Grove Manor Subdivision - Phase 1

PRELIMINARY SUBDIVISION PLANS
for
Grove Manor, LLC
TOWN OF WAXHAW, UNION COUNTY, N.C.

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Development Data

Tax Parcel Nos.: 06165001 & 06165001c
Zoning Jurisdiction: Town Of Waxhaw
Zoning Classification: CD-R4-PRD
Total Site Area: 15.55± Acres
- Dedicated R/W (Waxhaw-Marvin Rd.): 0.65 Acres
- Proposed New R/W: 2.61 Acres (113,633 Sq. Ft.)
- Proposed Total Lot Area: 8.47 Acres
- Perimeter Buffer: 1.35 Acres
- Proposed Street / Landscape Buffer: 0.40 Acres
- Proposed BMP Ponds: 2.20 Acres

Open Space Provided: 4.78 Acres
- Perimeter Buffer Open Space: 1.35 Acres
- Street / Landscape Buffer Open Space: 0.40 Acres
- Interior Open Space (includes BMP Areas): 3.03 Acres

Tree Save Provided: 3.28 Acres
- Perimeter Buffer Tree Save: 1.35 Acres
- Internal Tree Protection Zone: 0.43 Acres (Located in Phase 1)
- Internal Tree Protection Zone (dedicated from Phase 2): 1.50 Acres

Proposed Lot Data:
- Density: 3.2 Units / Acre
- No. Lots Allowed: 48
- No. Lots Proposed: 46
- Min. Lot Area: 6,000 sf
- Min. Lot Area Proposed: 6,369 sf
- Max. Impervious Lot Coverage: 75%
- Min. Lot Width: 55'
- Min. Setback: 20'
- Min. Side Yard: 5' Internal, 10' Corner
- Min. Rear Yard: 25' Internal (reduced from 30')
  30' Exterior (reduced from 40')
- Note: Reductions in Rear Yards per Board of Commissioner's approval during the Conditional District Rezoning.

Proposed Street Length (Measured Centerline To Centerline):
- Grove Manor Drive: 1,133.15 Lf
- Walking Path Drive: 577.18 Lf
- Idol Rock Way: 406.20 Lf

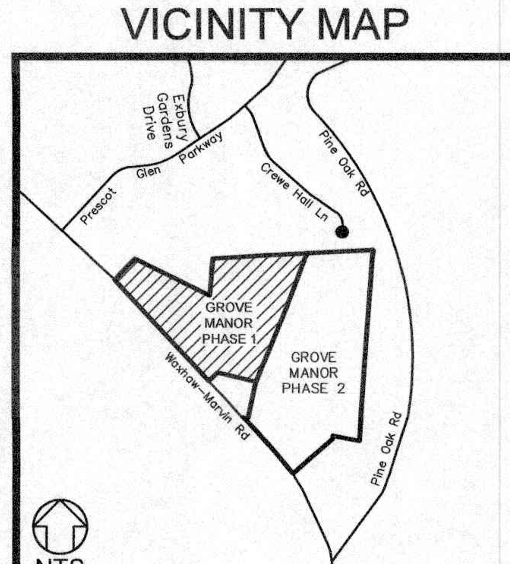
Proposed Building Data:
- Building size (square feet): 1600 - 2800
- Building Heights: 25' to 27'

Engineer
Harris Engineering
5200 Park Road, Suite 231
Charlotte, NC 28209
Phone: (704) 334-1325
Fax: (704) 334-1330
Contact: Wayne M. Harris, P.E.
(wharris@he-nc.com)

#11

Owner / Developer
Grove Manor NC, LLC
P.O. Box 8790
Virginia Beach, VA. 23450
Phone: (980) 406-3818
Contact: Doug Lawrie
(doug@sdgnc.com)

VICINITY MAP



Site Plan
Scale: 1" = 100'

LOT YIELD CALCULATIONS		
DESCRIPTION	SQUARE FEET	ACRES
TOTAL SITE AREA	677,502.47	15.553
EXISTING FLOODPLAIN	0.00	0.000
EXISTING PONDS	0.00	0.000
EXISTING WETLANDS	698.00	0.016
TOTALS	**698.000**	**0.016**
DEVELOPABLE AREA	676,804.47	15.537
MINIMUM LOT SIZE	6,000.00	
MAXIMUM LOT YIELD	112.80	
PROPOSED LOTS	46.00	

OPEN SPACE CALCULATIONS			
OPEN SPACE AREAS	SQUARE FEET	ACRES	PERCENT OF OVERALL SITE AREA
COMMON OPEN SPACE "A"	17,330	0.398	2.56%
COMMON OPEN SPACE "B"	13,115	0.301	1.94%
COMMON OPEN SPACE "C"	20,465	0.470	3.02%
COMMON OPEN SPACE "D"	81,185	1.864	11.99%
COMMON OPEN SPACE "E"	0	0.000	0.00%
COMMON OPEN SPACE "F"	0	0.000	0.00%
30' TREE PRESERVATION BUFFER	58,696	1.347	8.67%
TOTALS	**190,792**	**4.380**	**28.17%**

INTERNAL TREE SAVE AREA SUMMARY			
INTERNAL TREE PRESERVATION ZONE (ITPZ) AREAS	SQUARE FEET	ACRES	PERCENT OF INTERNAL PROPERTY AREA
ITPZ #1 (within COS "A", along Lot 1)	2,091	0.048	0.50%
ITPZ #2 (within Lot 1, along buffer)	0	0.000	0.00%
ITPZ #3 (within COS "B" & Lot 6)	11,722	0.269	2.81%
ITPZ #4 (within COS "C". Along buffer)	1,231	0.028	0.29%
ITPZ #5 (within COS "C". Along buffer)	3,840	0.088	0.92%
ITPZ #6 (within COS "D", along buffer)	0	0.000	0.00%
ITPZ #7 (within COS "D" & Lot 16)	0	0.000	0.00%
ITPZ #8 (within COS "D", next to Lot 19)	0	0.000	0.00%
ITPZ #9 (within COS "F")	0	0.000	0.00%
ITPZ #10 (within Lot 23)	0	0.000	0.00%
ITPZ #11 (within Lots 24 & 25)	0	0.000	0.00%
ITPZ #12 (within Lots 27 & 28)	0	0.000	0.00%
ITPZ #13 (within Lot 37)	0	0.000	0.00%
ITPZ #14 (within Lots 43, 44, & 45)	0	0.000	0.00%
ITPZ #15 (within Lots 38 & 46)	0	0.000	0.00%
ITPZ #16 (within Grove Manor Phase 2)	65,340	1.500	15.64%
TOTALS	**84,224**	**1.934**	**20.16%**

NOTE: See sheet #3 for exact locations of Internal Tree Preservation Zone areas.

INTERNAL TREE SAVE CALCULATIONS		
DESCRIPTION	SQUARE FEET	ACRES
TOTAL SITE AREA	677,502.47	15.553
30' TREE PRESERVATION BUFFER	58,696.30	1.347
EXISTING STREET BUFFER	17,427.83	0.400
EXISTING PONDS	0.00	0.000
EXISTING UTILITY EASEMENTS	0.00	0.000
PROPOSED UTILITY EASEMENTS	41,569.48	0.954
DEDICATED RIGHT-OF-WAY	28,358.45	0.651
PROPOSED RIGHT-OF-WAY	113,775.97	2.612
TOTALS	259,828.03	5.965
INTERNAL PROPERTY AREA	417,674.44	9.588
INTERNAL TREE SAVE REQUIRED BY THE WAXHAW UDO (20%)	83,534.89	1.918
TREE SAVE DEPICTED ON THE CONSTRUCTION PLANS	84,223.95	1.934

APPROVED
By Max Hsiang at 3:38 pm, Jun 26, 2019

General Notes

1. This Preliminary Subdivision Plan is submitted, and shall be constructed in accordance with the requirements of the Town of Waxhaw Zoning and Subdivision Ordinances, and the Waxhaw Engineering Design & Construction Standards Procedures Manual.
2. Boundary information per Boundary Survey prepared by Metrolina Engineering & Surveying Associates.
3. Existing topographic information within the project boundary is based on field-run survey performed by Metrolina Engineering & Surveying Associates. Existing topographic information beyond the project boundary is based NCDOT aerial LiDAR mapping.
4. All lot dimensions are preliminary and subject to revision thru the design and approval process. Reference record plat for exact lot dimensions and Tree Save Areas.
5. Approximate completion time is summer 2019 (no phasing).
6. No on-site demolition landfills (i.e., Stump Holes) will be located on this site.
7. Construction of all development improvements shall be in accordance with the Waxhaw Engineering Design & Construction Standards Procedures Manual. See Sheet 10 for site-related details. The following additional details are included by reference:

Item	Standard. No.
Curb & Gutter	100.1, 101.1 & 102.1
Curb Transition	104.1
Concrete Sidewalk	106.1
Catch Basin Location	121.1 & 122.1
Accessible Ramps	131.1
Catch Basin	840.01 or 840.02 (NCDOT)
Drop Inlet (Grate)	840.14 or 840.15 (NCDOT)
Manhole	840.53 (NCDOT)
Flared End Section	307.1
Street Name Sign	702.1 & 704.1
Barricade w/ Sign	705.1, 706.1, 707.1, 708.1 & 709.1
Cluster Mail Box & Parking	719.1, 721.1, 725.1 & 727.1

8. All storm drainage pipe shall be Class 3 Reinforced Concrete Pipe (RCP) unless otherwise noted. Pipe lengths indicated on the plans are approximate and are subject to change due to field conditions. See Storm Drainage Pipe Schedule (Sheets 4 & 8) for information regarding pipes that shall be installed as "O-Ring Gasket Pipe."
9. See Sheets 5 & 6 for Erosion Control Plan information and notes. See Sheet 11 for Erosion Control Details.
10. Site development and Grading Permit shall be in accordance with the Town of Waxhaw Code. Encroachment agreements may be required for work within existing rights-of-way.
11. The Erosion Control Inspector shall be given 48 hours advance notice prior to commencement of construction.
12. Sidewalk Note: The Contractor shall coordinate with the Waxhaw Town Engineer for the latest revision of the Handicap Ramp Detail(s) prior to placement of any sidewalk or handicapped ramps.
13. Coordinate all curb and street grades in intersections with the Inspector.
14. All road improvements at the tie-in to existing Waxhaw-Marvin Road shall be coordinated with the Waxhaw Town Engineer and/or NCDOT as required prior to construction. Intersection improvements shall be in accordance with the approved Driveway Permit and required specifications.
15. The developer shall provide street signs at all intersections per Std. #702.1. Standard MUTCD "Keep Right" signs (R4-7, 24" x 30") shall be installed by the developer at each end of the proposed island at the intersection of Waxhaw-Marvin Road and Grove Manor Drive.
16. Direct vehicular access to Waxhaw-Marvin Road from Lots 27 thru 37 is prohibited.
17. Sight Triangles shown are the minimum required.
18. In rolling and hilly terrain, sweeping of the stone base and/or application of a tack coat may be required near intersections. These requirements will be established by the Inspector based on field conditions.
19. Approval of this plan is not an authorization to grade adjacent properties. When field conditions warrant off-site grading, permission must be obtained from the affected property owner(s).
20. To insure proper drainage, minimum curb and gutter grade shall be 0.50%.
21. Subsurface drainage facilities may be required in the street right-of-way as deemed necessary by the Inspector.
22. The purpose of the "Storm Drain Easement" (SDE) is to provide storm water conveyance. Structures are not permitted in the easement area. Any other objects which impede storm water flow or system maintenance are also prohibited.
23. DELETED
24. The Developer shall maintain each stream, creek, or backwash channel in an unobstructed state and shall remove from the channel and banks of the stream all debris, logs, timber, junk and other accumulations.
25. P.E. sealed shop drawings for any proposed retaining walls must be submitted to Waxhaw Engineering prior to construction.
26. "As-Built" drawings and plans of the storm drainage system, including designed ditches, must be submitted prior to subdivision final inspection to Waxhaw Engineering Department.
27. Prior to installation, PE sealed shop drawings for any underground detention systems must be furnished to Waxhaw Engineering for approval.
28. All non-standard items (i. e., pavers, irrigation systems, etc.) in the right-of-way require a right-of-way encroachment agreement prior to installation.
29. Prior to issuance of the Certificate of Occupancy, surveyor sealed as-built drawings of all water quality BMP's and detention systems must be provided.
30. Prior to plat recordation, any off-site R/W and/or construction easements are required to be obtained. Any required off-site R/W and/or easements shall be clearly shown on the roadway improvement plan.
31. Common Open Space shall be conveyed to the Grove Manor Homeowners Association upon completion of all required improvements and construction of all homes.
32. See Sheet 9 for Landscape Plan information related to street trees and Notes. See Sheet 10 for details related to tree protection and tree planting.
33. (#10) The temporary on-site benchmark used as the basis for all on-site surveys is a storm drain manhole located adjacent to the Grove Manor site in the rear of Lot 63 in the Prescot Subdivision, approximately 10.5' north of the rear property line of proposed Lot 14, rim elevation = 533.45 (NAVD 88).
34. No floodplain located on site, per information obtained from FEMA Firm Panels 4484J and 4483J, effective date of study October 16, 2008.
35. Maintenance of all storm drainage outside of public right-of-way is the responsibility of the Home Owner's Association or the private property owner.
36. Section 20 of the Waxhaw Unified Development Ordinance, as it existed at the time of the Conditional Dristrict Rezoning approval, shall govern the architecture of this subdivsion.
37. All public streets, sidewalks, and other common areas or facilities shall be sufficiently illuminated to ensure the security of property and the safety of persons using such streets, sidewalks, and other common areas or facilities. Street lights shall be rated a minimum of 9500-lumen, and shall be 100 watt high pressure sodium vapor located at all intersections and mid-block locations with intervals not exceeding 250 feet.
38. All internal speed limits shall be 25 mph, or as dictated by the Town of Waxhaw.
39. Parking spaces and access to the Cluster Mailbox unit shall meet ADA requirements.
40. The Cluster Mailbox unit is subject to approval by theWaxhaw Post Master.
41. All public sidewalks shall be constructed with a maximum cross-slope of 2%, and a maximum longitudinal slope of 5% unless a steeper slope is required to match street grades.
42. No jurisdictional wetlands are located within the site based on a determination by Water Oak Consulting.

Revision Note - Rev. #9:
The purpose of this revision to the previously approved Grove Manor Phase 1 (aka, Grove Manor) plans is to incorporate modifications that were approved as a part of the Major Zoning Amendment to the original Grove Manor Rezoning submittal. The following Zoning Amendments are addressed with this submittal:
- Remove the "Perimeter Buffer" along the eastern property boundary that is common to Phase 2.
- Allow allocation of a portion of the excess "Interior Tree Protection Zone" (ITPZ) in Phase 2 to be used to satisfy ITPZ requirements for Phase 1.

A Summary has been added to each revised sheet in this submittal to explain the change(s) required by these zoning modifications, which include the incorporation of Grove Manor Phase 2 plans as appropriate.

#11 - 3/26/19: Revised Sheet 1, Note #33 per in-house review; Revised Sheets 2, 4 - 7, 12, 13 & 16 per review comments; Revised Sheets 4, 6 - 8, 13 & 15 per Client request; and revised all sheets to update Design Firm information.
#10 - 11/14/18: Revised Sheets 1, 3 thru 9, 11 thru 16 and 17A per review comments; Revised all sheets to update owner information.

HARRIS ENGINEERING
5200 PARK ROAD
SUITE 231
CHARLOTTE, NC 28209
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F (704) 334-1330
NC #C-1170 & SC #C00946

COVER SHEET

Grove Manor Sub. - Phase 1
Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

Revisions
#1 - 10/27/17: Revised Sheets 1-11 and 13-15 per review comments. Changed Sheet Numbers 12-14 to 13-15. Added Sheets 12, 16-20 per review comments.
#2 - 01/16/18: Revised Sheets 1 through 20 per review comments and added Sheets 18A, 18B, 18C, 19A & 19B per Union County Urban Forester.
#3 - 2/15/18: Revisions per Town of Waxhaw comments and Added Note #42 per DEQ comments.
#4 - 3/1/18: Revised per Town of Waxhaw & NCDOT comments, and added Sheet 17A.
#5 - 3/20/18: Revised Sheets 4, 6, 7, 8, & 17 per NC DOT comments.
#6 - 4/2/18: Revised Sheets 14 & 15 per NC DEQ comments.
#7 - 4/9/18: Revised Note #8 (this sheet), and Sheets 4 & 8 per review comment.
#8 - 7/10/18: Revised Sheets 3 & 10 to update street light locations and add detail.
#9 - 9/7/18: Revised Sheets 1, 3 thru 9, 11, 13, 15, 16, 18 thru 20 per Zoning Amendment and additional of Phase 2.

Job No.	043-17-001
Date	5/25/2017
Proj. Mgr.	WMH
Drawn	AW / SCE

NORTH CAROLINA PROFESSIONAL SEAL #12,585 ENGINEER WAYNE M. HARRIS 5/10/19

Scale:	NOTED

Sheet No.
1
of 26

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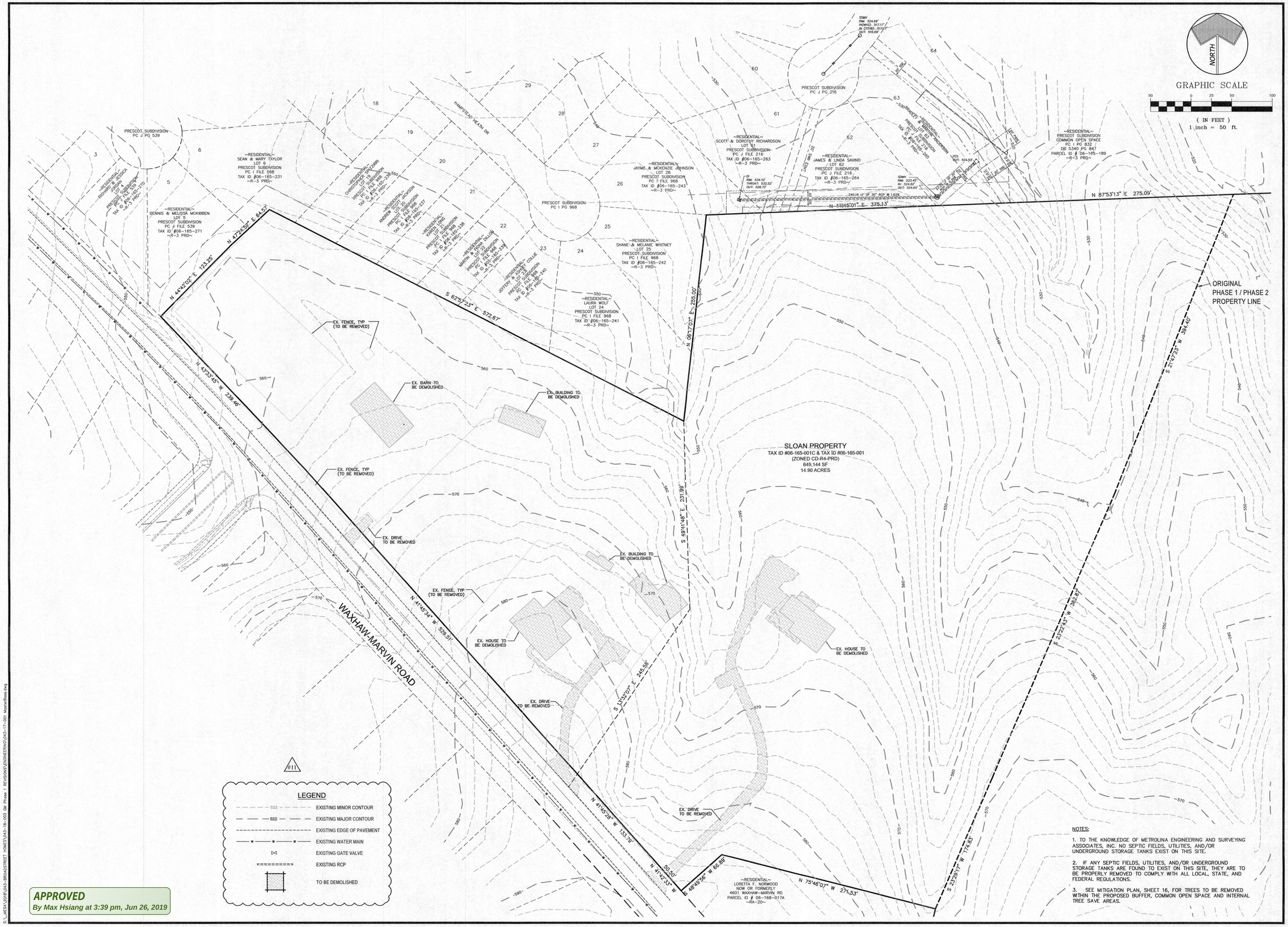

NOTES:

1. TO THE KNOWLEDGE OF METROLINA ENGINEERING AND SURVEYING ASSOCIATES, INC. NO SEPTIC FIELDS, UTILITIES, AND/OR UNDERGROUND STORAGE TANKS EXIST ON THIS SITE.

2. IF ANY SEPTIC FIELDS, UTILITIES, AND/OR UNDERGROUND STORAGE TANKS ARE FOUND TO EXIST ON THIS SITE, THEY ARE TO BE PROPERLY REMOVED TO COMPLY WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.

3. SEE MITIGATION PLAN, SHEET 16, FOR TREES TO BE REMOVED WITHIN THE PROPOSED BUFFER, COMMON OPEN SPACE AND INTERNAL TREE SAVE AREAS.

APPROVED
By Max Hsiang at 3:39 pm, Jun 26, 2019

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EXISTING CONDITIONS AND DEMOLITION PLAN

Grove Manor Sub. - Phase 1

Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

Revisions
#1 - 10/27/17: Revised per review comments.
#2 - 01/16/18: Revised per review comments.
#10 - 11/14/18: Revised owner information.
#11 - 3/26/19: Revised per review comments; and updated Design Firm information.

Job No.	043-17-001
Date	5/25/2017
Proj. Mgr.	WMH
Drawn	AW / SCE

NORTH CAROLINA PROFESSIONAL SEAL #12,585 ENGINEER WAYNE M. HARRIS 5/10/19

Scale: 1" = 50'

Sheet No. 2 of 26

GRAPHIC SCALE
(IN FEET)
1 inch = 50 ft.
NORTH
SITE LEGEND
PROPOSED PROPERTY LINE
PROPOSED RIGHT-OF-WAY
EXISTING PROPERY LINE & RIGHT-OF-WAY
PROPOSED HANDICAPPED RAMP
STREET LIGHT
STOP SIGN
STREET SIGN
COMMON OPEN SPACE
PROPOSED 5' CONCRETE SIDEWALK
INTERNAL TREE SAVE
WALKING PATH DRIVE
GROVE MANOR DRIVE
IDOL ROCK WAY
WAXHAW-MARVIN ROAD
Helmsworth Drive
Idol Rock Way
PHASE 2
COMMUNITY AMENITY SITE
ORIGINAL PHASE 1 / PHASE 2 PROPERTY LINE
PROPOSED WIDENING TO BE BY OTHERS. WIDENING APPROVED AS PART OF MILLBRIDGE PHASE 5
FUTURE MILLBRIDGE PHASE 5
COMMON OPEN SPACE "A" 17,330 SF 0.40 AC
COMMON OPEN SPACE "B" 13,115 SF 0.30 AC
COMMON OPEN SPACE "C" 20,465 SF 0.47
COMMON OPEN SPACE "D" 81,189 SF 1.86 AC
C.B.U. CLUSTER MAILBOXES W/2 ADA 8'x22' PARKING SPACES AND ADA RAMP
BMP #1
BMP #2
BMP #3
BMP & STORM DRAINAGE EASEMENT
30' PERIMETER BUFFER, TREE PRESERVATION AREA & PERMANENT LANDSCAPE PRESERVATION EASEMENT
PERIMETER BUFFER 65,249 SF 1.5 AC
PERIMETER BUFFER 16,384 SF 0.42 AC
~RESIDENTIAL~ LORETTA F. NORWOOD NOW OR FORMERLY 4601 WAXHAW-MARVIN RD PARCEL ID # 06-168-017A ~RA-20~
~RESIDENTIAL~ PRESCOT SUBDIVISION COMMON OPEN SPACE PC I PG 832 DB 5340 PG 847 PARCEL ID # 06-165-189 ~R-3 PRD~
N 87°45'01" E 375.13'
N 87°53'13" E 275.09'
N 75°46'07" W 271.53'
N 41°45'34" W 525.51'
N 41°45'28" W 133.79'
N 41°42'33" W 80.50'
S 45°49'56" W 66.89'
S 62°57'23" E 572.67'
N 44°02'02" E 123.25'
N 47°24'57" E 64.57'
N 06°17'07" E 255.00'
S 54°31'12" E 107.59'
S 87°33'45" E 206.57'
S 87°31'13" E 229.75'
N 75°18'27" E 138.07'
S 22°58'17" W 174.83'
S 27°12'43" W 382.87'
S 54°25'23" W 394.40'
N 44°33'45" W 235.90'
N 02°21'39" W 25.56'
N 18°41'38" W 22.19'
S 47°24'57" W 64.57'
S 44°33'45" E 235.90'
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S 41°45'28" W 133.79'
S 41°42'33" W 80.50'
S 45°49'56" W 66.89'
S 75°46'07" W

APPROVED
By Max Hsiang at 3:39 pm, Jun 26, 2019

STORM DRAINAGE STRUCTURE SCHEDULE

ID	RIM ELEV(FT)	INVERT-IN ELEV(FT)	INVERT-OUT ELEV(FT)
CI #1A	568.36	N/A	565.00
CI #1	565.89	562.80	562.60
CI #3	564.34	N/A	561.41
CI #2	564.34	561.30 (#1) 561.30 (#3)	561.05
CI #4	561.19	N/A	557.19
CI #5	560.91	555.91 (#2) 556.98 (#4)	553.81
FES #6	N/A	N/A	553.64

#11

ID	RIM ELEV(FT)	INVERT-IN ELEV(FT)	INVERT-OUT ELEV(FT)
CI #7	565.35	N/A	554.90
YI 27	559.57 (TOP) 558.57 (THROAT)	N/A	553.00
CI #28	560.85	551.84	550.00
CI #8	557.68	550.95 (#7) 547.92 (#28)	547.42
CI #9	554.14	547.19	546.69
CI #29	553.83	546.10	545.90
YI #11	553.32	N/A	547.23
CI #10	551.08	544.80 (#29) 547.04 (#11)	543.83
CI #12	551.08	543.20	542.20
MH #13	549.25	540.34	536.37
FES #14	N/A	N/A	536.00 #11

ID	RIM ELEV(FT)	INVERT-IN ELEV(FT)	INVERT-OUT ELEV(FT)
CI #15	554.94	N/A	550.36
CI #16	552.32	548.29	548.09
CI #18	544.93	N/A	542.49
CI #17	545.12	542.29 (#16) 542.29 (#18)	542.19
FES #19	N/A	N/A	542.00

ID	RIM ELEV(FT)	INVERT-IN ELEV(FT)	INVERT-OUT ELEV(FT)
CI #20	535.12	N/A	532.22
FES #21	N/A	N/A	532.00 #11

ID	RIM ELEV(FT)	INVERT-IN ELEV(FT)	INVERT-OUT ELEV(FT)
FES #25	N/A	560.42±	N/A
FES #26	N/A	N/A	556.82±

STORM DRAINAGE PIPE SCHEDULE

ID FROM	ID TO	SLOPE (%)	LENGTH (FT)	SIZE (IN)	MATERIAL
CI #3*	CI #2*	0.50	22.2	15	RCP IV*
CI #4*	CI #5*	0.50	41.40	15	RCP*
CI #1A	CI #1	2.01	109.3	15	RCP
CI #1*	CI #2*	1.21	107.2	15	RCP*
CI #2	CI #5	3.31	155.4	18	RCP
CI #5	FES #6	0.50	34.5	24	RCP

ID FROM	ID TO	SLOPE (%)	LENGTH (FT)	SIZE (IN)	MATERIAL
CI #7	CI #8	2.55	154.8	15	RCP
YI #27	CI #28	1.00	116.4	24	RCP
CI #28	CI #8	2.00	104.1	24	RCP
CI #8*	CI #9*	1.00	23.4	24	RCP*
YI #9*	CI #29*	1.50	39.2	24	RCP*
YI #11*	CI #10*	0.62	30.5	15	RCP*
CI #29*	CI #10*	1.08	102.1	24	RCP*
CI #10*	CI #12*	3.00	21.00	30	RCP*
CI #12	MH #13	1.62	115.00	30	RCP
MH #13	FES #14	0.60	61.4	30	RCP

ID FROM	ID TO	SLOPE (%)	LENGTH (FT)	SIZE (IN)	MATERIAL
CI #15*	CI #16*	4.50	45.90	15	RCP*
CI #18*	CI #17*	0.97	21.00	15	RCP IV*
CI #16*	CI #17*	5.00	116.00	15	RCP IV*
CI #17	FES #19	0.50	37.50	15	RCP IV

ID FROM	ID TO	SLOPE (%)	LENGTH (FT)	SIZE (IN)	MATERIAL
CI #20	FES #21	0.56	38.5	15	RCP

ID FROM	ID TO	SLOPE (%)	LENGTH (FT)	SIZE (IN)	MATERIAL
FES #25	FES #26	3.10	116.0	18	RCP IV

* PIPE RUNS INDICATED BY AN ASTERISK (*) SHALL BE O-RING GASKET PIPE.

#11 NOTES:
1. SEE SHEETS 10, 11, 14, & 15 FOR POND DETAILS AND RIP-RAP APRON DIMENSIONS.
2. PROPOSED STORM DRAIN PIPES WILL ENTER STRUCTURES ON SIDE WALLS OR PRE-CAST STRUCTURES SHALL BE PROVIDED.

NOTES:
1. Slopes shall be stabilized as soon as practical, consistent with the requirements of the Town of Waxhaw and/or NCDEQ. All slopes of 3:1 or steeper shall be stabilized with jute or other biodegradable netting (North American Green Rollmax OS150, or similar).
2. See Detail #8, Sheet 10 for rip-rap apron information.

Rev. #9 Summary for This Sheet:
The following revisions have been made to this sheet:
- Revisions summarized on Sheet 3 (Proposed Site Plan).
- Revised grading for Lots 18-26, 43-46, & BMP #3.
- Revised storm drainage system from CI #7 to FES #14, YI #11 to CI #10, & CI #20 to FES #21.
- Added storm drainage from YI #27 to CI # 8.
- Removed storm drainage inlet YI #22.
- Updated Storm Drainage Structure & Pipe Schedules.

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PROPOSED GRADING & STORM DRAINAGE PLAN

Grove Manor Sub. - Phase 1

Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

Revisions
#1 - 10/27/17: Revised per review comments.
#2 - 01/16/18: Revised per review comments.
#3 - 02/27/18: Revised per review comments.
#4 - 04/06/18: Added "O-Ring Gasket Pipe" notation per review comment.
#5 - 03/20/18: Revised pipe size at entry per NCDOT; Revised per review comment; and revised owner info.
#6 - 04/06/18: Added "O-Ring Gasket Pipe" notation per review comment.
#7 - 04/09/18: Revised per review comments.
#8 - 05/30/18: Revised per review comments.
#9 - 3/26/19: Revised grading and storm drainage per Client request; and updated Design Firm information.

Job No.	043-17-001
Date	5/25/2017
Proj. Mgr.	WMH
Drawn	AW / SCE

NORTH CAROLINA PROFESSIONAL SEAL #12,589 ENGINEER WILLIAM M. HARRIS 3/26/19

Scale: 1" = 50'

Sheet No. 4 of 26

S:_MEGA\2016\043-BRIARCRESTREET HOMES\043-16-003 GM Phase 1 REVISIONS\ENGINEERING\043-17-001 MasterPlan.dwg

GRAPHIC SCALE

(IN FEET)
1 inch = 50 ft.

Seeding Specifications

1. All open areas shall be seeded with Kentucky Fescue #31 or sodded.
2. Lime shall be applied at 4000/lb per acre.
3. Fertilizer shall be applied as follows: 10-10-10 at 1000 lb. per acre and 0-20-0 at 500 lb. per acre. No fertilizer shall be applied within 10 feet of water courses.
4. Seed shall be applied at 80 lb. per acre (add 30 lb. per acre annual rye if seeding between November and February).
5. Straw shall be applied at 3000 lb. per acre and asphalt tacked at 225 gal. per acre.
6. See Detail #12, Sheet 10 for "Temporary Seeding Schedule."

Seedbed Preparation Notes

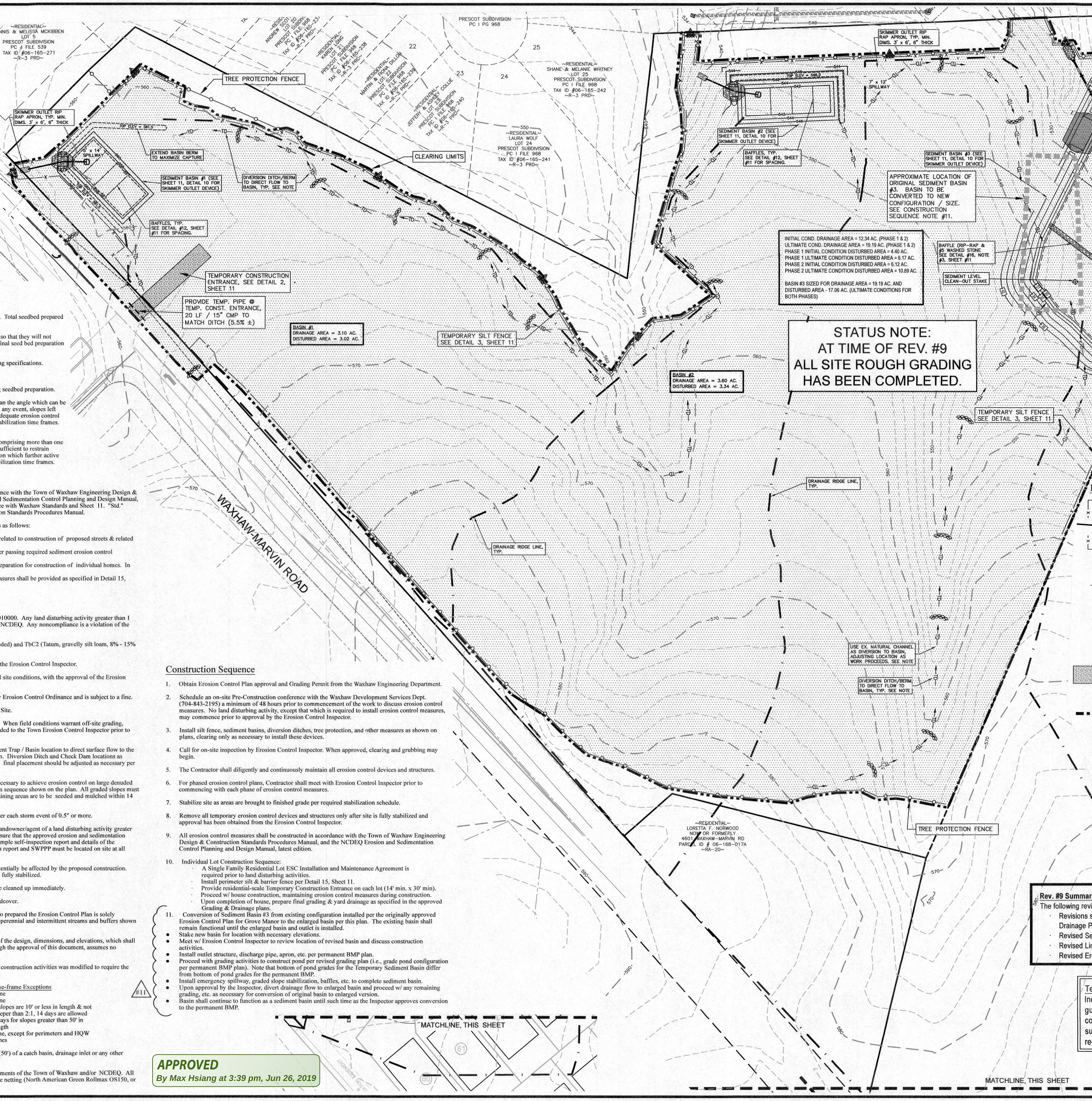
1. Surface water control features shall be installed per approved plan.
2. Areas to be seeded shall be ripped and spread with available topsoil 3" deep. Total seedbed prepared depth shall be 4" to 6" deep.
3. Loose rocks, roots and other obstructions shall be removed from the surface so that they will not interfere with establishment and/or maintenance of vegetation. Surface for final seed bed preparation at indicated finish grades, shall be reasonably smooth and uniform.
4. If no soil test is taken, fertilizer and lime shall be applied according to seeding specifications.
5. If soil test is taken, provide fertilizer and lime according to soil report.
6. Fertilizer and lime shall be applied uniformly and mixed with the soil during seedbed preparation.
7. Graded Slopes and Fills: The angles for graded slopes shall be no greater than the angle which can be retained by vegetative cover or other adequate erosion control measures. In any event, slopes left exposed shall be planted or otherwise provided with ground cover or other adequate erosion control measures sufficient to restrain erosion. See Erosion Control Note #20 for stabilization time frames. Maximum slope is 2:1.
8. Ground Cover: Whenever land disturbing activity is undertaken on a tract comprising more than one (1) acre, if more than one (1) contiguous acre is uncovered, a ground cover sufficient to restrain erosion must be planted or otherwise provided on that portion of the tract upon which further active construction is not being undertaken. See Erosion Control Note #20 for stabilization time frames.

Erosion Control Notes

1. This Erosion Control Plan shall be designed and implemented in accordance with the Town of Waxhaw Engineering Design & Construction Standards Procedures Manual, and the NCDEQ Erosion and Sedimentation Control Planning and Design Manual, latest edition. All Erosion Control devices shall be installed in accordance with Waxhaw Standards and Sheet 11. "Std." numbers refer to the Town of Waxhaw Engineering Design & Construction Standards Procedures Manual.
2. Development and related Erosion Control of this Site will occur in phases as follows:
   - Phase 1 - Initial Development Phase: Clearing and grading activities related to construction of proposed streets & related infrastructure, and mass site grading to prepare lots for future house construction, after passing required sediment erosion control inspection.
   - Phase 2 - House Construction: Fine grading activities related to lot preparation for construction of individual homes. In addition to the general Erosion Control measures specified for the site, individual measures shall be provided as specified in Detail 15, Sheet 11 in order to minimize sediment loss from the site.
3. Total project area: 15.55± acres; total disturbed area = 13.3± acres.
4. Site grading is to be covered under the General Stormwater Permit NCG010000. Any land disturbing activity greater than 1 acre requires compliance with all conditions of the General Permit under NCDEQ. Any noncompliance is a violation of the Clean Water Act and may require enforcement by NCDEQ.
5. Soil classification: TbB2 (Tatum, gravelly silt loam, 2% - 8% slopes, eroded) and TbC2 (Tatum, gravelly silt loam, 8% - 15% slopes, eroded) .
6. Additional measures to control erosion and sediment may be required by the Erosion Control Inspector.
7. Final location of silt fence shall be determined in the field based on actual site conditions, with the approval of the Erosion Control inspector.
8. Any grading beyond the indicated clearing limits is a violation of the City Erosion Control Ordinance and is subject to a fine.
9. No on-site demolition landfills (i.e., Stump Holes) will be located on this Site.
10. Approval of this plan is not an authorization to grade adjacent properties. When field conditions warrant off-site grading, permission must be obtained from the affected property owner, and provided to the Town Erosion Control Inspector prior to proceeding.
11. The Contractor shall provide Temporary Diversion Ditches at any Sediment Trap / Basin location to direct surface flow to the trap / basin. Ditches should be placed to maximize flow to the trap / basin. Diversion Ditch and Check Dam locations as shown on this plan are to be used as a guide for the Contractor, however, final placement should be adjusted as necessary per field conditions or as directed by the Erosion Control Inspector.
12. Stabilization is the best form of erosion control. Temporary seeding is necessary to achieve erosion control on large denuded areas and especially when specifically required as part of the construction sequence shown on the plan. All graded slopes must be seeded and mulched within 7 days of completion of grading. All remaining areas are to be seeded and mulched within 14 days.
13. All erosion control devices shall be inspected at least once a week and after each storm event of 0.5" or more.
14. Effective October 1, 2010, the financially responsible party/agent or the landowner/agent of a land disturbing activity greater than 1 acre must inspect a project after each phase of the project to make sure that the approved erosion and sedimentation control plan is being followed. Self-inspection reports are required. A sample self-inspection report and details of the self-inspection program can be found on the NCDEQ website. Inspection report and SWPPP must be located on site at all times and accessible by Erosion Control Inspector.
15. Silt sacks shall be placed in all inlets collecting drainage or that might potentially be affected by the proposed construction. Inlet protection must be maintained until all areas draining to the inlet are fully stabilized.
16. Any sediment or dirt tracked into the roads by Contractor activity shall be cleaned up immediately.
17. All disturbed areas not built upon will be provided with permanent groundcover.
18. The Professional Engineer registered with the State of North Carolina who prepared the Erosion Control Plan is solely responsible for identification and location of all environmental wetlands, perennial and intermittent streams and buffers shown on the plans.
19. The Town of Waxhaw is not responsible for the accuracy and adequacy of the design, dimensions, and elevations, which shall be confirmed and correlated at the job site. The Town of Waxhaw, through the approval of this document, assumes no responsibility for the completeness and/or accuracy of this document.
20. Effective August 3, 2011, the North Carolina NPDES General Permit for construction activities was modified to require the following ground stabilization time-frames:

Site Area Description	Stabilization	Time-frame Exceptions
• Perimeter dikes, swales, ditches & slopes	7 days	none
• High Quality Water (HQW) zones	7 days	none
• Slopes steeper than 3:1	7 days	if slopes are 10' or less in length & not steeper than 2:1, 14 days are allowed
• Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length
• All other areas w/ slopes flatter than 4:1	14 days	none, except for perimeters and HQW zones

21. No concrete washouts or any similar type use may be located within fifty (50') of a catch basin, drainage inlet or any other similar structure.
22. Slopes shall be stabilized as soon as practical, consistent with the requirements of the Town of Waxhaw and/or NCDEQ. All slopes of 3:1 or steeper shall be stabilized with jute or other biodegradable netting (North American Green Rollmax OS150, or similar).



