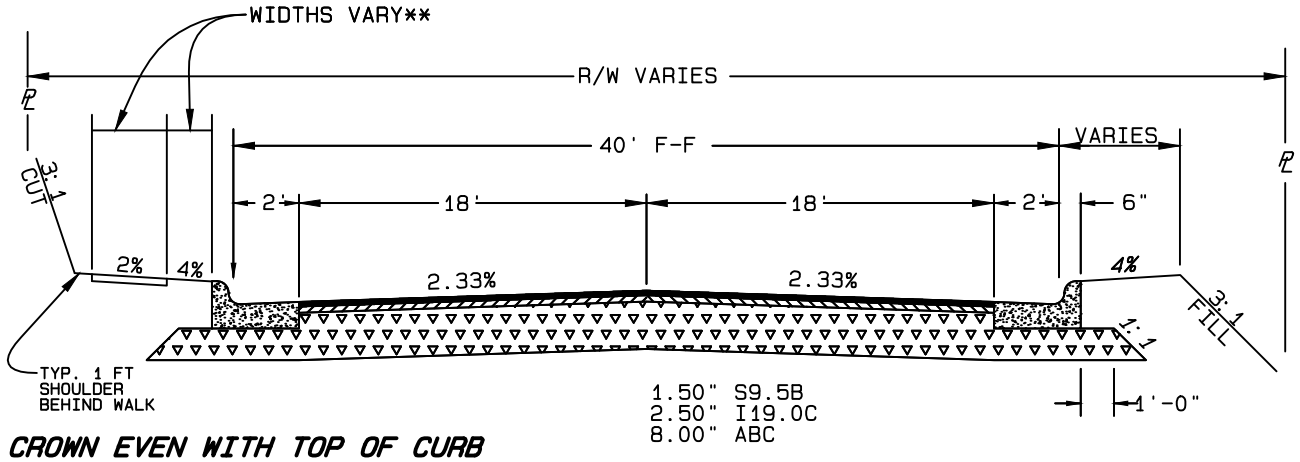
SUPERELEVATED SECTION

CURB ELEV. DIFF.	%GRADE
0.50'	1.56
0.60'	1.87
0.70'	2.19
0.80'	2.50
0.90'	2.81
1.00'	3.12
1.10'	3.44
1.20'	3.75

***NOTE:*
SEE THE "STREET DESIGN STANDARDS MANUAL" PUBLISHED BY THE CITY OF GREENSBORO'S DEPT. OF TRANSPORTATION IN ORDER TO DETERMINE THE LOCATION OF SIDEWALKS, SIDEWALK WIDTH AND GRASS STRIP WIDTH.
COG STD #418-A HAS A SUMMARY OF THEIR GUIDELINES AS THEY RELATE TO SIDEWALK LOCATION, SIDEWALK WIDTH AND GRASS STRIP WIDTH.

CITY OF GREENSBORO

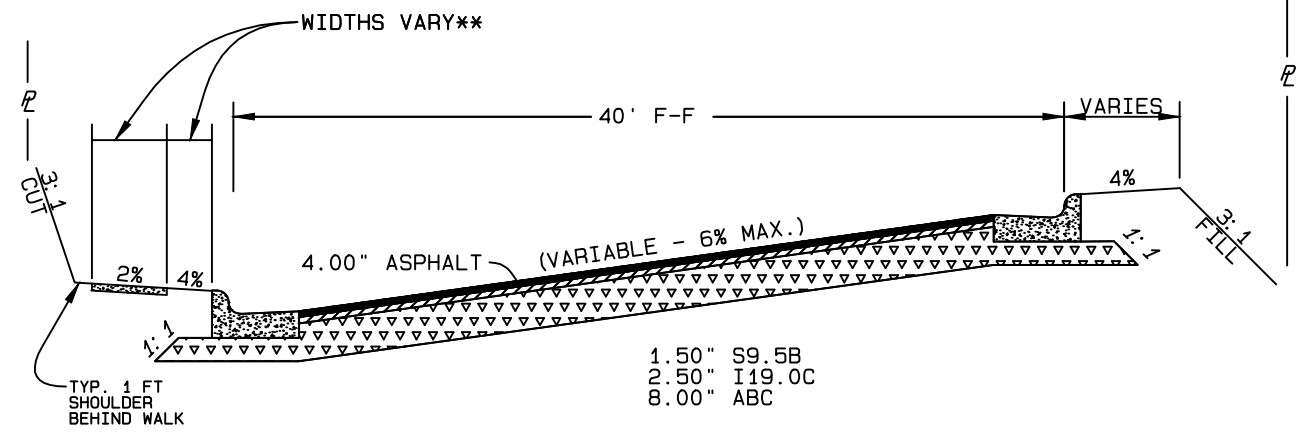
STREET SECTION, 36' FACE TO FACE	STD. NO.	REV.
	605	03-04 06-08 06-04 12-12 03-07 03-18



CROWN EVEN WITH TOP OF CURB

NORMAL CROWN SECTION

NOTE:
MAX. CURB ELEVATION DIFFERENTIAL FOR NORMAL CROWN SECTION IS 0.60'.



