HOPKINS FARM

8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

CONSTRUCTION DRAWINGS

CASE # ZMA-7-24
ORDINANCE # 25-09-17-004
PROJECT NUMBER: LEN24015
DATE: NOVEMBER 14, 2025

SITE DATA

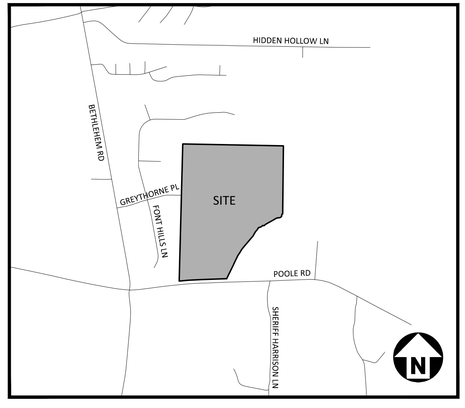
PIN	1752496412	
SITE AREA	GROSS AREA: 51.11 AC NCDOT R/W DEDICATION: 0.30 AC NET AREA: 50.81 AC	
EXISTING ZONING	RT	
PROPOSED ZONING	PUD (GR8 BASE DISTRICT)	
WATERSHED CLASSIFICATION	LOWER NEUSE RIVER	
RIVER BASIN	NEUSE	
FEMA DATA	FIRM PANELS #3720175300K & #3720175200K, BOTH DATED 07/19/22.	
EXISTING USE	AGRICULTURE / RESIDENTIAL	
PROPOSED USE	RESIDENTIAL	
DENSITY	171 UNITS / 50.81 AC = 3.36 DU/AC (MAXIMUM) SINGLE FAMILY = 102 UNITS (60%) [32 FL UNITS; 70 RL UNITS] TOWNHOMES = 69 UNITS (40%) [53 TH FRONTING R/W; 16 TH FRONTING OPEN SPACE]	
SETBACKS (SFD FRONT LOAD)	PROPOSED (PER PUD)	MIN. LOT SIZE: 6,000 SF MIN. LOT WIDTH: 60' MIN. FRONT SETBACK: 10' (25' FOR FACE OF GARAGE) MIN. DRIVEWAY LENGTH: 25' SIDE SETBACK: 20% LOT WIDTH AGGREGATE (5' MIN.) CORNER SIDE SETBACK: 10' REAR SETBACK: 25' MAX. BUILDING HEIGHT: 3 STORIES
SETBACKS (SFD REAR LOAD)	PROPOSED (PER PUD)	MIN. LOT SIZE: 3,500 SF MIN. LOT WIDTH: 34' MIN. FRONT SETBACK: 10' (EXCLUDING PORCH/STOOP ENCROACHMENT) MIN. SIDE SETBACK: 3' MIN. SIDE STREET SETBACK: 10' MIN. REAR SETBACK: 12' (20' TO EDGE OF ALLEY PAVEMENT) MIN. DRIVEWAY LENGTH: 20' (MEASURED FROM EDGE OF PAVEMENT) MAX. BUILDING HEIGHT: 3 STORIES
SETBACKS (TOWNHOMES REAR LOAD - FRONTING STREETS)	PROPOSED (PER PUD)	MIN. LOT WIDTH: 20' MIN. FRONT SETBACK: 5' MIN. BUILDING SEPARATION: 15' MIN. SIDE SETBACK: 5' (0' IF PARTY WALL EXISTS) MIN. SIDE STREET YARD: 10' MIN. REAR SETBACK: 12' (20' TO EDGE OF ALLEY PAVEMENT) MIN. DRIVEWAY LENGTH: 20' (MEASURED FROM EDGE OF PAVEMENT) MAX. BUILDING HEIGHT: 3 STORIES
SETBACKS (TOWNHOMES REAR LOAD - FRONTING OPEN SPACE)	PROPOSED (PER PUD)	MIN. LOT WIDTH: 20' MIN. FRONT SETBACK: 0' MIN. BUILDING SEPARATION: 15' MIN. SIDE SETBACK: 5' (0' IF PARTY WALL EXISTS) MIN. SIDE STREET YARD: 10' MIN. REAR SETBACK: 12' (20' TO EDGE OF ALLEY PAVEMENT) MIN. DRIVEWAY LENGTH: 20' (MEASURED FROM EDGE OF PAVEMENT) MAX. BUILDING HEIGHT: 3 STORIES
TOTAL OPEN SPACE	REQUIRED	6.32 AC ([102x3.5x520] + [69x2.5x520] / 43560 = 6.32 AC)
	PROPOSED	4.29 AC - ACTIVE 10.47 AC - PASSIVE 6.94 AC - COMMON OPEN SPACE 21.70 AC - TOTAL (42.71% OF NET SITE)
ACTIVE OPEN SPACE	REQUIRED	3.16 AC
	PROPOSED	4.29 AC (SEE OPEN SPACE SUMMARY TABLE ON SHEET C2.01)
PASSIVE OPEN SPACE	REQUIRED	3.16 AC
	PROPOSED	10.47 AC (SEE OPEN SPACE SUMMARY TABLE ON SHEET C2.01)
ADDITIONAL COMMON OPEN SPACE	PROPOSED	6.94 AC
TREE SAVE	REQUIRED	1.95 AC
	PROPOSED	6.89 AC
CONNECTIVITY	REQUIRED	1.4
	PROPOSED	1.5 (15 LINKS/10 NODES)
PARKING DATA	REQUIRED	2/UNIT x 171 UNITS = 342 SPACES
	PROPOSED	341 GARAGE SPACES (204 SFD/137 TH) 341 DRIVEWAY SPACES (204 SFD/137 TH) 684 TOTAL SPACES
	ADDITIONAL PROPOSED	84 ON-STREET SPACES (2 ACC) 19 AMENITY SPACES (1 VAN) 43 ON-ALLEY SPACES 146 TOTAL ADDITIONAL SPACES

RALEIGH WATER INSPECTIONS QUANTITIES (SUBDIVISIONS AND SITE PLANS)

PHASE NUMBER(S)	PHASE 1	PHASE 2
NUMBER OF LOT(S)	119	52
NUMBER OF UNITS	119	52
PUBLIC WATER (LF)	5,780	1,425
PUBLIC SEWER (LF)	5,318	1,191
PRIVATE SEWER* (LF)	636	0
WATER SERVICE STUBS (QUANTITY)	128	43
SEWER SERVICE STUBS (QUANTITY)	128	43
AVERAGE DAILY FLOW PER PHASE**	23,800 GPD	10,400 GPD
COMMERCIAL PROJECTS WITH SINGLE WATER AND SEWER SERVICE		
FIRE SERVICE (SIZE)	N/A	N/A
DOMESTIC METER SIZE	N/A	N/A
IRRIGATION METER SIZE	N/A	N/A
AVERAGE DAILY FLOW PER PHASE**	N/A	N/A

*Sewer mains and manholes as part of a collection system

**Entire Project Flow. Based on 75gpd per bedroom for residential (Apartments, single Family dwelling, townhouse, condos), or based on 15A NCAC 02T .0114 Wastewater Design Flow Rates for Commercial and Industrial.
The meter size must match domestic service size (Exemption - 3/4" service tap with 5/8" meter)



VICINITY MAP
N.T.S.

ZONING CONDITIONS

SITE DEVELOPMENT ALLOWANCES

1. FRONT-LOADED SINGLE-FAMILY LOTS SHALL BE A MINIMUM OF 60-FEET WIDE AND SHALL HAVE A MINIMUM DRIVEWAY LENGTH OF 25-FEET.
2. REAR-LOADED SINGLE-FAMILY LOTS SHALL BE A MINIMUM OF 34-FEET WIDE AND SHALL HAVE A MINIMUM DRIVEWAY LENGTH OF 20-FEET, WHILE TOWNHOME LOTS SHALL BE A MINIMUM OF 20-FEET WIDE AND SHALL HAVE A MINIMUM DRIVEWAY LENGTH OF 20-FEET.
3. TOWNHOME LOTS (FRONTING PUBLIC STREETS & OPEN SPACES) SHALL BE A MINIMUM OF 20-FEET WIDE AND SHALL HAVE A MINIMUM DRIVEWAY LENGTH OF 20-FEET.
4. THE MINIMUM AND MAXIMUM DISTRIBUTION OF SINGLE-FAMILY DWELLINGS SHALL BE 15% AND 85%, RESPECTIVELY, WHILE THE MINIMUM AND MAXIMUM DISTRIBUTION OF TOWNHOME DWELLINGS SHALL BE 10% AND 40%, RESPECTIVELY, AS DETAILED ON THE MASTER PLAN AND PUD DOCUMENT.
5. MINIMUM SETBACKS FOR ALL BUILDING TYPES SHALL BE AS DETAILED ON THE MASTER PLAN AND PUD DOCUMENT.
6. THE REAR-LOADED TOWNHOMES ADJACENT POOLE ROAD SHALL BE PERMITTED TO FRONT AN OPEN SPACE ALONG POOLE ROAD.
7. SINGLE-FAMILY DWELLING FOUNDATION PLANTINGS (EVERGREEN SHRUBS) SHALL BE INSTALLED ALONG THE ENTIRE FRONT ELEVATION, AS WELL AS ANY ELEVATION DIRECTLY FACING PUBLIC RIGHTS-OF-WAY OR IMPROVED OPEN SPACE, AND THE FIRST TWELVE FEET OF THE SIDE ELEVATIONS CLOSEST TO THE FRONT ELEVATION.
8. ALL LOTS 60-FEET-WIDE OR GREATER SHALL BE PERMITTED TO BE MASS GRADED. NO RESIDENTIAL LOT WITHIN 100- FEET OF ANY RIPARIAN STREAM BUFFER SHALL BE MASS GRADED.
9. STREET "B" SHALL BE CONSTRUCTED TO THE MAIN STREET CROSS-SECTION PER SECTION 10.4.A.2.A OF THE UDO,EXCEPT FOR WHERE THIS ROAD BISECTS THE RIPARIAN BUFFER TOWARDS THE NORTHEASTERN SIDE OF THE SUBJECT PROPERTY. AT THAT LOCATION, THE MAIN STREET CROSS-SECTION SHALL BE MODIFIED, AS DETAILED ON SHEET C8.00 OF THE MASTER PLAN, TO REDUCE THE IMPACTS TO THAT RIPARIAN BUFFER.
10. THE ROADWAY DESIGN OF OLD KNIGHT ROAD EXTENSION NORTH OF THE INTERNAL ROUNDABOUT SHALL BE PERMITTED TO BE CONSTRUCTED TO A LESSER STANDARD THAN A COLLECTOR ROAD (MAIN STREET) DUE TO EXISTING CONDITIONS. MINOR FLEXIBILITY RELATED TO ROADWAY GEOMETRIES MAY GRANTED TO INSTALL SAID ROAD BASED UPON RIGHT-OF-WAY CONSTRAINTS.
11. IN LIEU OF A TRADITIONAL CUL-DE-SAC, AN ENHANCED, CUSTOM TURNAROUND SHALL BE CONSTRUCTED AT THE NORTHERN TERMINUS OF STREET F, AS SHOWN ON THE MASTER PLAN, WHICH SHALL NOT BE BOUND BY THE LOCAL STREET MINIMUM CENTERLINE RADIUS.
12. IN LIEU OF A ROUNDABOUT AT THE INTERSECTION OF STREET "A" AND POOLE ROAD, THIS INTERSECTION SHALL BE DESIGNED AS A STOP-CONTROLLED INTERSECTION, AS RECOMMENDED BY THE ZMA-7-24 TRANSPORTATION IMPACT ANALYSIS.
13. CONSTRUCTION TRAFFIC SHALL NOT UTILIZE THE EXISTING GREYTHORNE PLACE AS A MEANS OF ACCESS TO HOPKINS FARM.
14. THE SITE SHALL PROVIDE AT LEAST ONE CONSTRUCTED WETLAND AS A METHOD OF GREEN STORMWATER INFRASTRUCTURE. SAID CONSTRUCTED WETLAND SHALL BE PROVIDED SOUTH OF THE POOL AND WILL INCLUDE FLOWERING POLLINATOR PLANTS, AS SHOWN ON THE CURRENT ITERATION OF THE MASTER PLAN.
15. SITE AMENITIES SHALL INCLUDE A POLLINATOR GARDEN WITH EDUCATIONAL SIGNAGE HIGHLIGHTING THEIR ENVIRONMENTAL BENEFITS. THE CONSTRUCTED WETLAND SHALL BE PLANTED WITH POLLINATOR-FRIENDLY SPECIES TO SERVE AS A SECONDO POLLINATOR GARDEN.
16. ENHANCED ROADSIDE LANDSCAPING AND HARDSCAPING SHALL BE INSTALLED ALONG POOLE ROAD, WHICH SHALL BE COMPARABLE TO THE ENHANCED LANDSCAPING APPLIED TO THE ADJACENT HAVEN AT GRIFFITH MEADOWS' PUD TO THE EAST (ZMA-12-22). NEIGHBORHOOD GATEWAY SIGNAGE AT THE NEIGHBORHOOD ENTRANCE ON POOLE ROAD MAY BE LOCATED WITHIN THE ENHANCED ROADSIDE LANDSCAPING AND HARDSCAPING AREA.
17. A MINIMUM OF A TYPE B BUFFER SHALL BE APPLIED ALONG THE PROJECT'S PERIMETER. EXISTING VEGETATION SHALL BE CREDITED TOWARDS THE PLANTINGS REQUIRED WITH A TYPE B BUFFER. WHERE EXISTING VEGETATION IS USED TO SATISFY THE PROPOSED 20-FOOT TYPE B BUFFERS, THE DEVELOPER WILL BE RESPONSIBLE FOR SUPPLEMENTING ANY PORTIONS OF THE BUFFERS WITH NEW PLANTINGS WHERE EXISTING VEGETATION DOES NOT MEET PERFORMANCE STANDARDS. THE LAND USE ADMINISTRATOR RESERVES THE RIGHT TO REQUIRE ADDITIONAL VEGETATION TO BE PLANTED PRIOR TO CERTIFICATE OF OCCUPANCY ISSUANCE TO MEET THE PERFORMANCE STANDARDS OF THE REQUIRED BUFFERS.
18. HOPKINS FARM WILL PROVIDE A MINIMUM OF 100 GUEST PARKING SPACES, INCLUDING ON- AND OFF-STREET PARKING SPACES.
19. HOPKINS FARM SHALL INCLUDE ARCHITECTURAL STANDARDS FOR SINGLE-FAMILY DETACHED HOMES AND TOWNHOMES, AS OUTLINED IN THE "DESIGN GUIDELINES" SECTION OF THE PUD DOCUMENT.
20. ALONG ALLEY #6, AS SHOWN ON THE CURRENT ITERATION OF THE MASTER PLAN, THE ELEVATION OF THE ALLEY ON AVERAGE WILL BE THREE FEET BELOW THE ELEVATION OF THE ADJACENT TYPE B BUFFER.
21. ALL HOMES WILL BE PRE-WIRED FOR EV CHARGING.
22. PRIOR TO PHASE 2, THE DEVELOPER SHALL EITHER:
    a. INSTALL A WAYFINDING SIGN MEETING THE TOWN'S APPROVED SPECIFICATIONS IN THE GENERAL LOCATION IDENTIFIED ON THE MASTER PLAN AND PROVIDE THE TOWN WITH AN ACCESS AND MAINTENANCE EASEMENT FOR SAID SIGN; OR
    b. MAKE A PAYMENT TO THE TOWN IN THE AMOUNT OF $40,000 TO COVER THE TOWN'S EXPENSE TO INSTALL A WAYFINDING SIGN IN THE GENERAL LOCATION IDENTIFIED ON THE MASTER PLAN. THE DEVELOPER SHALL ALSO PROVIDE THE TOWN WITH AN ACCESS AND MAINTENANCE EASEMENT FOR THE SIGN FOR ANY AREA OUTSIDE OF THE RIGHT-OF-WAY NEEDED TO SERVICE THE SIGN.
23. NO PRIVATE COVENANT OR RESTRICTION SHALL PROHIBIT THE CONSTRUCTION OF ACCESSORY DWELLING UNITS (ADUS) WITHIN HOPKINS FARM; HOWEVER, MAY REGULATE THEIR LOCATION, DESIGN, ETC. TO ENSURE COMPATIBILITY WITH HOMES.
24. ARCHITECTURAL STANDARDS HAVE BEEN OFFERED BY THE APPLICANT FOR ALL BUILDINGS AS INDICATED IN THE PLANNED UNIT DEVELOPMENT (PUD) DOCUMENT.
25. THE SUBMITTED PUD DOCUMENT AND SUBMITTED MASTER PLAN WILL SERVE AS THE SITE-SPECIFIC DEVELOPMENT PLAN. THE APPLICANT MUST SUBMIT CONSTRUCTION DRAWINGS TO THE TOWN THAT CONFORM TO THE APPROVED CONDITIONS OF THE GR8-PUD ZONING DISTRICT, MASTER PLAN COMMENTS, THE UNIFIED DEVELOPMENT ORDINANCE, AND COMMENTS FROM THE MAY 15, 2025 DRC MEETING.

RALEIGH WATER CONDITIONS OF APPROVAL

1. ALL WATER, SANITARY SEWER AND REUSE FACILITIES SHALL BE INSTALLED, INSPECTED, TESTED, AND ACCEPTED BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT FOR OPERATIONS AND MAINTENANCE.
2. A PETITION FOR ANNEXATION INTO THE TOWN OF KNIGHTDALE SHALL BE SUBMITTED IN ACCORDANCE WITH CITY COUNCIL POLICY FOR EXTENSION OF UTILITY SERVICE TO PROPERTIES CURRENTLY OUTSIDE OF THE CITY LIMITS OF MERGER COMMUNITIES.
3. CONSTRUCTION DRAWINGS MUST BE APPROVED BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT FOR ALL PUBLIC WATER, PUBLIC SEWER AND/OR PRIVATE SEWER EXTENSIONS PRIOR TO MAP RECORDATION.
4. A PLAT MUST BE RECORDED AT THE WAKE COUNTY REGISTER OF DEEDS OFFICE FOR ALL UTILITY EASEMENT DEDICATIONS.
5. A DOWNSTREAM SEWER CAPACITY STUDY IN COMPLIANCE WITH CORPUD HANDBOOK SHALL BE SUBMITTED BY THE PROJECT ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION DRAWINGS.
6. A DEED SHALL BE RECORDED PRIOR TO CONCURRENT APPROVAL FOR ALL NECESSARY OFFSITE CITY OF RALEIGH SANITARY SEWER EASEMENTS TO ACCOMMODATE FUTURE SEWER LINE CONSTRUCTION.
7. IN COORDINATION WITH THE UNDERGROUND UTILITY SAFETY AND DAMAGE PREVENTION ACT REQUIREMENTS FOR WORKING WITHIN A TOLERANCE ZONE, RALEIGH WATER REQUIRES THAT ALL CONTRACTORS AND UTILITY COMPANIES PROVIDE NOTIFICATION WHEN THEY INTEND TO SPOT ANY CRITICAL INFRASTRUCTURE.
8. A SEVENTY-TWO (72) HOUR ADVANCE NOTIFICATION MUST BE GIVEN WHEN CONSIDERING ANY TYPE OF BLASTING EXCAVATION AND/OR BORING WITHIN THE REGULATED DISTANCES OF CRITICAL INFRASTRUCTURE.

LANDSCAPE PLANS

L2.00	OVERALL HARDSCAPE PLAN
L2.01	HARDSCAPE PLAN - MAIN AMENITY
L2.02	HARDSCAPE PLAN - ACTIVE OPEN
L2.03	HARDSCAPE PLAN - POLLINATOR GARDEN
L3.01	FINE GRADING PLAN - MAIN AMENITY
L3.02	FINE GRADING PLAN - ACTIVE OPEN
L3.03	FINE GRADING PLAN - POLLINATOR GARDEN
L4.00	HARDSCAPE NOTES AND SCHEDULE
L4.01	HARDSCAPE DETAILS
L4.02	HARDSCAPE DETAILS
L5.00	OVERALL CODE LANDSCAPE PLAN
L5.01	CODE LANDSCAPE PLAN - AREA "A"
L5.02	CODE LANDSCAPE PLAN - AREA "B"
L5.03	CODE LANDSCAPE PLAN - AREA "C"
L5.04	CODE LANDSCAPE PLAN - AREA "D"
L5.05	CODE LANDSCAPE PLAN - AREA "E"
L5.06	CODE LANDSCAPE NOTES & DETAILS
L5.07	CODE LANDSCAPE NOTES & DETAILS
L5.11	ENHANCED LANDSCAPE PLAN - MAIN AMENITY
L5.12	ENHANCED LANDSCAPE PLAN - ACTIVE OPEN
L5.13	ENHANCED LANDSCAPE PLAN - POLLINATOR GARDEN
L5.14	ENHANCED LANDSCAPE DETAILS
L5.15	ENHANCED LANDSCAPE DETAILS

ARCHITECTURAL PLANS

A00.2	PLANNING ELEVATIONS

FOR REFERENCE ONLY

C2.02	SPECIMEN TREE PRESERVATION EXHIBIT (FROM MASTER PLAN SUBMITTAL)

USE DISTRIBUTION SUMMARY

USE TYPE	MINIMUM DISTRIBUTION	MAXIMUM DISTRIBUTION	APPROX. DISTRIBUTION AS SHOWN ON PLAN
DWELLING - DUPLEX/TOWNHOUSE	10%	40%	±8.5 AC
DWELLING - MULTIFAMILY	N/A	N/A	N/A
DWELLING - SINGLE FAMILY	15%	85%	±21 AC

LOT IMPERVIOUS CALCULATION

LOT TYPE	LOT COUNT	LOT IMP.	TOTAL LOT IMP. PER TYPE
TOWNHOME	69	2,234	154,146
FRONT LOADED SINGLE FAMILY HOME	32	3,109	99,488
REAR LOADED SINGLE FAMILY HOME	70	2,650	185,500
TOTAL	171		439,134

TOWNHOME IMPERVIOUS BREAKDOWN

ROOF	52
LEAD WALK (ASSUME 5' WIDTH)	52
DRIVEWAY	1,425
PATIO	1,327
AC PAD (ASSUME 5'X5')	
FLUFF	
TOTAL	43

FRONT LOADED SINGLE FAMILY HOME IMPERVIOUS BREAKDOWN

ROOF	1,830
LEAD WALK (ASSUME 5' WIDTH)	50
DRIVEWAY	584
PATIO	120
AC PAD (ASSUME 5'X5')	25
FLUFF	500
TOTAL	3,109

REAR LOADED SINGLE FAMILY HOME IMPERVIOUS BREAKDOWN

ROOF	2,000
LEAD WALK (ASSUME 5' WIDTH)	105
DRIVEWAY	320
PATIO	0
AC PAD (ASSUME 5'X5')	25
FLUFF	200
TOTAL	2650

WATER ALLOCATION POINTS

REQUIRED POINTS	50 POINTS
MAJOR SUBDIVISION BASE POINTS	15 POINTS
CONSTRUCT A FOUNTAIN OR OTHER STORMWATER AMENITY WITHIN THE SCM	4 POINTS
ANY OTHER POOL	2 POINTS
INSTALLATION OF WAYFINDING / TOWN SIGNAGE	3 POINTS
ENHANCED ROADSIDE LANDSCAPING AND HARDSCAPING	2 POINTS
DISC GOLF COURSE (9 HOLE COURSE)	4 POINTS
CLUBHOUSE - NO MEETING SPACE, BATHROOM & CHANGING ROOMS ONLY	3 POINTS
IPEMA CERTIFIED PLAYGROUND EQUIPMENT	4 POINTS
CONSERVATION OF NATURAL HABITAT MEETING RECREATIONAL OS REQUIREMENTS AS DEFINED IN CH. 11 OF UDO.	
NATURAL HABITAT CONSERVATION	6 POINTS
PUBLIC ART	4 POINTS
STORMWATER BIORETENTION (AT OPEN SPACE #1)	5 POINTS
TOTAL MAJOR SUBDIVISION POINTS	52 POINTS

SHEET INDEX

C0.00	PROJECT NOTES
C1.00	EXISTING CONDITIONS
C1.01	OVERALL DEMOLITION PLAN
C1.02	DEMOLITION PLAN - AREA "A"
C1.03	DEMOLITION PLAN - AREA "B"
C1.04	DEMOLITION PLAN - AREA "C"
C1.05	DEMOLITION PLAN - AREA "D"
C1.06	DEMOLITION PLAN - AREA "E"
C2.00	OVERALL SITE PLAN
C2.01	SITE, SIGNAGE AND PAVEMENT MARKING PLAN - AREA "A"
C2.02	SITE, SIGNAGE AND PAVEMENT MARKING PLAN - AREA "B"
C2.03	SITE, SIGNAGE AND PAVEMENT MARKING PLAN - AREA "C"
C2.04	SITE, SIGNAGE AND PAVEMENT MARKING PLAN - AREA "D"
C2.05	SITE, SIGNAGE AND PAVEMENT MARKING PLAN - AREA "E"
C3.00	OVERALL GRADING AND STORM DRAINAGE PLAN
C3.01	GRADING AND STORM DRAINAGE PLAN - AREA "A"
C3.02	GRADING AND STORM DRAINAGE PLAN - AREA "B"
C3.03	GRADING AND STORM DRAINAGE PLAN - AREA "C"
C3.04	GRADING AND STORM DRAINAGE PLAN - AREA "D"
C3.05	GRADING AND STORM DRAINAGE PLAN - AREA "E"
C4.00	OVERALL UTILITY PLAN
C4.01	UTILITY PLAN - AREA "A"
C4.02	UTILITY PLAN - AREA "B"
C4.03	UTILITY PLAN - AREA "C"
C4.04	UTILITY PLAN - AREA "D"
C4.05	UTILITY PLAN - AREA "E"
C5.00	PLAN AND PROFILE - STREET "A" STA. 7+00 THRU STA. 18+25
C5.01	PLAN AND PROFILE - STREET "A" STA. 18+25 THRU STA. 29+50
C5.02	PLAN AND PROFILE - STREET "B"
C5.03	PLAN AND PROFILE - STREET "C" STA. 9+50 THRU STA. 19+50
C5.04	PLAN AND PROFILE - STREET "C" STA. 19+50 THRU STA. 29+00
C5.05	PLAN AND PROFILE - ALLEY "7"
	PLAN AND PROFILE - STREET "D"
C5.06	PLAN AND PROFILE - STREET "E"
	PLAN AND PROFILE - STREET "G"
C5.07	PLAN AND PROFILE - STREET "F" STA. 9+50 THRU STA. 16+00
C5.08	PLAN AND PROFILE - STREET "F" STA. 16+00 THRU STA. 22+00
C5.09	PLAN AND PROFILE - ALLEY "8"
	PLAN AND PROFILE - ALLEY "9"
C5.10	PLAN AND PROFILE - ALLEY "10"
	PLAN AND PROFILE - ALLEY "11"
C5.11	PLAN AND PROFILE - ALLEY "1"
C5.12	PLAN AND PROFILE - ALLEY "2"
	PLAN AND PROFILE - ALLEY "3"
C5.13	PLAN AND PROFILE - ALLEY "5"
C5.14	PLAN AND PROFILE - ALLEY "4"
	PLAN AND PROFILE - ALLEY "6" STA. 9+50 THRU STA. 15+00
C5.15	PLAN AND PROFILE - ALLEY "6" STA. 15+00 THRU STA. 22+00
C5.16	PLAN AND PROFILE - SS O/F "A"
C8.00	TYPICAL SECTIONS AND SITE DETAILS
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C8.02	SITE DETAILS
C8.03	STORM DRAINAGE DETAILS
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C8.05	WATER DETAILS
C8.06	SANITARY SEWER DETAILS
C8.07	SANITARY SEWER DETAILS
C9.A00	STORMWATER CONTROL MEASURE "A" PLAN VIEW
C9.A01	STORMWATER CONTROL MEASURE "A" DETAILS
C9.A02	STORMWATER CONTROL MEASURE "A" DETAILS
C9.A03	STORMWATER CONTROL MEASURE "A" PLANTING PLAN
C9.B00	STORMWATER CONTROL MEASURE "B" BIORETENTION NOTES
C9.B01	STORMWATER CONTROL MEASURE "B" BIORETENTION PLAN VIEW AND DETAILS
C9.B02	STORMWATER CONTROL MEASURE "B" BIORETENTION DETAILS
L6.00	PRELIMINARY LIGHTING PLAN

SEE SHEET C0.00 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF KNIGHTDALE, CITY OF RALEIGH PUBLIC UTILITIES, AND NCDOT (WHERE APPLICABLE) ENGINEERING DESIGN AND CONSTRUCTION STANDARDS

ATTENTION CONTRACTORS

The Contractor responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for contacting the Public Utilities Inspector at 919-996-3245 or https://cityworks.raleighnc.gov/pucontractors/New and schedule a Pre-construction meeting prior to beginning any construction.
Raleigh Water must be contacted at (919) 996-4540 at least twenty-four hours prior to beginning any work activity around critical water and sewer infrastructure.

Failure to notify the Divisions in advance of beginning construction, will result in the issuance of monetary fines, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for Inspection, install a downstream plug, have permitted plans on the jobsite, or any other violation of City of Raleigh Standards will result in a fine and possible exclusion from future work in the City of Raleigh.

Town Approved Standards Shall Control. In the event of a conflict or inconsistency between these construction drawings and the Town of Knightdale's Approved Standards for this project, the Approved Standards shall control. Town of Knightdale Approved Standards shall mean all development documents necessary for approval for the Property including, but not limited to, any special use permit, subdivision plan, site plan, subdivision plat(s), phasing schedule, Development Agreement, Utility Allocation Agreement, Annexation Agreement, the Town of Knightdale Standard Specification and Details Manual and applicable provisions of the North Carolina State Building Code.

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
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CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

LENNAR

PROJECT DIRECTORY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 WILLIAM D. WILLIAMSON NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
6		

CONSTRUCTION DRAWINGS FOR:
HOPKINS FARM
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545
PROJECT NUMBER: LEN24015

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GENERAL NOTES

1. CONTRACTOR SHALL NOTIFY "NC811" (811) OR (1-800-632-4949) AT LEAST 3 FULL BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF "NC811". REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
2. PRIOR TO BEGINNING CONSTRUCTION, THE GENERAL CONTRACTOR SHALL SCHEDULE AND ATTEND A PRECONSTRUCTION CONFERENCE WITH THE TOWN OF KNIGHTDALE, A REPRESENTATIVE OF THE OWNER, THE GRADING COMPANY, THE EROSION CONTROL INSTALLER, AND A REPRESENTATIVE FOR THE ENGINEER OF RECORD.
3. CONSTRUCTION, MAINTENANCE AND REMOVAL OF ALL EROSION CONTROL DEVICES ARE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. SEE EROSION CONTROL PLAN FOR SEQUENCING.
4. GRADING CONTRACTOR SHALL BE RESPONSIBLE TO GRADE EACH LOT SUCH THAT POSITIVE DRAINAGE FROM THE HOUSE FOUNDATION IS PROVIDED AND WATER FROM A HIGHER ELEVATION ON ADJOINING LOTS IS DIVERTED THROUGH THE USE OF SWALES ALONG LOT LINES. THE GRADING CONTRACTOR SHALL ALSO ENSURE THAT PONDING ON INDIVIDUAL LOTS WILL NOT BE CREATED.
5. EXISTING VEGETATION AND NATURAL AREAS SHALL BE PROTECTED TO THE GREATEST EXTENT POSSIBLE.
6. ALL PUBLIC STREETS & LANES MUST BE INSTALLED TO THE MINIMUM TOWN OF KNIGHTDALE STANDARDS SET FORTH IN THE STREET/SUBDIVISION DESIGN MANUAL OR THE CONDITIONS NOTED ON THE PLANS, WHICHEVER IS MORE STRINGENT.
7. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH TOWN OF KNIGHTDALE, CITY OF RALEIGH AND NCDOT STANDARDS, SPECIFICATIONS AND DETAILS.
8. ALL EXISTING UTILITIES ARE SHOWN AT APPROXIMATE LOCATIONS. ACTUAL LOCATIONS AND DEPTHS TO BE CONFIRMED BY THE CONTRACTOR IN THE FIELD PRIOR TO BEGINNING CONSTRUCTION.
9. ALL DIMENSIONS SHOWN ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.
10. PRIOR TO STARTING ANY CONSTRUCTION OF IMPROVEMENTS WITHIN ANY TOWN OR NCDOT STREET OR HIGHWAY RIGHT-OF-WAY, THE FOLLOWING PROCEDURES SHALL BE UNDERTAKEN: TOWN RIGHT-OF-WAY: CONTACT TOWN OF KNIGHTDALE ENGINEERING DEPARTMENT (919-217-2200) FOR INFORMATION ON DETOURS, OPEN CUTTING OF STREETS OR FOR ANY CONSTRUCTION WITHIN THE RIGHT-OF-WAY. NCDOT RIGHT-OF-WAY: CONTACT McADAMS COMPANY PROJECT ENGINEERS (919-361-5000) AND OBTAIN ALL PERMITS AND ENCROACHMENTS (KEEP COPIES ON CONSTRUCTION SITE), ALSO CONTACT NCDOT DISTRICT OFFICE (919-733-3213) 24 HOURS IN ADVANCE PRIOR TO PLACING CURB AND GUTTER AND TOWN OF KNIGHTDALE FOR SIDEWALKS AND RAMPS WITHIN NCDOT R/W.
11. ALL DIMENSIONS AND GRADES SHOWN ON THE PLANS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY PLAN OR GRADING CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR ANY WORK DONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL CONTROL POINTS AND BENCH MARKS NECESSARY.
13. DISPOSAL OF ALL DEMOLISHED MATERIALS IS THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE TAKEN OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL MUNICIPAL REQUIREMENTS.
14. THE AREA OR AREAS OF ENTRANCE AND EXIT TO AND FROM THE SITE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
15. NO SUBSTITUTION FOR SPECIFIED MATERIALS SHALL TAKE PLACE WITHOUT WRITTEN APPROVAL FROM THE OWNER. SAID APPROVAL MUST BE ACQUIRED PRIOR TO INSTALLATION. ANY COSTS FOR TESTING OR ENGINEERING SERVICES REQUIRED TO PROVE PROPOSED SUBSTITUTIONS ARE ACCEPTABLE SHALL BE PAID BY THE CONTRACTOR.
16. ALL SIGNS AND TRAFFIC CONTROL DEVICES SHALL BE IN COMPLIANCE WITH THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.).
17. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS FOR EXCAVATIONS; FINAL RULE 29CFR PART 1926, SUBPART "P" APPLIES TO ALL EXCAVATIONS EXCEEDING FIVE (5) FEET IN DEPTH. EXCAVATION EXCEEDING TWENTY (20) FEET IN DEPTH REQUIRES THE DESIGN OF A TRENCH SAFETY SYSTEM BY A REGISTERED PROFESSIONAL ENGINEER, PROVIDED BY CONTRACTOR RESPONSIBLE FOR EXCAVATION.
18. EXISTING IMPROVEMENTS DAMAGED DURING CONSTRUCTION SHALL BE REPLACED/RESTORED TO THEIR ORIGINAL CONDITION OR TO THE SATISFACTION OF THE OWNER BY THE CONTRACTOR RESPONSIBLE FOR THE DAMAGE.
19. CONTRACTOR IS RESPONSIBLE FOR COORDINATING CONSTRUCTION ACTIVITIES WITH THE APPROPRIATE UTILITY COMPANIES FOR ANY REQUIRED RELOCATION (I.E. POWER POLES, TELEPHONE PEDESTALS, WATER METERS, ETC.).
20. STREET LIGHTING WILL BE INSTALLED IN ACCORDANCE WITH THE TOWN OF KNIGHTDALE UNIFIED DEVELOPMENT ORDINANCE - LIGHTING PLANS SHALL BE BY OTHERS.
21. NONE OF THE SUBJECT PROPERTY IS WITHIN A SPECIAL FLOOD HAZARD AREA.
22. CURB & GUTTER DETAILS ARE SPECIFIC TO TOWN OF KNIGHTDALE UDO AND MSSD STANDARDS.
23. PAVEMENT DESIGN IS SHOWN AS A MINIMUM AND FINAL DESIGN TO BE DETERMINED BY GEOTECHNICAL ENGINEER.

SITE NOTES

1. OPEN SPACE TO BE MAINTAINED BY THE HOMEOWNERS ASSOCIATION.
2. ALL HOUSING DESIGN INFORMATION SHALL BE SUBMITTED TO THE TOWN OF KNIGHTDALE IN CONJUNCTION WITH BUILDING PERMIT PROCESS.
3. SITE PLANS WILL BE SUBMITTED TO THE TOWN OF KNIGHTDALE AND THE CITY OF RALEIGH FOR THE REMAINING FUTURE DEVELOPMENT AREAS WITHIN THE REMAINING PHASES.
4. EXISTING VEGETATION AND NATURAL AREAS SHALL BE PROTECTED TO THE GREATEST EXTENT POSSIBLE AND THAT MINIMUM CLEARING OF LAND SHALL BE UNDERTAKEN DURING DEVELOPMENT.
5. ALL PUBLIC SIDEWALKS/CROSSWALKS ACROSS ALLEY ENTRANCES SHALL BE FLUSH, CONCRETE PAVEMENT (SEE DETAIL).
6. ALL DIRECTIONAL ARROWS, PEDESTRIAN CROSSINGS, AND STOP BARS ON THE DEVELOPMENT SHALL BE THERMOPLASTIC.

PAVEMENT MARKINGS AND SIGNAGE NOTES

1. ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE TO TOWN OF KNIGHTDALE STANDARD AND SPECIFICATIONS, LATEST REVISIONS.
2. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC IN ACCORDANCE WITH TOWN OF KNIGHTDALE STANDARDS.
3. ALL SIGNAGE SHALL BE IN ACCORDANCE WITH MUTCD, LATEST REVISION.
4. STREET NAME SIGNS SHALL FOLLOW THE TOWN OF KNIGHTDALE DETAILS 3.16-1 AND 3.16-2.

STORM DRAINAGE NOTES

1. ALL STORM DRAINAGE PIPES SHOWN ARE SHALL BE REINFORCED CONCRETE (RCP) (MINIMUM CLASS III) UNLESS NOTED OTHERWISE. CONTRACTOR TO COORDINATE WITH THE GEOTECH TO VERIFY TYPE OF BEDDING REQUIRED BASED ON SOIL CONDITIONS. CONTRACTOR TO SELECT REQUIRED CLASS OF PIPE BASED ON DEPTH OF PIPE AND BEDDING PROVIDED PER THE AMERICAN CONCRETE PIPE ASSOCIATION GUIDELINES.

1.1. AS AN ALTERNATIVE TO REINFORCED CONCRETE PIPE , THE CONTRACTOR HAS THE OPTION OF USING HIGH DENSITY POLYETHYLENE (HDPE) PIPE IN PRIVATE AREAS TO BE MAINTAINED BY THE HOA. SEE DETAILS FOR TRENCHING AND BEDDING REQUIREMENTS.

