CHARLOTTE

ENGINEERING & PROPERTY MANAGEMENT

Charlotte Land Development Standards Manual

(CLDSM)

Revision No. 10

January 1, 2013

CLDSM REVISION LOG

The original effective date of the Charlotte Land Development Standards Manual is December 1, 2006. This log is a description of all standard revisions from that date forward.

REVISION NO.	REVISION DATE	STANDARD No.	NAME	DESCRIPTION OF REVISION
1	1/1/2008	10.22	Concrete Sidewalks	Changed cross-slope label to 1/4" per foot
1	1/1/2008	10.24A	Commercial Type II and Residential Drop Curb Type I Driveway with Sidewalk Abutting Curb (2'-6" Curb and Gutter)	Updated driveway width table, adjusted cut/fill slope percentages to match other DW details
1	1/1/2008	10.24B	Commercial Type II and Residential Drop Curb Type I Driveway with Sidewalk Abutting Curb (6"X18" Vertical Curb)	Updated driveway width table, adjusted cut/fill slope percentages to match other DW details
1	1/1/2008	10.24C	Commercial and Residential Drop Curb Driveway with Sidewalk Abutting Curb	Updated driveway width table
1	1/1/2008	10.25A	Residential Drop Curb Type I Driveway with Planting Strip (2'-6" Curb and Gutter)	Updated driveway width table
1	1/1/2008	10.25C	Residential Drop Curb Type I Driveway with Planting Strip (6"X18" Vertical Curb)	Updated driveway width table, Removed overprint "std. no"
1	1/1/2008	10.26	Drop Curb Driveway – Monolithic Curb and Sidewalk	Updated driveway width table
1	1/1/2008	10.27A	Residential Driveway (Type I) Valley Gutter	Updated driveway width table, adjusted cut/fill slope percentages to match other DW details
1	1/1/2008	10.27B	Commercial Type II Driveway For 2'-0" Valley Gutter	New detail
1	1/1/2008	10.37	Typical Local Residential To Local Limited Street Taper	Curb lines adjusted to align across intersection; added note #4
1	1/1/2008	11.01	Local Residential Street Typical Section	Removed "Marshall Mix" pavement specifications, Intermediate course changed to S9.5B from S9.5A
1	1/1/2008	11.02	Local Residential Typical Ditch Type Street Section	Removed "Marshall Mix" pavement specifications, Intermediate course changed to S9.5B from S9.5A
1	1/1/2008	11.03	Divided Residential Street Typical Section	Removed "Marshall Mix" pavement specifications, Intermediate course changed to S9.5B from S9.5A
1	1/1/2008	11.04	Local Limited Residential Street Typical Section	Removed "Marshall Mix" pavement specifications, Intermediate course changed to S9.5B from S9.5A
1	1/1/2008	11.05	Local Limited Residential Typical Ditch Type Street Section	Removed "Marshall Mix" pavement specifications, Intermediate course changed to S9.5B from S9.5A
1	1/1/2008	11.06	Residential Collector Street Typical Section	Removed "Marshall Mix" pavement specifications, Intermediate course changed to S9.5B from S9.5A
1	1/1/2008	11.07	Residential Collector Street Ditch Type Typical Section	Removed "Marshall Mix" pavement specifications, Intermediate course changed to S9.5B from S9.5A
1	1/1/2008	11.08	Limited Residential Collector Street Type Typical Section	Removed "Marshall Mix" pavement specifications, Intermediate course changed to S9.5B from S9.5A
1	1/1/2008	11.10	City Of Charlotte 45' Local Traditional Neighborhood Development Street	Removed "Marshall Mix" pavement specifications, Intermediate course changed to S9.5B from S9.5A
1	1/1/2008	11.11	Commercial Street Typical Sections	Removed overprint "std. no"
1	1/1/2008	11.14	Divided Private Street Typical Sections	Removed "Marshall Mix" pavement specifications
1	1/1/2008	11.15	Typical Sections Improvement Existing NCDOT Thoroughfares	Removed detail from manual
1	1/1/2008	11.18	Residential Hammerhead Detail	Added R/W, sidewalk, and planting strip dimensions; added ramps
1	1/1/2008	11.21	Oversized Residential Cul-De-Sacs with Raised Planter Island	Added back of curb radius dimension for 2'-6" C&G; revised note #2
1	1/1/2008	20.00B	NCDOT Standards Approved For Use in the City of Charlotte and Charlotte ETJ	Fixed 840.04 and 840.05 to list correct standard reference 840.54
1	1/1/2008	20.00C	NCDOT Standards Approved For Use in the City of Charlotte and Charlotte ETJ	Added note regarding waffle wall to 840.45
1	1/1/2008	20.03	Double Brick Catch Basin 15"-36" Pipe	Revised note #1 per NCDOT requirements
1	1/1/2008	20.22	Flared End Section 12" to 72" Pipe	Renumbered - previously 20.23A, added 3:1 note on drawing in lieu of H:V column in data block; Minimum concrete PSI in note #3 changed from 4000 to 3600
1	1/1/2008	20.34	Offset Catch Basin	Changed slope of flume under grate from 0.5% to 1"/ft
1	1/1/2008	30.00	Special Erosion Control Requirements & Notes	New detail
1	1/1/2008	30.01	Temporary Sediment Trap	New detail
1	1/1/2008	30.02	Gravel and Rip Rap Sediment Basin	Removed detail from manual
1	1/1/2008	30.02A	Skimmer Sediment Basin	New detail
1	1/1/2008	30.02B	Skimmer	New detail
1	1/1/2008	30.03	Sediment Basin	New detail
1	1/1/2008	30.06A	Temporary Silt Fence	Removed alternate installation detail; revised filter fabric anchor depth; 24" filter fabric above ground
1	1/1/2008	30.06B	High Hazard Temporary Silt Fence	Removed alternate installation detail; revised filter fabric anchor depth; 24" filter fabric above ground
1	1/1/2008	30.09	Hardware Cloth and Gravel Inlet Protection	New detail
1	1/1/2008	30.12	Gravel and Rip Rap Filter Berm Basin	Added data block; updated volume and surface area req'ments; DA <= 5 AC
1	1/1/2008	30.19	Baffle Installation	Revised note #3; added note #5
1	1/1/2008	30.20	Embankment Matting Detail	Added notes #2 and #4
1	1/1/2008	40.03	Large and Small Maturing Tree Pit with Grate in Sidewalk (Plan)	Updated pit dimensions per City Arborist
1	1/1/2008	40.03A	Large and Small Maturing Tree Pit with Grate in Sidewalk (Section)	Updated pit dimensions per City Arborist
1	1/1/2008	40.03B	Large and Small Maturing Tree Pit with Grate in Sidewalk (Section)	Updated pit dimensions per City Arborist
1	1/1/2008	40.03C	Large and Small Maturing Tree Pit with Grate in Sidewalk (Section)	Updated pit dimensions per City Arborist
1	1/1/2008	50.09B	Parking Standards (Continued)	Revised note #4 regarding wheelstops
1	1/1/2008	50.11	Signage and Pavement Markings at Roundabouts	Fixed 20' dimension placement behind yield line
2	7/1/2008	21.00 - 21.23	2100 Series - "Stormwater BMP Details"	Added new section to manual: 2100 Series - "Stormwater BMP Details" for use with Post-Construction Controls Ordinance, effective July 1, 2008
2	7/1/2008	20.31A/B	Best Management Practices Wet Pond details	These details are no longer needed - they replaced by new details 21.05 through 21.09
2	7/1/2008	Specs	Removal of error	Remove the words "and Vert." from Section I.B.1.f. of the Specifications and Special Provision Notes

REVISION NO.	REVISION DATE	STANDARD No.	NAME	DESCRIPTION OF REVISION
3	1/30/2009	Text pg 16, 17	Notes and Special Provisions	Revised text regarding posting of bonds; added CDOT Pavement Marking Stds to reference list
3	1/30/2009	10.23	Monolithic Concrete Curb and Sidewalk	Revised dimension "A," added dimension "B"
3	1/30/2009	10.32B	Accessible Ramp Sections without planting strip (2'6" Curb & Gutter)	Added 6" sidewalk thickness dimension
3	1/30/2009	11.16	City of Charlotte and ETJ Residential Cul-de-sac Detail	Removed "20'R","IN ETJ","33' ETJ" - now consistent with NCDOT details
3	1/30/2009	20.28	Subdrain Detail	Added notes 5-9.
3	1/30/2009	30.02A	Skimmer Sediment Basin	Clarified Sediment Storage elevation & dimensions at spillway.
3	1/30/2009	30.03A	Sediment Basin	Clarified Sediment Storage elevation & dimensions at spillway, add note #5 re: H; changed std to 30.03A
3	1/30/2009	30.03B	General Notes - Sediment Basin	Inadvertently removed during previous revision. Added back in & revised to match NCDENR manual
3	1/30/2009	40.03	Large and Small Maturing Tree Pit with Grate in Sidewalk (Plan)	Added note re: City std tree grate
3	1/30/2009	40.03A	Large and Small Maturing Tree Pit with Grate in Sidewalk (Section)	Added reference to CLDS #20.28
3	1/30/2009	40.03B	Large and Small Maturing Tree Pit with Grate in Sidewalk (Section)	Added reference to CLDS #20.28
3	1/30/2009	40.03C	Large and Small Maturing Tree Pit with Grate in Sidewalk (Section)	Added reference to CLDS #20.28; added 10' width dimension.
3	1/30/2009	40.06	6' Tree Planting Strip UMUD Only	Added reference to CLDS #20.28
3	1/30/2009	40.08A	Median Greater than 120 Inches, Excavation, Drainage and Backfill	Changed top of planting mix to be a horizontal line; "removed 12" max at center"
3	1/30/2009	40.08B	Median Greater than 120 Inches, Excavation, Drainage and Backfill	Changed top of planting mix to be a horizontal line; "removed 12" max at center"
3	1/30/2009	40.08C	Median Greater than 120 Inches, Excavation, Drainage and Backfill	Changed top of planting mix to be a horizontal line; "removed 12" max at center"
4	7/1/2009	10.34B	Accessible Ramp Sections Monolithic Curb and Sidewalk	Removed stray dimension arrows/typo
4	7/1/2009	10.36B	Culvert Crossings on Residential and Commercial Streets	added info to note #9 re: clear zone and/or handrail
4	7/1/2009	10.40A	Directional Accessible Ramp with Small/Medium Curb Radii	New Detail
4	7/1/2009	10.40B	Directional Accessible Ramp with Large Curb Radius	New Detail
4	7/1/2009	11.07	Residential Collector Street Ditch Type Street Typical Section	Revised Street Classification System to properly show "Class V"
4	7/1/2009	11.08	Limited Residential Collector Street Typical Section	Revised Street Classification System to properly show "Class V"
4	7/1/2009	11.09	Arterial Street Typical Sections	Revised Street Classification System to properly show "Classes III and IV"
4	7/1/2009	11.12	Divided Commercial Street Typical Section	Revised title of detail for clarity
4	7/1/2009	11.13	Private Street Typical Sections	Revised title of detail for clarity
4	7/1/2009	11.18A	Residential Hammerhead Detail	Changed standard detail number from 11.18 to 11.18A
4	7/1/2009	11.18B	Temporary Turnaround Local Residential Street (Optional)	New Detail
4	7/1/2009	21.00	Bioretention Plan	Added notes re: vandal-proof locking cap, double hammered hardwood mulch
4	7/1/2009	21.01	Bioretention Cross-section	Minor adjustments for clarity, added note #7
4	7/1/2009	21.23	Underground Sand Filter	added notes for clarity and to match BMP Design Manual re: 1" debris screen, 12" gravel around drain
4	7/1/2009	30.06A	Temporary Silt Fence	Removed note #1, adjusted note numbering, adjusted bury depth to 8", post spacing to 6' Max
4	7/1/2009	30.06B	High Hazard Temporary Silt Fence	Adjusted note #1 to read "wire fencing" instead of "filter fabric fence", adjusted bury depth to 8"
4	7/1/2009	50.08A	End of Roadway Marker	Removed (ER-1) from title, added notes 3 & 4, added Connectivity sign / 50.08C, added OM4-3 note
4	7/1/2009	50.08B	End of Roadway Marker Guard Rail Clamp Installation	Removed (ER-1) from title and notes
4	7/1/2009	50.08C	Street Connectivity Sign for End-of-Road Barricade	New Detail
4	7/1/2009	50.09C	Parallel Parking Standards	Show reverse curves on curbline with chamfers optional, show 22' min length of pkg space
4	7/1/2009	TEXT pg 17-21	Notes and Special Provisions	Added List of Approved Plant Species (Trees & Shrubs) to text.

REVISION NO.	REVISION DATE	STANDARD No.	NAME	DESCRIPTION OF REVISION
5	7/1/2010	20.00B	NCDOT Standards for use in City of Charlotte and ETJ	Added reference to 20.05A & B
5	7/1/2010	20.00C	NCDOT Standards for use in City of Charlotte and ETJ	Removed reference to "840.06 Manhole Frame and Cover" - does not exist.
5	7/1/2010	20.05A	Slab Type Catch Basin 15" Thru 48" Pipe	Added old std. detail back in CLDSM to provide details how to build slab type CB with 4" deep MH cover
5	7/1/2010	20.05B	Manhole Ring and Cover for Slab Type Catch Basin	Added old std. detail back in CLDSM to provide details how to build slab type CB with 4" deep MH cover
5	7/1/2010	20.28	Subdrain Detail	Clarified PVC ratings, add reference to Type CP and SP HDPE. Allow Sched. 40 PVC under roadways.
5	7/1/2010	21.00	Bioretention Plan	Added note regarding Post-Construction Controls Easement (PCCE)
5	7/1/2010	21.01	Bioretention Cross-section	Added PCCE note, clarified specs for stone curtain, underdrain, cleanouts, tree plantings, amended soil
5	7/1/2010	21.02	Bioretention Planting Plan	Added note re: small maturing trees in amended soils
5	7/1/2010	21.03	Bioretention Concrete Curb Spillway	REMOVED
5	7/1/2010	21.06	Wetpond Profile	Added PCCE note, various drafting changes for clarity, moved outlet orifice to perm. pool elev.
5	7/1/2010	21.08	Wetpond Littoral Shelf and Berm detail	Moved outlet orifice to perm. pool elev.
5	7/1/2010	21.11	Wetland Profile	Added PCCE note
5	7/1/2010	21.16	Enhanced Grass Swale Details	Added PCCE note
5	7/1/2010	21.17	Grass Channel	Added PCCE note
5	7/1/2010	21.19	Infiltration Trench	Added PCCE note
5	7/1/2010	21.23	Underground Sand Filter	Added PCCE note
5	7/1/2010	30.01	Temporary Sediment Trap	Removed misleading titles "Cross-section" and "Plan View"
5	7/1/2010	50.12	Emergency Vehicle Median Crossover	Added note #3 re: use at RI/RO entrances only with CDOT approval
5	7/1/2010	TEXT pg 4-5	Section I.B.1. "Public Streets"	Removed Min. Stopping Sight Distance values, added note.
5	7/1/2010	TEXT pg 9	Section I.F.6. "Sidewalks and Driveways"	Added note re: measurement and payment of curb and gutter for drop curb driveways
5	7/1/2010	TEXT pg 13	Section II.E.4. "Storm Drainage: Standards for Design"	Replace reference to 4" PVC or Metal perf. Pipe to instead reference "subdrains"
REVISION NO.	**REVISION DATE**	**STANDARD No.**	**NAME**	**DESCRIPTION OF REVISION**
6	1/1/2011	Text pg 4, 5, 6	Section B. "Standards of Street Design"	Amended design criteria to match USDG
6	1/1/2011	10.25F	Commercial Type IV Driveway Standard	Clarified dimensions on wings
6	1/1/2011	10.27A	Residential Driveway (Type I) For 2'-0" Valley Gutter	Added 4x4 wings, adjusted driveway width table to account for wings
6	1/1/2011	11.16	Residential Cul-de-Sac Detail	Removed S/W around bulb, removed short C-D-S, removed notes #1 & 6, added #4
6	1/1/2011	11.17	Office / Commercial / Industrial Cul-de-sac Detail	Adjusted Right-of-way outward to accommodate larger planting strip and sidewalk
6	1/1/2011	11.18A	Residential Hammerhead Detail	Removed S/W around bulb, added note #3
6	1/1/2011	11.21	Oversized Residential Cul-de-sac with raised Planter Island	Removed S/W around bulb, added note #7
6	1/1/2011	20.00	NCDOT Standards for use in City of Charlotte and ETJ	Removed reference to 842.01, 842.02, 842.03 (Retaining Walls)
6	1/1/2011	20.03	Brick Double Catch Basin 15" thru 36" Pipe	Removed previous note #1 that exempted this detail from use on ETJ streets. OK now per NCDOT
6	1/1/2011	U-01 through U-07	USDG typical street sections	Added new typical sections for USDG streets
REVISION NO.	**REVISION DATE**	**STANDARD No.**	**NAME**	**DESCRIPTION OF REVISION**
7	7/1/2011	10.28	Type III Driveway Entrance	Added note re: option for depth of concrete gutter across entrance
7	7/1/2011	10.36A	Culvert Crossings on Residential and Commercial Streets	Replaced "Handrail" reference with "Safety Rail"
7	7/1/2011	10.36B	Culvert Crossings on Residential and Commercial Streets	Replaced "Handrail" reference with "Safety Rail"
7	7/1/2011	20.05A	Slab Type Catch Basin 15” Thru 48” Pipe	Added option for using Drop Inlet Frame and Grate NCDOT standard 840.16
7	7/1/2011	20.23	Rip Rap Aprons at Outfalls Other than SWIM	Added Thickness=10" Min. to match Site Checklist
7	7/1/2011	50.04A	Safety Rail	Changed name from "Typical Handrail" to "Safety Rail" to avoid confusion relating to ADA requirements
7	7/1/2011	50.04B	Safety Rail Warrants	Changed name, revised and updated the warrants. Added detailed exhibits.
REVISION NO.	**REVISION DATE**	**STANDARD No.**	**NAME**	**DESCRIPTION OF REVISION**
8	1/1/2012	10.27A	Residential Driveway (Type I) For 2'-0" Valley Gutter	Moved Section A-A to middle of apron to better illustrate 6" thickness requirement
8	1/1/2012	11.13	Private Street Typical Sections	Added note 4, re: section not to be used to meet connectivity req'mts of Subdivision/Zoning ordinances
8	1/1/2012	20.00C	NCDOT Standards for use in City of Charlotte and ETJ	Added clarifying note regarding 340.34, Traffic Bearing Junction Box
8	1/1/2012	20.03	Brick Double Catch Basin 15" thru 36" Pipe	Added note 8, re: weep holes
8	1/1/2012	20.17A	Concrete Wingwall With Splash Pad	Fixed Typo: Removed "MIN." label over the "H" column
8	1/1/2012	30.01	Temporary Sediment Trap	Changed Drainage Area max to 1 Ac, per DWQ SW General Permit requirements
8	1/1/2012	30.17A	Seeding Schedule	Removed notes 1 and 2, regarding seeding timeframes, see Site Checklist for new notes.
8	1/1/2012	50.09C	Parallel Parking Standards	Added info to note 5, re: sloping parking toward flow line only permitted if street grade is 2% or more.

REVISION NO.	REVISION DATE	STANDARD No.	NAME	DESCRIPTION OF REVISION
9	7/1/2012	Text pgs 17-24	Section IV, Approved Plant Species	Update to the Approved Tree Species List, per Urban Forestry and LS Mgmt, adjust page #'s.
9	7/1/2012	10.24C	Commercial Type II and Res. Type I Drop Curb Driveway w/ SW abutting Curb (6x18" vert curb)	Removed previously shown sidewalk width, adjusted to provide 4' continuous passage
9	7/1/2012	10.25A	Residential Drop Curb Type I Driveway with Planting Strip (2-6" Curb and Gutter)	Added minimum vertical dimension of 4' on flare
9	7/1/2012	10.25C	Residential Drop Curb Type I Driveway with Planting Strip (6"x18" Vert curb)	Added minimum vertical dimension of 4' on flare, drafting changes for clarity
9	7/1/2012	10.25F	Commercial Type IV Driveway Standard	Added note 6" thickness through DW, removed "R/W" for clarity
9	7/1/2012	10.26	Drop Curb Driveway Monolithic Concrete Curb and Sidewalk	Adjusted dimensions for 4' Continuous Passage.
9	7/1/2012	10.32A	Accessible Ramp Standard without Planting Strip 2'-6" Curb and Gutter	Adjusted dimensions for 4' Continuous Passage.
9	7/1/2012	10.32B	Accessible Ramp Sections without planting strip (2'6" Curb & Gutter)	Adjusted dimensions for 4' Continuous Passage, added detectable warning mat in cross section
9	7/1/2012	10.34A	Accessible Ramp Standard Monolithic Curb and Sidewalk	Adjusted dimensions for 4' Continuous Passage.
9	7/1/2012	10.34B	Accessible Ramp Sections Monolithic Curb and Sidewalk	Adjusted dimensions for 4' Continuous Passage, added detectable warning mat in cross section
9	7/1/2012	20.25	Trench Detail For Storm Drain	Fixed Typo
9	7/1/2012	20.29	Overlapping Storm Drainage / Sanitary Sewer Easements	Revised diagram and adjusted note so ensure required trench width can be provided
9	7/1/2012	30.00	Special Erosion Control Requirements & Notes	Added reference to 6.11 Permanent Seeding, and added NCDOT Roadway Std. Dwgs as reference, along with NCDOT 1606.1 Special Sediment Fence
9	7/1/2012	30.17	Temporary Seeding Schedule	Revamped detail to match NCDENR ESCPDM requirements and LS Mgmt requirements
9	7/1/2012	40.04A, B, C, D	Irrigation details	REMOVED details - similar details will be housed in separate Landscape Management standards doc
9	7/1/2012	40.04	Typical Valve and Valve Box Installation	New detail - replaces previous 40.04D
9	7/1/2012	40.05A	Shrub Planting Bed	Changed from 40.05 to 40.05A, "Acceptable Plant Media" note
9	7/1/2012	40.05B	Individual Small Shrub / Tree Planting	New Detail
9	7/1/2012	40.08A	Median Greater than 120 Inches, Excavation, Drainage and Backfill	Note 3 revised to update pipe options, allowing HDPE as well as PVC
9	7/1/2012	40.08B	73 to 120 Inch Median, Excavation, Drainage and Backfill	Note 3 revised to update pipe options, allowing HDPE as well as PVC
9	7/1/2012	40.08C	48 to 72 inch Median, Excavation, Drainage, and Backfill	Note 3 revised to update pipe options, allowing HDPE as well as PVC
9	7/1/2012	40.09	Root Crown Depths	Changed title, changed wording to "Root Flare" instead of "Root Crown"
9	7/1/2012	40.11	Bridging Tree Roots	Added "Rebar Chairs", removed rebar embed detail, added diagonal groove joint
9	7/1/2012	50.05A	Street Name Sign	Complete revision to match City's current installation practice
9	7/1/2012	50.05B	Street Name Sign	Complete revision to match City's current installation practice
9	7/1/2012	50.06	Street Name Sign Installation Locations	Detail of post installation moved to 50.05A
9	7/1/2012	50.10A	Accessible Parking and Signage Standards	Update to match current MUTCD/CLDSM numbering, Changed table to ref ADA standards, added note 4, Changed sign for hatched spaces to "No Parking Any Time" MUTCD R7-1
9	7/1/2012	50.10B	Supplemental Van Accessible Sign (R7-8P)	changed title, adjusted notations to match current MUTCD Manual
9	7/1/2012	50.10C	Supplemental Accessible Sign	Changed title, revised notations to match MUTCD
9	7/1/2012	50.14	Piano-style Crosswalk	New detail provided by CDOT
REVISION NO.	**REVISION DATE**	**STANDARD No.**	**NAME**	**DESCRIPTION OF REVISION**
10	1/1/2013	11.09	Arterial Street Typical Sections	Updated Intermediate Course thickness from 2.25 to 2.5" to match current SuperPave spec requirements
10	1/1/2013	11.19A	Residential Alley Detail One-Way Operation	Clarified dimensions D3 and D4
10	1/1/2013	11.19B	Residential Alley Detail Double-loaded with Two-Way Operation	Clarified dimensions D3 and D4
10	1/1/2013	11.19C	Residential Alley Detail Single-loaded with Two-Way Operation	Clarified dimensions D3 and D4
10	1/1/2013	20.00C	NCDOT Standards approved for use in City of Charlotte and ETJ	Changed 840.32 title to match current NCDOT manual title for same detail
10	1/1/2013	21.24	Surface Sand Filter	New detail, same as Mecklenburg County's detail of same number
10	1/1/2013	21.25	Surface Sand Filter Section	New detail, same as Mecklenburg County's detail of same number
10	1/1/2013	50.06	Street Name Sign Installation Locations	Moved street name signs and stop signs into planting strip for diagram with sidewalk shown.

Charlotte Land Development Standards Manual

City of Charlotte (Including ETJ) Land Development

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1100 Series - Street Section Details

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11.16	City Of Charlotte and ETJ Residential Cul-De-Sac Detail
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11.18B	Temporary Turnaround Local Residential Street (Optional)
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11.20	Residential Alley Hammerheads and Intersections
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2000 Series - Storm Drain Standards

Standard	Description
20.00A,B,C	NCDOT Standards Approved For Use in the City of Charlotte and Charlotte ETJ
20.03	Double Brick Catch Basin 15”-36” Pipe
20.05A	Slab Type Catch Basin 15” Thru 48” Pipe
20.05B	Manhole Ring and Cover for Slab Type Catch Basin
20.17A	Concrete Wingwall Splash Pad
20.17B	Concrete Wingwall Splash Pad
20.22	Flared End Section 12” To 72”
20.23	Rip Rap Aprons at Outfalls
20.24	Rip Rap Plunge Pool
20.25	Trench Detail for Storm Drain
20.26	Concrete Paved Ditches
20.27	Rip Rap Ditches
20.28	Subdrain Detail
20.29	Overlapping Sewer and Storm Easements
20.30	Minimum Storm Easements Pipe and Channel
20.34	Offset Catch Basin
20.35	Grading At Drop Inlet

2100 Series – Stormwater BMP Details

Standard	Description
21.00	Bioretention Plan
21.01	Bioretention Cross-Section
21.02	Bioretention Planting Zones
21.04	Flow Splitter Structure
21.05	Wetpond Plan
21.06	Wetpond Profile
21.07	Wetpond Cross-Sections
21.08	Wetpond Littoral Shelf and Berm Detail
21.09	Wetpond Planting Plan
21.10	Wetland Plan
21.11	Wetland Section
21.12	Wetland Cross-Sections
21.13	Wetland Details
21.14	Wetland Planting Plan
21.15	Enhanced Grass Swale Planting Plan
21.16	Enhanced Grass Swale Details
21.17	Grass Channel
21.18	Grass Channel Planting Plan
21.19	Infiltration Trench
21.20	Monitoring Well Detail
21.21	Buffer Strip
21.22	Buffer Strip Planting Plan
21.23	Underground Sand Filter
21.24	Surface Sand Filter
21.25	Surface Sand Filter Section

3000 Series - Erosion Control Standards

Standard	Description
30.00	Special Erosion Control Requirements & Notes
30.01	Temporary Sediment Trap
30.02A	Skimmer Sediment Basin
30.02B	Skimmer
30.03A	Sediment Basin
30.03B	General Notes – Sediment Basins
30.04	Flexible Pipe Slope Drain
30.05	Temporary Silt Ditch
30.06A	Temporary Silt Fence
30.06B	High Hazard Temporary Silt Fence
30.07	Block and Gravel Stone Inlet Protection
30.08	Stone Inlet Protection
30.09	Hardware Cloth and Gravel Inlet Protection
30.10	Temporary Rock Check Dam
30.11A	Stabilized Construction Entrance
30.11B	Construction Entrance Tire Wash
30.12	Gravel and Rip Rap Filter Berm Basin
30.13	Erosion Control Dewatering
30.14	Temporary Stream Crossing
30.15	Catch Basin Inlet Protection
30.16	Slope Stability
30.17	Temporary Seeding Schedule
30.18	Construction within Creek Bank
30.19	Baffle Installation
30.20	Embankment Matting Detail
30.21	Brick Storm Structure with Temporary Pipe

4000 Series - Tree Standards

Standard	Description
40.01	Tree Planting Detail
40.02	Tree Protection Detail
40.03	Large and Small Maturing Tree Pit with Grate in Sidewalk (Plan)
40.03A	Large and Small Maturing Tree Pit with Grate in Sidewalk (Section)
40.03B	Large and Small Maturing Tree Pit with Grate in Sidewalk (Section)
40.03C	Large and Small Maturing Tree Pit with Grate in Sidewalk (Section)
40.04	Typical Valve and Valve Box Installation
40.05A	Shrub Planting Bed
40.05B	Individual Small Shrub / Tree Planting
40.06	6’ Tree Planting Strip UMUD Only
40.08A	Median Greater than 120 Inches Excavation, Drainage and Backfill
40.08B	73 to 120 Inch Median Excavation, Drainage and Backfill
40.08C	48 to 72 Inch Median Excavation, Drainage and Backfill
40.09	Root Flare Depths
40.10	Tree Planting Notes
40.11	Bridging Tree Roots
40.12	Temporary Tree Protection Detail
40.13	Asphalt Curb Placement at Existing Trees
40.14	Rock Chimney

5000 Series - Miscellaneous Standards

Standard	Description
50.03	Concrete Control Monument
50.04A	Typical Handrail
50.04B	Handrail Warrants
50.05A	Street Name Sign
50.05B	Street Name Sign
50.06	Street Name Sign Installation Locations
50.07A	Dead End Street Barricade
50.07B	Dead End Street Barricade General Notes
50.08A	End of Roadway Marker
50.08B	End of Roadway Marker Guard Rail Clamp Installation
50.08C	Street Connectivity Sign for End-of-Road Barricade
50.09A	Parking Standards
50.09B	Parking Standards (Continued)
50.09C	Parallel Parking Standards
50.10A	Accessible Parking and Signage Standards
50.10B	Supplemental Van Accessible Sign (R7-8P)
50.10C	Supplemental Accessible Sign
50.11	Signage and Pavement Markings at Roundabouts
50.12	Emergency Vehicle Median Crossover
50.13	Directional Crossover with Raised Medians
50.14	Piano Style Crosswalk
50.20	Inverted U Rack Bicycle Parking
50.21	Wave Rack for Bicycle Parking
50.22	Bicycle Lockers

U Series – Standards for Urban Street Design

Standard	Description
U-01	Local Residential Narrow Street Typical Section
U-02	Local Residential Medium Street Typical Section
U-03	Local Residential Wide Street Plan View
U-03A	Local Residential Wide Street Typical Section
U-03B	Local Residential Wide Street at Midblock with Curb Extension Typical Section
U-03C	Local Residential Wide Street at Intersection with Curb Extension Typical Section
U-04	Local Office/Commercial Narrow Street Typical Section
U-05	Local Office/Commercial Wide Street Plan View
U-05A	Local Office/Commercial Wide Street Typical Section
U-05B	Local Office/Commercial Wide Street at Midblock with Curb Extension Typical Section
U-05C	Local Office/Commercial Wide Street at Intersection with Curb Extension Typical Section
U-06	Local Industrial Street Typical Section
U-07	Local Collector Street Typical Section

CHARLOTTE LAND DEVELOPMENT STANDARDS
SPECIFICATIONS AND SPECIAL PROVISION NOTES
Includes ETJ

The following specifications and special provisions are intended to be used in conjunction with Charlotte Land Development Standard Drawings, NCDOT Roadway Standard Drawings, and NCDOT Standard Specifications for Roads and Structures for all development within the City of Charlotte and the City of Charlotte ETJ unless otherwise directed by the City Engineer.

I. STREETS

A. GENERAL NOTES

1. All work and materials shall conform to the latest edition of the North Carolina Department of Transportation Standard Specifications for Roads and Structures *unless otherwise specified in this manual*.

2. All asphalt cuts shall be made with a saw when preparing street surfaces for patching or widening strips.

3. Paper joints shall be used to seal the ends of an asphalt pour so that future extensions can be made without causing rough joints.

4. When placing asphalt against existing surfaces, a straight edge shall be used to prevent “humping” at that location.

5. Stone shall be primed if paving is not complete within seven days following stone base approval.

6. Surfaces shall be tacked when asphalt is being placed over existing asphalt streets or adjoining concrete, storm drain and sanitary sewer structures.

7. In rolling and hilly terrains, sweeping of the stone base and/or application of a tack coat may be required near intersections. These requirements will be established by the City Inspector based on field conditions.

8. ALL concrete used for streets, curb and gutter, sidewalks and drainage structures, etc. shall have a minimum compressive strength of 3600 PSI at 28 days. This requirement shall be provided regardless of any lesser compressive strength specified in the North Carolina Department of Transportation Standard Specifications for Roads and Structures. The contractor shall prepare concrete test cylinders in accordance with Section 1000 of the North Carolina Department of Transportation Standard Specifications for Roads and Structures at the direction of the project inspector. All equipment and cylinder molds shall be furnished by the contractor. It shall be the responsibility of the contractor to protect the cylinders until such time as they are transported for testing. Testing for projects shall be performed by an independent testing lab, at no cost to the City. The contractor shall provide equipment and perform tests on concrete for a maximum slump and air content as defined in Section 1000 of the North Carolina Department of Transportation Standard Specifications for Roads and Structures. These tests shall be performed at a frequency established by the inspector. Materials failing to meet specifications shall be removed by the contractor.

9. All concrete shall be cured with 100% Resin Base, white pigmented curing compound which meets ASTM Specifications C-309, Type 1, applied at a uniform rate at one (1) gallon to 400 square feet within 24 hours of placement of the concrete.

10. All curb and gutter shall be backfilled with soil approved by the Inspector within 48 hours after construction to prevent erosion.

11. All backfill shall be non-plastic in nature, free from roots, vegetative matter, waste, construction material or other objectionable material. Said material shall be capable of being compacted by mechanical means and the material shall have no tendency to flow or behave in a plastic manner under the tamping blows or proof rolling.

12. Materials deemed by the Inspector as unsuitable for backfill purposes shall be removed and replaced with select backfill material.

13. All trenches in the street right-of-way shall be backfilled with suitable material immediately after the pipe is laid. The fill around all pipe shall be placed in layers not to exceed six (6) inches and each layer shall be compacted thoroughly.

14. Under no circumstances shall water be permitted to rise in un-backfilled trenches after the pipe has been placed.

15. Compaction requirements shall be attained by the use of mechanical compaction methods. Each six (6) inch layer of backfill shall be placed loose and thoroughly compacted into place.

16. Straight forms shall not be used for forming curb and gutter in curves.

17. All excess concrete on the front edge (lip) of gutter shall be removed when curb and gutter is poured with a machine.

18. All subgrade shall be compacted to 100% of the maximum density obtainable with the Standard Proctor Test to a depth of eight (8) inches, and a density of 95% Standard Proctor for depths greater than eight (8) inches. All tests shall be performed by developer at no cost to the City.

19. A canvas cover or other suitable cover shall be required for transporting plant mix asphalt during cool weather when the following conditions are present:

    a. Air temperature is below 60 degrees F.
    b. Length of haul from plant to job is greater than five (5) miles.
    c. Other occasions at the Inspector's discretion when a combination of factors indicates that material should be covered in order to assure proper placement temperature.

20. Concrete or asphalt shall not be placed until the air temperature measured at the location of the paving operation is at 35 degrees F and rising by 10:00 a.m. Concrete or paving operations should be suspended when the air temperature is 40 degrees F and descending. The contractor shall protect freshly placed concrete or asphalt in accordance with Sections 420 (Concrete Structures), 600 (Asphalt Bases And Pavements), and 700 (Concrete Pavements And Shoulders) of the North Carolina Department of Transportation Standard Specifications when the air temperature is at or below 35 degrees F and the concrete has not obtained an age of 72 hours.

21. The contractor shall maintain two-way traffic at all times when working within existing streets. The contractor shall place and maintain signs, danger lights, and barricades and furnish watchmen or flagmen to direct traffic in accordance with the latest edition Work Area Traffic Control Handbook (WATCH), Work in the right-of-way of State System Streets may require additional traffic control provisions.

22. The contractor shall do that which is necessary to control erosion and to prevent sedimentation damage to all adjacent properties and streams in accordance with the appropriate City of Charlotte Erosion and Sedimentation Control Ordinance.

B. STANDARDS OF STREET DESIGN

Note: Use of Hilly Terrain criteria is NOT permitted without PRIOR approval of the City Engineer.

Note: Design standards that apply for the ETJ are taken from the January 1, 2000, edition of the NCDOT design manual *Subdivision Roads*. Any revisions to *Subdivision Roads* will supersede the design standards given in the Charlotte Land Development Standards for ETJ streets. However, under no circumstances shall an NCDOT/ETJ standard be less restrictive than what is required by the City of Charlotte.

1. STREETS (PUBLIC and PRIVATE):

	ALL LOCAL STREETS (Except Industrial & Collector)		LOCAL INDUSTRIAL AND COLLECTOR ONLY	
	Level/Rolling	Hilly	Level/Rolling	Hilly
a. Terrain Classification	0-15%	15% +	0-15%	15%+
b. Maximum Grade	10%	12%	8%	10%
c. Design Speed (mph)	25	20	30	25

d.	Minimum Radius (ft.)				
	Public Street	150	90	250	175
	Private Street	50	50	150	150
e.	Min. Tangent between Reverse Curves (ft.) Horiz. And Vert.	50	50	100	100
f.	K Values (crest/sag)	20/20	15/20	28/35	20/20

Note: Provisions of adequate stopping sight distance may require use of larger K values than the minimums listed above. The Charlotte Department of Transportation, under Section 19-245 of City Code, reserves the right to prescribe more stringent sight distance standards and/or means to achieve adequate sight distance than these listed above.

2. INTERSECTIONS:

a. PUBLIC STREET: Vertical Alignment is 5% maximum within 100 feet of intersection.
PRIVATE STREET: Vertical Alignment is 5% maximum within 40 feet of intersection.

b. Minimum Angle of Intersection is 75 degrees.

c. Minimum Curb & R/W Radius = Taken from Appendix C (Curb Return Radii Guidelines) of USDG

Table 4 - Curb Radii for Local Street Intersections

From\To	R/Narrow	R/Medium	R/Wide	C/Narrow	C/Wide	Industrial
R/Narrow	35					
R/Medium	20	15				
R/Wide	15	15	10			
C/Narrow	20	15	25	35		
C/Wide	15	15	15	30	10	
Industrial	30	25	15	40	25	50

R = Residential
C = Commercial

d. Minimum Intersection Separation.

Along local streets	125 feet
Along collector streets	200 feet
Along thoroughfares	To be determined by CDOT

Intersection offsets/separation from a thoroughfare, at signalized intersections, or at intersections that may become signalized in the future may need to be greater that these minimums and will be determined by CDOT on a case by case basis.

3. Design criteria for arterial streets shall be established jointly by the City Engineer and the Director of the Department of Transportation on a case by case basis using the latest edition of the American Association of State Highway and Transportation Officials (AASHTO) A Policy on Geometric Design of Highway and Streets and/or NCDOT Roadway Design Manual.

4. Intersection corner – A minimum 35' x 35' sight triangle (measured along right-of-way lines) shall be provided at each intersection corner. An additional 10' x 70' sight triangle shall be provided at intersections connecting to NCDOT maintained roadways. Other sight distance requirements may be required by the NCDOT or CDOT.

5. Refer to the NCDOT Subdivision Roads Minimum Construction Manual for development criteria for sites located within the City of Charlotte Extraterritorial Jurisdiction (ETJ) within these areas governed by Charlotte Land Development Standards Manual and the NCDOT Subdivision Roads Minimum Construction Standards Manual. The more restrictive standard shall apply.

C. GRADING

1. Proposed street rights-of-way shall be graded to their full width for ditch type streets and a minimum of eight (8) feet behind the curb for curb and gutter sections.

2. Fill embankments shall be formed of suitable material placed in successive layers not to exceed more than six (6) inches in depth for the full width of the cross-section, including the width of the slope area. No stumps, trees, brush, rubbish or other unsuitable materials or substances shall be placed in the embankment. Each successive six (6) inch layer shall be thoroughly compacted by the sheepsfoot tamping roller, 10-ton power roller, pneumatic-tired roller, or other methods approved by the City Engineer. Embankments over and around all pipe culverts shall be of select material, placed and thoroughly tamped and compacted as directed by the City Engineer or his representative.

D. ROADWAY BASE

1. All roadways shall be constructed with a base course as described on the appropriate Charlotte Land Development Standard Detail Drawing.

2. The material for stone base course shall conform to the requirements of Section 1010, Aggregate for Non-Asphalt Flexible Type Base, and Section 520, Aggregate Base course of the North Carolina Department of Transportation Standard Specifications for Roads and Structures.

3. The stone base shall be compacted to 100% of the maximum density obtainable with the Modified Proctor Test (AASHTO-T180) by rolling with ring or tamping roller or with a pneumatic tired roller with a minimum weight of ten tons. When completed, the base course shall be smooth, hard, dense, unyielding and well bonded.

4. A bituminous concrete base course, as specified on the Standard Detail Drawing may be substituted in lieu of a stone base course.

5. Asphalt base course will only be allowed within widening strips less than five (5) feet in width.

E. ROADWAY INTERMEDIATE AND SURFACE COURSE

1. All public roadways shall be constructed with an intermediate and surface course as described on the appropriate City of Charlotte Land Development Standard Detail Drawing.

2. Plant mixed asphalt shall conform in all respects to Section 610 of the North Carolina Department of Transportation Standard Specifications for Roads and Structures.

3. The final (1) one inch lift of asphalt surface course for Residential Subdivision Streets shall be withheld until a minimum of (75%) Seventy-Five Percent of the Development is occupied (occupied means a certificate of occupancy has been issued) or at least (1) one year has lapsed from the application of the intermediate course layer (All documentation to be provided by the developer and approved by the City Inspector). All known base failures shall be repaired prior to application of the final one inch lift of asphalt surface course.

4. The City inspector shall be given a (24) twenty-four hour notification to inspect the intermediate course deficiencies. All deficiency repairs are to be monitored by a City Inspector and accepted prior to application of final layer.

5. City inspectors shall be notified prior to using recycled plant mixes.

6. Failure to meet the above requirements may result in the delay or prevention of street acceptance by the City of Charlotte or NCDOT.

F. SIDEWALKS AND DRIVEWAYS

1. Sidewalks shall be constructed of not less than 3600 P.S.I. concrete and shall be four (4) inches thick, constructed on an adequately graded base, except where a sidewalk crosses a driveway it shall be six (6) inches thick. Subgrade shall be compacted to 95% of the maximum density obtainable with the Standard Proctor Test. The surface of the sidewalk shall be steel trowel and light broom finished and cured with an acceptable curing compound. Tooled joints shall be provided at intervals of not less than five (5) feet and expansion joints at intervals of not more than forty-five (45) feet. The sidewalk shall have a lateral slope of one-quarter (1/4) inch per foot.

2. Planting strip adjacent to sidewalk shall be graded to ¼ inch per foot (min.) up to 1 ¼ inch per foot (max.), except where excessive natural grades make this requirement impractical. In such cases, the City Engineer may authorize a suitable grade.

3. Sidewalk widths shall be a minimum of four (4) feet unless otherwise specified. A 5’ x 5’ sidewalk is required at least every 200’ as required by ADA for a passing zone unless otherwise provided by residential driveways, intersecting sidewalk, etc.

4. Approval of sidewalk construction plans must be obtained as part of the plan review process. Except in unusual circumstances, sidewalk must be located a minimum of (4) four feet from the back of the curb or at the back of the right-of-way. A recorded public sidewalk easement is required for all sidewalk located outside public right-of-way; the width shall be equal to the distance from the right-of-way line to the back of the sidewalk plus two feet or to the face of building, whichever is less. The sidewalk easement must be recorded with the Mecklenburg County Register of Deeds prior to issuance of a certificate of occupancy for the corresponding building(s).

5. Accessible ramps are required where sidewalks intersect curbing at any street intersection and at Type III driveway connections.

6. For City projects only: On Commercial Type II and Residential Type I drop curb driveways with sidewalk abutting the curb (CLDS #10.24A/B/C) – the curb and gutter across the front of the driveway shall be measured and paid for under 2’-6” Curb and Gutter. The curb and gutter is to be measured per linear foot along the surface of the top of the curb. The concrete driveway apron is to be measured per square yard.

II. **STORM DRAINAGE**

A. GENERAL NOTES

1. All work and materials shall conform to the latest edition of the NCDOT Standard Specifications *unless otherwise specified in this manual*. ALL concrete used for drainage structures shall have a minimum compressive strength of 3600 PSI at 28 days. This requirement shall be provided regardless of any lesser compressive strength specified in the North Carolina Department of Transportation Standard Specifications for Roads and Structures.
2. Reinforced concrete pipe may be used in all storm drain applications. High Density Polyethylene Pipe (HDPE) may be substituted for pipe diameters of 48 inches or less. Culverts 60 inches in diameter or greater may be Corrugated Aluminized Metal Pipe (CAMP) or aluminum with a minimum 14 gauge metal.
3. All pipe shall be laid with the bell or groove upgrade and the joint entirely interlocking.
4. The minimum cover for all pipes is two (2) feet measured from the final surface. Special applications for less than two (2) feet of cover will be reviewed and approved by the City Engineer individually. The maximum cover for storm drainage pipes shall at a minimum comply with the requirements of the North Carolina Department of Transportation Highway Design Branch Roadway Design Manual, Part I, Section 5, and "Drainage Design". Storm pipe design that exceeds these criteria may be approved at the discretion of the City Engineer.
5. All pipes in storm drain structures shall be flush with the inside wall.
6. All storm drain structures over three (3) feet and six (6) inches in height must have steps in accordance with standard details set forth in this manual.
7. The interior surfaces of all storm drainage structures shall be pointed up and smoothed to an acceptable standard using mortar mixed to manufacturer's specifications.
8. All frames, grates, rings, covers, etc., must conform to the standards set forth in this manual.
9. All graded creek banks and slopes shall be at a maximum of two (2) feet horizontal to one (1) foot vertical (2:1) and not to exceed 10' without terracing or the slopes shall be designed by a Professional Geotechnical Engineer and approved by the City Engineer on a case by case basis.

B. HIGH DENSITY POLYETHYLENE PIPE (HDPE)

1. The Product used shall be corrugated exterior/smooth interior pipe (Type S), conforming to the requirements of AASHTO Specification M294 (latest edition) for Corrugated Polyethylene Pipe.
2. Bell and spigot joints shall be required on all pipes inside the right-of-way. Bells shall cover at least two full corrugations on each section of pipe. The bell and spigot joint shall have an "O" ring rubber gasket meeting ASTM F477 with the gasket factory installed, placed on the spigot end of the pipe. Pipe joints shall meet all requirements of AASHTO M294.
3. All HDPE pipe installed must be inspected and approved by the City's Inspector prior to any backfill being placed. The City inspector must be present during the backfilling operation as well.
4. Backfill material used to install HDPE pipe within the street right-of-way shall be Select Material, Class II-IV, as defined by Section 1016-3 of the North Carolina Department of Transportation Standard Specifications for Roads and Structures. Upon submittal of written certification of material suitability by a licensed geotechnical engineer, NCDOT Class I Select Material may be used. All backfill material shall be approved by the City inspector prior to placement of the material within the street right-of-way.
5. The minimum length of HDPE pipe permitted for use shall be four (4) feet. HDPE flared end sections are not allowed.
6. All HDPE pipe installed shall be third party certified and shall bear the Plastic Pipe Institute's (PPI) certificate sticker.

C. REINFORCED CONCRETE.

1. All concrete shall be at least 3600 PSI. Prior approval shall be obtained in order to use pre-cast storm drainage structures in any street right-of-way by City Engineer.
2. Concrete pipe used within the street right-of-way shall be a minimum of Class III Reinforced Concrete Pipe, with a minimum diameter of fifteen (15) inches (eighteen (18) inches minimum on cross drain culverts within the ETJ). Installation of Class IV or higher concrete pipe shall be identified on the As-Built Plan and the City inspector shall be given documentation and notification of this information prior to construction.

3. Concrete mortar joints shall be used for joining all concrete pipes. The pipe shall be clean and moist when mortar is applied. The lower portions of the bell or groove shall be filled with mortar sufficient to bring the inner surface flush and even when the next joint is fitted into place. The remainder of the joint shall then be filled with mortar and a bead or ring of mortar formed around the outside of the joint. The application of mortar may be delayed until fill is completed when the pipe is larger than thirty (30) inches.
4. Performed joint sealer, which conforms to AASHTO specification M-198 for Type B flexible plastic gaskets, may be used in lieu of the mortar joining method.

D. INSTALLATION OF REINFORCED CONCRETE AND CORRUGATED METAL PIPE.

1. All backfill shall be non-plastic in nature, free from roots, vegetative matter, waste, construction material or other objectionable material. Said material shall be capable of being compacted by mechanical means and shall have no tendency to flow or behave in a plastic manner under the tamping blows or proof rolling.
2. Materials deemed by the Engineer as unsuitable for backfill purposes shall be removed and replaced with select backfill material.
3. Backfilling of trenches shall be accomplished immediately after the pipe is laid. The fill around the pipe shall be placed in layers not to exceed eight (8) inches, each layer shall be thoroughly compacted to 95% of the maximum density obtainable with the Standard Proctor Test (a density of 100% Standard Proctor is required for the top eight (8) inches).
4. Compaction requirements shall be attained by the use of mechanical compaction methods. Each layer of backfill shall be placed loose and thoroughly compacted in place.
5. Under no circumstances shall water be permitted to rise in un-backfilled trenches after the pipe has been placed.

E. STANDARDS FOR DESIGN

1. All storm drainage design shall conform to the standards and specifications as provided in the Charlotte-Mecklenburg Storm Water Design Manual, North Carolina Department of Transportation Standards Specifications for Roads and Structures, Charlotte Land Development Standards Manual, or the more restrictive of any standards that conflict.

2. Adequate storm drainage shall be provided throughout the development by means of storm drainage pipes or properly graded channels. All pipes shall be of adequate size and capacity, as approved by the City Engineer, to carry all storm water in its drainage area.

3. In accordance with Section 12.603 of the City Zoning Ordinance, the City Engineer shall review the drainage plan for compliance with the standards contained in the current edition of the Charlotte Land Development Standards Manual and the Charlotte-Mecklenburg Storm Water Design Manual and all other relevant and appropriate standards established by the City Engineering Department.

4. Sub-surface drainage shall be provided where the ground water level is likely to be near the surface. In capillary soils, the water level should be four (4) to six (6) feet below the surface to prevent the rise of moisture into the subgrade. Subdrains shall be used to lower ground water in low areas in the street.

5. The NCDOT Standard Drawings have been accepted as approved standards to be specified for Land Development projects in the City of Charlotte and City of Charlotte ETJ. See standard #20.00A, B, and C of this manual for a table listing the standards accepted. These standard drawings shall be referenced by NCDOT number or shown on all plans submitted to the City of Charlotte for approval.

III. PLAN REQUIREMENTS

A. GENERAL NOTES

1. All erosion control measures shall conform to the standards set forth in the Charlotte Land Development Standards Manual, State of North Carolina Erosion and Sediment Control Planning and Design Manual, or the more restrictive of any standards that conflict.

2. All storm drainage design shall conform to the standards and specifications as provided in the Charlotte-Mecklenburg Storm Water Design Manual, Charlotte Land Development Standards Manual, or the more restrictive of any standards that conflict.

3. In areas where the Floodway Regulations are applicable, the Future Conditions Flood Fringe Line, FEMA Flood Fringe Line, Community Encroachment Line, and FEMA Encroachment Line shall be shown on the preliminary plan and the final plat. An application for a Floodlands Development Permit shall be submitted to Mecklenburg County Engineering in accordance with the requirements set forth in the City/County Floodway Regulations.

4. Cite all appropriate standard detail numbers for any structures or specifics used within the plans in reference to the most current copy of the Charlotte Land Development Standards Manual.

B. SUBDIVISIONS -PRELIMINARY PLAN

1. The preliminary plan must include, at a minimum, the information described in Section 6.400 of the City of Charlotte Subdivision Ordinance.

2. Storm Drainage Easements shall be provided for all storm drainage pipe and shown on site plans, construction plans and plats with widths specified below. The following note shall be placed on all grading plans and plats; "The purpose of the storm drainage easement (SDE) is to provide storm water conveyance. Buildings are not permitted in the easement area. Any other objects which impede storm water flow or system maintenance are also prohibited."

PIPES

Diameter	Width
15" – 24"	15'
30" – 36"	20'
42" – 48"	25'
54" +	30'

CHANNELS

Drainage Area (Ac)	Channel Easement Width (feet)
1 – 45	20'
45 – 120	30'
120 – 500	40'
500 +	see std. 20.30

3. Overlapping of storm drainage easements shall be approved by the City Engineer.

C. BOND POLICY – SUBDIVISION IMPROVEMENTS

1. Release of the final subdivision plat will not occur until the improvements required for the area of the final plat are constructed and a final inspection has been performed and found to be in conformance with the plans approved by the

Charlotte-Mecklenburg Planning Commission., or a security has been posted with the Land Development Bond Coordinator of the applicable department and all required documents are received in their entirety.

2. The security shall be posted and remain in force until the construction is complete and found to be in conformance with the plans approved by the Charlotte-Mecklenburg Planning Commission. The security will be reevaluated after one year from the date of posting.

3. The Applicant shall notify the City Engineer or his assigns that construction is complete according to the appropriate subdivision ordinance and the Charlotte Land Development Standards Manual before any security will be released. A final inspection will be made to check completeness of the project upon notification.

4. One type of security may be replaced by another type of security in certain situations. The amount of the replacement security will be based on the City's Engineer Estimate of the work remaining. If the estimate of work results in a lower amount, the replacement security will be treated as a reduction. Certain situations will require an increase in a security and in such cases the replacement security shall be required to equal the higher amount.

5. A one-time reduction in security will be allowed if requested in writing by the principal party of the security. However, the security shall never be less than $10,000 for the City of Charlotte unless approved by the City Engineer.

IV. APPROVED PLANT SPECIES

The following list of trees and shrubs represent the approved plant species that may be used to comply with code sections 12.302 and 12.303 of the City of Charlotte Zoning Ordinance and Chapter 21 ("Tree Ordinance") of the City of Charlotte Code.

Other species may be allowed with staff approval

List subject to change

* - Not allowed for required city planting.

**- Not reccomended for required city planting.

† - Cultivars under 15' tall only.

‡- Trees <25' mature height can be planted directly under power lines.

Trees 25'- 40' mature height can be planted at least 20' from power lines.

Trees

Common Name	Scientific Name	City Tree Ordinance Approved	CIP/ROW Approved	City Zoning Approved (**L**arge or **S**mall Maturing)	Duke Transmission Zone(**T**) or Distribution line(**D**) Approved		Shade Tolerant	Tolerates Poor Drainage	Native	Blooming	Foliage (**D**eciduous, **S**emi-deciduous, or **E**vergreen)
LARGE MATURING (50'+ H)											
Arborvitae, 'Green Giant'	**Thuja 'Green Giant'**		x					x			E
Ash, Green	**Fraxinus pennsylvanica**			L			x		x		D
Ash, White	**Fraxinus americana**	x		L					x		D
Baldcypress	**Taxodium distichum**	x	x	L				x	x		D
Beech, American	**Fagus grandiflora**	x	x	L					x		D
Birch, River	**Betula nigra**	x	x	L			x	x	x		D
Black Gum	**Nyssa sylvatica**	x	x	L					x		D
Cedar, Deodar	**Cedrus deodara**	x	x	L							E
Cedar, Eastern Red	**Juniperus virginiana**		x	L					x		E
Cryptomeria, Japanese	**Cryptomeria japonica**	x	x					x			E

Trees

Common Name	Scientific Name	City Tree Ordinance Approved	CIP/ROW Approved	City Zoning Approved (**L**arge or **S**mall Maturing)	Duke Transmission Zone(**T**) or Distribution line(**D**) Approved		Shade Tolerant	Tolerates Poor Drainage	Native	Blooming	Foliage (**D**eciduous, **S**emi-deciduous, or **E**vergreen)
LARGE MATURING (50'+ H) cont...											
Dawn Redwood	Metasequoia glyptostroboides	x	x								S
Elm, Princeton	Ulmus americana 'Princeton'		x								D
Elm, Lacebark	Ulmus parvifolia	x	x	L			x	x			D
Gingko ‡	Gingko biloba	x	x	L			x	x			D
Hackberry, Common	Celtis occidentalis	x		L			x	x	x		D
Hackberry, Sugar	Celtis laevigata	x					x	x	x		D
Hemlock, Eastern	Tsuga canadensis			L			x		x		E
Hickory, Bitternut	Carya cordiformis			L					x		D
Hickory, Pignut	Carya glabra			L					x		E
Hickory, Shagbark	Carya ovata			L					x		E
Holly, American	Ilex opaca	x	x	S			x		x		E
Honeylocust, Shademaster**	Gleditsia tricanthos inermis 'Shademaster'								x		D
Hornbeam, European	Carpinus betulus	x	x	S			x	x			D
Kentucky Coffeetree	Gymnocladus dioicus	x	x				x		x		D
Linden, Little Leaf	Tilia cordata	x					x	x		x	D
Magnolia, Cucumber	Magnolia acuminata		x						x	x	D
Magnolia, Southern	Magnolia grandiflora	x	x	L				x	x	x	E
Maple, Freeman	Acer x fremanii	x	x				x		x		D
Maple, Red *	Acer rubrum		x	L			x	x	x		D
Maple, Sugar	Acer saccharum	x	x	L			x		x		D
Oak, Black	Quercus velutina			L			x		x		D
Oak, Fastigiante English	Quercus robur 'Fastigiata'		x								D

Trees

Common Name	Scientific Name	City Tree Ordinance Approved	CIP/ROW Approved	City Zoning Approved (**L**arge or **S**mall Maturing)	Duke Transmission Zone(**T**) or Distribution line(**D**) Approved		Shade Tolerant	Tolerates Poor Drainage	Native	Blooming	Foliage (**D**eciduous, **S**emi-deciduous, or **E**vergreen)
LARGE MATURING (50'+ H) cont...											
Oak, Laurel	Quercus laurifolia	x		L			x		x		D
Oak, Live	Quercus virginiana	x	x	L			x	x	x		E
Oak, Northern Red*	Quercus rubra			L			x		x		D
Oak, Nuttall	Quercus nuttalii	x	x				x		x		D
Oak, Overcup	Quercus lyrata	x	x				x	x	x		D
Oak, Scarlet**	Quercus coccinea			L					x		D
Oak, Shumard	Quercus shumardii	x	x	L			x		x		D
Oak, Southern Red	Quercus falcata	x	x	L			x		x		D
Oak, Swamp White	Quercus bicolor		x	L			x	x	x		D
Oak, Water	Quercus nigra		x	L				x	x		D
Oak, White	Quercus alba		x	L			x		x		D
Oak, Willow	Quercus phellos	x	x	L			x	x	x		D
Pecan	Carya illinoensis			L					x		D
Persimmon	Diospyros virginiana			L			x		x		D
Pine, Austrian	Pinus nigra	x		L				x			E
Pine, Japanese Black	Pinus thunbergi			L							E
Pine, Loblolly	Pinus taeda	x	x	L				x	x		E
Pine, Shortleaf	Pinus echinata		x	L					x		E
Pine, Virginia	Pinus virginiana	x	x	L					x		E
Poplar, Tulip	Liriodendron tulipfera	x	x	L			x	x	x	x	D
Sweetgum, Fruitless	Liquidambar styraciflua 'Rotundiloba'	x	x	L			x	x	x		D
Sweetgum, Slender	Liquidambar styraciflua 'Slender Silhouette'		x				x	x	x		D
Zelkova, Japanese *	Zelkova serrata			L			x				D

Trees

Common Name	Scientific Name	City Tree Ordinance Approved	CIP/ROW Approved	City Zoning Approved (**L**arge or **S**mall Maturing)	Duke Transmission Zone(**T**) or Distribution line(**D**) Approved		Shade Tolerant	Tolerates Poor Drainage	Native	Blooming	Foliage (**D**eciduous, **S**emi-deciduous, or **E**vergreen)
MEDIUM MATURING (30'-50'H)											
Arborvitae, American †	Thuja occidentalis		x		D			x	x		E
Carolina Silverbell	Halesia carolina	x	x	S			x		x	x	D
Chinese Pistache	Pistacia chinensis	x	x				x	x			D
Crape Myrtle (Biloxi, Natchez)*	Lagerstroemia		x								D
Dogwood, Flowering ‡	Cornus florida	x	x	S	D		x		x	x	D
Dogwood, Kousa ‡-	Cornus kousa	x	x	S	D		x		x	x	D
Fringetree, Chinese	Chionanthus retusus	x					x			x	D
Golden Raintree	Koelreuteria paniculata		x	S						x	D
Hawthorne, Green	Crataegus viridis 'Winter King'	x	x					x	x	x	D
Holly, 'Emily Brunner'	Ilex X 'Emily Brunner'		x				x				E
Holly, 'Nellie R. Stevens'	Ilex X 'Nellie R. Stevens'		x				x				E
Holly, Savannah	Ilex X attenuata 'Savannah'		x	S				x	x		E
Hornbeam, American	Carpinus caroliniana	x	x	S			x	x	x		D
Maple, Hedge	Acer campestre		x	S				x			D
Maple, Paperbark	Acer griseum		x								D
Maple, Trident	Acer buergeranum	x	x				x				D
Redbud, Chinese ‡	Cercis chinensis	x	x		D		x			x	D
Sourwood	Oxydendrum arboreum			S			x		x	x	D

Trees

Common Name	Scientific Name	City Tree Ordinance Approved	CIP/ROW Approved	City Zoning Approved (**L**arge or **S**mall Maturing)	Duke Transmission Zone(**T**) or Distribution line(**D**) Approved		Shade Tolerant	Tolerates Poor Drainage	Native	Blooming	Foliage (**D**eciduous, **S**emi-deciduous, or **E**vergreen)
SMALL MATURING (UP-25'H)											
Arborvitae, Emerald Green	**Thuja occidentalis 'Emerald Green'**		x								E
Buckeye, Bottlebrush †	**Aesculus parviflora**	x	x		T		x		x	x	D
Camellia, Sasanuqa	**Camellia sasanqua**		x	S			x			x	E
Cherry, Kwanzan	**Prunus serrulata 'Kwanzan'**	x		S						x	D
Cherry, Snowgoose	**Prunus serrulata 'Snowgoose'**		x							x	D
Cherry, 'Okame'	**Prunus X 'Okame'**	x	x							x	D
Cherry, Weeping	**Prunus subhirtella pendula**			S						x	D
Cherry, Yoshino	**Prunus X yedoensis**	x	x	S	D					x	D
Cherrylaurel, Carolina	**Prunus caroliniana**			S			x	x	x	x	E
Crabapple, Japanese Flowering †	**Malus floribunda**		x	S	D					x	D
Crape Myrtle	**Lagerstroemia**		x								D
Dogwood, redtwig †	**Cornus sericea f. baileyi**		x		D			x	x	x	D
Dogwood, Rutger's Hybrid	**Cornus kousa X florida**		x		D		x	x		x	D
Filbert, American	**Corylus americana**	x	x		T,D		x		x		D
Fringetree	**Chionanthus virginiana**		x					x	x	x	D
Hawthorne, Washington	**Crataegus phaenopyrum**	x	x	S				x	x	x	D
Holly, Foster	**Ilex X attenuata 'Fosteri'**	x	x	S				x	x		E
Holly, Yaupon	**Ilex vomitoria**		x	S			x		x		E
Magnolia, Star †	**Magnolia stellata**	x	x	S	D			x	x	x	D

Trees

Common Name	Scientific Name	City Tree Ordinance Approved	CIP/ROW Approved	City Zoning Approved (**L**arge or **S**mall Maturing)	Duke Transmission Zone(**T**) or Distribution line(**D**) Approved		Shade Tolerant	Tolerates Poor Drainage	Native	Blooming	Foliage (**D**eciduous, **S**emi-deciduous, or **E**vergreen)
SMALL MATURING (UP-25'H)											
Magnilia, Lily Flowered	**Magnolia liliiflora**		x				x			x	D
Magnolia, 'Little Gem'	**Magnolia grandiflora 'Little Gem'**	x	x					x	x	x	E
Magnolia, 'Merrill'	**Magnolia X loebneri 'Merrill'**		x					x	x	x	D
Magnolia, Saucer	**Magnolia X soulangiana**	x	x	S	D			x	x	x	D
Maple, Armur 'Flame' †	**Acer tataricum ginnala 'Flame'**	x	x		D			x			D
Maple, Japanese	**Acer palmatum**	x	x				x				D
Maple, Purplebow/Shantung	**Acer truncatum**		x								D
Plum, Purpleleaf	**Prunus cerasifera 'Atropurpurea'**	x	x	S						x	D
Redbud, Eastern	**Cercis canadensis**	x	x	S	D		x	x	x	x	D
Serviceberry	**Amelanchier arborea**	x	x						x	x	D
Serviceberry, Shadbush †	**Amelanchier canadensis**	x	x	S	T		x		x	x	D
Waxmyrtle	**Myrica cerifera**	x		S				x			E

SHRUBS

Common Name	Scientific Name
Burford holly *	Ilex cornuta burfordi
Camellia *	Camellia japonica
Convex Japanese holly *	Ilex crenata `convexa'
Dwarf burford holly *	Ilex cornuta burfordi nana
Emily brunner holly *	Ilex "Emily Brunner"
English holly *	Ilex aquifolium
Evergreen euonymus *	Euonymus japonicus
Flowering quince	Chaenomeles speciosa
Forsythia	Forsythia intermedia
Glenn dale azalea *	Azalea hybrida
Glossy abelia *	Abelia grandiflora
Hetzi Japanese holly *	Ilex crenata `hetzi'
Hetzi jumper *	Jumperus chinesis hetzi
Indian azalea *	Azalea indica
Inkberry holly *	Ilex glabra
Japanese aucuba *	Aucuba japonica
Kaempferi azalea *	Azalea obtusum Kaempferi
Laurel *	Laurus nobilis
Loropetalum *	Loropetalum chinense
Lusterleaf holly *	Ilex latifolia
Oakleaf hydrangea	Hydrangea quercifolia
Perny holly *	Ilex pernyi
Pfitzer juniper *	Juniperus chinensis pfitzeriana

Common Name	Scientific Name
Roundleaf Japanese holly *	Ilex crenata `rotundifolia'
Sasanqua Camellia *	Camellia sasanqua
Witch-hazel	Hammamelis virginiana
Yaupon holly *	Ilex vomitoria
Wax myrtle *	Myrica cerifera
Wild olive *	Osmanthus americana
Chinese photinia *	Photinia serrulata
Mountain andromeda *	Pieris floribunda
Japanese andromeda *	Pieris japonica
Pittosporum *	Pittosporum tobira
English laurel *	Prunus laurocerasus
Podocarpus *	Podocarpus macrophyllus maki
Narrow leafed English laurel *	Prunus laurocerasus angustifolia
Scarlet firethorn	Pyracantha coccinea
Yeddo-hawthorn *	Raphiolepis umbellata
Reeves spirea	Spirea cantoniensis
Thunberg spirea	Spirea thunbergii
Bridalwreath spirea	Spirea prunifolia plena
Vanhoutte spirea	Spirea vanhouttei
Japanese yew *	Taxus cuspidata
Leatherleaf viburnum *	Viburnum rhytidophyllum
Laurestinus viburnum *	Viburnum tinus

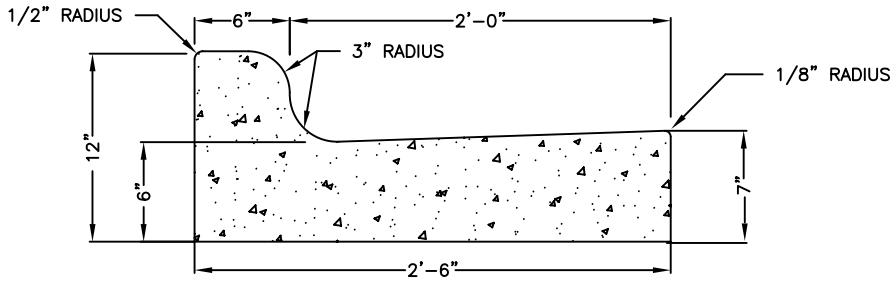
* denotes evergreen

Other species may be allowed with staff approval

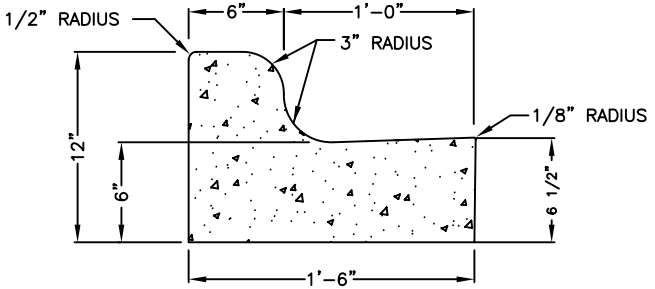
List subject to change

REFERENCES

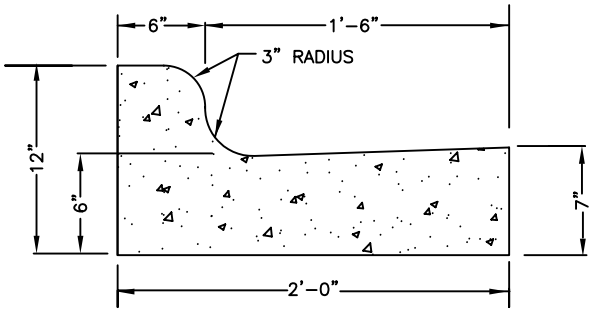
1. North Carolina Department of Transportation, most recent edition, Standard Specifications for Roads and Structures.
2. North Carolina Department of Transportation, most recent edition, Roadway Standards Drawings.
3. City of Charlotte Department of Transportation, most recent edition, Work Area Traffic Control Handbook (WATCH)
4. City of Charlotte Storm Water Services-Mecklenburg County Storm Water Services most recent edition, Charlotte-Mecklenburg Storm Water Design Manual
5. American Association of State Highway and Transportation Officials most recent edition, A Policy on Geometric Design of Highways and Streets
6. North Carolina Department of Transportation, Roadway Design Manual, latest edition
7. North Carolina Department of Environment and Natural Resources most recent edition, Erosion and Sediment Control Planning and Design Manual
8. NCDENR, Storm Water Best Management Practices, latest edition.
9. Charlotte-Mecklenburg BMP Design Manual, latest edition.
10. CDOT Pavement Marking Standards, latest edition.
11. The City of Charlotte Urban Street Design Guidelines, adopted by City Council October 22, 2007.



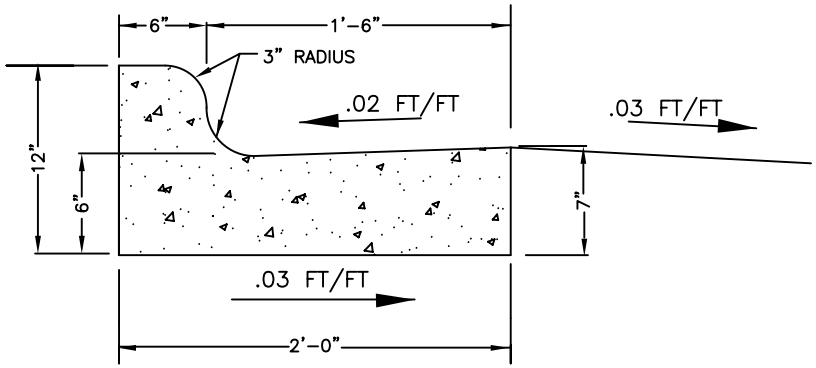
STANDARD 2'-6" CURB AND GUTTER



1'-6" STANDARD CURB AND GUTTER



2'-0" STANDARD CURB & GUTTER



SLOPE FOR VARIABLE
SUPERELEVATION RATES

NOT TO SCALE

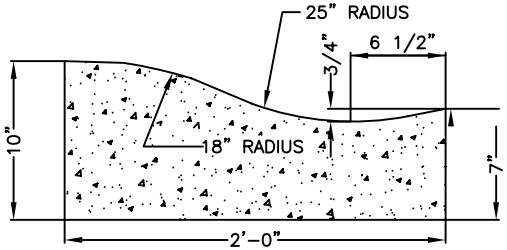
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

STANDARD CURB AND GUTTER

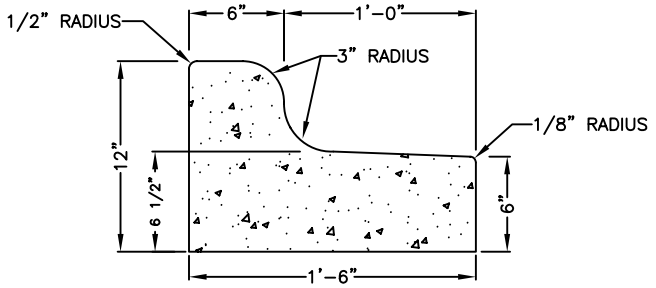
STD. NO.	REV.
10.17A	

2'–0" VALLEY GUTTER



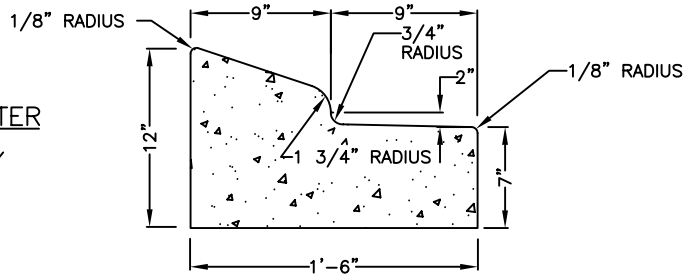
1'–6" MEDIAN CURB AND GUTTER

TO BE USED IN MEDIANS WHEN LANES ARE SLOPED FROM ISLAND OR AS SPECIFIED BY THE APPROPRIATE CITY ENGINEERING DEPT.



1'–6" MOUNTABLE CURB AND GUTTER

TO BE USED IN MEDIANS ONLY: WHEN SPECIFIED BY THE APPROPRIATE CITY ENGINEERING DEPT.



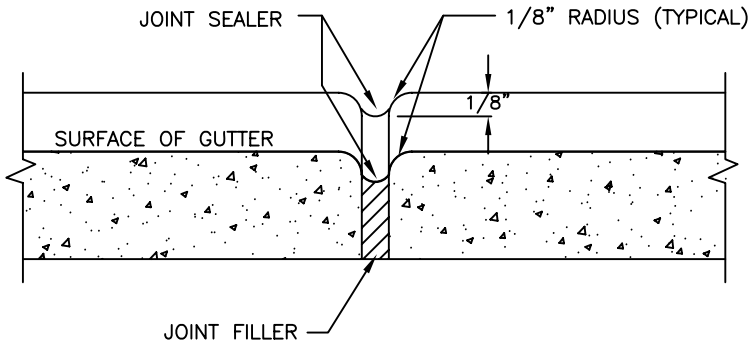
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

CURB AND GUTTER

STD. NO.	REV.
10.17B	



TRANSVERSE EXPANSION JOINT

NOTES:

1. CONTRACTION JOINTS SHALL BE SPACED AT 10–FOOT INTERVALS. FOR VALLEY GUTTER, A 10–FOOT SPACING MAY BE USED WHEN A MACHINE IS USED. JOINT SPACING MAY BE ALTERED BY THE CITY ENGINEER TO PREVENT UNCONTROLLED CRACKING.
2. CONTRACTION JOINTS MAY BE INSTALLED BY THE USE OF TEMPLATES OR FORMED BY OTHER APPROVED METHODS. WHERE SUCH JOINTS ARE NOT FORMED BY TEMPLATES, A MINIMUM DEPTH OF 1 1/2" SHALL BE OBTAINED.
3. ALL EXPANSION JOINTS SHALL BE SPACED AT 90–FOOT INTERVALS, AND ADJACENT TO ALL RIGID OBJECTS. JOINTS SHALL MATCH LOCATIONS WITH JOINTS IN ABUTTING SIDEWALK.
4. CONCRETE COMPRESSIVE STRENGTH SHALL BE 3600 P.S.I. IN 28 DAYS.
5. CURB SHALL BE DEPRESSED AT INTERSECTIONS TO PROVIDE FOR FUTURE ACCESSIBLE RAMPS.
6. TOP 6" OF SUBGRADE BENEATH THE CURB AND GUTTER SHALL BE COMPACTED TO 100% STANDARD PROCTOR DENSITY.

NOT TO SCALE

CHARLOTTE.

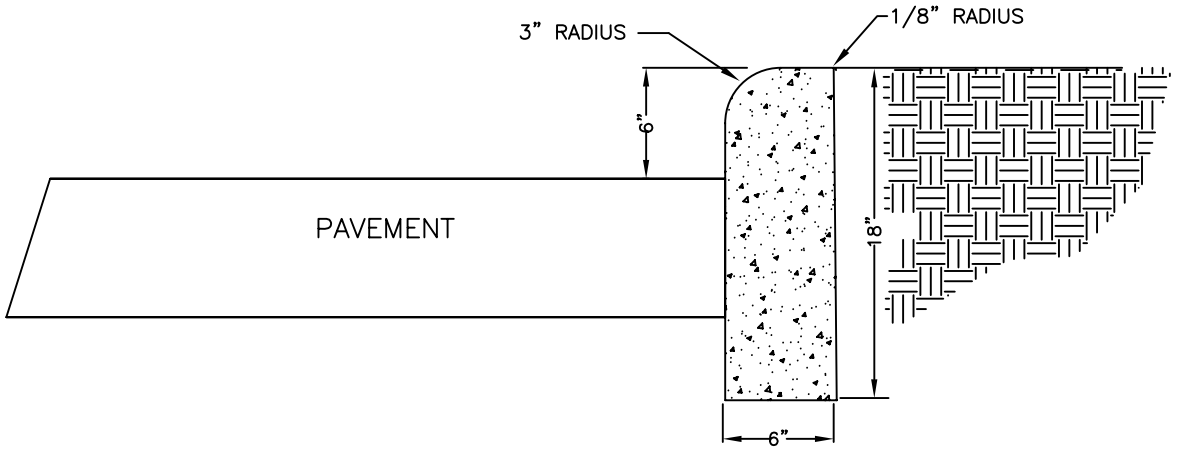
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

CURB AND GUTTER

STD. NO.	REV.
10.17C	

NOTES:

1. CONTRACTION JOINTS SHALL BE SPACED AT 10–FOOT INTERVALS. JOINT SPACING MAY BE ALTERED BY THE ENGINEER TO PREVENT UNCONTROLLED CRACKING.
2. CONTRACTION JOINTS MAY BE INSTALLED BY THE USE OF TEMPLATES OR FORMED BY OTHER APPROVED METHODS. WHERE SUCH JOINTS ARE NOT FORMED BY TEMPLATES, A MINIMUM DEPTH OF 1 1/2" SHALL BE OBTAINED.
3. ALL EXPANSION JOINTS SHALL BE SPACED AT 90–FOOT INTERVALS, AND ADJACENT TO ALL RIGID OBJECTS. JOINTS SHALL MATCH LOCATIONS WITH JOINTS IN ABUTTING SIDEWALK.
4. CONCRETE COMPRESSIVE STRENGTH SHALL BE 3600 P.S.I. IN 28 DAYS.
5. CURB SHALL BE DEPRESSED AT INTERSECTIONS TO PROVIDE FOR FUTURE ACCESSIBLE RAMPS.
6. TOP 6" OF SUBGRADE BENEATH THE CURB SHALL BE COMPACTED TO 100% STANDARD PROCTOR DENSITY.
7. DETAIL MAY BE USED FOR PRIVATE DRIVES, PARKING LOTS, AND INTERIOR CIRCULATION DRIVE.



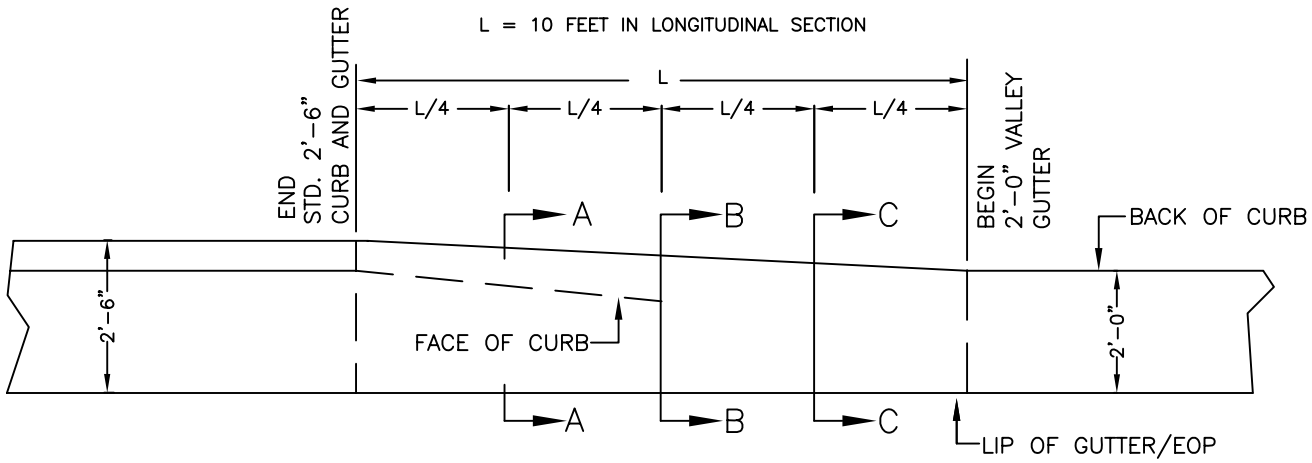
NOT TO SCALE

CHARLOTTE.

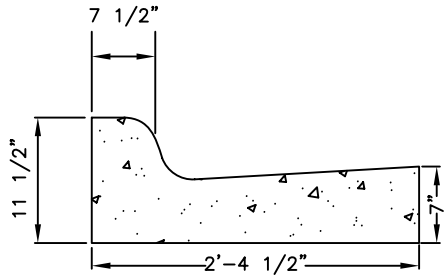
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

18" VERTICAL CURB

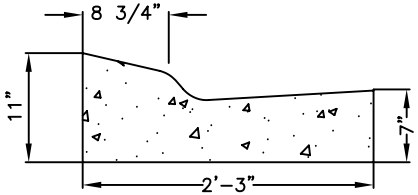
STD. NO.	REV.
10.18	



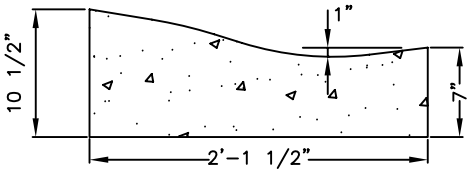
PLAN VIEW



SECTION A–A



SECTION B–B



SECTION C–C

NOTES:

1. TRANSITION IS NOT TO BE LOCATED WITHIN THE CURB RADIUS.

NOT TO SCALE

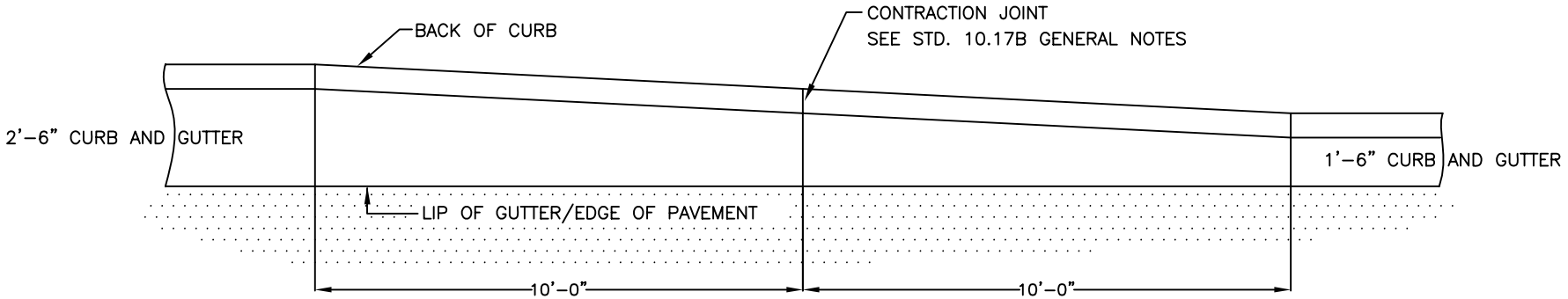
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

CURB TRANSITION

2'6" CURB AND GUTTER TO 2'-0" VALLEY GUTTER

STD. NO.	REV.
10.19	



PLAN VIEW

NOTES:

1. TRANSITION TO BE ALONG BACK OF CURB.

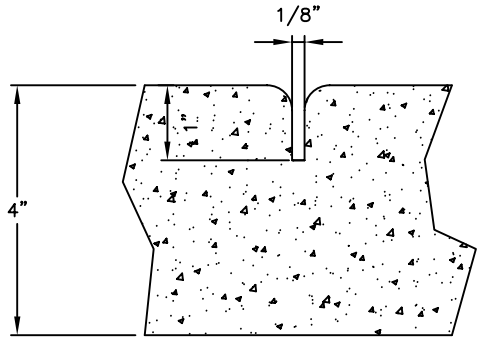
NOT TO SCALE

CHARLOTTE.

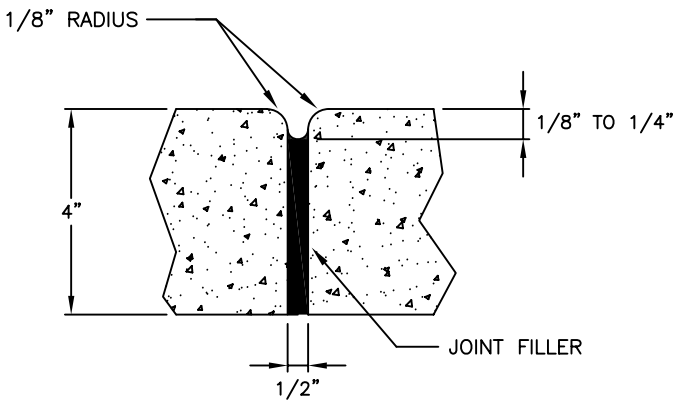
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

CURB TRANSITION
2'–6" CURB AND GUTTER TO 1'–6" CURB AND GUTTER

STD. NO.	REV.
10.20	



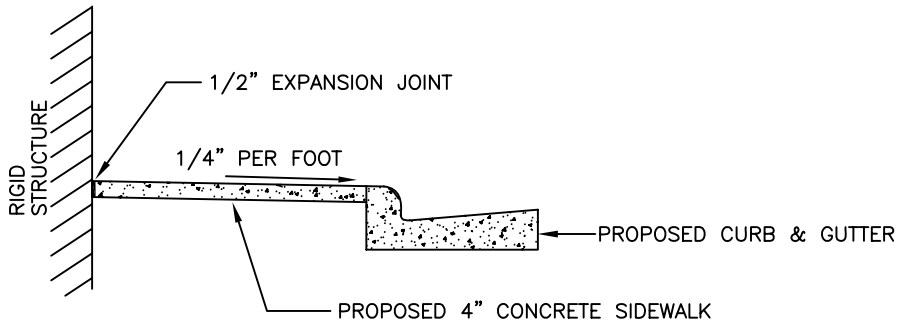
GROOVE JOINT IN SIDEWALK



TRANSVERSE EXPANSION JOINT IN SIDEWALK

GENERAL NOTES:

1. A GROOVE JOINT 1" DEEP WITH 1/8" RADII SHALL BE REQUIRED IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 45' INTERVALS NOT TO EXCEED 50' AND MATCHING EXPANSION/CONSTRUCTION JOINT IN ADJACENT CURB. A SEALED 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.
2. SIDEWALK AT DRIVEWAY ENTRANCES TO BE 6" THICK.
3. WIDTH OF SIDEWALK ON THOROUGHFARE STREETS SHALL BE A MINIMUM OF 5'. WIDTH OF SIDEWALKS IN THE CENTRAL BUSINESS DISTRICT WILL BE DETERMINED BY THE CDOT.
4. WIDTH OF SIDEWALKS ON NON-THOROUGHFARE STREETS SHALL BE A MINIMUM OF 4'.
5. SIDEWALK TO BE POURED TO END OF RADIUS AT INTERSECTING STREETS.
6. CONCRETE COMPRESSIVE STRENGTH SHALL BE 3600 PSI. IN 28 DAYS.
7. ZONING CONDITIONS MAY REQUIRE ADDITIONAL WIDTH SIDEWALKS WHICH SHALL SUPERSEDE THESE STANDARD DIMENSIONS SHOWN.



DETAILS SHOWING EXPANSION JOINTS IN CONCRETE SIDEWALK

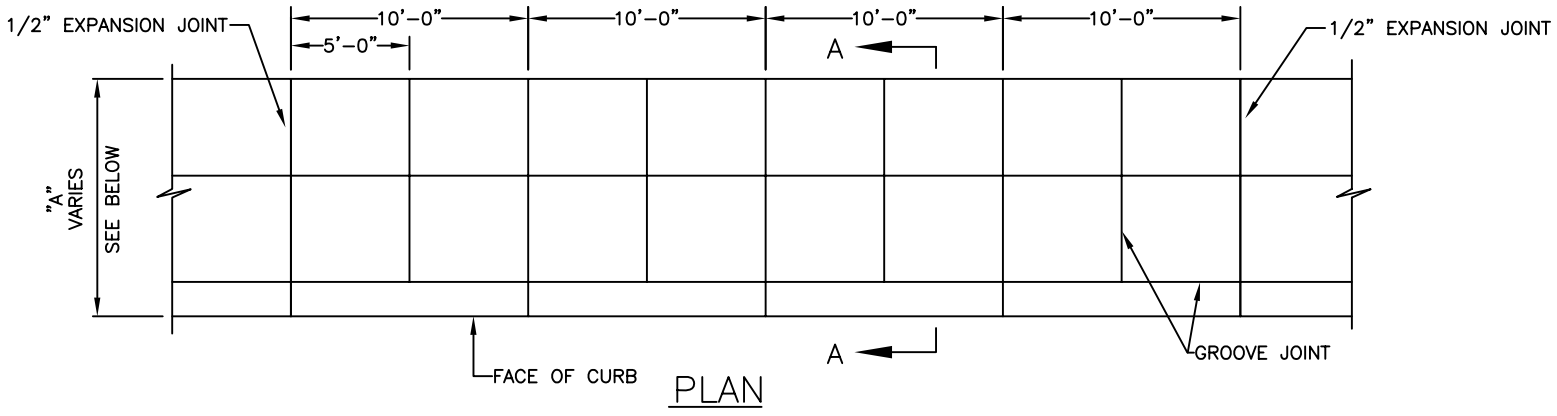
NOT TO SCALE

CHARLOTTE.

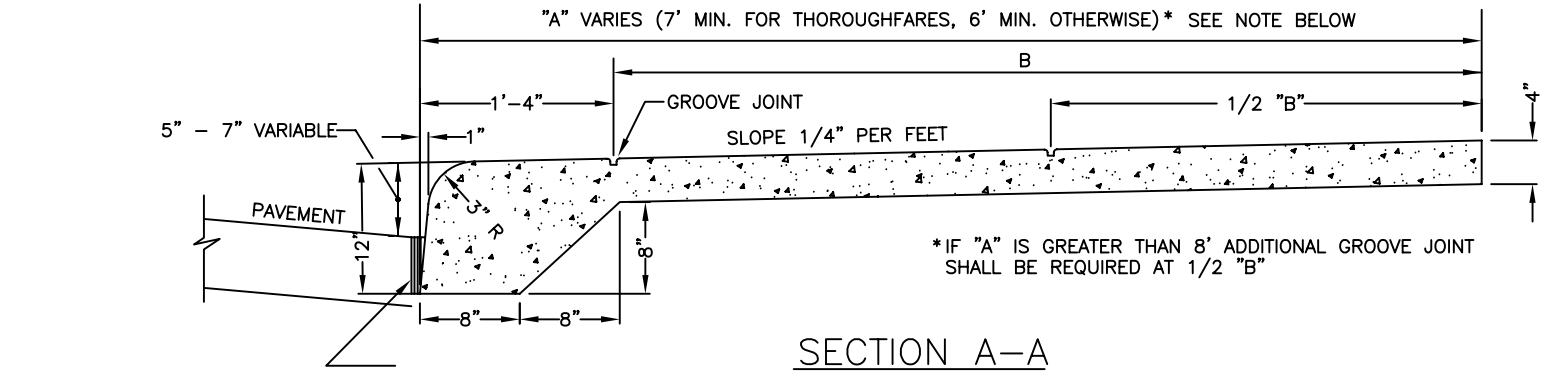
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

CONCRETE SIDEWALKS

STD. NO.	REV.
10.22	1



PLAN



SECTION A-A

TWO 1/2" THICK PIECES BITUMINOUS FIBER REQUIRED IF SUBBASE IS CONCRETE. MUST BE SEALED WITH APPROVED JOINT SEALER.

GENERAL NOTES:

1. A GROOVE JOINT 1" DEEP WITH 1/3" RADII SHALL BE REQUIRED IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 40' INTERVALS. A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.
2. ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH.
3. SEE STANDARD 10.22 FOR DETAIL OF EXPANSION JOINT AND GROOVE JOINT.
4. SEE STANDARD 10.26 FOR DETAIL OF DRIVEWAY.
5. MONOLITHIC CURB AND SIDEWALK TO BE CONSTRUCTED ONLY WHEN REPLACING GRANITE CURB OR AT LOCATIONS APPROVED BY THE APPROPRIATE CITY ENGINEER.

NOT TO SCALE

CHARLOTTE.

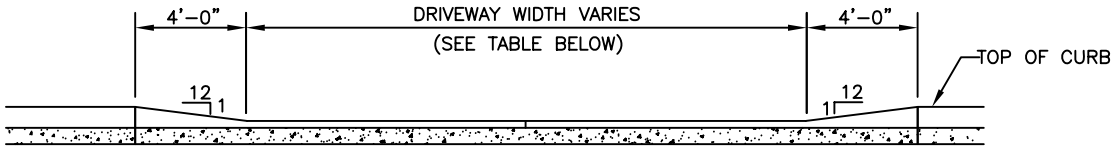
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

MONOLITHIC CONCRETE CURB AND SIDEWALK

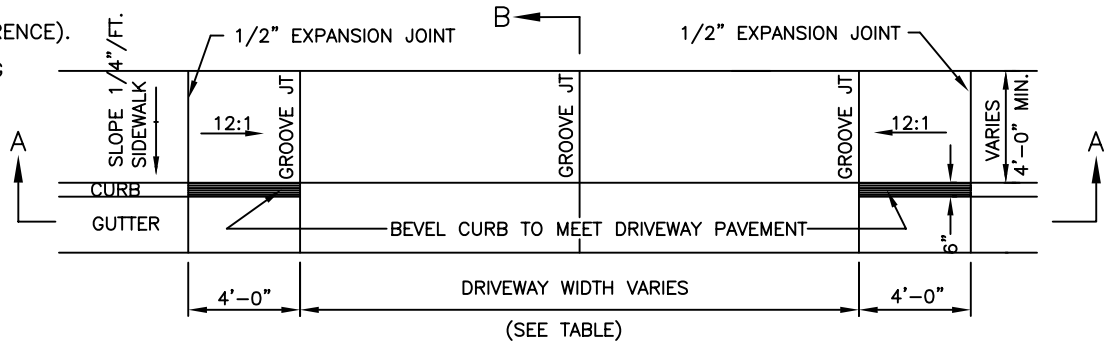
STD. NO.	REV.
10.23	3

NOTE:

1. 1/2" EXPANSION JOINTS REQUIRE INSTALLATION OF ONE 1/2" THICK PIECE OF BITUMINOUS FIBER THROUGH THE ENTIRE SLAB.
2. TO LIMIT STORM WATER FLOW DOWN DRIVEWAYS, USE STANDARD 10.24C FOR DRIVEWAYS NEAR LOW POINTS.
3. ALL DRIVEWAYS MUST MEET THE CURRENT CITY DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCE AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
4. "A" BREAKOVER SHALL BE 8% OR LESS (A = ALGEBRAIC DIFFERENCE).
5. PRIOR APPROVAL IS REQUIRED BY CDOT ON GRADES EXCEEDING WHAT ARE SHOWN.



SECTION A – A



PLAN

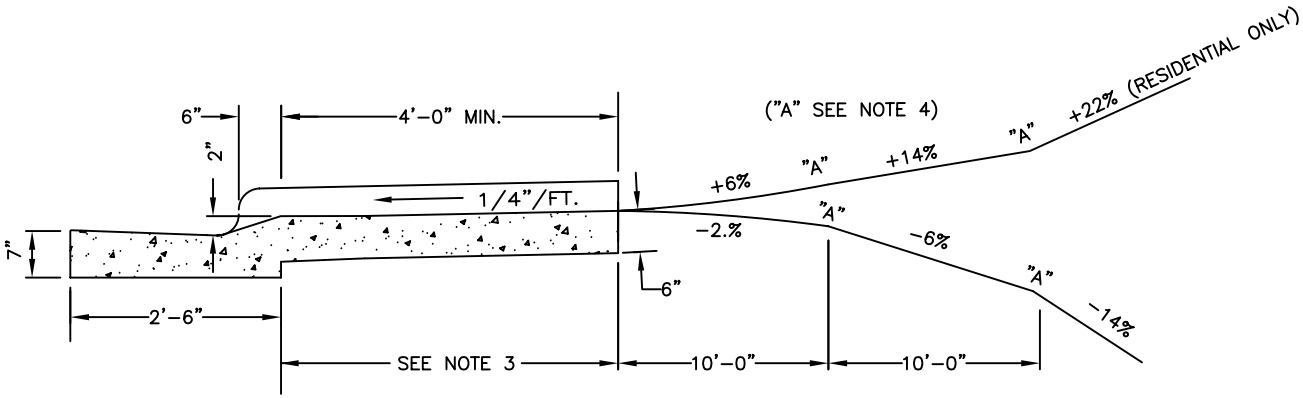
GENERAL NOTES:

ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH.

ALL CURB, CURB AND GUTTER AND SIDEWALKS ARE TO BE REMOVED TO THE NEAREST JOINT BEYOND NEW CONSTRUCTION OR CUT WITH A SAW AND REMOVED. SAW CUT OR JOINT TO BE PERPENDICULAR TO EDGE OF EXISTING PAVEMENT.
SEE STD. NO 10.17B FOR DETAIL OF EXPANSION JOINT AND GROOVE JOINT.

DRIVEWAY WIDTH		
TYPE DRIVEWAY	MINIMUM	MAXIMUM
TYPE I–RESIDENTIAL:		
LOCAL/COLLECTOR	10'	30'
THOROUGHFARE*	15'	30'
ONE–WAY TYPE II COMMERCIAL	20'	30'
TWO–WAY TYPE II COMMERCIAL	26'	50'

* MUST PROVIDE ON–SITE TURNAROUND



SECTION B – B

NOT TO SCALE

CHARLOTTE.

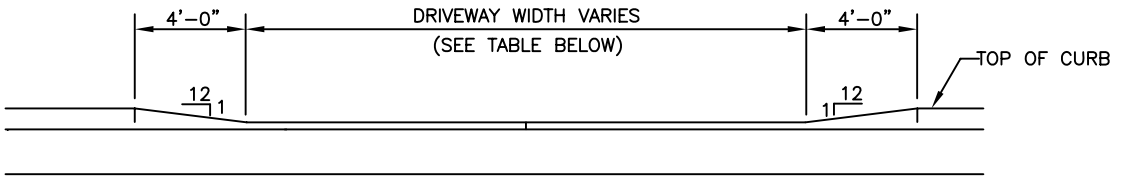
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

COMMERCIAL TYPE II AND RESIDENTIAL TYPE I DROP CURB DRIVEWAY WITH SIDEWALK ABUTTING CURB (2'–6" CURB AND GUTTER)

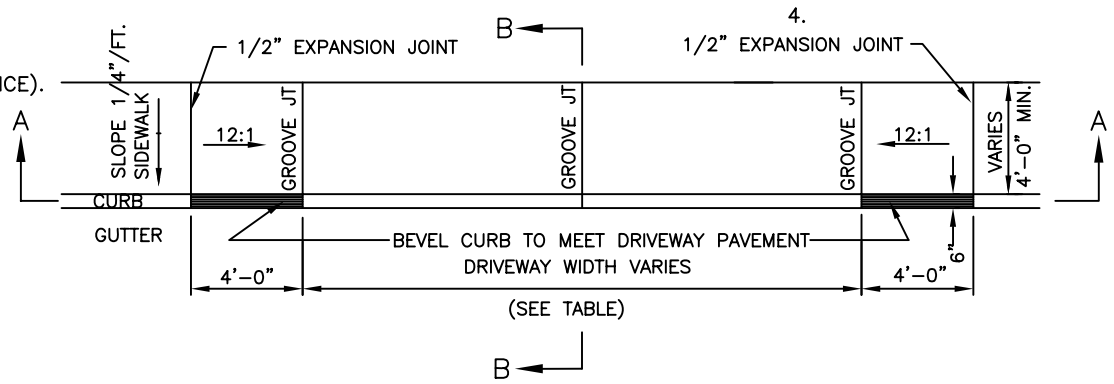
STD. NO.	REV.
10.24A	1

NOTE:

1. 1/2" EXPANSION JOINTS REQUIRE INSTALLATION OF ONE 1/2" THICK PIECE OF BITUMINOUS FIBER MATERIAL THROUGH THE ENTIRE SLAB.
2. TO LIMIT STORM WATER FLOW DOWN DRIVEWAYS, USE STANDARD 10.24C FOR DRIVEWAY LOWPOINT.
3. ALL DRIVEWAYS MUST MEET THE CURRENT CITY DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCE AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
4. "A" BREAKOVER SHALL BE 8% OR LESS (A = ALGEBRAIC DIFFERENCE).
5. PRIOR APPROVAL IS REQUIRED BY CDOT ON GRADES EXCEEDING WHAT ARE SHOWN.



SECTION A – A



PLAN

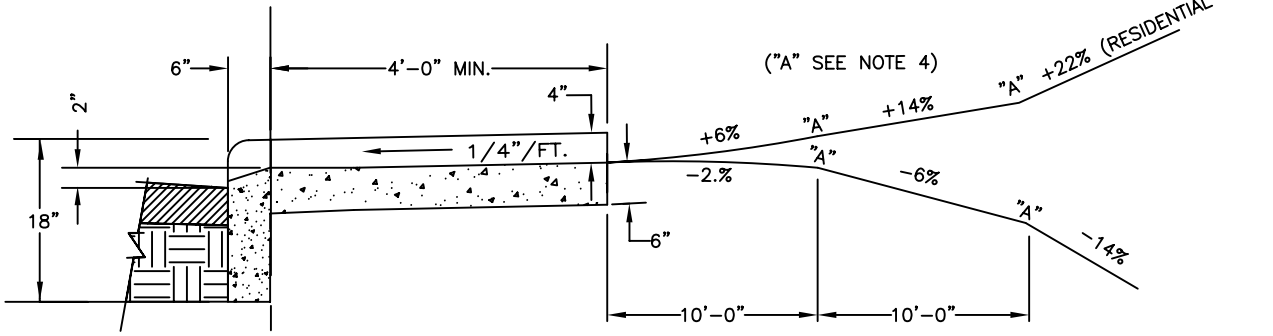
GENERAL NOTES:

ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH.

ALL CURB OR CURB AND GUTTER AND SIDEWALKS ARE TO BE REMOVED TO THE NEAREST JOINT BEYOND NEW CONSTRUCTION OR CUT WITH A SAW AND REMOVED. SAW CUT OR JOINT TO BE PERPENDICULAR TO EDGE OF EXISTING PAVEMENT. SEE STD. NO 10.17B FOR DETAIL OF EXPANSION JOINT AND GROOVE JOINT.

DRIVEWAY WIDTH		
TYPE DRIVEWAY	MINIMUM	MAXIMUM
TYPE I–RESIDENTIAL:		
LOCAL/COLLECTOR	10'	30'
THOROUGHFARE*	15'	30'
ONE–WAY TYPE II COMMERCIAL	20'	30'
TWO–WAY TYPE II COMMERCIAL	26'	50'

* MUST PROVIDE ON–SITE TURNAROUND



SECTION B – B

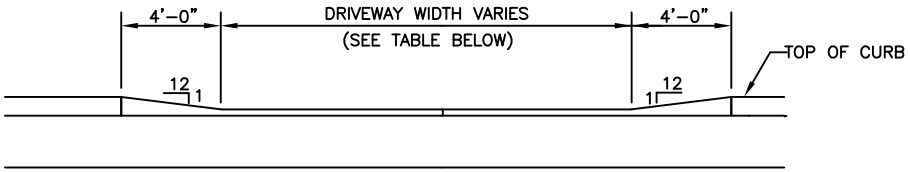
NOT TO SCALE

CHARLOTTE.

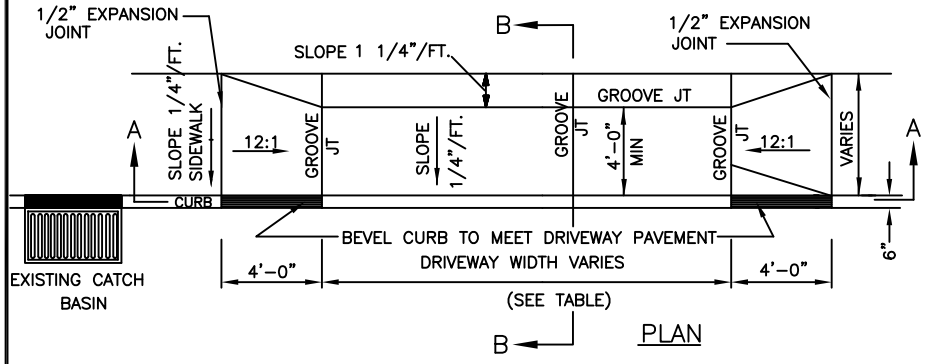
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

COMMERCIAL TYPE II AND RESIDENTIAL TYPE I DROP CURB DRIVEWAY WITH SIDEWALK ABUTTING CURB (6" X 18" VERTICAL CURB)

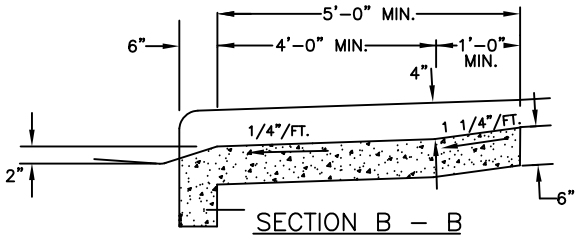
STD. NO.	REV.
10.24B	1



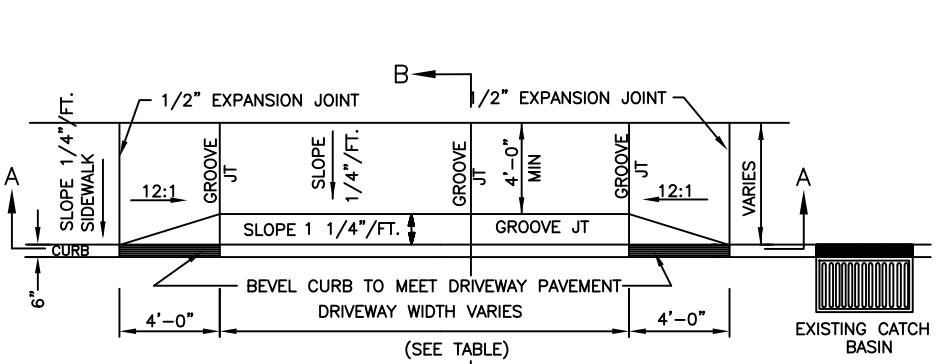
SECTION A – A



PLAN

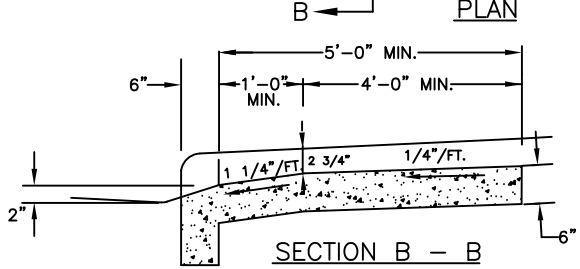


SECTION B – B



SECTION A – A

PLAN



SECTION B – B

DRIVEWAY WIDTH		
TYPE DRIVEWAY	MINIMUM	MAXIMUM
TYPE I–RESIDENTIAL: LOCAL/COLLECTOR THOROUGHFARE*	 10' 15'	 30' 30'
ONE–WAY TYPE II COMMERCIAL	20'	30'
TWO–WAY TYPE II COMMERCIAL	26'	50'

* MUST PROVIDE ON–SITE TURNAROUND

NOTES

1. USED AT LOW POINTS IN ROADWAYS WITH 2'–6" CURB AND GUTTER OR 6" X 18" CURB AS DIRECTED BY CITY ENGINEER.
2. SEE STANDARDS 10.24A & 10.24B FOR ADDITIONAL DETAILS.
3. ALL DRIVEWAYS MUST MEET THE CURRENT CITY DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCE AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

COMMERCIAL TYPE II AND RESIDENTIAL TYPE I DROP CURB DRIVEWAY WITH SIDEWALK ABUTTING CURB 6" X 18" (VERTICAL CURB)

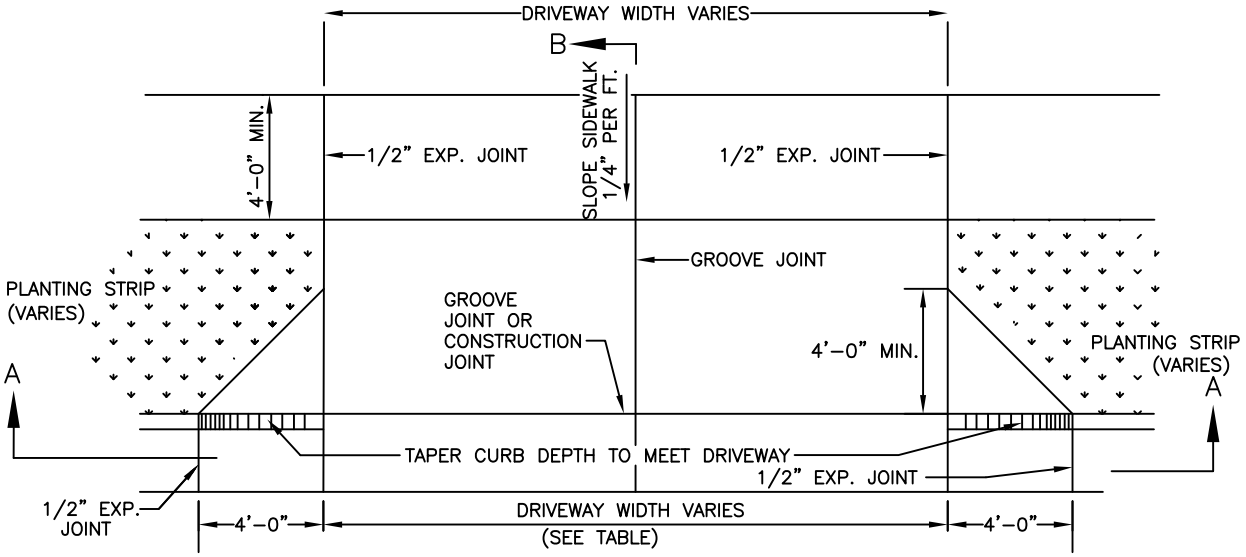
STD. NO.	REV.
10.24C	9

NOTES:

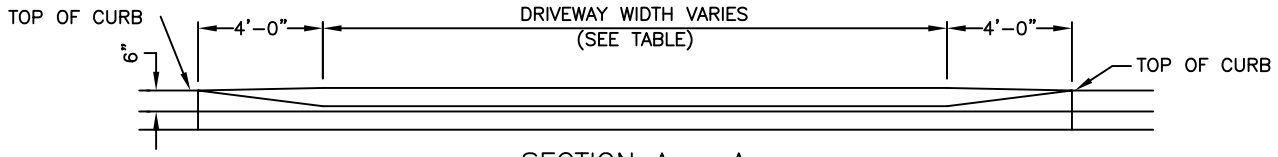
1. ALL CONCRETE TO BE 3600 P.S.I.
2. ALL CURB OR CURB AND GUTTER AND SIDEWALKS ARE TO BE REMOVED TO THE NEAREST JOINT BEYOND NEW CONSTRUCTION OR CUT WITH A SAW AND REMOVED. SAW CUT OR JOINT TO BE PERPENDICULAR TO EDGE OF EXISTING PAVEMENT. SEE STD. NO. 10.17 FOR JOINT DETAIL.
3. ALL DRIVEWAYS MUST MEET THE CURRENT CITY DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCE AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
4. "A" BREAKOVER SHALL BE 8% OR LESS (A = ALGEBRAIC DIFFERENCE).
5. PRIOR APPROVAL IS REQUIRED BY CDOT ON GRADES EXCEEDING WHAT ARE SHOWN.