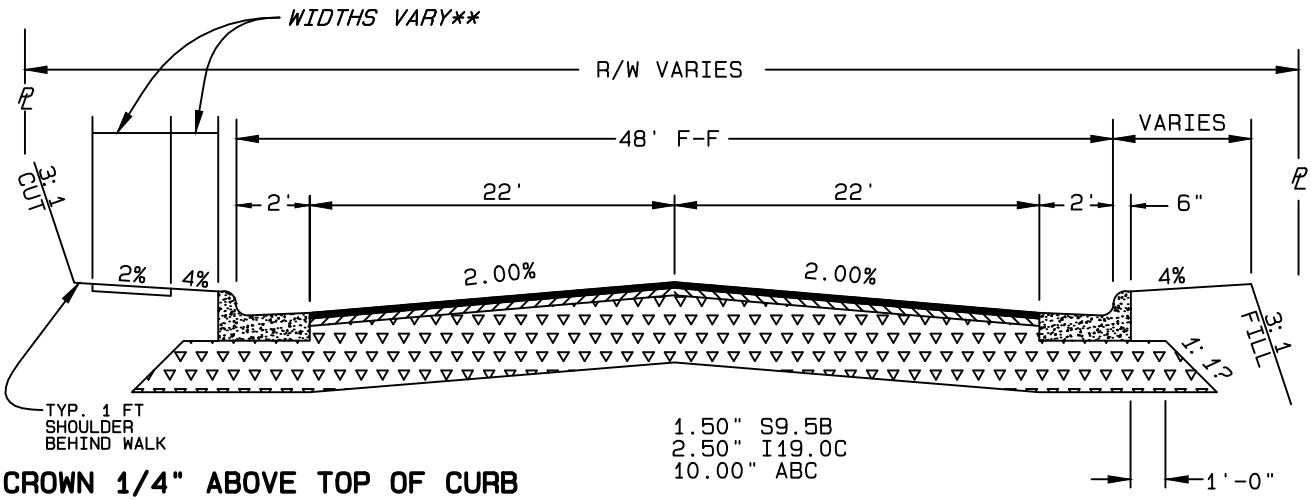
SUPERELEVATED SECTION

***NOTE:*
SEE THE "STREET DESIGN STANDARDS MANUAL" PUBLISHED BY THE CITY OF GREENSBORO'S DEPT. OF TRANSPORTATION IN ORDER TO DETERMINE THE LOCATION OF SIDEWALKS, SIDEWALK WIDTH AND GRASS STRIP WIDTH.
COG STD #418-A HAS A SUMMARY OF THEIR GUIDELINES AS THEY RELATE TO SIDEWALK LOCATION, SIDEWALK WIDTH AND GRASS STRIP WIDTH.