2. ALL STORM DRAINAGE CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST TOWN OF KNIGHTDALE STANDARDS.
3. ALL CONCRETE SHALL MEET A MINIMUM 3000 PSI COMPRESSIVE STRENGTH.
4. ALL PIPE IN STORM DRAIN STRUCTURES SHALL BE STRUCK EVEN WITH INSIDE WALL.
5. ALL PIPE JOINTS SHALL BE MADE WITH PREFORMED JOINT SEALER, WHICH CONFORMS TO AASHTO SPECIFICATION M-198 FOR TYPE B FLEXIBLE PLASTIC GASKETS UNLESS OTHERWISE NOTED.
6. THE INTERIOR SURFACES OF ALL STORM DRAINAGE STRUCTURES SHALL BE POINTED UP AND SMOOTHED TO AN ACCEPTABLE STANDARD USING MORTAR MIXED TO MANUFACTURER'S SPECIFICATIONS.
7. ALL BACKFILL SHALL BE NON-PLASTIC IN NATURE, FREE FROM ROOTS, VEGETATION MATTER, WASTE CONSTRUCTION MATERIAL OR OTHER OBJECTIONABLE MATERIAL. SAID MATERIAL SHALL BE CAPABLE OF BEING COMPACTED BY MECHANICAL MEANS AND SHALL HAVE NO TENDENCY TO FLOW OR BEHAVE IN A PLASTIC MANNER UNDER THE TAMPING BLOWS OR PROOF ROLLING.
8. MATERIALS DEEMED BY THE OWNER'S REPRESENTATIVE AS UNSUITABLE FOR BACKFILL PURPOSES SHALL BE REMOVED AND REPLACED WITH SUITABLE MATERIAL.
9. BACKFILLING OF TRENCHES SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PIPE IS LAID. THE FILL AROUND THE PIPE SHALL BE THOROUGHLY COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY OBTAINABLE WITH THE STANDARD PROCTOR TEST. THE TOP EIGHT (8) INCHES SHALL BE COMPACTED TO 100 PERCENT STANDARD PROCTOR.
10. UNDER NO CIRCUMSTANCES SHALL WATER BE ALLOWED TO RISE IN UNBACKFILLED TRENCHES AFTER PIPE HAS BEEN PLACED.
11. CONTRACTOR SHALL GRADE & INSTALL PREFORMED SCOUR HOLES, LEVEL SPREADERS AND VELOCITY DISSIPATERS PER DETAILS.
12. CONTRACTOR SHALL DETERMINE SPILL CURB LOCATIONS PRIOR TO PLACEMENT TO PROVIDE POSITIVE DRAINAGE TO DRAINAGE STRUCTURES. NO BIRD-BATHS SHALL BE ALLOWED WITHIN CURB AND GUTTER OR ASPHALT AREAS.

GRADING AND DRAINAGE NOTES

1. ALL DIMENSIONS AND GRADES SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION, FOR NECESSARY PLAN OR GRADE CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR ANY WORK DONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
2. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS FOR EXCAVATIONS; FINAL RULE 29CFR PART 1926, SUBPART "P" APPLIES TO ALL EXCAVATIONS EXCEEDING FIVE (5) FEET IN DEPTH. EXCAVATION EXCEEDING TWENTY (20) FEET IN DEPTH REQUIRES THE DESIGN OF A TRENCH SAFETY SYSTEM BY A REGISTERED PROFESSIONAL ENGINEER, PROVIDED BY CONTRACTOR RESPONSIBLE FOR EXCAVATION.
3. ALL CONSTRUCTION SHALL CONFORM TO THE LATEST TOWN OF KNIGHTDALE, CITY OF RALEIGH AND NCDOT (WHERE APPLICABLE) STANDARDS AND SPECIFICATIONS.
4. CONTRACTOR SHALL NOTIFY "NC811" (811) OR (1-800-632-4949) AT LEAST 3 FULL BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF "NC811". REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
5. PRIOR TO BEGINNING CONSTRUCTION, THE GENERAL CONTRACTOR SHALL SCHEDULE AND ATTEND A PRECONSTRUCTION CONFERENCE WITH THE TOWN OF KNIGHTDALE, A REPRESENTATIVE OF THE OWNER, THE GRADING COMPANY, THE EROSION CONTROL INSTALLER, UTILITY CONTRACTOR, AND A REPRESENTATIVE FOR THE ENGINEER OF RECORD.
6. CONSTRUCTION, MAINTENANCE AND REMOVAL OF ALL EROSION CONTROL DEVICES ARE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. TIMING OF REMOVAL SHALL BE COORDINATED WITH THE EROSION CONTROL INSPECTOR.
7. EXISTING UTILITIES AND STRUCTURES SHOWN, BOTH UNDERGROUND AND ABOVE GROUND, ARE BASED ON A FIELD SURVEY AND THE BEST AVAILABLE RECORD DRAWINGS. THE CONTRACTOR SHALL VERIFY FIELD CONDITIONS PRIOR TO BEGINNING RELATED CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
8. SOIL UNDER BUILDINGS, PAVED AREAS AND WITHIN SLOPES GREATER THAN 3:1 (H:V) SHALL BE APPROVED, PLACED AND COMPACTED AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
9. GRADING CONTRACTOR SHALL BE RESPONSIBLE TO GRADE EACH LOT SUCH THAT POSITIVE DRAINAGE FROM THE HOUSE FOUNDATION IS PROVIDED AND WATER FROM A HIGHER ELEVATION ON ADJOINING LOTS IS DIVERTED THROUGH THE USE OF SWALES ALONG LOT LINES. THE GRADING CONTRACTOR SHALL ALSO ENSURE THAT PONDING ON INDIVIDUAL LOTS WILL NOT BE CREATED.
10. EXISTING VEGETATION AND NATURAL AREAS SHALL BE PROTECTED TO THE GREATEST EXTENT POSSIBLE.
11. ALL STORM DRAINAGE PIPE SHALL HAVE A MINIMUM COVER OF 2 FEET TO THE PIPE CROWN IN TRAFFIC, UNLESS APPROVED BY THE TOWN OF KNIGHTDALE.
12. ALL STORM DRAINAGE PIPE SHALL HAVE A MINIMUM COVER OF 1 FOOT TO THE PIPE CROWN IN NON-TRAFFIC AREAS.
13. STORM SEWER PIPE ENDS SHALL BE FURNISHED WITH REINFORCED CONCRETE PIPE FLARED END SECTION UNLESS OTHERWISE SPECIFIED ON PLANS
14. EACH DRAINAGE STRUCTURE SHALL HAVE A SHAPED INVERT CONSTRUCTED FROM CONCRETE PER TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS
15. ENERGY DISSIPATER SHALL BE INSTALLED AT ALL STORM SEWER DISCHARGE POINTS. A FABRIC OR WASHED STONE BARRIER SHALL BE INSTALLED BETWEEN THE DISSIPATION PAD AND THE NATURAL GROUND.
16. STORM PIPE TRENCH EXCAVATION AND BACKFILLING SHALL BE PERFORMED IN ACCORDANCE WITH TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS AND DETAILS. PLEASE CONTACT THE TOWN OF KNIGHTDALE DEVELOPMENT SERVICES ENGINEER PRIOR TO THE INSTALLATION OF ALL STORM DRAIN PIPE. STORMWATER CALCULATIONS ARE BASED ON A MAXIMUM 3,500 SF OF IMPERVIOUS AREA PER LOT.
17. ALL STORM DRAINAGE PIPE SHALL BE CLASS III REINFORCED CONCRETE PIPE (RCP) OR POLYPROPYLENE PIPE (PP) UNLESS NOTES OTHERWISE.
18. DISCHARGE BASED ON 10-YR STORM EVENT UNLESS NOTED OTHERWISE.
19. CB=CATCH BASIN: FES=FLARED END SECTION: JB=JUNCTION BOX; YI=YARD INLET; (TOK#S.03); DI=DROP INLET (TOK #5.04)
20. RIM ELEVATION GIVEN FOR CB IS TOP OF CURB, YI OPENING INVERT FOR SLAB TOP, DI IS TOP OF GRATE FOR GRATED INLET, JB IS TOP OF RIM.
21. 'TOWN OF KNIGHTDALE DRAINAGE EASEMENT'=PUBLIC EASEMENT
22. ALL PUBLIC STORM DRAINAGE FRAMES, GRATES, & HOODS SHALL BE STAMPED W/ "DRAINS TO RIVER" IN ACCORDANCE WITH TOWN OF KNIGHTDALE STANDARDS.
23. THE USE OF WAFFLE BOXES IS NOT PERMITTED WITHIN PUBLIC RIGHT OF WAY AND PUBLIC DRAINAGE EASEMENTS.
24. THE CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING STEPS IN THE STORM DRAINAGE BLOSES GREATER THAN OR EQUAL TO 3'-6" DEPTH. THE STEPS SHALL BE INSTALLED ON 12 INCH CENTERS AND SECURED PER TOWN OF KNIGHTDALE SPECIFICATIONS.

STANDARD UTILITY NOTES (AS APPLICABLE)

1. ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS (REFERENCE: CORPUD HANDBOOK, CURRENT EDITION).
2. UTILITY SEPARATION REQUIREMENTS:
   A. A DISTANCE OF 100' SHALL BE MAINTAINED BETWEEN SANITARY SEWER & ANY PRIVATE OR PUBLIC WATER SUPPLY SOURCE SUCH AS AN IMPOUNDED RESERVOIR USED AS A SOURCE OF DRINKING WATER. IF ADEQUATE LATERAL SEPARATION CANNOT BE ACHIEVED, FERROUS SANITARY SEWER PIPE SHALL BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS. HOWEVER, THE MINIMUM SEPARATION SHALL NOT BE LESS THAN 25' FROM A PRIVATE WELL OR 50' FROM A PUBLIC WELL.
   B. WHEN INSTALLING WATER &/OR SEWER MAINS, THE HORIZONTAL SEPARATION BETWEEN UTILITIES SHALL BE 10'. IF THIS SEPARATION CANNOT BE MAINTAINED DUE TO EXISTING CONDITIONS, THE VARIATION ALLOWED IS THE WATER MAIN IN A SEPARATE TRENCH WITH THE ELEVATION OF THE WATER MAIN AT LEAST 18" ABOVE THE TOP OF THE SEWER & MUST BE APPROVED BY THE PUBLIC UTILITIES DIRECTOR. ALL DISTANCES ARE MEASURED FROM OUTSIDE DIAMETER TO OUTSIDE DIAMETER.
   C. WHERE IT IS IMPOSSIBLE TO OBTAIN PROPER SEPARATION, OR ANYTIME A SANITARY SEWER PASSES OVER A WATERMAIN, DIP MATERIALS OR STEEL ENCASEMENT EXTENDED 10' ON EACH SIDE OF CROSSING MUST BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS.
   D. 5.0' MINIMUM HORIZONTAL SEPARATION IS REQUIRED BETWEEN ALL SANITARY SEWER & STORM SEWER FACILITIES, UNLESS DIP MATERIAL IS SPECIFIED FOR SANITARY SEWER.
   E. MAINTAIN 18" MIN. VERTICAL SEPARATION AT ALL WATERMAIN & RCP STORM DRAIN CROSSINGS. MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFIY DIP MATERIALS & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUD DETAILS W-41 & S-49).
   F. ALL OTHER UNDERGROUND UTILITIES SHALL CROSS WATER & SEWER FACILITIES WITH 18" MIN. VERTICAL SEPARATION REQUIRED.
3. ANY NECESSARY FIELD REVISIONS ARE SUBJECT TO REVIEW & APPROVAL OF AN AMENDED PLAN &/OR PROFILE BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PRIOR TO CONSTRUCTION.
4. CONTRACTOR SHALL MAINTAIN CONTINUOUS WATER & SEWER SERVICE TO EXISTING RESIDENCES & BUSINESSES THROUGHOUT CONSTRUCTION OF PROJECT. ANY NECESSARY SERVICE INTERRUPTIONS SHALL BE PRECEDED BY A 24 HOUR ADVANCE NOTICE TO THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT.
5. 3.0' MINIMUM COVER IS REQUIRED ON ALL WATER MAINS & SEWER FORCEMAINS. 4.0' MINIMUM COVER IS REQUIRED ON ALL REUSE MAINS.
6. IT IS THE DEVELOPER'S RESPONSIBILITY TO ABANDON OR REMOVE EXISTING WATER & SEWER SERVICES NOT BEING USED IN REDEVELOPMENT OF A SITE UNLESS OTHERWISE DIRECTED BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT. THIS INCLUDES ABANDONING TAP AT MAIN & REMOVAL OF SERVICE FROM ROW OR EASEMENT PER CORPUD HANDBOOK PROCEDURE.
7. INSTALL 3/4" COPPER* WATER SERVICES WITH METERS LOCATED AT ROW OR WITHIN A 2'X2' WATERLINE EASEMENT IMMEDIATELY ADJACENT. NOTE: IT IS THE APPLICANT'S RESPONSIBILITY TO PROPERLY SIZE THE WATER SERVICE FOR EACH CONNECTION TO PROVIDE ADEQUATE FLOW & PRESSURE.
8. INSTALL 4" PVC* SEWER SERVICES @ 1.0% MINIMUM GRADE WITH CLEANOUTS LOCATED AT ROW OR EASEMENT LINE & SPACED EVERY 75 LINEAR FEET MAXIMUM.
9. PRESSURE REDUCING VALVES ARE REQUIRED ON ALL WATER SERVICES EXCEEDING 80 PSI; BACKWATER VALVES ARE REQUIRED ON ALL SANITARY SEWER SERVICES HAVING BUILDING DRAINS LOWER THAN 1.0' ABOVE THE NEXT UPSTREAM MANHOLE.
10. ALL ENVIRONMENTAL PERMITS APPLICABLE TO THE PROJECT MUST BE OBTAINED FROM NCDWQ, USACE &/OR FEMA FOR ANY RIPARIAN BUFFER, WETLAND &/OR FLOODPLAIN IMPACTS (RESPECTIVELY) PRIOR TO CONSTRUCTION.
11. NCDOT / RAILROAD ENCROACHMENT AGREEMENTS ARE REQUIRED FOR ANY UTILITY WORK (INCLUDING MAIN EXTENSIONS & SERVICE TAPS) WITHIN STATE OR RAILROAD ROW PRIOR TO CONSTRUCTION.
12. GREASE INTERCEPTOR / OIL WATER SEPARATOR SIZING CALCULATIONS & INSTALLATION SPECIFICATIONS SHALL BE APPROVED BY THE CORPUD FOG PROGRAM COORDINATOR PRIOR TO ISSUANCE OF A BUILDING PERMIT. CONTACT TIM BEASLEY AT (919) 996-2334 OR TIMOTHY.BEASLEY@RALEIGHNC.GOV FOR MORE INFORMATION.
13. CROSS-CONNECTION CONTROL PROTECTION DEVICES ARE REQUIRED BASED ON DEGREE OF HEALTH HAZARD INVOLVED AS LISTED IN APPENDIX-B OF THE RULES GOVERNING PUBLIC WATER SYSTEMS IN NORTH CAROLINA. THESE GUIDELINES ARE THE MINIMUM REQUIREMENTS. THE DEVICES SHALL MEET AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE) STANDARDS OR BE ON THE UNIVERSITY OF SOUTHERN CALIFORNIA APPROVAL LIST. THE DEVICES SHALL BE INSTALLED AND TESTED (BOTH INITIAL AND PERIODIC TESTING THEREAFTER) IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS OR THE LOCAL CROSS-CONNECTION CONTROL PROGRAM, WHICHEVER IS MORE STRINGENT. CONTACT JOANIE HARTLEY AT (919) 996-5923 OR JOANIE.HARTLEY@RALEIGHNC.GOV FOR MORE INFORMATION.

ADDITIONAL UTILITY NOTES

1. ALL WATER SERVICE LINES WHERE 1 TO 2 UNITS CONNECT SHALL BE 1" HDPE SDR9 LINE. ALL WATER SERVICE LINES WHERE 3 OR MORE UNITS CONNECT SHALL BE 2" HDPE SDR9 LINE.
2. ALL SEWER MAINS SHALL BE EITHER PVC OR DUCTILE IRON PIPE AS SHOWN ON THE PLANS. ALL PIPE MATERIAL SHALL MEET CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AS DEFINED IN THE LATEST ISSUE OF THE PUBLIC UTILITIES HANDBOOK AND/OR UNIFIED DEVELOPMENT ORDINANCE (UDO).
3. ALL FIRE HYDRANTS ALONG PUBLIC R/W LINES SHALL HAVE A 3'Wx3'L CITY OF RALEIGH WATERLINE EASEMENT ONTO ADJACENT PROPERTY.
4. ALL SANITARY SEWER INTERCEPTOR LINES (12" AND LARGER), AS WELL AS MANHOLES AND FITTINGS ASSOCIATED WITH THE INTERCEPTOR LINE, SHALL BE INTERNALLY LINED WITH PROTECTO 401 OR APPROVED EQUAL TO PREVENT HYDROGEN SULFIDE CORROSION. SEE THE CURRENT CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT HANDBOOK FOR APPROVED COATINGS AND APPLICATION METHODS.
5. IN ACCORDANCE WITH GENERAL STATUTE 87-121(G), ALL UNDERGROUND UTILITIES INSTALLED AFTER OCTOBER 1, 2014 SHALL BE ELECTRONICALLY LOCATABLE. CONTRACTOR SHALL COORDINATE DIRECTLY WITH THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT FOR DETAILS AND SPECIFICATIONS FOR MEETING THESE REQUIREMENTS.
6. EXISTING UTILITIES SHOWN ARE BASED ON FIELD SURVEYS AND THE BEST AVAILABLE RECORD DRAWINGS. THE CONTRACTOR SHALL VERIFY CONDITIONS PRIOR TO BEGINNING CONSTRUCTION. ANY DISCREPANCIES BETWEEN ACTUAL FIELD CONDITIONS AND THE PLANS SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
7. ALL WATER AND SEWER MAINS WITHIN PUBLIC EASEMENTS OR RIGHTS-OF-WAY TO BE OWNED, OPERATED, AND MAINTAINED BY THE CITY OF RALEIGH.
8. ALL WATER AND SEWER MAINS NOT WITHIN PUBLIC EASEMENTS OR RIGHTS-OF-WAY TO BE PRIVATELY OWNED, OPERATED, AND MAINTAINED BY THE PROPERTY OWNER.
9. CONTRACTOR SHALL NOTIFY "NC811" (811) OR (1-800-632-4949) AT LEAST 3 FULL BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF "NC811". REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
10. ALL UTILITY SLEEVES SHALL BE SCHEDULE 40 PVC AND INSTALLED WITH 2' MINIMUM COVER. BOTH ENDS SHALL BE CAPPED AND MARKED.

RETAINING WALL NOTES

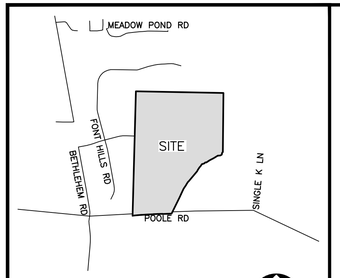
1. THE RETAINING WALL ALIGNMENT SHOWN ON THESE PLANS DEPICTS THE LOCATION OF THE FRONT/BOTTOM FACE OF THE RETAINING WALL.
2. RETAINING WALLS SHALL BE DESIGNED BY A REGISTERED NORTH CAROLINA PROFESSIONAL ENGINEER AND PROVIDED AS A STANDALONE CONSTRUCTION DRAWING SET TO THE TOWN OF KNIGHTDALE FOR APPROVAL PRIOR TO THE ISSUANCE OF BUILDING PERMITS.
3. RETAINING WALLS SHALL BE ASSUMED TO BE BACKFILLED WITH OFF-SITE BORROW MATERIAL OR PROCESSED FILL UNLESS DESIGN ENGINEER CAN PROVIDE OWNER WITH CONFIRMATION FROM THE GEOTECHNICAL ENGINEER THAT READILY AVAILABLE ON-SITE SOILS CAN BE USED.
4. THE TOP AND BOTTOM OF WALL ELEVATIONS SHOWN ON THESE PLANS IDENTIFY FINISHED GRADE ELEVATIONS ONLY. THE EXTENT THAT THE RETAINING WALL WILL EXTEND BELOW GRADE TO THE FOOTING SHALL BE IDENTIFIED ON THE RETAINING WALL CONSTRUCTION DRAWINGS.
5. RETAINING WALLS GREATER THAN 30" IN HEIGHT SHALL HAVE A RAILING OR FENCE INSTALLED AT THE TOP OF WALL. RAILING DESIGN SHALL BE INCLUDED IN THE RETAINING WALL CONSTRUCTION DRAWINGS.
6. RETAINING WALL DESIGNER SHALL BE RESPONSIBLE FOR IDENTIFYING AND REPORTING TO THE ENGINEER THE REQUIRED SPACING, CLEARANCE, OR CONFLICTS BETWEEN THE FOOTPRINT OF THE WALL AND ANY ADJACENT SURFACE/SUB-SURFACE UTILITIES. WALL DESIGNER SHALL ALSO BE RESPONSIBLE FOR REVIEW AND APPROVAL OF ALL WALL RELATED SHOP DRAWINGS/SUBMITTALS.
7. CONTRACTOR SHALL ENSURE THAT WALL BATTER DOES NOT ENCROACH INTO BUFFERS, ADJACENT PROPERTIES, SIDEWALKS, ETC.

STORMWATER CONTROL MEASURE NOTES:

1. SEE SHEETS C9.A00 – C9.B02

GENERAL NOTES AND CONSTRUCTION SEQUENCE

1. DRAIN EXISTING POND WITH TEMPORARY SIPHON SYSTEM, PUMP, OR OTHER MEANS APPROVED BY THE DESIGN ENGINEER IN SUCH A WAY TO AVOID RELEASING SEDIMENT FROM POND. POND SHALL BE PUMPED SO AS TO DECREASE WATER SURFACE ELEVATION IN THE POND AT A SPEED OF APPROXIMATELY 1 FOOT PER DAY. POND TO BE COMPLETELY DRAINED BEFORE DAM EMBANKMENT IS BREACHED. THE POND SHALL NOT BE DRAINED BY BREACHING THE DAM. OUTLET OF DRAIN FROM SIPHON OR PUMP TO EXIT INTO DEWATERING STRUCTURE (FILTER BAG TYPE SPECIAL STILLING BASIN) PER DETAIL. NOTE THAT A PUMP MAY BE REQUIRED DURING CONSTRUCTION TO PASS THE BASEFLOW.
2. ONCE POND IS COMPLETELY DRAINED, EVALUATE POND DEPTH AND BREACH SECTION LOCATION. CONTRACTOR AND OWNER TO DECIDE FINAL LOCATION OF BREACH SECTION AND GEOMETRY BASED ON FIELD CONDITIONS AND COMMUNICATION WITH THE TOWN OF KNIGHTDALE. DAM TO BE BREACHED AT THE LOWEST POSSIBLE POINT AS TO NOT IMPOUND ANY WATER AFTER THE FINAL BREACH SECTION IS STABILIZED. THE LOCATION OF THE BREACH AND ASSOCIATED DISTURBANCE MUST REMAIN WITHIN THE PERMITTED LIMITS OF DISTURBANCE.
3. PROPOSED CUT SLOPES FOR THE BREACH OF THE DAMS ARE SHOWN AT 3(H):1(V). ALL OSHA REQUIREMENTS FOR EXCAVATIONS (SHORING, DEPTH, ETC.) ARE THE RESPONSIBILITY OF THE CONTRACTOR. IF REQUIRED, THE CONTRACTOR SHALL PROVIDE AN EXCAVATION PLAN TO BE SEALED BY A NC P.E. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE IF AN EXCAVATION PLAN IS REQUIRED. THE JOHN R. MCADAMS COMPANY ASSUMES NO RESPONSIBILITY FOR ANY EXCAVATION DESIGN RELATED TO SAFETY OR OSHA REQUIREMENTS.
4. AN IMPERVIOUS LINER (MIRAFI FW402 OR ENGINEER APPROVED EQUIVALENT) SHALL BE INSTALLED IN THE BREACH CHANNEL DURING PAUSES IN CONSTRUCTION WHILE THE BREACH CHANNEL HAS NOT BEEN COMPLETED (I.E. EROSION CONTROL MEASURES INSTALLED). AN IMPERVIOUS LINER SHALL NOT BE PRESENT IN THE F



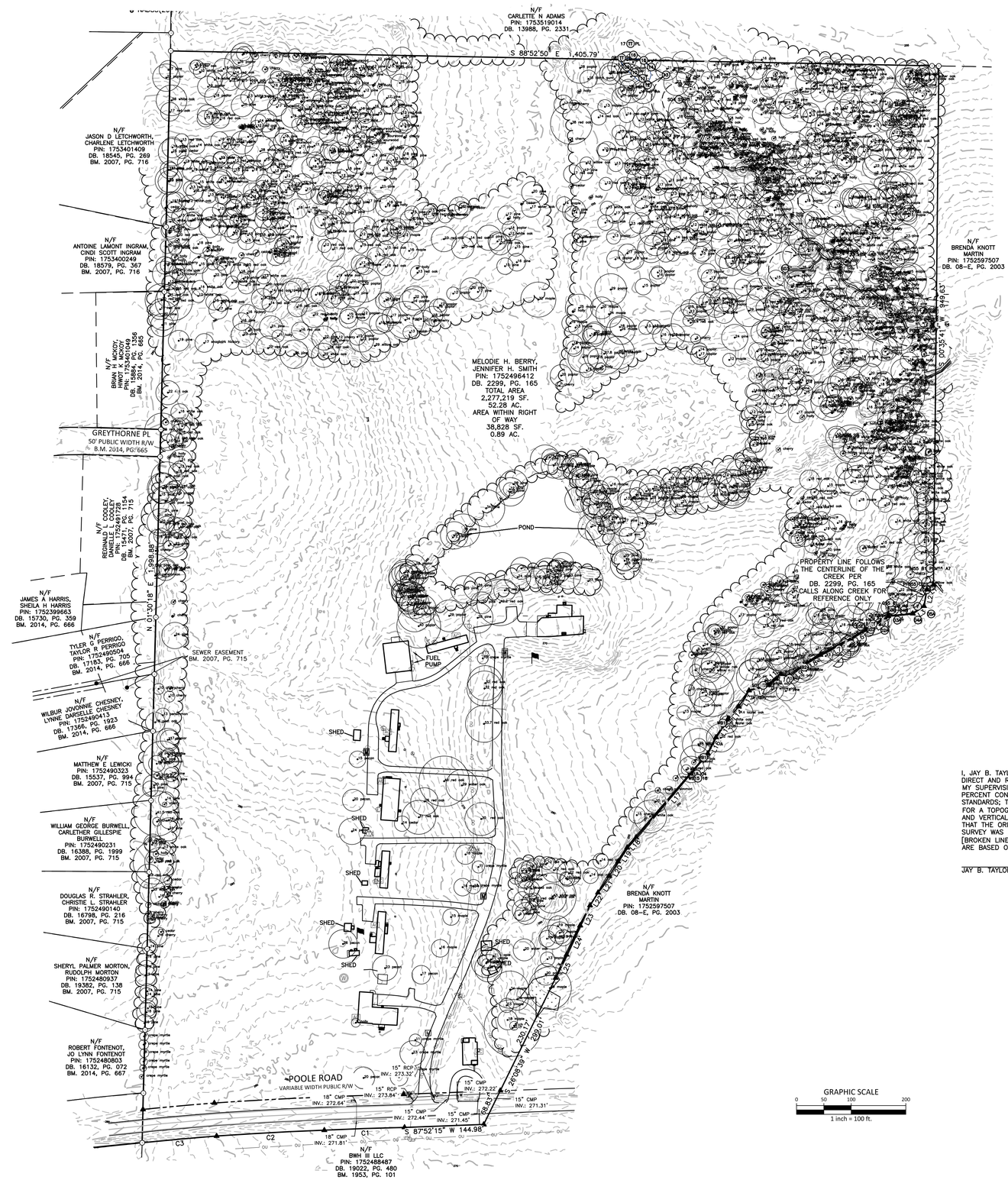
VICINITY MAP
N.T.S.

GENERAL NOTES

1. THIS IS A SURVEY OF AN EXISTING PARCEL OF LAND.
2. BEARINGS FOR THIS SURVEY ARE BASED ON GRID NORTH NAD83 (2011).
3. ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES.
4. ZONING: AS SHOWN.
5. AREA BY COORDINATE GEOMETRY.
6. FLOOD NOTE: THIS PROPERTY IS NOT LOCATED IN A SPECIAL FLOOD HAZARD ZONE. IT IS LOCATED IN ZONE "X" AS DEFINED BY F.E.M.A F.I.R.M COMMUNITY PANEL #3720175200K DATED JULY 19, 2024.
7. REFERENCES AS SHOWN ON SURVEY.
8. UTILITY STATEMENT
   THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.
9. NO EVIDENCE OF EARTH MOVING ACTIVITIES OCCURRING ON SITE.
10. NO EVIDENCE OF STREET CHANGES.
11. TREE SURVEY RECEIVED BY S&EC.

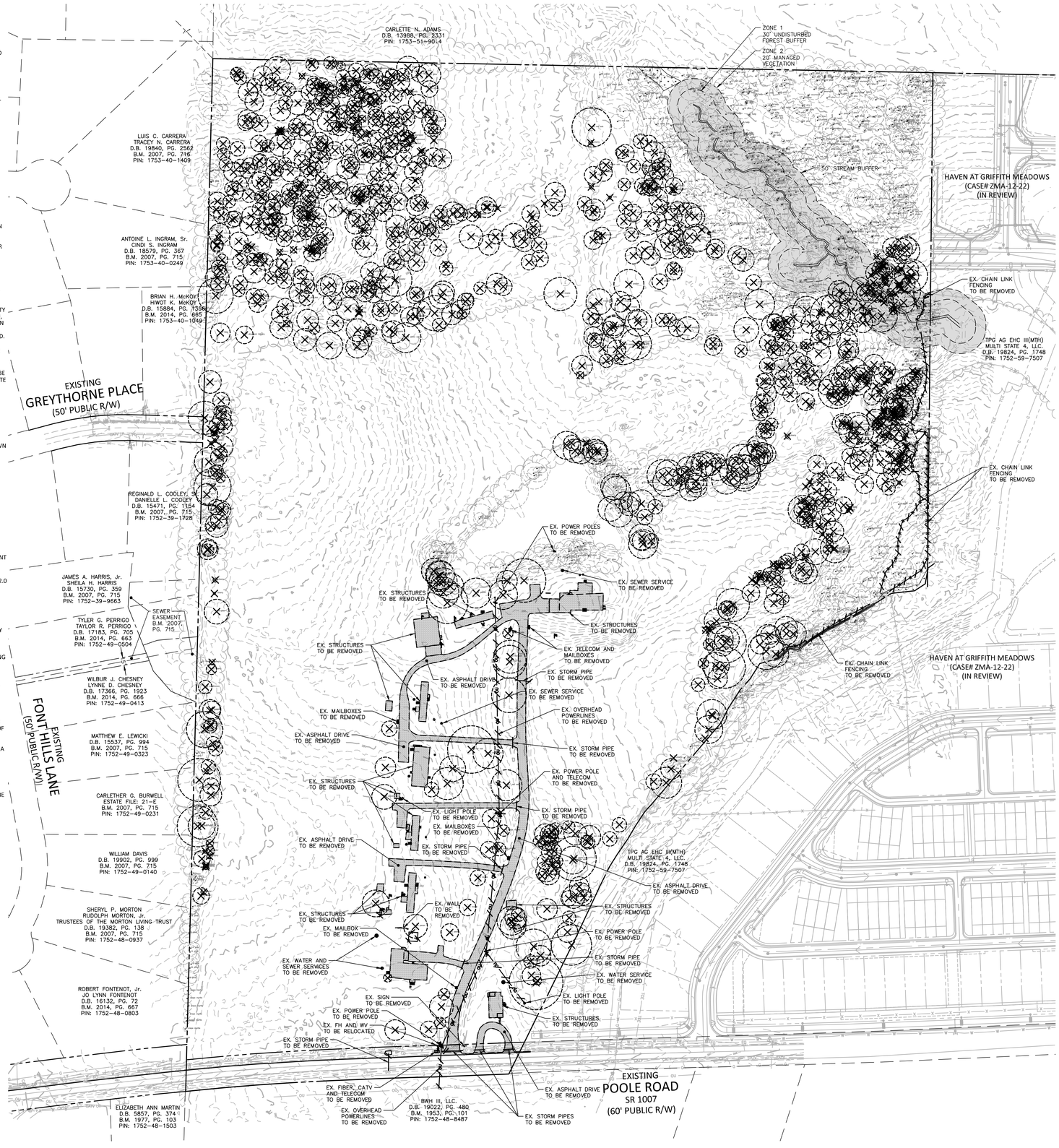
LEGEND

- EXISTING IRON PIPE
- IRON PIPE SET
- CALCULATED POINT
- FIRE HYDRANT
- WATER VALVE
- WELL
- ELECTRIC METER
- GUY WIRE
- LIGHT POLE
- POWER/UTILITY POLE
- CABLE TV BOX
- TELEPHONE PEDESTAL
- AIR CONDITIONER
- MAIL BOX
- SIGN
- SATELLITE DISH
- FLAG POLE
- SD — SD — STORM DRAIN LINE
- FENCE LINE
- WOOD LINE/LANDSCAPING
- BM. 1985, PG. 1852
- RIGHT OF WAY


N/F
CARLETTE N ADAMS
PIN: 1753519014
DB. 13988, PG. 2331
S 88°52'50" E 1,405.79'
N/F
JASON D LETCHWORTH,
CHARLENE LETCHWORTH
PIN: 1753401408
DB. 18545, PG. 269
BM. 2007, PG. 716
N/F
ANTOINE LAMONT INGRAM,
CINDI SCOTT INGRAM
PIN: 1753400249
DB. 18579, PG. 367
BM. 2007, PG. 716
N/F
BRIAN K. MCKOY,
HWOT K. MCKOY
PIN: 1752401048
DB. 18586, PG. 685
BM. 2014, PG. 665
GREYTHORNE PL
50' PUBLIC WIDTH R/W
B.M. 2014, PG'665
N/F
REGINALD L. COOLEY,
DANIELLE L. COOLEY
PIN: 1752491725
DB. 18586, PG. 715
BM. 2007, PG. 715
N/F
JAMES A HARRIS,
SHEILA H HARRIS
PIN: 1752399663
DB. 15730, PG. 359
BM. 2014, PG. 666
N/F
TYLER G PERRIGO,
TAYLOR R PERRIGO
PIN: 1752490504
DB. 17183, PG. 705
BM. 2014, PG. 666
N/F
WILBUR JOVONNIE CHESNEY,
LYNNE DANIELLE CHESNEY
PIN: 1752490413
DB. 17366, PG. 1923
BM. 2014, PG. 666
N/F
MATTHEW E LEWICKI
PIN: 1752490323
DB. 15537, PG. 994
BM. 2007, PG. 715
N/F
WILLIAM GEORGE BURWELL,
CARLETHER GILLESPIE BURWELL
PIN: 1752490231
DB. 16388, PG. 1999
BM. 2007, PG. 715
N/F
DOUGLAS R. STRAHLER,
CHRISTIE L. STRAHLER
PIN: 1752490140
DB. 16798, PG. 216
BM. 2007, PG. 715
N/F
SHERYL PALMER MORTON,
RUDOLPH MORTON
PIN: 1752480937
DB. 19382, PG. 138
BM. 2007, PG. 715
N/F
ROBERT FONTENOT,
JO LYNN FONTENOT
PIN: 1752480803
DB. 16132, PG. 072
BM. 2014, PG. 667
N/F
BRENDA KNOTT
MARTIN
PIN: 1752597507
DB. 08-E, PG. 2003
N/F
BRENDA KNOTT
MARTIN
PIN: 1752597507
DB. 08-E, PG. 2003
MELODIE H. BERRY,
JENNIFER H. SMITH
PIN: 1752496412
DB. 2299, PG. 165
TOTAL AREA
2,277,219 SF.
52.28 AC.
AREA WITHIN RIGHT
OF WAY
38,828 SF.
0.89 AC.
N. 01°30'18" E 1,996.88'
S 00°35'41" W 949.63'
POND
PROPERTY LINE FOLLOWS
THE CENTERLINE OF THE
CREEK PER
DB. 2299, PG. 165
CALLS ALONG CREEK FOR
REFERENCE ONLY
SEWER EASEMENT
BM. 2007, PG. 715
FUEL
PUMP
SHED
SHED
SHED
SHED
SHED
SHED
SHED
S 87°52'15" W 144.98
S 26°08'39" W 299.01
230.72'
124.23'
124.23'
124.23

DEMOLITION NOTES:

1. CONTRACTOR SHALL PERFORM DEMOLITION ACTIVITIES AS NOTED AND SHOWN ON THE DEMOLITION PLAN AND AS DIRECTED BY THE OWNER'S REPRESENTATIVE IN ACCORDANCE WITH CURRENT APPLICABLE LOCAL, STATE, AND FEDERAL LAWS.
2. THE CONTRACTOR SHALL FIELD VERIFY AND LOCATE ALL EXISTING UTILITIES ON SITE PRIOR TO DEMOLITION.
3. CONTRACTOR SHALL OBTAIN ANY PERMITS AND PAY FEES REQUIRED FOR DEMOLITION AND HAUL-OFF FROM THE APPROPRIATE AUTHORITIES.
4. ALL WASTE MATERIAL GENERATED FROM DEMOLITION ACTIVITIES SHALL BE DISPOSED OF OFF-SITE IN ACCORDANCE WITH ALL APPLICABLE RULES AND REGULATIONS.
5. THE DEMOLITION PLAN IS INTENDED TO DEPICT GENERAL DEMOLITION AND UTILITY WORK. IT IS NOT INTENDED TO IDENTIFY EACH ELEMENT OF DEMOLITION OR RELOCATION. CONTRACTOR IS RESPONSIBLE FOR APPROPRIATE SEQUENCING OF UTILITY DEMOLITION WITH THE RESPECTIVE UTILITY AGENCIES AND SHALL COORDINATE WITH THE OWNER'S REPRESENTATIVE AND APPROPRIATE UTILITY COMPANIES PRIOR TO WORK.
6. INSTALL EROSION AND SEDIMENT CONTROL DEVICES AND TREE PROTECTION FENCE PRIOR TO STARTING DEMOLITION WORK. SEE EROSION CONTROL NOTES AND PLANS FOR ADDITIONAL INFORMATION.
7. CONTRACTOR SHALL TAKE MEASURES TO AVOID CONFLICTS WITH EXISTING UTILITIES TO REMAIN. DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
8. CONTRACTOR TO COORDINATE UTILITY CUT OFF TO EXISTING STRUCTURES WITH APPROPRIATE UTILITY COMPANY.
   A. CONTRACTOR SHALL COORDINATE REMOVAL AND RELOCATIONS OF UTILITY APPURTENANCES AS DETERMINED NECESSARY THROUGH THEIR COORDINATION WITH UTILITY PROVIDERS. UTILITY APPURTENANCES TO BE REMOVED MAY INCLUDE BUT ARE NOT LIMITED TO HYDRANTS, FIRE DEPARTMENT CONNECTIONS, VALVES/VALVE BOXES, STORM DRAIN AND/OR SANITARY SEWER CLEANOUTS, AND STORM DRAIN INLETS. ALL UTILITIES AND ASSOCIATED APPURTENANCES SCHEDULED TO BE SALVAGED SHALL BE RETURNED TO THE APPROPRIATE UTILITY AGENCY. ANY CREDIT/REIMBURSEMENT ASSOCIATED WITH RETURNING SAID APPURTENANCES SHALL BE REMITTED TO THE OWNER.
   B. REMOVE AND/OR PLUG EXISTING UTILITIES SUCH AS SANITARY SEWER, WATER, GAS, ELECTRIC, AND TELECOMMUNICATIONS AS NOTED ON PLANS.
   C. CONTRACTOR SHALL CUT AND PLUG OR ARRANGE FOR THE APPROPRIATE UTILITY COMPANY TO CUT AND PLUG ALL SERVICE PIPING AT THE STREET LINE OR MAIN, AS REQUIRED, OR AS OTHERWISE NOTED. ALL SERVICES MAY NOT BE SHOWN ON THE PLAN. CONTRACTOR SHALL INVESTIGATE THE SITE PRIOR TO BIDDING TO DETERMINE THE EXTENT OF SERVICE PIPING TO BE REMOVED, CUT, OR PLUGGED.
   D. WATER OR SEWER ABANDONMENT OR RELOCATION MAY BE REQUIRED AT THE MAIN LINE.
9. EXISTING WATER METERS AND SANITARY SEWER LATERALS SLATED FOR REMOVAL ARE TO BE REMOVED BY [LOCAL MUNICIPAL DEPT] [CONTRACTOR AND RETURNED TO THE APPROPRIATE ENTITY AS APPLICABLE].
10. CONTRACTOR SHALL BE RESPONSIBLE FOR RESETTING OF CURB BOXES, VALVE BOXES, ETC.
11. CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF UTILITIES TO REMAIN IN PLACE.
12. CONTRACTOR TO DEMOLISH AND DISPOSE OF EXISTING BUILDINGS, INCLUDING FOUNDATIONS AND SITE APPURTENANCES NOT LIMITED TO CURBS, SIDEWALKS, FENCES, STAIRS, WALLS, CONDUITS, LIGHT POLE BASES, DEBRIS, AND RUBBISH AS NOTED AND SHOWN ON THE DEMOLITION PLAN AND AS DIRECTED BY THE OWNER'S REPRESENTATIVE. DEMOLISHED ITEMS SHALL BE DISPOSED OF OFF SITE AT AN APPROVED LANDFILL AND IN A LAWFUL MANNER.
13. CONTRACTOR IS RESPONSIBLE FOR THE DEMOLITION OF TREES MARKED TO BE REMOVED. TREES MAY BE EITHER INDIVIDUALLY MARKED OR WITHIN A DESIGNATED REMOVAL AREA. DEMOLITION OF TREES INCLUDES REMOVAL AND DISPOSAL OF ENTIRE TREE INCLUDING STUMP.
14. MATERIALS, FURNISHINGS, UTILITIES AND PAVEMENT THAT ARE NOT SCHEDULED TO BE DEMOLISHED AND ARE DAMAGED BY THE CONTRACTOR AS A RESULT OF THE DEMOLITION OR CONSTRUCTION OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
15. EXISTING CONCRETE SURFACES TO BE REMOVED OR DEMOLISHED SHALL BE SAWCUT AT NEAREST JOINTS, PROVIDING A CLEAN EDGE WHEN RESTORED. SAWCUT EXISTING PAVEMENT AT THE RIGHT OF WAY UNLESS OTHERWISE SHOWN.
16. ALL ASPHALT EDGES SHALL BE SAW CUT TO PROVIDE A GOOD LONGITUDINAL JOINT. MILL 2.0 FEET AT 1.5 INCHES DEEP MINIMUM TO PROVIDE A LONGITUDINAL LAP JOINT FOR FINAL SURFACE LAYER. NO MILLING SHALL BE LEFT FOR A PERIOD OF TIME GREATER THAN 48 HOURS BEFORE A STREET IS TO BE RE-PAVED/RESURFACED.
17. IN ACCORDANCE WITH 40 CODE OF FEDERAL REGULATIONS (CFR), PART 61, SUBPART M, A THOROUGH INSPECTION SHALL BE CONDUCTED FOR ASBESTOS-CONTAINING MATERIALS, PRIOR TO CONDUCTING A RENOVATION OR DEMOLITION ACTIVITY OF AN EXISTING FACILITY OR ANY FACILITY COMPONENT. THE ASBESTOS INSPECTION MUST BE CONDUCTED BY A [NORTH CAROLINA] ACCREDITED ASBESTOS INSPECTOR. REGULATED AND/OR FRIABLE ASBESTOS-CONTAINING MATERIALS IDENTIFIED DURING THE SURVEY WHICH WILL BE DISTURBED, MUST BE PROPERLY REMOVED BY ACCREDITED INDIVIDUALS BEFORE BEGINNING THE RENOVATION OR DEMOLITION ACTIVITY.
18. NEAR SURFACE ROCK BELOW PROPOSED FOOTINGS DEEMED BY THE GEOTECHNICAL ENGINEER TO BE UNSUITABLE FOR LOAD BEARING SHALL BE REMOVED AS NECESSARY AND AS DIRECTED BY THE GEOTECHNICAL ENGINEER. BLASTING SHALL NOT BE ALLOWED WITHOUT PRIOR CONSENT OF OWNER'S REPRESENTATIVE.
19. WELLS THAT ARE SCHEDULED TO BE ABANDONED SHALL FOLLOW WELL ABANDONMENT PROCEDURES OUTLINED IN [TITLE 15A NORTH CAROLINA ADMINISTRATIVE CODE, CHAPTER 2C, SECTION .0113] [TEXAS ADMINISTRATIVE CODE, TITLE 16, SECTION 76.104]. A RECORD OF THE WELL ABANDONMENT MUST BE SENT TO [NORTH CAROLINA DEPARTMENT OF ENVIRONMENT QUALITY - DIVISION OF WATER RESOURCES] [TCEQ AND LOCAL GROUNDWATER CONSERVATION DISTRICT] WITHIN [30 DAYS] OF ABANDONING THE WELL. A COPY OF THE RECORD SHALL BE PROVIDED TO THE OWNER.
20. ON-SITE SEWAGE FACILITIES (SEPTIC SYSTEMS) THAT ARE SCHEDULED TO BE ABANDONED SHALL FOLLOW LOCAL JURISDICTION SEPTIC ABANDONMENT PROCEDURES.
21. STOCKPILE LOCATIONS OF ALL MATERIALS SLATED TO BE REUSED OR RE-PURPOSED SHALL BE IDENTIFIED AND APPROVED BY OWNER'S REPRESENTATIVE PRIOR TO STARTING LAND DISTURBING ACTIVITY, DEMOLITION, OR CONSTRUCTION.
22. CONTRACTOR SHALL COORDINATE WITH OWNER'S REPRESENTATIVE IN THE REMOVAL, RELOCATION, AND/OR STORAGE OF OWNER OWNED SITE FURNISHINGS SCHEDULED TO BE SALVAGED.
23. ALL EXISTING VAULTS, MANHOLES, STORM DRAIN STRUCTURES, CLEANOUTS, ETC. NOT DESIGNATED TO BE REMOVED SHALL BE ADJUSTED AS NEEDED TO MATCH FINISH GRADE



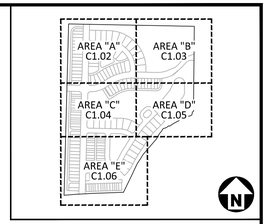
DEMOLITION NOTES (CONTINUED):

24. LANDSCAPED AREAS REQUIRED BY CHAPTER 7 OF THE UDO SHALL NOT CONTAIN ANY DEVELOPMENT, IMPERVIOUS SURFACES, OR SITE FEATURES THAT DO NOT FUNCTION TO MEET THE APPLICABLE STANDARDS FOR THAT AREA OR THAT REQUIRE REMOVAL OF EXISTING SIGNIFICANT VEGETATION [UDO, SEC. 7.4.E.1].
25. NO GRADING, DEVELOPMENT, OR LAND-DISTURBING ACTIVITIES SHALL OCCUR WITHIN A BUFFER YARD IF FOREST CANOPY, SPECIMEN TREES, OR SIGNIFICANT VEGETATION EXISTS WITHIN THESE AREAS, UNLESS APPROVED BY THE LAND USE ADMINISTRATOR. IF GRADING WITHIN A BUFFER YARD IS PROPOSED, SLOPES OF 1:3 OR LESS ARE ENCOURAGED TO ENSURE THE PROPER TRANSITION OF GRADES TO THE ADJACENT PROPERTY AND TO FACILITATE LANDSCAPING AND MAINTENANCE [UDO, SEC. 7.4.E.2].
26. ALL AREAS WITHIN FLOODWAYS, REQUIRED BUFFER YARDS, STREAM BUFFERS, SLOPE AREAS GREATER THAN 25%, AND WETLANDS ARE TREE SAVE AREAS AND ALL VEGETATION AND SOIL IS TO REMAIN UNDISTURBED [UDO, SEC. 7.4.H.1].
27. ALL TREES GREATER THAN 12" DBH WITHIN THE 100-YEAR FLOODPLAIN, FRONT SETBACK AREAS, STREET TREE PLANTING STRIP, RESIDENTIAL LANDSCAPING AREAS, REQUIRED OPEN SPACE, AND SLOPE AREAS OF 15-25% ARE TO REMAIN UNDISTURBED OR REPLACEMENT TREES ARE REQUIRED AT A RATE OF 1 TREE PER 12" DBH, AND SHOULD BE INCORPORATED INTO OPEN SPACE AMENITIES/PUBLIC GATHERING AREAS/PEDESTRIAN PLAZA WHEREVER POSSIBLE. REQUIRED STREET TREES, PARKING LOT LANDSCAPING, AND BUFFER YARD PLANTINGS ARE NOT TO BE COUNTED TOWARDS REPLACEMENT REQUIREMENTS [UDO, SEC. 7.4.H.1].
28. ALL TREES GREATER THAN 24" DBH ON-SITE ARE TO REMAIN UNDISTURBED OR REPLACEMENT TREES ARE REQUIRED AT A RATE OF 1 TREE PER 12" DBH, AND SHOULD BE INCORPORATED INTO OPEN SPACE AMENITIES/PUBLIC GATHERING AREAS/PEDESTRIAN PLAZA WHEREVER POSSIBLE. REQUIRED STREET TREES, PARKING LOT LANDSCAPING, AND BUFFER YARD PLANTINGS ARE NOT TO BE COUNTED TOWARDS REPLACEMENT REQUIREMENTS [UDO, SEC. 7.4.H.1].
29. THROUGH THE PROTECTION OF TREES AND EXISTING VEGETATION, THE TOWN ENCOURAGES NEW DEVELOPMENT TO BE CREATIVE IN DESIGN AND PLACEMENT OF BUILDINGS, STRUCTURES, PARKING, AND OTHER IMPERVIOUS SURFACES AS TO PRESERVE NATURAL FEATURES AND TO COMPLEMENT THE EXISTING TOPOGRAPHY WHEN PRACTICAL. NO TREE GREATER THAN TWELVE (12) INCHES IN DIAMETER AT BREAST HEIGHT (DBH: MEASURED AT 4.5 FEET ABOVE GRADE) LOCATED ON PUBLIC PROPERTY OR WITHIN A REQUIRED TREE PROTECTION AREA (SECTION 7.4) SHALL BE REMOVED FOR THE PURPOSE OF SURVEYING WITHOUT APPROVAL FROM THE LAND USE ADMINISTRATOR [UDO, SEC. 7.4.D.4.A.II.A].
30. TREE PROTECTION FENCES SHALL BE PLACED AROUND ALL PROTECTED TREES DESIGNATED TO BE SAVED PRIOR TO THE START OF DEVELOPMENT ACTIVITIES OR GRADING IN ACCORDANCE WITH STANDARD 2.10 OF THE TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS AND DETAILS MANUAL. TREE PROTECTION FENCES SHALL REMAIN IN PLACE UNTIL DEVELOPMENT ACTIVITIES ARE COMPLETED. TO PREVENT UNINTENDED COMPACTION OF SOIL, THE AREA WITHIN THE PROTECTIVE BARRICADE SHALL REMAIN FREE OF ALL BUILDING MATERIALS, DIRT OR OTHER CONSTRUCTION DEBRIS, CONSTRUCTION TRAFFIC, STORAGE OF VEHICLES AND MATERIALS, AND MASS GRADING [UDO, SEC. 7.4.D.4.A.II.B].
31. EXCEPT FOR DRIVEWAY ACCESS POINTS, SIDEWALKS, CURB, AND GUTTER; NO PAVING WITH CONCRETE OR OTHER IMPERVIOUS MATERIALS WITHIN FIVE (5) FEET OF A TREE DRIP LINE SHALL BE ALLOWED UNLESS OTHERWISE APPROVED. WHERE GRADING WITHIN A TREE DRIPLINE CANNOT BE AVOIDED, CUT AND FILL SHALL BE LIMITED TO ONE-QUARTER (¼) TO ONE-HALF (½) OF THE AREA WITHIN THE DRIPLINE, AND TREE ROOTS MUST BE PRUNED WITH CLEAN CUTS AT THE EDGE OF THE DISTURBED AREA. NO FILL SHALL BE PLACED WITHIN THE DRIPLINE OF A TREE WITHOUT VENTING TO ALLOW AIR AND WATER TO REACH THE ROOTS [UDO, SEC. 7.4.D.4.A.II.C].

DEMOLITION LEGEND

TREE	TREE OR OTHER VEGETATION TO BE REMOVED
U/G U/G U/G	UNDERGROUND UTILITY AND FENCING TO BE REMOVED
	AREA TO BE REMOVED (SIDEWALK, CURB AND GUTTER, STRUCTURES, ASPHALT, CONCRETE PAVING, ETC.)

NOTE: SEE PLAN FOR DETAILED DEMOLITION PROCEDURES, SEQUENCING AND SPECIFICATIONS.



KEY MAP

GRAPHIC SCALE
0 50 100 200
1 inch = 100 ft.

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713
phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293, C-187
www.mcadamsco.com

CLIENT

LENNAR
1100 PERIMETER PARK DRIVE, SUITE 112
MORRISVILLE, NORTH CAROLINA 27560
CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545



REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
6		

PLAN INFORMATION

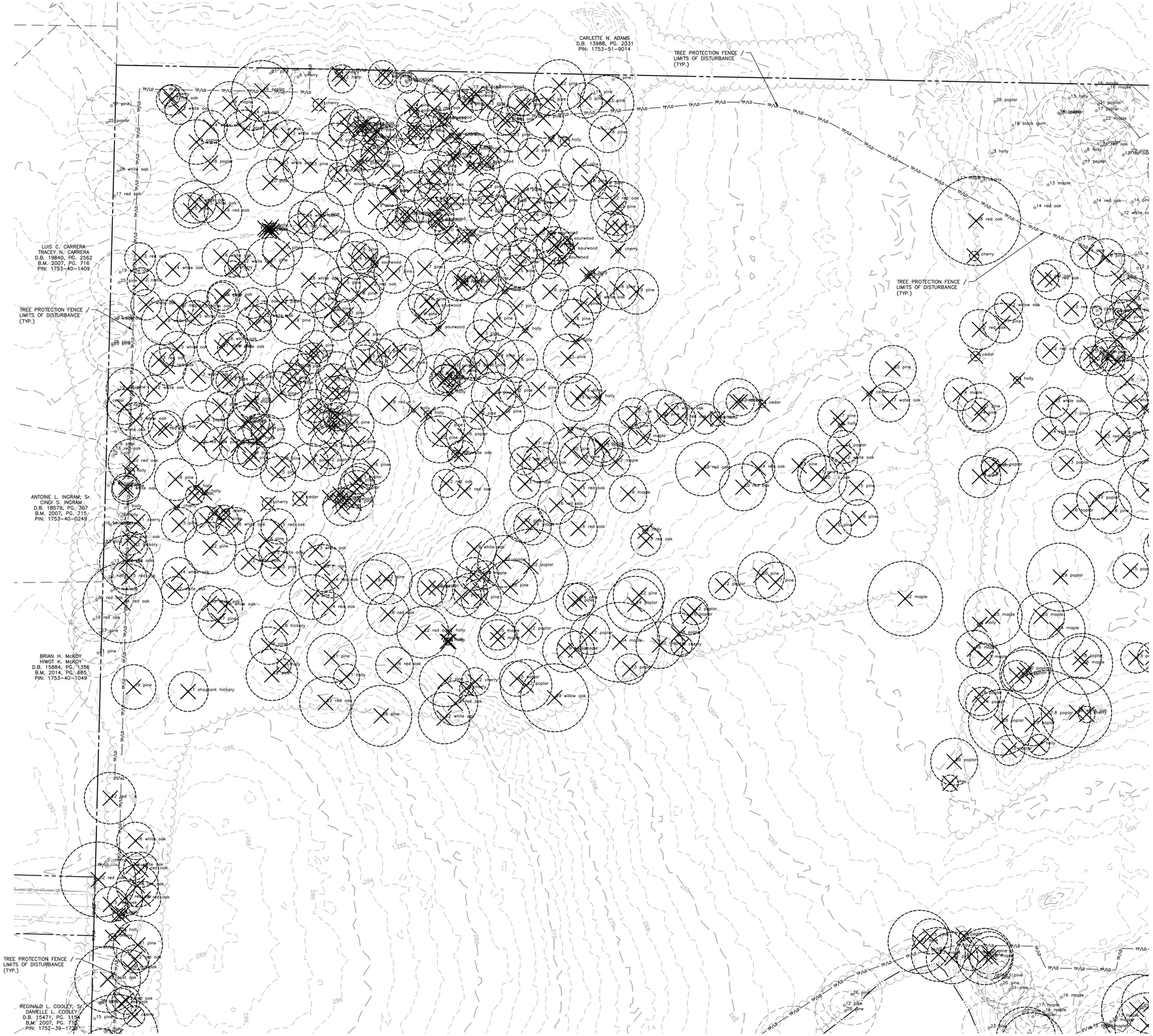
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DATE	11. 14. 2025

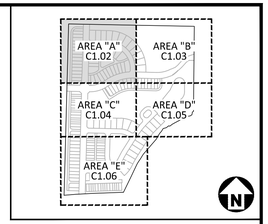
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OVERALL DEMOLITION PLAN

C1.01

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KEY MAP

DEMOLITION LEGEND

TREE	TREE OR OTHER VEGETATION TO BE REMOVED
UTILITY, FENCING TO BE REMOVED	
AREA TO BE REMOVED (SIDEWALK, CURB AND GUTTER, STRUCTURES, ASPHALT, CONCRETE PAVING, ETC.)	

NOTE: SEE PLAN FOR DETAILED DEMOLITION PROCEDURES, SEQUENCING AND SPECIFICATIONS.

ALL TREES WITHIN THE LIMITS OF DISTURBANCE TO BE REMOVED

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 WILLIAM D. WILLIAMSON

REVISIONS

NO.	DATE

PLAN INFORMATION

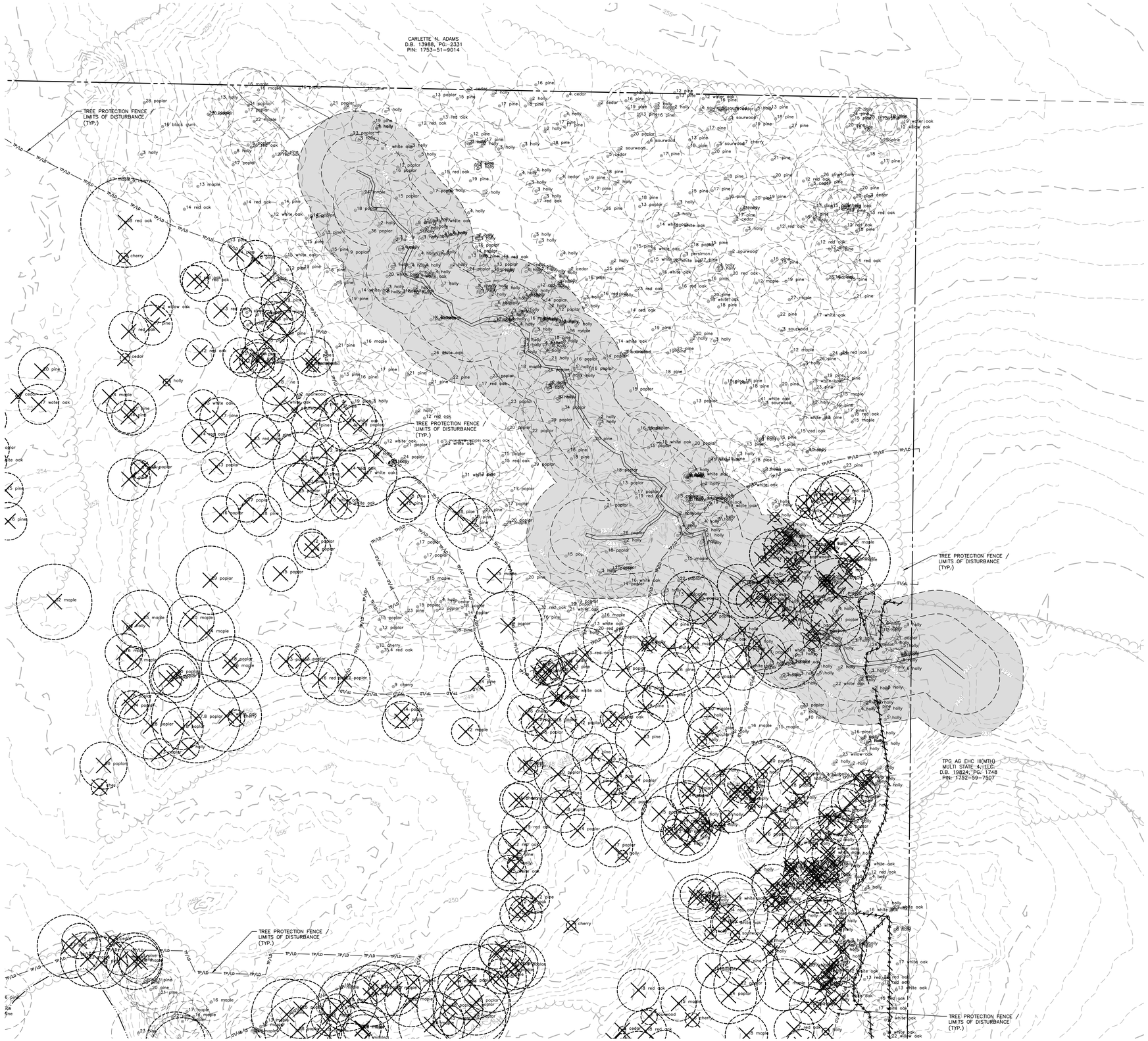
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DATE	11. 14. 2025

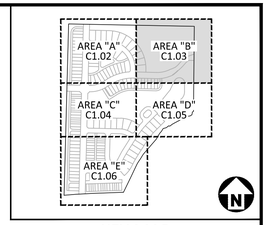
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DEMOLITION PLAN - AREA "A"

C1.02

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KEY MAP

DEMOLITION LEGEND

TREE	TREE OR OTHER VEGETATION TO BE REMOVED
TP/LD	UTILITY, FENCING TO BE REMOVED
	AREA TO BE REMOVED (SIDEWALK, CURB AND GUTTER, STRUCTURES, ASPHALT, CONCRETE PAVING, ETC.)

NOTE: SEE PLAN FOR DETAILED DEMOLITION PROCEDURES, SEQUENCING AND SPECIFICATIONS.

ALL TREES WITHIN THE LIMITS OF DISTURBANCE TO BE REMOVED

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293, C-187

www.mcadamsco.com

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LENNAR
1100 PERIMETER PARK DRIVE, SUITE 112
MORRISVILLE, NORTH CAROLINA 27560
CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 NICHOLAS D. WILLIAMS
NOT FOR CONSTRUCTION

REVISIONS

NO. DATE

PLAN INFORMATION

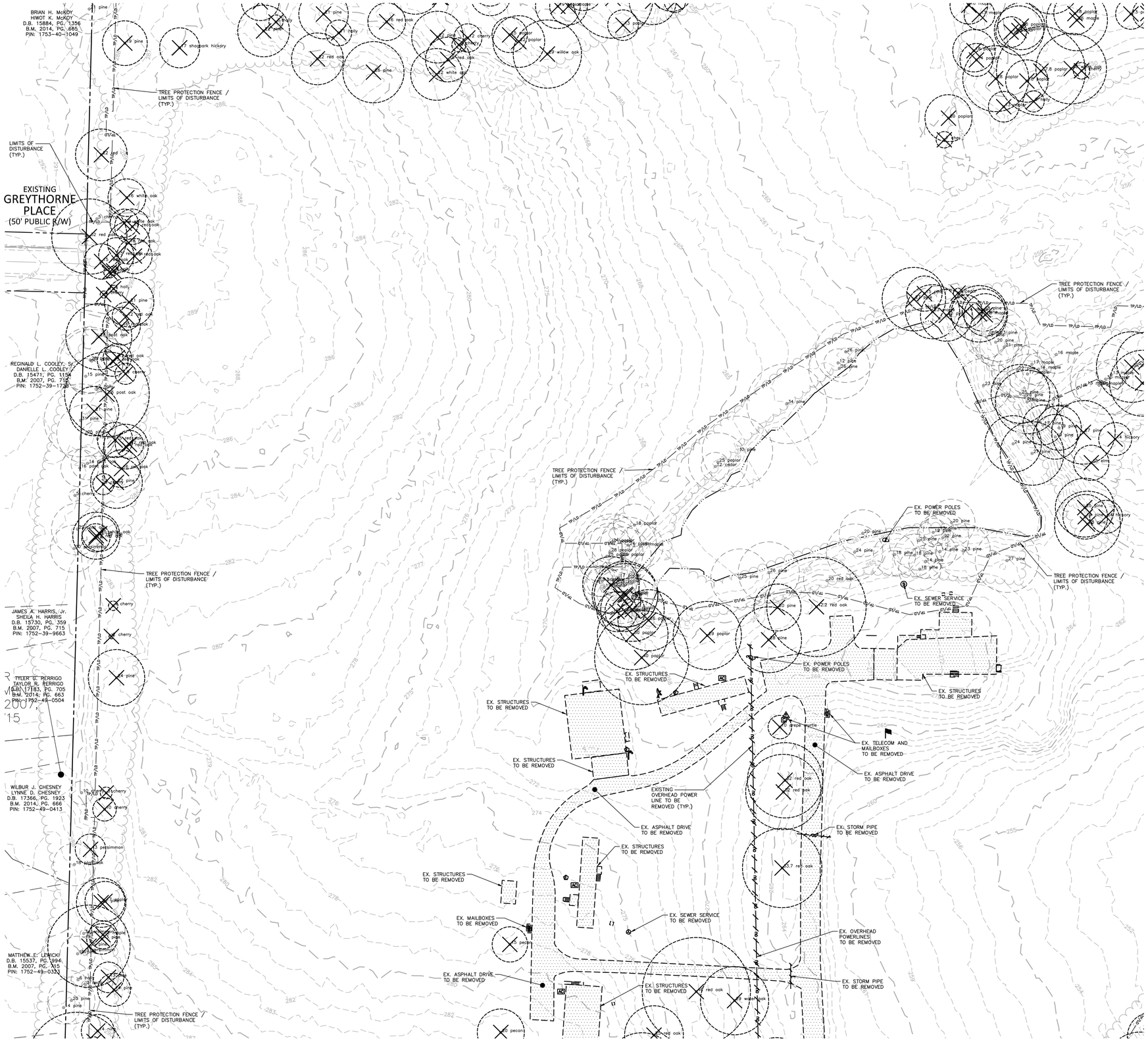
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FILENAME	LEN24015-DM1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 40'
DATE	11. 14. 2025

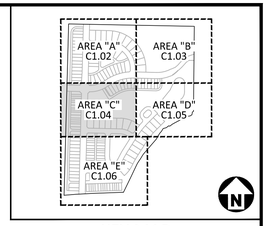
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DEMOLITION PLAN - AREA "B"

C1.03

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KEY MAP

DEMOLITION LEGEND

TREE	TREE OR OTHER VEGETATION TO BE REMOVED
	UTILITY, FENCING TO BE REMOVED
	AREA TO BE REMOVED (SIDEWALK, CURB AND GUTTER, STRUCTURES, ASPHALT, CONCRETE PAVING, ETC.)

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CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 WILLIAM D. WILLIAMSON

REVISIONS

NO.	DATE

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-DM1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 40'
DATE	11. 14. 2025

SHEET

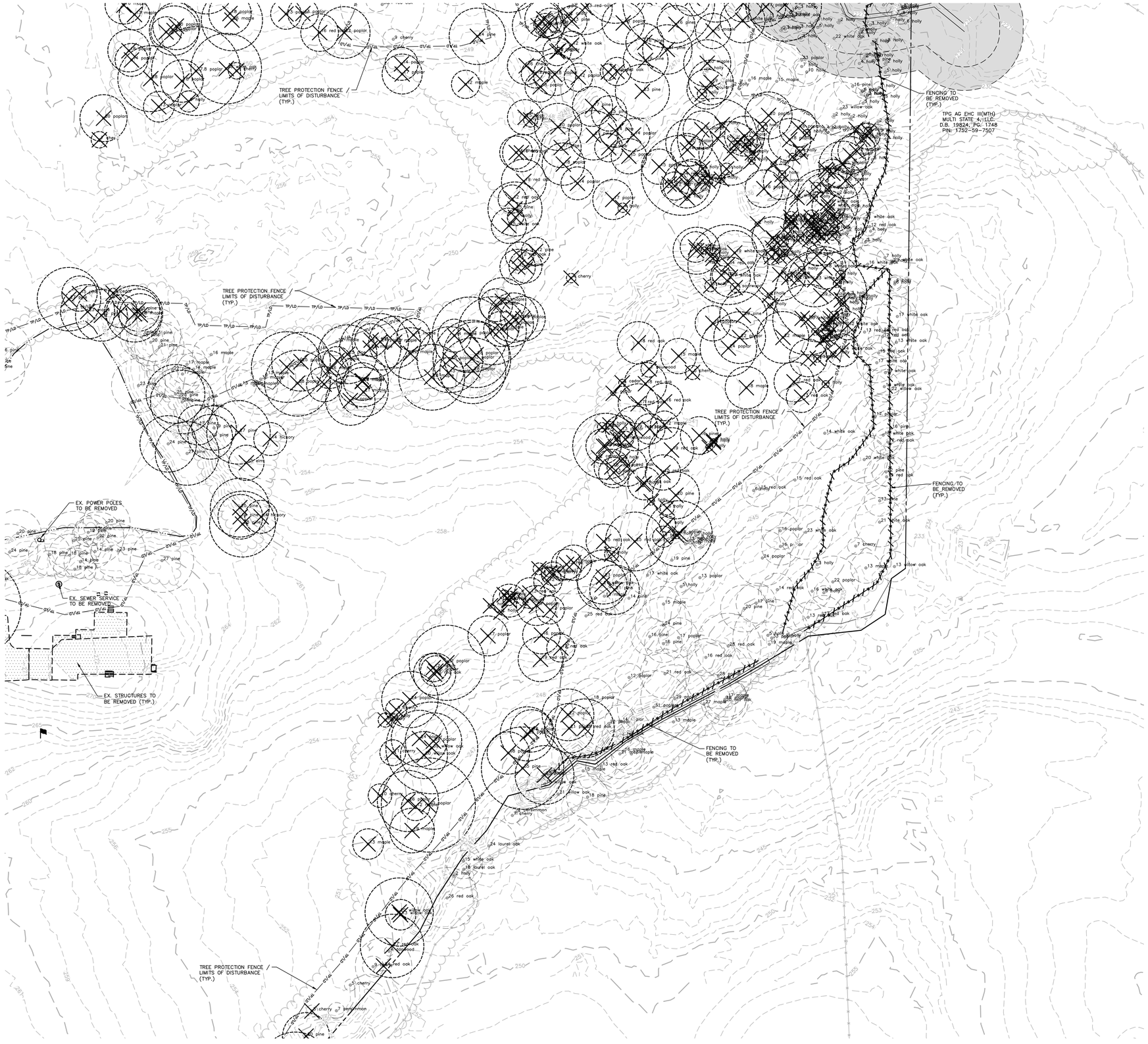
GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

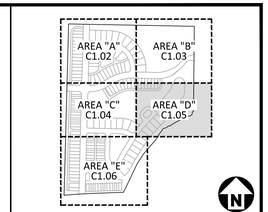
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Land Use Administrator

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DEMOLITION PLAN - AREA "C"
C1.04

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KEY MAP

DEMOLITION LEGEND

TREE	TREE OR OTHER VEGETATION TO BE REMOVED
UTILITY, FENCING TO BE REMOVED	UTILITY, FENCING TO BE REMOVED
AREA TO BE REMOVED (SIDEWALK, CURB AND GUTTER, STRUCTURES, ASPHALT, CONCRETE PAVING, ETC.)	AREA TO BE REMOVED (SIDEWALK, CURB AND GUTTER, STRUCTURES, ASPHALT, CONCRETE PAVING, ETC.)

NOTE: SEE PLAN FOR DETAILED DEMOLITION PROCEDURES, SEQUENCING AND SPECIFICATIONS.

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GRAPHIC SCALE
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 NICHOLAS D. WILLIAMSON

REVISIONS

NO.	DATE

PLAN INFORMATION

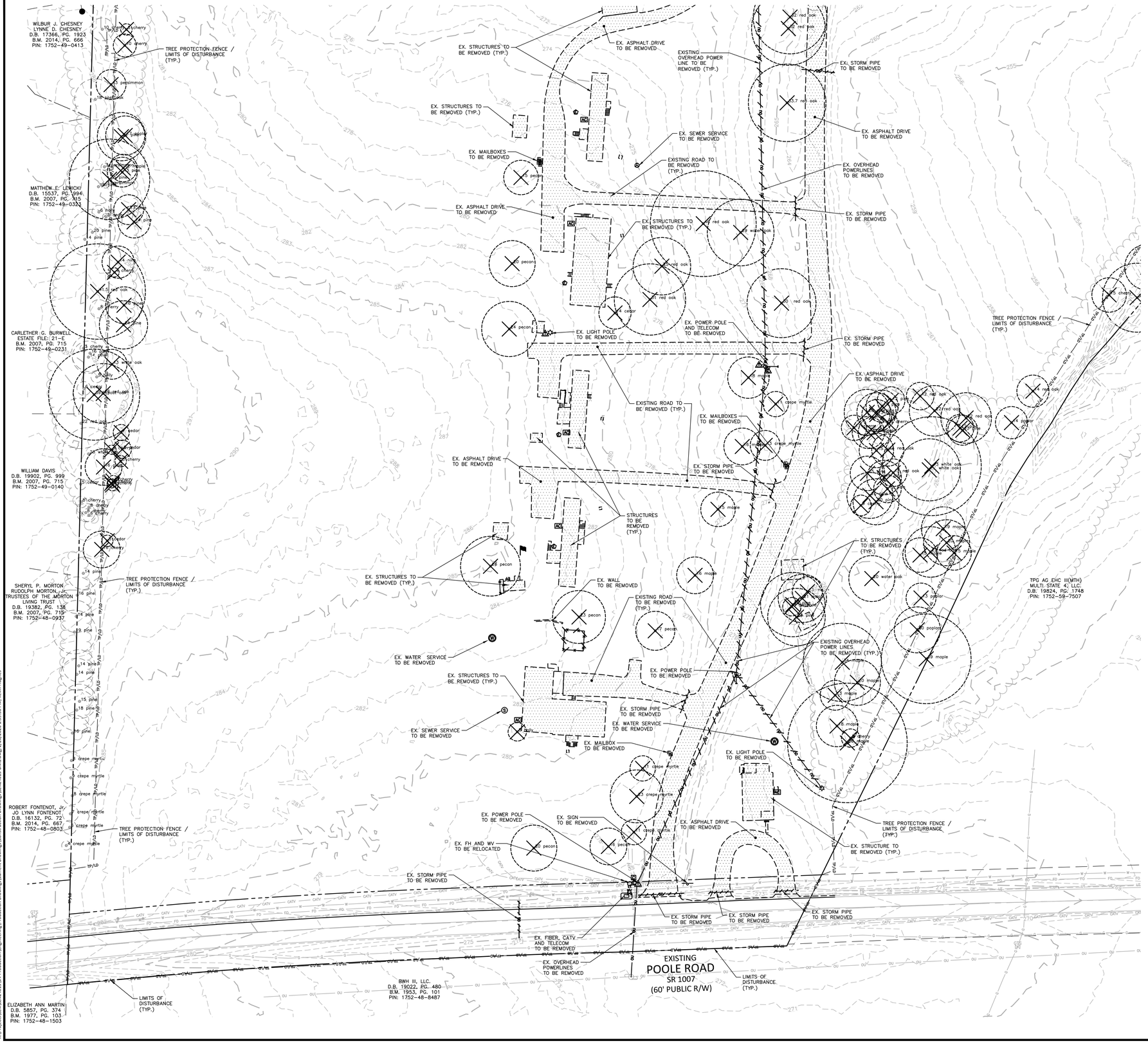
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FILENAME	LEN24015-DM1
CHECKED BY	WMK
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DATE	11. 14. 2025

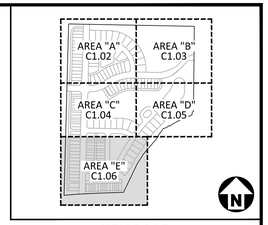
SHEET

DEMOLITION PLAN - AREA "D"

C1.05

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KEY MAP

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- TREE — TREE OR OTHER VEGETATION TO BE REMOVED
- UTILITY, FENCING TO BE REMOVED
- AREA TO BE REMOVED (SIDEWALK, CURB AND GUTTER, STRUCTURES, ASPHALT, CONCRETE PAVING, ETC.)

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GRAPHIC SCALE
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 NICHOLAS D. WILLIAMSON
NOT FOR CONSTRUCTION

REVISIONS

NO. DATE

PLAN INFORMATION

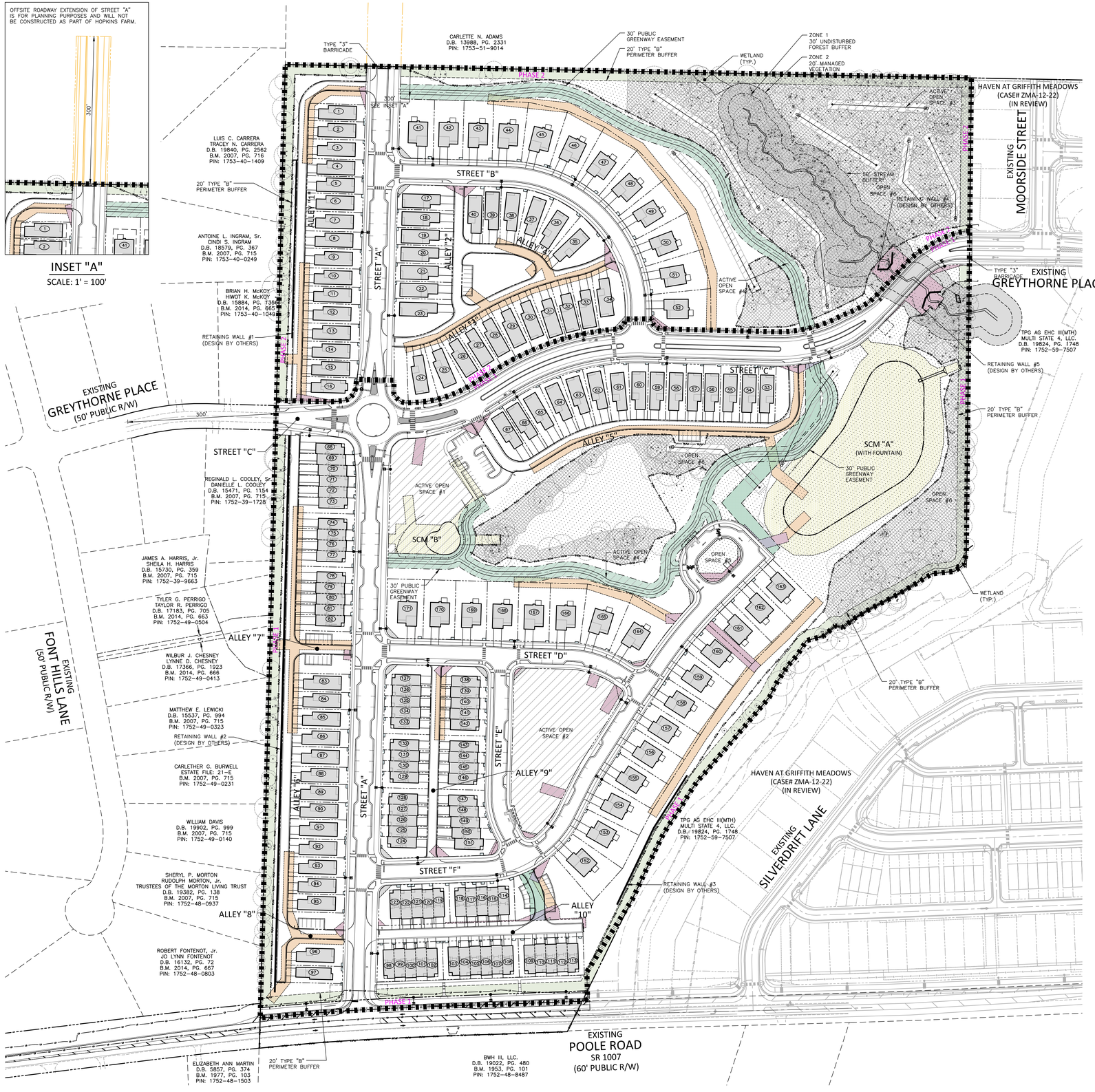
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FILENAME	LEN24015-DM1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 40'
DATE	11. 14. 2025

SHEET

DEMOLITION PLAN - AREA "E"

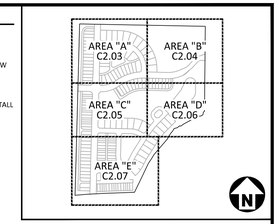
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SITE LEGEND

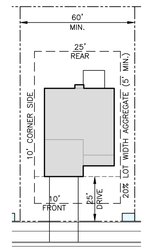
- SIGNAGE
- POWER POLE
- TRAFFIC DIRECTIONAL ARROW
- ACC / VAN — ACCESSIBLE PARKING STALL
- VAN ACCESSIBLE PARKING STALL
- (XX) PARKING SPACE COUNT
- ACCESSIBLE RAMPS
- ACCESSIBLE ROUTE
- PHASE LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- LOT LINE
- CENTERLINE
- GUARDRAIL
- WETLANDS
- TREE CONSERVATION AREA (NOTE: A 20' WIDE AREA ALONG EACH DISC GOLF HOLE IS DEDUCTED FROM TREE SAVE CALCULATIONS)
- OPEN SPACE - ACTIVE (NOTE: 20' ACTIVE OPEN SPACE STRIP PROVIDED ALONG EACH DISC GOLF HOLE)
- OPEN SPACE - PASSIVE
- PERIMETER BUFFER



KEY MAP

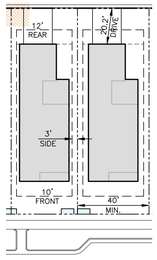
EASEMENT LEGEND

- SS — SANITARY SEWER EASEMENT
- PuSD — PUBLIC STORM DRAINAGE EASEMENT
- PrSD — PRIVATE STORM DRAINAGE EASEMENT
- GW — PUBLIC GREENWAY EASEMENT



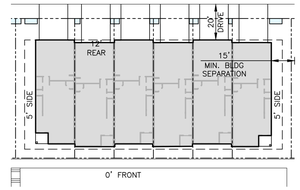
FRONT-LOADED SINGLE FAMILY DWELLING DETAIL

SCALE: 1"=40'



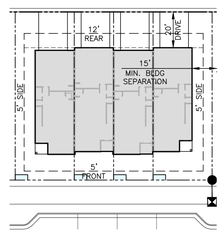
REAR-LOADED SINGLE DWELLING FAMILY DETAIL

SCALE: 1"=40'



OPEN SPACE FACING REAR-LOADED TOWNHOME DETAIL

SCALE: 1"=40'



STREET FACING REAR-LOADED TOWNHOME DETAIL

SCALE: 1"=40'

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NC GRID (NAD83)

GRAPHIC SCALE
0 50 100 200
1 inch = 100 ft.