DRIVEWAY WIDTH		
DRIVEWAY TYPE	MINIMUM	MAXIMUM
LOCAL/COLLECTOR	10'	30'
THOROUGHFARE*	15'	30'

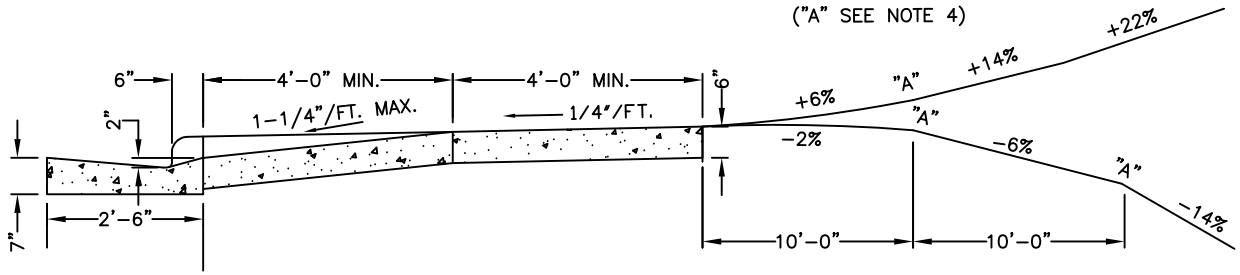
* MUST PROVIDE ON-SITE TURNAROUND



PLAN VIEW



SECTION A – A



SECTION B – B

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

RESIDENTIAL DROP CURB TYPE I DRIVEWAY WITH PLANTING STRIP (2'-6" CURB AND GUTTER)

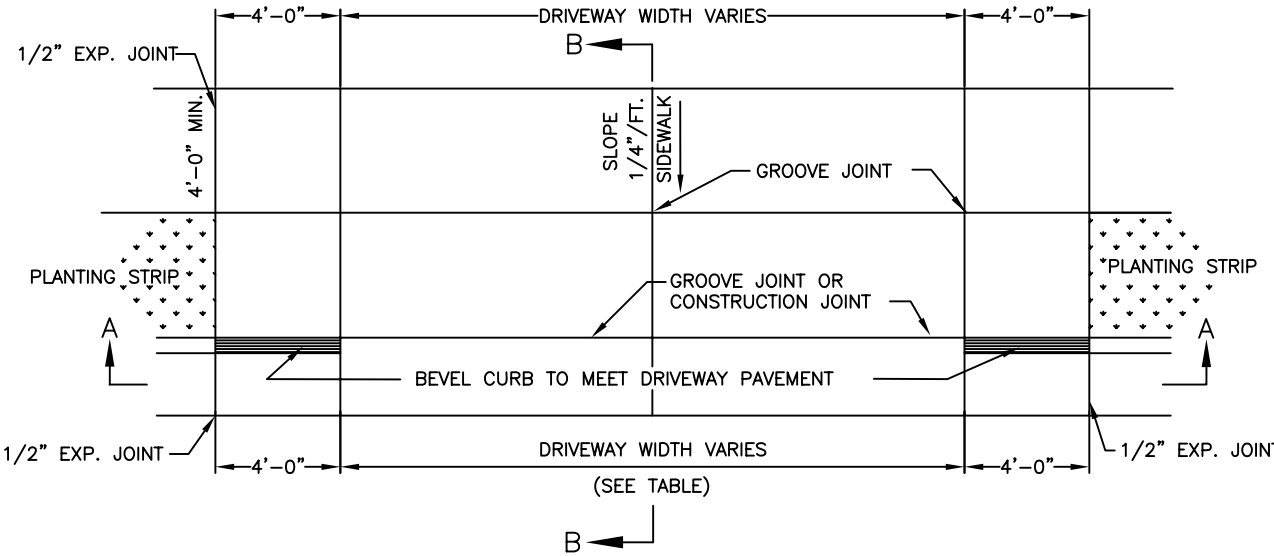
STD. NO.	REV.
10.25A	9

NOTES:

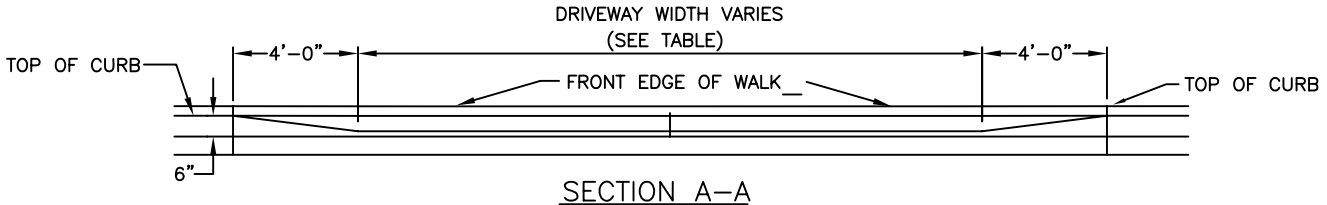
1. ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH.
2. AT ALL DRIVEWAYS, SIDEWALKS TO BE REMOVED TO THE NEAREST JOINT BEYOND NEW CONSTRUCTION OR CUT WITH A SAW AND REMOVED. SAW CUT OR JOINT TO BE PERPENDICULAR TO EDGE OF EXISTING PAVEMENT. SEE ST. NO. 10.17 FOR JOINT DETAIL.
3. ALL DRIVEWAYS MUST MEET THE CURRENT CITY DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS SIGHT DISTANCE AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
4. "A" BREAKOVER SHALL BE 8% OR LESS (A = ALGEBRAIC DIFFERENCE).
5. PRIOR APPROVAL IS REQUIRED BY CDOT ON GRADES EXCEEDING WHAT ARE SHOWN.

DRIVEWAYS CLASSIFICATION		
TYPE DRIVEWAYS	MINIMUM	MAXIMUM
ONE–WAY TYPE II – COMMERCIAL	20'	30'
TWO–WAY TYPE II – COMMERCIAL	26'	50'*

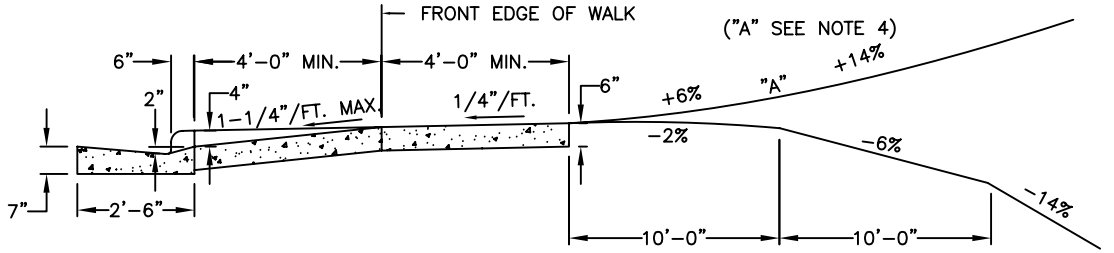
* NEED MORE THAN ONE CONTRACTION JOINT IN CENTER.



PLAN VIEW



SECTION A–A



SECTION B–B

NOT TO SCALE

CHARLOTTE.

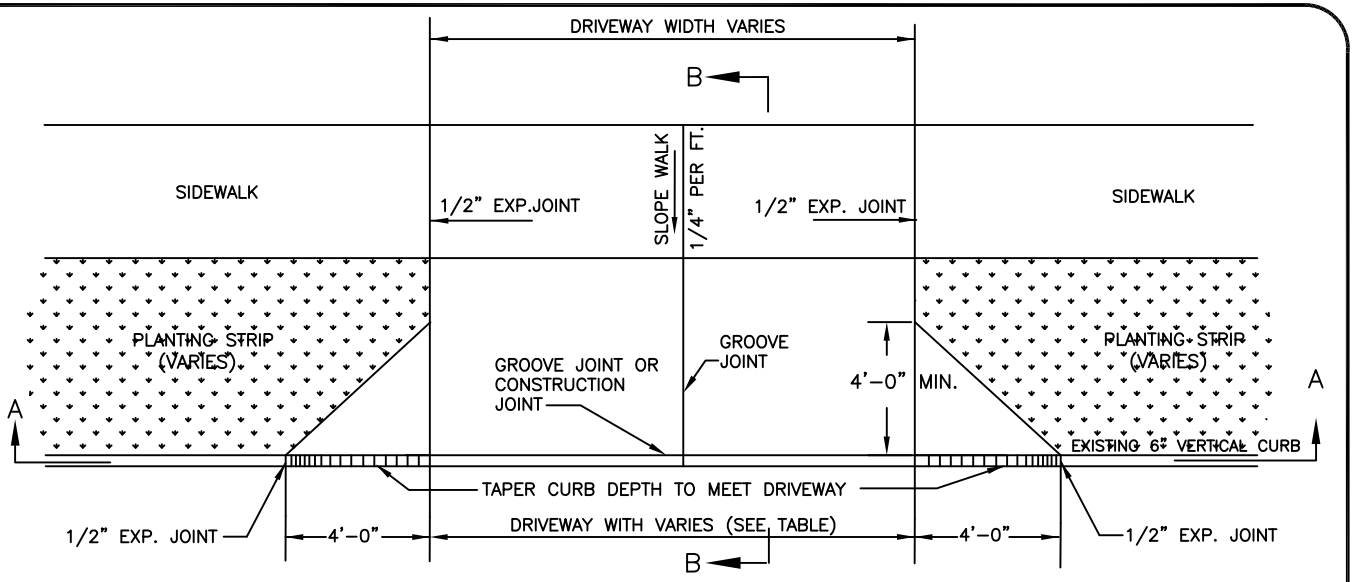
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

COMMERCIAL DROP CURB TYPE II DRIVEWAY WITH PLANTING STRIP (2'–6" CURB AND GUTTER)

STD. NO.	REV.
10.25B	

NOTES:

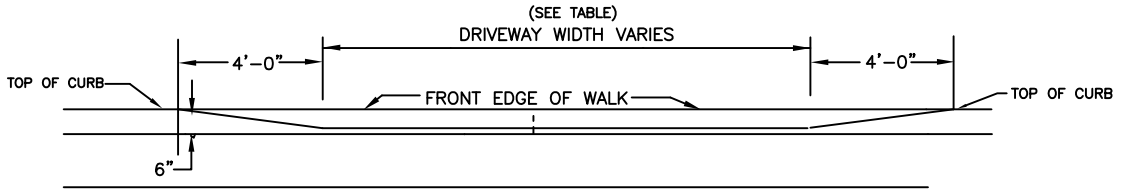
1. ALL CONCRETE TO BE 3600 P.S.I.
2. ALL CURB OR CURB AND GUTTER AND SIDEWALK ARE TO BE REMOVED TO THE NEAREST JOINT BEYOND NEW CONSTRUCTION OR CUT WITH A SAW AND REMOVED. SAW CUT OR JOINT TO BE PERPENDICULAR TO EDGE OF EXISTING PAVEMENT. SEE STD. NO. 10.17 FOR JOINT DETAIL.
3. ALL DRIVEWAYS MUST MEET THE CURRENT CITY DRIVWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCE, AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
4. "A" BREAKOVER SHALL BE 8% OR LESS.
5. PRIOR APPROVAL IS REQUIRED BY CDOT ON GRADES EXCEEDING WHAT ARE SHOWN.



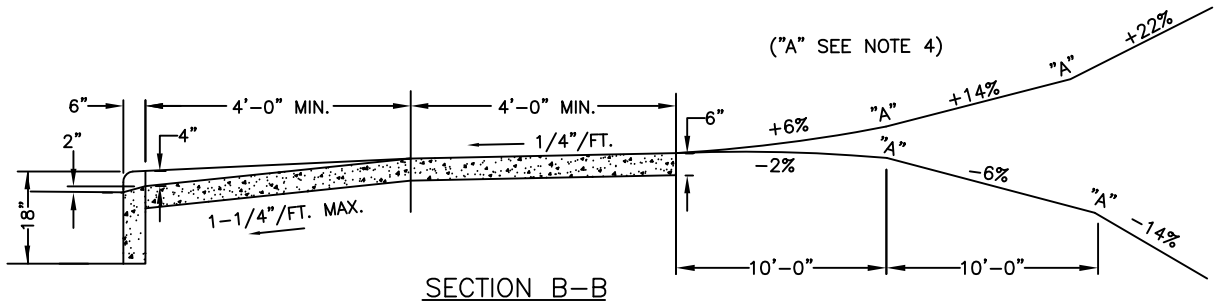
PLAN VIEW

DRIVEWAY WIDTH		
DRIVEWAY TYPE	MINIMUM	MAXIMUM
LOCAL/COLLECTOR	10'	30'
THOROUGHFARE*	15'	30'

* MUST PROVIDE ON-SITE TURNAROUND



SECTION A-A (ALONG FLOW LINE)



SECTION B-B

NOT TO SCALE

CHARLOTTE.

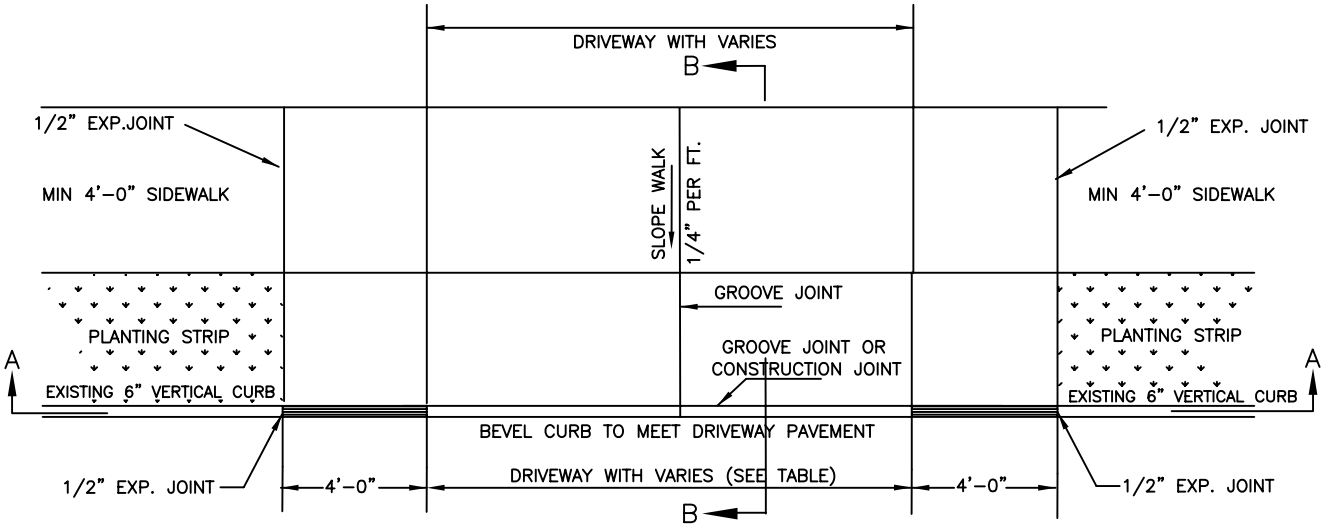
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

RESIDENTIAL DROP CURB TYPE I DRIVEWAY WITH PLANTING STRIP (6" X 18" VERTICAL CURB)

STD. NO.	REV.
10.25C	9

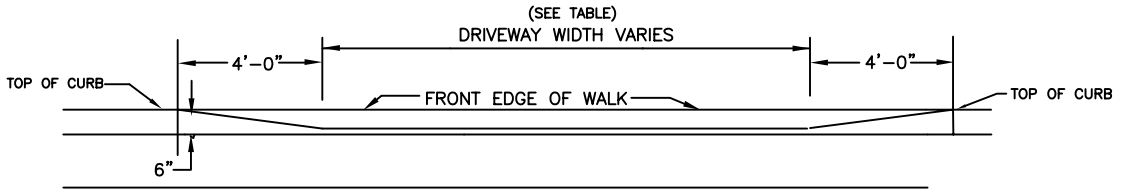
NOTES:

1. ALL CONCRETE TO BE 3600 P.S.I.
2. ALL CURB OR CURB AND GUTTER AND SIDEWALK ARE TO BE REMOVED TO THE NEAREST JOINT BEYOND NEW CONSTRUCTION OR CUT WITH A SAW AND REMOVED. SAW CUT OR JOINT TO BE PERPENDICULAR TO EDGE OF EXISTING PAVEMENT. SEE STD. NO. 10.17 FOR JOINT DETAIL.
3. ALL DRIVEWAYS MUST MEET THE CURRENT CITY DRIVWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING,SIGHT DISTANCE, AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
4. "A" BREAKOVER SHALL BE 8% OR LESS.
5. PRIOR APPROVAL IS REQUIRED BY CDOT ON GRADES EXCEEDING WHAT ARE SHOWN.

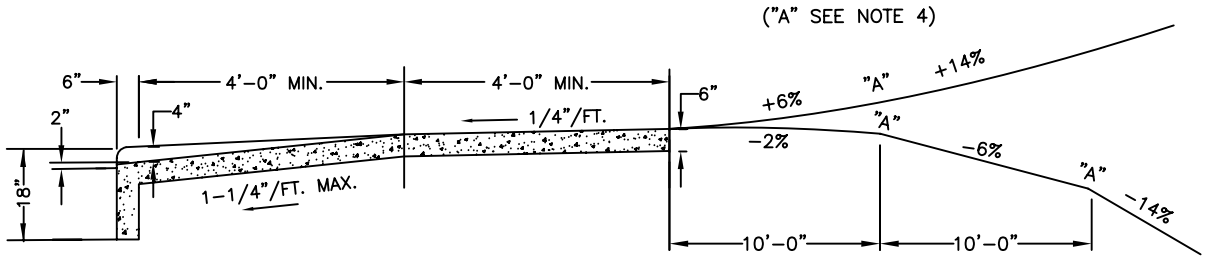


PLAN VIEW

DRIVEWAYS CLASSIFICATION		
TYPE DRIVEWAYS	MINIMUM	MAXIMUM
ONE-WAY TYPE II-COMMERCIAL	20'	30'
TWO-WAY TYPE II-COMMERCIAL	26'	50'*



SECTION A-A (ALONG FLOW LINE)



SECTION B-B

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

COMMERCIAL DROP CURB TYPE II DRIVEWAY WITH PLANTING STRIP (6" X 18" VERTICAL CURB)

STD. NO.	REV.
10.25D	

DRIVEWAY DIMENSIONS		
OPERATION/RADIUS	MINIMUM	MAXIMUM
ONE–WAY WITH 6–12 FT. RADII	20'	30'
ONE–WAY WITH 13+ FT. RADII	15'	25'
TWO–WAY WITH 6–12 FT. RADII	26'	50'
TWO–WAY WITH 13+ FT. RADII	22'	40'

NOTES:

1. ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH.

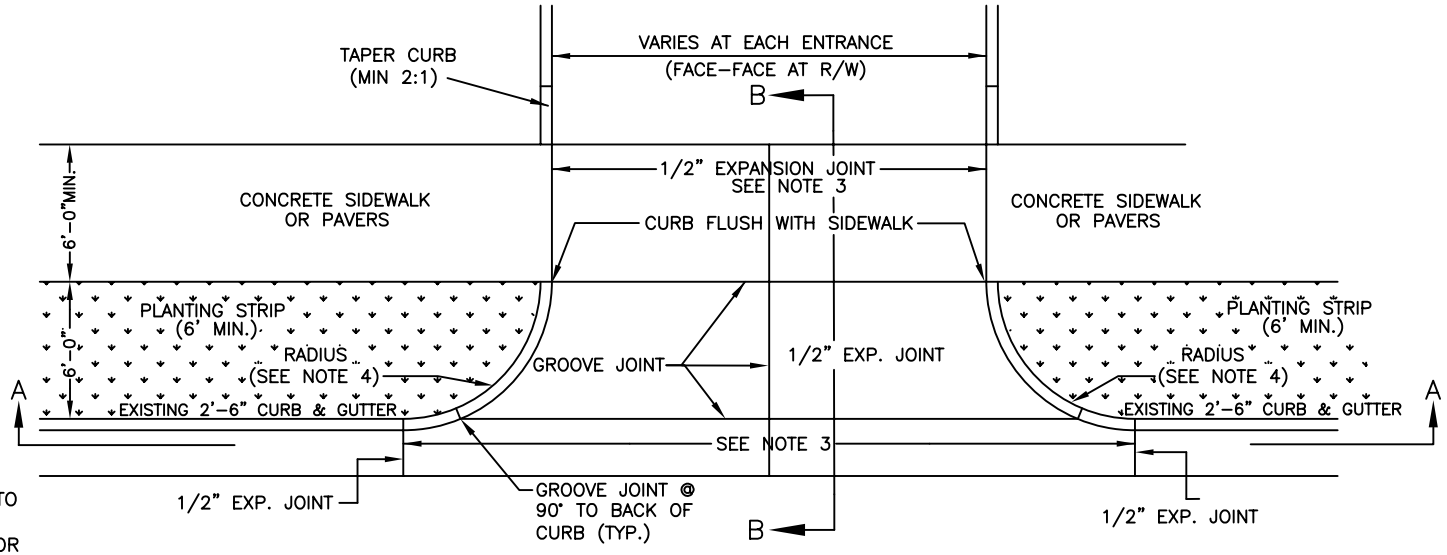
2. AT ALL DRIVEWAYS, SIDEWALKS TO BE REMOVED TO THE NEAREST JOINT BEYOND NEW CONSTRUCTION OR CUT WITH A SAW AND REMOVED. SAW CUT OR JOINT TO BE PERPENDICULAR TO EDGE OF EXISTING PAVEMENT. SEE STD. NO. 10.17 FOR JOINT DETAIL. PAY LIMITS FOR WORK DONE UNDER CITY OF CHARLOTTE CONTRACTS ARE FROM EXPANSION JOINT TO EXPANSION JOINT, FROM LIP OF CURB TO BACK OF SIDEWALK.

3. ALL DRIVEWAYS MUST MEET THE CURRENT CITY DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCE, AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.

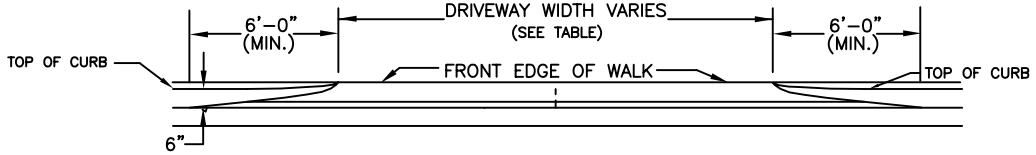
4. RADII MUST BE MINIMUM 6 FEET OR THE WIDTH OF THE PLANTING STRIP, WHICHEVER IS GREATER. RADII GREATER THAN THESE MINIMUMS MAY BE REQUIRED BY CDOT ON A CASE–BY–CASE BASIS. FOR RADII GREATER THAN 6 FEET, THE RADII ARE TO CONTINUE AS A BAND AT–GRADE THROUGH THE SIDEWALK.

5. PAVERS USED IN DRIVEWAY MUST HAVE A THICKNESS OF 3 INCHES.

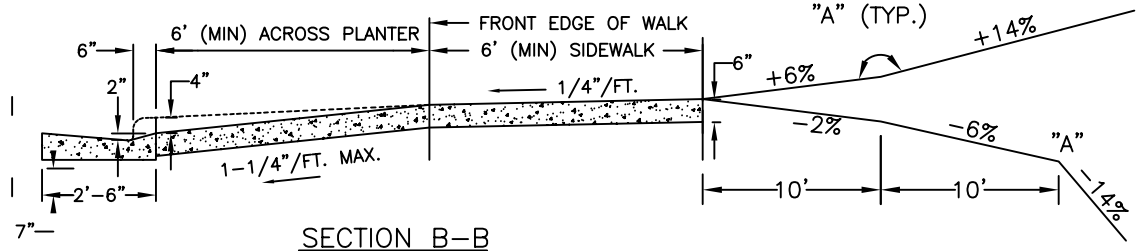
6. ALGEBRAIC DIFFERENCE IN GRADE ("A") BETWEEN SLOPES SHALL BE 8% OR LESS.



PLAN VIEW



SECTION A–A (ALONG FLOW LINE)



SECTION B–B

NOT TO SCALE

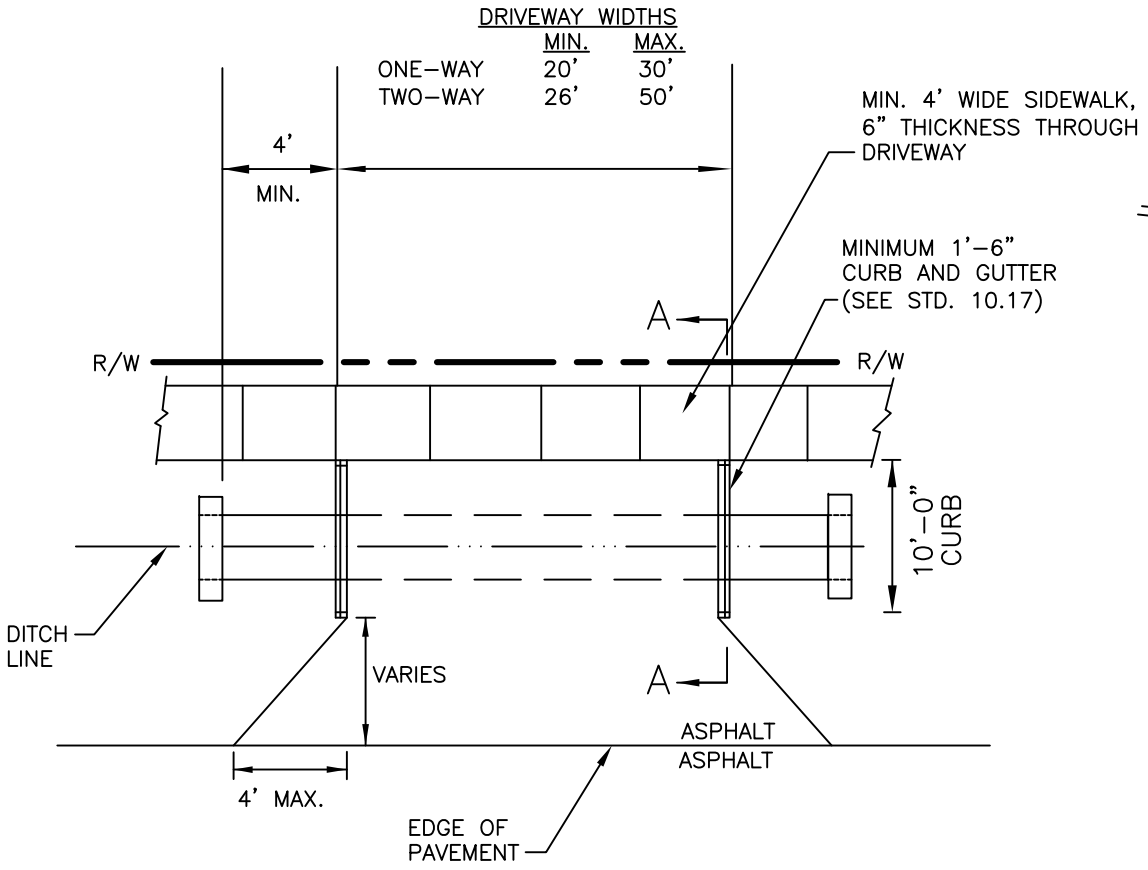
APPROVED DATE _____

CHARLOTTE.

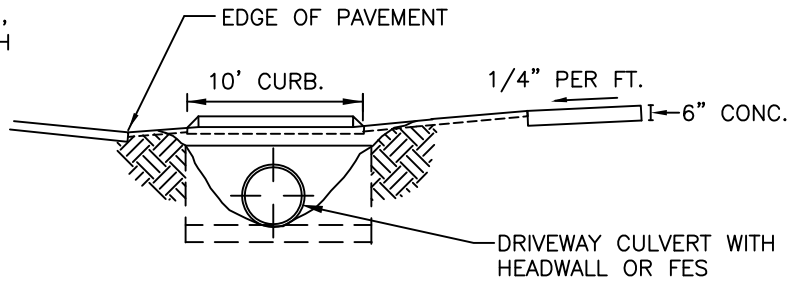
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TYPE II–MODIFIED DRIVEWAY DETAIL WITH WIDE PLANTING STRIP AND STANDARD CURB

STD. NO.	REV.
10.25E	



PLAN



SECTION A–A

* NCDOT TO APPROVE ON NCDOT SYSTEM ROAD.

NOTES:

1. TO BE USED ON ROADS WITHOUT CURB AND GUTTER AND WHERE CURB AND GUTTER IS NOT BEING INSTALLED. (MUST MEET BOTH CRITERIA)
2. ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH.
3. USE OF THIS STANDARD FOR RESIDENTIAL DRIVEWAY CONSTRUCTION AT THE DISCRETION OF THE CITY ENGINEER ONLY.

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

COMMERCIAL TYPE IV DRIVEWAY STANDARD

STD. NO.	REV.
10.25F	9

GENERAL NOTES:

ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH.

A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE. SEE STANDARD 10.22.

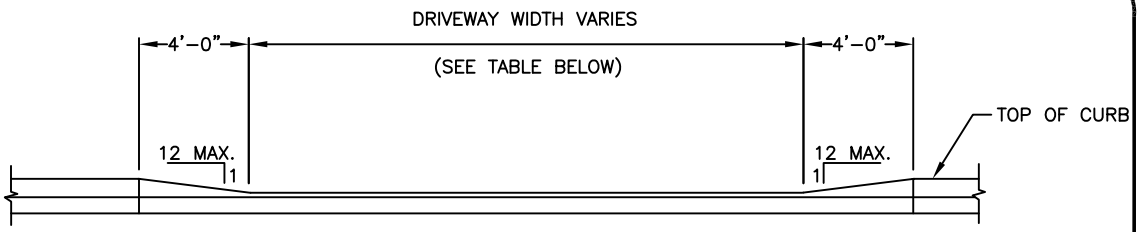
THIS DETAIL TO BE USED ONLY IN CONJUNCTION WITH MONOLITHIC SIDEWALK AS ON STANDARD NO. 10.23

NOTES:

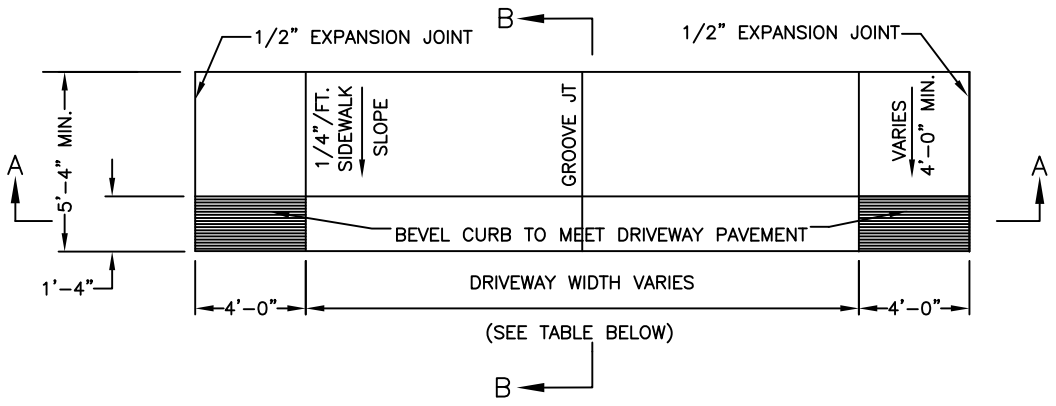
1. ALL DRIVEWAYS MUST MEET THE CURRENT CITY DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCES, AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.

DRIVEWAY WIDTH		
TYPE DRIVEWAY	MINIMUM	MAXIMUM
TYPE I–RESIDENTIAL:		
LOCAL/COLLECTOR	10'	30'
THOROUGHFARE*	15'	30'
ONE–WAY TYPE II COMMERCIAL	20'	30'
TWO–WAY TYPE II COMMERCIAL	26'	50'

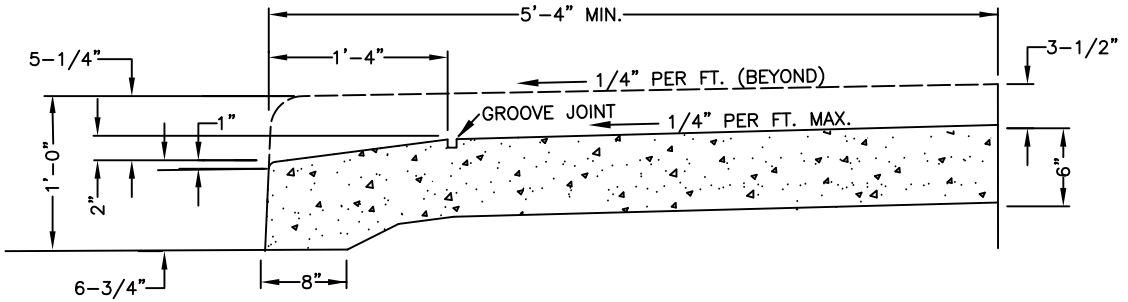
* MUST PROVIDE ON–SITE TURNAROUND



SECTION A–A



PLAN



SECTION B–B

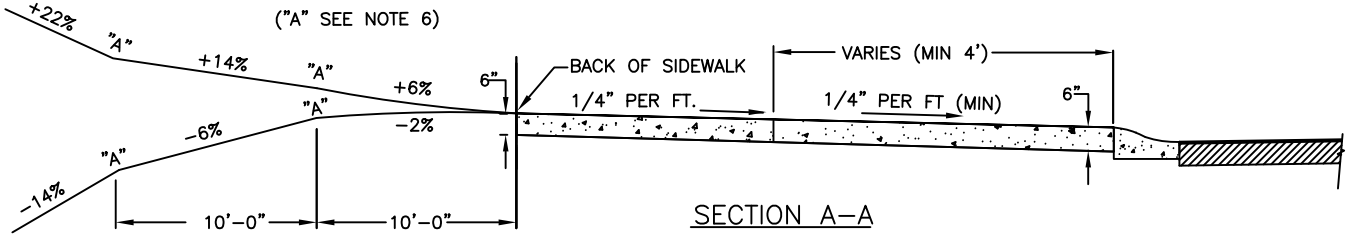
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

DROP CURB DRIVEWAY
MONOLITHIC CONCRETE CURB AND SIDEWALK

STD. NO.	REV.
10.26	9



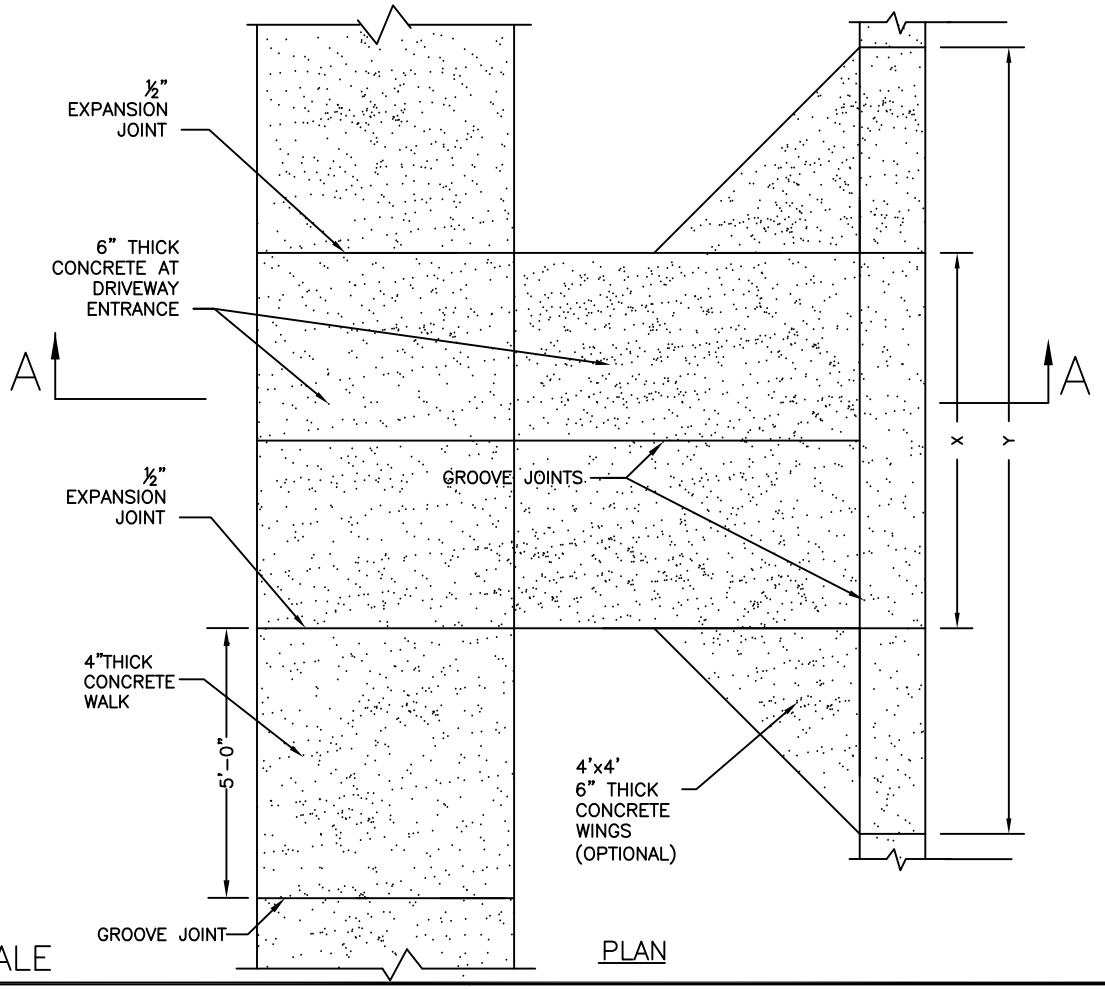
SECTION A-A

NOTES:

1. THE ELEVATION OF THE SIDEWALK SHALL BE NOT LESS THAN SIX INCHES OR MORE THAN EIGHTEEN INCHES ABOVE THE ROADWAY CROWN. THIS ELEVATION DIFFERENTIAL SHALL BE CONSISTENT WITHIN EACH BLOCK.
2. ALL CONCRETE TO BE 3600 PSI STRENGTH.
3. ALL CONSTRUCTION PRACTICES, INCLUDING COMPACTION, CURING, FINISHING, ETC. SHALL BE IN ACCORDANCE WITH THE CHARLOTTE LAND DEVELOPMENT STANDARDS.
4. PLANTING STRIP SHALL BE GRADED WITH A CROSS SLOPE BETWEEN 1/2 IN. PER FOOT AND 1 1/4 IN. PER FOOT EXCEPT WHERE EXCESSIVE NATURAL GRADES MAKE THIS REQUIREMENT IMPRACTICAL. IN SUCH CASES, THE CITY ENGINEER MAY AUTHORIZE A SUITABLE GRADE
5. ALL DRIVEWAYS MUST MEET THE CURRENT CITY DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS, INCLUDING BUT NOT LIMITED TO SPACING, SIGHT DISTANCE, AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
6. "A" BREAKOVER SHALL BE 8% OR LESS (A = ALGEBRAIC DIFFERENCE).
7. PRIOR APPROVAL IS REQUIRED BY CDOT ON GRADES EXCEEDING WHAT ARE SHOWN.

DRIVEWAY WIDTH		
	X	Y
TYPE I-RESIDENTIAL:		
LOCAL/COLLECTOR	10' MIN.	30' MAX. **
THOROUGHFARE *	15' MIN.	30' MAX. **

* MUST PROVIDE ON-SITE TURNAROUND
** MAXIMUM WIDTH INCLUDES OPTIONAL WINGS



PLAN

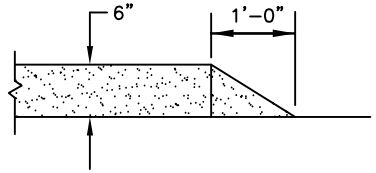
NOT TO SCALE

CHARLOTTE.

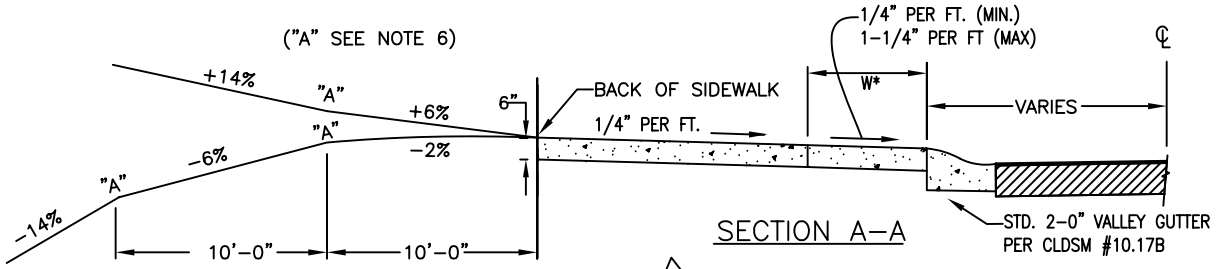
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

RESIDENTIAL DRIVEWAY (TYPE I) FOR 2'-0" VALLEY GUTTER

STD. NO.	REV.
10.27A	8



SECTION B–B



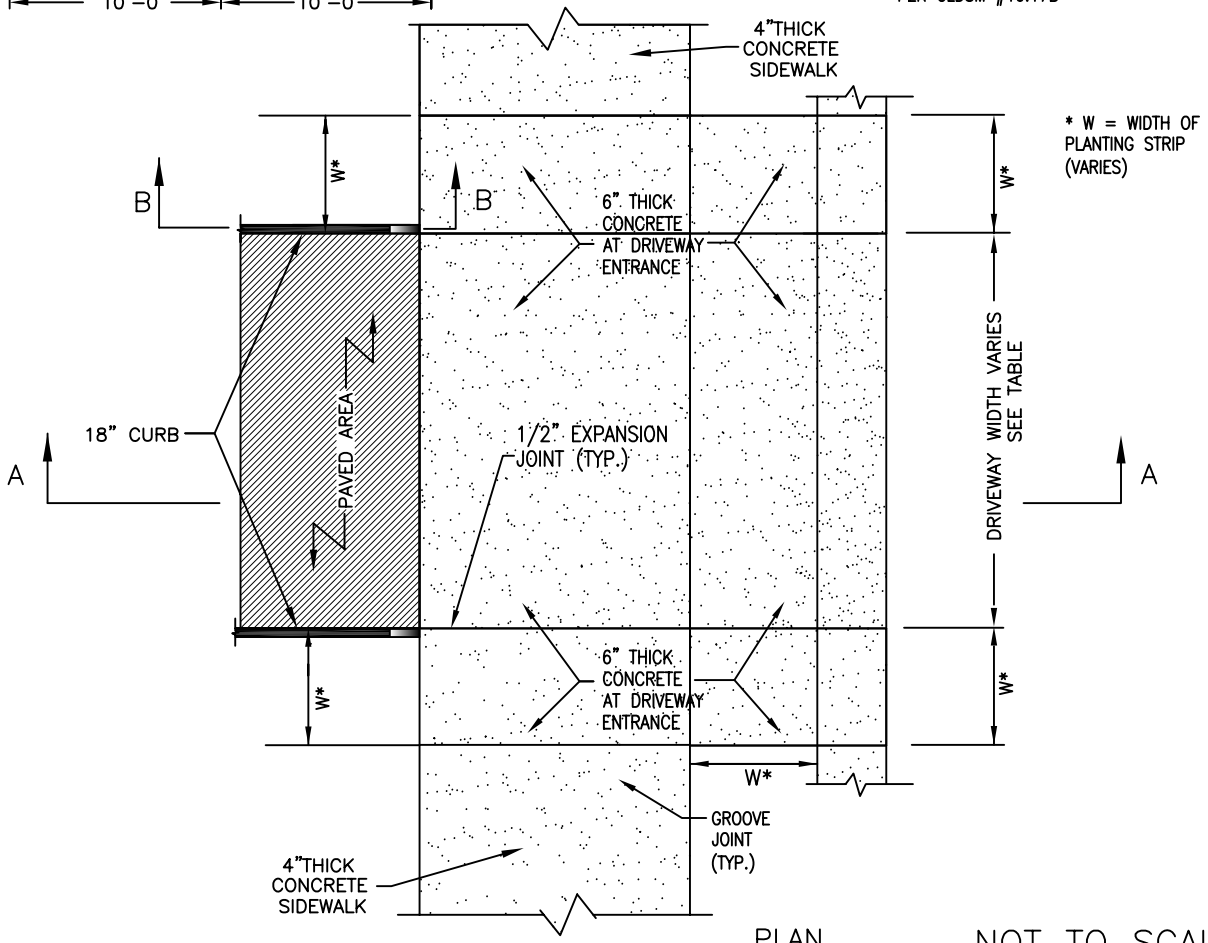
SECTION A–A

NOTES:

1. THE ELEVATION OF THE SIDEWALK SHALL BE NOT LESS THAN SIX INCHES OR MORE THAN EIGHTEEN INCHES ABOVE THE ROADWAY CROWN. THIS ELEVATION DIFFERENTIAL SHALL BE CONSISTENT WITHIN EACH BLOCK.
2. ALL CONCRETE TO BE 3600 PSI STRENGTH.
3. ALL CONSTRUCTION PRACTICES, INCLUDING COMPACTION, CURING, FINISHING, ETC. SHALL BE IN ACCORDANCE WITH THE CHARLOTTE LAND DEVELOPMENT STANDARDS.
4. PLANTING STRIP SHALL BE GRADED WITH A CROSS SLOPE BETWEEN 1/2 IN. PER FOOT AND 1 1/4 IN. PER FOOT EXCEPT WHERE EXCESSIVE NATURAL GRADES MAKE THIS REQUIREMENT IMPRACTICAL. IN SUCH CASES, THE CITY ENGINEER MAY AUTHORIZE A SUITABLE GRADE
5. ALL DRIVEWAYS MUST MEET THE CURRENT CITY DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS, INCLUDING BUT NOT LIMITED TO SPACING, SIGHT DISTANCE, AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
6. "A" BREAKOVER SHALL BE 8% OR LESS (A=ALGEBRAIC DIFFERENCE).
7. PRIOR APPROVAL IS REQUIRED BY CDOT ON GRADES EXCEEDING WHAT ARE SHOWN.

DRIVEWAY WIDTH		
TYPE DRIVEWAY	MINIMUM	MAXIMUM
ONE–WAY TYPE II COMMERCIAL	20'	30'
TWO–WAY TYPE II COMMERCIAL	26'	50'

* MUST PROVIDE ON–SITE TURNAROUND



PLAN

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

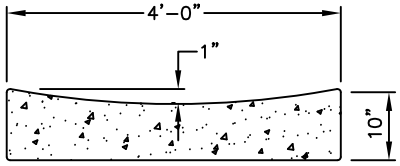
COMMERCIAL TYPE II DRIVEWAY FOR 2'–0" VALLEY GUTTER

STD. NO.	REV.
10.27B	1

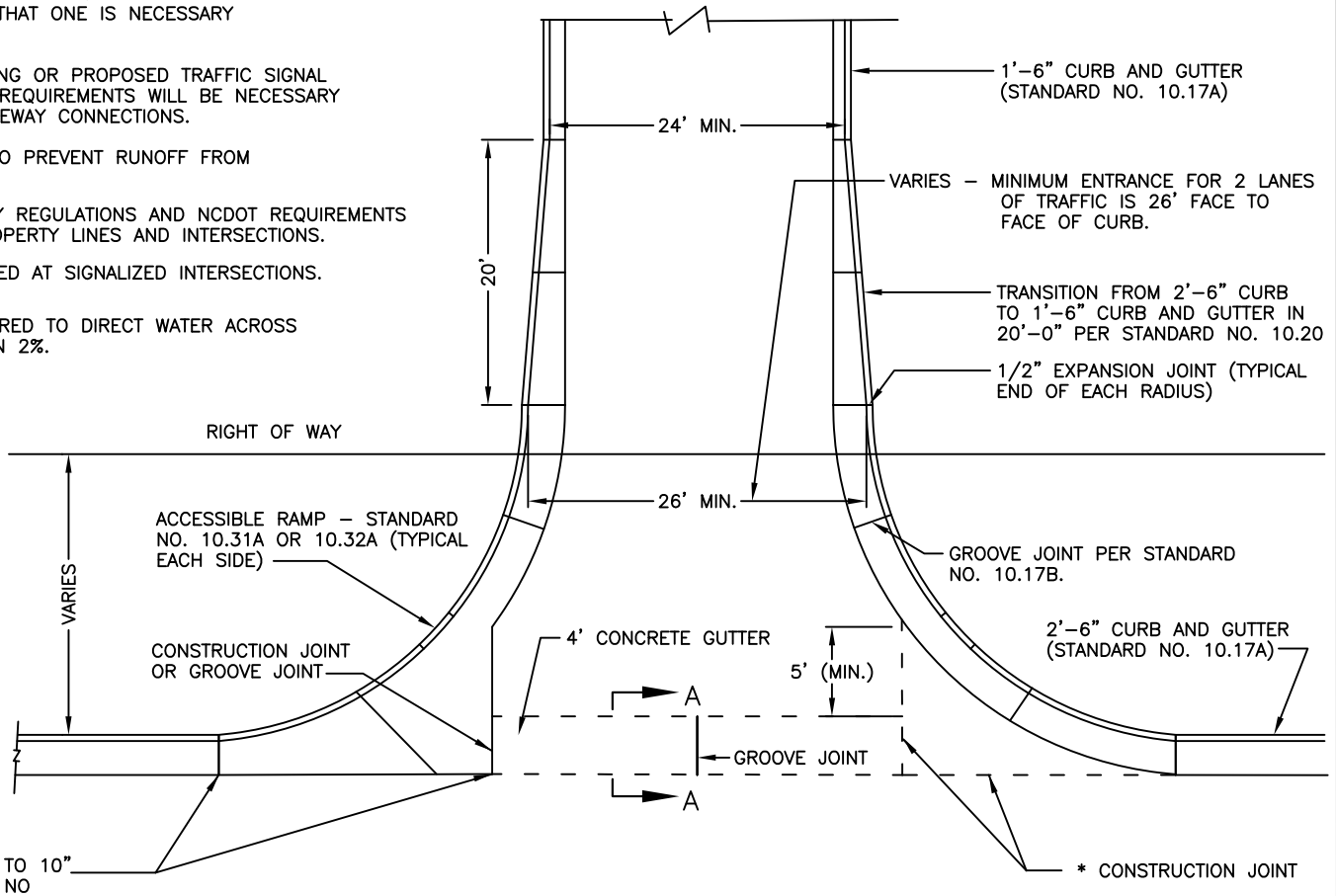
NOTES:

1. WHERE A TYPE III DRIVEWAY IS APPROVED BY THE CHARLOTTE DEPARTMENT OF TRANSPORTATION (CDOT) THAT CONNECTS TO AN EXISTING SIGNALIZED INTERSECTION, OR AT A LOCATION WHERE A TRAFFIC SIGNAL INSTALLATION IS PROPOSED BY CDOT BASED ON A TRAFFIC IMPACT/SIGNAL WARRANT STUDY, A FULL DEPTH ASPHALT PAVEMENT (2–1/2" S–9.5 B/C AND 6" B–25.0 B/C) IS REQUIRED. THIS PAVEMENT DESIGN IS REQUIRED IN THE DRIVEWAY EASEMENT (100–FOOT MINIMUM) TO MAINTAIN DETECTOR LOOPS AND PAVEMENT MARKINGS. A TRAFFIC SIGNAL WILL BE INSTALLED ONLY IF CDOT DETERMINES THAT ONE IS NECESSARY BASED ON A TRAFFIC STUDY OF CURRENT CONDITIONS.
2. A CONCRETE GUTTER IS TO BE USED EXCEPT AT EXISTING OR PROPOSED TRAFFIC SIGNAL LOCATIONS. AT THESE LOCATIONS ADDITIONAL DRAINAGE REQUIREMENTS WILL BE NECESSARY TO ELIMINATE THE NEED FOR GUTTER ACROSS THE DRIVEWAY CONNECTIONS.
3. THE DRIVEWAY MUST RISE 6" FROM THE GUTTER LINE TO PREVENT RUNOFF FROM ENTERING DRIVEWAY.
4. ALL DRIVEWAYS MUST MEET THE CURRENT CITY DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCE, AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
5. TWO (2) ACCESSIBLE RAMPS PER CURB RETURN REQUIRED AT SIGNALIZED INTERSECTIONS.

* FOUR (4) FOOT GUTTER AND WINGS WILL NOT BE REQUIRED TO DIRECT WATER ACROSS DRIVE IF THE DRIVEWAY GUTTER SLOPE IS GREATER THAN 2%.



SECTION A–A



PLAN

TRANSITION CONCRETE DEPTH FROM 7" AT LIP TO 10" AT CONCRETE GUTTER CONSTRUCTION JOINT IF NO ASPHALT BASE INSTALLED. IF ASPHALT BASE IS USED, 7" CONCRETE DEPTH CAN BE CARRIED THROUGH THE CONCRETE GUTTER.

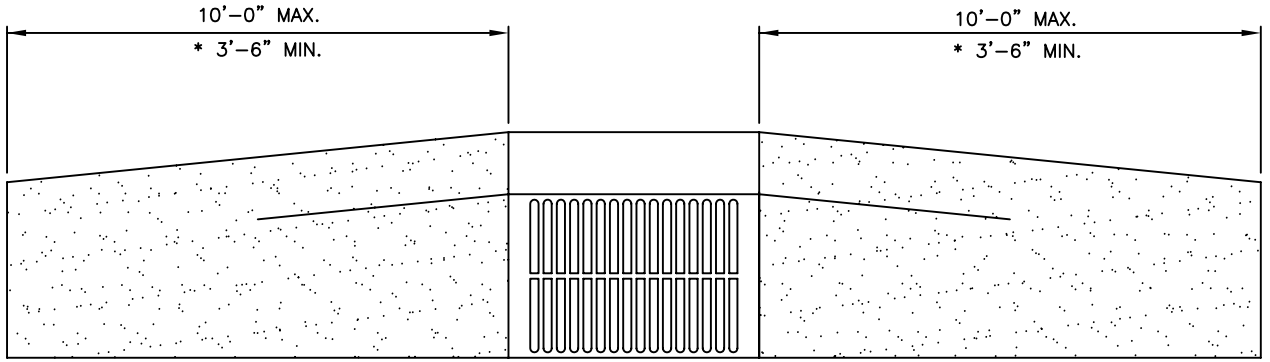
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TYPE III DRIVEWAY ENTRANCE

STD. NO.	REV.
10.28	7



PLAN

NOTE:

* TRANSITION FROM 2'–6" STANDARD CURB TO VALLEY CURB AT A DRAINAGE INLET ONLY.
SEE STANDARD 10.19 FOR CROSS SECTION GEOMETRY.

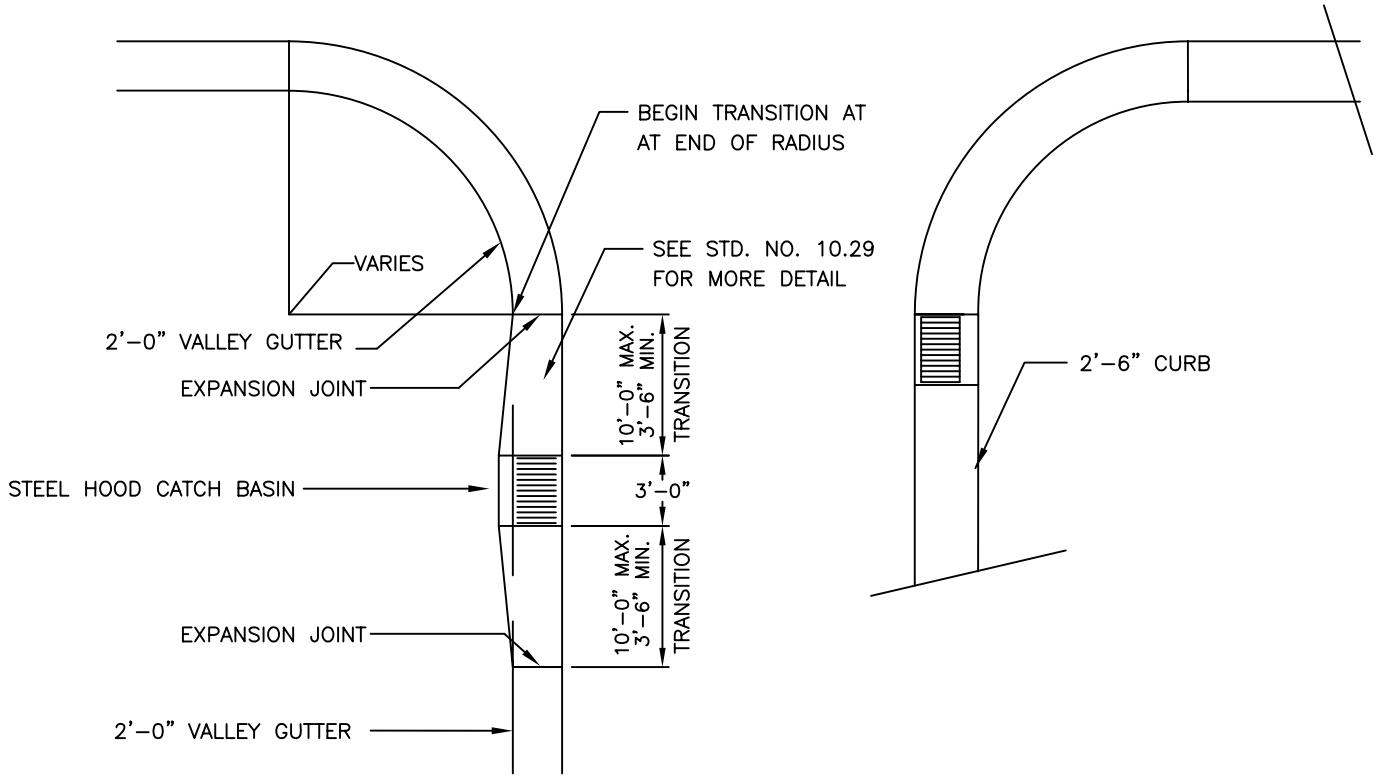
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

CATCH BASIN FRAME IN VALLEY GUTTER

STD. NO.	REV.
10.29	



NOTE:

1. WHERE 2'–6" CURB AND GUTTER IS USED, CATCH BASINS MAY BE LOCATED AT END OF RADIUS.
2. RADIUS AT INTERSECTION MAY VARY.

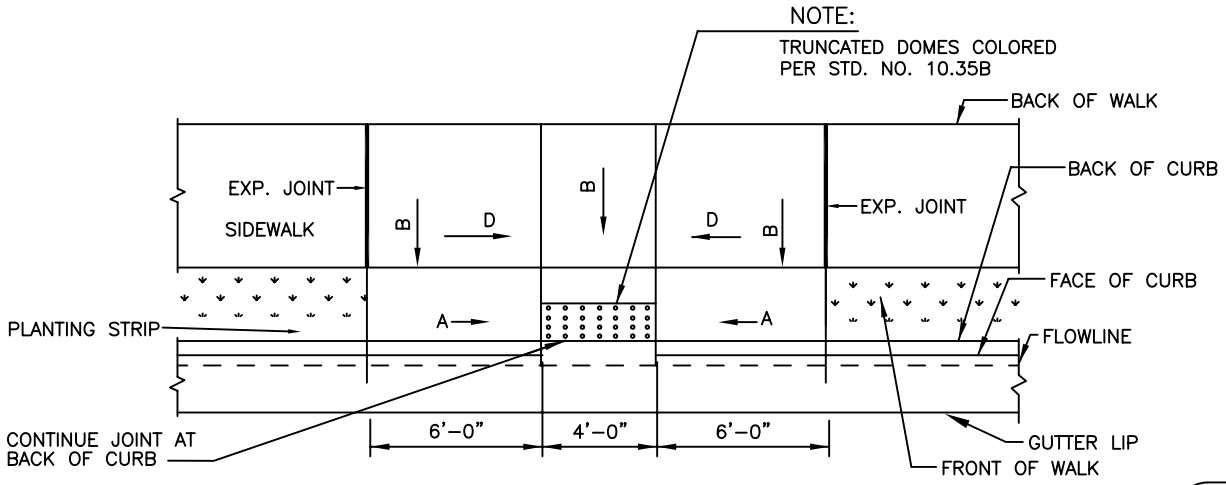
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

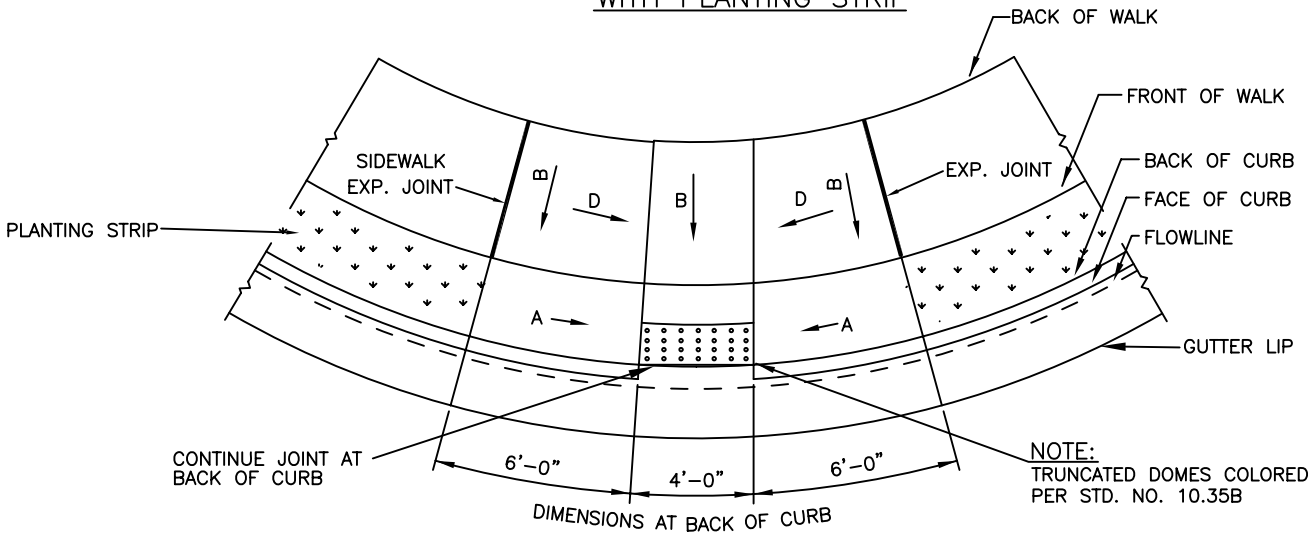
CATCH BASIN PLACEMENT AT INTERSECTIONS

STD. NO.	REV.
10.30	



PLAN VIEW–PARALLEL RAMP
WITH PLANTING STRIP

SLOPE "A"	12:1
SLOPE "B"	1/4"/FT
SLOPE "D"	3/8"/FT



PLAN VIEW–DIAGONAL RAMP WITH PLANTING STRIP

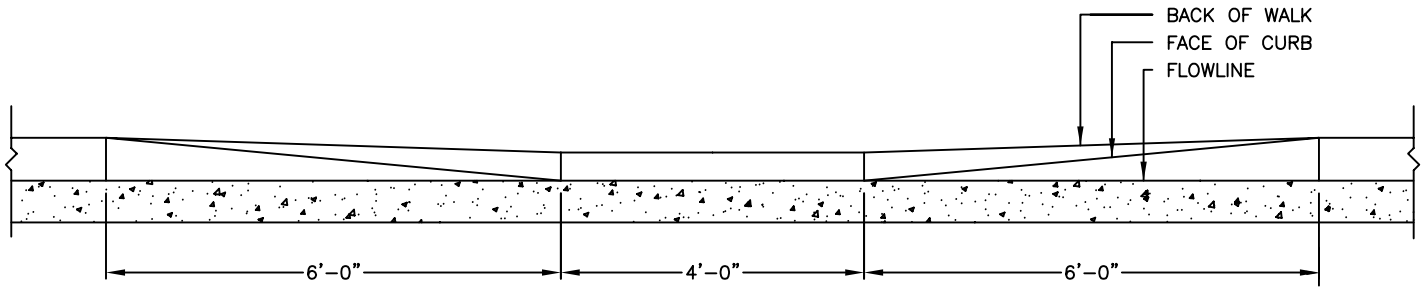
NOT TO SCALE

CHARLOTTE.

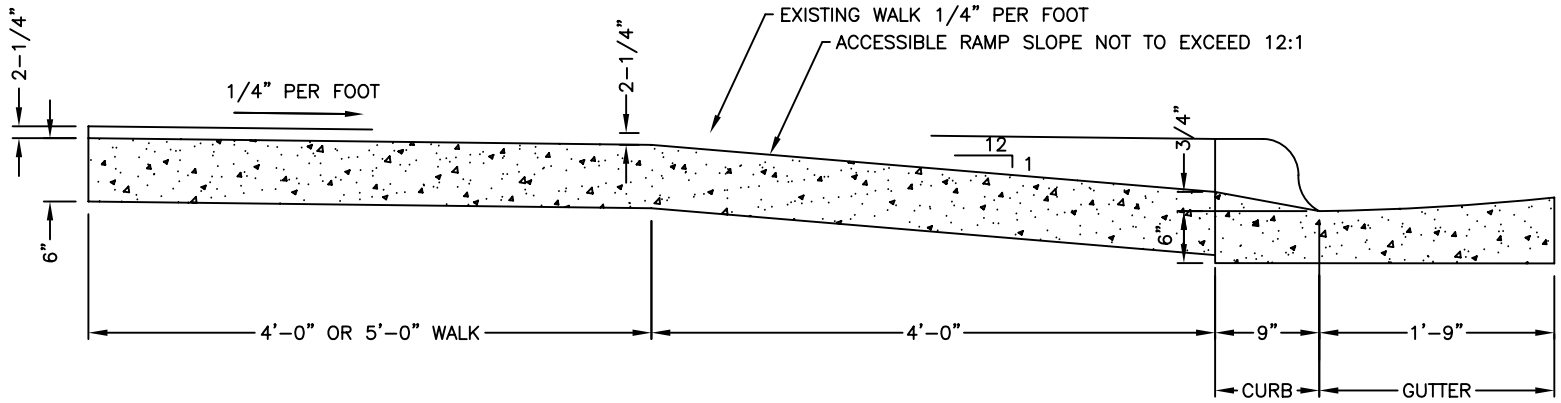
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

ACCESSIBLE RAMP STANDARD WITH PLANTING STRIP 2'–6" CURB AND GUTTER

STD. NO.	REV.
10.31A	



ELEVATION



TYPICAL RAMP ℄ SECTION

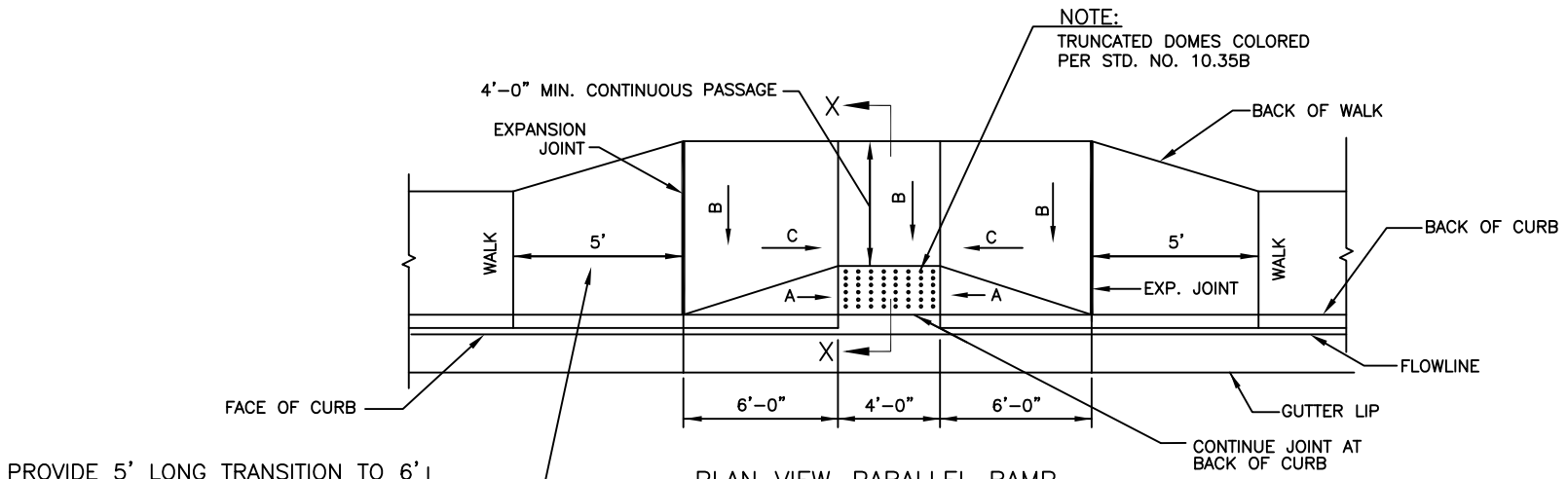
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

ACCESSIBLE RAMP SECTIONS WITH PLANTING STRIP 2–6" CURB AND GUTTER

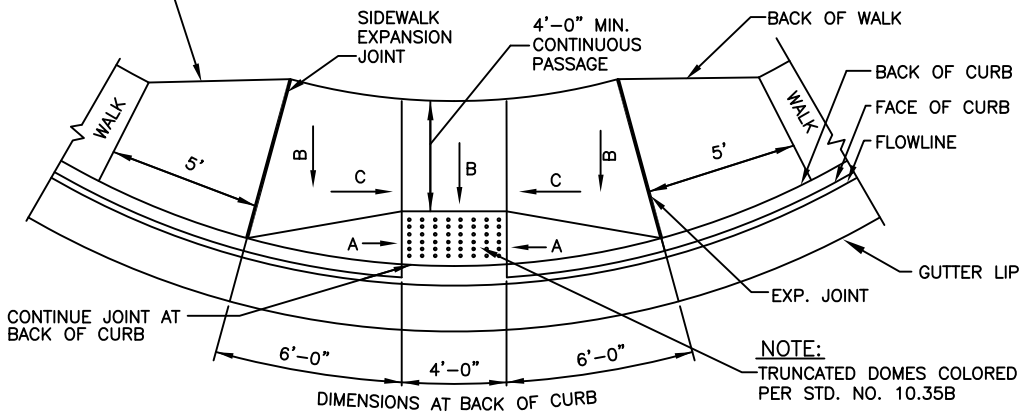
STD. NO.	REV.
10.31B	



PLAN VIEW–PARALLEL RAMP
WITHOUT PLANTING STRIP

PROVIDE 5' LONG TRANSITION TO 6' WIDE WALK. ALL WALKS MUST BE A MIN. 6' WIDTH AT RAMP.

SLOPE "A"	12:1
SLOPE "B"	1/4"/FT
SLOPE "C"	5/8"/FT



PLAN VIEW–DIAGONAL RAMP WITHOUT PLANTING STRIP

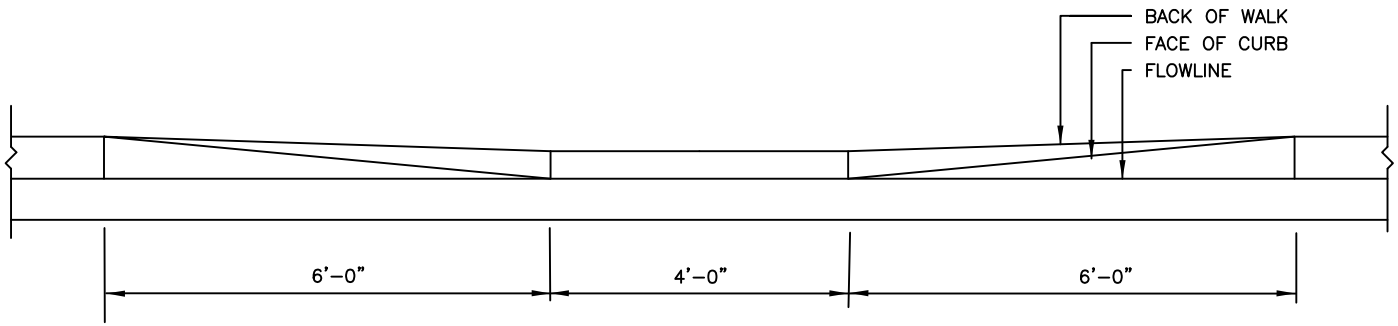
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

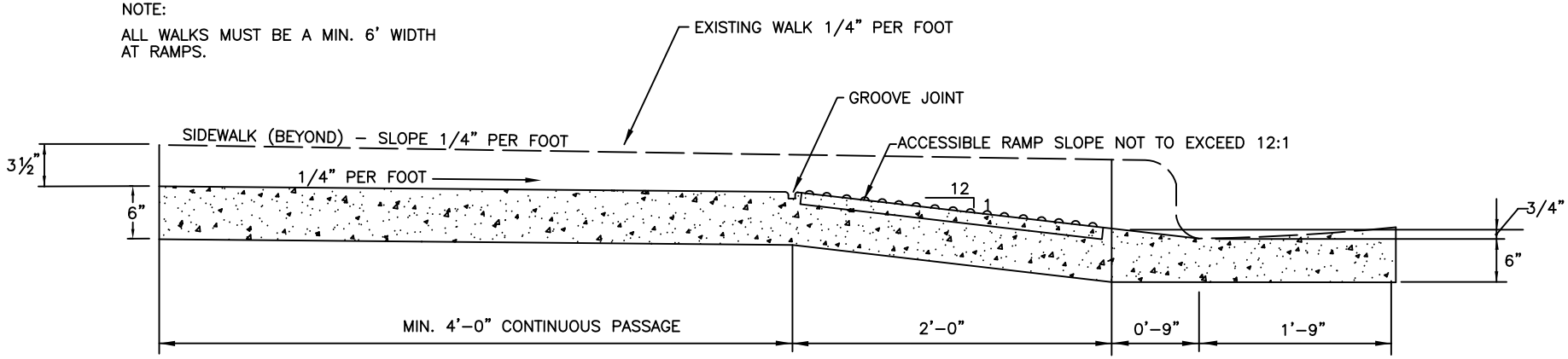
ACCESSIBLE RAMP STANDARD WITHOUT PLANTING STRIP 2'–6" CURB AND GUTTER

STD. NO.	REV.
10.32A	9



SECTION THROUGH FLOWLINE

NOTE:
ALL WALKS MUST BE A MIN. 6' WIDTH AT RAMPS.



TYPICAL RAMP ℄ SECTION X–X

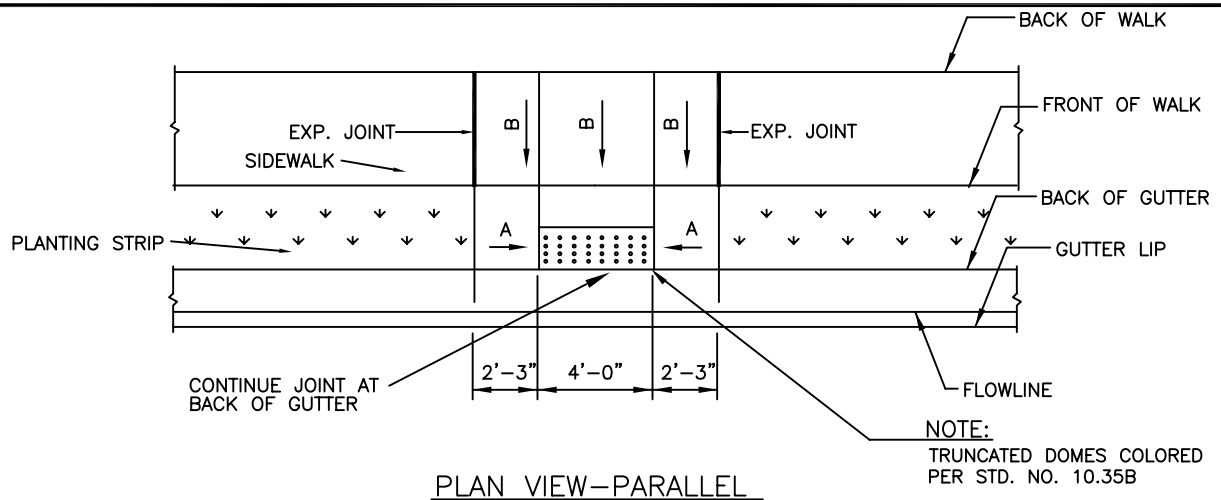
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

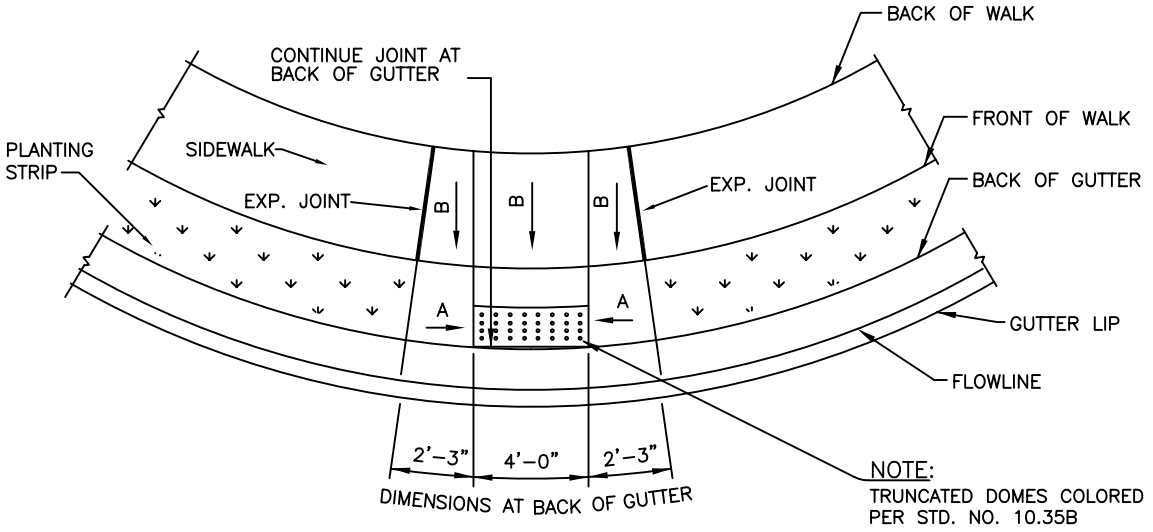
ACCESSIBLE RAMP SECTIONS WITHOUT PLANTING STRIP (2'–6" CURB AND GUTTER)

STD. NO.	REV.
10.32B	9



PLAN VIEW–PARALLEL
RAMP WITH PLANTING STRIP

SLOPE "A"	12:1
SLOPE "B"	1/4"/FT



PLAN VIEW–DIAGONAL RAMP
WITH PLANTING STRIP

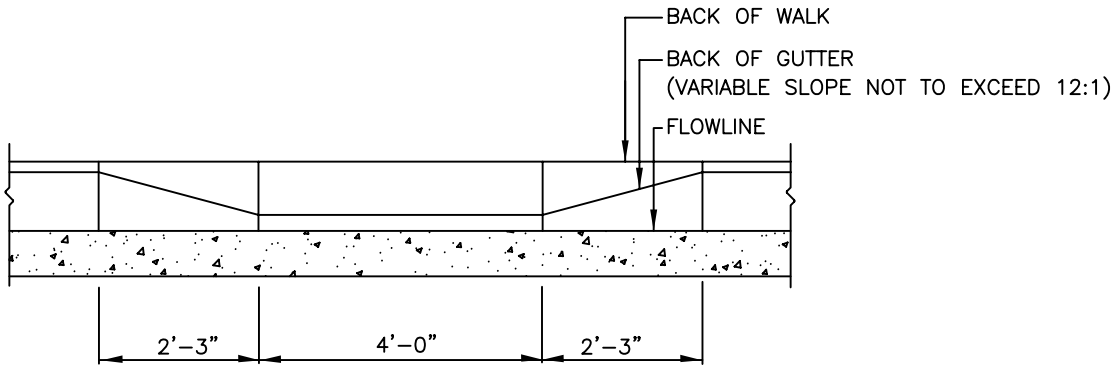
NOT TO SCALE

CHARLOTTE.

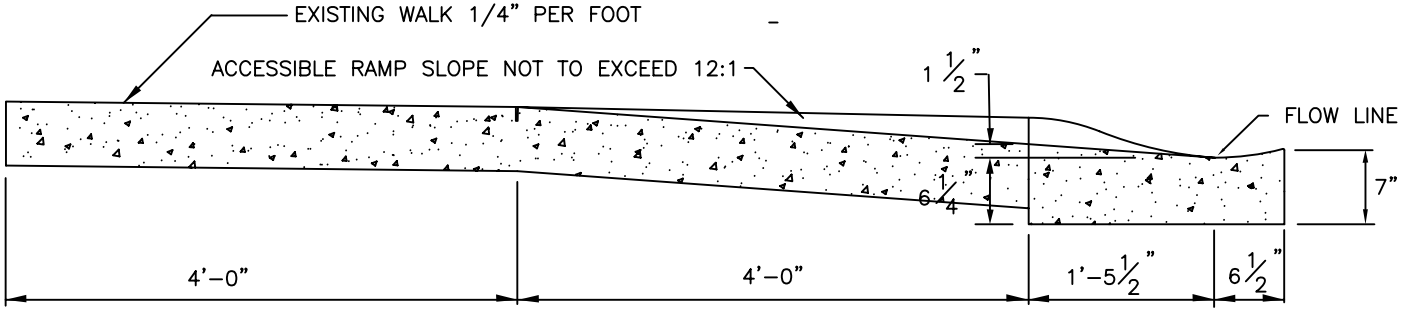
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

ACCESSIBLE RAMP STANDARD
2'–0" VALLEY GUTTER

STD. NO.	REV.
10.33A	



SECTION THROUGH FLOWLINE



TYPICAL RAMP ℄ SECTION

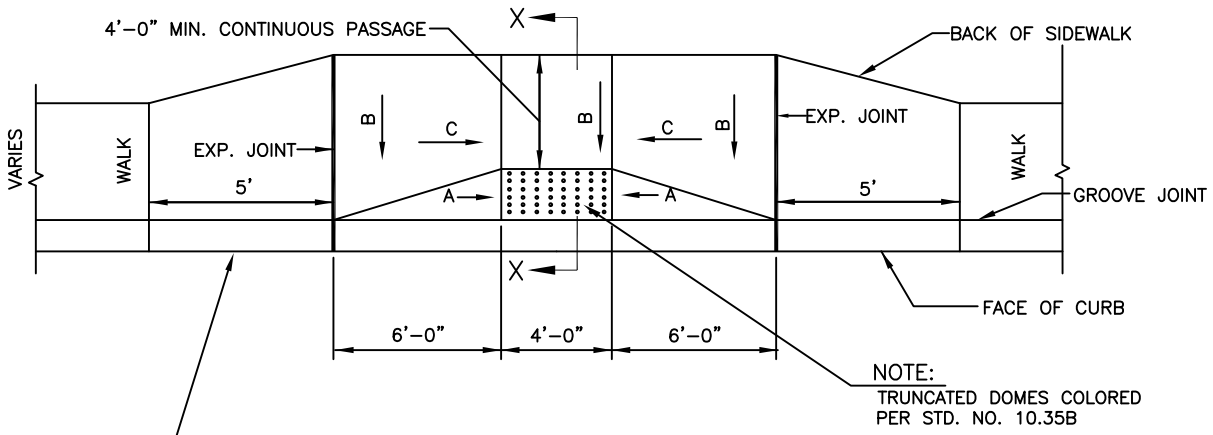
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

ACCESSIBLE RAMP SECTIONS
2'–0" VALLEY GUTTER

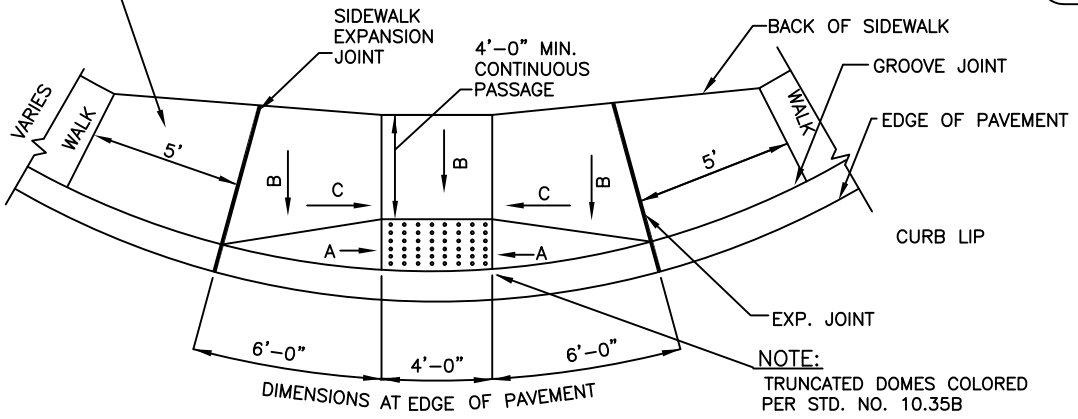
STD. NO.	REV.
10.33B	



PLAN VIEW–PARALLEL RAMP

PROVIDE 5' LONG TRANSITION TO 6' WIDE WALK. ALL WALKS MUST BE A MIN. 6' WIDTH AT RAMP.

SLOPE "A"	12:1
SLOPE "B"	1/4"/FT
SLOPE "C"	1/2"/FT



PLAN VIEW–DIAGONAL RAMP

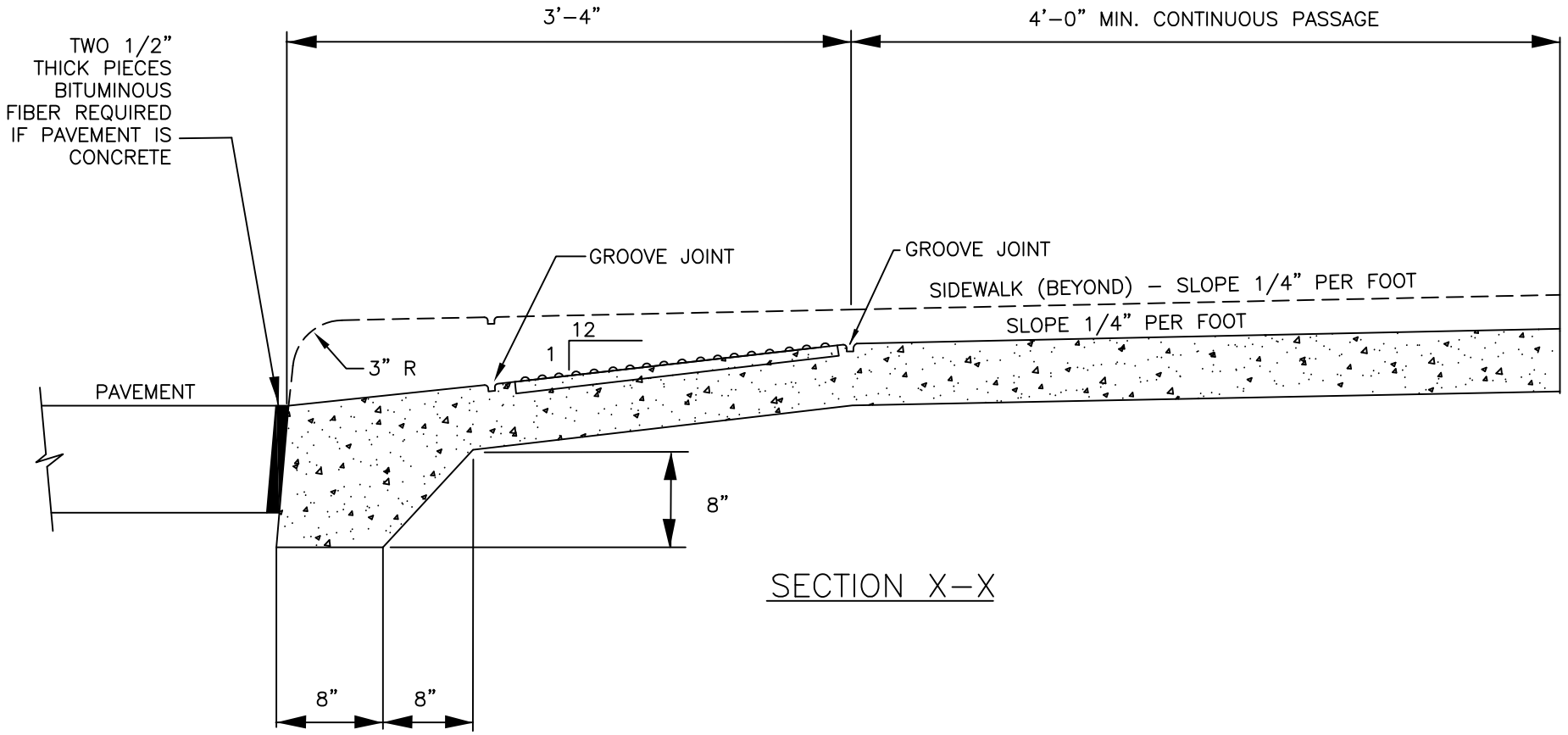
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

ACCESSIBLE RAMP STANDARD
MONOLITHIC CURB AND SIDEWALK

STD. NO.	REV.
10.34A	9



SECTION X–X

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

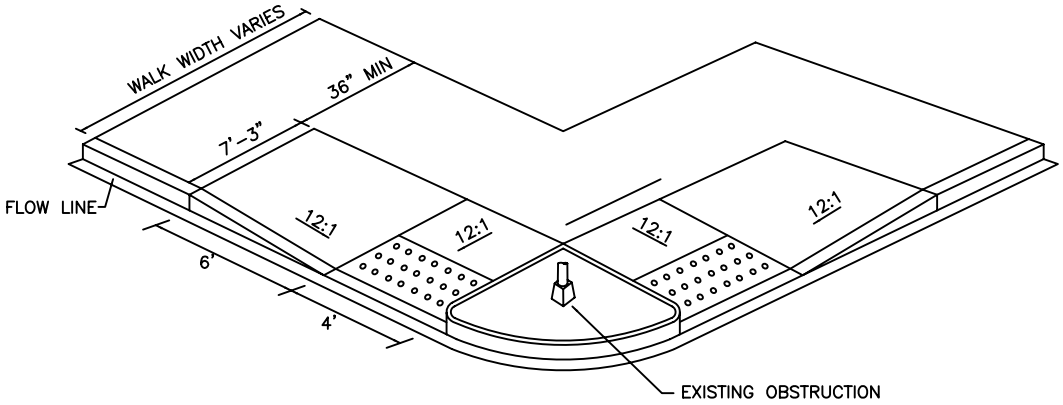
ACCESSIBLE RAMP SECTIONS MONOLITHIC CURB AND SIDEWALK

STD. NO.	REV.
10.34B	9

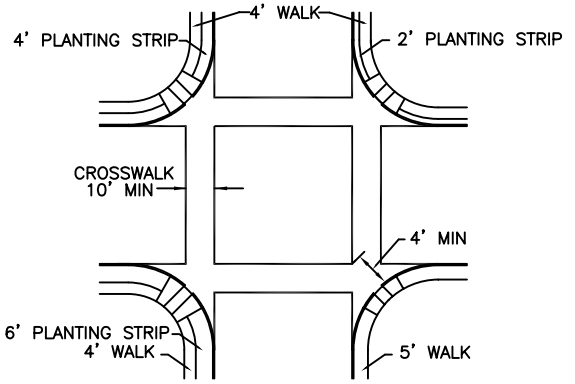
NOTES:

1. RAMP AND WING SLOPES SHALL NOT BE STEEPER THAN 12:1.
2. GUTTER FLOW LINE AND PLAN PROFILE SHALL BE MAINTAINED THROUGH THE RAMP AREA.
3. THE SURFACE OF THE RAMP SHALL BE FLUSH WITH THE FLOWLINE OF THE CURB AND GUTTER.
4. THE RAMP OPENING (AT THE FULLY DEPRESSED CURB) SHALL BE LOCATED WITHIN THE PARALLEL BOUNDARIES OF THE CROSSWALK MARKINGS. THE RAMP CENTERLINE SHALL BE LOCATED AT THE CORNER RADIUS CENTERLINE UNLESS OTHERWISE DIRECTED BY THE ENGINEER. DIAGONAL CURB RAMPS SHALL HAVE A SEGMENT OF STRAIGHT CURB AT LEAST 24 INCHES LONG LOCATED ON EACH SIDE OF THE WING SLOPE AND WITHIN THE CROSSWALK MARKINGS.
5. THE WING AND RAMP SURFACES SHALL BE 3600 PSI CONCRETE WITH A SIDEWALK FINISH IN ACCORDANCE WITH CURRENT EDITION NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.
6. DRAINAGE STRUCTURES, MAST ARMS, LIGHT POLES AND OTHER OBSTRUCTIONS SHALL NOT BE PLACED IN LINE WITH RAMPS. LOCATION OF THE RAMP SHALL TAKE PRECEDENCE OVER LOCATION OF OBSTRUCTIONS EXCEPT WHERE EXISTING OBSTRUCTIONS ARE BEING UTILIZED IN THE NEW CONSTRUCTION.
7. AT ALL LOCATIONS, NOT LESS THAN 2 FEET OF FULL HEIGHT CURB SHALL BE PLACED BETWEEN THE RAMPS.
8. SEE STANDARD DRAWING 10.35B FOR DETECTABLE WARNING INSTALLATION.

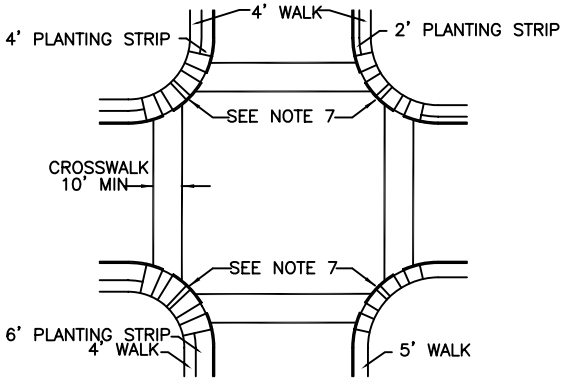
ROADWAY PLAN SYMBOL
(ACC)
FOR PROPOSED ACCESSIBLE RAMP



PLACEMENT FOR OBSTRUCTED CORNER RADIUS OR CORNER RADIUS LESS THAN TEN FEET



TYPICAL LOCATION OF ACCESSIBLE RAMPS AND PEDESTRIAN CROSSWALKS ON SUBDIVISION STREETS



TYPICAL LOCATION OF ACCESSIBLE RAMPS AND PEDESTRIAN CROSSWALKS ON THOROUGHFARES/SIGNALIZED INTERSECTIONS

SEE NCDOT STANDARD DRAWINGS

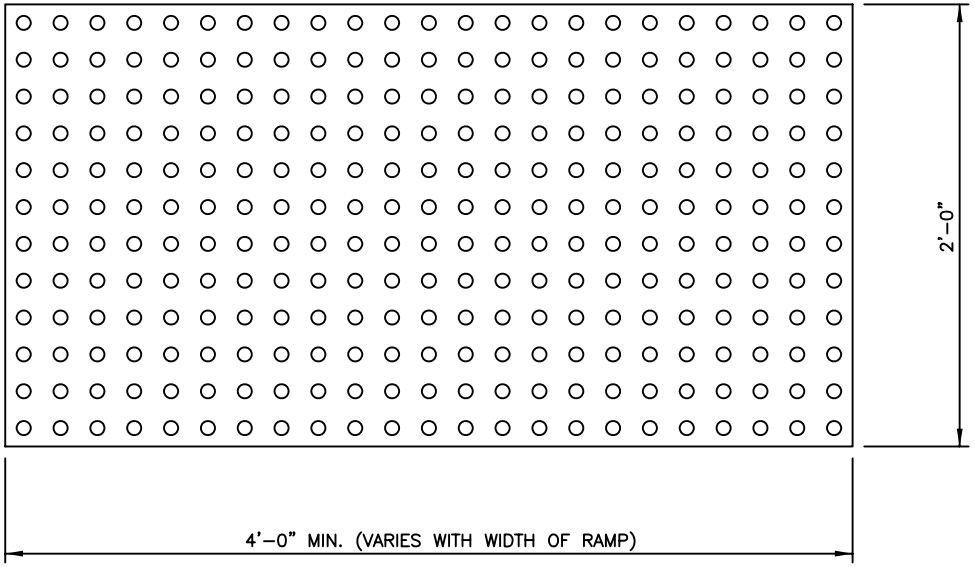
NOT TO SCALE

CHARLOTTE.

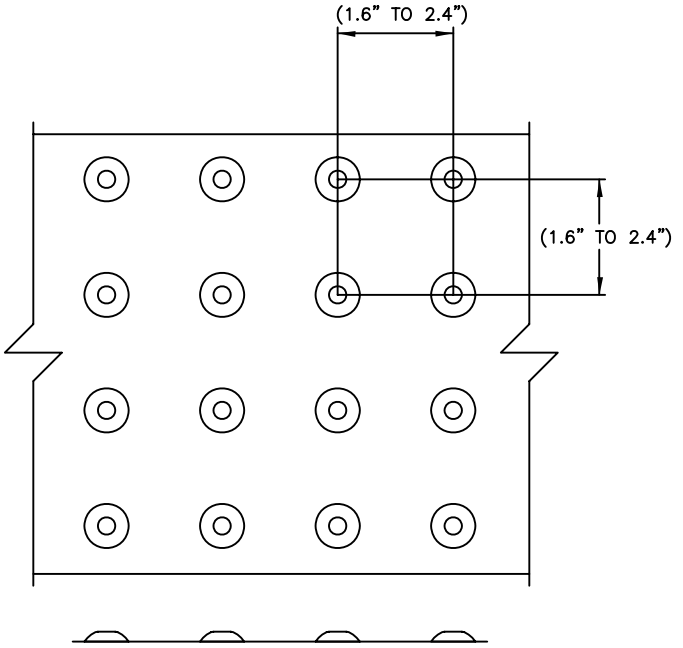
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

STANDARD PLACEMENT OF ACCESSIBLE RAMP AND GENERAL NOTES

STD. NO.	REV.
10.35A	



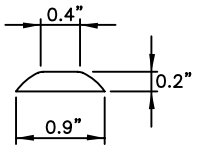
TRUNCATED DOME PLAN VIEW



TRUNCATED DOME SPACING

NOTES:

1. ALL DETECTABLE WARNING DEVICES USED IN NEW CONSTRUCTION SHALL BE OF A RIDGID PRECAST OR EMBEDDED PRODUCT APPROVED BY THE CITY ENGINEER. RETRO FIT MATS WILL ONLY BE ALLOWEED ON EXISTING RAMPS WITH PRIOR APPROVAL OF THE CITY ENGINEER FOR MATERIAL TYPE AND INSTALLATION (IE. RESURFACING).
2. WIDTH OF DETECTABLE WARNING AREA SHALL BE A MINIMUM OF 4 FEET AND VARY WITH WIDTH OF RAMP.
3. LENGTH OF DETECTABLE WARNING AREA SHALL BE 2 FEET REGARDLESS OF SECTION WIDTH.
4. DETECTABLE WARNING AREA CAN BE SQUARE WHERE USED IN A CURB RADIUS.
5. DETECTABLE WARNING DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.
6. DECTECTABLE WARNING AREA SHALL BE COLORED BLACK IN ALL LOCATIONS EXCEPT ON TRYON STREET MALL, WHERE FRENCH GRAY IS TO BE USED.
7. IF PAVERS ARE TO BE USED, PAVERS SHALL BE 6" THICK AND CAST FROM 5000 psi CONCRETE.
8. MATS ARE TO BE RIGID WITH TURN DOWN EDGES EMBEDDED IN CONCRETE TO ELIMINATE TRIP HAZARD.



TRUNCATED DOME SECTION

NOT TO SCALE

REVISED 2/3/06

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TRUNCATED DOMES
PLAN AND CROSS-SECTION

STD. NO.	REV.
10.35B	

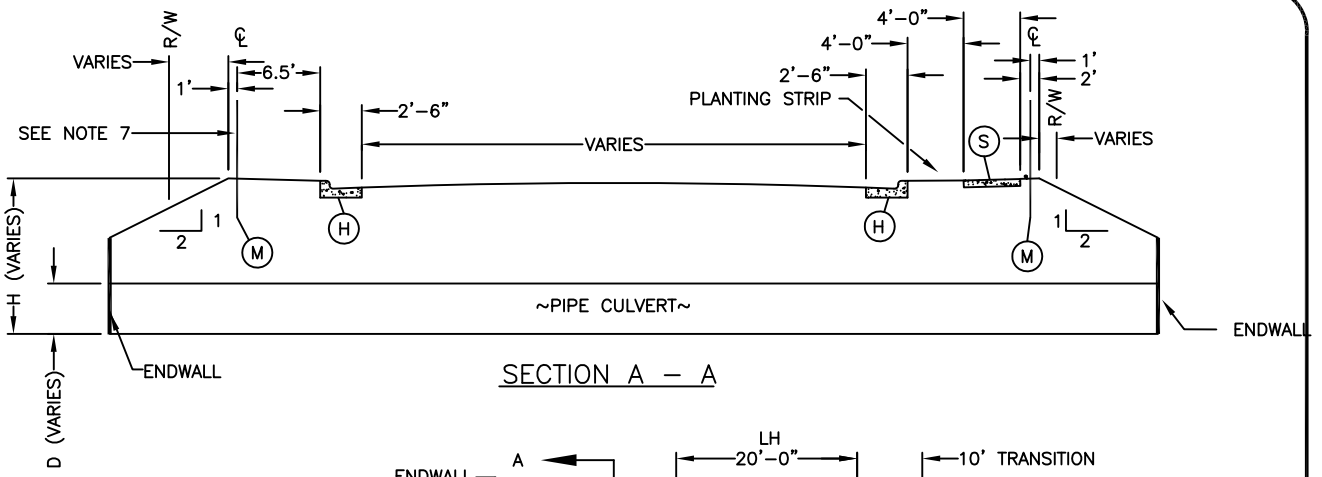
(H) 2'–6" CURB AND GUTTER, STD. 10.17A

(M) SAFETY RAIL, STD. 50.04A & 50.04B

(S) 4'–0" SIDEWALK, STD. 10.22

(H1) 2'–0" VALLEY GUTTER. STD. 10.17B

(H2) CURB TRANSITION 2'–6" CURB AND GUTTER TO 2'–0" VALLEY GUTTER, STD. 10.19

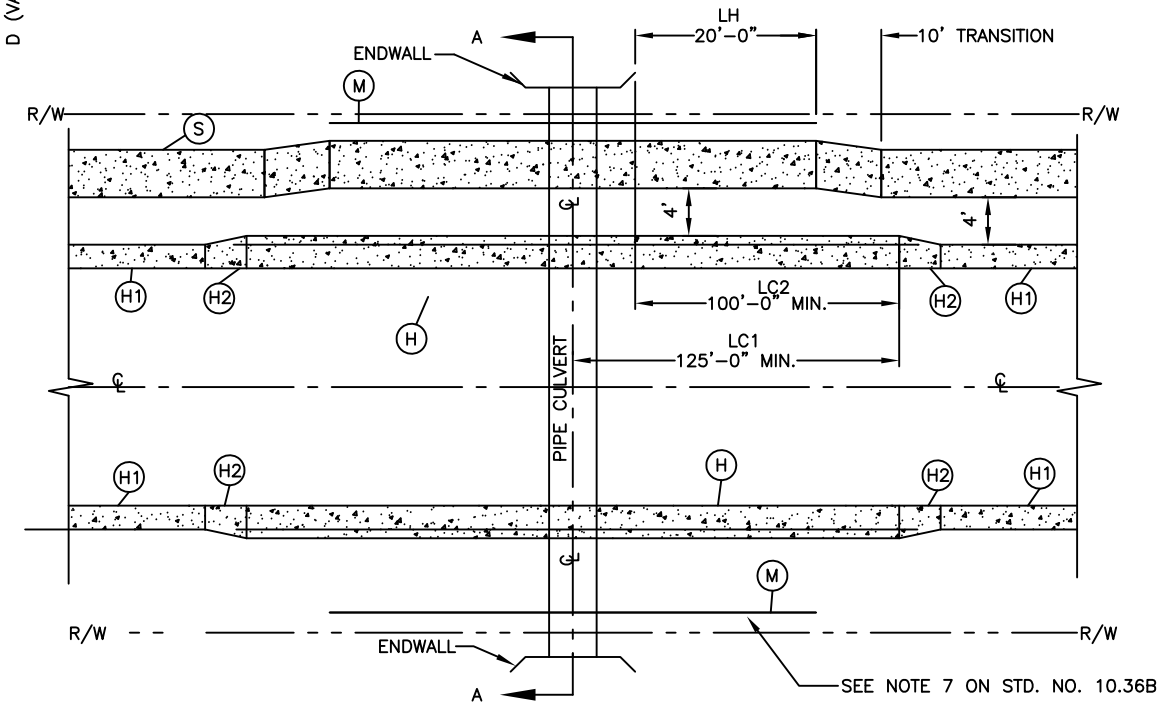


SECTION A – A

LH = DISTANCE FROM END OF WINGWALL TO END OF SAFETY RAIL.

LC1 = DISTANCE FROM ℄ OF CULVERT TO END OF 2'–6" CURB AND GUTTER GUTTER.

LC2 = DISTANCE FROM END OF WINGWALL TO END OF 2'–6" CURB AND GUTTER.



NOTES:

1. SEE STD. NO. 10.36B FOR GENERAL NOTES AND CLEAR ZONE DISTANCES

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

CULVERT CROSSINGS ON RESIDENTIAL AND COMMERCIAL STREETS

STD. NO.	REV.
10.36A	7

GENERAL NOTES:

1. UNLESS OTHERWISE DETERMINED BY THE CITY ENGINEER, THE MEASURES ILLUSTRATED SHALL BE USED WHEN CULVERT DIAMETER, D, IS GREATER THAN OR EQUAL TO 24 INCHES AND WHEN THE DIFFERENCE IN ELEVATION BETWEEN THE CULVERT INVERT AND THE TOP OF SLOPE, H, IS GREATER THAN OR EQUAL TO 5 FEET.
2. INSTALLATION OF 2'–6" CURB AND GUTTER MAY NOT BE REQUIRED WHEN AN ADEQUATE CLEAR ZONE IS PROVIDED FOR VEHICLES WITH A MAXIMUM OF 6:1 SLOPE (SEE TABLE 1).
3. INSTALLATION OF SAFETY RAIL MAY NOT BE REQUIRED WHEN A 10–FOOT PEDESTRIAN CLEAR ZONE IS PROVIDED BEHIND THE SIDEWALK WITH A MAXIMUM OF 6:1 SLOPE. WHERE NO SIDEWALK IS REQUIRED, INSTALLATION OF SAFETY RAIL MAY NOT BE REQUIRED WHEN A 15–FOOT PEDESTRIAN CLEAR ZONE IS PROVIDED BEHIND THE CURB WITH A MAXIMUM OF 6:1 SLOPE.
4. FOR CULVERT CROSSINGS WITHOUT ENDWALLS, LH AND LC2 SHALL BE MEASURED FROM THE OUTSIDE OF THE NEAREST WALL OF THE CULVERT BARREL.
5. FOR MULITIPLE BARREL CULVERT CROSSINGS, LC1 SHALL BE MEASURED FROM THE CENTERLINES OF THE OUTBOARD CULVERT BARRELS.
6. WHEN NECESSARY, AS DETERMINED BY THE CITY ENGINEER, ADDITIONAL MEASURES MAY BE REQUIRED.
7. INSTALLATION OF SAFETY RAIL IS REQUIRED ON BOTH SIDES OF STREET IF SIDEWALK IS REQUIRED ON BOTH SIDES.
8. INSTALLATION OF SAFETY RAIL IS REQUIRED ON BOTH SIDES OF STREET IF NO SIDEWALK IS REQUIRED EXCEPT WHEN A 15–FOOT PEDESTRIAN CLEAR ZONE IS PROVIDED BEHIND THE CURB WITH A MAXIMUM OF 6:1 SLOPE.
9. INSTALLATION OF SAFETY RAIL IS REQUIRED ON THE SIDEWALK SIDE OF STREET IF SIDEWALK IS ONLY REQUIRED ON ONE SIDE OF STREET. INSTALL EITHER SAFTEY RAIL OR 15–FT CLEAR ZONE ON SIDE WITHOUT SIDEWALK.
10. DESIGN ADT IS CALCULATED ASSUMING A TRIP GENERATION OF 10 DAILY TRIPS PER SINGLE FAMILY DWELLING UNIT.

TABLE 1.
CLEAR ZONE DISTANCES
LOCAL, COLLECTOR, AND COMMERCIAL STREETS

DESIGN ADT	CLEAR ZONE FROM EDGE OF PAVEMENT	
	TANGENT SECTION	CURVE (WITHIN 125' OF CULVERT)
UNDER 750	10'	15'
750 – 1500	12'	18'
1501 – 6000	14'	21'
OVER 6000	16'	24'

SEE STD. NO. 10.36A FOR PLAN AND CROSS SECTIONAL SCHEMATICS.

NOT TO SCALE

CHARLOTTE.

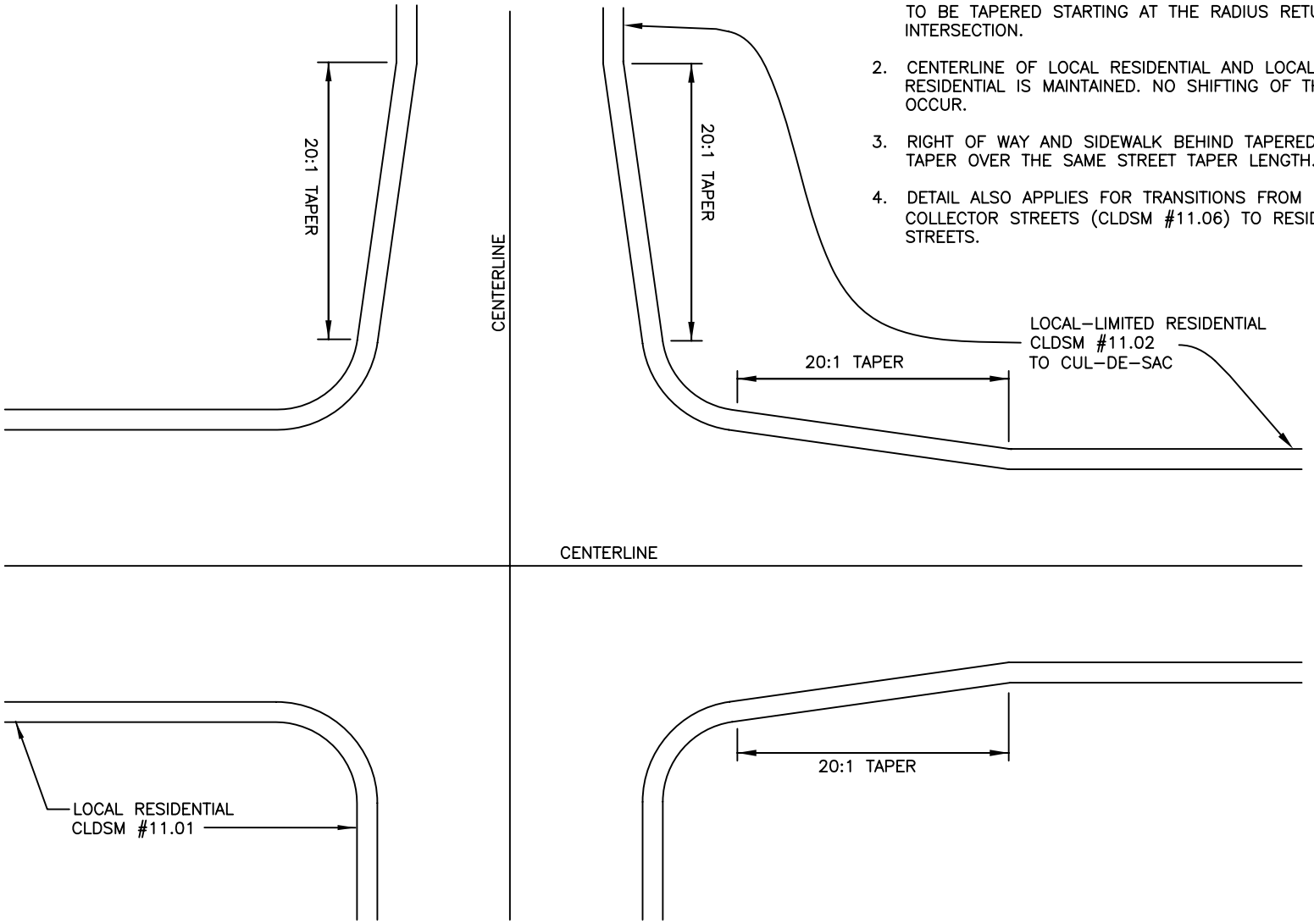
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

CULVERT CROSSINGS ON RESIDENTIAL AND COMMERCIAL STREETS

STD. NO.	REV.
10.36B	7

GENERAL NOTES:

1. ALL TAPERS ARE 20:1 AND OCCUR ON BOTH SIDES OF THE ROAD TO BE TAPERED STARTING AT THE RADIUS RETURN AFTER THE INTERSECTION.
2. CENTERLINE OF LOCAL RESIDENTIAL AND LOCAL–LIMITED RESIDENTIAL IS MAINTAINED. NO SHIFTING OF THE CENTERLINE SHALL OCCUR.
3. RIGHT OF WAY AND SIDEWALK BEHIND TAPERED STREET SECTION TO TAPER OVER THE SAME STREET TAPER LENGTH.
4. DETAIL ALSO APPLIES FOR TRANSITIONS FROM RESIDENTIAL COLLECTOR STREETS (CLDSM #11.06) TO RESIDENTIAL LOCAL STREETS.