CURB ELEV. DIFF.	% GRADE
0.60'	1.67
0.70'	1.94
0.80'	2.22
0.90'	2.50
1.00'	2.78
1.10'	3.05
1.20'	3.33

CITY OF GREENSBORO

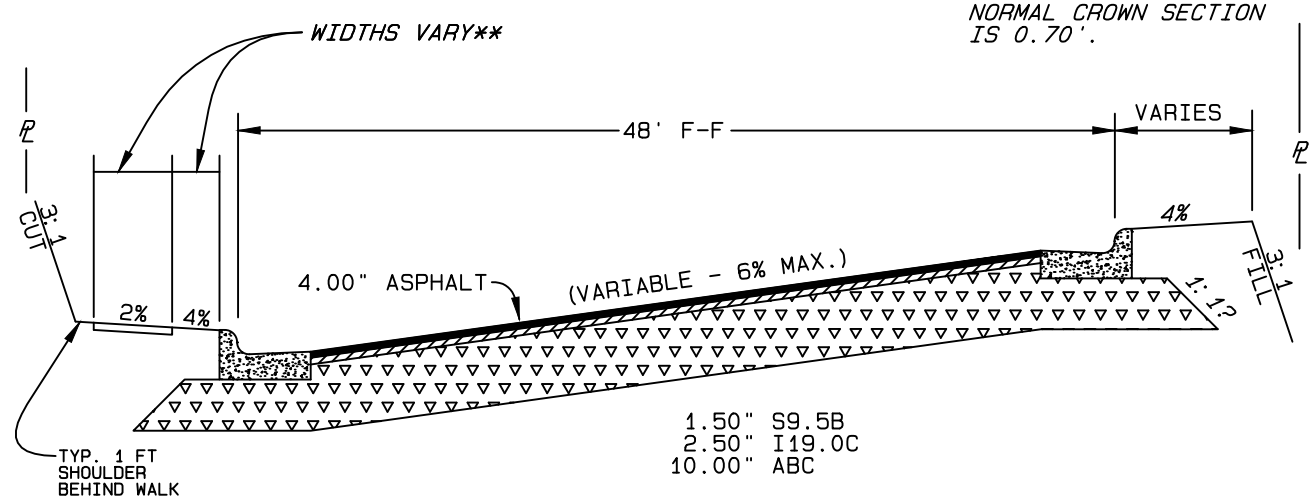
STREET SECTION, 40' FACE TO FACE	STD. NO.	REV.
	606	03-08 03-18 06-09 12-12



CROWN 1/4" ABOVE TOP OF CURB

NORMAL CROWN SECTION

NOTE:
MAX. CURB ELEVATION DIFFERENTIAL FOR NORMAL CROWN SECTION IS 0.70'.



SUPERELEVATED SECTION

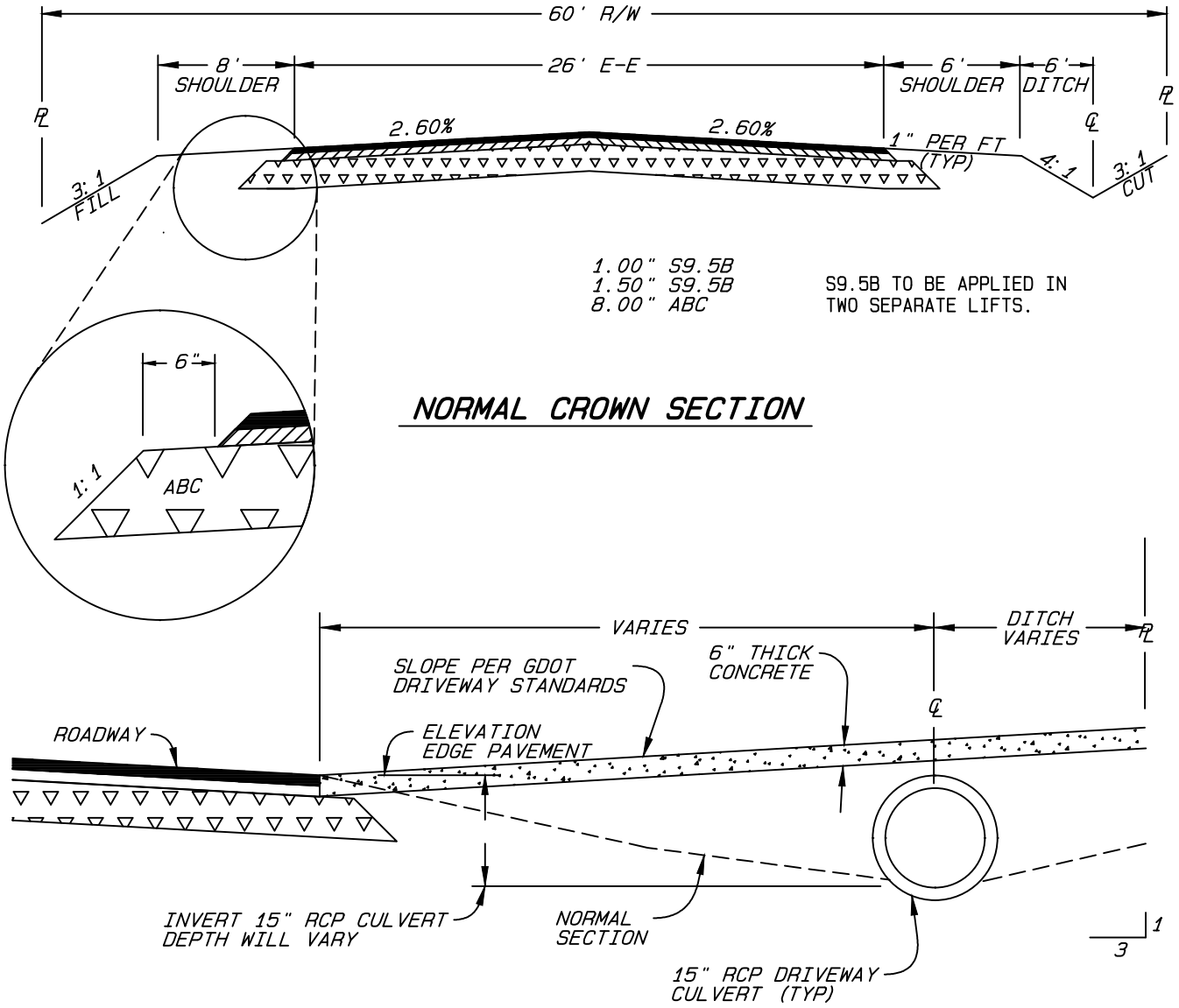
CURB ELEV. DIFF.	CURB ELEV. DIFF.
0.70'	1.59
0.80'	1.82
0.90'	2.02
1.00'	2.27
1.10'	2.50
1.20'	2.73
1.30'	2.96
1.40'	3.18
1.50'	3.41