Construction Sequence

1. Obtain Erosion Control Plan approval and Grading Permit from the Waxhaw Engineering Department.
2. Schedule an on-site Pre-Construction conference with the Waxhaw Development Services Dept. (704-843-2195) a minimum of 48 hours prior to commencement of the work to discuss erosion control measures. No land disturbing activity, except that which is required to install erosion control measures, may commence prior to approval by the Erosion Control Inspector.
3. Install silt fence, sediment basins, diversion ditches, tree protection, and other measures as shown on plans, clearing only as necessary to install these devices.
4. Call for on-site inspection by Erosion Control Inspector. When approved, clearing and grubbing may begin.
5. The Contractor shall diligently and continuously maintain all erosion control devices and structures.
6. For phased erosion control plans, Contractor shall meet with Erosion Control Inspector prior to commencing with each phase of erosion control measures.
7. Stabilize site as areas are brought to finished grade per required stabilization schedule.
8. Remove all temporary erosion control devices and structures only after site is fully stabilized and approval has been obtained from the Erosion Control Inspector.
9. All erosion control measures shall be constructed in accordance with the Town of Waxhaw Engineering Design & Construction Standards Procedures Manual, and the NCDEQ Erosion and Sedimentation Control Planning and Design Manual, latest edition.
10. Individual Lot Construction Sequence:
    - A Single Family Residential Lot ESC Installation and Maintenance Agreement is required prior to land disturbing activities.
    - Install perimeter silt & barrier fence per Detail 15, Sheet 11.
    - Provide residential-scale Temporary Construction Entrance on each lot (14' min. x 30' min).
    - Proceed w/ house construction, maintaining erosion control measures during construction.
    - Upon completion of house, prepare final grading & yard drainage as specified in the approved Grading & Drainage plans.
11. Conversion of Sediment Basin #3 from existing configuration installed per the originally approved Erosion Control Plan for Grove Manor to the enlarged basin per this plan. The existing basin shall remain functional until the enlarged basin and outlet is installed.
    - Stake new basin for location with necessary elevations.
    - Meet w/ Erosion Control Inspector to review location of revised basin and discuss construction activities.
    - Install outlet structure, discharge pipe, apron, etc. per permanent BMP plan.
    - Proceed with grading activities to construct pond per revised grading plan (i.e., grade pond configuration per permanent BMP plan). Note that bottom of pond grades for the Temporary Sediment Basin differ from bottom of pond grades for the permanent BMP.
    - Install emergency spillway, graded slope stabilization, baffles, etc. to complete sediment basin.
    - Upon approval by the Inspector, divert drainage flow to enlarged basin and proceed w/ any remaining grading, etc. as necessary for conversion of original basin to enlarged version.
    - Basin shall continue to function as a sediment basin until such time as the Inspector approves conversion to the permanent BMP.

#11

APPROVED
By Max Hsiang at 3:39 pm, Jun 26, 2019

EROSION CONTROL LEGEND

Symbol	Description
	Temporary Sediment Basin w/ baffles and skimmer. Basin shown to scale with approximate location of proposed contours (Ref. Details #10, #11, & #12, Sheet 11). Omit FES and last joints of RCP as required for placement of basins. Complete pipe & install FES and Apron after basin removal. Provide silt fence at all basin locations.
—x—x—x—x—	Temporary Silt fence with washed stone and wire mesh. Ref. Details #3 & #4, Sheet 11.
	Temporary Silt fence Outlet. Ref. Detail #4, Sheet 11.
←TD— ←TD—	Temporary Diversion / Silt Ditch. Ref. Detail #13, Sheet 11.
	Inlet Sediment Trap (typical at all prop. inlets). Ref. Detail #7, Sheet 11.
	Temp. Const. Entrance. Ref. Detail #2, Sheet 11.
	Temp. Rock Check Dam. Ref. Detail #5, Sheet 11.
	Clearing Limits
	Denuded Area Shown Shaded
—o—o—o—	Tree Protection Fence
	Skimmer Outlet Protection (Rip Rap Apron, 3' x 6' x 6" min. depth)

Rev. #9 Summary for This Sheet:
The following revisions have been made to this sheet:
- Revisions summarized on Sheet 4 (Proposed Grading & Storm Drainage Plan).
- Revised Sediment Basin #3.
- Revised Limits of Disturbance.
- Revised Erosion Control Note #3, updating the Total Disturbed area.

Temporary Diversion Note:
Indicated locations of Diversion Ditches are intended as guidance for the Contractor, and may adjusted per field conditions. The Diversions shall be located to maximize surface flow to the Sediment Basins, adjusting location if required as construction progresses.

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EROSION CONTROL PLAN - INITIAL CONDITION

Grove Manor Sub. - Phase 1

Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

Revisions
#1 - 10/27/17: Revised per review comments.
#2 - 01/16/18: Revised per review comments.
#4 - 3/1/18: Revised per review comments.
#9 - 9/7/18: Revised per Zoning Amendment and addition of Phase 2.
#10 - 11/14/18: Revised per review comments and revised owner information.
#11 - 3/26/19: Revised per review comments; and updated Design Firm information.

Job No.	043-17-001
Date	5/25/2017
Proj. Mgr.	WMH
Drawn	AW / SCE

NORTH CAROLINA PROFESSIONAL SEAL #12,585 ENGINEER WAYNE M. HARRIS 5/10/19

Scale:	1" = 50"

Sheet No. 5 of 26

S:_MESA\2018\043-BROADSTREET HOMES\043-18-003 GM Phase 1 REVISIONS\ENGINEERING\043-17-001 Shts5-6 ErosionControl.dwg

EROSION CONTROL LEGEND

- Temporary Sediment Basin w/ baffles and skimmer. Basin shown to scale with approximate location of proposed contours (Ref. Details #10, #11, & #12, Sheet 11). Omit FES and last joints of RCP as required for placement of basins. Complete pipe & install FES and Apron after basin removal. Provide silt fence at all basin locations.
- Temporary Silt fence with washed stone and wire mesh. Ref. Details #3 & #4, Sheet 11.
- Temporary Silt fence Outlet. Ref. Detail #4, Sheet 11.
- Temporary Diversion / Silt Ditch. Ref. Detail #13, Sheet 11.
- Inlet Sediment Trap (typical at all prop. inlets). Ref. Detail #7, Sheet 11.
- Temp. Const. Entrance. Ref. Detail #2, Sheet 11.
- Temp. Rock Check Dam. Ref. Detail #5, Sheet 11.
- Clearing Limits
- Denuded Area Shown Shaded
- Tree Protection Fence

APPROVED
By Max Hsiang at 3:39 pm, Jun 26, 2019

Rev. #9 Summary for This Sheet:
The following revisions have been made to this sheet:
- Revisions summarized on Sheet 3 (Proposed Site Plan).
- Revisions summarized on Sheet 4 (Proposed Grading & Storm Drainage Plan).
- Updated Erosion Control features as necessary.

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EROSION CONTROL PLAN - ULTIMATE CONDITION

Grove Manor Sub. - Phase 1

Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

Revisions
#1 - 10/27/17: Revised per review comments.
#2 - 01/16/18: Revised per review comments.
#3 - 2/2/18: Revised per review comments.
#5 - 3/20/18: Revised per Sheet 4.
#6 - 6/7/18: Revised per Zoning Amendment and addition of Phase 2.
#7 - 11/13/18: Revised per review comments; revised per Grading Plan information.
#11 - 3/26/19: Revised per review comments; Revised per Grading Plan (Sheet 4) revisions; and updated Design Firm information.

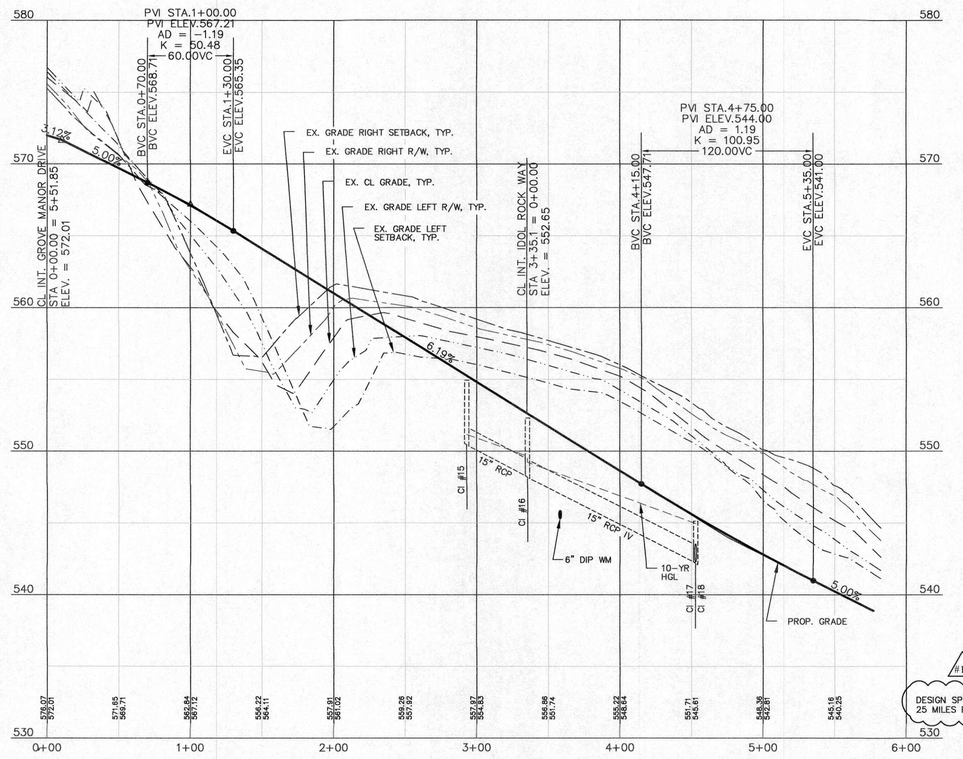
Job No.	043-17-001
Date	5/25/2017
Proj. Mgr.	WMH
Drawn	AW / SCE

NORTH CAROLINA PROFESSIONAL SEAL #12,585 WAYNE M. HARRIS 6/26/19

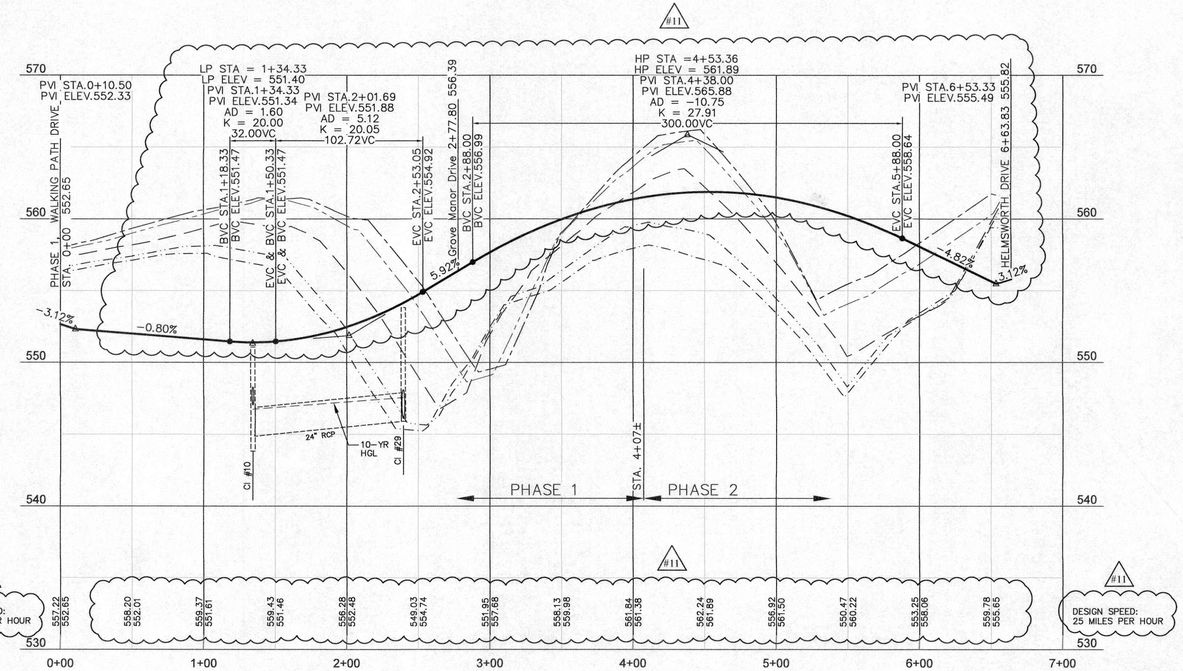
Scale: 1" = 50"

Sheet No. 6 of 26

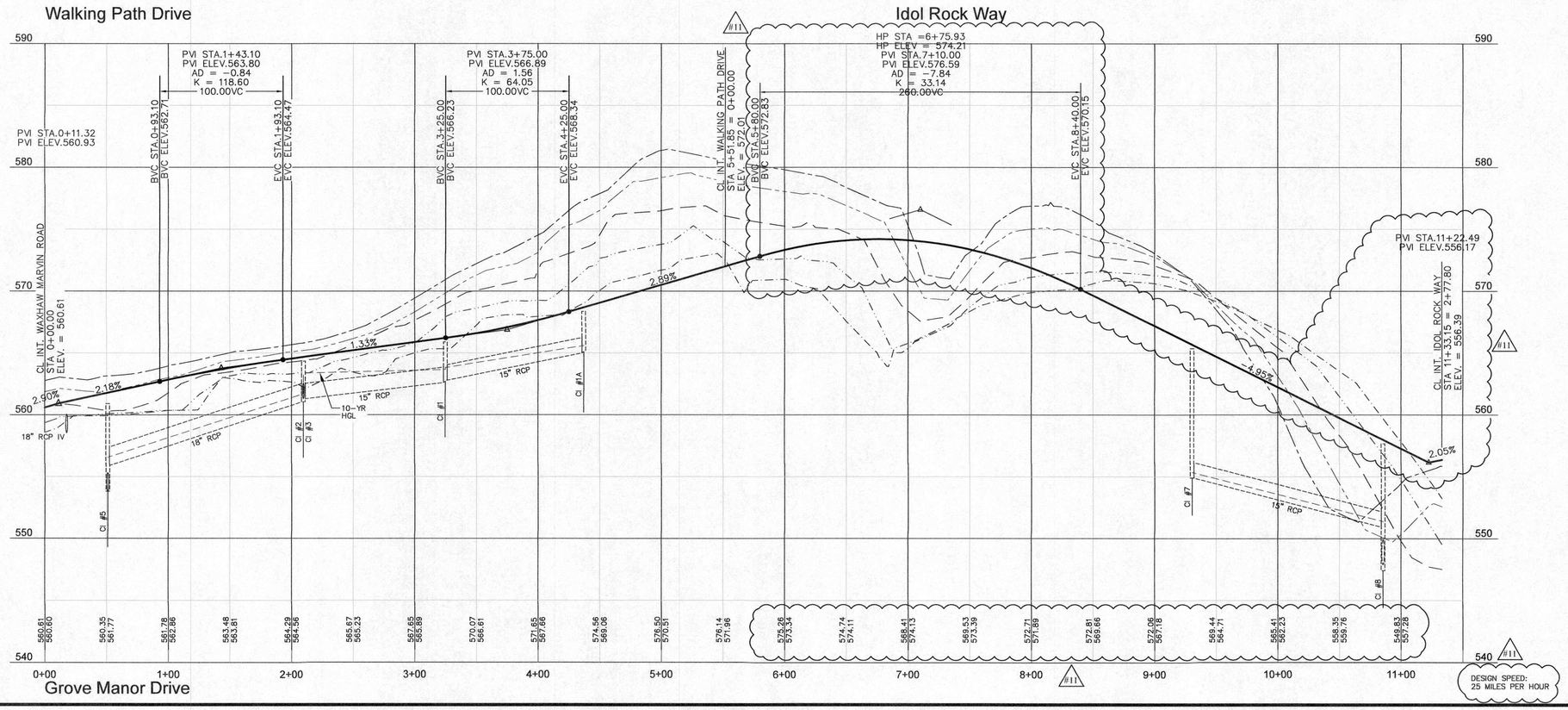
S:_MESA\2018\043-BROADSTREET HOMES\043-18-003 GM Phase 1 REVISIONS\ENGINEERING\043-17-001 Grade-6 ErosionControl.dwg



Walking Path Drive



Idol Rock Way



Grove Manor Drive

DESIGN SPEED: 25 MILES PER HOUR

VERTICAL
1 inch = 5 ft.

HORIZONTAL
(IN FEET)
1 inch = 50 ft.

APPROVED
By Max Hsiang at 3:39 pm, Jun 26, 2019

Rev. #9 Summary for This Sheet:
The following revisions have been made to this sheet:
- Revised Grove Manor Drive profile from Station 5+80± to end.
- Revised Idol Rock Way profile.

STREET & STORM SEWER PROFILES ON THIS SHEET:
- GROVE MANOR DRIVE
- WALKING PATH DRIVE
- IDOL ROCK WAY
- FOR ADDITIONAL STORM SEWER PROFILES, SEE SHEET 8
- FOR STORM DRAINAGE STRUCTURE AND PIPE SCHEDULES SEE SHEET 8.

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STREET & STORM DRAINAGE PROFILES

Grove Manor Sub. - Phase 1

Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

Revisions
#1 - 10/27/17: Revised per review comments.
#2 - 1/16/18: Revised per review comments.
#3 - 4/13/18: Revised per review comments.
#5 - 3/20/18: Revised per Sheet 4.
#9 - 5/17/18: Revised per Zoning Amendment and addition of Phase 2.
#10 - 11/14/18: Revised per review comments. Revised per drainage revision.
#11 - 1/25/19: Revised per review comments. Revised per drainage revision and updated Design Firm information.

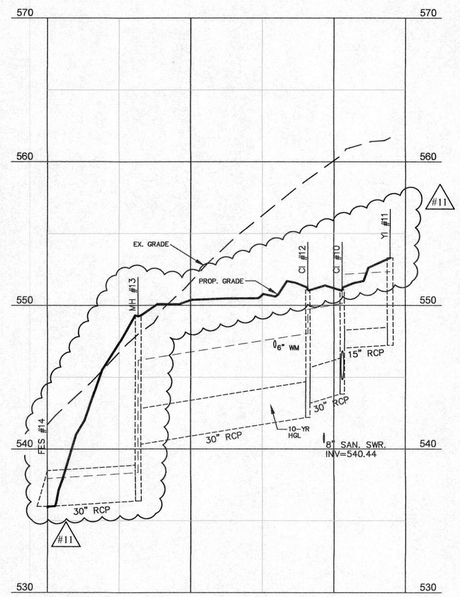
Job No.	043-17-001
Date	5/25/2017
Proj. Mgr.	WMH
Drawn	AW / SCE

NORTH CAROLINA PROFESSIONAL SEAL #12,585 WILLIAM M. HARRIS

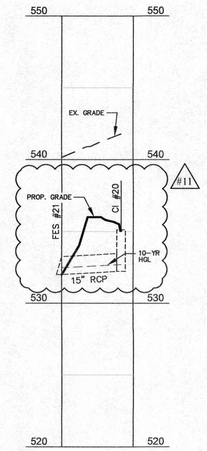
Scale: Horiz: 1" = 50'
Vert: 1" = 5'

Sheet No. 7 of 26

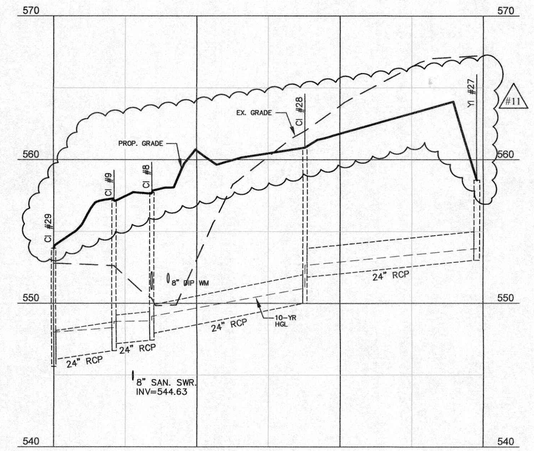
S:_LIBRARY\2018\043-18-003 GM Phase 1 REVISIONS\DRAWINGS\043-17-001 MasterPlans.dwg



IDOL ROCK WAY
TO POND 3



WALKING PATH DRIVE
TO POND 3



YI #27 TO INTERSECTION OF
GROVE MANOR DRIVE & IDOL ROCK WAY

VERTICAL
1 inch = 5 ft.

HORIZONTAL
(IN FEET)
1 inch = 50 ft.

STORM DRAINAGE STRUCTURE SCHEDULE

ID	RIM ELEV(FT)	INVERT-IN ELEV(FT)	INVERT-OUT ELEV(FT)
CI #1A	568.36	N/A	565.00
CI #1	565.89	562.80	562.60
CI #3	564.34	N/A	561.41
CI #2	564.34	561.30 (#1) 561.30 (#3)	561.05
CI #4	561.19	N/A	557.19
CI #5	560.91	555.91 (#2) 556.98 (#4)	553.81
FES #6	N/A	N/A	553.64

#11

ID	RIM ELEV(FT)	INVERT-IN ELEV(FT)	INVERT-OUT ELEV(FT)
CI #7	565.35	N/A	554.90
YI 27	559.57 (TOP) 558.57 (THROAT)	N/A	553.00
CI #28	560.85	551.84	550.00
CI #8	557.68	550.95 (#7) 547.92 (#28)	547.42
CI #9	554.14	547.19	546.69
CI #29	553.83	546.10	545.90
YI #11	553.32	N/A	547.23
CI #10	551.08	544.80 (#29) 547.04 (#11)	543.83
CI #12	551.08	543.20	542.20
MH #13	549.25	540.34	536.37
FES #14	N/A	N/A	536.00 #11

ID	RIM ELEV(FT)	INVERT-IN ELEV(FT)	INVERT-OUT ELEV(FT)
CI #15	554.94	N/A	550.36
CI #16	552.32	548.29	548.09
CI #18	544.93	N/A	542.49
CI #17	545.12	542.29 (#16) 542.29 (#18)	542.19
FES #19	N/A	N/A	542.00

ID	RIM ELEV(FT)	INVERT-IN ELEV(FT)	INVERT-OUT ELEV(FT)
CI #20	535.12	N/A	532.22
FES #21	N/A	N/A	532.00 #11

ID	RIM ELEV(FT)	INVERT-IN ELEV(FT)	INVERT-OUT ELEV(FT)
FES #25	N/A	560.42±	N/A
FES #26	N/A	N/A	556.82±

STORM DRAINAGE PIPE SCHEDULE

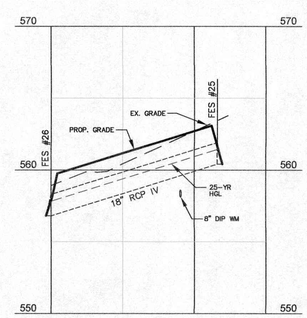
ID FROM	ID TO	SLOPE (%)	LENGTH (FT)	SIZE (IN)	MATERIAL
CI #3*	CI #2*	0.50	22.2	15	RCP IV*
CI #4*	CI #5*	0.50	41.40	15	RCP*
CI #1A	CI #1	2.01	109.3	15	RCP
CI #1*	CI #2*	1.21	107.2	15	RCP*
CI #2	CI #5	3.31	155.4	18	RCP
CI #5	FES #6	0.50	34.5	24	RCP

ID FROM	ID TO	SLOPE (%)	LENGTH (FT)	SIZE (IN)	MATERIAL
CI #7	CI #8	2.55	154.8	15	RCP
YI #27	CI #28	1.00	116.4	24	RCP
CI #28	CI #8	2.00	104.1	24	RCP
CI #8*	CI #9*	1.00	23.4	24	RCP*
YI #9*	CI #29*	1.50	39.2	24	RCP*
YI #11*	CI #10*	0.62	30.5	15	RCP*
CI #29*	CI #10*	1.08	102.1	24	RCP*
CI #10*	CI #12*	3.00	21.00	30	RCP*
CI #12	MH #13	1.62	115.00	30	RCP
MH #13	FES #14	0.60	61.4	30	RCP

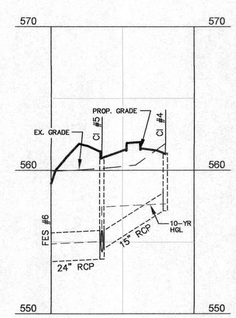
ID FROM	ID TO	SLOPE (%)	LENGTH (FT)	SIZE (IN)	MATERIAL
CI #15*	CI #16*	4.50	45.90	15	RCP*
CI #18*	CI #17*	0.97	21.00	15	RCP IV*
CI #16*	CI #17*	5.00	116.00	15	RCP IV*
CI #17	FES #19	0.50	37.50	15	RCP IV

ID FROM	ID TO	SLOPE (%)	LENGTH (FT)	SIZE (IN)	MATERIAL
CI #20	FES #21	0.56	38.5	15	RCP

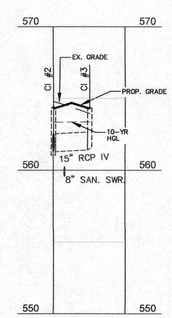
ID FROM	ID TO	SLOPE (%)	LENGTH (FT)	SIZE (IN)	MATERIAL
FES #25	FES #26	3.10	116.0	18	RCP IV

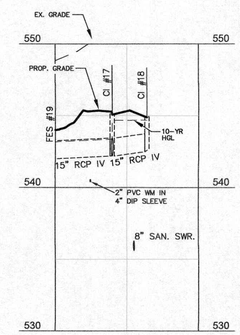


GROVE MANOR DRIVE
ENTRY



GROVE MANOR DRIVE
TO POND 1





WALKING PATH DRIVE
TO POND 2

Rev. #9 Summary for This Sheet:
The following revisions have been made to this sheet:
- Removed Storm Drainage Profile CI #10 to CI #9.
- Removed Storm Drainage profile CI #7 to YI #22.
- Revised Idol Rock Way to Pond #3 profile.
- Revised Walking Path Drive to Pond #3 profile.
- Added YI #27 to intersection of Grove Manor Drive & Idol Rock Way profile.
- Updated Storm Drainage Structure & Pipe Schedules.

APPROVED
By Max Hsiang at 3:39 pm, Jun 26, 2019

STORM SEWER PROFILES ON THIS SHEET:
- GROVE MANOR DRIVE ENTRY
- GROVE MANOR DRIVE TO POND 1
- WALKING PATH DRIVE TO POND 2
- IDOL ROCK WAY TO POND 3
- WALKING PATH DRIVE TO POND 3
- YI #27 TO INTERSECTION OF GROVE MANOR DRIVE & IDOL ROCK WAY
- FOR STORM SEWER PROFILES ALONG EACH STREET
  SEE SHEET 7.

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STORM DRAINAGE PROFILES

Grove Manor Sub. - Phase 1

Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

Revisions
#1 - 10/27/17: Revised per review comments.
#2 - 01/16/18: Revised per review comments.
#3 - 3/21/18: Revised per review comments.
#4 - 5/30/18: Revised per review comments.
#5 - 04/09/18: Added "O-ring Gasket Pipe" notation per review comment.
#6 - 01/11/19: Revised per Zoning Amendment and addition of Phase 2.
#7 - 01/14/19: Revised per review comments and revised per addition.
#8 - 1/28/19: Revised per review comments and revised per addition.
#9 - 3/28/19: Revised per Grading Plan (Sheet 4) revisions, and updated Design Firm information.

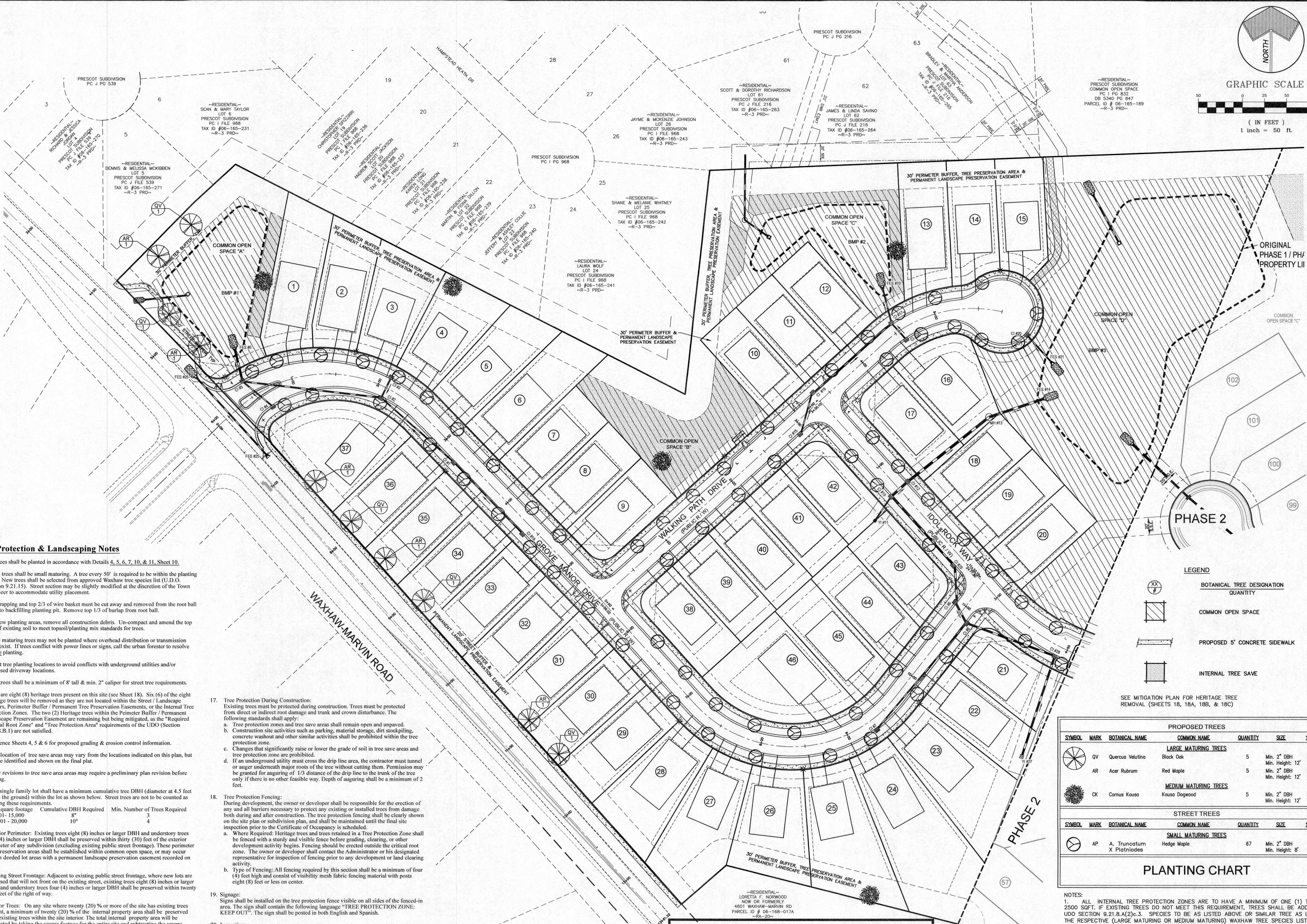
Job No.	043-17-001
Date	5/25/2017
Proj. Mgr.	WMH
Drawn	AW / SCE

NORTH CAROLINA PROFESSIONAL SEAL #12,585 ENGINEER WILLIAM M. HARRIS 5/9/19

Scale: Horiz: 1" = 50'
Vert: 1" = 5'

Sheet No. **8** of 26

S:_MEGA\2018\043-BROADSTREET HOMES\043-18-003 GM Phase 1 REVISIONS\ENGINEERING\043-17-001 MasterBase.dwg



Tree Protection & Landscaping Notes

1. All trees shall be planted in accordance with Details 4, 5, 6, 7, 10, & 11, Sheet 10.
2. Street trees shall be small maturing. A tree every 50' is required to be within the planting strip. New trees shall be selected from approved Waxhaw tree species list (U.D.O. Section 9.21.15). Street section may be slightly modified at the discretion of the Town Engineer to accommodate utility placement.
3. All strapping and top 2/3 of wire basket must be cut away and removed from the root ball prior to backfilling planting pit. Remove top 1/3 of burlap from root ball.
4. For new planting areas, remove all construction debris. Un-compact and amend the top 24" of existing soil to meet topsoil/planting mix standards for trees.
5. Large maturing trees may not be planted where overhead distribution or transmission lines exist. If trees conflict with power lines or signs, call the urban forester to resolve before planting.
6. Adjust tree planting locations to avoid conflicts with underground utilities and/or proposed driveway locations.
7. New trees shall be a minimum of 8' tall & min. 2" caliper for street tree requirements.
8. There are eight (8) heritage trees present on this site (see Sheet 18). Six (6) of the eight heritage trees will be removed as they are not located within the Street / Landscape Buffers, Perimeter Buffer / Permanent Tree Preservation Easements, or the Internal Tree Protection Zones. The two (2) Heritage trees within the Peimeter Buffer / Permanent Landscape Preservation Easement are remaining but being mitigated, as the "Required Critical Root Zone" and "Tree Protection Area" requirements of the UDO (Section 9.21.8.B.1) are not satisfied.
9. Reference Sheets 4, 5 & 6 for proposed grading & erosion control information.
10. Final location of tree save areas may vary from the locations indicated on this plan, but will be identified and shown on the final plat.
11. Major revisions to tree save area areas may require a preliminary plan revision before platting.
12. Each single family lot shall have a minimum cumulative tree DBH (diameter at 4.5 feet above the ground) within the lot as shown below. Street trees are not to be counted as meeting these requirements.

Lot Square footage	Cumulative DBH Required	Min. Number of Trees Required
6001- 15,000	8"	3
15,001 - 20,000	10"	4

13. Exterior Perimeter: Existing trees eight (8) inches or larger DBH and understory trees four (4) inches or larger DBH shall be preserved within thirty (30) feet of the exterior perimeter of any subdivision (excluding existing public street frontage). These perimeter tree preservation areas shall be established within common open space, or may occur within deeded lot areas with a permanent landscape preservation easement recorded on lots.
14. Existing Street Frontage: Adjacent to existing public street frontage, where new lots are proposed that will not front on the existing street, existing trees eight (8) inches or larger DBH and understory trees four (4) inches or larger DBH shall be preserved within twenty (20) feet of the right of way.
15. Interior Trees: On any site where twenty (20) % or more of the site has existing trees present, a minimum of twenty (20) % of the internal property area shall be preserved with existing trees within the site interior. The total internal property area will be calculated by taking the square footage for the entire site and subtracting the square footage for required tree save areas in perimeter landscape buffers, any existing or proposed street or utility right-of-ways, existing street setback areas, and any area covered by existing ponds and lakes. Internal tree protection zones shall be no less than eight (8) feet in width in order to apply toward the required tree save requirement.
16. Interior tree protection areas shall contain no less than one (1) tree per 2500 square feet of tree protection area. Where existing trees are insufficient to meet this standard, new trees shall be planted to meet this minimum standard. New trees shall be a minimum of two (2) inch caliper at planting.
17. Tree Protection During Construction:
Existing trees must be protected during construction. Trees must be protected from direct or indirect root damage and trunk and crown disturbance. The following standards shall apply:
    a. Tree protection zones and tree save areas shall remain open and unpaved.
    b. Construction site activities such as parking, material storage, dirt stockpiling, concrete washout and other similar activities shall be prohibited within the tree protection zone.
    c. Changes that significantly raise or lower the grade of soil in tree save areas and tree protection zone are prohibited.
    d. If an underground utility must cross the drip line area, the contractor must tunnel or auger underneath major roots of the tree without cutting them. Permission may be granted for auguring of 1/3 distance of the drip line to the trunk of the tree only if there is no other feasible way. Depth of auguring shall be a minimum of 2 feet.
18. Tree Protection Fencing:
During development, the owner or developer shall be responsible for the erection of any and all barriers necessary to protect any existing or installed trees from damage both during and after construction. The tree protection fencing shall be clearly shown on the site plan or subdivision plan, and shall be maintained until the final site inspection prior to the Certificate of Occupancy is scheduled.
    a. Where Required: Heritage trees and trees retained in a Tree Protection Zone shall be fenced with a sturdy and visible fence before grading, clearing, or other development activity begins. Fencing should be erected outside the critical root zone. The owner or developer shall contact the Administrator or his designated representative for inspection of fencing prior to any development or land clearing activity.
    b. Type of Fencing: All fencing required by this section shall be a minimum of four (4) feet high and consist of visibility mesh fabric fencing material with posts eight (8) feet or less on center.
19. Signage:
Signs shall be installed on the tree protection fence visible on all sides of the fenced-in area. The sign shall contain the following language "TREE PROTECTION ZONE: KEEP OUT". The sign shall be posted in both English and Spanish.
20. Inspection:
All tree protection measures shall be inspected and approved by the administrator or his designee prior to the start of any land disturbing activities. Failure to have tree protection measures in place prior to the commencement of construction is a violation of this Ordinance. Sites may be inspected periodically by planning department staff and authorized representatives of the Town to ensure compliance.
21. Additional Tree Protection:
Additional tree protection measures and notes may be required by the Town where applicable.

APPROVED
By Max Hsiang at 3:39 pm, Jun 26, 2019

Rev. #9 Summary for This Sheet:

The following revisions have been made to this sheet:
- Revisions summarized on Sheet 3 (Proposed Site Plan).
- Added drives for Lots 20-22.
- Adjusted street trees as necessary for Lots 20-22 drives and storm drainage changes.
- Removed proposed trees within the removed Internal Tree Protection Zones.
- Updated Planting Chart quantities.

LEGEND

- BOTANICAL TREE DESIGNATION / QUANTITY
- COMMON OPEN SPACE
- PROPOSED 5' CONCRETE SIDEWALK
- INTERNAL TREE SAVE

SEE MITIGATION PLAN FOR HERITAGE TREE REMOVAL (SHEETS 18, 18A, 18B, & 18C)

PLANTING CHART

PROPOSED TREES

SYMBOL	MARK	BOTANICAL NAME	COMMON NAME	QUANTITY	SIZE	SPACING
			LARGE MATURING TREES			
	QV	Quercus Velutina	Black Oak	5	Min. 2" DBH Min. Height: 12'	Min. 25'
	AR	Acer Rubrum	Red Maple	5	Min. 2" DBH Min. Height: 12'	Min. 25'
			MEDIUM MATURING TREES			
	CK	Cornus Kousa	Kousa Dogwood	5	Min. 2" DBH Min. Height: 12'	Min. 25'

STREET TREES

SYMBOL	MARK	BOTANICAL NAME	COMMON NAME	QUANTITY	SIZE	SPACING
			SMALL MATURING TREES			
	AP	A. Truncatum X Platniodes	Hedge Maple	67	Min. 2" DBH Min. Height: 8'	50' (Max.) See Plan

NOTES:
1. ALL INTERNAL TREE PROTECTION ZONES ARE TO HAVE A MINIMUM OF ONE (1) TREE PER 2500 SQFT. IF EXISTING TREES DO NOT MEET THIS REQUIREMENT, TREES SHALL BE ADDED PER UDO SECTION 9.21.8.A(2)c.3. SPECIES TO BE AS LISTED ABOVE OR SIMILAR TREE AS LISTED IN THE RESPECTIVE (LARGE MATURING OR MEDIUM MATURING) WAXHAW TREE SPECIES LISTS IN THE U.D.O., SECTION 9.21.15. ADDITIONAL SPECIES MAY BE AS USED SUBJECT TO SPECIFIC APPROVAL OF THE ADMINISTRATOR.
2. STREET TREES – SPECIES TO BE AS LISTED ABOVE OR SIMILAR SMALL MATURING VARIETY, SELECTED FROM THE WAXHAW "SMALL MATURING" TREE SPECIES LIST IN THE U.D.O., SECTION 9.21.15. ADDITIONAL SPECIES MAY BE AS USED SUBJECT TO SPECIFIC APPROVAL OF THE ADMINISTRATOR.
3. REFERENCE SHEETS 18, 18A, 18B, & 18C FOR EXISTING TREES TO REMAIN IN THE STREET / LANDSCAPE BUFFERS, PERIMETER BUFFERS / TREE PRESERVATION AREAS, AND THE INTERNAL TREE PRESERVATION ZONES.

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PROPOSED LANDSCAPE PLAN

Grove Manor Sub. - Phase 1

Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

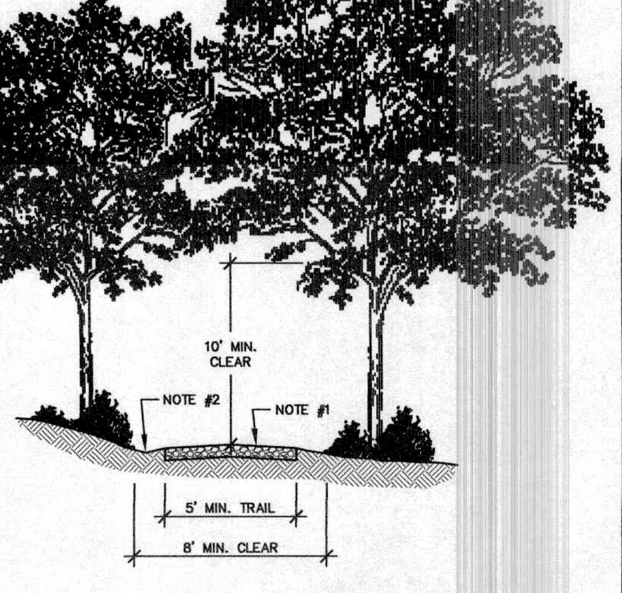
Revisions
#1 - 10/27/17: Revised per review comments.
#2 - 1/16/18: Revised per review comments.
#4 - 3/1/18: Revised per review comments.
#8 - 9/7/18: Revised per Zoning Amendment and addition of Phase 2.
#10 - 11/14/18: Revised per review comments and revised owner information.
#11 - 3/26/19: Updated Design Firm information.

Job No.	043-17-001
Date	5/25/2017
Proj. Mgr.	WMH
Drawn	AW / SCE

NORTH CAROLINA PROFESSIONAL SEAL #12,585 ENGINEER WAYNE M. HARRIS

Scale: 1" = 50'

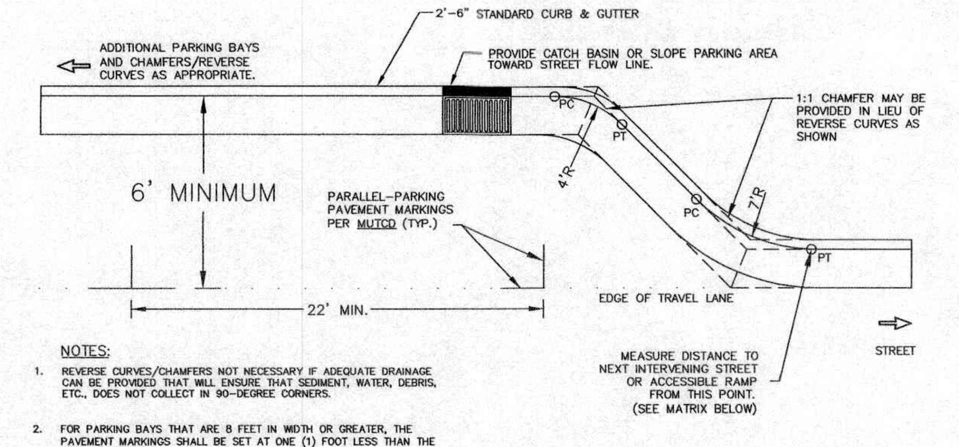
S:_MESA\2018\043-BROADSTREET HOMES\043-18-003 GM Phase 1 REVISIONS\ENGINEERING\043-17-001 MasterBase.dwg



NOTES:
1. TRAIL SURFACE TO BE CRUSHED STONE, PIT GRAVEL OR SIMILAR ALL-WEATHER SURFACE (MIN. DEPTH OF 6") PLACED ON GEOTEXTILE FABRIC OVER COMPACTED SOIL.
2. PROVIDE POSITIVE DRAINAGE AWAY FROM TRAIL SURFACE ON HIGH SIDE.
3. LOCATE TRAIL APPROX. AS SHOWN ON SITE PLAN, HOWEVER ADJUST FINAL ROUTE PER FIELD CONDITIONS TO MINIMIZE CLEARING AND AVOID CROSS-DRAIN SWALES.
4. IF CROSS-DRAINS CANNOT BE AVOIDED, CONTRACTOR TO PROVIDE HDPE PIPE (12" MIN. OR CONTACT ENGINEER FOR SIZING), W/ BOTH PIPE ENDS MITERED TO SLOPE AND PROTECTED W/ RIP RAP.