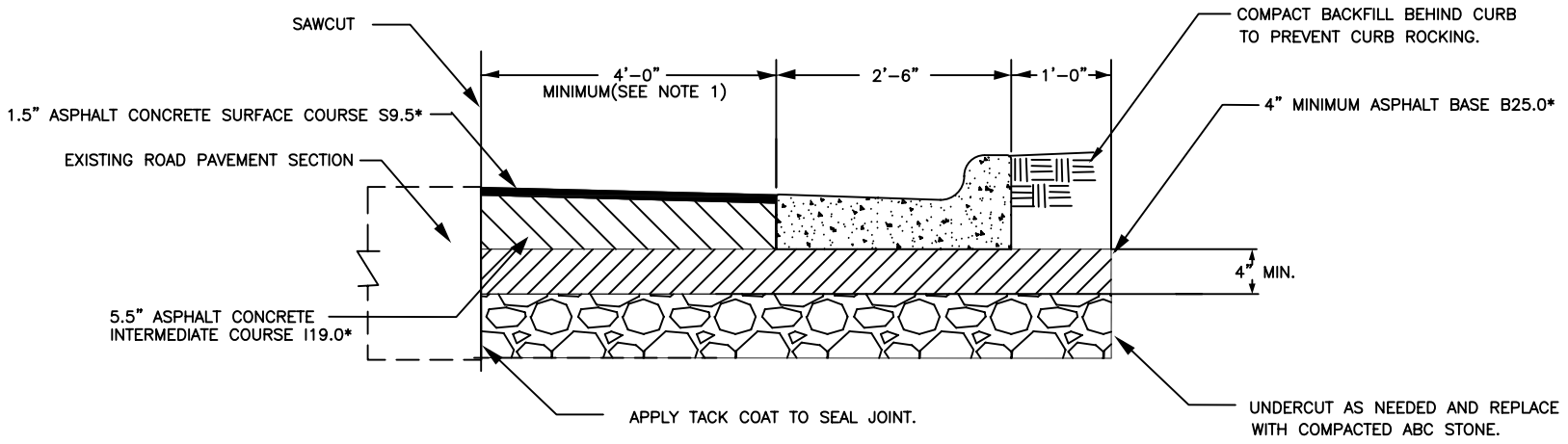
NOT TO SCALE

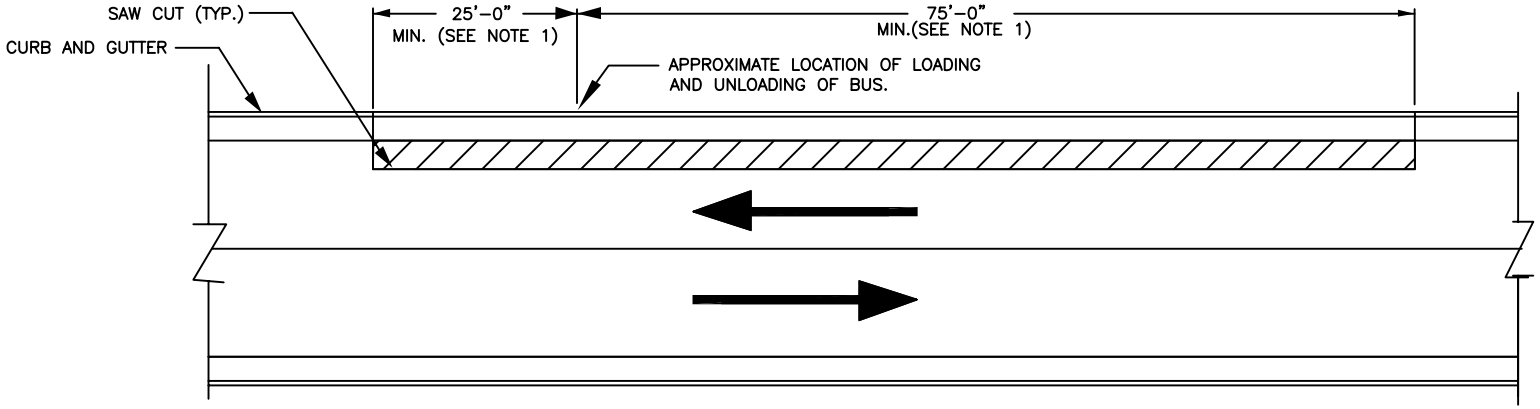
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TYPICAL LOCAL RESIDENTIAL TO LOCAL LIMITED RESIDENTIAL STREET TAPER

STD. NO.	REV.
10.37	1





NOTES

1. ACTUAL SITE CONDITIIONS MAY REQUIRE ADDITIONAL LIMITS OF CONSTRUCTION TO BE DETERMINED BY THE CITY ENGINEER (MINIMUM SHOWN).
2. SEE APPROPRIATE CURB DETAIL FOR CURB INSTALLATION.
3. CONCRETE SHALL BE A MINIMUM OF 3600 PSI.
4. ASPHALT TYPE (*) TO MATCH SPECIFIED STREET DETAIL STANDARD PAVEMENT STRUCTURE OR AS DIRECTED BY CITY ENGINEER (SEE STREET TYPICAL DETAIL STANDARD).

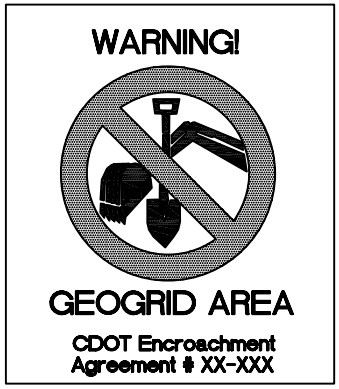
NOT TO SCALE

CHARLOTTE.

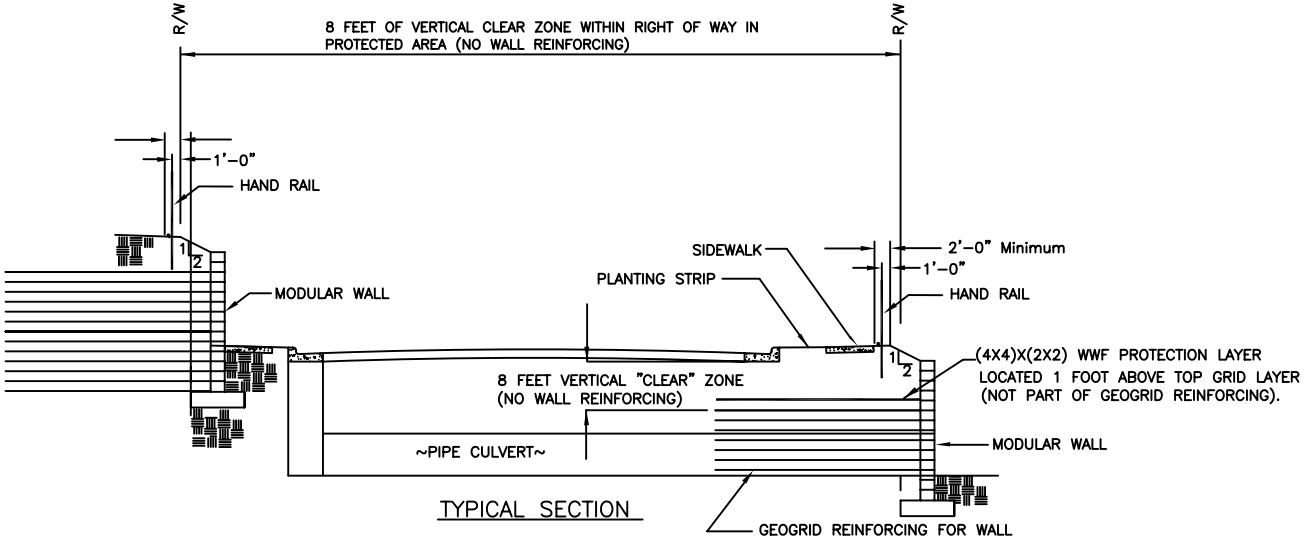
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

CURB REPAIRS AT EXISITING BUS STOPS

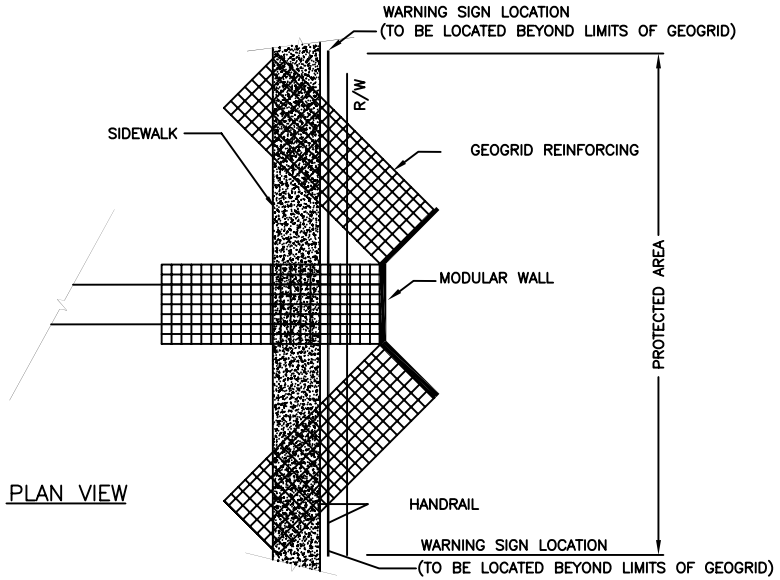
STD. NO.	REV.
10.38	



WARNING SIGN
DETAIL



TYPICAL SECTION



PLAN VIEW

NOTES

1. THIS DRAWING ILLUSTRATES THE CONCEPTS TO BE USED FOR MODULAR WALL INSTALLATIONS REGARDING WARNING SIGN PLACEMENT, CLEAR SPACE REQUIREMENTS, GEOGRID PROTECTION, AND THE NEED TO OBTAIN AN ENCROACHMENT AGREEMENT PRIOR TO CONSTRUCTION. THIS DETAIL DOES NOT CONSTITUTE A STRUCTURAL DESIGN. FULL CONSTRUCTION PLANS FOR RETAINING WALLS MUST BE SEALED BY A PROFESSIONAL ENGINEER LICENSED IN NORTH CAROLINA AND SUBMITTED TO THE CITY DURING THE PLAN REVIEW PROCESS.

2. PLACEMENT OF ANY PORTION OF A MODULAR RETAINING WALL IN THE RIGHT-OF-WAY (R/W) SHALL REQUIRE AN ENCROACHMENT AGREEMENT TO BE EXECUTED WITH CDOT PRIOR TO CONSTRUCTION.

3. HANDRAILS SHALL EXTEND THROUGH THE PROTECTED AREA AND WARNING SIGNS SHALL BE ATTACHED TO THE HANDRAIL AT EACH END OF THE PROTECTED AREA.

4. ADDITIONAL MEASURE(S) MAY BE REQUIRED BY CDOT.

5. THIS DETAIL APPLIES ONLY TO STREETS MAINTAINED (OR TO-BE-MAINTAINED) BY THE CITY OF CHARLOTTE. USE OF THIS DETAIL ON AN EXISTING NCDOT-MAINTAINED ROADWAY, OR ALONG ONE THAT WOULD NEED TO BE MAINTAINED BY NCDOT, OCCURS AT THE DEVELOPER'S OWN RISK. SUCH RETAINING WALLS NEED THE APPROVAL OF NCDOT.

6. CDOT PREFERS THAT ALL RETAINING WALLS AND APPURTENANCES BE LOCATED OUTSIDE OF THE R/W IN ORDER TO PROVIDE ADEQUATE SPACE FOR UTILITES (AERIAL AND UNDERGROUND), LANDSCAPING, SIDEWALKS, AND OTHER ITEMS.

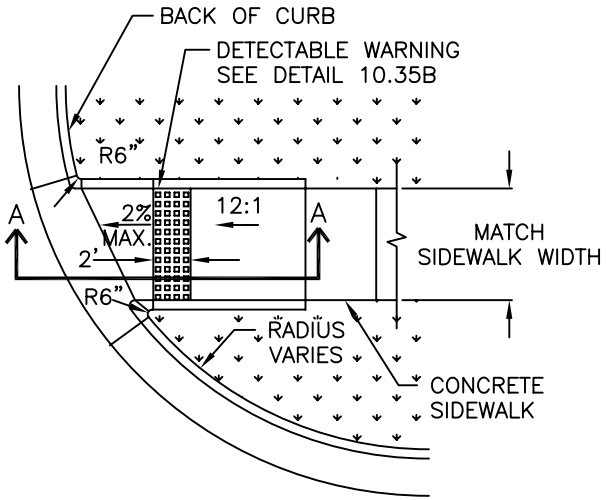
NOT TO SCALE

CHARLOTTE.

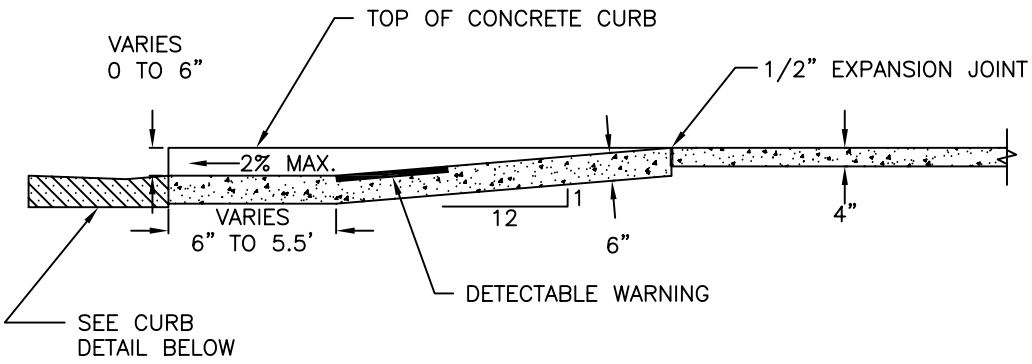
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

MODULAR RETAINING WALLS USING GEOGRID IN THE RIGHT-OF-WAY

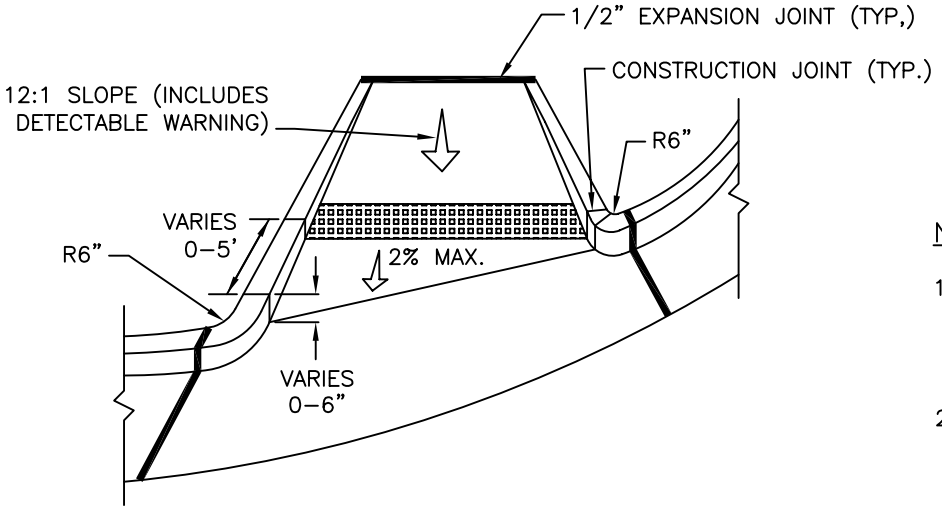
STD. NO.	REV.
10.39	



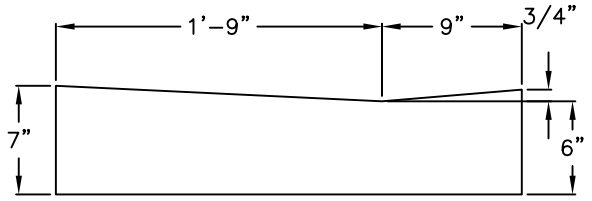
PLAN



SECTION A–A



PERSPECTIVE



CURB DETAIL

NOTES:

1. USE THIS DETAIL ONLY UNDER THE FOLLOWING CIRCUMSTANCES:
   - 5–FOOT SIDEWALKS WITH CURB RADII OF 35 FEET OR LESS
   - 6–FOOT SIDEWALKS WITH CURB RADII OF 30 FEET OR LESS
   - 8–FOOT SIDEWALKS WITH CURB RADII OF 25 FEET OR LESS
2. DIRECTIONAL RAMPS MAY BE USED WHEN AN 8–FOOT PLANTING STRIP IS PROVIDED. DO NOT USE THIS DETAIL IF THERE IS HARDSCAPE INSTEAD OF A PLANTING STRIP.
3. ALL CONCRETE SHALL BE AT LEAST 3600 PSI.

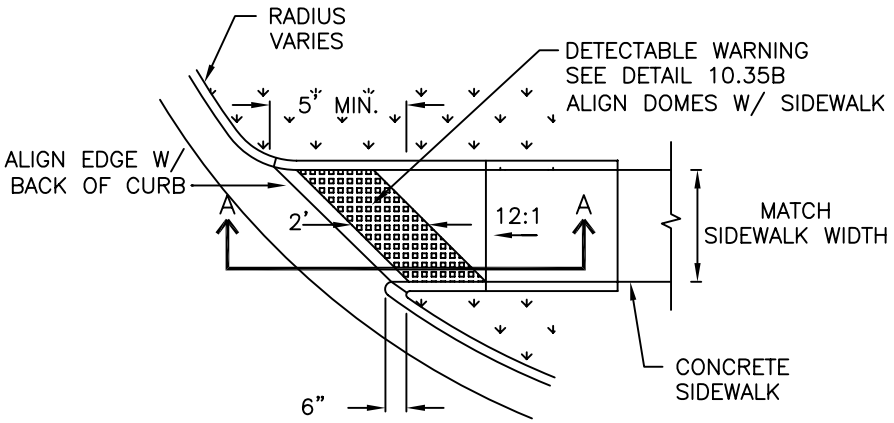
NOT TO SCALE

CHARLOTTE.

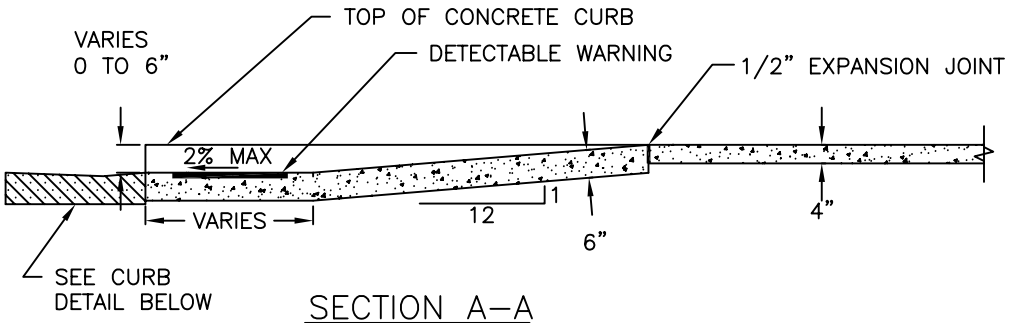
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

DIRECTIONAL ACCESSIBLE RAMP WITH SMALL/MEDIUM CURB RADII

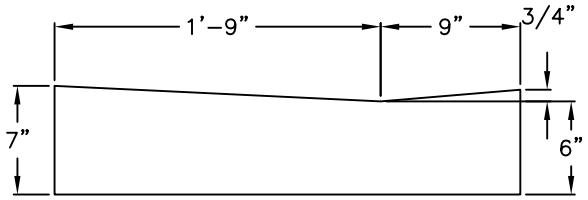
STD. NO.	REV.
10.40A	4



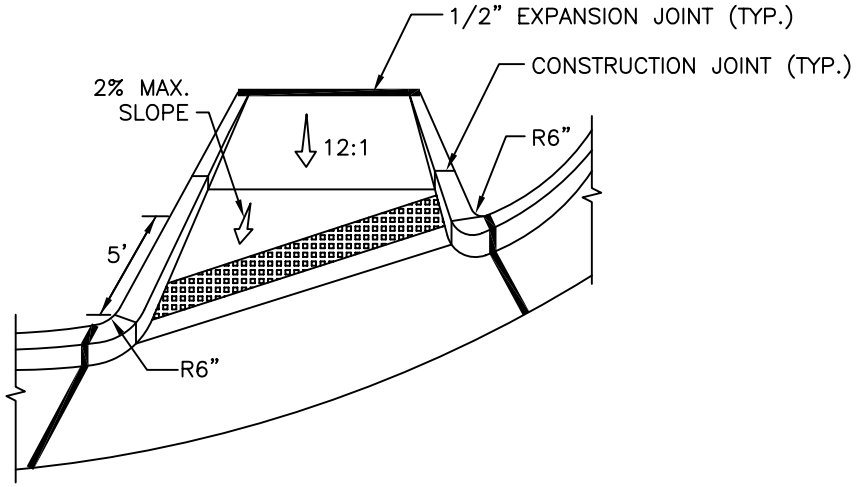
PLAN



SECTION A–A



CURB DETAIL



PERSPECTIVE

NOTES:

1. USE THIS DETAIL ONLY UNDER THE FOLLOWING CIRCUMSTANCES:
   - 5–FOOT SIDEWALKS WITH CURB RADII GREATER THAN 35 FEET
   - 6–FOOT SIDEWALKS WITH CURB RADII GREATER THAN 30 FEET
   - 8–FOOT SIDEWALKS WITH CURB RADII GREATER THAN 25 FEET
2. DIRECTIONAL RAMPS MAY BE USED WHEN A MIN. 8–FOOT PLANTING STRIP IS PROVIDED. DO NOT USE THIS DETAIL IF THERE IS HARDSCAPE INSTEAD OF A PLANTING STRIP.
3. ALL CONCRETE SHALL BE AT LEAST 3600 PSI.
4. THE ANGLES ON THE DETECTABLE WARNING WILL VARY WITH THE CURB RADIUS AND SIDEWALK WIDTH. IN THE CONFIGURATION SHOWN IN PLAN VIEW, ONE SIDE OF THE DETECTABLE WARNING TRAPEZOID SHALL BE LOCATED AT THE TOE OF THE 12:1 SLOPE, AND THE OTHER SIDE SHALL BE ALIGNED WITH THE CURB ON THE ACCESSIBLE RAMP.
5. THE TRUNCATED DOME PATTERN MUST ALIGN WITH THE SIDEWALK TO ALLOW WHEELCHAIRS TO PASS FREELY. DO NOT ALIGN DOME PATTERN WITH THE CURB RADIUS.

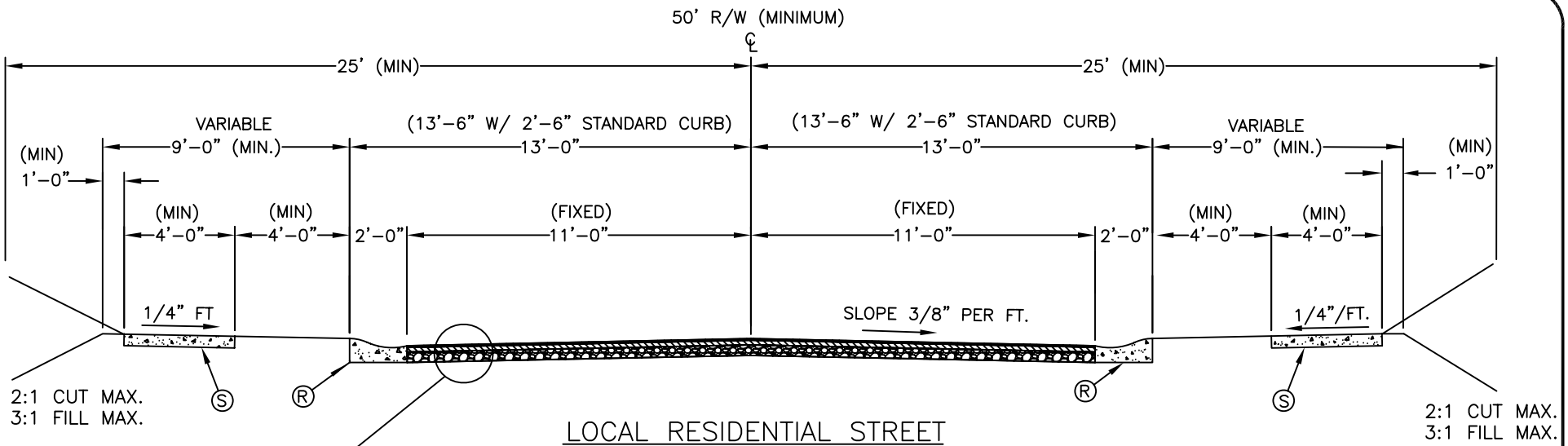
NOT TO SCALE

CHARLOTTE.

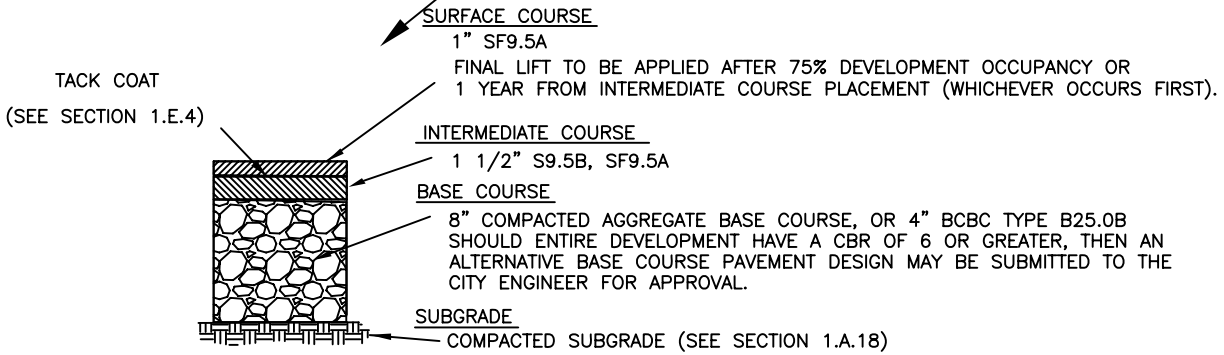
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

DIRECTIONAL ACCESSIBLE RAMP WITH LARGE CURB RADIUS

STD. NO.	REV.
10.40B	4



LOCAL RESIDENTIAL STREET



TYPICAL PAVEMENT SECTION

NOTES:

1. SIDEWALK SHALL BE PROVIDED ON BOTH SIDES OF STREET, MINIMUM 4' FROM BACK OF CURB.
2. SEE SECTION 1.F. SIDEWALKS AND DRIVEWAYS.

KEY

Ⓡ 2'-0" VALLEY GUTTER OR 2'-6" STD. CURB AND GUTTER

Ⓢ 4" CONCRETE SIDEWALK

ELEVATION CHANGE AT CENTER LINE REFERENCED FROM TOP OF CURB		
	FOR STONEBASE	FOR ASPHALT
SUBGRADE	– 9-3/8"	– 5-3/8"
BASE COURSE	-1-3/8"	
INTERMEDIATE COURSE	+1/8"	

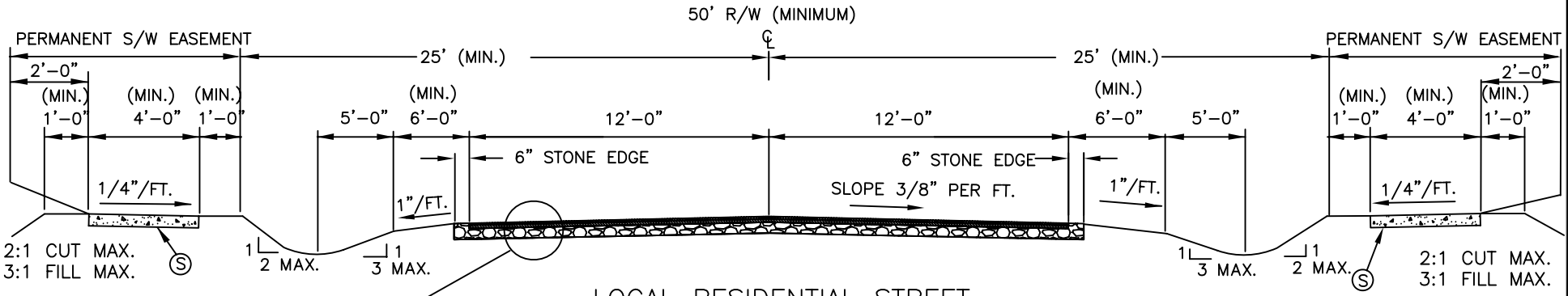
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LOCAL RESIDENTIAL STREET TYPICAL SECTION

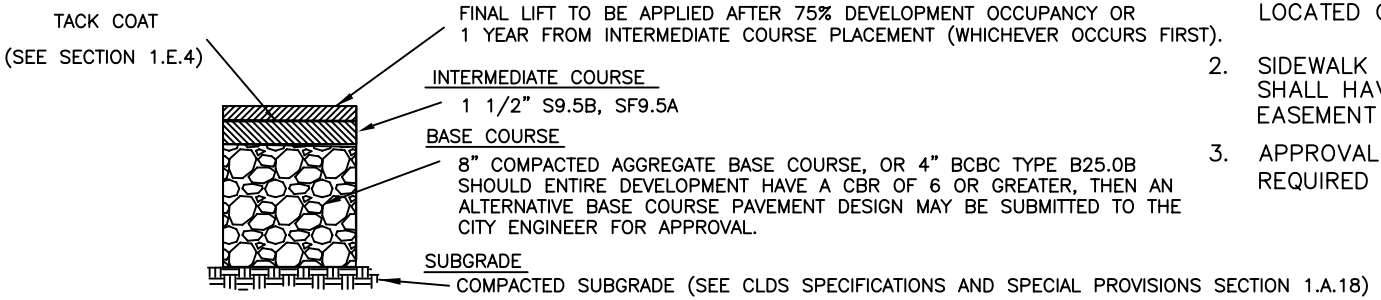
COMPREHENSIVE STREET CLASSIFICATION SYSTEM (CLASS VI)

STD. NO.	REV.
11.01	1



LOCAL RESIDENTIAL STREET

(DITCH TYPE)



TYPICAL PAVEMENT SECTION

NOTES:

1. SIDEWALK SHALL BE ON BOTH SIDES OF STREET AND LOCATED ON LOT SIDE OF DITCH.
2. SIDEWALK LOCATED OUTSIDE OF STREET RIGHT OF WAY SHALL HAVE BE LOCATED IN A PERMANENT SIDEWALK EASEMENT EXTENDING 2 FEET BEHIND BACK OF S/W.
3. APPROVAL BY THE CITY ENGINEER IS REQUIRED PRIOR TO USING DITCH TYPE SECTION.

KEY

Ⓢ = 4" CONCRETE SIDEWALK

NOT TO SCALE

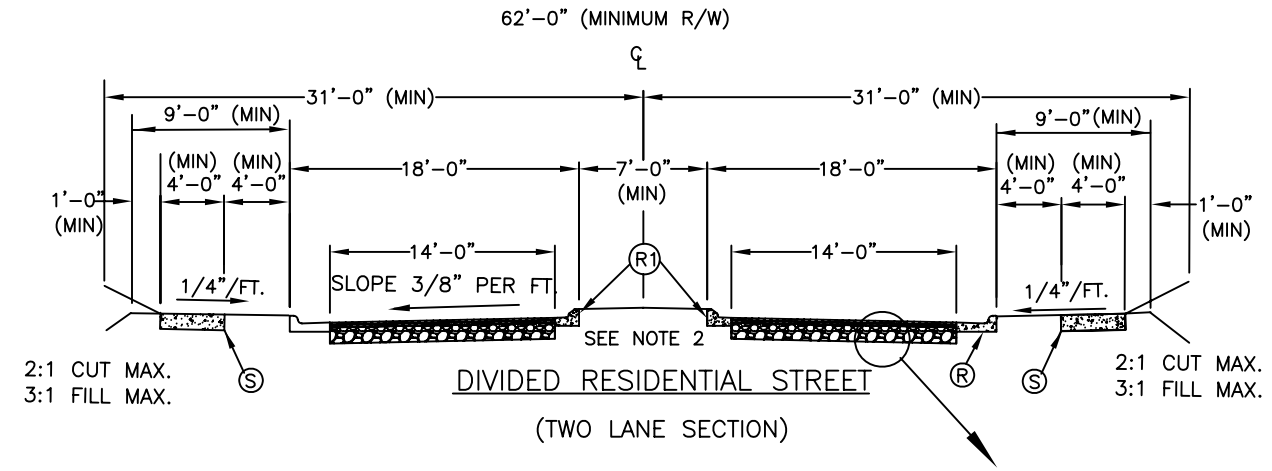
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LOCAL RESIDENTIAL
TYPICAL DITCH TYPE STREET SECTION

COMPREHENSIVE STREET CLASSIFICATION SYSTEM (CLASS VI)

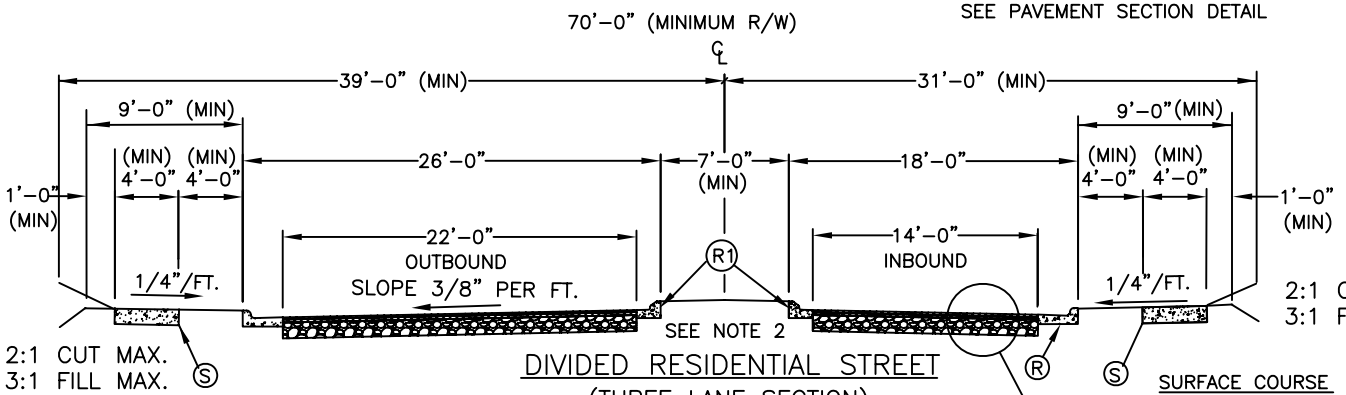
STD. NO.	REV.
11.02	1



DIVIDED RESIDENTIAL STREET

(TWO LANE SECTION)

SEE PAVEMENT SECTION DETAIL



DIVIDED RESIDENTIAL STREET

(THREE LANE SECTION)

NOTES:

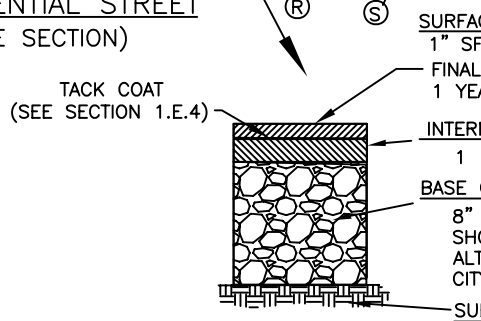
1. CURB RETURN RADIUS DIMENSIONS AT INTERSECTIONS MAY VARY DEPENDING ON MEDIAN WIDTH AND WILL BE APPROVED ON A CASE BY CASE BASIS.
2. SUBDRAINS ARE REQUIRED ON ALL MEDIANS. (TO BE TIED INTO STORM DRAINAGE SYSTEM). SEE SUBDRAIN STANDARD DETAIL.
3. 2'-0" VALLEY GUTTER MAY BE USED WITH APPROVAL OF CITY ENGINEER.
4. MEDIAN PLANTINGS SHALL MEET SIGHT DISTANCE REQUIREMENTS.
5. MONOLITHIC CONCRETE MEDIANS WITH BEVELED EDGES AND MINIMUM WIDTH OF 4 FEET CAN BE USED IN LIEU OF LANDSCAPE MEDIANS.

KEY

Ⓡ 2'-6" STANDARD GUTTER

Ⓡ1 1'-6" MOUNTABLE CURB

Ⓢ 4" CONCRETE SIDEWALK



SURFACE COURSE
1" SF9.5A
FINAL LIFT TO BE APPLIED AFTER 75% DEVELOPMENT OCCUPANCY OR 1 YEAR FROM INTERMEDIATE COURSE PLACEMENT (WHICHEVER OCCURS FIRST).

INTERMEDIATE COURSE
1 1/2" S9.5B, SF9.5A

BASE COURSE
8" COMPACTED AGGREGATE BASE COURSE, OR 4" BCBC TYPE B25.0B SHOULD ENTIRE DEVELOPMENT HAVE A CBR OF 6 OR GREATER, THEN AN ALTERNATIVE BASE COURSE PAVEMENT DESIGN MAY BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL.

SUBGRADE
COMPACTED SUBGRADE (SEE CLDS SPECIFICATIONS AND SPECIAL PROVISIONS SECTION 1.A.18)

TYPICAL PAVEMENT SECTION

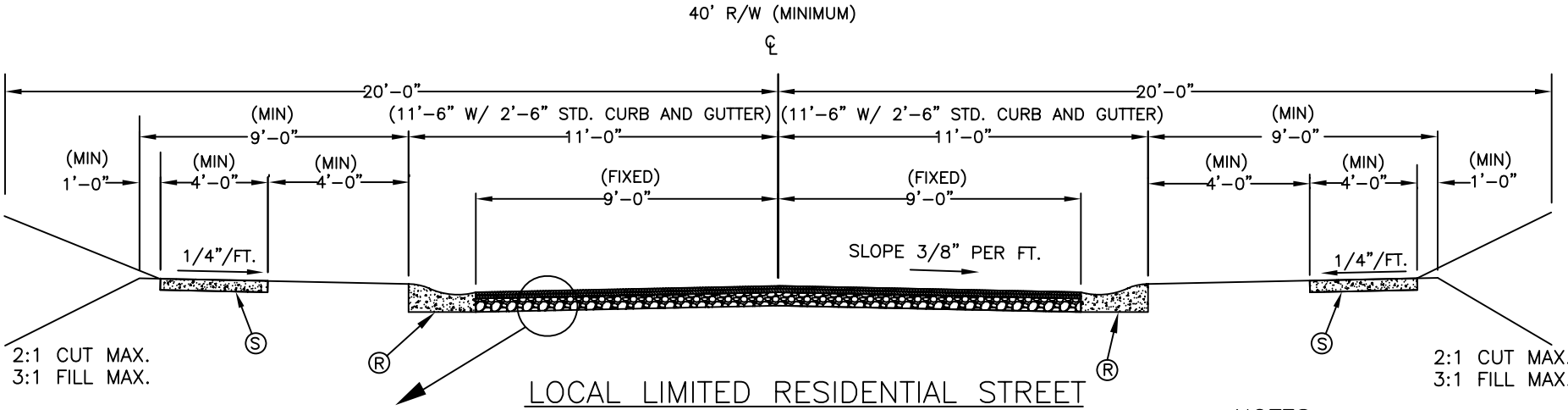
NOT TO SCALE

CHARLOTTE.

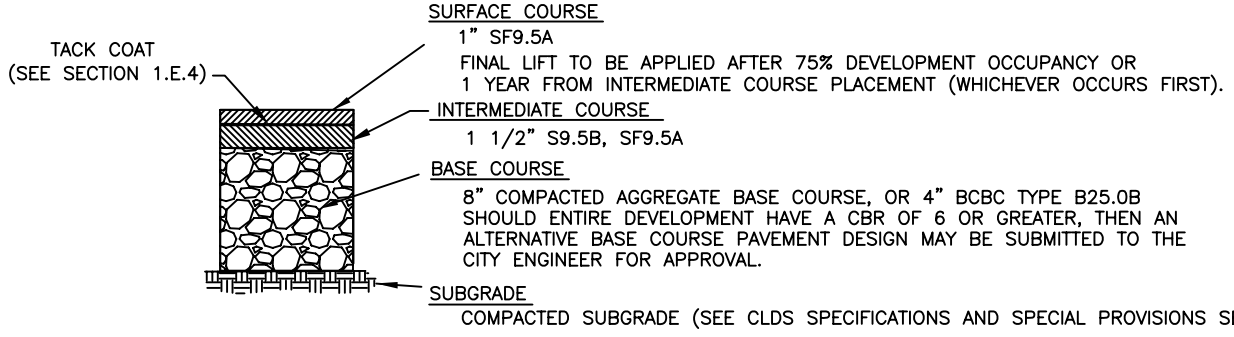
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

DIVIDED RESIDENTIAL STREET TYPICAL SECTIONS

STD. NO.	REV.
11.03	1



LOCAL LIMITED RESIDENTIAL STREET



TYPICAL PAVEMENT SECTION

NOTES:

1. STREETS ACCESSING LESS THAN TEN (10) LOTS OR LESS THAN 250 FEET IN LENGTH, SIDEWALK WILL ONLY BE REQUIRED ON ONE SIDE OF STREET AND NOT ALONG CUL-DE-SAC "BULB".

KEY

Ⓡ 2'-0" VALLEY GUTTER, 2'-0" STD. CURB AND GUTTER OR 2'-6" STD. CURB AND GUTTER.

Ⓢ 4" CONCRETE SIDEWALK

ELEVATION CHANGE AT CENTER LINE REFERENCED FROM TOP OF CURB		
	FOR STONEBASE	FOR ASPHALT
SUBGRADE	-10-1/8"	-6-1/8"
BASE COURSE	-2-1/8"	
INTERMEDIATE COURSE	-5/8"	

CHARLOTTE.

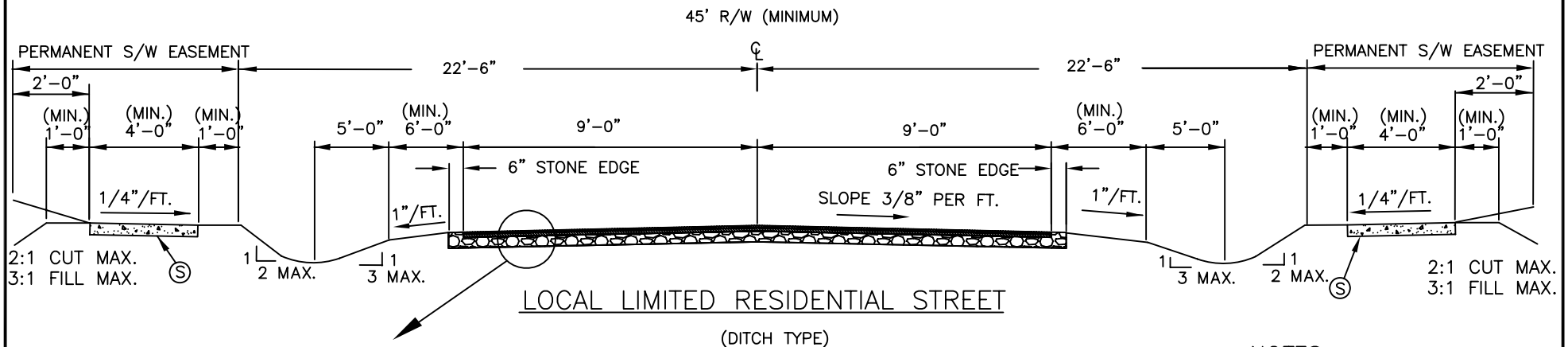
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LOCAL LIMITED RESIDENTIAL STREET TYPICAL SECTION

NOT TO SCALE

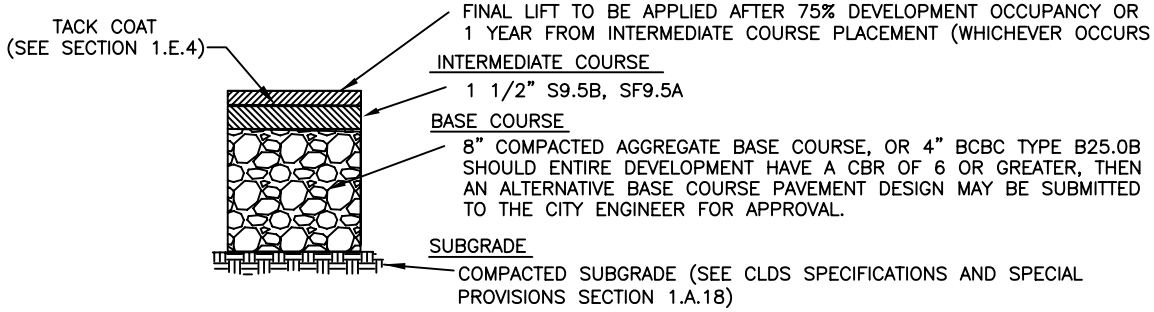
COMPREHENSIVE STREET CLASSIFICATION SYSTEM (CLASS VI-L)

STD. NO.	REV.
11.04	1



LOCAL LIMITED RESIDENTIAL STREET

(DITCH TYPE)



TYPICAL PAVEMENT SECTION

NOTES:

1. SIDEWALK SHALL BE ON BOTH SIDES OF STREET AND LOCATED ON LOT SIDE OF DITCH.
2. SIDEWALK LOCATED OUTSIDE OF STREET RIGHT OF WAY SHALL HAVE BE LOCATED IN A PERMANENT SIDEWALK EASEMENT EXTENDING 2 FEET BEHIND BACK OF S/W.
3. APPROVAL BY THE CITY ENGINEER IS REQUIRED PRIOR TO USING DITCH TYPE SECTION.
4. ON STREETS ACCESSING FEWER THAN TEN (10) LOTS OR LESS THAN 250 FEET IN LENGTH, SIDEWALK WILL ONLY BE REQUIRED ON ONE SIDE OF STREET AND NOT ALONG THE CUL-DE-SAC "BULB".
5. SEE SECTION 1.F. SIDEWALKS AND DRIVEWAYS.

KEY

Ⓢ = 4" CONCRETE SIDEWALK

NOT TO SCALE

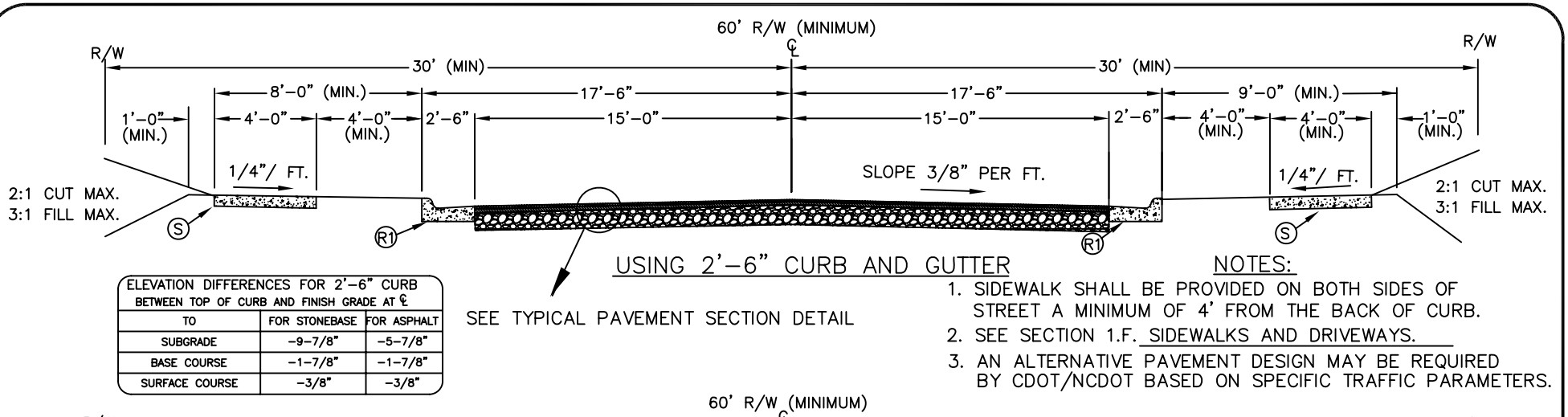
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LOCAL LIMITED RESIDENTIAL STREET
TYPICAL DITCH TYPE SECTIONS

COMPREHENSIVE STREET CLASSIFICATION SYSTEM (CLASS VI-L)

STD. NO.	REV.
11.05	1



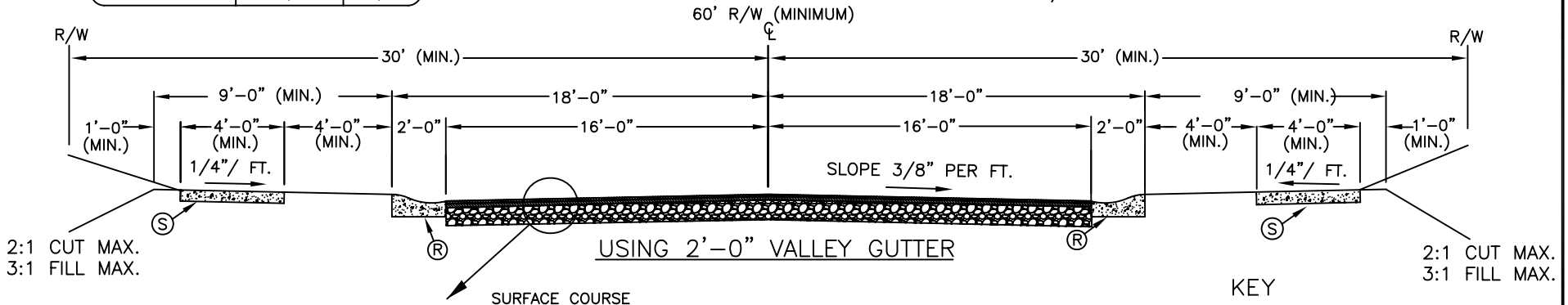
USING 2'-6" CURB AND GUTTER

SEE TYPICAL PAVEMENT SECTION DETAIL

ELEVATION DIFFERENCES FOR 2'-6" CURB BETWEEN TOP OF CURB AND FINISH GRADE AT ℄		
TO	FOR STONEBASE	FOR ASPHALT
SUBGRADE	-9-7/8"	-5-7/8"
BASE COURSE	-1-7/8"	-1-7/8"
SURFACE COURSE	-3/8"	-3/8"

NOTES:

1. SIDEWALK SHALL BE PROVIDED ON BOTH SIDES OF STREET A MINIMUM OF 4' FROM THE BACK OF CURB.
2. SEE SECTION 1.F. SIDEWALKS AND DRIVEWAYS.
3. AN ALTERNATIVE PAVEMENT DESIGN MAY BE REQUIRED BY CDOT/NCDOT BASED ON SPECIFIC TRAFFIC PARAMETERS.



USING 2'-0" VALLEY GUTTER

KEY

- Ⓡ 2'-0" VALLEY GUTTER
- Ⓡ1 2'-6" CURB AND GUTTER
- Ⓢ 4" CONCRETE SIDEWALK

SURFACE COURSE

1" SF9.5A

FINAL LIFT TO BE APPLIED AFTER 75% DEVELOPMENT OCCUPANCY OR 1 YEAR FROM INTERMEDIATE COURSE PLACEMENT (WHICHEVER OCCURS FIRST).

INTERMEDIATE COURSE

1 1/2" S9.5B, SF9.5A

BASE COURSE

8" COMPACTED AGGREGATE BASE COURSE, OR 4" BCBC TYPE B25.0B SHOULD ENTIRE DEVELOPMENT HAVE A CBR OF 6 OR GREATER, THEN AN ALTERNATIVE BASE COURSE PAVEMENT DESIGN MAY BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL.

SUBGRADE

COMPACTED SUBGRADE (SEE CLDS SPECIFICATIONS AND SPECIAL PROVISIONS SECTION 1.A.18)

TYPICAL MINIMUM PAVEMENT SECTION
(SEE NOTE 3.)

NOT TO SCALE

ELEVATION CHANGE AT CENTER LINE REFERENCED FROM TOP OF CURB		
	FOR STONEBASE	FOR ASPHALT
SUBGRADE	-7-1/2"	-3-1/2"
BASE COURSE	+1/2"	
INTERMEDIATE COURSE	+2"	

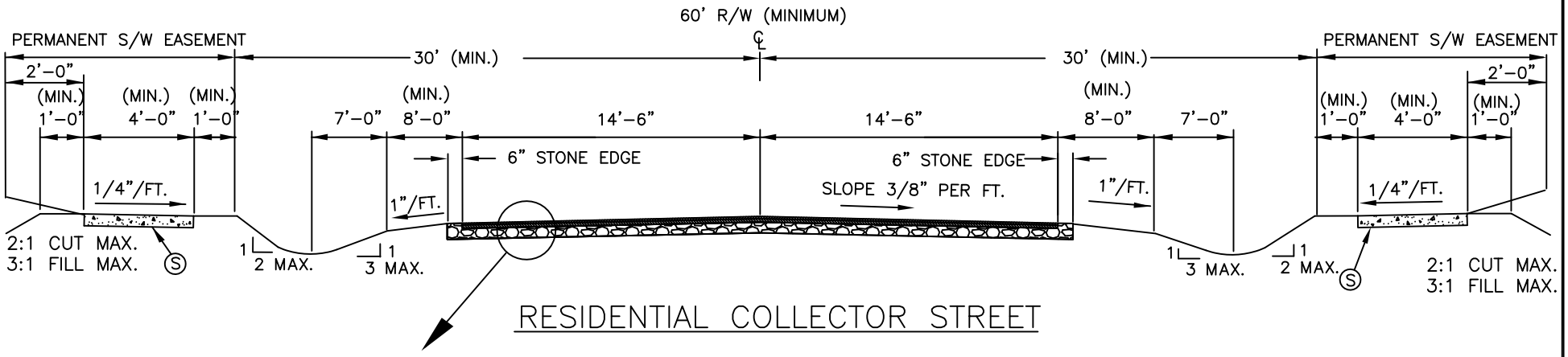
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

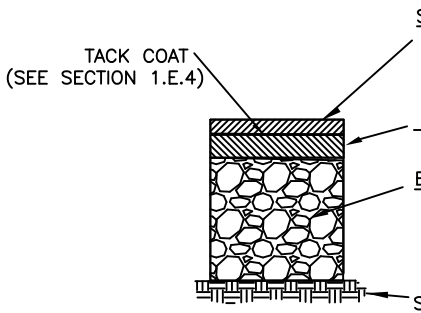
RESIDENTIAL COLLECTOR STREET TYPICAL SECTIONS

COMPREHENSIVE STREET CLASSIFICATION SYSTEM (CLASS V)

STD. NO.	REV.
11.06	1



RESIDENTIAL COLLECTOR STREET



SURFACE COURSE
1" SF9.5A
FINAL LIFT TO BE APPLIED AFTER 75% DEVELOPMENT OCCUPANCY OR 1 YEAR FROM INTERMEDIATE COURSE PLACEMENT (WHICHEVER OCCURS FIRST).

INTERMEDIATE COURSE
1 1/2" S9.5B, SF9.5A

BASE COURSE
8" COMPACTED AGGREGATE BASE COURSE, OR 4" BCBC TYPE B25.0B SHOULD ENTIRE DEVELOPMENT HAVE A CBR OF 6 OR GREATER, THEN AN ALTERNATIVE BASE COURSE PAVEMENT DESIGN MAY BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL.

SUBGRADE
COMPACTED SUBGRADE (SEE CLDS SPECIFICATIONS AND SPECIAL PROVISIONS SECTION 1.A.18)

TYPICAL MINIMUM PAVEMENT SECTION
(SEE NOTE 4.)

NOTES:

1. SIDEWALK SHALL BE ON BOTH SIDES OF STREET AND LOCATED ON LOT SIDE OF DITCH.
2. SIDEWALK LOCATED OUTSIDE OF STREET RIGHT OF WAY SHALL HAVE A 5 FOOT PERMANANT SIDEWALK EASEMENT.
3. APPROVAL BY THE CITY ENGINEER IS REQUIRED PRIOR TO USING DITCH TYPE SECTION.
4. AN ALTERNATIVE PAVEMENT DESIGN MAY BE REQUIRED BY CDOT/NCDOT BASED ON SPECIFIC TRAFFIC PARAMETERS.

KEY

Ⓢ 4" CONCRETE SIDEWALK

NOT TO SCALE

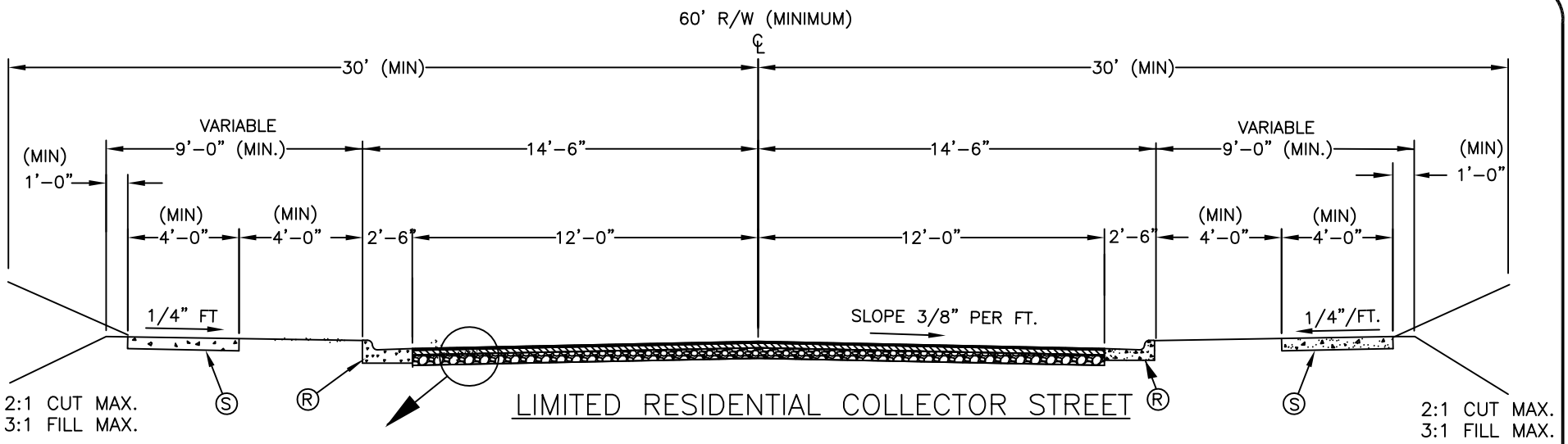
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

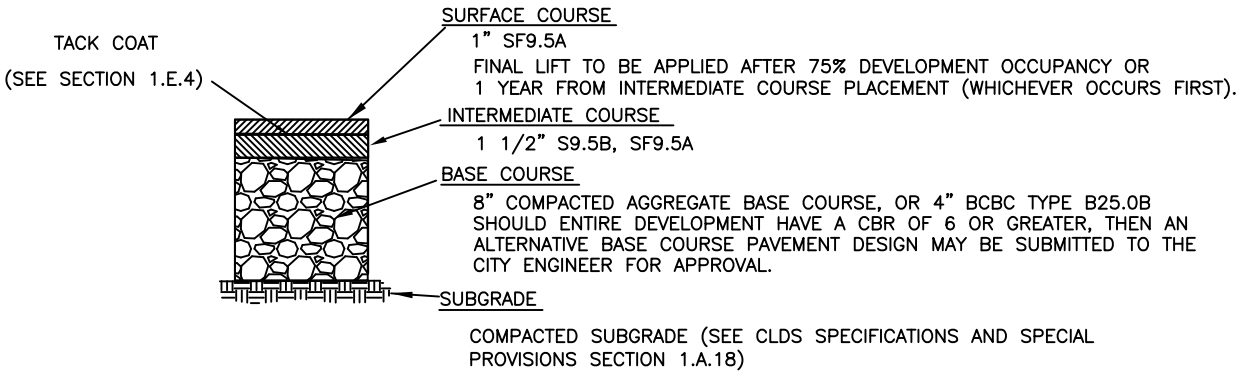
RESIDENTIAL COLLECTOR STREET
DITCH TYPE STREET TYPICAL SECTION

COMPREHENSIVE STREET CLASSIFICATION SYSTEM (CLASS V)

STD. NO.	REV.
11.07	4



LIMITED RESIDENTIAL COLLECTOR STREET



NOTES:

1. SIDEWALK SHALL BE PROVIDED ON BOTH SIDES OF STREET A MINIMUM OF 4' FROM THE BACK OF CURB.
2. TO BE USED ONLY ON REVERSE FRONTAGE LOTS.
3. DRIVEWAY CONNECTIONS WILL NOT BE ALLOWED TO LIMITED COLLECTOR STREET.
4. AN ALTERNATIVE PAVEMENT DESIGN MAY BE REQUIRED BY CDOT/NCDOT BASED ON SPECIFIC TRAFFIC PARAMETERS.

TYPICAL MINIMUM PAVEMENT SECTION

(SEE NOTE 4.)

KEY

Ⓡ 2'-6" STANDARD CURB

Ⓢ 4" CONCRETE SIDEWALK

NOT TO SCALE

ELEVATION CHANGE AT CENTER LINE REFERENCED FROM TOP OF CURB		
	FOR STONEBASE	FOR ASPHALT
SUBGRADE	-11"	-7"
BASE COURSE	-3"	
INTERMEDIATE COURSE	-1-1/2"	

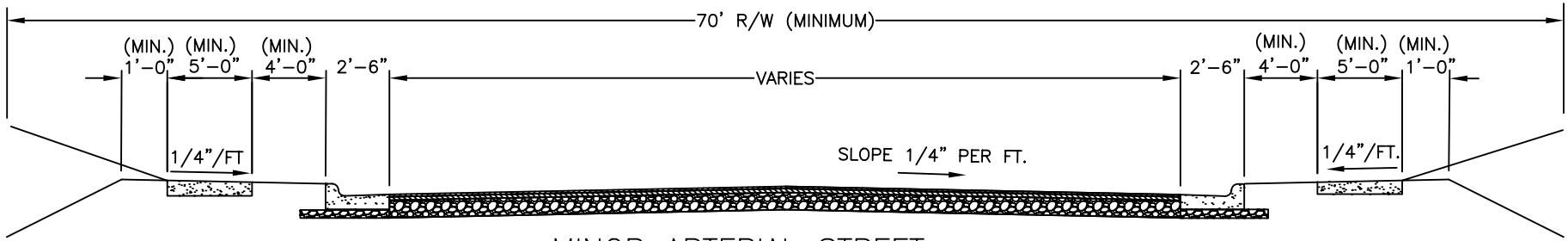
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LIMITED RESIDENTIAL COLLECTOR STREET TYPICAL SECTION

COMPREHENSIVE STREET CLASSIFICATION SYSTEM (CLASS V)

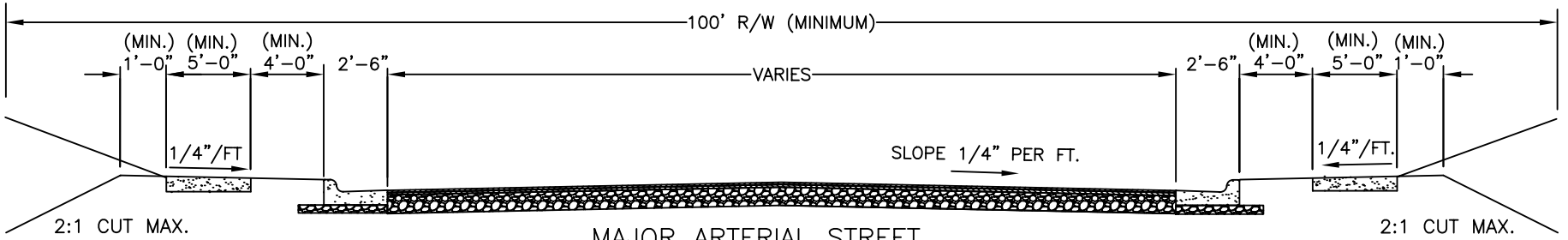
STD. NO.	REV.
11.08	4



2:1 CUT MAX.
3:1 FILL MAX.

MINOR ARTERIAL STREET

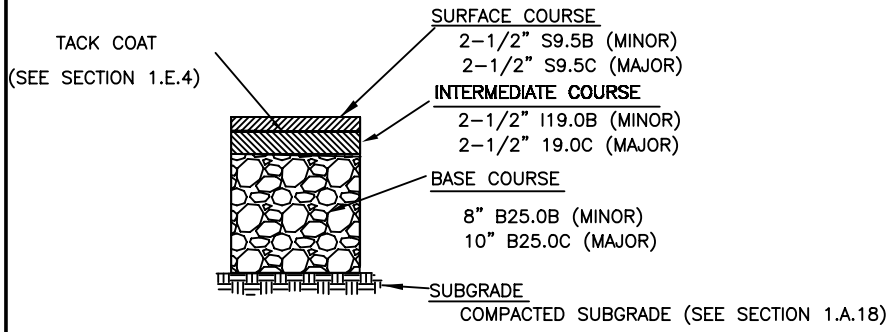
2:1 CUT MAX.
3:1 FILL MAX.



2:1 CUT MAX.
3:1 FILL MAX.

MAJOR ARTERIAL STREET

2:1 CUT MAX.
3:1 FILL MAX.



TYPICAL MINIMUM PAVEMENT SECTION

(SEE NOTE 3.)

NOTES:

1. SIDEWALKS SHALL BE PROVIDED IN ACCORDANCE WITH THE APPLICABLE ORDINANCE(S).
2. DITCH TYPE STREET IS TO BE USED ONLY WHEN APPROVED BY CITY ENGINEER.
3. AN ALTERNATIVE PAVEMENT DESIGN MAY BE REQUIRED BY CDOT/NCDOT BASED ON SPECIFIC TRAFFIC PARAMETERS.

NOT TO SCALE

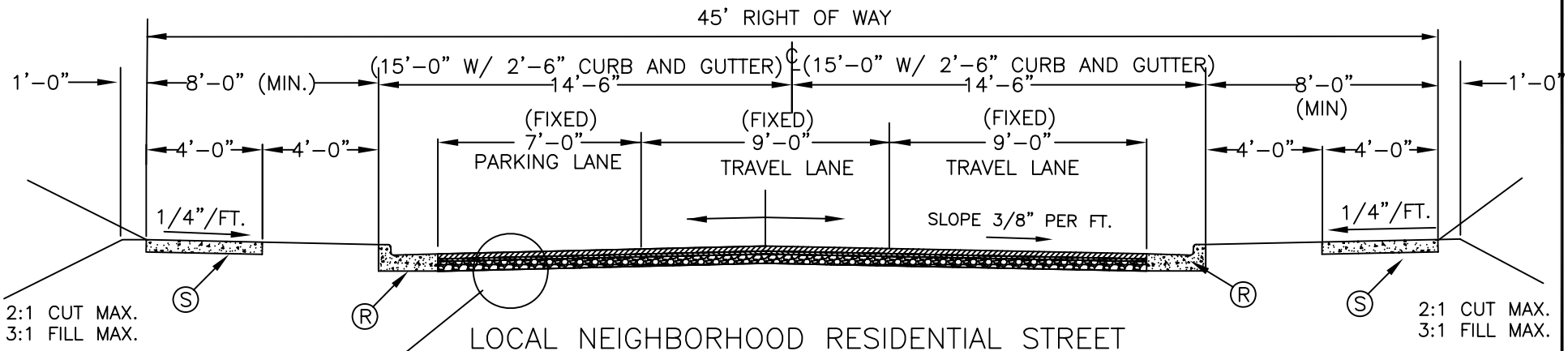
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

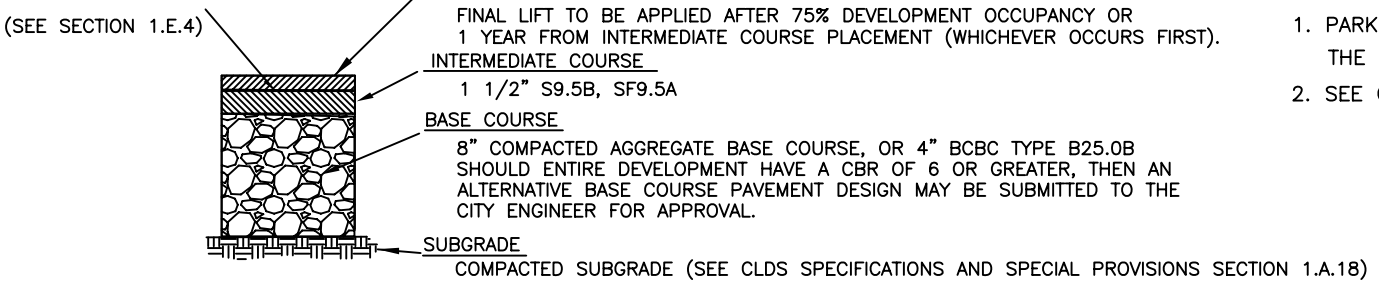
ARTERIAL STREET TYPICAL SECTIONS

COMPREHENSIVE STREET CLASSIFICATION SYSTEM (CLASSES III AND IV)

STD. NO.	REV.
11.09	10



LOCAL NEIGHBORHOOD RESIDENTIAL STREET



TYPICAL PAVEMENT SECTION

NOTES:

1. PARKING BAY DESIGNS TO BE SUBMITTED TO THE CDOT PRIOR TO APPROVAL.
2. SEE CURB TRANSITION STANDARD 10.19 AND 10.29.

KEY

Ⓡ 2'-0" STANDARD CURB & GUTTER (OR 2'-6" STANDARD CURB & GUTTER)

Ⓢ 4" CONCRETE SIDEWALK

NOT TO SCALE

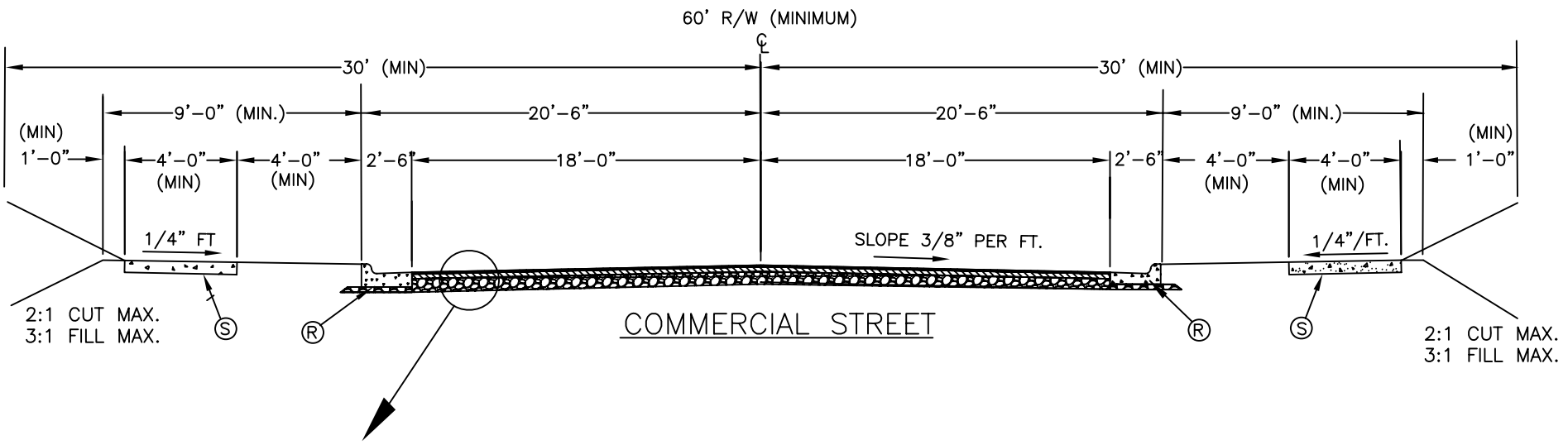
ELEVATION CHANGE AT CENTER LINE REFERENCED FROM TOP OF CURB		
	FOR STONEBASE	FOR ASPHALT
SUBGRADE	-10-7/8"	-6-3/4"
BASE COURSE	-2-7/8"	
INTERMEDIATE COURSE	-1-3/8"	

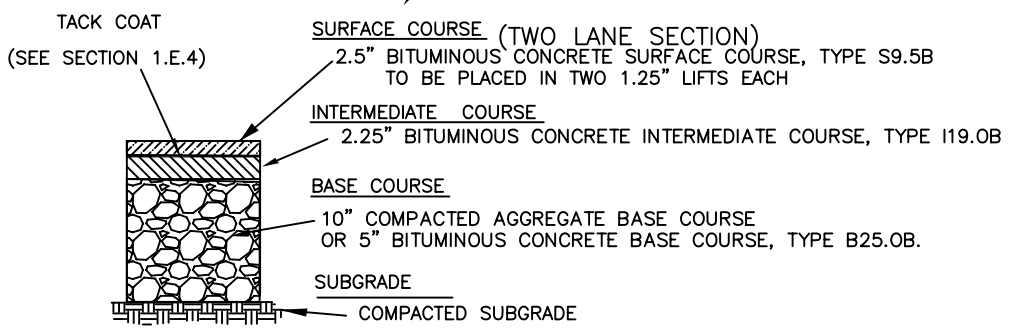
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

CITY OF CHARLOTTE 45' TRADITIONAL NEIGHBORHOOD DEVELOPMENT STREET

STD. NO.	REV.
11.10	1





TYPICAL MINIMUM PAVEMENT SECTION
(SEE NOTE 3)

NOTES:

1. DEVELOPER MAY SUBMIT AN ALTERNATIVE PAVEMENT DESIGN TO CITY ENGINEER.
2. SEE CLDS SPECIFICATIONS AND SPECIAL PROVISIONS SECTION 1. F. "SIDEWALKS AND DRIVEWAYS."
3. AN ALTERNATIVE PAVEMENT DESIGN MAY BE REQUIRED BY CDOT/NCDOT BASED ON SPECIFIC TRAFFIC PARAMETERS.

KEY

Ⓡ 2'-6" CURB AND GUTTER

Ⓢ 4" CONCRETE SIDEWALK

ELEVATION CHANGE AT CENTER LINE REFERENCED FROM TOP OF CURB		
	FOR STONEBASE	FOR ASPHALT
SUBGRADE	-13"	-8"
BASE COURSE	-3"	
INTERMEDIATE COURSE	-3/4"	

CHARLOTTE.

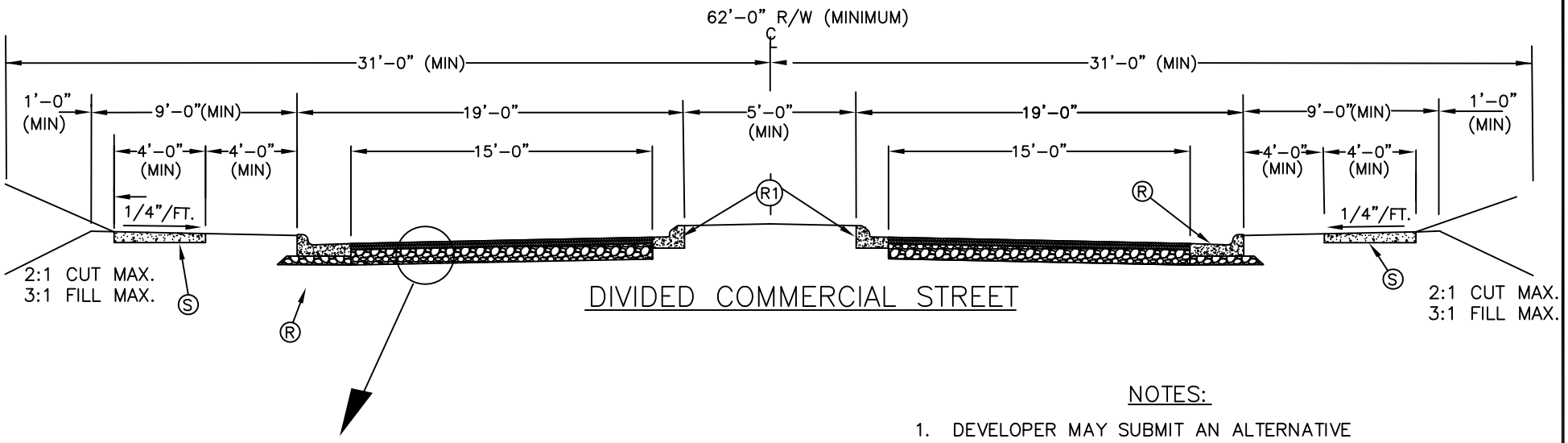
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

NOT TO SCALE

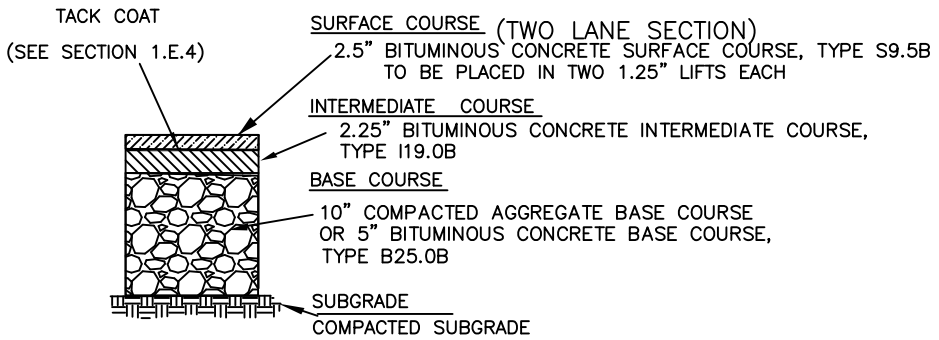
COMMERCIAL STREET TYPICAL SECTION

COMPREHENSIVE STREET CLASSIFICATION SYSTEM (CLASS V-C)

STD. NO.	REV.
11.11	1



DIVIDED COMMERCIAL STREET



TYPICAL MINIMUM PAVEMENT SECTION
(SEE NOTE 7.)

KEY

- (R) 2'-6" CURB AND GUTTER
- (R1) 1'-6" MOUNTABLE CURB
- (S) 4" CONCRETE SIDEWALK

NOTES:

1. DEVELOPER MAY SUBMIT AN ALTERNATIVE PAVEMENT DESIGN TO CITY ENGINEER.
2. SUBDRAINS ARE REQUIRED ON ALL MEDIANS. (TO BE TIED INTO STORM DRAINAGE SYSTEM). SEE STD. NO. 20.28
3. EACH ADDITIONAL LANE SHALL BE 11'-0" WIDE.
4. CURB RETURN RADIUS DIMENSIONS AT INTERSECTIONS MAY VARY DEPENDING ON MEDIAN WIDTH AND WILL BE REVIEWED ON A CASE BY CASE BASIS.
5. MEDIAN PLANTINGS TO BE APPROVED BY APPROPRIATE CITY ENGINEER FOR SIGHT DISTANCE.
6. MONOLITHIC CONCRETE MEDIANS WITH BEVELED EDGES AND MINIMUM WIDTH OF 4 FEET CAN BE USED IN LIEU OF LANDSCAPE MEDIANS.
7. AN ALTERNATIVE PAVEMENT DESIGN MAY BE REQUIRED BY CDOT/NCDOT BASED ON SPECIFIC TRAFFIC PARAMETERS.

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

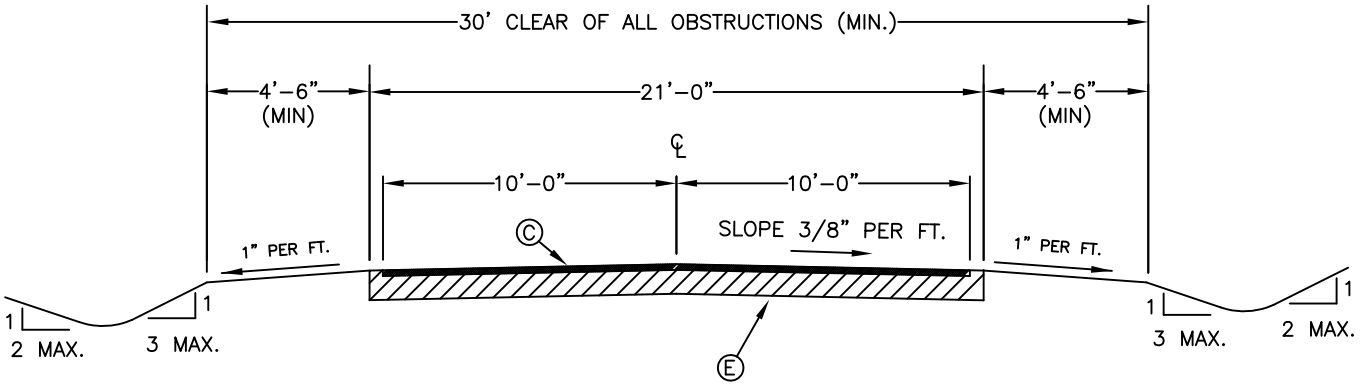
DIVIDED COMMERCIAL STREET TYPICAL SECTION

COMPREHENSIVE STREET CLASSIFICATION SYSTEM (CLASS V-C)

STD. NO.	REV.
11.12	4

NOTES:

1. DETAILS SHOWN SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY STANDARDS.
2. DITCH TYPE STREET REQUIRES APPROVAL OF CITY ENGINEER.
3. MINIMUM CURB RADIUS ON INTERIOR DRIVES AND PARKING AREAS IS 10'
4. THIS DETAIL IS NOT TO BE USED TO MEET INTERNAL/EXTERNAL CONNECTIVITY REQUIREMENTS OF THE SUBDIVISION ORDINANCE AND ZONING ORDINANCE.



DITCH TYPE

GUIDELINES FOR PRIVATE STREET DESIGN:

1. INTERNAL STREET ALIGNMENT:
   MAXIMUM GRADE: 10%
   MINIMUM VERTICAL CURVE "K" VALUES: 10/20 (CREST/SAG)
   MINIMUM HORIZONTAL CURVE CENTERLINE RADIUS: 50 FT.
2. INTERSECTION WITH PUBLIC STREET:
   SAME AS FOR PUBLIC STREET. SEE GENERAL NOTES, SECTION I.B.2.
   5% MAXIMUM GRADE WITHIN 40 FEET OF PUBLIC STREET INTERSECTION BEGINNING FROM EDGE OF PAVEMENT LINE.

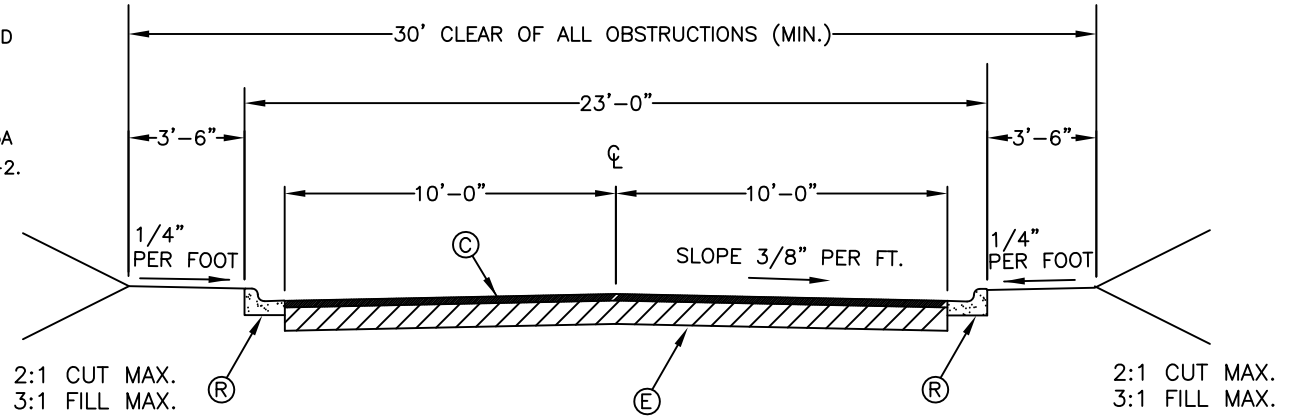
NOTE: VARIATIONS ON THESE GUIDELINES WILL BE REVIEWED ON A CASE BY CASE BASIS BY CITY STAFF.

PAVEMENT SCHEDULE

Ⓒ 1.5" BITUMINOUS CONCRETE SURFACE COURSE, TYPE SF9.5A OR 1.5" BITUMINOUS CONCRETE SURFACE COURSE, TYPE I-2.

Ⓔ 6" COMPACTED AGGREGATE BASE COURSE OR 4" BITUMINOUS CONCRETE BASE COURSE, TYPE B25.0B OR 4" BCBC TYPE HB.

Ⓡ CURB AND GUTTER (REFERENCE 10.17A AND B)



CURB AND GUTTER

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

PRIVATE STREET TYPICAL SECTIONS

STD. NO.	REV.
11.13	8

NOTES:

1. CURB RETURN RADIUS DIMENSIONS AT INTERSECTIONS MAY VARY DEPENDING ON MEDIAN WIDTH AND WILL BE REVIEWED ON A CASE BY CASE BASIS.
2. FOR ADDITIONAL LANES ADD 10'(MINIMUM) OF PAVEMENT PER LANE.
3. 2'–0" VALLEY GUTTER MAY BE USED WITH APPROVAL OF APPROPRIATE CITY ENGINEER.
4. MONOLITHIC CONCRETE MEDIANS WITH BEVELED EDGES AND MINIMUM WIDTH OF 4 FEET CAN BE USED IN LIEU OF LANDSCAPE MEDIANS.

GUIDELINES FOR PRIVATE STREET DESIGN:

1. INTERNAL STREET ALIGNMENT:
   MAXIMUM GRADE: 10%
   MINIMUM VERTICAL CURVE "K" VALUES: 10/20 (CREST/SAG)
   MINIMUM HORIZONTAL CURVE CENTERLINE RADIUS: 50 FT.
2. INTERSECTION WITH PUBLIC STREET:
   SAME AS FOR PUBLIC STREET. SEE CLDS SPECIFICATIONS AND SPECIAL PROVISIONS SECTION I.B.2.
   5% MAXIMUM GRADE WITHIN 40 FEET OF PUBLIC STREET INTERSECTION BEGINNING FROM EDGE OF PAVEMENT LINE.

NOTE: VARIATIONS ON THESE GUIDELINES WILL BE REVIEWED ON A CASE BY CASE BASIS BY CITY STAFF.

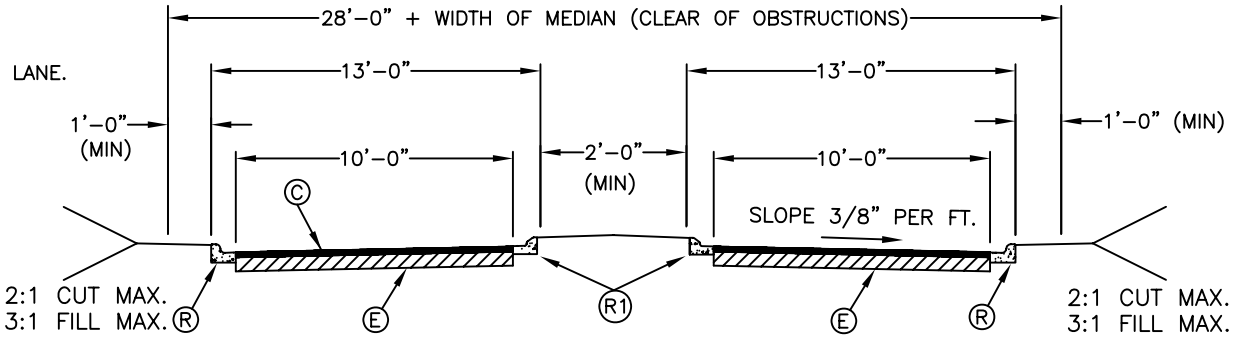
PAVEMENT SCHEDULE

Ⓒ 1.5" BITUMINOUS CONCRETE SURFACE COURSE, TYPE SF9.5A

Ⓔ 6" COMPACTED AGGREGATE BASE COURSE OR 4" BITUMINOUS CONCRETE BASE COURSE, TYPE B25.0B

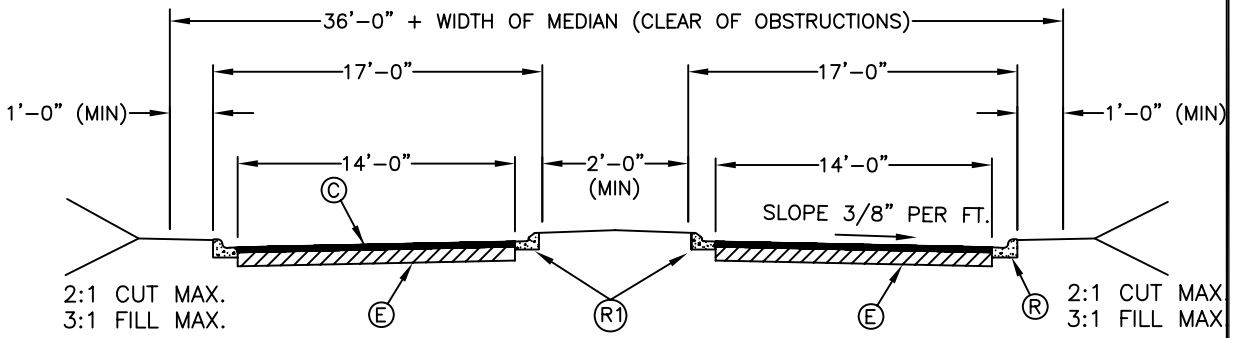
Ⓡ CURB AND GUTTER (REFERENCE 10.17A & B).

Ⓡ1 1'–6" MOUNTABLE CURB



DIVIDED PRIVATE STREET

(INTERNAL)



DIVIDED PRIVATE STREET

(AT INTERSECTION WITH A PUBLIC STREET
FOR 150' OR LENGTH OF MEDIAN WHICHEVER IS GREATER)

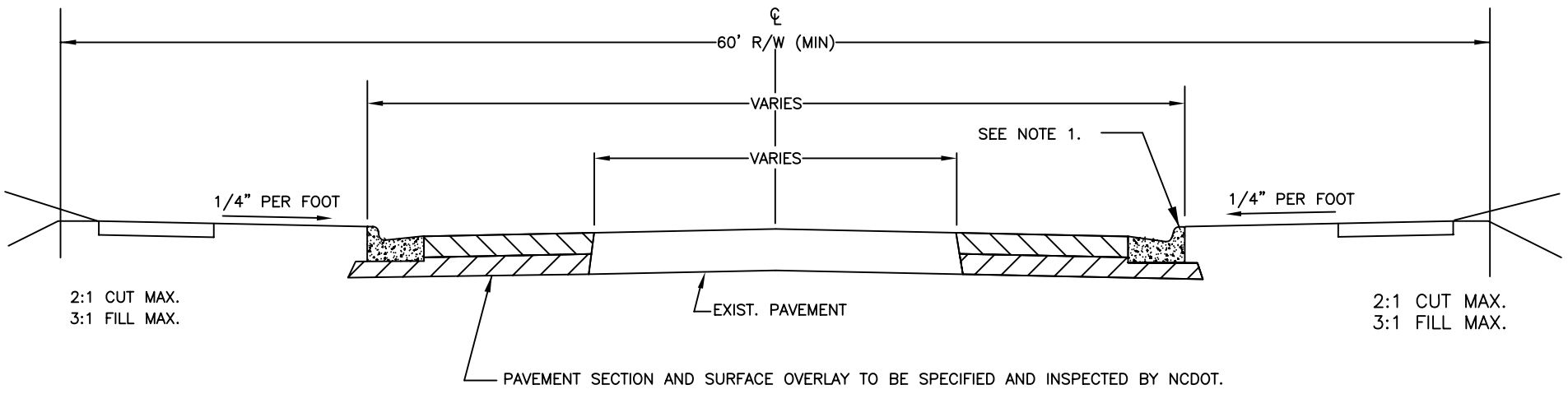
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

DIVIDED PRIVATE STREET TYPICAL SECTIONS

STD. NO.	REV.
11.14	1



NOTES:

1. CURB LOCATIONS ON STATE ROADS TO BE DETERMINED BY CDOT.
2. ALL WORK TO BE DONE ON EXISTING NCDOT MAINTAINED STREETS SHALL REQUIRE NCDOT ENCROACHMENT/ACCESS APPLICATIONS, SUBMITTED TO THE CITY ENGINEER.
3. SIDEWALK SHALL BE PROVIDED IN ACCORDANCE WITH THE APPLICABLE ORDINANCES.

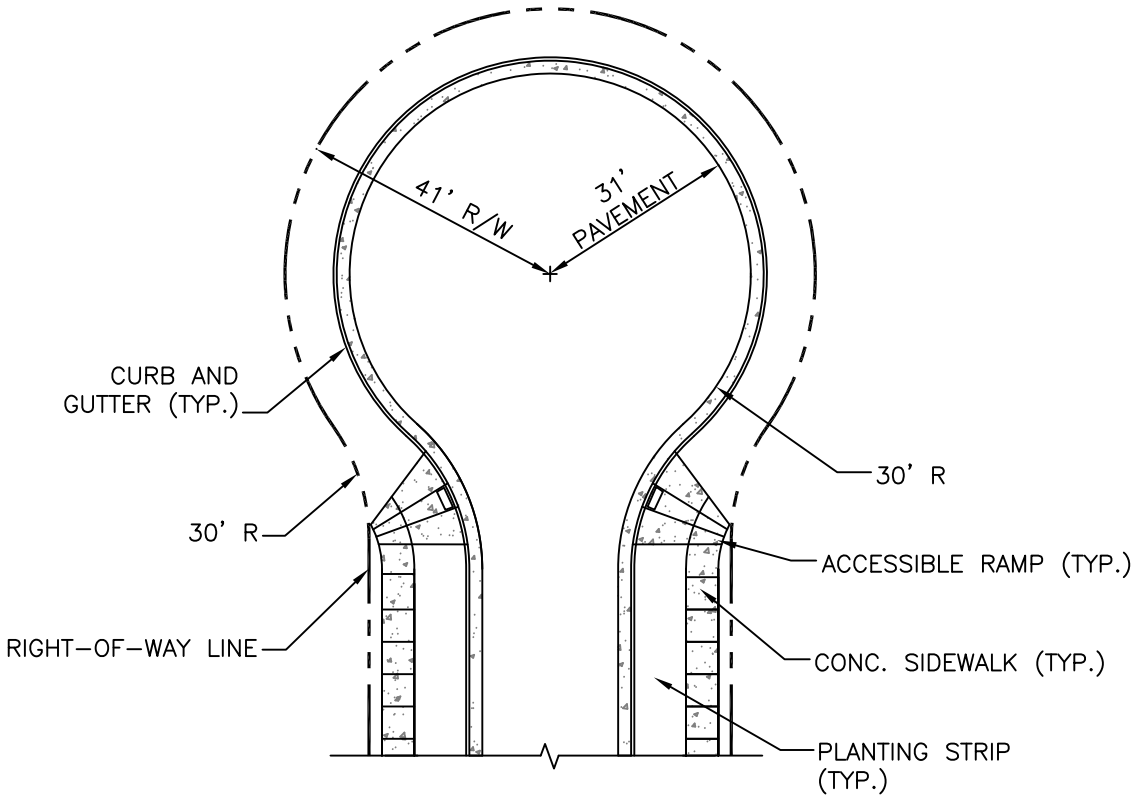
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TYPICAL SECTION IMPROVEMENTS ON EXISTING NCDOT THOROUGHFARES

STD. NO.	REV.
11.15	



STANDARD CUL-DE-SAC

NOTES:

1. ALTERNATIVE CUL-DE-SAC DESIGNS, INCLUDING ISLANDS SHALL BE SUBMITTED TO THE CITY ENGINEER AND CDOT FOR REVIEW AND APPROVAL.
2. THE CROWN FOR PAVEMENT SHALL BE 1/4" PER FT FROM THE CENTER OF THE CUL-DE-SAC.
3. REFER TO NCDOT STANDARDS FOR DITCH TYPE STREETS IN ETJ.
4. SIDEWALK MAY BE REQUIRED TO EXTEND AROUND CUL-DE-SAC BULB WHERE PARKS OR SCHOOLS HAVE FRONTAGE TO THE END OF THE CUL-DE-SAC.

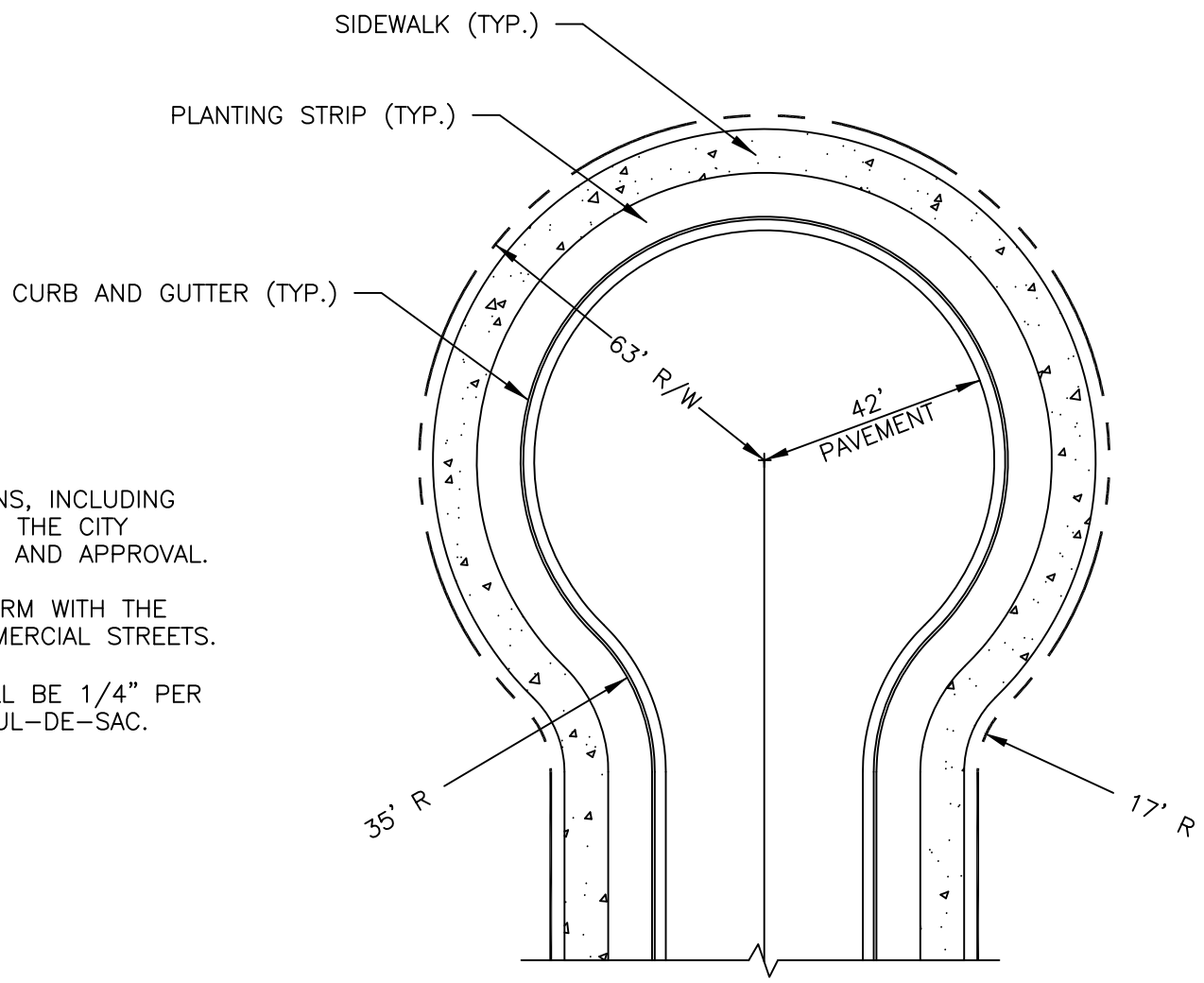
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

CITY OF CHARLOTTE AND ETJ RESIDENTIAL CUL-DE-SAC DETAIL

STD. NO.	REV.
11.16	6



NOTES:

1. ALTERNATIVE CUL-DE-SAC DESIGNS, INCLUDING ISLANDS SHALL BE SUBMITTED TO THE CITY ENGINEER AND CDOT FOR REVIEW AND APPROVAL.
2. PAVEMENT SECTION SHALL CONFORM WITH THE DESIGN REQUIREMENTS FOR COMMERCIAL STREETS.
3. THE CROWN FOR PAVEMENT SHALL BE 1/4" PER FT FROM THE CENTER OF THE CUL-DE-SAC.

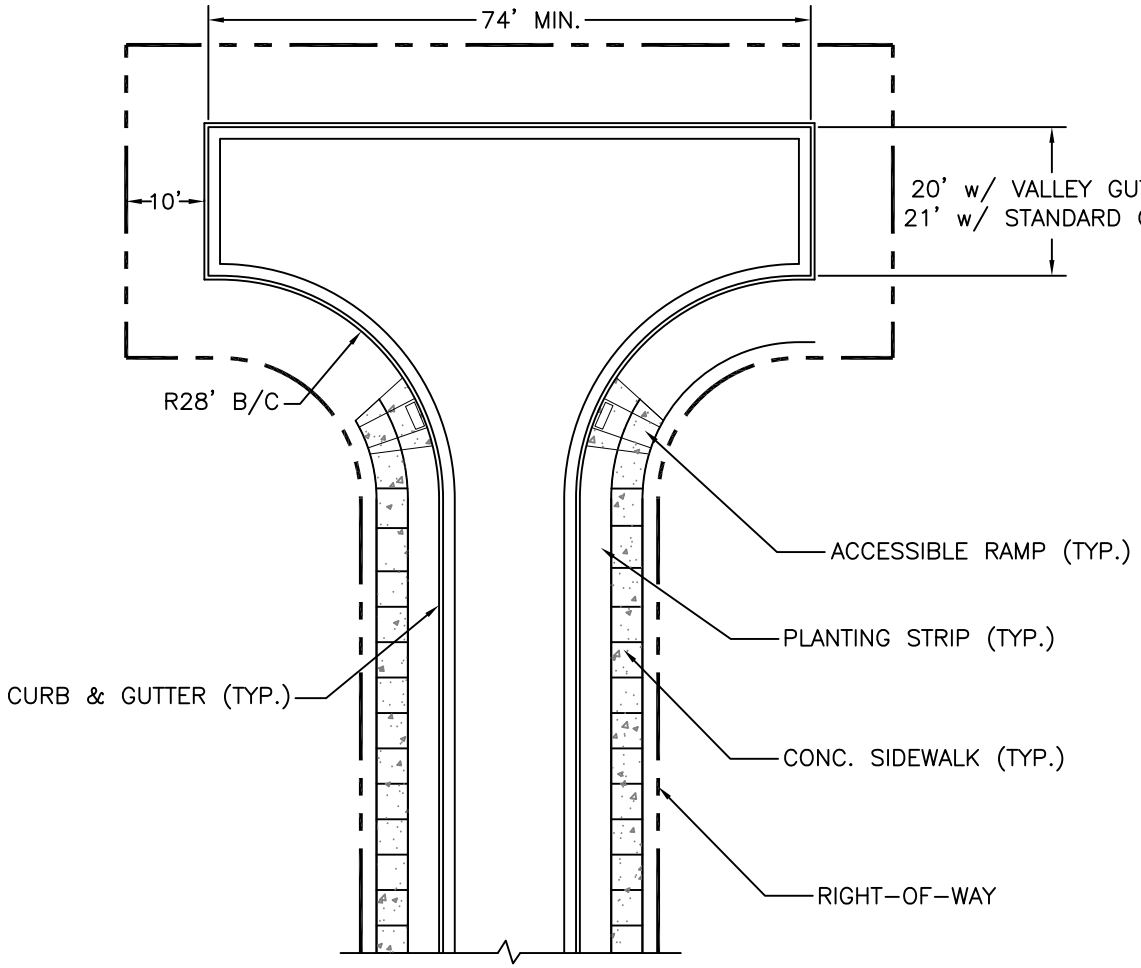
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

OFFICE / COMMERCIAL / INDUSTRIAL
CUL-DE-SAC DETAIL

STD. NO.	REV.
11.17	6



NOTES

1. THIS DESIGN ACCOMMODATES SINGLE-UNIT TRUCK BUT NOT A CHARLOTTE FIRE DEPARTMENT LADDER TRUCK. TO DESIGN FOR A LADDER TRUCK REQUIRES A HAMMERHEAD OF 120 FEET IN LENGTH.
2. VARIATIONS ON THIS DESIGN (E.G., WYES, TURNAROUNDS IN THE STEM, ROTATION OF ENTRY POINT, ETC.) CAN BE SUBMITTED TO CDOT FOR REVIEW AND APPROVAL ON A CASE-BY-CASE BASIS.
3. SIDEWALK MAY BE REQUIRED TO EXTEND AROUND THE HAMMERHEAD WHERE PARKS OR SCHOOLS HAVE FRONTAGE TO THE END OF THE HAMMERHEAD.

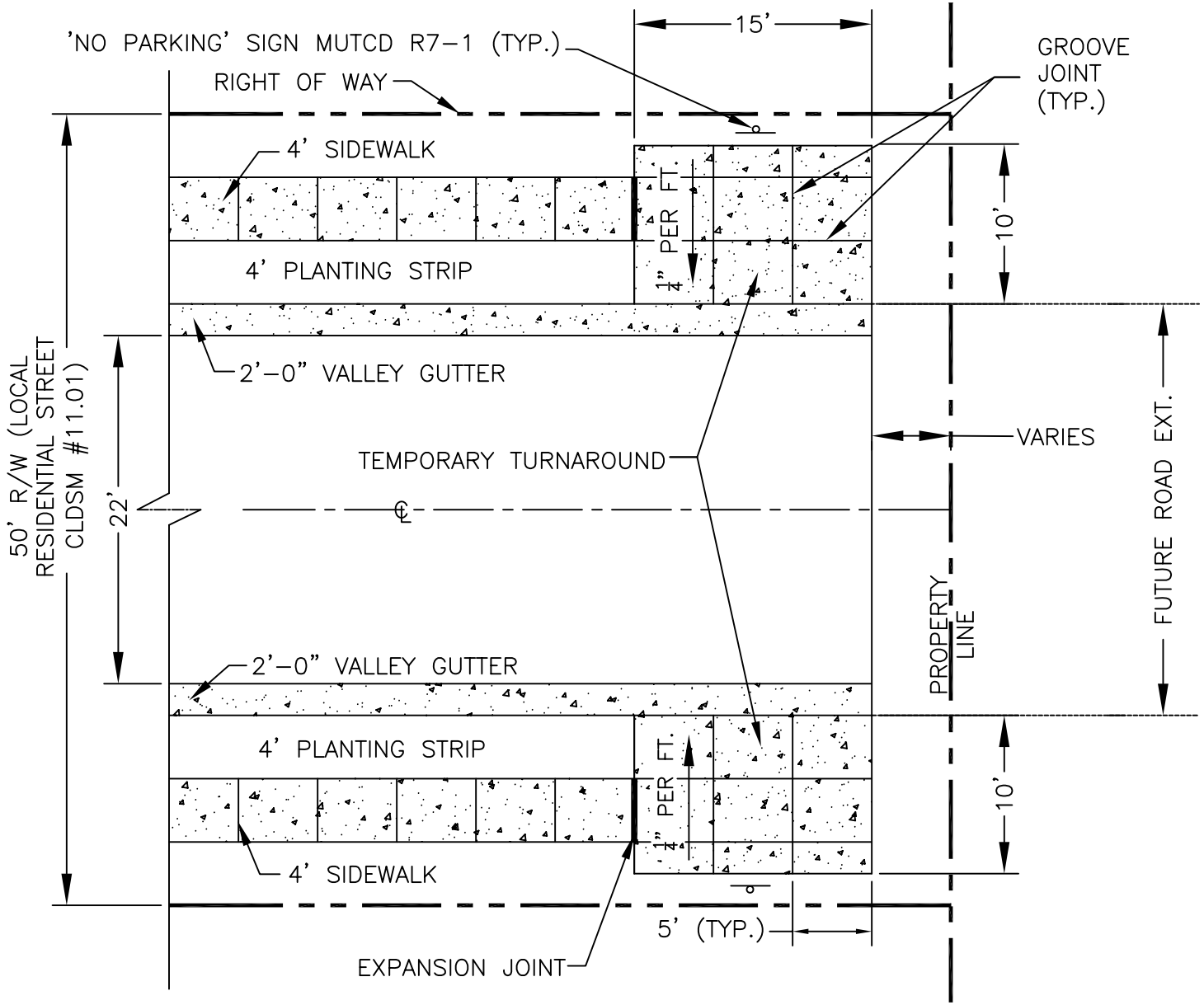
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

RESIDENTIAL HAMMERHEAD DETAIL

STD. NO.	REV.
11.18A	6



NOTES

1. TEMPORARY TURNAROUND MATERIAL SHALL BE MIN. 3600 PSI CONCRETE, 6" THICK.

2. TEMPORARY INSTALLATION ONLY – TO BE REMOVED WHEN FUTURE DEVELOPMENT CONNECTS TO STREET. "SIDEWALK" PORTION OF TURNAROUND MAY BE LEFT IN PLACE IF NOT DAMAGED.