***NOTE:*
SEE THE "STREET DESIGN STANDARDS MANUAL" PUBLISHED BY THE CITY OF GREENSBORO'S DEPT. OF TRANSPORTATION IN ORDER TO DETERMINE THE LOCATION OF SIDEWALKS, SIDEWALK WIDTH AND GRASS STRIP WIDTH. COG STD #418-A HAS A SUMMARY OF THEIR GUIDELINES AS THEY RELATE TO SIDEWALK LOCATION, SIDEWALK WIDTH AND GRASS STRIP WIDTH.

CITY OF GREENSBORO

STREET SECTION 48' FACE TO FACE

STD. NO.	REV.
608	03-04 06-08 03-07 12-12 03-08 03-18



NORMAL CROWN SECTION

THE PIPE SHOULD ALWAYS BE INSTALLED WITH THE PIPE INVERT AT THE SAME ELEVATION AS THE DITCH INVERT. THE PIPE SHOULD NEVER BE INSTALLED ABOVE THE DITCH INVERT. IF THE PIPE MUST BE INSTALLED BELOW THE DITCH INVERT, HEAD AND TAIL DITCHING WILL BE REQUIRED FOR A SMOOTH TRANSITION.

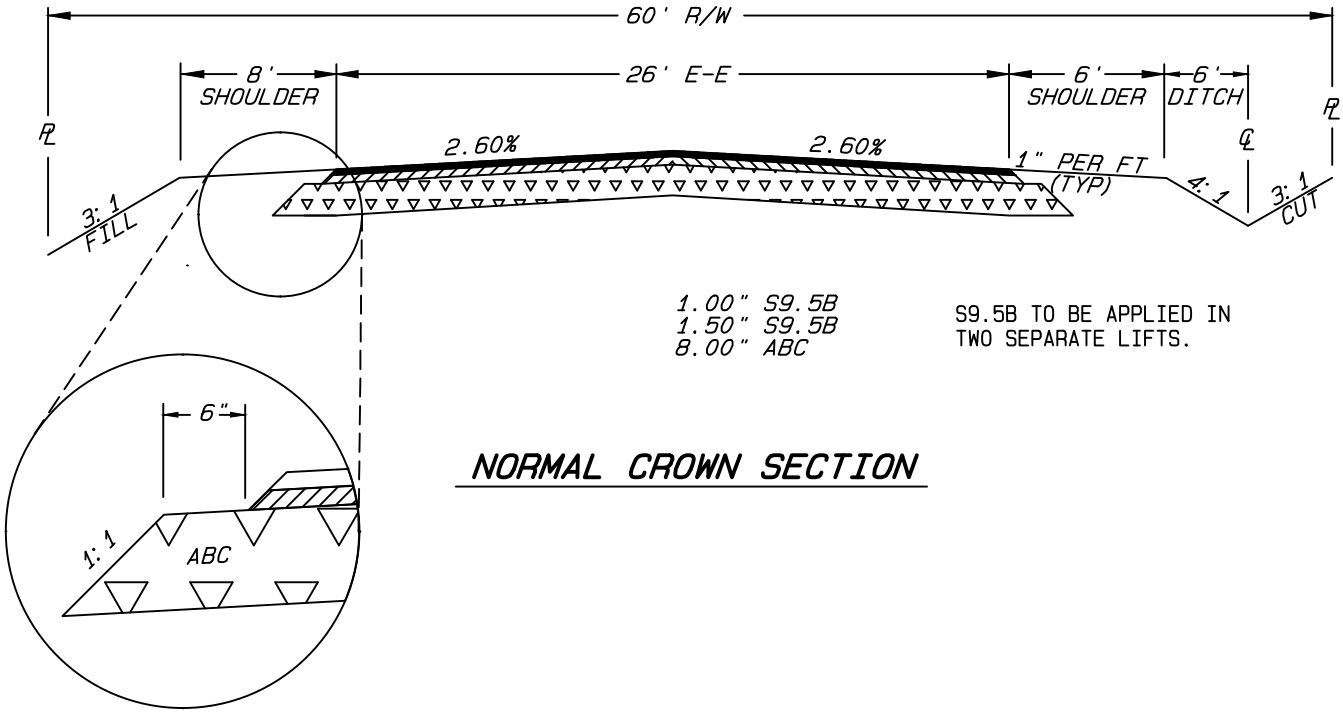
SECTION THRU DRIVEWAY APPROACH

THIS SECTION IS TO BE USED WHEN PROPERTY IS SITUATED HIGHER THAN STREET

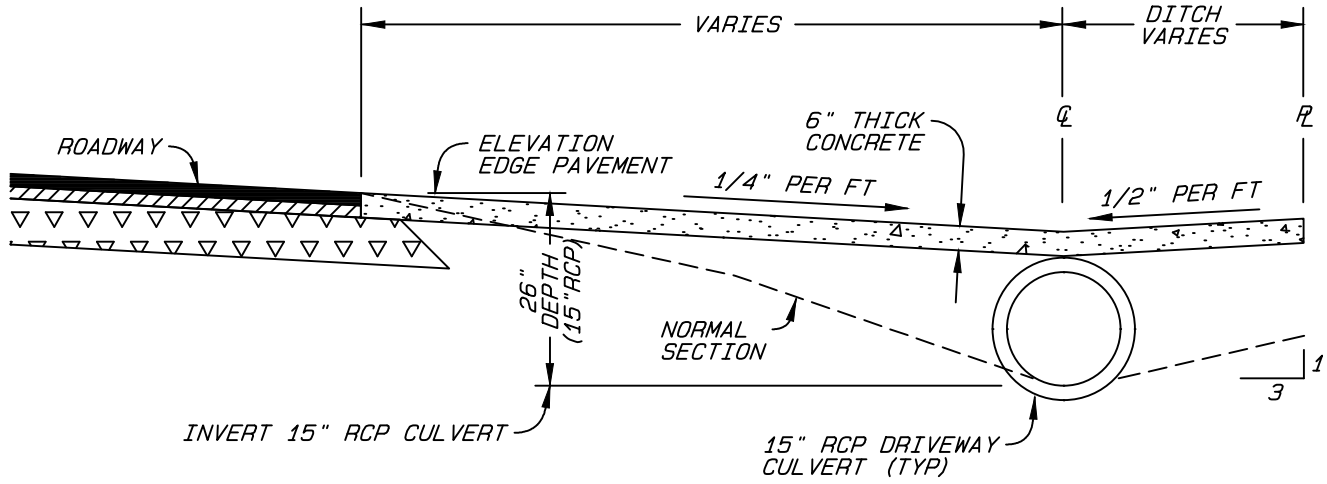
NOTE:

THIS TYPICAL SECTION IS TO BE USED IN THE WATERSHED CRITICAL AREA (WCA) PROTECTION DISTRICT ONLY, IN ACCORDANCE WITH STREET DESIGN STANDARDS FOR THE WCA.