NOT TO SCALE

(13) TYPICAL PEDESTRIAN TRAIL THRU COMMON AREA



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. 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.
3. GREATER SEPARATION FROM INTERVENING STREETS THAN THE DISTANCES PROVIDED IN THE MATRIX MAY BE REQUIRED AT THE TOWN ENGINEER'S DISCRETION.
4. POSITIVE DRAINAGE SHALL BE PROVIDED EITHER BY INSTALLATION OF APPROPRIATE RAINAGE STRUCTURES OR SLOPE PARKING AREA TO STREET FLOW LINE. SLOPING PARKING AREA TO STREET FLOW LINE ONLT PERMITTED IF ROAD GRADE IS GREATER THAN 2%.

MINIMUM DISTANCE TO NEXT INTERVENING STREET

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

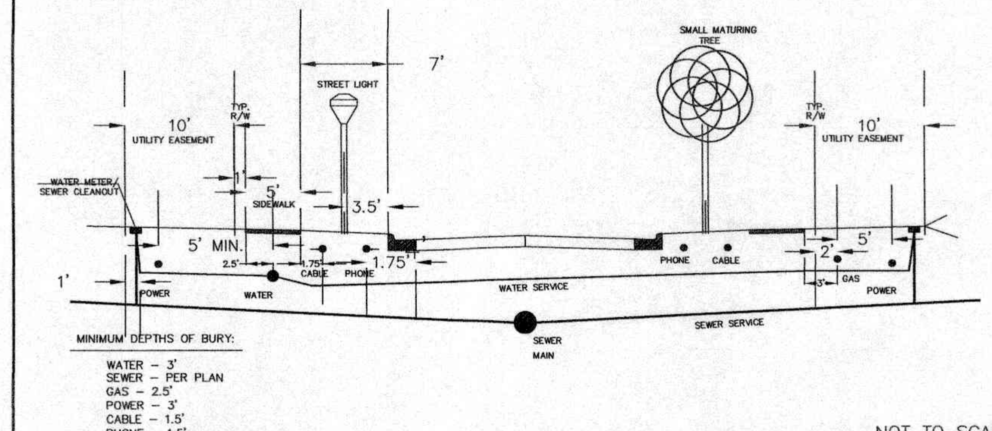
NOT TO SCALE

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS | PARALLEL PARKING STANDARDS | STD. NO. 285.2 | REV.

(9) PARALLEL PARKING STANDARDS

A. THIS DETAIL IS A REFERENCE FOR UTILITY PLACEMENT ONLY, REFER TO RESIDENTIAL STREET TYPICAL DETAILS 200.1–210.4 FOR RIGHT OF WAY AND PAVEMENT SECTION INFORMATION BASED ON TYPE OF STREET BEING CONSTRUCTED.
B. STREET LIGHTS AND TREES SHOWN ON OPPOSITE SIDE OF STREET FOR ILLUSTRATIVE PURPOSES ONLY. REFER TO SITE PLAN FOR ACTUAL LOCATIONS.
C. REFER TO SECTION "H" OF DESIGN CRITERIA FOR PLACEMENT OF CLUSTER MAILBOX UNITS, AS WELL AS DETAILS 720.1–723.1.

1. GAS MAIN SHALL BE ON OPPOSITE SIDE OF STREET FROM WATER MAIN.
2. STREET TREES SHALL BE SMALL MATURING SPECIES 2" CALIPER
3. LIGHT POLES AND STREET TREES SHALL MAINTAIN A MINIMUM OFFSET DISTANCE OF 5' FROM WATER AND SEWER SERVICE LINES.
4. CABLE AND TELEPHONE PEDESTALS SHALL BE LOCATED WITHIN THE UTILITY EASEMENT, ALONG THE SIDE LOT LINES.

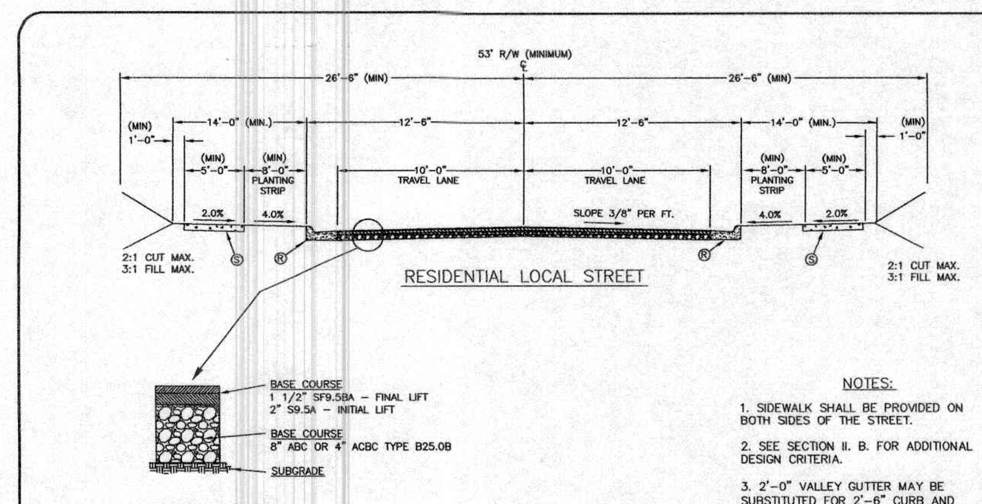


MINIMUM DEPTHS OF BURY:
WATER – 3'
SEWER – PER PLAN
GAS – 2.5'
POWER – 3'
CABLE – 1.5'
PHONE – 1.5'

NOT TO SCALE

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS | RESIDENTIAL SUBDIVISION UTILITY LAYOUT TYPICAL SECTION | REV. DATE | STD. NO. 200.0

(5) RESIDENTIAL SUBDIVISION UTILITY LAYOUT SECTION



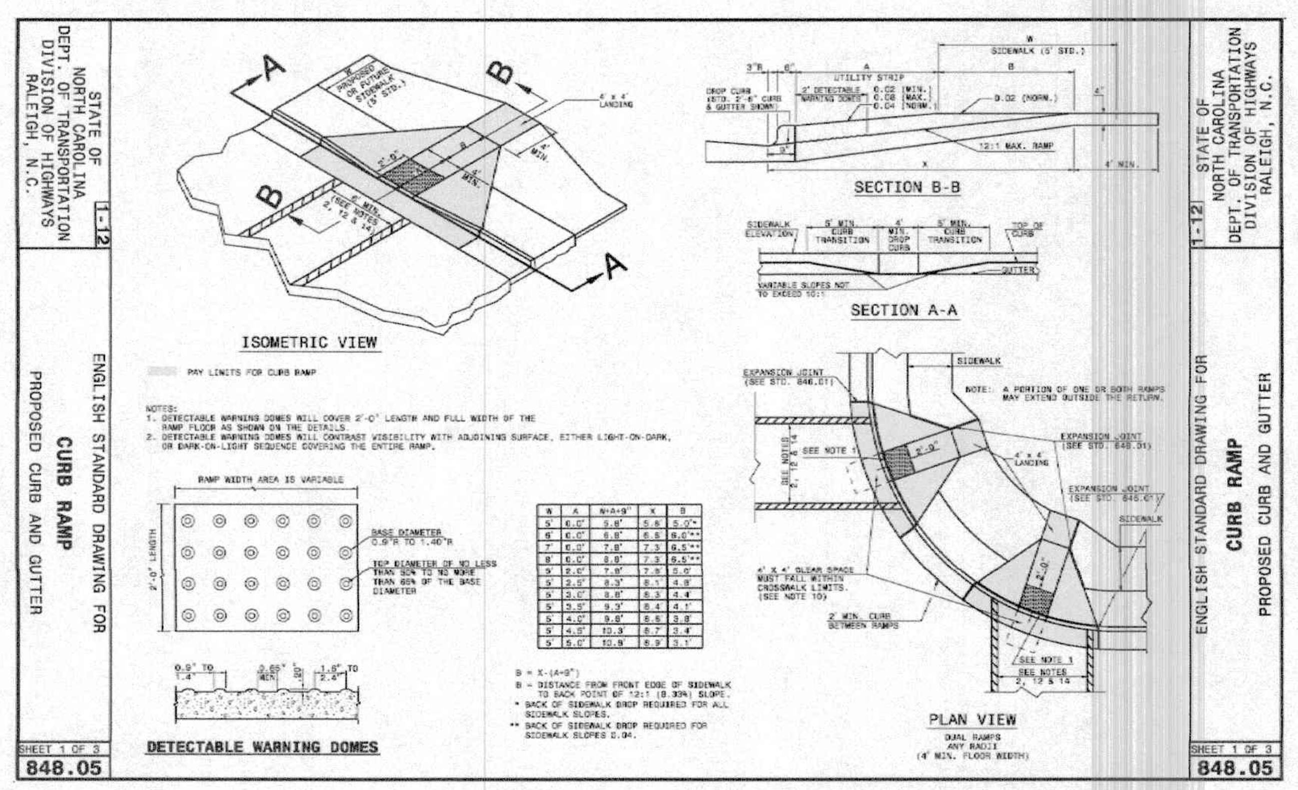
NOTES:
1. SIDEWALK SHALL BE PROVIDED ON BOTH SIDES OF THE STREET.
2. SEE SECTION II. B. FOR ADDITIONAL DESIGN CRITERIA.
3. 2'-0" VALLEY GUTTER MAY BE SUBSTITUTED FOR 2'-6" CURB AND GUTTER.

KEY
Ⓡ 2'-6" STD. CURB AND GUTTER
Ⓢ 4" CONCRETE SIDEWALK

NOT TO SCALE

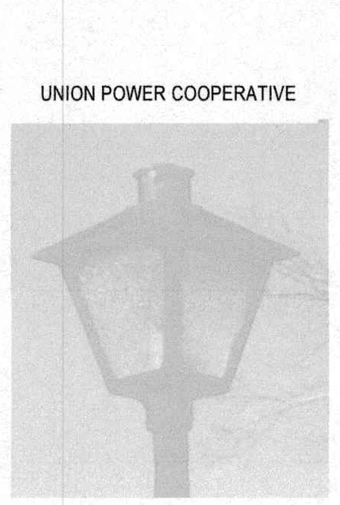
TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS | RESIDENTIAL LOCAL STREET NO ON STREET PARKING TYPICAL SECION | REV. DATE | STD. NO. 200.3

(1) LOCAL RESIDENTIAL STREET SECTION



(14) NCDOT RAMP DETAIL

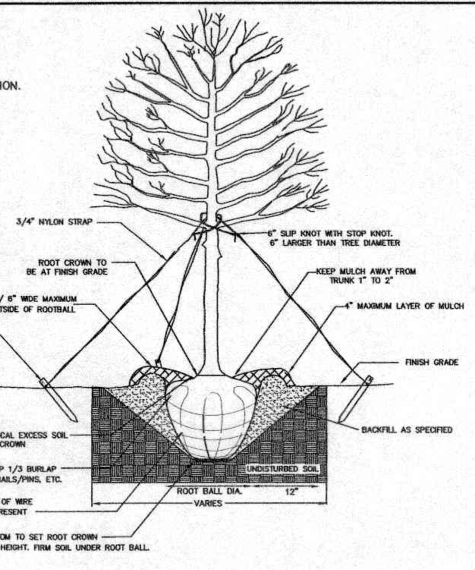
UNION POWER COOPERATIVE



COLONIAL LANTERN LED

(15) STREET LIGHT DETAIL

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. STAKE ACCORDING TO CONSTRUCTION PLAN. STAKES AND STRAPPING ARE TO BE REMOVED ONE YEAR AFTER PLANTING.
4. REMOVE EXCESS SOIL FROM SITE AND DISPOSE OF IN A LEGAL MANNER.
5. RESEED UNMULCHED, DISTURBED AREAS.
6. MULTI-STEM TREES ARE NOT ALLOWED FOR STREET TREES, AND DISCOURAGED FOR ANY APPLICATION.



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

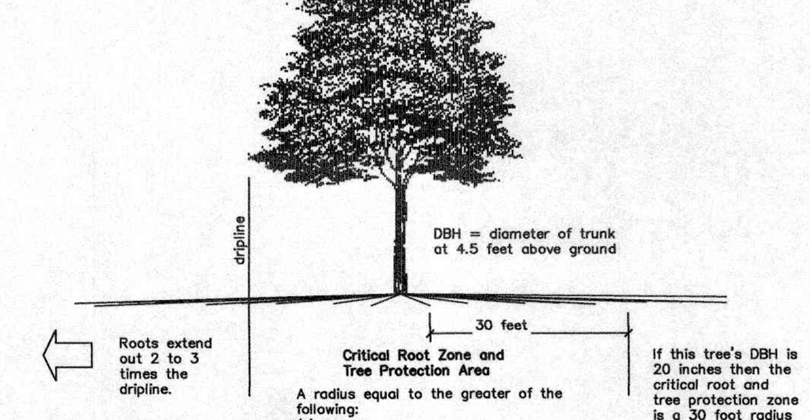
FOR EXAMPLE: CALIPER	HEIGHT (RANGE)	MAX. HEIGHT	MIN. ROOT BALL DIA.	MIN. ROOT BALL DEPTH
2"	12–14'	16'	24"	16"
3"	14–16'	18'	32"	21"

NOT TO SCALE

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS | TREE PLANTING (FOR SINGLE AND MULTI-STEM TREES) | STD. NO. 600.1 | REV.

(10) TYPICAL TREE PLANTING DETAIL

The area containing the canopy and critical root zones of trees composing the existing tree canopy to be retained shall be known as the "Tree Protection Zone". The critical root zone and tree protection zone will be measured as a radial distance from the tree trunk and will be equivalent to the greater area of: the drip line; a maximum of six feet from the trunk; or a distance or 1.5 feet for every inch of trunk DBH. (See Figure 9.21.1)



Roots extend out 2 to 3 times the dripline.

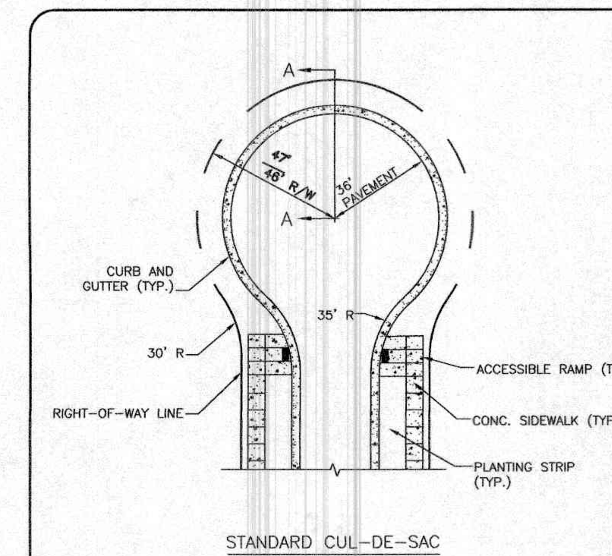
Critical Root Zone and Tree Protection Area

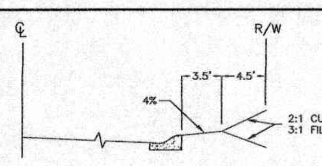
A radius equal to the greater of the following:
(1) 6 feet:
(2) The outer limits of the dripline; or
(3) 1.5 feet for each 1" of tree diameter (DBH)

If this tree's DBH is 20 inches then the critical root and tree protection zone is a 30 foot radius around the tree.

(6) CRITICAL ROOT / TREE PROTECTION ZONE DETAIL

MODIFIED PER ARBORIST REQUEST





SECTION A–A
APPLICABLE WHEN NO SIDEWALK PRESENT. PLEASE NOTE: DRIVEWAY STANDARD MAX. SLOPES AND BREAKOVERS APPLY

NOTES:
1. ALTERNATIVE CUL-DE-SAC DESIGNS, INCLUDING ISLANDS SHALL BE SUBMITTED TO THE TOWN ENGINEER 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.
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.

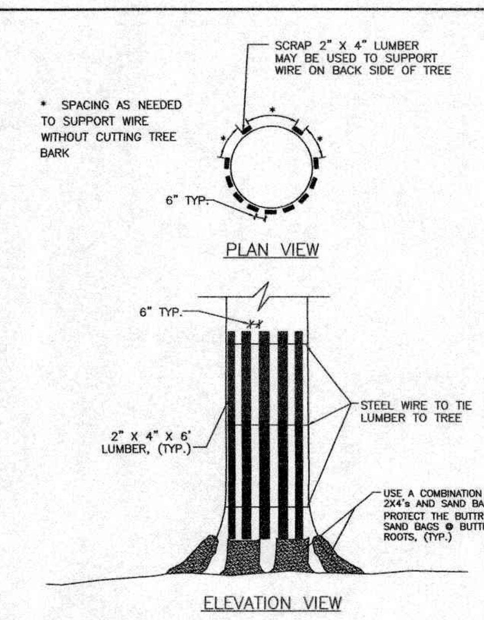
NOTE: THIS DETAIL IS NOT FOR USE ON NCDOT-MAINTAINED STREETS. REFER TO NCDOT SUBDIVISION ROADS MINIMUM CONSTRUCTION STANDARDS MANUAL.

NOT TO SCALE

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS | RESIDENTIAL LOCAL STREET CUL-DE-SAC DETAIL | STD. NO. 280.1 | REV.

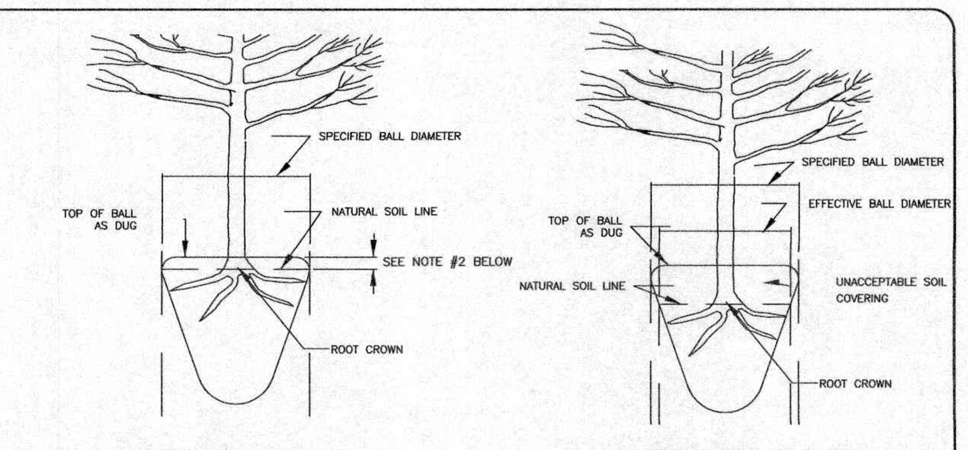
(2) RESIDENTIAL LOCAL STREET CUL-DE-SAC

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, ANDSANDBAGS MAY BE REUSED AT OTHER TREES.
4. THE INTENT OF THIS DETAILIS TO PROTECT EXISTING TREES FROM DAMAGEDURING CONSTRUCTION ESPECIALLY FROM BACKHOE ARM SWING. AN ALTERNATE APPROACH MAYBE USED IF APPROVED IN WRITINGBY THE ENGINEER AFTER CONSULTATION WITH THE ARBORIST OR HIS DULY AUTHORIZED REPRESENTATIVE.



TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS | TEMPORARY TREE PROTECTION DETAIL | STD. NO. 617.1 | REV.

(11) TEMPORARY TREE PROTECTION DETAIL



ACCEPTABLE CONDITION (AS DELIVERED)

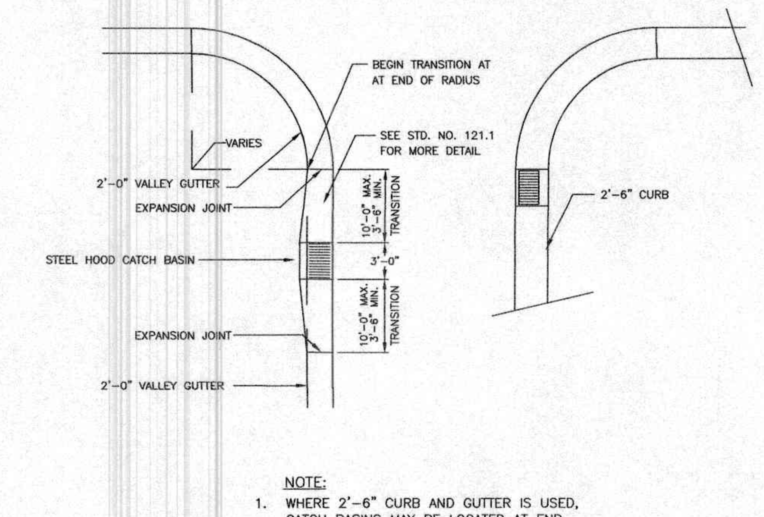
UNACCEPTABLE CONDITION (AS DELIVERED)

NOTES:
1. NO TREES ARE TO BE PLANTED UNTIL THE ARBORIST HAS INSPECTED AND APPROVED EACH TREE TO BE PLANTED.
2. THE ROOT CROWN SHOULD BE VISIBLE AND 2" ABOVE GRADE WHEN PLANTED. NO MORE THAN 1/3 OF THE ROOT BALL BALL (BELOW THE ROOT CROWN) SHOULD BE ABOVE GRADE. TWO INCHES (2") ABOVE GRADE IS RECOMMENDED AS BEST PLANTING HEIGHT.

NOTE:
A ROOT FLARE EXCAVATION FOR ALL TREES SPECIFIED WILL BE DONE BY THE 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 ARBORIST DETERMINES THAT THERE IS EXCESSIVE SOIL OVER THE ROOT CROWN, THESE TREES WILL BE REJECTED.

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS | ROOT FLARE DEPTHS (TREE ROOT BALL CONDITION ON TREES FROM SUPPLIERS) | STD. NO. 614.1 | REV.

(7) ROOT FLARE DEPTHS



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

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS | CATCH BASIN PLACEMENT AT INTERSECTIONS | STD. NO. 122.1 | REV.

(3) CATCH BASIN PLACEMENT AT INTERSECTION

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 NCDEQ 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.

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS | TEMPORARY SEEDING SCHEDULE | STD. NO. 521.1 | REV.

(12) TEMPORARY SEEDING SCHEDULE

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 WAXHAW 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 RECEIVING CHANNEL MUST BE STABILIZED.

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

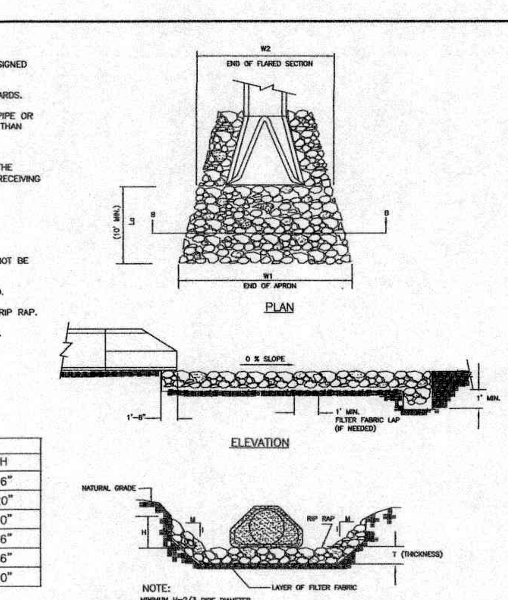
RIP RAP SUMMARY CHART

OUTLET	La	W1	W2	*T	H
FES #6	12'	6.8'	6.8'	10" (CLASS 1)	16"
FES #14	18'	9.2'	9.2'	10" (CLASS 1)	20"
FES #19	10'	6'	6'	10" (CLASS 1)	10"
FES #21	10'	6'	6'	10" (CLASS 1)	16"
FES #25	10' (#1)	6'	6'	10" (CLASS 1)	16"
FES #26	12'	6.1'	6.1'	12" (CLASS 1)	10"

* d50 (see fig 8.06 a&b "NC SEDIMENT AND EROSION CONTROL MANUAL"

#1 – FOR FES #25 MIN. APRON LENGTH = 10' OR DISTURBED DITCH, WHICHEVER GREATER.

dmax = 1.5 x d50
T = 1.5 x dmax.
T(min.)=10"



NOTE: MINIMUM H=2/3 PIPE DIAMETER

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS | RIPRAP APRON AT PIPE OUTFALLS OTHER THAN AT SWIM | STD. NO. 306.1 | REV.

(8) RIPRAP APRON AT PIPE OUTFALLS

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 TOWN OR STATE MAINTAINED STREETS REQUIRE AN ENCROACHMENT AGREEMENT EXECUTED THROUGH TOWN OR NCDOT. THE TOWN'S ENCROACHMENT AGREEMENT REVIEW/APPROVAL PROCESS MAY INCLUDE ADDITIONAL REQUIREMENTS. CONTACT TOWNS DEVELOPMENT SERVICES FOR ADDITIONAL INFORMATION REGARDING COST, SUBMITTAL, AND LIABILITY INSURANCE COVERAGE REQUIREMENTS.
2. 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. 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 ARBORIST EXCEPT FOR THE TREE APPROVALS AS NOTED.

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS | TREE PLANTING–NOTES (DRAINAGE AND INSPECTION) | STD. NO. 615.1 | REV.

(4) TREE PLANTING NOTES

HARRIS ENGINEERING
5200 PARK ROAD
SUITE 231
CHARLOTTE, NC 28209
P (704) 334-1325
F (704) 334-1330
NC #C-1170 & SC #C00946

SITE DETAILS

Grove Manor Phase 1

Grove Manor NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

Revisions
#1 - 10/27/17: Revised per review comments.
#2 - 1/16/18: Revised per review comments.
#4 - 3/1/18: Revised per review comments.
#8 - 7/10/18: Added Detail #15 (Street Light).
#10 - 11/14/18: Revised owner information.
#11 - 3/26/19: Updated Design Firm information.

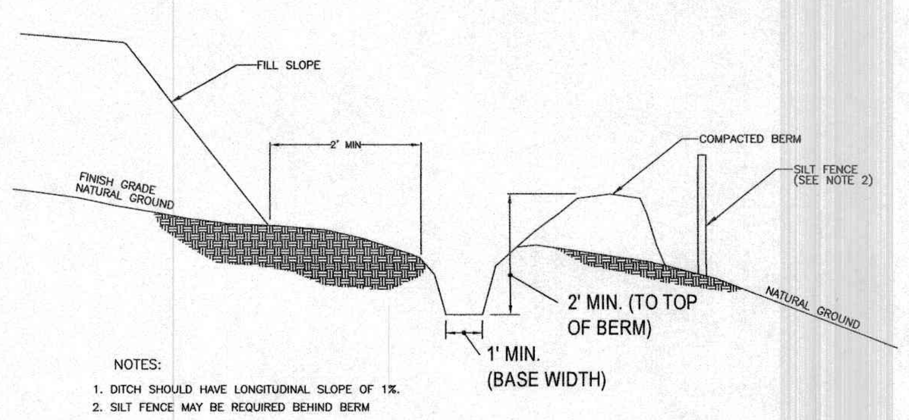
Job No.	043-17-001
Date	5/25/2017
Proj. Mgr.	WMH
Drawn	AW / SCE

NORTH CAROLINA PROFESSIONAL SEAL #12585 ENGINEER WAYNE M. HARRIS 5/10/19

Scale: NTS

APPROVED
By Max Hsiang at 3:40 pm, Jun 26, 2019

S:_MESA\2018\043-BROADSTREET HOMES\043-18-003 GM Phase 1 REVISIONS\ENGINEERING\043-17-001 Shts10-11 Details.dwg



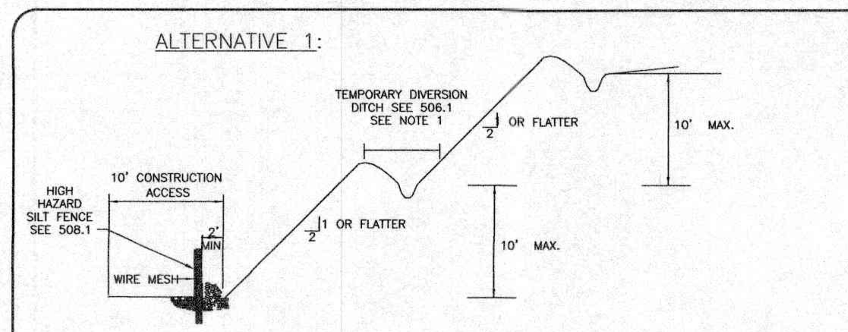
NOTES:
1. DITCH SHOULD HAVE LONGITUDINAL SLOPE OF 1%.
2. SILT FENCE MAY BE REQUIRED BEHIND BERM

NOT TO SCALE

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS — TEMPORARY SILT DITCH — STD. NO. 506.1

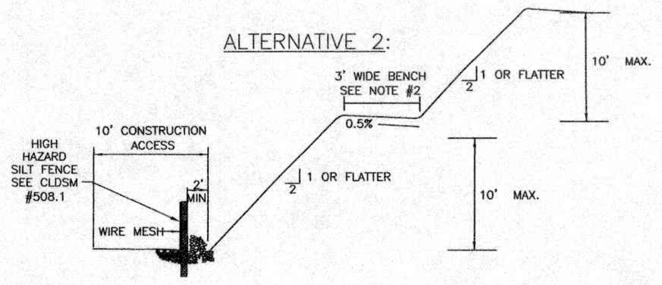
(13) TEMPORARY DIVERSION / SILT DITCH

ALTERNATIVE 1:



NOTES:
1. IF DIVERSION DITCH USED, IT SHOULD FLOW INTO SEDIMENT BASIN ROCK CHECK DAM, OR SLOPE DRAIN
2. BENCH SHOULD BE GRADED AT 0% LONGITUDINAL SLOPE (ON-CONTOUR)

ALTERNATIVE 2:

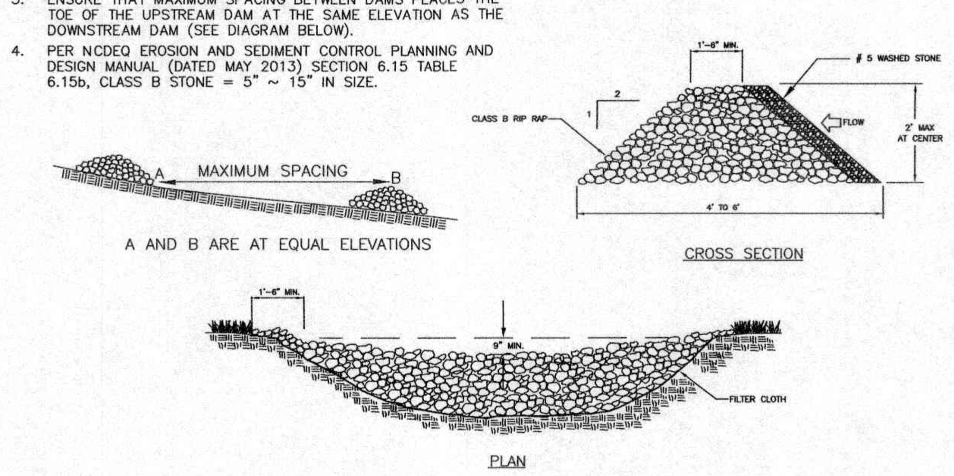


NOT TO SCALE

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS — SLOPE STABILITY — STD. NO. 520.1

(9) SLOPE STABILITY

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).
4. PER NCDEQ EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL (DATED MAY 2013) SECTION 6.15 TABLE 6.15b, CLASS B STONE = 5" ~ 15" IN SIZE.



NOT TO SCALE

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS — TEMPORARY ROCK CHECK DAM — STD. NO. 513.1

(5) TEMPORARY ROCK CHECK DAM

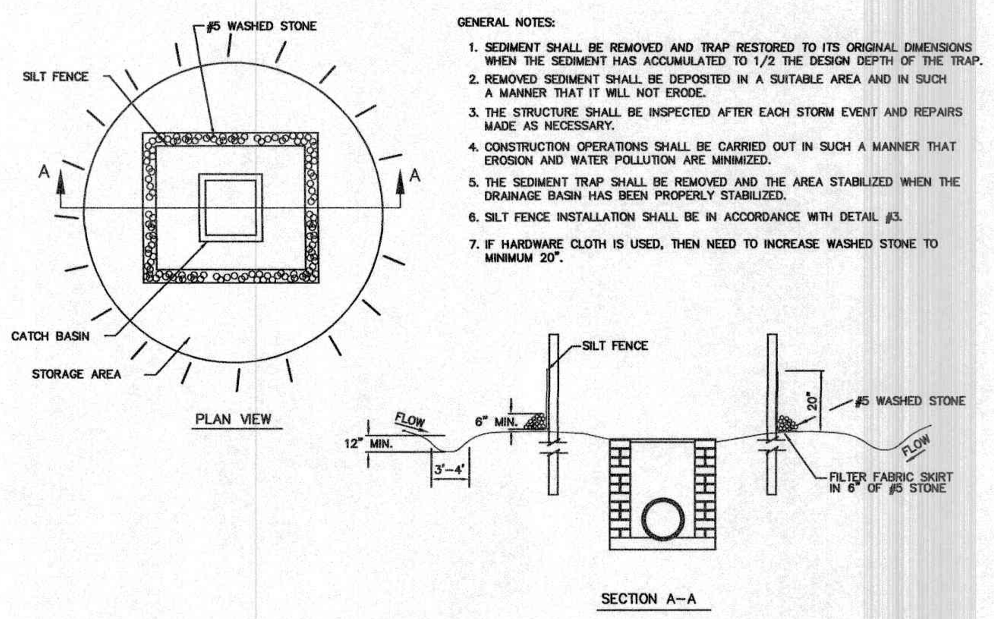
STD. & SPEC. #	TITLE	SPECIAL REQUIREMENTS & NOTES
6.11	PERMANENT SEEDING	—
6.17	ROLLED EROSION CONTROL PRODUCTS	—
6.51	HARDWARE CLOTH & GRAVEL INLET PROTECTION	—
6.60	TEMPORARY SEDIMENT TRAP	WEIR TOP WIDTH 10' MIN., BOTTOM 7' MIN.
6.61	SEDIMENT BASIN	FLASH BOARD RISER NOT PERMITTED
6.64	SKIMMER SEDIMENT 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 TOWN OF WAXHAW HAS ADOPTED THE SPECIFIC STANDARDS & SPECIFICATIONS SHOWN ON THIS DETAIL AS MANDATORY MINIMUM DESIGN STANDARDS & SPECIFICATIONS.

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS — SPECIAL EROSION CONTROL REQUIREMENTS & NOTES — STD. NO. 500.1 REV. 1

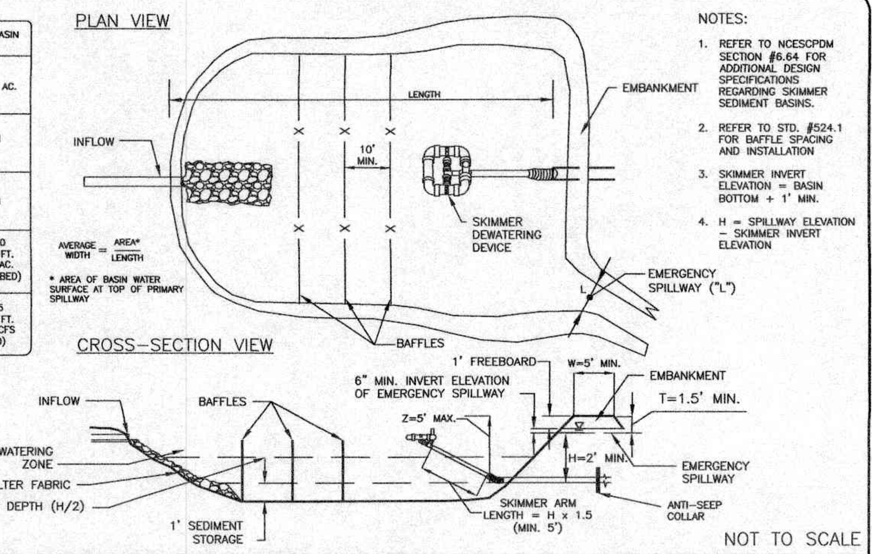
(1) SPECIAL EROSION CONTROL REQUIREMENTS & NOTES



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 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. SILT FENCE INSTALLATION SHALL BE IN ACCORDANCE WITH DETAIL #3.
7. IF HARDWARE CLOTH IS USED, THEN NEED TO INCREASE WASHED STONE TO MINIMUM 20".

(14) SILT FENCE INLET SEDIMENT TRAP

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)



NOTES:
1. REFER TO NCESCPDM SECTION #6.64 FOR ADDITIONAL DESIGN SPECIFICATIONS REGARDING SKIMMER SEDIMENT BASINS.
2. REFER TO STD. #524.1 FOR BAFFLE SPACING AND INSTALLATION.
3. SKIMMER INVERT ELEVATION = BASIN BOTTOM + 1' MIN.
4. H = SPILLWAY ELEVATION – SKIMMER INVERT ELEVATION

NOT TO SCALE

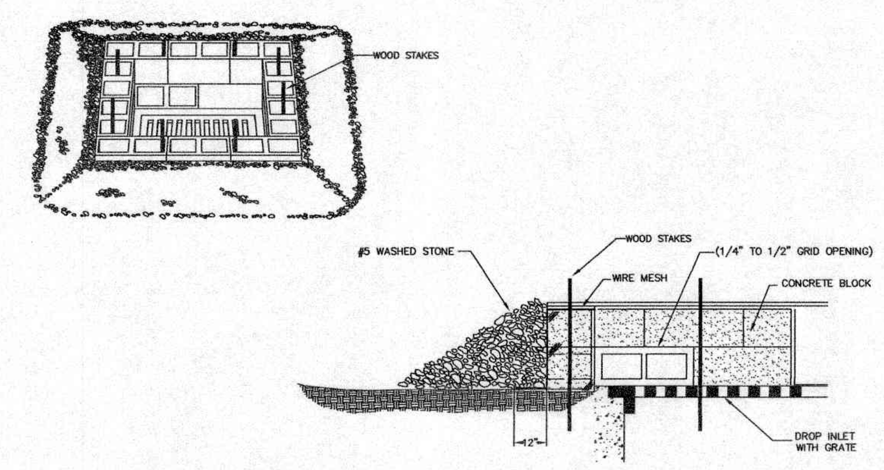
DATA BLOCK

BASIN	DRAINAGE AREA (ACRES)	DENUDED AREA (ACRES)	Q_{10}	BASIN VOLUME REQUIRED (CUBIC FT.)	BASIN VOLUME PROVIDED (CUBIC FT.)	BASIN SURFACE AREA REQUIRED (SQ FT.)	BASIN SURFACE AREA PROVIDED (SQ FT.)	CLEANOUT DEPTH (FT.) H/2	H (FT.)	Z (FT.)	L (FT.)	T (FT.)	W (FT.)	SKIMMER PIPE DIAMETER	SKIMMER ORIFICE DIAMETER
#1	3.10	3.02	9.81	5,436	9,828	3,187	4,050	1.5'	3'	4.5'	10'	1.5'	5'	2"	1.9"
#2	3.60	3.34	11.4	6,012	9,588	3,701	4,000	1.5'	3'	4.5'	10'	1.5'	5'	2"	1.9"

#11

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS — SKIMMER SEDIMENT BASIN — STD. NO. 502.1

(10) SKIMMER SEDIMENT BASIN



SPECIFIC APPLICATION:

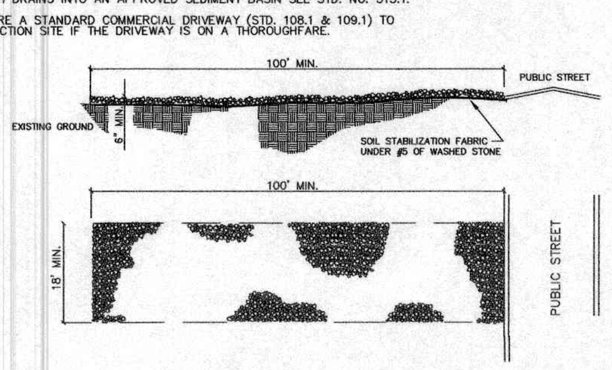
THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY FLOWS ARE EXPECTED AND WHERE OVERFLOW CAPACITY IS NECESSARY TO PREVENT EXCESSIVE PONDING AROUND THE STRUCTURE.

NOT TO SCALE

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS — BLOCK AND GRAVEL STONE INLET PROTECTION — STD. NO. 510.1

(6) BLOCK AND GRAVEL STONE INLET PROTECTION

NOTES:
1. A STABILIZED ENTRANCE PAD OF #5 WASHED STONE AND RAILROAD 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. ANY AGGREGATE TRACKED INTO THE ROADWAY MUST BE SWEPT BACK ONSITE ON A NIGHTLY BASIS.
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. 515.1.
6. THE TOWN MAY REQUIRE A STANDARD COMMERCIAL DRIVEWAY (STD. 108.1 & 109.1) TO ACCESS THE CONSTRUCTION SITE IF THE DRIVEWAY IS ON A THOROUGHFARE.