3. NOT TO BE USED AS A PRIVATE DRIVEWAY.

4. DEAD END STREET BARRICADE AND END OF ROADWAY MARKER PER CLDSM #50.07A&B AND #50.08A, B, & C ARE REQUIRED.

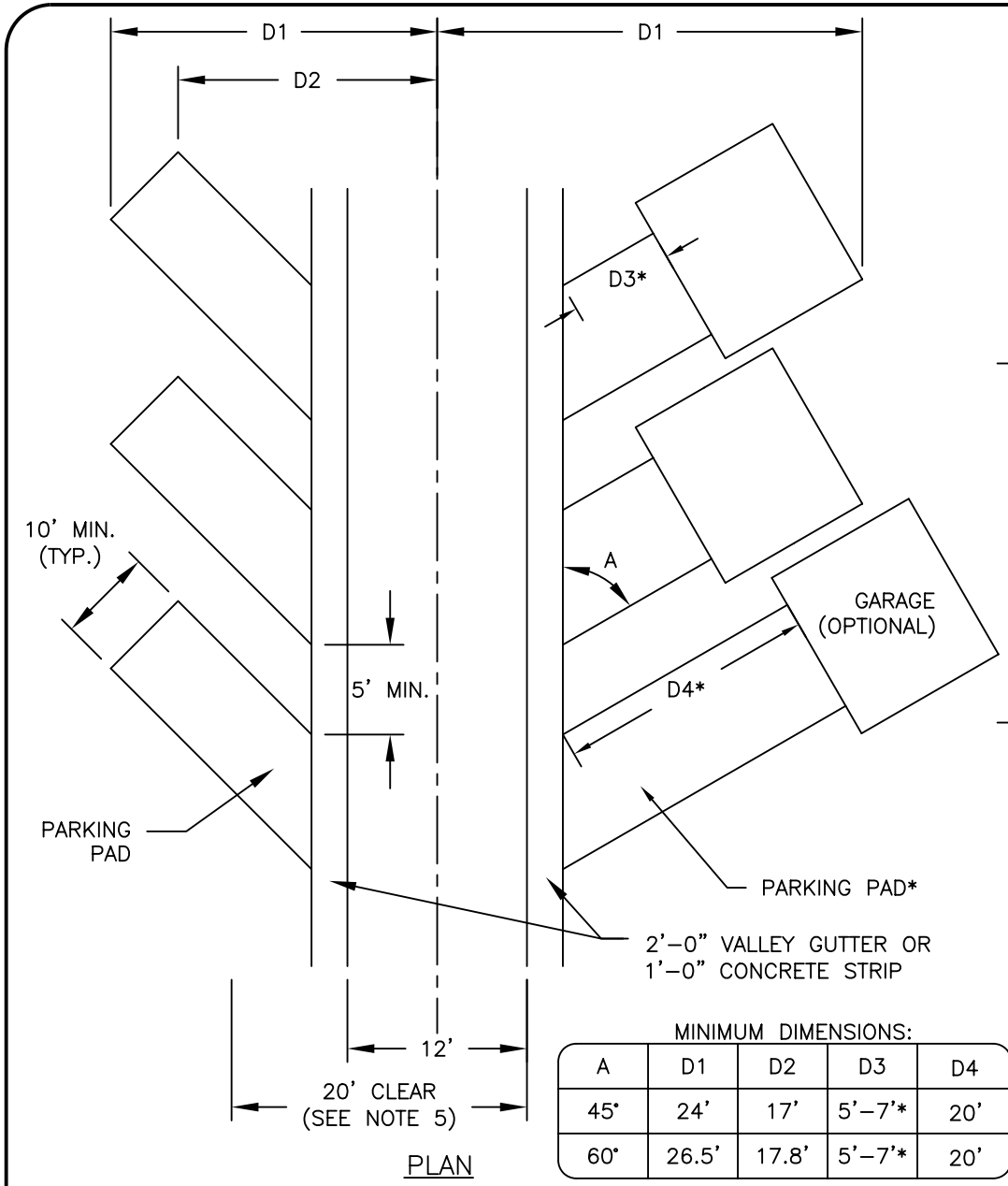
SCALE 1"=10'

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TEMPORARY TURNAROUND
LOCAL RESIDENTIAL STREET
(OPTIONAL)

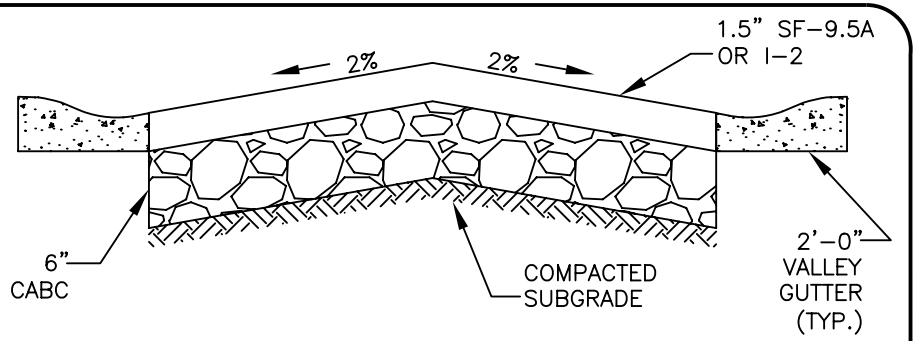
STD. NO.	REV.
11.18B	4



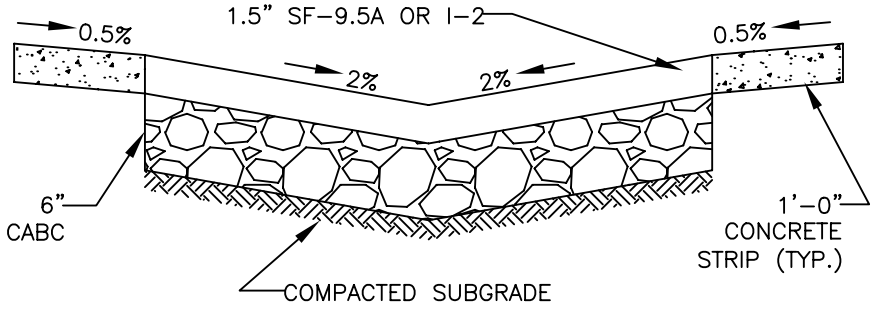
PLAN

MINIMUM DIMENSIONS:

A	D1	D2	D3	D4
45°	24'	17'	5'–7'*	20'
60°	26.5'	17.8'	5'–7'*	20'



ALLEY WITH NORMAL CROWN



ALLEY WITH INVERSE CROWN

NOTES:

1. SUBGRADE SHALL BE COMPACTED TO PUBLIC STREET STANDARDS.
2. STORM DRAINAGE (NOT SHOWN) SHALL BE PROVIDED AS NECESSARY.
3. ALLEYS SHALL BE CONSIDERED PRIVATE EASEMENTS AND WILL NOT BE ACCEPTED FOR MAINTENANCE BY THE CITY OF CHARLOTTE.
4. DRIVEWAYS SHALL BE SEPARATED BY AT LEAST 5 FEET, OR GREATER IF REQUIRED BY PLANNING (LOT SIZE) REQUIREMENTS AND/OR N.C. BUILDING CODE.
5. DETAIL APPLIES TO SINGLE– OR DOUBLE–LOADED ALLEYS. FOR SINGLE–LOADED ALLEYS, THERE SHALL BE A 20–FOOT CLEAR ZONE FREE OF CUT SLOPES, OBSTRUCTIONS, HEDGES, ETC. FROM THE LOADED SIDE EDGE OF PAVEMENT.

* WITH NO PARKING PAD, DIMENSION D3 IS REQUIRED TO BE MINIMUM 5' BUT NO GREATER THAN 7'. WITH PARKING PAD, DIMENSION D4 IS REQUIRED TO BE A MINIMUM OF 20'.

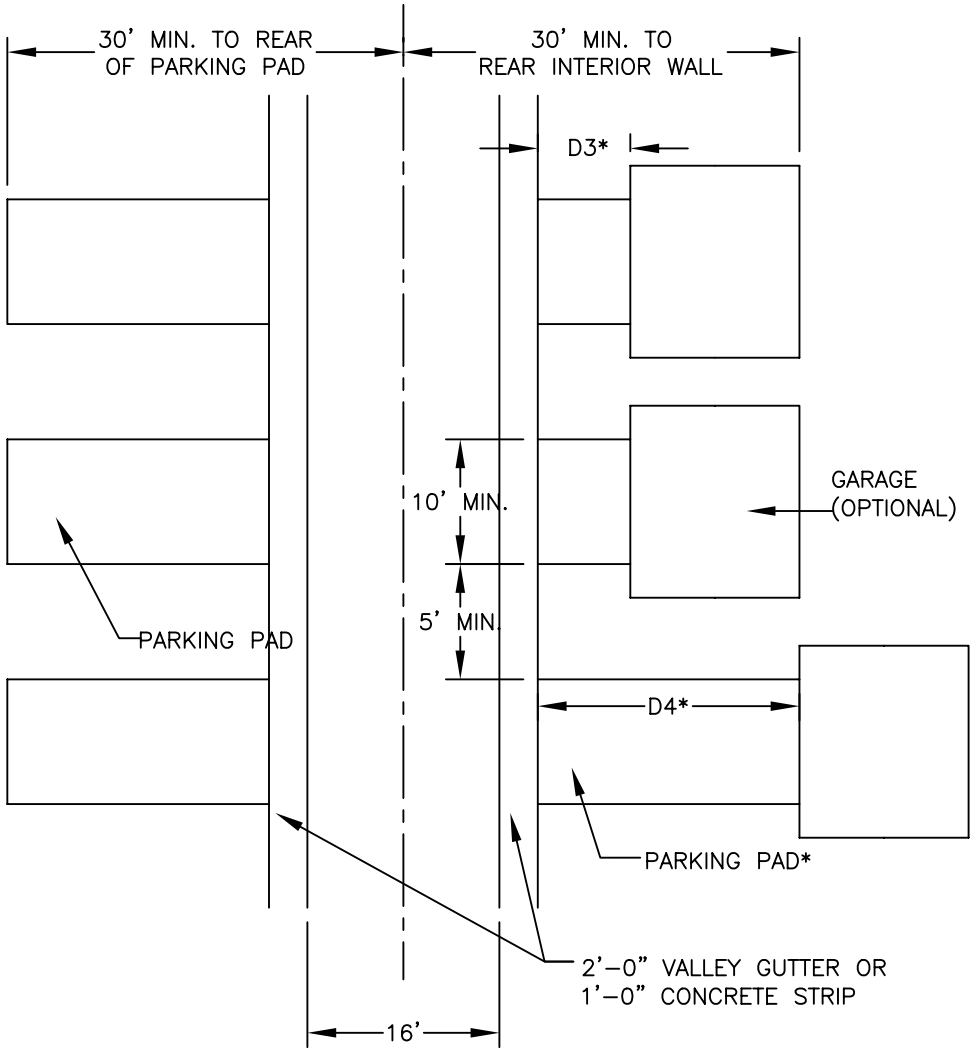
NOT TO SCALE

CHARLOTTE.

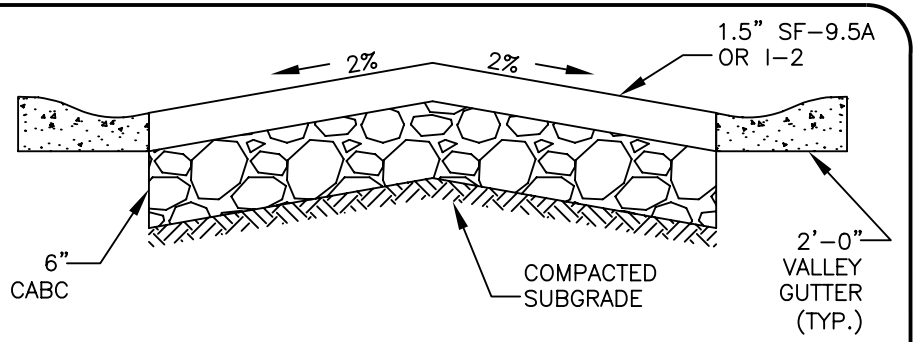
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

RESIDENTIAL ALLEY DETAIL
ONE–WAY OPERATION

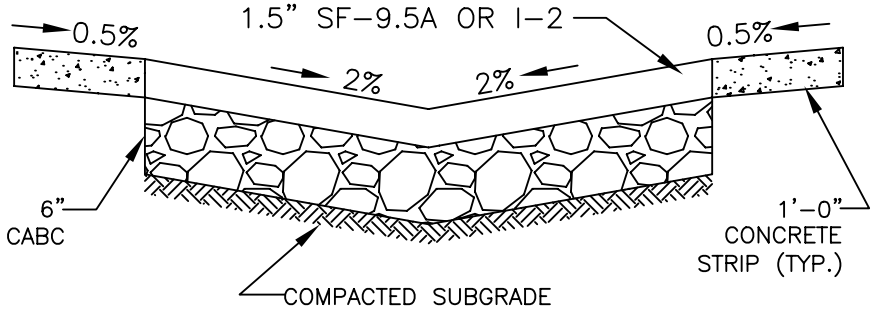
STD. NO.	REV.
11.19A	10



PLAN



ALLEY WITH NORMAL CROWN



ALLEY WITH INVERSE CROWN

NOTES:

1. SUBGRADE SHALL BE COMPACTED TO PUBLIC STREET STANDARDS.
2. STORM DRAINAGE (NOT SHOWN) SHALL BE PROVIDED AS NECESSARY.
3. ALLEYS SHALL BE CONSIDERED PRIVATE EASEMENTS AND WILL NOT BE ACCEPTED FOR MAINTENANCE BY THE CITY OF CHARLOTTE.
4. DRIVEWAYS SHALL BE SEPARATED BY AT LEAST 5 FEET, OR GREATER IF REQUIRED BY PLANNING (LOT SIZE) REQUIREMENTS AND/OR N.C. BUILDING CODE.

* WITH NO PARKING PAD, DIMENSION D3 IS REQUIRED TO BE MINIMUM 5' BUT NO GREATER THAN 7'. WITH PARKING PAD, DIMENSION D4 IS REQUIRED TO BE A MINIMUM OF 20'.

NOT TO SCALE

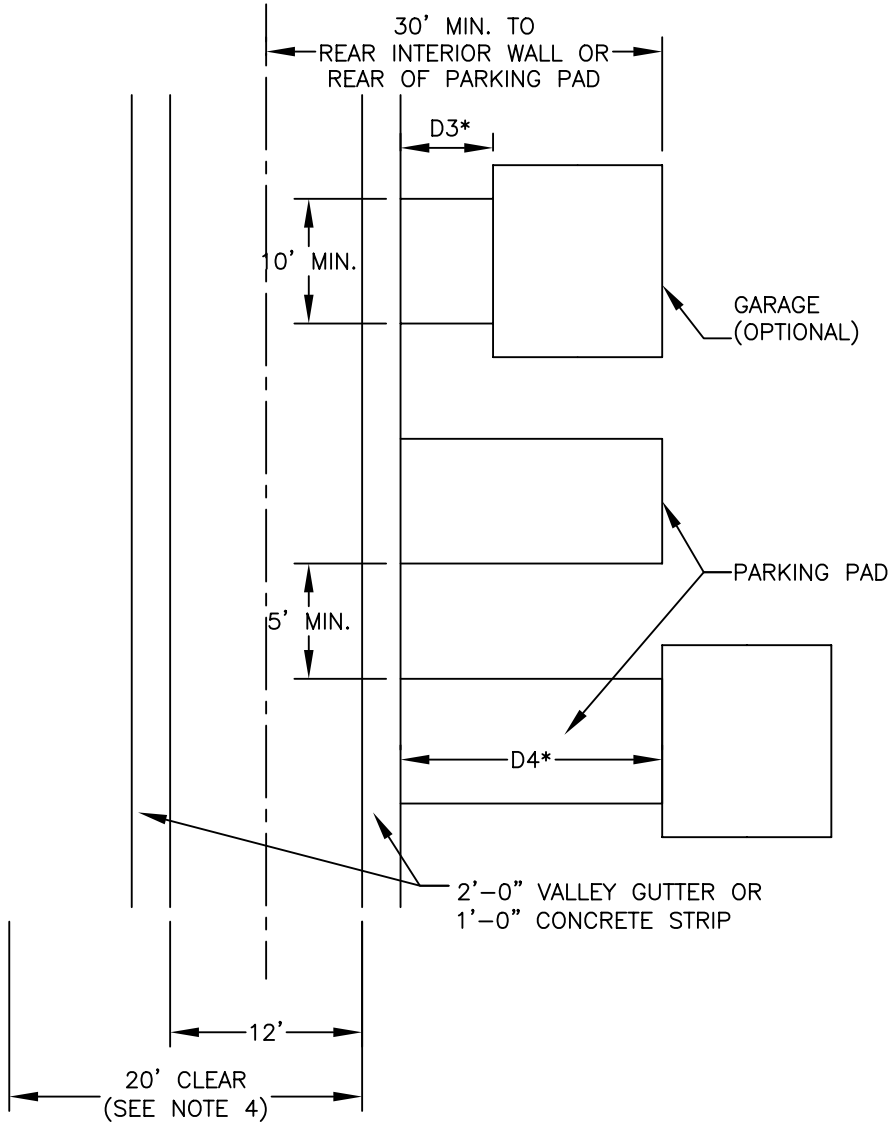
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

RESIDENTIAL ALLEY DETAIL

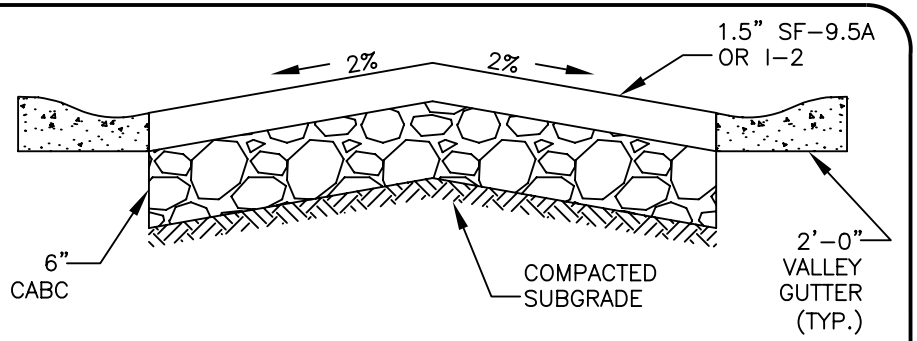
DOUBLE LOADED W/ TWO-WAY OPERATION

STD. NO.	REV.
11.19B	10

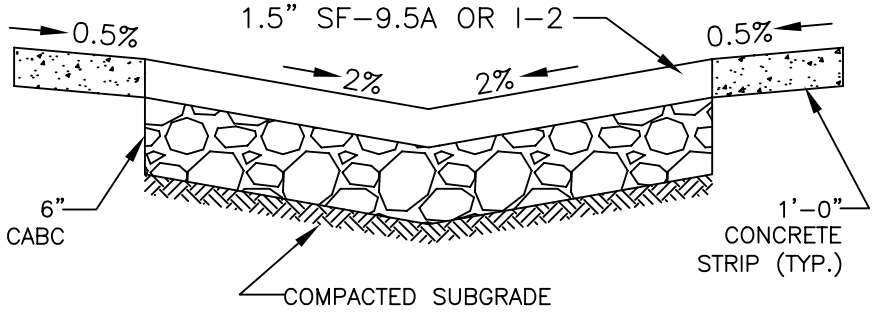


PLAN

NOT TO SCALE



ALLEY WITH NORMAL CROWN



ALLEY WITH INVERSE CROWN

NOTES:

1. SUBGRADE SHALL BE COMPACTED TO PUBLIC STREET STANDARDS.
2. STORM DRAINAGE (NOT SHOWN) SHALL BE PROVIDED AS NECESSARY.
3. ALLEYS SHALL BE CONSIDERED PRIVATE EASEMENTS AND WILL NOT BE ACCEPTED FOR MAINTENANCE BY THE CITY OF CHARLOTTE.
4. NO CUT SLOPES, OBSTRUCTIONS, HEDGES, ETC. ON NON-LOADED SIDE OF ALLEY WITHIN 20 FEET OF LOADED SIDE EDGE OF PAVEMENT.
5. DRIVEWAYS SHALL BE SEPARATED BY AT LEAST 5 FEET, OR GREATER IF REQUIRED BY PLANNING (LOT SIZE) REQUIREMENTS AND/OR N.C. BUILDING CODE.

* WITH NO PARKING PAD, DIMENSION D3 IS REQUIRED TO BE MINIMUM 5' BUT NO GREATER THAN 7'. WITH PARKING PAD, DIMENSION D4 IS REQUIRED TO BE A MINIMUM OF 20'.

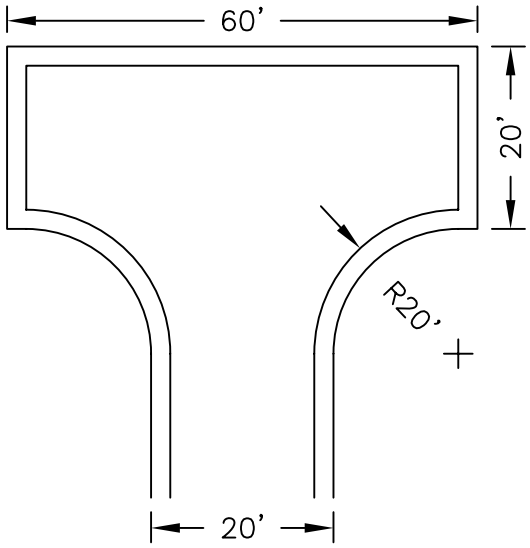
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

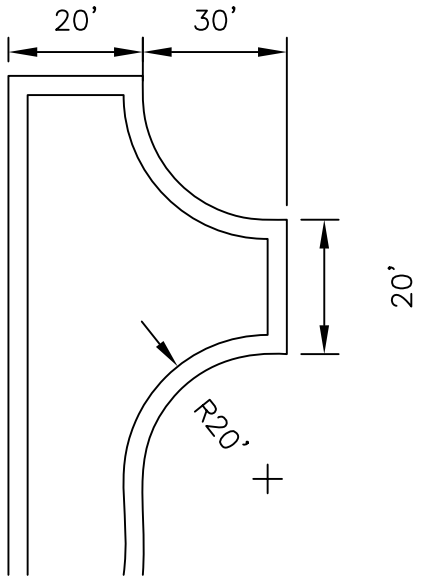
RESIDENTIAL ALLEY DETAIL

SINGLE LOADED W/ TWO-WAY OPERATION

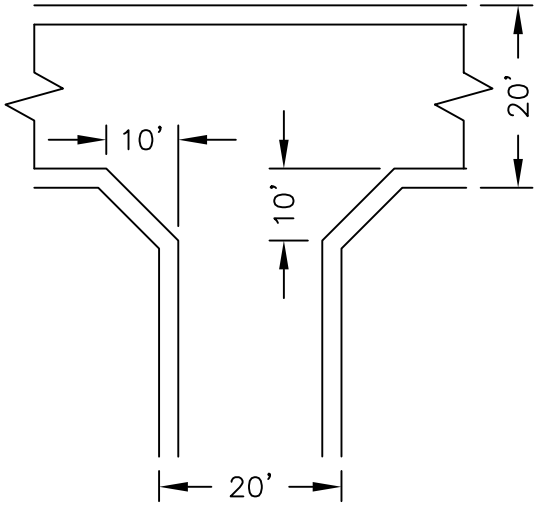
STD. NO.	REV.
11.19C	10



STANDARD HAMMERHEAD



ROTATED HAMMERHEAD



STANDARD INTERSECTION

NOTES:

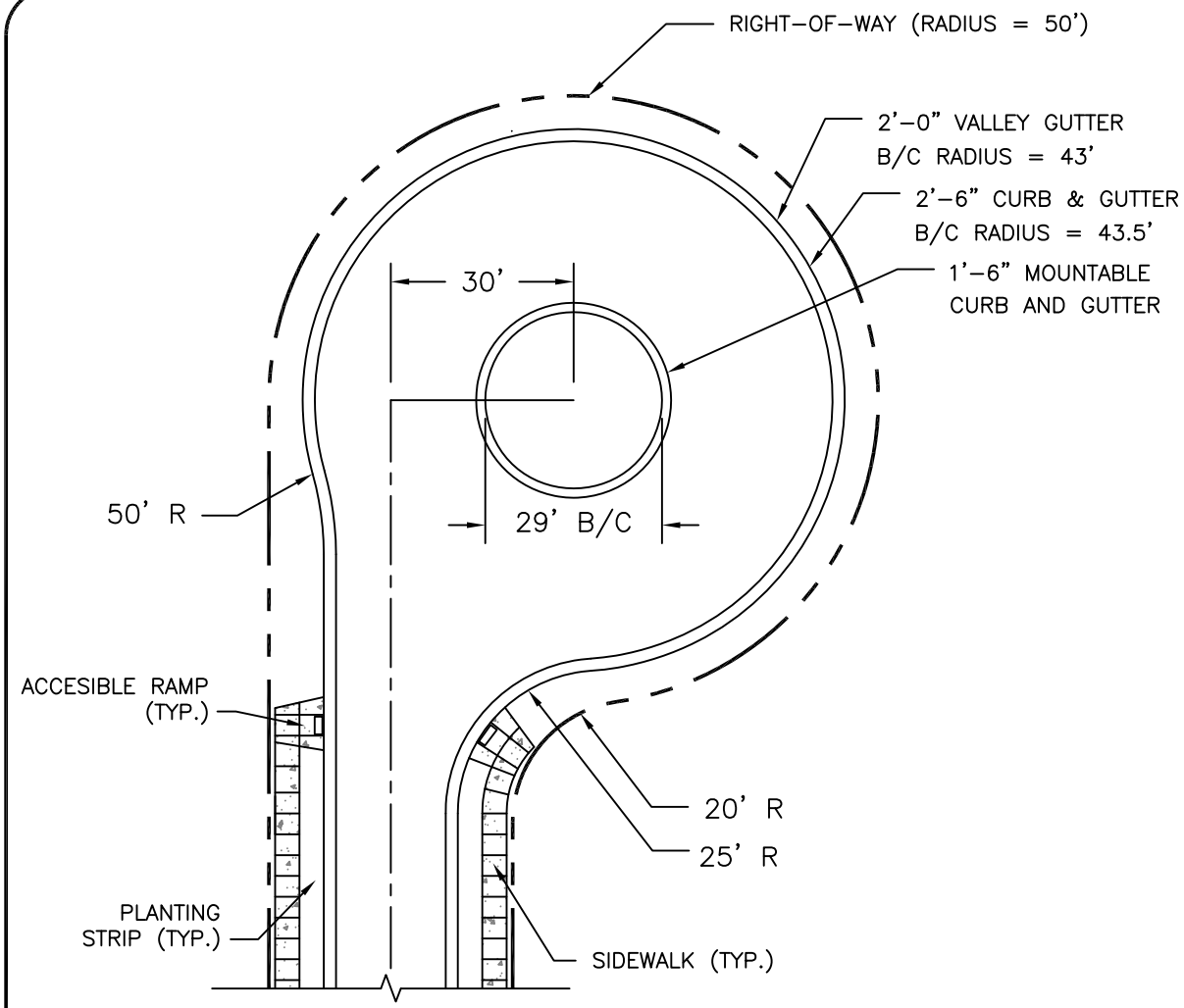
1. SEE DETAILS 11.19A–B FOR ALLEY DESIGN STANDARDS.
2. HAMMERHEAD DETAILS APPLY ONLY FOR TWO–WAY ALLEYS. ONE–WAY ALLEYS MUST CONNECT TO A PUBLIC STREET OR ANOTHER ALLEY.
3. FOR INTERSECTIONS WITH A LEAST ONE (1) ONE–WAY ALLEY, THE BACK–OF–CURB TO BACK–OF–CURB WIDTH CAN BE 16 FEET ON THE APPROPRIATE LEG(S) INSTEAD OF THE 20 FEET SHOWN.
4. OTHER INTERSECTION DESIGNS WILL BE APPROVED BY CDOT ON A CASE–BY–CASE BASIS.
5. THIS DETAIL DOES NOT ACCOMMODATE COMMERCIAL VEHICLES OR CHARLOTTE FIRE DEPARTMENT DESIGN FIRE TRUCK.
6. ADEQUATE STOPPING SIGHT DISTANCE (SSD) SHALL BE PROVIDED AT EACH INTERSECTION. MINIMUM SSD SHALL BE 50 FEET ASSUMING AN OPERATIONAL SPEED OF 10 MPH.

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

RESIDENTIAL ALLEY HAMMERHEADS AND INTERSECTIONS

STD. NO.	REV.
11.20	



ALL CURB RADII SHOWN ARE DIMENSIONED TO BACK–OF–CURB

NOTES:

1. THE CENTRAL ISLAND SHALL BE PUBLIC RIGHT–OF–WAY.
2. THE CENTRAL ISLAND WILL NOT BE MAINTAINED BY THE CITY OF CHARLOTTE. A PROPERTY OWNERS' ASSOCIATION OR PRIVATE ENTITY WILL BE RESPONSIBLE FOR MAINTENANCE OF THE ISLAND.
3. ONLY GRASS, FLOWERS, GROUND COVER, ETC., WITH A MATURE HEIGHT OF 30 INCHES OR LESS WILL BE ALLOWED TO BE PLANTED IN THE CENTRAL ISLAND WITHOUT AN ENCROACHMENT AGREEMENT. ANY NONSTANDARD ITEM, E.G., BENCHES, IRRIGATION, ETC., PLACED IN THE ISLAND REQUIRES AN ENCROACHMENT AGREEMENT PRIOR TO INSTALLATION. CDOT REVIEWS EACH ENCROACHMENT REQUEST ON A CASE–BY–CASE BASIS AND MAY NOT APPROVE ENCROACHMENTS FOR ALL ITEMS REQUESTED.
4. WHERE NECESSARY, A SIDEWALK EASEMENT SHALL BE PROVIDED FOR ALL SIDEWALK LOCATED OUTSIDE THE PUBLIC RIGHT–OF–WAY. THE EASEMENT SHALL EXTEND FROM THE RIGHT–OF–WAY LINE TO TWO (2) FEET BEHIND THE BACK OF SIDEWALK, OR TO THE FACE OF BUILDING, WHICHEVER IS LESS.
5. SIDEWALK SHALL BE PROVIDED AS REQUIRED BY APPLICABLE ORDINANCE(S).
6. CUL–DE–SAC CAN BE OFFSET LEFT, OFFSET RIGHT, OR SYMMETRIC.
7. SIDEWALK MAY BE REQUIRED TO EXTEND AROUND CUL–DE–SAC BULB WHERE PARKS OR SCHOOLS HAVE FRONTAGE TO THE END OF THE CUL–DE–SAC.

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

OVERSIZED RESIDENTIAL CUL–DE–SAC WITH RAISED PLANTER ISLAND

STD. NO.	REV.
11.21	6

DWG	SHEET TITLE	SPECIAL REQUIREMENTS AND NOTES
300.01	METHOD OF PIPE INSTALLATION – METHOD A	
310.02	PARALLEL PIPE END SECTION–PRECAST CONCRETE FOR 15" TO 24" PIPE	REQUIRED IN RIGHT OF WAY WITHIN THE ETJ
310.03	CROSS PIPE END SECTION–PRECAST CONCRETE FOR 18" TO 30" PIPE	REQUIRED IN RIGHT OF WAY WITHIN THE ETJ
310.10	DRIVEWAY PIPE CONSTRUCTION USING NO SPECIAL END SECTIONS	ONLY AT LOCATIONS APPROVED BY THE CITY ENGINEER
815.03	PIPE UNDERDRAIN AND BLIND DRAIN	
816.03	GEOCOMPOSITE SHOULDER DRAIN	
838.01	CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS	NOTE 1
	15" THRU 48" PIPE 90' SKEW	NOTE 1
838.02	CONCRETE ENDWALL AND SLUICE GATE 15" THRU 36" PIPE–90' SKEW	NOTE 1
838.04	CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS	NOTE 1
	17"X13"THRU 71"X47" PIPE ARCH 90' SKEW	NOTE 1
838.05	CONCRETE "L" ENDWALL FOR SINGLE PIPE CULVERTS 15" THRU 48" PIPE	NOTE 1
838.06	CONCRETE "L" ENDWALL FOR SINGLE PIPE CULVERTS 17"X13" THRU 71"X47"	NOTE 1
	71"X47" ARCH PIPE	NOTE 1
838.07	CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS	NOTE 1
	40"X31" THRU 66"X51" PIPE ARCH 90'SKEW	NOTE 1
838.08	CONCRETE "L" ENDWALL FOR SINGLE PIPE CULVERTS 40"X32"	NOTE 1
	THRU 66"X51" PIPE ARCH	NOTE 1
838.10	CONCRETE ENDWALL FOR OUTFALL 4'–6" OR 8" PIPE	NOTE 1
838.11	BRICK ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS	NOTE 1
	15" THRU 48" 90' SKEW	NOTE 1
838.14	BRICK ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS 17"X31"	NOTE 1
	THRU 71"X47" 90' SKEW	NOTE 1
838.15	BRICK "L" ENDWALL FOR SINGLE PIPE CULVERTS 15" THRU 48" PIPE	NOTE 1
838.16	BRICK "L" ENDWALL FOR SINGLE PIPE CULVERTS 17"X13" THRU	NOTE 1
	71"X47" PIPE ARCH	NOTE 1
838.17	BRICK ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS 40"X31"	NOTE 1
	THRU 66"X51" PIPE ARCH 90'SKEW	NOTE 1
838.18	BRICK ENDWALL FOR SINGLE PIPE CULVERTS 40"X31" THRU	NOTE 1
	66"X51" PIPE ARCH 90' SKEW	NOTE 1
838.20	BRICK ENDWALL FOR OUTFALL 4", 6" AND 8" PIPE	NOTE 1
838.21	REINFORCED CONCRETE ENDWALL FOR SINGLE 54" PIPE 90' SKEW	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD
838.22	REINFORCED CONCRETE ENDWALL FOR DOUBLE & TRIPLE 54" PIPE 90' SKEW	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD
838.27	REINFORCED CONCRETE ENDWALL FOR SINGLE 60" PIPE 90' SKEW	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD
838.28	REINFORCED CONCRETE ENDWALL FOR DOUBLE & TRIPLE 60" PIPE 90' SKEW	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD
838.33	REINFORCED CONCRETE ENDWALL FOR SINGLE 66" PIPE 90' SKEW	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD
838.34	REINFORCED CONCRETE ENDWALL FOR DOUBLE & TRIPLE 66" PIPE 90' SKEW	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD
838.39	REINFORCED CONCRETE ENDWALL FOR SINGLE 72" PIPE 90' SKEW	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD
838.40	REINFORCED CONCRETE ENDWALL FOR DOUBLE & TRIPLE 72" PIPE 90' SKEW	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD

NOTE 1: FOR ALL STRUCTURES – NCDOT REQUIRES CLASS B CONCRETE (2500PSI). THE CITY REQUIRES 3600 PSI CONCRETE STRENGTH @ 28 DAYS. 3600 PSI CONCRETE SHALL BE USED IN ALL CITY AND ETJ PROJECTS.

DWG	SHEET TITLE	SPECIAL REQUIREMENTS AND NOTES
838.45	NOTES FOR REINFORCED CONCRETE ENDWALL STANDARD DRAWINGS	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD
	838.21 THRU 838.40	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD
838.51	REINFORCED BRICK ENDWALL FOR SINGLE 54" PIPE 90' SKEW	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD
838.52	REINFORCED BRICK ENDWALL FOR DOUBLE & TRIPLE 54" PIPE 90'SKEW	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD
838.57	REINFORCED BRICK ENDWALL FOR SINGLE 60" PIPE 90' SKEW	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD
838.58	REINFORCED BRICK ENDWALL FOR DOUBLE & TRIPLE 60" PIPE 90' SKEW	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD
838.63	REINFORCED BRICK ENDWALL FOR SINGLE 66" PIPE 90' SKEW	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD
838.64	REINFORCED BRICK ENDWALL FOR DOUBLE & TRIPLE 66" PIPE 90' SKEW	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD
838.69	REINFORCED BRICK ENDWALL FOR SINGLE 72" PIPE 90' SKEW	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD
838.70	REINFORCED BRICK ENDWALL FOR DOUBLE & TRIPLE 72" PIPE 90' SKEW	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD
838.75	NOTES FOR REINFORCED BRICK ENDWALL STANDARD DRAWINGS 838.51 THRU 838.70	NOTE 1 SEE CLDS 20.17 FOR SPLASH PAD
838.80	PRECAST CONCRETE ENDWALL FOR SINGLE 12" THRU 72" PIPE 90' SKEW	
840.00	CONCRETE BASE PAD FOR DRAINAGE STRUCTURES	
840.01	BRICK CATCH BASIN 15" THRU 54" PIPE	
840.02	CONCRETE CATCH BASIN 12" THRU 54" PIPE	
840.03	FRAME, GRATE BASIN 12" THRU 54" PIPE	TYPE F AND G GRATES ARE OPTIONAL WITHIN THE CITY LIMITS
840.04	CONCRETE OPEN THROAT CATCH BASIN 12" THRU 48" PIPE	NOTE 1; OPENINGS PERMITTED IN 4 SIDES OUTSIDE OF STREET R/W MANHOLE RING AND COVER REQUIRED IN TOP SLAB SEE CLDS 20.05 A&B
840.05	BRICK OPEN THROAT CATCH BASIN 15" THRU 48" PIPE	NOTE 1; OPENINGS PERMITTED IN 4 SIDES OUTSIDE OF STREET R/W MANHOLE RING AND COVER REQUIRED IN TOP SLAB SEE CLDS 20.05 A&B
840.14	CONCRETE DROP INLET 12" THRU 30" PIPE	NOTE 1
840.15	BRICK DROP INLET 12" THRU 30' PIPE	NOTE 1
840.16	DROP INLET FRAME AND GRATE FOR USE WITH DWGS. 840.14 & 840.15	NOTE 1
840.17	CONCRETE GRATED DROP INLET TYPE "A" 12" THRU 72" PIPE	NOTE 1
840.18	CONCRETE GRATED DROP INLET TYPE "B" 12" THRU 36" PIPE	NOTE 1
840.19	CONCRETE GRATED DROP INLET TYPE "D" 12" THRU 36" PIPE	NOTE 1
840.20	FRAMES AND WIDE SLOT FLAT GRATES	NOT FOR USE IN PEDESTRIAN AREAS
840.22	FRAMES AND WIDE SLOT SAG GRATES	NOT FOR USE IN PEDESTRIAN AREAS
840.24	FRAMES AND NARROW SLOT SAG GRATES	
840.25	ANCHORAGE FOR FRAMES BRICK OR CONCRETE	
840.26	BRICK GRATED DROP INLET TYPE "A" 12" THRU 72" PIPE	
840.27	BRICK GRATED DROP INLET TYPE "B" 12" THRU 36" PIPE	
840.28	BRICK GRATED DROP INLET TYPE "D" 12" THRU 36" PIPE	
840.29	FRAMES AND NARROW SLOT FLAT GRATES	
840.30	DRIVEWAY DROP INLET	

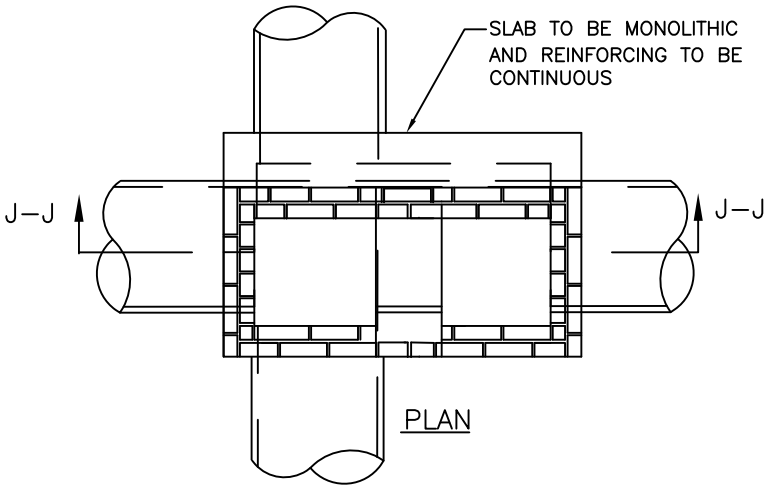
NOTE 1: FOR ALL STRUCTURES – NCDOT REQUIRES CLASS B CONCRETE (2500PSI). THE CITY REQUIRES 3600 PSI CONCRETE STRENGTH @ 28 DAYS. 3600 PSI CONCRETE SHALL BE USED IN ALL CITY AND ETJ PROJECTS.

DWG	SHEET TITLE	SPECIAL REQUIREMENTS AND NOTES
840.31	CONCRETE JUNCTION BOX (WITH OPTIONAL MANHOLE) 12" THRU 66" PIPE	NOTE 1; OPTIONAL MANHOLE IS REQUIRED
840.32	BRICK JUNCTION BOX 12" THRU 66" PIPE	NOTE 1; OPTIONAL MANHOLE IS REQUIRED
840.34	TRAFFIC BEARING JUNCTION BOX FOR USE WITH PIPES 42" AND UNDER	NOTE 1; OPTIONAL MANHOLE IS REQUIRED; AS MEASURED FROM BOTTOM OF TOP SLAB -- FOR JUNCTION BOX HEIGHT 0'-4'8" USE 8" THICK WALL, FROM 4'8" HEIGHT TO 10' HEIGHT, USE 12" THICK WALL. IF PROPOSED STRUCTURE EXCEEDS 12'-0" HEIGHT A SPECIAL DESIGN WILL BE REQUIRED
840.35	TRAFFIC BEARING DROP INLET FOR CAST IRON DOUBLE FRAME AND GRATES	
840.36	TRAFFIC BEARING DROP INLET FOR STEEL (840.37) DOUBLE FRAME AND GRATES	NOT FOR USE IN PEDESTRIAN AREAS
840.37	STEEL GRATE AND FRAME	NOT FOR USE IN PEDESTRIAN AREAS
840.41	SPRING BOX CONCRETE OR BRICK	
840.45	PRECAST DRAINAGE STRUCTURE (SOLID AND WAFFLE WALL)	WAFFLE WALL IS NOT PERMITTED IN ROADWAY, PLANTING STRIPS, OR MEDIANS. ALL OPENINGS SHALL BE PRE-CAST
840.46	TRAFFIC BEARING PRECAST DRAINAGE STRUCTURE	
840.51	BRICK MANHOLE 12" 36" PIPE	
840.52	PRECAST MANHOLE 4', 5' AND 6' DIAMETER 12" THRU 42" PIPE	
840.53	PRECAST MANHOLE WITH MASONRY BASE 12" THRU 42" PIPE	
840.54	MANHOLE FRAME AND COVER	
840.60	DRAINAGE STRUCTURE STEPS	
840.71	CONCRETE PAVED DITCHES	
840.72	PIPE COLLAR	
850.01	CONCRETE PAVED DITCHES	
852.04	METHODS FOR PLACEMENT OF DROP INLETS IN GRASSED MEDIAN (USING 1'-6" CURB AND GUTTER)	
852.05	MEDIAN CURB FOR CATCH BASIN (FOR USE WITH 1'-6" CURB AND GUTTER)	
852.06	METHOD OF PLACEMENT OF DROP INLETS IN CONCRETE ISLANDS	
876.01	RIP RAP IN CHANNELS	
876.03	DRAINAGE DITCHES WITH CLASS "A" RIP RAP	
876.04	DRAINAGE DITCHES WITH CLASS "B" RIP RAP	
310.01	1998 DRAWINGS CONCRETE FLARED END SECTION	

NOTE 1: FOR ALL STRUCTURES – NCDOT REQUIRES CLASS B CONCRETE (2500PSI). THE CITY REQUIRES 3600 PSI CONCRETE STRENGTH @ 28 DAYS. 3600 PSI CONCRETE SHALL BE USED IN ALL CITY AND ETJ PROJECTS.

GENERAL NOTES:

1. SEE NCDOT STANDARD 840.01 FOR DETAILS BASED ON PIPE SIZE PER CROSS SECTION.
2. CONSTRUCT TWO SINGLE BASINS PER NCDOT STANDARD WITH DOUBLE INTERIOR WALL.
3. ALL CONCRETE TO BE 3600 P.S.I COMPRESSIVE STRENGTH.
4. BASE SLAB SHALL BE MONOLITHIC.
5. SEE CLDSM STANDARDS #10.29 AND #10.30 FOR PLACEMENT OF CATCH BASIN.
6. PIPE SECTION D2 CONNECTING CATCH BASINS SHALL HAVE A MINIMUM DIAMETER SAME AS OF OUTLET PIPE D3.
7. ALL REINFORCING STEEL SHOWN ON NCDOT STANDARDS IS TO BE PROVIDED AS CONTINUOUS MEMBERS. (NO LAPS, USED AS A SINGLE CONTINUOUS BAR IN THE SLAB)
8. WEEP HOLES SHALL BE PLACED IN BACK WALL WITH FILTER FABRIC OR STONE ON BACK SIDE



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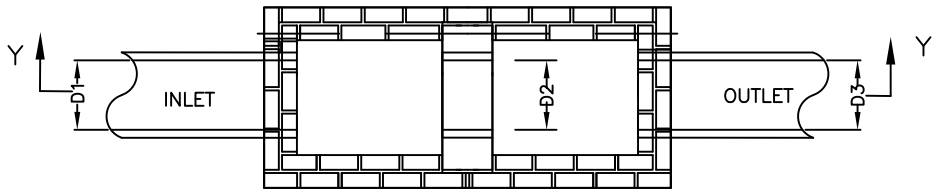

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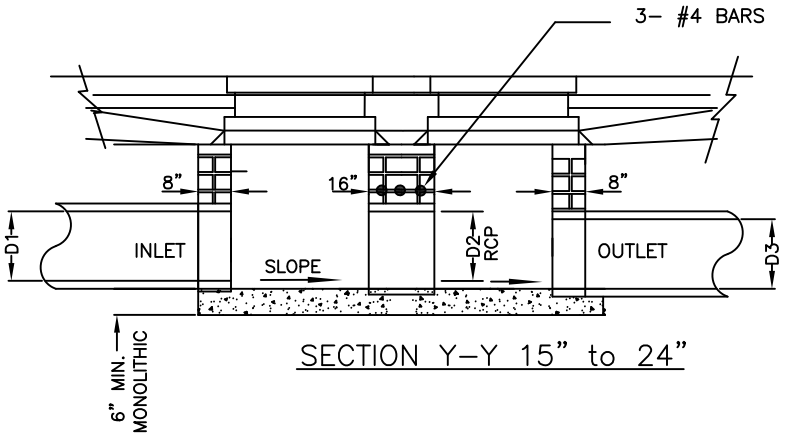
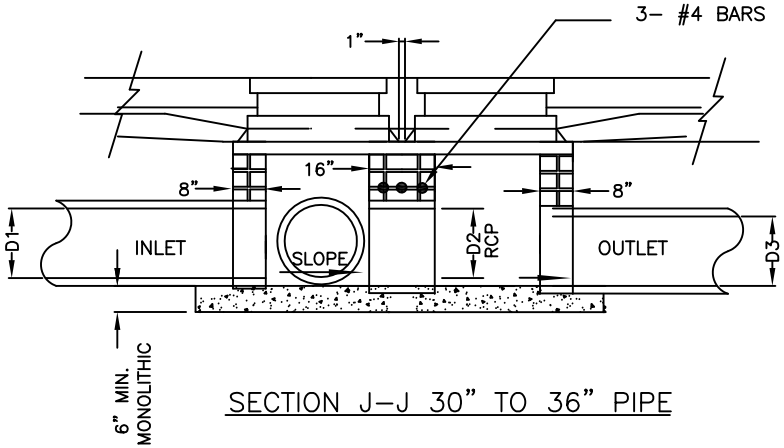


SECTION Y–Y 15" to 24"



SECTION J–J 30" TO 36" PIPE

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

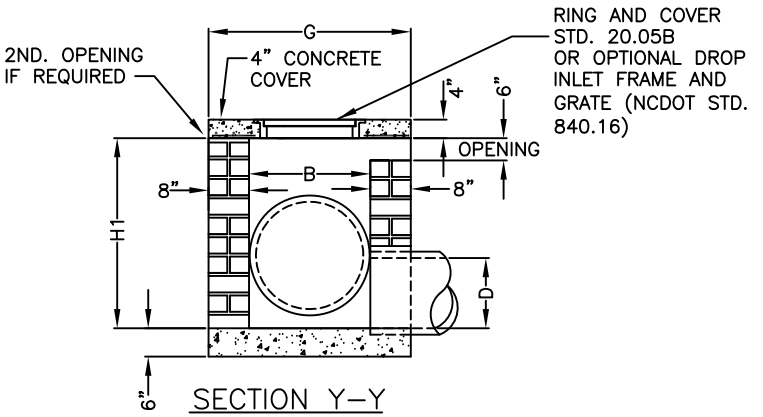
BRICK DOUBLE CATCH BASIN 15" THRU 36" PIPE

STD. NO.	REV.
20.03	8

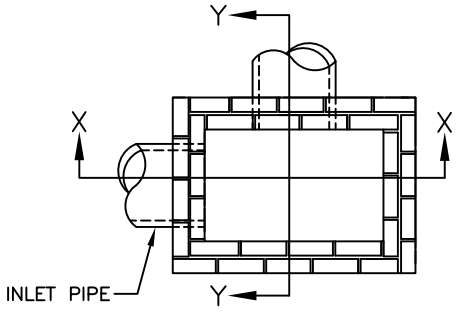
GENERAL NOTES:

1. MORTAR JOINTS SHOULD BE BETWEEN 3/8" AND 5/8" THICK.
2. ALL CONCRETE TO BE 3600 P.S.I COMPRESSIVE STRENGTH.
3. THE 6" OPENING SHOWN MAY BE INCREASED TO 8" MAX. IF DEEMED TO BE NECESSARY BY THE ENGINEER.
4. ALL CATCH BASIN OVER 3'–6" IN DEPTH SHALL BE PROVIDED WITH STEPS 1'–2" ON CENTERS. STEPS SHALL BE IN ACCORDANCE WITH STD. 20.12.
5. CONCRETE BRICK MAY BE USED IN LIEU OF HARD COMMON CLAY BRICK.
6. JUMBO BRICK WILL BE PERMITTED.
7. FOR 8'–0" IN HEIGHT OR LESS USE 8" WALL. OVER 8'–0" IN HEIGHT USE 12" WALL TO 6'–0" FROM TOP OF WALL, AND 8" WALL FOR THE REMAINING 6'–0".
8. ALL EXPOSED JOINTS WILL BE CONCAVE TOOLED.
9. ALL PIPE IN STORM DRAIN STRUCTURE SHALL BE STRUCK EVEN WITH THE INSIDE WALL, GROUTED AND BRUSHED SMOOTH.
10. WEEP HOLES SHALL BE PLACED IN BACK WALL WITH FILTER FABRIC OR STONE ON BACK SIDE.
11. THIS CATCH BASIN IS NOT TO BE USED WITHIN STREET RIGHT OF WAY UNLESS OTHERWISE APPROVED BY CITY ENGINEER.

DIMENSIONS OF BOX AND PIPE				REINFORCING					COVER DIMENSION	
PIPE	SPAN	WIDTH	HEIGHT	BARS – X		BARS – Y		TOTAL		
D	A	B	H1(MIN.)	NO.	LENGTH	NO.	LENGTH	LBS.	F	G
15"	3'–6"	2'–3"	2'–7"	2	3'–4"	7	4'–7"	26	4'–10"	3'–7"
18"	4'–0"	2'–8"	2'–11"	2	3'–9"	8	5'–1"	33	5'–4"	4'–0"
24"	4'–0"	2'–8"	3'–5"	2	3'–9"	8	5'–1"	33	5'–4"	4'–0"
30"	4'–0"	3'–6"	3'–11"	2	4'–7"	9	5'–1"	37	5'–4"	4'–10"
36"	4'–0"	3'–6"	4'–6"	2	4'–7"	9	5'–1"	37	5'–4"	4'–10"
42"	4'–0"	3'–6"	4'–11"	2	4'–7"	9	5'–1"	37	5'–4"	4'–10"
48"	4'–6"	4'–0"	5'–5"	2	5'–1"	10	5'–7"	45	5'–10"	5'–4"



SECTION Y–Y



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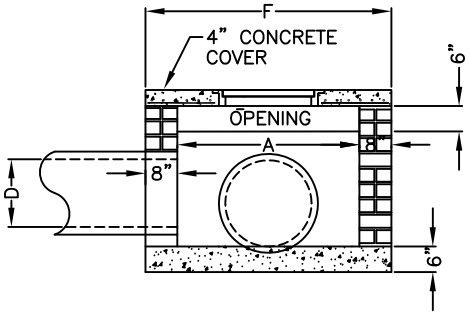


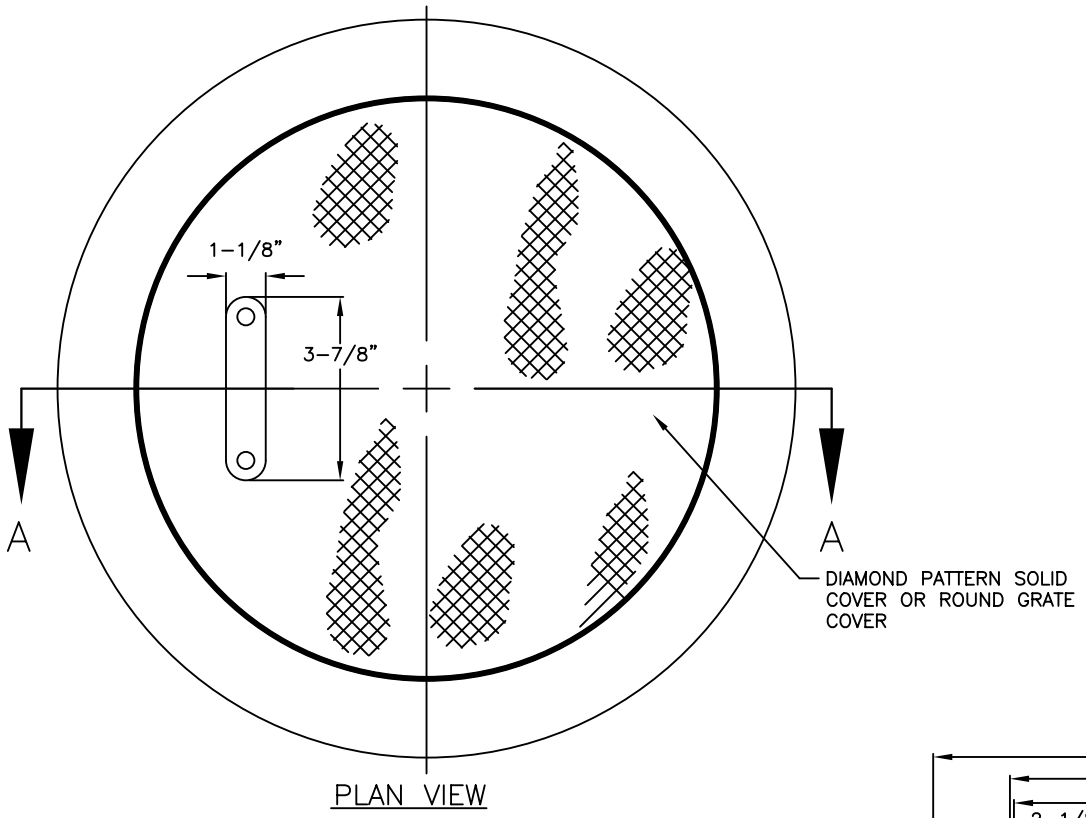
SECTION X–X

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

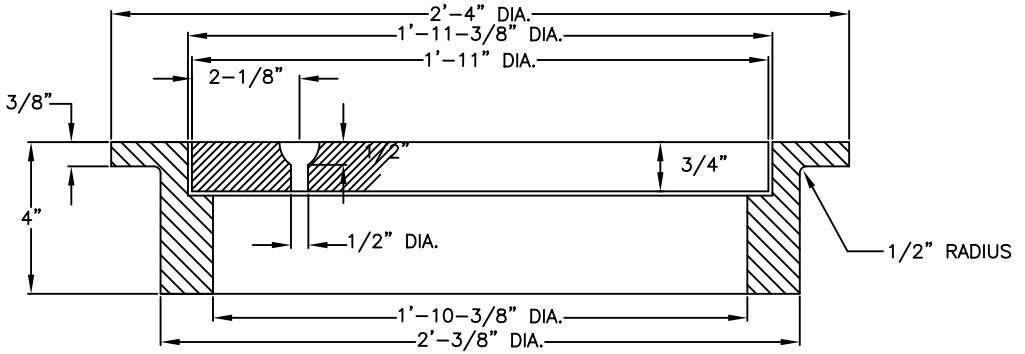
SLAB TYPE CATCH BASIN 15" THRU 48" PIPE

STD. NO.	REV.
20.05A	7



PLAN VIEW

MINIMUM WEIGHT	
RING	96 LBS
COVER	86 LBS



SECTION A–A

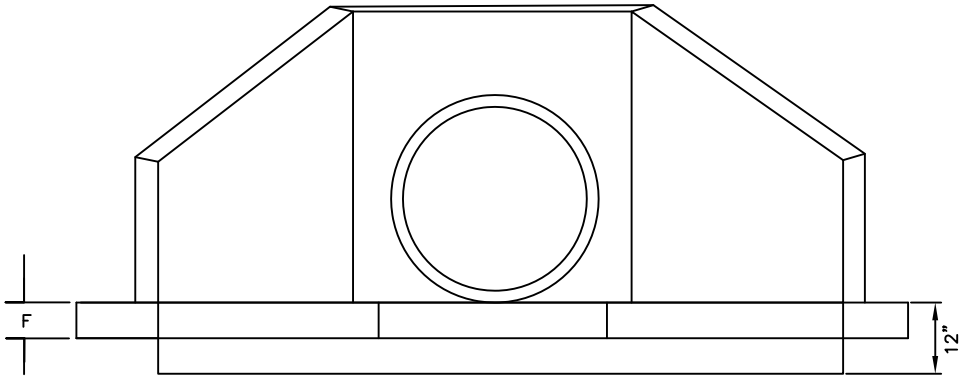
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

MANHOLE RING AND COVER FOR SLAB TYPE CATCH BASIN

STD. NO.	REV.
20.05B	5

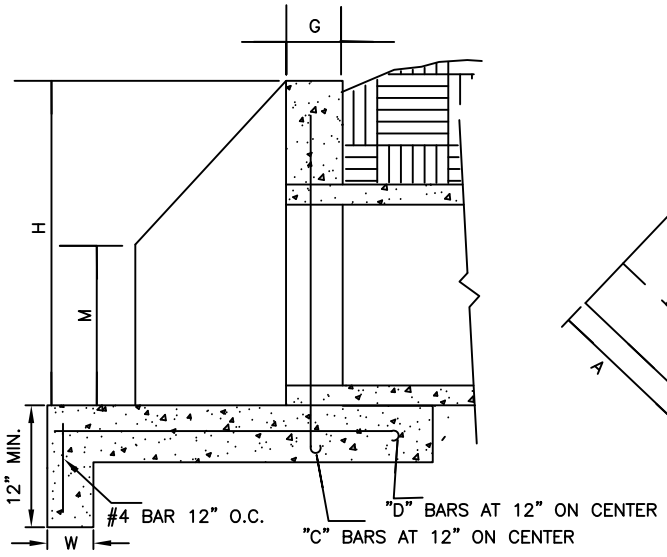
CONCRETE PIPE			DIMENSIONS									
WALL THK.	OUT DIA.	IN DIA.	H	A	B	C	E	F	G	W	K	M
2 1/4"	19 1/2"	15"	27 1/2"	20"	24"	8"	7 1/2"	4"	4"	8"	17"	10"
2 1/2"	23"	18"	31"	20"	24"	8"	9"	4"	4"	8"	17"	12"
3"	30"	24"	38"	20"	30"	8"	12"	4"	4"	8"	21"	15"
3 1/2"	37"	30"	45"	20"	44"	12"	15"	6"	8"	8"	31"	18"
4"	44"	36"	52"	32"	44"	12"	18"	6"	8"	8"	31"	22"
4 1/2"	51"	42"	59"	32"	48"	12"	21"	6"	8"	8"	34"	26"
5"	58"	48"	66"	32"	48"	12"	24"	6"	8"	8"	34"	29"
5 1/2"	65"	54"	73"	32"	54"	12"	27"	6"	8"	8"	38"	33"
6"	72"	60"	80"	36"	66"	12"	30"	8"	12"	12"	46"	36"
6 1/2"	79"	66"	87"	36"	72"	12"	33"	8"	12"	12"	51"	40"
7"	86"	72"	94"	36"	78"	12"	36"	8"	12"	12"	56"	43"



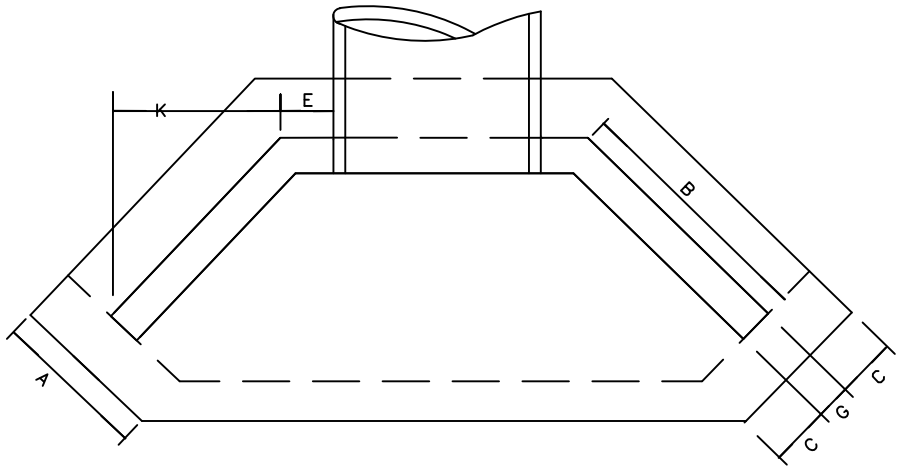
FRONT VIEW

REINFORCING

DIA.	"C" BAR		"D" BAR	
	NO.	LGT.	NO.	LGT.
15"	4	2'-0"	4	1'-11"
18"	4	2'-3"	4	2'-2"
24"	4	2'-9"	4	2'-8"
30"	4	3'-3"	4	3'-2"
36"	4	3'-9"	4	3'-8"
42"	4	4'-3"	4	4'-2"
48"	4	4'-9"	4	4'-8"
54"	4	5'-3"	4	5'-2"
60"	4	5'-9"	4	5'-8"
66"	4	6'-3"	4	6'-2"
72"	4	6'-9"	4	6'-8"



SIDE VIEW



TOP VIEW

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

CONCRETE WINGWALL WITH SPLASH PAD

STD. NO.	REV.
20.17A	8

GENERAL NOTES:

1. ALL CORNERS TO BE CHAMFERED 1" IF CONCRETE.
2. THE CONTRACTOR WILL BE REQUIRED TO PLACE 2–#6 BARS "Y" IN THE TOP OF ALL ENDWALL FOR PIPE CULVERTS 42" AND OVER WITH A MINIMUM 3" COVER AND A LENGTH OF 6" LESS THAN ENDWALL.
3. FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
4. WALL THICKNESS (T) SHOWN IS NOT TO BE INTERPRETED TO MEAN THE THICKNESS ACCEPTABLE, BUT IS USED ONLY IN COMPUTING ENDWALL QUANTITIES.
5. IF CONTRACTOR ELECTS TO USE CONSTRUCTION JOINT AT BOTTOM OF PIPE, AND POURS BASE SEPARATELY, THE TOP OF BASE SHALL BE LEFT ROUGH.
6. ALL CONCRETE TO BE 3600 P.S.I COMPRESSIVE STRENGTH.

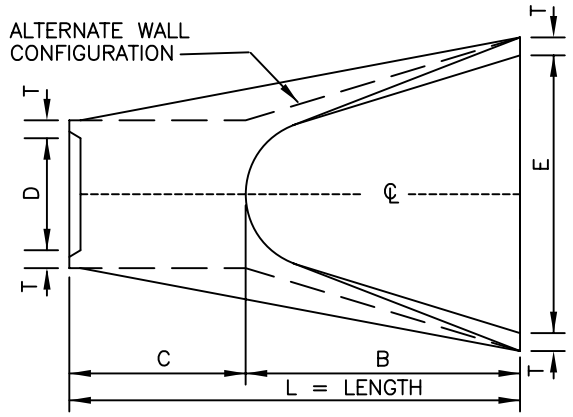
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

CONCRETE WINGWALL WITH SPLASH PAD

STD. NO.	REV.
20.17B	



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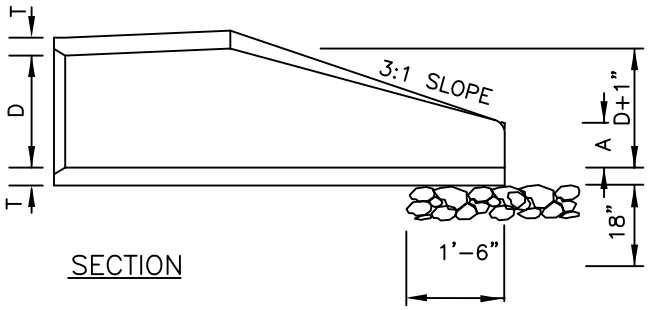
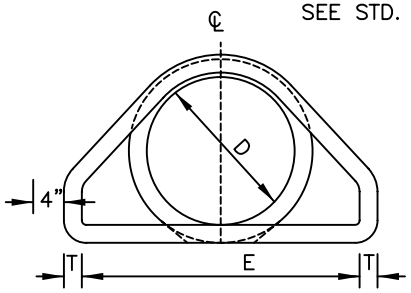


SECTION

SEE STD. 20.23 AND 20.24



END VIEW

TABLE OF DIMENSIONS							
D	T	A	B	C	E	L	WT.
12"	2–1/4"	4"	2'–0"	4'–1"	2'–0"	6'–1"	730
15"	2–1/4"	6"	2'–3"	3'–10"	2'–0"	6'–1"	730
18"	2–1/2"	9"	2'–3"	3'–10"	3'–0"	6'–1"	1190
24"	3"	10"	3'–8"	2'–6"	4'–0"	6'–2"	1770
30"	3–1/2"	1'–0"	4'–6"	1'–8"	5'–0"	6'–2"	2380
36"	4"	1'–3"	5'–3"	2'–11"	6'–0"	8'–2"	5320
42"	4–1/2"	1'–9"	5'–3"	2'–11"	6'–6"	8'–2"	5920
48"	5"	2'–0"	6'–0"	2'–2"	7'–0"	8'–2"	7470
54"	5–1/2"	2'–3"	5'–6"	2'–10"	7'–6"	8'–4"	8810
60"	6"	2'–6"	5'–0"	3'–3"	8'–0"	8'–3"	11180
66"	6–1/2"	3'–0"	6'–0"	2'–3"	8'–6"	8'–3"	12530
72"	7"	3'–0"	6'–6"	1'–9"	9'–0"	8'–3"	13980

GENERAL NOTES:

1. SEE FORMER NCDOT STANDARD 310.01 FOR DETAILS.
2. REINFORCEMENT SHALL CONFORM TO THE REQUIREMENTS OF REINFORCED CONCRETE PIPE OF LIKE DIAMETER PER AASHTO M170, TABLE 2, WALL B.
3. ALL CONCRETE TO BE 3600 P.S.I COMPRESSIVE STRENGTH.
4. PROVIDE TONGUE OR SPIGOT JOINT AT INLET END SECTION.
5. PROVIDE GROOVE OR BELL JOINT AT OUTLET END SECTION.
6. THE DIMENSIONS FOR END SECTIONS SHALL SUBSTANTIALLY AGREE WITH THE TABLE. MINOR VARIATIONS WILL BE PERMITTED BASED ON THE MANUFACTURER'S STANDARD FORMS AND TEMPLATES.
7. NOT TO BE USED IN NCDOT MAINTAINED RIGHT OF WAY.

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

FLARED END SECTION
12" THRU 72" PIPE

STD. NO.	REV.
20.22	1

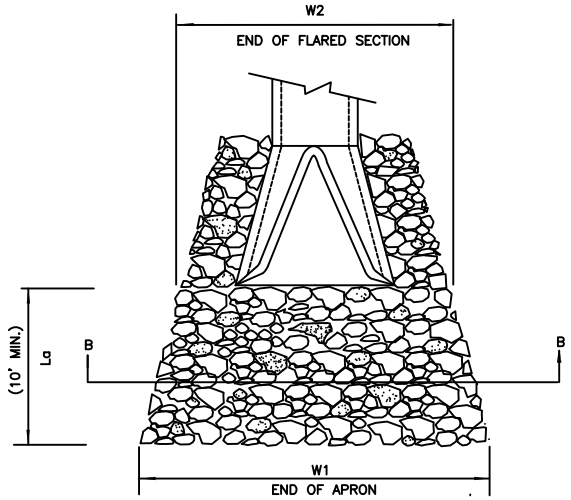
NOTES:

1. CLASS OR MEDIAN SIZE OF RIPRAP AND LENGTH, WIDTH AND DEPTH OF APRON TO BE DESIGNED BY THE ENGINEER.
2. REFER TO THE CHARLOTTE MECKLENBURG STORM WATER DESIGN MANUAL FOR RIPRAP APRON DESIGN STANDARDS.
3. RIPRAP SHOULD EXTEND UP BOTH SIDES OF THE APRON AND AROUND THE END OF THE PIPE OR CULVERT AT THE DISCHARGE OUTLET AT A MAXIMUM SLOPE OF 2:1 AND A HEIGHT NOT LESS THAN TWO THIRDS THE PIPE DIAMETER OR CULVERT HEIGHT.
4. THERE SHALL BE NO OVERFLOW FROM THE END OF THE APRON TO THE SURFACE OF THE RECEIVING CHANNEL. THE AREA TO BE PAVED OR RIPRAPPED SHALL BE UNDERCUT SO THAT THE INVERT OF THE APRON SHALL BE AT THE SAME GRADE (FLUSH) WITH THE SURFACE OF THE RECEIVING CHANNEL. THE APRON SHALL HAVE A CUTOFF OR TOE WALL AT THE DOWNSTREAM END.
5. THE WIDTH OF THE END OF THE APRON SHALL BE EQUAL TO THE BOTTOM WIDTH OF THE RECEIVING CHANNEL. MAXIMUM TAPER TO RECEIVING CHANNEL 5:1
6. ALL SUBGRADE FOR STRUCTURE TO BE COMPACTED TO 95% OR GREATER.
7. THE PLACING OF FILL, EITHER LOOSE OR COMPACTED IN THE RECEIVING CHANNEL SHALL NOT BE ALLOWED.
8. NO BENDS OR CURVES IN THE HORIZONTAL ALIGNMENT OF THE APRON WILL BE PERMITTED.
9. FILTER FABRIC SHALL BE INSTALLED ON COMPACTED SUBGRADE PRIOR TO PLACEMENT OF RIP RAP.
10. ANY DISTURBED AREA FROM END OF APRON TO RECIEVING CHANNEL MUST BE STABILIZED.

USE USDA NOMOGRAPH FROM NC SEDIMENT AND EROSION CONTROL MANUAL OR CHARLOTTE MECKLENBURG STORM WATER DESIGN MANUAL FOR DESIGN DATA.

OUTLET	La	W1	W2	*T	H

* d50 (see fig 8.06 a&b "NC SEDIMENT AND EROSION CONTROL MANUAL"
dmax = 1.5 x d50
T = 1.5 X dmax.
T(min.)=10"



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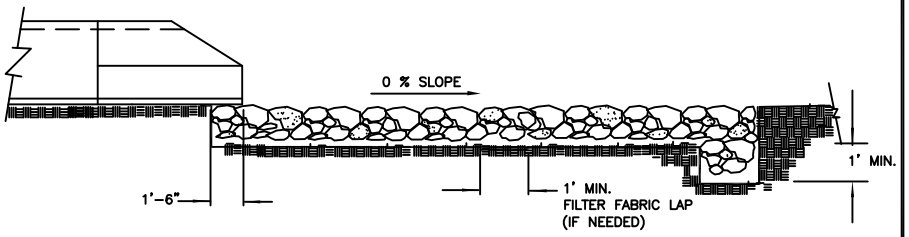
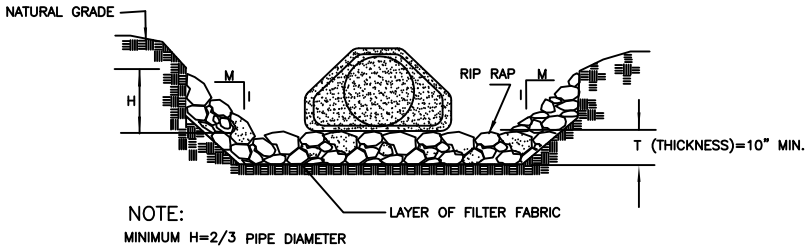


ELEVATION



NOTE:
MINIMUM H=2/3 PIPE DIAMETER

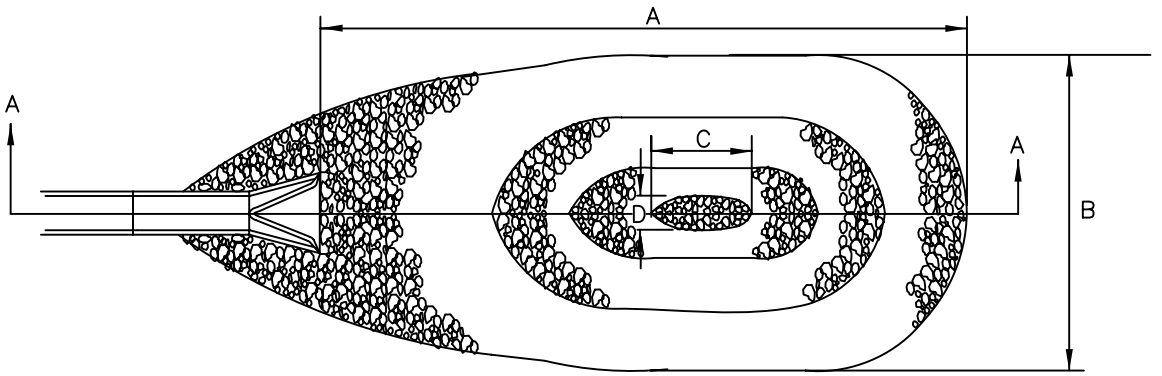
SECTION B–B

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

RIPRAP APRON AT PIPE OUTFALLS OTHER THAN AT SWIM

STD. NO.	REV.
20.23	7



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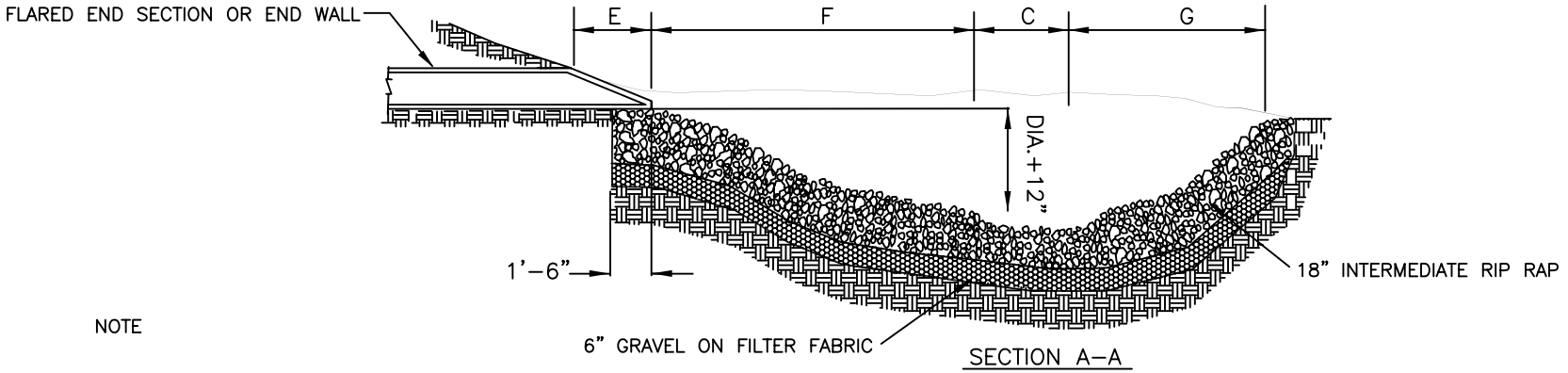


SECTION A-A

NOTE

1. THIS DETAIL IS TO ONLY BE USED WHEN OUTFALL HAS A CONTINUOUS FLOW OF WATER AND WITH PRIOR APPROVAL OF THE CITY ENGINEER.

PIPE SIZE	A	B	C	D	E	F	G	WT. RIP RAP IN TONS
15"	10'	7'	1 1/2'	1'	1'	4 1/2'	3'	6
18"	12'	8'	2'	1'	1'	5'	4'	8
21"	15'	9'	2 1/2'	1 1/2'	1'	7'	4 1/2'	12
24"	17'	10'	2 1/2'	1 1/2'	1'	8'	5 1/2'	15
30"	20'	13'	3'	2'	2'	9'	6'	22
36"	24'	16'	3 1/2'	2'	2'	9 1/2'	7'	33

NOT TO SCALE

CHARLOTTE.

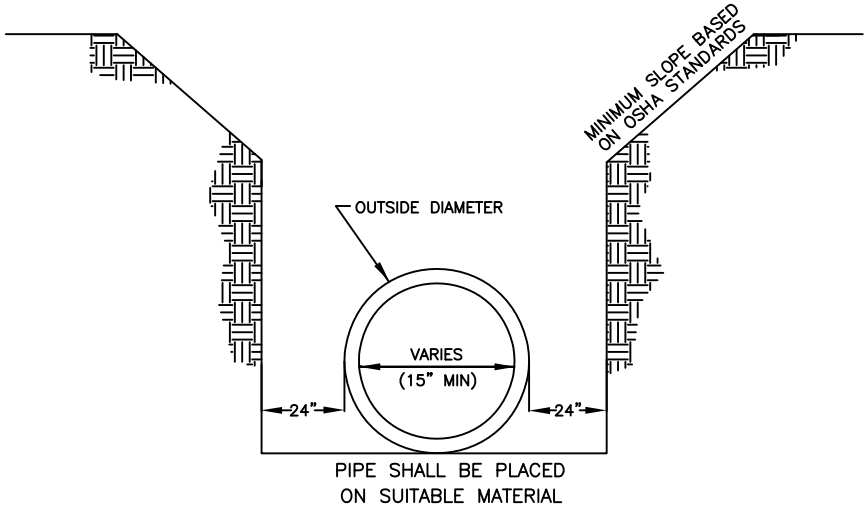
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

RIP RAP PLUNGE POOL

STD. NO.	REV.
20.24	

NOTES:

1. A MINIMUM OF 24" FROM OUTSIDE DIAMETER OF PIPE TO SIDE OF TRENCH MUST BE ALLOWED FOR COMPACTION OF FILL MATERIAL. BACKFILLING OF TRENCHES SHALL BE ACCOMPLISHED IMMEDIATELY AFTER THE PIPE IS LAID. THE FILL AROUND THE PIPE SHALL BE PLACED IN LAYERS NOT TO EXCEED 6". UNDER NO CIRCUMSTANCES SHALL WATER BE PERMITTED TO RISE IN UNBACKFILLED TRENCHES AFTER THE PIPE HAS BEEN PLACED. COMPACTION REQUIREMENTS SHALL BE ATTAINED BY THE USE OF MECHANICAL TAMPS ONLY. EACH AND EVERY LAYER OF BACKFILL SHALL BE PLACED LOOSE AND THOROUGHLY COMPACTED INTO PLACE.
2. ALL BACKFILL MATERIAL SHALL HAVE AN IN PLACE COMPACTED DENSITY OF 95% STANDARD PROCTOR.
3. THE FINAL 2' BELOW FINISHED GRADE SHALL BE 100%.
4. ALL TRENCHING OPERATIONS SHALL MEET OSHA STANDARDS.
5. BACKFILL MATERIAL BENEATH ROADWAY SHALL BE SELECT BACKFILL MATERIAL.



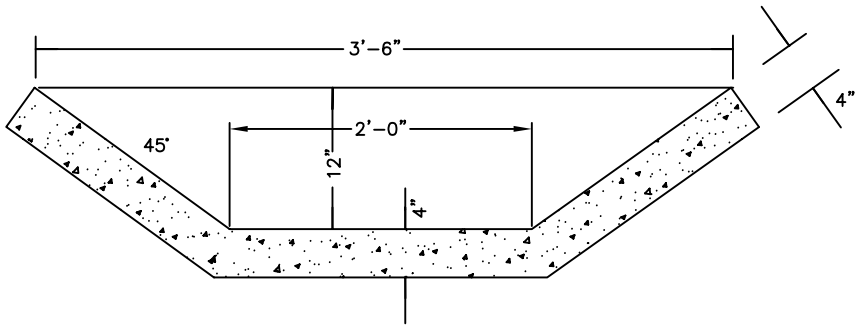
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TRENCH DETAIL FOR STORM DRAIN

STD. NO.	REV.
20.25	9



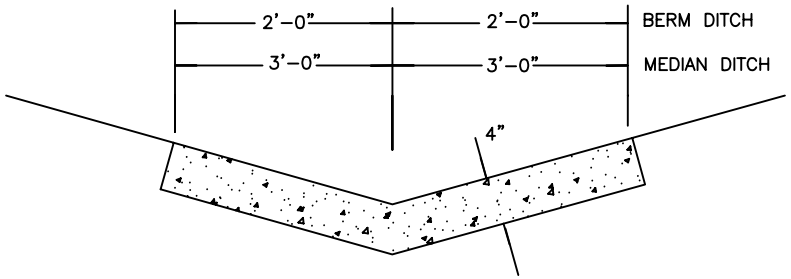
SLOPE DRAIN, BASE DITCH OR BERM DRAINAGE OUTLET DITCH

GENERAL NOTES:

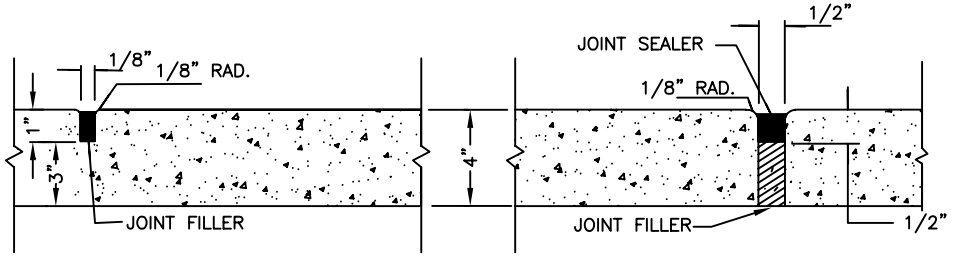
IN THE 4" CONCRETE PAVED DITCHES PLACE 1/2" EXPANSION JOINT AT 30 FT INTERVALS AND AT ALL OTHER POINTS WHERE PROPOSED DITCHES ABUT RIGID OBJECTS. PLACE GROOVED JOINTS 1" DEEP AT 10' INTERVALS BETWEEN EXPANSION JOINTS.

WIDTH AND SHAPE OF PROPOSED 4" CONCRETE PAVED DITCHES SHALL BE AS SHOWN OR AS DIRECTED BY THE ENGINEER.

ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH.

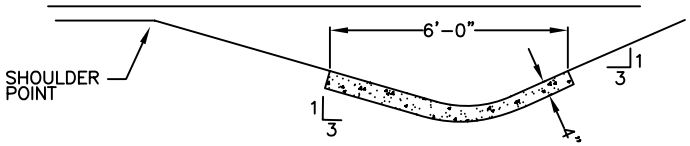


MEDIAN OR BERM DITCH

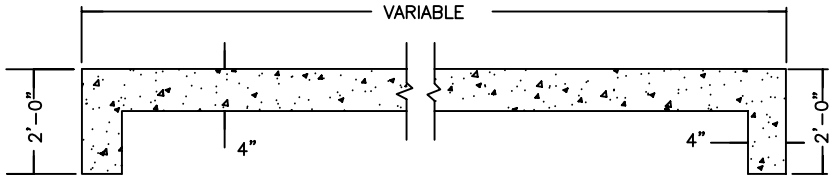


SHOWING GROOVED JOINT

SHOWING EXPANSION JOINT



SIDE DITCH



LONGITUDINAL SECTION OF PAVED DITCH

SHOWING 2'-0" CURTAIN WALL REQUIRED AT EACH END

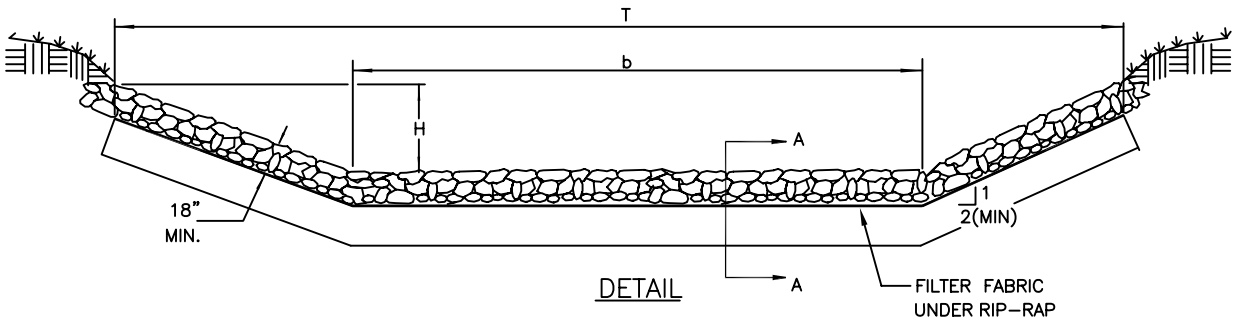
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

CONCRETE PAVED DITCHES

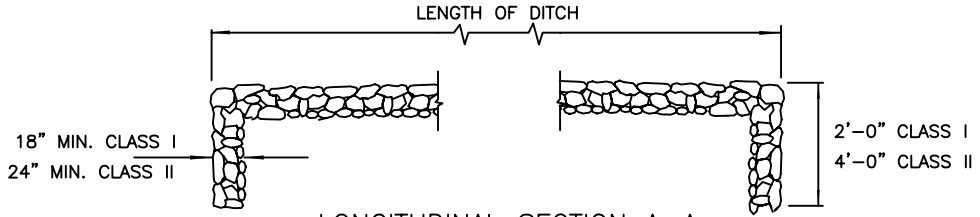
STD. NO.	REV.
20.26	



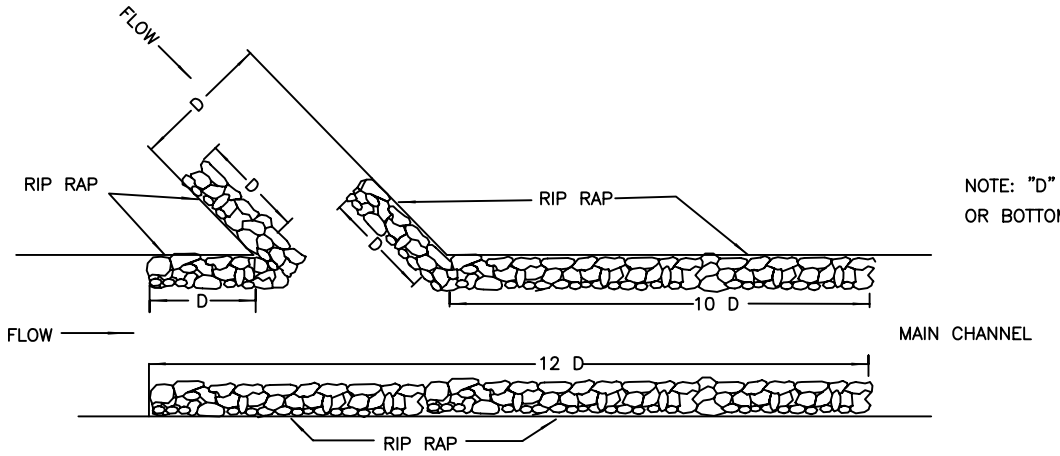
DETAIL

GENERAL NOTES:

1. IF BEDROCK IS ENCOUNTERED WITHIN THE LIMITS OF THE TOEWALL, BEGIN TOEWALL ON THE BEDROCK OR AS DIRECTED BY THE ENGINEER.
2. WHERE ONLY ONE SIDE REQUIRES RIP RAP CLASS I OR II, LIST STATION AND SIDE OF SAME.
3. CHANNEL AND RIP RAP SIZE TO BE DESIGNED BY THE ENGINEER.
4. DEPENDING ON SOIL CONDITIONS, WASHED STONE AND FILTER FABRIC MAY BE NECESSARY UNDER RIP RAP.
5. CHANNEL DEPTH "H" SHALL INCLUDE A MINIMUM 6" OF FREEBOARD.



LONGITUDINAL SECTION A–A



CHANNEL INTERSECTIONS

NOTE: "D" EQUALS DIAMETER OF PIPE OR BOTTOM WIDTH OF CHANNEL.

NOT TO SCALE

CHARLOTTE.

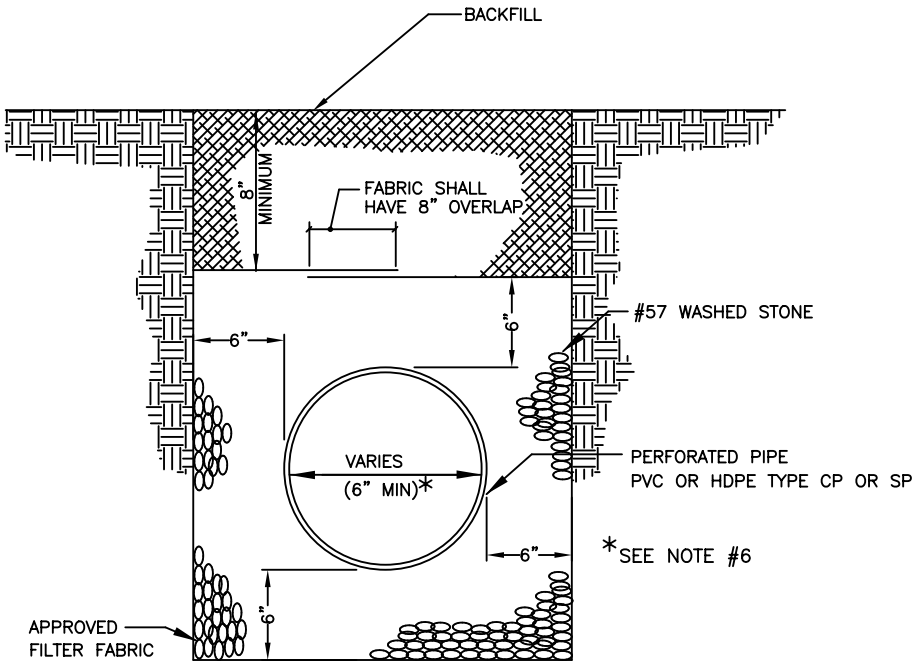
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

RIP RAP DITCHES

STD. NO.	REV.
20.27	

NOTES:

1. A MINIMUM OF 6" FROM OUTSIDE DIAMETER OF PIPE TO SIDE OF TRENCH MUST BE ALLOWED FOR WASHED STONE. THE METHOD OF COMPACTING BACKFILL MATERIAL IS SUBJECT TO APPROVAL BY THE CITY ENGINEER. AN APPROVED FILTER FABRIC SHALL BE PLACED AROUND STONE AND OVERLAPPED 8" AT TOP WITHIN STREET RIGHT OF WAY.
2. SUBDRAIN IS TO BE A MINIMUM 6" DIAMETER PERFORATED PIPE; USE SCHEDULE 40 PVC PER ASTM D1785 OR HDPE PER AASHTO M252, TYPE CP (SINGLE-WALL, CORRUGATED) OR TYPE SP (DOUBLE-WALL, SMOOTH INTERIOR).
3. OUTLET PIPE FROM SUBDRAIN SHALL BE NON-PERFORATED UNDER PAVEMENT (INCLUDING SIDEWALKS AND DRIVEWAYS). SEE SITE PLAN FOR SLOPE OF SUBDRAIN AND TIE IN TO STORM DRAINAGE.
4. THE OUTLET PIPES SHALL BE SCHEDULE 40 (MIN.) PVC PER ASTM D2665 OR HDPE PER AASHTO M252, TYPE S (DOUBLE WALL, SMOOTH INTERIOR) UNDER ROADWAYS.
5. FILTER FABRIC SHALL BE AN APPROVED, TYPE 2 WATER PERMEABLE, SYNTHETIC FABRIC.
6. A MINIMUM 4" DIAMETER SUBDRAIN MAY BE USED IN PLANTING AREAS AS DESCRIBED IN THE CLDSM 4000 SERIES.
7. CLEAN-OUTS ARE RECOMMENDED AT ALL PIPE INTERSECTIONS AND AT A 100' MAXIMUM SEPARATION.
8. SUBDRAIN INVERTS AT CATCH BASINS SHOULD BE INSTALLED ABOVE THE BOTTOM TO AVOID SURCHARGE OF SUBDRAIN SYSTEM.
9. ALL SUBDRAINS WILL TIE INTO A STANDARD DRAINAGE STRUCTURE OR DAYLIGHT TO THE SURFACE WHERE APPROPRIATE.



SPECIAL NOTE:

PREFABRICATED DRAINAGE MAY BE USED WITH APPROVAL OF CITY ENGINEER.

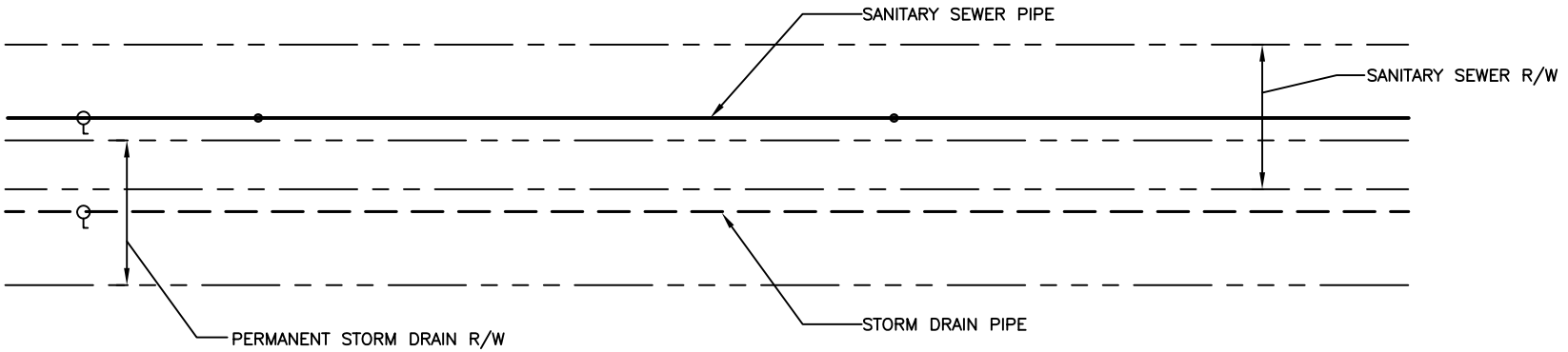
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

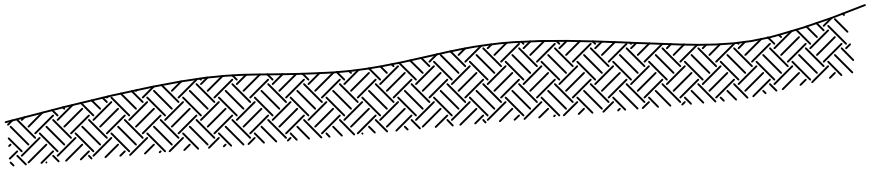
SUBDRAIN DETAIL

STD. NO.	REV.
20.28	5

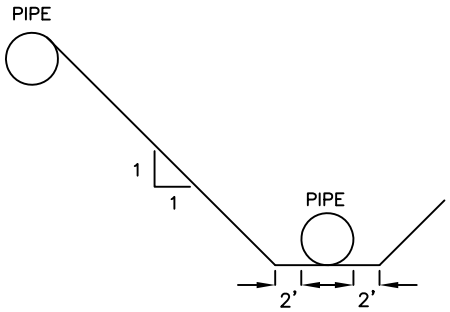


THE SANITARY SEWER AND STORM DRAINAGE RIGHTS OF WAY MAY OVERLAP; HOWEVER THE PIPE AND ASSOCIATED STRUCTURES MUST NOT BE IN THE OTHER UTILITY'S RIGHT OF WAY. THE SANITARY SEWER RIGHT OF WAY WIDTHS SHALL BE AS OUTLINED IN C.M.U.D.'S DESIGN MANUAL. THIS DETAIL DOES NOT APPLY TO STORM DRAINAGE UTILIZING OPEN CHANNEL FLOW.

PLAN VIEW



THE VERTICAL SEPARATION GUIDELINE WILL BE USED UP TO THE POINT WHERE THE TWO RIGHTS OF WAY ADJOIN EACH OTHER.



THE SANITARY SEWER AND STORM DRAINAGE PIPES MUST BE NO CLOSER TOGETHER HORIZONTALLY THAN THE VERTICAL DISTANCE BETWEEN THE TOP OF THE HIGHER PIPE AND THE BOTTOM OF THE LOWER PIPE. A MAINTENANCE CREW MUST BE ABLE TO DIG DOWN TO THE LOWER PIPE SLOPING THE DITCH ON A 1:1 SLOPE UP FROM THE REQUIRED TRENCH BOTTOM WIDTH AND NOT EXPOSE THE HIGHER PIPE.

PROFILE VIEW

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

OVERLAPPING STORM DRAINAGE/SANITARY SEWER EASEMENTS

STD. NO.	REV.
20.29	9

GENERAL NOTES:

1. FOR STREAMS CARRYING 500 ACRES OR MORE OF SURFACE RUNOFF, THE EASEMENT REQUIREMENT IS TO BE THE WIDTH OF THE STREAM FROM TOP OF BANK TO TOP OF BANK, PLUS (+) 10' ON EACH SIDE OF STREAM. (40' MINIMUM WIDTH)

2. FOR OPEN CHANNELS THE MINIMUM EASEMENT MUST CONTAIN THE WIDTH OF THE STREAM FROM TOP OF BANK TO TOP BANK.

3. WIDER EASEMENT WIDTHS MAY BE REQUIRED FOR PIPE DEPTHS GREATER THAN TEN FEET.

4. PIPE SYSTEMS AND OPEN CHANNELS ON PRIVATE PROPERTY SHALL BE PLACED IN A STORM DRAINAGE EASEMENT.

Easement Requirements for
Open Storm Drainage Channels

Area in Acreage	Easement Requirement
0–45 ac.	20'
45–120 ac.	30'
120–500 ac.	40'
500 ac.+	see note

Easement Requirements for Storm Drain Pipe

Pipe Size	Easement Requirement
15"	15'
18"	15'
24"	15'
30"	20'
36"	20'
42"	25'
48"	25'
54"+	30'MIN (VARIES)

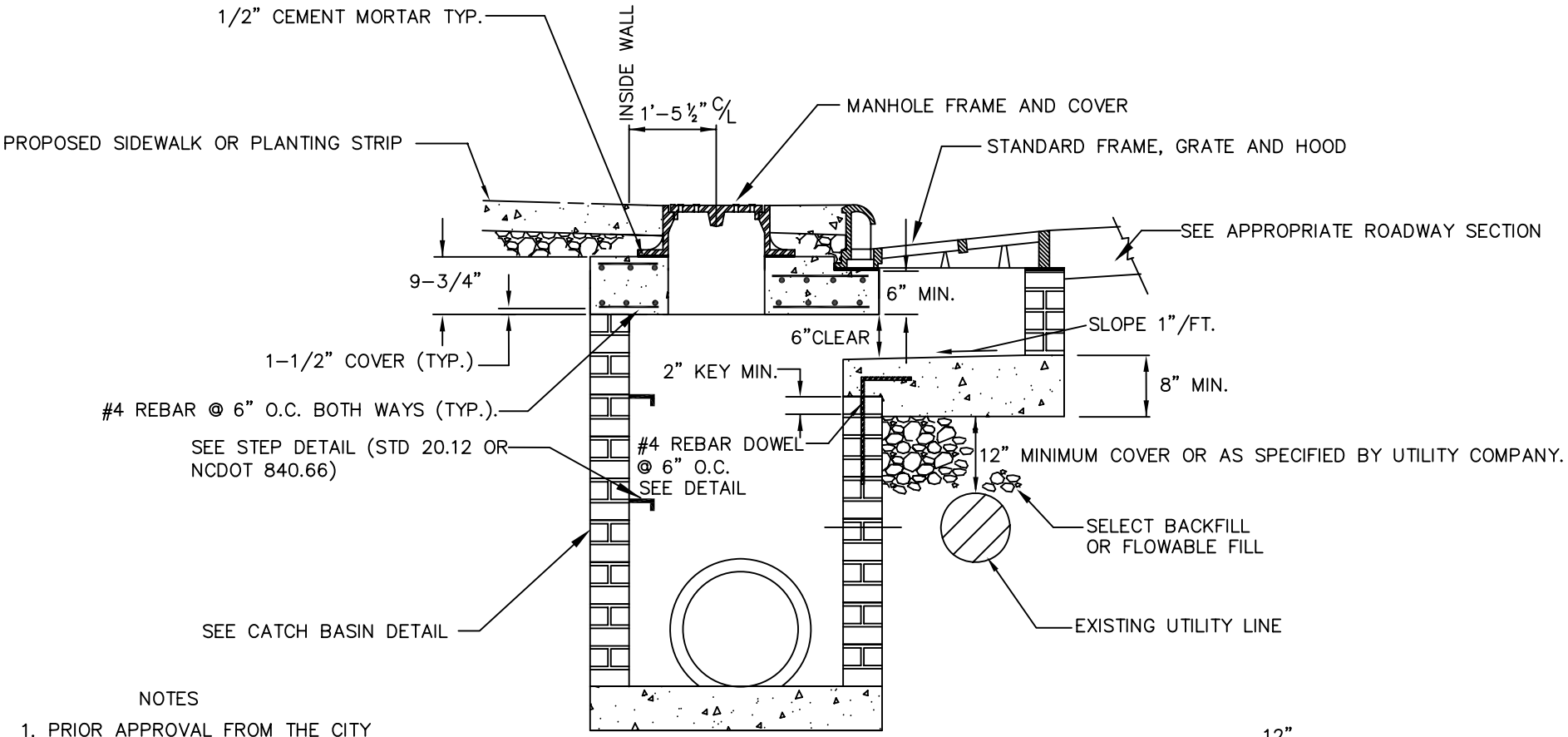
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

MINIMUM DRAINAGE EASEMENT REQUIREMENTS FOR STORM DRAIN PIPES AND OPEN CHANNELS

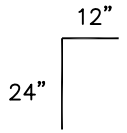
STD. NO.	REV.
20.30	



NOTES

1. PRIOR APPROVAL FROM THE CITY ENGINEER IS REQUIRED.
2. THIS STRUCTURE IS TO ONLY BE USED ON CITY MAINTAINED STREETS AND NOT ON NCDOT STREETS WITHOUT THEIR PERMISSION.

OFFSET CATCH BASIN EXISTING UTILITY CONFLICT



DOWEL DETAIL

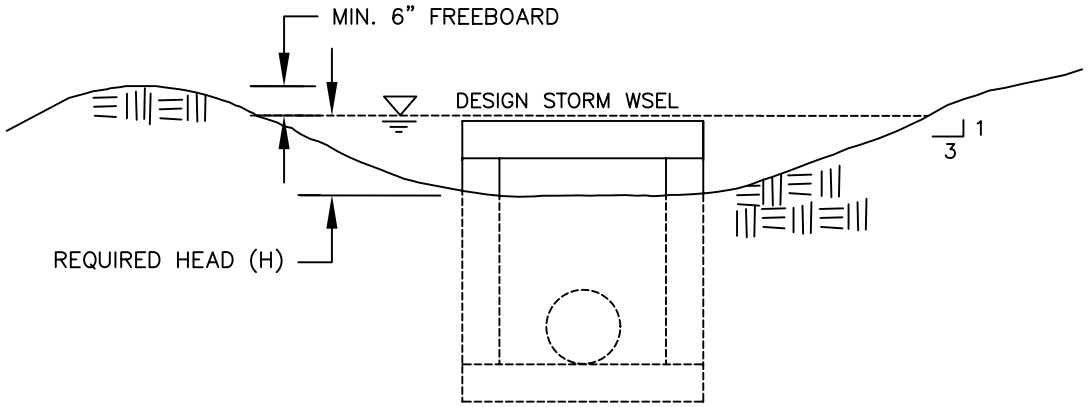
NOT TO SCALE

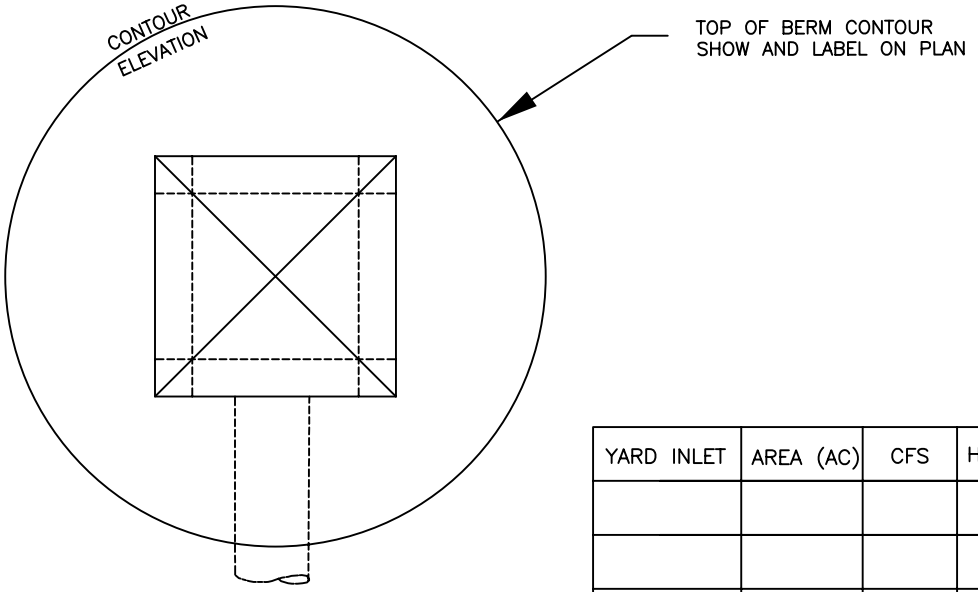
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

OFFSET CATCH BASIN

STD. NO.	REV.
20.34	1





YARD INLET	AREA (AC)	CFS	HEAD H (FT)	COMMENT

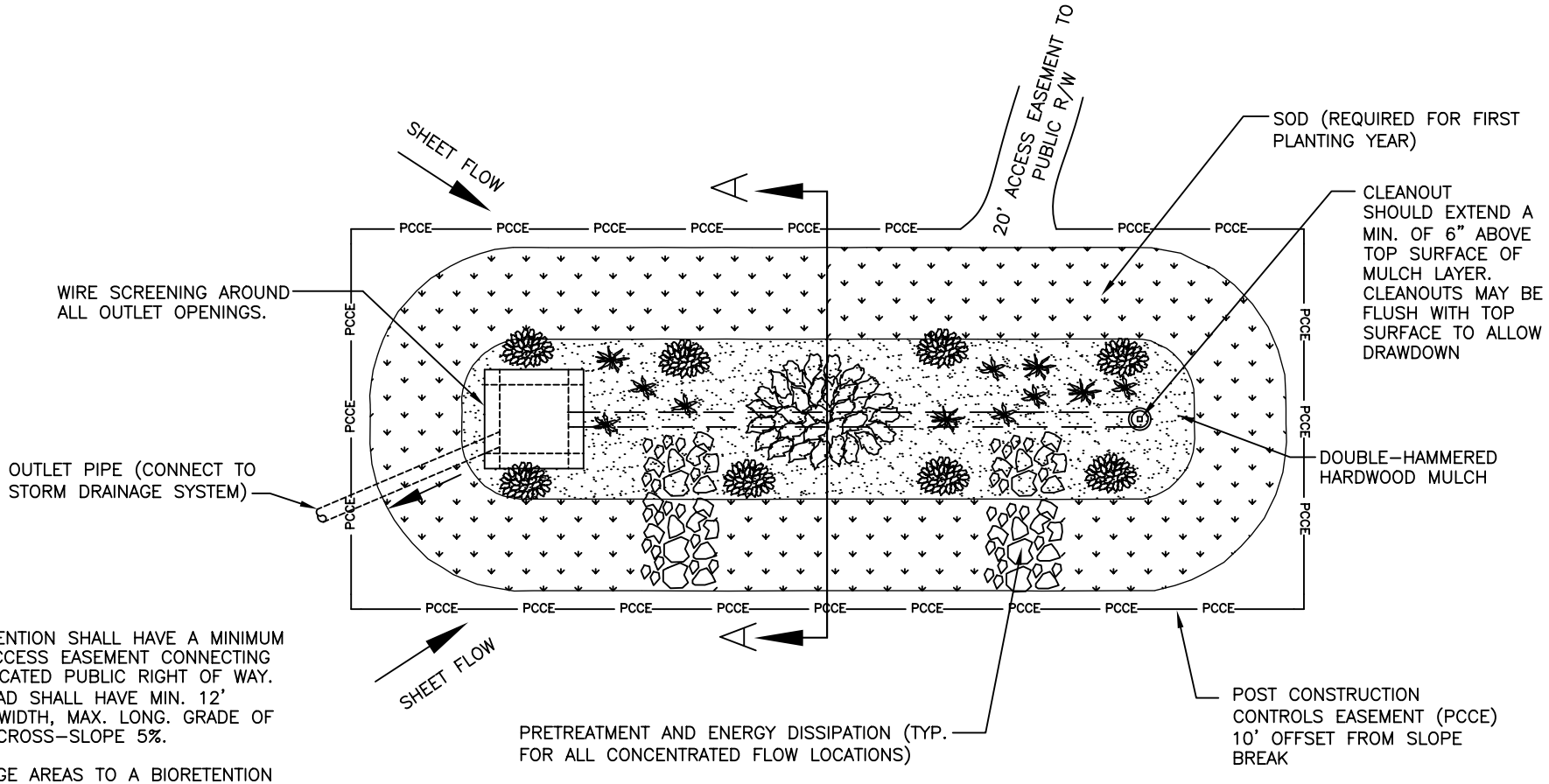
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

GRADING AT DROP INLET

NOT TO SCALE

STD. NO.	REV.
20.35	



PLAN

NOTES:

1. ALL BIORETENTION SHALL HAVE A MINIMUM 20 FOOT ACCESS EASEMENT CONNECTING TO A DEDICATED PUBLIC RIGHT OF WAY. ACCESS ROAD SHALL HAVE MIN. 12' STABILIZED WIDTH, MAX. LONG. GRADE OF 15%, MAX. CROSS-SLOPE 5%.
2. ALL DRAINAGE AREAS TO A BIORETENTION FACILITY ARE TO BE STABILIZED PRIOR TO INSTALLATION OF AMENDED SOILS, MULCH OR PLANTINGS.
3. AMENDED SOIL WILL ONLY BE PERMITTED WITH A VALID SOIL ANALYSIS REPORT.
4. INSTALL WIRE SCREENING AROUND ALL OUTLET OPENINGS TO PREVENT LOSS OF MULCH.

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

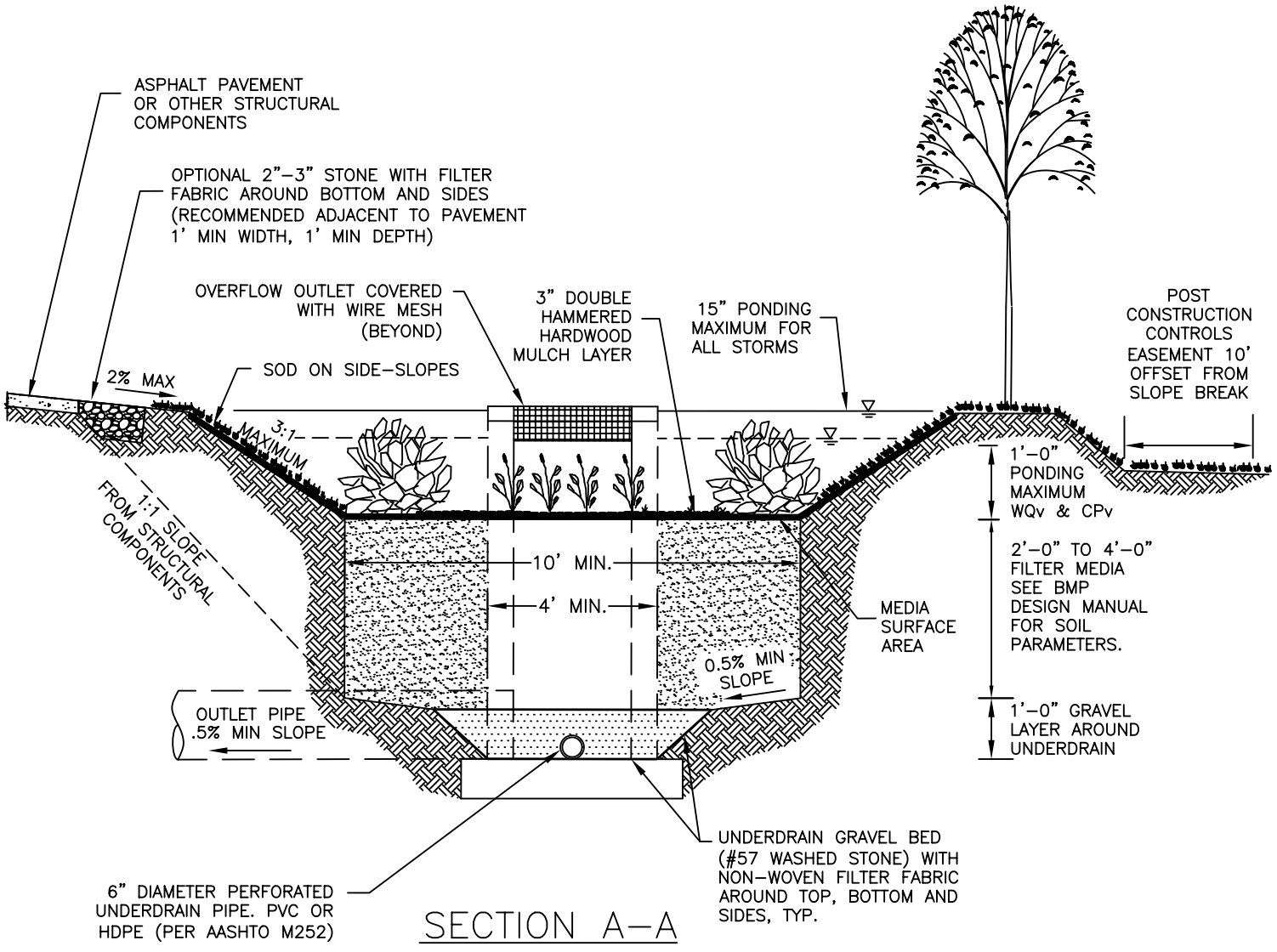
BIORETENTION PLAN

BMP FIG. 4.1.2

STD. NO.	REV.
21.00	5

NOTES:

1. ALL BIORETENTION FACILITIES SHALL HAVE A MINIMUM 20 FOOT ACCESS EASEMENT CONNECTING TO A DEDICATED PUBLIC RIGHT OF WAY. ACCESS ROAD SHALL HAVE MIN. 12' STABILIZED WIDTH, MAX. LONG. GRADE OF 15%, MAX. CROSS–SLOPE 5%.
2. ALL DRAINAGE AREAS TO A BIORETENTION FACILITY ARE TO BE STABILIZED PRIOR TO INSTALLATION OF AMENDED SOILS, MULCH OR PLANTINGS.
3. AMENDED SOIL WILL ONLY BE PERMITTED WITH A VALID SOIL ANALYSIS REPORT. NO AMENDED SOIL SHALL BE ALLOWED ON THE SIDE SLOPES.
4. INSTALL WIRE SCREENING AROUND ALL OUTLET OPENINGS TO PREVENT LOSS OF MULCH.
5. PVC UNDERDRAIN PIPE SHOULD HAVE 3/8" PERFORATIONS SPACED AT 6" CENTERS, MIN. 4 HOLES PER ROW. MAX SPACING OF UNDERDRAIN PIPE IS 10 FEET ON CENTER. HDPE SHALL ADHERE TO AASHTO M252 SPECS.
6. UNDERDRAIN CLEANOUTS SHOULD EXTEND A MIN. OF 6" ABOVE TOP SURFACE OF MULCH LAYER. CLEANOUTS MAY BE FLUSH WITH TOP OF SURFACE TO ALLOW DRAWDOWN.
7. ONLY SMALL MATURING TREES ARE ALLOWED TO BE PLANTED IN THE AMENDED SOILS.