CITY OF GREENSBORO		
NON-CURB AND GUTTER SUBDIVISION STREET (TYPICAL)	STD. NO.	REV.
	609	03-07 03-08 03-18



NORMAL CROWN SECTION



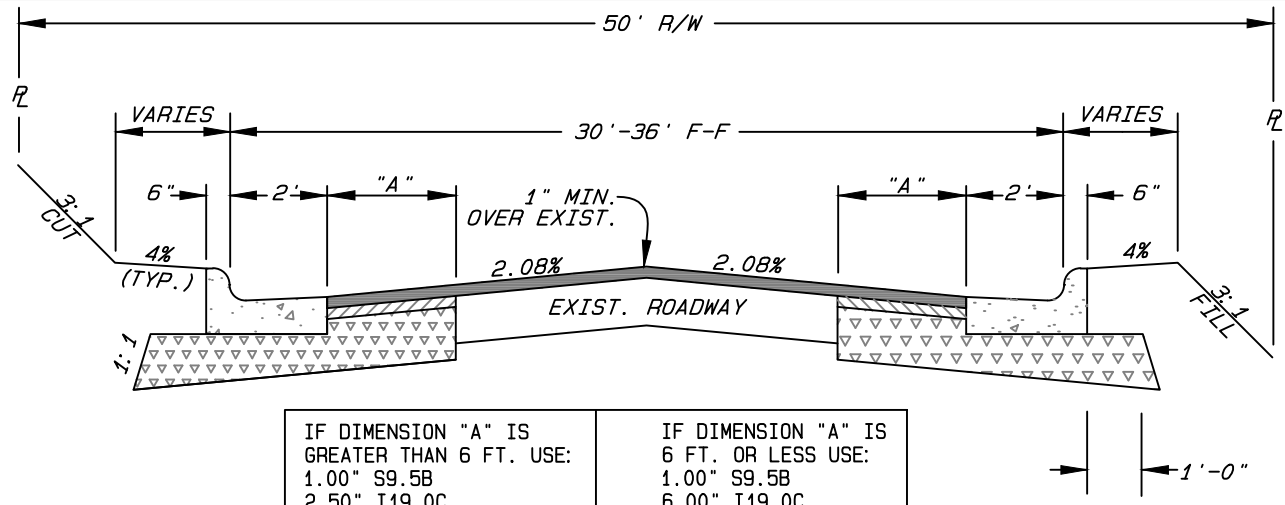
SECTION THRU DRIVEWAY APPROACH

THIS SECTION IS TO BE USED WHEN THE RPOPERTY IS SITUATED LOWER THAN THE STREET

NOTE:

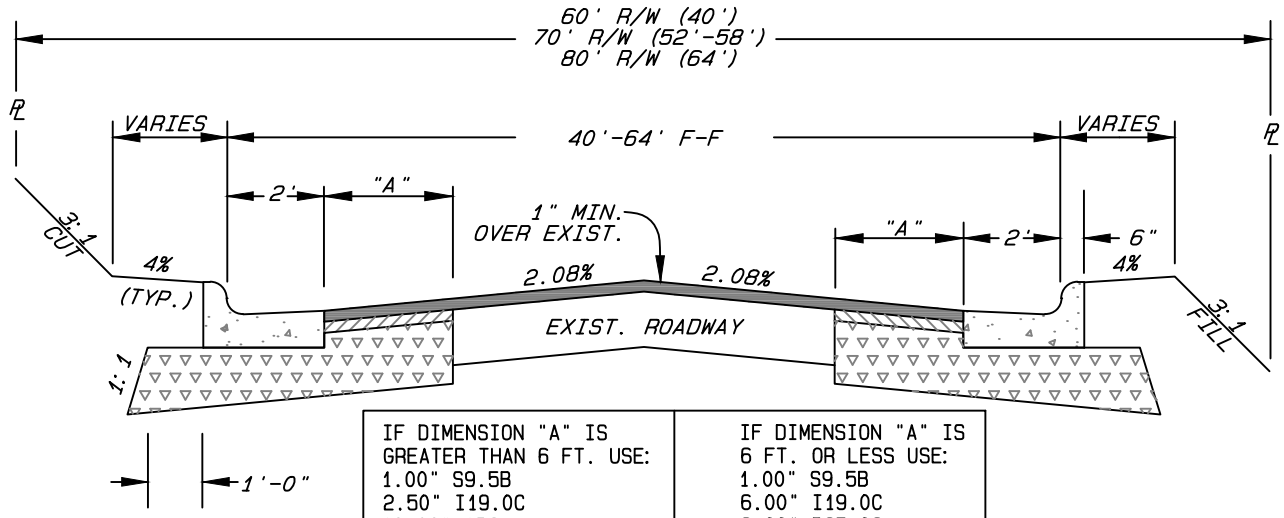
THIS TYPICAL SECTION IS TO BE USED IN THE WATERSHED CRITICAL AREA (WCA) PROTECTION DISTRICT ONLY, IN ACCORDANCE WITH STREET DESIGN STANDARDS FOR THE WCA.

CITY OF GREENSBORO		
NON-CURB AND GUTTER SUBDIVISION STREET (TYPICAL)	STD. NO.	REV.
	609	03-07 03-08 03-18



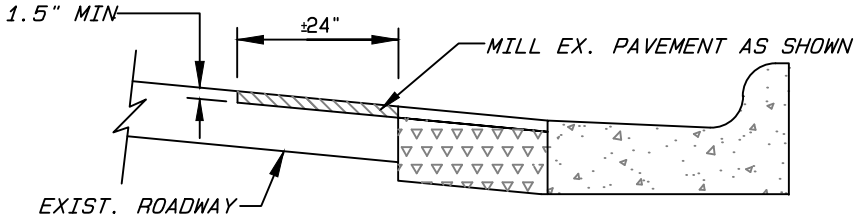
IF DIMENSION "A" IS GREATER THAN 6 FT. USE:	IF DIMENSION "A" IS 6 FT. OR LESS USE:
1.00" S9.5B 2.50" I19.0C 10.00" ABC	1.00" S9.5B 6.00" I19.0C 3.00" B25.0C

SECTION FOR WIDENING EXISTING PAVEMENT WITH 50' RIGHT OF WAY



IF DIMENSION "A" IS GREATER THAN 6 FT. USE:	IF DIMENSION "A" IS 6 FT. OR LESS USE:
1.00" S9.5B 2.50" I19.0C 10.00" ABC	1.00" S9.5B 6.00" I19.0C 3.00" B25.0C