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CLIENT

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LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545



REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
6		

PLAN INFORMATION

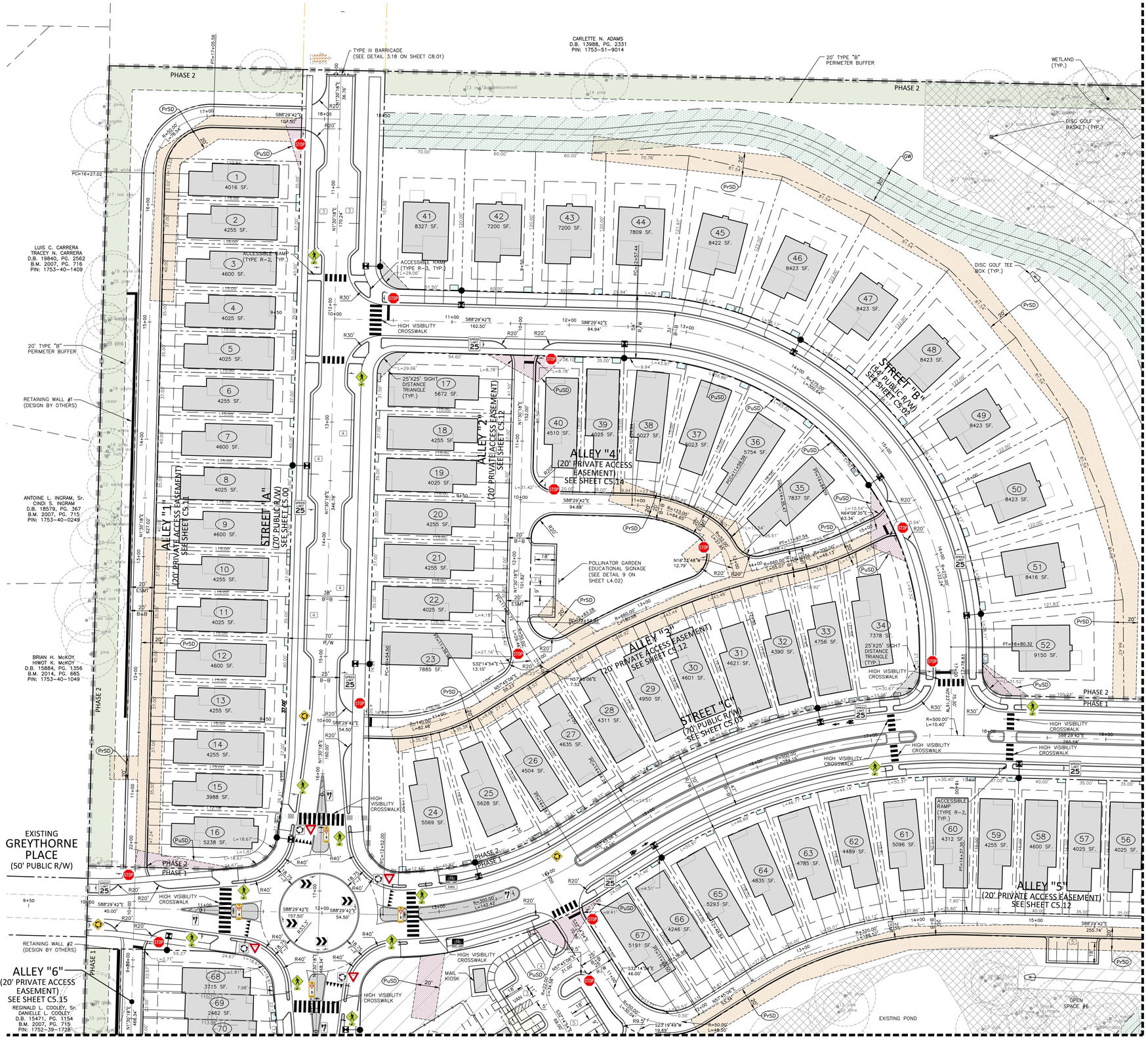
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FILENAME	LEN24015-OAS1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 100'
DATE	11. 14. 2025

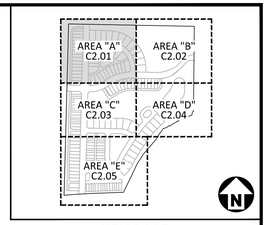
SHEET

OVERALL SITE PLAN

C2.00

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KEY MAP

SITE LEGEND

- SIGNAGE
- POWER POLE
- STREET LIGHT
- TRAFFIC DIRECTIONAL ARROW
- ACC / VAN — ACCESSIBLE PARKING STALL
- VAN ACCESSIBLE PARKING STALL
- (XX) — PARKING SPACE COUNT
- ACCESSIBLE RAMPS
- ACCESSIBLE ROUTE
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- PERIMETER BUFFER

SITE SIGN KEY

R2-1 SPEED LIMIT 25 · R1-1 STOP · R6-5P · W11-2 W16-7P · R6-4 · R1-2 YIELD · R1-6 STATE LAW TO MOTION CROSSWALK · R4-7C · W2-6 · TYPE III

SPEED LIMIT TABLE	
LOCAL STREET	25 MPH
MAIN STREET	25 MPH

EASEMENT LEGEND

- GW — GREENWAY EASEMENT
- SS — SANITARY SEWER EASEMENT
- SCM — SCM ACCESS AND MAINTENANCE EASEMENT
- SDT — SIGHT DISTANCE TRIANGLE EASEMENT
- PuSD — PUBLIC STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- PrSD — PRIVATE STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- UE — UTILITY EASEMENT
- WE — WATERLINE EASEMENT

NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
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CONSTRUCTION DRAWINGS
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KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 KEVIN D. WILLIAMSON — NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
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6		

PLAN INFORMATION

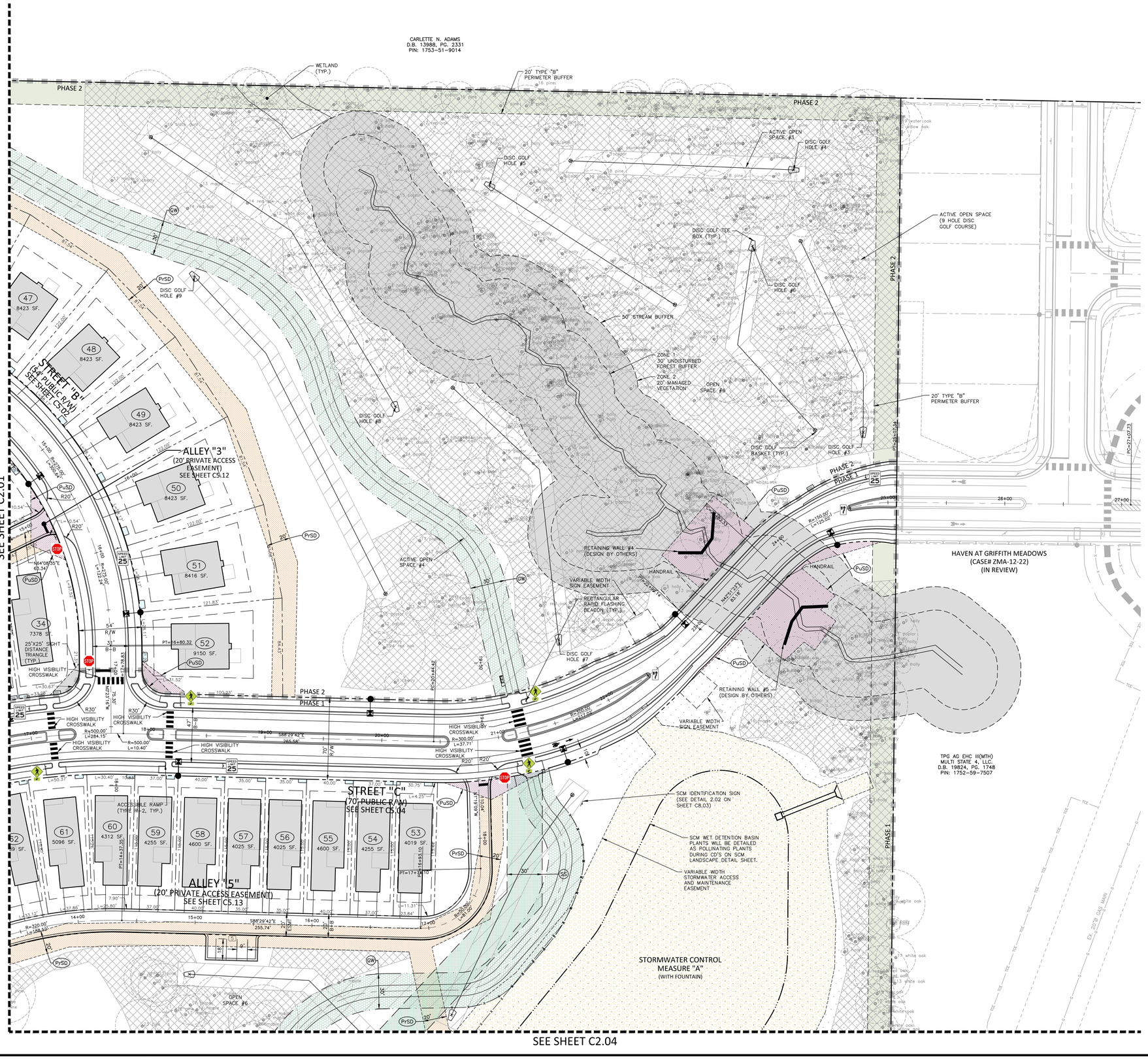
PROJECT NO.	LEN24015
FILENAME	LEN24015-S1
CHECKED BY	WMK
DRAWN BY	KWH
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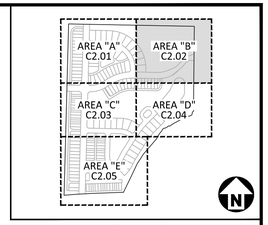
SHEET

SITE, SIGNAGE & PAVEMENT MARKING PLAN - AREA "A"

C2.01

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KEY MAP

SITE LEGEND

- SIGNAGE
- POWER POLE
- STREET LIGHT
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- ACC / VAN — ACCESSIBLE PARKING STALL
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SITE SIGN KEY

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R4-7C · W2-6 · TYPE III

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NC GRID (NAD83)

GRAPHIC SCALE
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1 inch = 40 ft.

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 THOMAS D. WILLIAMSON — NOT FOR CONSTRUCTION

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SCALE	1" = 40'
DATE	11. 14. 2025

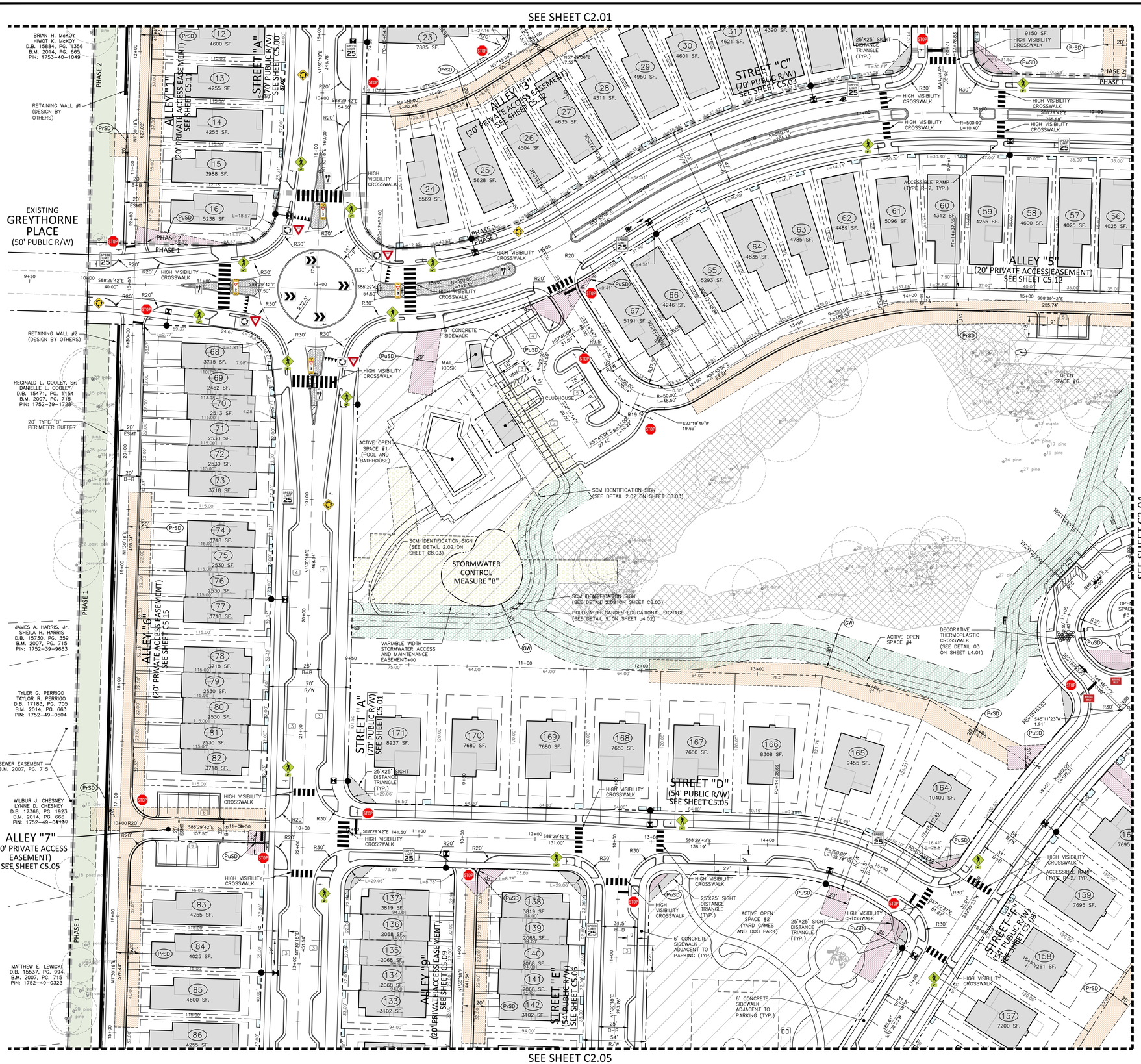
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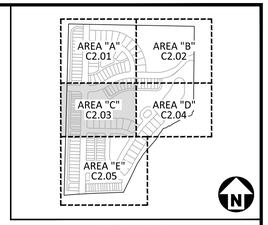
SITE, SIGNAGE & PAVEMENT MARKING PLAN - AREA "B"

C2.02

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SEE SHEET C2.01



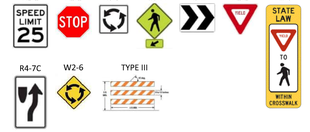


KEY MAP

SITE LEGEND

- SIGNAGE
- POWER POLE
- STREET LIGHT
- TRAFFIC DIRECTIONAL ARROW
- ACC / VAN — ACCESSIBLE PARKING STALL / VAN ACCESSIBLE PARKING STALL
- (XX) — PARKING SPACE COUNT
- ACCESSIBLE RAMPS
- ACCESSIBLE ROUTE
- PHASE LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- LOT LINE
- CENTERLINE
- GUARDRAIL
- WETLANDS
- TREE CONSERVATION AREA (NOTE: A 20' WIDE AREA ALONG EACH DISC GOLF HOLE IS DEDUCTED FROM TREE SAVE CALCULATIONS)
- OPEN SPACE - ACTIVE (NOTE: 20' ACTIVE OPEN SPACE STRIP PROVIDED ALONG EACH DISC GOLF HOLE)
- OPEN SPACE - PASSIVE
- PERIMETER BUFFER

SITE SIGN KEY



SPEED LIMIT TABLE	
LOCAL STREET	25 MPH
MAIN STREET	25 MPH

EASEMENT LEGEND

- GW — GREENWAY EASEMENT
- SS — SANITARY SEWER EASEMENT
- SCM — SCM ACCESS AND MAINTENANCE EASEMENT
- SDT — SIGHT DISTANCE TRIANGLE EASEMENT
- PuSD — PUBLIC STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- PrSD — PRIVATE STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- UE — UTILITY EASEMENT
- WE — WATERLINE EASEMENT

NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

SEE SHEET C0.00 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

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Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By: _____ Date: _____
Town Engineer

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Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 WILLIAM D. WILLIMSON — NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
6		

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-S1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 40'
DATE	11. 14. 2025

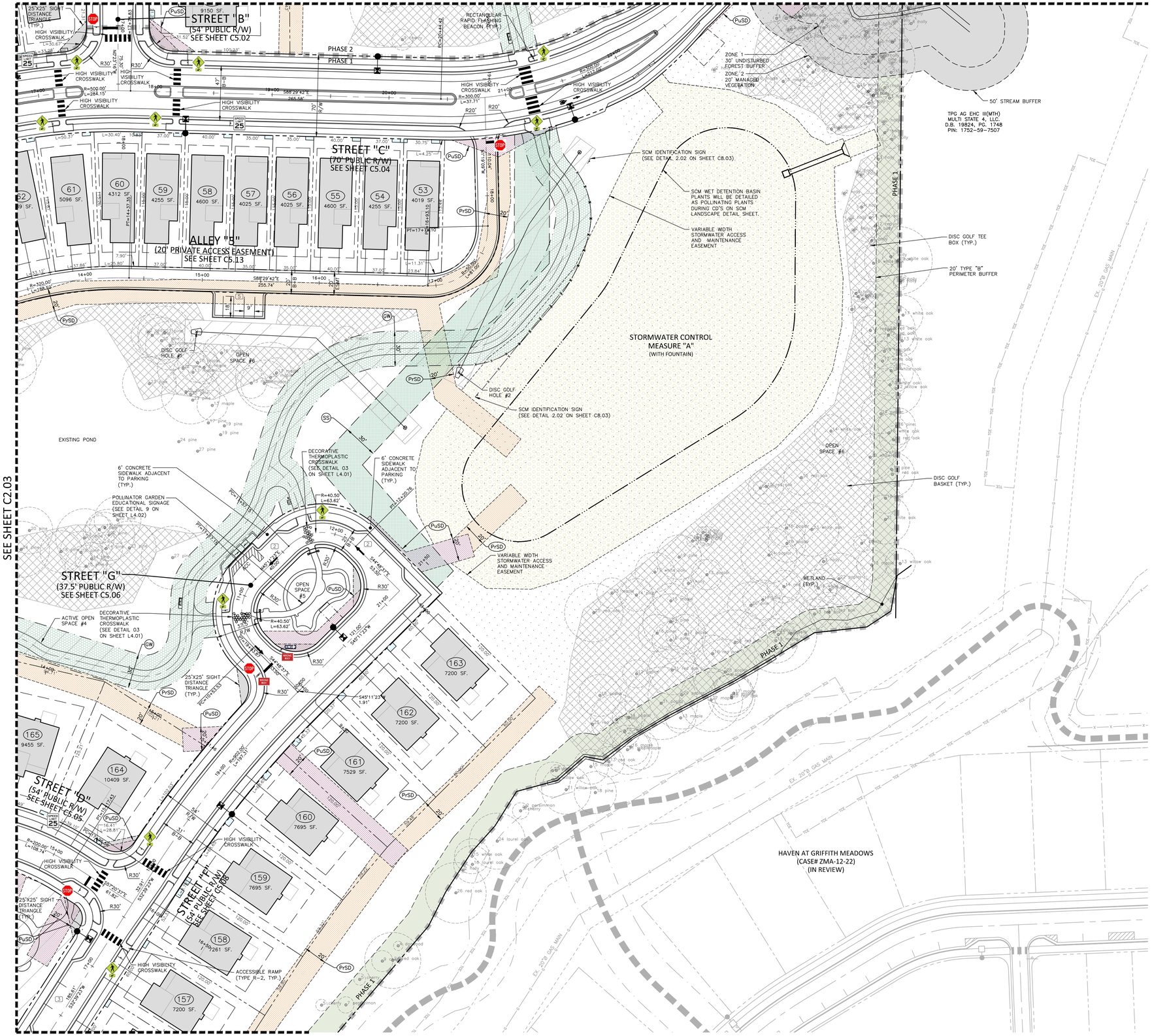
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SITE, SIGNAGE & PAVEMENT MARKING PLAN - AREA "C"

C2.03

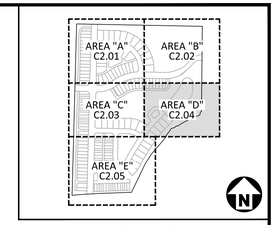
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SEE SHEET C2.02



SEE SHEET C2.03

SEE SHEET C2.05



KEY MAP

SITE LEGEND

- SIGNAGE
- POWER POLE
- STREET LIGHT
- TRAFFIC DIRECTIONAL ARROW
- ACC — ACCESSIBLE PARKING STALL
- VAN — VAN ACCESSIBLE PARKING STALL
- (XX) — PARKING SPACE COUNT
- ACCESSIBLE RAMPS
- ACCESSIBLE ROUTE
- PHASE LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- LOT LINE
- CENTERLINE
- GUARDRAIL
- WETLANDS
- TREE CONSERVATION AREA (NOTE: A 20' WIDE AREA ALONG EACH DISC GOLF HOLE IS DEDUCTED FROM TREE SAVE CALCULATIONS)
- OPEN SPACE - ACTIVE (NOTE: 20' ACTIVE OPEN SPACE STRIP PROVIDED ALONG EACH DISC GOLF HOLE)
- OPEN SPACE - PASSIVE
- PERIMETER BUFFER

SITE SIGN KEY

R2-1 SPEED LIMIT 25 · R1-1 STOP · R6-5P · W11-2 W16-7P · R6-4 · R1-2 · R1-6 STATE LAW TO WITHIN CROSSWALK · R4-7C · W2-6 · TYPE III

SPEED LIMIT TABLE	
LOCAL STREET	25 MPH
MAIN STREET	25 MPH

EASEMENT LEGEND

- GW — GREENWAY EASEMENT
- SS — SANITARY SEWER EASEMENT
- SCM — SCM ACCESS AND MAINTENANCE EASEMENT
- SDT — SIGHT DISTANCE TRIANGLE EASEMENT
- PuSD — PUBLIC STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- PrSD — PRIVATE STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- UE — UTILITY EASEMENT
- WE — WATERLINE EASEMENT

NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

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LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 THOMAS D. WILLIAMSON — NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
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6		

PLAN INFORMATION

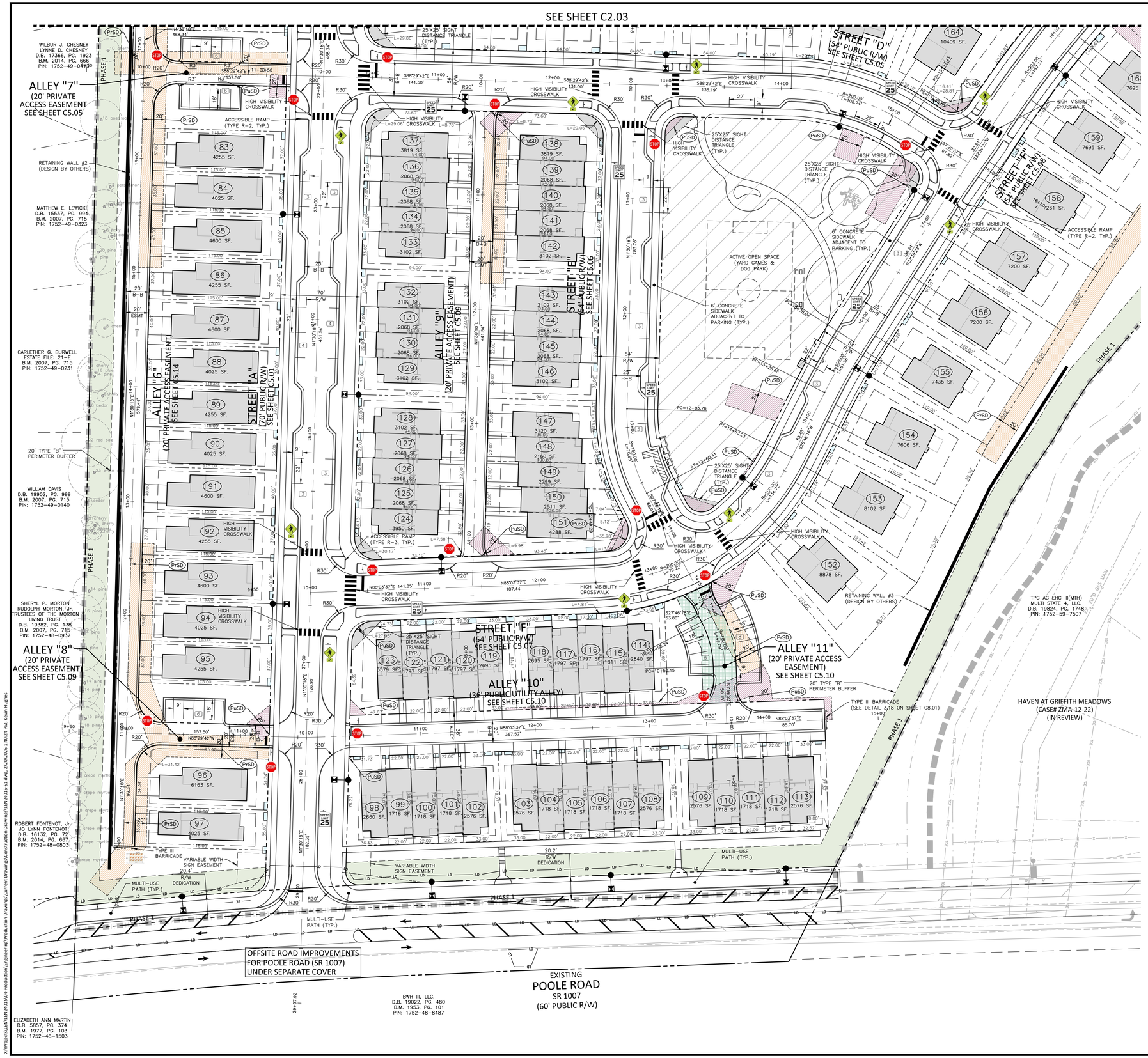
PROJECT NO.	LEN24015
FILENAME	LEN24015-S1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 40'
DATE	11. 14. 2025

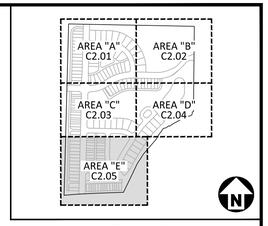
SHEET

SITE, SIGNAGE & PAVEMENT MARKING PLAN - AREA "D"

C2.04

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KEY MAP

SITE LEGEND

- SIGNAGE
- POWER POLE
- STREET LIGHT
- TRAFFIC DIRECTIONAL ARROW
- ACC — ACCESSIBLE PARKING STALL
- VAN — VAN ACCESSIBLE PARKING STALL
- (XX) — PARKING SPACE COUNT
- ACCESSIBLE RAMPS
- ACCESSIBLE ROUTE
- PHASE LINE
- PROPERTY LINE
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- OPEN SPACE - ACTIVE (NOTE: 20' ACTIVE OPEN SPACE STRIP PROVIDED ALONG EACH DISC GOLF HOLE)
- OPEN SPACE - PASSIVE
- PERIMETER BUFFER

SITE SIGN KEY

R2-1 SPEED LIMIT 25 · R1-1 STOP · R6-5P · W11-2 W16-7P · R6-4 · R1-2 · R1-6 STATE LAW TO WITHIN CROSSWALK · R4-7C · W2-6 · TYPE III

SPEED LIMIT TABLE	
LOCAL STREET	25 MPH
MAIN STREET	25 MPH

EASEMENT LEGEND

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- SDT — SIGHT DISTANCE TRIANGLE EASEMENT
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- PrSD — PRIVATE STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- UE — UTILITY EASEMENT
- WE — WATERLINE EASEMENT

NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

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LENNAR

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KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 THOMAS D. WILLIAMSON — NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
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PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-S1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 40'
DATE	11. 14. 2025

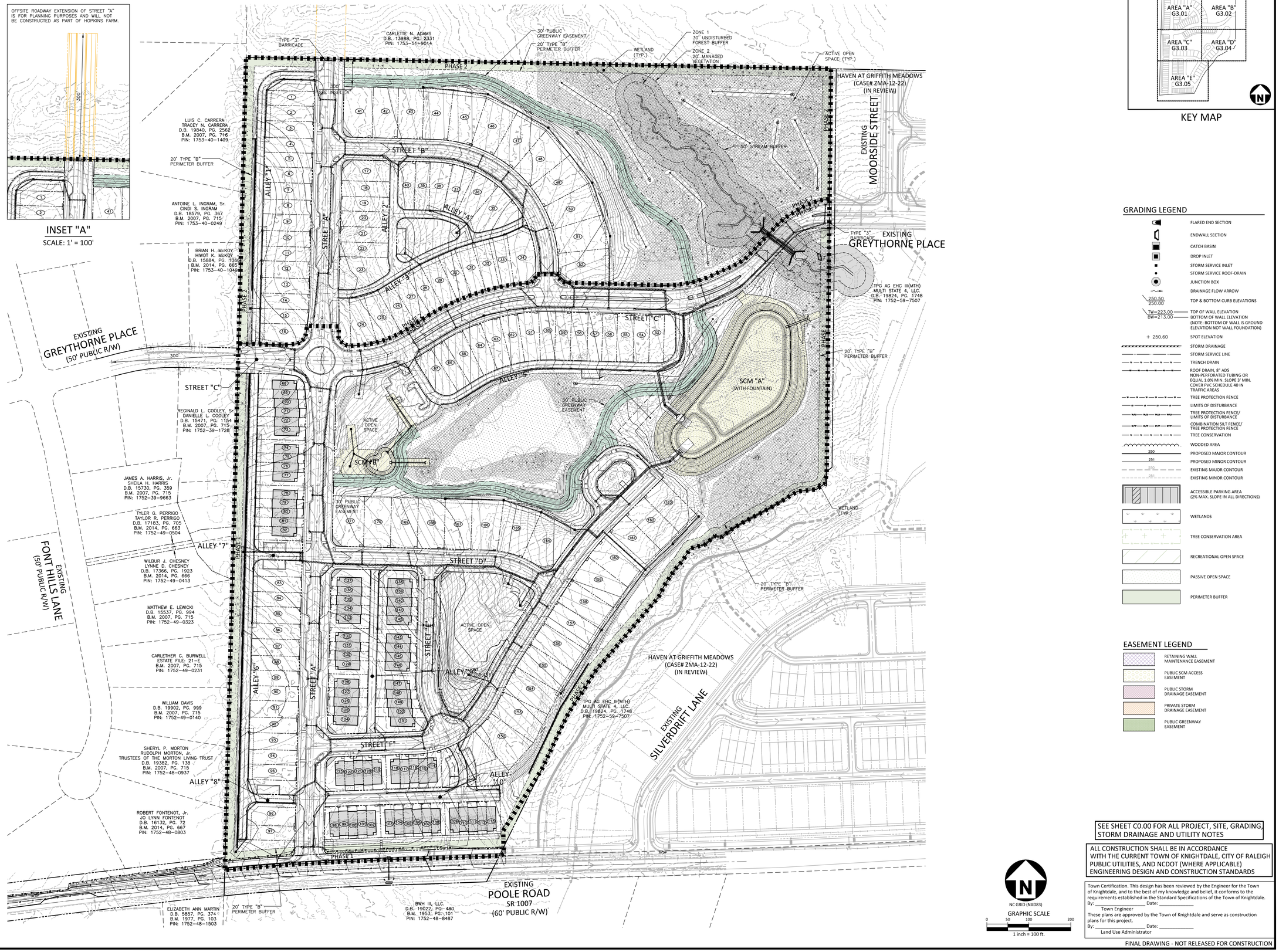
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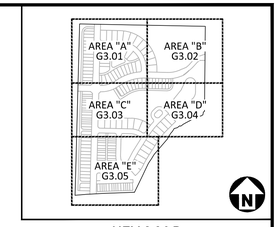
SITE, SIGNAGE & PAVEMENT MARKING PLAN - AREA "E"

C2.05

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INSET "A"
SCALE: 1' = 100'





KEY MAP

GRADING LEGEND

- FLARED END SECTION
- ENDWALL SECTION
- CATCH BASIN
- DROP INLET
- STORM SERVICE INLET
- STORM SERVICE ROOF-DRAIN
- JUNCTION BOX
- DRAINAGE FLOW ARROW
- 250.50 / 250.00 — TOP & BOTTOM CURB ELEVATIONS
- TW=223.00 / BW=213.00 — TOP OF WALL ELEVATION / BOTTOM OF WALL ELEVATION (NOTE: BOTTOM OF WALL IS GROUND ELEVATION NOT WALL FOUNDATION)
- + 250.60 — SPOT ELEVATION
- STORM DRAINAGE
- STORM SERVICE LINE
- TRENCH DRAIN
- ROOF DRAIN, 8" ADS NON-PERFORATED TUBING OR EQUAL 1.0% MIN. SLOPE 3' MIN. COVER PVC SCHEDULE 40 IN TRAFFIC AREAS
- TREE PROTECTION FENCE
- LIMITS OF DISTURBANCE
- TREE PROTECTION FENCE/ LIMITS OF DISTURBANCE
- COMBINATION SILT FENCE/ TREE PROTECTION FENCE
- TREE CONSERVATION
- WOODED AREA
- 250 — PROPOSED MAJOR CONTOUR
- 251 — PROPOSED MINOR CONTOUR
- 250 — EXISTING MAJOR CONTOUR
- 251 — EXISTING MINOR CONTOUR
- ACCESSIBLE PARKING AREA (2% MAX. SLOPE IN ALL DIRECTIONS)
- WETLANDS
- TREE CONSERVATION AREA
- RECREATIONAL OPEN SPACE
- PASSIVE OPEN SPACE
- PERIMETER BUFFER

EASEMENT LEGEND

- RETAINING WALL MAINTENANCE EASEMENT
- PUBLIC SCM ACCESS EASEMENT
- PUBLIC STORM DRAINAGE EASEMENT
- PRIVATE STORM DRAINAGE EASEMENT
- PUBLIC GREENWAY EASEMENT

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NC GRID (NAD83)

GRAPHIC SCALE
0 50 100 200
1 inch = 100 ft.