SECTION A–A

NOT TO SCALE

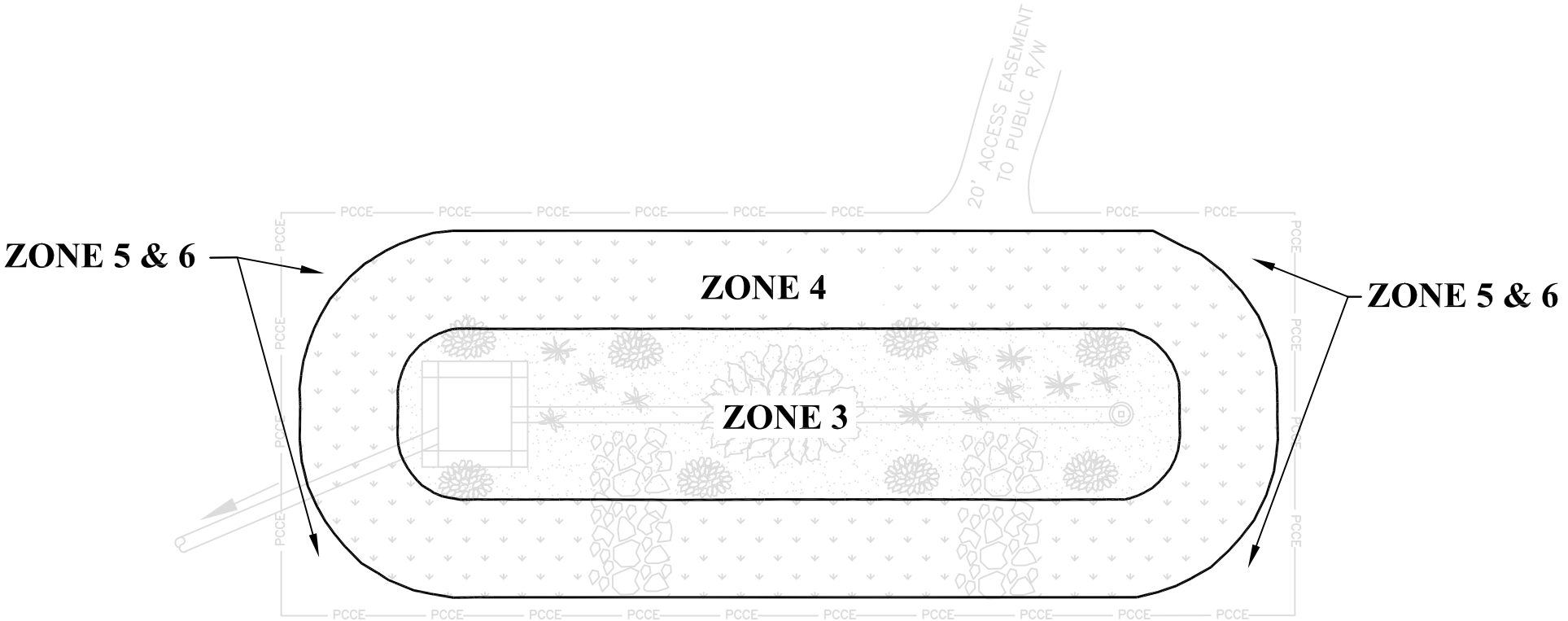
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

BIORETENTION CROSS–SECTION

BMP FIG. 4.1.3

STD. NO.	REV.
21.01	5



PLAN

NOTES:

1. PLANTING ZONES AND PLANT SELECTION PER THE BMP DESIGN MANUAL, CHAPTER 6 & APPENDICES.
2. ALL PLANTINGS SHALL BE LOCAL NATIVE SPECIES.
3. IRRIGATION MAY BE PROVIDED FOR INITIAL ESTABLISHMENT AND DRY SEASONS.
4. ONLY SMALL MATURING TREES ARE ALLOWED TO BE PLANTED IN THE AMENDED SOILS.

NOT TO SCALE

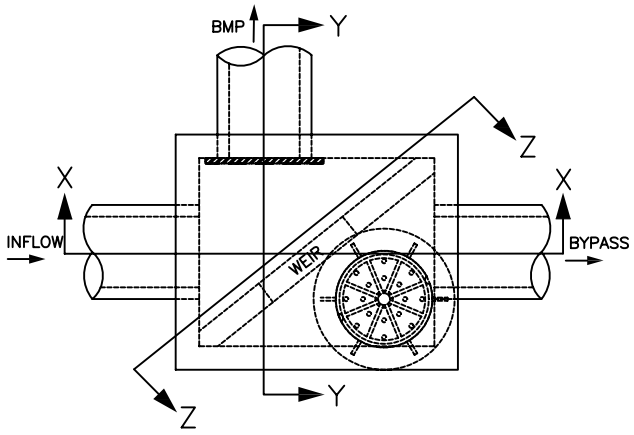
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

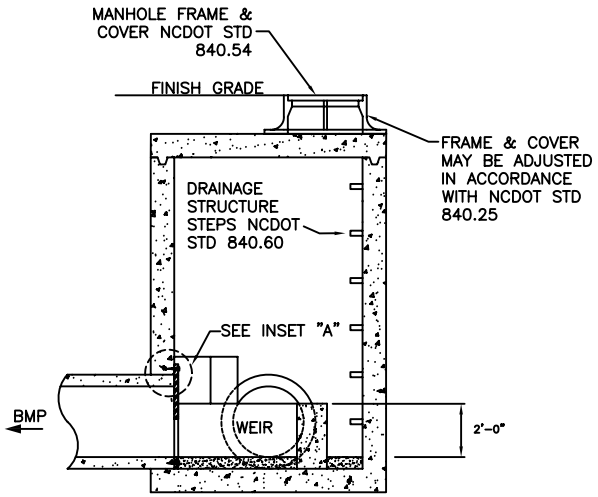
BIORETENTION PLANTING PLAN

BMP FIG. 4.1.4

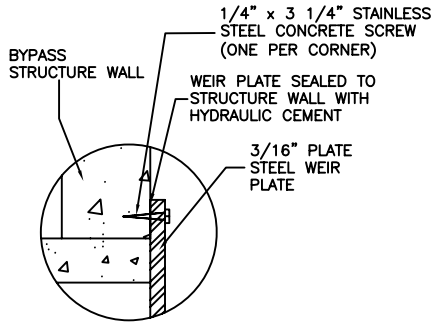
STD. NO.	REV.
21.02	5



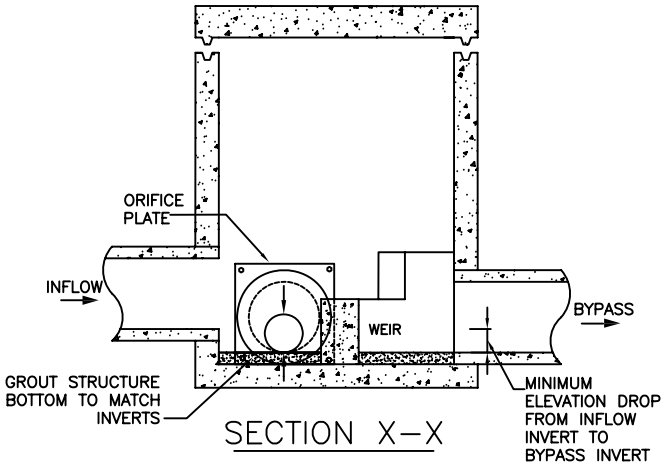
PLAN



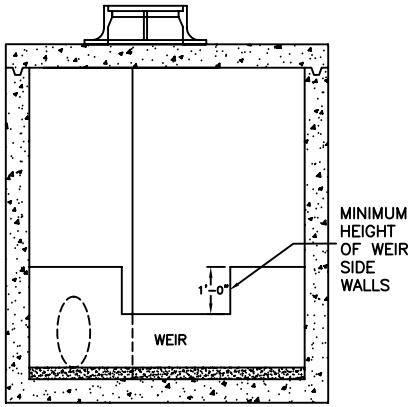
SECTION Y–Y



INSET "A"



SECTION X–X



SECTION Z–Z

NOTES:

1. ALL CONCRETE SHALL BE 3600 PSI.
2. ALL JOINTS ARE TO BE SEALED WATER TIGHT.
3. WEIR IS TO BE POURED–IN–PLACE CONCRETE.
4. REFER TO NCDOT STANDARD DRAWINGS FOR BOX CONSTRUCTION.
5. NOT ACCEPTABLE FOR USE IN STREET RIGHT OF WAY WITHOUT CDOT/NCDOT APPROVAL.

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

FLOW SPLITTER STRUCTURE

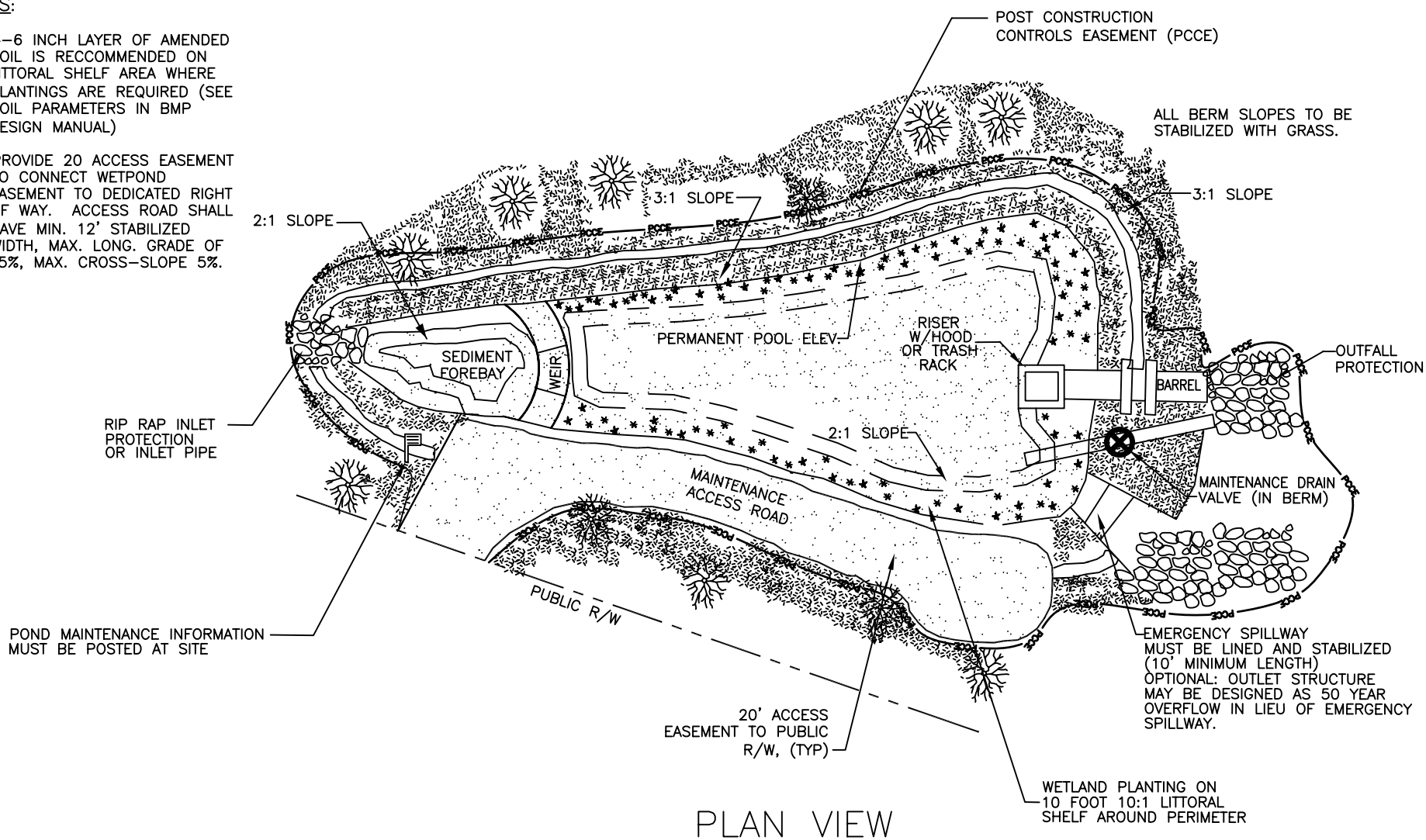
BMP FIG. 4.1.11

STD. NO.	REV.
21.04	2

NOTES:

1. 4–6 INCH LAYER OF AMENDED SOIL IS RECCOMMENDED ON LITTORAL SHELF AREA WHERE PLANTINGS ARE REQUIRED (SEE SOIL PARAMETERS IN BMP DESIGN MANUAL)

2. PROVIDE 20 ACCESS EASEMENT TO CONNECT WETPOND EASEMENT TO DEDICATED RIGHT OF WAY. ACCESS ROAD SHALL HAVE MIN. 12' STABILIZED WIDTH, MAX. LONG. GRADE OF 15%, MAX. CROSS–SLOPE 5%.



PLAN VIEW

NOT TO SCALE

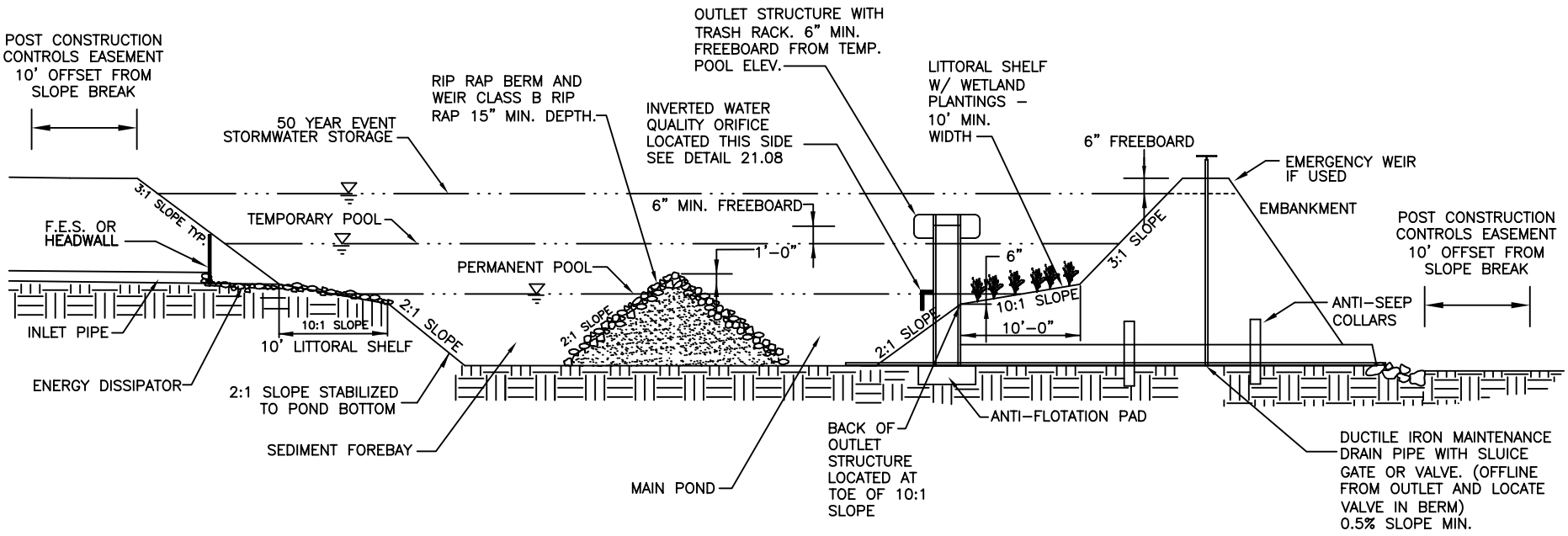
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

WETPOND PLAN

BMP FIG. 4.2.2

STD. NO.	REV.
21.05	2



NOTES:

1. 4–6 INCH LAYER OF AMENDED SOIL IS RECOMMENDED IN ANY AREA WHERE PLANTINGS ARE REQUIRED (SEE BMP DESIGN MANUAL).

NOT TO SCALE

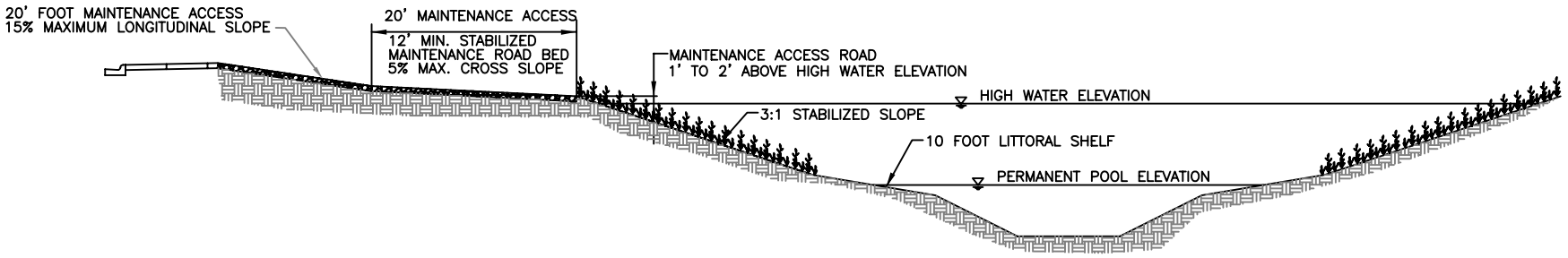
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

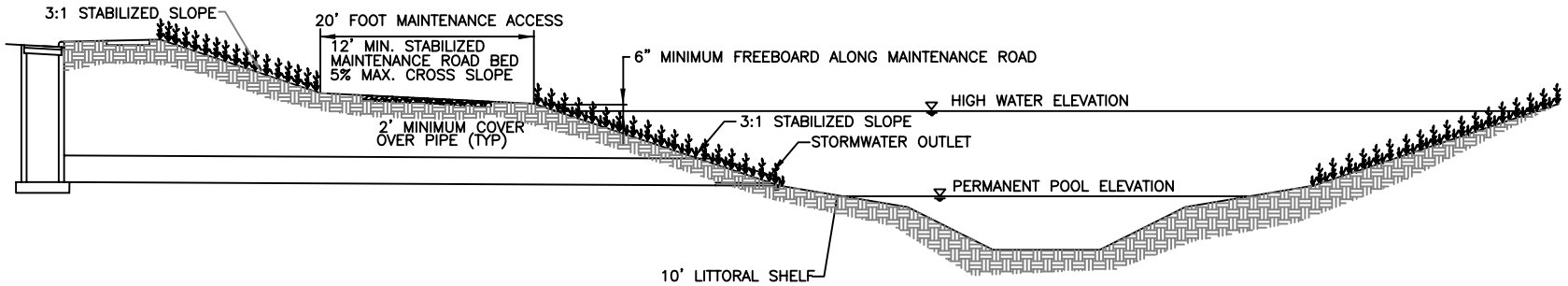
WETPOND PROFILE

BMP FIG. 4.2.2

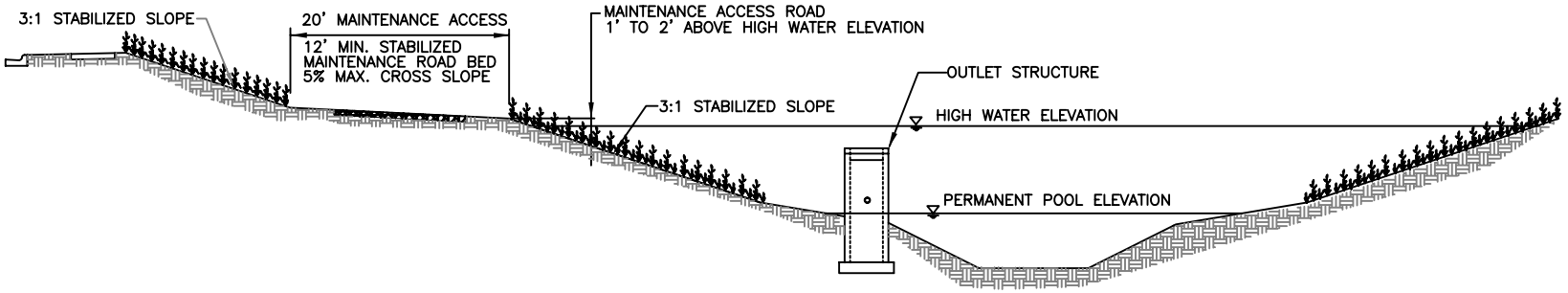
STD. NO.	REV.
21.06	5



SECTION AT MAINTENANCE ROAD ACCESS AND FOREBAY



SECTION AT STORMWATER OUTFALL



SECTION AT OUTLET STRUCTURE

NOT TO SCALE

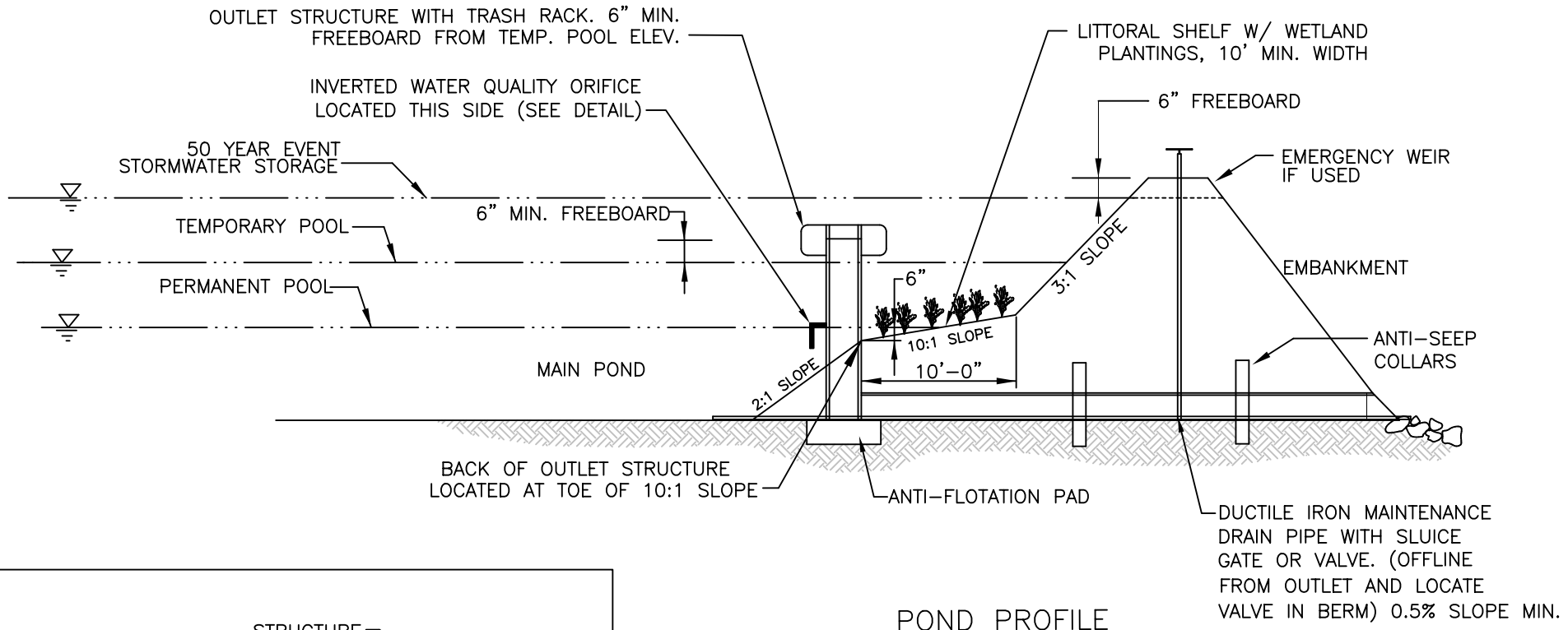
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

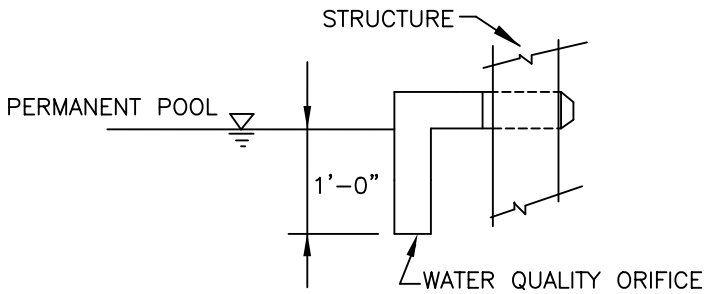
WETPOND CROSS SECTIONS

BMP FIG. 4.2.3

STD. NO.	REV.
21.07	2



POND PROFILE



WATER QUALITY ORIFICE DETAIL

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

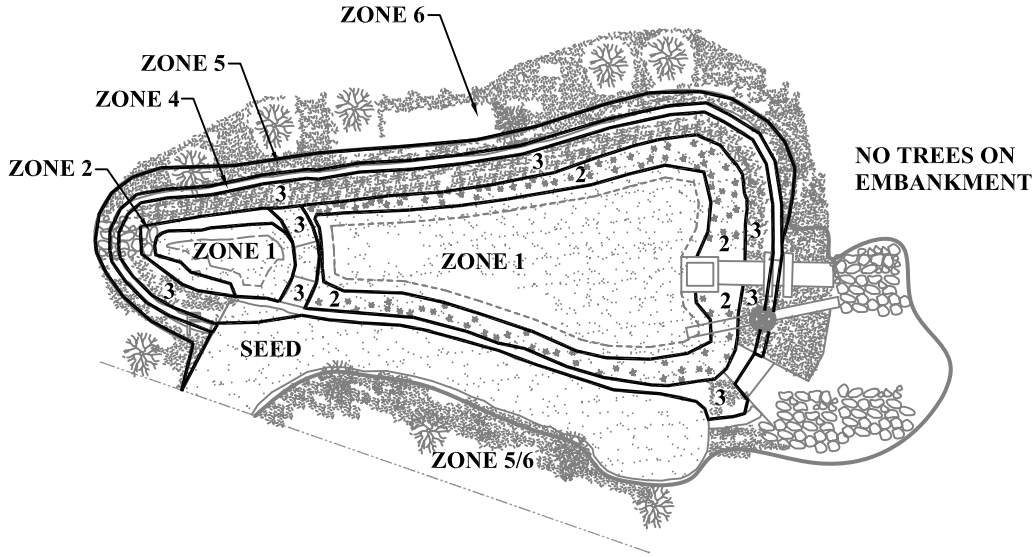
WETPOND
LITTORAL SHELF AND BERM DETAIL

BMP FIG. 4.2.4

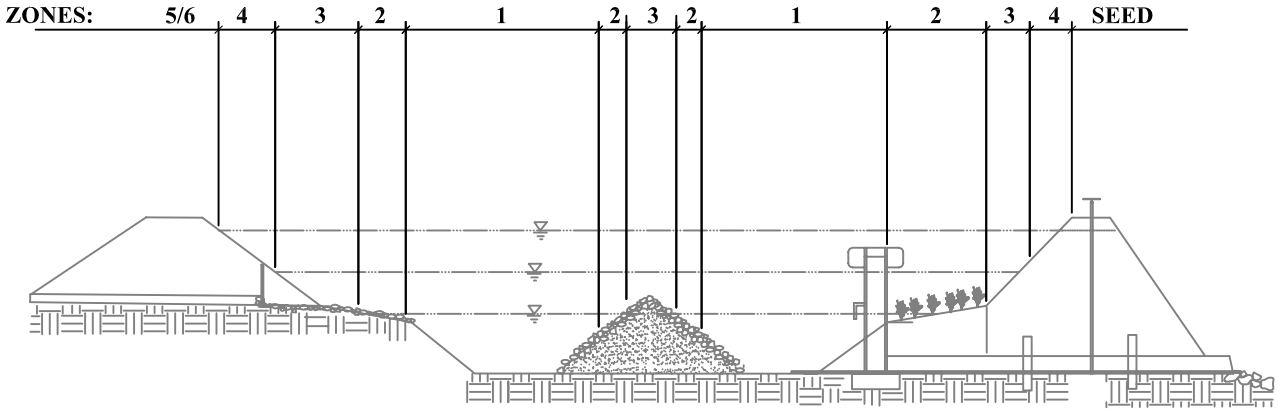
STD. NO.	REV.
21.08	5

NOTES:

1. PLANTINGS ZONES AND PLANT SELECTION PER THE BMP DESIGN MANUAL, CHAPTER 6 & APPENDICES.
2. ALL PLANTINGS SHALL BE LOCAL NATIVE SPECIES.
3. IRRIGATION MAY BE PROVIDED FOR INITIAL ESTABLISHMENT AND DRY SEASONS.



PLAN VIEW
NOT TO SCALE



POND CROSS SECTION
NOT TO SCALE

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

WETPOND PLANTING PLAN

BMP FIG. 4.2.5

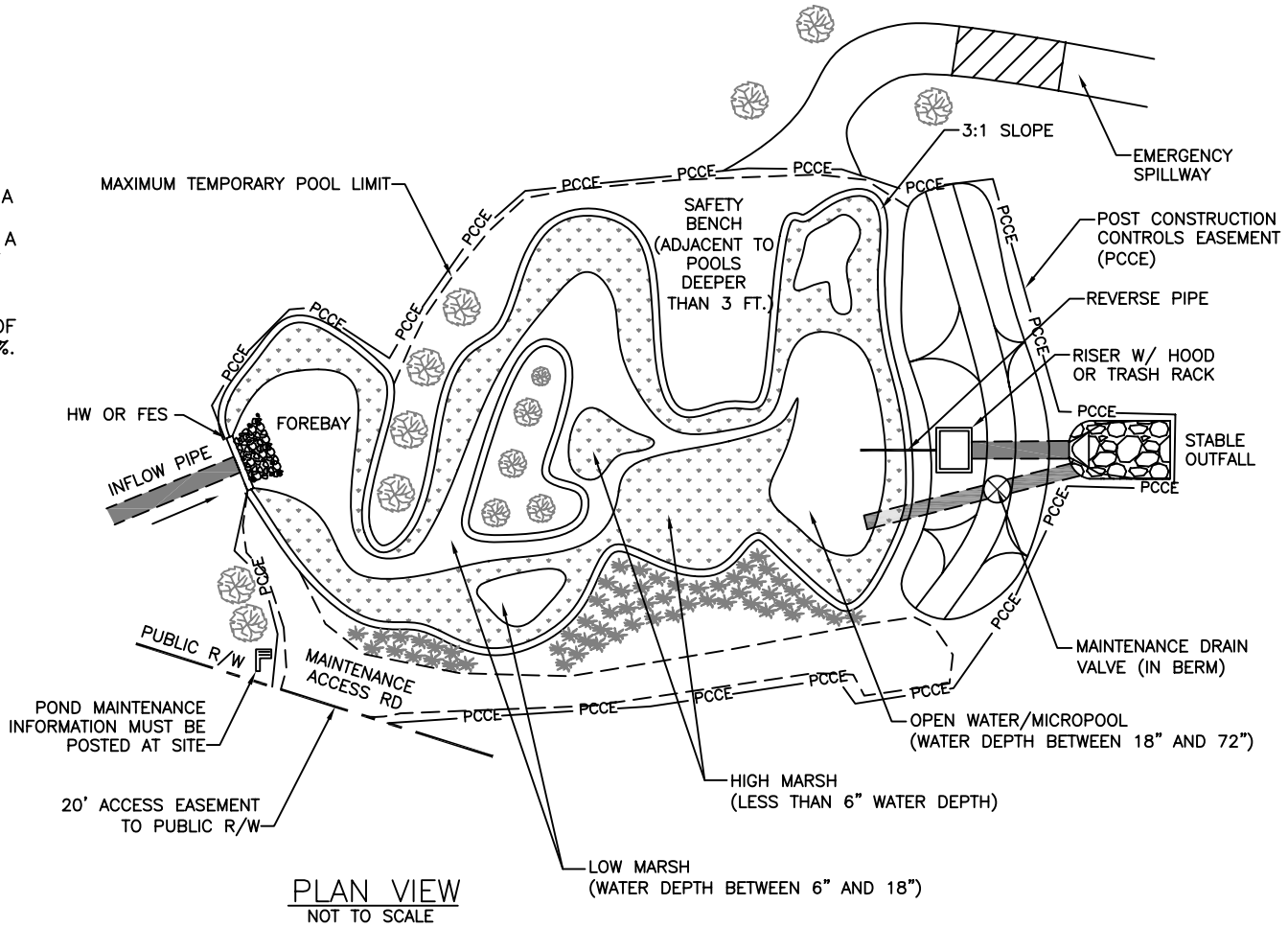
STD. NO.	REV.
21.09	2

NOTES:

1. 4–6 INCH LAYER OF AMENDED SOIL IS REQUIRED ON ANY MARSH AREA WHERE PLANTINGS ARE REQUIRED (SEE SOIL PARAMETERS IN BMP DESIGN MANUAL)

2. PROVIDE 20' ACCESS EASEMENT TO CONNECT WETLAND EASEMENT TO DEDICATED RIGHT OF WAY.

3. ALL WETLANDS SHALL HAVE A MINIMUM 20 FOOT ACCESS EASEMENT CONNECTING TO A DEDICATED PUBLIC RIGHT OF WAY. ACCESS ROAD SHALL HAVE MIN. 12' STABILIZED WIDTH, MAX. LONG. GRADE OF 15%, MAX. CROSS–SLOPE 5%.



PLAN VIEW
NOT TO SCALE

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

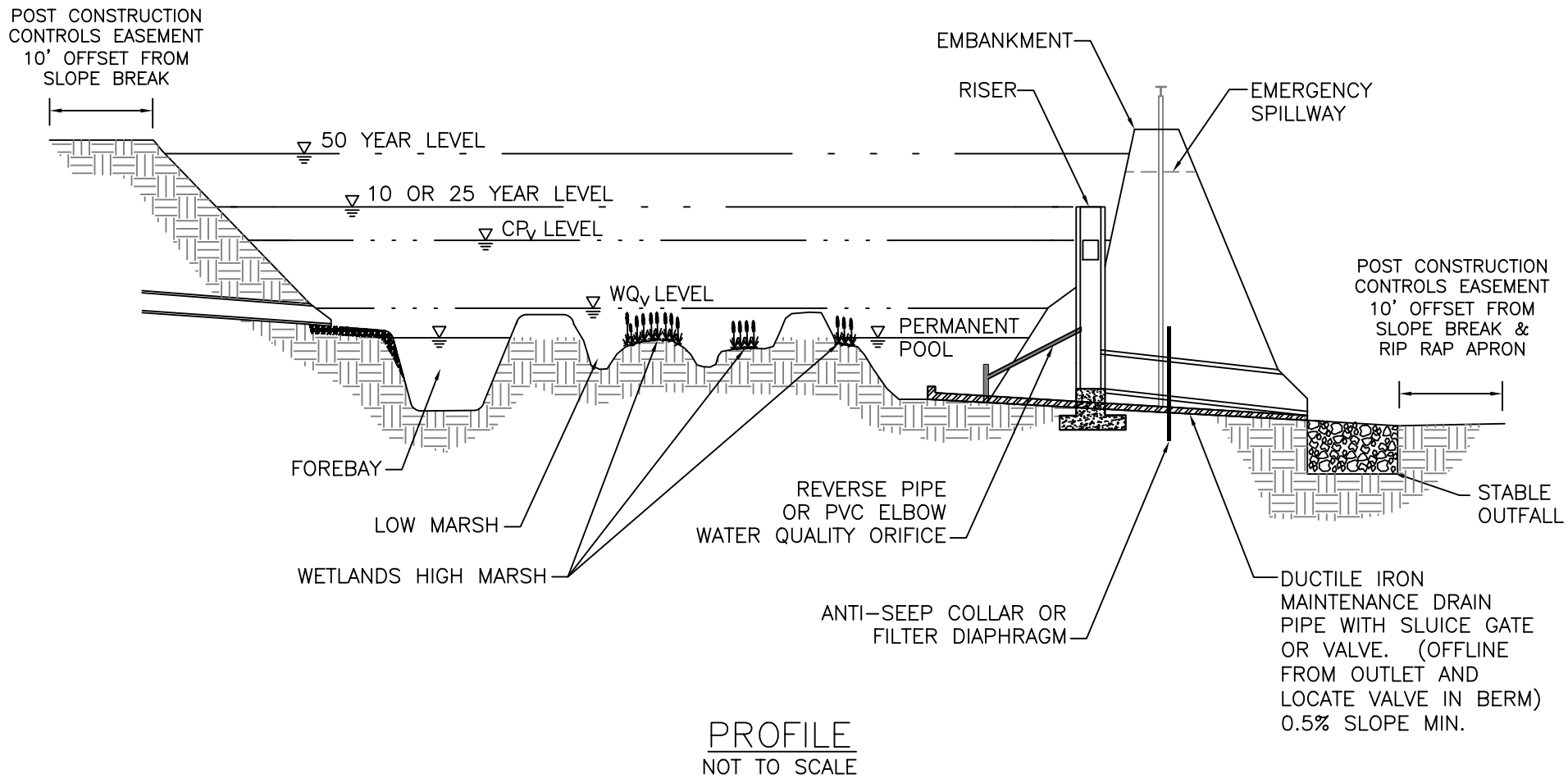
WETLAND PLAN

BMP FIG. 4.3.2

STD. NO.	REV.
21.10	2

NOTE:

A 4–6 INCH LAYER OF AMENDED SOIL IS RECOMMENDED IN ANY AREA WHERE PLANTINGS ARE REQUIRED (SEE SOIL PARAMETERS IN BMP DESIGN MANUAL).



PROFILE
NOT TO SCALE

NOT TO SCALE

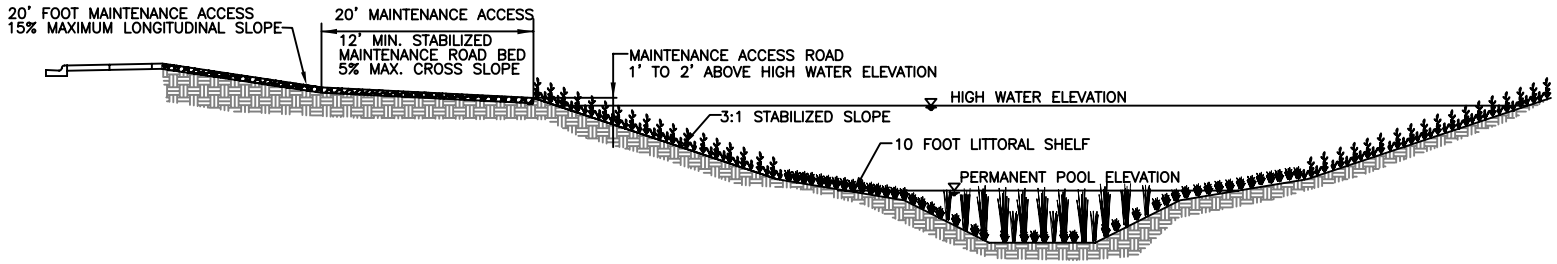
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

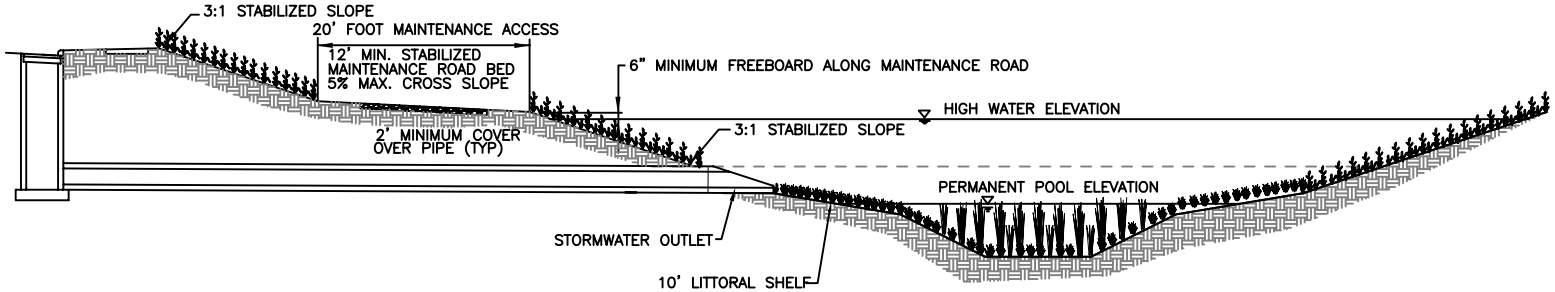
WETLAND PROFILE

BMP FIG. 4.3.2

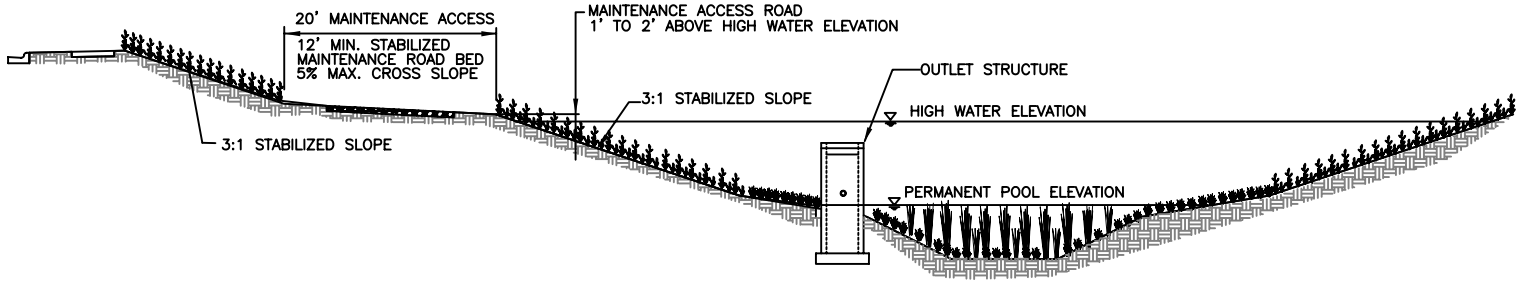
STD. NO.	REV.
21.11	5



SECTION AT MAINTENANCE ROAD ACCESS AND FOREBAY



SECTION AT STORMWATER OUTFALL



SECTION AT OUTLET STRUCTURE

NOT TO SCALE

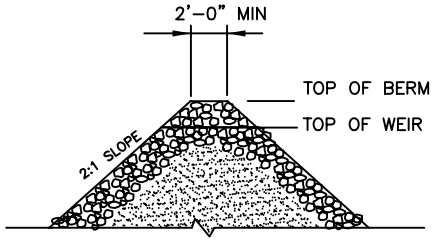
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

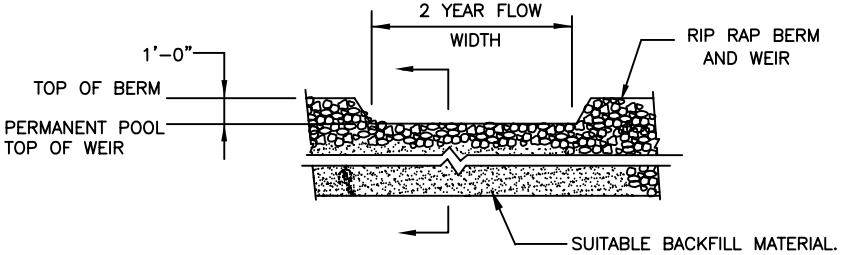
WETLAND CROSS SECTIONS

BMP FIG. 4.3.3

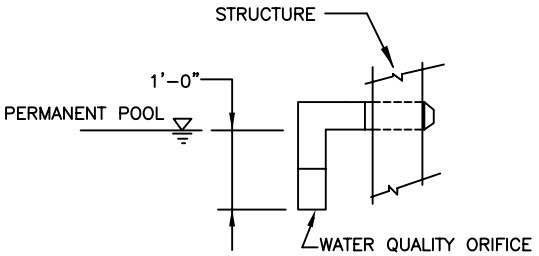
STD. NO.	REV.
21.12	2



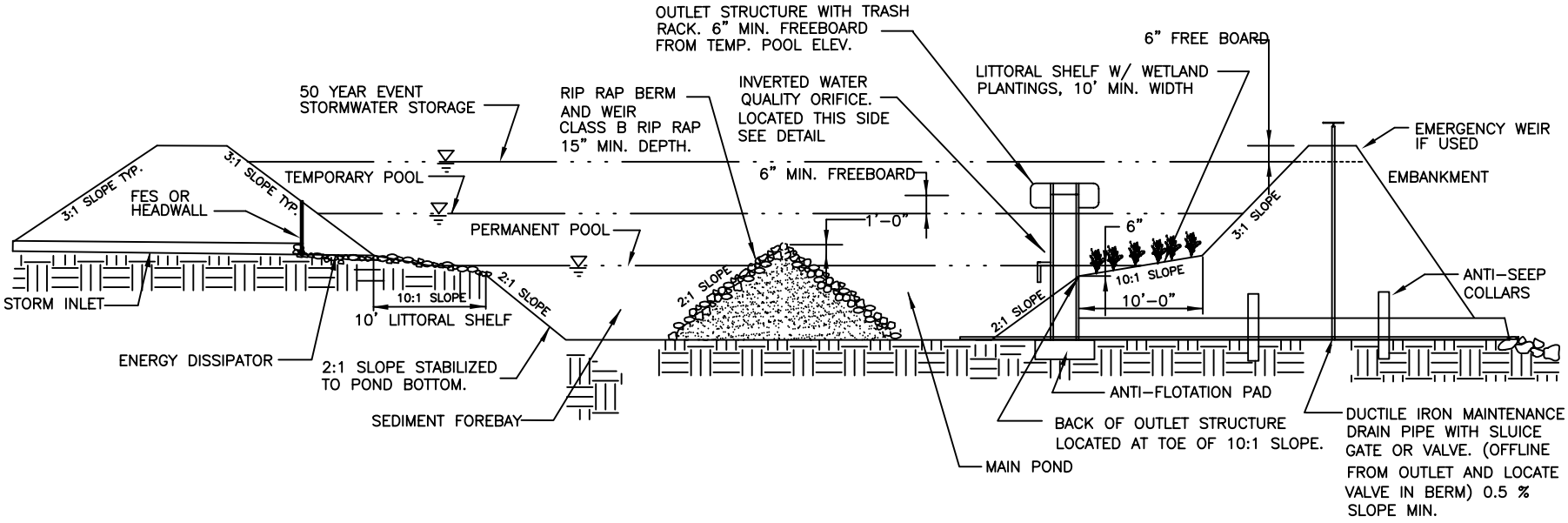
BERM AND WEIR SECTION



BERM AND WEIR DETAIL



WATER QUALITY ORIFICE DETAIL



CROSS SECTION
NOT TO SCALE

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

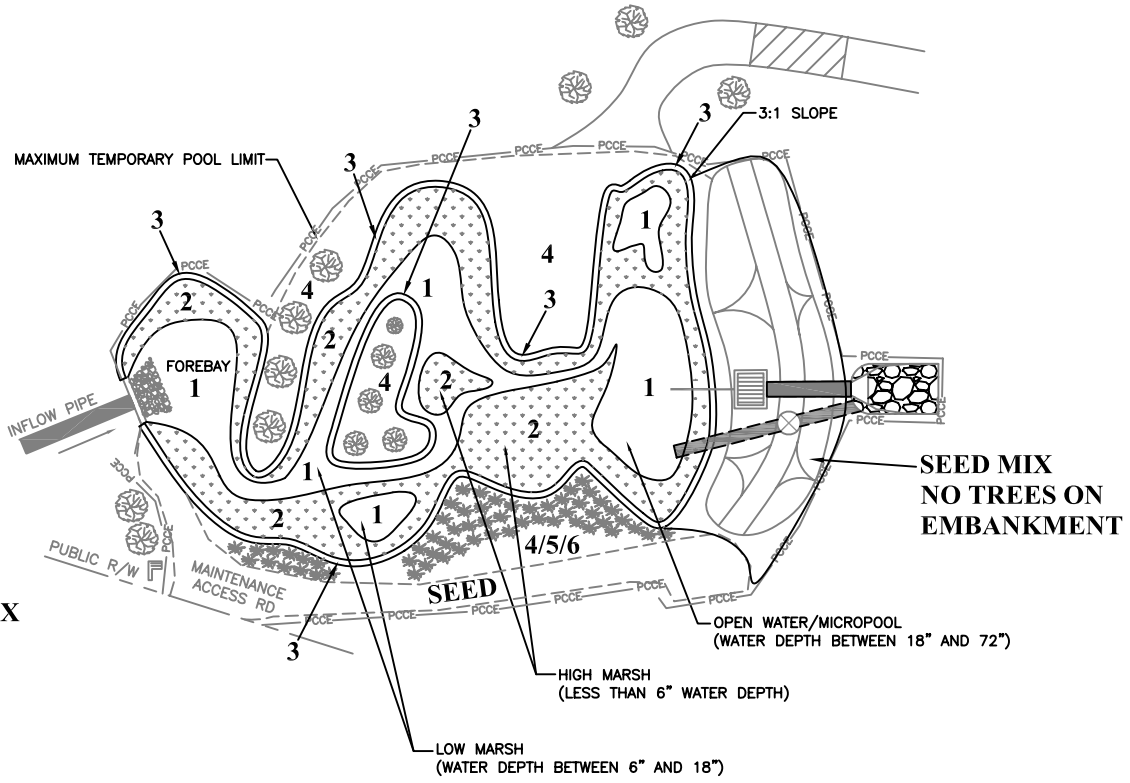
WETLAND DETAILS

BMP FIG. 4.3.4

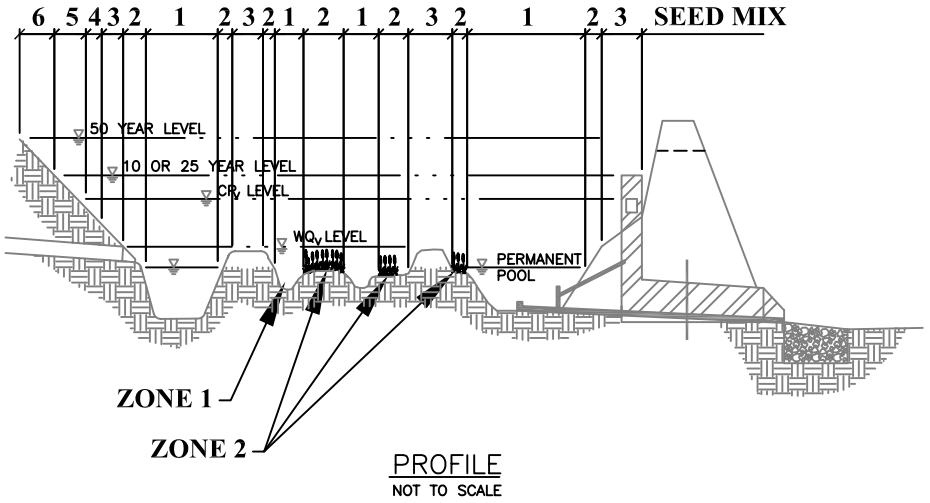
STD. NO.	REV.
21.13	2

NOTES

1. PLANTINGS ZONES AND PLANT SELECTION PER THE BMP DESIGN MANUAL, CHAPTER 6 & APPENDICES.
2. ALL PLANTINGS SHALL BE LOCAL NATIVE SPECIES.
3. IRRIGATION MAY BE PROVIDED FOR INITIAL ESTABLISHMENT AND DRY SEASONS.



PLAN VIEW
NOT TO SCALE



PROFILE
NOT TO SCALE

NOT TO SCALE

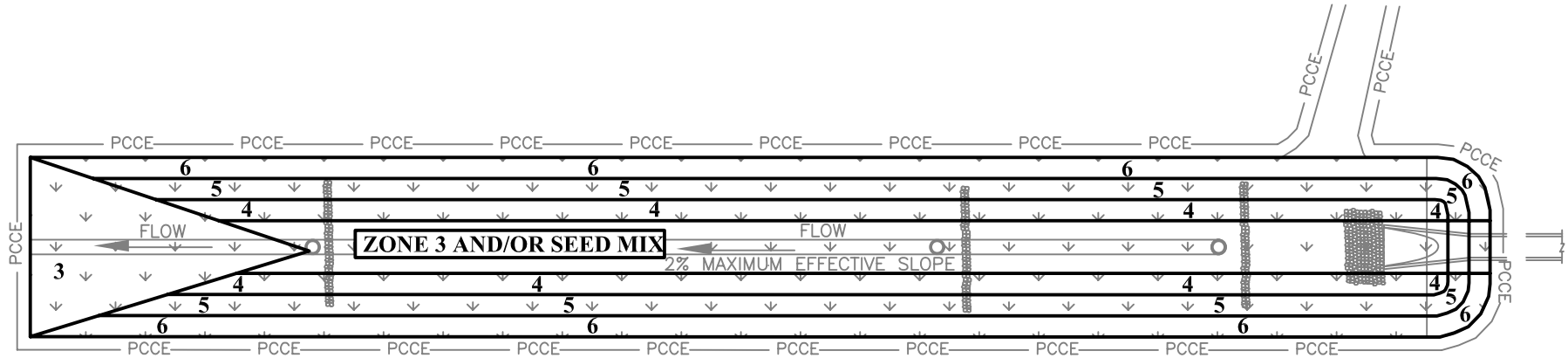
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

WETLAND PLANTING PLAN

BMP FIG. 4.3.5

STD. NO.	REV.
21.14	2



PLAN VIEW

NOTES

1. PLANTING ZONES AND PLANT SELECTION PER THE BMP DESIGN MANUAL, CHAPTER 6 & APPENDICES.
2. ALL PLANTINGS SHALL BE LOCAL NATIVE SPECIES.
3. IRRIGATION MAY BE PROVIDED FOR INITIAL ESTABLISHMENT AND DRY SEASONS.

NOT TO SCALE

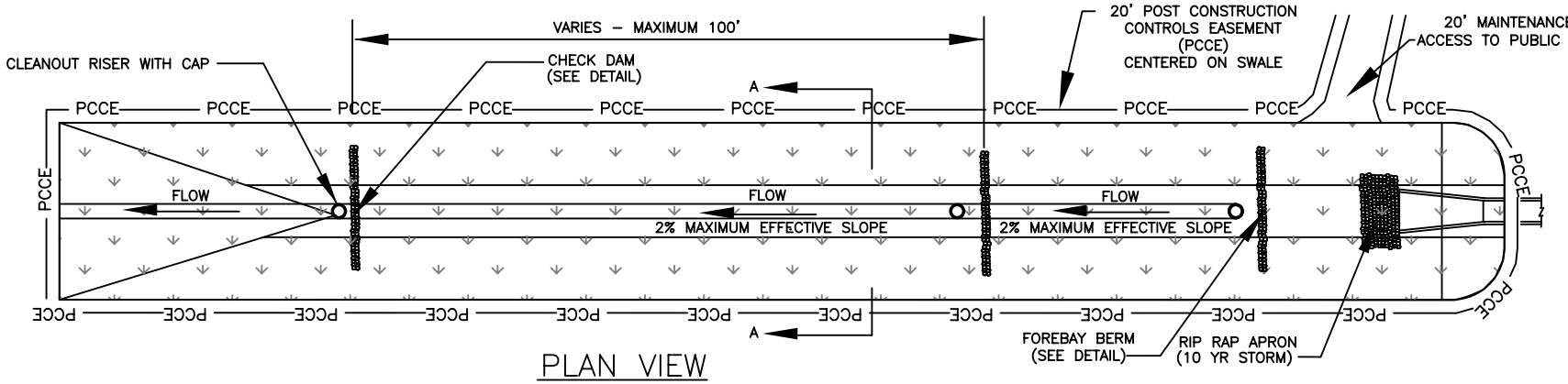
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

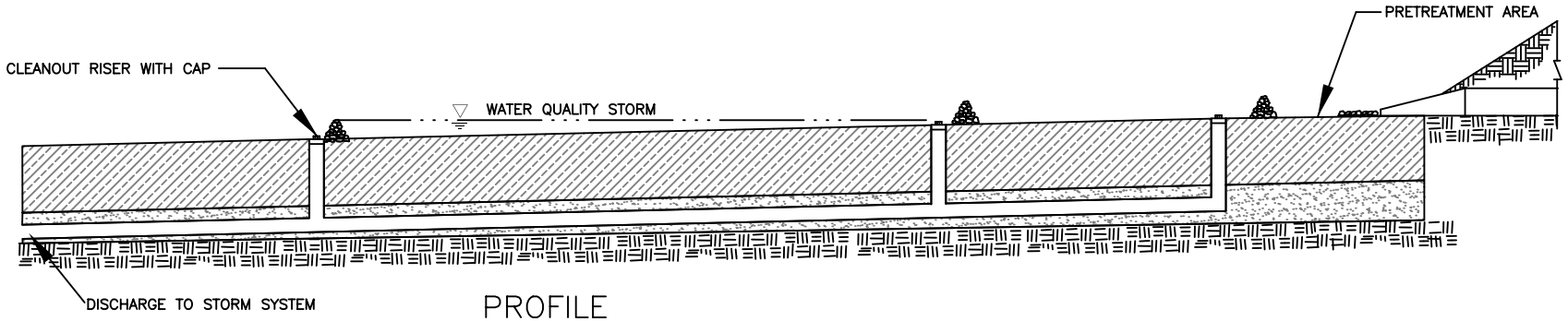
ENHANCED GRASS SWALE PLANTING PLAN

BMP FIG. 4.4.3

STD. NO.	REV.
21.15	2



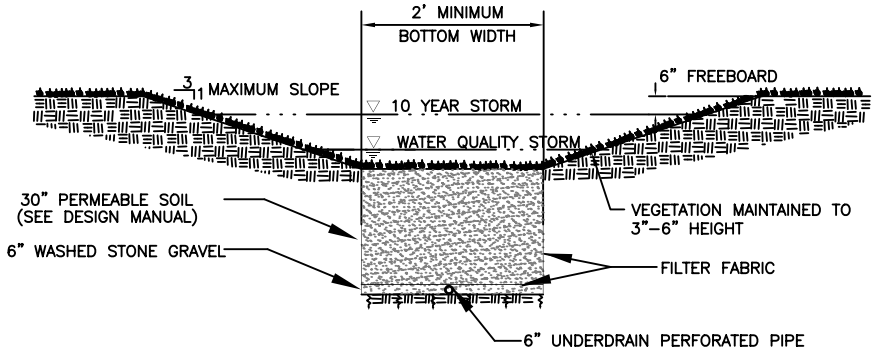
PLAN VIEW



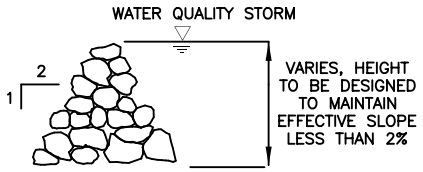
PROFILE

NOTES:

1. ALL ENHANCED GRASS SWALES SHALL HAVE A MINIMUM 20–FOOT ACCESS EASEMENT CONNECTING TO A DEDICATED PUBLIC RIGHT OF WAY. ACCESS ROAD SHALL HAVE MIN. 12' STABILIZED WIDTH, MAX. LONG. GRADE OF 15%, MAX. CROSS–SLOPE 5%.



SECTION A–A



CHECK DAM and FOREBAY BERM DETAIL

NOT TO SCALE

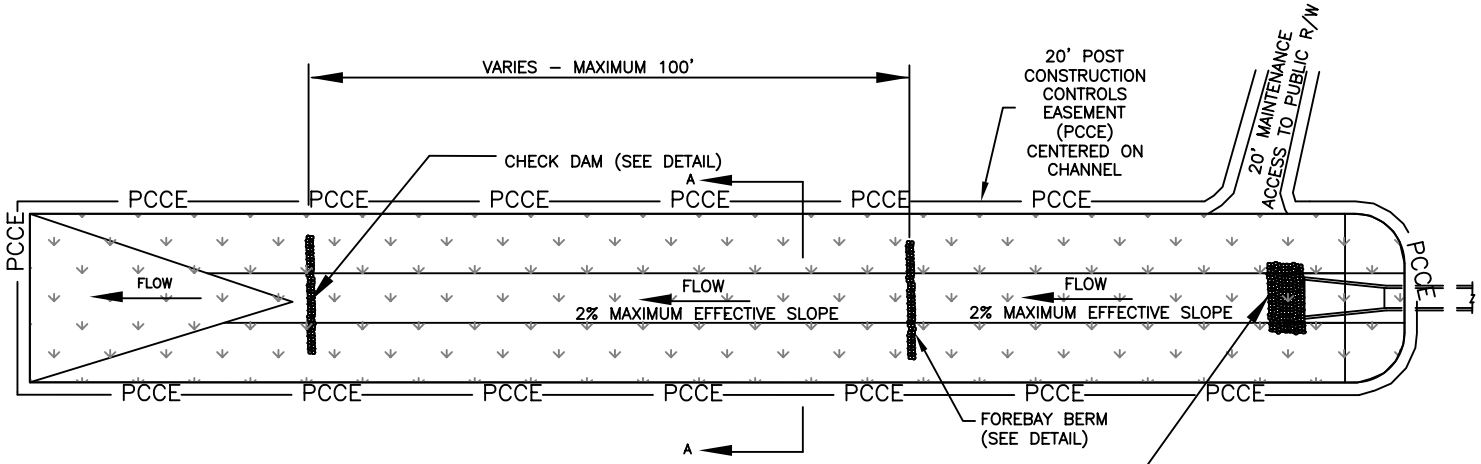
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

ENHANCED GRASS SWALE DETAILS

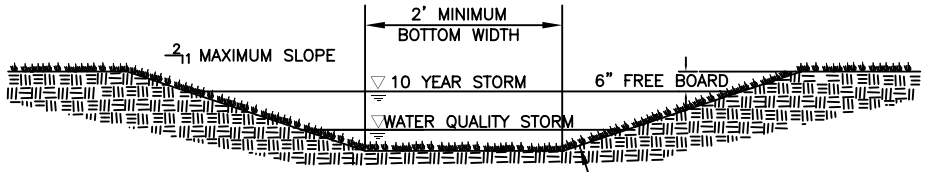
BMP FIG. 4.4.5

STD. NO.	REV.
21.16	5

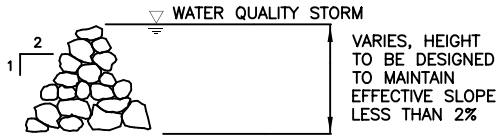


PLAN

PROFILE



SECTION A–A



CHECK DAM and FOREBAY BERM DETAIL

NOTES:

1. CONNECT GRASS SWALE EASEMENT TO A DEDICATED PUBLIC RIGHT OF WAY WITH A 20–FOOT ACCESS EASEMENT.

NOT TO SCALE

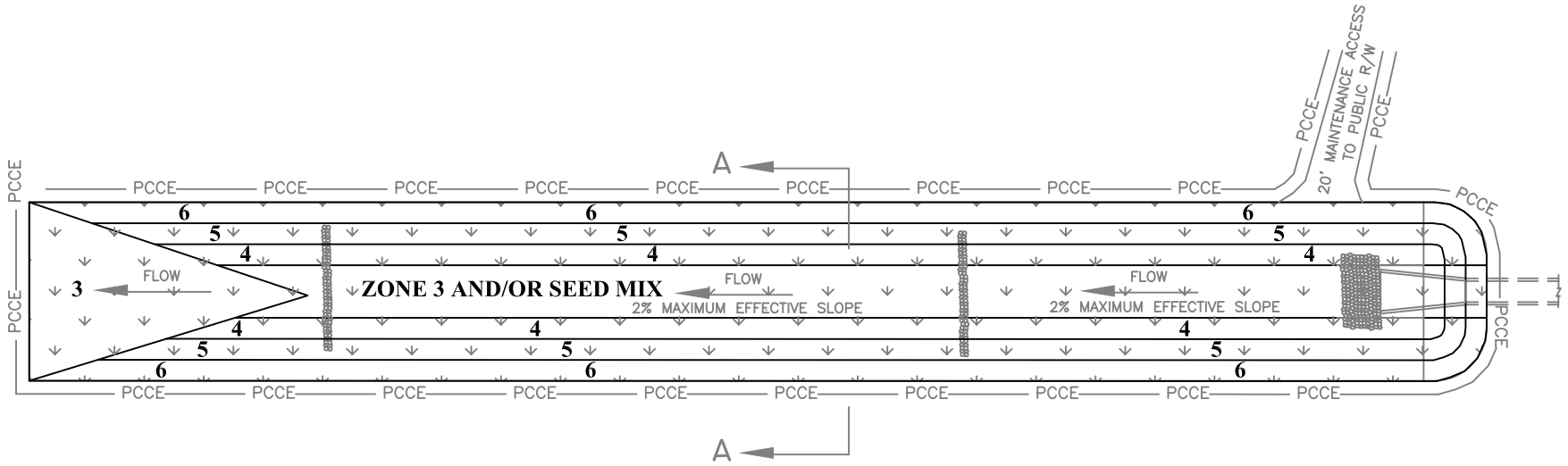
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

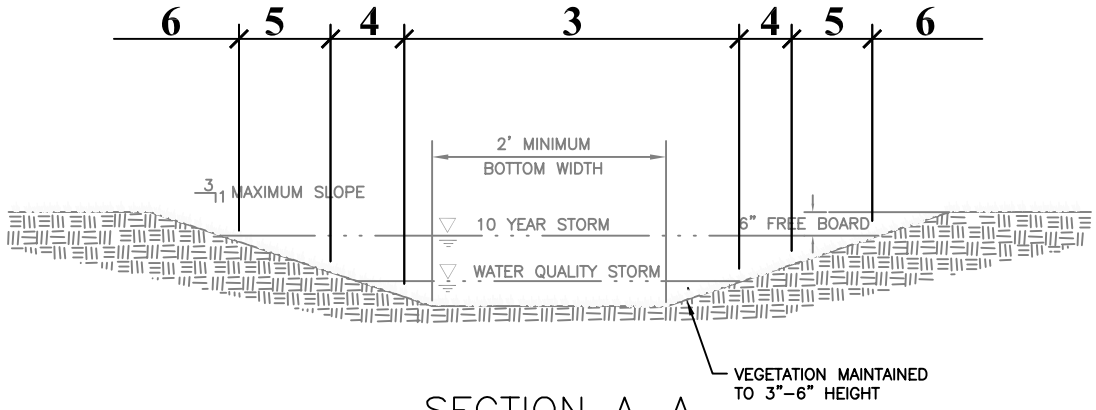
GRASS CHANNEL

BMP FIG. 4.5.2

STD. NO.	REV.
21.17	5



PLAN VIEW
NOT TO SCALE



SECTION A–A
NOT TO SCALE

NOT TO SCALE

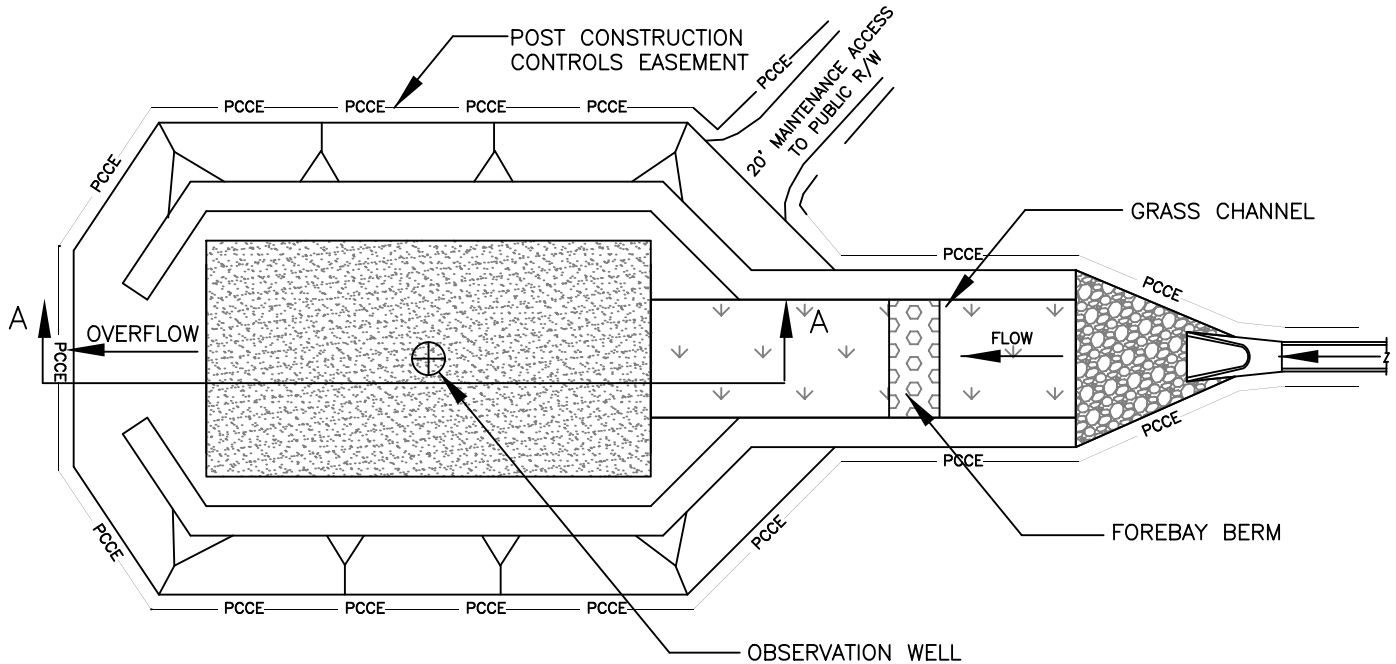
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

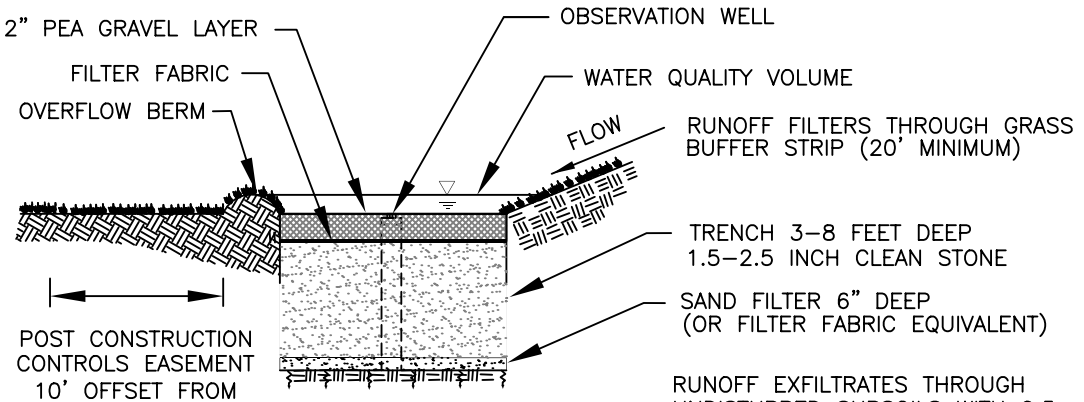
GRASS CHANNEL PLANTING PLAN

BMP FIG. 4.5.3

STD. NO.	REV.
21.18	2



PLAN
NOT TO SCALE



SECTION A–A
NOT TO SCALE

NOTES:

1. CONNECT INFILTRATION TRENCH EASEMENT TO A DEDICATED PUBLIC RIGHT OF WAY WITH A 20–FOOT ACCESS EASEMENT.
2. 5 ACRE MAXIMUM DRAINAGE AREA.

NOT TO SCALE

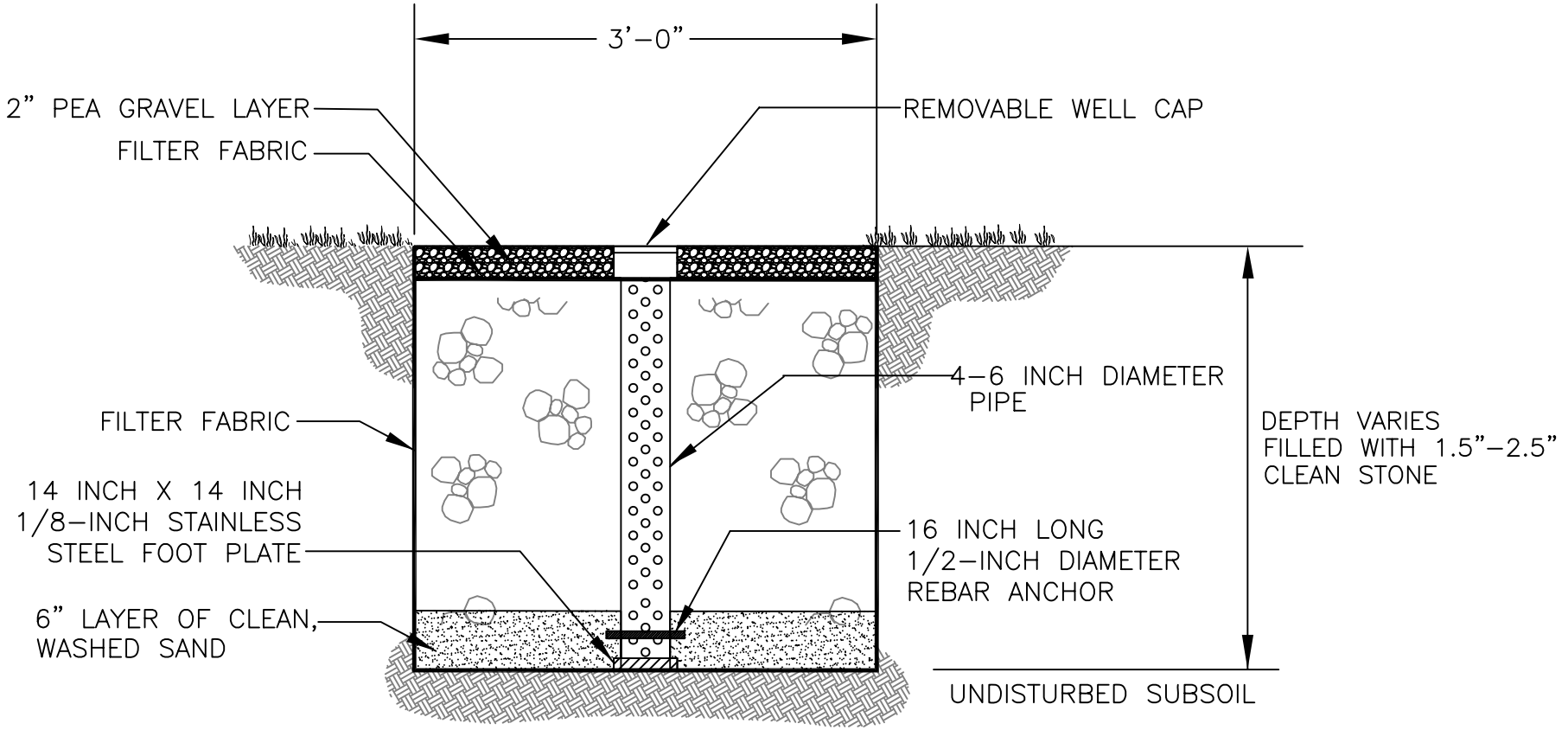
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

INFILTRATION TRENCH

BMP FIG. 4.6.2

STD. NO.	REV.
21.19	5



PERFORATION HOLES TO BE 1/2 INCH DIAMETER
AT 3 INCH MINIMUM VERTICAL SPACING

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

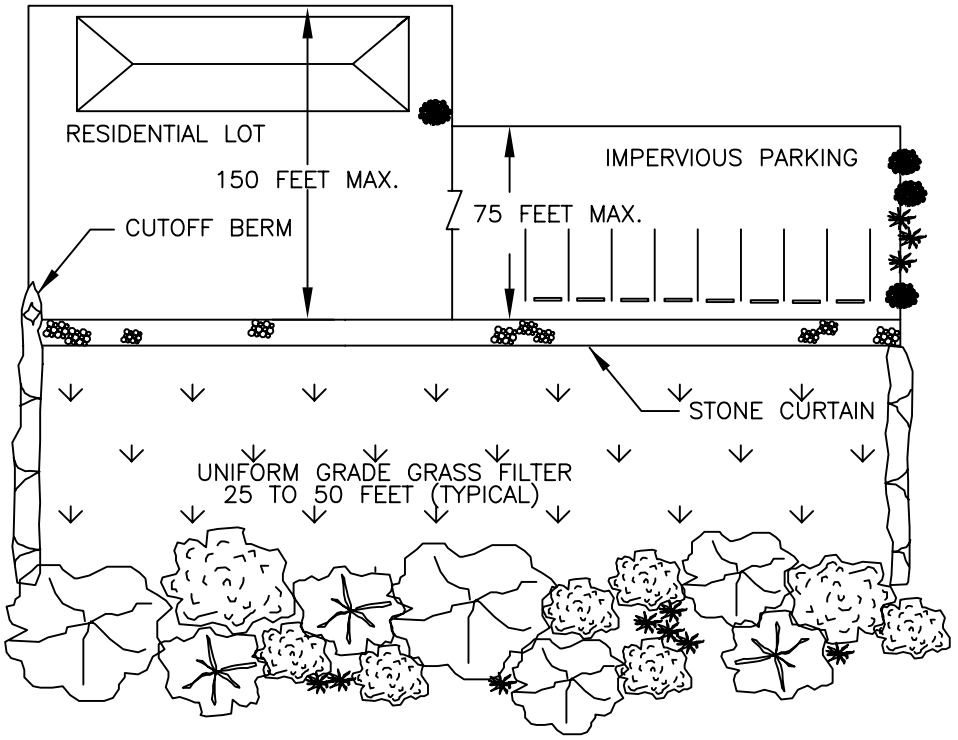
OBSERVATION WELL

BMP FIG. 4.6.3

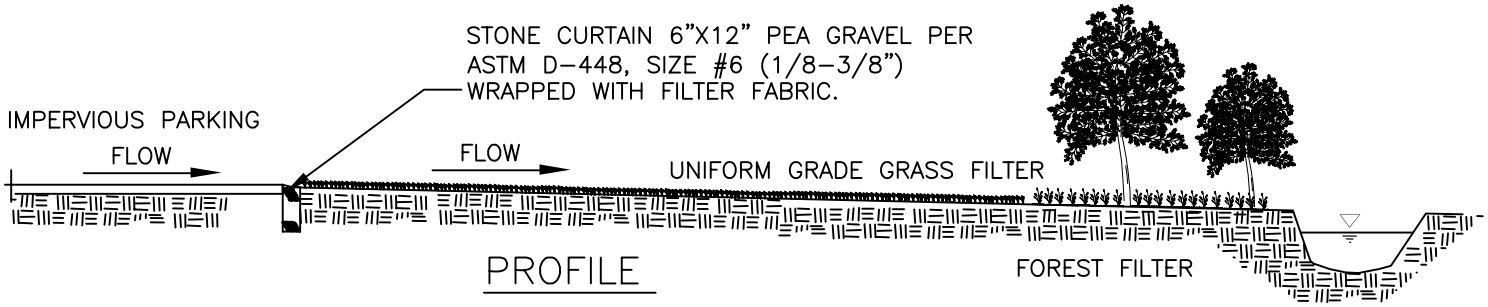
STD. NO.	REV.
21.20	2

NOTES:

1. MAXIMUM SLOPE 2% FOR FILTER STRIP AND 5% FOR BUFFER STRIP.
2. 5 ACRE MAXIMUM DRAINAGE AREA.
3. ALL FILTER/BUFFER STRIPS SHALL HAVE A MINIMUM 20 FOOT ACCESS EASEMENT CONNECTING TO A DEDICATED PUBLIC RIGHT OF WAY. ACCESS ROAD SHALL HAVE MIN. 12' STABILIZED WIDTH, MAX. LONG. GRADE OF 15%, MAX. CROSS-SLOPE 5%.



PLAN



PROFILE

NOT TO SCALE

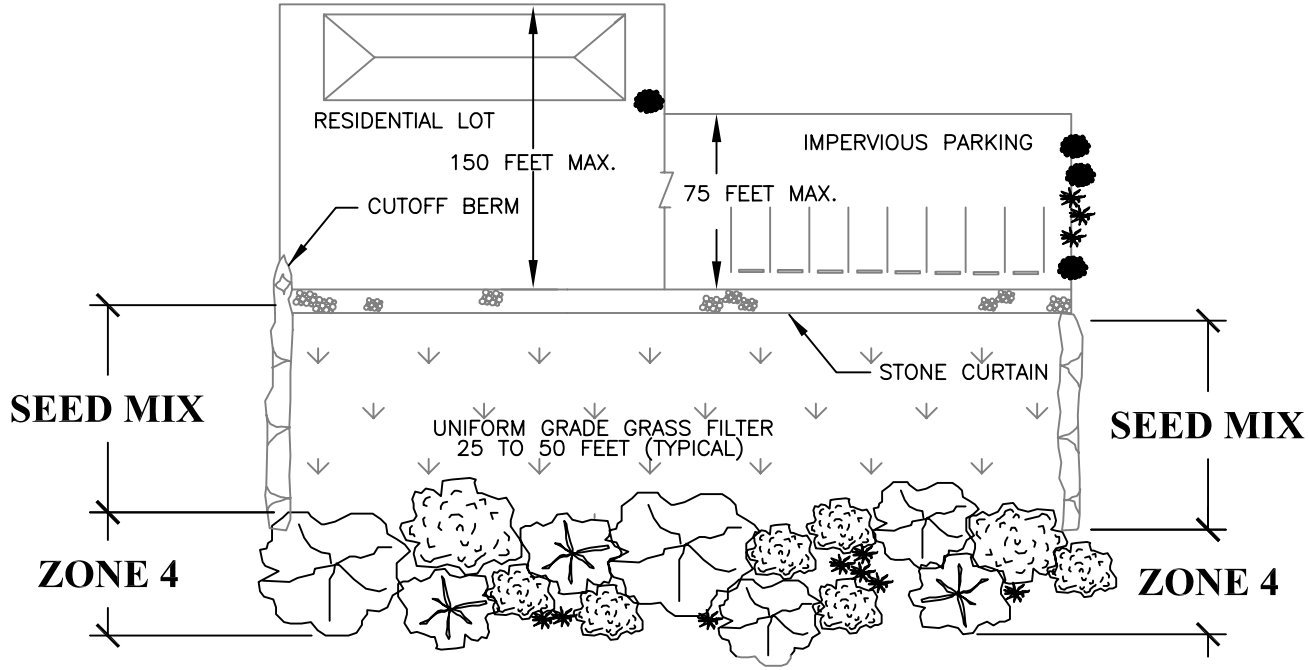
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

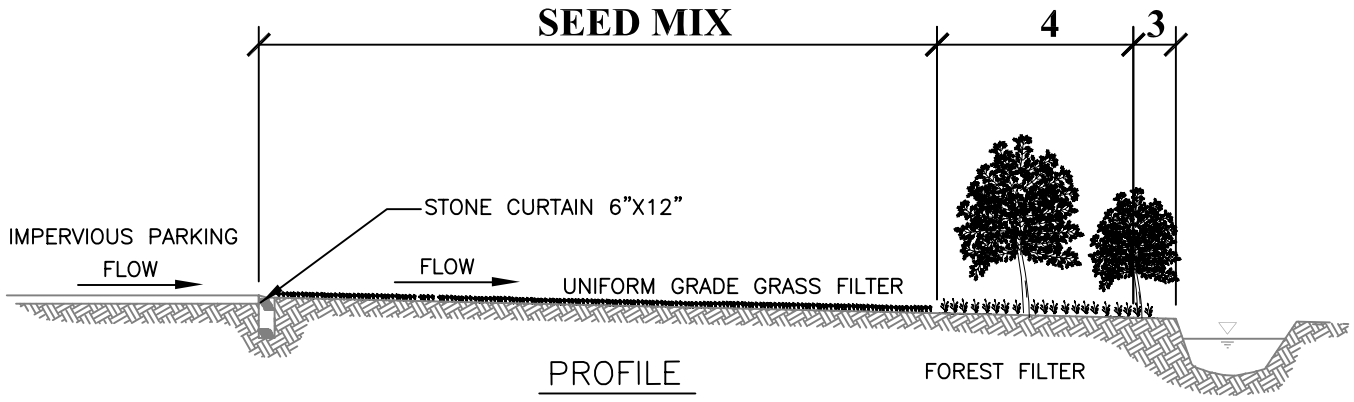
BUFFER STRIP

BMP FIG. 4.7.3

STD. NO.	REV.
21.21	2



PLAN
NOT TO SCALE



PROFILE
NOT TO SCALE

NOT TO SCALE

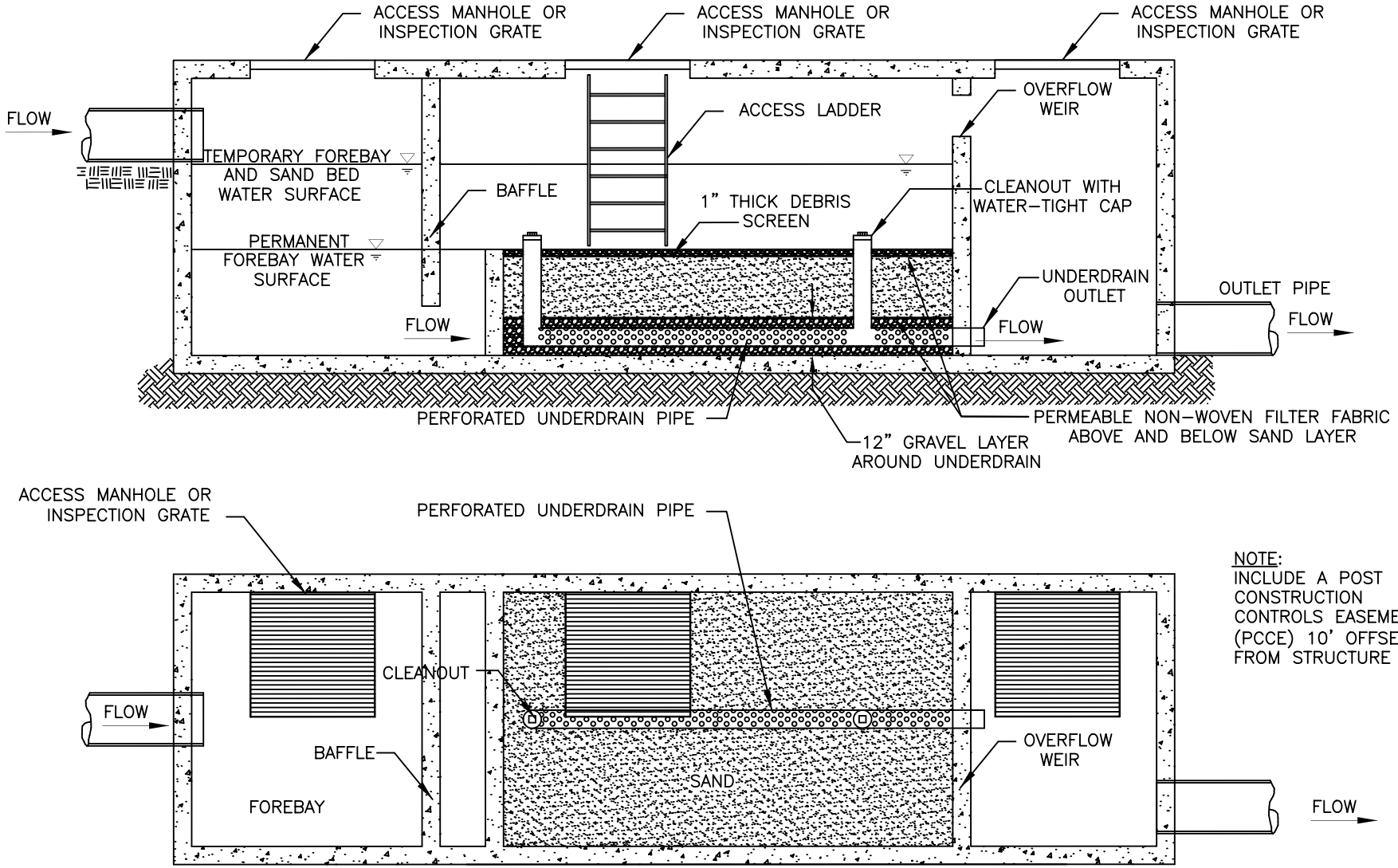
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

BUFFER STRIP PLANTING PLAN

BMP FIG. 4.7.4

STD. NO.	REV.
21.22	2



NOTE:
INCLUDE A POST CONSTRUCTION CONTROLS EASEMENT (PCCE) 10' OFFSET FROM STRUCTURE

CHARLOTTE.

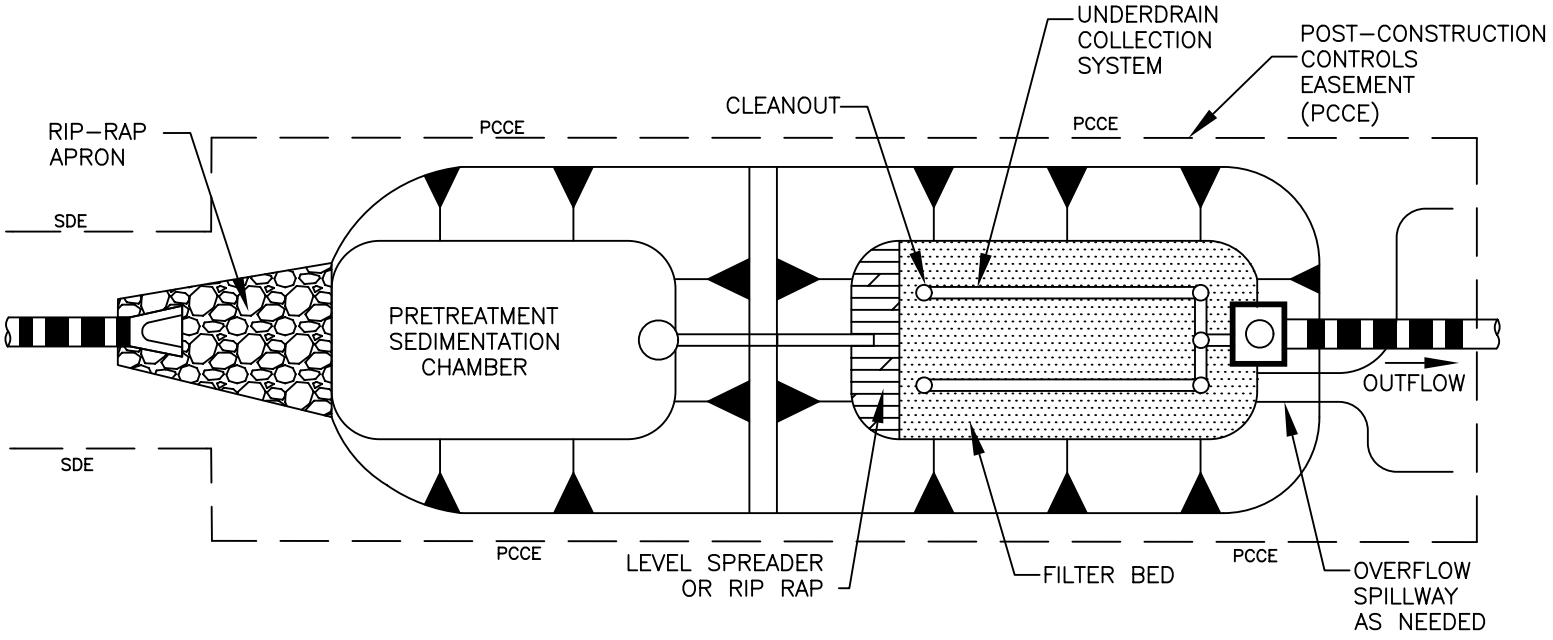
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

UNDERGROUND SAND FILTER

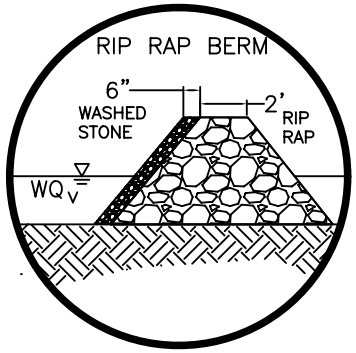
STD. NO.	REV.
21.23	5

NOTES:

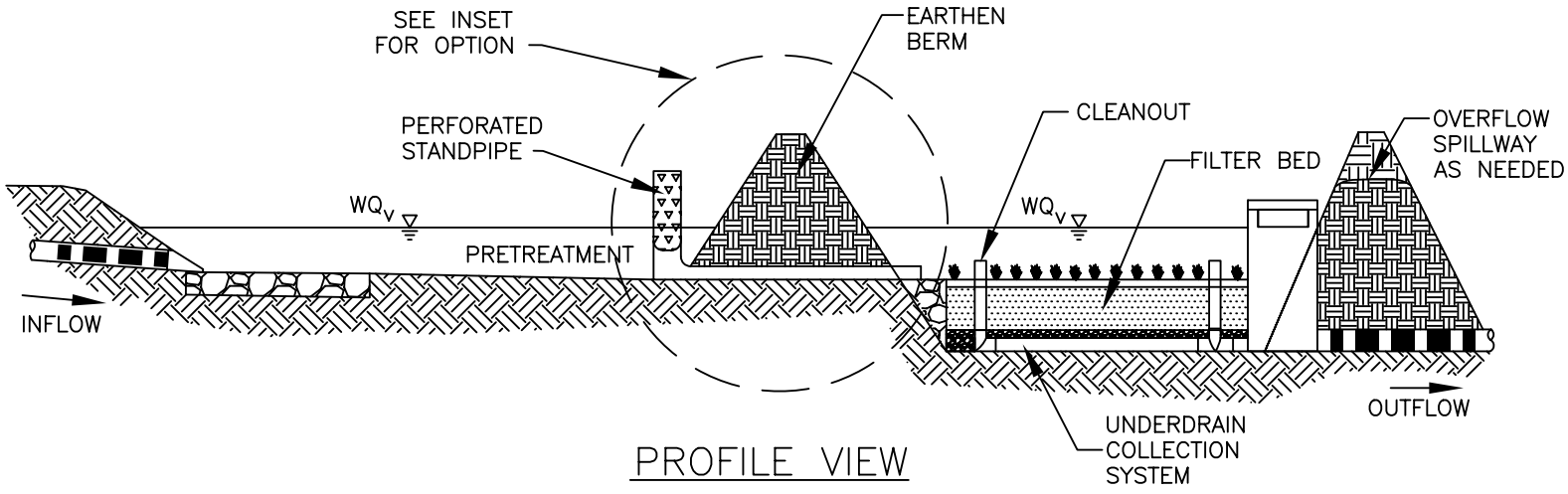
1. ALL SAND FILTERS SHALL HAVE A MINIMUM 20 FOOT ACCESS EASEMENT CONNECTING TO A DEDICATED PUBLIC RIGHT OF WAY. ACCESS ROAD SHALL HAVE MIN. 12' STABILIZED WIDTH, MAX. LONG. GRADE OF 15%, MAX. CROSS-SLOPE 5%. IN ADDITION, A 10-FOOT WIDE PERMANENT MAINTENANCE ACCESS EASEMENT MUST BE PROVIDED AROUND THE PERIMETER OF ALL BMPS TO ALLOW FOR ADEQUATE MAINTENANCE AND REPAIR.
2. ALL DRAINAGE AREAS TO A SAND FILTER FACILITY ARE TO BE STABILIZED PRIOR TO INSTALLATION OF SAND.
3. CLEAN OUTS IN THE UNDERDRAIN SYSTEM ARE TO BE PROVIDED EVERY 50' MINIMUM. CLEAN OUTS SHALL HAVE WATER TIGHT, VANDAL PROOF CAPS AND EXTEND 6" ABOVE THE SURFACE.



PLAN VIEW



INSET



PROFILE VIEW

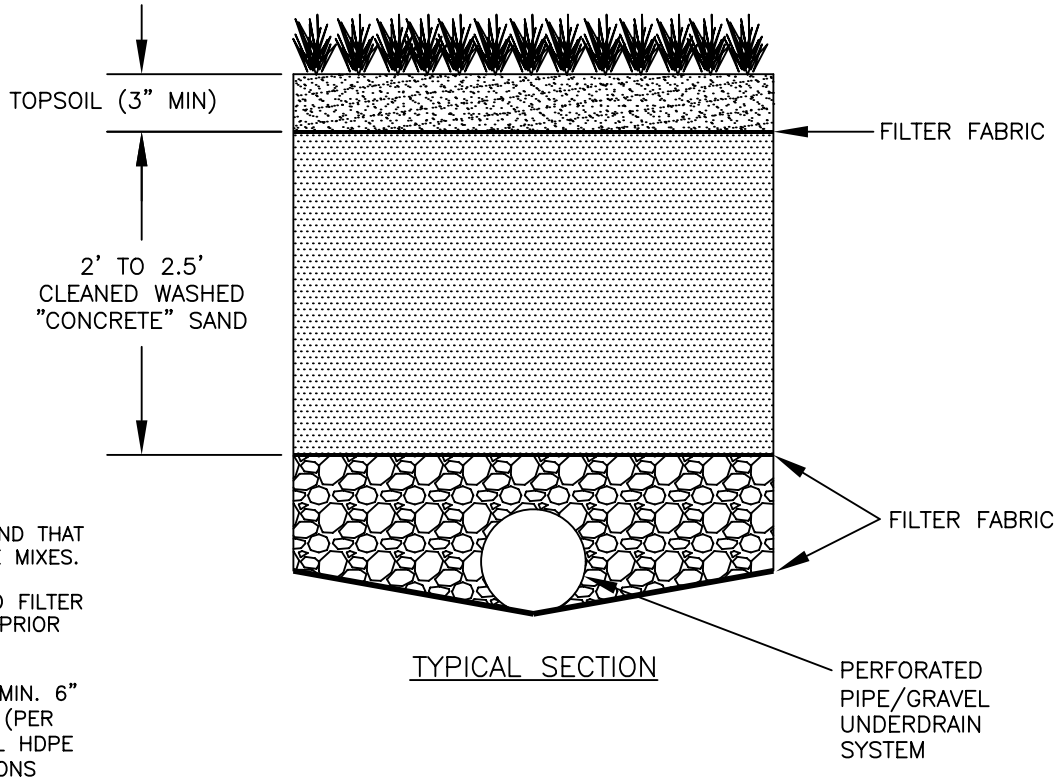
CHARLOTTE

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

SURFACE SAND FILTER

NOT TO SCALE

STD. NO.	REV.
21.24	10



TYPICAL SECTION

NOTES:

1. "CONCRETE" SAND REFERS TO SAND THAT IS COMMONLY USED IN CONCRETE MIXES.
2. ALL DRAINAGE AREAS TO A SAND FILTER FACILITY ARE TO BE STABILIZED PRIOR TO INSTALLATION OF SAND.
3. UNDERDRAIN PIPES SHOULD BE MIN. 6" PERFORATED SCHEDULE 40 PVC (PER AASHTO M278) OR DOUBLE WALL HDPE (PER AASHTO M252). PERFORATIONS SHOULD BE ⅜" SPACED 3" ON CENTER ALONG 4 LONGITUDINAL ROWS SPACED 90° APART.

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

SURFACE SAND FILTER SECTION

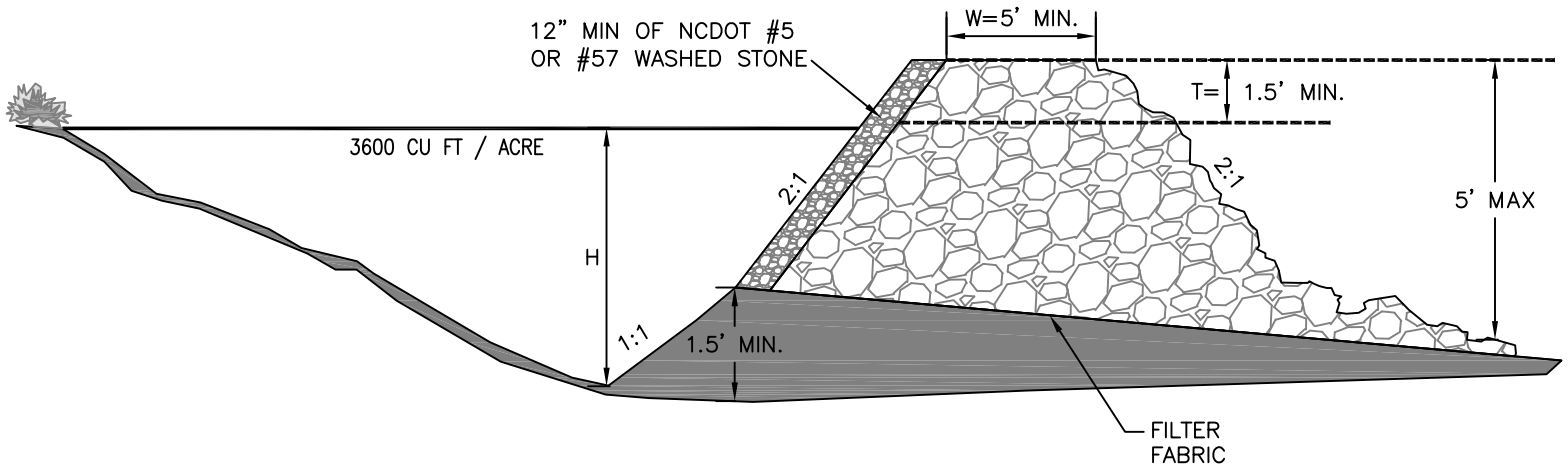
STD. NO.	REV.
21.25	10

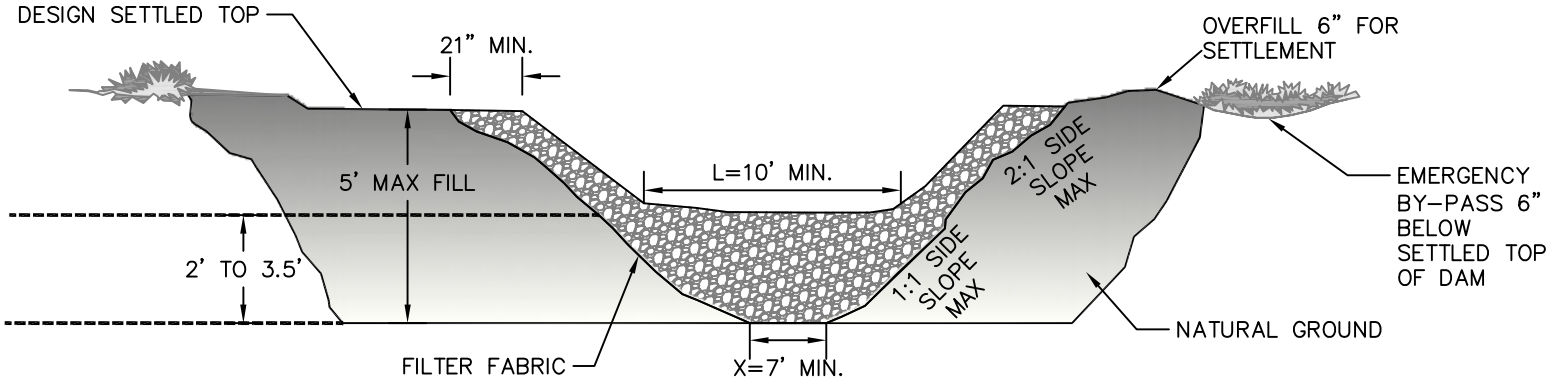
STD. & SPEC. #	TITLE	SPECIAL REQUIREMENTS & NOTES
6.11	PERMANENT SEEDING	—
6.17	ROLLED EROSION CONTROL PRODUCTS	—
6.51	HARDWARE CLOTH & GRAVEL INLET PROTECTION	—
6.60	TEMPORARY SEDIMENT TRAP	WEIR TOP WIDTH 10' MIN., BOTTOM 7' MIN.
6.61	SEDIMENT BASIN	FLASH BOARD RISER NOT PERMITTED
6.64	SKIMMER SEDIMENT BASIN	1ST BAFFLE: RIP RAP & WASHED STONE BERM 2ND BAFFLE: STANDARD BAFFLE 3RD BAFFLE: HARDWARE CLOTH SURROUNDING THE SKIMMER
NCDOT 1606.1	SPECIAL SEDIMENT CONTROL FENCE	—

THE STANDARDS & SPECIFICATIONS SHOWN ARE FROM THE "NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL" (NCESCPDM) PREPARED BY NC DEPT. OF ENVIRONMENT AND NATURAL RESOURCES (NCDENR); ALSO REFERENCE NCDOT "ROADWAY STANDARD DRAWINGS," LATEST EDITION.

THE CITY OF CHARLOTTE HAS ADOPTED THE SPECIFIC STANDARDS & SPECIFICATIONS SHOWN ON THIS DETAIL AS MANDATORY MINIMUM DESIGN STANDARDS & SPECIFICATIONS. "SPECIAL REQUIREMENTS & NOTES" ARE INCLUDED WHEN THE CITY OF CHARLOTTE'S CRITERIA ARE MORE STRINGENT THAN THE NCESCPDM OR NCDOT STANDARDS.

TEMPORARY SEDIMENT TRAP DESIGN CRITERIA	
DRAINAGE AREA (ACRES)	< 1 AC.
MIN. LENGTH TO WIDTH RATIO	2:1
MIN. VOLUME REQUIRED	3600 (CU. FT. PER AC. DISTURBED)
SURFACE AREA REQUIRED	435 (SQ. FT. PER CFS Q10)





NOTE:

PLEASE REFER TO NCESCPDM SECTION #6.60 FOR ADDITIONAL DESIGN SPECIFICATIONS REGARDING TEMPORARY SEDIMENT TRAPS.

NOT TO SCALE

DATA BLOCK

TRAP NO.	DRAINAGE AREA (ACRES)	DENUDED AREA (ACRES)	Q_{10}	TRAP VOLUME REQUIRED (CUBIC FT.)	TRAP VOLUME PROVIDED (CUBIC FT.)	TRAP SURFACE AREA REQUIRED (SQ FT.)	TRAP SURFACE AREA PROVIDED (SQ FT.)	CLEANOUT DEPTH (FT.) H/2	H (FEET)	L (FEET)	T (FEET)	W (FEET)	X (FEET)

CHARLOTTE.

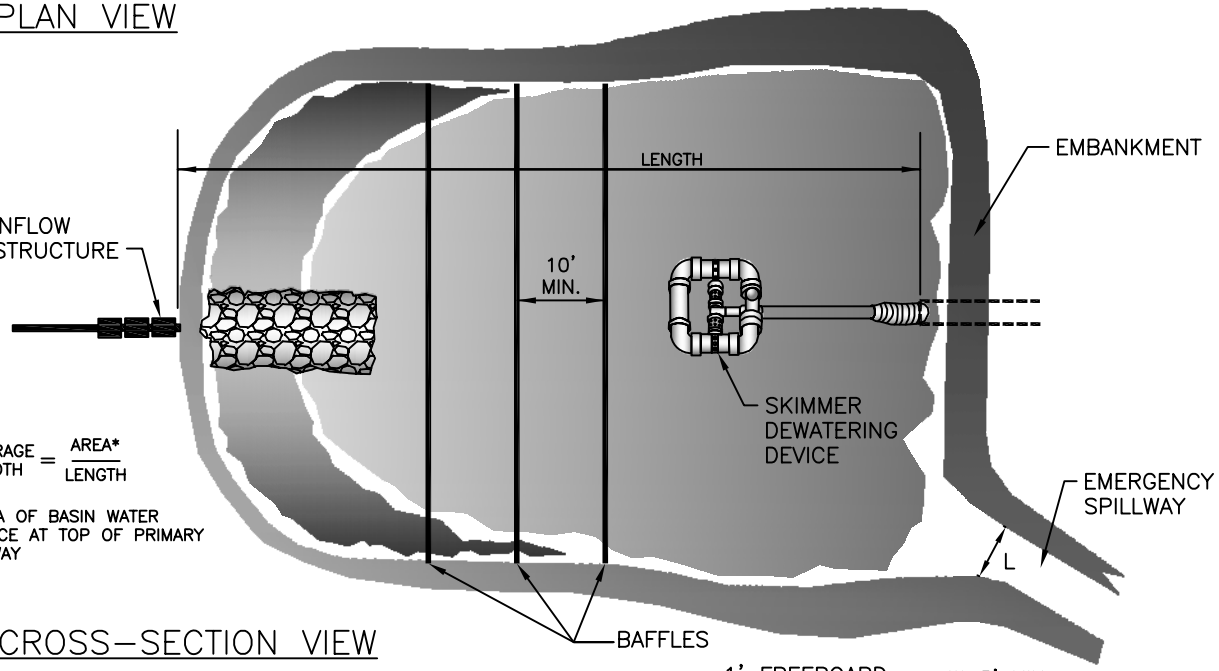
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TEMPORARY SEDIMENT TRAP

STD. NO.	REV.
30.01	8

SKIMMER SEDIMENT BASIN DESIGN CRITERIA	
DRAINAGE AREA (ACRES)	< 10 AC.
MIN. LENGTH TO WIDTH RATIO	2:1
MAX. LENGTH TO WIDTH RATIO	6:1
MIN. VOLUME REQUIRED	1800 (CU. FT. PER AC. DISTURBED)
SURFACE AREA REQUIRED	325 (SQ. FT. PER CFS Q10)

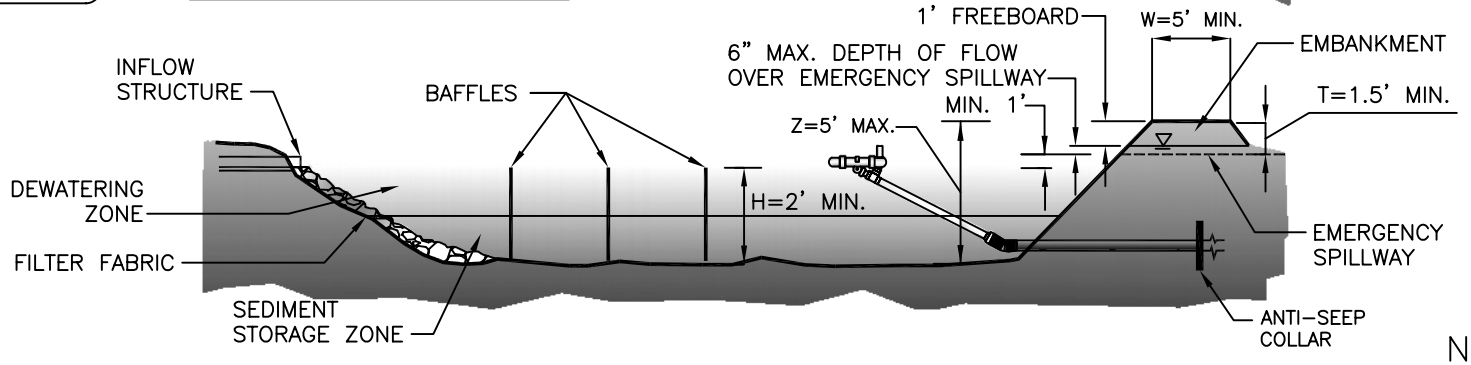
PLAN VIEW



$$\text{AVERAGE WIDTH} = \frac{\text{AREA*}}{\text{LENGTH}}$$

* AREA OF BASIN WATER SURFACE AT TOP OF PRIMARY SPILLWAY

CROSS–SECTION VIEW



NOTES:

1. REFER TO NCESCPDM SECTION #6.64 FOR ADDITIONAL DESIGN SPECIFICATIONS REGARDING SKIMMER SEDIMENT BASINS.
2. REFER TO STD. #30.19 FOR BAFFLE SPACING AND INSTALLATION.