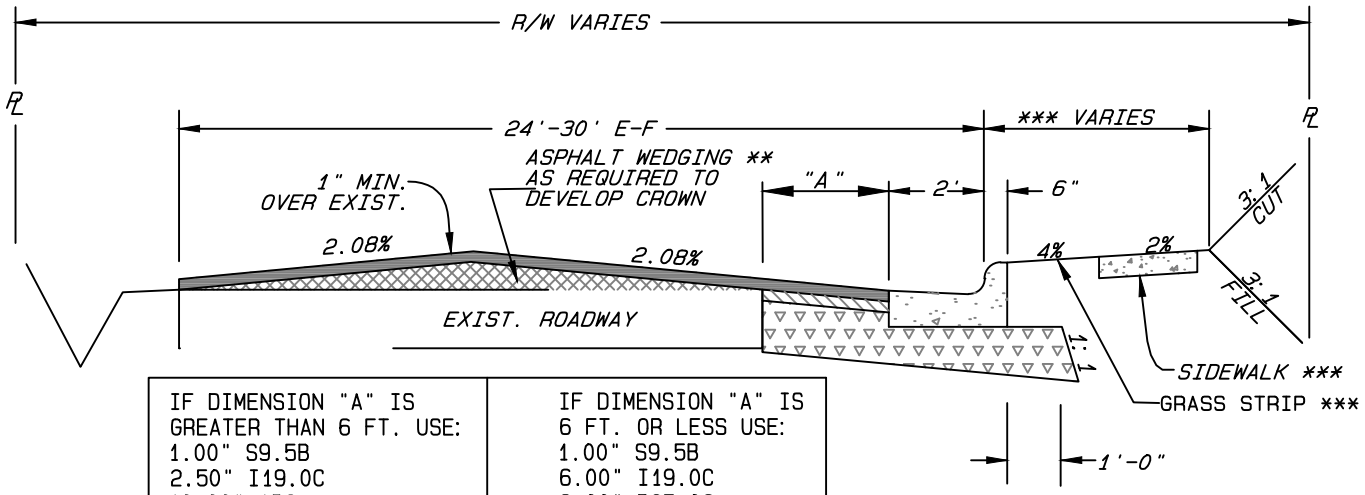
SECTION FOR WIDENING EXISTING PAVEMENT WITH GREATER THAN 60' RIGHT OF WAY



CONSTRUCTION JOINT (IF ENTIRE STREET OVERLAY NOT REQUIRED)

CITY OF GREENSBORO

STREET WIDENING SECTIONS 30' TO 64' FACE TO FACE	STD. NO.	REV.
	610	03-07 03-18 12-12 12-17



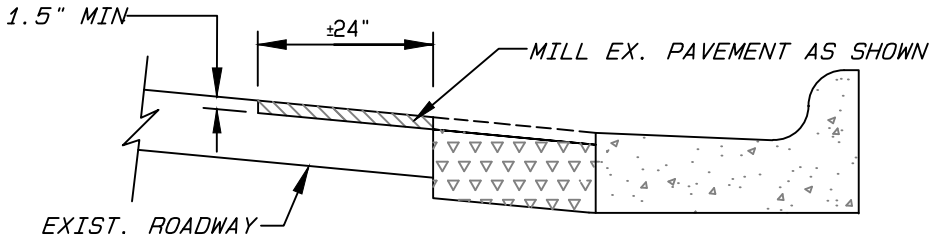
IF DIMENSION "A" IS GREATER THAN 6 FT. USE:	IF DIMENSION "A" IS 6 FT. OR LESS USE:
1.00" S9.5B 2.50" I19.0C 10.00" ABC	1.00" S9.5B 6.00" I19.0C 3.00" B25.0C

SECTION FOR WIDENING EXISTING PAVEMENT
ONE SIDE ONLY

* IT SHALL BE THE RESPONSIBILITY OF THE DESIGNER TO ENSURE THE DESIGN WILL PROVIDE FOR POSITIVE DRAINAGE FROM THE CENTERLINE OF THE ROADWAY TO THE NEW CURB & GUTTER. IF THE EXISTING ROADWAY IS NOT A NORMAL CROWN SECTION (I.E. FLAT), IT MAY REQUIRE OVERLAY BEYOND THE CENTERLINE OF THE ROAD AND A DEPTH IN EXCESS OF THE TYPICAL SECTION TO BUILD A CROWN IN THE EXISTING ROAD.