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REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
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5		
6		

PLAN INFORMATION

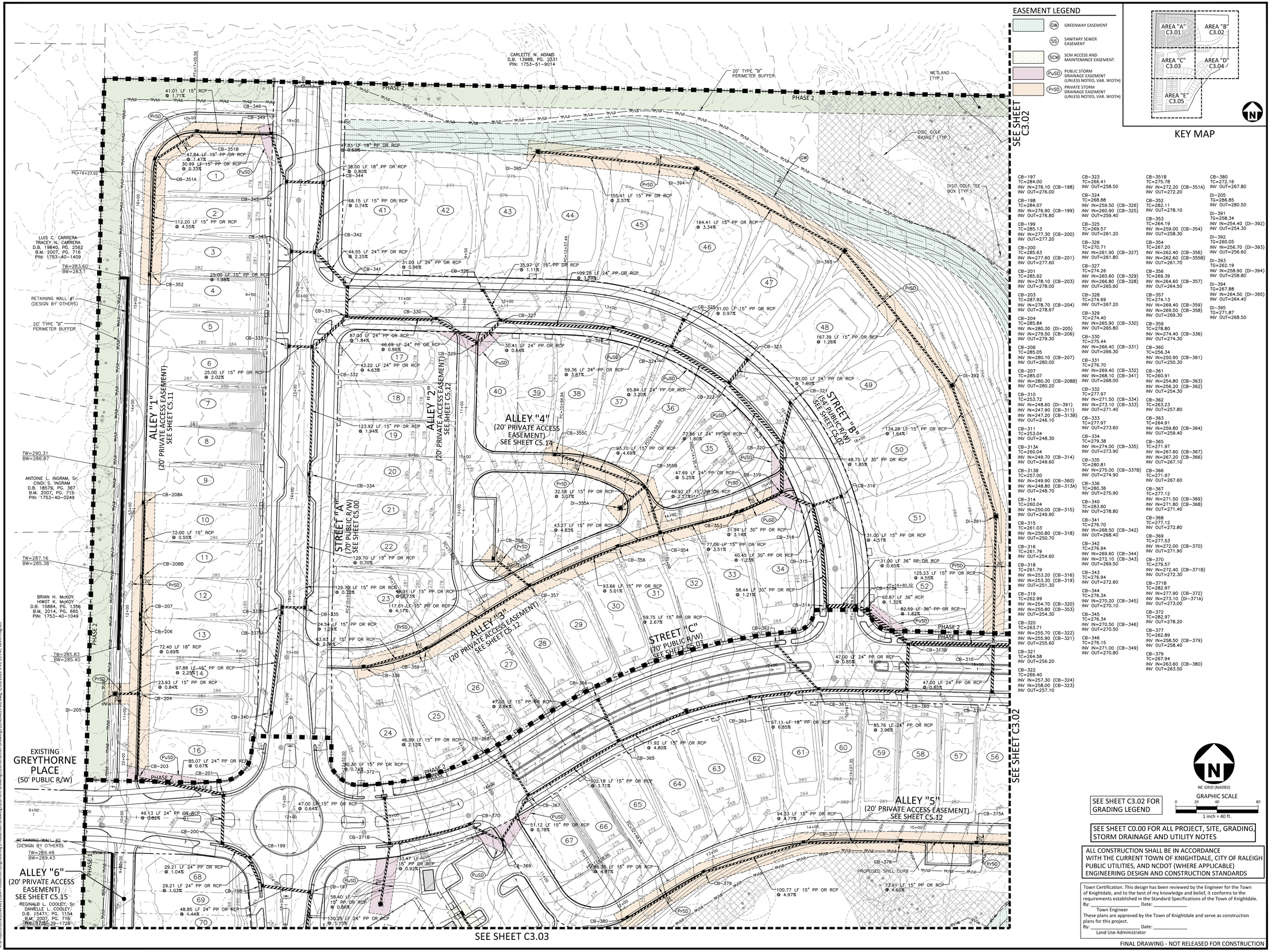
PROJECT NO.	LEN24015
FILENAME	LEN24015-OAG1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 100'
DATE	11. 14. 2025

SHEET

OVERALL GRADING AND STORM DRAINAGE PLAN

C3.00

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048280 ENGINEER THOMAS D. WILLIAMSON NOT FOR CONSTRUCTION

REVISIONS

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1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
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6		

PLAN INFORMATION

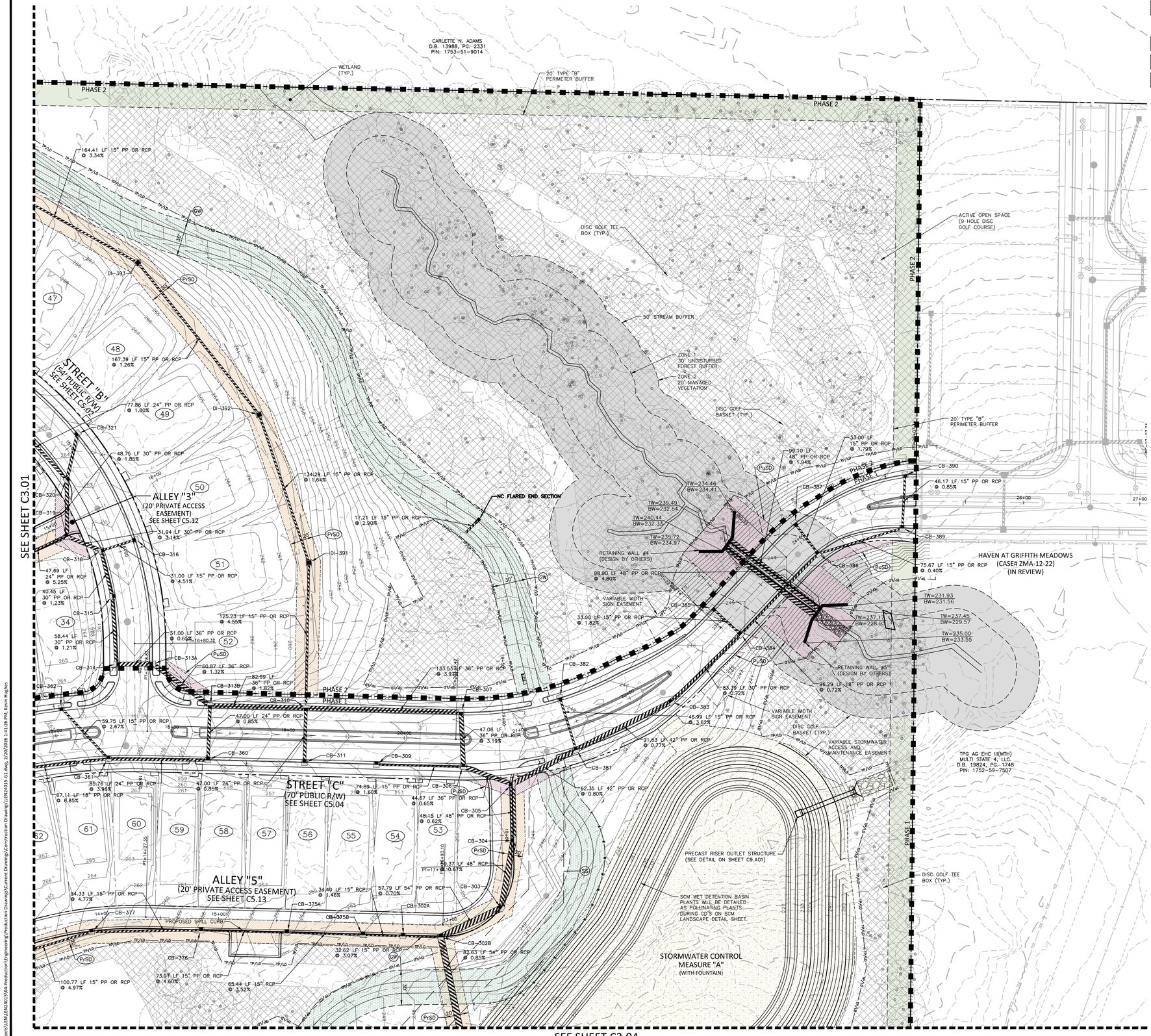
PROJECT NO.	LEN24015
FILENAME	LEN24015-G1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 40'
DATE	11. 14. 2025

SHEET

STORM DRAINAGE PLAN - AREA "A"

C3.01

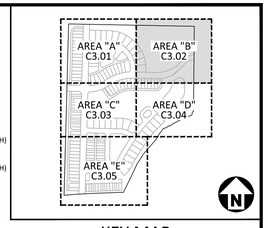
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EASEMENT LEGEND

- GW — GREENWAY EASEMENT
- SS — SANITARY SEWER EASEMENT
- SCM — SCM ACCESS AND MAINTENANCE EASEMENT
- PuSD — PUBLIC STORM DRAINAGE EASEMENT (UNLESS NOTED, VAR. WIDTH)
- PrSD — PRIVATE STORM DRAINAGE EASEMENT (UNLESS NOTED, VAR. WIDTH)

KEY MAP



CB-302B
TC=251.41
INV IN=246.30 (CB-302A)
INV IN=233.40 (CB-303)
INV OUT=233.30

CB-303
TC=250.91
INV IN=233.90 (CB-304)
INV OUT=233.80

CB-305
TC=249.89
INV IN=236.50 (CB-306)
INV IN=234.80 (CB-381)
INV OUT=234.70

CB-306
TC=250.24
INV IN=236.90 (CB-307)
INV IN=245.90 (CB-309)
INV OUT=236.80

CB-307
TC=250.46
INV IN=240.80 (CB-310)
INV OUT=238.40

CB-309
TC=251.50
INV OUT=247.10

CB-310
TC=253.72
INV IN=248.60 (DI-391)
INV IN=247.90 (CB-311)
INV IN=247.20 (CB-313B)
INV OUT=246.10

CB-311
TC=253.04
INV OUT=248.30

CB-313A
TC=260.04
INV IN=249.70 (CB-314)
INV OUT=249.60

CB-313B
TC=257.00
INV IN=249.90 (CB-360)
INV IN=248.80 (CB-313A)
INV OUT=248.70

CB-314
TC=260.04
INV IN=250.00 (CB-315)
INV OUT=249.90

CB-315
TC=261.03
INV IN=250.80 (CB-318)
INV OUT=250.70

CB-316
TC=261.79
INV OUT=254.60

CB-318
TC=261.79
INV IN=253.20 (CB-316)
INV IN=253.30 (CB-319)
INV OUT=251.30

CB-319
TC=262.99
INV IN=254.70 (CB-320)
INV IN=255.80 (CB-353)
INV OUT=254.30

CB-320
TC=263.71
INV IN=255.70 (CB-322)
INV IN=255.90 (CB-321)
INV OUT=255.60

CB-321
TC=264.58
INV OUT=256.20

CB-360
TC=256.34
INV IN=250.90 (CB-361)
INV OUT=250.30

CB-361
TC=260.91
INV IN=254.80 (CB-363)
INV IN=256.20 (CB-362)
INV OUT=254.30

CB-362
TC=263.23
INV OUT=257.80

CB-377
TC=262.89
INV IN=258.50 (CB-379)
INV OUT=258.40

CB-381
TC=249.03
INV IN=235.40 (CB-383)
INV IN=242.10 (CB-382)
INV OUT=235.30

CB-382
TC=248.35
INV OUT=243.80

CB-383
TC=247.32
INV IN=236.20 (CB-384)
INV OUT=236.10

CB-384
TC=245.57
INV IN=240.40 (CB-385)
INV IN=236.90 (CB-386)
INV OUT=236.80

CB-385
TC=245.57
INV OUT=241.00

CB-386
TC=243.67
INV IN=239.00 (CB-387)
INV IN=238.10 (CB-389)
INV OUT=237.60

CB-387
TC=243.67
INV OUT=239.60

CB-389
TC=241.67
INV IN=238.50 (CB-390
INV OUT=238.40

CB-390
TC=241.56
INV OUT=238.90

DI-391
TC=258.34
INV IN=254.40 (DI-392)
INV OUT=254.30

DI-392
TC=260.05
INV IN=256.70 (DI-393)
INV OUT=256.60

DI-393
TC=262.19
INV IN=258.90 (DI-394)
INV OUT=258.80

GRADING LEGEND

- FLARED END SECTION
- ENDWALL SECTION
- CATCH BASIN
- DROP INLET
- STORM SERVICE INLET
- STORM SERVICE ROOF-DRAIN
- JUNCTION BOX
- DRAINAGE FLOW ARROW
- 250.50 / 250.00 — TOP & BOTTOM CURB ELEVATIONS
- TW=223.00 / BW=213.00 — TOP OF WALL ELEVATION / BOTTOM OF WALL ELEVATION (NOTE: BOTTOM OF WALL IS GROUND ELEVATION NOT WALL FOUNDATION)
- + 250.60 — SPOT ELEVATION
- STORM DRAINAGE
- STORM SERVICE LINE
- TD — TRENCH DRAIN
- RD — ROOF DRAIN, 8" ADS NON-PERFORATED TUBING OR EQUAL 1.0% MIN. SLOPE 3' MIN. COVER PVC SCHEDULE 40 IN TRAFFIC AREAS
- TP — TREE PROTECTION FENCE
- LD — LIMITS OF DISTURBANCE
- TP/LD — TREE PROTECTION FENCE/ LIMITS OF DISTURBANCE
- SF/TP — COMBINATION SILT FENCE/ TREE PROTECTION FENCE
- TC — TREE CONSERVATION
- WOODED AREA
- 250 — PROPOSED MAJOR CONTOUR
- 251 — PROPOSED MINOR CONTOUR
- 250 — EXISTING MAJOR CONTOUR
- 251 — EXISTING MINOR CONTOUR
- ACCESSIBLE PARKING AREA (2% MAX. SLOPE IN ALL DIRECTIONS)
- WETLANDS
- TREE CONSERVATION AREA
- ACTIVE OPEN SPACE (POCKET PARKS)
- PASSIVE OPEN SPACE
- PERIMETER BUFFER

NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

SEE SHEET C0.00 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF KNIGHTDALE, CITY OF RALEIGH PUBLIC UTILITIES, AND NCDOT (WHERE APPLICABLE) ENGINEERING DESIGN AND CONSTRUCTION STANDARDS

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293, C-187

www.mcadamsco.com

CLIENT

LENNAR
1100 PERIMETER PARK DRIVE, SUITE 112
MORRISVILLE, NORTH CAROLINA 27560
CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 WILLIAMSON — NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
6		

PLAN INFORMATION

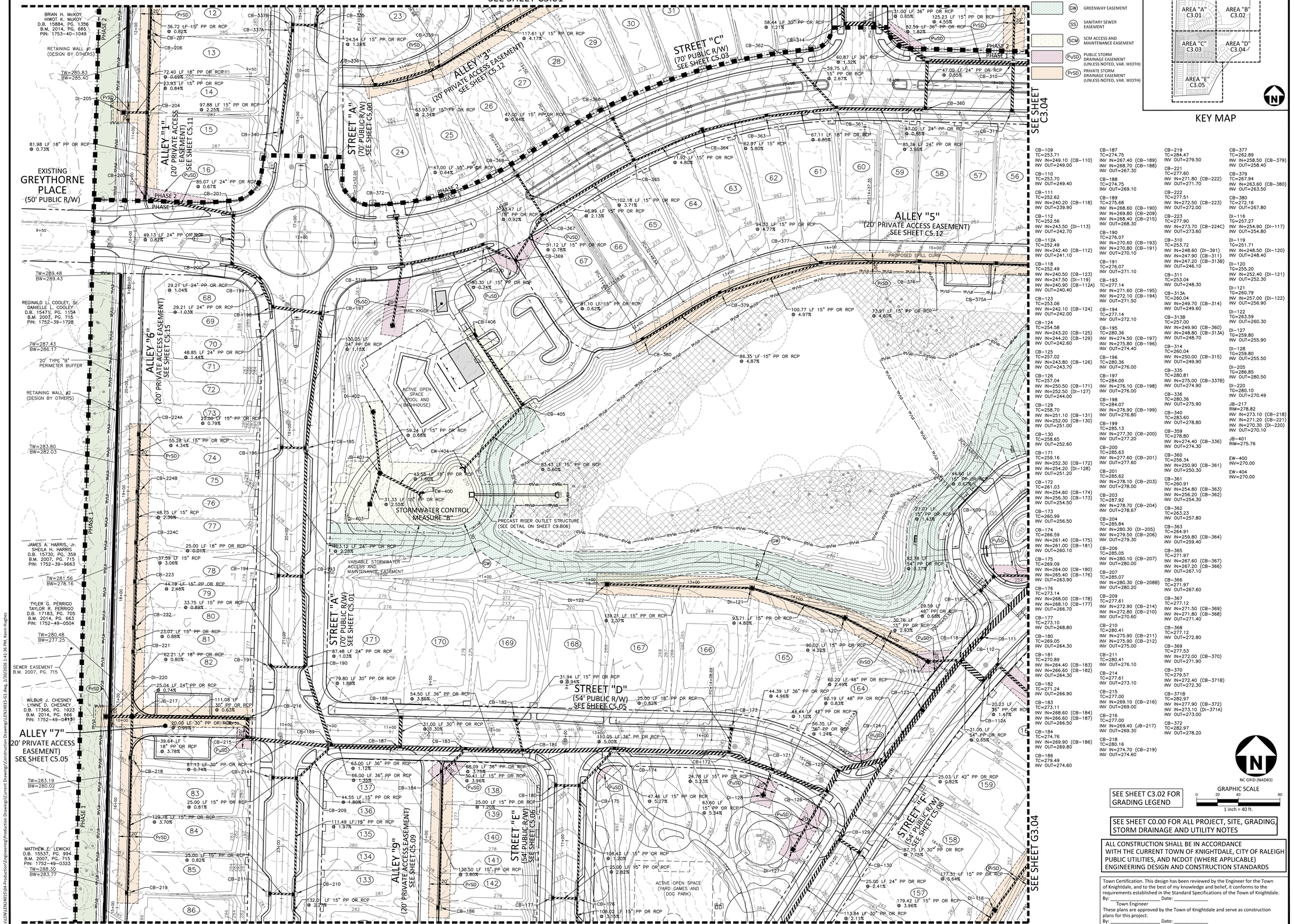
PROJECT NO.	LEN24015
FILENAME	LEN24015-G1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 40'
DATE	11. 14. 2025

SHEET

STORM DRAINAGE PLAN - AREA "B"

C3.02

X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawing\LEN24015-G1.dwg, 2/20/2026 1:41:26 PM, Kevin Hughes



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NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
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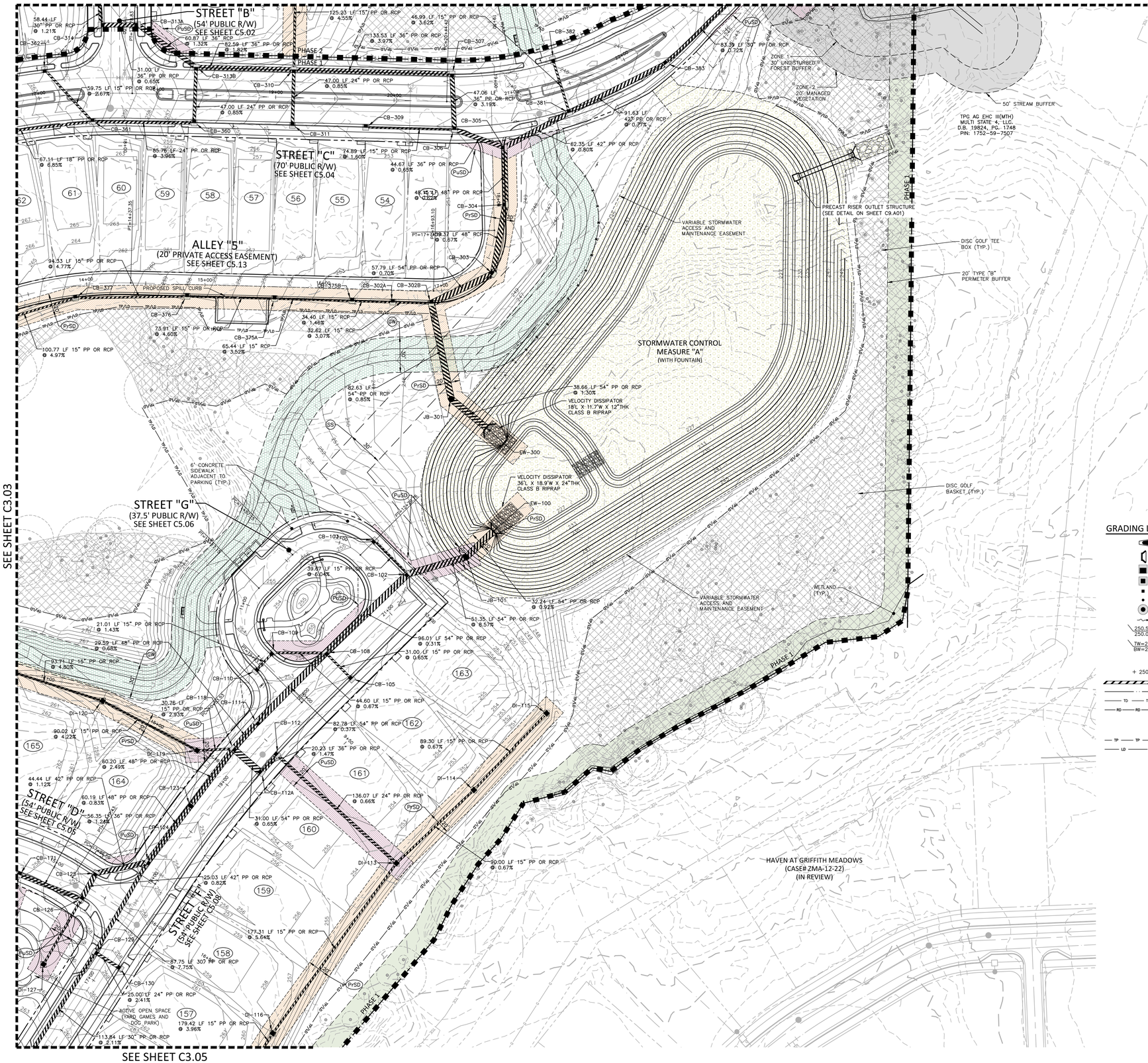
PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-G1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 40'
DATE	11. 14. 2025

SHEET

STORM DRAINAGE PLAN - AREA "C"

C3.03



EASEMENT LEGEND

- GW — GREENWAY EASEMENT
- SS — SANITARY SEWER EASEMENT
- SCM — SCM ACCESS AND MAINTENANCE EASEMENT
- PuSD — PUBLIC STORM DRAINAGE EASEMENT (UNLESS NOTED, VAR. WIDTH)
- PrSD — PRIVATE STORM DRAINAGE EASEMENT (UNLESS NOTED, VAR. WIDTH)

AREA "A" C3.01 | AREA "B" C3.02 | AREA "C" C3.03 | AREA "D" C3.04 | AREA "E" C3.05

KEY MAP

CB-102
TC=253.79
INV IN=238.40 (CB-108)
INV IN=248.60 (CB-103)
INV OUT=237.80

CB-103
TC=255.63
INV OUT=251.00

CB-105
TC=253.42
INV OUT=242.10

CB-108
TC=253.42
INV IN=248.70 (CB-109)
INV IN=239.60 (CB-111)
INV IN=241.90 (CB-105)
INV OUT=238.70

CB-109
TC=253.71
INV IN=249.10 (CB-110)
INV OUT=249.00

CB-110
TC=253.70
INV OUT=249.40

CB-111
TC=252.62
INV IN=240.20 (CB-118)
INV OUT=239.90

CB-112
TC=252.56
INV IN=243.50 (DI-113)
INV OUT=242.70

CB-112A
TC=252.49
INV IN=242.40 (CB-112)
INV OUT=241.10

CB-118
TC=252.49
INV IN=240.50 (CB-123)
INV IN=247.50 (DI-119)
INV IN=240.90 (CB-112A)
INV OUT=240.40

CB-123
TC=253.06
INV IN=242.10 (CB-124)
INV OUT=242.00

CB-124
TC=254.58
INV IN=243.20 (CB-125)
INV IN=244.20 (CB-129)
INV OUT=242.60

CB-125
TC=257.02
INV IN=243.80 (CB-126)
INV OUT=243.70

CB-126
TC=257.04
INV IN=250.50 (CB-171)
INV IN=252.50 (DI-127)
INV OUT=244.00

CB-129
TC=258.70
INV IN=251.10 (CB-131)
INV IN=252.00 (CB-130)
INV OUT=251.00

CB-130
TC=258.65
INV OUT=252.60

CB-171
TC=259.16
INV IN=252.30 (CB-172)
INV IN=254.20 (DI-128)
INV OUT=251.20

CB-302B
TC=251.41
INV IN=246.30 (CB-302A)
INV IN=233.40 (CB-303)
INV OUT=233.30

CB-303
TC=250.91
INV IN=233.90 (CB-304)
INV OUT=233.80

CB-305
TC=249.89
INV IN=236.50 (CB-306)
INV IN=234.80 (CB-381)
INV OUT=234.70

CB-306
TC=250.24
INV IN=236.90 (CB-307)
INV IN=245.90 (CB-309)
INV OUT=236.80

CB-307
TC=250.46
INV IN=240.80 (CB-310)
INV OUT=238.40

CB-309
TC=251.50
INV OUT=247.10

CB-310
TC=253.72
INV IN=248.60 (DI-391)
INV IN=247.90 (CB-311)
INV IN=247.20 (CB-313B)
INV OUT=246.10

CB-311
TC=253.04
INV OUT=248.30

CB-313A
TC=260.04
INV IN=249.70 (CB-314)
INV OUT=249.60

CB-313B
TC=257.00
INV IN=249.90 (CB-360)
INV IN=248.80 (CB-313A)
INV OUT=248.70

CB-314
TC=260.04
INV IN=250.00 (CB-315)
INV OUT=249.90

CB-360
TC=256.34
INV IN=250.90 (CB-361)
INV OUT=250.30

CB-361
TC=260.91
INV IN=254.80 (CB-363)
INV IN=256.20 (CB-362)
INV OUT=254.30

CB-362
TC=263.23
INV OUT=257.80

CB-377
TC=262.89
INV IN=258.50 (CB-379)
INV OUT=258.40

CB-381
TC=249.03
INV IN=235.40 (CB-383)
INV IN=242.10 (CB-382)
INV OUT=235.30

CB-382
TC=248.35
INV OUT=243.80

CB-383
TC=247.32
INV IN=236.20 (CB-384)
INV OUT=236.10

DI-113
TG=251.80
INV IN=244.80 (DI-116)
INV IN=244.70 (DI-114)
INV OUT=244.40

DI-114
TG=251.00
INV IN=245.40 (DI-115)
INV OUT=245.30

DI-115
TG=248.33
INV OUT=246.00

DI-116
TG=257.27
INV IN=254.90 (DI-117)
INV OUT=254.80

DI-119
TG=251.71
INV IN=248.50 (DI-120)
INV OUT=248.40

DI-120
TG=255.20
INV IN=252.40 (DI-121)
INV OUT=252.30

DI-127
TG=259.80
INV OUT=255.90

JB-101
RIM=242.54
INV IN=233.40 (CB-102)
INV OUT=232.30

JB-301
RIM=246.61
INV IN=232.60 (CB-302B)
INV OUT=232.50

EW-100
INV=232.00

EW-300
INV=232.00

GRADING LEGEND

- FLARED END SECTION
- ENDWALL SECTION
- CATCH BASIN
- DROP INLET
- STORM SERVICE INLET
- STORM SERVICE ROOF-DRAIN
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- WETLANDS
- TREE CONSERVATION AREA
- ACTIVE OPEN SPACE (POCKET PARKS)
- PASSIVE OPEN SPACE
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NC GRID (NADB3)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

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LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 NICHOLAS D. WILLIAMSON — NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
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PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-G1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 40'
DATE	11. 14. 2025

SHEET

STORM DRAINAGE PLAN - AREA "D"

C3.04

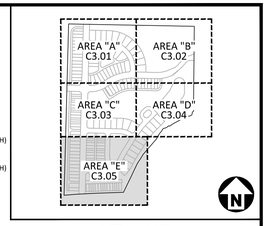
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EASEMENT LEGEND

- GW — GREENWAY EASEMENT
- SS — SANITARY SEWER EASEMENT
- SCM — SCM ACCESS AND MAINTENANCE EASEMENT
- PuSD — PUBLIC STORM DRAINAGE EASEMENT (UNLESS NOTED, VAR. WIDTH)
- PrSD — PRIVATE STORM DRAINAGE EASEMENT (UNLESS NOTED, VAR. WIDTH)

KEY MAP



CB-112A TC=252.49 INV IN=242.40 (CB-112) INV OUT=241.10

CB-123 TC=253.06 INV IN=242.10 (CB-124) INV OUT=242.00

CB-124 TC=254.58 INV IN=243.20 (CB-125) INV IN=244.20 (CB-129) INV OUT=242.60

CB-125 TC=257.02 INV IN=243.80 (CB-126) INV OUT=243.70

CB-126 TC=257.04 INV IN=250.50 (CB-171) INV IN=252.50 (DI-127) INV OUT=244.00

CB-129 TC=258.70 INV IN=251.10 (CB-131) INV IN=252.00 (CB-130) INV OUT=251.00

CB-130 TC=258.65 INV OUT=252.60

CB-131 TC=264.39 INV IN=254.60 (CB-133) INV IN=255.20 (CB-132) INV OUT=253.50

CB-132 TC=264.34 INV OUT=256.40

CB-133 TC=269.83 INV IN=257.60 (CB-136) INV IN=265.10 (CB-135) INV IN=258.70 (DI-134) INV OUT=257.10

CB-135 TC=270.20 INV OUT=265.70

CB-136 TC=275.73 INV IN=259.60 (CB-144) INV IN=262.30 (CB-137) INV OUT=259.10

CB-137 TC=275.69 INV IN=262.80 (CB-138) INV OUT=262.50

CB-138 TC=277.13 INV IN=263.10 (CB-139) INV OUT=263.00

CB-139 TC=273.98 INV IN=266.90 (CB-142) INV IN=263.90 (CB-140) INV OUT=263.80

CB-140 TC=271.93 INV IN=264.30 (CB-141) INV OUT=264.20

CB-141 TC=269.40 INV OUT=264.70

CB-142 TC=275.58 INV IN=269.20 (CB-143) INV OUT=269.10

CB-143 TC=282.01 INV OUT=277.30

CB-144 TC=278.51 INV IN=263.00 (CB-145) INV OUT=262.90

CB-145 TC=278.50 INV IN=265.10 (CB-146) INV OUT=265.00

CB-146 TC=280.14 INV IN=267.80 (CB-148) INV IN=274.50 (CB-147) INV OUT=267.50

CB-147 TC=280.12 INV OUT=275.50

CB-148 TC=281.04 INV IN=269.60 (CB-153) INV IN=276.30 (CB-151) INV IN=270.30 (CB-149) INV OUT=269.20

CB-149 TC=281.04 INV IN=275.50 (CB-150) INV OUT=273.40

CB-150 TC=281.66 INV OUT=276.00

CB-151 TC=281.61 INV OUT=276.60

CB-153 TC=282.34 INV IN=275.00 (CB-154) INV IN=270.30 (CB-156) INV OUT=270.50

CB-154 TC=283.69 INV IN=279.00 (CB-155) INV OUT=276.90

CB-155 TC=283.69 INV OUT=279.40

CB-156 TC=282.34 INV IN=270.70 (CB-157) INV OUT=270.60

CB-157 TC=282.34 INV IN=271.20 (CB-158) INV OUT=271.10

CB-158 TC=281.79 INV IN=271.60 (CB-163) INV IN=272.00 (CB-159) INV OUT=271.50

CB-159 TC=281.71 INV IN=273.11 (CB-160) INV OUT=272.81

CB-160 TC=280.59 INV IN=274.24 (CB-161) INV OUT=274.24

CB-161 TC=279.36 INV IN=274.75 (CB-162) INV OUT=274.75

CB-162 TC=279.30 INV OUT=274.92

CB-163 TC=281.61 INV IN=271.90 (CB-164) INV OUT=271.80

CB-164 TC=281.55 INV IN=272.30 (CB-165) INV OUT=272.19

CB-165 TC=281.86 INV IN=272.60 (CB-166) INV OUT=272.50

CB-166 TC=281.65 INV IN=276.80 (CB-169) INV IN=273.50 (CB-167) INV OUT=273.20

CB-167 TC=280.59 INV IN=273.90 (CB-168B) INV OUT=273.80

CB-168B TC=278.96 INV IN=274.70 (DI-168A) INV OUT=274.40

CB-169 TC=282.51 INV IN=277.70 (CB-170) INV OUT=277.60

CB-170 TC=285.35 INV OUT=280.80

CB-171 TC=259.16 INV IN=252.30 (CB-172) INV IN=254.20 (DI-128) INV OUT=251.20

CB-172 TC=261.03 INV IN=254.60 (CB-174) INV IN=256.30 (CB-173) INV OUT=254.50

CB-173 TC=260.99 INV OUT=256.50

CB-174 TC=266.59 INV IN=261.40 (CB-175) INV IN=261.00 (CB-181) INV OUT=260.10

CB-175 TC=269.09 INV IN=264.00 (CB-180) INV IN=265.40 (CB-176) INV OUT=263.90

CB-176 TC=273.14 INV IN=268.00 (CB-178) INV IN=268.10 (CB-177) INV OUT=266.70

CB-177 TC=273.10 INV OUT=268.80

CB-178 TC=277.99 INV IN=273.50 (CB-179) INV OUT=271.40

CB-179 TC=278.01 INV OUT=273.70

CB-180 TC=269.05 INV OUT=264.30

CB-181 TC=270.89 INV IN=264.40 (CB-183) INV IN=266.60 (CB-182) INV OUT=264.30

CB-182 TC=271.24 INV OUT=266.90

CB-183 TC=273.11 INV IN=268.60 (CB-184) INV IN=266.60 (CB-187) INV OUT=266.50

CB-184 TC=274.76 INV IN=269.90 (CB-186) INV OUT=269.80

CB-186 TC=279.49 INV OUT=274.60

CB-187 TC=274.75 INV IN=267.40 (CB-189) INV IN=268.70 (CB-188) INV OUT=267.30

CB-188 TC=274.75 INV OUT=269.10

CB-189 TC=275.68 INV IN=268.60 (CB-190) INV IN=269.80 (CB-209) INV IN=268.40 (CB-215) INV OUT=268.30

CB-209 TC=277.61 INV IN=272.90 (CB-214) INV IN=272.80 (CB-210) INV OUT=270.60

CB-210 TC=280.41 INV IN=275.90 (CB-211) INV IN=275.90 (CB-212) INV OUT=275.00

CB-211 TC=280.41 INV OUT=276.10

CB-212 TC=283.55 INV IN=279.00 (CB-213) INV OUT=278.90

CB-213 TC=283.55 INV IN=279.20 INV OUT=279.20

CB-214 TC=277.61 INV OUT=273.10

CB-215 TC=277.00 INV IN=269.10 (CB-216) INV OUT=269.00

CB-216 TC=277.00 INV IN=269.40 (JB-217) INV OUT=269.30

CB-218 TC=280.16 INV IN=274.70 (CB-219) INV OUT=274.60

CB-219 TC=284.47 INV OUT=279.50

DI-116 TG=257.27 INV IN=254.90 (DI-117) INV OUT=254.80

DI-117 TG=264.71 INV OUT=262.00

DI-127 TG=259.80 INV OUT=255.90

DI-128 TG=259.80 INV OUT=255.50

DI-134 TG=267.00 INV OUT=259.70

DI-168A TG=282.32 INV OUT=276.50

DI-220 TG=280.10 INV OUT=270.49

JB-217 RIM=278.82 INV IN=273.10 (CB-218) INV IN=271.20 (CB-221) INV IN=270.30 (DI-220) INV OUT=270.10

GRADING LEGEND

- FLARED END SECTION
- ENDWALL SECTION
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- STORM SERVICE INLET
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- JUNCTION BOX
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NC GRID (NAD83)

GRAPHIC SCALE 0 20 40 80 — 1 inch = 40 ft.

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LENNAR

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 THOMAS D. WILLIAMSON — NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
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PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-G1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 40'
DATE	11. 14. 2025

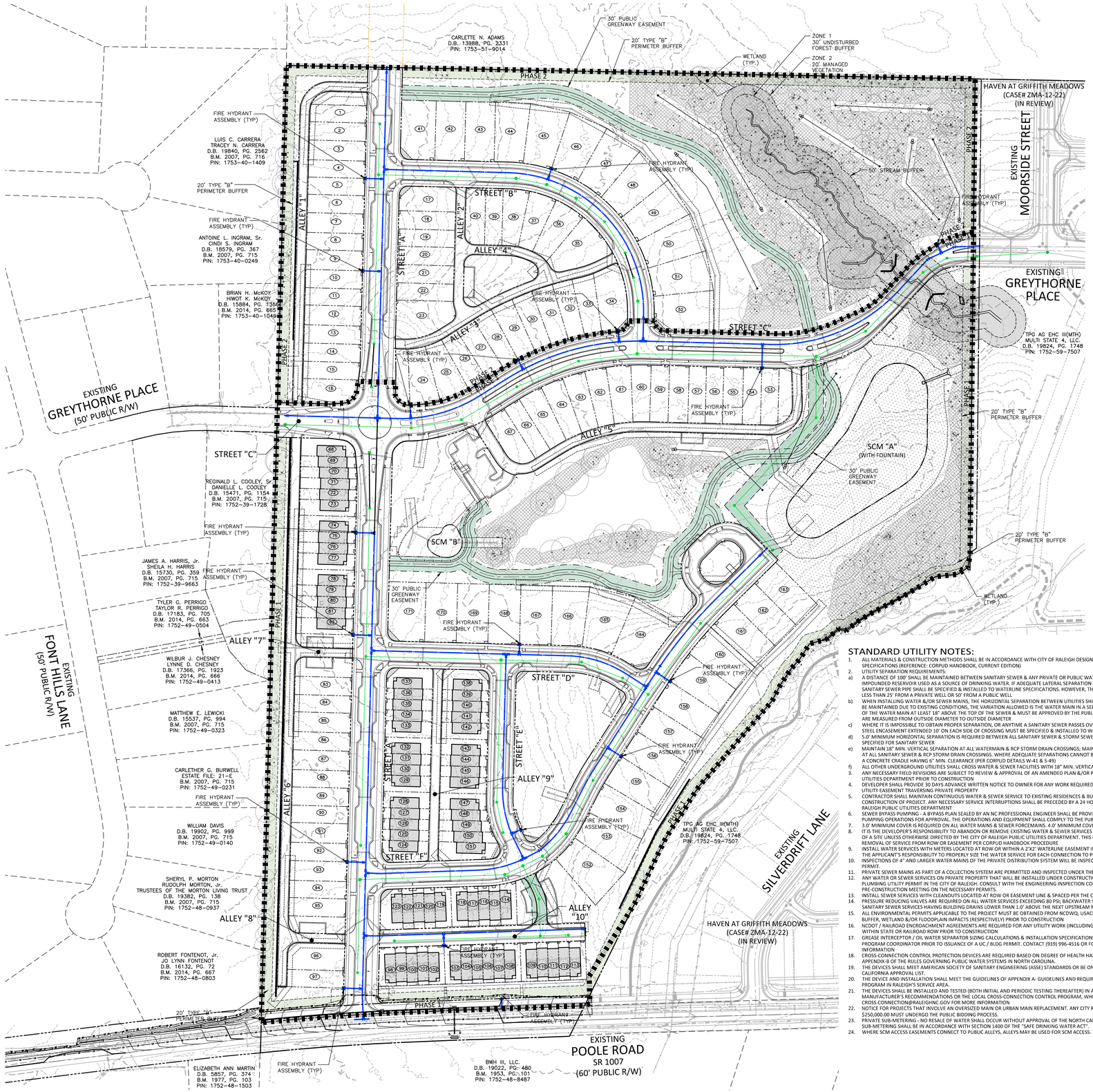
SHEET

STORM DRAINAGE PLAN - AREA "E"

C3.05

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

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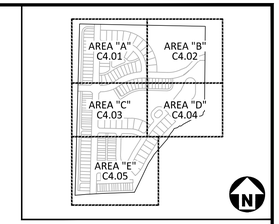


UTILITY LEGEND

- FIRE HYDRANT ASSEMBLY
- FIRE DEPARTMENT CONNECTION (FDC)
- WATER METER
- WATER VALVE
- POST INDICATOR VALVE
- VALVE IN MANHOLE
- METER & VAULT
- BACKFLOW PREVENTER
- REDUCER
- PLUG
- BLOW-OFF ASSEMBLY
- SANITARY SEWER MANHOLE
- SEWER CLEAN-OUT
- GREASE TRAP
- SEWER FLOW DIRECTION ARROW
- POWER POLE
- WATERLINE
- WATER SERVICE LINE
- UTILITY SLEEVE
- SANITARY SEWER
- SEWER SERVICE LINE
- SEWER FORCE MAIN
- GAS LINE
- OVERHEAD UTILITY
- UNDERGROUND ELECTRIC
- TELEPHONE
- TREE CONSERVATION
- WETLANDS
- TREE CONSERVATION AREA (NOTE: A 20' WIDE AREA ALONG EACH DISC GOLF HOLE IS DEDUCTED FROM TREE SAVE CALCULATIONS)
- PERIMETER BUFFER

EASEMENT LEGEND

- SS — SANITARY SEWER EASEMENT
- PuSD — PUBLIC STORM DRAINAGE EASEMENT
- PrSD — PRIVATE STORM DRAINAGE EASEMENT
- PUBLIC GREENWAY EASEMENT



KEY MAP

ATTENTION CONTRACTORS

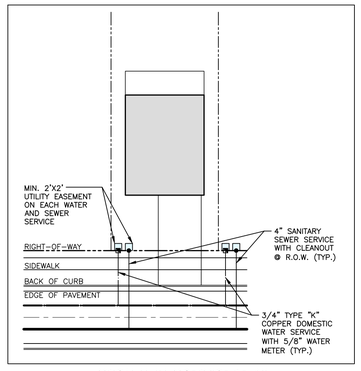
The Contractor responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for contacting the Public Utilities Inspector at 919-996-3245 or https://cityworks.raleighnc.gov/pucontractors/New and schedule a Pre-construction meeting prior to beginning any construction.
Raleigh Water must be contacted at (919) 996-4540 at least twenty-four hours prior to beginning any work activity around critical water and sewer infrastructure.

Failure to notify the Divisions in advance of beginning construction, will result in the issuance of monetary fines, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for Inspection, install a downstream plug, have permitted plans on the jobsite, or any other violation of City of Raleigh Standards will result in a fine and possible exclusion from future work in the City of Raleigh.