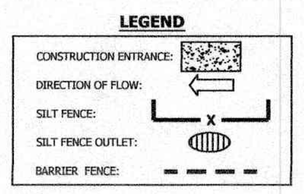


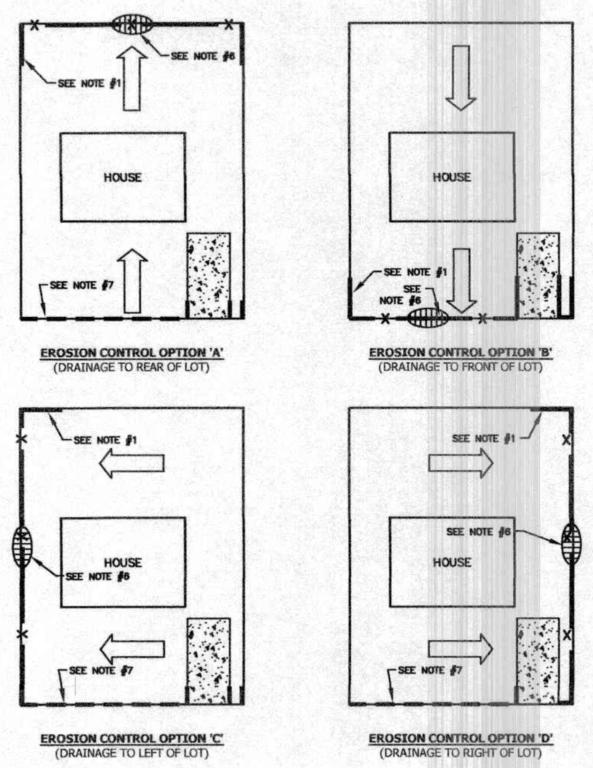
NOT TO SCALE

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS — STABILIZED CONSTRUCTION ENTRANCE — STD. NO. 514.1

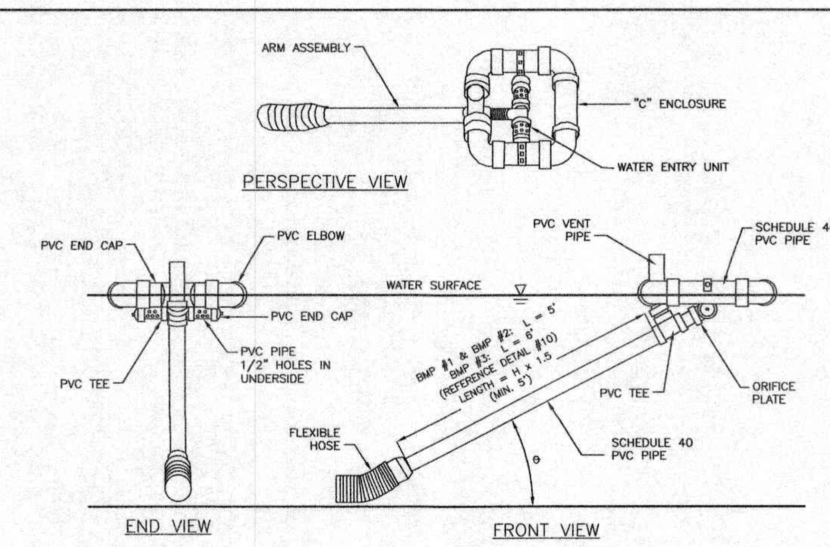
(2) STABILIZED CONSTRUCTION ENTRANCE

NOTES:
1. EXTEND SILT FENCE ALONG FRONT, SIDE AND/OR REAR PROPERTY LINES PARALLEL TO FLOW FOR A MINIMUM OF 8' OR AS FAR AS NECESSARY TO AVOID SEDIMENT LOSS AROUND ENDS OF FENCE.
2. WHEN ADJACENT LOTS ARE DISTURBED / UNDER CONSTRUCTION, SILT FENCE SHOULD BE CONNECTED TO SILT FENCE ON ADJOINING LOTS WHERE POSSIBLE TO PROVIDE A CONTINUOUS SILT BARRIER.
3. SEE SHEET 5 FOR INDIVIDUAL LOT CONSTRUCTION SEQUENCE.
4. SEE DETAIL SHEET 4 FOR LOT GRADING.
5. CONSTRUCTION ENTRANCE MAY BE LOCATED ON EITHER SIDE OF LOT.
6. PROVIDE SILT FENCE OUTLET(S) IN LOW-LYING AREAS OF SILT FENCE (SEE DETAIL #4 THIS SHEET). OUTLET LOCATION(S) TO BE DETERMINED PER ACTUAL SITE CONDITIONS.
7. PROVIDE BARRIER FENCE (SILT FENCE, ORANGE TREE PROTECTION FENCE, ETC.) ACROSS LOT FRONTAGE TO RESTRICT VEHICULAR ACCESS TO THE TEMPORARY CONSTRUCTION ENTRANCE.





(15) TYPICAL INDIVIDUAL LOT EROSION CONTROL MEASURES



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

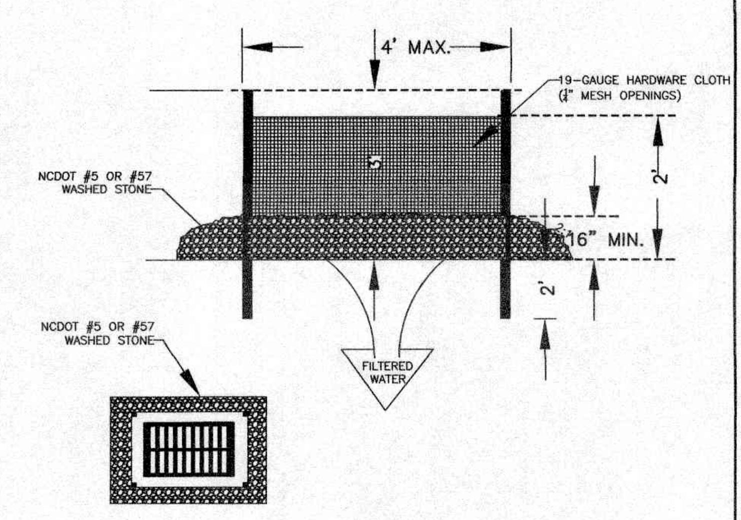
"H" REFERS TO THE HEIGHT FROM INVERT OF FLEXIBLE HOSE ON SKIMMER TO THE INVERT OF THE PRIMARY SPILLWAY.

NOT TO SCALE

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS — SKIMMER — STD. NO. 503.1

(11) SKIMMER

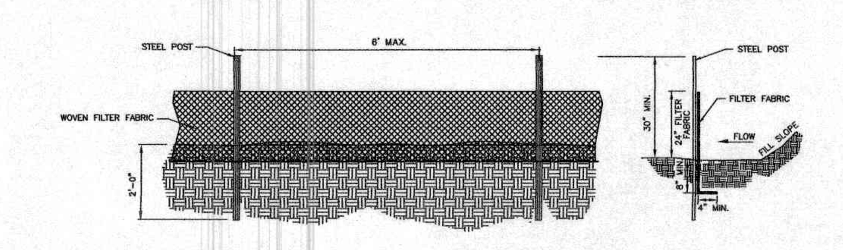
GENERAL NOTES:
1. UNIFORMLY GRADE A SHALLOW DEPRESSION APPROACHING THE INLET.
2. DRIVE 5-FOOT STEEL POSTS 2 FEET INTO THE GROUND SURROUNDING THE INLET. SPACE POSTS EVENLY AROUND THE PERIMETER OF THE INLET, A MAXIMUM OF 4 FEET APART.
3. SURROUND THE POSTS WITH WIRE MESH HARDWARE CLOTH. SECURE THE WIRE 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

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS — HARDWARE CLOTH AND GRAVEL INLET PROTECTION — STD. NO. 512.1

(7) TEMPORARY INLET PROTECTION



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.

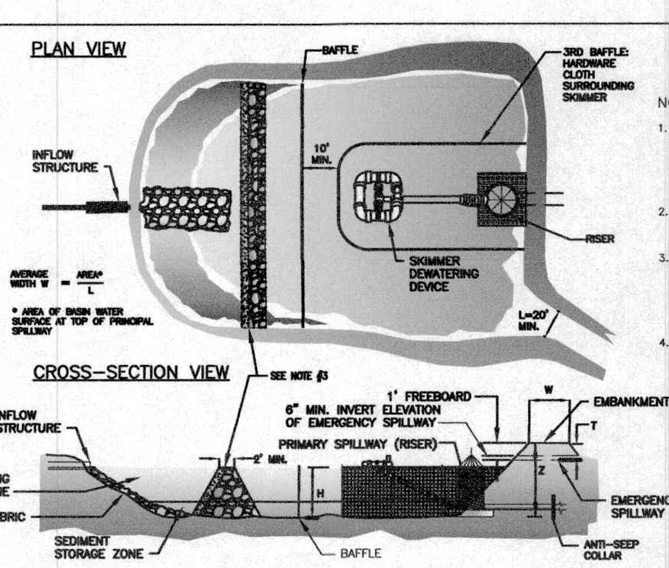
MAINTENANCE NOTES:
1. FILTER BARRIERS SHALL BE INSPECTED BY THE FINANCIALLY RESPONSIBLE PARTY OR HIS AGENT IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS NEEDED SHALL BE MADE IMMEDIATELY.
2. SHOULD THE FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END 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

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS — TEMPORARY SILT FENCE — STD. NO. 507.1

(3) TEMPORARY SILT FENCE

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)



NOTES:
1. REFER TO NCESCPDM SECTION #6.61 FOR ADDITIONAL DESIGN SPECIFICATIONS REGARDING SEDIMENT BASINS.
2. REFER TO STD. #524.1 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 TOWN OF WAXHAW

NOT TO SCALE

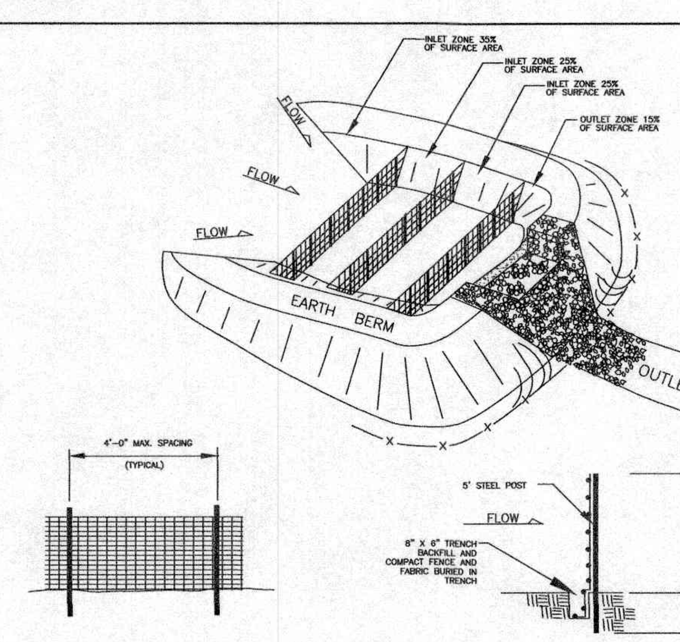
DATA BLOCK

BASIN	DRAINAGE AREA (ACRES)	DENUDED AREA (ACRES)	Q_{10}	BASIN VOLUME REQUIRED (CUBIC FT.)	BASIN VOLUME PROVIDED (CUBIC FT.)	BASIN SURFACE AREA REQUIRED (SQ FT.)	BASIN SURFACE AREA PROVIDED (SQ FT.)	CLEANOUT DEPTH (FT.) H/2	H (FEET)	Z (FEET)	L (FEET)	T (FEET)	W (FEET)	SKIMMER PIPE DIAMETER	SKIMMER ORIFICE DIAMETER
#3	19.19	17.06	60.7	30,708	64,488	26,408	30,310	1.25	2.5'	4.5'	32'	1.75'	6'	5"	4.0"

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS — SEDIMENT BASIN — STD. NO. 504.1

#11

(16) SEDIMENT BASIN DETAIL



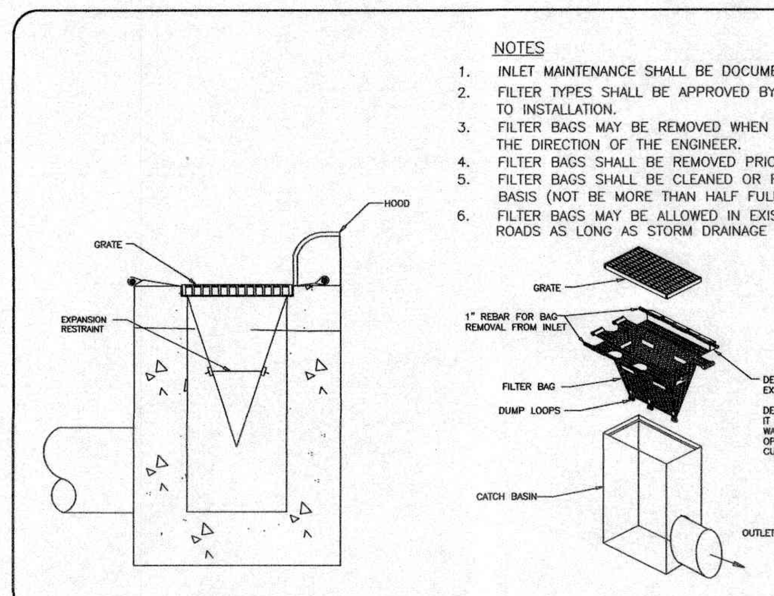
GENERAL NOTES:
1. DRIVE 5' STEEL POST AT LEAST 24" INTO SOLID GROUND.
2. USE STAPLES 1' APART HORIZONTALLY AND VERTICALLY TO ATTACH THE **POROUS MATERIAL** TO THE WIRE FENCE.
3. MINIMUM BAFFLE SPACING IS 10'.
4. THE FLOOR OF THE BASIN IN THE OUTLET ZONE AND BERMS SHOULD BE SEEDED IMMEDIATELY AFTER THE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

NOT TO SCALE

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS — BAFFLE INSTALLATION — STD. NO. 524.1

(12) BAFFLE INSTALLATION

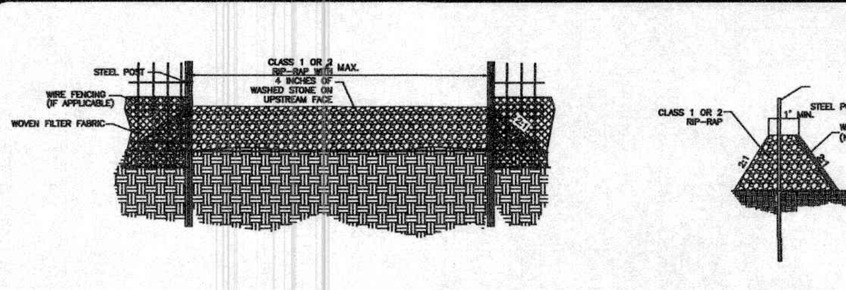
NOTES
1. INLET MAINTENANCE SHALL BE DOCUMENTED IN PROJECT LOG BOOK.
2. FILTER TYPES SHALL BE APPROVED BY THE TOWN INSPECTOR PRIOR TO INSTALLATION.
3. FILTER BAGS MAY BE REMOVED WHEN SITE IS STABILIZED AT THE DIRECTION OF THE ENGINEER.
4. FILTER BAGS SHALL BE REMOVED PRIOR TO STREET ACCEPTANCE.
5. FILTER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



NOT TO SCALE

TOWN OF WAXHAW LAND DEVELOPMENT STANDARDS — CATCH BASIN INLET PROTECTION — STD. NO. 519.1

(8) CATCH BASIN INLET PROTECTION



GENERAL NOTES:
1. SEDIMENT FILTER OUTLET SHALL BE 16 INCHES HIGH BUT NO TALLER THAN 18 INCHES.
2. CLASS 1 OR 2 RIP-RAP SHALL BE USED AND COVERED WITH 4 INCHES OF NCDOT #5 OR #57 WASHED STONE ON THE UPSLOPE SIDE.
3. POSTS SHALL BE NO MORE THAN 4 FEET APART.
4. SITE OUTLETS AT ANY POINT SMALL CONCENTRATED FLOWS ARE ANTICIPATED AND AT THE DIRECTION OF THE INSPECTOR.
5. ONE ACRE MAXIMUM DRAINAGE AREA PER OUTLET.

MAINTENANCE NOTES:
1. FILTER OUTLETS 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. THE STONE SHALL BE REPLACED PROMPTLY AFTER ANY EVENT THAT HAS CLOGGED OR REMOVED IT.
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 OUTLET IS REMOVED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.

(4) SILT FENCE OUTLET

APPROVED
By Max Hsiang at 3:40 pm, Jun 26, 2019

Rev. #9 Summary for This Sheet:
The following revisions have been made to this sheet:
· Revised Detail #10 Data Block for Basin #3.

HARRIS ENGINEERING
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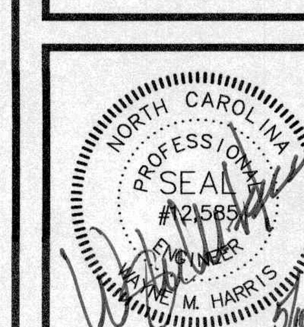
EROSION CONTROL DETAILS

Grove Manor Phase 1

Grove Manor NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

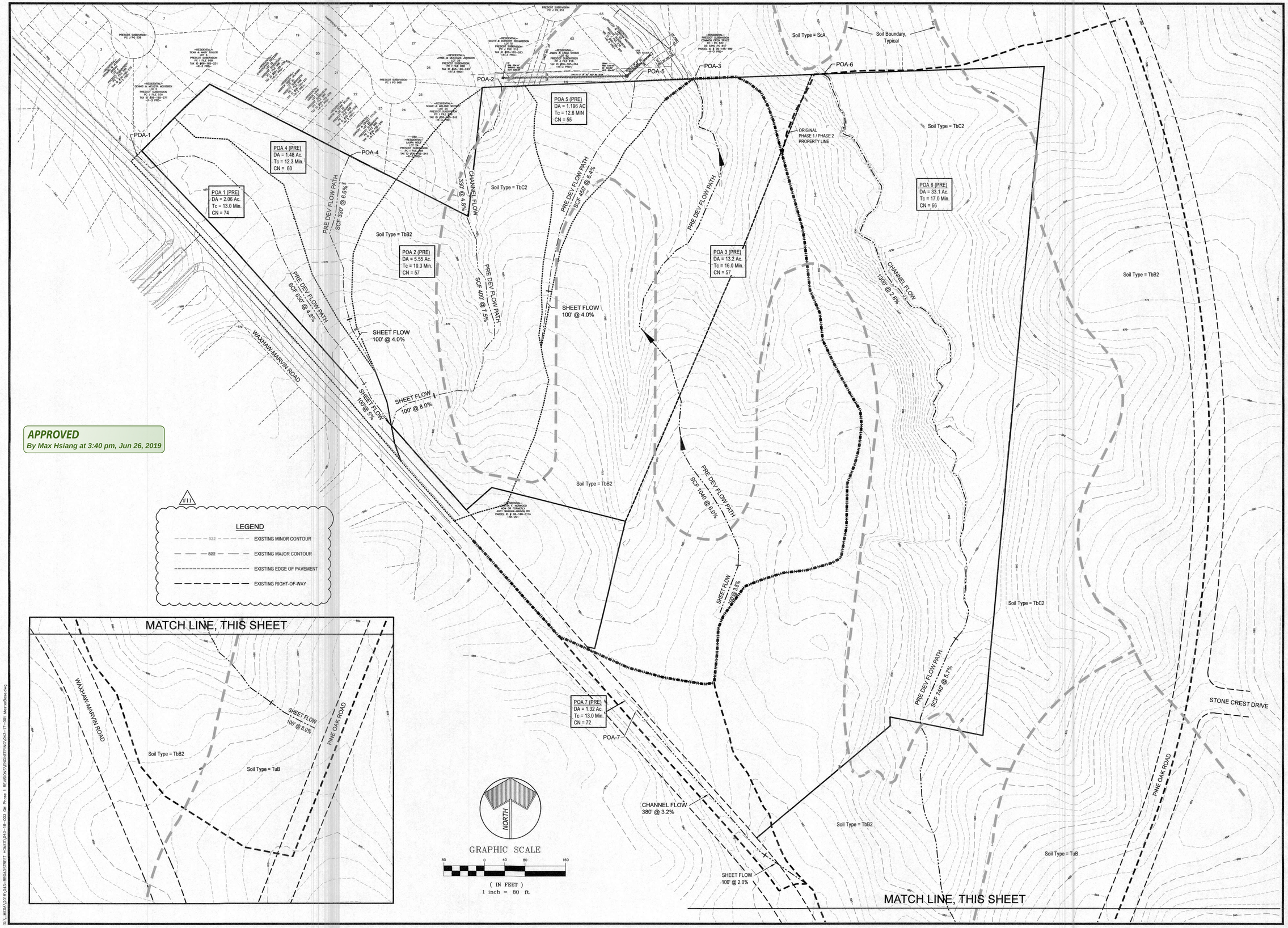
Revisions
#1 - 10/27/17: Revised per review comments.
#2 - 1/16/18: Revised per review comments.
#9 - 9/7/18: Revised per Zoning Amendment and addition of Phase 2.
#10 - 11/14/18: Revised per review comments and revised owner information.
#11 - 3/26/19: Revised per review comments; and updated Design Firm information.

Job No.	043-17-001
Date	5/25/2017
Proj. Mgr.	WMH
Drawn	AW / SCE



Scale: NTS

S:_MESA\2018\043-BROADSTREET HOMES\043-18-003 GM Phase 1 REVISIONS\ENGINEERING\043-17-001 Shts10-11 Details.dwg



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By Max Hsiang at 3:40 pm, Jun 26, 2019

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PRE-DEVELOPMENT DRAINAGE AREA MAP

Grove Manor Sub. - Phase 1

Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

Revisions
#1: 01/16/18: Revised per review comments.
#10: 12/14/18: Revised per review comments and revised menor information.
#11: 3/26/19: Revised per review comments; and updated Design Firm information.

Job No.	043-17-001
Date	10/27/2017
Proj. Mgr.	WMH
Drawn	AW / SCE

NORTH CAROLINA PROFESSIONAL SEAL #12,585 ENGINEER WAYNE M. HARRIS 6/10/19

Scale: 1" = 80'

Sheet No. 12 of 26

S:_MESA\2018\043-BROADSTREET HOMES\043-18-003 GM Phase 1 REVISIONS\ENGINEERING\043-17-001 MasterBase.dwg

APPROVED
By Max Hsiang at 3:40 pm, Jun 26, 2019

Rev. #9 Summary for This Sheet:
The following revisions have been made to this sheet:
- Revisions summarized on Sheet 3 (Proposed Site Plan).
- Revisions summarized on Sheet 4 (Proposed Grading & Storm Drainage Plan).
- Updated Drainage Areas.

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POST-DEVELOPMENT DRAINAGE AREA MAP

Grove Manor Sub. - Phase 1

Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

Revisions
#1 : 10/2/17: Revised per review comments, and changed Sheet Number from 12 to 13.
#2 : 01/16/18: Revised per review comments.
#3 : 2/15/18: Revised per DEQ comments.
#4 : 3/13/18: Revised per review comments.
#5 : 5/7/18: Revised per Zoning Amendment and addition of Phase 2.
#6 : 11/14/18: Revised per review comments and revised owner information.
#7 : 1/28/19: Revised per review comments, Revised per Grading Plan (Sheet 4) revisions; and updated Design Firm information.

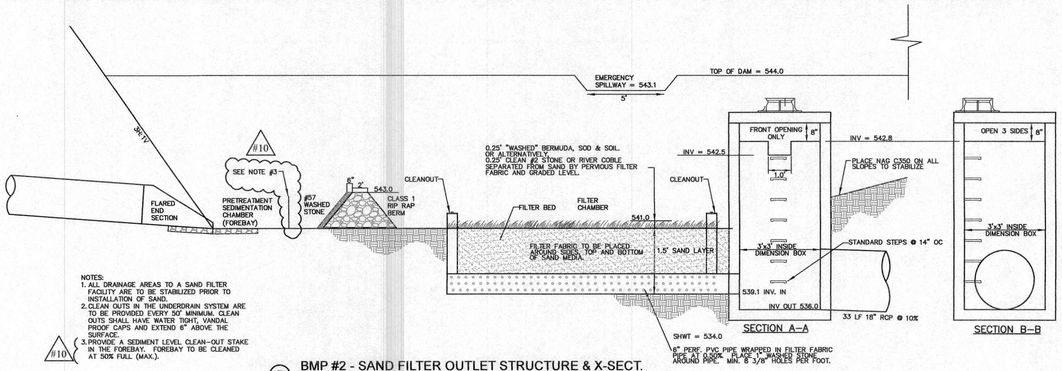
Job No.	043-17-001
Date	5/25/2017
Proj. Mgr.	WMH
Drawn	AW / SCE

NORTH CAROLINA PROFESSIONAL SEAL 012,585 ENGINEER WAYNE M. HARRIS 6/10/19

Scale: 1" = 80'

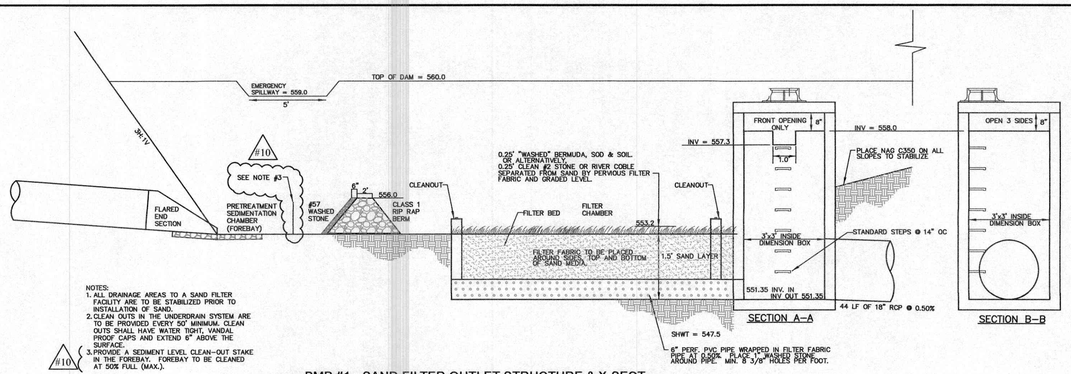
Sheet No. 13 of 26

S:_MESA\2018\043-BROADSTREET HOMES\043-18-003 GM Phase 1 REVISIONS\ENGINEERING\043-17-001 MasterBase.dwg



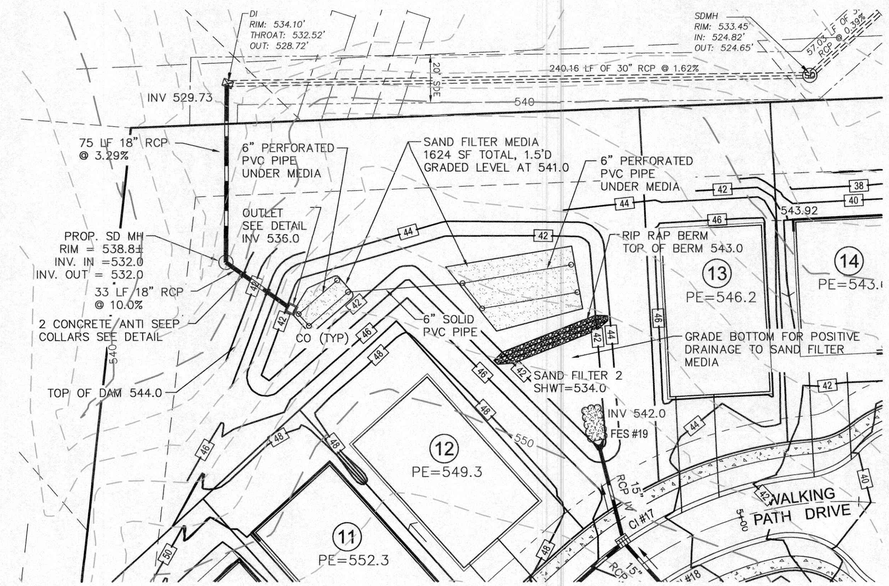
NOTES:
1. ALL DRAINAGE AREAS TO A SAND FILTER FACILITY ARE TO BE STABILIZED PRIOR TO INSTALLATION OF SAND.
2. CLEAN OUTS IN THE UNDERDRAIN SYSTEM ARE TO BE PROVIDED EVERY 50' MINIMUM. CLEAN OUTS SHALL HAVE WATER TIGHT, VANDAL PROOF CAPS AND EXTEND 6" ABOVE THE SURFACE.
3. PROVIDE A SEDIMENT LEVEL CLEAN-OUT STAKE IN THE FOREBAY. FOREBAY TO BE CLEANED AT 50% FULL (MAX.).

3 BMP #2 - SAND FILTER OUTLET STRUCTURE & X-SECT.
NOT TO SCALE

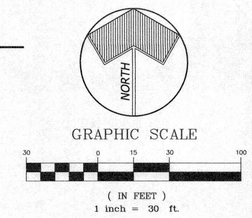


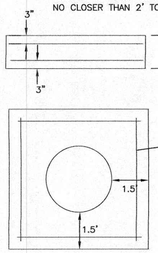
NOTES:
1. ALL DRAINAGE AREAS TO A SAND FILTER FACILITY ARE TO BE STABILIZED PRIOR TO INSTALLATION OF SAND.
2. CLEAN OUTS IN THE UNDERDRAIN SYSTEM ARE TO BE PROVIDED EVERY 50' MINIMUM. CLEAN OUTS SHALL HAVE WATER TIGHT, VANDAL PROOF CAPS AND EXTEND 6" ABOVE THE SURFACE.
3. PROVIDE A SEDIMENT LEVEL CLEAN-OUT STAKE IN THE FOREBAY. FOREBAY TO BE CLEANED AT 50% FULL (MAX.).

5 BMP #1 - SAND FILTER OUTLET STRUCTURE & X-SECT.
NOT TO SCALE

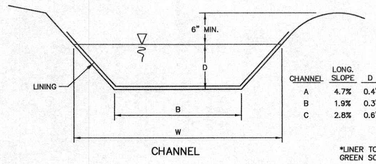


1 BMP #2 PLAN
SCALE: 1" = 30'





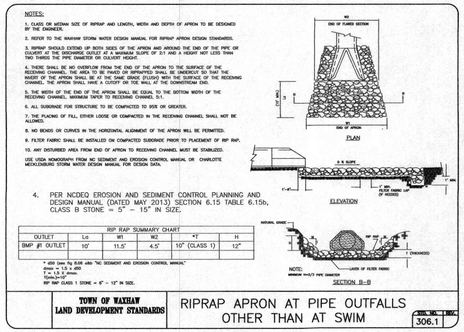
8 CONCRETE ANTI-SEEP COLLAR
NOT TO SCALE



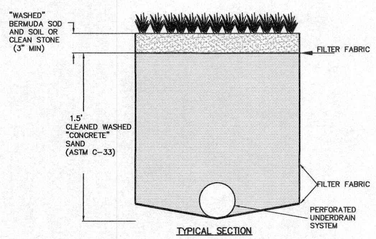
CHANNEL	LONG. SLOPE	D	W	B	SIDE SLOPE	LINING
A	4.7%	0.4'	2.9'	1'	2:1 / 3:1	SC 150*
B	1.9%	0.3'	5.1'	4'	2:1	SC 150*
C	2.8%	0.6'	4'	1'	2:1 / 3:1	SC 150*

*LINER TO BE NORTH AMERICAN GREEN SC-150, OR APPROVED EQUAL.

4 CHANNEL DETAIL
NOT TO SCALE

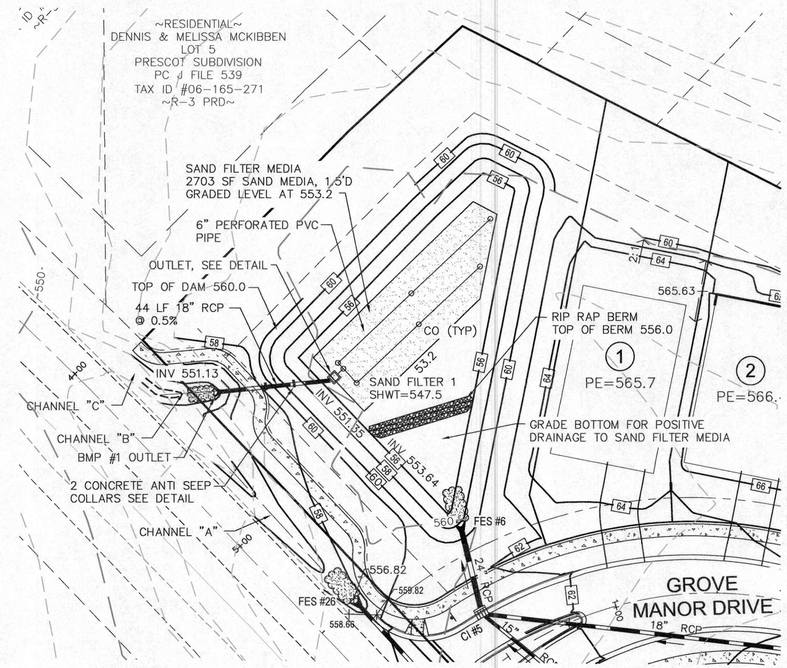


9 RIPRAP APRON AT PIPE OUTFALL FOR BMP #1



NOTES:
1. "CONCRETE" SAND REFERS TO SAND THAT IS COMMONLY USED IN CONCRETE MIXES (ASTM C-33).
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 1 ALONG 4 LONGITUDINAL ROWS SPACED 90? APART.

7 SURFACE SAND FILTER SECTION
NOT TO SCALE



APPROVED
By Max Hsiang at 3:40 pm, Jun 26, 2019

2 BMP #1 PLAN
SCALE: 1" = 30'

HARRIS ENGINEERING
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BMP PLAN & DETAILS - BMP #1 & #2

Grove Manor Sub. - Phase 1

Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

Revisions
#1 - 10/27/17: Revised per review comments. Changed Sheet Number from 13 to 14.
#2 - 1/16/18: Revised per review comments.
#4 - 3/13/18: Revised per review comments.
#6 - 4/2/18: Revised per NCDEQ comments.
#10 - 11/14/18: Revised per review comments and revised owner information.
#11 - 3/26/19: Updated Design Firm information.

Job No.	043-17-001
Date	5/25/2017
Proj. Mgr.	WMH
Drawn	AW / SCE

NORTH CAROLINA PROFESSIONAL SEAL 012589 ENGINEER W. M. HARRIS
6/10/19

Scale: N.T.S.

Sheet No. 14 of 26

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7 ***DELETED***
NOT TO SCALE

8 ***DELETED***
NOT TO SCALE

9 ***DELETED***
NOT TO SCALE

10 ***DELETED***
NOT TO SCALE

11 ***DELETED***
NOT TO SCALE

THE 6' WIDE WET POND VEGETATED SHELF SHALL BE PLANTED WITH A MINIMUM OF THREE DIVERSE SPECIES OF HERBACEOUS , NATIVE VEGETATION AT A MINIMUM DENSITY OF 50 PLANTS PER 200 SF OF SHELF AREA. THREE SPECIES ARE RECOMMENED BELOW. OTHER SPECIES WHICH MAY BE USED ARE LISTED IN THE "NCDEQ STORMWATER DESIGN MANUAL", UNDER CHAPTER C–3. WET POND.

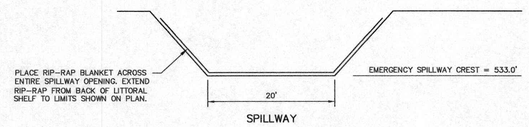
ASCLEPIAS INCARNATA – SWAMP MILKWEED
CHELONE GALBRA – WHITE TURTLEHEAD
LOBELIA CARDINALIS – CARDINAL FLOWER.

3 WET POND VEGETATED SHELF PLANTINGS
NOT TO SCALE

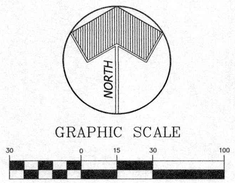
DAMS AND EMBANKMENTS SHALL BE SEEDED WITH HYBRID BERMUDA GRASS SEED. TREES AND WOODY SHRUBS SHALL NOT ALLOWED.

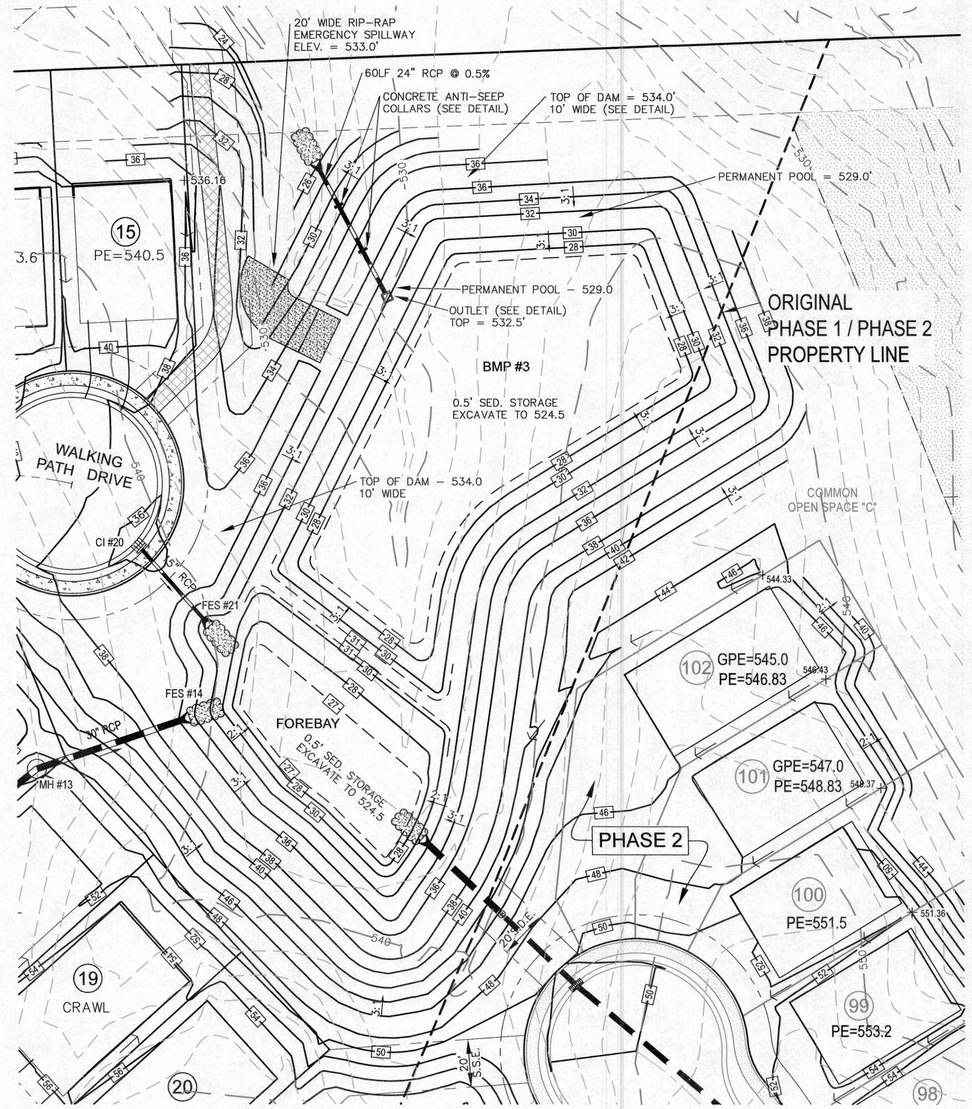
SEEDING RATE: 0.5 LBS / 1000 SF
PLANTING DEPTH: 0.25"
RECOMMENDED SEEDING DATES: APRIL 15 TO JULY 31
FERTILIZER: APPLY SLOW RELEASE 10–10–10 FERTILIZER AT THE RATE OF 1.5 LBS PER 1000 SF 5 WEEKS AFTER EMERGENCE.
DO NOT APPLY IF PLANTS ARE STRESSED BY HIGH OR LOW TEMPERATURES.

4 DAM AND EMBANKMENT PERMANENT STABILIZATION
NOT TO SCALE

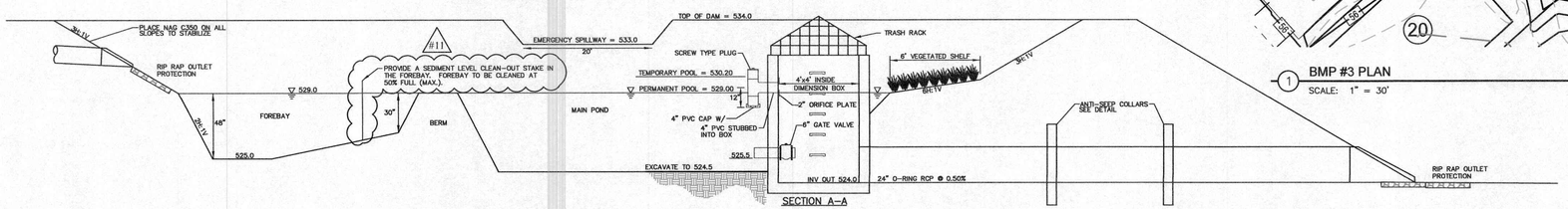


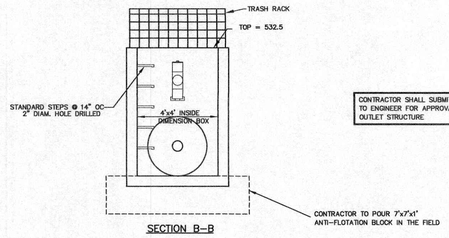
5 EMERGENCY SPILLWAY CHANNEL DETAIL
NOT TO SCALE





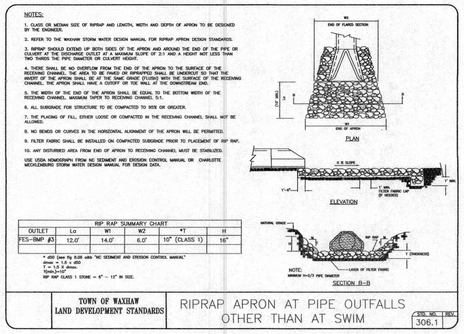
1 BMP #3 PLAN
SCALE: 1" = 30'





CONTRACTOR SHALL SUBMIT SEALED SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATING OUTLET STRUCTURE

6 BMP #3 - WET POND OUTLET STRUCTURE & X-SECT.
NOT TO SCALE



2 RIPRAP APRON AT PIPE OUTFALL FOR BMP #3

NOTE:
SEE SHEET 10, DETAIL 8, FOR RIP RAP DIMENSIONS.

Rev. #9 Summary for This Sheet:
The following revisions have been made to this sheet:
- Revisions summarized on Sheet 3 (Proposed Site Plan).
- Revisions summarized on Sheet 4 (Proposed Grading & Storm Drainage Plan).
- Updated BMP #3 and associated easement.