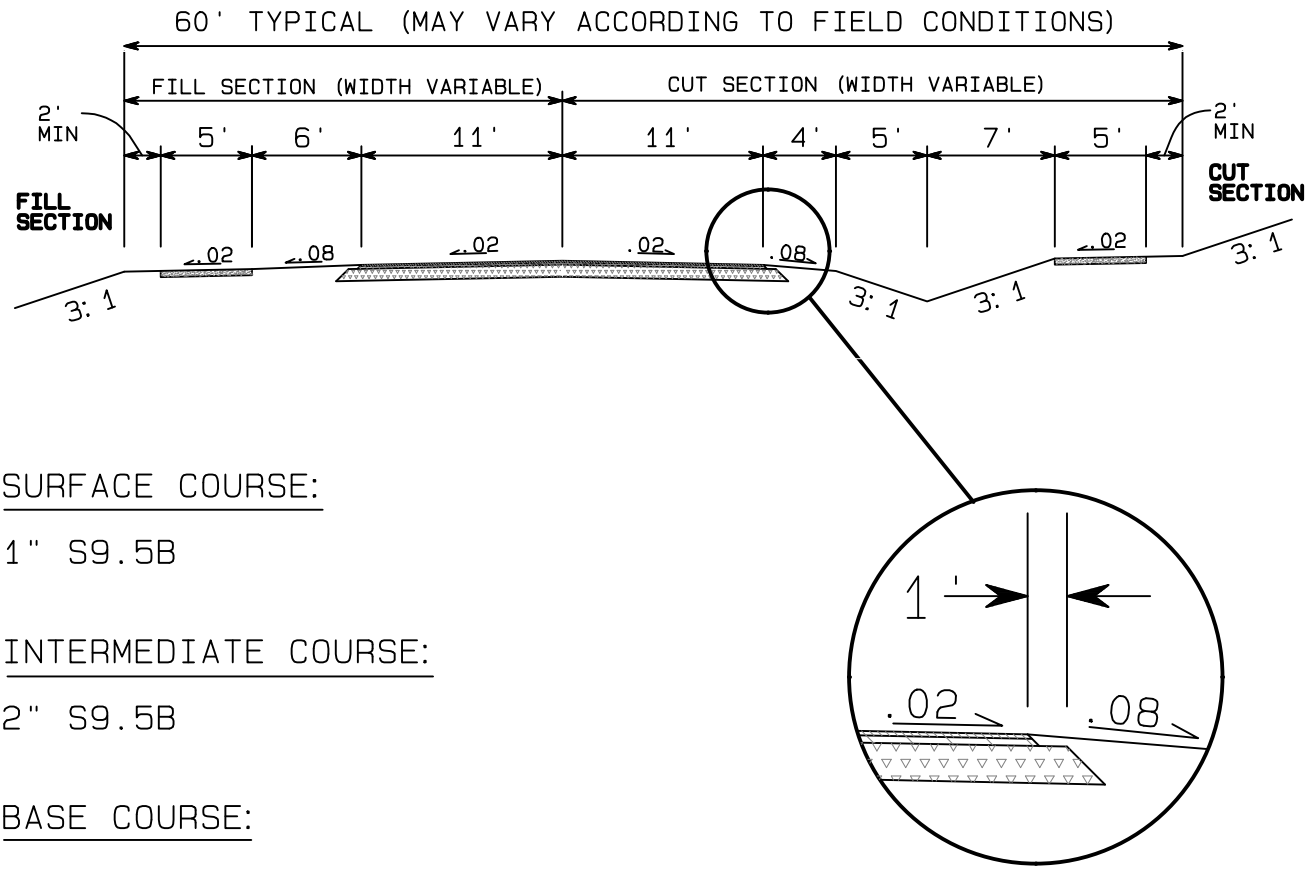
** ASPHALT WEDGING MAY BE SURFACE, INTERMEDIATE, OR BASE COURSE AS DETERMINED BY THE NCDOT SUPERPAVE HMA/QMS MANUAL OR AS DIRECTED BY THE ENGINEER.

*** SEE COG STD 418-A FOR SIDEWALK AND GRASS STRIP.



CONSTRUCTION JOINT
(IF ENTIRE STREET OVERLAY NOT REQUIRED)

CITY OF GREENSBORO		
STREET WIDENING SECTIONS CURB & GUTTER ONE SIDE ONLY	STD. NO.	REV.
	610-A	12-12 02-22 12-17 03-18



SURFACE COURSE:

1" S9.5B

INTERMEDIATE COURSE:

2" S9.5B

BASE COURSE:

7" COMPACTED AGGREGATE BASE COURSE

NOTE:

THE DITCH ON CUT SECTIONS MAY VARY DEPENDING ON STORMWATER REQUIRMENTS.

C I T Y O F G R E E N S B O R O		
RESIDENTIAL STREET SECTION- RIBBON PAVEMENT WITH SIDEWALK	***STD. NO.***	***REV.***
	611	12-07 03-18