STANDARD UTILITY NOTES:

1. ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS (REFERENCE: CORPUD HANDBOOK, CURRENT EDITION)
2. UTILITY SEPARATION REQUIREMENTS:
a) A DISTANCE OF 100' SHALL BE MAINTAINED BETWEEN SANITARY SEWER & ANY PRIVATE OR PUBLIC WATER SUPPLY SOURCE SUCH AS AN IMPOUNDED RESERVOIR USED AS A SOURCE OF DRINKING WATER. IF ADEQUATE LATERAL SEPARATION CANNOT BE ACHIEVED, FERROUS SANITARY SEWER PIPE SHALL BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS. HOWEVER, THE MINIMUM SEPARATION SHALL NOT BE LESS THAN 25' FROM A PRIVATE WELL OR 50' FROM A PUBLIC WELL
b) WHEN INSTALLING WATER &/OR SEWER MAINS, THE HORIZONTAL SEPARATION BETWEEN UTILITIES SHALL BE 10'. IF THIS SEPARATION CANNOT BE MAINTAINED DUE TO EXISTING CONDITIONS, THE VARIATION ALLOWED IS THE WATER MAIN IN A SEPARATE TRENCH WITH THE ELEVATION OF THE WATER MAIN AT LEAST 18" ABOVE THE TOP OF THE SEWER & MUST BE APPROVED BY THE PUBLIC UTILITIES DIRECTOR. ALL DISTANCES ARE MEASURED FROM OUTSIDE DIAMETER TO OUTSIDE DIAMETER
c) WHERE IT IS IMPOSSIBLE TO OBTAIN PROPER SEPARATION, OR ANYTIME A SANITARY SEWER PASSES OVER A WATERMAIN, DIP MATERIALS OR STEEL ENCASEMENT EXTENDED 10' ON EACH SIDE OF CROSSING MUST BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS
d) 5.0' MINIMUM HORIZONTAL SEPARATION IS REQUIRED BETWEEN ALL SANITARY SEWER & STORM SEWER FACILITIES, UNLESS DIP MATERIAL IS SPECIFIED FOR SANITARY SEWER
e) MAINTAIN 18" MIN. VERTICAL SEPARATION AT ALL WATERMAIN & RCP STORM DRAIN CROSSINGS; MAINTAIN 18" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUD DETAILS W-41 & S-49)
f) ALL OTHER UNDERGROUND UTILITIES SHALL CROSS WATER & SEWER FACILITIES WITH 18" MIN. VERTICAL SEPARATION REQUIRED
3. ANY NECESSARY FIELD REVISIONS ARE SUBJECT TO REVIEW & APPROVAL OF AN AMENDED PLAN &/OR PROFILE BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PRIOR TO CONSTRUCTION
4. DEVELOPER SHALL PROVIDE 30 DAYS ADVANCE WRITTEN NOTICE TO OWNER FOR ANY WORK REQUIRED WITHIN AN EXISTING CITY OF RALEIGH UTILITY EASEMENT TRAVERSING PRIVATE PROPERTY
5. CONTRACTOR SHALL MAINTAIN CONTINUOUS WATER & SEWER SERVICE TO EXISTING RESIDENCES & BUSINESSES THROUGHOUT CONSTRUCTION OF PROJECT. ANY NECESSARY SERVICE INTERRUPTIONS SHALL BE PRECEDED BY A 24 HOUR ADVANCE NOTICE TO THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT
6. SEWER BYPASS PUMPING - A BYPASS PLAN SEALED BY AN NC PROFESSIONAL ENGINEER SHALL BE PROVIDED TO RALEIGH WATER PRIOR TO PUMPING OPERATIONS FOR APPROVAL. THE OPERATIONS AND EQUIPMENT SHALL COMPLY TO THE PUBLIC UTILITIES HANDBOOK
7. 3.0' MINIMUM COVER IS REQUIRED ON ALL WATER MAINS & SEWER FORCEMAINS. 4.0' MINIMUM COVER IS REQUIRED ON ALL REUSE MAINS
8. IT IS THE DEVELOPER'S RESPONSIBILITY TO ABANDON OR REMOVE EXISTING WATER & SEWER SERVICES NOT BEING USED IN REDEVELOPMENT OF A SITE UNLESS OTHERWISE DIRECTED BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT. THIS INCLUDES ABANDONING TAP AT MAIN & REMOVAL OF SERVICE FROM ROW OR EASEMENT PER CORPUD HANDBOOK PROCEDURE
9. INSTALL WATER SERVICES WITH METERS LOCATED AT ROW OR WITHIN A 2'X2' WATERLINE EASEMENT IMMEDIATELY ADJACENT. NOTE: IT IS THE APPLICANT'S RESPONSIBILITY TO PROPERLY SIZE THE WATER SERVICE FOR EACH CONNECTION TO PROVIDE ADEQUATE FLOW & PRESSURE
10. INSPECTIONS OF 4" AND LARGER WATER MAINS OF THE PRIVATE DISTRIBUTION SYSTEM WILL BE INSPECTED AS PART OF THE INFRASTRUCTURE PERMIT.
11. PRIVATE SEWER MAINS AS PART OF A COLLECTION SYSTEM ARE PERMITTED AND INSPECTED UNDER THE PRIVATE INFRASTRUCTURE PERMIT.
12. ANY WATER OR SEWER SERVICES ON PRIVATE PROPERTY THAT WILL BE INSTALLED UNDER CONSTRUCTION DRAWINGS MAY REQUIRE A PLUMBING UTILITY PERMIT IN THE CITY OF RALEIGH. CONSULT WITH THE ENGINEERING INSPECTION COORDINATOR DURING THE PRE-CONSTRUCTION MEETING ON THE NECESSARY PERMITS.
13. INSTALL SEWER SERVICES WITH CLEANOUTS LOCATED AT ROW OR EASEMENT LINE & SPACED PER THE CURRENT NC PLUMBING CODE.
14. PRESSURE REDUCING VALVES ARE REQUIRED ON ALL WATER SERVICES EXCEEDING 80 PSI; BACKWATER VALVES ARE REQUIRED ON ALL SANITARY SEWER SERVICES HAVING BUILDING DRAINS LOWER THAN 1.0' ABOVE THE NEXT UPSTREAM MANHOLE
15. ALL ENVIRONMENTAL PERMITS APPLICABLE TO THE PROJECT MUST BE OBTAINED FROM NCDWQ, USACE &/OR FEMA FOR ANY RIPARIAN BUFFER, WETLAND &/OR FLOODPLAIN IMPACTS (RESPECTIVELY) PRIOR TO CONSTRUCTION
16. NCDOT / RAILROAD ENCROACHMENT AGREEMENTS ARE REQUIRED FOR ANY UTILITY WORK (INCLUDING MAIN EXTENSIONS & SERVICE TAPS) WITHIN STATE OR RAILROAD ROW PRIOR TO CONSTRUCTION
17. GREASE INTERCEPTOR / OIL WATER SEPARATOR SIZING CALCULATIONS & INSTALLATION SPECIFICATIONS SHALL BE APPROVED BY THE RW FOG PROGRAM COORDINATOR PRIOR TO ISSUANCE OF A UC / BLDG PERMIT. CONTACT (919) 996-4516 OR FOG@RALEIGHNC.GOV FOR MORE INFORMATION
18. CROSS-CONNECTION CONTROL PROTECTION DEVICES ARE REQUIRED BASED ON DEGREE OF HEALTH HAZARD INVOLVED AS LISTED IN APPENDIX-B OF THE RULES GOVERNING PUBLIC WATER SYSTEMS IN NORTH CAROLINA.
19. THE DEVICES SHALL MEET AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE) STANDARDS OR BE ON THE UNIVERSITY OF SOUTHERN CALIFORNIA APPROVAL LIST.
20. THE DEVICE AND INSTALLATION SHALL MEET THE GUIDELINES OF APPENDIX A- GUIDELINES AND REQUIREMENTS FOR THE CROSS CONNECTION PROGRAM IN RALEIGH'S SERVICE AREA.
21. THE DEVICES SHALL BE INSTALLED AND TESTED (BOTH INITIAL AND PERIODIC TESTING THEREAFTER) IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS OR THE LOCAL CROSS-CONNECTION CONTROL PROGRAM, WHICHEVER IS MORE STRINGENT. CONTACT CROSS.CONNECTION@RALEIGHNC.GOV FOR MORE INFORMATION
22. NOTICE FOR PROJECTS THAT INVOLVE AN OVERSIZED MAIN OR URBAN MAIN REPLACEMENT. ANY CITY REIMBURSEMENT GREATER THAN $250,000.00 MUST UNDERGO THE PUBLIC BIDDING PROCESS.
23. PRIVATE SUB-METERING - NO RESALE OF WATER SHALL OCCUR WITHOUT APPROVAL OF THE NORTH CAROLINA UTILITY COMMISSION. SUB-METERING SHALL BE IN ACCORDANCE WITH SECTION 1400 OF THE "SAFE DRINKING WATER ACT".
24. WHERE SCM ACCESS EASEMENTS CONNECT TO PUBLIC ALLEYS, ALLEYS MAY BE USED FOR SCM ACCESS.



TYPICAL UTILITY SERVICE DETAIL
SCALE: NTS

SEE SHEET C0.00 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

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NC GRID (NAD83)

GRAPHIC SCALE
0 50 100 200
1 inch = 100 ft.

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
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By: _____ Date: _____
Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
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2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293, C-187

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CLIENT

LENNAR
1100 PERIMETER PARK DRIVE, SUITE 112
MORRISVILLE, NORTH CAROLINA 27560
CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 JAMES D. WILLIAMSON NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
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PLAN INFORMATION

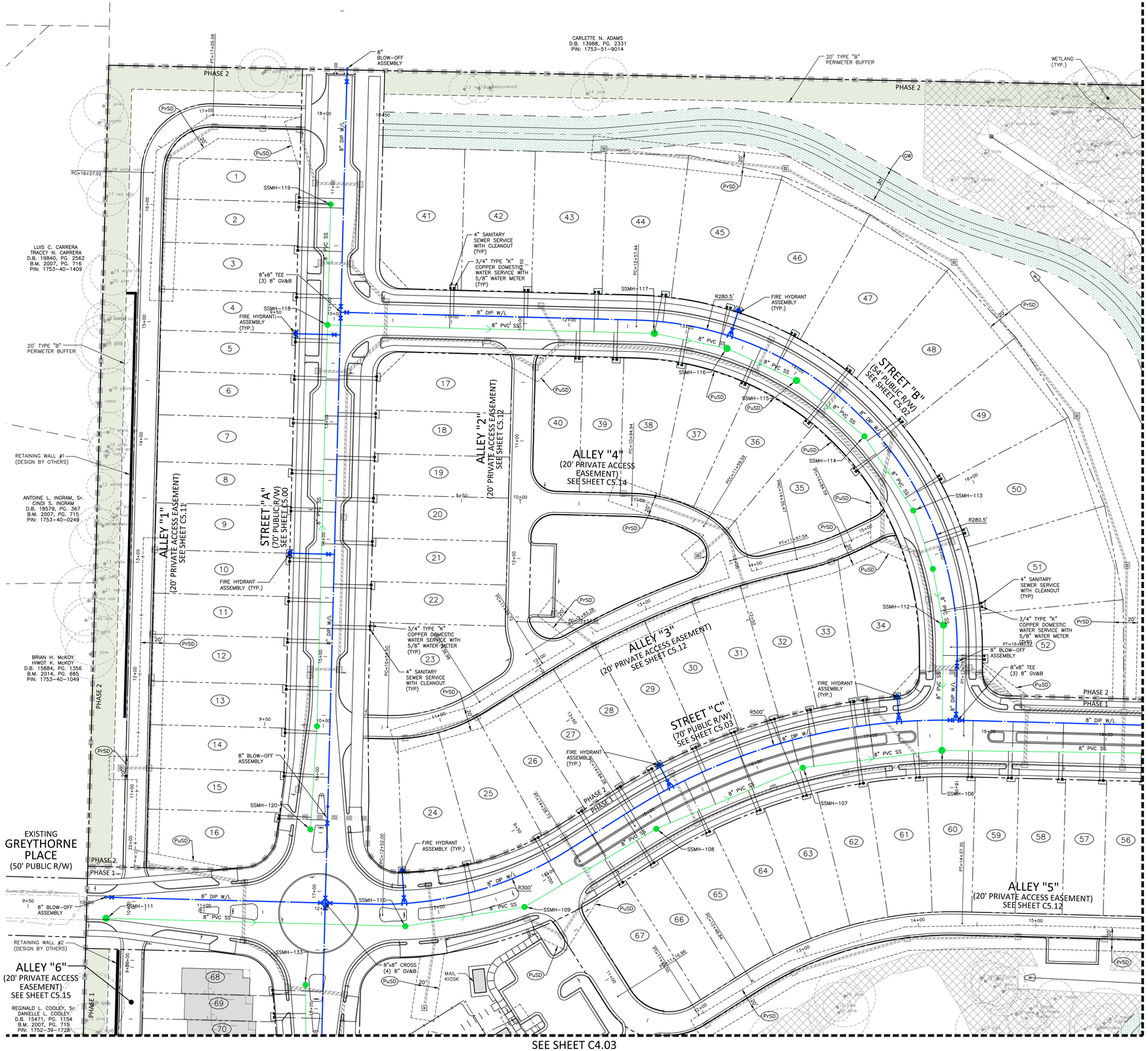
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FILENAME	LEN24015-OAU1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 100'
DATE	11. 14. 2025

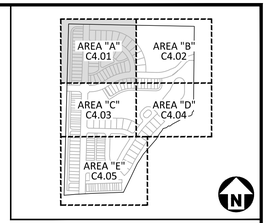
SHEET

OVERALL UTILITY PLAN

C4.00

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KEY MAP

UTILITY LEGEND

- FIRE HYDRANT ASSEMBLY
- FIRE DEPARTMENT CONNECTION (FDC)
- WATER METER
- WATER VALVE
- POST INDICATOR VALVE
- VALVE IN MANHOLE
- METER & VAULT
- BACKFLOW PREVENTER
- REDUCER
- PLUG
- BLOW-OFF ASSEMBLY
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- (GW) GREENWAY EASEMENT
- (SS) SANITARY SEWER EASEMENT
- (SCM) SCM ACCESS AND MAINTENANCE EASEMENT
- (PuSD) PUBLIC STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
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- (UE) UTILITY EASEMENT
- (WE) WATERLINE EASEMENT

NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

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FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
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Durham, NC 27713

phone 919. 361. 5000
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CLIENT

LENNAR
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MORRISVILLE, NORTH CAROLINA 27560
CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048290 THOMAS D. WILLIAMSON

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
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PLAN INFORMATION

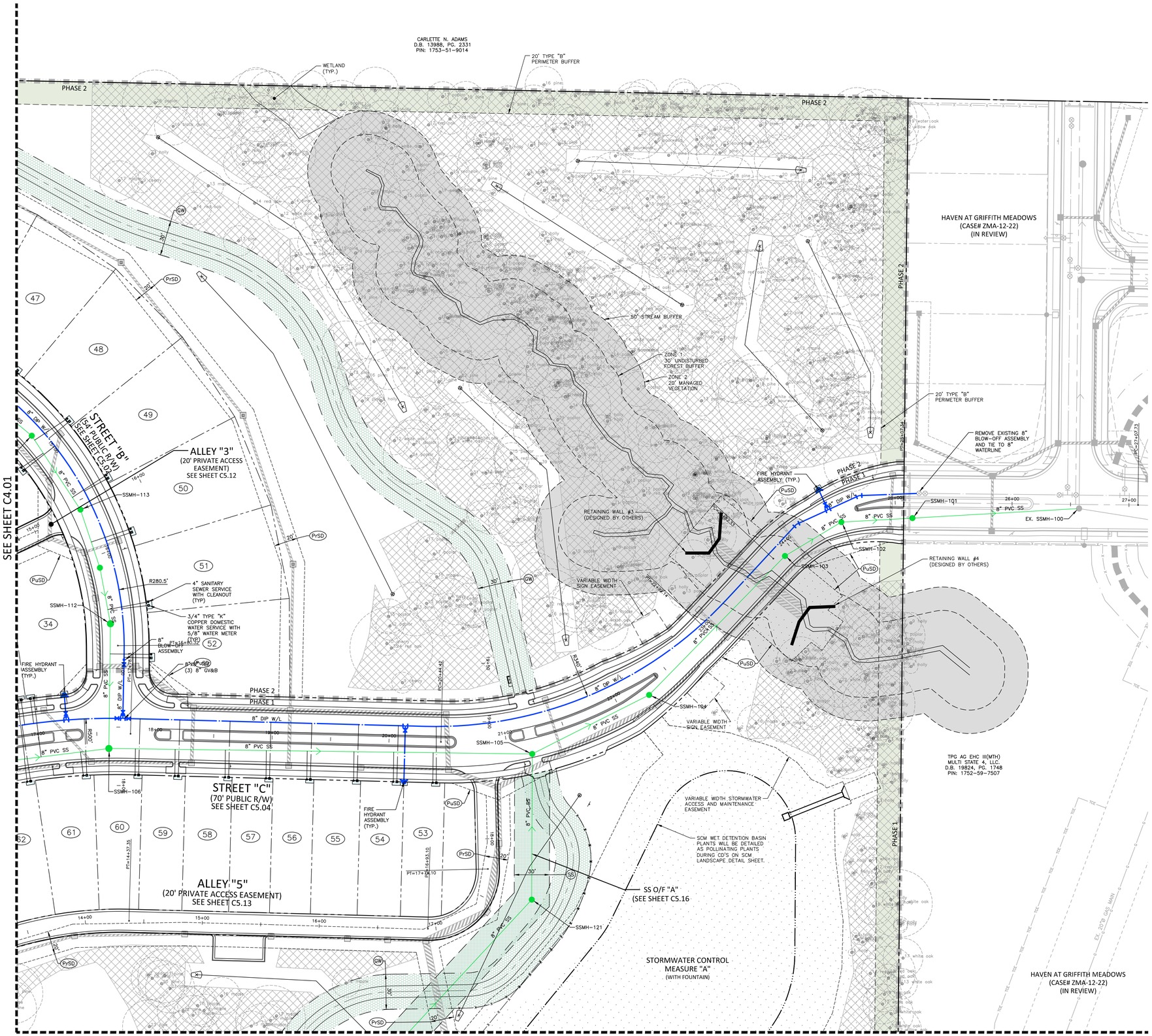
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FILENAME	LEN24015-U1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 40'
DATE	11. 14. 2025

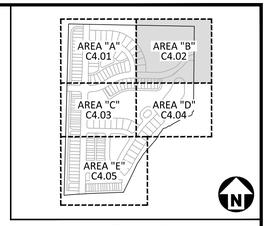
SHEET

UTILITY PLAN - AREA "A"

C4.01

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KEY MAP

UTILITY LEGEND

- FIRE HYDRANT ASSEMBLY
- FIRE DEPARTMENT CONNECTION (FDC)
- WATER METER
- WATER VALVE
- POST INDICATOR VALVE
- VALVE IN MANHOLE
- METER & VAULT
- BACKFLOW PREVENTER
- REDUCER
- PLUG
- BLOW-OFF ASSEMBLY
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- PERIMETER BUFFER

EASEMENT LEGEND

- GW GREENWAY EASEMENT
- SS SANITARY SEWER EASEMENT
- SCM SCM ACCESS AND MAINTENANCE EASEMENT
- PuSD PUBLIC STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- PrSD PRIVATE STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- UE UTILITY EASEMENT
- WE WATERLINE EASEMENT

NC GRID (NADD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 THOMAS D. WILLIAMSON NOT FOR CONSTRUCTION

REVISIONS

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PLAN INFORMATION

PROJECT NO.	LEN24015
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CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 40'
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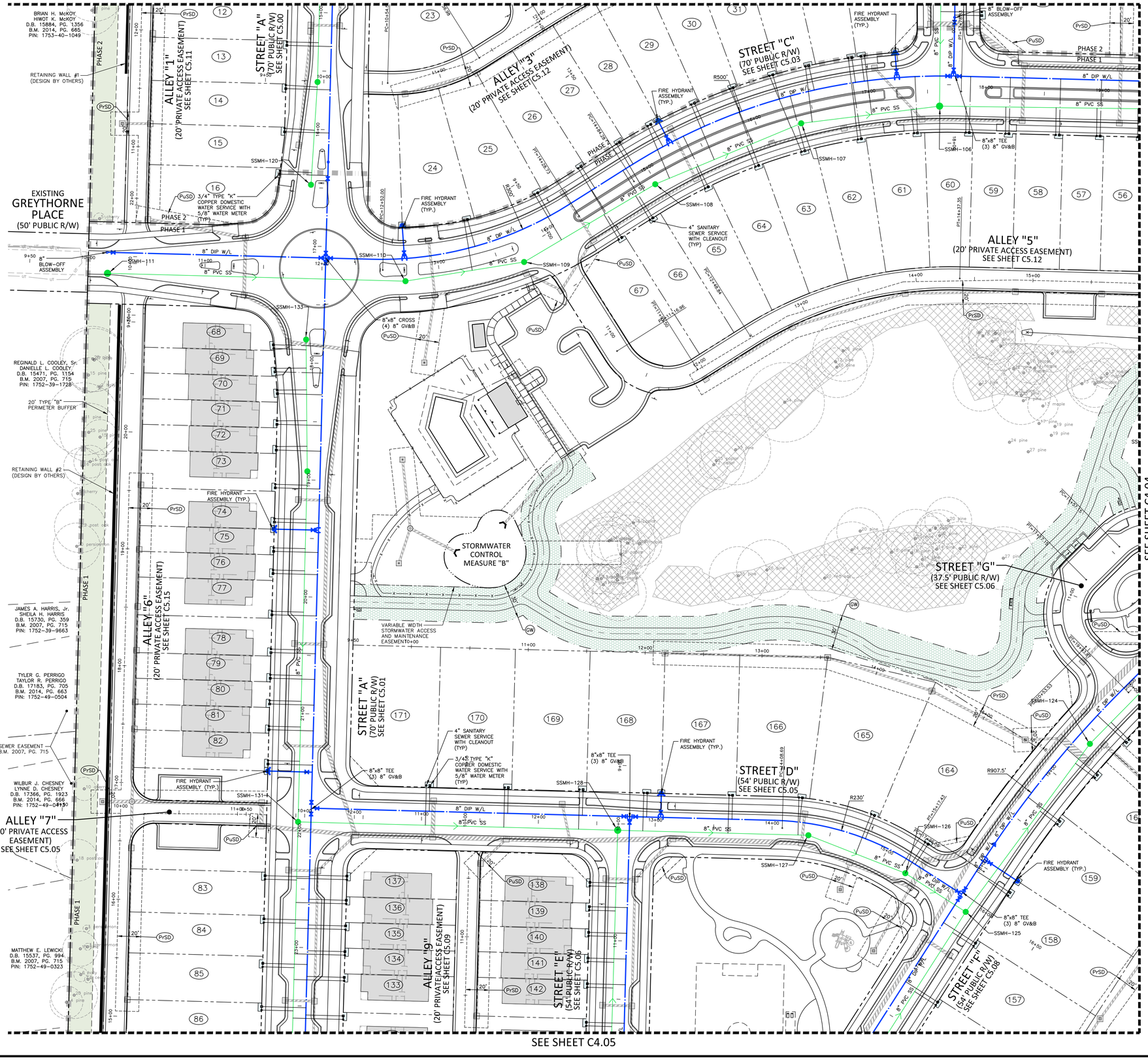
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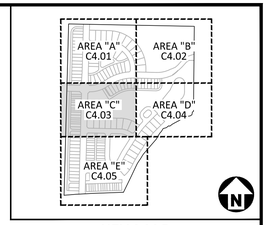
UTILITY PLAN - AREA "B"

C4.02

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SEE SHEET C4.01





KEY MAP

UTILITY LEGEND

- FIRE HYDRANT ASSEMBLY
- FIRE DEPARTMENT CONNECTION (FDC)
- WATER METER
- WATER VALVE
- POST INDICATOR VALVE
- VALVE IN MANHOLE
- METER & VAULT
- BACKFLOW PREVENTER
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- (UE) UTILITY EASEMENT
- (WE) WATERLINE EASEMENT

NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

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LENNAR

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 NICHOLAS D. WILLIAMSON
NOT FOR CONSTRUCTION

REVISIONS

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PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-U1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 40'
DATE	11. 14. 2025

SHEET

UTILITY PLAN - AREA "C"

C4.03

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SEE SHEET C4.02

SEE SHEET C4.03

SEE SHEET C4.05

STREET "B"
(54' PUBLIC R/W)
SEE SHEET C5.02

STREET "C"
(70'PUBLIC R/W)
SEE SHEET C5.04

ALLEY "5"
(20' PRIVATE ACCESS EASEMENT)
SEE SHEET C5.13

STREET "G"
(37.5' PUBLIC R/W)
SEE SHEET C5.06

STREET "D"
(54' PUBLIC R/W)
SEE SHEET C5.05

STREET "F"
(54' PUBLIC R/W)
SEE SHEET C5.08

PHASE 2
PHASE 1

8" BLOW-OFF ASSEMBLY
FIRE HYDRANT ASSEMBLY (TYP.)
8" DIP W/L
8" PVC SS
SSMH-104
SSMH-105
SSMH-106
SSMH-121
SSMH-122
SSMH-123
SSMH-124
SSMH-125
SSMH-126
8"x8" TEE
(3) 8" GV&B
3/4" TYPE "K" COPPER DOMESTIC WATER SERVICE WITH 5/8" WATER METER (TYP)
4" SANITARY SEWER SERVICE WITH CLEANOUT (TYP)
FIRE HYDRANT ASSEMBLY (TYP.)

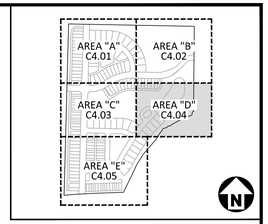
SCM WET DETENTION BASIN PLANTS WILL BE DETAILED AS POLLINATING PLANTS DURING CD'S ON SCM LANDSCAPE DETAIL SHEET.
VARIABLE WIDTH STORMWATER ACCESS AND MAINTENANCE EASEMENT
STORMWATER CONTROL MEASURE "A"
(WITH FOUNTAIN)
SS O/F "A"
(SEE SHEET C5.16)

ZONE 1
30' UNDISTURBED FOREST BUFFER
ZONE 2
20' MANAGED VEGETATION
50' STREAM BUFFER
20' TYPE "B" PERIMETER BUFFER
WETLAND (TYP.)

TPG AG EHC III(MTH) MULTI STATE 4, LLC
D.B. 19824, PG. 1748
PIN: 1752-59-7507

HAVEN AT GRIFFITH MEADOWS
(CASE# ZMA-12-22)
(IN REVIEW)

EX. 20"Ø GAS MAIN



KEY MAP

UTILITY LEGEND

- FIRE HYDRANT ASSEMBLY
- FIRE DEPARTMENT CONNECTION (FDC)
- WATER METER
- WATER VALVE
- POST INDICATOR VALVE
- VALVE IN MANHOLE
- METER & VAULT
- BACKFLOW PREVENTER
- REDUCER
- PLUG
- BLOW-OFF ASSEMBLY
- SANITARY SEWER MANHOLE
- SEWER CLEAN-OUT
- GREASE TRAP
- SEWER FLOW DIRECTION ARROW
- POWER POLE
- WATERLINE
- WATER SERVICE LINE
- UTILITY SLEEVE
- SANITARY SEWER
- SEWER SERVICE LINE
- SEWER FORCE MAIN
- GAS LINE
- OVERHEAD UTILITY
- UNDERGROUND ELECTRIC
- TELEPHONE
- TREE CONSERVATION
- WETLANDS
- TREE CONSERVATION AREA (NOTE: A 20' WIDE AREA ALONG EACH DISC GOLF HOLE IS DEDUCTED FROM TREE SAVE CALCULATIONS)
- PERIMETER BUFFER

EASEMENT LEGEND

- (GW) GREENWAY EASEMENT
- (SS) SANITARY SEWER EASEMENT
- (SCM) SCM ACCESS AND MAINTENANCE EASEMENT
- (PuSD) PUBLIC STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- (PrSD) PRIVATE STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- (UE) UTILITY EASEMENT
- (WE) WATERLINE EASEMENT

NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

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PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 THOMAS D. WILLIAMSON NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
6		

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-U1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 40'
DATE	11. 14. 2025

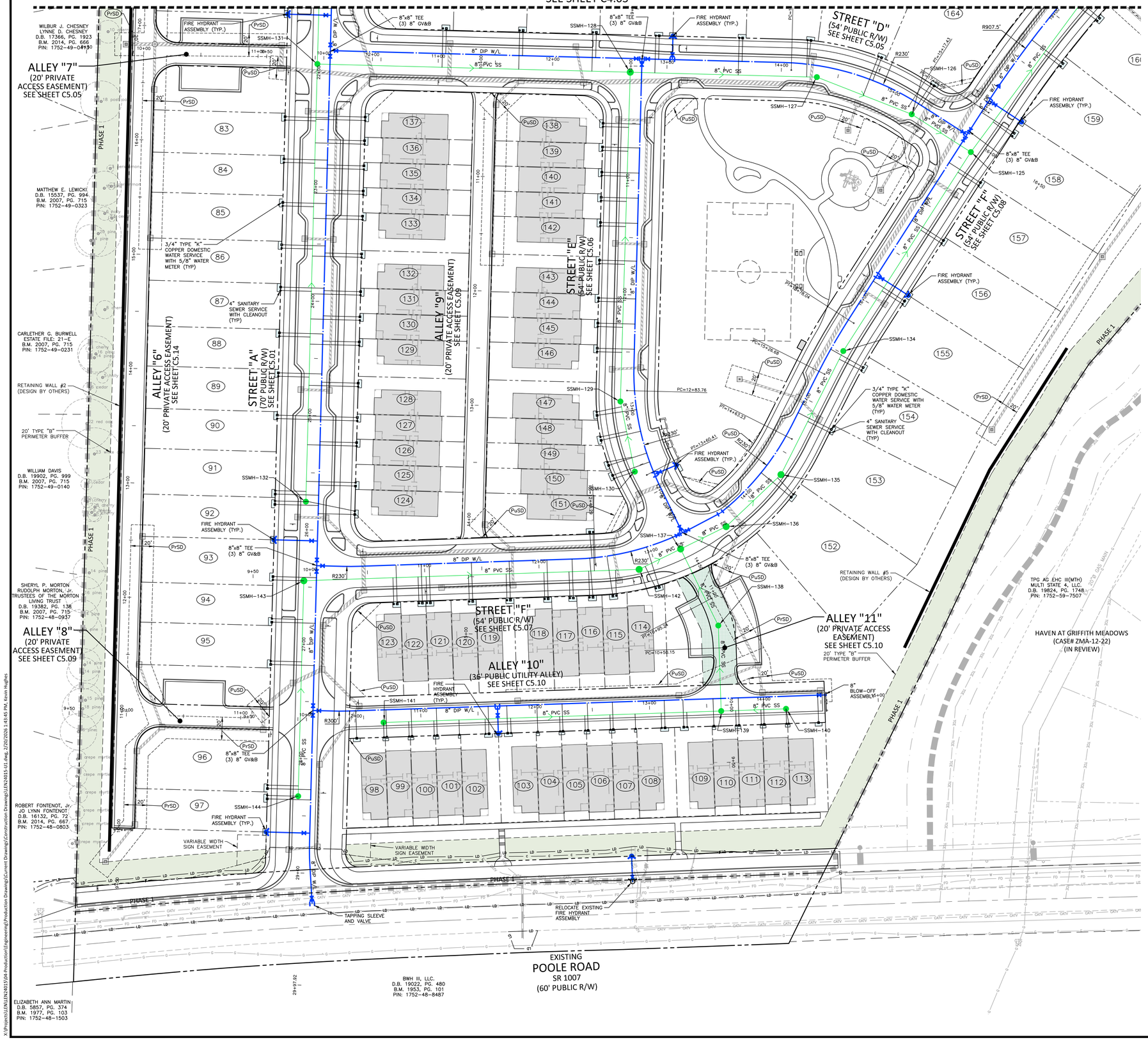
SHEET

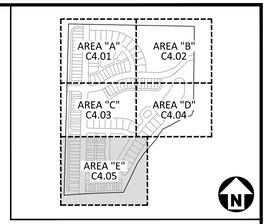
UTILITY PLAN - AREA "D"

C4.04

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SEE SHEET C4.03





KEY MAP

UTILITY LEGEND

- FIRE HYDRANT ASSEMBLY
- FIRE DEPARTMENT CONNECTION (FDC)
- WATER METER
- WATER VALVE
- POST INDICATOR VALVE
- VALVE IN MANHOLE
- METER & VAULT
- BACKFLOW PREVENTER
- REDUCER
- PLUG
- BLOW-OFF ASSEMBLY
- SANITARY SEWER MANHOLE
- SEWER CLEAN-OUT
- GREASE TRAP
- SEWER FLOW DIRECTION ARROW
- POWER POLE
- WATERLINE
- WATER SERVICE LINE
- UTILITY SLEEVE
- SANITARY SEWER
- SEWER SERVICE LINE
- FM — FM — SEWER FORCE MAIN
- G — G — GAS LINE
- OU — OU — OVERHEAD UTILITY
- UE — UE — UNDERGROUND ELECTRIC
- T — T — TELEPHONE
- TC — TC — TREE CONSERVATION
- WETLANDS
- TREE CONSERVATION AREA (NOTE: A 20' WIDE AREA ALONG EACH DISC GOLF HOLE IS DEDUCTED FROM TREE SAVE CALCULATIONS)
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- (GW) GREENWAY EASEMENT
- (SS) SANITARY SEWER EASEMENT
- (SCM) SCM ACCESS AND MAINTENANCE EASEMENT
- (PuSD) PUBLIC STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- (PrSD) PRIVATE STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- (UE) UTILITY EASEMENT
- (WE) WATERLINE EASEMENT

NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

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CONSTRUCTION DRAWINGS
8501 POOLE ROAD
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 THOMAS D. WILLIAMSON NOT FOR CONSTRUCTION

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PLAN INFORMATION

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DATE	11. 14. 2025

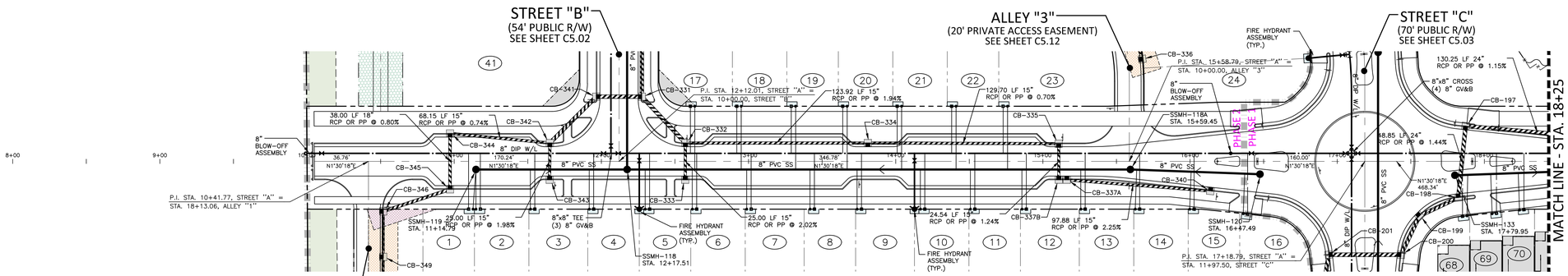
SHEET

UTILITY PLAN - AREA "E"

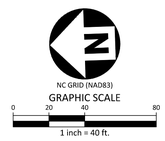
C4.05

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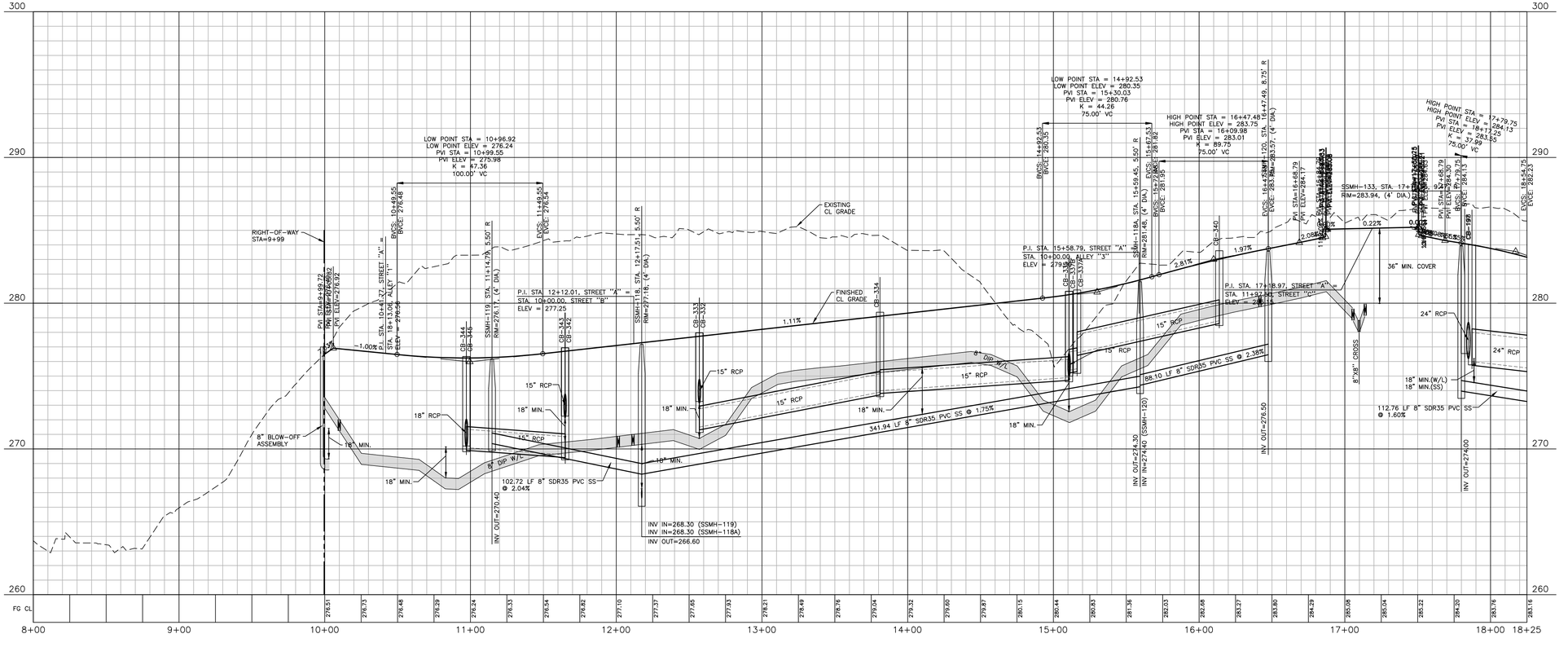
PIPE MATERIAL FOR SEWER:	
<12'	SDR 35 PVC
12'-20'	SDR 26 PVC
>20'	DIP



CB-197 STA 17+87.27 TC=284.00 INV IN=276.10 (CB-198) INV OUT=276.00	CB-335 STA 15+10.73 TC=280.81 INV IN=275.00 (CB-337B) INV OUT=274.90	CB-343 STA 11+64.83 TC=276.94 INV OUT=272.60
CB-198 STA 17+82.29 TC=284.07 INV IN=276.90 (CB-199) INV OUT=276.80	CB-337A STA 15+16.28 TC=280.91 INV IN=276.60 (CB-340) INV OUT=275.50	CB-344 STA 10+97.16 TC=276.34 INV IN=270.20 (CB-345) INV OUT=270.10
CB-332 STA 12+57.11 TC=277.97 INV IN=271.50 (CB-334) INV IN=273.10 (CB-333) INV OUT=271.40	CB-337B STA 15+10.88 TC=280.82 INV IN=275.40 (CB-337A) INV OUT=275.30	CB-345 STA 10+97.16 TC=276.34 INV IN=270.50 (CB-346) INV OUT=270.50
CB-333 STA 12+57.01 TC=277.97 INV OUT=273.60	CB-340 STA 16+13.87 TC=283.60 INV OUT=278.80	
CB-334 STA 13+81.03 TC=279.38 INV IN=274.00 (CB-335) INV OUT=273.90	CB-342 STA 11+65.01 TC=276.94 INV IN=269.60 (CB-344) INV IN=272.10 (CB-343) INV OUT=269.50	



STREET "A"



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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 NICOLAS D. WILLIAMSON

HOPKINS FARM
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8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