NOT TO SCALE

DATA BLOCK

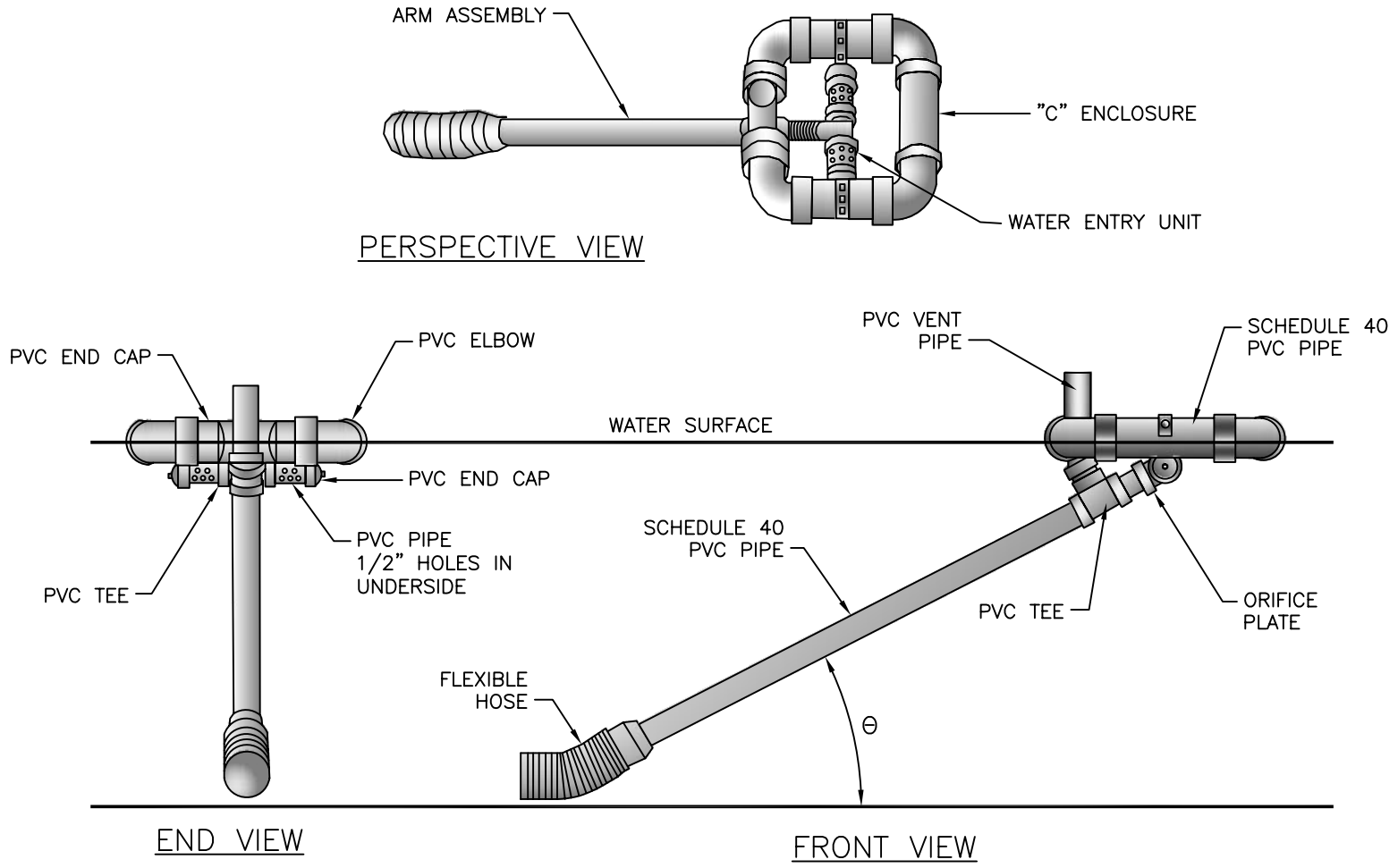
BASIN	DRAINAGE AREA (ACRES)	DENUDED AREA (ACRES)	Q_{10}	BASIN VOLUME		BASIN SURFACE AREA		CLEANOUT DEPTH (FT.) H/2	H (FEET)	Z (FEET)	L (FEET)	T (FEET)	W (FEET)	SKIMMER PIPE DIAMETER	SKIMMER ORIFICE DIAMETER
				REQUIRED (CUBIC FT.)	PROVIDED (CUBIC FT.)	REQUIRED (SQ FT.)	PROVIDED (SQ FT.)								

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

SKIMMER SEDIMENT BASIN

STD. NO.	REV.
30.02A	3



SCHEMATIC OF SKIMMER TAKEN FROM PENNSYLVANIA EROSION AND SEDIMENT POLLUTION CONTROL MANUAL, MARCH 2000.

NOT TO SCALE

CHARLOTTE.

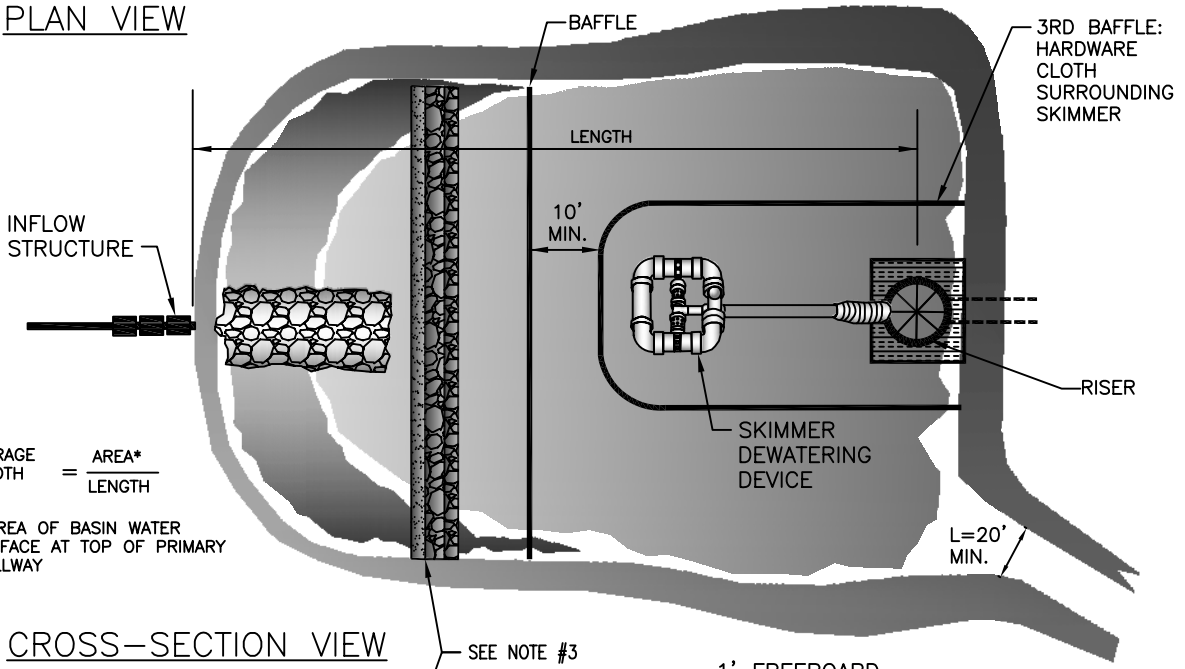
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

SKIMMER

STD. NO.	REV.
30.02B	1

SEDIMENT BASIN DESIGN CRITERIA	
DRAINAGE AREA (ACRES)	>10 AC. <100 AC.
MIN. LENGTH TO WIDTH RATIO	2:1
MAX. LENGTH TO WIDTH RATIO	6:1
MIN. VOLUME REQUIRED	1800 (CU. FT. PER AC. DISTURBED)
SURFACE AREA REQUIRED	435 (SQ. FT. PER CFS Q10)

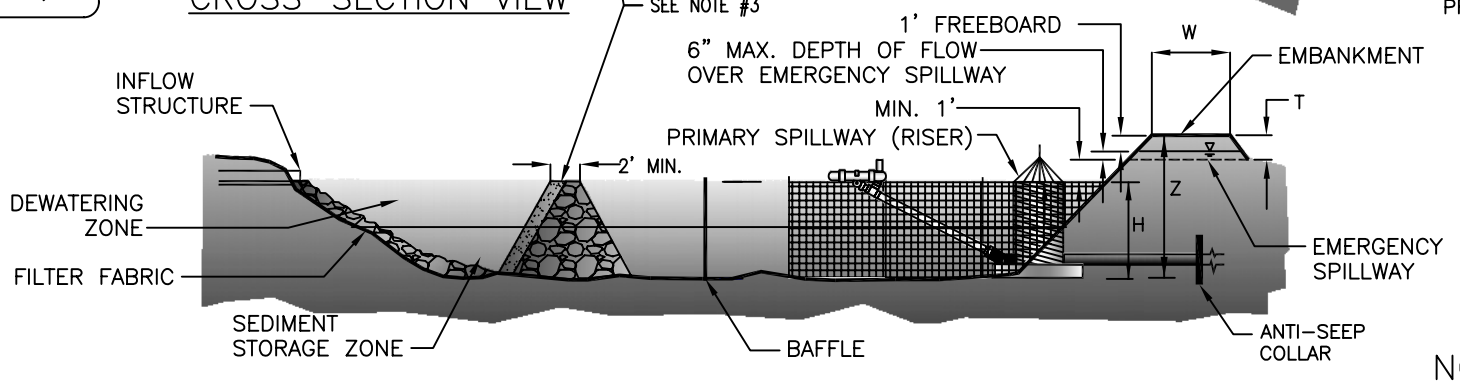
PLAN VIEW



$$\text{AVERAGE WIDTH} = \frac{\text{AREA*}}{\text{LENGTH}}$$

* AREA OF BASIN WATER SURFACE AT TOP OF PRIMARY SPILLWAY

CROSS-SECTION VIEW



NOTES:

1. REFER TO NCESCPDM SECTION #6.61 FOR ADDITIONAL DESIGN SPECIFICATIONS REGARDING SEDIMENT BASINS.
2. REFER TO STD. #30.19 FOR BAFFLE SPACING AND INSTALLATION.
3. FIRST BAFFLE IS TO BE CONSTRUCTED OF RIP-RAP AND #5 WASHED STONE, WITH A MIN. HEIGHT OF 3' AND MIN. TOPWIDTH OF 2'.
4. FLASHBOARD RISER NOT PERMITTED FOR USE IN THE CITY OF CHARLOTTE
5. DIMENSION "H" IS FROM BOTTOM OF BASIN TO THE CREST OF THE PRIMARY SPILLWAY.

NOT TO SCALE

DATA BLOCK

BASIN	DRAINAGE AREA (ACRES)	DENUDED AREA (ACRES)	Q_{10}	BASIN VOLUME		BASIN SURFACE AREA		CLEANOUT DEPTH (FT.) H/2	H (FEET)	Z (FEET)	L (FEET)	T (FEET)	W (FEET)	SKIMMER PIPE DIAMETER	SKIMMER ORIFICE DIAMETER
				REQUIRED (CUBIC FT.)	PROVIDED (CUBIC FT.)	REQUIRED (SQ FT.)	PROVIDED (SQ FT.)								

CHARLOTTE.

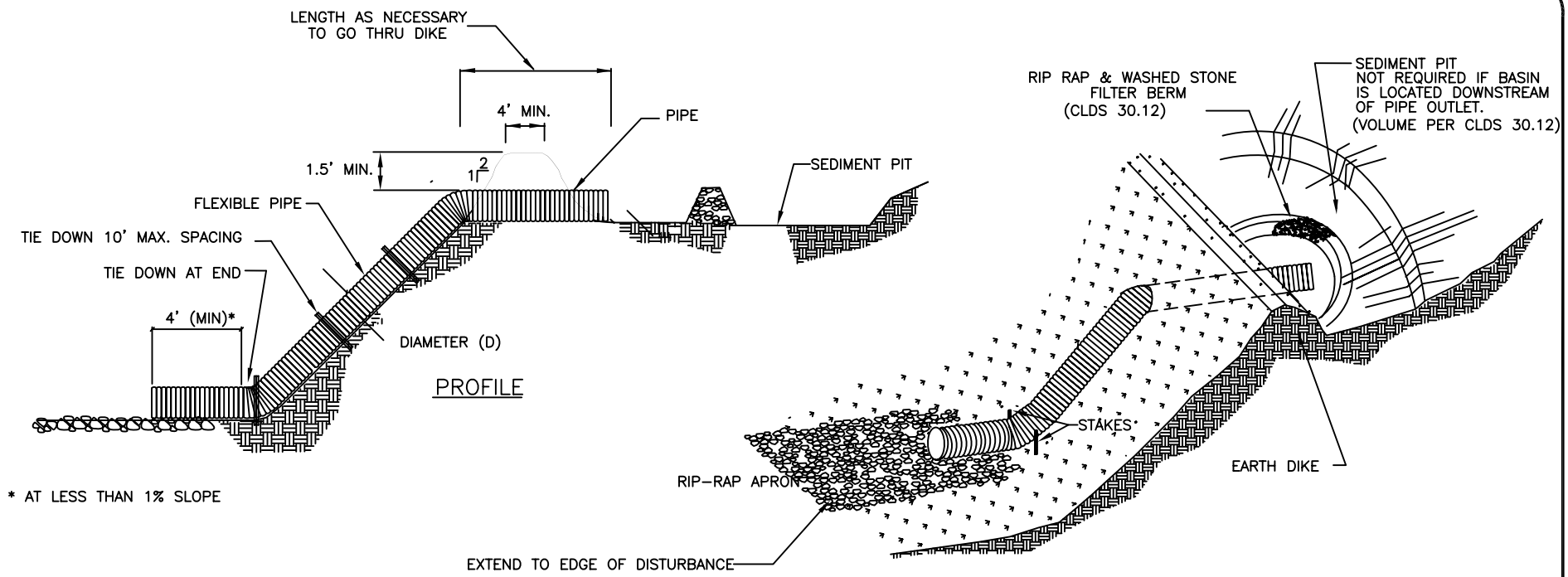
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

SEDIMENT BASIN

STD. NO.	REV.
30.03A	3

GENERAL NOTES:

1. AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED, AND STRIPPED OF ANY VEGETATION AND ROOT MATERIAL. THE BASIN AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION AS WELL AS OVERSIZED STONES, ROCKS, ORGANIC MATERIAL OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE BEING CONSTRUCTED. SPILLWAYS SHOULD NOT BE CONSTRUCTED THROUGH FILL SECTIONS. ALL SPILLWAYS SHOULD BE LINED AND/OR RIPRAPPED.
3. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO DEPTH SHOWN ON STANDARD. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA IN SUCH A MANNER THAT IT WILL NOT ERODE.
4. THE TRAP SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NECESSARY.
5. CONSTRUCTION OPERATION SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION IS MINIMIZED.
6. ALL CUT AND FILL SLOPES SHALL BE 2:1 OR FLATTER, UNLESS CERTIFIED BY REGISTERED GEOTECHICAL ENGINEER.
7. SEDIMENT BASIN EMBANKMENTS SHOULD BE PROVIDED WITH EROSION CONTROL AND STABILIZATION.
8. STORAGE AREA MAY BE CONSTRUCTED IN ANY SHAPE PROVIDED THE MINIMUM STORAGE VOLUME REQUIREMENT IS MET. THE BASIN SHOULD ALSO BE ORIENTED SUCH THAT THE FILTER AND THE MAIN FLOW OF WATER AND SEDIMENT ARE ON OPPOSITE ENDS ON THE LONGER BASIN DIMENSIONS.
9. THE LENGTH OF THE STONE OUTLET (SPILLWAY) IS TO BE BASED ON A 10 YEAR STORM.
10. WHENEVER TOPOGRAPHY ALLOWS, THE BASIN LENGTH SHOULD BE TWICE (2X) THE BASIN WIDTH, TO ALLOW FOR SETTLING. BAFFLES SHALL BE INSTALLED IN ALL BASINS.
11. CLEANOUT STAKES SHALL BE PLACED IN ALL SEDIMENT BASINS AT THE LOW POINT IN THE BASIN. THE STAKES SHALL BE MARKED SHOWING THE HALF FULL, CLEANOUT POINT, OF THE BASIN.
12. SAFETY FENCING 3' HIGH SHOULD BE PLACED AROUND ALL SEDIMENT BASINS.
13. FOR DESIGN OF SEDIMENT BASINS, REFER TO THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.
14. FOR SLOPES GREATER THAN 10' IN LENGTH AND PROTECTED BY SILT FENCE AT THE TOE OF THE SLOPE, SLOPE TERRACING WILL BE REQUIRED.
15. THE BERM ON SEDIMENT BASINS SHALL BE SEEDED ONCE FINAL GRADE HAS BEEN REACHED. THE SILT FENCE MAY BE REMOVED IF PERMISSION HAS BEEN GRANTED BY THE CITY LAND DEVELOPMENT INSPECTOR AFTER THE GRASS HAS GERMINATED AND STABLE GROUND HAS BEEN ESTABLISHED.
16. WASHED STONE AND WIRE BACKING SHALL BE USED WITH SILT FENCE WHENEVER SILT FENCE IS PLACE AT THE TOE OF A SLOPE >10' VERTICAL OR ALONG ANY CHANNEL OR WATER COURSE WHERE 50' OF BUFFER IS NOT PROVIDED.



CONSTRUCTION SPECIFICATIONS:

1. THE TOP OF THE EARTH DIKE OVER THE INLET PIPE AND THOSE DIKES CARRYING WATER TO THE PIPE SHALL BE AT LEAST 1.5 FEET HIGHER AT ALL POINTS THAN THE TOP OF THE INLET PIPE.
2. THE PIPE SHALL BE FLEXIBLE WITH WATER TIGHT CONNECTING BANDS. FLEXIBLE PIPE SHOULD BE STAKED ON EITHER SIDE.
3. A RIP RAP APRON SHALL BE PROVIDED AT THE OUTLET, IF EMPTYING INTO A DISTURBED AREA.
4. THE SOIL AROUND AND UNDER THE INLET PIPE AND ENTRANCE SECTION SHALL BE HAND TAMPED IN 4" LIFTS TO THE TOP OF THE EARTH DIKE.
5. FOLLOW-UP INSPECTION AND ANY NEEDED MAINTENANCE SHALL BE PERFORMED AFTER EACH STORM BY THE FINANCIALLY RESPONSIBLE PARTY OR HIS AGENT.
6. OUTLET PIPE SHOULD BE TAKEN OVER OR THROUGH ANY SILT FENCE, TAKING CARE NOT TO VOID THE EFFECTIVENESS OF THE SILT FENCE.

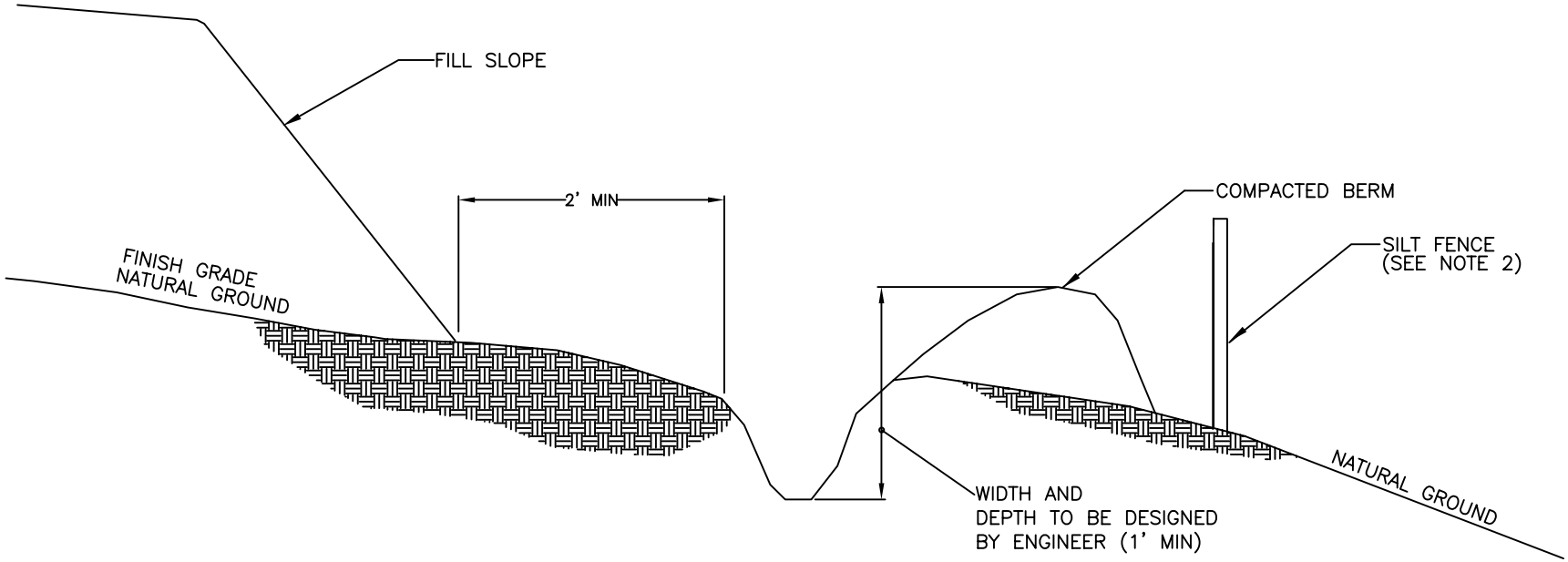
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

FLEXIBLE PIPE SLOPE DRAIN

STD. NO.	REV.
30.04	



NOTE:

1. DITCH SHOULD HAVE LONGITUDINAL SLOPE OF 1%.
2. SILT FENCE MAY BE REQUIRED BEHIND BERM

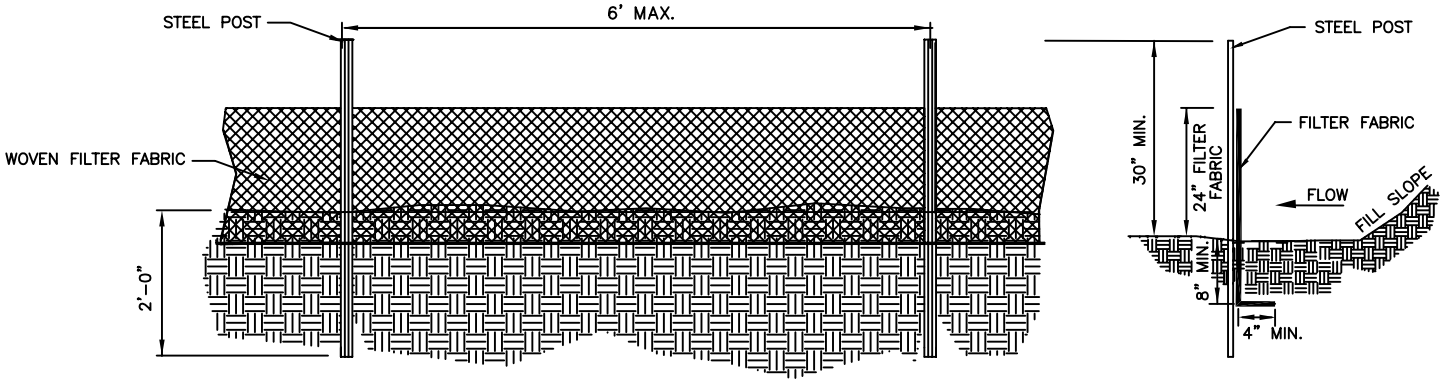
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TEMPORARY SILT DITCH

STD. NO.	REV.
30.05	



GENERAL NOTES:

1. WOVEN FILTER FABRIC BE USED WHERE SILT FENCE IS TO REMAIN FOR A PERIOD OF MORE THAN 30 DAYS.
2. STEEL POSTS SHALL BE 5'-0" IN HEIGHT AND BE OF THE SELF-FASTENER ANGLE STEEL TYPE.
3. TURN SILT FENCE UP SLOPE AT ENDS.
4. ORANGE SAFETY FENCE IS REQUIRED AT BACK OF SILT FENCE WHEN GRADING IS ADJACENT TO SWIM BUFFERS, STREAMS OR WETLANDS (REFER TO SWIM BUFFER GUIDELINES). THE COLOR ORANGE IS RESERVED FOR VISUAL IDENTIFICATION OF ENVIRONMENTALLY SENSITIVE AREAS.
5. DRAINAGE AREA CAN NOT BE GREATER THAN 1/4 ACRE PER 100 FT OF FENCE.
6. SLOPE LENGTHS CAN NOT EXCEED CRITERIA SHOWN IN TABLE 6.62A NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.
7. DO NOT INSTALL SEDIMENT FENCE ACROSS STREAMS, DITCHES, WATERWAYS OR OTHER AREAS OF CONCENTRATED FLOW.

MAINTENANCE NOTES:

1. FILTER BARRIERS SHALL BE INSPECTED BY THE FINANCIALLY RESPONSIBLE PARTY OR HIS AGENT IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS NEEDED SHALL BE MADE IMMEDIATELY.
2. SHOULD THE FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL IS NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN DEPOSITS REACH APPROX. HALF THE HEIGHT OF THE BARRIER. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE IS REMOVED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.

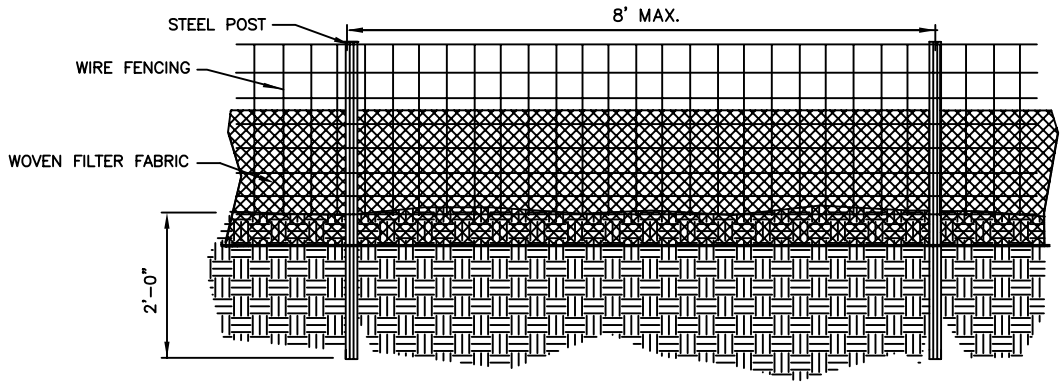
NOT TO SCALE

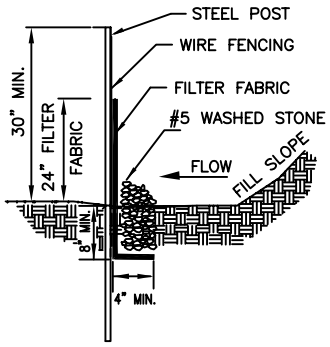
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TEMPORARY SILT FENCE

STD. NO.	REV.
30.06A	4





GENERAL NOTES:

1. WIRE FENCING SHALL BE A MINIMUM OF 32" IN WIDTH AND SHALL HAVE A MINIMUM OF 6 LINE WIRES WITH 12" STAY SPACING.
2. WOVEN FILTER FABRIC BE USED WHERE SILT FENCE IS TO REMAIN FOR A PERIOD OF MORE THAN 30 DAYS.
3. STEEL POSTS SHALL BE 5'-0" IN HEIGHT AND BE OF THE SELF-FASTENER ANGLE STEEL TYPE.
4. WIRE FENCING SHALL BE AT LEAST #10 GAGE WITH A MINIMUM OF 6 LINE WIRES WITH 12" STAY SPACING.
5. TURN SILT FENCE UP SLOPE AT ENDS.
6. WIRE MESH SHALL BE MIN. 13 GAGE WITH MAXIMUM 12" OPENINGS.
7. WIRE AND WASHED STONE IS REQUIRED TO BE SHOWN ON PLANS AT THE TOE OF SLOPES GREATER THAN 10 FEET VERTICAL (2:1 SLOPE)
8. ORANGE SAFETY FENCE IS REQUIRED AT BACK OF SILT FENCE WHEN GRADING IS ADJACENT TO SWIM BUFFERS, STREAMS OR WETLANDS (REFER TO SWIM BUFFER GUIDELINES). THE COLOR ORANGE IS RESERVED FOR VISUAL IDENTIFICATION OF ENVIRONMENTALLY SENSITIVE AREAS.
9. DRAINAGE AREA CAN NOT BE GREATER THAN 1/4 ACRE PER 100 FT OF FENCE.
10. SLOPE LENGTHS CAN NOT EXCEED CRITERIA SHOWN IN TABLE 6.62A NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.
11. DO NOT INSTALL SEDIMENT FENCE ACROSS STREAMS, DITCHES, WATERWAYS OR OTHER AREAS OF CONCENTRATED FLOW.

MAINTENANCE NOTES:

1. FILTER BARRIERS SHALL BE INSPECTED BY THE FINANCIALLY RESPONSIBLE PARTY OR HIS AGENT IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS NEEDED SHALL BE MADE IMMEDIATELY.
2. SHOULD THE FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL IS NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN DEPOSITS REACH HALF THE HEIGHT OF THE BARRIER. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE IS REMOVED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.

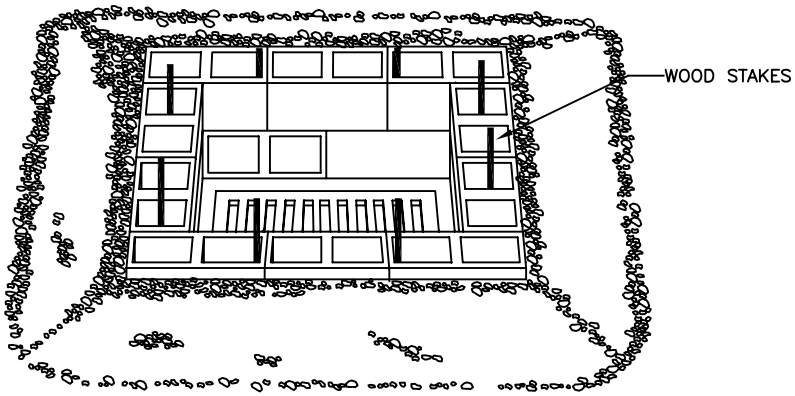
NOT TO SCALE

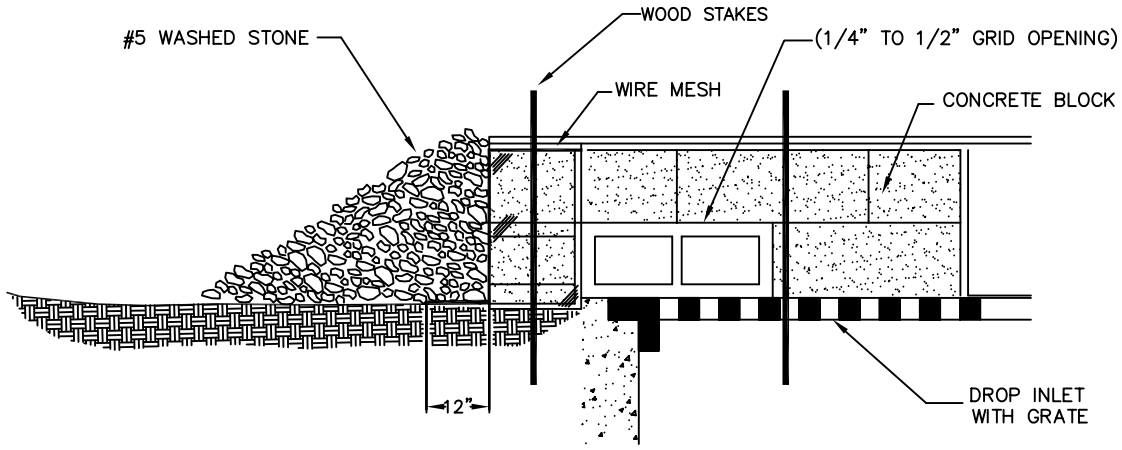
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

HIGH HAZARD TEMPORARY SILT FENCE

STD. NO.	REV.
30.06B	4





SPECIFIC APPLICATION:

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

NOT TO SCALE

CHARLOTTE.

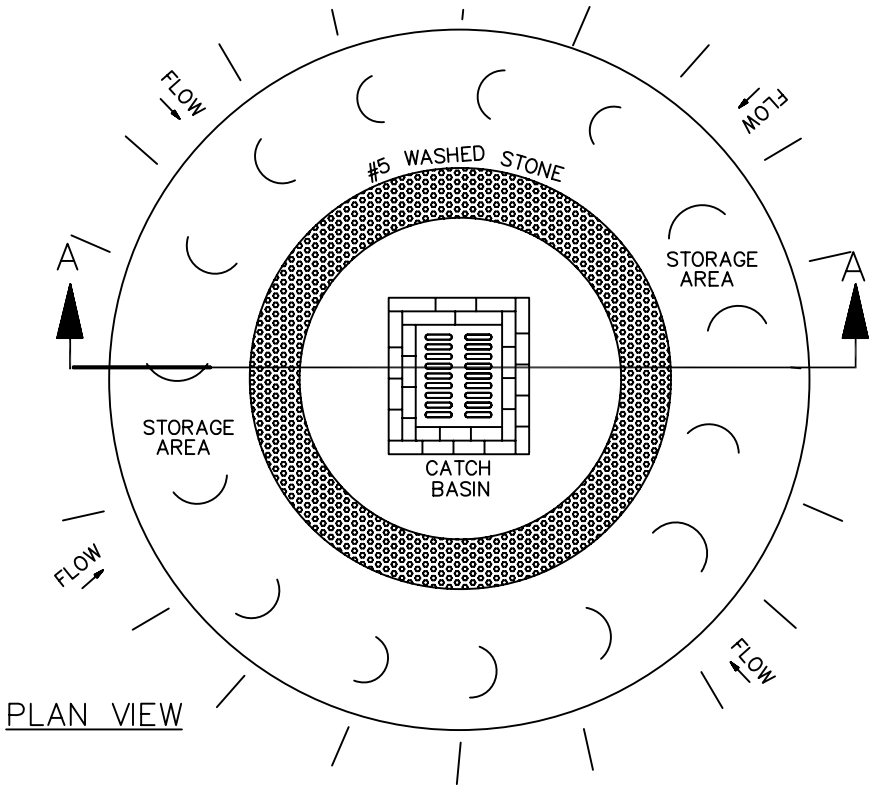
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

BLOCK AND GRAVEL STONE INLET PROTECTION

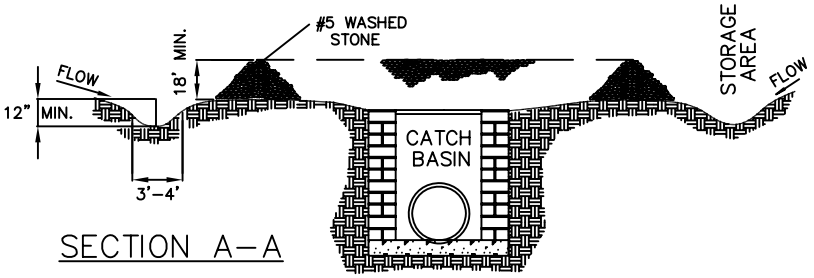
STD. NO.	REV.
30.07	

GENERAL NOTES:

1. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP.
2. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
3. THE STRUCTURE SHALL BE INSPECTED BY THE FINANCIALLY RESPONSIBLE PARTY OR HIS AGENT AFTER EACH STORM EVENT AND REPAIRS MADE AS NECESSARY.
4. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE MINIMIZED.
5. THE SEDIMENT TRAP SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE DRAINAGE BASIN HAS BEEN PROPERLY STABILIZED.
6. ON LARGER DRAINAGE AREAS RIP RAP MAY BE REQUIRED UNDER THE WASHED STONE.



PLAN VIEW



SECTION A–A

NOT TO SCALE

CHARLOTTE.

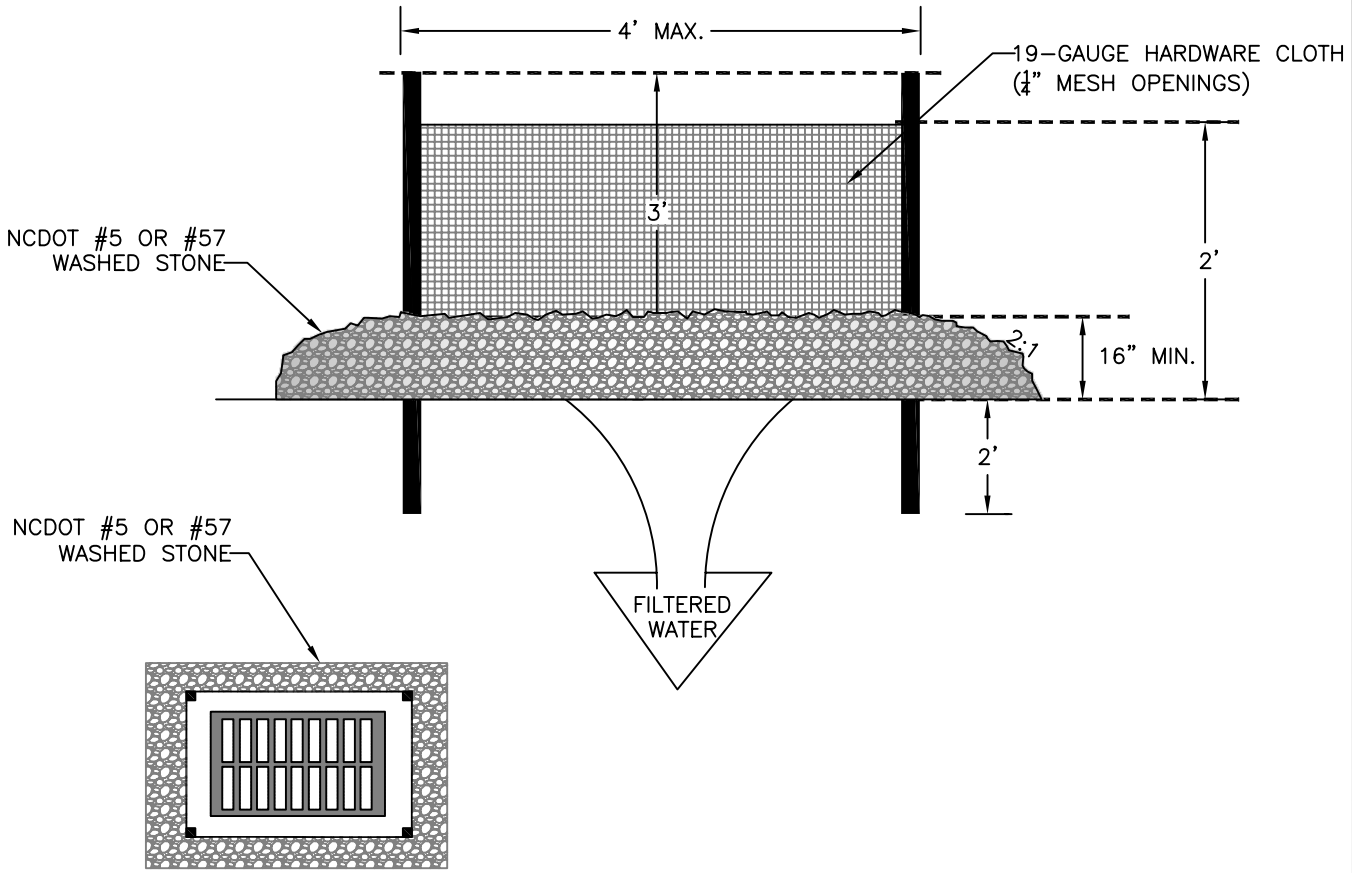
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

STONE INLET PROTECTION

STD. NO.	REV.
30.08	

GENERAL NOTES:

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



NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

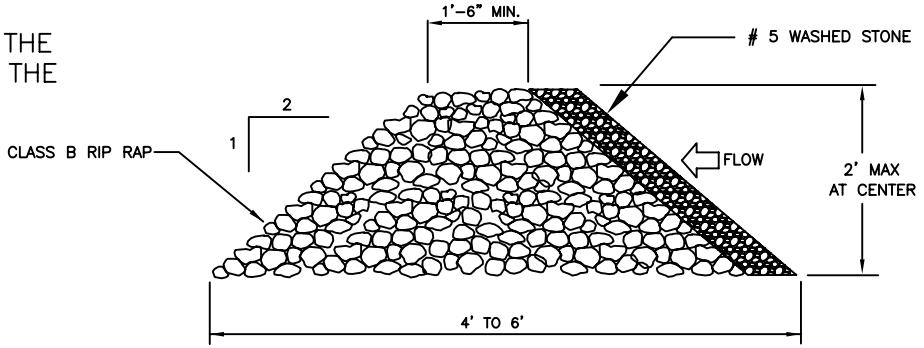
HARDWARE CLOTH AND GRAVEL INLET PROTECTION

STD. NO.	REV.
30.09	1

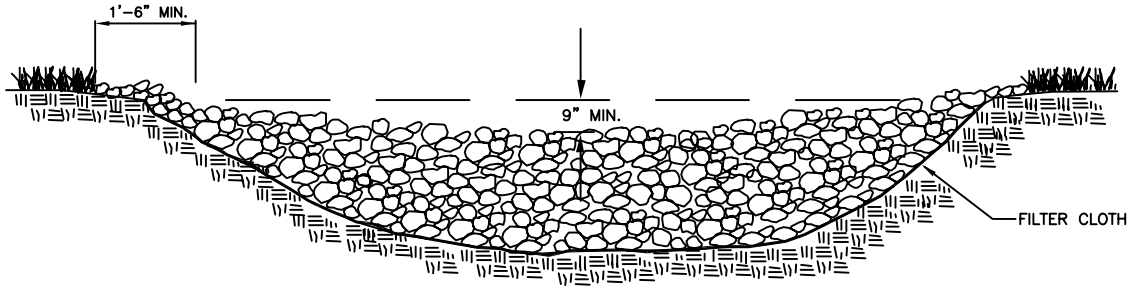
GENERAL NOTES:

1. RIPRAP SIZE TO BE DESIGNED BY ENGINEER.
2. CHECK DAMS MAY BE USED IN SLOPING DITCHES OR CHANNELS TO SLOW VELOCITY OR TO CREATE SEDIMENT TRAPS.
3. ENSURE THAT MAXIMUM SPACING BETWEEN DAMS PLACES THE TOE OF THE UPSTREAM DAM AT THE SAME ELEVATION AS THE DOWNSTREAM DAM (SEE DIAGRAM BELOW).

A AND B ARE AT EQUAL ELEVATIONS



CROSS SECTION



PLAN

NOT TO SCALE

CHARLOTTE.

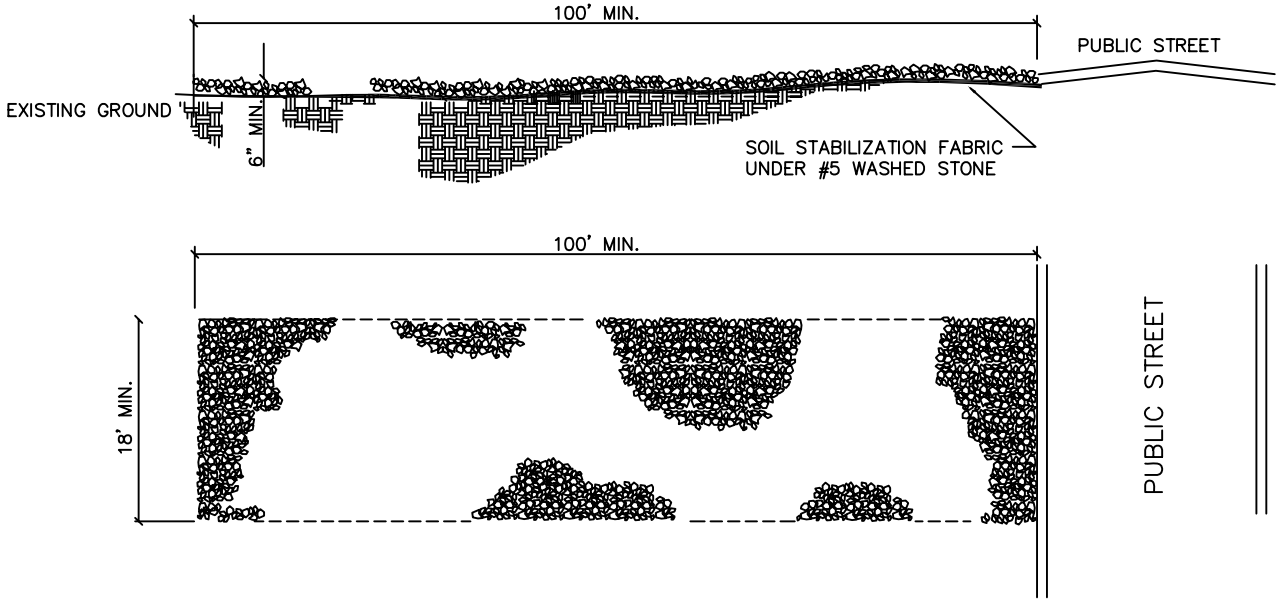
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TEMPORARY ROCK CHECK DAM

STD. NO.	REV.
30.10	

NOTES:

1. A STABILIZED ENTRANCE PAD OF #5 WASHED STONE OR RAIL ROAD BALLAST SHALL BE LOCATED WHERE TRAFFIC WILL ENTER OR LEAVE THE CONSTRUCTION SITE ONTO A PUBLIC STREET.
2. FILTER FABRIC OR COMPACTED CRUSHER RUN STONE SHALL BE USED AS A BASE FOR THE CONSTRUCTION ENTRANCE.
3. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC STREETS OR EXISTING PAVEMENT. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS WARRANT AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
4. ANY SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC STREETS MUST BE REMOVED IMMEDIATELY.
5. WHEN APPROPRIATE, WHEELS MUST BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTERING A PUBLIC STREET. WHEN WASHING IS REQUIRED, IT SHALL BE DONE IN AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT BASIN SEE STD. NO. 30.11B.
6. CDOT MAY REQUIRE A STANDARD COMMERCIAL DRIVEWAY (STD. 10.24 & 10.25) TO ACCESS THE CONSTRUCTION SITE IF THE DRIVEWAY IS ON A THOROUGHFARE.



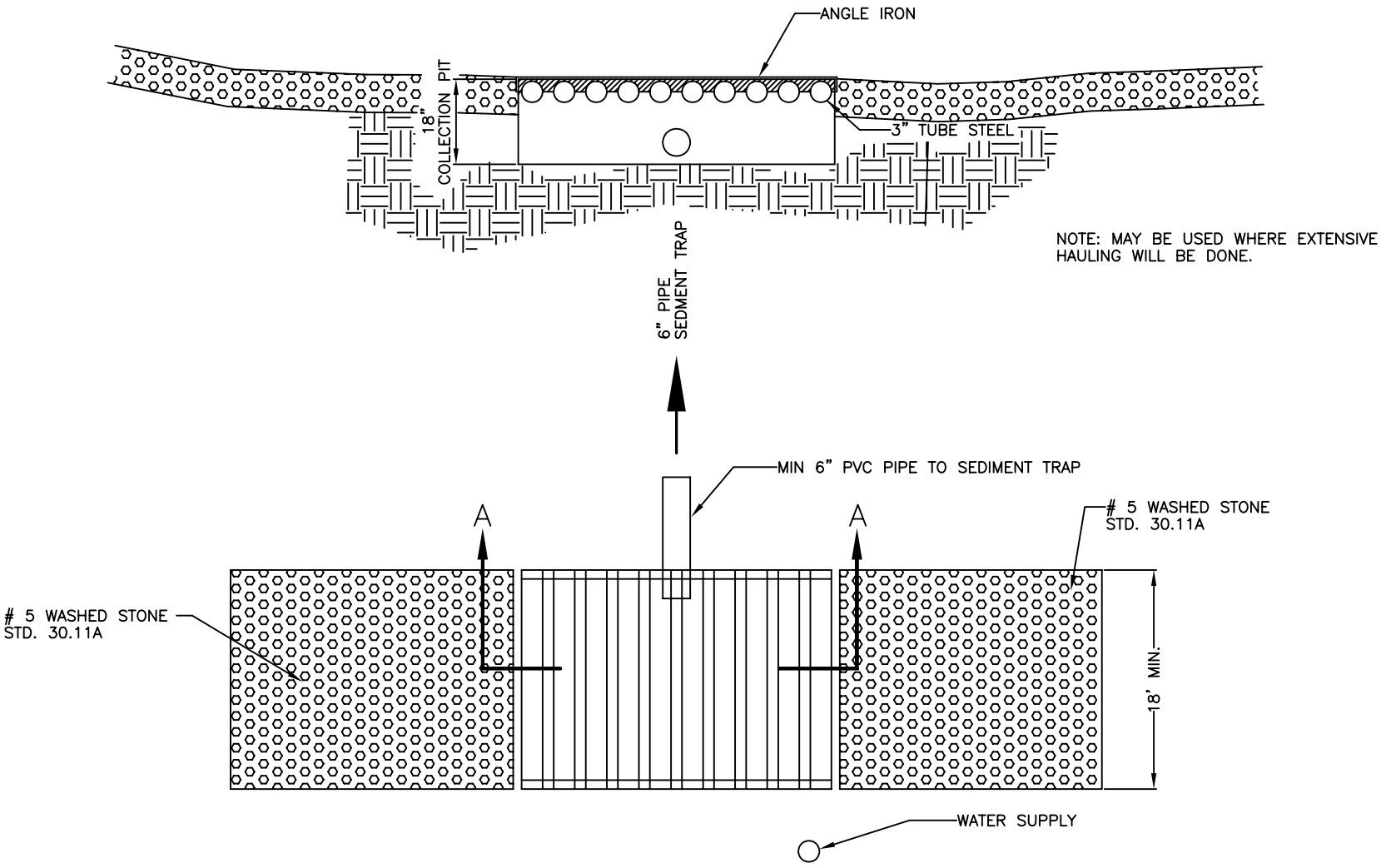
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

STABILIZED CONSTRUCTION ENTRANCE

STD. NO.	REV.
30.11A	



NOT TO SCALE

CHARLOTTE.

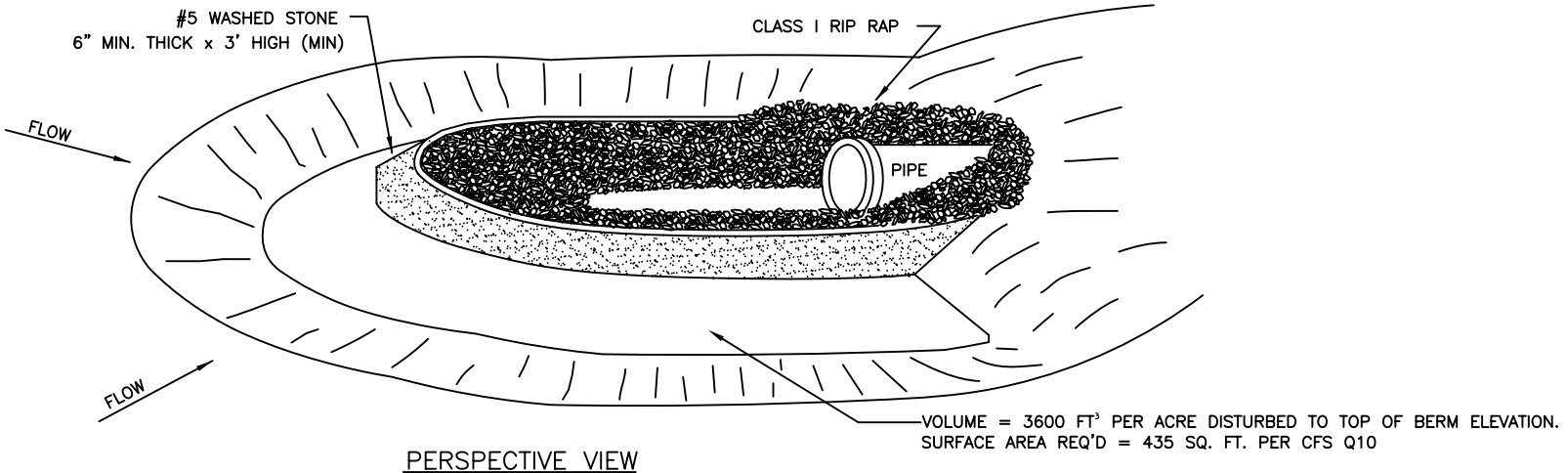
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

CONSTRUCTION ENTRANCE TIRE WASH

STD. NO.	REV.
30.11B	

DATA BLOCK

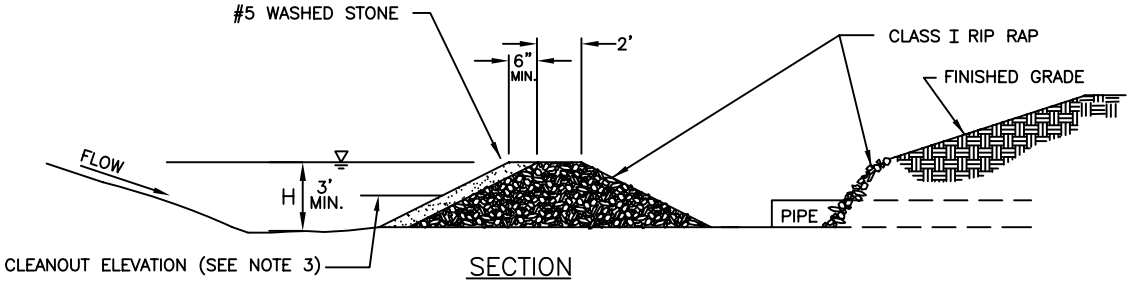
BASIN NO.	DRAINAGE AREA (ACRES)	DENUDED AREA (ACRES)	BASIN VOLUME		BASIN SURFACE AREA		CLEANOUT DEPTH (FT.) H/2	H (FEET)
			REQUIRED (CUBIC FT.)	PROVIDED (CUBIC FT.)	REQUIRED (SQ FT.)	PROVIDED (SQ FT.)		



PERSPECTIVE VIEW

GENERAL NOTES:

1. GRAVEL AND RIP RAP FILTER BERM BASIN SHOULD BE USED TO PROTECT EXISTING PIPE INVERTS THAT DRAIN 5 ACRES OR LESS.
2. DIMENSIONS SHOWN ARE THE MINIMUM ACCEPTED UNLESS OTHERWISE NOTED.
3. CLEANOUT PRIOR TO SEDIMENT REACHING HALF OF BERM HEIGHT.



SECTION

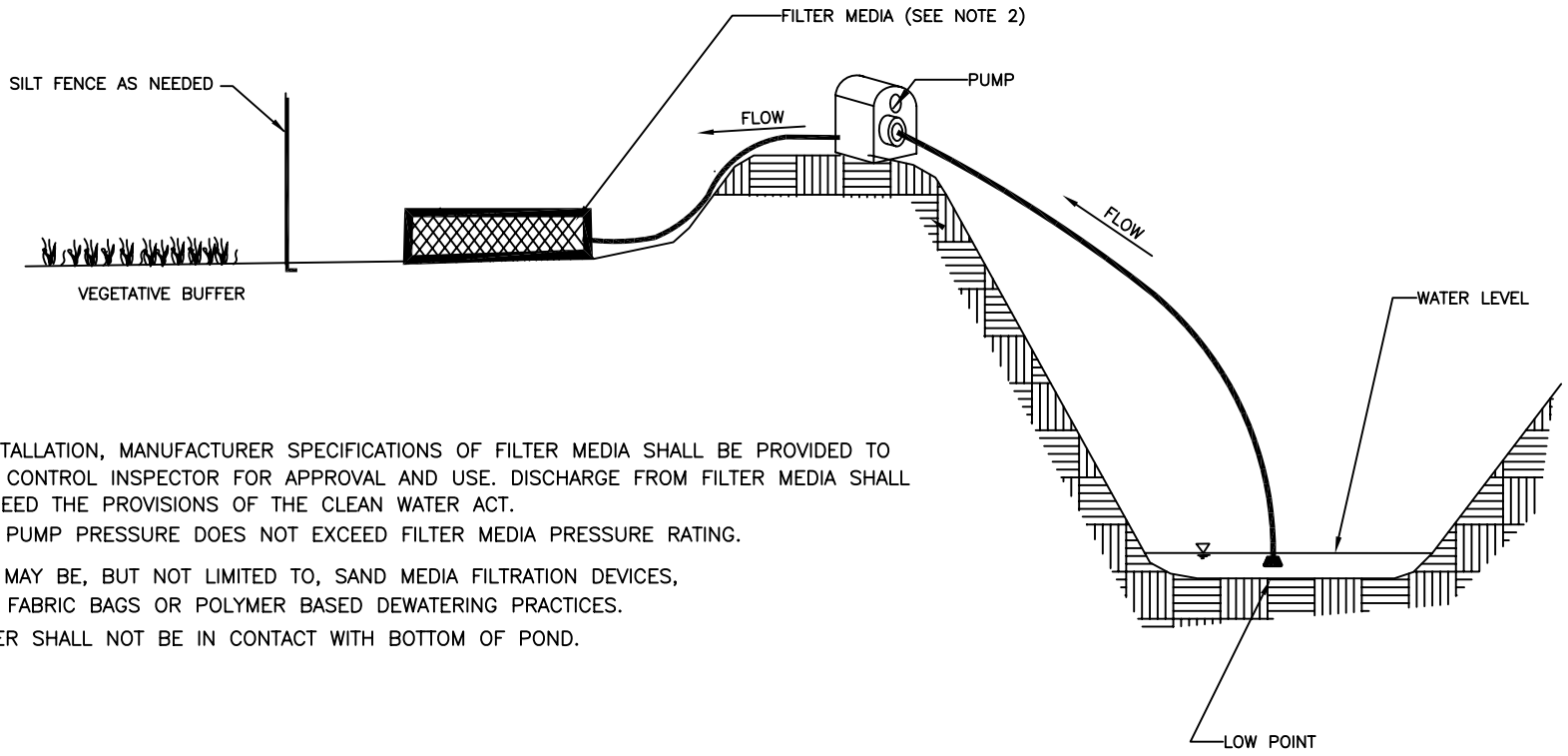
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

GRAVEL AND RIP RAP FILTER BERM BASIN

STD. NO.	REV.
30.12	1



NOTE:

1. PRIOR TO INSTALLATION, MANUFACTURER SPECIFICATIONS OF FILTER MEDIA SHALL BE PROVIDED TO THE EROSION CONTROL INSPECTOR FOR APPROVAL AND USE. DISCHARGE FROM FILTER MEDIA SHALL MEET OR EXCEED THE PROVISIONS OF THE CLEAN WATER ACT.
2. ENSURE THAT PUMP PRESSURE DOES NOT EXCEED FILTER MEDIA PRESSURE RATING.
3. FILTER MEDIA MAY BE, BUT NOT LIMITED TO, SAND MEDIA FILTRATION DEVICES, RATED FILTER FABRIC BAGS OR POLYMER BASED DEWATERING PRACTICES.
4. PUMP STRAINER SHALL NOT BE IN CONTACT WITH BOTTOM OF POND.

NOT TO SCALE

CHARLOTTE.

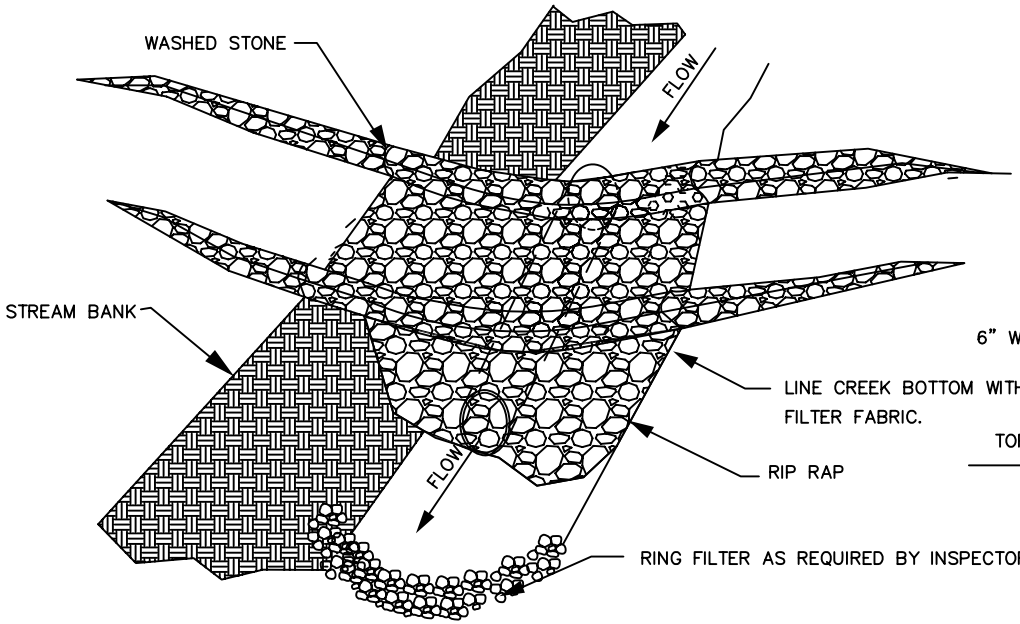
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

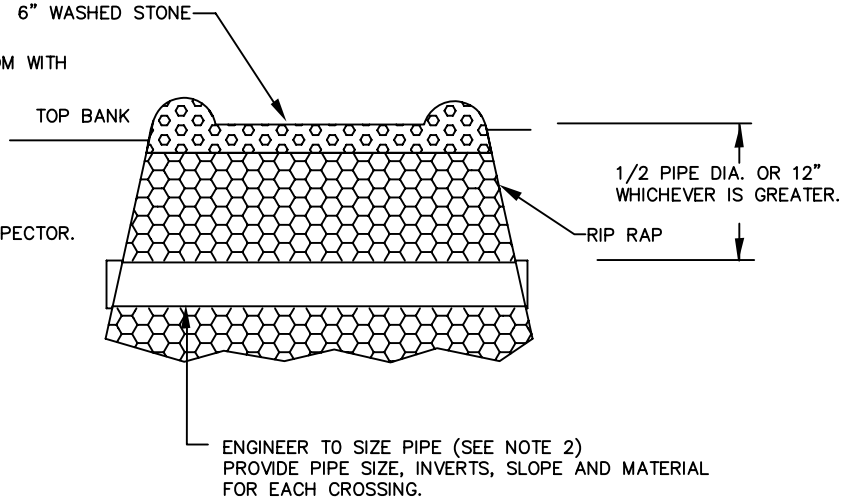
EROSION CONTROL DEWATERING

STD. NO.	REV.
30.13	

NOTES

1. REMOVE THE STRUCTURE WHEN NO LONGER NEEDED. (NOT TO EXCEED 1 YEAR).
2. AS A MINIMUM, DESIGN THE STRUCTURE TO PASS 2 YEAR PEAK FLOW WITHOUT OVERTOPPING.
3. ENSURE THAT DESIGN FLOW VELOCITY AT THE OUTLET OF THE CROSSING STRUCTURE IS NON–EROSIVE FOR THE RECEIVING STREAM CHANNEL.





NOTES:

1. ADDITIONAL MEASURES MAY BE REQURIED PER THE CITY ENGINEER BASED ON SPECIFIC SITE CONDITIONS.

NOT TO SCALE

CHARLOTTE.

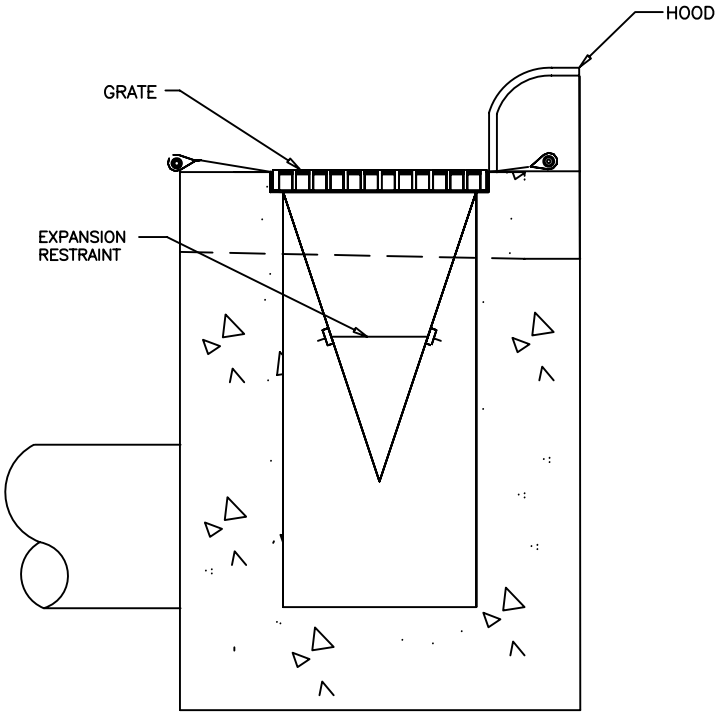
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TEMPORARY STREAM CROSSING

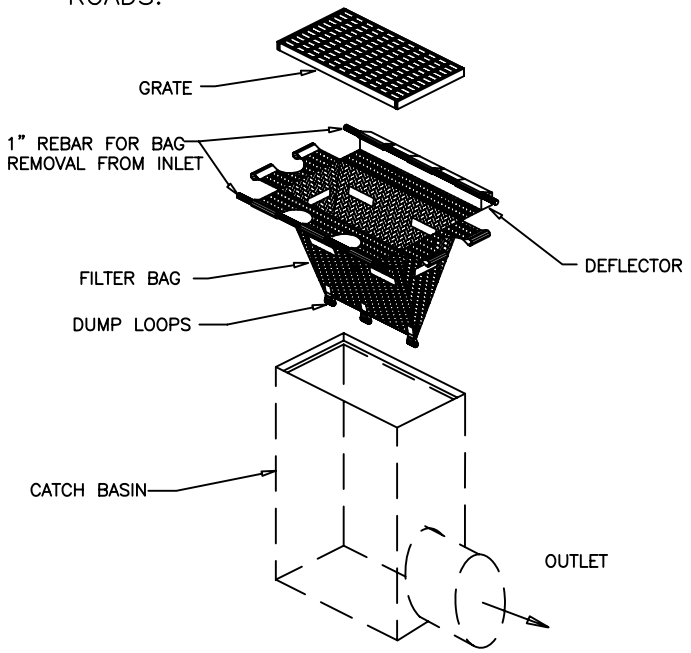
STD. NO.	REV.
30.14	

NOTES

1. INLET MAINTENANCE SHALL BE DOCUMENTED IN PROJECT LOG BOOK.
2. FILTER TYPES SHALL BE APPROVED BY THE CITY INSPECTOR PRIOR TO INSTALLATION.
3. FILTER BAGS MAY BE REMOVED WHEN SITE IS STABILIZED AT THE DIRECTION OF THE ENGINEER.
4. FILTER BAGS SHALL BE REMOVED PRIOR TO STREET ACCEPTANCE.
5. FILTER BAGS SHALL BE CLEANED OR REPLACED ON A REGULAR BASIS (NOT BE MORE THAN HALF FULL AT ANY TIME).
6. FILTER BAGS SHALL NOT BE ALLOWED IN EXISTING CITY OR NCDOT ROADS.



SECTION



INSTALLATION

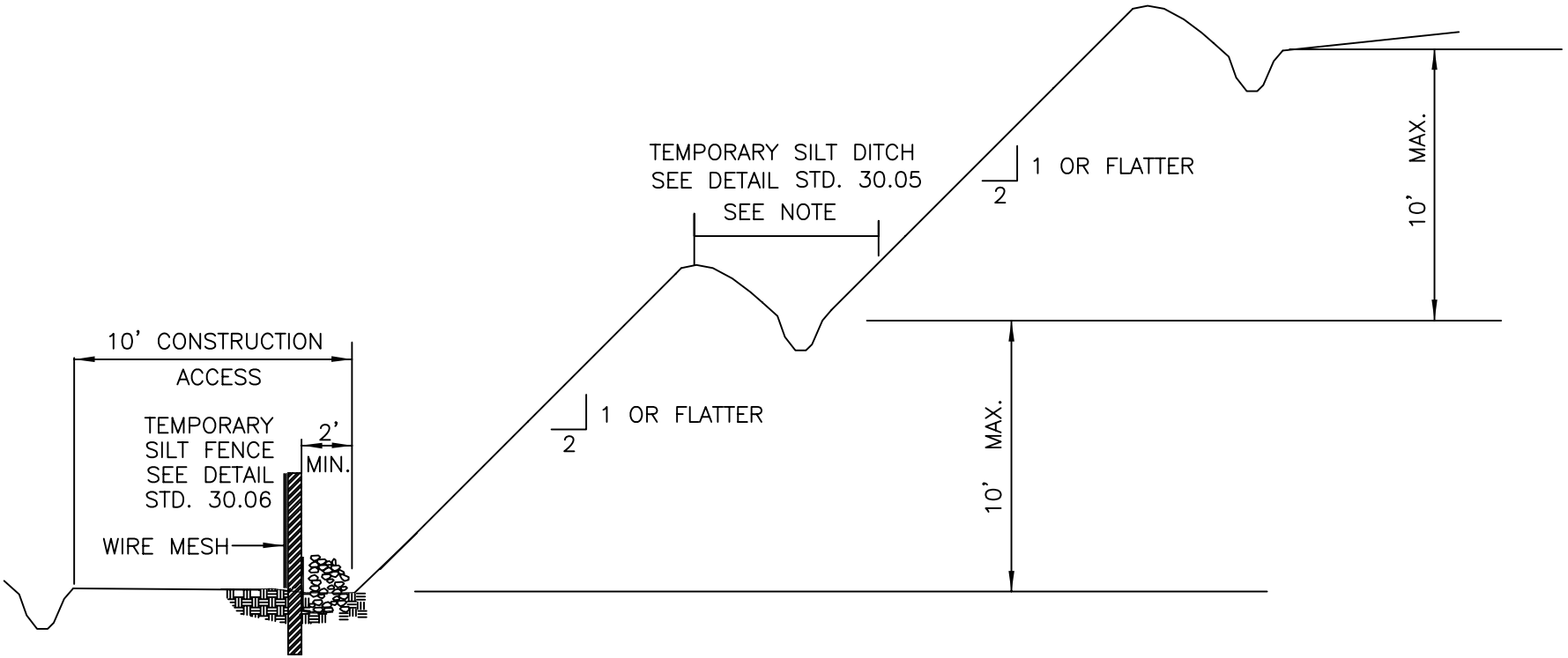
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

CATCH BASIN INLET PROTECTION

STD. NO.	REV.
30.15	



NOTE:

DIVERSION DITCH SHOULD FLOW INTO SEDIMENT BASIN ROCK CHECK DAM, OR SLOPE DRAIN

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

SLOPE STABILITY

STD. NO.	REV.
30.16	

FOR LATE WINTER AND EARLY SPRING:

SEEDING MIXTURE:
RYE (GRAIN) – 120 LB/ACRE
ANNUAL LESPEDEZA (KOBE) – 50 LB/ACRE
(OMIT ANNUAL LESPEDEZA WHEN DURATION OF TEMPORARY COVER IS NOT TO EXTEND BEYOND JUNE)

SEEDING DATES:
JAN. 1 – MAY 1

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

MULCH:
APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL

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

FOR SUMMER:

SEEDING MIXTURE:
GERMAN MILLET – 40 LB/ACRE
(A SMALL–STEMMED SUDANGRASS MAY BE SUBSTITUTED AT A RATE OF 50 LB/ACRE)

SEEDING DATES:
MAY 1 – AUG. 15

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

MULCH:
APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL

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

FOR FALL:

SEEDING MIXTURE:
RYE (GRAIN) – 120 LB/ACRE

SEEDING DATES:
AUG. 15 – DEC 30

SOIL AMENDMENTS:
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 LB/ACRE GROUND AGRICULTURAL LIMESTONE AND 1,000 LB/ACRE 10–10–10 FERTILIZER

MULCH:
APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL

MAINTENANCE:
REPAIR AND REFERTILIZE DAMAGED AREAS IMMEDIATELY. TOPDRESS WITH 50 LB/ACRE OF NITROGEN IN MARCH. IF IT IS NECESSARY TO EXTEND TEMPORARY COVER BEYOND JUNE 15, OVERSEED WITH 50 LB/ACRE KOBE LESPEDEZA IN LATE FEBRUARY OR EARLY MARCH.

FOR ADDITIONAL INFORMATION, REFER TO NCDENR EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL (ESCPDM), SECTION 6.10.
FOR PERMANENT SEEDING SPECIFICATIONS, INCLUDING SEED BED PREP, SEASONAL LIMITATIONS FOR SEEDING OPERATIONS, THE KINDS OF GRADES OF FERTILIZERS, THE KINDS OF SEED, AND THE RATES OF APPLICATION OF LIMESTONE, FERTILIZER, AND SEED, REFER TO NCDENR ESCPDM SECTION 6.11 AND THE CHARLOTTE LANDSCAPE CONSTRUCTION STANDARDS SECTION 04200 SEEDING AND SODDING OF TURFGRASS.

CHARLOTTE.

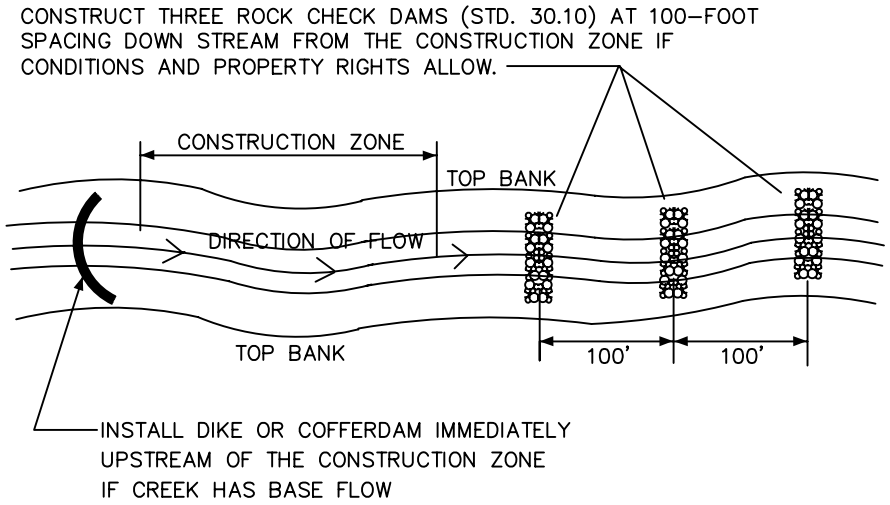
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TEMPORARY SEEDING SCHEDULE

STD. NO.	REV.
30.17	9

NOTES:

1. WORK IN CREEK SHALL BE PLANNED TO MINIMIZE THE NUMBER OF DAYS OF DISTURBANCE.
2. THE CONTRACTOR IS TO OBSERVE THE LOCAL WEATHER FORECASTS AND NOT BEGIN WORK IN THE CREEK UNLESS AT LEAST THREE DAYS WITHOUT RAIN IS ANTICIPATED.
3. ALL DISTURBED CREEK BED AND BANKS ARE TO BE STABILIZED PRIOR TO THE END OF EACH WORK DAY.
4. FOR LARGER CREEKS, CONSTRUCTION SHOULD OCCUR ON ONE SIDE OF THE CREEK AT A TIME. THE FIRST SIDE SHOULD BE STABILIZED BEFORE BEGINNING CONSTRUCTION ON THE OPPOSITE SIDE.
5. A TEMPORARY PIPE OR PUMP MAY BE INSTALLED TO CONTROL CREEK FLOW DURING CUNSTRUCTION.



NOT TO SCALE

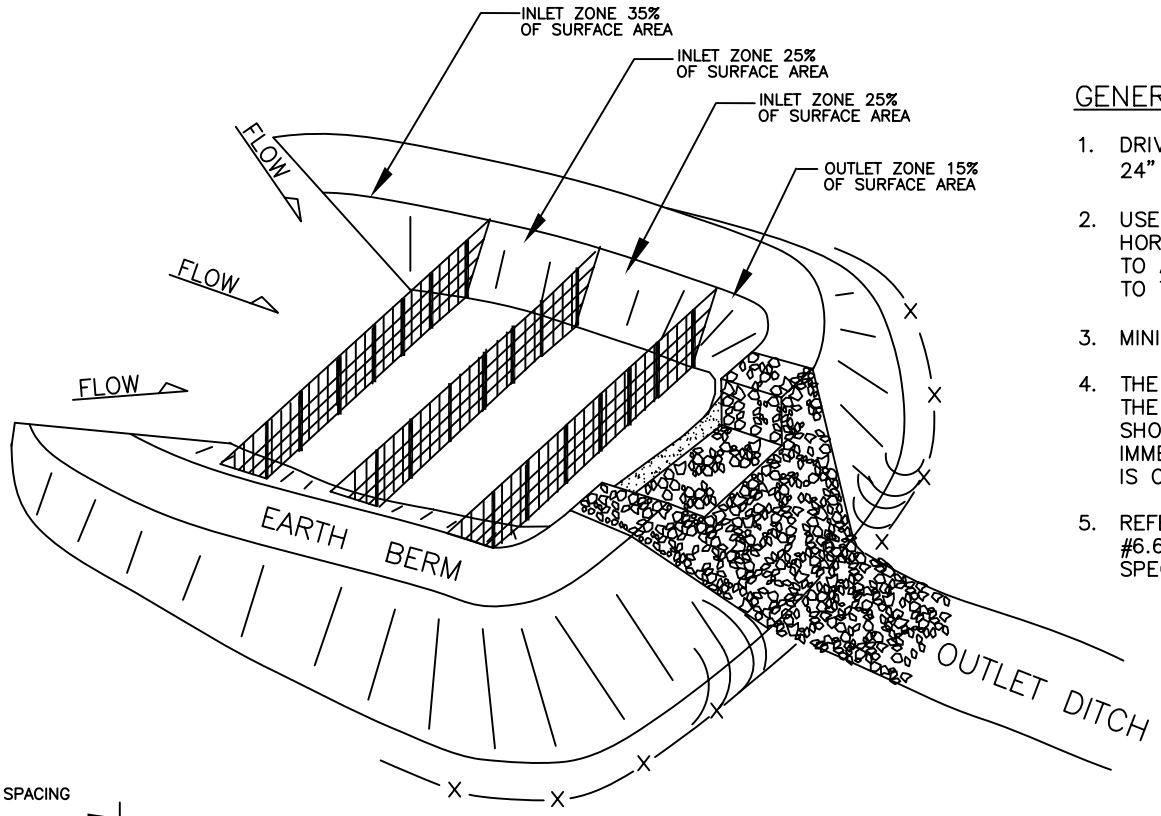
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

CONSTRUCTION WITHIN CREEK BANK

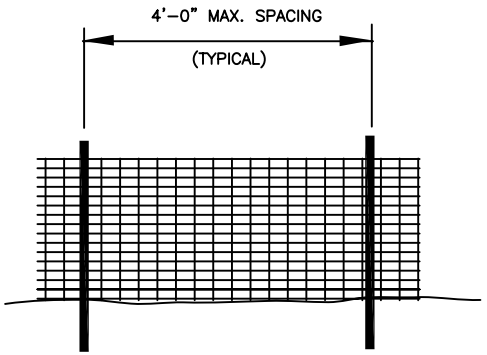
(FOR USE WITH ROAD CROSSINGS, UTILITY CROSSINGS & CULVERT CONSTRUCTION)

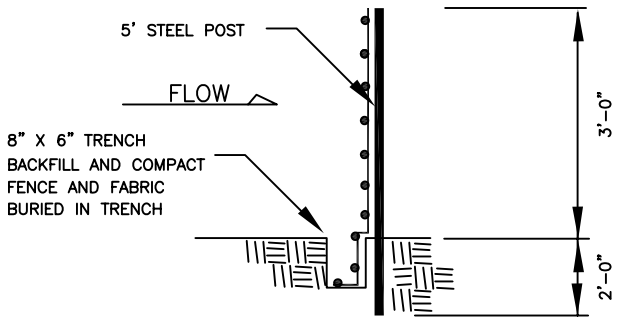
STD. NO.	REV.
30.18	



GENERAL NOTES:

1. DRIVE 5' STEEL POST AT LEAST 24" INTO SOLID GROUND.
2. USE STAPLES 1' APART HORIZONTALLY AND VERTICALLY TO ATTACH THE FILTER FABRIC TO THE WIRE FENCE.
3. MINIMUM BAFFLE SPACING IS 10'.
4. THE FLOOR OF THE BASIN IN THE OUTLET ZONE AND BERMS SHOULD BE SEEDED IMMEDIATELY AFTER THE BASIN IS CONSTRUCTED.
5. REFER TO NCESCPDM SECTION #6.65 FOR ADDITIONAL SPECIFIATIONS.





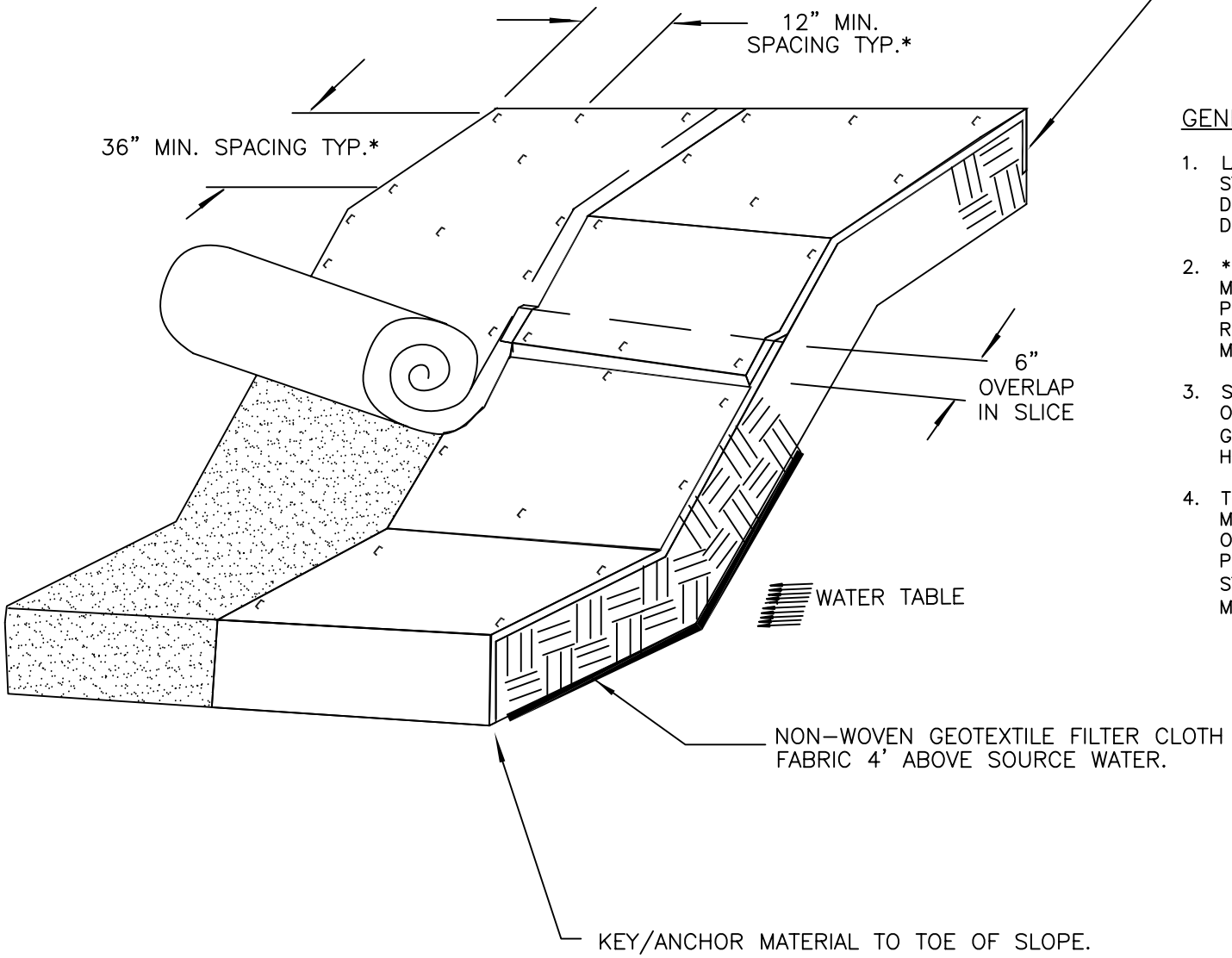
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

BAFFLE INSTALLATION

STD. NO.	REV.
30.19	1



GENERAL NOTES:

1. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
2. * DIMENSIONS SHOWN ARE MINIMUM, MANUFACTURED PRODUCTS MAY HAVE ADDITIONAL REQUIREMENTS THAT MUST BE MET.
3. SLOPE SURFACE SHALL BE FREE OF ROCKS, SOIL CLODS, STICKS, GRASS. MAT/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
4. THE DETAIL SHOWN IS FOR SLOPE MATTING. FOR CHANNEL OR PIPE OUTFALL MATTING SPECIFICATIONS, PLEASE REFER TO NCESCPDM STANDARD #6.17 AND MANUFACTURER'S GUIDELINES.

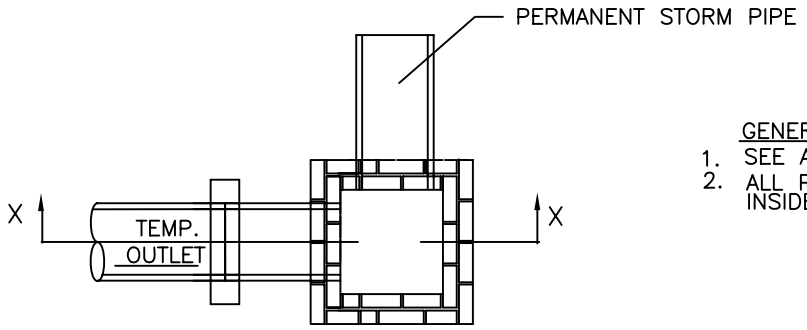
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

EMBANKMENT MATTING DETAIL

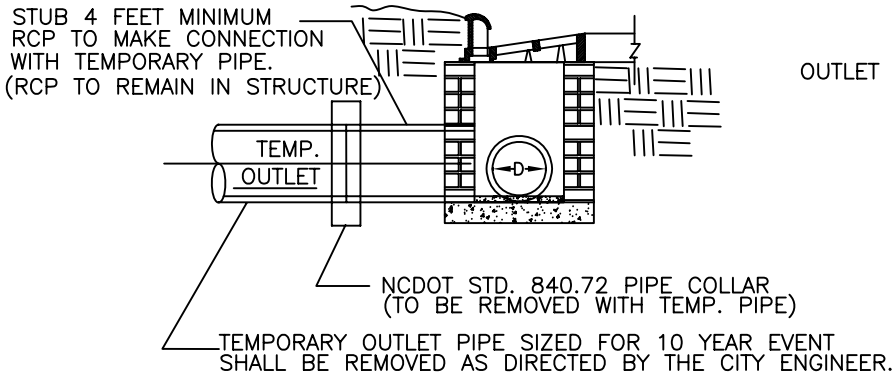
STD. NO.	REV.
30.20	1



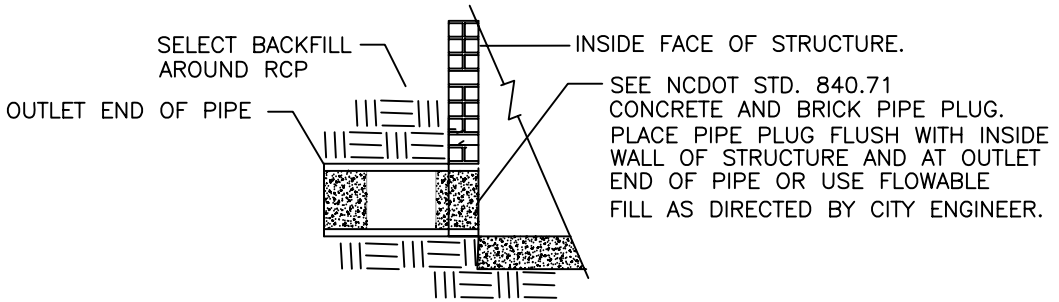
PLAN

GENERAL NOTES:

1. SEE APPROPRIATE STANDARD FOR CATCH BASIN, MANHOLE, JUNCTION BOX USED.
2. ALL PIPE IN STORM DRAIN STRUCTURES SHALL BE STRUCK EVEN WITH THE INSIDE WALL, GROUTED AND BRUSHED SMOOTH.



SECTION X–X
ACTIVE SYSTEM



PIPE PLUG DETAIL
AFTER REMOVAL OF TEMPORARY PIPE

NOT TO SCALE

CHARLOTTE.

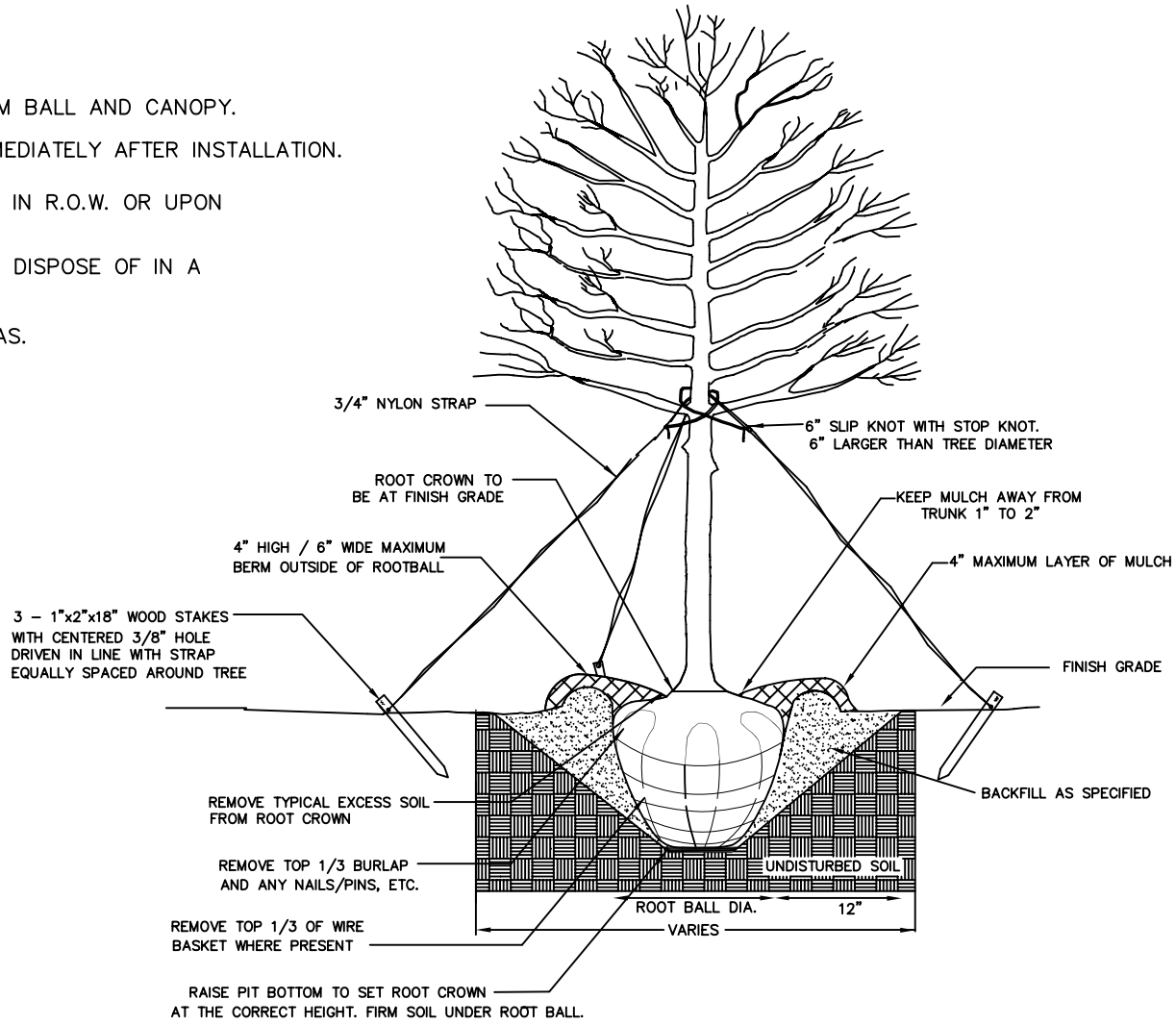
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

BRICK STORM STRUCTURE WITH TEMPORARY PIPE

STD. NO.	REV.
30.21	

NOTES:

1. REMOVE WIRE AND NYLON TWINE FROM BALL AND CANOPY.
2. SOAK ROOT BALL AND PLANT PIT IMMEDIATELY AFTER INSTALLATION.
3. STAKING IS REQUIRED FOR ALL TREES IN R.O.W. OR UPON REQUEST OF ARBORIST.
4. REMOVE EXCESS SOIL FROM SITE AND DISPOSE OF IN A LEGAL MANNER.
5. RESEED UNMULCHED, DISTURBED AREAS.



ALL TREES SHALL MEET AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-2004)

FOR EXAMPLE:	CALIPER	HEIGHT (RANGE)	MAX. HEIGHT	MIN. ROOT BALL DIA.	MIN. ROOT BALL DEPTH
	2"	12-14'	16'	24"	16"
	3"	14-16'	18'	32"	21"

NOT TO SCALE

CHARLOTTE.

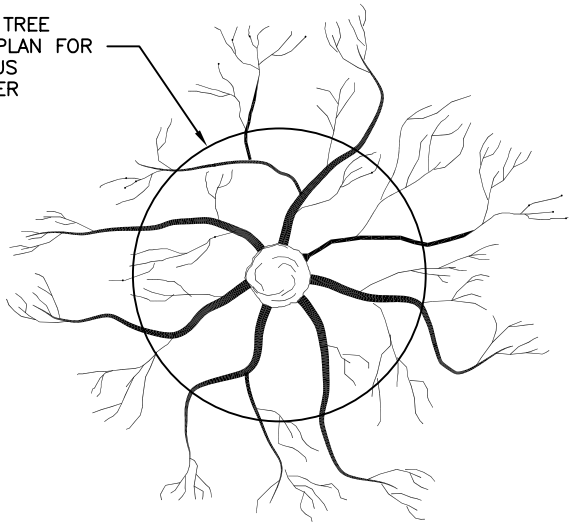
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TREE PLANTING

(FOR SINGLE AND MULTI-STEM TREES)

STD. NO.	REV.
40.01	

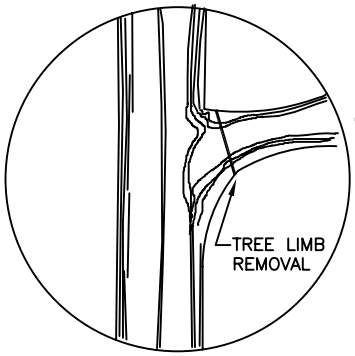
SEE APPROVED TREE PRESERVATION PLAN FOR REQUIRED RADIUS OF TREE BARRIER



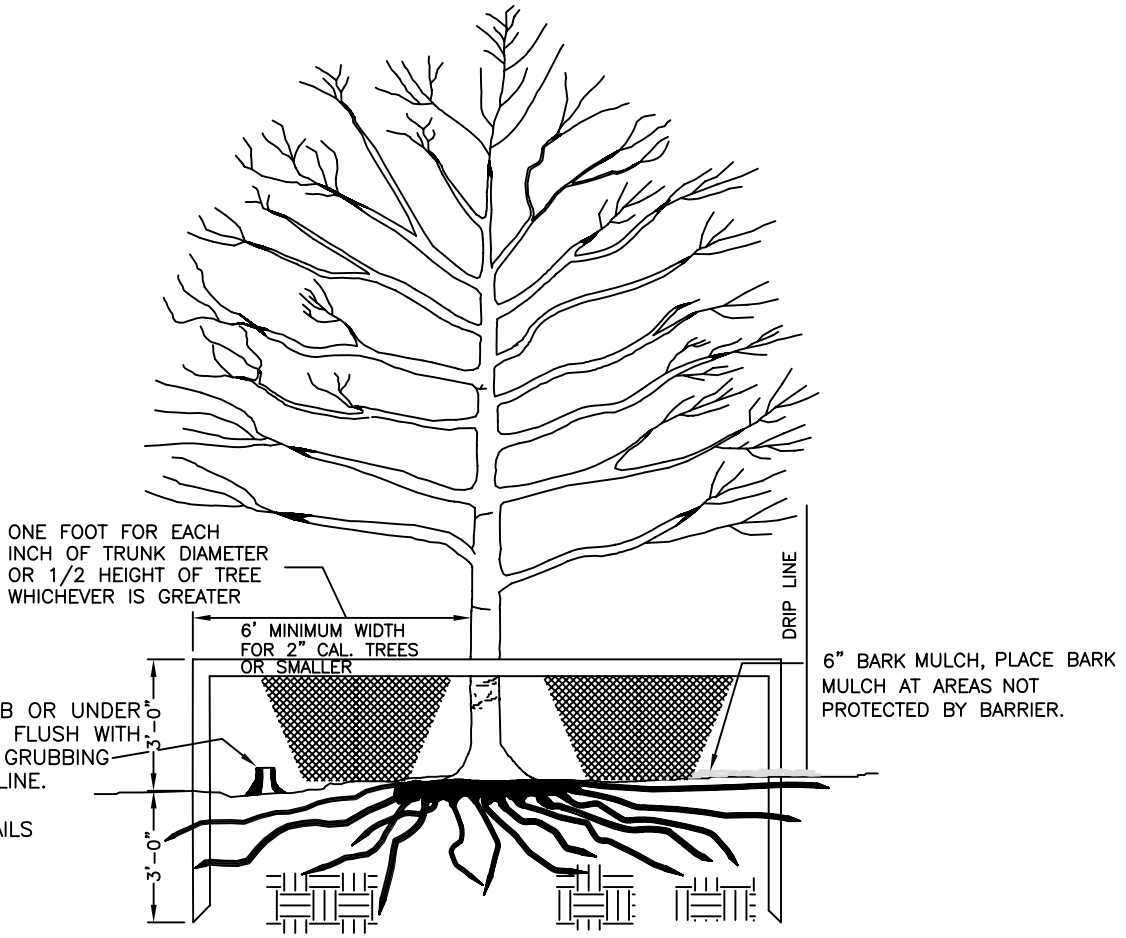
PLAN VIEW OF ROOT ZONE

NOTES:

1. REMOVE ALL BARRIERS UPON COMPLETION OF PROJECT.
2. LANDSCAPING PLANS SHALL SHOW THE LOCATIONS OF ALL TREE PROTECTION FENCES.
3. REFER TO CITY OF CHARLOTTE LANDSCAPE CONSTRUCTION STANDARDS SECTION 01000 FOR GENERAL SPECIFICATION REGARDING TREE PROTECTION.



FOR PRUNING SEE INTERNATIONAL SOCIETY OF ARBORICULTURE SPECS.

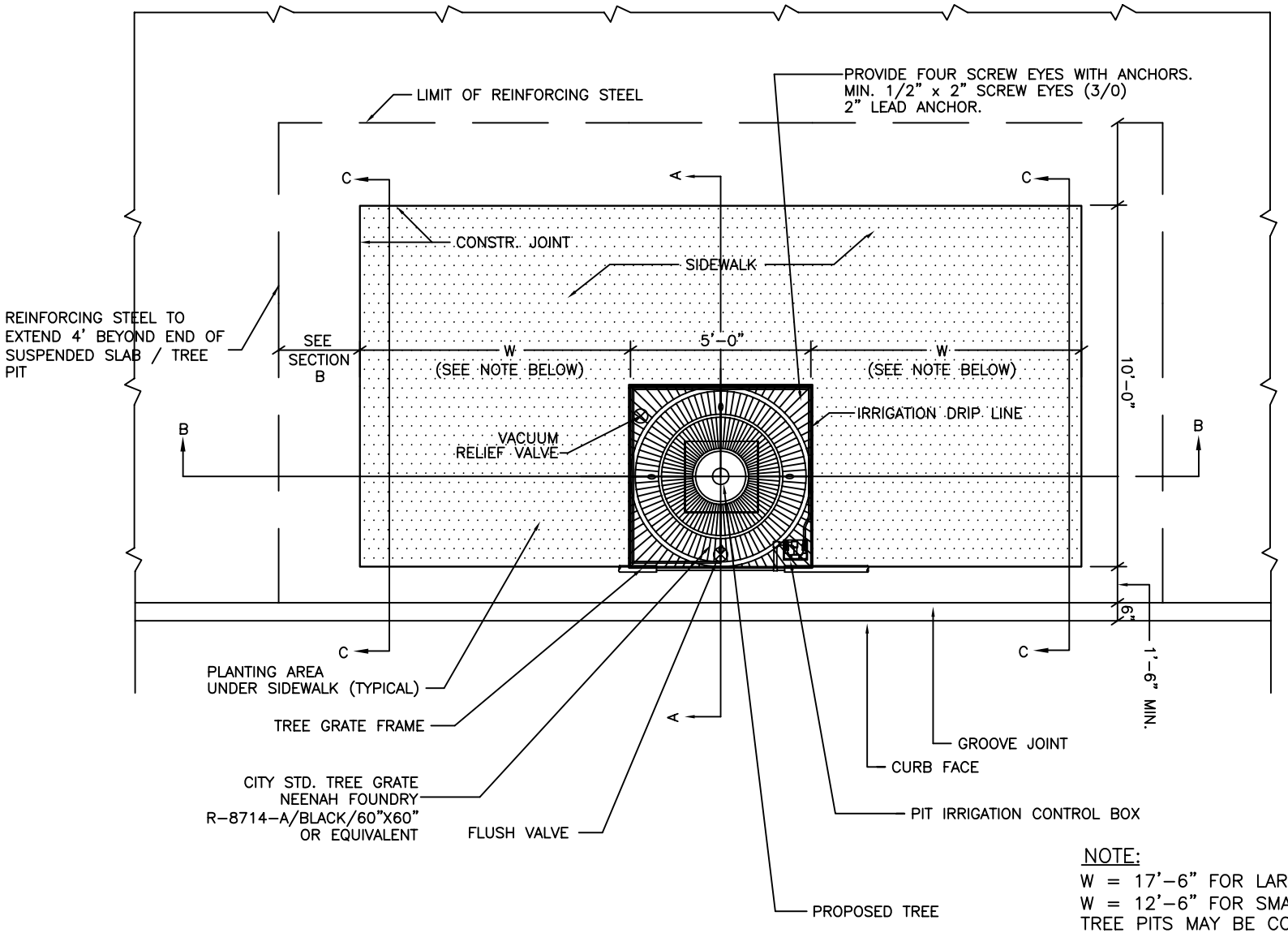


CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TREE PROTECTION DETAIL

STD. NO.	REV.
40.02	



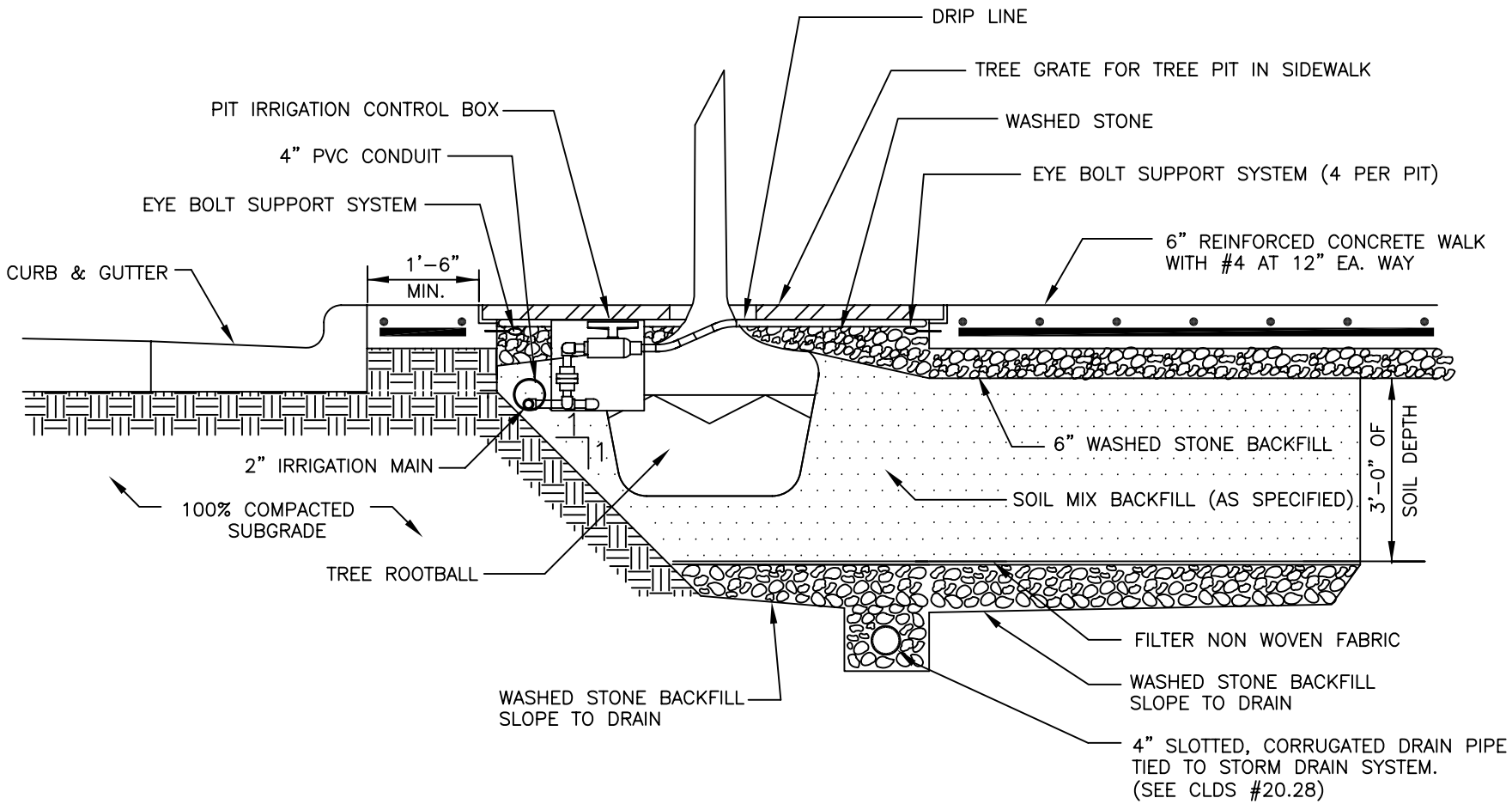
NOTE:
W = 17'-6" FOR LARGE MATURING TREE.
W = 12'-6" FOR SMALL MATURING TREE.
TREE PITS MAY BE CONTIGUOUS

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LARGE AND SMALL MATURING TREE PIT WITH GRATE IN SIDEWALK (PLAN)

STD. NO.	REV.
40.03	3



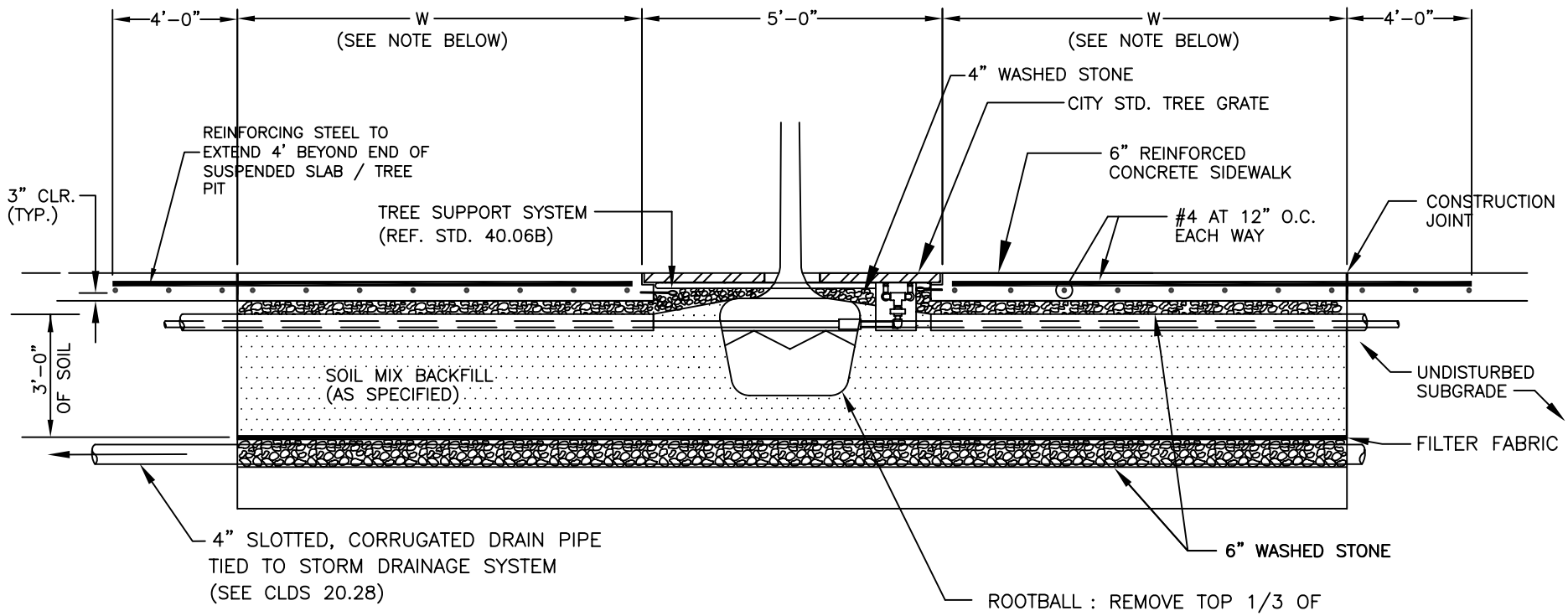
SECTION A

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LARGE AND SMALL MATURING TREE PIT WITH GRATE IN SIDEWALK (SECTION)

STD. NO.	REV.
40.03A	3



NOTE:
W = 17'-6" FOR LARGE MATURING TREE.
W = 12'-6" FOR SMALL MATURING TREE.
TREE PITS MAY BE CONTIGUOUS

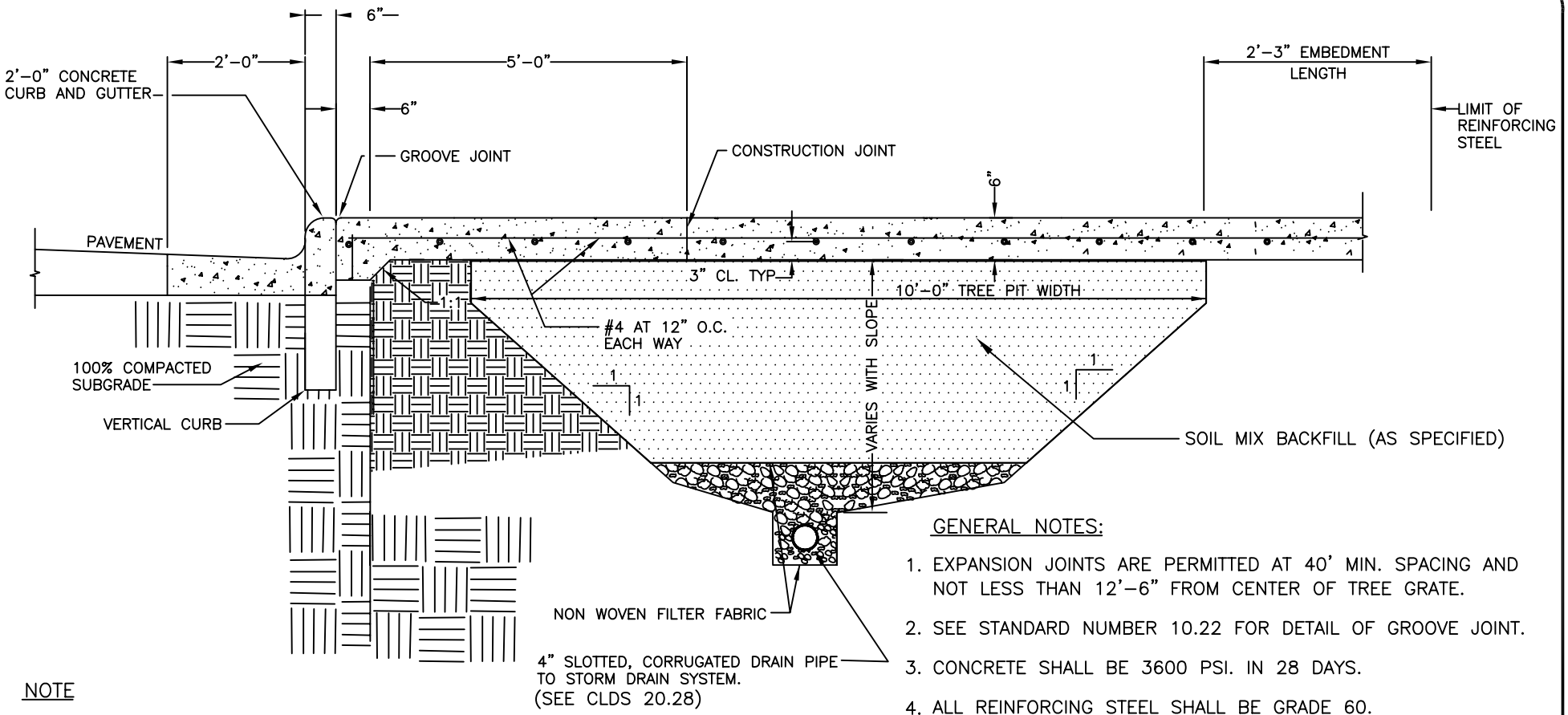
SECTION B

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LARGE AND SMALL MATURING TREE PIT WITH GRATE IN SIDEWALK (SECTION)

STD. NO.	REV.
40.03B	3



NOTE

A DRAINAGE SYSTEM IS REQUIRED AS SHOWN FOR ALL IRRIGATED PLANTING AREAS LOCATED ADJACENT TO STREET.