APPROVED
By Max Hsiang at 3:40 pm, Jun 26, 2019

S:_MESA\2018\V43-BROADSTREET HOMES\043-18-003 Gal Phase 1 REVISIONS\ENGINEERING\043-17-001 MasterBase.dwg

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BMP PLAN & DETAILS - BMP #3

Grove Manor Sub. - Phase 1

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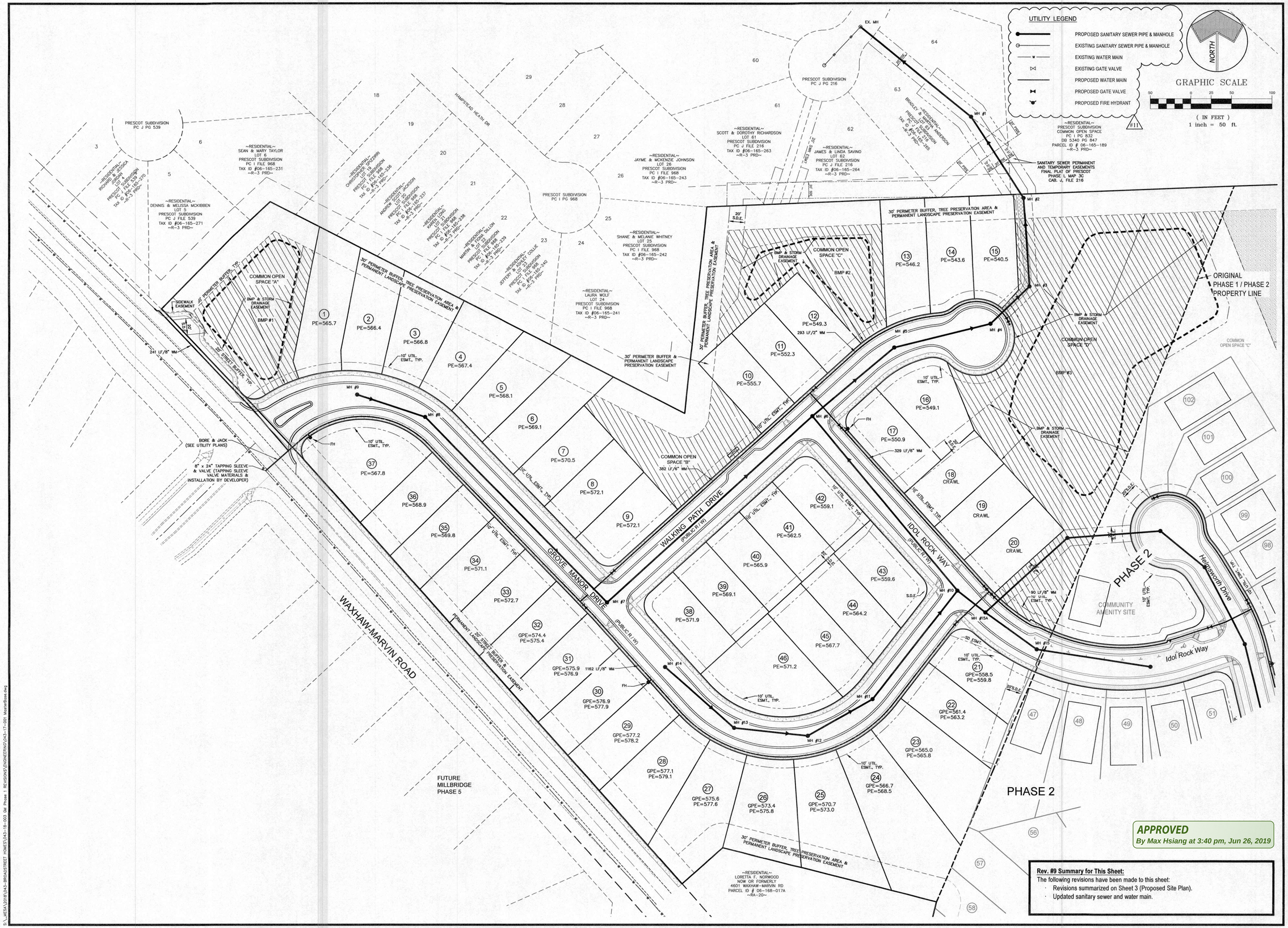
Revisions
#1 - 10/27/17: Revised per review comments. Changed Sheet Number from 14 to 15.
#2 - 1/15/18: Revised per review comments.
#3 - 2/15/18: Revised per DEQ comments.
#4 - 3/7/18: Revised per review comments.
#5 - 4/16/18: Revised per review comments.
#6 - 5/10/18: Revised per review comments.
#7 - 9/7/18: Revised per Zoning Amendment and addition of Phase 2.
#10 - 11/14/18: Revised per review comments and revised owner information.
#11 - 2/26/19: Revised per review comments, and updated Design Firm information.

Job No.	043-17-001
Date	5/25/2017
Proj. Mgr.	WMH
Drawn	AW / SCE

NORTH CAROLINA PROFESSIONAL SEAL #23851 ENGINEER JOHN M. HARRIS 5/10/19

Scale: N.T.S.

Sheet No. 15 of 26



Rev. #9 Summary for This Sheet:
The following revisions have been made to this sheet:
- Revisions summarized on Sheet 3 (Proposed Site Plan).
- Updated sanitary sewer and water main.

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NC #C-1170 & SC #C00946

PROPOSED UTILITY PLAN

Grove Manor Sub. - Phase 1

Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

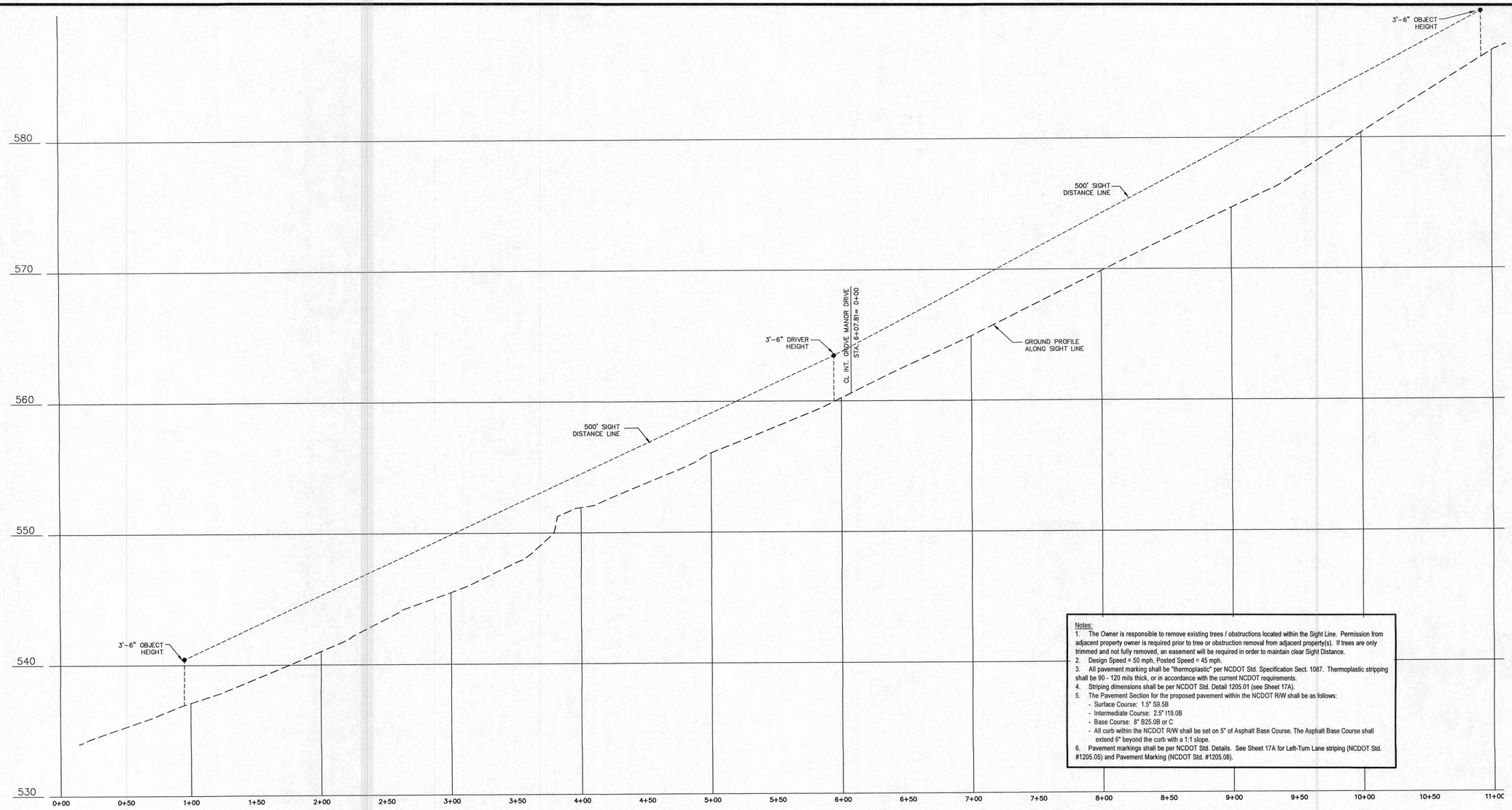
Revisions
#1 - 1/16/18: Revised per review comments.
#4 - 3/1/18: Revised per review comments.
#9 - 9/7/18: Revised per Zoning Amendment and addition of Phase 2.
#10 - 11/14/18: Revised owner information.
#11 - 3/26/19: Revised per review comments; and updated Design Firm information.

Job No.	043-17-001
Date	10/27/2017
Proj. Mgr.	WMH
Drawn	AW / SCE

NORTH CAROLINA PROFESSIONAL SEAL #12,585 ENGINEER WAYNE M. HARRIS 6/20/19

Scale: 1" = 50'

Sheet No. 16 of 26



Notes:

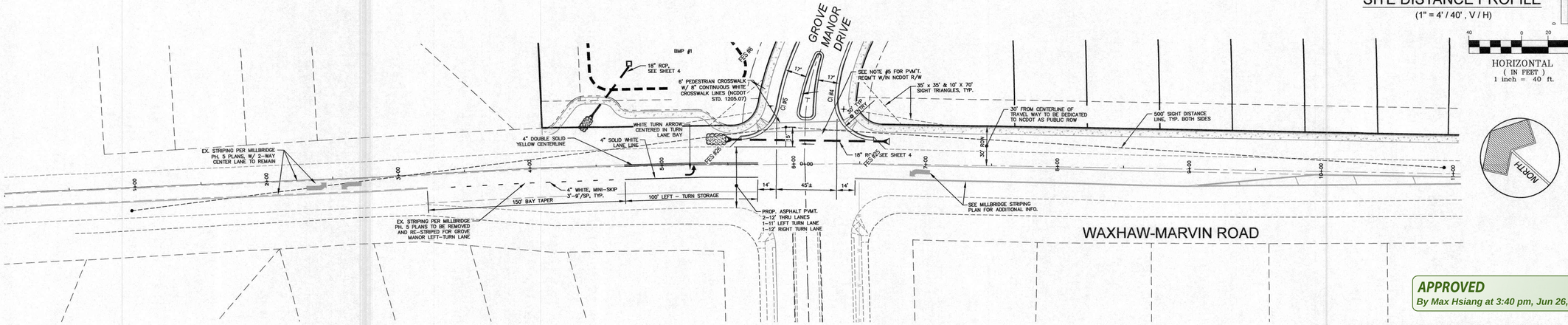
1. The Owner is responsible to remove existing trees / obstructions located within the Sight Line. Permission from adjacent property owner is required prior to tree or obstruction removal from adjacent property(s). If trees are only trimmed and not fully removed, an easement will be required in order to maintain clear Sight Distance.
2. Design Speed = 50 mph, Posted Speed = 45 mph.
3. All pavement marking shall be "thermoplastic" per NCDOT Std. Specification Sect. 1087. Thermoplastic stripping shall be 90 - 120 mils thick, or in accordance with the current NCDOT requirements.
4. Striping dimensions shall be per NCDOT Std. Detail 1205.01 (see Sheet 17A).
5. The Pavement Section for the proposed pavement within the NCDOT R/W shall be as follows:
   - Surface Course: 1.5" S9.5B
   - Intermediate Course: 2.5" I19.0B
   - Base Course: 8" B25.0B or C
   - All curb within the NCDOT R/W shall be set on 5" of Asphalt Base Course. The Asphalt Base Course shall extend 6" beyond the curb with a 1:1 slope.
6. Pavement markings shall be per NCDOT Std. Details. See Sheet 17A for Left-Turn Lane striping (NCDOT Std. #1205.05) and Pavement Marking (NCDOT Std. #1205.08).

SITE DISTANCE PROFILE

(1" = 4' / 40', V / H)

VERTICAL 1 inch = 4 ft.

HORIZONTAL (IN FEET) 1 inch = 40 ft.



APPROVED
By Max Hsiang at 3:40 pm, Jun 26, 2019

PAVEMENT MARKING DETAIL

(1" = 40')

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PROPOSED STRIPING PLAN

Grove Manor Sub. - Phase 1

Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

Revisions
#2 - 1/16/18: Revised per review comments.
#4 - 3/1/18: Revised per review comments.
#5 - 3/20/18: Revised per Sheet 4.
#10 - 11/14/18: Revised owner information.
#11 - 3/26/19: Updated Design Firm information.

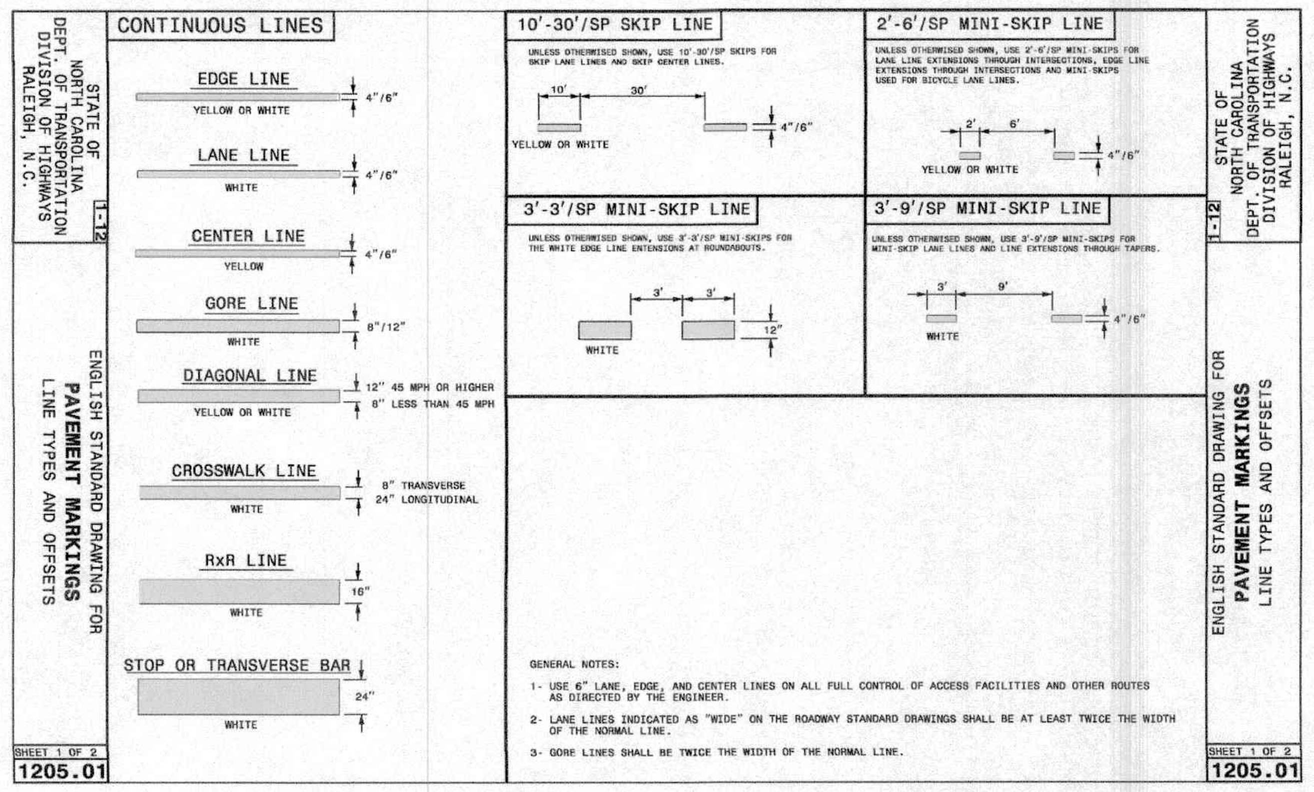
Job No.	043-17-001
Date	10/27/2017
Proj. Mgr.	WMH
Drawn	AW / SCE

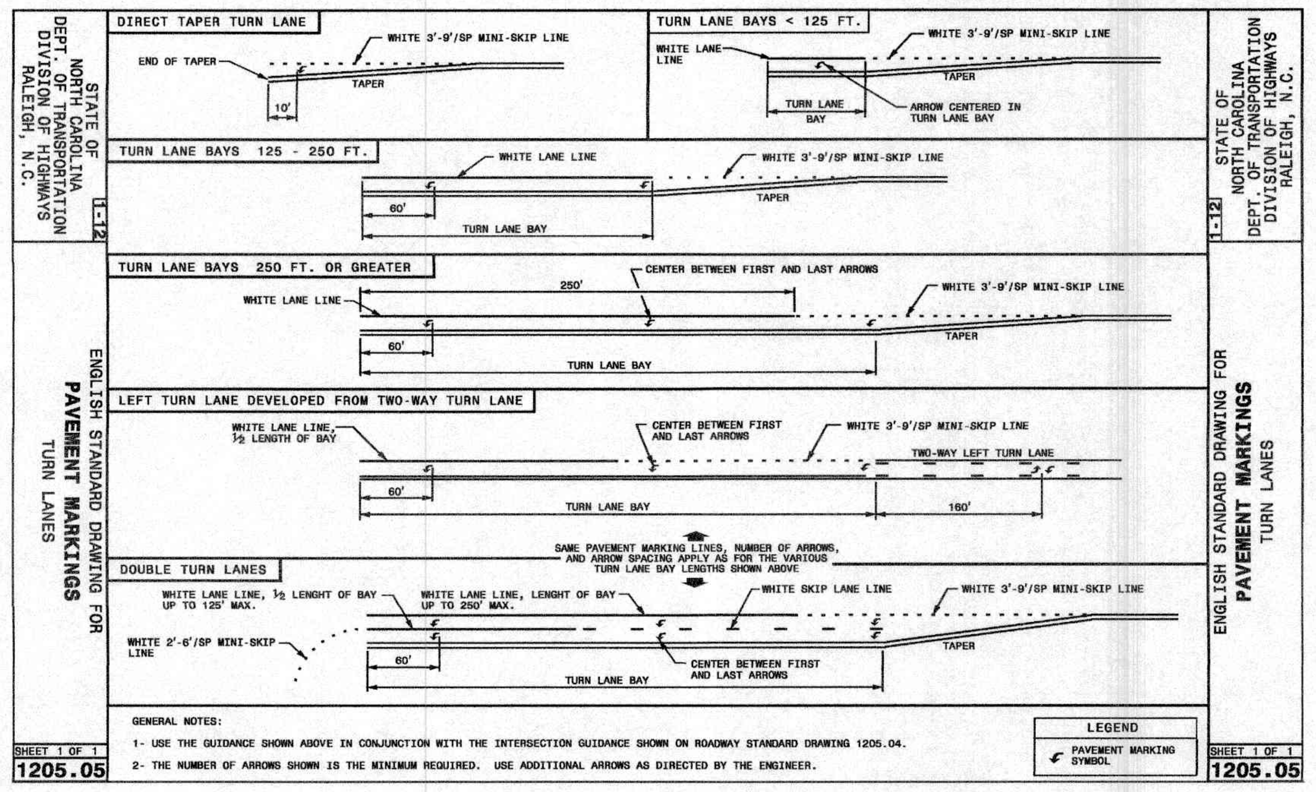
NORTH CAROLINA PROFESSIONAL SEAL #12,585 ENGINEER WAYNE M. HARRIS 6/10/19

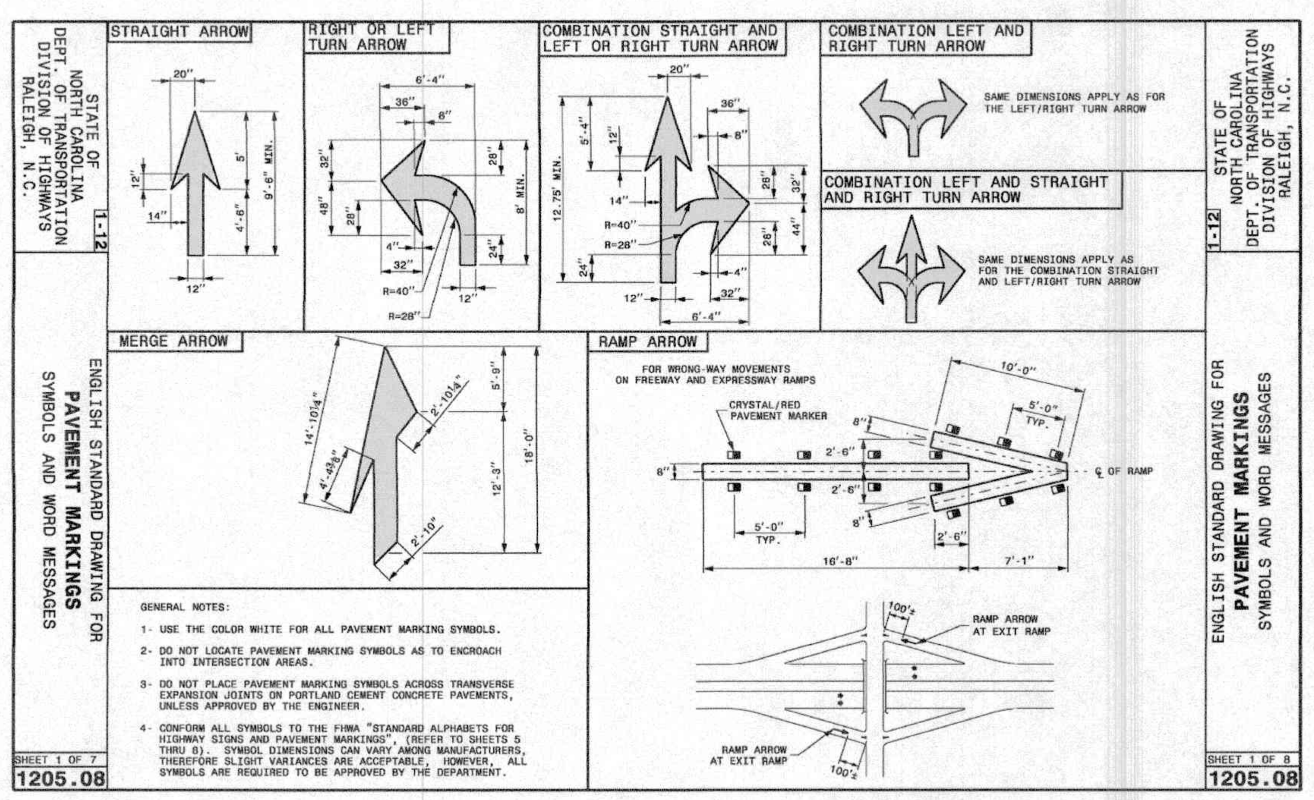
Scale: NOTED

Sheet No. 17 of 26

S:_MESA\2018\043-BROADSTREET HOMES\043-18-003 GM Phase 1 REVISIONS\ENGINEERING\043-17-001 MasterBase.dwg

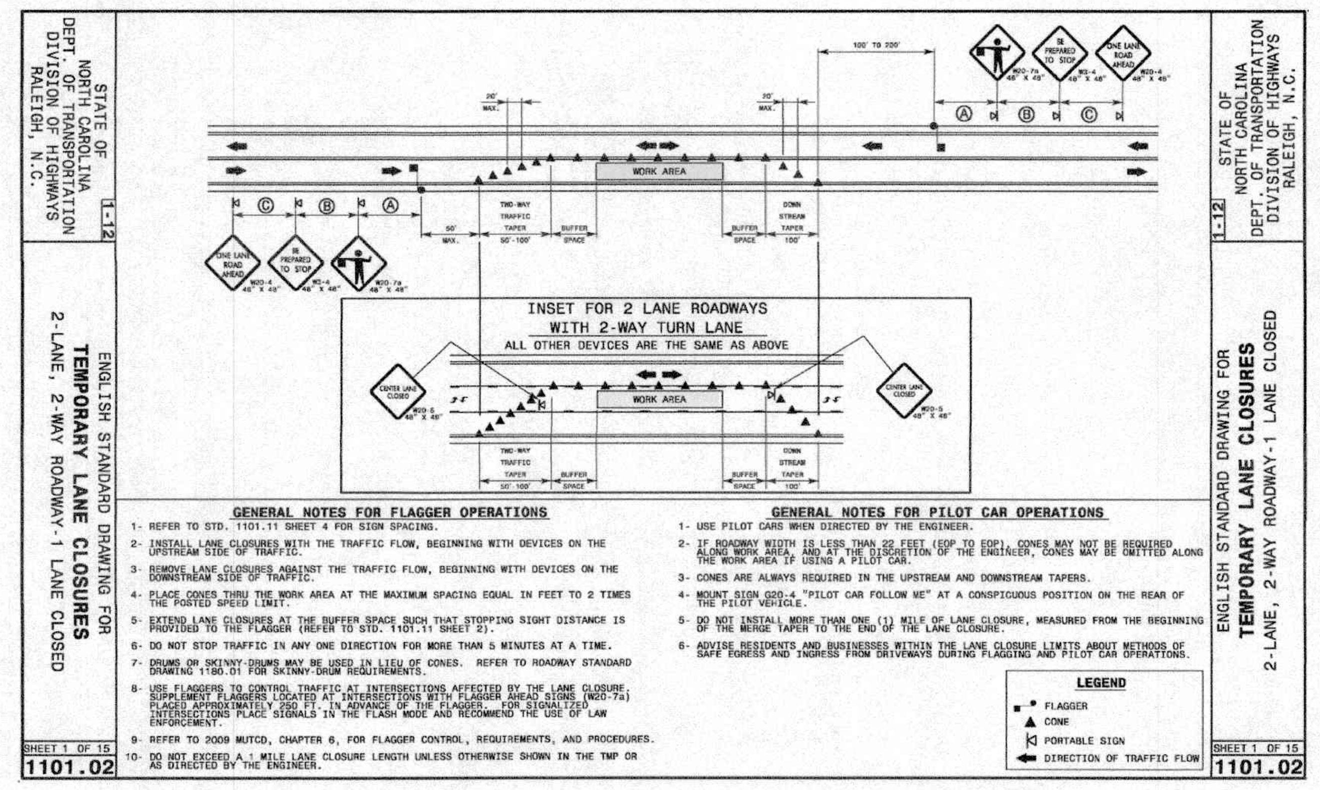


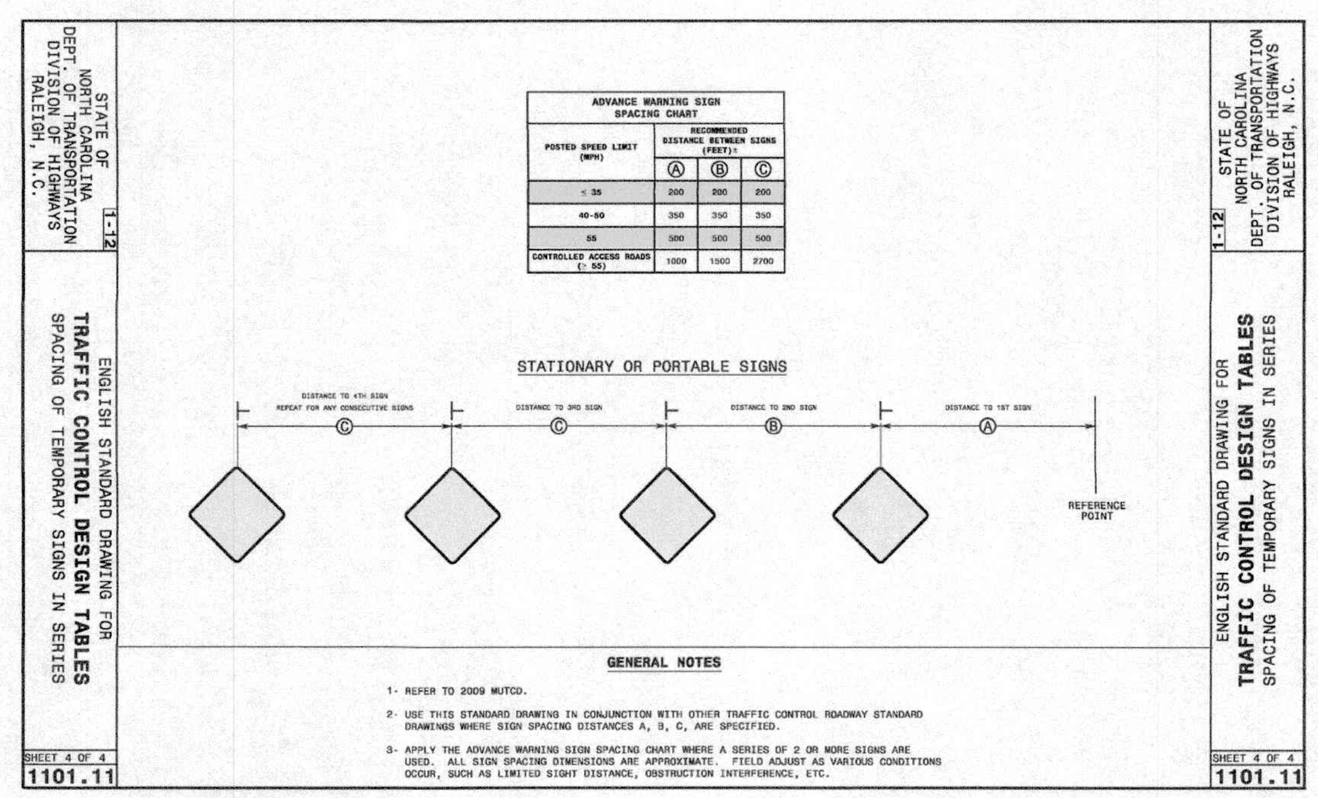




SYMBOL LEGEND

Symbol	Description	Symbol	Description
Ⓕ	FLAGMAN	(hatched)	WORK ZONE
①	FLAGMAN SIGN (W20-7a, 48" x 48")	○	NON-METALIC DRUM W/ TYPE C STEADY BURN WARNING LIGHTS, PER NCDOT STD. #1130.01
②	BE PREPARED TO STOP SIGN (W3-4, 48" x 48")	┻	PORTABLE SIGN
③	ONE LANE ROAD AHEAD SIGN (W20-4, 48" x 48")	←	TRAFFIC DIRECTION





CONSTRUCTION SEQUENCE

1. INSTALL ALL NECESSARY SIGNAGE PER NCDOT STD. 1101.02 (SHT. 1 OF 15) PRIOR TO THE START OF CONSTRUCTION AND ADHERE TO THE GENERAL REQUIREMENTS AS SHOWN.

2. BEGIN PREPARATION OF THE EXISTING SHOULDER FOR PROPOSED CONSTRUCTION.

3. PROVIDE DRUMS, AS SHOWN IN THE PLAN, WHEN GRADING IS BEYOND 3' FROM EDGE OF TRAVEL LANE, PER DETAIL.

4. SAW CUT EXISTING PAVEMENT AS NECESSARY TO PROVIDE CLEAN SURFACE FOR PROPOSED IMPROVEMENTS (1' MAX.).

5. AT THE END OF EACH WORKDAY THE CONTRACTOR SHALL BE REQUIRED TO BACKFILL UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPEN TRAVEL LANE THAT HAS A DROP-OFF OF MORE THAN 3" (SEE BACKFILL DETAIL).

6. COMPLETE COMPACTION OF THE SUBGRADE, BINDER, AND SURFACE COURSES AS PER NCDOT STANDARDS, AND IN CONJUNCTION WITH THE APPROVED DRIVEWAY / ENCROACHMENT AGREEMENT.

TABLE A: BARRICADE WARNING LIGHTS

	TYPE A LOW INTENSITY	TYPE B HIGH INTENSITY	TYPE C LOW INTENSITY
LENS DIRECTIONAL FACE	1 OR 2	1	1 OR 2
FLASH RATE / MINUTE	55 TO 75	55 TO 75	CONSTANT
FLASH DURATION (a)	10%	8%	CONSTANT
MIN. EFFECTIVE INTENSITY (b)	4.0 CANDELAS	35 CANDELAS	--
MINIMUM BEAM CANDLE POWER (b)	--	--	2 CANDLES
HOURS OF OPERATION	DUSK TO DAWN	24 HRS / DAY	DUSK TO DAWN

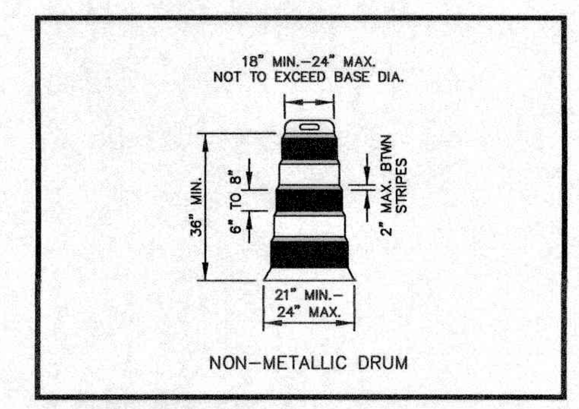
(a) LENGTH OF TIME THAT INSTANTANEOUS INTENSITY IS EQUAL TO OR GREATER THAN EFFECTIVE INTENSITY.

(b) THESE VALUES MUST BE MAINTAINED WITHIN A FULL 9 DEGREES ON EACH SIDE OF THE VERTICAL AXIS, AND 5 DEGREES ABOVE AND 3 DEGREES BELOW THE HORIZONTAL AXIS.

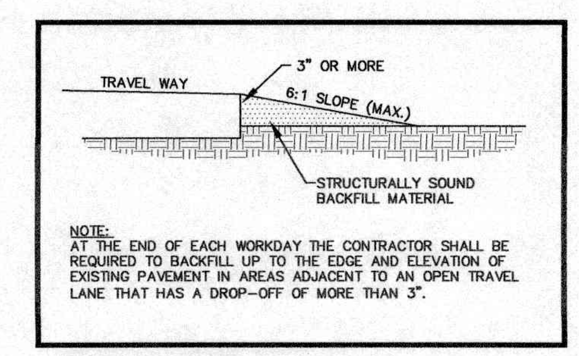
TYPE C STEADY BURN WARNING LIGHTS ARE MOST COMMONLY MOUNTED ON SEPARATE PORTABLE SUPPORTS OR ON TYPE 1 OR TYPE 11 BARRICADES AND ARE INTENDED TO CONTINUALLY WARN THE DRIVER THAT HE IS APPROACHING OR ADJACENT TO A HAZARDOUS AREA.

BARRICADE WARNING LIGHTS ARE PORTABLE, LENS DIRECTED, ENCLOSED LIGHTS. THE COLOR OF THE LIGHT EMITTED SHALL BE YELLOW.

BARRICADE WARNING LIGHTS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) STANDARD FOR FLASHING AND STEADY BURN BARRICADE WARNING LIGHTS (1971) (SEE TABLE A).



DRUM DETAIL
NTS



BACKFILL DETAIL
NTS

GENERAL REQUIREMENTS

A. STREET SPACE IS AT A MINIMUM SO NO MORE SPACE SHOULD BE USED FOR CONSTRUCTION OR MAINTENANCE WORK, THAN IS ABSOLUTELY NECESSARY. THROUGH BARRICADING AND CHANNELIZATION, THE REMAINING STREET SPACE IS TO BE USED TO CARRY THE TRAFFIC AROUND THE WORK AREA IN THE BEST WAY POSSIBLE UNDER PREVAILING CONDITIONS.

B. TRAFFIC CONTROL DEVICES SHALL BE SET UP PRIOR TO THE START OF CONSTRUCTION OR MAINTENANCE OPERATIONS, AND SHALL BE REMOVED OR RELOCATED AS THE WORK IS FINISHED OR WORK CONDITIONS CHANGE. THE AGENCY DOING THE WORK SHALL PATROL THE WORK SITE AS REQUIRED TO ENSURE THAT ALL TRAFFIC CONTROL DEVICES ARE IN PLACE AND OPERATING AT ALL TIMES.

C. ALL TRAFFIC CONTROL SIGNS FOR THE WORK AREA SHALL BE REFLECTORIZED. THE REFLECTIVE MATERIALS USED SHALL BE EQUAL TO OR BETTER THAN THE TYPE I, LEVEL A REFLECTIVE SHEETING REQUIREMENTS IN SECTION 633 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-74).

D. AT NIGHT, ADEQUATE BARRICADES WITH REFLECTORIZED MATERIAL AND LIGHTS ARE REQUIRED TO CALL ATTENTION TO AND TO INDICATE THE ACTUAL LOCATION OF OBSTRUCTIONS AND HAZARDS.

E. WHEN NOT IN USE DURING WORK HOURS OR CONSTRUCTION INACTIVITY, EQUIPMENT SHALL BE PARKED A MINIMUM OF 10' AWAY FROM THE TRAVEL LANE IN SUCH A MANNER AS TO NOT CREATE A SIGHT DISTANCE PROBLEM FOR MOTORISTS.

F. THE MINIMUM WIDTH FOR TEMPORARY TRAVEL LANES IS 11 FEET, HOWEVER, A 12 FOOT LANE IS ADVISABLE AND SHOULD BE PROVIDED WHENEVER POSSIBLE.

G. WHENEVER TRAFFIC MUST BE ROUTED ACROSS THE CENTERLINE, THE TWO DIRECTIONS OF TRAFFIC MUST BE PHYSICALLY SEPARATED. TRAFFIC CONES CAN BE EFFECTIVELY USED FOR THIS PURPOSE DURING DAYLIGHT HOURS; REFLECTORIZED DRUMS MUST BE USED AT NIGHT.

H. TRAFFIC SHALL NOT BE ROUTED ACROSS CENTERLINE WITH CONES OR DRUMS DURING NON-WORKING HOURS. CONTRACTOR MUST BE ON SITE OR CHANGE PAVEMENT MARKINGS APPROPRIATELY.

I. GENERALLY, THE PEAK FLOW OF TRAFFIC OCCURS BETWEEN THE HOURS OF 6-9 AM AND 4-6:30 PM MONDAY THROUGH FRIDAY. DURING THESE HOURS, CONSTRUCTION ACTIVITY WHICH INVOLVE A LANE CLOSURE WILL NOT BE ALLOWED ON THOROUGHFARE STREETS EXCEPT IN EMERGENCY SITUATIONS OR WITH THE APPROVAL FROM THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.

J. THE AGENCY DOING THE WORK SHALL PROVIDE FLAGGERS AND/OR POLICE CONTROL WHEN REQUIRED. CONTRACTOR MAY ALSO BE REQUIRED TO PROVIDE A UNIFORMED OFFICER TO CONTROL TRAFFIC WHEN WORKING IN AND AROUND A SIGNALIZED INTERSECTION.

K. EVERY ATTEMPT SHALL BE MADE TO SCHEDULE AND EXPEDITE THE WORK TO CAUSE THE LEAST INCONVENIENCE TO THE TRAVELING PUBLIC.

L. IN SITUATIONS NOT COVERED IN THIS DESIGN, THE PROTECTION OF THE TRAVELING PUBLIC AND THE PROTECTION OF THE WORKERS ON SITE WILL DICTATE THE MEASURES TO BE TAKEN CONSISTENT WITH THE WORK AREA TRAFFIC CONTROL HANDBOOK (WATCH).

M. ** DELETED **

N. WHERE COMPLETE STREET CLOSURE IS NECESSARY, THE DEPARTMENT OF TRANSPORTATION WILL COORDINATE CLOSURE OF THE STREET AND IF NECESSARY FULLY SIGN A DETOUR ROUTE.

N. THE CITY ENGINEER OR DIRECTOR OF THE DEPARTMENT OF TRANSPORTATION OR THEIR REPRESENTATIVES ARE AUTHORIZED TO STOP ANY CONSTRUCTION OR MAINTENANCE ACTIVITY WHICH IS NOT PROPERLY SIGNED AND BARRICADED AS REQUIRED BY THIS STANDARD, THE WATCH, AND THE MUTCD UNTIL SUCH REQUIREMENTS ARE MET.

O. THIS DESIGN STANDARD CANNOT BE USED FOR ALL ROADWAY CONSTRUCTION SITUATIONS. IT IS INTENDED ONLY TO BE USED AS A GUIDELINE. SPECIFIC SITUATIONS MAY REQUIRE ENGINEERING JUDGMENT IN THE PLACEMENT OF TRAFFIC CONTROL DEVICES BECAUSE OF LIMITED VERTICAL AND/OR HORIZONTAL SIGHT DISTANCE.

P. WHEN PERSONNEL AND/OR EQUIPMENT ARE WITHIN 3' OF THE EDGE OF AN OPEN TRAVEL LANE, THE CONTRACTOR SHALL REFER TO THE WATCH FOR PROPER LANE CLOSURE.

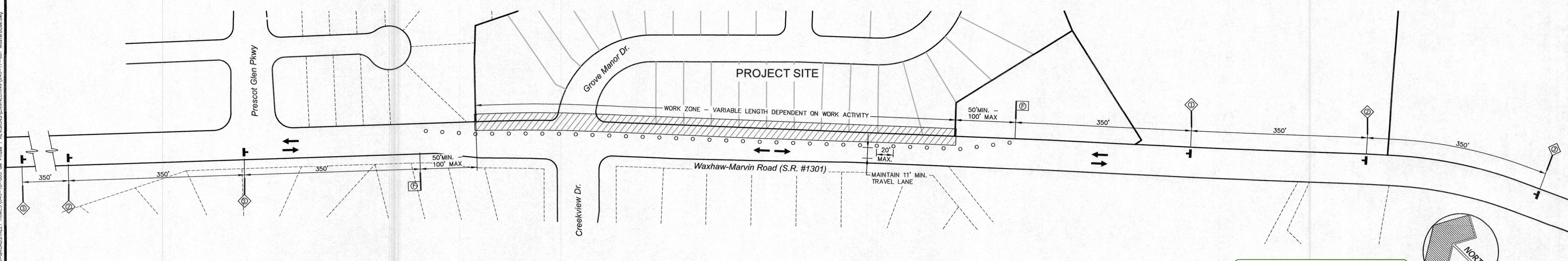
Q. OPERATIONAL SIGNS ARE GENERALLY MOUNTED ON PORTABLE SUPPORT. THESE ARE USUALLY USED FOR SHORT-TERM OPERATION TO WARN AND GUIDE TRAFFIC. ADVANCED WARNING SIGNS (CONSTRUCTION AHEAD) SHALL BE MOUNTED ON STATIONARY SUPPORTS SEVEN (7) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION OF THE ROADWAY.

R. ALL DRUMS SHALL BE BALLASTED IN SUCH A MANNER THAT THEY WILL BE STABLE UNDER WIND AND VEHICLE ACTION. BALLASTING SHALL BE DONE WITH SANDBAGS OR OTHER YIELDING MATERIAL SITUATED IN THE BASE OF THE DRUMS.

S. CONSTRUCTION WORK SHALL NOT BE ALLOWED ON BOTH SIDES OF THE ROAD SIMULTANEOUSLY WITHIN THE SAME AREA, UNLESS THE ROADWAY IS MEDIAN DIVIDED.

T. AT THE END OF EACH WORK DAY THE CONTRACTORS SHALL BACKFILL UP TO THE EDGE AND ELEVATION OF THE EXISTING PAVEMENT AREAS WITHIN 2 FEET OF AN OPEN TRAVEL LANE THAT INCLUDE A DROP OFF OF MORE THAN 3 INCHES IN ACCORDANCE WITH WATCH. SEE DETAIL B, THIS SHEET.