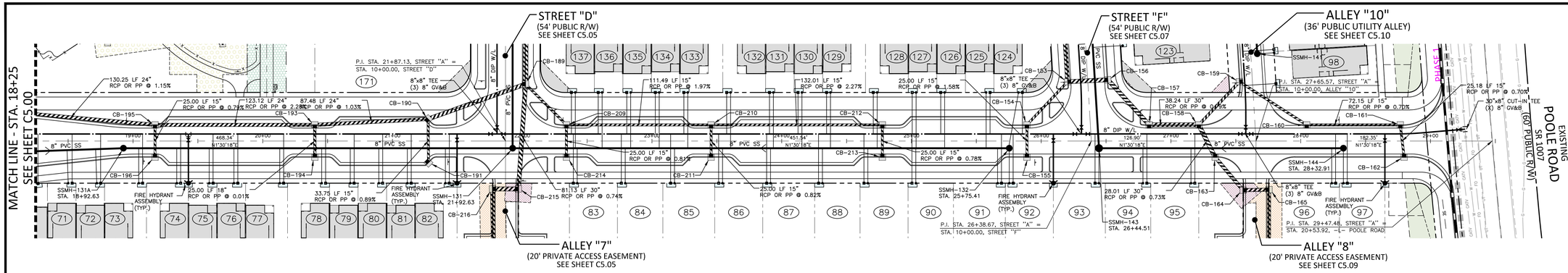
PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-P1
CHECKED BY	NDW
DRAWN BY	KWH
SCALE	1" = 40'/1" = 4'
DATE	11. 14. 2025

PLAN AND PROFILE
STREET "A", STA. 7+00 THRU STA. 18+25

C5.00

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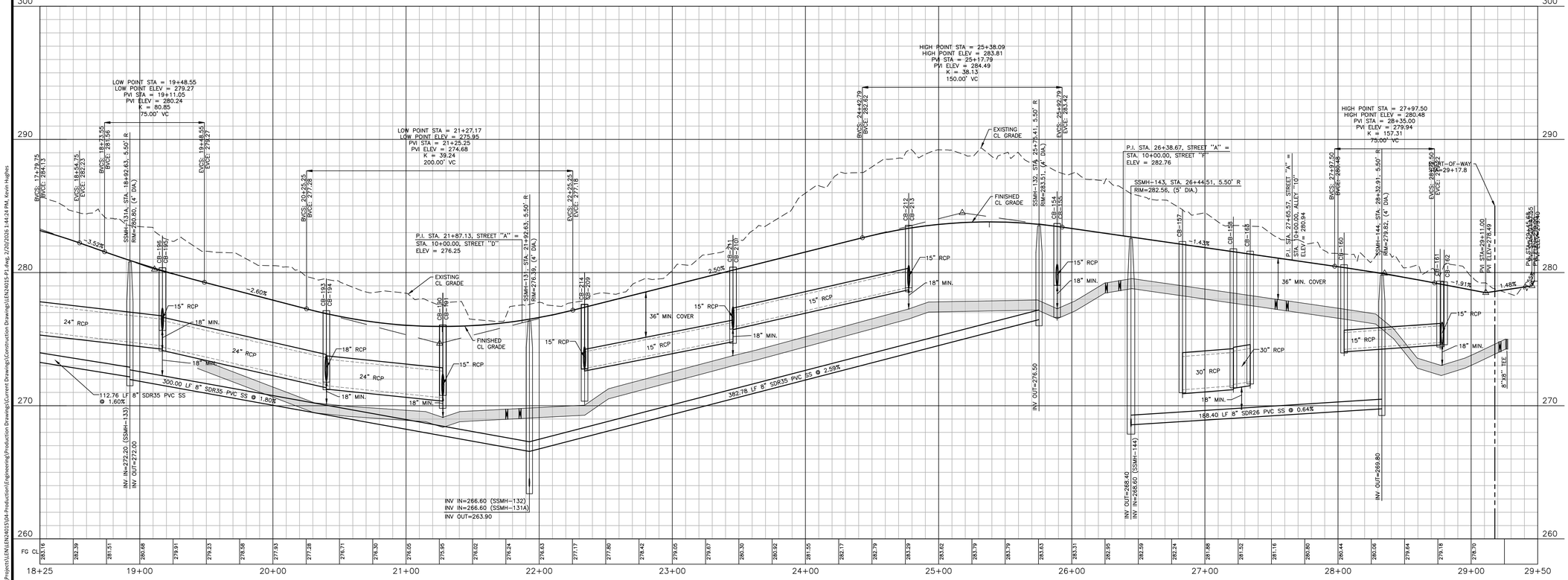
CB-154	CB-158	CB-162	CB-191	CB-195	CB-210	CB-213
STA 25+89.03	STA 27+21.44	STA 28+79.73	STA 21+27.75	STA 19+17.01	STA 23+45.58	STA 24+77.58
TC=283.69	TC=281.79	TC=279.30	TC=276.07	TC=280.36	TC=280.41	TC=283.55
INV IN=279.00 (CB-155)	INV IN=271.60 (CB-163)	INV OUT=274.92	INV OUT=271.10	INV IN=274.50 (CB-197)	INV IN=275.90 (CB-211)	INV OUT=279.20
INV OUT=276.90	INV IN=272.00 (CB-159)			INV IN=275.80 (CB-196)	INV IN=275.90 (CB-212)	
	INV OUT=271.50	CB-163	CB-193	INV OUT=274.40	INV OUT=275.00	CB-214
CB-155		STA 27+34.07	STA 20+40.13			STA 22+34.09
STA 25+89.03	CB-160	TC=281.61	TC=277.14	CB-196	CB-211	TC=277.61
TC=283.69	STA 28+04.58	INV IN=271.90 (CB-164)	INV IN=271.60 (CB-195)	STA 19+17.01	STA 23+45.58	INV OUT=273.10
INV OUT=279.40	TC=280.59	INV OUT=271.80	INV IN=272.10 (CB-194)	TC=280.36	TC=280.41	
	INV IN=274.24 (CB-161)		INV OUT=271.50	INV OUT=276.00	INV OUT=276.10	
CB-157	INV OUT=274.24	CB-190				
STA 26+83.20		STA 21+27.49	CB-194	CB-209	CB-212	
TC=282.34	CB-161	TC=276.07	STA 20+40.17	STA 22+34.09	STA 24+77.58	
INV IN=271.20 (CB-158)	STA 28+76.73	INV IN=270.60 (CB-193)	TC=277.14	TC=277.61	TC=283.55	
INV OUT=271.10	TC=279.36	INV IN=270.80 (CB-191)	INV OUT=272.10	INV IN=272.90 (CB-214)	INV IN=279.00 (CB-213)	
	INV IN=274.75 (CB-162)	INV OUT=270.10		INV IN=272.80 (CB-210)	INV OUT=278.90	
	INV OUT=274.75			INV OUT=270.60		

PIPE MATERIAL FOR SEWER:	
<12'	SDR 35 PVC
12'-20'	SDR 26 PVC
>20'	DIP

NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

STREET "A"



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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048256 ENGINEERING CORPORATION NICHOLAS D. WILLIAMSON

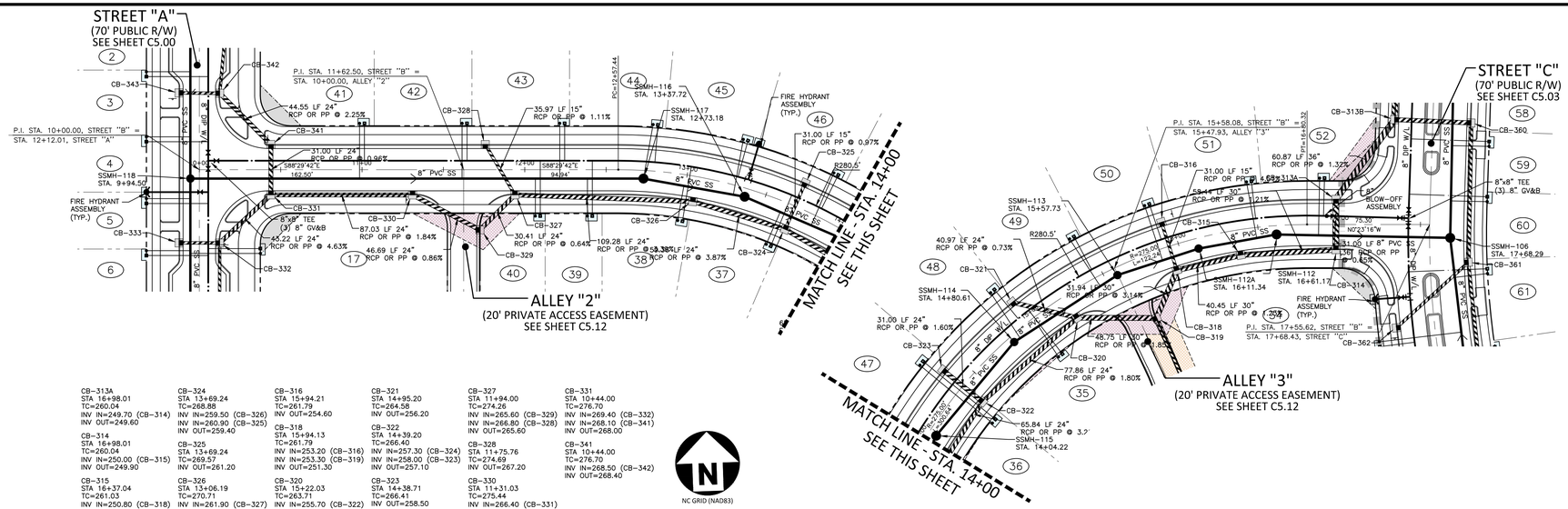
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PLAN AND PROFILE
STREET "A", STA. 18+25 THRU STA. 29+50

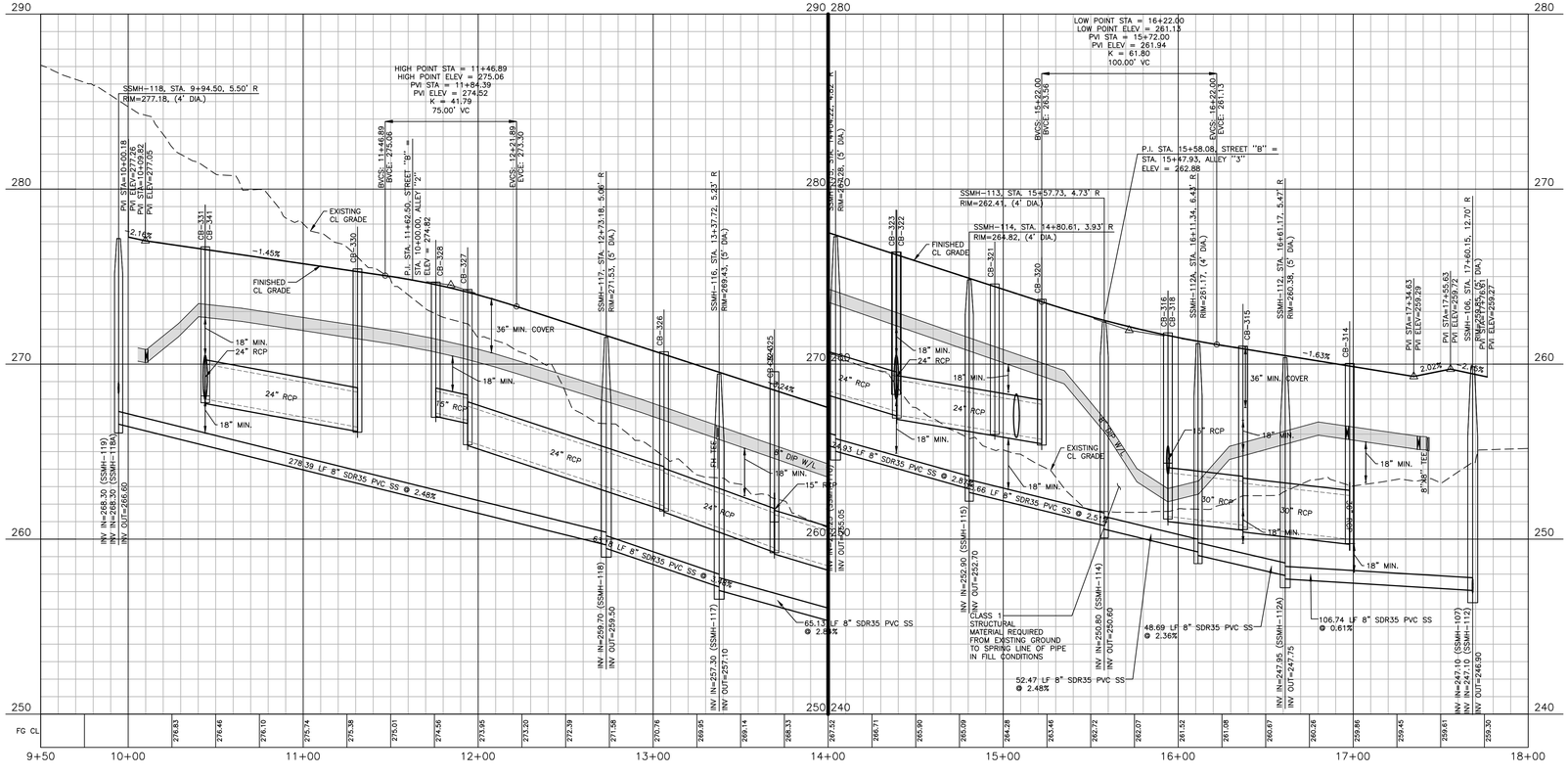
C5.01



PIPE MATERIAL FOR SEWER:

<12'	SDR 35 PVC
12'-20'	SDR 26 PVC
>20'	DIP

STREET "B"



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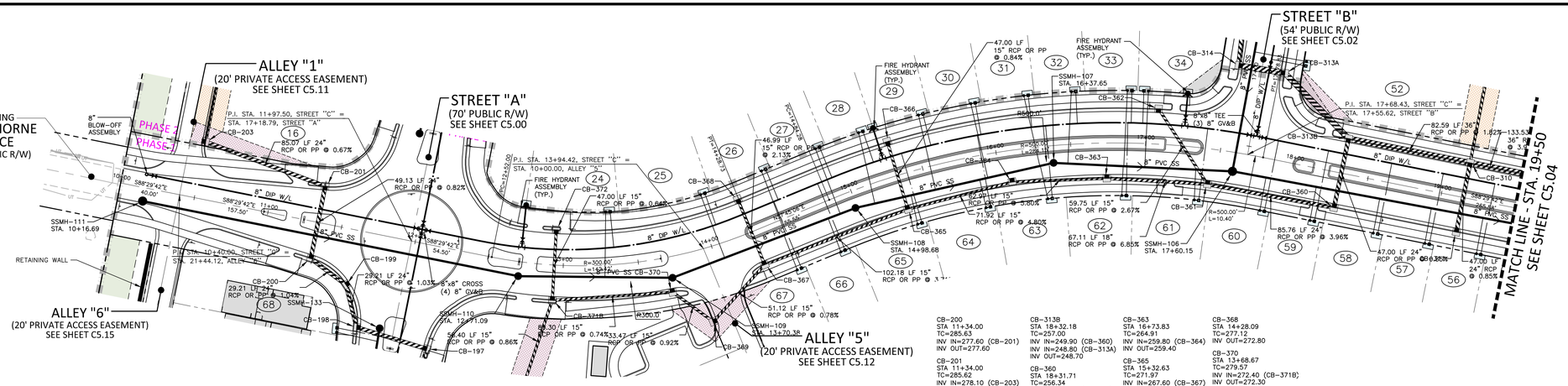
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PLAN AND PROFILE
STREET "B", STA. 9+50 THRU STA. 18+00

C5.02

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<12'	SDR 35 PVC
12'-20'	SDR 26 PVC
>20'	DIP

CB-200
STA 11+34.00
TC=285.63
INV IN=277.60 (CB-201)
INV OUT=277.60

CB-201
STA 11+34.00
TC=285.62
INV IN=278.10 (CB-203)
INV OUT=278.00

CB-310
STA 19+14.77
TC=253.72
INV IN=248.60 (DI-391)
INV IN=247.90 (CB-311)
INV IN=247.20 (CB-313B)
INV OUT=246.10

CB-311
STA 19+14.77
TC=253.04
INV OUT=248.30

CB-313B
STA 18+32.18
TC=257.00
INV IN=249.90 (CB-360)
INV IN=248.80 (CB-313A)
INV OUT=248.70

CB-360
STA 18+31.71
TC=256.34
INV IN=250.90 (CB-361)
INV OUT=250.30

CB-361
STA 17+44.30
TC=260.91
INV IN=254.80 (CB-363)
INV IN=256.20 (CB-362)
INV OUT=254.30

CB-362
STA 17+07.36
TC=263.23
INV OUT=257.80

CB-363
STA 16+73.83
TC=264.91
INV IN=259.80 (CB-364)
INV OUT=259.40

CB-365
STA 15+32.63
TC=271.97
INV IN=267.60 (CB-367)
INV IN=267.20 (CB-366)
INV OUT=267.10

CB-366
STA 15+32.63
TC=271.97
INV OUT=267.60

CB-367
STA 14+28.17
TC=277.12
INV IN=271.50 (CB-369)
INV IN=271.80 (CB-368)
INV OUT=271.40

CB-368
STA 14+28.09
TC=277.12
INV OUT=272.80

CB-370
STA 13+68.67
TC=279.57
INV IN=272.40 (CB-371B)
INV OUT=272.30

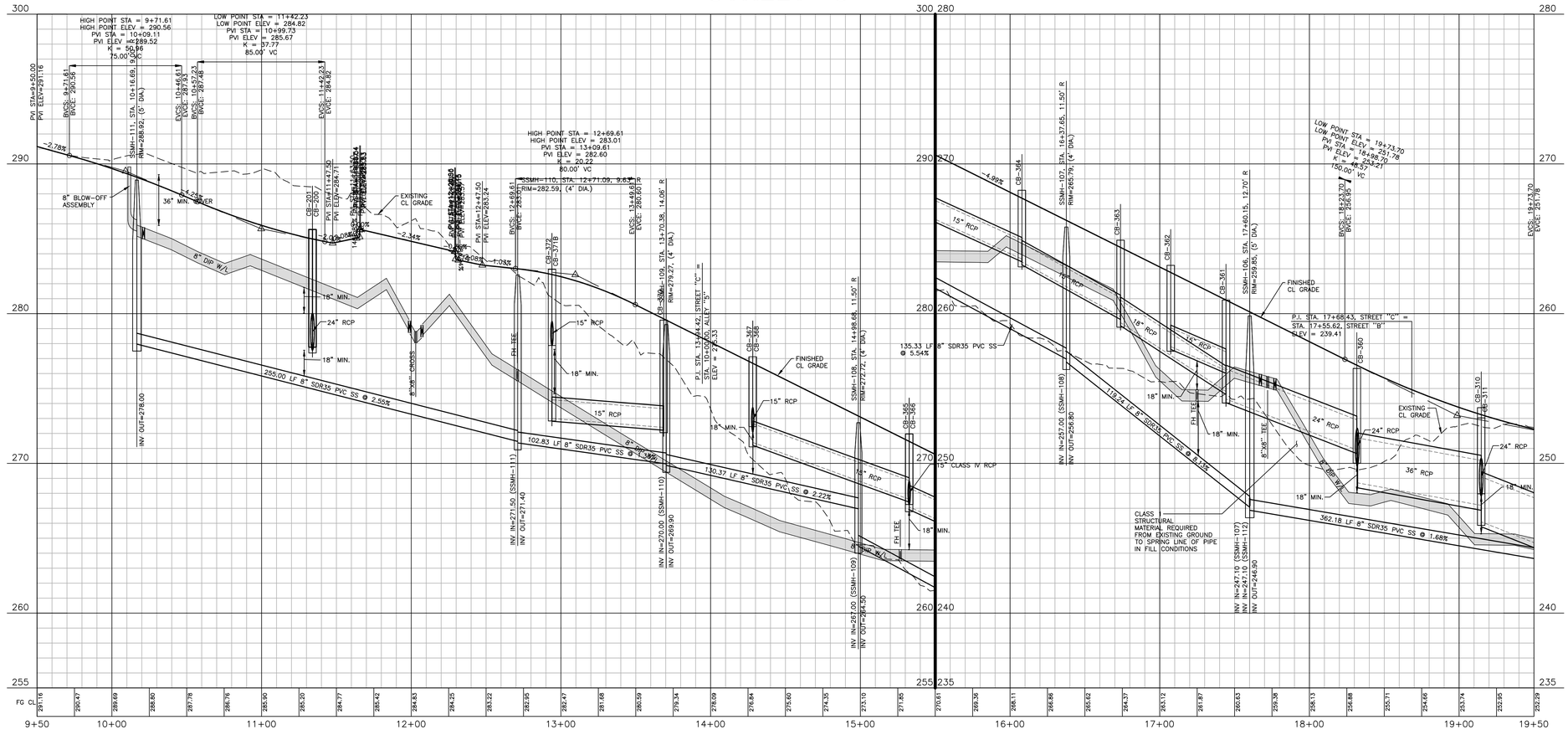
CB-371B
STA 12+94.01
TC=282.97
INV IN=277.90 (CB-372)
INV IN=273.10 (DI-371A)
INV OUT=273.00

CB-372
STA 12+94.01
TC=282.97
INV OUT=278.20

NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

STREET "C"



SEE SHEET C0.00 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

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Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
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2905 Meridian Parkway
Durham, NC 27713
phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293, C-187
www.mcadamsco.com

CLIENT
LENNAR
1100 PERIMETER PARK DRIVE, SUITE 112
MORRISVILLE, NORTH CAROLINA 27560
CONTACT: Tucker Ennis
PHONE: 919. 960. 7674
LENNAR

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
6		

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 THOMAS D. WILLIAMSON
EXPIRATION 12/31/2026
NOT FOR CONSTRUCTION

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

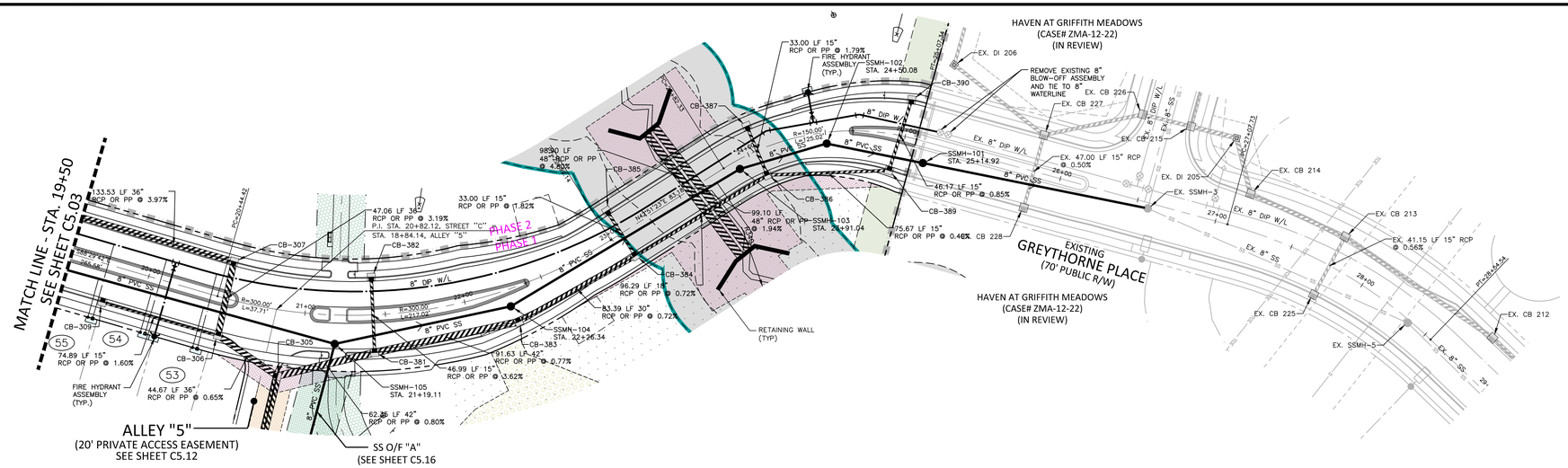
PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-P1
CHECKED BY	NDW
DRAWN BY	KWH
SCALE	1" = 40'/1" = 4'
DATE	11. 14. 2025

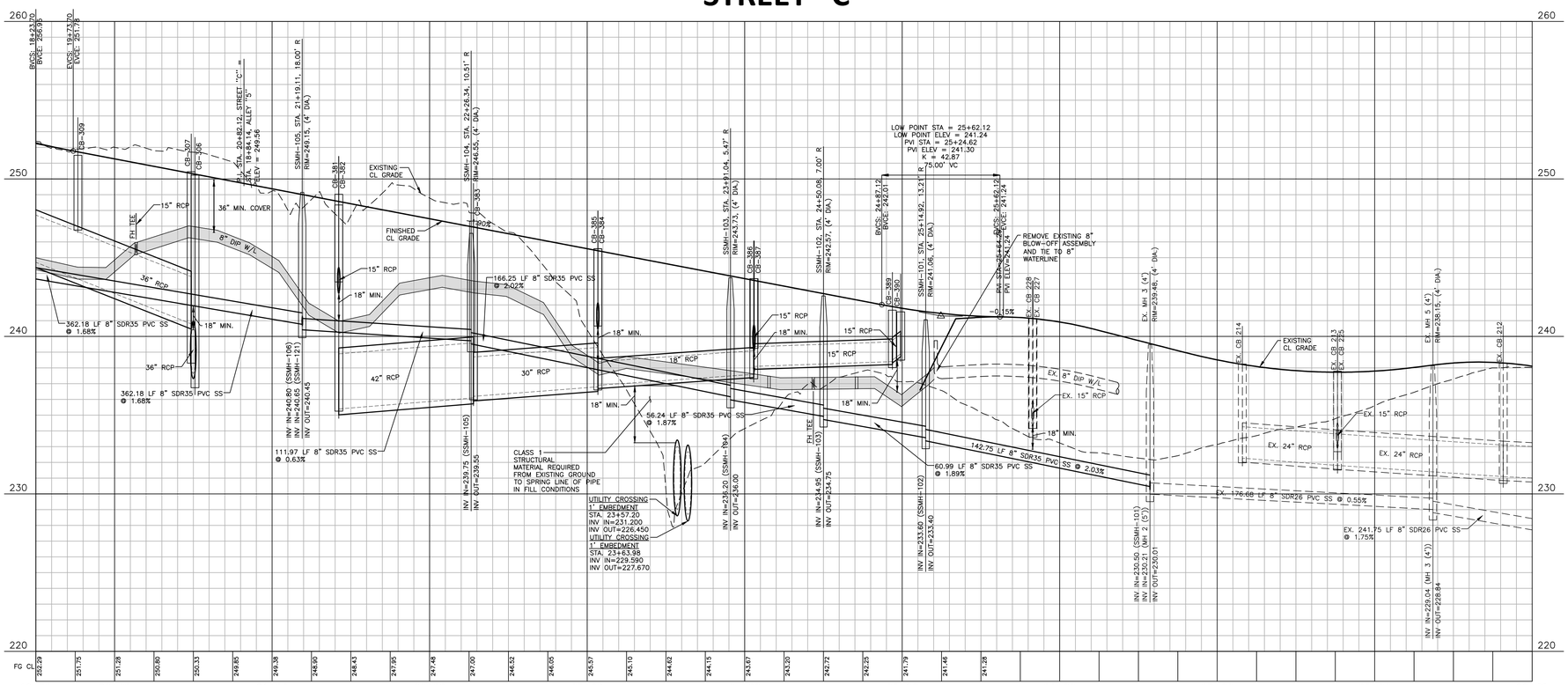
PLAN AND PROFILE
STREET "C", STA. 9+50 THRU STA. 19+50

C5.03

X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawing\LEN24015-P1.dwg, 2/10/2026 1:44:41 PM, Kevin Hughes



STREET "C"



SEE SHEET C0.00 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

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By: _____ Date: _____
Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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MORRISVILLE, NORTH CAROLINA 27560
CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
6		

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 WILLIAMS D. WILLIAMSON — NOT FOR CONSTRUCTION

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

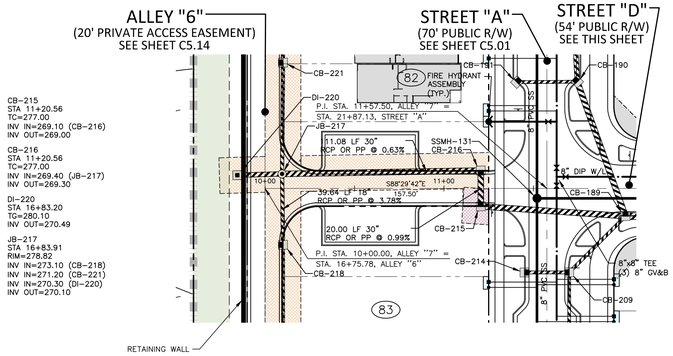
PLAN INFORMATION

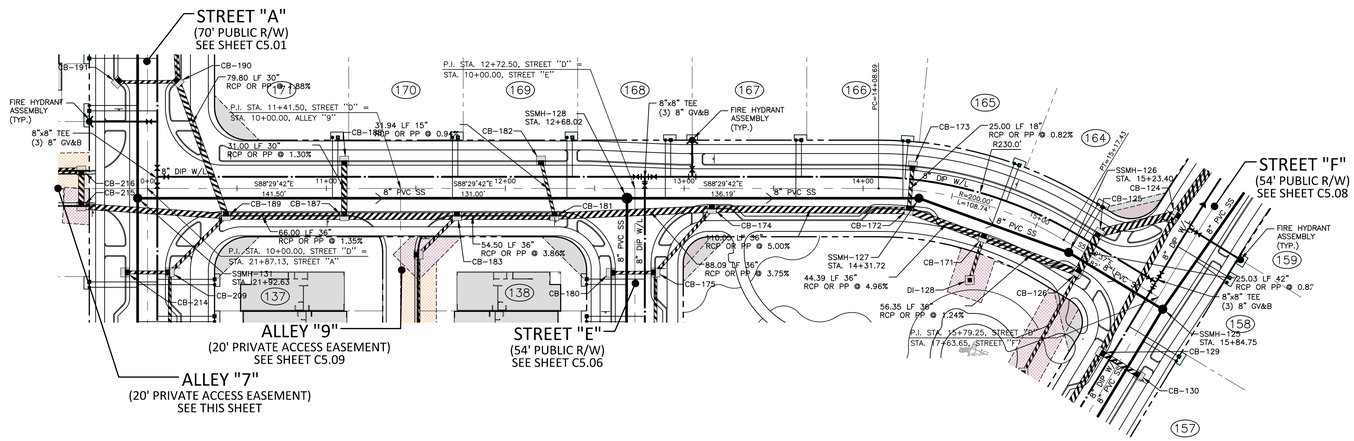
PROJECT NO.	LEN24015
FILENAME	LEN24015-P1
CHECKED BY	NDW
DRAWN BY	KWH
SCALE	1" = 40'/1" = 4'
DATE	11. 14. 2025

PLAN AND PROFILE
STREET "C", STA. 19+50 THRU STA. 29+00

C5.04

X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawing\LEN24015-P1.dwg, 2/20/2026 1:44:48 PM, Kevin Hughes





PIPE MATERIAL FOR SEWER:	
<12'	SDR 35 PVC
12'-20'	SDR 26 PVC
>20'	DIP

CB-125
STA 15+32.14
TC=257.02
INV IN=243.80 (CB-126)
INV OUT=243.70

CB-126
STA 15+33.65
TC=257.04
INV IN=250.50 (CB-171)
INV IN=252.50 (DI-127)
INV OUT=244.00

CB-171
STA 14+74.13
TC=259.16
INV IN=252.30 (CB-172)
INV IN=254.20 (DI-128)
INV OUT=251.20

CB-172
STA 14+26.60
TC=261.03
INV IN=254.60 (CB-174)
INV IN=256.30 (CB-173)
INV OUT=254.50

CB-173
STA 14+26.54
TC=260.99
INV OUT=256.50

CB-174
STA 13+15.50
TC=266.59
INV IN=261.40 (CB-175)
INV IN=261.00 (CB-181)
INV OUT=260.10

CB-181
STA 12+27.50
TC=270.89
INV IN=264.40 (CB-183)
INV IN=266.60 (CB-182)
INV OUT=264.30

CB-182
STA 12+20.00
TC=271.24
INV OUT=266.90

CB-183
STA 11+73.00
TC=273.11
INV IN=268.60 (CB-184)
INV IN=266.60 (CB-187)
INV OUT=266.50

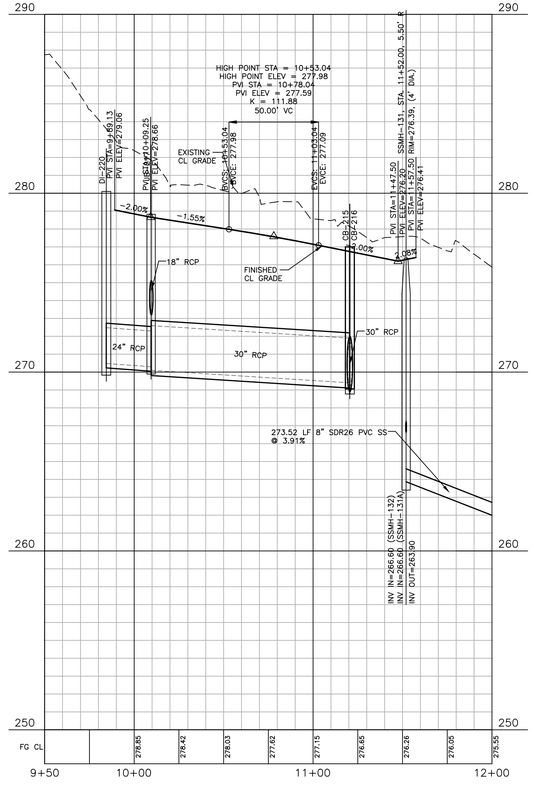
CB-187
STA 11+10.00
TC=274.75
INV IN=267.40 (CB-189)
INV IN=268.70 (CB-188)
INV OUT=267.30

CB-188
STA 11+10.00
TC=274.75
INV OUT=269.10

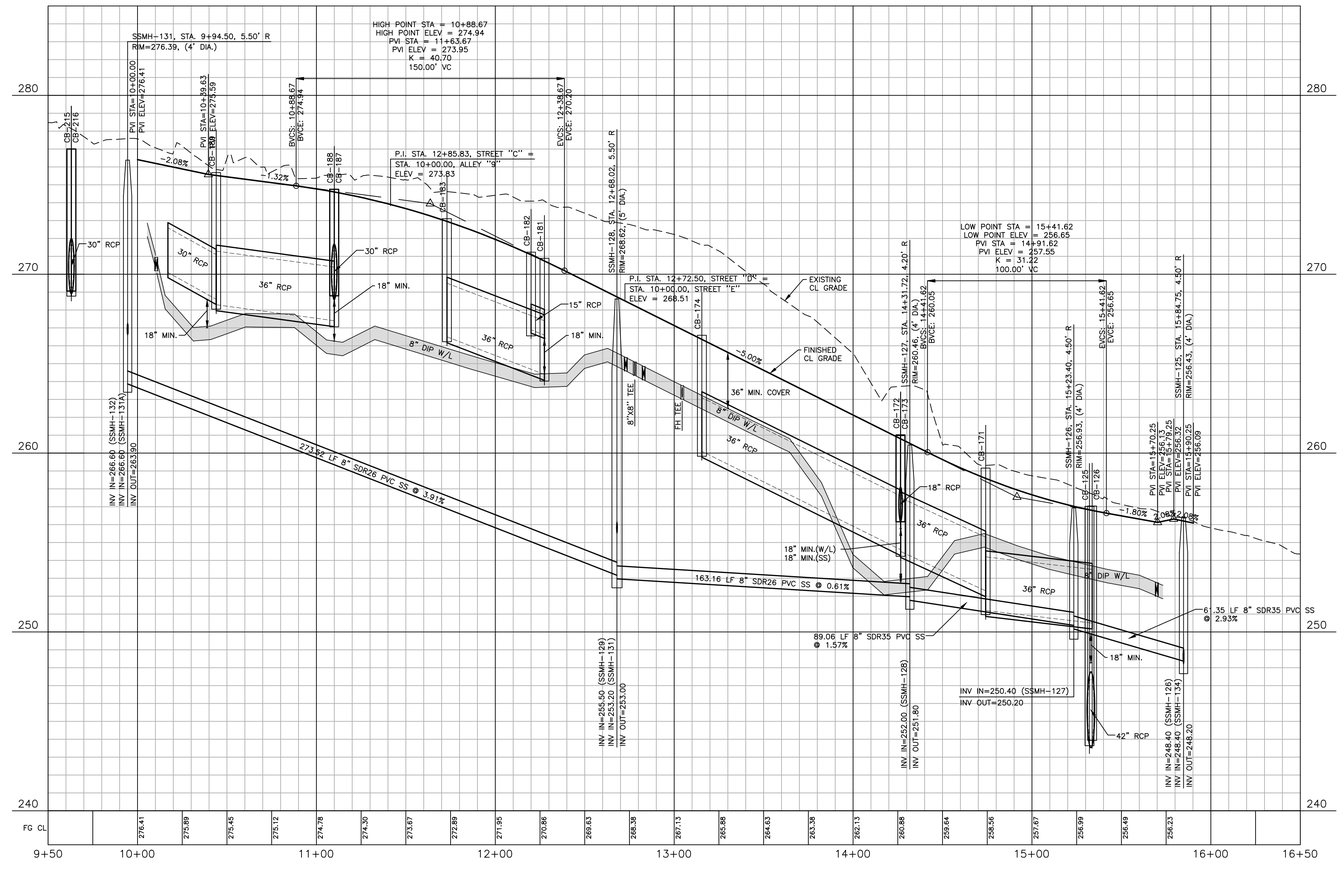
CB-189
STA 10+44.00
TC=275.68
INV IN=268.60 (CB-190)
INV IN=269.80 (CB-209)
INV IN=268.40 (CB-215)
INV OUT=268.30

N
NC GRID (NAD83)
GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

ALLEY "7"



STREET "D"



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Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawings\LEN24015-P1.dwg, 7/20/2026 1:44:55 PM, Kevin Hughes

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LENNAR

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
6		

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 THOMAS D. WILLIAMSON
PRELIMINARY NOT FOR CONSTRUCTION

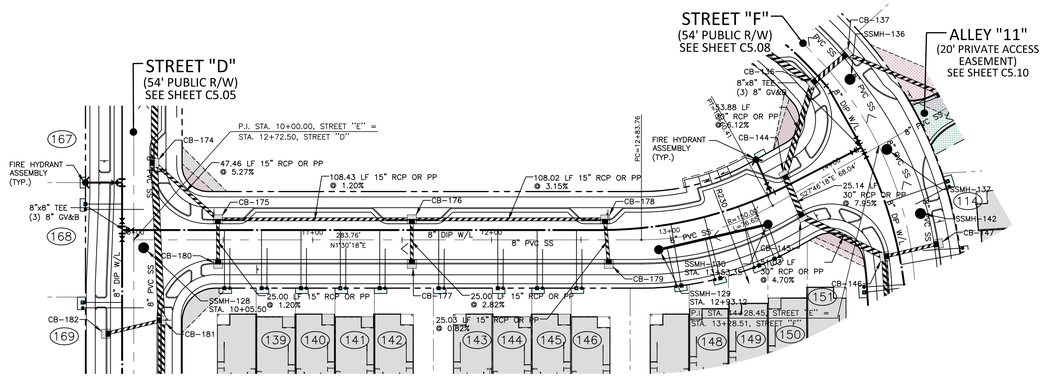
HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-P1
CHECKED BY	NDW
DRAWN BY	KWH
SCALE	1" = 40'/1" = 4'
DATE	11. 14. 2025