SECTION C

GENERAL NOTES:

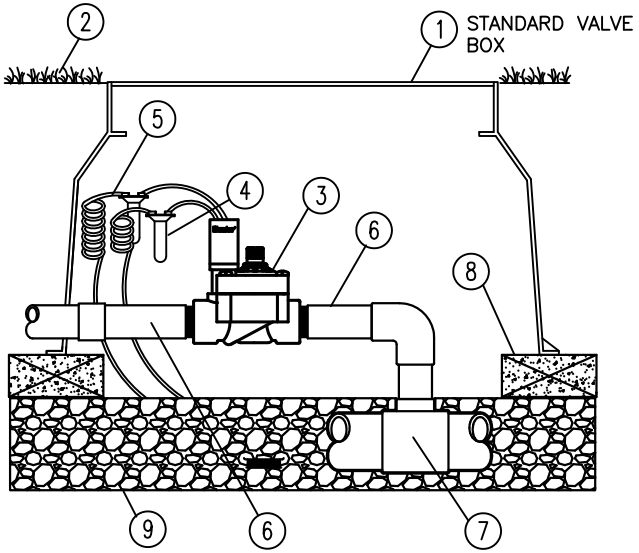
1. EXPANSION JOINTS ARE PERMITTED AT 40' MIN. SPACING AND NOT LESS THAN 12'-6" FROM CENTER OF TREE GRATE.
2. SEE STANDARD NUMBER 10.22 FOR DETAIL OF GROOVE JOINT.
3. CONCRETE SHALL BE 3600 PSI. IN 28 DAYS.
4. ALL REINFORCING STEEL SHALL BE GRADE 60.
5. USE REINFORCED STEEL BAR SUPPORTS IN COMPLIANCE WITH N.C.D.O.T. STANDARD SPECIFICATION 970-4.

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

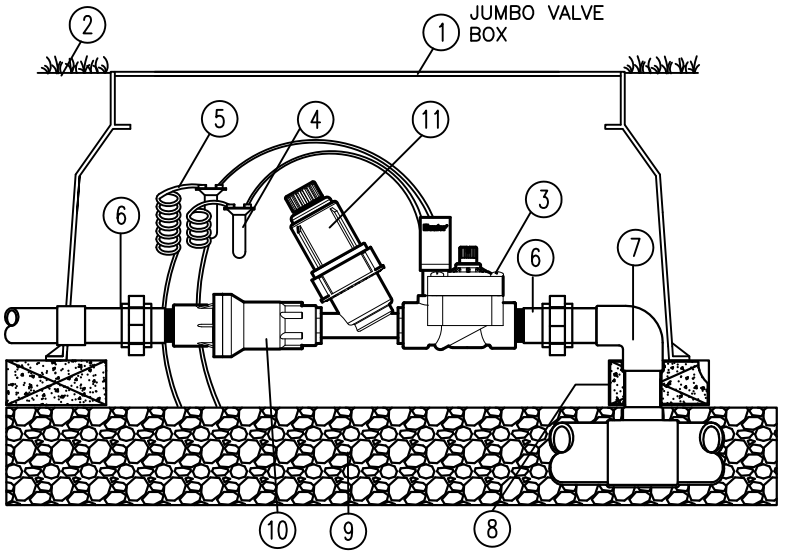
LARGE AND SMALL TREE PIT WITH GRATE IN SIDEWALK (SECTION)

STD. NO.	REV.
40.03C	3



CONTROL VALVE

2 FINISH GRADE
3 CONTROL VALVE WITH FLOW CONTROL
4 WATERPROOF CONNECTORS (2)
5 18–24" COILED WIRE
6 SCH 80 T.O.E. NIPPLE
7 MAIN LINE PIPE & FITTINGS
8 BRICK SUPPORTS (4)
9 3/4" MINUS WASHED GRAVEL, MIN. 3" DEPTH
10 PRESSURE REGULATOR
11 FILTER



DRIP IRRIGATION W/ PRESSURE REGULATOR AND FILTER

CHARLOTTE.

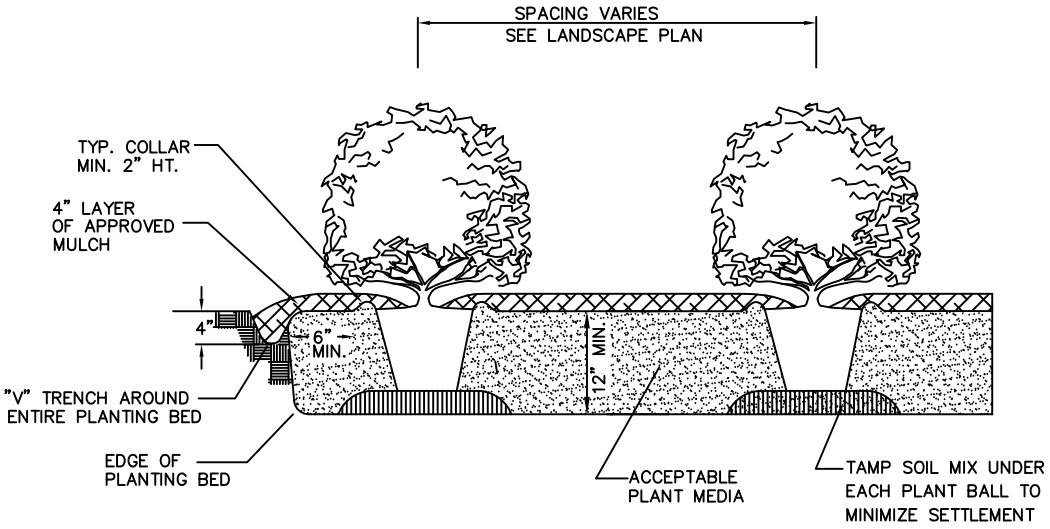
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TYPICAL VALVE AND VALVE BOX INSTALLATION

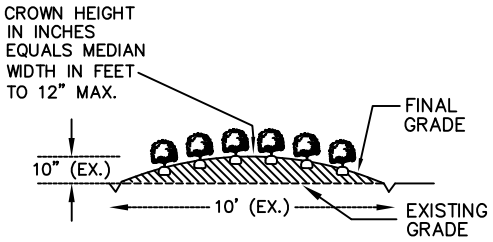
STD. NO.	REV.
40.04	9

NOTES:

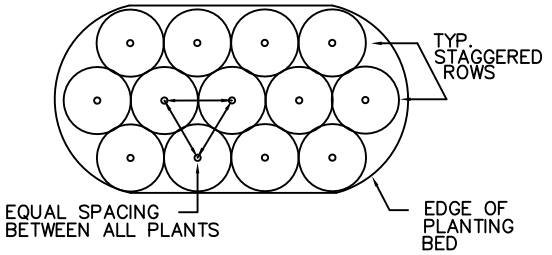
1. SCARIFY ROOT MASS OF CONTAINERIZED PLANT MATERIAL.
2. INSTALL CONTAINERIZED PLANTS AT FINSHED GRADE
3. TAMP PLANTING MIX FIRMLY AS PIT IS FILLED AROUND EACH PLANT BALL.
4. OMIT COLLAR AROUND EACH SHRUB WHEN IRRIGATION SYSTEM IS PRESENT.
5. SOAK EACH PLANT BALL AND PIT IMMEDIATELY AFTER INSTALLATION.



TYPICAL PLANTING BED DETAIL



TYPICAL BED CROWNING



TYPICAL PLANTING BED PLAN

CHARLOTTE.

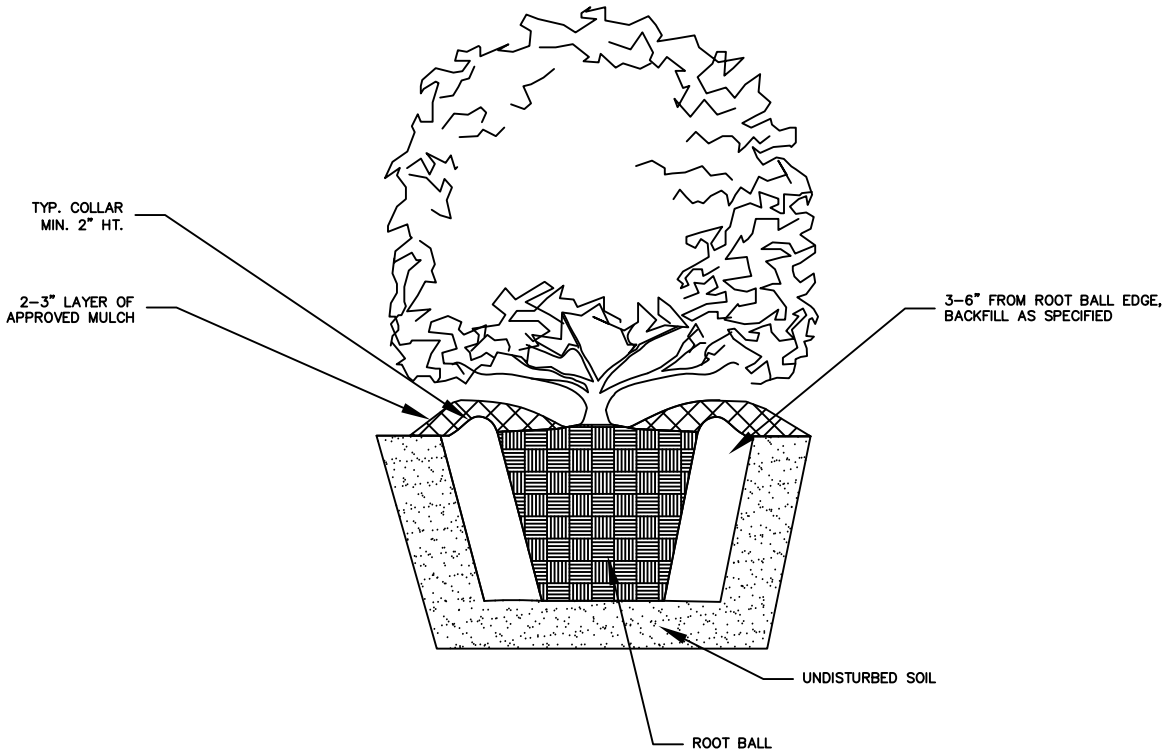
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

SHRUB PLANTING BED

STD. NO.	REV.
40.05A	9

NOTES:

1. SCARIFY ROOT MASS OF CONTAINERIZED PLANT MATERIAL.
2. INSTALL CONTAINERIZED PLANTS AT FINSHED GRADE
3. TAMP PLANTING MIX FIRMLY AS PIT IS FILLED AROUND EACH PLANT BALL.
4. OMIT COLLAR AROUND EACH SHRUB WHEN IRRIGATION SYSTEM IS PRESENT.
5. SOAK EACH PLANT BALL AND PIT IMMEDIATELY AFTER INSTALLATION.



CHARLOTTE.

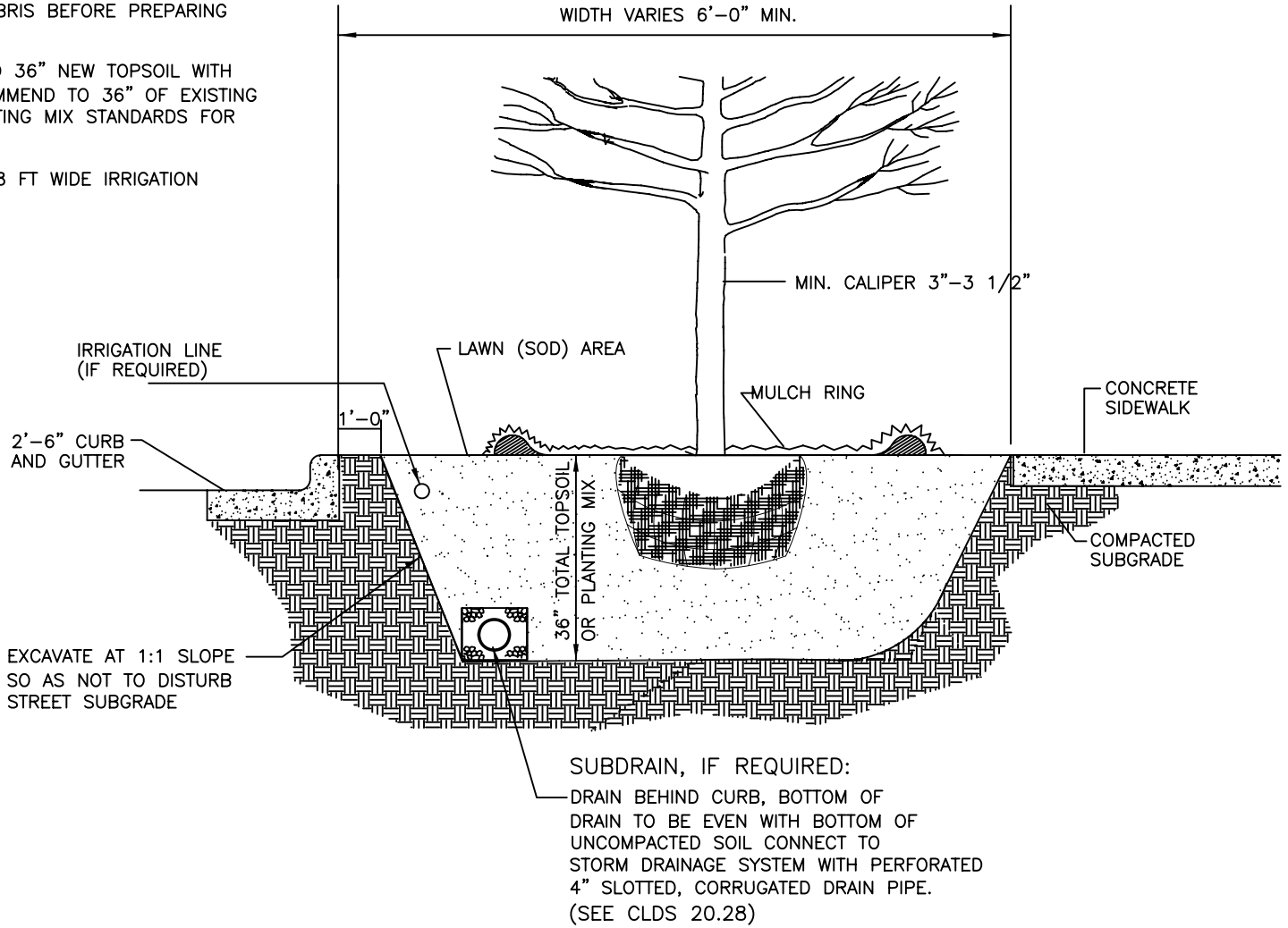
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

INDIVIDUAL SMALL SHRUB/TREE PLANTING

STD. NO.	REV.
40.05B	9

NOTES:

1. FOR NEW PLANTING AREAS, REMOVE ALL PAVEMENT, GRAVEL, SUB–BASE AND CONSTRUCTION DEBRIS BEFORE PREPARING SOIL AND PLANTING TREES
2. REMOVE COMPACTED SOIL AND ADD 36" NEW TOPSOIL WITH PLANT MIX OR UNCOMPACT AND AMMEND TO 36" OF EXISTING SOIL TO MEET TOPSOIL WITH PLANTING MIX STANDARDS FOR TREES. (SEE DETAIL)
3. IF PLANTING STRIP IS LESS THAN 8 FT WIDE IRRIGATION AND SUBDRAIN ARE REQUIRED.



CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

6' TREE PLANTING STRIP UMUD ONLY
(WITH IRRIGATION AND DRAINAGE)

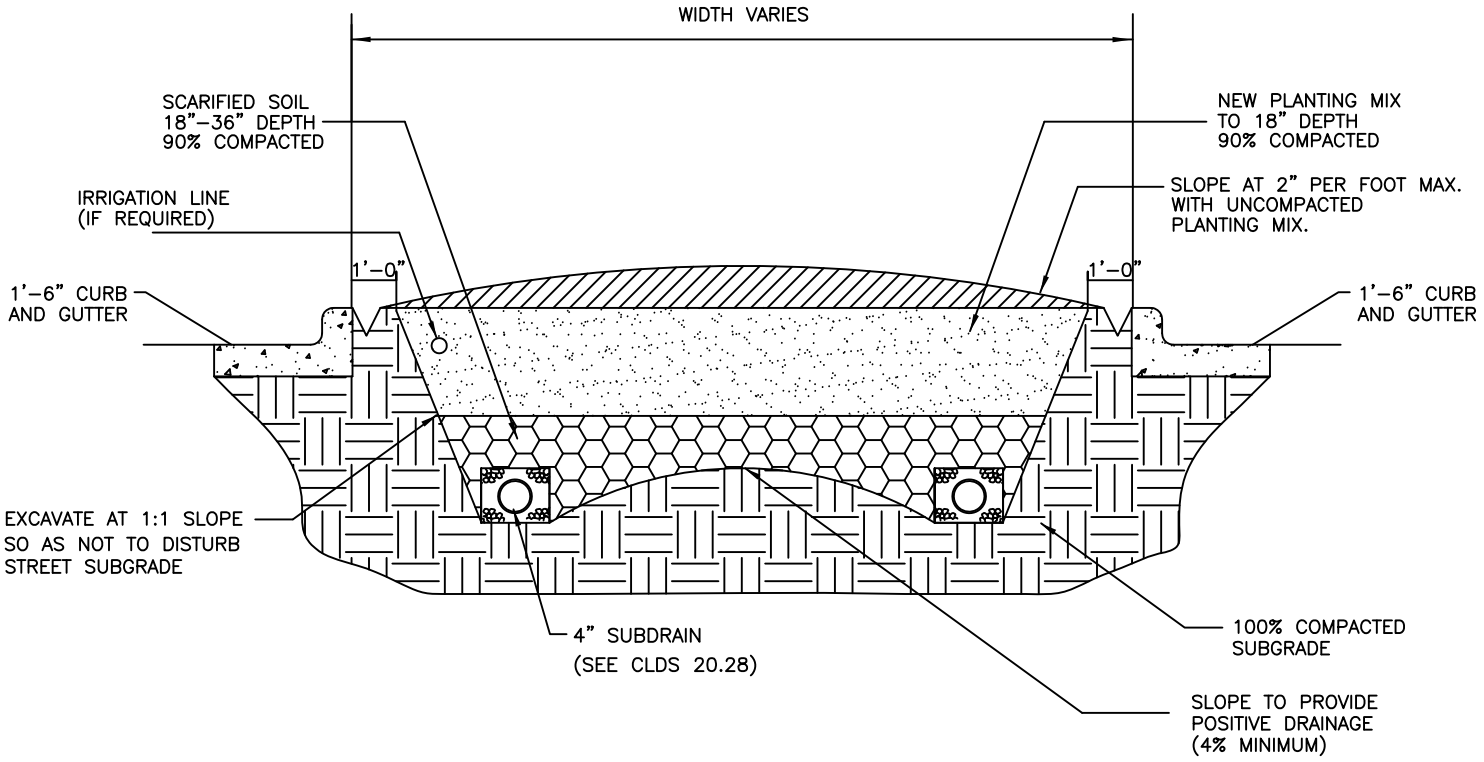
STD. NO.	REV.
40.06	3

NOTES:

1. FOR NEW PLANTING AREAS, REMOVE ALL PAVEMENT, GRAVEL, SUB-BASE AND CONSTRUCTION DEBRIS BEFORE PREPARING SOIL AND PLANTING TREES.

2. REMOVE SOIL TO A DEPTH OF 18". SCARIFY, TILL OR OTHERWISE LOOSEN THE REMAINING SOIL TO A DEPTH OF 18". ADD NEW PLANTING MIX AS SPECIFIED.

3. SUBSURFACE DRAINAGE SHALL BE INSTALLED IN ALL MEDIANS AND TIED INTO EXISTING STORM DRAIN SYSTEM. A 4 INCH PERFORATED CORRUGATED PVC DRAIN OR HDPE PER AASHTO M252, TYPE CP (SINGLE-WALL, CORRUGATED) SHALL BE INSTALLED IN EACH MEDIAN AT THE BOTTOM OF THE EXCAVATED AREA. DRAIN SHALL BE COVERED WITH A MINIMUM 6 INCHES OF #57 WASHED STONE, THEN WRAPPED WITH A SPECIFIED NON-WOVEN GEOTEXTILE FABRIC. SPECIAL CARE SHALL BE EXERCISED WHEN FILLING MEDIANS WITH SOIL SO NOT TO CRUSH OR DAMAGE THE DRAINAGE SYSTEM.



CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

MEDIAN GREATER THAN 120 INCHES
EXCAVATION, DRAINAGE AND BACKFILL

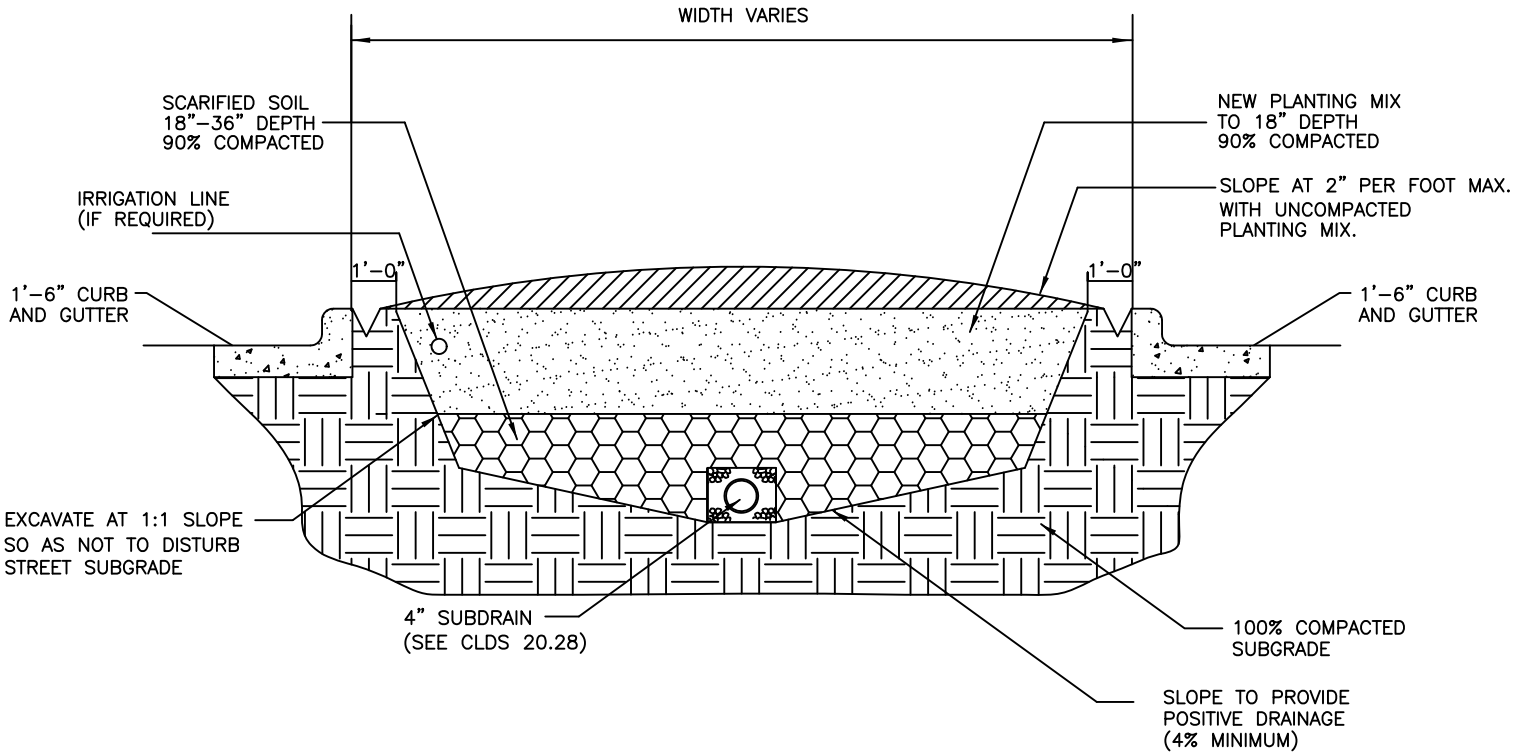
STD. NO.	REV.
40.08A	9

NOTES:

1. FOR NEW PLANTING AREAS, REMOVE ALL PAVEMENT, GRAVEL, SUB-BASE AND CONSTRUCTION DEBRIS BEFORE PREPARING SOIL AND PLANTING TREES.

2. REMOVE SOIL TO A DEPTH OF 18". SCARIFY, TILL OR OTHERWISE LOOSEN THE REMAINING SOIL TO A DEPTH OF 18". ADD NEW PLANTING MIX AS SPECIFIED.

3. SUBSURFACE DRAINAGE SHALL BE INSTALLED IN ALL MEDIANS AND TIED INTO EXISTING STORM DRAIN SYSTEM. A 4 INCH PERFORATED CORRUGATED PVC DRAIN OR HDPE PER AASHTO M252, TYPE CP (SINGLE-WALL, CORRUGATED) SHALL BE INSTALLED IN EACH MEDIAN AT THE BOTTOM OF THE EXCAVATED AREA. DRAIN SHALL BE COVERED WITH A MINIMUM 6 INCHES OF #57 WASHED STONE, THEN WRAPPED WITH A SPECIFIED NON-WOVEN GEOTEXTILE FABRIC. SPECIAL CARE SHALL BE EXERCISED WHEN FILLING MEDIANS WITH SOIL SO NOT TO CRUSH OR DAMAGE THE DRAINAGE SYSTEM.



CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

73 TO 120 INCH MEDIAN EXCAVATION, DRAINAGE AND BACKFILL

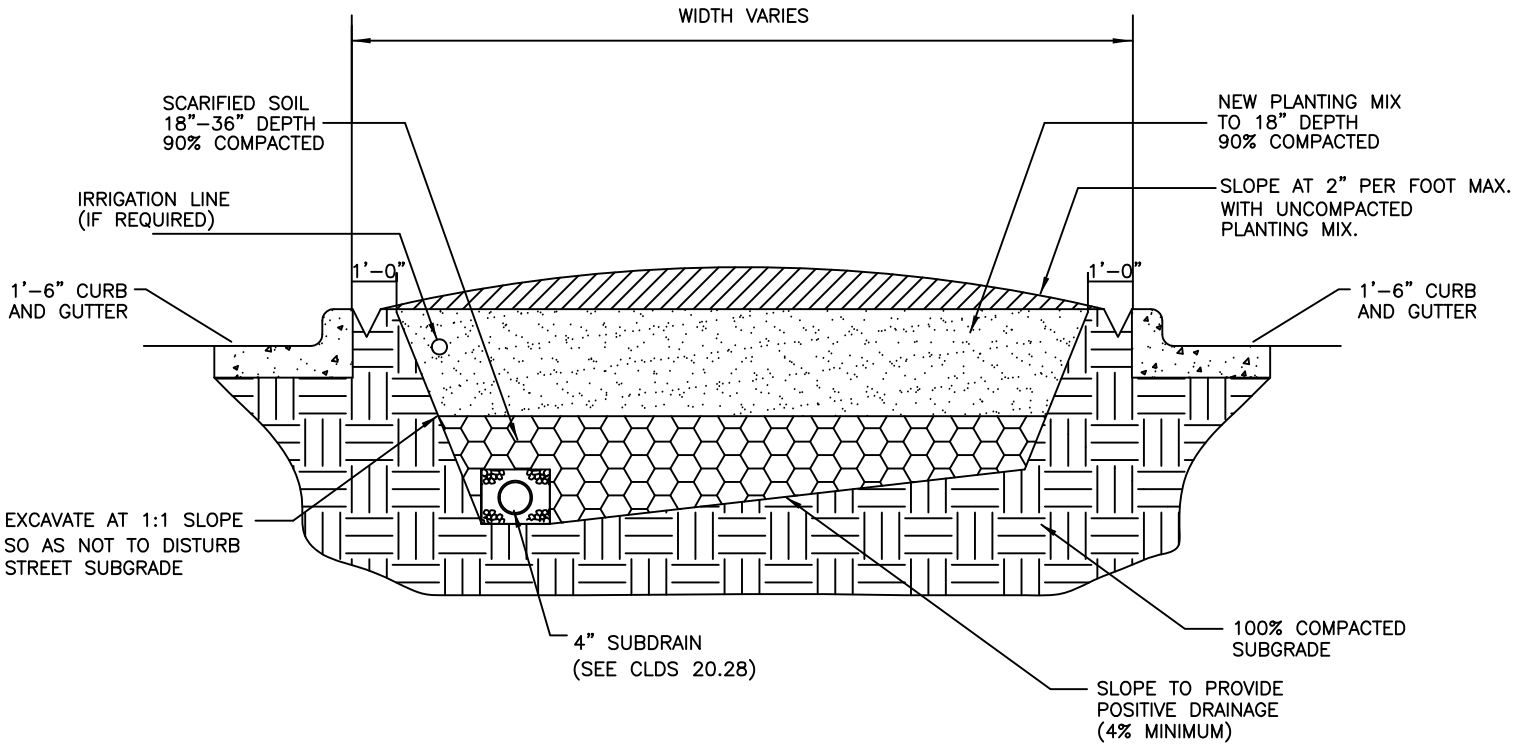
STD. NO.	REV.
40.08B	9

NOTES:

1. FOR NEW PLANTING AREAS, REMOVE ALL PAVEMENT, GRAVEL, SUB–BASE AND CONSTRUCTION DEBRIS BEFORE PREPARING SOIL AND PLANTING TREES.

2. REMOVE SOIL TO A DEPTH OF 18". SCARIFY, TILL OR OTHERWISE LOOSEN THE REMAINING SOIL TO A DEPTH OF 18". ADD NEW PLANTING MIX AS SPECIFIED.

3. SUBSURFACE DRAINAGE SHALL BE INSTALLED IN ALL MEDIANS AND TIED INTO EXISTING STORM DRAIN SYSTEM. A 4 INCH PERFORATED CORRUGATED PVC DRAIN OR HDPE PER AASHTO M252, TYPE CP (SINGLE–WALL, CORRUGATED) SHALL BE INSTALLED IN EACH MEDIAN AT THE BOTTOM OF THE EXCAVATED AREA. DRAIN SHALL BE COVERED WITH A MINIMUM 6 INCHES OF #57 WASHED STONE, THEN WRAPPED WITH A SPECIFIED NON–WOVEN GEOTEXTILE FABRIC. SPECIAL CARE SHALL BE EXERCISED WHEN FILLING MEDIANS WITH SOIL SO NOT TO CRUSH OR DAMAGE THE DRAINAGE SYSTEM.

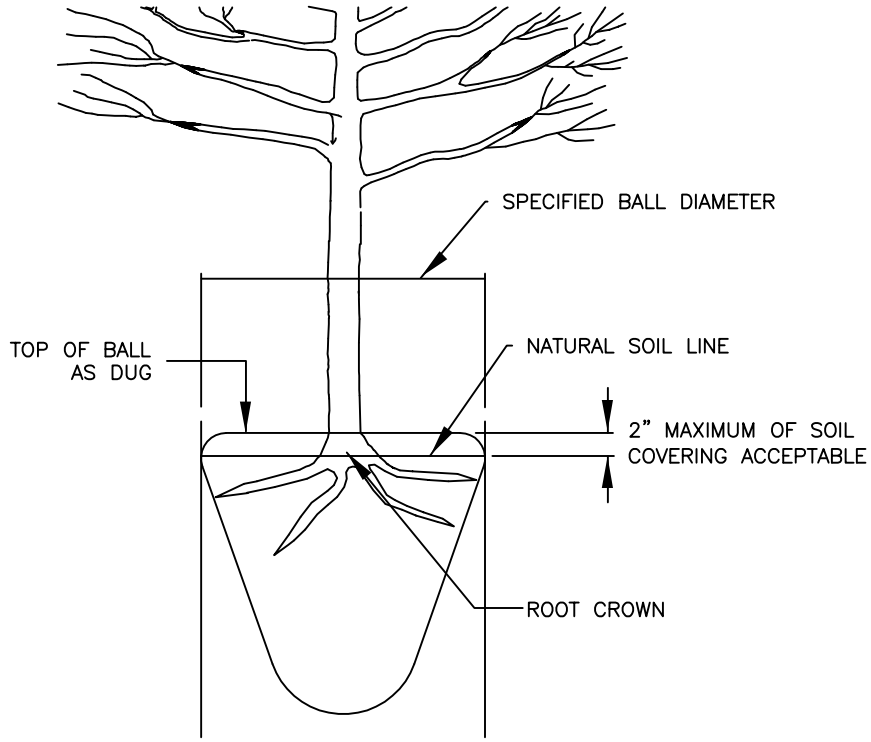


CHARLOTTE.

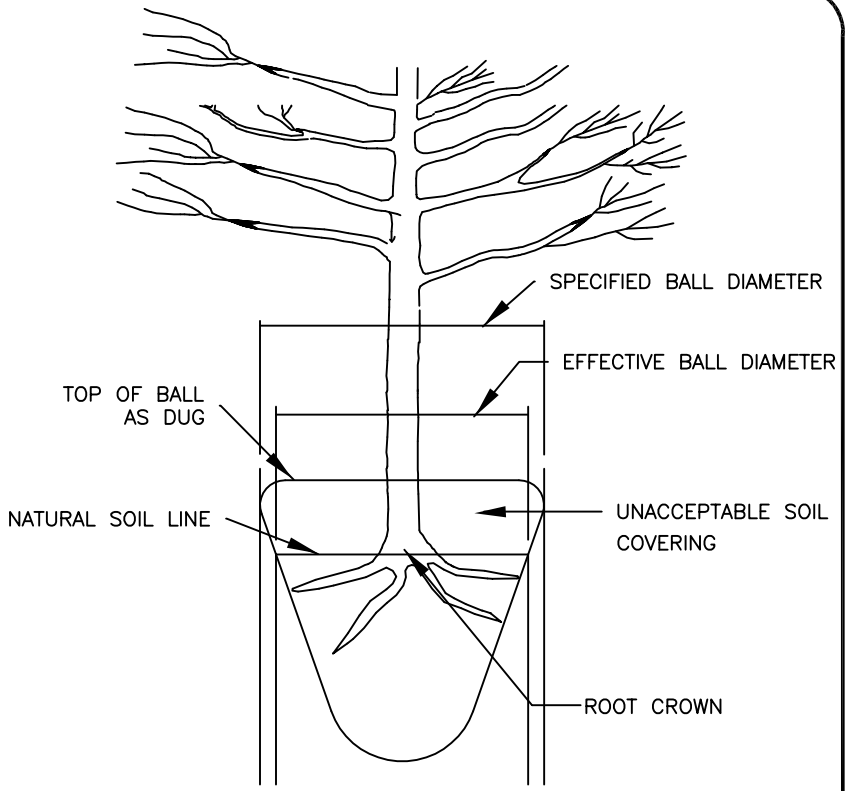
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

48 TO 72 INCH MEDIAN
EXCAVATION, DRAINAGE AND BACKFILL

STD. NO.	REV.
40.08C	9



ACCEPTABLE CONDITION
(AS DELIVERED)



UNACCEPTABLE CONDITION
(AS DELIVERED)

NOTE:
A ROOT FLARE EXCAVATION FOR ALL TREES SPECIFIED WILL BE DONE BY THE CITY ARBORIST TO ENSURE THAT TREES WERE NOT PLANTED/GROWN TOO DEEPLY AT SOURCE (NURSERY). LANDSCAPE CONTRACTOR SHALL HAVE SUPPLIER MARK GROUND LEVEL LINE ABOVE ROOT BALL. IF CITY ARBORIST DETERMINES THAT THERE IS EXCESSIVE SOIL OVER THE ROOT CROWN, THESE TREES WILL BE REJECTED.

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

ROOT FLARE DEPTHS

(TREE ROOT BALL CONDITION ON TREES FROM SUPPLIERS)

STD. NO.	REV.
40.09	9

PLANTINGS IN STREET RIGHT-OF-WAY

GENERAL NOTES

1. TREE GRATES AND ASSOCIATED IRRIGATION SYSTEMS ARE REQUIRED AT VARIOUS LOCATIONS IN THE UPTOWN AREAS TO COMPLY WITH THE UPTOWN STREETSCAPE GUIDELINES AND OTHER ZONING REQUIREMENTS. ALL OTHER INSTALLATIONS OF IRRIGATION SYSTEMS WITHIN THE RIGHT-OF-WAY OF CITY OR STATE MAINTAINED STREETS REQUIRE AN ENCROACHMENT AGREEMENT EXECUTED THROUGH CDOT OR NCDOT. THE CITY'S ENCROACHMENT AGREEMENT REVIEW/APPROVAL PROCESS MAY INCLUDE ADDITIONAL REQUIREMENTS. CONTACT CDOT OR NCDOT FOR ADDITIONAL INFORMATION REGARDING COST, SUBMITTAL, AND LIABILITY INSURANCE COVERAGE REQUIREMENTS.

2. A DRAINAGE SYSTEM IS REQUIRED AS SHOWN FOR ALL IRRIGATED PLANTING AREAS LOCATED ADJACENT TO STREETS. ALL IRRIGATION/DRAINAGE SYSTEMS NOT REQUIRED BY THE UPTOWN STREET GUIDELINES REQUIRE AN ENCROACHMENT AGREEMENT EXECUTED BY CDOT OR NCDOT FOR CITY OR STATE-MAINTAINED ROADS, RESPECTIVELY. CONTACT CDOT OR NCDOT FOR ADDITIONAL INFORMATION REGARDING COST, SUBMITTAL AND LIABILITY INSURANCE COVERAGE REQUIREMENTS.

3. AN INSPECTION SCHEDULE IS NEEDED FOR TREES THAT WILL BE PLANTED IN THE STREET RIGHT OF WAY DUE TO ZONING OR OTHER REQUIREMENTS. LANDSCAPE INSPECTION INCLUDE THE FOLLOWING:

   SUBDRAINAGE INSPECTION
   TREE PIT/WELL OR PLANTING STRIP INSPECTION
   SOIL MIX APPROVALS/INSPECTIONS
   TREE APPROVALS/INSPECTIONS – PRIOR TO PURCHASING THE TREES, TO BE MADE BY THE CITY ARBORIST OR ASSISTANT CITY ARBORIST – 336-4262.
   THIS MAY INCLUDE PHOTO APPROVAL OR PARTICIPATION IN TAGGING THE TREES.
   TREE PLANTING INSPECTION
   IRRIGATION INSPECTION
   FINAL WALK THROUGH

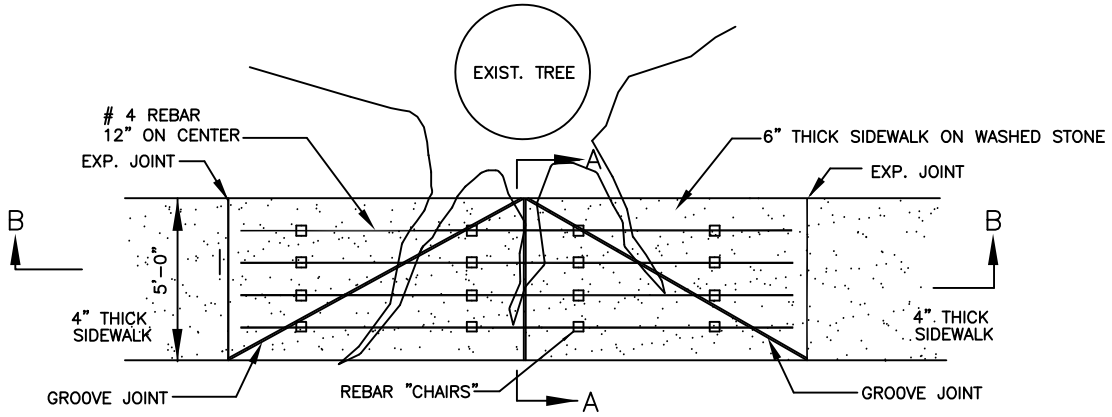
ALL OF THE ABOVE INSPECTIONS WILL BE PERFORMED BY THE CITY LAND DEVELOPMENT DIV. (URBAN FORESTRY SECTION) EXCEPT FOR THE TREE APPROVALS AS NOTED.

CHARLOTTE.

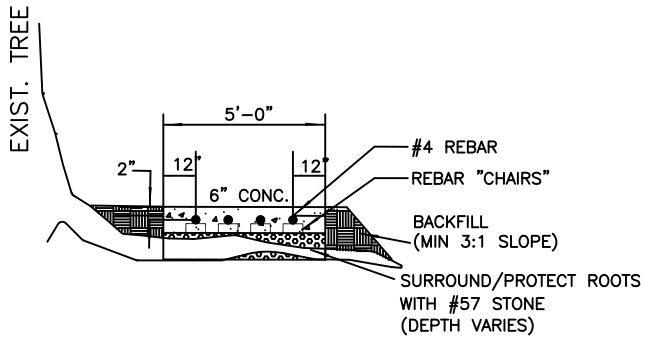
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TREE PLANTING-NOTES
(DRAINAGE AND INSPECTION)

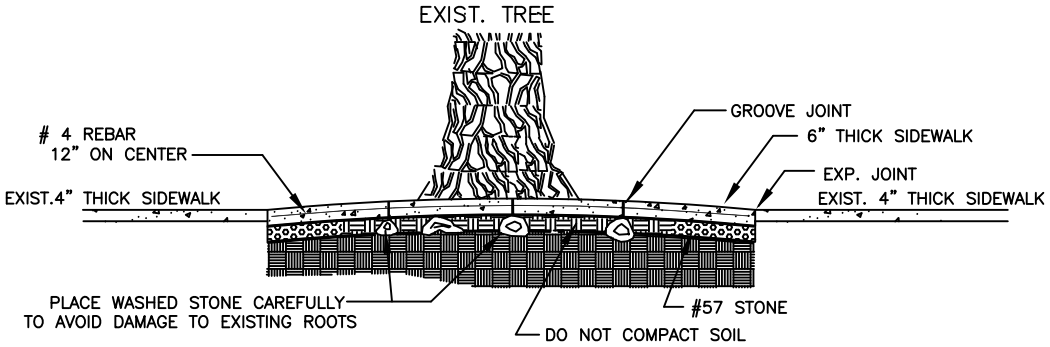
STD. NO.	REV.
40.10	



PLAN VIEW



SECTION A–A



SECTION B–B

CHARLOTTE.

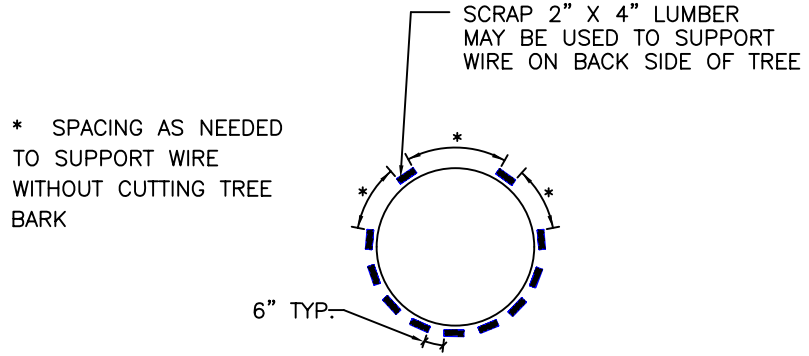
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

BRIDGING TREE ROOTS

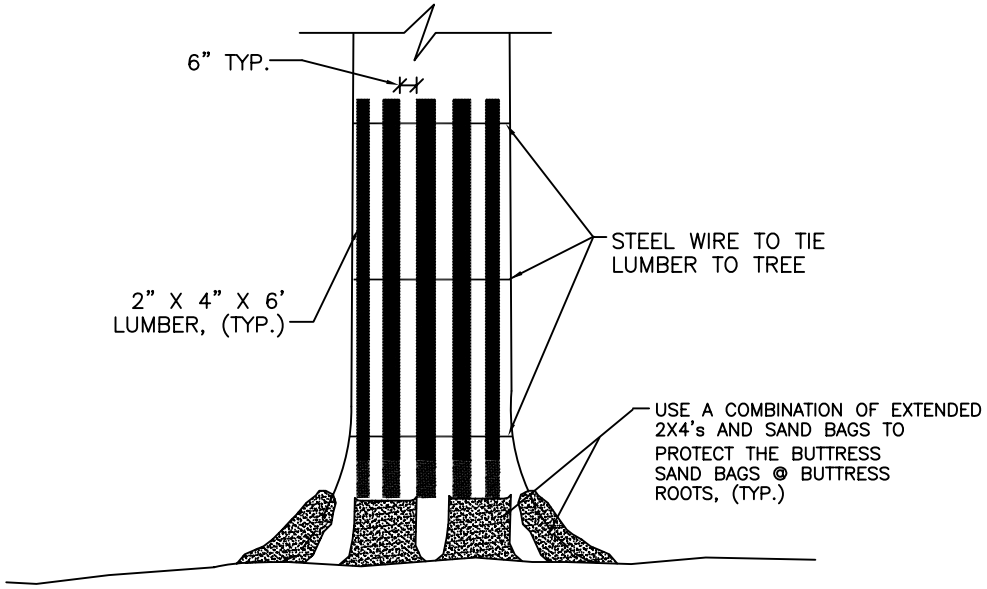
STD. NO.	REV.
40.11	9

NOTES:

1. THIS TREE BUMPER DETAIL SHALL BE USED WHEN WORKING WITHIN 10' OF AN EXISTING TREE TO BE PROTECTED.
2. ALL TREES SHALL BE SAVED UNLESS NOTED OTHERWISE ON THE PLANS OR DIRECTED BY THE ENGINEER.
3. LUMBER, WIRE, AND SANDBAGS MAY BE REUSED AT OTHER TREES.
4. THE INTENT OF THIS DETAIL IS TO PROTECT EXISTING TREES FROM DAMAGE DURING CONSTRUCTION ESPECIALLY FROM BACKHOE ARM SWING. AN ALTERNATE APPROACH MAY BE USED IF APPROVED IN WRITING BY THE ENGINEER AFTER CONSULTATION WITH THE CITY ARBORIST OR HIS DULY AUTHORIZED REPRESENTATIVE.



PLAN VIEW



ELEVATION VIEW

CHARLOTTE.

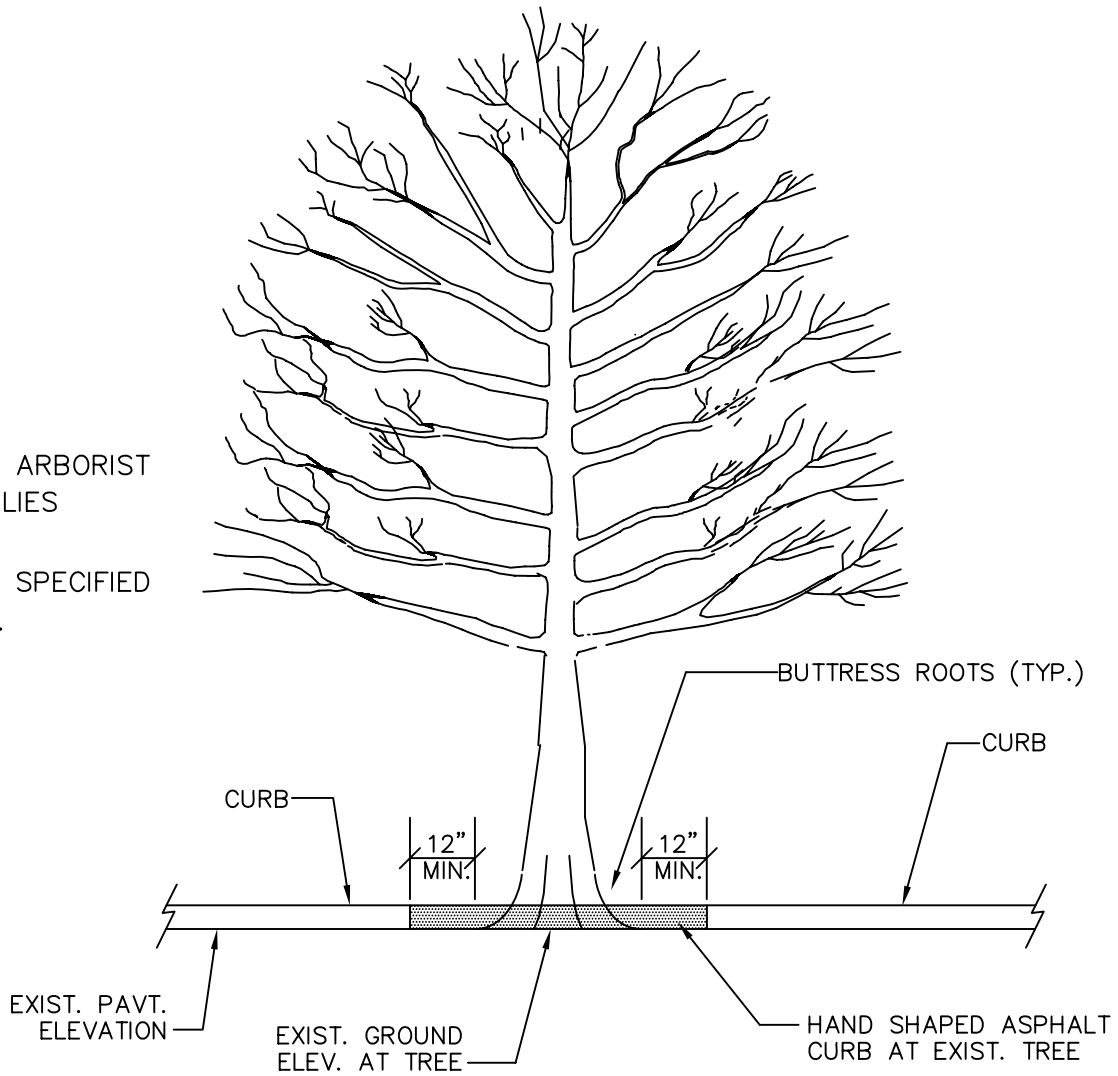
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TEMPORARY TREE PROTECTION DETAIL

STD. NO.	REV.
40.12	

NOTES:

1. CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR EXISTING TREES.
2. WHERE EXISTING TREES ARE WITHIN 4' OF THE PROPOSED BACK OF CURB, THE PROPOSED CURB SHALL END A MINIMUM OF 12" FROM THE TREE'S BUTTRESS ROOTS.
3. CONTRACTOR SHALL COORDINATE WITH THE CITY ARBORIST TO IDENTIFY TREES FOR WHICH THIS DETAIL APPLIES PRIOR TO CONSTRUCTION NEAR THE TREE(S).
4. NO TREES SHALL BE REMOVED UNLESS CLEARLY SPECIFIED ON THE PLANS OR IDENTIFIED BY THE ENGINEER.
5. AVOID FILL PLACEMENT NEAR TREE.
6. FOR ADDITIONAL SPECS., SEE SECTION 1000 PART 03. B AND C

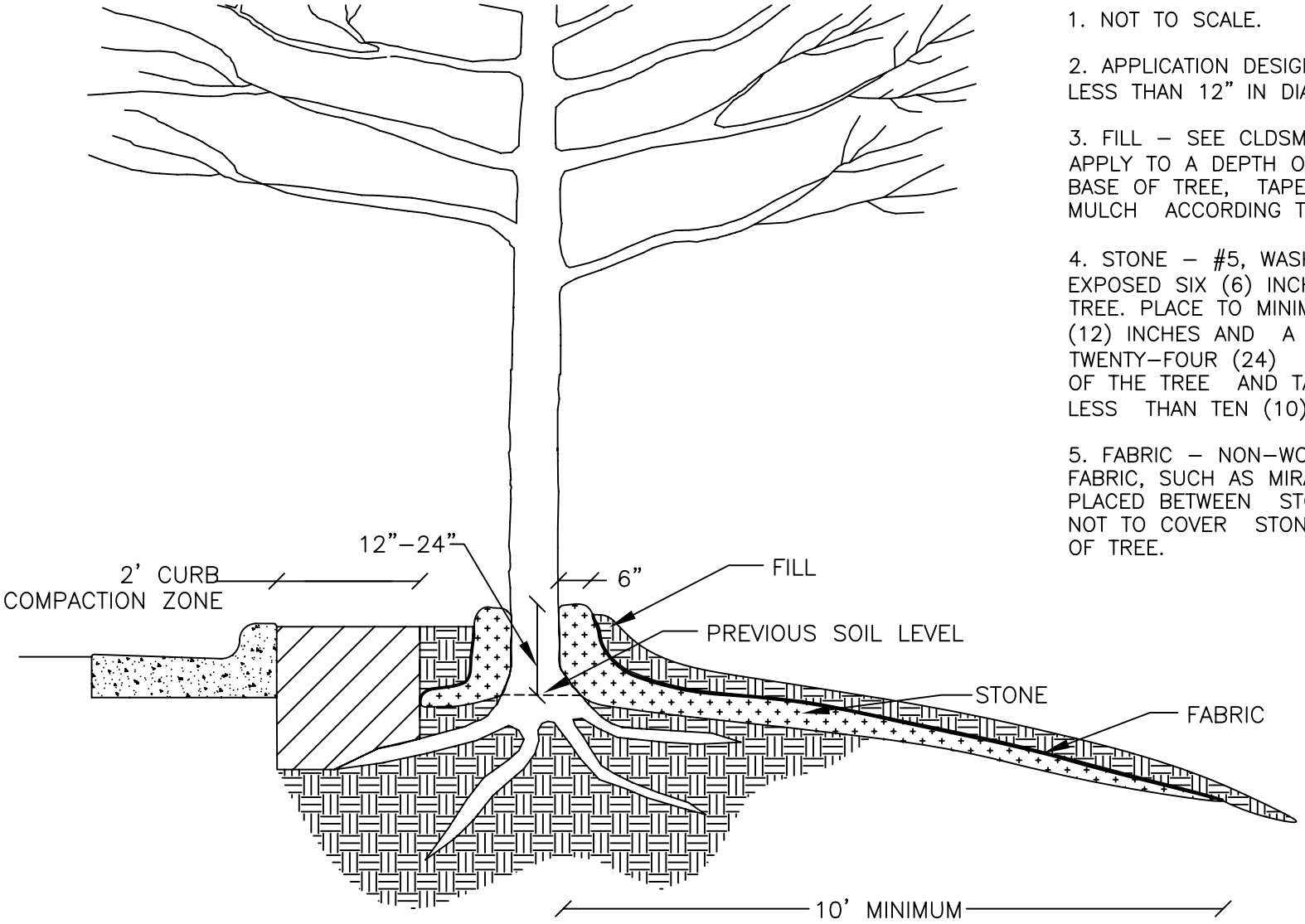


CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

ASPHALT CURB PLACEMENT AT EXISTING TREES

STD. NO.	REV.
40.13	



NOTES:

1. NOT TO SCALE.

2. APPLICATION DESIGNED FOR TREES NO LESS THAN 12" IN DIAMETER.

3. FILL – SEE CLDSM – PLANTING MIX. APPLY TO A DEPTH OF FOUR (4) INCHES AT BASE OF TREE, TAPER TO GRADE. SEED AND MULCH ACCORDING TO CLDSM.

4. STONE – #5, WASHED. MAINTAIN EXPOSED SIX (6) INCH WIDTH AT TRUNK OF TREE. PLACE TO MINIMUM DEPTH OF TWELVE (12) INCHES AND A MAXIMUM OF TWENTY–FOUR (24) INCHES AT THE BASE OF THE TREE AND TAPER OUTWARD TO NO LESS THAN TEN (10) FEET.

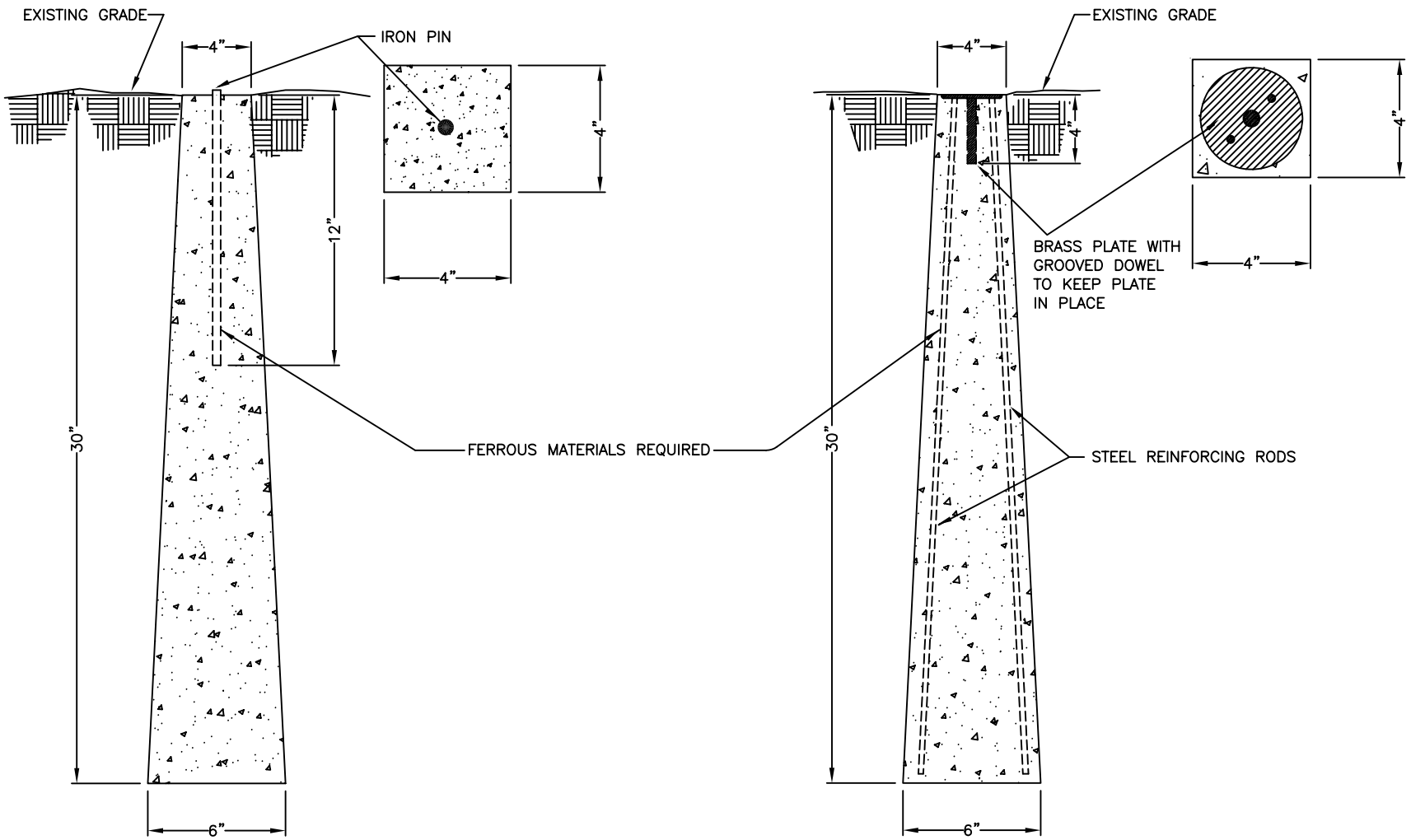
5. FABRIC – NON–WOVEN GEOTEXTILE FABRIC, SUCH AS MIRAFI OR EQUIVALENT, PLACED BETWEEN STONE AND FILL. IT IS NOT TO COVER STONE EXPOSED AT TRUNK OF TREE.

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

ROCK CHIMNEY

STD. NO.	REV.
40.14	



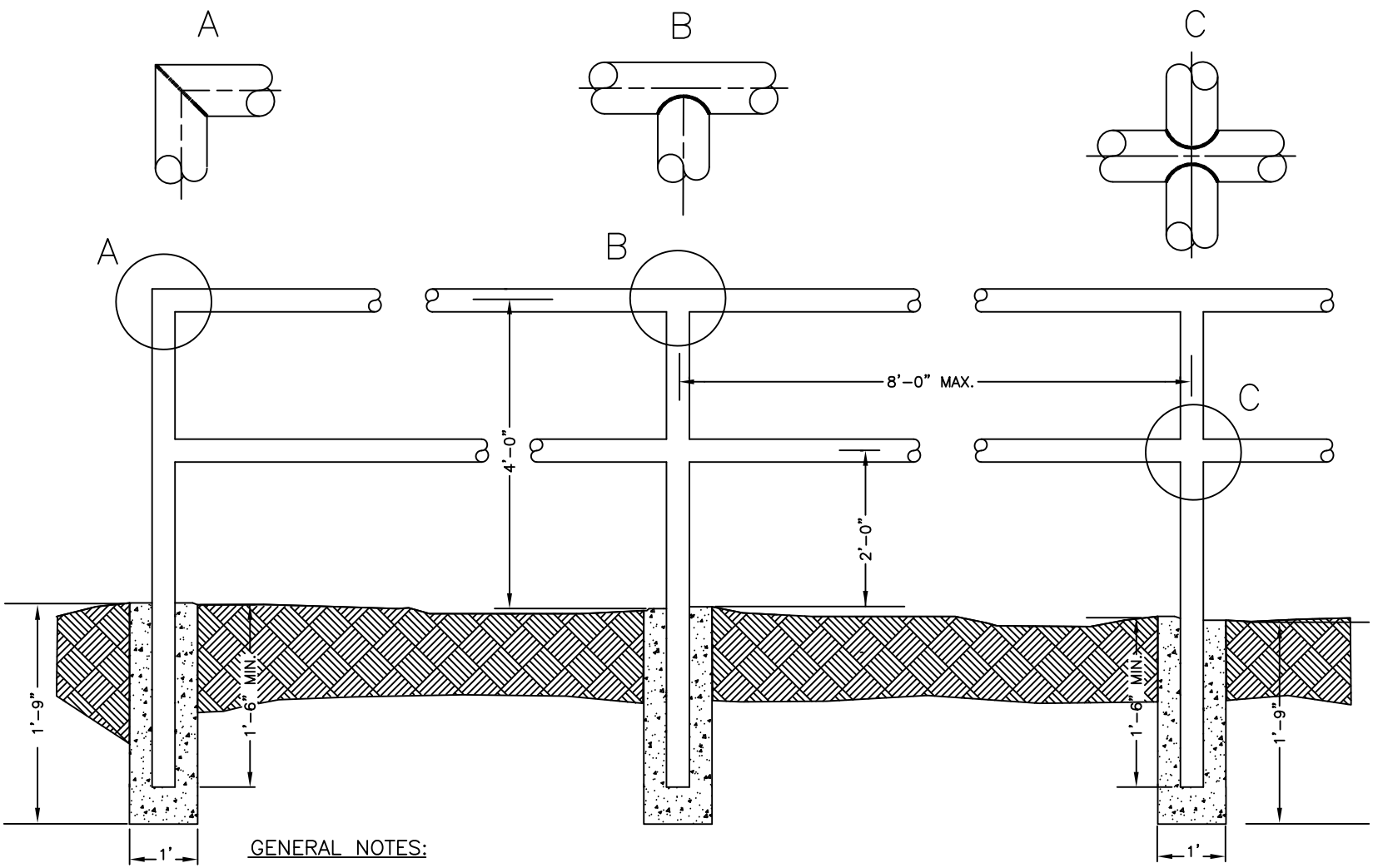
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

TYPICAL CONCRETE CONTROL MONUMENT

STD. NO.	REV.
50.03	



GENERAL NOTES:

1. ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH.
2. TYPE OF PIPE TO BE USED IS 1-5/8" MAX. O.D. BLACK IRON, LOW CARBON PIPE OR GALVANIZED.
3. ALL JOINTS TO HAVE A 1/2" FILLET WELD AT ALL JOINTS.
4. AFTER INSTALLATION PAINT ASSMBLY WITH BLACK ALL WEATHER ENAMEL.
5. SEE DETAIL 50.04-B FOR WARRANTS

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

SAFETY RAIL

STD. NO.	REV.
50.04A	7

WARRANTS

STANDARD SAFETY RAIL (STD. #50.04A) SHALL BE INSTALLED UNDER ANY OF THE FOLLOWING CIRCUMSTANCES IN BOTH NEW CONSTRUCTION AND IN RETROFITTING OR RECONSTRUCTION OF EXISTING ROADWAYS OR SITES:

1. WHEN THE CULVERT CROSSING DETAIL (STD. #10.36A–B) APPLIES.
2. IF THERE IS A TWO FOOT OR GREATER DROPOFF WITHIN 2 FEET OF THE EDGE OF THE SIDEWALK (SEE DIAGRAM A).
3. IF THERE IS A ONE FOOT OR GREATER DROPOFF DIRECTLY ADJACENT TO THE SIDEWALK EDGE (SEE DIAGRAM B).
4. AT THE TOP OF ANY DROPOFF WITHIN THE PEDESTRIAN CLEAR ZONE OR WHERE PEDESTRIANS CAN REASONABLY BE EXPECTED IN THE VICINITY.
5. AT THE DIRECTION OF CDOT OR ENGINEERING & PROPERTY MANAGEMENT STAFF BASED ON FIELD CONDITIONS.

DEFINITIONS

- DROPOFF –– A SLOPE OF 2:1 OR STEEPER. EXAMPLES INCLUDE HEADWALLS, RETAINING WALLS, AND CULVERTS.
- PEDESTRIAN CLEAR ZONE –– 10 FEET OF ANY COMBINATION OF SIDEWALK, SLOPE, AND SHOULDER SLOPED AT 6:1 OR FLATTER. SIDEWALK DOES NOT NEED TO BE PRESENT.
- SIDEWALK –– FOR PURPOSES OF THIS STANDARD, THE TERM "SIDEWALK" IS USED GENERICALLY AND SHALL MEAN ANY PATH OR SURFACE TO BE USED FOR BICYCLE AND/OR PEDESTRIAN TRANSPORTATION. EXAMPLES INCLUDE, BUT ARE NOT LIMITED TO, SIDEWALKS, BIKE PATHS, SHARED–USE PATHS, PEDESTRIAN PATHS, AND GREENWAYS.

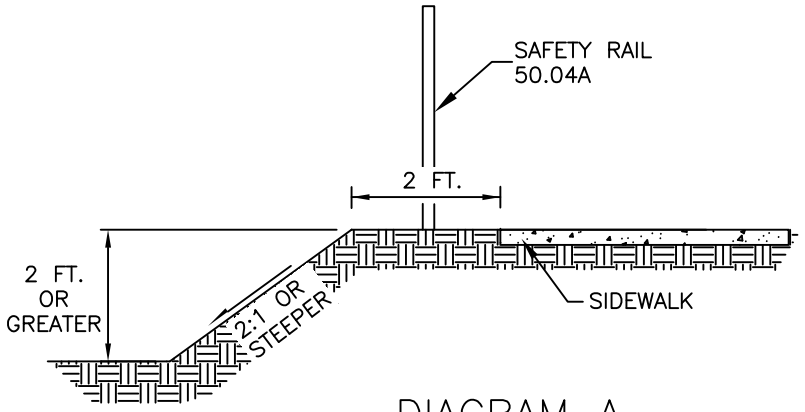


DIAGRAM A

SLOPED DROPOFF AT BACK OF SIDEWALK

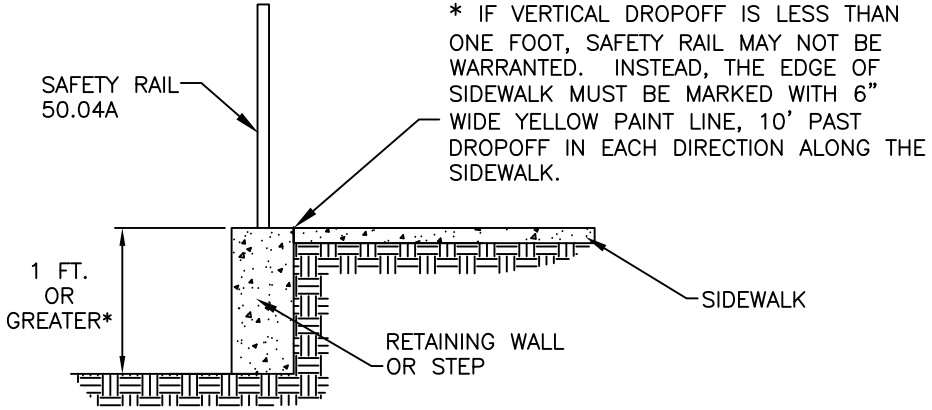


DIAGRAM B

VERTICAL DROPOFF AT BACK OF SIDEWALK

NOT TO SCALE

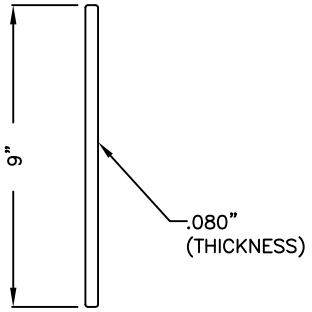
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

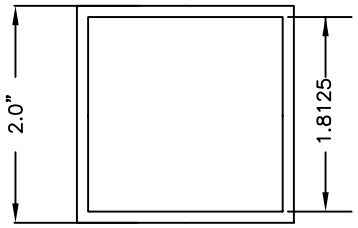
SAFETY RAIL WARRANTS

STD. NO.	REV.
50.04B	7

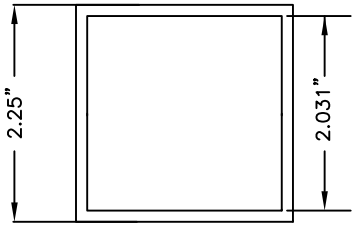
SIGN



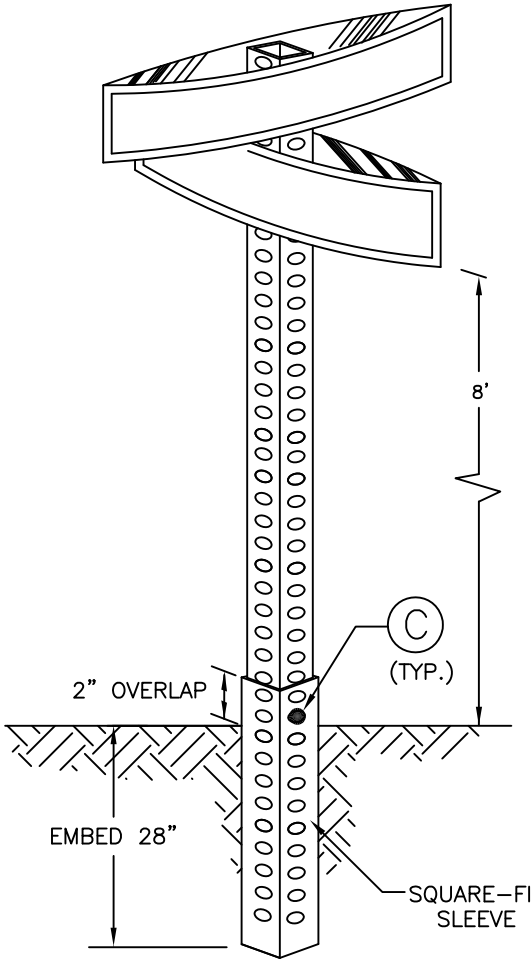
POST
(14 GAUGE)



SQUARE–FIT SLEEVE
(12 GAUGE)



STREET NAME SIGN
POST INSTALLATION



KEY TO FASTENERS:

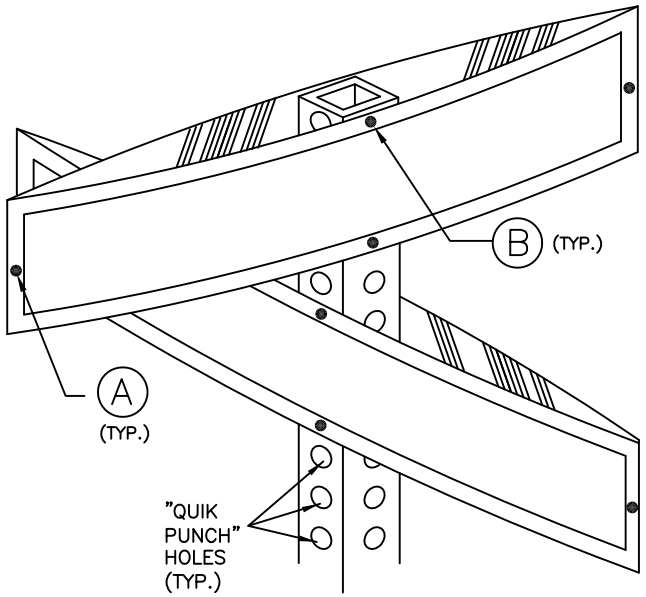
(A) #10–24 x $\frac{3}{4}$" HEX HEAD MACHINE, ZINC– DEAD END
#10–24 FLANGE NUT, ZINC– DEAD END

(B) $\frac{5}{16}$" #16 X 3" CARRIAGE BOLT, ZINC
$\frac{5}{16}$" #16 HEX NUT, STEEL

(C) $\frac{5}{16}$" #16 X 2–$\frac{3}{4}$" CORNER BOLT (BREAKAWAY), ZINC
$\frac{5}{16}$" #16 HEX NUT, STEEL

NOTES:

1. POST SHALL BE 14–GAUGE GALVANIZED STEEL, QUIK–PUNCH, $\frac{7}{16}$" HOLES, 1" ON CENTER, ALIGNED ON ALL SIDES, AND 2" SQUARE, 10 FEET IN LENGTH.
2. THE SLEEVE SHALL BE 12–GAUGE GALVANIZED STEEL, $\frac{7}{16}$" HOLES, 1" ON CENTER, ALIGNED ON ALL SIDES, AND 2.25" SQUARE, 30" IN LENGTH.
3. ALL STREET NAME SIGNS ARE SUBJECT TO THE APPROVAL OF THE DIRECTOR OF THE CHARLOTTE DEPARTMENT OF TRANSPORTATION AND THE CITY ENGINEER.



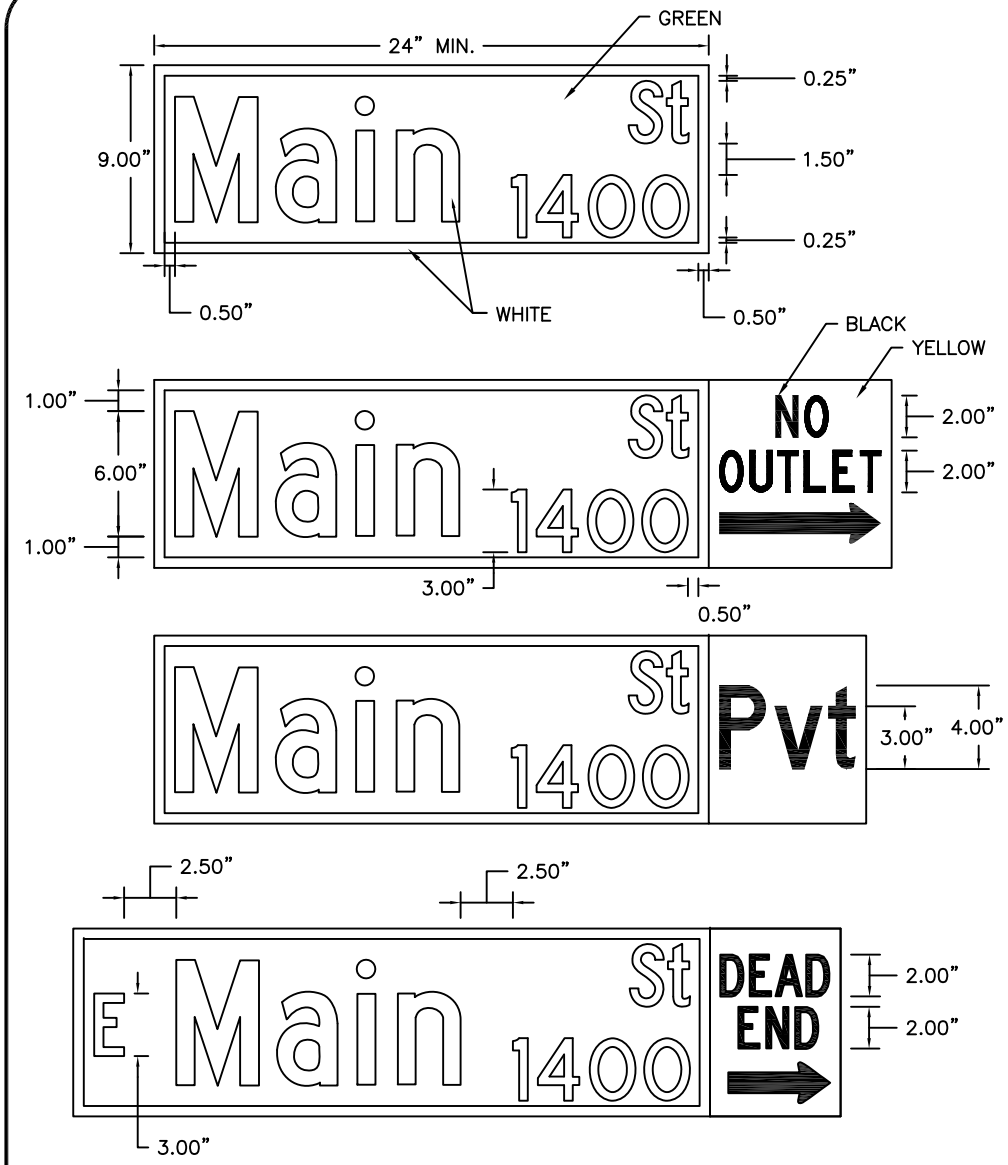
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

STREET NAME SIGN

STD. NO.	REV.
50.05A	9



NOT TO SCALE

NOTES:

1. STREET NAME MARKERS (SNM) SHALL BE ALUMINUM, FLAT, AND HAVE DIMENSIONS AS SHOWN ON THIS DETAIL. MIMIMUM LENGTH OF 24"; MAXIMUM LENGTH OF 60". THE SNM'S SHALL BE COVERED WITH WHITE HIGH INTENSITY PRISMATIC (HIP) RETRO-REFLECTIVE SHEETING (3M SERIES 3930 OR EQUIVALENT) WITH PRESSURE SENSITIVE ADHESIVE (OR EQUIVALENT TYPE IV OR HIGHER).

2. THE LETTERS SHALL BE REVERSE CUT FROM TRANSPARENT GREEN OVERLAY FILM (3M #1177 EC FILM OR EQUIVALENT MEETING FEDERAL SPECIFICATION FP-96, SECTION 178.01(A) AND ASTM D4956). THE TRANSPARENT GREEN OVERLAY FILM MUST BE PLACED ON THE SNM TO PROVIDE AN EXPOSED 0.5" BORDER OF THE UNDERLAY WHITE HIP RETRO-REFLECTIVE SHEETING.

3. THE STREET NAME SHALL BE COMPOSED OF INITIAL UPPER CASE LETTERS 6" IN HEIGHT AND CORRESPONDING LOWER CASE LETTERS 4.5" IN HEIGHT, IN FHWA "HIGHWAY B" FONT. THE STREET NAME SHALL BE LEFT-JUSTIFIED AND PLACED 0.5" FROM THE SIGN BORDER. ANY STREET NAME WITH 3 OR FEWER LETTERS SHALL BE CENTERED IN THE SIGN TEXT AREA.

   - PREFIX/SUFFIX NAMES SHALL BE COMPOSED OF INITIAL UPPER CASE LETTERS 3" IN HEIGHT AND CORRESPONDING LOWER CASE LETTERS 2.25" IN HEIGHT, IN FHWA "HIGHWAY C" FONT.
   - BLOCK NUMBERS SHALL BE 3" IN HEIGHT, IN FHWA "HIGHWAY C" FONT.
   - SUFFIX NAMES AND BLOCK NUMBERS SHALL BE RIGHT-JUSTIFIED AND PLACED 0.5" FROM THE RIGHT-SIDE SIGN BORDER AND 0.25" FROM THE TOP AND BOTTOM SIGN BORDERS. PREFIX LETTERS (N, S, E, AND W) SHALL BE CENTERED AND PLACED 0.5" FROM THE LEFT-SIDE SIGN BORDER WITH 2.5" SPACING TO BEGINNING OF STREET NAME.

4. SUPPLEMENTAL SNM WORDING ON YELLOW HIP RETRO-REFLECTIVE SHEETING WITH BLACK VINYL LETTERS SHALL BE PLACED ADJACENT TO THE GREEN OVERLAY FILM/BORDER TO INDICATE STREETS THAT DEAD END, HAVE NO OUTLET, ETC. OR ARE PRIVATE STREETS (PVT). THE YELLOW HIP RETRO-REFLECTIVE SHEETING MUST BE PLACED ON THE SNM TO MAINTAIN AN EXPOSED 0.5" BORDER OF THE UNDERLAY WHITE HIP RETRO-REFLECTIVE SHEETING.

   - NO OUTLET WITH ARROW (RIGHT OR LEFT) – PLACED ON SNM AT ENTRANCE TO A STREET OR STREET NETWORK FROM WHICH THERE IS NO OTHER EXIT. USE UPPER CASE LETTERS 2" IN HEIGHT, IN FHWA "HIGHWAY C" FONT.
   - PVT – PLACED ON SNM AT ENTRANCE TO PRIVATE STREET, USE UPPER CASE LETTER 4" IN HEIGHT AND CORRESPONDING LOWER CASE LETTERS 3" IN HEIGHT, IN FHWA "HIGHWAY C" FONT.
   - DEAD END WITH ARROW (RIGHT OR LEFT) – PLACED ON SNM AT ENTRANCE TO A SINGLE STREET THAT TERMINATES IN A DEAD END OR CUL-DE-SAC. USE UPPER CASE LETTERS 2" IN HEIGHT, IN FHWA "HIGHWAY C" FONT. IF STUB STREET IS LESS THAN OR EQUAL TO 200 FEET, THEN DEAD END IS NOT NECESSARY.

5. ALL SNMs ARE SUBJECT TO THE APPROVAL OF THE DIRECTOR OF THE CHARLOTTE DEPARTMENT OF TRANSPORTATION AND THE CITY ENGINEER.

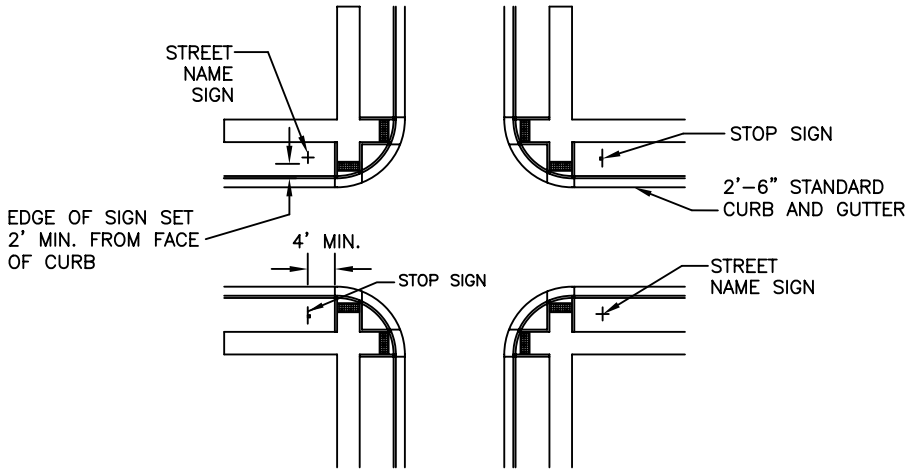
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

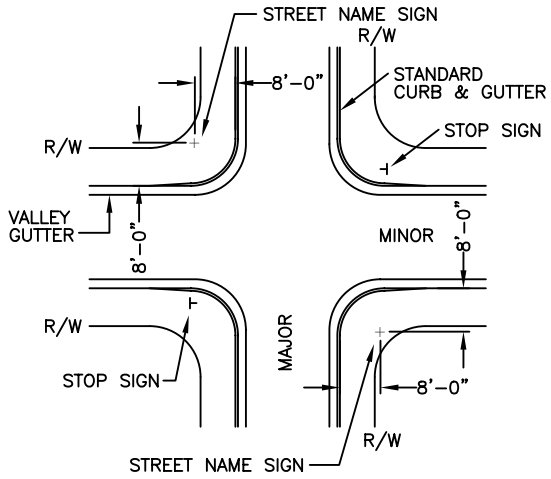
STREET NAME SIGN

STD. NO.	REV.
50.05B	9

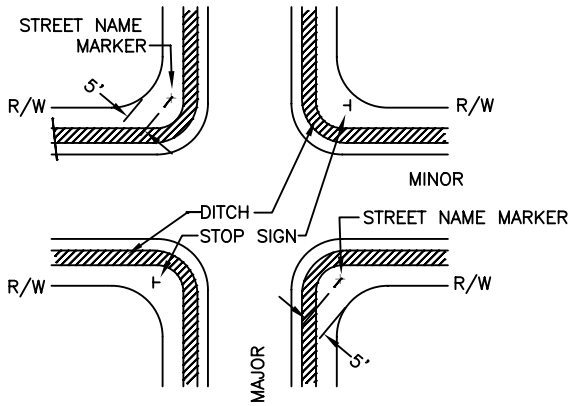
INTERSECTION with
SIDEWALK, CURB, and GUTTER



INTERSECTION with CURB and GUTTER



INTERSECTION with
DITCHES, and NO CURB and GUTTER



NOTES

1. TWO STREET NAME MARKERS ARE REQUIRED IF THE MAJOR STREET HAS 3 OR MORE LANES.
2. ANY VARIANCE FROM THIS STANDARD MUST BE APPROVED BY THE CHARLOTTE DEPARTMENT OF TRANSPORTATION.

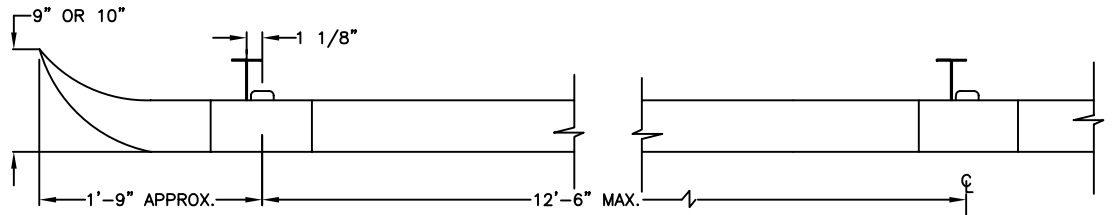
NOT TO SCALE

CHARLOTTE.

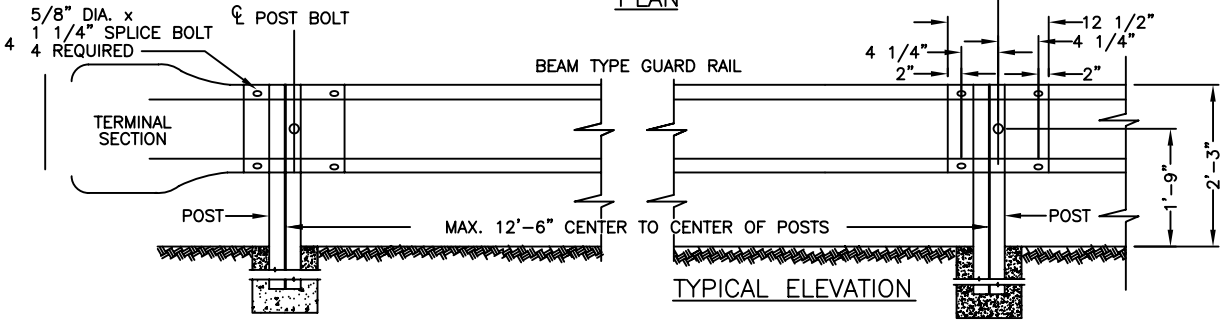
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

STREET NAME SIGN INSTALLATION LOCATIONS

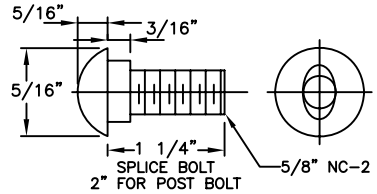
STD. NO.	REV.
50.06	10



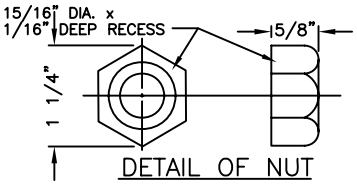
PLAN



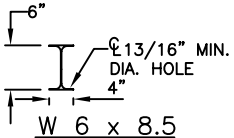
TYPICAL ELEVATION



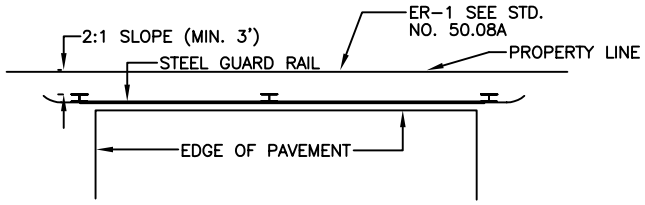
DETAIL OF BOLT



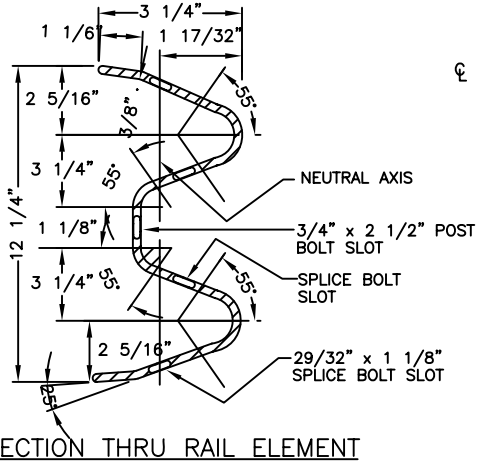
DETAIL OF NUT



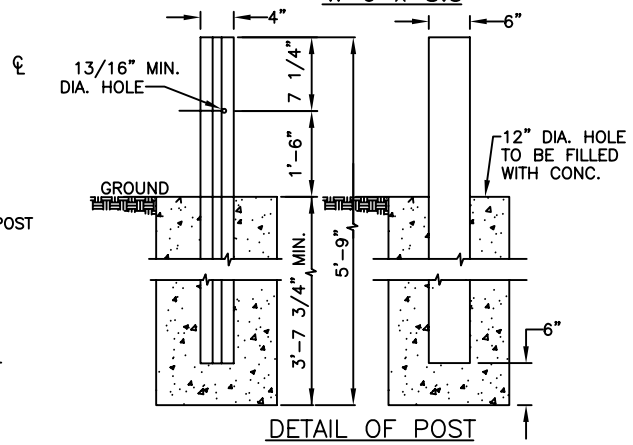
W 6 x 8.5



DEAD-END STREET BARRICADE



SECTION THRU RAIL ELEMENT



DETAIL OF POST

APPROVED DATE

NOTE

THIS DETAIL IS NOT A GUARDRAIL DETAIL. FOR ROADSIDE GUARDRAIL, SEE NCDOT STANDARD DRAWINGS 862.01-862.03

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

DEAD END STREET BARRICADE

STD. NO.	REV.
50.07A	

GENERAL NOTES:

1. STEEL BEAM TYPE GUARD RAILS SHALL BE INSTALLED AT THE END OF ALL DEAD–END STREETS, EXCEPT CUL–DE–SAC STREETS WHICH HAVE BEEN IMPROVED WITH A PERMANENT TURN–AROUND.
2. FOR STREETS 26' IN WIDTH THE GUARD RAIL SHALL CONSIST OF TWO(2) 12'–6" SECTIONS OR ONE(1) 25' SECTION, THREE (3) STEEL POSTS, AND TWO (2) TERMINAL SECTIONS. FOR STREETS GREATER THAN 25' IN WIDTH THE GUARD RAIL SHALL SPAN THE ENTIRE WIDTH OF THE STREET.
3. GUARD RAIL SHALL CONSIST OF RAIL ELEMENTS FABRICATED TO DEVELOP CONTINUOUS BEAM STRENGTH AND INSTALLED AS SHOWN.
4. MINIMUM THICKNESS OF GUARD RAIL SHALL BE 12 GAGE U.S. STANDARD.
   THE RAIL ELEMENT INCLUDING SPLICES, SHALL HAVE A MINIMUM ULTIMATE TENSILE STRENGTH OF 80,000 LBS.
   GUARD RAIL PARTS FURNISHED SHALL BE INTERCHANGEABLE WITH SIMILAR PARTS REGARDLESS OF THE SOURCE OF MANUFACTURER.
   THE HOLES FOR CONNECTING BOLTS SHALL BE PUNCHED OF DRILLED, BURNING WILL NOT BE PERMITTED.
5. THE GUARD, BOLTS, NUTS, STEEL POSTS. AND ALL OTHER METAL PARTS SHALL BE GALVANIZED TO CONFORM TO THE REQUIREMENTS FOR THE COATING CLASS, (2.50 OUNCES PER SQUARE FOOT) OF THE CURRENT SPECIFICATIONS FOR ZINC–COATED (GALVANIZED) IRON, AND STEEL SHEETS, COILS, AND CUT LENGTHS, IN ACCORDANCE WITH ASTM 123A.
6. IF THE AVERAGE SPELTER COATING AS DETERMINED FROM THE REQUIRED SAMPLES IS LESS THAN TWO (2) OUNCES OF SPELTER PER SQUARE FOOT, OR IF ANY ONE SPECIMEN HAS LESS THAN 1.8 ONCES OF SPELTER PER SQUARE FOOT OF DOUBLE EXPOSED SURFACE, THE LOT SAMPLED SHALL BE REJECTED, THE FINISHED SHEETS SHALL BE OF FIRST CLASS COMMERCIAL QUALITY, FREE FROM INJURIOUS DEFECTS, SUCH AS BLISTERS, FLUX, AND UNCOATED SPOTS.
7. THE GUARD RAIL SHALL BE INSPECTED TO DETERMINE THAT THE MATERIAL, DIMENSIONS, AND WORKMANSHIP ARE IN ACCORDANCE WITH THIS PLAN.
8. WHERE A DEAD–END STREET REQUIRES GUARD RAIL, END OF ROADWAY MARKER SIGNS SHALL ALSO BE REQUIRED. (SEE STD. 50.08A & 50.08B) (ER–1).

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

DEAD END STREET BARRICADE
GENERAL NOTES

STD. NO.	REV.
50.07B	

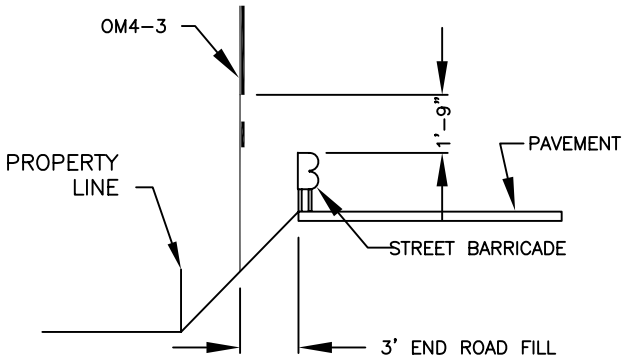
NOTES:

1. WHEN A DEAD–END OR STUBBED STREET REQUIRES A GUARDRAIL SECTION, END–OF–ROADWAY MARKER SIGNS (OM4–3, 24"x24", SOLID RED) SHALL BE PROVIDED.

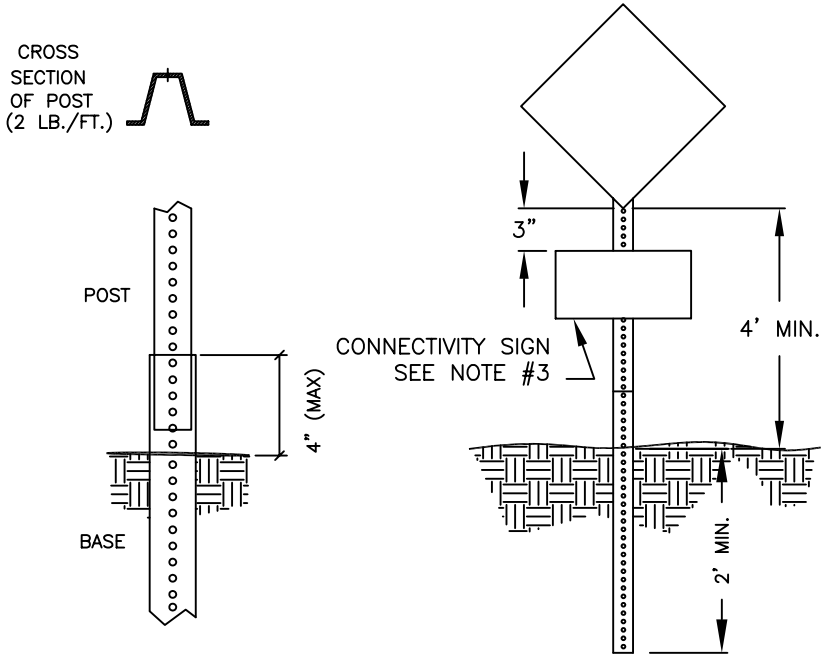
2. SIGNS ARE TO BE PLACED BEHIND THE BARRICADE (SEE DETAILS 50.07A–B), EVENLY SPACED WITH ONE SIGN PLACED AT THE CENTERLINE LOCATION AND ADDITIONAL SIGNS AT 6' O.C. (MINIMUM OF 3 SIGNS, MAXIMUM OF 5 SIGNS).

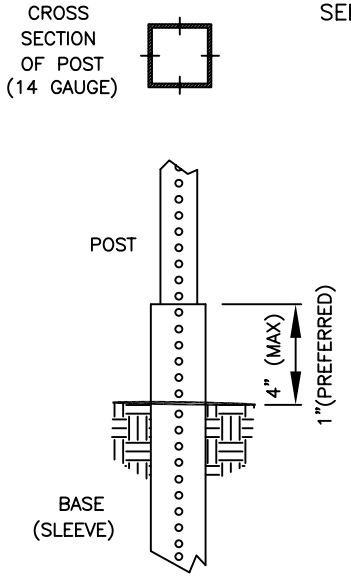
3. WHEN BARRICADE IS USED ON A STREET STUB, THE SIGN AT THE CENTERLINE SHALL BE SUPPLEMENTED WITH A STREET CONNECTIVITY SIGN. SEE DETAIL 50.08C.

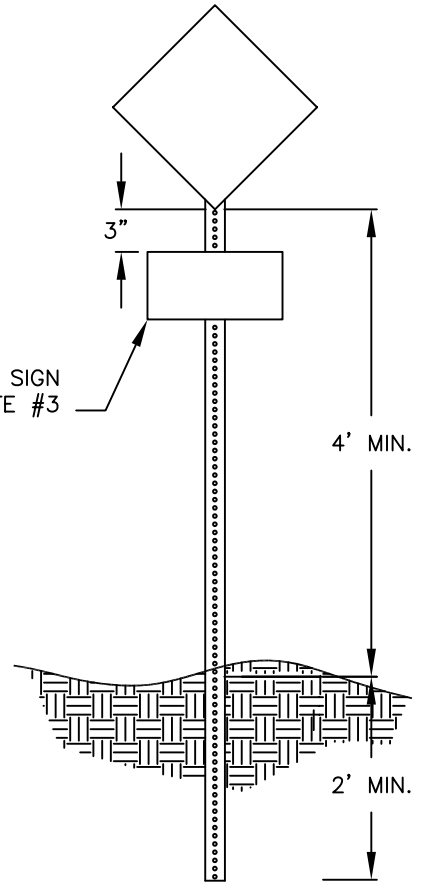
4. ALL SIGNS/MARKERS SHALL MEET OR EXCEED MUTCD STANDARDS FOR RETROREFLECTIVITY.



SIGN LOCATION DETAIL







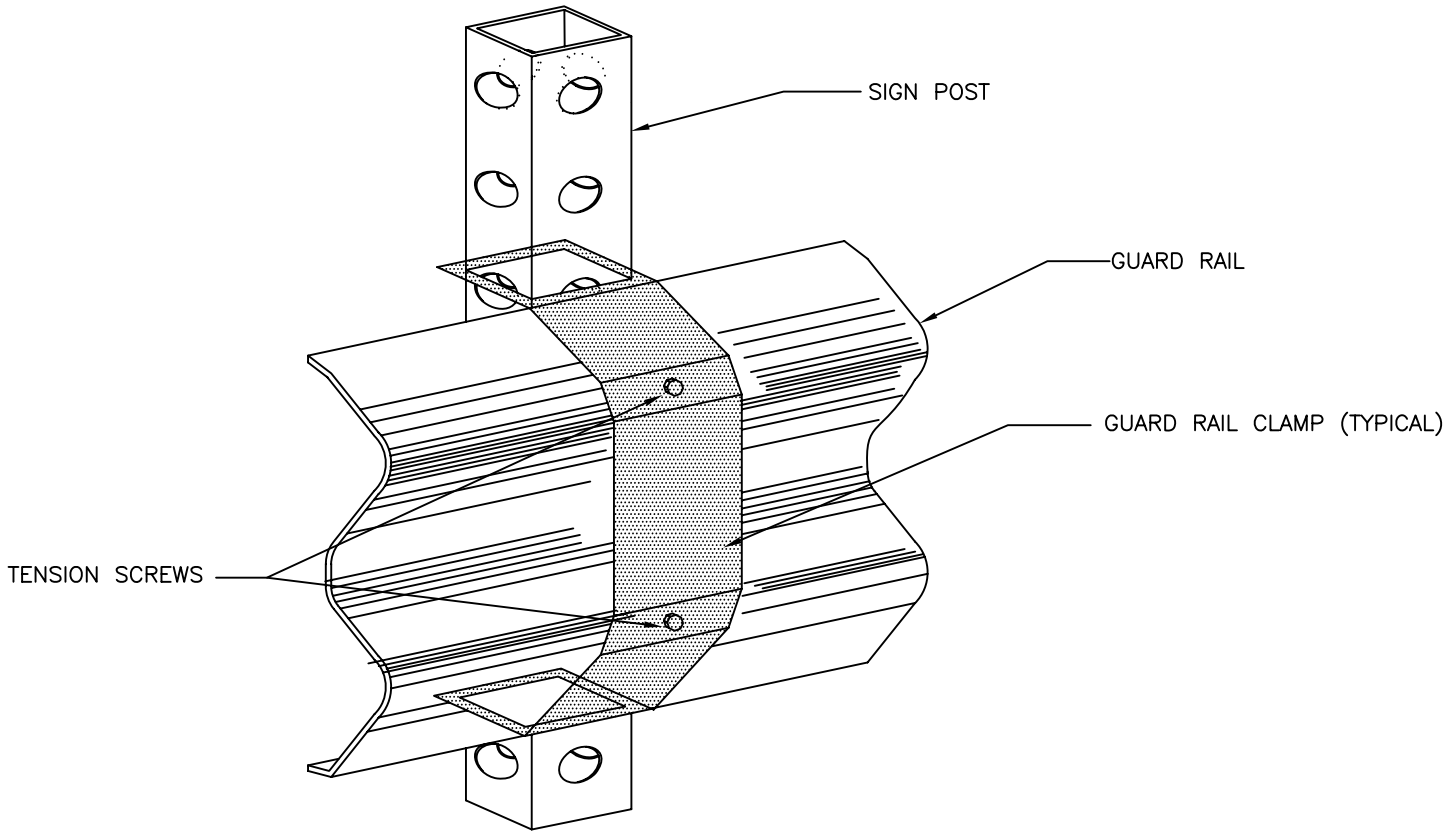
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

END OF ROADWAY MARKER

STD. NO.	REV.
50.08A	4



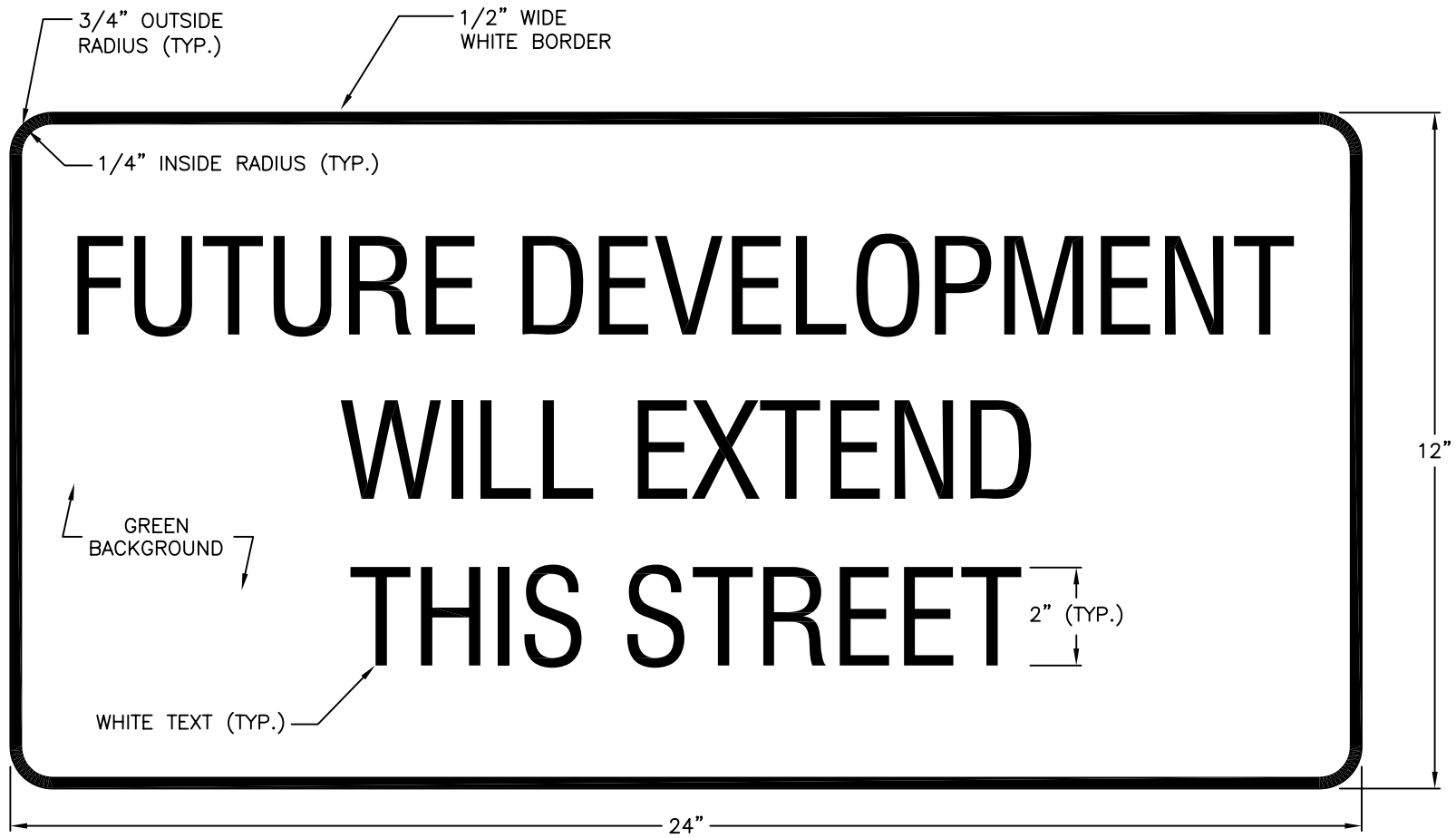
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

END OF ROADWAY MARKER
GUARD RAIL CLAMP INSTALLATION

STD. NO.	REV.
50.08B	4



NOTES:

1. SIGN SHALL MEET OR EXCEED MUTCD STANDARDS FOR RETROREFLECTIVITY
2. SIGN MATERIAL SHALL BE 0.080" THICK ALUMINUM
3. ALL LETTERS SHALL BE SERIES B-2000 FROM THE 2004 STANDARD HIGHWAY SIGNS MANUAL (AND ANY REVISION THERETO) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.

NOT TO SCALE

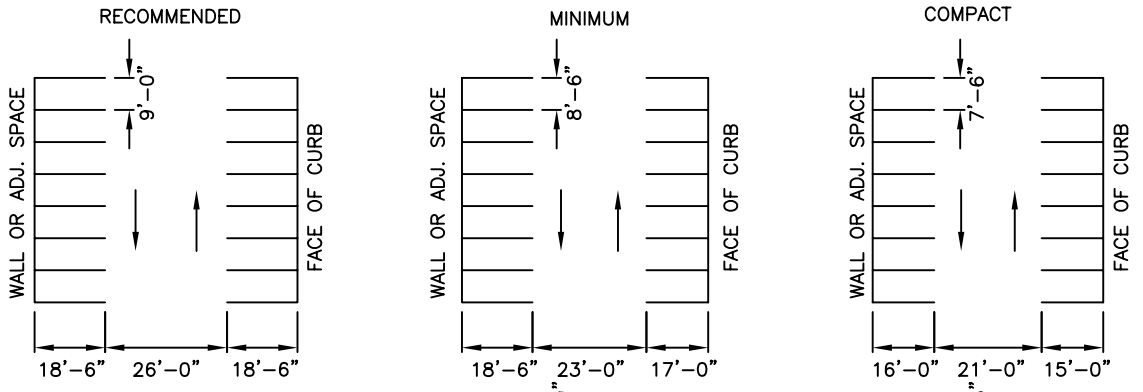
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

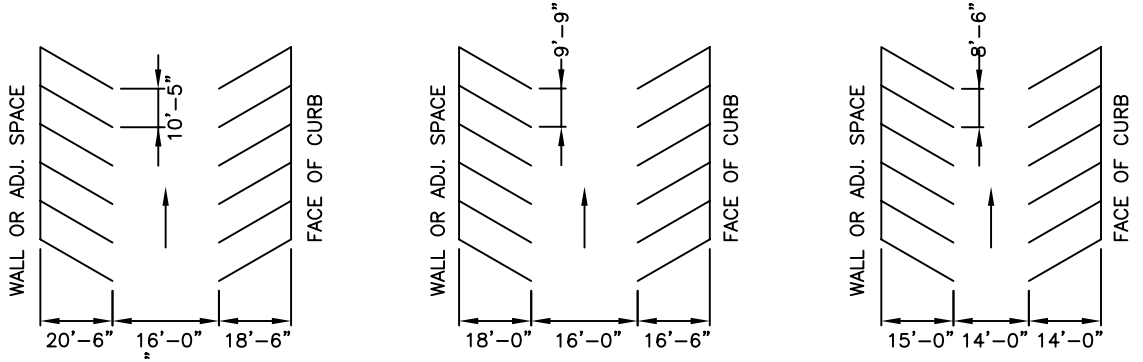
STREET CONNECTIVITY SIGN FOR END-OF-ROAD BARRICADE

STD. NO.	REV.
50.08C	4

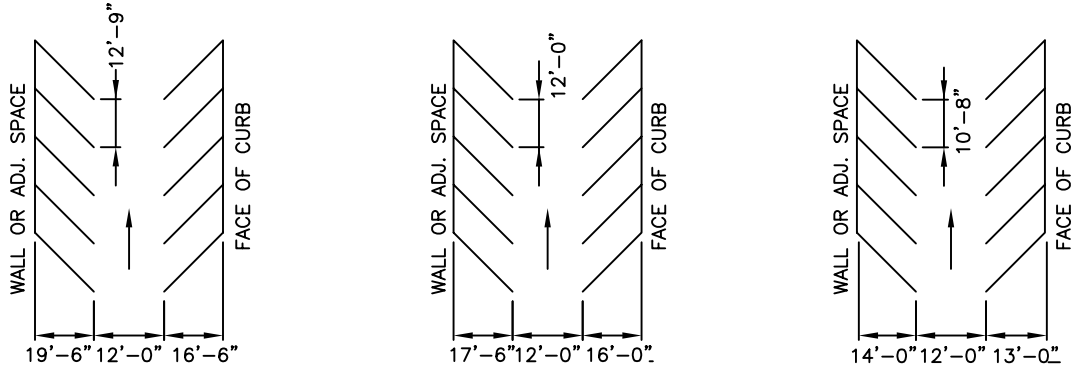
PARKING ANGLE 90°
(TWO WAY OPERATION ONLY)



PARKING ANGLE 60°
(ONE WAY OPERATION ONLY)



PARKING ANGLE 45°
(ONE WAY OPERATION ONLY)



NOTES:

1. FOR ACCESSIBLE PARKING STANDARDS/SIGNAGE SEE STDS. 50.10A, B, AND C.
2. PAVEMENT MARKINGS SHALL BE 4" WHITE PAINT.
3. ALTERNATIVE PARKING ANGLES, AISLE WIDTHS, AND OPERATION (TWO-WAY ANGLED PARKING OR REVERSE-ANGLE PARKING) WILL BE CONSIDERED BY CDOT ON A CASE-BY-CASE BASIS.