U. PAVEMENT MARKINGS ARE TO BE INSTALLED BY THE CONTRACTOR. PRE-LINES MUST BE APPROVED PRIOR TO PLACEMENT OF THE PAVEMENT MARKINGS.



PLAN VIEW
NTS

APPROVED
By Max Hsiang at 3:40 pm, Jun 26, 2019

S:_MESA\2018\043-BROADSTREET HOMES\043-18-003 GM Phase 1 REVISIONS\ENGINEERING\043-17-001 MasterBase.dwg

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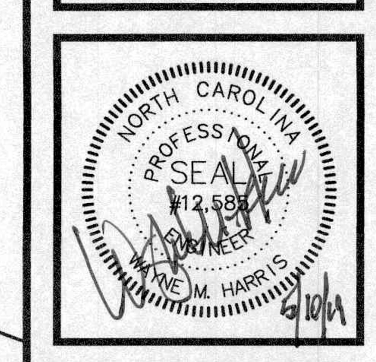
TRAFFIC CONTROL PLAN

Grove Manor Sub. - Phase 1

Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

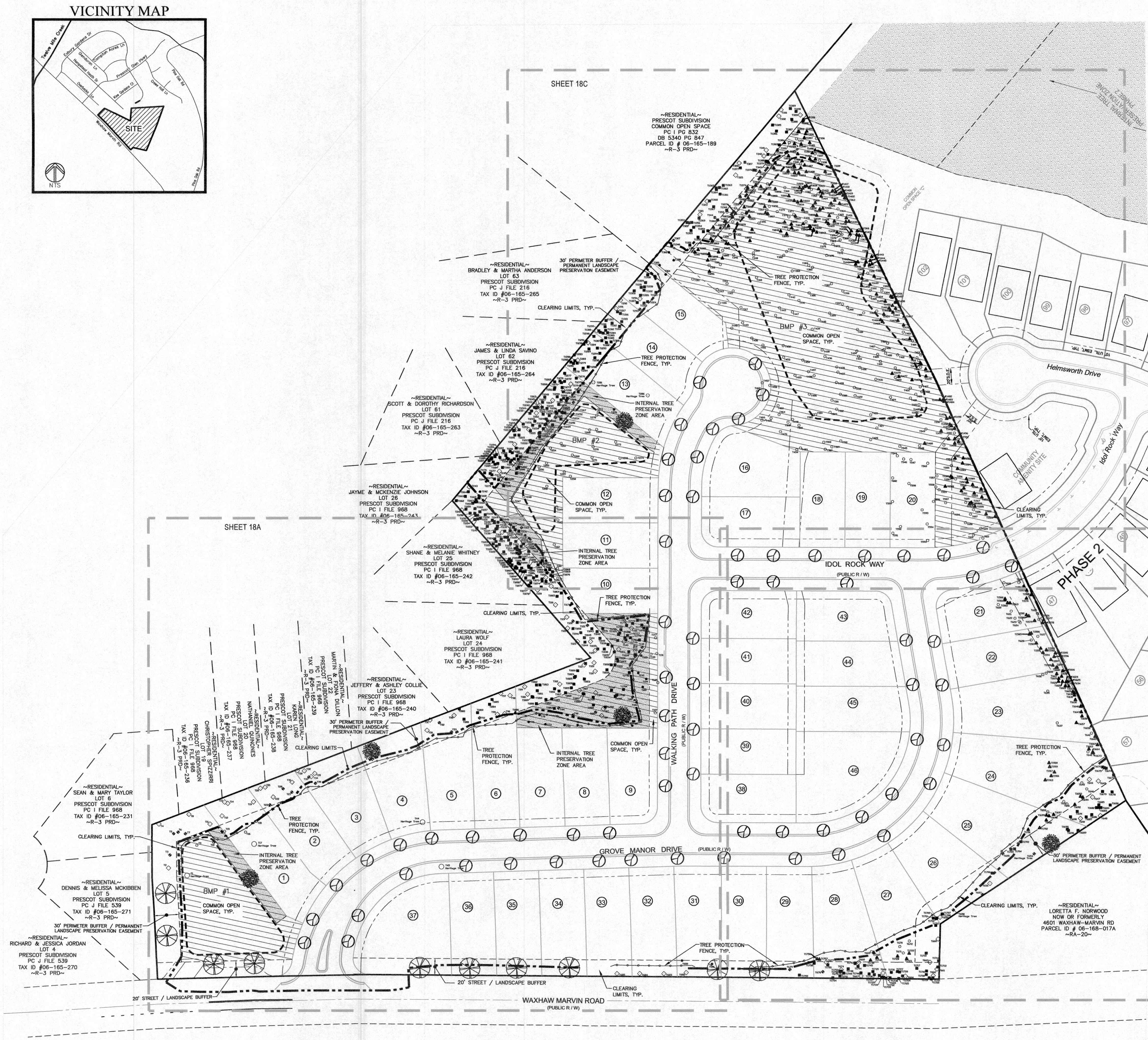
Revisions
#10 - 11/14/18: Revised per review comments and revised owner information.
#11 - 3/26/19: Updated Design Firm information.

Job No.	043-17-001
Date	3/1/2018
Proj. Mgr.	WMH
Drawn	AW / SCE



Scale: NTS

Sheet No. 17A
Of 26



TREE SUMMARY TABLE

TREES TO REMAIN
(To be undisturbed)

SYMBOL	ITEM	TOTAL TREES / DBH: TOTAL TREES	TOTAL TREES / DBH: TOTAL DBH (Inches)	
◇	TREES TO REMAIN	101	1061	NO MITIGATION REQUIRED

TREES TO BE REMOVED WITHOUT MITIGATION
(Within areas **outside** of the Permeter Buffers/Tree Preservation Areas, Street/Landscape Buffers and Internal Tree Protection Zones)

SYMBOL	ITEM	TOTAL TREES / DBH: TOTAL TREES	TOTAL TREES / DBH: TOTAL DBH (Inches)	
⊙	TREES TO BE REMOVED WITHOUT MITIGATION	254	3192	NO MITIGATION REQUIRED
	HERITAGE TREES TO BE REMOVED WITHOUT MITIGATION	6	260	
	TOTAL TREES TO BE REMOVED WITHOUT MITIGATION	260	3452	

TREES TO BE MITIGATED
(Within the Permeter Buffers/Tree Preservation Areas, Street/Landscape Buffers and Internal Tree Protection Zones)

SYMBOL	ITEM	TOTAL TREES / DBH: TOTAL TREES	TOTAL TREES / DBH: TOTAL DBH (Inches)	MITIGATION REQUIRED: TOTAL TREES REQUIRED FOR MITIGATION	MITIGATION REQUIRED: TOTAL DBH REQUIRED FOR MITIGATION (trees assumed to be at 2" DBH when planted)
	TREES TO REMAIN (Unable to meet "Required Critical Root Zone" and "Tree Protection Area", per U.D.O. Section 9.21.8.B.1)	29	445	252	504
	HERITAGE TREES TO REMAIN (Unable to meet "Required Critical Root Zone" and "Tree Protection Area", per U.D.O. Section 9.21.8.B.1)	2	72	30	60
●	TREES TO BE REMOVED (OF VARYING DBH)	24	311	177	354
	TOTAL TREES (OF VARYING DBH) REQUIRING MITIGATION	55	828	459	918

EXISTING TREES TO BE USED FOR MITIGATION PURPOSES
(Within the Permeter Buffers/Tree Preservation Areas, Street/Landscape Buffers and Internal Tree Protection Zones)

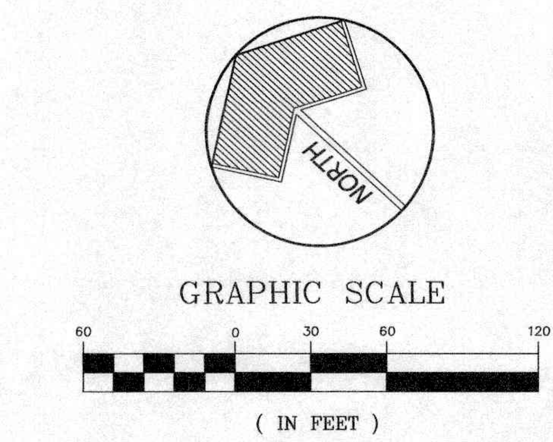
SYMBOL	ITEM	TOTAL TREES / DBH: TOTAL TREES	TOTAL TREES / DBH: TOTAL DBH (Inches)	
■	EXISTING TREES (WITH SIZES OF 2" TO UNDER 8")	403	1539	FOR MITIGATION USE

PROPOSED TREES TO BE PLANTED
(To meet the 1 tree per 2500 square feet requirement, per U.D.O. Section 9.21.8.A.(2).3)

SYMBOL	ITEM	TOTAL TREES / DBH: TOTAL TREES	TOTAL TREES / DBH: TOTAL DBH (Inches)	
or	PROPOSED TREES (See Proposed Landscape Plan, Sheet 9 for Planting Chart and tree symbol designations.)	15	30	NO MITIGATION
△	EXISTING TREES, PREVIOUSLY USED FOR MITIGATION PURPOSES, TO BE REMOVED.			

NOTES:

1. See Sheets 18A, 18B, & 18C for enlarged tree mitigation plans.
2. See Sheets as follows for Tree Summary Tables:
   A. Existing Trees To Be Removed And Mitigated - Sheets 19 & 19A
   B. Existing Trees To Remain But Mitigated - Sheet 19B
   C. Existing Heritage Trees On Site - Sheet 20
   D. Existing Trees To Be Removed - Mitigation Not Required - Sheet 20
   E. Existing Trees Remaining (To Be Undisturbed) - Sheet 20
3. All tree mitigation is achieved by preservation of existing trees that are less than 8" DBH for large maturing or 4" DBH for understory trees. These trees used for mitigation credit have been located by field survey, and are shown on Sheets 18-18C.
4. Per the Town of Waxhaw, the only trees that are required to be shown on the plans and mitigated for removal, are the trees within the street/landscape buffers, perimeter buffers/permanent tree preservation easements and the internal tree protection zones (per the Tree Survey submitted with the approved rezoning plan). Six (6) of the eight heritage trees are not located in these areas, and therefore will be included in the tree removal permit application.
5. Two (2) heritage trees are located within the Perimeter Buffer / Tree Preservation Area, and will not be removed, however, due to proposed lot grading the "Required Critical Root Zone" and "Tree Protection Area" requirements (per UDO Section 9.21.8.b.1) cannot be satisfied, and therefore mitigation is provided.
6. The dashed line indicates the limits of the proposed BMP's.



APPROVED
By Max Hsiang at 3:40 pm, Jun 26, 2019

Rev. #9 Summary for This Sheet:
The following revisions have been made to Sheets 18, 18A, 18B, & 18C:
- Revisions summarized on Sheet 3 (Proposed Site Plan).
- Revised tree information as necessary for the Site Plan revisions.
- Added new symbol for existing trees previously used for mitigation purposes, to be removed.
- Updated Tree Summary Table.

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PROPOSED TREE PLANTING / MITIGATION PLAN

Grove Manor Sub. - Phase 1

Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

Revisions
#2 - 1/16/18: Revised per review comments.
#4 - 3/1/18: Revised per review comments.
#9 - 9/7/18: Revised per Zoning Amendment and addition of Phase 2.
#10 - 11/14/18: Revised owner information.
#11 - 3/26/19: Updated Design Firm information.

Job No.	043-17-001
Date	10/27/2017
Proj. Mgr.	WMH
Drawn	AW / SCE

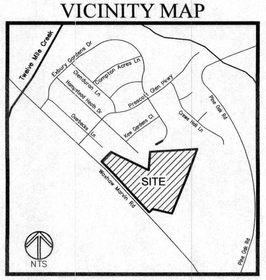
NORTH CAROLINA PROFESSIONAL SEAL #12,585 ENGINEER WAYNE M. HARRIS
5/30/19

Scale:	1" = 60'

Sheet No. **18** of 26

S:_MESA\2018\043-BROADSTREET HOMES\043-18-003 GM Phase 1 REVISIONS\ENGINEERING\TreeMitigation-Shts17-19\043-17-001 Sht18 TreePlantingMitigationPlan.DWG

VICINITY MAP



GRAPHIC SCALE

30 0 15 30 60

(IN FEET)
1 inch = 30 ft.

TREE SUMMARY TABLE

TREES TO REMAIN
(To be undisturbed)

SYMBOL	ITEM	TOTAL TREES / DBH: TOTAL TREES	TOTAL TREES / DBH: TOTAL DBH (Inches)	
◇	TREES TO REMAIN	101	1061	NO MITIGATION REQUIRED

TREES TO BE REMOVED WITHOUT MITIGATION
(Within areas outside of the Permeter Buffers/Tree Preservation Areas, Street/Landscape Buffers and Internal Tree Protection Zones)

SYMBOL	ITEM	TOTAL TREES / DBH: TOTAL TREES	TOTAL TREES / DBH: TOTAL DBH (Inches)	
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	HERITAGE TREES TO BE REMOVED WITHOUT MITIGATION	6	260	
	TOTAL TREES TO BE REMOVED WITHOUT MITIGATION	260	3452	

TREES TO BE MITIGATED
(Within the Permeter Buffers/Tree Preservation Areas, Street/Landscape Buffers and Internal Tree Protection Zones)

SYMBOL	ITEM	TOTAL TREES / DBH: TOTAL TREES	TOTAL TREES / DBH: TOTAL DBH (Inches)	MITIGATION REQUIRED: TOTAL TREES REQUIRED FOR MITIGATION	MITIGATION REQUIRED: TOTAL DBH REQUIRED FOR MITIGATION (trees assumed to be at 2" DBH when planted)
	TREES TO REMAIN (Unable to meet "Required Critical Root Zone" and "Tree Protection Area", per U.D.O. Section 9.21.8.B.1)	29	445	252	504
	HERITAGE TREES TO REMAIN (Unable to meet "Required Critical Root Zone" and "Tree Protection Area", per U.D.O. Section 9.21.8.B.1)	2	72	30	60
●	TREES TO BE REMOVED (OF VARYING DBH)	24	311	177	354
	TOTAL TREES (OF VARYING DBH) REQUIRING MITIGATION	55	828	459	918

EXISTING TREES TO BE USED FOR MITIGATION PURPOSES
(Within the Permeter Buffers/Tree Preservation Areas, Street/Landscape Buffers and Internal Tree Protection Zones)

SYMBOL	ITEM	TOTAL TREES / DBH: TOTAL TREES	TOTAL TREES / DBH: TOTAL DBH (Inches)	
■	EXISTING TREES (WITH SIZES OF 2" TO UNDER 8")	403	1539	FOR MITIGATION USE

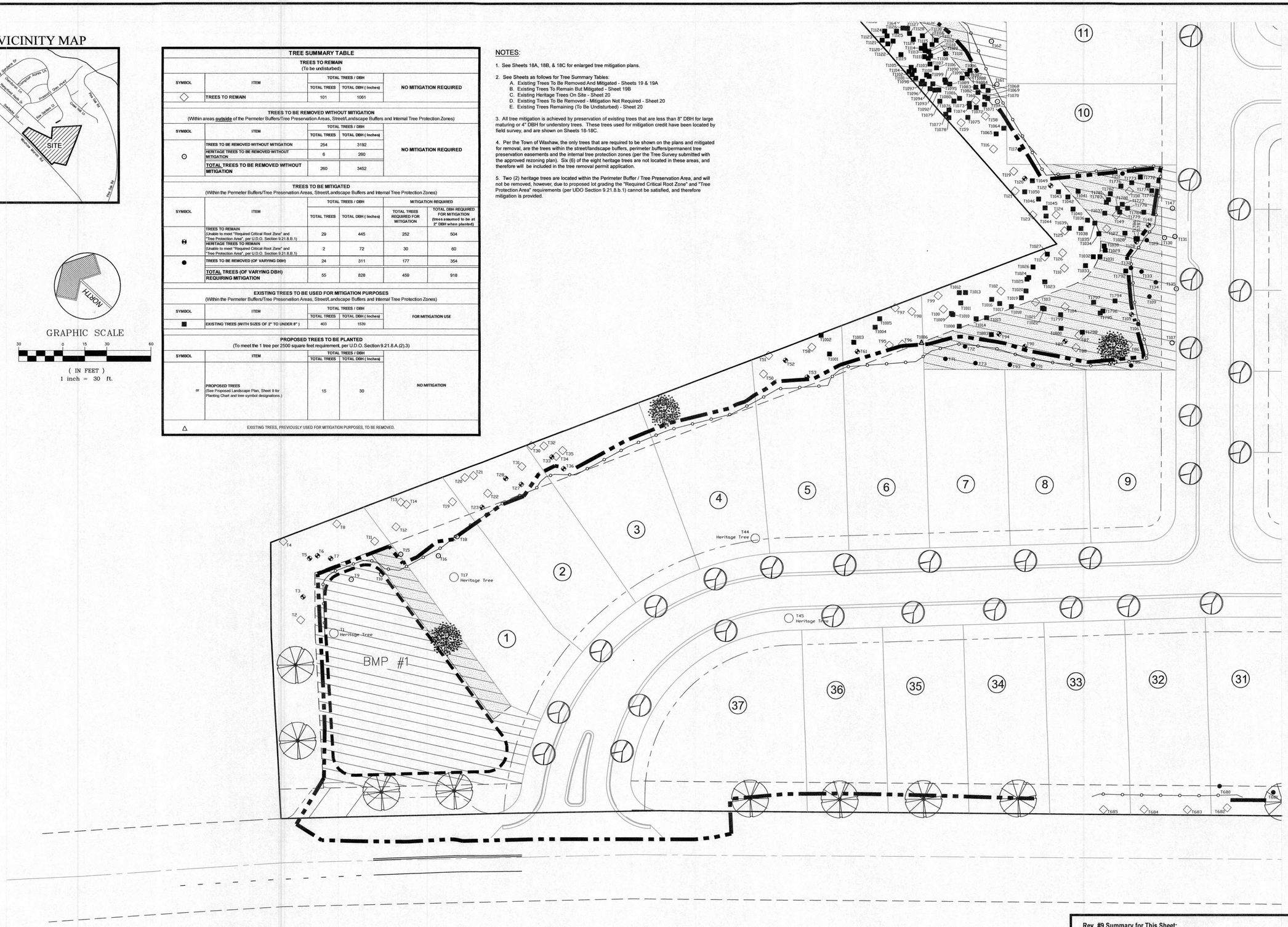
PROPOSED TREES TO BE PLANTED
(To meet the 1 tree per 2500 square feet requirement, per U.D.O. Section 9.21.8.A.(2),3)

SYMBOL	ITEM	TOTAL TREES / DBH: TOTAL TREES	TOTAL TREES / DBH: TOTAL DBH (Inches)	
or	PROPOSED TREES (See Proposed Landscape Plan, Sheet 9 for Planting Chart and tree symbol designations.)	15	30	NO MITIGATION

△ EXISTING TREES, PREVIOUSLY USED FOR MITIGATION PURPOSES, TO BE REMOVED.

NOTES:

1. See Sheets 18A, 18B, & 18C for enlarged tree mitigation plans.
2. See Sheets as follows for Tree Summary Tables:
   A. Existing Trees To Be Removed And Mitigated - Sheets 19 & 19A
   B. Existing Trees To Remain But Mitigated - Sheet 19B
   C. Existing Heritage Trees On Site - Sheet 20
   D. Existing Trees To Be Removed - Mitigation Not Required - Sheet 20
   E. Existing Trees Remaining (To Be Undisturbed) - Sheet 20
3. All tree mitigation is achieved by preservation of existing trees that are less than 8" DBH for large maturing or 4" DBH for understory trees. These trees used for mitigation credit have been located by field survey, and are shown on Sheets 18-18C.
4. Per the Town of Waxhaw, the only trees that are required to be shown on the plans and mitigated for removal, are the trees within the street/landscape buffers, perimeter buffers/permanent tree preservation easements and the internal tree protection zones (per the Tree Survey submitted with the approved rezoning plan). Six (6) of the eight heritage trees are not located in these areas, and therefore will be included in the tree removal permit application.
5. Two (2) heritage trees are located within the Perimeter Buffer / Tree Preservation Area, and will not be removed, however, due to proposed lot grading the "Required Critical Root Zone" and "Tree Protection Area" requirements (per UDO Section 9.21.8.b.1) cannot be satisfied, and therefore mitigation is provided.



APPROVED
By Max Hsiang at 3:41 pm, Jun 26, 2019

Rev. #9 Summary for This Sheet:
The following revisions have been made to Sheets 18, 18A, 18B, & 18C:
- Revisions summarized on Sheet 3 (Proposed Site Plan).
- Revised tree information as necessary for the Site Plan revisions.
- Added new symbol for existing trees previously used for mitigation purposes, to be removed.
- Updated Tree Summary Table.

HARRIS ENGINEERING
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SUITE 231
CHARLOTTE, NC 28209

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NC #C-1170 & SC #C00946

PROPOSED TREE PLANTING / MITIGATION PLAN

Grove Manor Sub. - Phase 1

Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

Revisions
#2 - 1/16/18: Added Sheet 18A per review comments.
#4 - 4/13/18: Revised per Planning Board comments.
#9 - 9/7/18: Revised per Zoning Amendment and addition of Phase 2.
#10 - 11/14/18: Revised owner information.
#11 - 3/26/19: Updated Design Firm information.

Job No.	043-17-001
Date	1/16/2018
Proj. Mgr.	WMH
Drawn	AW / SCE

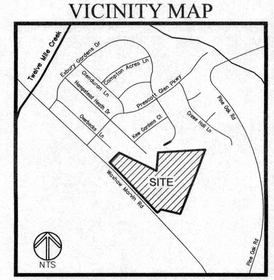
NORTH CAROLINA PROFESSIONAL SEAL #22,384 ENGINEER WAYNE M. HARRIS

Scale:	1" = 30'

Sheet No.
18A
of 26

S:_MESA\2018\043-BROUGSTREET HOMES\043-18-003 GM Phase 1 REVISIONS\ENGINEERING\Treemitigation-Sht17-19\043-17-001 Sht18 TreePlantingMitigationPlan.DWG

VICINITY MAPP



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TREE SUMMARY TABLE

TREES TO REMAIN
(To be undisturbed)

SYMBOL	ITEM	TOTAL TREES / DBH: TOTAL TREES	TOTAL TREES / DBH: TOTAL DBH (Inches)	
◇	TREES TO REMAIN	101	1061	NO MITIGATION REQUIRED

TREES TO BE REMOVED WITHOUT MITIGATION
(Within areas **outside** of the Permeter Buffers/Tree Preservation Areas, Street/Landscape Buffers and Internal Tree Protection Zones)

SYMBOL	ITEM	TOTAL TREES / DBH: TOTAL TREES	TOTAL TREES / DBH: TOTAL DBH (Inches)	
⊙	TREES TO BE REMOVED WITHOUT MITIGATION	254	3192	NO MITIGATION REQUIRED
	HERITAGE TREES TO BE REMOVED WITHOUT MITIGATION	6	260	
	TOTAL TREES TO BE REMOVED WITHOUT MITIGATION	260	3452	

TREES TO BE MITIGATED
(Within the Permeter Buffers/Tree Preservation Areas, Street/Landscape Buffers and Internal Tree Protection Zones)

SYMBOL	ITEM	TOTAL TREES / DBH: TOTAL TREES	TOTAL TREES / DBH: TOTAL DBH (Inches)	MITIGATION REQUIRED: TOTAL TREES REQUIRED FOR MITIGATION	MITIGATION REQUIRED: TOTAL DBH REQUIRED FOR MITIGATION (trees assumed to be at 2" DBH when planted)
⊕	TREES TO REMAIN (Unable to meet "Required Critical Root Zone" and "Tree Protection Area", per U.D.O. Section 9.21.8.B.1)	29	445	252	504
	HERITAGE TREES TO REMAIN (Unable to meet "Required Critical Root Zone" and "Tree Protection Area", per U.D.O. Section 9.21.8.B.1)	2	72	30	60
●	TREES TO BE REMOVED (OF VARYING DBH)	24	311	177	354
	TOTAL TREES (OF VARYING DBH) REQUIRING MITIGATION	55	828	459	918

EXISTING TREES TO BE USED FOR MITIGATION PURPOSES
(Within the Permeter Buffers/Tree Preservation Areas, Street/Landscape Buffers and Internal Tree Protection Zones)

SYMBOL	ITEM	TOTAL TREES / DBH: TOTAL TREES	TOTAL TREES / DBH: TOTAL DBH (Inches)	
■	EXISTING TREES (WITH SIZES OF 2" TO UNDER 8")	403	1539	FOR MITIGATION USE

PROPOSED TREES TO BE PLANTED
(To meet the 1 tree per 2500 square feet requirement, per U.D.O. Section 9.21.8.A.(2).3)

SYMBOL	ITEM	TOTAL TREES / DBH: TOTAL TREES	TOTAL TREES / DBH: TOTAL DBH (Inches)	
or	PROPOSED TREES (See Proposed Landscape Plan, Sheet 9 for Planting Chart and tree symbol designations.)	15	30	NO MITIGATION

△ EXISTING TREES, PREVIOUSLY USED FOR MITIGATION PURPOSES, TO BE REMOVED.

NOTES:

1. See Sheets 18A, 18B, & 18C for enlarged tree mitigation plans.

2. See Sheets as follows for Tree Summary Tables:
   A. Existing Trees To Be Removed And Mitigated - Sheets 19 & 19A
   B. Existing Trees To Remain But Mitigated - Sheet 19B
   C. Existing Heritage Trees On Site - Sheet 20
   D. Existing Trees To Be Removed - Mitigation Not Required - Sheet 20
   E. Existing Trees Remaining (To Be Undisturbed) - Sheet 20

3. All tree mitigation is achieved by preservation of existing trees that are less than 8" DBH for large maturing or 4" DBH for understory trees. These trees used for mitigation credit have been located by field survey, and are shown on Sheets 18-18C.

4. Per the Town of Waxhaw, the only trees that are required to be shown on the plans and mitigated for removal, are the trees within the street/landscape buffers, perimeter buffers/permanent tree preservation easements and the internal tree protection zones (per the Tree Survey submitted with the approved rezoning plan). Six (6) of the eight heritage trees are not located in these areas, and therefore will be included in the tree removal permit application.

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APPROVED
By Max Hsiang at 3:41 pm, Jun 26, 2019

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Revisions
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#4 - 3/1/18: Revised per review comments.
#6 - 6/7/18: Revised per Zoning Amendment and addition of Phase 2.
#8 - 11/1/18: Revised per review comments.
#11 - 3/26/19: Updated Design Firm information.

Job No.	043-17-001
Date	1/16/2018
Proj. Mgr.	WMH
Drawn	AW / SCE

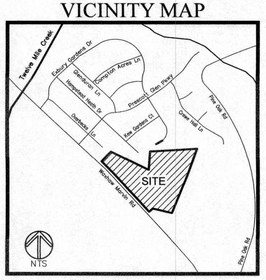
NORTH CAROLINA PROFESSIONAL SEAL #12585 ENGINEER WILLIAM H. HARRIS 6/26/19

Scale: 1" = 30'

Sheet No. **18B** of 26

S:_MEGA\2018\043-BROADSTREET HOMES\ENGINEERING\TreeMitigation-Sheet7-19\043-17-001 Sh18 TreePlantingMitigationPlan.DWG

VICINITY MAP



GRAPHIC SCALE

30 0 15 30 60

(IN FEET)
1 inch = 30 ft.

TREE SUMMARY TABLE

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(To be undisturbed)

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NOTES:

1. See Sheets 18A, 18B, & 18C for enlarged tree mitigation plans.

2. See Sheets as follows for Tree Summary Tables:
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Revisions
#2 - 1/16/18: Added Sheet 18C per review comments.
#6 - 5/7/18: Revised per review comments.
#9 - 10/16/18: Revised per review comments and addition of Phase 2.
#10 - 11/14/18: Revised owner information.
#11 - 3/26/19: Updated Design Firm information.

Job No.	043-17-001
Date	1/16/2018
Proj. Mgr.	WMH
Drawn	AW / SCE

NORTH CAROLINA PROFESSIONAL SEAL #2358 ENGINEER WILLIAM M. HARRIS 6/10/19

Scale: 1" = 30'

Sheet No. **18C** Of 26

S:_MESA\2018\043-BROADSTREET HOMES\043-1a-003 GM Phase 1 REVISIONS\ENGINEERING\Treeplan\grading\Grd17-19\043-17-003 Grd18 TreePlantingMitigationPlan.DWG

Existing Trees To Be Removed And Mitigated

FOR SMALL MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 4" AND LARGE MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 8"					EXISITNG TREES TO BE USED FOR MITIGATION CREDIT			
TREE NUMBER	TREE SPECIES	TREE DBH (Inches)	TOTAL TREES REQUIRED FOR MITIGATION	LOCATION (TREE PRESERVATION AREAS)	TREE NUMBER	TREE SPECIES	TREE DBH (Inches)	LOCATION
~~T16~~	~~SWEET GUM~~	~~10~~	~~12~~	~~INTERNAL TREE PRESERVATION ZONE~~	~~T1020~~	~~HICKORY~~	~~5~~	~~PERIMETER BUFFER~~
					~~T1021~~	~~HICKORY~~	~~4~~	~~INTERNAL TREE PRESERVATION ZONE~~
					~~T1022~~	~~HICKORY~~	~~4~~	~~INTERNAL TREE PRESERVATION ZONE~~
					~~T1023~~	~~HICKORY~~	~~2~~	~~PERIMETER BUFFER~~
					~~T1024~~	~~HICKORY~~	~~2~~	~~PERIMETER BUFFER~~
					~~T1025~~	~~HICKORY~~	~~3~~	~~PERIMETER BUFFER~~
					T1026	MAPLE	2	PERIMETER BUFFER
					T1027	MAPLE	7	PERIMETER BUFFER
					T1028	MAPLE	4	INTERNAL TREE PRESERVATION ZONE
					T1029	BEECH	4	INTERNAL TREE PRESERVATION ZONE
					T1030	BEECH TRIPLE	6	INTERNAL TREE PRESERVATION ZONE
					T1031	OAK	4	INTERNAL TREE PRESERVATION ZONE
~~T18~~	~~OAK (RED)~~	~~16~~	~~9~~	~~INTERNAL TREE PRESERVATION ZONE~~	T1772	POPLAR	5	INTERNAL TREE PRESERVATION ZONE
					T1773	GUM	2	INTERNAL TREE PRESERVATION ZONE
					T1774	MAPLE	5	INTERNAL TREE PRESERVATION ZONE
					T1775	MAPLE	6	INTERNAL TREE PRESERVATION ZONE
					T1776	POPLAR	4	INTERNAL TREE PRESERVATION ZONE
					T1777	POPLAT	6	INTERNAL TREE PRESERVATION ZONE
					T1778	MAPLE	4	INTERNAL TREE PRESERVATION ZONE
					T1779	POPLAR	7	INTERNAL TREE PRESERVATION ZONE
T71	OAK (SCARLET)	24	12	INTERNAL TREE PRESERVATION ZONE	T1780	GUM	5	INTERNAL TREE PRESERVATION ZONE
					T1781	GUM	7	INTERNAL TREE PRESERVATION ZONE
					T1782	GUM	7	INTERNAL TREE PRESERVATION ZONE
					T1783	GUM	3	INTERNAL TREE PRESERVATION ZONE
					T1784	BEECH	5	INTERNAL TREE PRESERVATION ZONE
					T1786	MAPLE	3	INTERNAL TREE PRESERVATION ZONE
					T1787	POPLAR	5	INTERNAL TREE PRESERVATION ZONE
					T1792	POPLAR	4	INTERNAL TREE PRESERVATION ZONE
					T1794	MAPLE	5	INTERNAL TREE PRESERVATION ZONE
					T1795	HICKORY	7	INTERNAL TREE PRESERVATION ZONE
					T1796	MAPLE	7	INTERNAL TREE PRESERVATION ZONE
					T1797	HICKORY	2	INTERNAL TREE PRESERVATION ZONE
					T1798	MAPLE	7	INTERNAL TREE PRESERVATION ZONE
T72	OAK (RED)	12	6	INTERNAL TREE PRESERVATION ZONE	T1799	MAPLE	2	INTERNAL TREE PRESERVATION ZONE
					T1800	MAPLE	5	INTERNAL TREE PRESERVATION ZONE
					T1803	MAPLE	7	INTERNAL TREE PRESERVATION ZONE
					T1091	POPLAR	2	PERIMETER BUFFER
					T1092	GUM	2	PERIMETER BUFFER
					T1093	OAK	2	PERIMETER BUFFER
T73	SWEET GUM	12	6	INTERNAL TREE PRESERVATION ZONE	T1094	POPLAR	4	PERIMETER BUFFER
					T1095	POPLAR	5	PERIMETER BUFFER
					T1096	POPLAR	2	PERIMETER BUFFER
					T1097	POPLAR	4	PERIMETER BUFFER
					T1098	GUM	5	PERIMETER BUFFER
					T1099	POPLAR	3	PERIMETER BUFFER
T85	SWEET GUM	12	6	INTERNAL TREE PRESERVATION ZONE	T1100	GUM	3	PERIMETER BUFFER
					T1101	POPLAR	2	PERIMETER BUFFER
					T1102	POPLAR	7	PERIMETER BUFFER
					T1103	POPLAR	7	PERIMETER BUFFER
					T1104	POPLAR	3	PERIMETER BUFFER
					T1105	POPLAR	3	PERIMETER BUFFER
T91	OAK (RED)	9	6	INTERNAL TREE PRESERVATION ZONE	T1117	POPLAR	3	PERIMETER BUFFER
					T1118	GUM	6	PERIMETER BUFFER
					T1119	GUM	3	PERIMETER BUFFER
					T1120	DOGWOOD	2	PERIMETER BUFFER
					T1121	MAPLE	3	PERIMETER BUFFER
					T1122	GUM	3	PERIMETER BUFFER
T93	OAK (RED)	22	12	INTERNAL TREE PRESERVATION ZONE	T1123	MAPLE	2	PERIMETER BUFFER
					T1124	POPLAR	4	PERIMETER BUFFER
					T1125	POPLAR	4	PERIMETER BUFFER
					T1126	MAPLE	2	PERIMETER BUFFER
					T1127	HICKORY	3	PERIMETER BUFFER
					T1128	POPLAR	4	PERIMETER BUFFER
					T1129	BEECH	3	PERIMETER BUFFER
					T1130	BEECH	7	PERIMETER BUFFER
					T1131	POPLAR	2	INTERNAL TREE PRESERVATION ZONE
					T1132	POPLAR	2	INTERNAL TREE PRESERVATION ZONE
					T1133	POPLAR	3	INTERNAL TREE PRESERVATION ZONE
					T1134	POPLAR	3	INTERNAL TREE PRESERVATION ZONE
T106	SWEET GUM	14	9	INTERNAL TREE PRESERVATION ZONE	T1142	POPLAR	3	PERIMETER BUFFER
					T1144	POPLAR	5	PERIMETER BUFFER
					T1145	POPLAR	3	PERIMETER BUFFER
					T1146	POPLAR	5	PERIMETER BUFFER
					T1143	POPLAR	3	PERIMETER BUFFER
					T1149	MAPLE DBL	4	PERIMETER BUFFER
					T1151	DOGWOOD	3	PERIMETER BUFFER
					T1152	DOGWOOD	3	PERIMETER BUFFER
					T1153	MAPLE	2	PERIMETER BUFFER
T109	SWEET GUM	10	6	INTERNAL TREE PRESERVATION ZONE	T1154	DOGWOOD	3	PERIMETER BUFFER
					T1155	CEDAR	3	PERIMETER BUFFER
					T1156	CEDAR	3	PERIMETER BUFFER
					T1157	CEDAR	3	PERIMETER BUFFER
					T1158	MAPLE	2	PERIMETER BUFFER
					T1159	GUM	7	PERIMETER BUFFER
T117	OAK (SCARLET)	14	9	PERIMETER BUFFER	T1160	GUM	4	PERIMETER BUFFER
					T1161	POPLAR	5	PERIMETER BUFFER
					T1162	DOGWOOD	3	PERIMETER BUFFER
					T1163	OAK	5	PERIMETER BUFFER
					T1164	OAK	5	PERIMETER BUFFER
					T1165	POPLAR	4	PERIMETER BUFFER
					T1166	OAK	3	PERIMETER BUFFER
					T1167	OAK	2	PERIMETER BUFFER
					T1168	OAK	3	PERIMETER BUFFER
T129	SWEET GUM	10	6	INTERNAL TREE PRESERVATION ZONE	T1188	BEECH	4	PERIMETER BUFFER
					T1189	DOGWOOD	2	PERIMETER BUFFER
					T1190	BEECH	3	PERIMETER BUFFER
					T1191	POPLAR	4	PERIMETER BUFFER
					T1192	MAPLE	4	PERIMETER BUFFER
					T1193	POPLAR	4	PERIMETER BUFFER
REQUIRED MITIGATION SUB-TOTALS (CARRY TO SHEET 19A)	10	139	78		PROPOSED MITIGATION SUB-TOTALS (CARRY TO SHEET 19A)	93	367	
	SUB-TOTAL TREES TO BE MITIGATED	SUB-TOTAL TREE DBH TO BE MITIGATED (Inches)	SUB-TOTAL TREES REQUIRED FOR MITIGATION			SUB-TOTAL EXISTING TREES FOR MITIGATION	SUB-TOTAL EXISTING TREE DBH FOR MITIGATION (Inches)	

FOR SMALL MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 4" AND LARGE MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 8"					EXISITNG TREES TO BE USED FOR MITIGATION CREDIT			
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T132	MAPLE	10	6	INTERNAL TREE PRESERVATION ZONE	T1194	POPLAR	5	PERIMETER BUFFER
					T1197	POPLAR	6	PERIMETER BUFFER
					T1198	POPLAR	3	PERIMETER BUFFER
					T1199	POPLAR	5	PERIMETER BUFFER
					T1200	POPLAR	3	PERIMETER BUFFER
					T1201	POPLAR	3	PERIMETER BUFFER
T133	SWEET GUM	10	6	INTERNAL TREE PRESERVATION ZONE	T1202	POPLAR	2	PERIMETER BUFFER
					T1203	DOGWOOD	2	PERIMETER BUFFER
					T1204	POPLAR	4	PERIMETER BUFFER
					T1205	POPLAR	6	PERIMETER BUFFER
					T1206	POPLAR	4	INTERNAL TREE PRESERVATION ZONE
					T1207	DOGWOOD	2	INTERNAL TREE PRESERVATION ZONE
T134	SWEET GUM	10	6	INTERNAL TREE PRESERVATION ZONE	T1208	POPLAR	7	INTERNAL TREE PRESERVATION ZONE
					T1209	POPLAR	5	PERIMETER BUFFER
					T1210	POPLAR	3	PERIMETER BUFFER
					T1211	POPLAR	5	PERIMETER BUFFER
					T1212	POPLAR DBL	3	PERIMETER BUFFER
					T1213	MAPLE	5	INTERNAL TREE PRESERVATION ZONE
T151	POPLAR (YELLOW)	10	6	INTERNAL TREE PRESERVATION ZONE	T1218	DOGWOOD	2	PERIMETER BUFFER
					T1219	CEDAR	4	PERIMETER BUFFER
					T1220	DOGWOOD	3	PERIMETER BUFFER
					T1221	MAPLE	6	PERIMETER BUFFER
					T1222	POPLAR	2	PERIMETER BUFFER
					T1223	POPLAR	2	PERIMETER BUFFER
T242	OAK (RED)	10	6	STORM EASEMENT	T1229	POPLAR	4	PERIMETER BUFFER
					T1230	HICKORY	5	PERIMETER BUFFER
					T1231	HICKORY	3	PERIMETER BUFFER
					T1232	OAK	3	PERIMETER BUFFER
					T1233	MAPLE TRIPLE	3	PERIMETER BUFFER
					T1234	BEECH DBL	3	PERIMETER BUFFER
T244	HICKORY	9	6	STORM EASEMENT	T1235	HICKORY	3	PERIMETER BUFFER
					T1236	POPLAR	4	PERIMETER BUFFER
					T1237	POPLAR	4	PERIMETER BUFFER
					T1238	POPLAR	5	PERIMETER BUFFER
					T1239	OAK	4	INTERNAL TREE PRESERVATION ZONE
					T1240	POPLAR	3	PERIMETER BUFFER
T275	HICKORY	10	6	INTERNAL TREE PRESERVATION ZONE	T1249	OAK	3	PERIMETER BUFFER
					T1250	POPLAR	3	PERIMETER BUFFER
					T1251	OAK	4	INTERNAL TREE PRESERVATION ZONE
					T1252	POPLAR DBL	5	INTERNAL TREE PRESERVATION ZONE
					T1253	POPLAR	2	INTERNAL TREE PRESERVATION ZONE
					T1254	POPLAR	2	INTERNAL TREE PRESERVATION ZONE
T276	HICKORY	9	6	PERIMETER BUFFER	T1255	POPLAR	7	PERIMETER BUFFER
					T1256	POPLAR	6	PERIMETER BUFFER
					T1257	POPLAR	4	PERIMETER BUFFER
					T1258	POPLAR	4	PERIMETER BUFFER
					T1259	OAK	6	PERIMETER BUFFER
					T1260	OAK	4	PERIMETER BUFFER
T304	MAPLE	12	6	PERIMETER BUFFER	T1271	MAPLE	6	PERIMETER BUFFER
					T1272	DOGWOOD	2	PERIMETER BUFFER
					T1273	OAK	2	PERIMETER BUFFER
					T1274	MAPLE	2	INTERNAL TREE PRESERVATION ZONE
					T1275	MAPLE	4	INTERNAL TREE PRESERVATION ZONE
					T1276	MAPLE	5	PERIMETER BUFFER
T305	OAK (RED)	18	9	PERIMETER BUFFER AND SANITARY SEWER EASEMENT	T1277	OAK	4	PERIMETER BUFFER
					T1278	DOGWOOD	3	PERIMETER BUFFER
					T1279	DOGWOOD	3	PERIMETER BUFFER
					T1280	MAPLE	3	PERIMETER BUFFER
					T1281	MAPLE	3	PERIMETER BUFFER
					T1282	OAK	3	PERIMETER BUFFER
					T1283	HICKORY	5	PERIMETER BUFFER
					T1284	MAPLE	4	PERIMETER BUFFER
					T1288	HICKORY DBL	3	PERIMETER BUFFER
T306	OAK (RED)	14	9	PERIMETER BUFFER	T1289	MAPLE	7	PERIMETER BUFFER
					T1290	POPLAR	2	PERIMETER BUFFER
					T1291	POPLAR	3	PERIMETER BUFFER
					T1292	HICKORY	3	PERIMETER BUFFER
					T1293	POPLAR	6	PERIMETER BUFFER
					T1294	MAPLE	2	PERIMETER BUFFER
					T1298	DOGWOOD	2	PERIMETER BUFFER
					T1299	HICKORY	5	PERIMETER BUFFER
					T1300	HICKORY	2	PERIMETER BUFFER
T308	OAK (RED)	28	15	PERIMETER BUFFER AND SANITARY SEWER EASEMENT	T1306	HICKORY	4	PERIMETER BUFFER
					T1307	HICKORY	3	PERIMETER BUFFER
					T1308	MAPLE	4	PERIMETER BUFFER
					T1312	MAPLE	4	PERIMETER BUFFER
					T1313	POPLAR	7	PERIMETER BUFFER
					T1314	DOGWOOD	3	PERIMETER BUFFER
					T1315	HICKORY	5	PERIMETER BUFFER
					T1316	MAPLE	6	PERIMETER BUFFER
					T1317	MAPLE	2	PERIMETER BUFFER
					T1324	MAPLE	5	PERIMETER BUFFER
					T1325	HICKORY	4	PERIMETER BUFFER
					T1326	MAPLE	4	PERIMETER BUFFER
					T1327	HICKORY	6	PERIMETER BUFFER
					T1328	CEDAR	3	PERIMETER BUFFER
					T1329	HICKORY	3	PERIMETER BUFFER
~~T313~~	~~OAK (RED)~~	~~20~~	~~12~~	~~INTERNAL TREE PRESERVATION ZONE~~	T1360	MAPLE DBL	3	PERIMETER BUFFER
					T1361	CEDAR	4	PERIMETER BUFFER
					T1362	DOGWOOD	2	PERIMETER BUFFER
					T1363	MAPLE	4	PERIMETER BUFFER
					T1364	HICKORY	2	PERIMETER BUFFER
					T1365	OAK	7	PERIMETER BUFFER
					T1366	MAPLE	2	PERIMETER BUFFER
					T1367	OAK	3	PERIMETER BUFFER
					T1368	MAPLE	5	PERIMETER BUFFER
					T1369	MAPLE	6	PERIMETER BUFFER
					T1370	MAPLE	5	PERIMETER BUFFER
					~~T1371~~	~~GUM~~	~~7~~	~~INTERNAL TREE PRESERVATION ZONE~~
REQUIRED MITIGATION SUB-TOTALS (CARRY TO SHEET 19A)	12	150	87		PROPOSED MITIGATION SUB-TOTALS (CARRY TO SHEET 19A)	98	376	
	SUB-TOTAL TREES TO BE MITIGATED	SUB-TOTAL TREE DBH TO BE MITIGATED (Inches)	SUB-TOTAL TREES REQUIRED FOR MITIGATION			SUB-TOTAL EXISTING TREES FOR MITIGATION	SUB-TOTAL EXISTING TREE DBH FOR MITIGATION (Inches)	

SEE SHEET 19A FOR CONTINUATION OF TABLE.