NOT TO SCALE

CHARLOTTE.

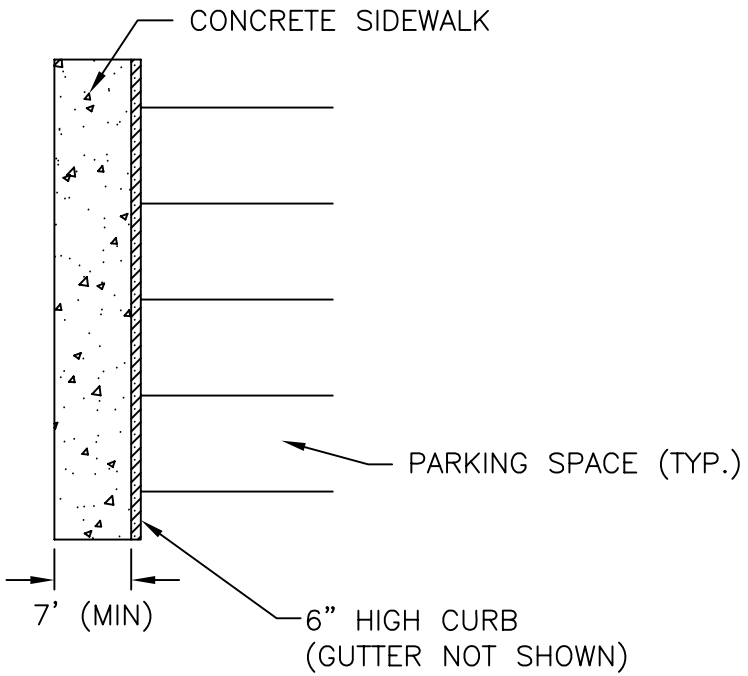
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

PARKING STANDARDS

STD. NO.	REV.
50.09A	

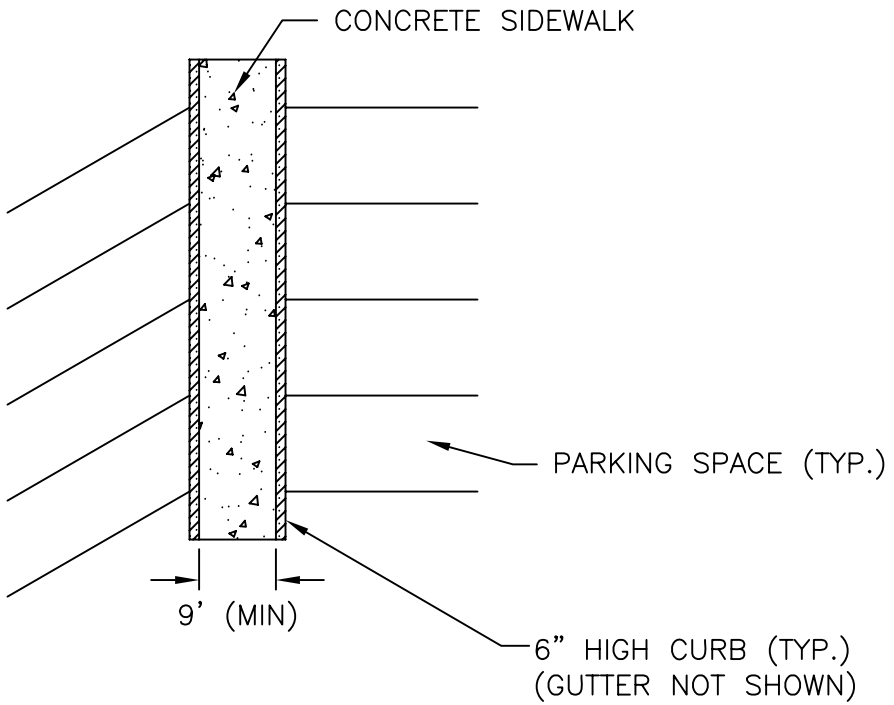
SIDEWALK ADJACENT TO HEAD–IN OR BACK–IN PARKING SHALL BE AT LEAST 7 FEET WIDE.

PARKING ON ONE SIDE OF A SIDEWALK



SIDEWALK BETWEEN TWO ROWS OF HEAD–IN OR BACK–IN PARKING SHALL BE AT LEAST 9 FEET WIDE.

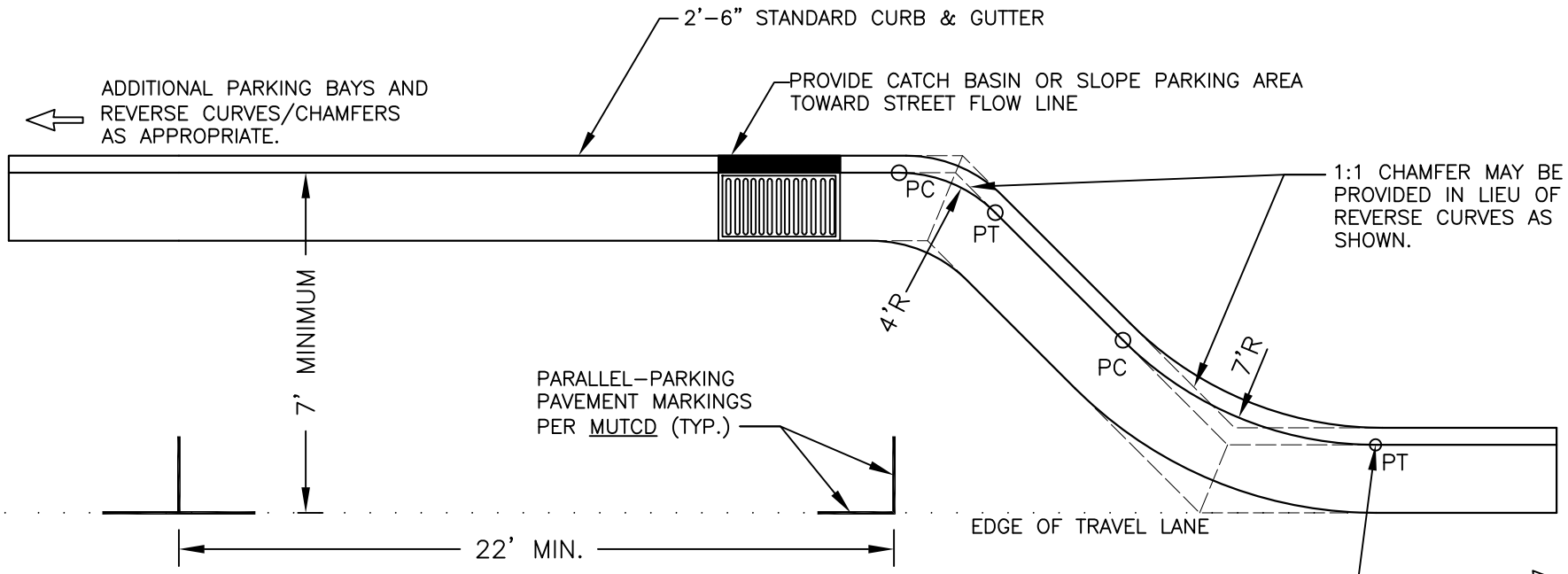
PARKING ON BOTH SIDES OF A SIDEWALK



NOTES:

1. A 2–FOOT–WIDE PLANTING STRIP LOCATED AT THE BACK OF CURB CAN BE USED IN LIEU OF 2 FEET OF SIDEWALK WIDTH.
2. PARKING AT ANY ANGLE OTHER THAN PARALLEL SHALL BE SUBJECT TO THIS STANDARD.
3. IF MONOLITHIC CURB & SIDEWALK IS USED, ADD 6" TO ALL DIMENSIONS (1' IF PARKING ON BOTH SIDES).
4. WHEELSTOPS SHALL ONLY BE USED IN LIEU OF 2 FEET OF SIDEWALK WITH THE APPROVAL OF THE CITY AND WHEN EXISTING CONDITIONS PREVENT CONSTRUCTION OF A 7–FOOT/9–FOOT SIDEWALK. WHEELSTOPS SHALL BE 6" HIGH, MADE OUT OF 3600–PSI REINFORCED CONCRETE, AND ANCHORED WITH #5 OR GREATER REBAR (2' MINIMUM LENGTH). REBAR HOLES SHALL BE GROUTED UPON INSTALLATION. WHEELSTOPS SHALL BE PLACED AT 2 FEET FROM THE EDGE OF SIDEWALK OR OBSTRUCTION.

NOT TO SCALE



NOTES:

1. REVERSE CURVES/CHAMFERS NOT NECESSARY IF ADEQUATE DRAINAGE CAN BE PROVIDED THAT WILL ENSURE THAT SEDIMENT, WATER, DEBRIS, ETC., DOES NOT COLLECT IN 90-DEGREE CORNERS.
2. PARALLEL ACCESSIBLE SPACES AND LOADING ZONES TO BE REVIEWED BY CDOT ON A CASE-BY-CASE BASIS.
3. FOR PARKING BAYS THAT ARE 8 FEET IN WIDTH OR GREATER, THE PAVEMENT MARKINGS SHALL BE SET AT ONE (1) FOOT LESS THAN THE STALL WIDTH.
4. GREATER SEPARATION FROM INTERVENING STREETS THAN THE DISTANCES PROVIDED IN THE MATRIX MAY BE REQUIRED AT CDOT'S DISCRETION.
5. POSITIVE DRAINAGE SHALL BE PROVIDED EITHER BY INSTALLATION OF APPROPRIATE DRAINAGE STRUCTURES OR SLOPE PARKING AREA TO STREET FLOW LINE. SLOPING PARKING AREA TO STREET FLOW LINE ONLY PERMITTED IF ROAD GRADE IS GREATER THAN 2%.
6. IF A BIKE LANE IS REQUIRED ADJACENT TO PARALLEL PARKING, THE MINIMUM WIDTH OF BIKE LANE IS 6'.

MINIMUM DISTANCE TO NEXT INTERVENING STREET

PARALLEL PARKING BAY LOCATED ON	DRIVEWAY	LOCAL/ COLLECTOR	TH'FARE
LOCAL/COLLECTOR	20'	20'	20'
THOROUGHFARE	20'	20'	50'

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

PARALLEL PARKING STANDARDS

STD. NO.	REV.
50.09C	8

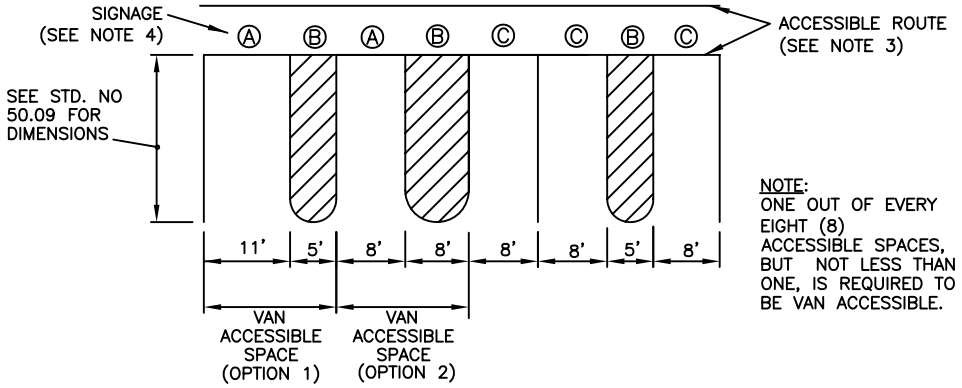
ACCESSIBLE PARKING REQUIREMENTS

TOTAL PARKING SPACES PROVIDED	MINIMUM NUMBER OF ACCESSIBLE SPACES SPACES REQUIRED	MINIMUM NUMBER OF ACCESSIBLE SPACES REQUIRED TO BE VAN ACCESSIBLE
1 TO 25	1	1
26 TO 50	2	1
51 TO 75	3	1
76 TO 100	4	1
101 TO 150	5	1
151 TO 200	6	1
201 TO 300	7	1
301 TO 400	8	1
401 TO 500	9	2
501 TO 1000	2% OF TOTAL	1 IN EVERY 8 ACCESSIBLE SPACES
1001 AND OVER	20 PLUS 1 FOR EACH 100 OVER 1000	1 IN EVERY 8 ACCESSIBLE SPACES
REFERENCE: SECTION 208 OF THE ADA STANDARDS FOR ACCESSIBLE DESIGN		

NOTES:

1. ALL 12"x18" ACCESSIBLE SIGNS (R7-8 & R7-1) SHALL BE MOUNTED AT 7 FEET FROM GRADE TO BOTTOM EDGE OF SIGN FACE (MUTCD). MOUNTING HEIGHT CAN BE REDUCED TO 5 FEET IF PLACED IN AN AREA BETWEEN SIDEWALK AND BUILDING FACE IN WHICH PEDESTRIANS ARE NOT EXPECTED TO USE.
2. REFER TO MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, (MUTCD) U.S. DEPARTMENT OF TRANSPORTATION AND NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SUPPLEMENT.
3. IF ACCESSIBLE ROUTE IS A RAISED SIDEWALK AREA, THEN RAMPS ARE REQUIRED AT LOADING ZONE AREA.
4. SIGNAGE MUST NOT OBSTRUCT ACCESSIBLE ROUTE OR RAMPS.

PARKING SPACE PAVEMENT MARKINGS



NOTE:
ONE OUT OF EVERY EIGHT (8) ACCESSIBLE SPACES, BUT NOT LESS THAN ONE, IS REQUIRED TO BE VAN ACCESSIBLE.

Ⓐ

MUTCD R7-8P 12"x6"

MUTCD R7-8 12"x18"

CLDSM 50.10C 12"x9"

Ⓑ

MUTCD R7-1 12"x18"

OPTIONAL ACCESIBLE LOADING ZONE SIGN

Ⓒ

MUTCD R7-8 12"x18"

CLDSM 50.10C 12"x9"

SEE STANDARD NO. 50.10C FOR SUPPLEMETAL SIGN DETAIL

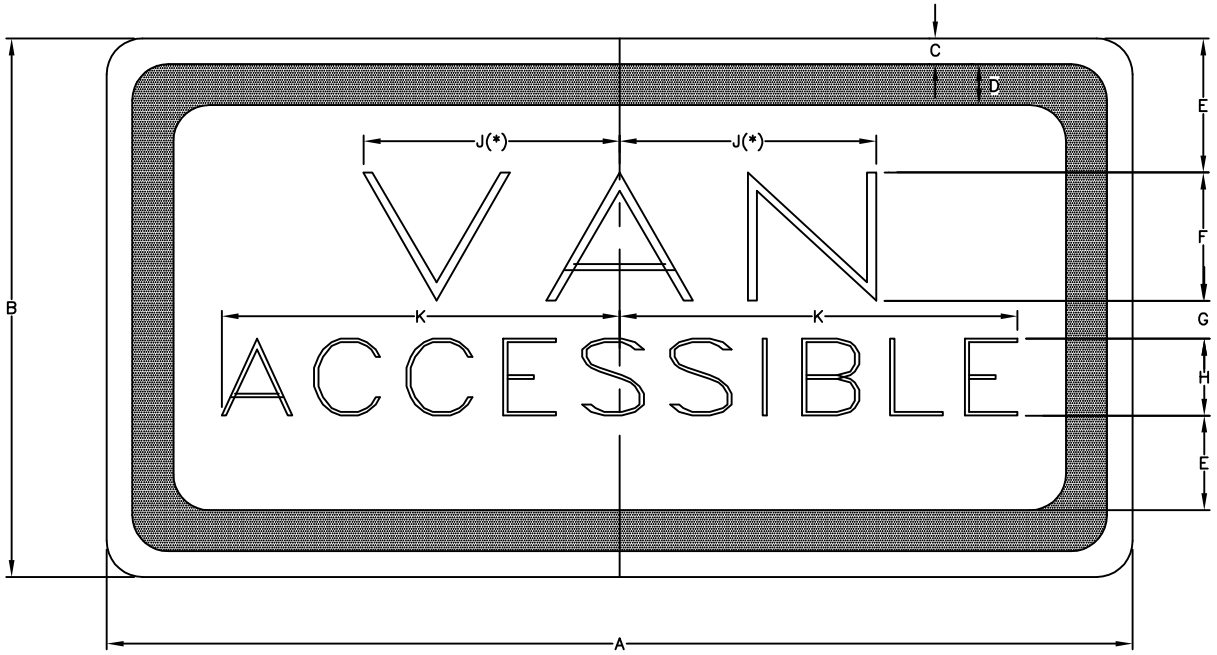
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

ACCESSIBLE PARKING AND SIGNAGE STANDARDS

STD. NO.	REV.
50.10A	9

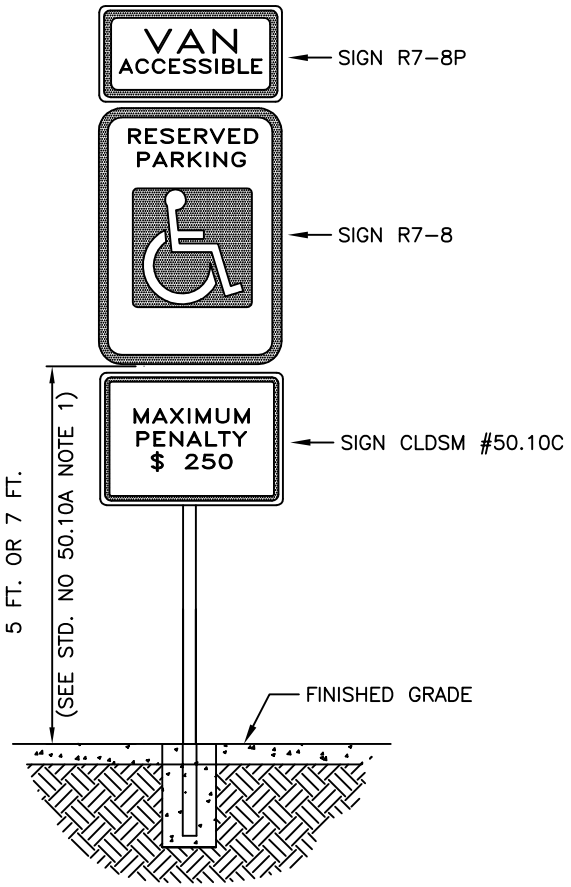


R7–8P

DIMENSIONS (INCHES)										
A	B	C	D	E	F	G	H	J	K	L
12	6	3/8	3/8	1–1/2	1–1/2D	1/2	1D	2–1/2	4	1–1/2

* INCREASE SPACING 50%
D–FHWA (FEDERAL HIGHWAY ADMINISTRATION/USDOT)
SERIES D LETTERS

LEGEND AND BORDER – GREEN
BACKGROUND – WHITE



NOT TO SCALE

CHARLOTTE.

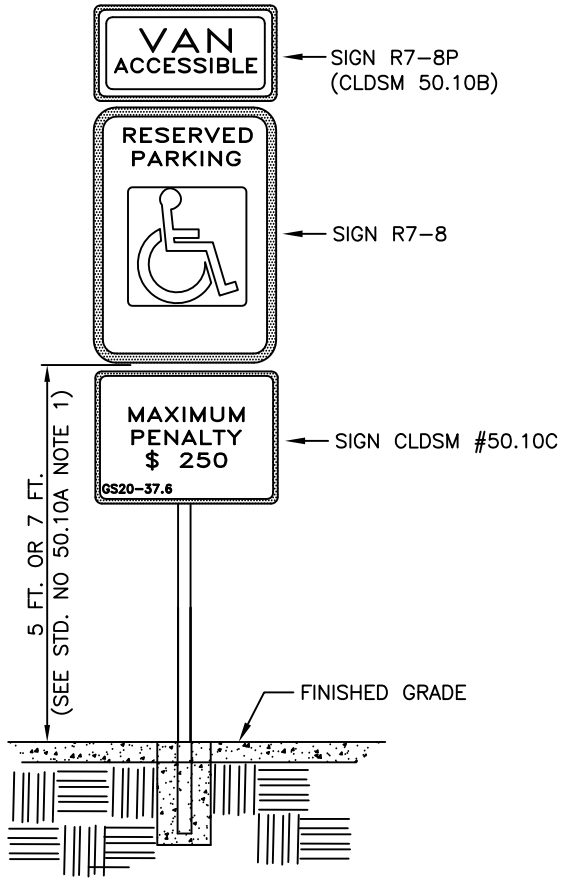
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

SUPPLEMENTAL VAN ACCESSIBLE SIGN (R7–8P)

STD. NO.	REV.
50.10B	9

NOTE:

SUPPLEMENTAL VAN ACCESSIBLE SIGN (R7-8P) USED IF THERE IS ONLY ONE REQUIRED ACCESSIBLE PARKING SPACE (MUST BE VAN ACCESSIBLE) AND AT EACH ADDITIONAL REQUIRED VAN ACCESSIBLE SPACE. (SEE STD. NO. 50.10B)



LEGEND AND BORDER – GREEN
BACKGROUND – WHITE

SIGN APPROVED FOR USE UNDER GENERAL STATUTE 20-37.6

THIS PENALTY SIGN IS REQUIRED TO ACCOMPANY ALL R7-8 PARKING SIGNS ERECTED AFTER DECEMBER 31,1990

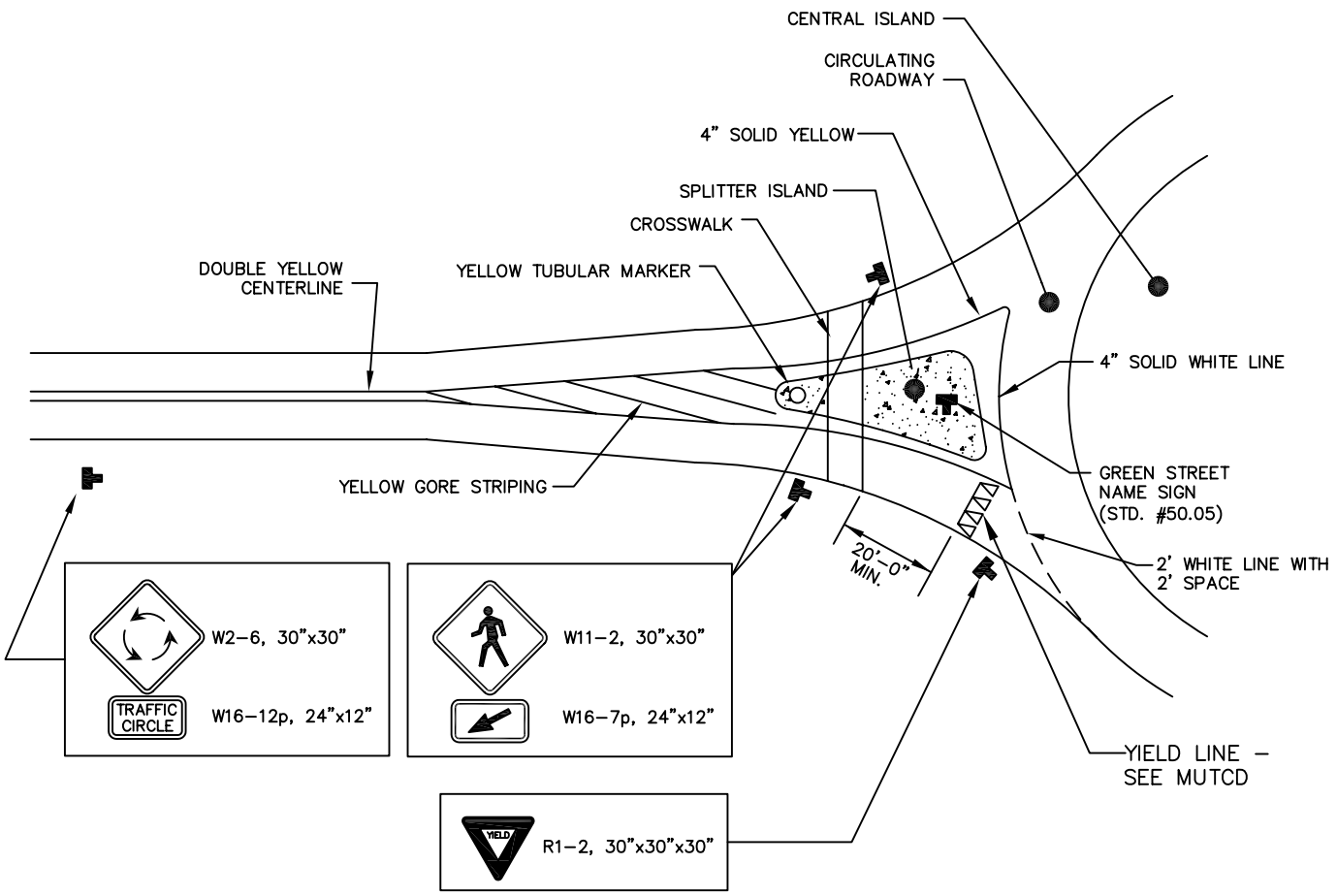
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

SUPPLEMENTAL ACCESSIBLE SIGN

STD. NO.	REV.
50.10C	9



NOTES:

1. PAVEMENT MARKINGS TO BE PER LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. SIGNS TO BE LOCATED/SPACED PER MUTCD REQUIREMENTS.
3. "CIRCULAR INTERSECTION" AND "TRAFFIC CIRCLE" SUBPLATE SIGNS, AND YELLOW TUBULAR MARKERS, ARE REQUIRED ON THOROUGHFARES. CDOT WILL DETERMINE IF ONE OR MORE OF THESE ARE NECESSARY ON LOCAL OR COLLECTOR STREETS.
4. "PEDESTRIAN CROSSING" AND ARROW SUBPLATE SIGNS ARE REQUIRED WHEREVER THERE IS A MARKED CROSSWALK OR ON A THOROUGHFARE.
5. "YIELD" SIGNS ARE ALWAYS REQUIRED.
6. PAVEMENT MARKINGS, SPLITTER ISLAND DESIGNS, CROSSWALK, ETC., ARE SHOWN FOR CONTEXT ONLY. REFER TO THE MUTCD AND/OR THE FEDERAL HIGHWAY ADMINSITRATION'S MANUAL ROUNDABOUTS: AN INFORMATIONAL GUIDE FOR MORE DETAIL OR DESIGN INFORMATION.
7. ADDITIONAL SIGNS MAY BE NEEDED ON A CASE-BY-CASE BASIS, TO BE EVALUATED BY CDOT.
8. ALL PAVEMENT MARKING SHALL BE THERMOPLASTIC.

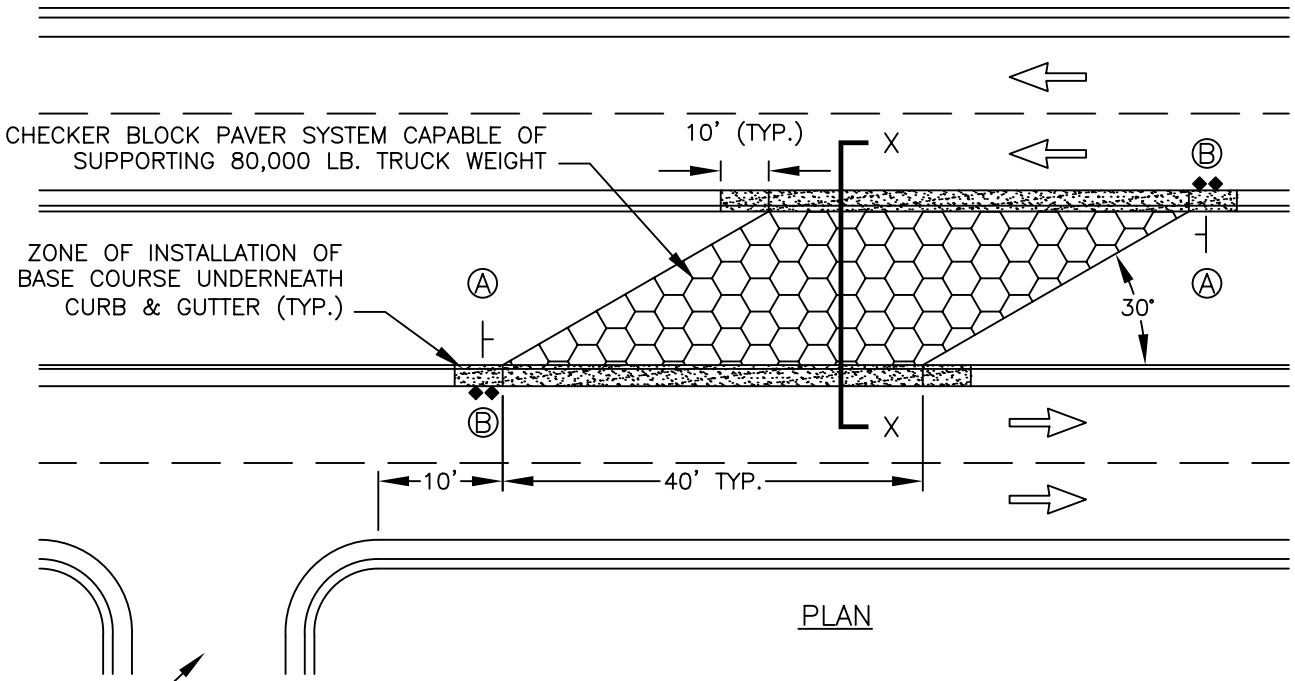
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

SIGNAGE AND PAVEMENT MARKINGS AT ROUNDABOUTS

STD. NO.	REV.
50.11	1



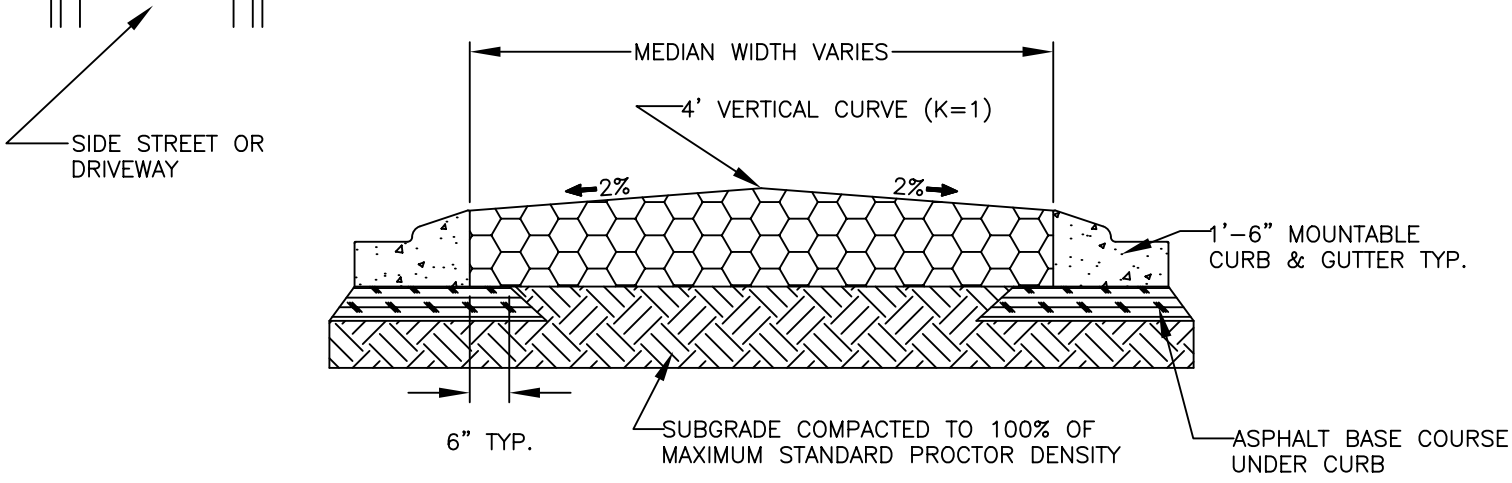
PLAN

Ⓐ "NO LEFT TURN" (R3-2, 24"x24")

Ⓑ YELLOW/YELLOW RAISED PVMT. MARKER 1' O.C. SEE NCDOT STD. #1250.01.

NOTES:

1. CROSSOVER TO BE OFFSET 10' FROM ANY INTERSECTING STREET OR DRIVEWAY OTHER THAN A FIRE DEPARTMENT DRIVEWAY.
2. ASPHALT BASE COURSE UNDERNEATH MOUNTABLE CURB AND GUTTER SHALL EXTEND AT LEAST 10 FEET BEYOND CROSSOVER.
3. ONLY FOR USE AT RIGHT-IN/RIGHT-OUT (RI/RO) ENTRANCES TO RESIDENTIAL SUBDIVISIONS AND COMMERCIAL DEVELOPMENTS WITH PRIOR APPROVAL FROM CHARLOTTE DEPARTMENT OF TRANSPORTATION (CDOT).



CROSS-SECTION X-X

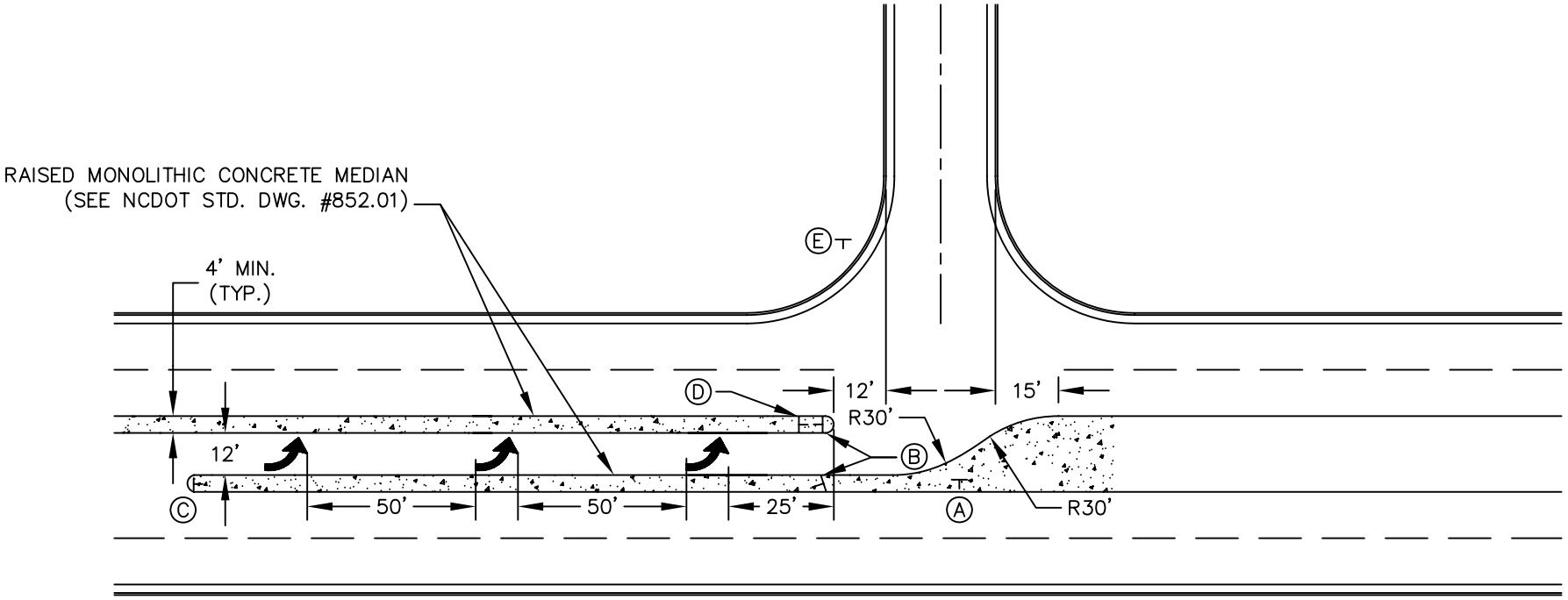
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

EMERGENCY VEHICLE MEDIAN CROSSOVER

STD. NO.	REV.
50.12	5



SIGN LEGEND

Ⓐ ONE WAY (R6-2R, 18"x24")

Ⓑ DO NOT ENTER (R5-1, 30"x30")

Ⓒ DOUBLE-DOWN ARROW (W12-1, 30"x30")

Ⓓ NO U-TURN (R3-4, 24"x24")*

Ⓔ STOP (R1-1, 30"x30")

* IF NECESSARY

NOTES:

1. ADDITIONAL PAVEMENT MARKINGS (EDGE LINES, GORES, ETC.) ARE NOT SHOWN BUT ARE REQUIRED. SEE CDOT PAVEMENT MARKING STANDARDS.
2. FOR DIVIDED SIDE STREETS, MEASURE THE 12 FOOT DIMENSION FROM THE FACE OF MEDIAN INSTEAD OF FACE OF CURB ON APPROACHING LANE.
3. ALL SIGNS SHALL BE MUTCD STANDARD SIGNS.

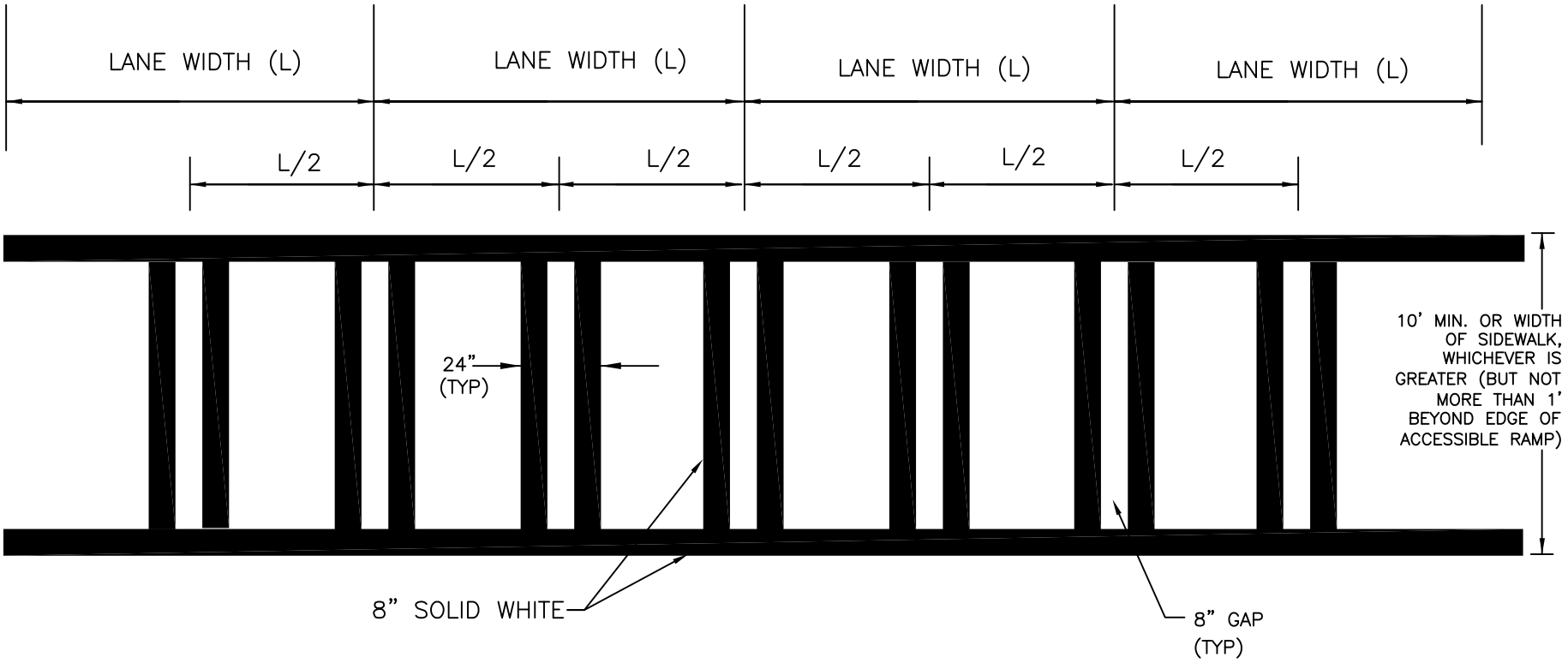
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

DIRECTIONAL CROSSOVER WITH RAISED MEDIANS

STD. NO.	REV.
50.13	



NOTES:

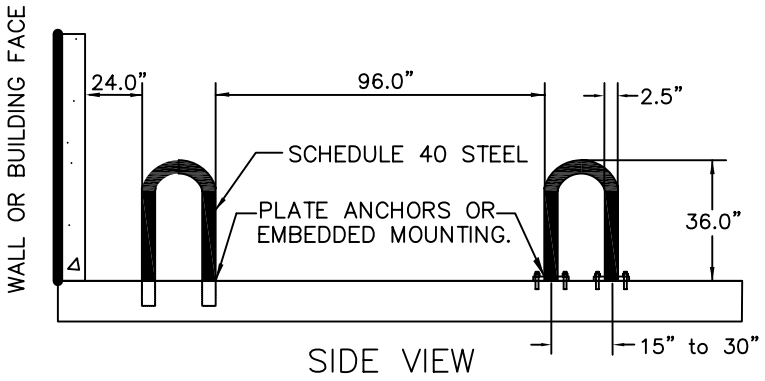
1. PER MUTCD STANDARDS, WHEN CROSSWALK LINES ARE USED THEY SHALL CONSIST OF SOLID WHITE LINES THAT MARK THE CROSSWALK. THEY SHALL BE NOT LESS THAN 150 MM (6 IN) NOR GREATER THAN 600 MM (24 IN) IN WIDTH.
2. IF TRANSVERSE LINES ARE USED TO MARK A CROSSWALK, THE GAP BETWEEN THE LINES SHOULD NOT BE LESS THAN 1.8 M (6 FT). IF DIAGONAL OR LONGITUDINAL LINES ARE USED WITHOUT TRANSVERSE LINES TO MARK A CROSSWALK, THE CROSSWALK SHOULD NOT BE LESS THAN 1.8 M (6 FT) WIDE.
3. IF USED, THE DIAGONAL OR LONGITUDINAL LINES SHOULD BE 300 TO 600 MM (12 TO 24 IN) WIDE AND SPACED 300 TO 1500 MM (12 TO 60 IN) APART. THE MARKING DESIGN SHOULD AVOID THE WHEEL PATHS, AND THE SPACING SHOULD NOT EXCEED 2.5 TIMES THE LINE WIDTH.

CHARLOTTE.

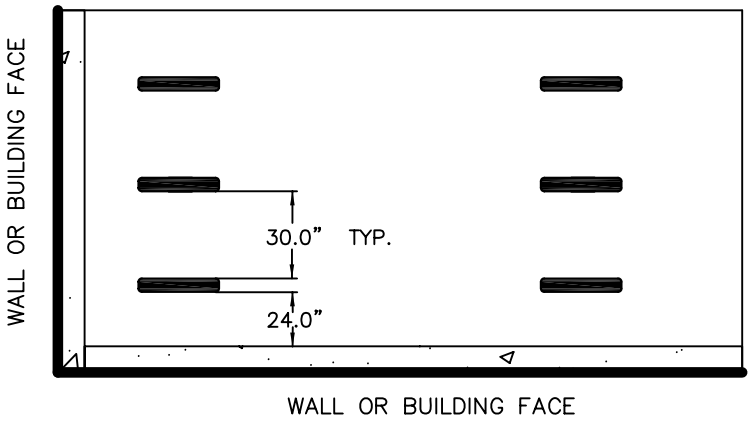
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

PIANO–STYLE CROSSWALK

STD. NO.	REV.
50.14	9



SIDE VIEW



PLAN VIEW

NOTES:

1. BIKE RACKS SHOULD BE INSTALLED AS PER MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES.
2. ALTERNATIVE BIKE RACKS OR LOCKERS MAY BE USED BUT ARE SUBJECT TO APPROVAL BY THE CHARLOTTE DEPARTMENT OF TRANSPORTATION.
3. ALL DIMENSIONS SHOWN ARE MINIMUM.

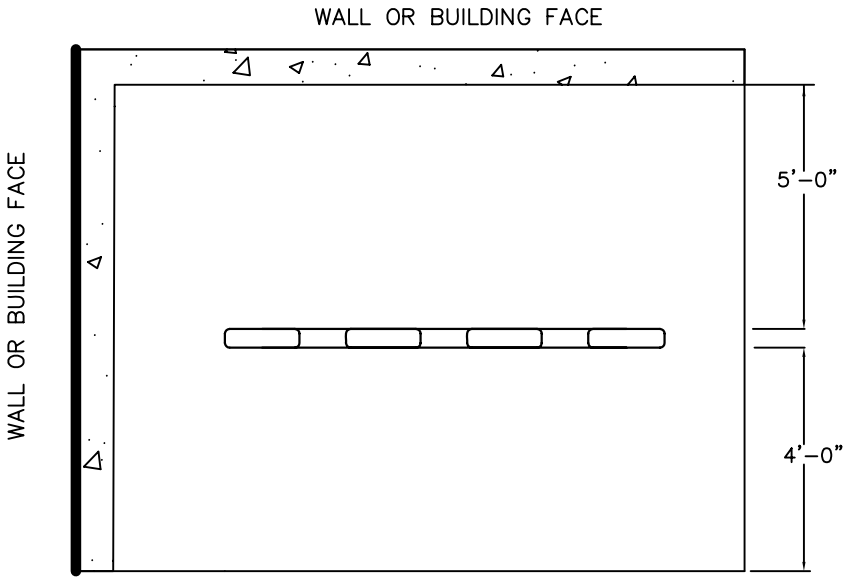
NOT TO SCALE

CHARLOTTE.

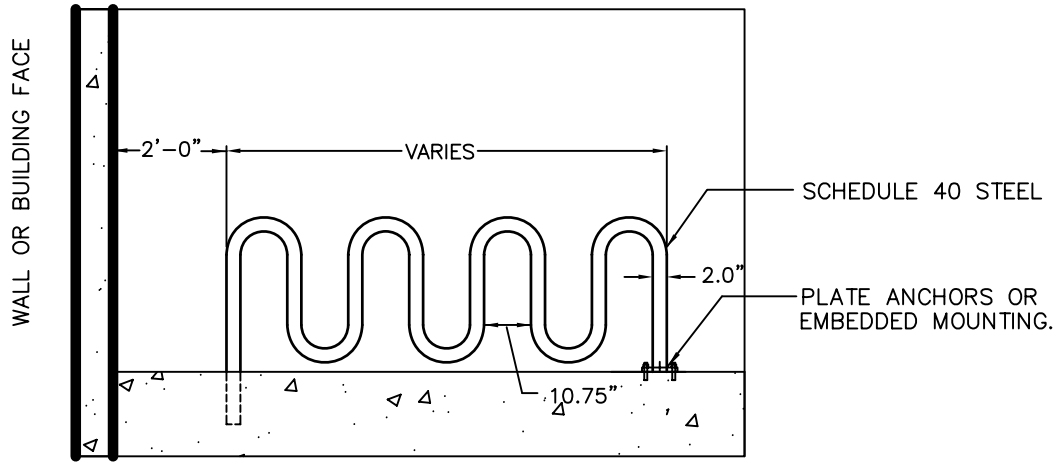
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

INVERTED "U" RACK FOR BICYCLE PARKING

STD. NO.	REV.
50.20	



PLAN VIEW



SIDE VIEW

NOTES:

1. BIKE RACKS SHOULD BE INSTALLED AS PER MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES.
2. ALTERNATIVE BIKE RACKS OR LOCKERS MAY BE USED BUT ARE SUBJECT TO APPROVAL BY THE CHARLOTTE DEPARTMENT OF TRANSPORTATION.
3. ALL DIMENSIONS SHOWN ARE MINIMUM.

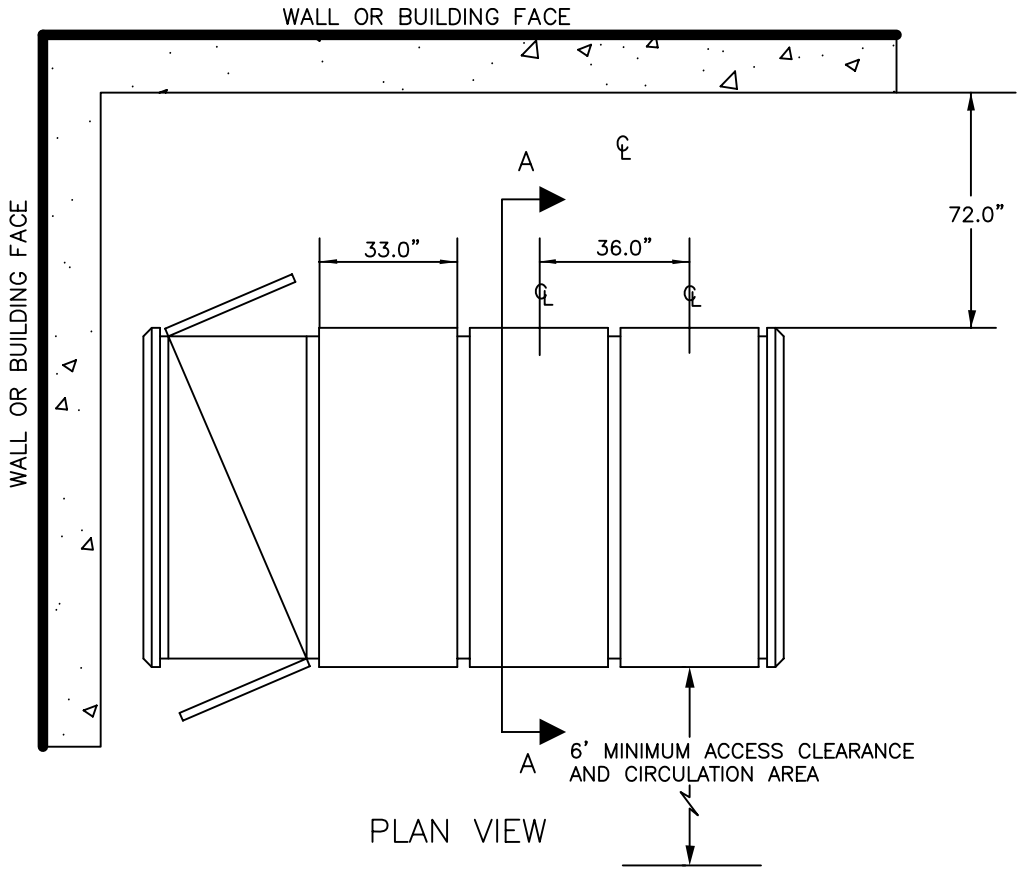
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

WAVE RACK FOR BICYCLE PARKING

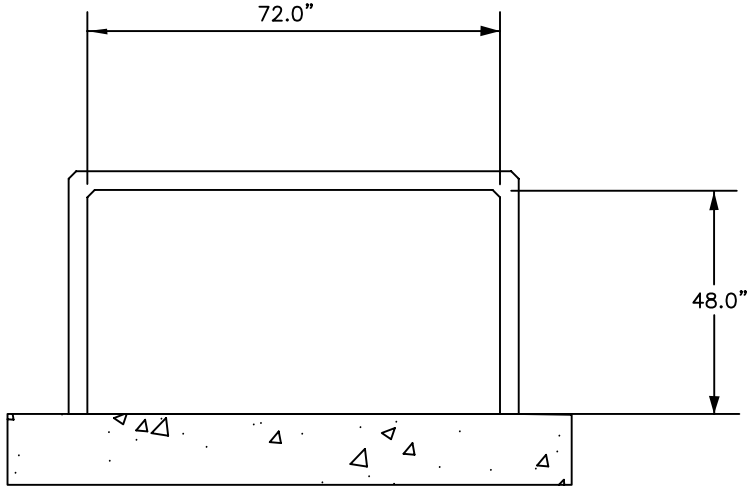
STD. NO.	REV.
50.21	



PLAN VIEW

NOTES:

1. BIKE LOCKERS SHOULD BE INSTALLED AS PER MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES.
2. ALTERNATIVE BIKE RACKS OR LOCKERS MAY BE USED BUT ARE SUBJECT TO APPROVAL BY THE CHARLOTTE DEPARTMENT OF TRANSPORTATION.
3. ALL DIMENSIONS SHOWN ARE MINIMUM.
4. ALLOW FOR POSITIVE DRAINAGE AWAY FROM LOCKERS.



SECTION A–A

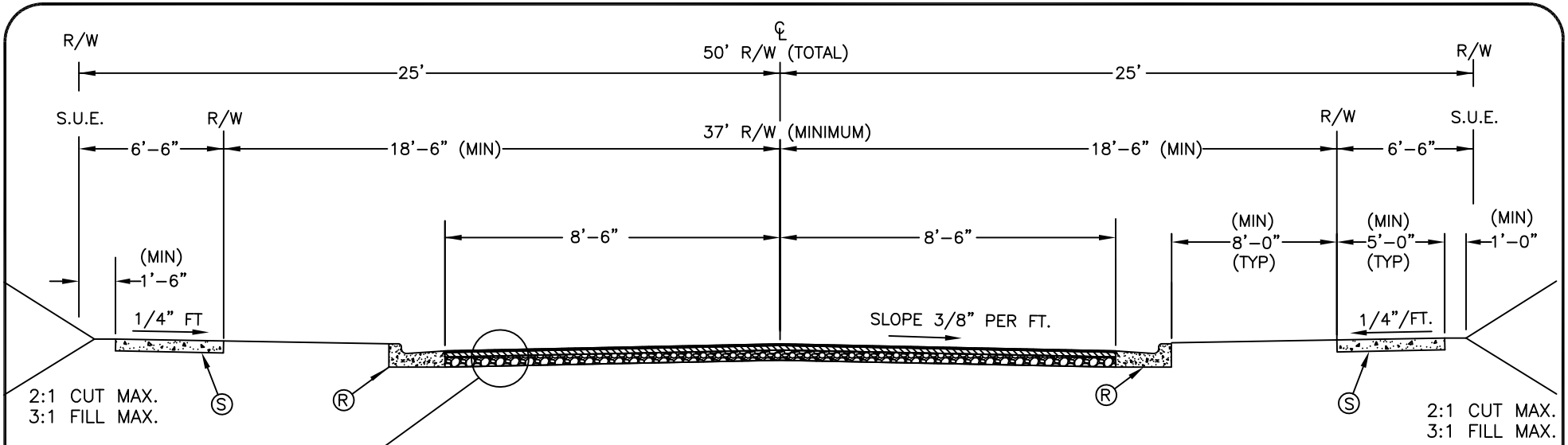
NOT TO SCALE

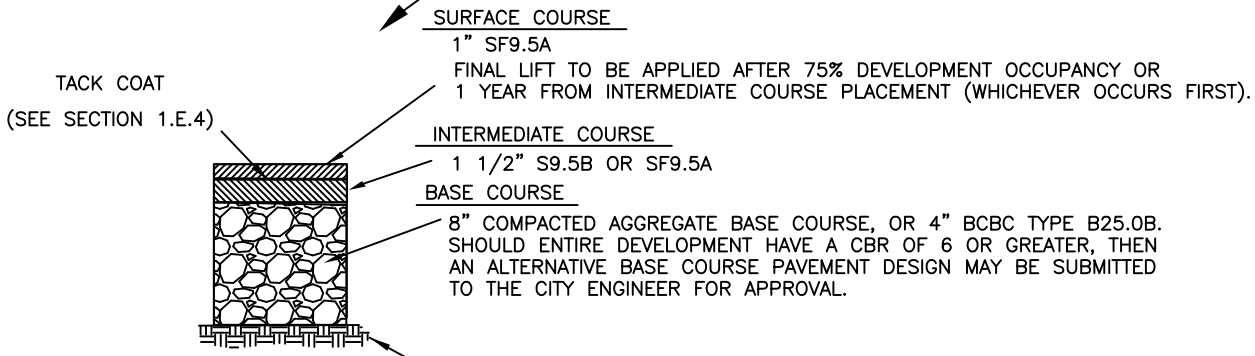
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

BICYCLE LOCKERS

STD. NO.	REV.
50.22	





TYPICAL PAVEMENT SECTION

NOTES:

1. VALLEY GUTTER IS ALLOWED ONLY WITH PRIOR APPROVAL FROM CDOT AND CITY ENGINEERING.
2. DETAIL CAN BE USED ONLY UNDER THE CIRCUMSTANCES PRESCRIBED IN THE USDG. SEE CLDSM SPECIFICATIONS AND SPECIAL PROVISION NOTES: "USDG TYPICAL SECTION ALTERNATIVES" NOTE C AND TABLE 1 FOR MORE INFORMATION.
3. BACK OF CURB TO BACK OF CURB DIMENSION OF 21' SHALL BE USED REGARDLESS OF CURB TYPE.
4. FOR EXPLANATION OF RIGHT-OF-WAY WIDTHS REFER TO CITY OF CHARLOTTE SUBDIVISION ORDINANCE SECTION 20-22(d).

KEY

Ⓡ 2'-0" STANDARD CURB AND GUTTER OR 2'-0" VALLEY GUTTER (SEE NOTE 1)

Ⓢ 4" CONCRETE SIDEWALK

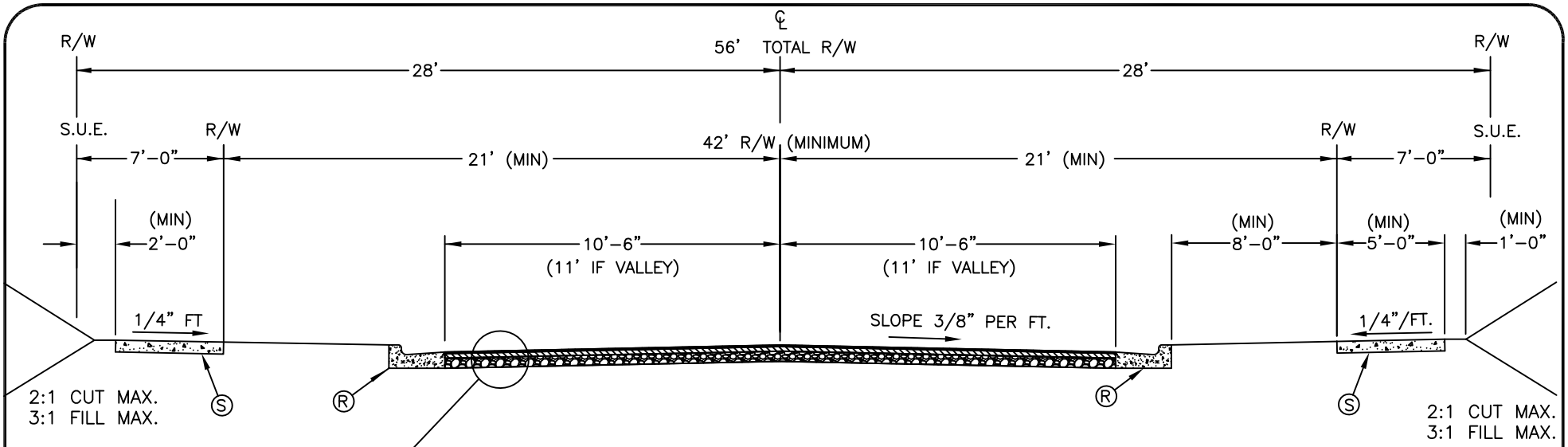
NOT TO SCALE

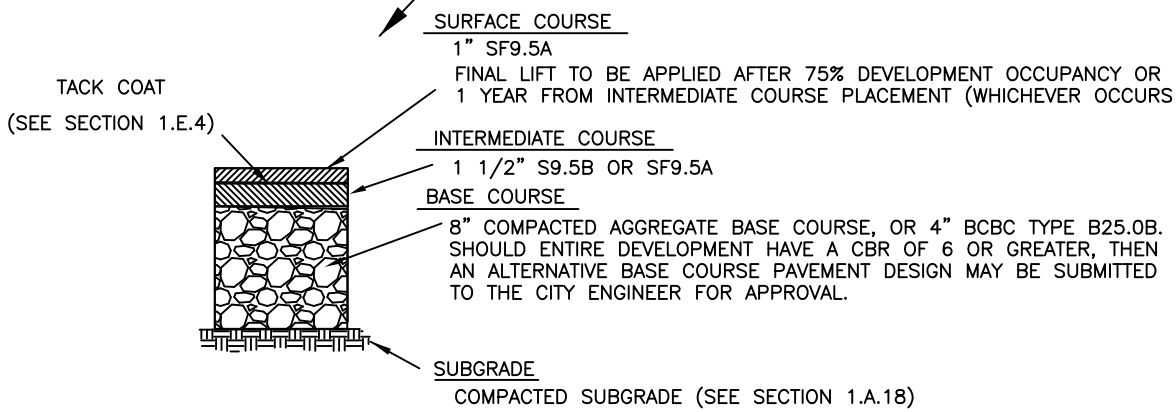
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LOCAL RESIDENTIAL NARROW STREET TYPICAL SECTION

STD. NO.	REV.
U-01	6





TYPICAL PAVEMENT SECTION

NOTE:

1. FOR EXPLANATION OF RIGHT-OF-WAY WIDTHS REFER TO CITY OF CHARLOTTE SUBDIVISION ORDINANCE SECTION 20-22(d).

KEY

Ⓡ 2'-6" STANDARD CURB AND GUTTER OR 2'-0" VALLEY GUTTER

Ⓢ 4" CONCRETE SIDEWALK

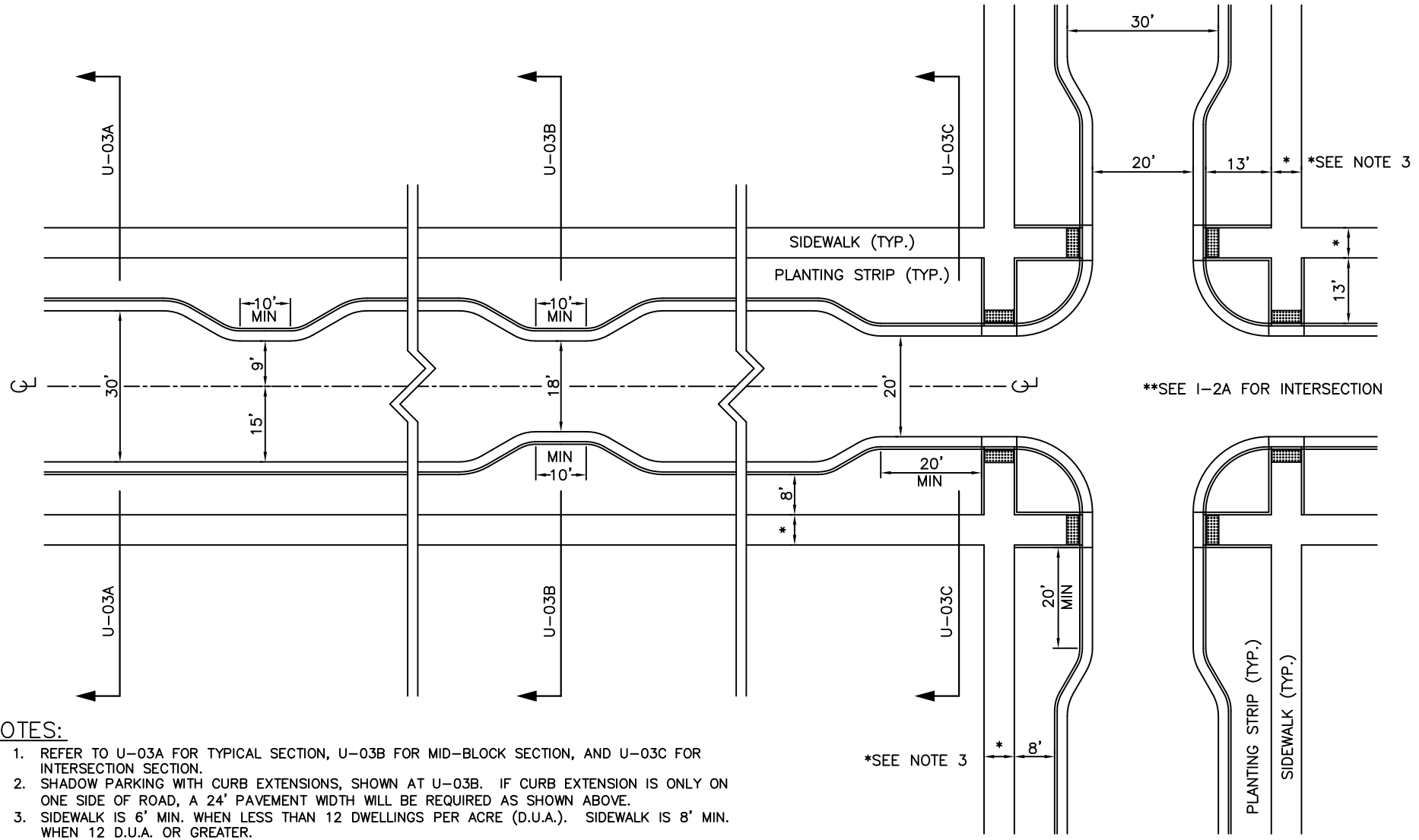
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LOCAL RESIDENTIAL MEDIUM STREET TYPICAL SECTION

STD. NO.	REV.
U-02	6



NOTES:

1. REFER TO U-03A FOR TYPICAL SECTION, U-03B FOR MID-BLOCK SECTION, AND U-03C FOR INTERSECTION SECTION.
2. SHADOW PARKING WITH CURB EXTENSIONS, SHOWN AT U-03B. IF CURB EXTENSION IS ONLY ON ONE SIDE OF ROAD, A 24' PAVEMENT WIDTH WILL BE REQUIRED AS SHOWN ABOVE.
3. SIDEWALK IS 6' MIN. WHEN LESS THAN 12 DWELLINGS PER ACRE (D.U.A.). SIDEWALK IS 8' MIN. WHEN 12 D.U.A. OR GREATER.
4. PAVEMENT WIDTH DIMENSIONS SHOWN ARE FOR STREETS THAT USE 2'-6" STD. CURB & GUTTER. ADJUST WIDTHS ACCORDINGLY IF 2'-0" STD. CURB & GUTTER OR VALLEY GUTTER ARE USED (SEE DETAILS U-03 A, B, AND C FOR MORE INFO.)

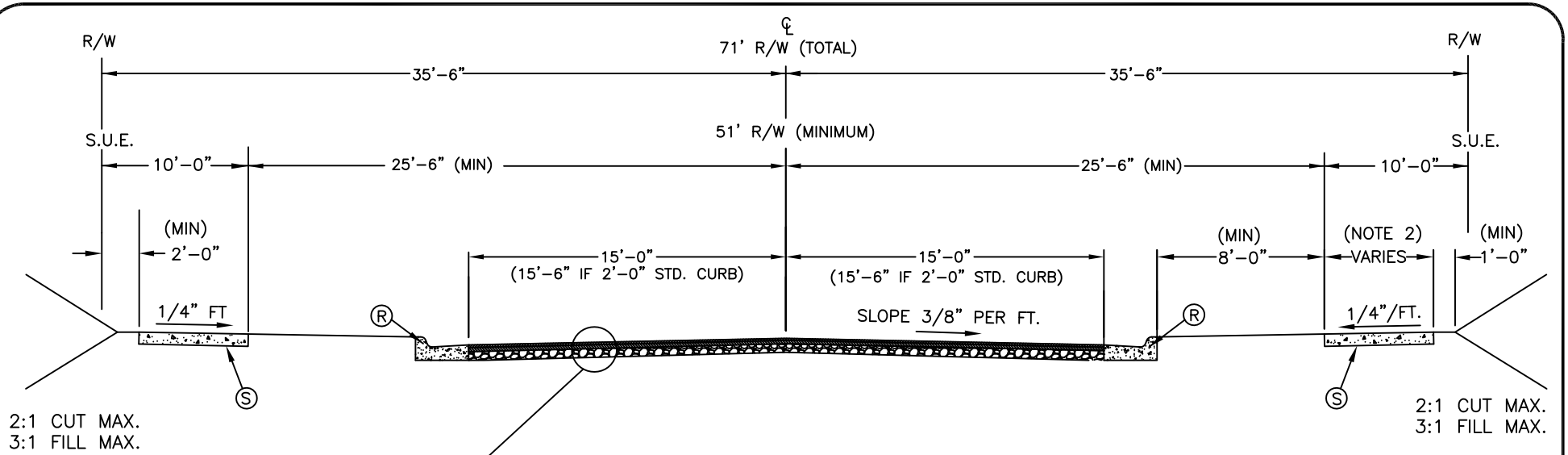
NOT TO SCALE

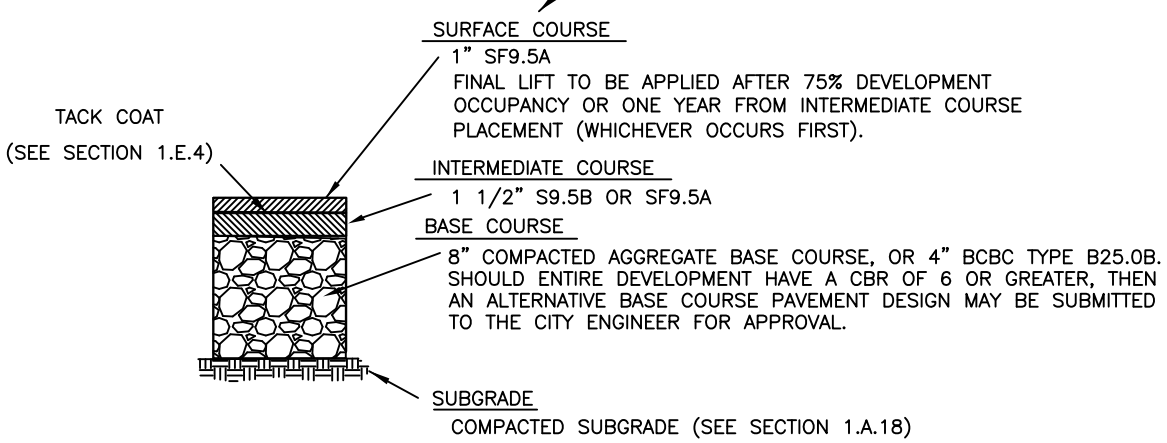
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LOCAL RESIDENTIAL WIDE STREET
PLAN VIEW

STD. NO.	REV.
U-03	6





TYPICAL PAVEMENT SECTION

KEY

Ⓡ 2'-6" STANDARD CURB AND GUTTER, 2'-0" STANDARD CURB AND GUTTER, OR 2'-0" VALLEY GUTTER (SEE NOTE 1)

Ⓢ 4" CONCRETE SIDEWALK

NOTES:

1. VALLEY GUTTER IS ALLOWED ONLY WITH PRIOR APPROVAL FROM CDOT AND CITY ENGINEERING.
2. SIDEWALK IS 6' MIN. WHEN LESS THAN 12 DWELLING UNITS PER ACRE (D.U.A.). SIDEWALK IS 8' MIN. WHEN 12 D.U.A. OR GREATER.
3. AN ALTERNATIVE PAVEMENT DESIGN MAY BE REQUIRED BY CDOT/NCDOT BASED ON SPECIFIC TRAFFIC PARAMETERS.
4. AMENITY ZONE (HARDSCAPE) ALLOWED IN LIEU OF PLANTING STRIP WITH PRIOR APPROVAL FROM ENGINEERING, CDOT, AND PLANNING.
5. SEE PARKING STANDARD DETAILS #50.09A, B, & C FOR INFORMATION REGARDING ON-STREET "HEAD-IN" PARKING.
6. ON STREETS WITH FREQUENT DRIVEWAYS THAT PRECLUDE ON-STREET PARKING, USE DETAIL #U-03C.
7. FOR EXPLANATION OF RIGHT-OF-WAY WIDTHS REFER TO CITY OF CHARLOTTE SUBDIVISION ORDINANCE SECTION 20-22(d).

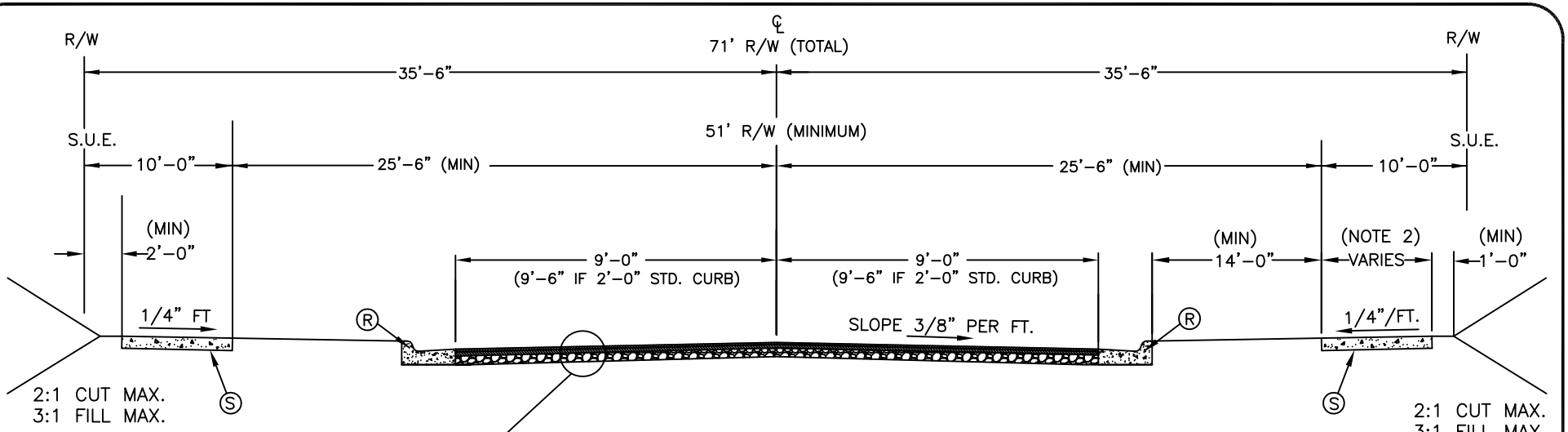
NOT TO SCALE

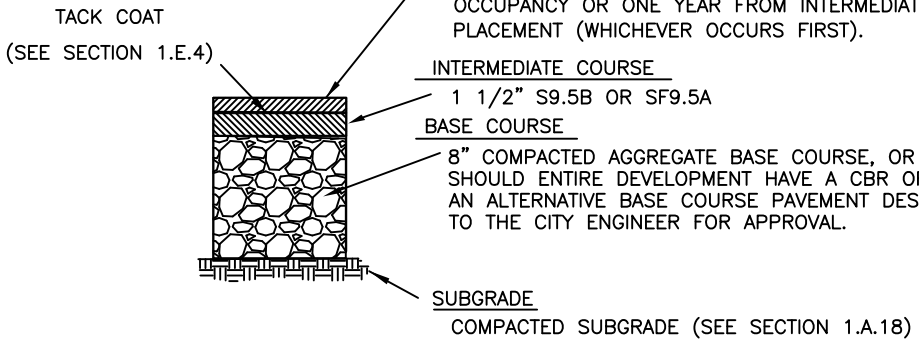
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LOCAL RESIDENTIAL WIDE STREET TYPICAL SECTION

STD. NO.	REV.
U-03A	6





TYPICAL PAVEMENT SECTION

NOTES:

1. VALLEY GUTTER IS ALLOWED ONLY WITH PRIOR APPROVAL FROM CDOT AND CITY ENGINEERING.
2. SIDEWALK IS 6' MIN. WHEN LESS THAN 12 DWELLING UNITS PER ACRE (D.U.A.). SIDEWALK IS 8' MIN. WHEN 12 D.U.A. OR GREATER.
3. AN ALTERNATIVE PAVEMENT DESIGN MAY BE REQUIRED BY CDOT/NCDOT BASED ON SPECIFIC TRAFFIC PARAMETERS.
4. AMENITY ZONE (HARDSCAPE) ALLOWED IN LIEU OF PLANTING STRIP WITH PRIOR APPROVAL FROM ENGINEERING, CDOT, AND PLANNING.
5. FOR EXPLANATION OF RIGHT–OF–WAY WIDTHS REFER TO CITY OF CHARLOTTE SUBDIVISION ORDINANCE SECTION 20–22(d).

KEY

Ⓡ 2'–6" STANDARD CURB AND GUTTER, 2'–0" STANDARD CURB AND GUTTER, OR 2'–0" VALLEY GUTTER (SEE NOTE 1)

Ⓢ 4" CONCRETE SIDEWALK

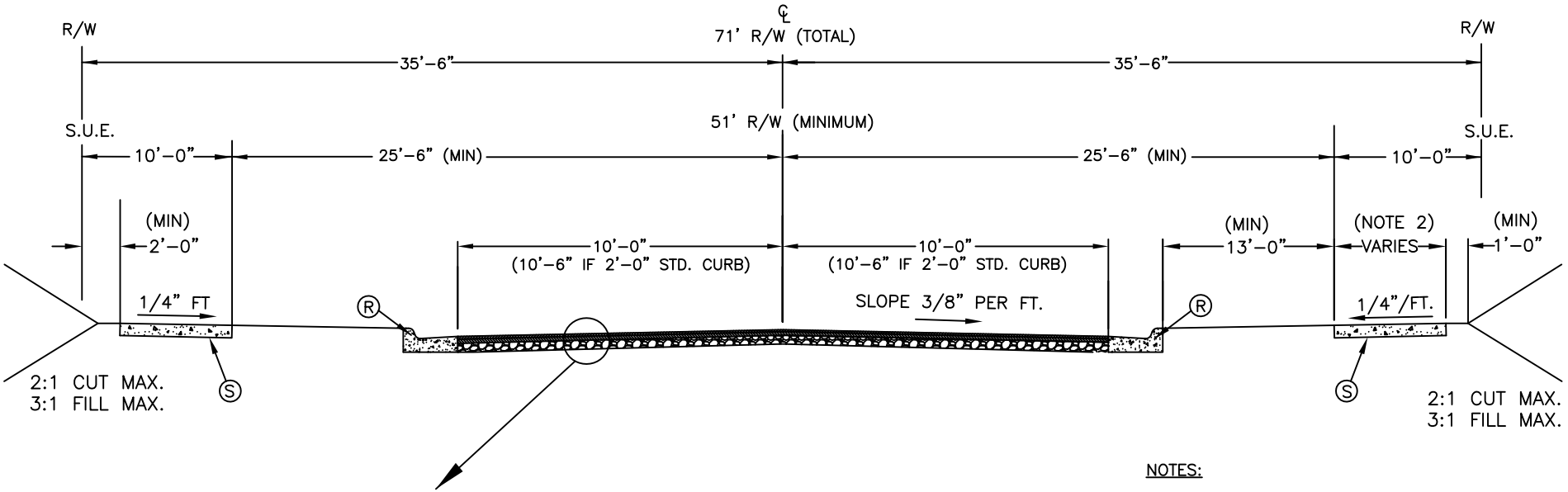
NOT TO SCALE

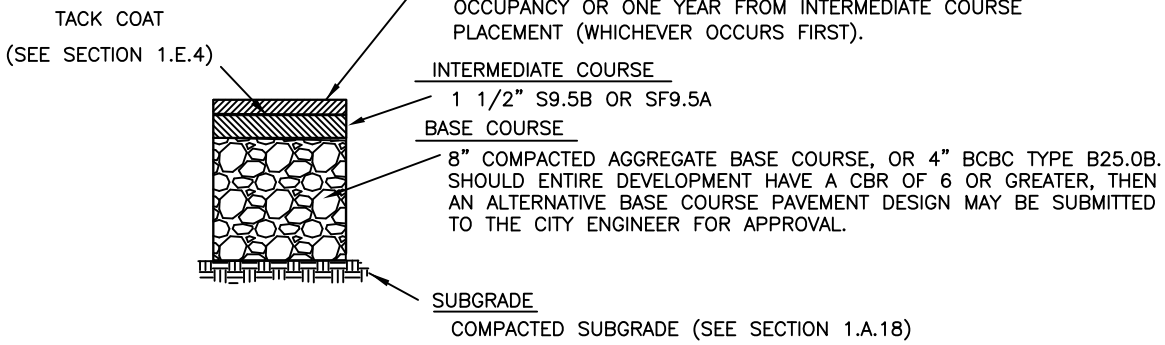
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LOCAL RESIDENTIAL WIDE STREET AT MIDBLOCK WITH CURB EXTENSION TYPICAL SECTION

STD. NO.	REV.
U–03B	6





TYPICAL PAVEMENT SECTION

NOTES:

1. VALLEY GUTTER IS ALLOWED ONLY WITH PRIOR APPROVAL FROM CDOT AND CITY ENGINEERING.
2. SIDEWALK IS 6' MIN. WHEN LESS THAN 12 DWELLING UNITS PER ACRE (D.U.A.). SIDEWALK IS 8' MIN. WHEN 12 D.U.A. OR GREATER.
3. AN ALTERNATIVE PAVEMENT DESIGN MAY BE REQUIRED BY CDOT/NCDOT BASED ON SPECIFIC TRAFFIC PARAMETERS.
4. AMENITY ZONE (HARDSCAPE) ALLOWED IN LIEU OF PLANTING STRIP WITH PRIOR APPROVAL FROM ENGINEERING, CDOT, AND PLANNING.
5. THIS DETAIL IS FOR USE ON STREETS WITH FREQUENT DRIVEWAYS THAT PRECLUDE ON-STREET PARKING.
6. FOR EXPLANATION OF RIGHT-OF-WAY WIDTHS REFER TO CITY OF CHARLOTTE SUBDIVISION ORDINANCE SECTION 20-22(d).

KEY

Ⓡ 2'-6" STANDARD CURB AND GUTTER,
2'-0" STANDARD CURB AND GUTTER, OR
2'-0" VALLEY GUTTER (SEE NOTE 1)

Ⓢ 4" CONCRETE SIDEWALK

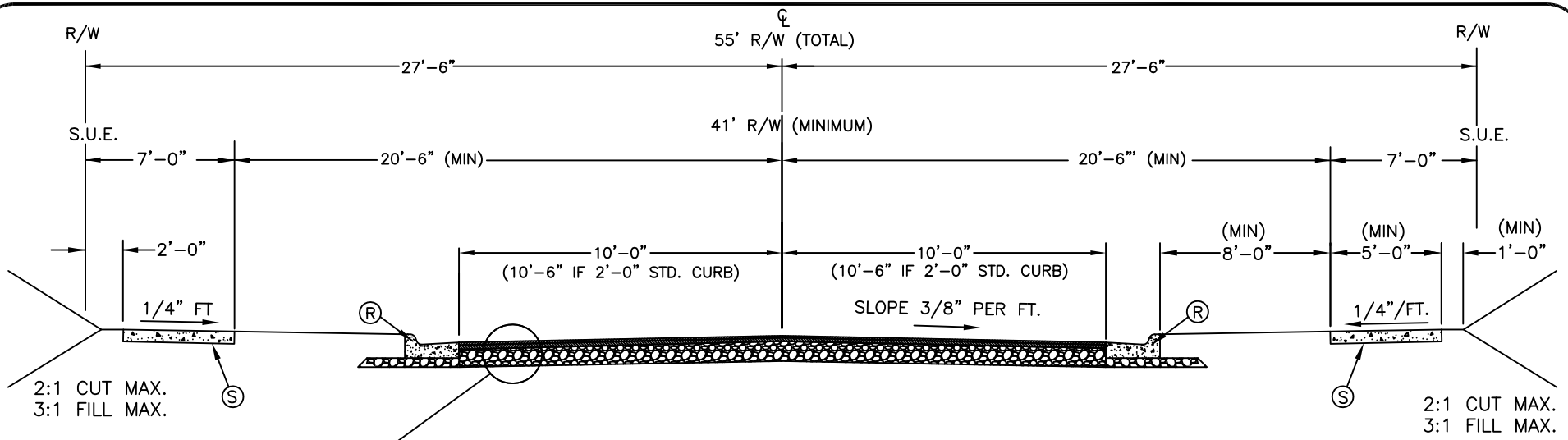
NOT TO SCALE

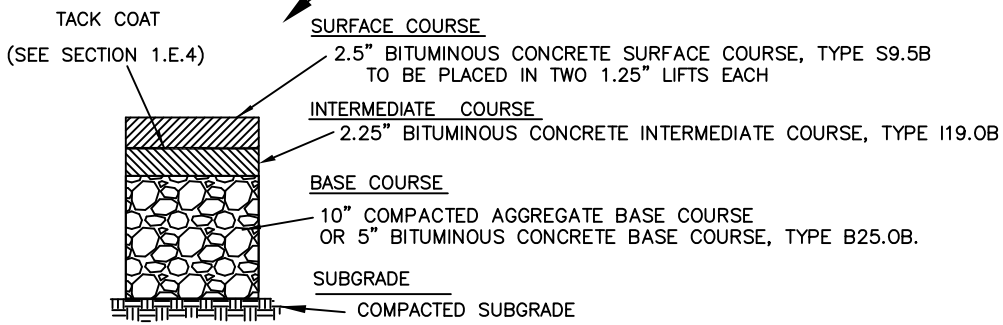
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LOCAL RESIDENTIAL WIDE STREET AT INTERSECTION WITH CURB EXTENSION TYPICAL SECTION

STD. NO.	REV.
U-03C	6





TYPICAL MINIMUM PAVEMENT SECTION

NOTES:

1. USE OF VALLEY GUTTER PROHIBITED.
2. DEVELOPER MAY SUBMIT AN ALTERNATIVE PAVEMENT DESIGN TO CITY ENGINEER.
3. AN ALTERNATIVE PAVEMENT DESIGN MAY BE REQUIRED BY CDOT/NCDOT BASED ON SPECIFIC TRAFFIC PARAMETERS.
4. FOR EXPLANATION OF RIGHT-OF-WAY WIDTHS REFER TO CITY OF CHARLOTTE SUBDIVISION ORDINANCE SECTION 20-22(d).

KEY

(R) 2'-6" STANDARD CURB AND GUTTER (SHOWN) OR 2'-0" STANDARD CURB AND GUTTER

(S) 4" CONCRETE SIDEWALK

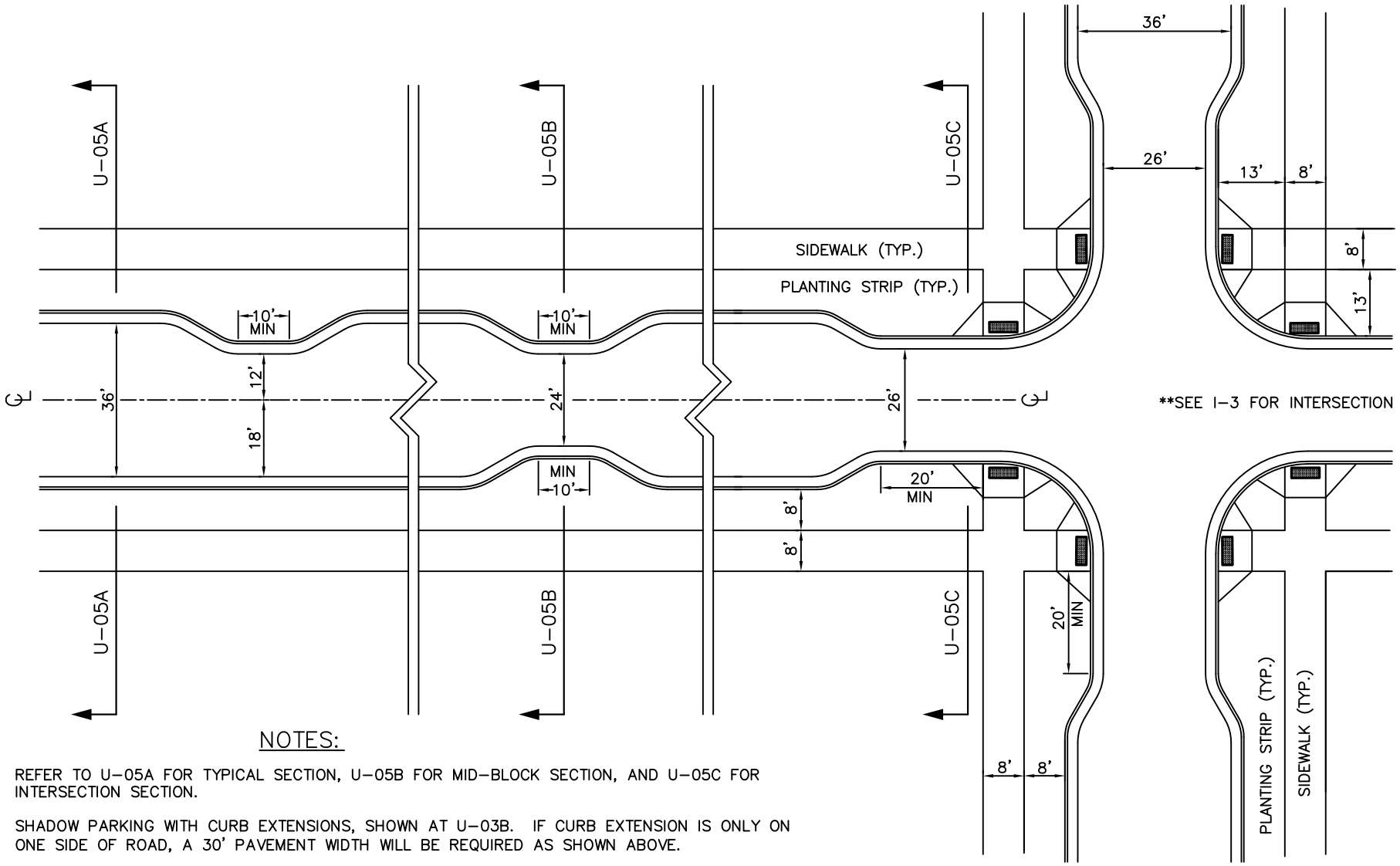
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LOCAL OFFICE/COMMERCIAL NARROW STREET TYPICAL SECTION

STD. NO.	REV.
U-04	6



NOTES:

1. REFER TO U-05A FOR TYPICAL SECTION, U-05B FOR MID-BLOCK SECTION, AND U-05C FOR INTERSECTION SECTION.
2. SHADOW PARKING WITH CURB EXTENSIONS, SHOWN AT U-03B. IF CURB EXTENSION IS ONLY ON ONE SIDE OF ROAD, A 30' PAVEMENT WIDTH WILL BE REQUIRED AS SHOWN ABOVE.

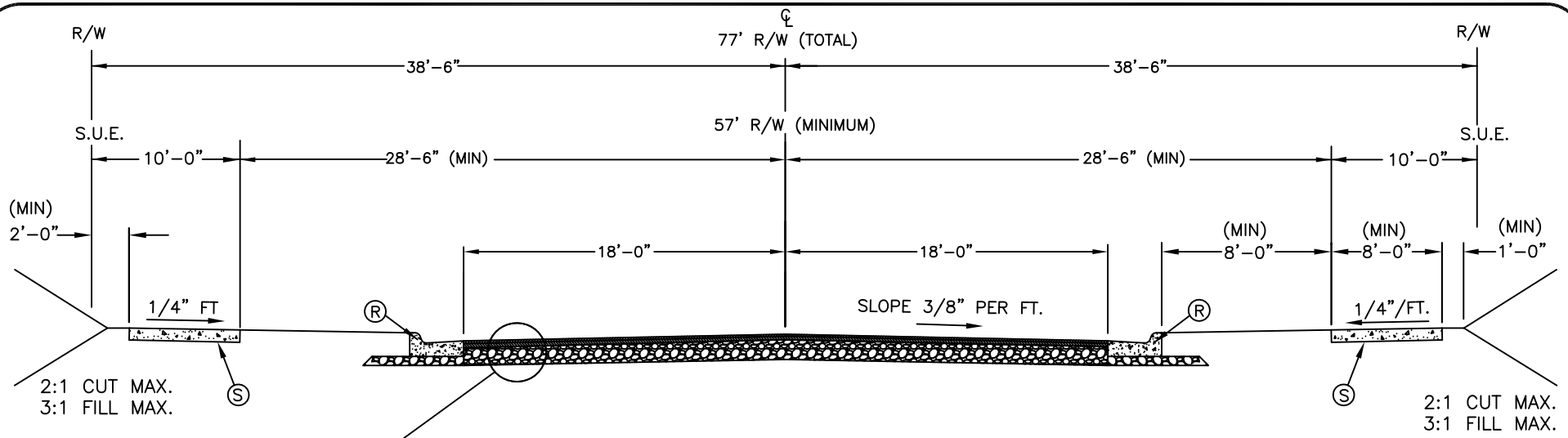
NOT TO SCALE

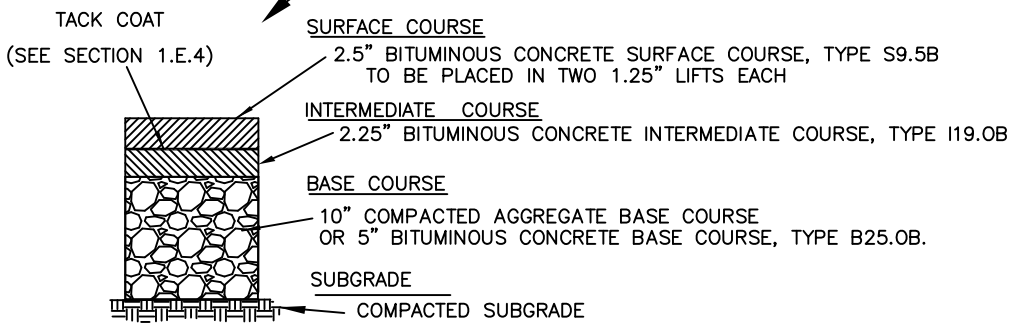
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LOCAL OFFICE/COMMERCIAL WIDE STREET
PLAN VIEW

STD. NO.	REV.
U-05	6





TYPICAL MINIMUM PAVEMENT SECTION

NOTES:

1. USE OF VALLEY GUTTER PROHIBITED.
2. WIDER SIDEWALKS MAY BE REQUIRED UNDER CIRCUMSTANCES AS IDENTIFIED IN THE USDG.
3. DEVELOPER MAY SUBMIT AN ALTERNATIVE PAVEMENT DESIGN TO CITY ENGINEER.
4. AN ALTERNATIVE PAVEMENT DESIGN MAY BE REQUIRED BY CDOT/NCDOT BASED ON SPECIFIC TRAFFIC PARAMETERS.
5. AMENITY ZONE (HARDSCAPE) ALLOWED IN LIEU OF PLANTING STRIP WITH PRIOR APPROVAL FROM ENGINEERING, CDOT, AND PLANNING.
6. FOR EXPLANATION OF RIGHT-OF-WAY WIDTHS REFER TO CITY OF CHARLOTTE SUBDIVISION ORDINANCE SECTION 20-22(d).

KEY

(R) 2'-6" STANDARD CURB AND GUTTER ONLY

(S) 4" CONCRETE SIDEWALK

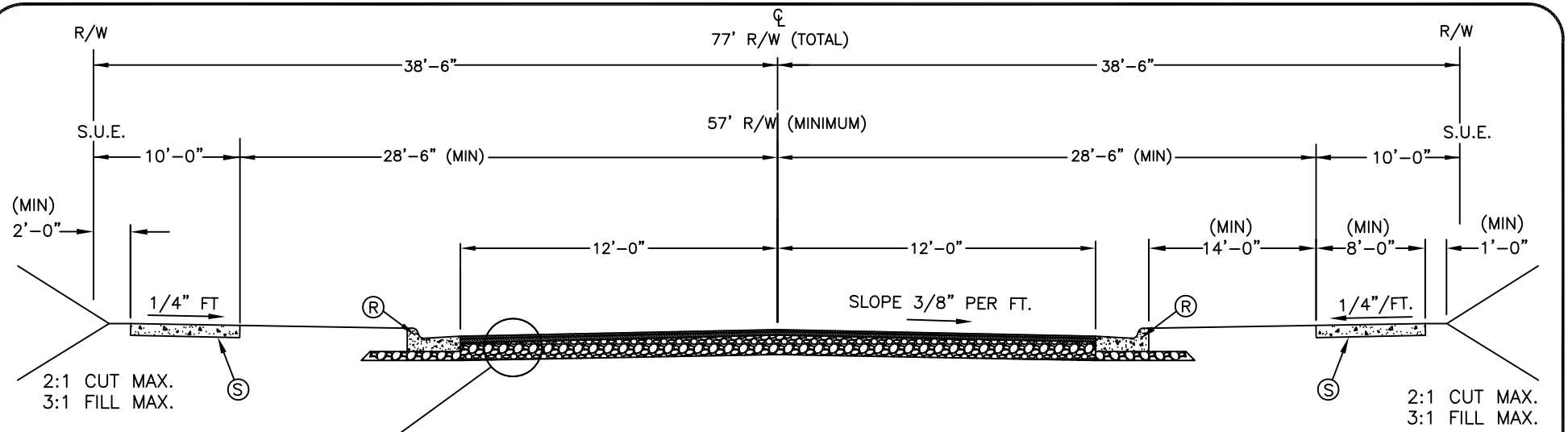
NOT TO SCALE

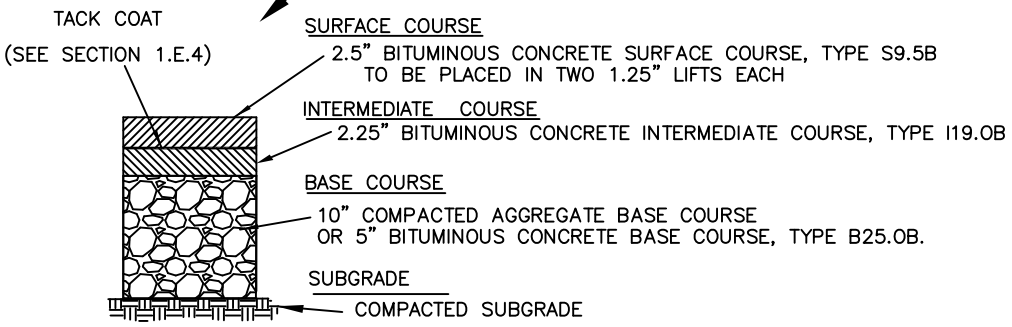
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LOCAL OFFICE/COMMERCIAL WIDE STREET TYPICAL SECTION

STD. NO.	REV.
U-05A	6





TYPICAL MINIMUM PAVEMENT SECTION

NOTES:

1. USE OF VALLEY GUTTER IS PROHIBITED.
2. WIDER SIDEWALKS MAY BE REQUIRED UNDER CIRCUMSTANCES AS IDENTIFIED IN THE USDG.
3. DEVELOPER MAY SUBMIT AN ALTERNATIVE PAVEMENT DESIGN TO CITY ENGINEER.
4. AN ALTERNATIVE PAVEMENT DESIGN MAY BE REQUIRED BY CDOT/NCDOT BASED ON SPECIFIC TRAFFIC PARAMETERS.
5. AMENITY ZONE (HARDSCAPE) ALLOWED IN LIEU OF PLANTING STRIP WITH PRIOR APPROVAL FROM ENGINEERING, CDOT, AND PLANNING.
6. FOR EXPLANATION OF RIGHT-OF-WAY WIDTHS REFER TO CITY OF CHARLOTTE SUBDIVISION ORDINANCE SECTION 20-22(d).

KEY

Ⓡ 2'-6" STANDARD CURB AND GUTTER ONLY

Ⓢ 4" CONCRETE SIDEWALK

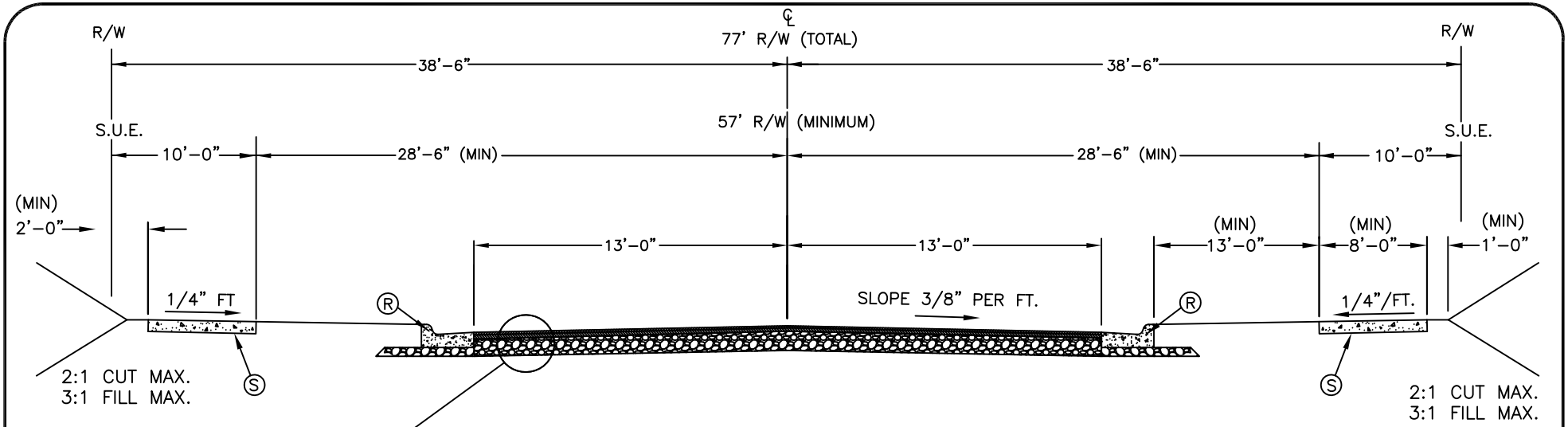
NOT TO SCALE

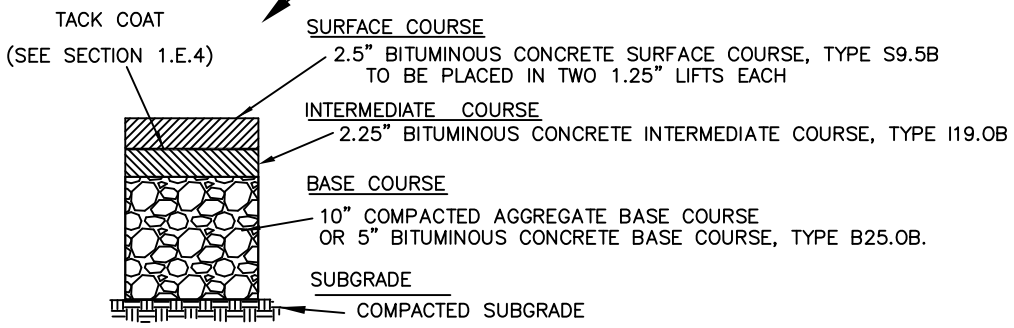
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LOCAL OFFICE/COMMERCIAL WIDE STREET AT MIDBLOCK WITH CURB EXTENSION TYPICAL SECTION

STD. NO.	REV.
U-05B	6





TYPICAL MINIMUM PAVEMENT SECTION

NOTES:

1. USE OF VALLEY GUTTER IS PROHIBITED.
2. WIDER SIDEWALKS MAY BE REQUIRED UNDER CIRCUMSTANCES AS IDENTIFIED IN THE USDG.
3. DEVELOPER MAY SUBMIT AN ALTERNATIVE PAVEMENT DESIGN TO CITY ENGINEER.
4. AN ALTERNATIVE PAVEMENT DESIGN MAY BE REQUIRED BY CDOT/NCDOT BASED ON SPECIFIC TRAFFIC PARAMETERS.
5. AMENITY ZONE (HARDSCAPE) ALLOWED IN LIEU OF PLANTING STRIP WITH PRIOR APPROVAL FROM ENGINEERING, CDOT, AND PLANNING.
6. FOR EXPLANATION OF RIGHT-OF-WAY WIDTHS REFER TO CITY OF CHARLOTTE SUBDIVISION ORDINANCE SECTION 20-22(d).

KEY

Ⓡ 2'-6" STANDARD CURB AND GUTTER ONLY

Ⓢ 4" CONCRETE SIDEWALK

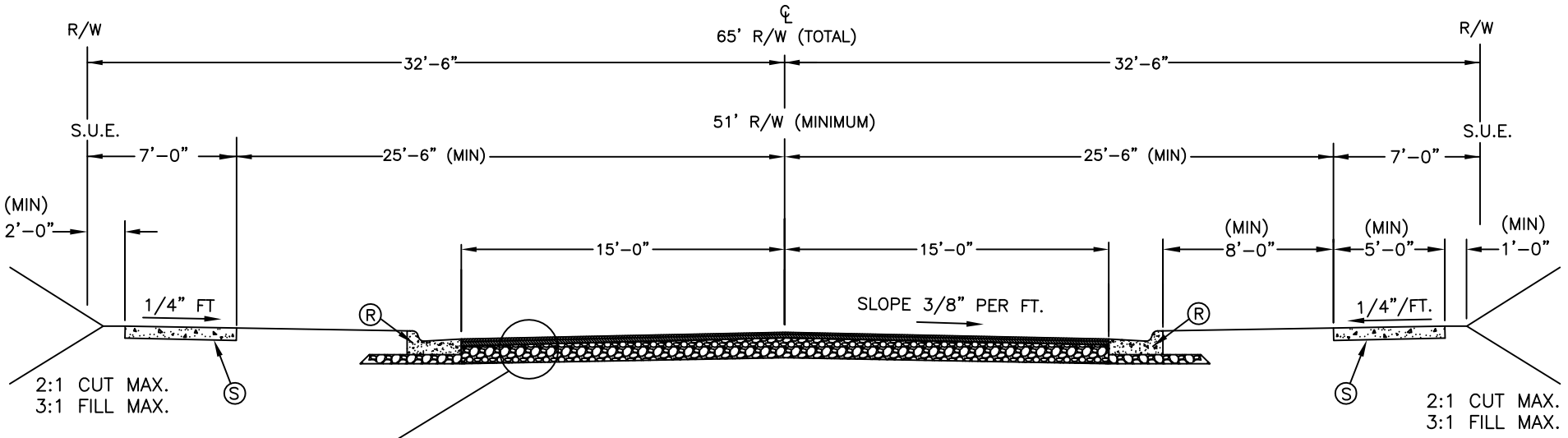
NOT TO SCALE

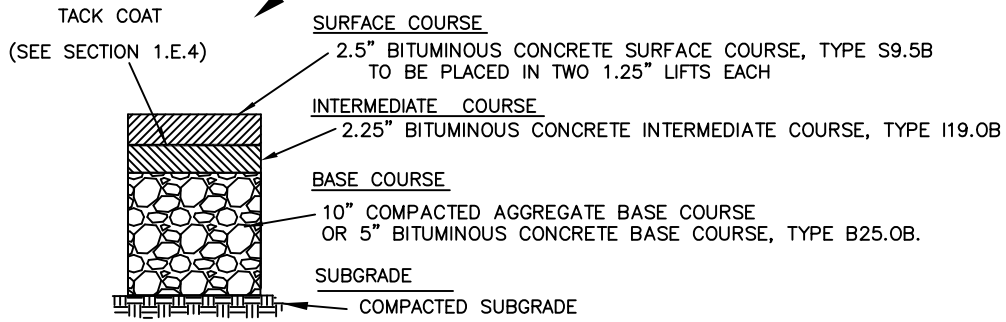
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LOCAL OFFICE/COMMERCIAL WIDE STREET AT INTERSECTION WITH CURB EXTENSION TYPICAL SECTION

STD. NO.	REV.
U-05C	6





TYPICAL MINIMUM PAVEMENT SECTION

NOTES:

1. USE OF VALLEY GUTTER IS PROHIBITED.
2. DEVELOPER MAY SUBMIT AN ALTERNATIVE PAVEMENT DESIGN TO CITY ENGINEER.
3. AN ALTERNATIVE PAVEMENT DESIGN MAY BE REQUIRED BY CDOT/NCDOT BASED ON SPECIFIC TRAFFIC PARAMETERS.
4. FOR EXPLANATION OF RIGHT-OF-WAY WIDTHS REFER TO CITY OF CHARLOTTE SUBDIVISION ORDINANCE SECTION 20-22(d).

KEY

Ⓡ 2'-6" STANDARD CURB AND GUTTER

Ⓢ 4" CONCRETE SIDEWALK

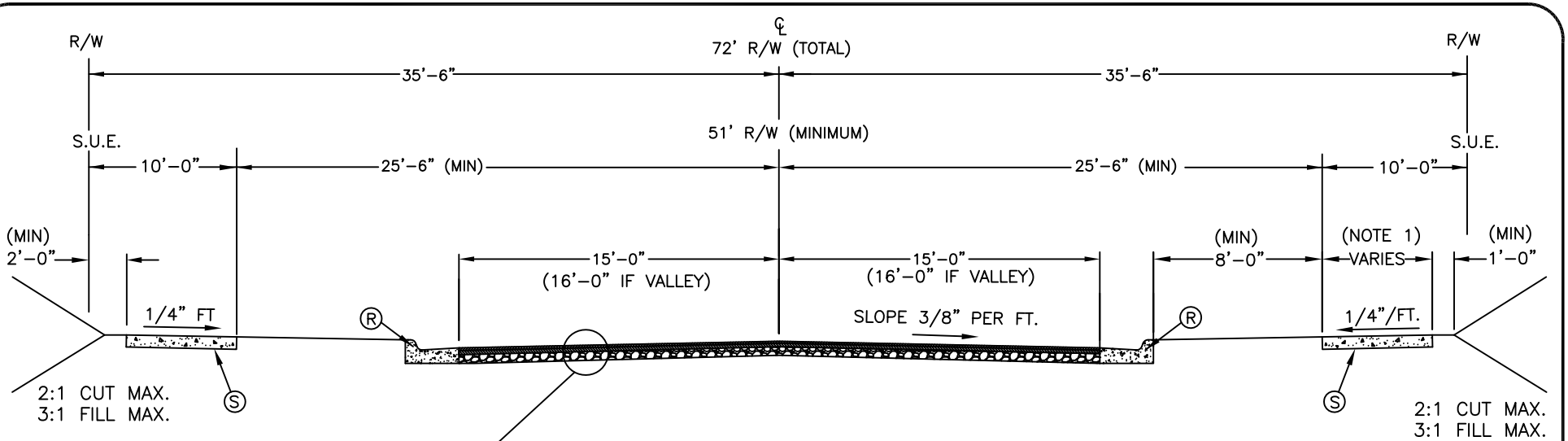
NOT TO SCALE

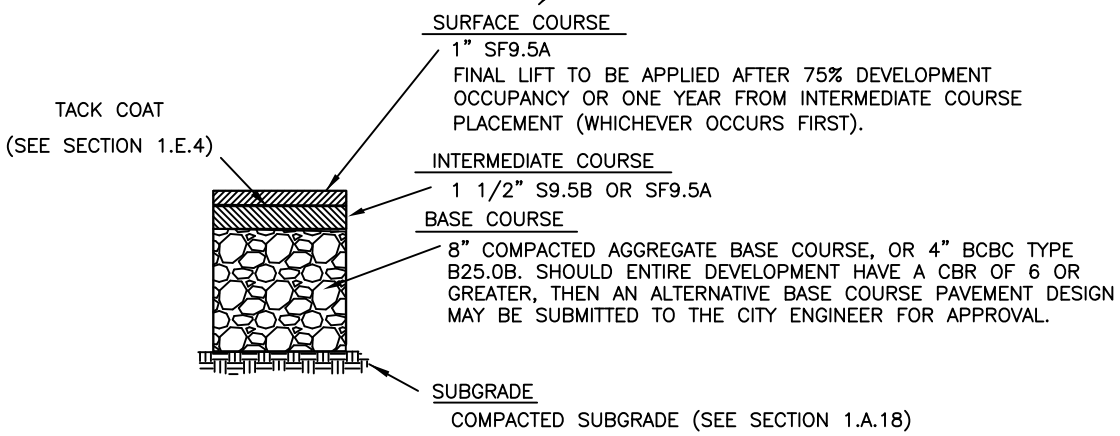
CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LOCAL INDUSTRIAL STREET TYPICAL SECTION

STD. NO.	REV.
U-06	6





TYPICAL PAVEMENT SECTION

NOTES:

1. SIDEWALK IS 5' MIN. WHEN LESS THAN 8 DUA. SIDEWALK IS 6' MIN. WHEN 8 DUA OR GREATER BUT LESS THAN 12 DUA. SIDEWALK IS 8' MIN. WHEN 12 DUA OR GREATER.
2. AN ALTERNATIVE PAVEMENT DESIGN MAY BE REQUIRED BY CDOT/NCDOT BASED ON SPECIFIC TRAFFIC PARAMETERS.
3. AMENITY ZONE (HARDSCAPE) ALLOWED IN LIEU OF PLANTING STRIP WITH PRIOR APPROVAL FROM ENGINEERING, CDOT, AND PLANNING.
4. FOR EXPLANATION OF RIGHT–OF–WAY WIDTHS REFER TO CITY OF CHARLOTTE SUBDIVISION ORDINANCE SECTION 20–22(d).

KEY

Ⓡ 2'–6" STANDARD CURB AND GUTTER (SHOWN) OR 2'–0" VALLEY GUTTER

Ⓢ 4" CONCRETE SIDEWALK

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

LOCAL COLLECTOR STREET
TYPICAL SECTION

STD. NO.	REV.
U–07	6