NOTES:

1. See Sheets 18A, 18B, & 18C for enlarged tree mitigation plans.

2. See Sheets as follows for Tree Summary Tables:
   A. Existing Trees To Be Removed And Mitigated - Sheets 19 & 19A
   B. Existing Trees To Remain But Mitigated - Sheet 19B
   C. Existing Heritage Trees On Site - Sheet 20
   D. Existing Trees To Be Removed - Mitigation Not Required - Sheet 20
   E. Existing Trees Remaining (To Be Undisturbed) - Sheet 20

3. All tree mitigation is achieved by preservation of existing trees that are less than 8" DBH for large maturing or 4" DBH for understory trees. These trees used for mitigation credit have been located by field survey, and are shown on Sheets 18-18C.

4. Per the Town of Waxhaw, the only trees that are required to be shown on the plans and mitigated for removal, are the trees within the street/landscape buffers, perimeter buffers/permanent tree preservation easements and the internal tree protection zones (per the Tree Survey submitted with the approved rezoning plan). Six (6) of the eight heritage trees are not located in these areas, and therefore will be included in the tree removal permit application.

5. Two (2) heritage trees are located within the Perimeter Buffer / Tree Preservation Area, and will not be removed, however, due to proposed lot grading the "Required Critical Root Zone" and "Tree Protection Area" requirements (per UDO Section 9.21.8.b.1) cannot be satisfied, and therefore mitigation is provided.

6. All trees that have been marked through are trees that are no longer located in tree protection areas (ITPZ or Buffer) per Revision #9 to the Construction Plans. Therefore these trees may be removed and no longer require mitigation.

Rev. #9 Summary for This Sheet:
The following revisions have been made to Sheets 19, 19A, 19B, & 20:
- Revisions summarized on Sheet 18 (Proposed Tree Planting / Mitigation Plan).
- Updated Tables as necessary for Proposed Tree Planting / Mitigation Plan revisions..

APPROVED
By Max Hsiang at 3:41 pm, Jun 26, 2019

FOLLOWING TREE SUMMARY TABLES ON THIS SHEET:
- Existing Trees to be Removed and Mitigated (Table continued on Sheet 19A)

HARRIS ENGINEERING
5200 PARK ROAD
SUITE 231
CHARLOTTE, NC 28209
P (704) 334-1325
F (704) 334-1330
NC #C-1170 & SC #C00946

TREE SUMMARY TABLES

Grove Manor Sub. - Phase 1
Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

Revisions
#2 - 1/16/18: Revised per review comments.
#9 - 9/7/18: Revised per Zoning Amendment and addition of Phase 2.
#10 - 11/14/18: Revised owner information.
#11 - 3/26/19: Updated Design Firm information.

Job No. 043-17-001
Date 10/27/2017
Proj. Mgr. WMH
Drawn AW / SCE

NORTH CAROLINA PROFESSIONAL SEAL #12,585 ENGINEER WAYNE M. HARRIS 6/10/19

Scale: NTS

S:_MESA\2018\043-BROADSTREET HOMES\043-18-003 GM Phase 1 REVISIONS\ENGINEERING\TreeMitigation-Shts17-19\043-17-001 Shts19-20 TreePlantingMitigationTables.dwg

Existing Trees To Be Removed And Mitigated

CONTINUED FROM SHEET 19

FOR SMALL MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 4" AND LARGE MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 8"

TREE NUMBER	TREE SPECIES	TREE DBH (Inches)	TOTAL TREES REQUIRED FOR MITIGATION	LOCATION (TREE PRESERVATION AREAS)
T319	OAK(RED)	10	6	INTERNAL TREE PRESERVATION ZONE
T346	OAK (RED)	11	6	INTERNAL TREE PRESERVATION ZONE
T348	OAK (RED)	17	9	INTERNAL TREE PRESERVATION ZONE
T349	OAK (RED)	10	6	INTERNAL TREE PRESERVATION ZONE
T374	OAK (RED)	9	6	INTERNAL TREE PRESERVATION ZONE
T375	OAK (RED)	14	9	INTERNAL TREE PRESERVATION ZONE
T401	HICKORY	12	6	PERIMETER BUFFER
T463	HICKORY	9	6	INTERNAL TREE PRESERVATION ZONE
T464	MAPLE	8	6	INTERNAL TREE PRESERVATION ZONE
T465	OAK (SCARLET)	10	6	INTERNAL TREE PRESERVATION ZONE
T476	MAPLE	10	6	INTERNAL TREE PRESERVATION ZONE
T544	PINE	14	9	INTERNAL TREE PRESERVATION ZONE
T584	OAK	23	12	INTERNAL TREE PRESERVATION ZONE
T591	POPLAR	12	6	INTERNAL TREE PRESERVATION ZONE
T592	OAK	14	9	INTERNAL TREE PRESERVATION ZONE
T593	TWIN DOGWOOD	6	3	UTILITY EASEMENT
T599	OAK	14	9	INTERNAL TREE PRESERVATION ZONE
T602	OAK	12	6	INTERNAL TREE PRESERVATION ZONE
T609	OAK	14	9	PERIMETER BUFFER
T611	CEDAR	8	6	PERIMETER BUFFER & UTILITY EASEMENT
T618	MAPLE	16	9	PERIMETER BUFFER & UTILITY EASEMENT
REQUIRED MITIGATION SUB-TOTALS (CARRY TO RIGHT-MOST TABLE)	0	0	0	
	SUB-TOTAL TREES TO BE MITIGATED	SUB-TOTAL TREE DBH TO BE MITIGATED (Inches)	SUB-TOTAL TREES REQUIRED FOR MITIGATION	

EXISITNG TREES TO BE USED FOR MITIGATION CREDIT

TREE NUMBER	TREE SPECIES	TREE DBH (Inches)	LOCATION
T1372	MAPLE	6	INTERNAL TREE PRESERVATION ZONE
T1373	BEECH	2	INTERNAL TREE PRESERVATION ZONE
T1374	MAPLE	4	INTERNAL TREE PRESERVATION ZONE
T1375	HICKORY	7	INTERNAL TREE PRESERVATION ZONE
T1376	MAPLE	5	PERIMETER BUFFER
T1377	MAPLE	5	PERIMETER BUFFER
T1378	MAPLE	4	INTERNAL TREE PRESERVATION ZONE
T1379	HICKORY	4	PERIMETER BUFFER
T1380	MAPLE	2	PERIMETER BUFFER
T1381	MAPLE	7	PERIMETER BUFFER
T1382	DOGWOOD	2	INTERNAL TREE PRESERVATION ZONE
T1383	MAPLE	3	PERIMETER BUFFER
T1384	MAPLE	3	INTERNAL TREE PRESERVATION ZONE
T1385	HICKORY	5	PERIMETER BUFFER
T1386	MAPLE DBL	5	PERIMETER BUFFER
T1387	MAPLE	2	PERIMETER BUFFER
T1388	MAPLE	3	PERIMETER BUFFER
T1389	MAPLE	5	PERIMETER BUFFER
T1390	MAPLE	2	PERIMETER BUFFER
T1391	MAPLE	2	PERIMETER BUFFER
T1392	MAPLE	4	PERIMETER BUFFER
T1393	CEDAR	4	PERIMETER BUFFER
T1394	MAPLE	2	PERIMETER BUFFER
T1395	DOGWOOD	2	PERIMETER BUFFER
T1396	DOGWOOD	2	PERIMETER BUFFER
T1397	MAPLE	2	PERIMETER BUFFER
T1398	MAPLE	3	PERIMETER BUFFER
T1811	MAPLE	3	INTERNAL TREE PRESERVATION ZONE
T1813	MAPLE	3	INTERNAL TREE PRESERVATION ZONE
T1814	MAPLE	3	INTERNAL TREE PRESERVATION ZONE
T1815	DOGWOOD	3	INTERNAL TREE PRESERVATION ZONE
T1816	DOGWOOD	3	INTERNAL TREE PRESERVATION ZONE
T1817	MAPLE	6	INTERNAL TREE PRESERVATION ZONE
T1818	MAPLE	2	INTERNAL TREE PRESERVATION ZONE
T1820	MAPLE	4	INTERNAL TREE PRESERVATION ZONE
T1821	MAPLE	2	INTERNAL TREE PRESERVATION ZONE
T1822	MAPLE	2	INTERNAL TREE PRESERVATION ZONE
T1823	POPLAR	2	INTERNAL TREE PRESERVATION ZONE
T1824	POPLAR	7	INTERNAL TREE PRESERVATION ZONE
T1819	HICKORY	3	INTERNAL TREE PRESERVATION ZONE
T1825	HICKORY	7	INTERNAL TREE PRESERVATION ZONE
T1828	MAPLE	3	INTERNAL TREE PRESERVATION ZONE
T1826	MAPLE	3	INTERNAL TREE PRESERVATION ZONE
T1827	HICKORY DBL	3	INTERNAL TREE PRESERVATION ZONE
T1829	MAPLE	2	INTERNAL TREE PRESERVATION ZONE
T1830	MAPLE	4	INTERNAL TREE PRESERVATION ZONE
T1831	DOGWOOD	3	INTERNAL TREE PRESERVATION ZONE
T1832	MAPLE	3	INTERNAL TREE PRESERVATION ZONE
T1833	HICKORY	3	INTERNAL TREE PRESERVATION ZONE
T1834	HICKORY	3	INTERNAL TREE PRESERVATION ZONE
T1835	MAPLE	2	INTERNAL TREE PRESERVATION ZONE
T1836	POPLAR	3	INTERNAL TREE PRESERVATION ZONE
T1837	HICKORY	3	INTERNAL TREE PRESERVATION ZONE
T1838	POPLAR	4	INTERNAL TREE PRESERVATION ZONE
T1839	HICKORY	2	INTERNAL TREE PRESERVATION ZONE
T1840	MAPLE	3	INTERNAL TREE PRESERVATION ZONE
T1842	MAPLE	3	INTERNAL TREE PRESERVATION ZONE
T1841	MAPLE	2	INTERNAL TREE PRESERVATION ZONE
T1843	HICKORY	2	INTERNAL TREE PRESERVATION ZONE
T1845	DOGWOOD	3	INTERNAL TREE PRESERVATION ZONE
T1846	CEDAR	2	INTERNAL TREE PRESERVATION ZONE
T1848	DOGWOOD	3	INTERNAL TREE PRESERVATION ZONE
T1847	MAPLE	5	INTERNAL TREE PRESERVATION ZONE
T1849	OAK	7	INTERNAL TREE PRESERVATION ZONE
T1856	HICKORY	5	INTERNAL TREE PRESERVATION ZONE
T1857	MAPLE	2	INTERNAL TREE PRESERVATION ZONE
T1858	BEECH	2	INTERNAL TREE PRESERVATION ZONE
T1859	CEDAR	3	INTERNAL TREE PRESERVATION ZONE
T1871	HICKORY	5	INTERNAL TREE PRESERVATION ZONE
T1872	HICKORY	5	INTERNAL TREE PRESERVATION ZONE
T1873	HICKORY	5	INTERNAL TREE PRESERVATION ZONE
T1877	MAPLE	3	INTERNAL TREE PRESERVATION ZONE
T1860	HICKORY	4	INTERNAL TREE PRESERVATION ZONE
T1861	OAK	2	INTERNAL TREE PRESERVATION ZONE
T1862	DOGWOOD	2	INTERNAL TREE PRESERVATION ZONE
T1863	HICKORY	3	INTERNAL TREE PRESERVATION ZONE
T1874	MAPLE	4	INTERNAL TREE PRESERVATION ZONE
T1875	MAPLE	2	INTERNAL TREE PRESERVATION ZONE
T1876	HICKORY	6	INTERNAL TREE PRESERVATION ZONE
T1880	OAK	6	INTERNAL TREE PRESERVATION ZONE
T1881	GUM	6	INTERNAL TREE PRESERVATION ZONE
T1882	MAPLE	3	INTERNAL TREE PRESERVATION ZONE
T1883	MAPLE	3	INTERNAL TREE PRESERVATION ZONE
T1884	MAPLE	3	INTERNAL TREE PRESERVATION ZONE
T1885	POPLAR	4	INTERNAL TREE PRESERVATION ZONE
T1896	MAPLE	2	INTERNAL TREE PRESERVATION ZONE
T1897	MAPLE	2	INTERNAL TREE PRESERVATION ZONE
T1898	OAK	3	INTERNAL TREE PRESERVATION ZONE
T1899	GUM	6	INTERNAL TREE PRESERVATION ZONE
T1900	MAPLE	2	INTERNAL TREE PRESERVATION ZONE
T1901	MAPLE	5	INTERNAL TREE PRESERVATION ZONE
T1509	OAK	4	PERIMETER BUFFER
T1510	GUM	2	PERIMETER BUFFER
T1511	CEDAR	7	PERIMETER BUFFER
T1512	OAK	2	PERIMETER BUFFER
T1513	GUM TRIPLE	5	PERIMETER BUFFER
PROPOSED MITIGATION SUB-TOTALS (CARRY TO RIGHT-MOST TABLE)	12	48	
	SUB-TOTAL EXISTING TREES FOR MITIGATION	SUB-TOTAL EXISTING TREE DBH FOR MITIGATION (Inches)	

FOR SMALL MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 4" AND LARGE MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 8"

TREE NUMBER	TREE SPECIES	TREE DBH (Inches)	TOTAL TREES REQUIRED FOR MITIGATION	LOCATION (TREE PRESERVATION AREAS)
T610	OAK	20	12	PERIMETER BUFFER
T632	MAPLE	17	9	PERIMETER BUFFER
T633	MAPLE	15	9	PERIMETER BUFFER
T635	OAK	15	9	PERIMETER BUFFER
T637	TWIN OAK	22	12	INTERNAL TREE PRESERVATION ZONE
T680	OAK	16	9	STREET BUFFER
T681	CHERRY	6	3	STREET BUFFER
REQUIRED MITIGATION SUB-TOTALS	2	22	12	
	SUB-TOTAL TREES TO BE MITIGATED	SUB-TOTAL TREE DBH TO BE MITIGATED (Inches)	SUB-TOTAL TREES REQUIRED FOR MITIGATION	
REQUIRED MITIGATION TOTALS (TOTAL FROM SHEETS 19 & 19A)	24	311	177	
	TOTAL TREES TO BE MITIGATED	TOTAL TREE DBH TO BE MITIGATED (Inches)	TOTAL TREES REQUIRED FOR MITIGATION	

EXISITNG TREES TO BE USED FOR MITIGATION CREDIT

TREE NUMBER	TREE SPECIES	TREE DBH (Inches)	LOCATION
T1514	MAPLE	6	PERIMETER BUFFER
T1515	POPLAR	5	PERIMETER BUFFER
T1516	OAK	4	PERIMETER BUFFER
T1517	OAK	2	PERIMETER BUFFER
T1518	BEECH	5	PERIMETER BUFFER
T1519	HICKORY	3	PERIMETER BUFFER
T1580	OAK	3	PERIMETER BUFFER
T1581	MAPLE	2	PERIMETER BUFFER
T1585	OAK	2	PERIMETER BUFFER
T1586	DOGWOOD	3	PERIMETER BUFFER
T1587	HICKORY	4	PERIMETER BUFFER
T1591	DOGWOOD	3	PERIMETER BUFFER
T1592	GUM	2	PERIMETER BUFFER
T1593	HICKORY DBL	3	PERIMETER BUFFER
T1594	HICKORY	7	PERIMETER BUFFER
T1595	DOGWOOD	3	PERIMETER BUFFER
T1597	DOGWOOD	2	PERIMETER BUFFER
T1598	DOGWOOD	3	PERIMETER BUFFER
T1599	DOGWOOD	3	PERIMETER BUFFER
T1600	OAK	5	PERIMETER BUFFER
T1617	HICKORY	3	PERIMETER BUFFER
T1618	MAPLE	2	PERIMETER BUFFER
T1619	MAPLE	2	PERIMETER BUFFER
T1620	MAPLE	2	PERIMETER BUFFER
T1621	GUM	2	PERIMETER BUFFER
T1596	OAK	2	PERIMETER BUFFER
T1616	HICKORY	2	PERIMETER BUFFER
T1622	GUM	2	PERIMETER BUFFER
T1623	GUM	2	PERIMETER BUFFER
T1624	GUM	2	PERIMETER BUFFER
T1625	GUM	3	PERIMETER BUFFER
T1629	GUM	3	PERIMETER BUFFER
T1630	MAPLE	3	PERIMETER BUFFER
T1631	MAPLE	3	PERIMETER BUFFER
T1632	DOGWOOD	3	PERIMETER BUFFER
T1746	BEECH	3	STREET BUFFER
T1748	BEECH	2	STREET BUFFER
T1749	HICKORY	3	STREET BUFFER
T1751	OAK	5	STREET BUFFER
T1752	HICKORY	7	STREET BUFFER
T1753	HICKORY	4	STREET BUFFER
T1754	MAPLE	4	STREET BUFFER
T1755	MAPLE	4	STREET BUFFER
T1724 Replaced	OAK	3	STREET BUFFER
T1730 Replaced	OAK	3	STREET BUFFER
T1758	DOGWOOD	2	STREET BUFFER
T1759	CEDAR	4	STREET BUFFER
PROPOSED MITIGATION SUB-TOTALS	12	44	
	SUB-TOTAL EXISTING TREES FOR MITIGATION	SUB-TOTAL EXISTING TREE DBH FOR MITIGATION (Inches)	
PROPOSED MITIGATION TOTALS (TOTAL FROM SHEETS 19 &19A)	215	835	
	TOTAL EXISTING TREES FOR MITIGATION	TOTAL EXISTING TREE DBH FOR MITIGATION (Inches)	

NOTES:

1. See Sheets 18A, 18B, & 18C for enlarged tree mitigation plans.

2. See Sheets as follows for Tree Summary Tables:
   A. Existing Trees To Be Removed And Mitigated - Sheets 19 & 19A
   B. Existing Trees To Remain But Mitigated - Sheet 19B
   C. Existing Heritage Trees On Site - Sheet 20
   D. Existing Trees To Be Removed - Mitigation Not Required - Sheet 20
   E. Existing Trees Remaining (To Be Undisturbed) - Sheet 20

3. All tree mitigation is achieved by preservation of existing trees that are less than 8" DBH for large maturing or 4" DBH for understory trees. These trees used for mitigation credit have been located by field survey, and are shown on Sheets 18-18C.

4. Per the Town of Waxhaw, the only trees that are required to be shown on the plans and mitigated for removal, are the trees within the street/landscape buffers, perimeter buffers/permanent tree preservation easements and the internal tree protection zones (per the Tree Survey submitted with the approved rezoning plan). Six (6) of the eight heritage trees are not located in these areas, and therefore will be included in the tree removal permit application.

5. Two (2) heritage trees are located within the Perimeter Buffer / Tree Preservation Area, and will not be removed, however, due to proposed lot grading the "Required Critical Root Zone" and "Tree Protection Area" requirements (per UDO Section 9.21.8.b.1) cannot be satisfied, and therefore mitigation is provided.

6. All trees that have been marked through are trees that are no longer located in tree protection areas (ITPZ or Buffer) per Revision #9 to the Construction Plans. Therefore these trees may be removed and no longer require mitigation.

Rev. #9 Summary for This Sheet:
The following revisions have been made to Sheets 19, 19A, 19B, & 20:
- Revisions summarized on Sheet 18 (Proposed Tree Planting / Mitigation Plan).
- Updated Tables as necessary for Proposed Tree Planting / Mitigation Plan revisions..

APPROVED
By Max Hsiang at 3:41 pm, Jun 26, 2019

FOLLOWING TREE SUMMARY TABLES ON THIS SHEET:
- Existing Trees to be Removed and Mitigated (Table continued from Sheet 19)

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5200 PARK ROAD
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CHARLOTTE, NC 28209
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NC #C-1170 & SC #C00946

TREE SUMMARY TABLES

Grove Manor Sub. - Phase 1

Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

Revisions
#2 - 1/16/18: Added Sheet 19A per review comments.
#9 - 9/7/18: Revised per Zoning Amendment and addition of Phase 2.
#10 - 11/14/18: Revised owner information.
#11 - 3/26/19: Updated Design Firm information.

Job No. 043-17-001
Date 1/16/2018
Proj. Mgr. WMH
Drawn AW / SCE

NORTH CAROLINA PROFESSIONAL SEAL #12585 ENGINEER WAYNE M. HARRIS 5/10/19

Scale: NTS

Sheet No. 19A
Of 26

S:_MESA\2018\043-BROADSTREET HOMES\043-18-003 GM Phase 1 REVISIONS\ENGINEERING\TreeMitigation-Shts17-19\043-17-001 Shts19-20 TreePlantingMitigationTables.dwg

Existing Trees To Remain But Mitigation Required - Unable To Meet Required Critical Root Zone And Tree Protection (Area Per U.D.O. Section 9.21.8.B.1)

FOR SMALL MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 4" AND LARGE MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 8"				
TREE NUMBER	TREE SPECIES	TREE DBH (Inches)	TOTAL TREES REQUIRED FOR MITIGATION	LOCATION (TREE PRESERVATION AREAS)
T3	SWEET GUM	16	9	PERIMETER BUFFER
T5	OAK (BLACK)	14	9	PERIMETER BUFFER
T6	SWEET GUM	18	9	PERIMETER BUFFER
T7	SWEET GUM	15	9	PERIMETER BUFFER
~~T15~~	~~PINE~~	~~14~~	~~9~~	~~INERNAL TREE PRESERVATION ZONE~~
T23	SWEET GUM	10	6	INERNAL TREE PRESERVATION ZONE
T27	SWEET GUM	14	9	PERIMETER BUFFER
T28	SWEET GUM	12	6	PERIMETER BUFFER
T33	SWEET GUM	14	9	PERIMETER BUFFER
T36	OAK (RED)	9	6	PERIMETER BUFFER
T52	OAK (RED)	22	12	PERIMETER BUFFER
T53	ASH	12	6	PERIMETER BUFFER
T61	OAK (RED)	22	12	PERIMETER BUFFER
T89	OAK (RED)	24	12	INERNAL TREE PRESERVATION ZONE
T90	OAK (RED)	10	6	INERNAL TREE PRESERVATION ZONE
T94	MAPLE	9	6	INERNAL TREE PRESERVATION ZONE
T105	HICKORY	9	6	INERNAL TREE PRESERVATION ZONE
T120	SWEET GUM	14	9	PERIMETER BUFFER
T122	MAPLE	9	6	PERIMETER BUFFER
T128	SWEET GUM	10	6	INERNAL TREE PRESERVATION ZONE
T148	POPLAR (YELLOW)	10	6	INERNAL TREE PRESERVATION ZONE
T163	POPLAR (YELLOW)	9	6	INERNAL TREE PRESERVATION ZONE
T265	POPLAR(YELLOW)	12	6	INERNAL TREE PRESERVATION ZONE
REQUIRED MITIGATION SUB-TOTALS (CARRY TO RIGHT-MOST TABLE)	23	308	180	
	SUB-TOTAL TREES TO BE MITIGATED	SUB-TOTAL TREE DBH TO BE MITIGATED (Inches)	SUB-TOTAL TREES REQUIRED FOR MITIGATION	

EXISITNG TREES TO BE USED FOR MITIGATION CREDIT			
TREE NUMBER	TREE SPECIES	TREE DBH (Inches)	LOCATION
T1001	HICKORY	7	PERIMETER BUFFER
T1002	MAPLE	7	PERIMETER BUFFER
T1003	OAK	4	PERIMETER BUFFER
T1004	HICKORY	7	PERIMETER BUFFER
T1005	HICKORY	4	PERIMETER BUFFER
T1006	OAK	7	PERIMETER BUFFER
T1008	HICKORY	7	PERIMETER BUFFER
T1009	MAPLE	6	PERIMETER BUFFER
T1010	MAPLE	3	PERIMETER BUFFER
T1011	MAPLE	3	PERIMETER BUFFER
T1012	MAPLE	4	PERIMETER BUFFER
T1013	GUM	7	PERIMETER BUFFER
T1014	HICKORY	4	PERIMETER BUFFER
T1015	GUM	4	PERIMETER BUFFER
~~T1016~~	~~GUM~~	~~4~~	~~PERIMETER BUFFER~~
~~T1017~~	~~GUM~~	~~2~~	~~PERIMETER BUFFER~~
~~T1018~~	~~HICKORY~~	~~7~~	~~PERIMETER BUFFER~~
~~T1019~~	~~MAPLE~~	~~6~~	~~PERIMETER BUFFER~~
T1032	POPLAR	3	PERIMETER BUFFER
T1033	MAPLE	5	PERIMETER BUFFER
T1034	HICKORY	5	PERIMETER BUFFER
T1035	GUM	4	PERIMETER BUFFER
T1036	POPLAR	2	PERIMETER BUFFER
T1037	GUM	3	INTERNAL TREE PRESERVATION ZONE
T1038	GUM	3	PERIMETER BUFFER
T1039	GUM	4	PERIMETER BUFFER
T1040	GUM DBL	6	PERIMETER BUFFER
T1041	GUM	3	INTERNAL TREE PRESERVATION ZONE
T1042	GUM	3	PERIMETER BUFFER
T1043	GUM	5	PERIMETER BUFFER
T1044	MAPLE	3	PERIMETER BUFFER
T1045	MAPLE	2	PERIMETER BUFFER
T1046	GUM	4	PERIMETER BUFFER
T1049	GUM	4	PERIMETER BUFFER
T1050	POPLAR	6	PERIMETER BUFFER
T1064	GUM	4	PERIMETER BUFFER
T1065	GUM	6	PERIMETER BUFFER
T1068	GUM	2	INTERNAL TREE PRESERVATION ZONE
T1069	BEECH	2	PERIMETER BUFFER
T1070	BEECH	3	INTERNAL TREE PRESERVATION ZONE
T1071	BEECH	5	PERIMETER BUFFER
T1072	POPLAR	3	PERIMETER BUFFER
T1073	MAPLE	2	PERIMETER BUFFER
T1074	HICKORY	3	PERIMETER BUFFER
T1075	POPLAR	3	PERIMETER BUFFER
T1076	POPLAR	6	PERIMETER BUFFER
T1077	POPLAR	7	PERIMETER BUFFER
T1078	MAPLE	2	PERIMETER BUFFER
T1079	MAPLE	3	PERIMETER BUFFER
T1080	POPLAR	3	PERIMETER BUFFER
T1081	HICKORY	4	PERIMETER BUFFER
T1082	POPLAR	4	PERIMETER BUFFER
T1083	POPLAR	5	PERIMETER BUFFER
T1084	POPLAR	2	INTERNAL TREE PRESERVATION ZONE
T1086	POPLAR	4	INTERNAL TREE PRESERVATION ZONE
T1087	POPLAR	3	INTERNAL TREE PRESERVATION ZONE
T1088	POPLAR	2	PERIMETER BUFFER
T1089	POPLAR	2	PERIMETER BUFFER
T1090	POPLAR	4	PERIMETER BUFFER
T1106	POPLAR	5	PERIMETER BUFFER
T1107	POPLAR	3	PERIMETER BUFFER
T1108	POPLAR	2	PERIMETER BUFFER
T1109	POPLAR	2	PERIMETER BUFFER
T1110	POPLAR	3	PERIMETER BUFFER
T1111	POPLAR	5	PERIMETER BUFFER
T1112	POPLAR	2	PERIMETER BUFFER
T1113	GUM	2	PERIMETER BUFFER
T1114	GUM	3	PERIMETER BUFFER
T1115	MAPLE	2	PERIMETER BUFFER
T1116	POPLAR	7	PERIMETER BUFFER
T1135	POPLAR	2	PERIMETER BUFFER
T1136	GUM	2	PERIMETER BUFFER
T1137	POPLAR	3	PERIMETER BUFFER
T1138	BEECH	6	PERIMETER BUFFER
T1139	DOGWOOD	3	PERIMETER BUFFER
T1140	DOGWOOD	3	PERIMETER BUFFER
T1141	OAK	6	PERIMETER BUFFER
T1173	MAPLE	4	PERIMETER BUFFER
T1176	OAK	3	PERIMETER BUFFER
T1177	POPLAR	4	PERIMETER BUFFER
T1178	POPLAR	4	PERIMETER BUFFER
T1179	HICKORY	2	PERIMETER BUFFER
T1180	POPLAR	3	PERIMETER BUFFER
T1181	MAPLE	5	INTERNAL TREE PRESERVATION ZONE
T1182	MAPLE	3	INTERNAL TREE PRESERVATION ZONE
T1183	DOGWOOD	3	PERIMETER BUFFER
T1184	POPLAR	4	PERIMETER BUFFER
T1185	POPLAR	3	PERIMETER BUFFER
T1186	POPLAR	6	PERIMETER BUFFER
T1187	BEECH	5	PERIMETER BUFFER
T1214	POPLAR	3	INTERNAL TREE PRESERVATION ZONE
T1215	OAK	4	PERIMETER BUFFER
T1216	HICKORY	3	PERIMETER BUFFER
T1217	HICKORY	3	PERIMETER BUFFER
T1224	POPLAR	2	PERIMETER BUFFER
T1225	OAK	2	PERIMETER BUFFER
T1226	POPLAR	3	INTERNAL TREE PRESERVATION ZONE
T1227	HICKORY DBL	4	INTERNAL TREE PRESERVATION ZONE
T1228	POPLAR	3	PERIMETER BUFFER
T1241	DOGWOOD	3	PERIMETER BUFFER
T1242	OAK	3	PERIMETER BUFFER
T1243	OAK	2	PERIMETER BUFFER
T1244	OAK	2	PERIMETER BUFFER
T1245	OAK	2	PERIMETER BUFFER
PROPOSED MITIGATION SUB-TOTALS (CARRY TO RIGHT-MOST TABLE)	104	391	
	SUB-TOTAL EXISTING TREES FOR MITIGATION	SUB-TOTAL EXISTING TREE DBH FOR MITIGATION (Inches)	

FOR SMALL MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 4" AND LARGE MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 8"				
TREE NUMBER	TREE SPECIES	TREE DBH (Inches)	TOTAL TREES REQUIRED FOR MITIGATION	LOCATION (TREE PRESERVATION AREAS)
T266	SWEET GUM	9	6	INERNAL TREE PRESERVATION ZONE
T293	OAK (RED)	24	12	PERIMETER BUFFER
T307	SWEET GUM	9	6	PERIMETER BUFFER
~~T309~~	~~OAK (RED)~~	~~10~~	~~6~~	~~INERNAL TREE PRESERVATION ZONE~~
~~T310~~	~~OAK (RED)~~	~~10~~	~~6~~	~~INERNAL TREE PRESERVATION ZONE~~
~~T311~~	~~SWEET GUM~~	~~12~~	~~6~~	~~INERNAL TREE PRESERVATION ZONE~~
~~T358~~	~~TWIN OAK (RED)~~	~~10~~	~~6~~	~~INERNAL TREE PRESERVATION ZONE~~
~~T372~~	~~OAK (RED)~~	~~10~~	~~6~~	~~INERNAL TREE PRESERVATION ZONE~~
~~T373~~	~~OAK (RED)~~	~~10~~	~~6~~	~~INERNAL TREE PRESERVATION ZONE~~
~~T378~~	~~OAK (RED)~~	~~30~~	~~15~~	~~INERNAL TREE PRESERVATION ZONE~~
~~T380~~	~~OAK (RED)~~	~~16~~	~~9~~	~~INERNAL TREE PRESERVATION ZONE~~
~~T382~~	~~OAK (BLACK)~~	~~24~~	~~12~~	~~PERIMETER BUFFER~~
~~T395~~	~~SWEET GUM~~	~~10~~	~~6~~	~~PERIMETER BUFFER~~
~~T402~~	~~OAK (RED)~~	~~30~~	~~15~~	~~PERIMETER BUFFER~~
~~T405~~	~~OAK (RED)~~	~~14~~	~~9~~	~~INERNAL TREE PRESERVATION ZONE~~
~~T406~~	~~OAK (RED)~~	~~11~~	~~6~~	~~INERNAL TREE PRESERVATION ZONE~~
T407	HICKORY	10	6	INERNAL TREE PRESERVATION ZONE
~~T408~~	~~SWEET GUM~~	~~9~~	~~6~~	~~INERNAL TREE PRESERVATION ZONE~~
~~T411~~	~~TWIN GUM~~	~~12~~	~~9~~	~~INERNAL TREE PRESERVATION ZONE~~
REQUIRED MITIGATION SUB-TOTALS (CARRY TO RIGHT-MOST TABLE)	19	287	159	
	SUB-TOTAL TREES TO BE MITIGATED	SUB-TOTAL TREE DBH TO BE MITIGATED (Inches)	SUB-TOTAL TREES REQUIRED FOR MITIGATION	

EXISITNG TREES TO BE USED FOR MITIGATION CREDIT			
TREE NUMBER	TREE SPECIES	TREE DBH (Inches)	LOCATION
T1246	MAPLE	5	PERIMETER BUFFER
T1247	OAK	4	PERIMETER BUFFER
T1248	OAK	7	PERIMETER BUFFER
T1261	OAK	2	PERIMETER BUFFER
T1262	OAK	5	PERIMETER BUFFER
T1263	DOGWOOD	2	PERIMETER BUFFER
T1264	DOGWOOD	2	PERIMETER BUFFER
T1265	DOGWOOD	3	PERIMETER BUFFER
T1266	HICKORY	6	PERIMETER BUFFER
T1267	BEECH	3	PERIMETER BUFFER
T1270	OAK	2	PERIMETER BUFFER
T1301	OAK	2	PERIMETER BUFFER
T1302	HICKORY	2	PERIMETER BUFFER
T1303	CEDAR	2	PERIMETER BUFFER
T1304	HICKORY	5	PERIMETER BUFFER
T1305	POPLAR	4	PERIMETER BUFFER
T1330	MAPLE	2	PERIMETER BUFFER
T1331	MAPLE	2	PERIMETER BUFFER
T1332	POPLAR	2	PERIMETER BUFFER
T1333	MAPLE	6	PERIMETER BUFFER
T1338	MAPLE	5	PERIMETER BUFFER
T1346	HICKORY	2	PERIMETER BUFFER
T1351	CEDAR	2	PERIMETER BUFFER
T1352	MAPLE	4	PERIMETER BUFFER
T1353	MAPLE	4	PERIMETER BUFFER
T1354	BEECH	2	PERIMETER BUFFER
T1355	CEDAR	4	PERIMETER BUFFER
T1356	CEDAR	3	PERIMETER BUFFER
T1357	DOGWOOD	2	PERIMETER BUFFER
~~T1398~~	~~HICKORY~~	~~7~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1399~~	~~MAPLE DBL~~	~~5~~	~~PERIMETER BUFFER~~
~~T1400~~	~~MAPLE~~	~~5~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1401~~	~~HICKORY DBL~~	~~3~~	~~PERIMETER BUFFER~~
~~T1402~~	~~BEECH~~	~~4~~	~~PERIMETER BUFFER~~
~~T1403~~	~~MAPLE~~	~~4~~	~~PERIMETER BUFFER~~
~~T1404~~	~~DOGWOOD~~	~~3~~	~~PERIMETER BUFFER~~
~~T1405~~	~~HICKORY~~	~~7~~	~~PERIMETER BUFFER~~
~~T1406~~	~~MAPLE~~	~~2~~	~~PERIMETER BUFFER~~
~~T1407~~	~~MAPLE~~	~~2~~	~~PERIMETER BUFFER~~
~~T1408~~	~~HICKORY~~	~~6~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1409~~	~~MAPLE TRIPLE~~	~~6~~	~~PERIMETER BUFFER~~
~~T1410~~	~~POPLAR~~	~~4~~	~~PERIMETER BUFFER~~
~~T1411~~	~~HICKORY~~	~~3~~	~~PERIMETER BUFFER~~
~~T1412~~	~~DOGWOOD~~	~~3~~	~~PERIMETER BUFFER~~
~~T1413~~	~~HICKORY~~	~~5~~	~~PERIMETER BUFFER~~
~~T1414~~	~~HICKORY~~	~~6~~	~~PERIMETER BUFFER~~
~~T1415~~	~~MAPLE~~	~~3~~	~~PERIMETER BUFFER~~
~~T1416~~	~~DOGWOOD~~	~~3~~	~~PERIMETER BUFFER~~
~~T1417~~	~~BEECH~~	~~2~~	~~PERIMETER BUFFER~~
T1418	MAPLE DBL	2	PERIMETER BUFFER
~~T1419~~	~~OAK~~	~~7~~	~~PERIMETER BUFFER~~
~~T1420~~	~~MAPLE~~	~~2~~	~~PERIMETER BUFFER~~
~~T1421~~	~~MAPLE~~	~~2~~	~~PERIMETER BUFFER~~
~~T1422~~	~~DOGWOOD~~	~~3~~	~~PERIMETER BUFFER~~
~~T1423~~	~~BEECH~~	~~3~~	~~PERIMETER BUFFER~~
~~T1424~~	~~MAPLE~~	~~4~~	~~PERIMETER BUFFER~~
~~T1425~~	~~DOGWOOD~~	~~3~~	~~PERIMETER BUFFER~~
~~T1426~~	~~MAPLE~~	~~3~~	~~PERIMETER BUFFER~~
~~T1427~~	~~BEECH~~	~~5~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1428~~	~~MAPLE~~	~~4~~	~~PERIMETER BUFFER~~
~~T1429~~	~~HICKORY~~	~~2~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1430~~	~~MAPLE~~	~~4~~	~~PERIMETER BUFFER~~
~~T1431~~	~~MAPLE TRIPLE~~	~~3~~	~~PERIMETER BUFFER~~
~~T1432~~	~~HICKORY~~	~~5~~	~~PERIMETER BUFFER~~
~~T1433~~	~~HICKORY~~	~~7~~	~~PERIMETER BUFFER~~
~~T1434~~	~~HICKORY~~	~~4~~	~~PERIMETER BUFFER~~
~~T1435~~	~~MAPLE~~	~~3~~	~~PERIMETER BUFFER~~
~~T1436~~	~~HICKORY~~	~~2~~	~~PERIMETER BUFFER~~
~~T1437~~	~~MAPLE~~	~~2~~	~~PERIMETER BUFFER~~
~~T1438~~	~~HICKORY~~	~~3~~	~~PERIMETER BUFFER~~
~~T1439~~	~~MAPLE~~	~~5~~	~~PERIMETER BUFFER~~
~~T1440~~	~~MAPLE~~	~~5~~	~~PERIMETER BUFFER~~
~~T1441~~	~~MAPLE~~	~~6~~	~~PERIMETER BUFFER~~
~~T1442~~	~~MAPLE~~	~~2~~	~~PERIMETER BUFFER~~
~~T1443~~	~~HICKORY~~	~~3~~	~~PERIMETER BUFFER~~
~~T1444~~	~~HOLLY~~	~~3~~	~~PERIMETER BUFFER~~
~~T1445~~	~~MAPLE~~	~~2~~	~~PERIMETER BUFFER~~
~~T1446~~	~~HICKORY~~	~~2~~	~~PERIMETER BUFFER~~
~~T1447~~	~~MAPLE~~	~~3~~	~~PERIMETER BUFFER~~
~~T1448~~	~~DOGWOOD~~	~~2~~	~~PERIMETER BUFFER~~
~~T1449~~	~~BEECH~~	~~3~~	~~PERIMETER BUFFER~~
~~T1450~~	~~BEECH~~	~~3~~	~~PERIMETER BUFFER~~
~~T1451~~	~~BEECH~~	~~3~~	~~PERIMETER BUFFER~~
~~T1452~~	~~DOGWOOD~~	~~2~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1454~~	~~POPLAR~~	~~6~~	~~PERIMETER BUFFER~~
~~T1455~~	~~MAPLE~~	~~2~~	~~PERIMETER BUFFER~~
~~T1456~~	~~POPLAR~~	~~4~~	~~PERIMETER BUFFER~~
~~T1457~~	~~POPLAR~~	~~3~~	~~PERIMETER BUFFER~~
~~T1458~~	~~POPLAR~~	~~5~~	~~PERIMETER BUFFER~~
~~T1459~~	~~POPLAR~~	~~2~~	~~PERIMETER BUFFER~~
~~T1460~~	~~HICKORY~~	~~3~~	~~PERIMETER BUFFER~~
~~T1461~~	~~HICKORY DBL~~	~~5~~	~~PERIMETER BUFFER~~
~~T1462~~	~~HICKORY~~	~~2~~	~~PERIMETER BUFFER~~
~~T1463~~	~~HICKORY~~	~~2~~	~~PERIMETER BUFFER~~
~~T1464~~	~~MAPLE~~	~~2~~	~~PERIMETER BUFFER~~
~~T1465~~	~~MAPLE~~	~~6~~	~~PERIMETER BUFFER~~
~~T1466~~	~~MAPLE~~	~~7~~	~~PERIMETER BUFFER~~
~~T1467~~	~~GUM~~	~~4~~	~~PERIMETER BUFFER~~
~~T1468~~	~~GUM DBL~~	~~6~~	~~PERIMETER BUFFER~~
~~T1470~~	~~GUM~~	~~4~~	~~PERIMETER BUFFER~~
~~T1471~~	~~BEECH~~	~~4~~	~~PERIMETER BUFFER~~
PROPOSED MITIGATION SUB-TOTALS (CARRY TO RIGHT-MOST TABLE)	101	351	
	SUB-TOTAL EXISTING TREES FOR MITIGATION	SUB-TOTAL EXISTING TREE DBH FOR MITIGATION (Inches)	

FOR SMALL MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 4" AND LARGE MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 8"				
TREE NUMBER	TREE SPECIES	TREE DBH (Inches)	TOTAL TREES REQUIRED FOR MITIGATION	LOCATION (TREE PRESERVATION AREAS)
~~T410~~	~~OAK (RED)~~	~~11~~	~~6~~	~~PERIMETER BUFFER~~
~~T420~~	~~SWEET GUM~~	~~12~~	~~6~~	~~INERNAL TREE PRESERVATION ZONE~~
~~T421~~	~~SWEET GUM~~	~~15~~	~~9~~	~~INERNAL TREE PRESERVATION ZONE~~
~~T422~~	~~SWEET GUM~~	~~10~~	~~6~~	~~INERNAL TREE PRESERVATION ZONE~~
~~T423~~	~~SWEET GUM~~	~~17~~	~~9~~	~~INERNAL TREE PRESERVATION ZONE~~
~~T546~~	~~PINE~~	~~14"~~	~~9~~	~~INERNAL TREE PRESERVATION ZONE~~
~~T547~~	~~PINE~~	~~18"~~	~~9~~	~~INERNAL TREE PRESERVATION ZONE~~
~~T608~~	~~TWIN MAPLE~~	~~8~~	~~6~~	~~INERNAL TREE PRESERVATION ZONE~~
~~T620~~	~~GUM~~	~~8~~	~~6~~	~~PERIMETER BUFFER~~
~~T631~~	~~TWIN POPLAR~~	~~10~~	~~6~~	~~PERIMETER BUFFER~~
~~T634~~	~~OAK~~	~~15~~	~~9~~	~~PERIMETER BUFFER~~
~~T641~~	~~POLPLAR~~	~~13~~	~~9~~	~~PERIMETER BUFFER~~
~~T642~~	~~GUM~~	~~9~~	~~6~~	~~PERIMETER BUFFER~~
~~T653~~	~~POPLAR~~	~~19~~	~~12~~	~~INERNAL TREE PRESERVATION ZONE~~
T655	POPLAR	19	12	PERIMETER BUFFER
T657	OAK	30	15	PERIMETER BUFFER
~~T660~~	~~BEECH~~	~~8~~	~~6~~	~~INERNAL TREE PRESERVATION ZONE~~
~~T672~~	~~TWIN OAK~~	~~21~~	~~12~~	~~INERNAL TREE PRESERVATION ZONE~~
T676	OAK	32	15	STREET BUFFER
T679	OAK	28	15	STREET BUFFER
REQUIRED MITIGATION SUB-TOTALS	4	109	57	
	SUB-TOTAL TREES TO BE MITIGATED	SUB-TOTAL TREE DBH TO BE MITIGATED (Inches)	SUB-TOTAL TREES REQUIRED FOR MITIGATION	
REQUIRED MITIGATION TOTALS (TOTAL OF SHEET 19B)	29	445	243	
	TOTAL TREES TO BE MITIGATED	TOTAL TREE DBH TO BE MITIGATED (Inches)	TOTAL TREES REQUIRED FOR MITIGATION	

EXISITNG TREES TO BE USED FOR MITIGATION CREDIT			
TREE NUMBER	TREE SPECIES	TREE DBH (Inches)	LOCATION
~~T1472~~	~~BEECH~~	~~4~~	~~PERIMETER BUFFER~~
~~T1473~~	~~OAK~~	~~3~~	~~PERIMETER BUFFER~~
~~T1474~~	~~BEECH~~	~~7~~	~~PERIMETER BUFFER~~
~~T1475~~	~~MAPLE~~	~~5~~	~~PERIMETER BUFFER~~
~~T1476~~	~~BEECH~~	~~7~~	~~PERIMETER BUFFER~~
~~T1477~~	~~GUM TRIPLE~~	~~5~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1478~~	~~HICKORY~~	~~2~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1481~~	~~POPLAR~~	~~5~~	~~PERIMETER BUFFER~~
~~T1482~~	~~HICKORY~~	~~2~~	~~PERIMETER BUFFER~~
~~T1483~~	~~BEECH~~	~~4~~	~~PERIMETER BUFFER~~
~~T1484~~	~~MAPLE~~	~~5~~	~~PERIMETER BUFFER~~
~~T1485~~	~~MAPLE~~	~~4~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1486~~	~~DOGWOOD~~	~~3~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1488~~	~~MAPLE~~	~~2~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1490~~	~~OAK DBL~~	~~4~~	~~PERIMETER BUFFER~~
~~T1491~~	~~MAPLE~~	~~5~~	~~PERIMETER BUFFER~~
~~T1492~~	~~MAPLE~~	~~4~~	~~PERIMETER BUFFER~~
~~T1494~~	~~MAPLE~~	~~2~~	~~PERIMETER BUFFER~~
~~T1495~~	~~POPLAR~~	~~5~~	~~PERIMETER BUFFER~~
~~T1496~~	~~OAK~~	~~5~~	~~PERIMETER BUFFER~~
~~T1497~~	~~GUM~~	~~3~~	~~PERIMETER BUFFER~~
~~T1498~~	~~GUM~~	~~3~~	~~PERIMETER BUFFER~~
~~T1499~~	~~GUM~~	~~2~~	~~PERIMETER BUFFER~~
~~T1500~~	~~MAPLE~~	~~4~~	~~PERIMETER BUFFER~~
~~T1501~~	~~OAK~~	~~5~~	~~PERIMETER BUFFER~~
~~T1502~~	~~GUM~~	~~2~~	~~PERIMETER BUFFER~~
~~T1503~~	~~MAPLE~~	~~4~~	~~PERIMETER BUFFER~~
~~T1504~~	~~MAPLE~~	~~3~~	~~PERIMETER BUFFER~~
~~T1505~~	~~HICKORY~~	~~2~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1506~~	~~MAPLE~~	~~3~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1507~~	~~MAPLE~~	~~4~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1509~~	~~HICKORY~~	~~7~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1510~~	~~MAPLE~~	~~5~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1596~~	~~GUM~~	~~2~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1597~~	~~MAPLE~~	~~4~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1598~~	~~OAK~~	~~5~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1604~~	~~CEDAR~~	~~2~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1620~~	~~HICKORY~~	~~3~~	~~PERIMETER BUFFER~~
~~T1621~~	~~DOGWOOD QUAD~~	~~3~~	~~PERIMETER BUFFER~~
~~T1622~~	~~POPLAR~~	~~6~~	~~PERIMETER BUFFER~~
~~T1556~~	~~MAPLE~~	~~2~~	~~PERIMETER BUFFER~~
~~T1557~~	~~MAPLE~~	~~5~~	~~PERIMETER BUFFER~~
~~T1560~~	~~DOGWOOD~~	~~2~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1561~~	~~CEDAR~~	~~2~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1562~~	~~GUM~~	~~5~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1563~~	~~GUM~~	~~5~~	~~PERIMETER BUFFER~~
~~T1565~~	~~GUM~~	~~2~~	~~PERIMETER BUFFER~~
~~T1570~~	~~CEDAR~~	~~3~~	~~PERIMETER BUFFER~~
~~T1577~~	~~DOGWOOD~~	~~3~~	~~PERIMETER BUFFER~~
~~T1578~~	~~GUM~~	~~3~~	~~PERIMETER BUFFER~~
~~T1579~~	~~DOGWOOD~~	~~2~~	~~PERIMETER BUFFER~~
~~T1646~~	~~MAPLE~~	~~3~~	~~PERIMETER BUFFER~~
~~T1647~~	~~MAPLE~~	~~5~~	~~PERIMETER BUFFER~~
~~T1650~~	~~DOGWOOD~~	~~2~~	~~PERIMETER BUFFER~~
~~T1656~~	~~HICKORY~~	~~3~~	~~PERIMETER BUFFER~~
~~T1657~~	~~GUM~~	~~3~~	~~PERIMETER BUFFER~~
~~T1664~~	~~HICKORY~~	~~3~~	~~PERIMETER BUFFER~~
~~T1663~~	~~OAK~~	~~4~~	~~PERIMETER BUFFER~~
~~T1665~~	~~GUM~~	~~6~~	~~PERIMETER BUFFER~~
~~T1667~~	~~OAK~~	~~3~~	~~PERIMETER BUFFER~~
~~T1673~~	~~GUM~~	~~3~~	~~PERIMETER BUFFER~~
~~T1013~~	~~GUM~~	~~3~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1016~~	~~GUM~~	~~4~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1017~~	~~GUM~~	~~4~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1019~~	~~HICKORY~~	~~7~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1020~~	~~MAPLE~~	~~4~~	~~INTERNAL TREE PRESERVATION ZONE~~
T1674	HICKORY	2	PERIMETER BUFFER
T1675	HICKORY	3	PERIMETER BUFFER
T1676	HICKORY	2	PERIMETER BUFFER
T1677	HICKORY	4	PERIMETER BUFFER
T1678	GUM	4	PERIMETER BUFFER
T1679	GUM	5	PERIMETER BUFFER
T1680	POPLAR	5	PERIMETER BUFFER
T1017 Replaced	GUM	2	PERIMETER BUFFER
T1018 Replaced	HICKORY	7	PERIMETER BUFFER
T1019 Replaced	MAPLE	6	PERIMETER BUFFER
T1020 Replaced	HICKORY	5	PERIMETER BUFFER
T1021 Replaced	HICKORY	4	INTERNAL TREE PRESERVATION ZONE
T1022 Replaced	HICKORY	4	INTERNAL TREE PRESERVATION ZONE
T1023 Replaced	HICKORY	2	PERIMETER BUFFER
T1024 Replaced	HICKORY	2	PERIMETER BUFFER
T1025 Replaced	HICKORY	3	PERIMETER BUFFER
~~T1722~~	~~HICKORY~~	~~3~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1723~~	~~CEDAR~~	~~4~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1734~~	~~OAK~~	~~3~~	~~STREET BUFFER~~
T1732	OAK	2	STREET BUFFER
~~T1725~~	~~MAPLE DBL~~	~~5~~	~~STREET BUFFER~~
~~T1726~~	~~OAK~~	~~4~~	~~STREET BUFFER~~
~~T1727~~	~~MAPLE~~	~~7~~	~~STREET BUFFER~~
~~T1728~~	~~HICKORY~~	~~5~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T1730~~	~~OAK~~	~~3~~	~~STREET BUFFER~~
T1731	HICKORY	4	STREET BUFFER
T1733	OAK	3	STREET BUFFER
T1734	OAK	4	STREET BUFFER
T1735	OAK	3	STREET BUFFER
T1736	OAK	5	STREET BUFFER
T1737	OAK	7	STREET BUFFER
T1739	HICKORY	5	STREET BUFFER
T1726	OAK	4	STREET BUFFER
T1725	MAPLE DBL	5	STREET BUFFER
T1727	MAPLE	7	STREET BUFFER
T1743	MAPLE	2	STREET BUFFER
T1744	HICKORY	6	STREET BUFFER
T1745	PINE	7	STREET BUFFER
PROPOSED MITIGATION SUB-TOTALS	29	122	
	SUB-TOTAL EXISTING TREES FOR MITIGATION	SUB-TOTAL EXISTING TREE DBH FOR MITIGATION (Inches)	
PROPOSED MITIGATION TOTALS (TOTAL OF SHEET 19B)	158	587	
	TOTAL EXISTING TREES FOR MITIGATION	TOTAL EXISTING TREE DBH FOR MITIGATION (Inches)	

NOTES:

1. See Sheets 18A, 18B, & 18C for enlarged tree mitigation plans.

2. See Sheets as follows for Tree Summary Tables:
   A. Existing Trees To Be Removed And Mitigated - Sheets 19 & 19A
   B. Existing Trees To Remain But Mitigated - Sheet 19B
   C. Existing Heritage Trees On Site - Sheet 20
   D. Existing Trees To Be Removed - Mitigation Not Required - Sheet 20
   E. Existing Trees Remaining (To Be Undisturbed) - Sheet 20

3. All tree mitigation is achieved by preservation of existing trees that are less than 8" DBH for large maturing or 4" DBH for understory trees. These trees used for mitigation credit have been located by field survey, and are shown on Sheets 18-18C.

4. Per the Town of Waxhaw, the only trees that are required to be shown on the plans and mitigated for removal, are the trees within the street/landscape buffers, perimeter buffers/permanent tree preservation easements and the internal tree protection zones (per the Tree Survey submitted with the approved rezoning plan). Six (6) of the eight heritage trees are not located in these areas, and therefore will be included in the tree removal permit application.

5. Two (2) heritage trees are located within the Perimeter Buffer / Tree Preservation Area, and will not be removed, however, due to proposed lot grading the "Required Critical Root Zone" and "Tree Protection Area" requirements (per UDO Section 9.21.8.b.1) cannot be satisfied, and therefore mitigation is provided.

6. All trees that have been marked through are trees that are no longer located in tree protection areas (ITPZ or Buffer) per Revision #9 to the Construction Plans. Therefore these trees may be removed and no longer require mitigation.

Rev. #9 Summary for This Sheet:
The following revisions have been made to Sheets 19, 19A, 19B, & 20:
- Revisions summarized on Sheet 18 (Proposed Tree Planting / Mitigation Plan).
- Updated Tables as necessary for Proposed Tree Planting / Mitigation Plan revisions..

FOLLOWING TREE SUMMARY TABLES ON THIS SHEET:
- Existing Trees to Remain But Mitigation Required (Unable to Meet UDO Requirements for Root Zone Protection)

APPROVED
By Max Hsiang at 3:41 pm, Jun 26, 2019

HE
HARRIS ENGINEERING
5200 PARK ROAD
SUITE 231
CHARLOTTE, NC 28209
P (704) 334-1325
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NC #C-1170 & SC #C00946

TREE SUMMARY TABLES

Grove Manor Sub. - Phase 1
Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

Revisions
#2 - 1/16/18: Added Sheet 19B per review comments.
#9 - 9/7/18: Revised per Zoning Amendment and addition of Phase 2.
#10 - 11/14/18: Revised owner information.
#11 - 3/26/19: Updated Design Firm information.

Job No.	043-17-001
Date	1/16/2018
Proj. Mgr.	WMH
Drawn	AW / SCE
Scale:	NTS

NORTH CAROLINA PROFESSIONAL SEAL #12585 ENGINEER WAYNE M. HARRIS

Sheet No. 19B
Of 26

S:_MESA\2018\043-BROADSTREET HOMES\043-18-003 GM Phase 1 REVISIONS\ENGINEERING\TreeMitigation-Shts17-19\043-17-001 Shts19-20 TreePlantingMitigationTables.dwg

Existing Trees To Be Removed - Mitigation Not Required

SMALL MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 4" AND LARGE MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 8"

TREE NUMBER	TREE SPECIES	TREE DBH (Inches)	LOCATION (TREE PRESERVATION AREAS)
T9	OAK (RED)	30	BMP 1 AREA
T10	OAK (RED)	17	BMP 1 AREA
T107	TRIPLE GUM	10	UTILITY EASEMENT
T130	SWEET GUM	10	UTILITY EASEMENT
T131	SWEET GUM	10	UTILITY EASEMENT
T135	SWEET GUM	16	UTILITY EASEMENT
T147	TWIN POPLAR (YELLOW)	9	UTILITY EASEMENT
T157	POPLAR (YELLOW)	12	BMP 2 AREA
T161	POPLAR (YELLOW)	9	BMP 2 AREA
T162	POPLAR (YELLOW)	9	BMP 2 AREA
T165	POPLAR (YELLOW)	9	BMP 2 AREA
T247	POPLAR (YELLOW)	10	BMP 2 AREA
T248	SWEET GUM	9	BMP 2 AREA
T249	POPLAR (YELLOW)	9	BMP 2 AREA
T250	HICKORY	12	BMP 2 AREA
T254	OAK (BLACK)	8	BMP 2 AREA
T255	POPLAR (YELLOW)	8	BMP 2 AREA
T256	DOGWOOD	5	BMP 2 AREA
T257	PINE	9	BMP 2 AREA
T258	POPLAR (YELLOW)	9	BMP 2 AREA
T259	POPLAR (YELLOW)	9	BMP 2 AREA
T260	DOGWOOD	5	BMP 2 AREA
T261	POPLAR (YELLOW)	9	BMP 2 AREA
T267	POPLAR(YELLOW)	10	BMP 2 AREA
T268	SWEET GUM	8	BMP 2 AREA
T269	HICKORY	12	BMP 2 AREA
T270	POPLAR(YELLOW)	9	BMP 2 AREA
T271	POPLAR(YELLOW)	10	BMP 2 AREA
T272	POPLAR(YELLOW)	11	BMP 2 AREA
T273	HICKORY	10	BMP 2 AREA
T274	POPLAR(YELLOW)	9	BMP 2 AREA
T277	HICKORY	10	BMP 2 AREA
T278	DOGWOOD	5	BMP 2 AREA
T312	OAK (RED)	25	UTILITY EASEMENT
T314	SWEET GUM	12	BMP 3 AREA
T315	OAK (RED)	14	BMP 3 AREA
T316	HICKORY	8	UTILITY EASEMENT
T317	OAK (RED)	8	BMP 3 AREA
T318	OAK (RED)	10	BMP 3 AREA
T347	OAK (RED)	24	BMP 3 AREA
T381	MAPLE	8	BMP 3 AREA
T382	OAK (SCARLET)	24	BMP 3 AREA
T383	HICKORY	8	BMP 3 AREA
T384	OAK (SCARLET)	12	BMP 3 AREA
T385	OAK (RED)	14	BMP 3 AREA
T386	OAK (RED)	18	BMP 3 AREA
T387	TWIN POPLAR	11	BMP 3 AREA
T396	OAK (SCARLET)	10	BMP 3 AREA
T397	OAK (BLACK)	10	BMP 3 AREA
T398	OAK (RED)	12	BMP 3 AREA
T399	OAK (RED)	22	BMP 3 AREA
T400	BEECH	16	BMP 3 AREA
T409	OAK (SCARLET)	30	BMP 3 AREA
T410	HICKORY	9	BMP 3 AREA
T424	SWEET GUM	11	BMP 3 AREA
T425	TWIN OAK	13	BMP 3 AREA
T426	SWEET GUM	14	BMP 3 AREA
T427	OAK (RED)	14	BMP 3 AREA
T428	TWIN GUM	10	BMP 3 AREA
T429	SWEET GUM	9	BMP 3 AREA
T430	OAK (RED)	12	BMP 3 AREA
T431	HICKORY	11	BMP 3 AREA
T432	TWIN OAK (RED)	10	BMP 3 AREA
T433	OAK (RED)	12	BMP 3 AREA
T434	OAK (RED)	19	BMP 3 AREA
T435	SWEET GUM	12	BMP 3 AREA
T436	HICKORY	9	BMP 3 AREA
T437	SWEET GUM	8	BMP 3 AREA
T438	OAK (RED)	12	BMP 3 AREA
T439	OAK (RED)	15	BMP 3 AREA
T440	SWEET GUM	11	BMP 3 AREA
T441	OAK (RED)	9	BMP 3 AREA
T442	OAK (RED)	12	BMP 3 AREA
T443	OAK (RED)	22	BMP 3 AREA
T444	OAK (RED)	19	BMP 3 AREA
T445	OAK (RED)	10	BMP 3 AREA
T446	SWEET GUM	10	BMP 3 AREA
T447	SWEET GUM	8	BMP 3 AREA
T448	OAK (RED)	17	UTILITY EASEMENT
T449	OAK (SCARLET)	14	BMP 3 AREA
T450	OAK (RED)	12	BMP 3 AREA
T451	OAK (RED)	8	BMP 3 AREA
T452	OAK(RED)	12	BMP 3 AREA
T453	OAK (RED)	14	BMP 3 AREA
T454	OAK(RED)	14	BMP 3 AREA
T455	HICKORY	10	BMP 3 AREA
T456	OAK (RED)	24	WALKING PATH DRIVE R/W
T457	OAK (RED)	12	WALKING PATH DRIVE R/W
T462	OAK (SCARLET)	13	WALKING PATH DRIVE R/W
T466	OAK(SCARLET)	10	COMMON OPEN SPACE
T493	POPLAR	9	BMP 3 AREA
T494	POPLAR(YELLOW)	14	BMP 3 AREA
T495	OAK (RED)	12	BMP 3 AREA
T496	POPLAR (YELLOW)	28	BMP 3 AREA
T497	OAK (RED)	17	BMP 3 AREA
T498	OAK (RED)	14	BMP 3 AREA
T499	OAK (RED)	10	BMP 3 AREA
T500	OAK (SCARLET)	10	BMP 3 AREA
T501	OAK (RED)	9	BMP 3 AREA
T502	OAK (RED)	12	BMP 3 AREA
T503	OAK (RED)	12	BMP 3 AREA
T504	OAK (RED)	16	BMP 3 AREA
T505	OAK (BLACK)	14	BMP 3 AREA
T506	HICKORY	8	BMP 3 AREA
T507	HICKORY	9	BMP 3 AREA
T508	OAK(SCARLET)	10	BMP 3 AREA
T509	MAPLE	10	BMP 3 AREA
T510	OAK (BLACK)	9	BMP 3 AREA
T545	OAK (BLACK)	12	BMP AND STORM DRAINAGE EASEMENT
T548	OAK (SCARLET)	20	BMP AND STORM DRAINAGE EASEMENT
T610	POPLAR	15	COMMON OPEN SPACE AND UTILITY EASEMENT
TOTAL TREES TO BE REMOVED WITHOUT MITIGATION	111	1364	
	TOTAL TREES	TOTAL TREE DBH (Inches)	

Existing Trees Remaining (To Be Undisturbed)

SMALL MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 4" AND LARGE MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 8"

TREE NUMBER	TREE SPECIES	TREE DBH (Inches)	LOCATION (TREE PRESERVATION AREAS)
T2	DOGWOOD	10	PERIMETER BUFFER
T4	RED OAK	8	PERIMETER BUFFER
T8	TWIN HARDWOOD	11	PERIMETER BUFFER
T11	SWEET GUM	8	PERIMETER BUFFER
T12	SWEET GUM	8	PERIMETER BUFFER
T13	SWEET GUM	10	PERIMETER BUFFER
T14	SWEET GUM	18	PERIMETER BUFFER
T19	TWIN MAPLE	8	PERIMETER BUFFER
T20	OAK (RED)	10	PERIMETER BUFFER
T21	SWEET GUM	9	PERIMETER BUFFER
T22	OAK (RED)	9	PERIMETER BUFFER
T30	SWEET GUM	9	PERIMETER BUFFER
T31	OAK (BLACK)	9	PERIMETER BUFFER
T32	PINE	9	PERIMETER BUFFER
T34	OAK	9	PERIMETER BUFFER
T35	SWEET GUM	11	PERIMETER BUFFER
T50	BIRCH	9	PERIMETER BUFFER
T51	MAPLE	10	PERIMETER BUFFER
T58	MAPLE	10	PERIMETER BUFFER
T86	MAPLE	10	INTERNAL TREE PRESERVATION ZONE
T87	SWEET GUM	8	INTERNAL TREE PRESERVATION ZONE
T88	MAPLE	9	INTERNAL TREE PRESERVATION ZONE
T95	HICKORY	8	PERIMETER BUFFER
T96	OAK (BLACK)	11	PERIMETER BUFFER
T97	OAK (RED)	16	PERIMETER BUFFER
T98	SWEET GUM	9	PERIMETER BUFFER
T99	HICKORY	10	PERIMETER BUFFER
T100	HICKORY	12	PERIMETER BUFFER
T102	OAK (RED)	25	PERIMETER BUFFER
T103	OAK(RED)	9	INTERNAL TREE PRESERVATION ZONE
T104	HICKORY	8	INTERNAL TREE PRESERVATION ZONE
T110	OAK (BLACK)	10	PERIMETER BUFFER
T111	HICKORY	10	PERIMETER BUFFER
T116	SWEET GUM	11	PERIMETER BUFFER
T119	SWEET GUM	11	PERIMETER BUFFER
T121	SWEET GUM	11	PERIMETER BUFFER
T123	MAPLE	8	PERIMETER BUFFER
T124	SWEET GUM	15	PERIMETER BUFFER
T125	SWEET GUM	8	PERIMETER BUFFER
T126	CEDAR	10	PERIMETER BUFFER
T127	SWEET GUM	11	INTERNAL TREE PRESERVATION ZONE
T149	POPLAR (YELLOW)	11	INTERNAL TREE PRESERVATION ZONE
T150	POPLAR (YELLOW)	9	INTERNAL TREE PRESERVATION ZONE
T158	POPLAR (YELLOW)	9	PERIMETER BUFFER
T159	POPLAR (YELLOW)	10	PERIMETER BUFFER
T160	POPLAR (YELLOW)	11	PERIMETER BUFFER
T164	POPLAR (YELLOW)	11	PERIMETER BUFFER
T241	MAPLE	9	PERIMETER BUFFER
T243	OAK (SCARLET)	10	PERIMETER BUFFER
T245	POPLAR (YELLOW)	9	PERIMETER BUFFER
T246	SWEET GUM	9	INTERNAL TREE PRESERVATION ZONE
T251	HICKORY	9	PERIMETER BUFFER
T252	HICKORY	14	PERIMETER BUFFER
T253	POPLAR (YELLOW)	9	PERIMETER BUFFER
T262	POPLAR (YELLOW)	9	PERIMETER BUFFER
T263	OAK (BLACK)	10	PERIMETER BUFFER
T264	PINE	13	PERIMETER BUFFER
T279	POPLAR (YELLOW)	9	PERIMETER BUFFER
T280	POPLAR (YELLOW)	12	PERIMETER BUFFER
T283	MAPLE	10	PERIMETER BUFFER
T284	OAK (BLACK)	10	PERIMETER BUFFER
T291	HICKORY	12	PERIMETER BUFFER
T292	OAK (RED)	18	PERIMETER BUFFER
T294	MAPLE	9	PERIMETER BUFFER
T320	OAK (RED)	27	PERIMETER BUFFER
T321	OAK (RED)	12	PERIMETER BUFFER
T323	OAK(RED)	12	PERIMETER BUFFER
T325	PINE	12	PERIMETER BUFFER
T326	OAK (RED)	10	PERIMETER BUFFER
T327	OAK (RED)	20	PERIMETER BUFFER
T331	HICKORY	10	PERIMETER BUFFER
T332	POPLAR (YELLOW)	8	PERIMETER BUFFER
T333	POPLAR (YELLOW)	16	PERIMETER BUFFER
~~T334~~	~~OAK (SCARLET)~~	~~8~~	~~PERIMETER BUFFER~~
~~T335~~	~~OAK (SCARLET)~~	~~17~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T336~~	~~OAK (SCARLET)~~	~~10~~	~~PERIMETER BUFFER~~
~~T337~~	~~OAK (RED)~~	~~13~~	~~PERIMETER BUFFER~~
~~T338~~	~~OAK (RED)~~	~~10~~	~~PERIMETER BUFFER~~
~~T339~~	~~OAK (SCARLET)~~	~~20~~	~~PERIMETER BUFFER~~
~~T340~~	~~OAK (RED)~~	~~21~~	~~INTERNAL TREE PRESERVATION ZONE~~
T341	HICKORY	8	PERIMETER BUFFER
T342	HICKORY	9	PERIMETER BUFFER
T343	OAK (RED)	10	PERIMETER BUFFER
T344	OAK (RED)	12	PERIMETER BUFFER
~~T345~~	~~HICKORY~~	~~8~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T350~~	~~OAK (RED)~~	~~8~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T351~~	~~OAK (RED)~~	~~12~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T352~~	~~HICKORY~~	~~8~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T353~~	~~OAK (RED)~~	~~10~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T354~~	~~OAK (RED)~~	~~22~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T355~~	~~HICKORY~~	~~10~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T357~~	~~OAK (RED)~~	~~16~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T358~~	~~OAK (RED)~~	~~11~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T359~~	~~MAPLE~~	~~9~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T360~~	~~OAK (RED)~~	~~12~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T361~~	~~OAK (RED)~~	~~17~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T362~~	~~HICKORY~~	~~9~~	~~PERIMETER BUFFER~~
~~T363~~	~~OAK (RED)~~	~~14~~	~~PERIMETER BUFFER~~
~~T364~~	~~HICKORY~~	~~9~~	~~PERIMETER BUFFER~~
~~T365~~	~~OAK (RED)~~	~~11~~	~~PERIMETER BUFFER~~
SUB-TOTAL TREES TO REMAIN W/O DISTURBANCE (CARRY TO TABLE @ RIGHT)	100	1118	
	TOTAL TREES	TOTAL TREE DBH (Inches)	

SMALL MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 4" AND LARGE MATURING TREES WITH DBH EQUAL TO OR GREATER THAN 8"

TREE NUMBER	TREE SPECIES	TREE DBH (Inches)	LOCATION (TREE PRESERVATION AREAS)
~~T366~~	~~MAPLE~~	~~10~~	~~PERIMETER BUFFER~~
~~T367~~	~~OAK (SCARLET)~~	~~16~~	~~PERIMETER BUFFER~~
~~T368~~	~~OAK (SCARLET)~~	~~15~~	~~PERIMETER BUFFER~~
~~T369~~	~~OAK (SCARLET)~~	~~10~~	~~PERIMETER BUFFER~~
~~T370~~	~~OAK (SCARLET)~~	~~12~~	~~PERIMETER BUFFER~~
~~T371~~	~~OAK (RED)~~	~~10~~	~~PERIMETER BUFFER~~
~~T376~~	~~OAK (RED)~~	~~12~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T377~~	~~HICKORY~~	~~9~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T379~~	~~OAK (RED)~~	~~12~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T388~~	~~OAK (RED)~~	~~16~~	~~PERIMETER BUFFER~~
~~T389~~	~~OAK (RED)~~	~~10~~	~~PERIMETER BUFFER~~
~~T390~~	~~OAK (RED)~~	~~11~~	~~PERIMETER BUFFER~~
~~T391~~	~~HICKORY~~	~~9~~	~~PERIMETER BUFFER~~
~~T393~~	~~OAK (RED)~~	~~12~~	~~PERIMETER BUFFER~~
~~T394~~	~~BEECH~~	~~9~~	~~PERIMETER BUFFER~~
~~T403~~	~~HICKORY~~	~~10~~	~~PERIMETER BUFFER~~
~~T404~~	~~OAK (RED)~~	~~12~~	~~PERIMETER BUFFER~~
~~T412~~	~~SWEET GUM~~	~~10~~	~~PERIMETER BUFFER~~
~~T413~~	~~OAK (SCARLET)~~	~~17~~	~~PERIMETER BUFFER~~
~~T414~~	~~OAK(RED)~~	~~10~~	~~PERIMETER BUFFER~~
~~T415~~	~~POPLAR (YELLOW)~~	~~16~~	~~PERIMETER BUFFER~~
~~T416~~	~~POPLAR (YELLOW)~~	~~14~~	~~PERIMETER BUFFER~~
~~T417~~	~~POPLAR (YELLOW)~~	~~12~~	~~PERIMETER BUFFER~~
~~T418~~	~~SWEET GUM~~	~~10~~	~~PERIMETER BUFFER~~
~~T549~~	~~OAK~~	~~10~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T550~~	~~MAPLE~~	~~13~~	~~PERIMETER BUFFER~~
~~T551~~	~~POPLAR~~	~~8~~	~~PERIMETER BUFFER~~
~~T552~~	~~POPLAR~~	~~10~~	~~PERIMETER BUFFER~~
~~T553~~	~~MAPLE~~	~~8~~	~~PERIMETER BUFFER~~
~~T554~~	~~OAK~~	~~8~~	~~PERIMETER BUFFER~~
~~T555~~	~~OAK~~	~~24~~	~~PERIMETER BUFFER~~
~~T556~~	~~OAK~~	~~20~~	~~PERIMETER BUFFER~~
~~T557~~	~~OAK~~	~~10~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T558~~	~~OAK~~	~~14~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T559~~	~~OAK~~	~~8~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T560~~	~~OAK~~	~~10"~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T594~~	~~MAPLE~~	~~12"~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T595~~	~~MAPLE~~	~~11"~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T596~~	~~MAPLE~~	~~10"~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T597~~	~~OAK~~	~~32~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T598~~	~~OAK~~	~~16"~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T604~~	~~POPLAR~~	~~12~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T605~~	~~POLAR~~	~~11~~	~~PERIMETER BUFFER~~
~~T606~~	~~OAK~~	~~12~~	~~PERIMETER BUFFER~~
~~T607~~	~~OAK~~	~~11~~	~~PERIMETER BUFFER~~
~~T622~~	~~GUM~~	~~12~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T623~~	~~TWIN POPLAR~~	~~10~~	~~PERIMETER BUFFER~~
~~T625~~	~~GUM~~	~~9~~	~~PERIMETER BUFFER~~
~~T626~~	~~POPLAR~~	~~10~~	~~PERIMETER BUFFER~~
~~T627~~	~~OAK~~	~~17~~	~~PERIMETER BUFFER~~
~~T628~~	~~MAPLE~~	~~9~~	~~PERIMETER BUFFER~~
~~T634~~	~~POPLAR~~	~~13~~	~~PERIMETER BUFFER~~
~~T645~~	~~MAPLE~~	~~13~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T646~~	~~MAPLE~~	~~13~~	~~INTERNAL TREE PRESERVATION ZONE~~
T647	POPLAR	10	PERIMETER BUFFER
T648	OAK	19	PERIMETER BUFFER
T650	POPLAR	9	PERIMETER BUFFER
~~T651~~	~~MAPLE~~	~~9~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T652~~	~~POPLAR~~	~~12~~	~~INTERNAL TREE PRESERVATION ZONE~~
T656	HICKORY	12	PERIMETER BUFFER
T659	OAK	9	PERIMETER BUFFER
T660	OAK	13	PERIMETER BUFFER
T661	HICKORY	9	STREET BUFFER
T662	HICKORY	8	STREET BUFFER
T623	TWIN POPLAR	10	PERIMETER BUFFER
T643	POPLAR	14	PERIMETER BUFFER & STORM DRAINAGE EASEMENT
T644	POPLAR	14	PERIMETER BUFFER & STORM DRAINAGE EASEMENT
T663	HICKORY	10	PERIMETER BUFFER
T664	PINE	8	STREET BUFFER
T665	OAK	8	STREET BUFFER
T666	HICKORY	9	STREET BUFFER
T667	TWIN OAK	16	STREET BUFFER
T668	GUM	8	STREET BUFFER
~~T670~~	~~OAK~~	~~10~~	~~INTERNAL TREE PRESERVATION ZONE~~
~~T671~~	~~OAK~~	~~11~~	~~INTERNAL TREE PRESERVATION ZONE~~
T674	HICKORY	10	STREET BUFFER
T675	HICKORY	10	STREET BUFFER
T677	MAPLE	8	STREET BUFFER
T682	CREPE CLUSTER	4	STREET BUFFER
T683	CREPE CLUSTER	3	STREET BUFFER
T684	CREPE CLUSTER	3	STREET BUFFER
T685	CREPE CLUSTER	4	STREET BUFFER
SUB-TOTAL TREES TO REMAIN W/O DISTURBANCE	82	871	
	TOTAL TREES	TOTAL TREE DBH (Inches)	
TOTAL TREES TO REMAIN WITHOUT DISTURBANCE	182	1989	
	TOTAL TREES	TOTAL TREE DBH (Inches)	

Existing Heritage Trees On Site

EXISTING HERITAGE TREES ON SITE

TREE NUMBER	TREE SPECIES	TREE DBH (Inches)	TOTAL TREES REQUIRED FOR MITIGATION	TREE PRESERVATION AREA LOCATION	COMMENTS
T1	OAK (RED)	42	0	BMP 1 AREA	TO BE REMOVED - MITIGATION NOT REQUIRED
T17	OAK (RED)	41	0	LOT 1	TO BE REMOVED - MITIGATION NOT REQUIRED
T44	OAK (BLACK)	54	0	LOT 4	TO BE REMOVED - MITIGATION NOT REQUIRED
T45	OAK (BLACK)	48	0	GROVE MANOR DRIVE RIGHT-OF-WAY	TO BE REMOVED - MITIGATION NOT REQUIRED
T281	OAK(RED)	40	0	LOT 13	TO BE REMOVED - MITIGATION NOT REQUIRED
T286	OAK(RED)	35	0	LOT 13	TO BE REMOVED - MITIGATION NOT REQUIRED
T654	OAK	36	15	PERIMETER BUFFER	TO REMAIN AND BE MITIGATED - UNABLE TO MEET REQUIRED CRITICAL ROOT ZONE AND TREE PROTECTION AREA (PER U.D.O. SECTION 9.21.8.B.1)
T658	OAK	36	15	PERIMETER BUFFER	TO REMAIN AND BE MITIGATED - UNABLE TO MEET REQUIRED CRITICAL ROOT ZONE AND TREE PROTECTION AREA (PER U.D.O. SECTION 9.21.8.B.1)
REQUIRED MITIGATION TOTALS	2	72	30		
	TOTAL TREES TO BE MITIGATED	TOTAL TREE DBH TO BE MITIGATED (Inches)	TOTAL TREES REQUIRED FOR MITIGATION		

EXISITNG TREES TO BE USED FOR MITIGATION CREDIT

TREE NUMBER	TREE SPECIES	TREE DBH (Inches)	LOCATION
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
T1682	HICKORY	7	PERIMETER BUFFER
T1683	HICKORY	3	PERIMETER BUFFER
T1684	HICKORY	2	PERIMETER BUFFER
T1685	MAPLE	2	PERIMETER BUFFER
T1686	MAPLE	4	PERIMETER BUFFER
T1687	MAPLE	7	PERIMETER BUFFER
T1689	MAPLE	2	PERIMETER BUFFER
T1690	GUM	2	PERIMETER BUFFER
T1691	MAPLE	5	PERIMETER BUFFER
T1695	MAPLE	4	PERIMETER BUFFER
T1696	MAPLE	6	PERIMETER BUFFER
T1703	MAPLE	2	PERIMETER BUFFER
T1704	HICKORY	3	PERIMETER BUFFER
T1705	GUM	4	PERIMETER BUFFER
T1706	HICKORY DBL	7	PERIMETER BUFFER
T1707	MAPLE	3	PERIMETER BUFFER
T1708	MAPLE	2	PERIMETER BUFFER
T1709	OAK	7	PERIMETER BUFFER
T1710	OAK	6	PERIMETER BUFFER
T1711	BEECH	4	PERIMETER BUFFER
T1712	DOGWOOD	3	PERIMETER BUFFER
T1713	MAPLE	3	STREET BUFFER
T1714	MAPLE	6	PERIMETER BUFFER
T1715	HICKORY	6	PERIMETER BUFFER
T1716	MAPLE DBL	4	STREET BUFFER
T1717	OAK	2	STREET BUFFER
T1718	OAK	2	STREET BUFFER
T1719	OAK	3	STREET BUFFER
T1720	OAK	3	STREET BUFFER
T1721	MAPLE	3	STREET BUFFER
PROPOSED MITIGATION TOTALS	30	117	
	TOTAL TREES FOR MITIGATION	TOTAL TREE DBH FOR MITIGATION (Inches)	

NOTES:

1. See Sheets 18A, 18B, & 18C for enlarged tree mitigation plans.

2. See Sheets as follows for Tree Summary Tables:
   A. Existing Trees To Be Removed And Mitigated - Sheets 19 & 19A
   B. Existing Trees To Remain But Mitigated - Sheet 19B
   C. Existing Heritage Trees On Site - Sheet 20
   D. Existing Trees To Be Removed - Mitigation Not Required - Sheet 20
   E. Existing Trees Remaining (To Be Undisturbed) - Sheet 20

3. All tree mitigation is achieved by preservation of existing trees that are less than 8" DBH for large maturing or 4" DBH for understory trees. These trees used for mitigation credit have been located by field survey, and are shown on Sheets 18-18C.

4. Per the Town of Waxhaw, the only trees that are required to be shown on the plans and mitigated for removal, are the trees within the street/landscape buffers, perimeter buffers/permanent tree preservation easements and the internal tree protection zones (per the Tree Survey submitted with the approved rezoning plan). Six (6) of the eight heritage trees are not located in these areas, and therefore will be included in the tree removal permit application.

5. Two (2) heritage trees are located within the Perimeter Buffer / Tree Preservation Area, and will not be removed, however, due to proposed lot grading the "Required Critical Root Zone" and "Tree Protection Area" requirements (per UDO Section 9.21.8.b.1) cannot be satisfied, and therefore mitigation is provided.

6. All trees that have been marked through are trees that are no longer located in tree protection areas (ITPZ or Buffer) per Revision #9 to the Construction Plans. Therefore these trees may be removed and no longer require mitigation.

Rev. #9 Summary for This Sheet:
The following revisions have been made to Sheets 19, 19A, 19B, & 20:
- Revisions summarized on Sheet 18 (Proposed Tree Planting / Mitigation Plan).
- Updated Tables as necessary for Proposed Tree Planting / Mitigation Plan revisions..

APPROVED
By Max Hsiang at 3:41 pm, Jun 26, 2019

FOLLOWING TREE SUMMARY TABLES ON THIS SHEET:
- Existing Trees to be Removed - Mitigated Not Required
- Existing Trees to Remain as Undisturbed
- Existing Heritage Trees

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TREE SUMMARY TABLES

Grove Manor Sub. - Phase 1

Grove Manor, NC, LLC
P.O. Box 8790, Virginia Beach, VA. 23450

Revisions
#2 - 1/16/18: Revised per review comments.
#4 - 3/1/18: Revised per review comments.
#9 - 9/7/18: Revised per Zoning Amendment and addition of Phase 2.
#10 - 11/14/18: Revised owner information.
#11 - 3/26/19: Updated Design Firm information.

Job No. 043-17-001
Date 10/27/2017
Proj. Mgr. WMH
Drawn AW / SCE

NORTH CAROLINA PROFESSIONAL SEAL 12,585 ENGINEER WAYNE M. HARRIS
5/10/19

Scale: NTS

Sheet No. 20 Of 26

S:_MESA\2018\043-BROADSTREET HOMES\043-18-003 GM Phase 1 REVISIONS\ENGINEERING\TreeMitigation-Shts17-19\043-17-001 Shts19-20 TreePlantingMitigationTables.dwg