PLAN AND PROFILE
ALLEY "7", STA. 9+50 THRU STA. 12+00
STREET "D", STA. 9+50 THRU STA. 16+50

C5.05



CB-144
STA. 13+74.48
TC=278.51
INV IN=263.00 (CB-145)
INV OUT=262.90

CB-145
STA. 13+71.84
TC=278.50
INV IN=265.10 (CB-146)
INV OUT=265.00

CB-174
STA. 13+15.50
TC=266.59
INV IN=261.40 (CB-175)
INV IN=261.00 (CB-181)
INV OUT=260.10

CB-175
STA. 10+47.00
TC=269.09
INV IN=264.00 (CB-180)
INV IN=265.40 (CB-176)
INV OUT=263.90

CB-176
STA. 11+55.43
TC=273.14
INV IN=268.00 (CB-178)
INV IN=268.10 (CB-177)
INV OUT=266.70

CB-177
STA. 11+55.43
TC=273.10
INV OUT=268.80

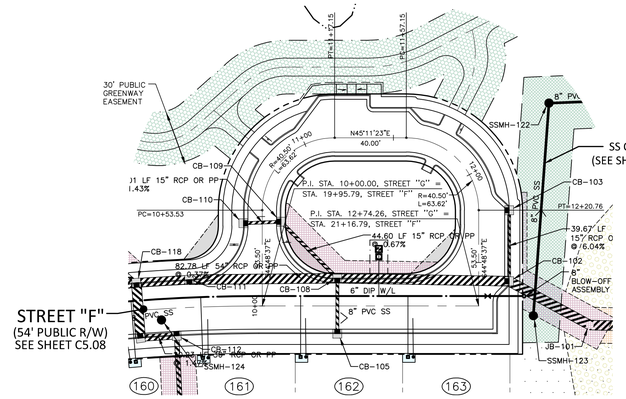
CB-178
STA. 12+63.45
TC=277.99
INV IN=273.50 (CB-179)
INV OUT=271.40

CB-179
STA. 12+65.54
TC=278.01
INV OUT=273.70

CB-180
STA. 10+47.17
TC=269.05
INV OUT=264.30

CB-181
STA. 12+27.50
TC=270.89
INV IN=264.40 (CB-183)
INV IN=266.60 (CB-182)
INV OUT=264.30

NC GRID (NADD83)



CB-102
STA. 21+33.79
TC=253.79
INV IN=238.40 (CB-108)
INV IN=248.60 (CB-103)
INV OUT=237.80

CB-103
STA. 12+20.76
TC=255.63
INV OUT=251.00

CB-108
STA. 20+37.79
TC=253.42
INV IN=248.70 (CB-109)
INV IN=239.60 (CB-111)
INV IN=241.90 (CB-105)
INV OUT=238.70

CB-109
STA. 10+47.10
TC=253.71
INV IN=249.10 (CB-110)
INV OUT=249.00

CB-110
STA. 10+46.25
TC=253.70
INV OUT=249.40

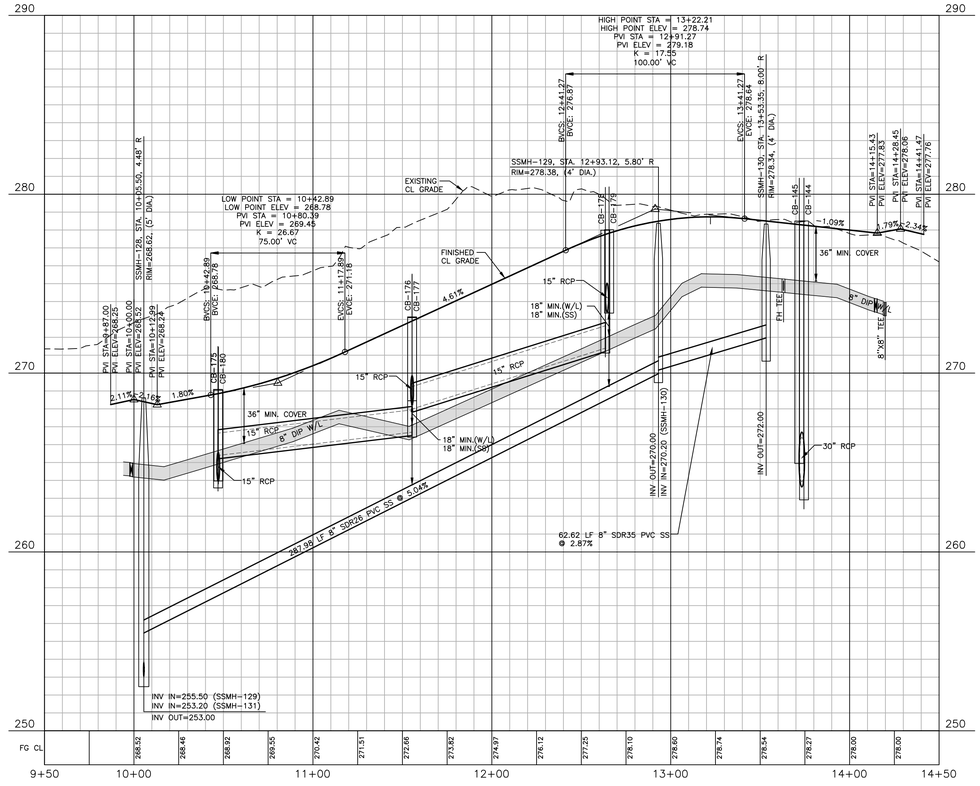
CB-111
STA. 19+55.65
TC=252.62
INV IN=240.20 (CB-118)
INV OUT=239.90

PIPE MATERIAL FOR SEWER:	
<12'	SDR 35 PVC
12'-20'	SDR 26 PVC
>20'	DIP

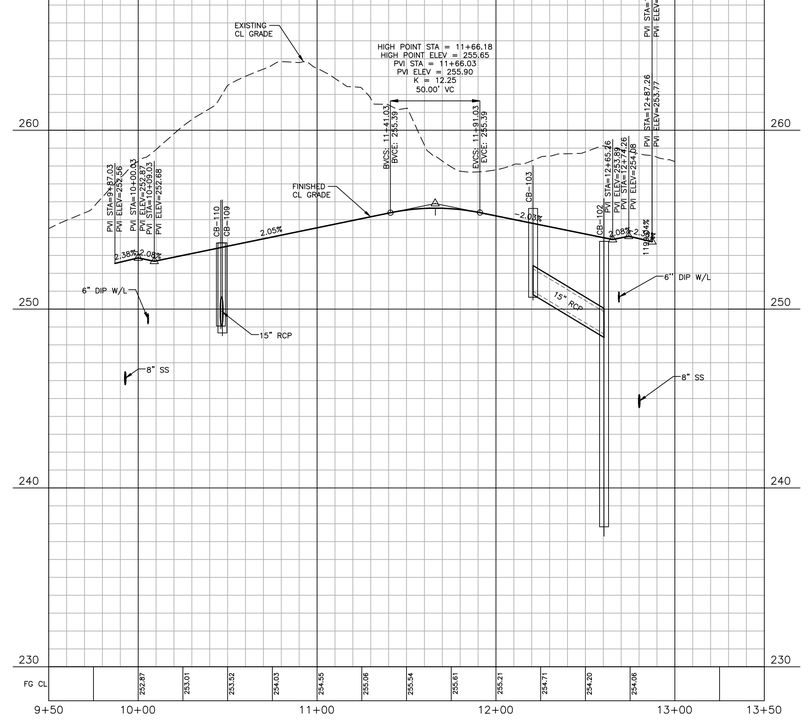
NC GRID (NADD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

STREET "E"



STREET "G"



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FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawings\LEN24015-P2.dwg, 2/20/2026 1:45:18 PM, Kevin Hughes

MCADAMS

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LENNAR

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
6		

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 ENGINEER NICHOLAS D. WILLIAMSON

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-P2
CHECKED BY	NDW
DRAWN BY	KWH
SCALE	1" = 40'/1" = 4'
DATE	11. 14. 2025

PLAN AND PROFILE
STREET "E", STA. 9+50 THRU STA. 14+50
STREET "G", STA. 9+50 THRU STA. 13+50

C5.06

CB–133
STA 14+97.82
TC=269.83
INV IN=257.60 (CB–136)
INV IN=265.10 (CB–135)
INV IN=258.70 (DI–134)
INV OUT=257.10

CB–135
STA 14+89.58
TC=270.20
INV OUT=265.70

CB–136
STA 13+79.85
TC=275.73
INV IN=259.60 (CB–144)
INV IN=262.30 (CB–137)
INV OUT=259.10

CB–137
STA 13+79.85
TC=275.69
INV IN=262.60 (CB–138)
INV OUT=262.50

CB–144
STA 13+74.48
TC=278.51
INV IN=263.00 (CB–145)
INV OUT=262.90

CB–145
STA 13+71.84
TC=278.50
INV IN=265.10 (CB–146)
INV OUT=265.00

CB–146
STA 12+65.83
TC=280.14
INV IN=267.80 (CB–148)
INV IN=274.50 (CB–147)
INV OUT=267.50

CB–147
STA 12+68.48
TC=280.12
INV OUT=275.50

CB–148
STA 11+76.95
TC=281.04
INV IN=269.60 (CB–153)
INV IN=276.30 (CB–151)
INV IN=270.30 (CB–149)
INV OUT=269.20

CB–149
STA 11+76.95
TC=281.04
INV IN=275.50 (CB–150)
INV OUT=273.40

CB–150
STA 11+14.32
TC=281.66
INV OUT=276.00

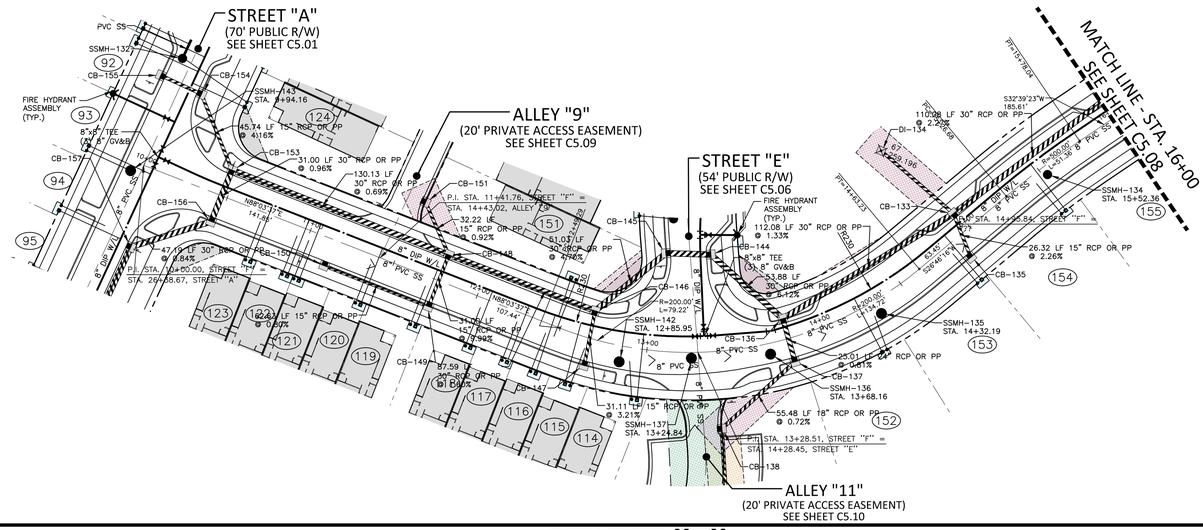
CB–151
STA 14+04.15
TC=281.61
INV OUT=276.60

CB–153
STA 10+46.82
TC=282.34
INV IN=275.00 (CB–154)
INV IN=270.30 (CB–156)
INV OUT=270.50

CB–156
STA 10+46.48
TC=282.34
INV IN=270.70 (CB–157)
INV OUT=270.60

DI–134
STA ???
TC=267.00
INV OUT=259.70

PIPE MATERIAL FOR SEWER:	
<12'	SDR 35 PVC
12'-20'	SDR 26 PVC
>20'	DIP


STREET "A"
(70' PUBLIC R/W)
SEE SHEET C5.01
ALLEY "9"
(20' PRIVATE ACCESS EASEMENT)
SEE SHEET C5.09
STREET "E"
(54' PUBLIC R/W)
SEE SHEET C5.06
ALLEY "11"
(20' PRIVATE ACCESS EASEMENT)
SEE SHEET C5.10
MATCH LINE - STA. 16+00
SEE SHEET C5.08
FIRE HYDRANT ASSEMBLY (TYP.)
SSMH–132
SSMH–143 STA. 9+94.16
SSMH–142 STA. 12+85.95
SSMH–137 STA. 13+24.84
SSMH–136 STA. 13+68.16
SSMH–135 STA. 14+32.19
SSMH–134 STA. 15+52.38
DI–134
CB–133
CB–135
CB–136
CB–137
CB–138
CB–144
CB–145
CB–146
CB–147
CB–148
CB–149
CB–150
CB–151
CB–153
CB–154
CB–155
CB–156
CB–157
8"x8" TEE
8" GV&B
8" DIP W/L
8" PVC SS
47.19 LF 30" RCP OR PP @ 0.84%
122.61 LF 15" RCP OR PP @ 0.60%
31.00 LF 30" RCP OR PP @ 0.96%
130.13 LF 30" RCP OR PP @ 0.69%
45.74 LF 15" RCP OR PP @ 41.16%
32.22 LF 15" RCP OR PP @ 0.92%
61.03 LF 30" RCP OR PP @ 4.76%
87.59 LF 30" RCP OR PP @ 0.84%
31.00 LF 15" RCP OR PP @ 17.94%
31.11 LF 15" RCP OR PP @ 3.21%
112.08 LF 30" RCP OR PP @ 1.33%
53.88 LF 30" RCP OR PP @ 5.12%
25.01 LF 15" RCP OR PP @ 0.61%
55.48 LF 18" RCP OR PP @ 0.72%
110.08 LF 30" RCP OR PP @ 2.26%
26.32 LF 15" RCP OR PP @ 2.26%
P.I. STA. 11+41.76, STREET "F" = STA. 14+43.02, ALLEY "9"
P.I. STA. 10+00.00, STREET "F" = STA. 264+56.67, STREET "A"
P.I. STA. 13+28.51, STREET "F" = STA. 14+28.45, STREET "E"
R=200.00'
L=79.22'
R=200.00'
L=79.22'
S32°39'23"W
185.61'
N32°39'23"E
185.61'
R=200.00'
L=51.38'
R=200.00'
L=51.38'
R=200.00'
L=51.38'
R=200.00'
L=51.38'
107.44'
108°03'31"E
141.85'
210.00'
R=200.00'
L=51.38'
R=200.00'
L=51.38'
R=200.00'
L=51.38'
R=200.00'
L=51.38

CB-102
STA 21+33.79
TC=253.79
INV IN=238.40 (CB-108)
INV IN=248.60 (CB-103)
INV OUT=237.80

CB-105
STA 20+37.79
TC=253.42
INV OUT=242.10

CB-108
STA 20+37.79
TC=253.42
INV IN=248.70 (CB-109)
INV IN=239.60 (CB-111)
INV IN=241.90 (CB-105)
INV OUT=238.70

CB-111
STA 19+55.65
TC=252.62
INV IN=240.20 (CB-118)
INV OUT=239.90

CB-112
STA 19+47.14
TC=252.56
INV IN=243.50 (DI-113)
INV OUT=242.70

CB-112A
STA 19+26.56
TC=252.49
INV IN=242.40 (CB-112)
INV OUT=241.10

CB-118
STA 19+26.56
TC=252.49
INV IN=240.50 (CB-123)
INV IN=247.50 (DI-119)
INV IN=240.90 (CB-112A)
INV OUT=240.40

CB-123
STA 18+67.33
TC=253.06
INV IN=242.10 (CB-124)
INV OUT=242.00

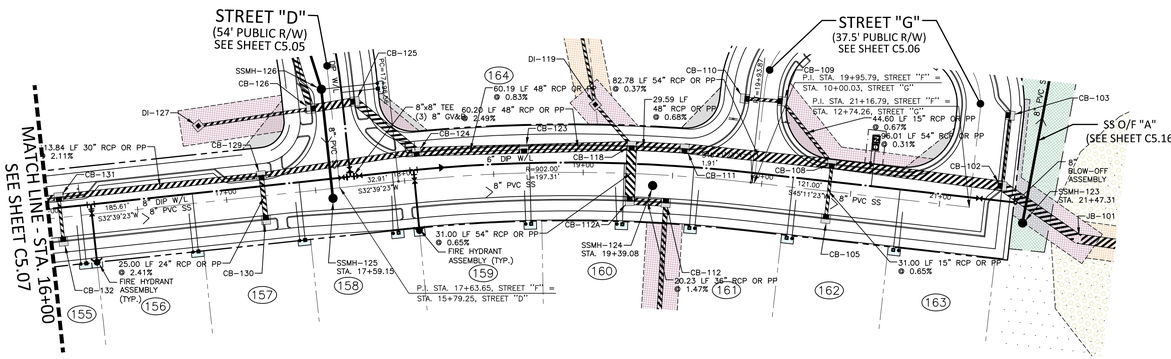
CB-124
STA 18+08.12
TC=254.58
INV IN=243.20 (CB-125)
INV IN=244.20 (CB-129)
INV OUT=242.60

CB-129
STA 17+20.65
TC=258.70
INV IN=251.10 (CB-131)
INV IN=252.00 (CB-130)
INV OUT=251.00

CB-130
STA 17+20.65
TC=258.65
INV OUT=252.60

CB-131
STA 16+06.81
TC=264.39
INV IN=254.60 (CB-133)
INV IN=255.20 (CB-132)
INV OUT=253.50

CB-132
STA 16+06.81
TC=264.34
INV OUT=256.40

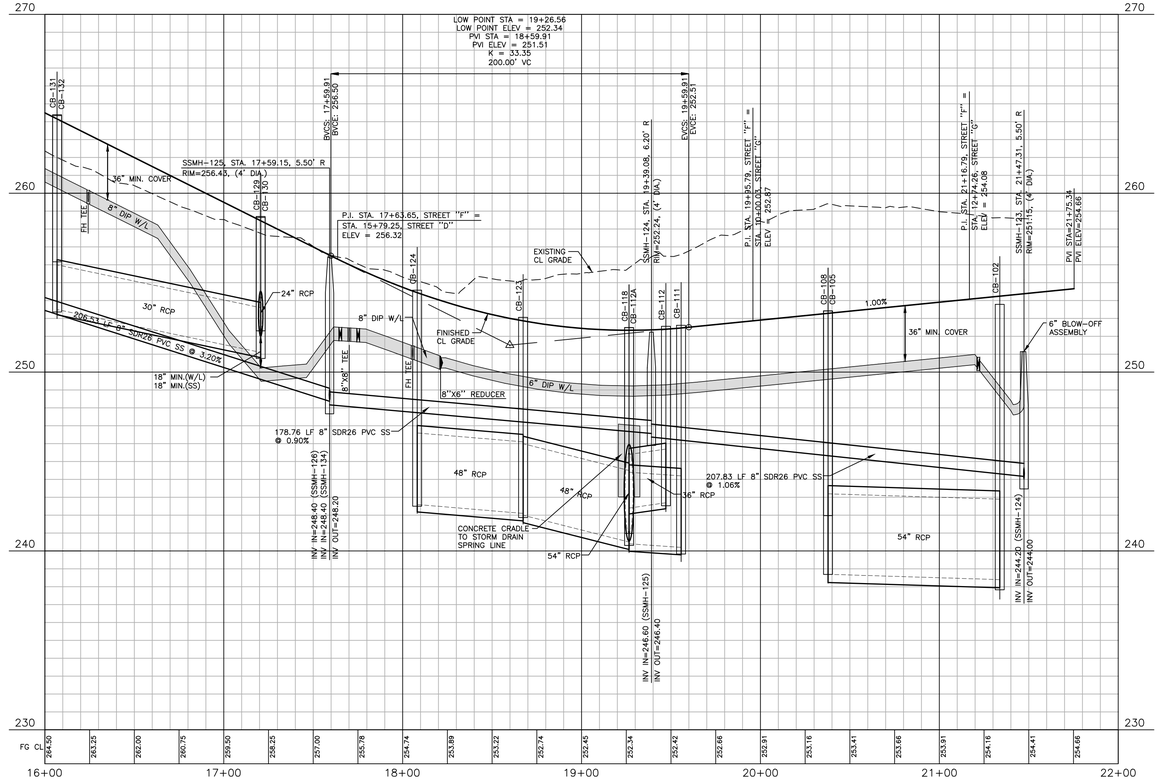


PIPE MATERIAL FOR SEWER:	
<12'	SDR 35 PVC
12'-20'	SDR 26 PVC
>20'	DIP

NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

STREET "F"



SEE SHEET C0.00 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

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Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
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6		

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048280 NICHOLAS D. WILLIAMSON

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-P2
CHECKED BY	NDW
DRAWN BY	KWH
SCALE	1" = 40'/1" = 4'
DATE	11. 14. 2025

PLAN AND PROFILE
STREET "F", STA. 16+00 THRU STA. 22+00

C5.08

X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawings\LEN24015-P2.dwg, 2/20/2026 1:45:26 PM, Kevin Hughes

CB–163
STA 27+34.07
TC=281.61
INV IN=271.90 (CB–164)
INV OUT=271.80

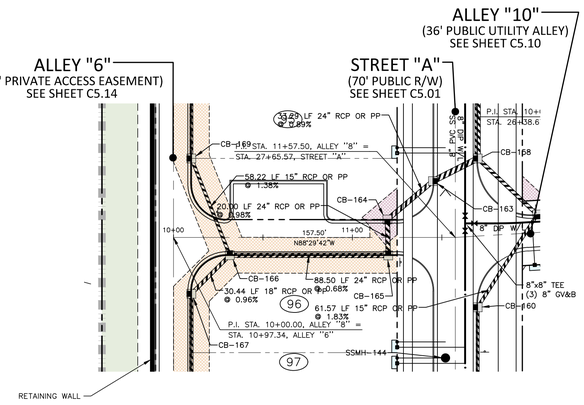
CB–164
STA 11+19.58
TC=281.55
INV IN=272.30 (CB–165)
INV OUT=272.19

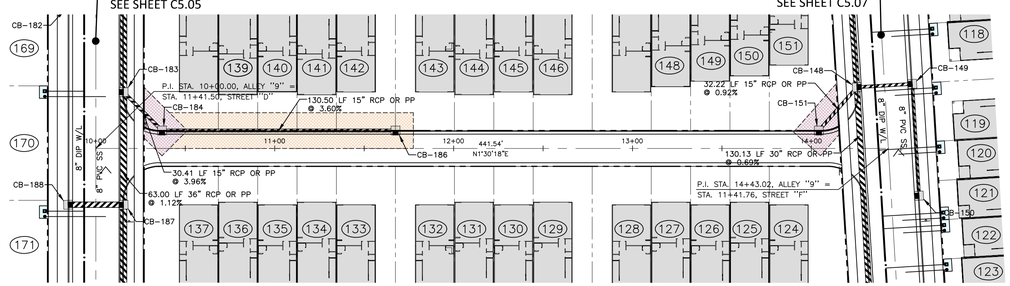
CB–165
STA 11+20.00
TC=281.86
INV IN=272.60 (CB–166)
INV OUT=272.50

CB–166
STA 10+31.50
TC=281.65
INV IN=276.80 (CB–169)
INV IN=273.50 (CB–167)
INV OUT=273.20

CB–167
STA 10+65.84
TC=280.59
INV IN=273.90 (CB–168B)
INV OUT=273.80

CB–169
STA 11+41.50
TC=282.51
INV IN=277.70 (CB–170)
INV OUT=277.60





CB–151
STA 14+04.15
TC=281.61
INV OUT=276.60

CB–183
STA 11+73.00
TC=273.11
INV IN=268.60 (CB–184)
INV IN=266.60 (CB–187)
INV OUT=266.50

CB–184
STA 10+37.00
TC=274.76
INV IN=269.90 (CB–186)
INV OUT=269.80

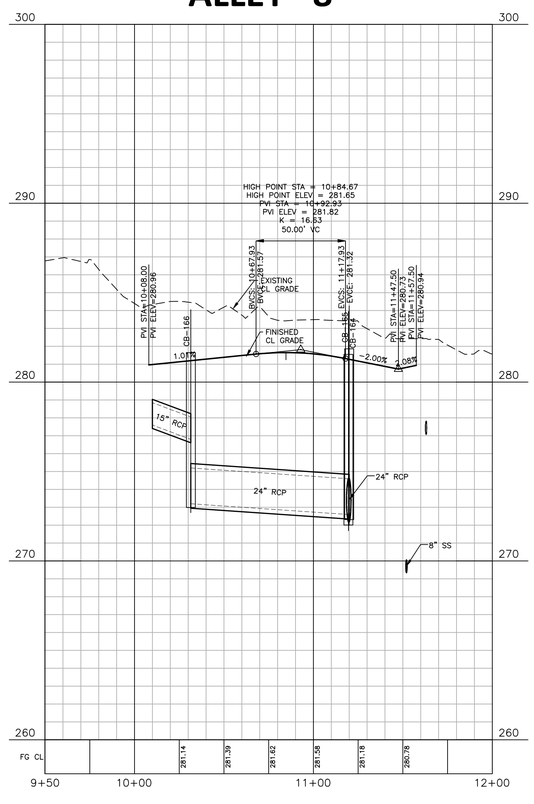
CB–186
STA 11+67.50
TC=279.49
INV OUT=274.60

PIPE MATERIAL FOR SEWER:	
<12'	SDR 35 PVC
12'-20'	SDR 26 PVC
>20'	DIP

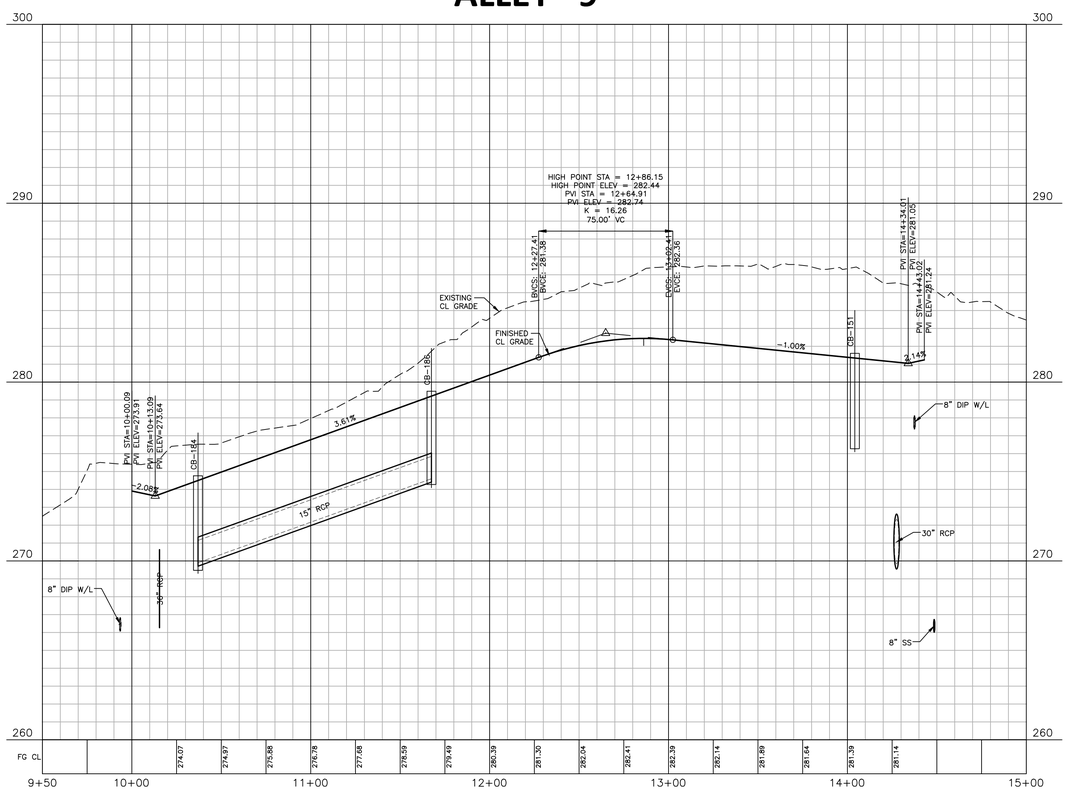
NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

ALLEY "8"



ALLEY "9"



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X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawings\LEN24015-P2.dwg, 2/20/2026 1:45:34 PM, Kevin Hughes

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REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048256 NICHOLAS D. WILLIAMSON

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-P2
CHECKED BY	NDW
DRAWN BY	KWH
SCALE	1" = 40'/1" = 4'
DATE	11. 14. 2025

PLAN AND PROFILE
ALLEY "8", STA. 9+50 THRU STA. 12+00
ALLEY "9", STA. 9+50 THRU STA. 15+00

C5.09

CB–139
STA 10+34.05
TC=273.98
INV IN=266.90 (CB–142)
INV IN=263.90 (CB–140)
INV OUT=263.80

CB–140
STA 13+99.02
TC=271.93
INV IN=264.30 (CB–141)
INV OUT=264.20

CB–141
STA 14+49.71
TC=269.40
INV OUT=264.70

CB–142
STA 13+26.02
TC=275.58
INV IN=269.20 (CB–143)
INV OUT=269.10

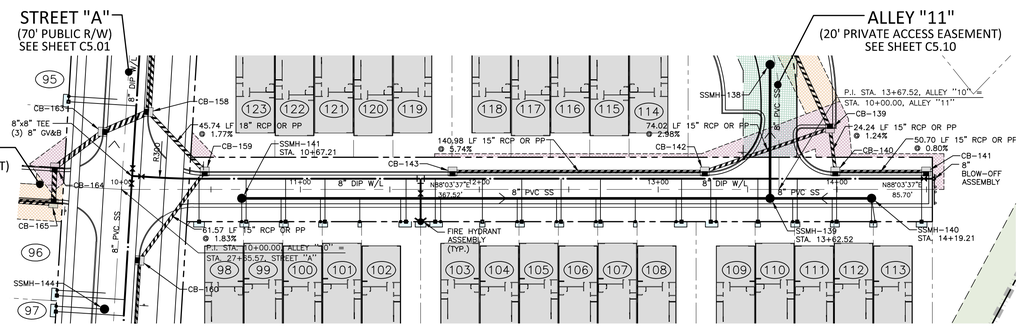
CB–143
STA 11+85.04
TC=282.01
INV OUT=277.30

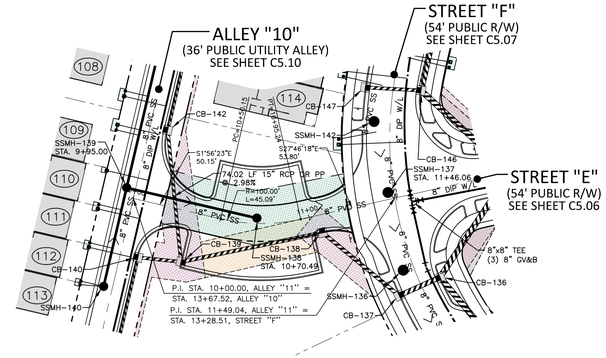
CB–159
STA 10+46.48
TC=281.71
INV IN=273.11 (CB–160)
INV OUT=272.81

CB–160
STA 28+04.58
TC=280.59
INV IN=274.24 (CB–161)
INV OUT=274.24

CB–164
STA 11+19.58
TC=281.55
INV IN=272.30 (CB–165)
INV OUT=272.19

CB–165
STA 11+20.00
TC=281.86
INV IN=272.60 (CB–166)
INV OUT=272.50





PIPE MATERIAL FOR SEWER:	
<12'	SDR 35 PVC
12'-20'	SDR 26 PVC
>20'	DIP

CB–137
STA 13+79.85
TC=275.69
INV IN=262.60 (CB–138)
INV OUT=262.50

CB–138
STA 11+05.48
TC=277.13
INV IN=263.10 (CB–139)
INV OUT=263.00

CB–139
STA 10+34.05
TC=273.98
INV IN=266.90 (CB–142)
INV IN=263.90 (CB–140)
INV OUT=263.80

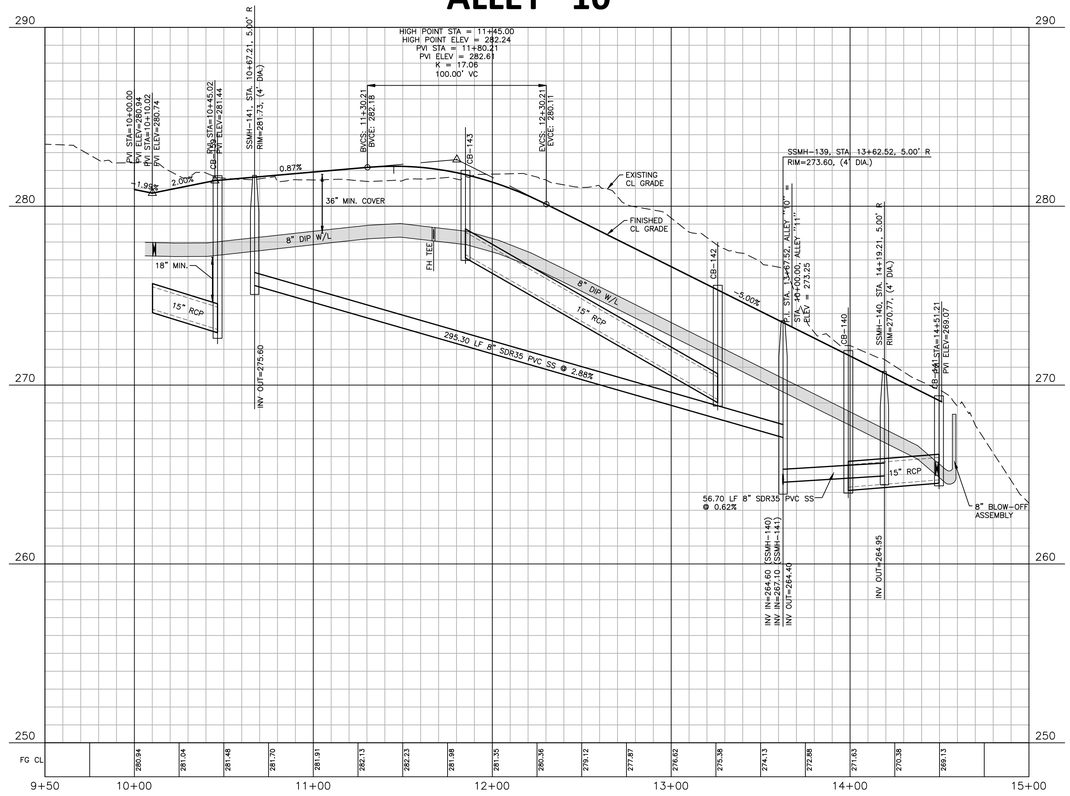
CB–140
STA 13+99.02
TC=271.93
INV IN=264.30 (CB–141)
INV OUT=264.20

CB–142
STA 13+26.02
TC=275.58
INV IN=269.20 (CB–143)
INV OUT=269.10

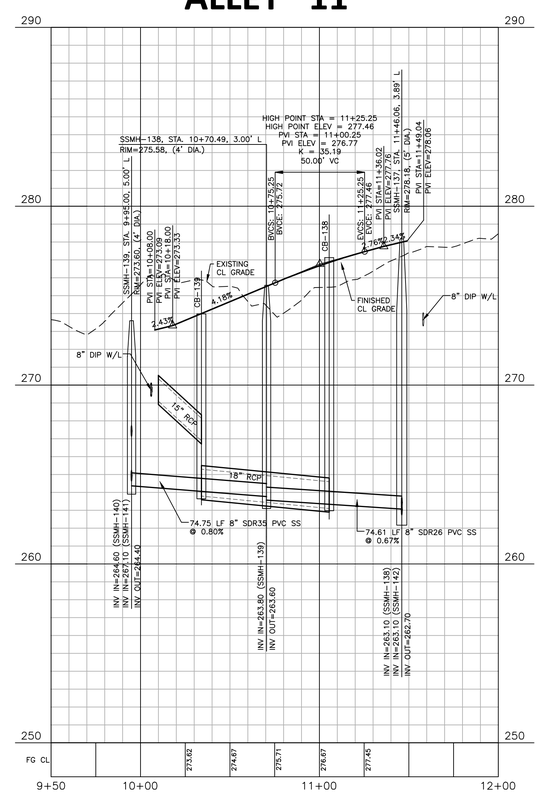
NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

ALLEY "10"



ALLEY "11"



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Land Use Administrator

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X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawings\LEN24015-P2.dwg, 2/20/2026 1:45:37 PM, Kevin Hughes

McADAMS
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CONTACT: Tucker Ennis
PHONE: 919. 960. 7674
LENNAR

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
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4		
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 ENGINEER NICOLAS D. WILLIAMSON

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-P2
CHECKED BY	NDW
DRAWN BY	KWH
SCALE	1" = 40'/1" = 4'
DATE	11. 14. 2025

PLAN AND PROFILE
ALLEY "10", STA. 9+50 THRU STA. 15+00
ALLEY "11", STA. 9+50 THRU STA. 12+00

C5.10

PIPE MATERIAL FOR SEWER:	
<12'	SDR 35 PVC
12'-20'	SDR 26 PVC
>20'	DIP

CB-203
STA 10+38.02
TC=287.92
INV IN=278.70 (CB-204)
INV OUT=278.67

CB-204
STA 11+20.00
TC=285.84
INV IN=280.30 (DI-205)
INV IN=279.50 (CB-206)
INV OUT=279.30

CB-206
STA 11+92.40
TC=285.05
INV IN=280.10 (CB-207)
INV OUT=280.00

CB-207
STA 11+97.28
TC=285.07
INV IN=280.30 (CB-208B)
INV OUT=280.20

CB-346
STA 17+79.06
TC=276.15
INV IN=271.00 (CB-349)
INV OUT=270.80

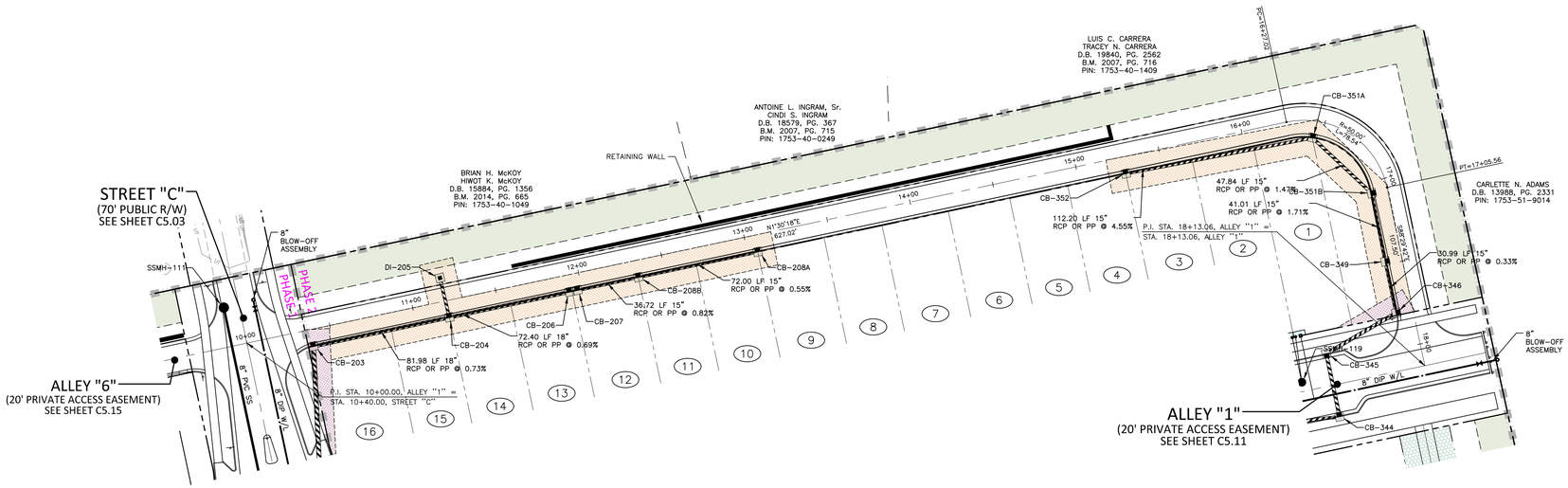
CB-349
STA 17+48.07
TC=275.76
INV IN=271.50 (CB-351B)
INV OUT=271.10

CB-351A
STA 16+43.78
TC=276.95
INV IN=273.00 (CB-352)
INV OUT=272.90

CB-351B
STA 17+07.06
TC=275.78
INV IN=272.20 (CB-351A)
INV OUT=272.20

CB-352
STA 15+28.00
TC=282.11
INV OUT=278.10

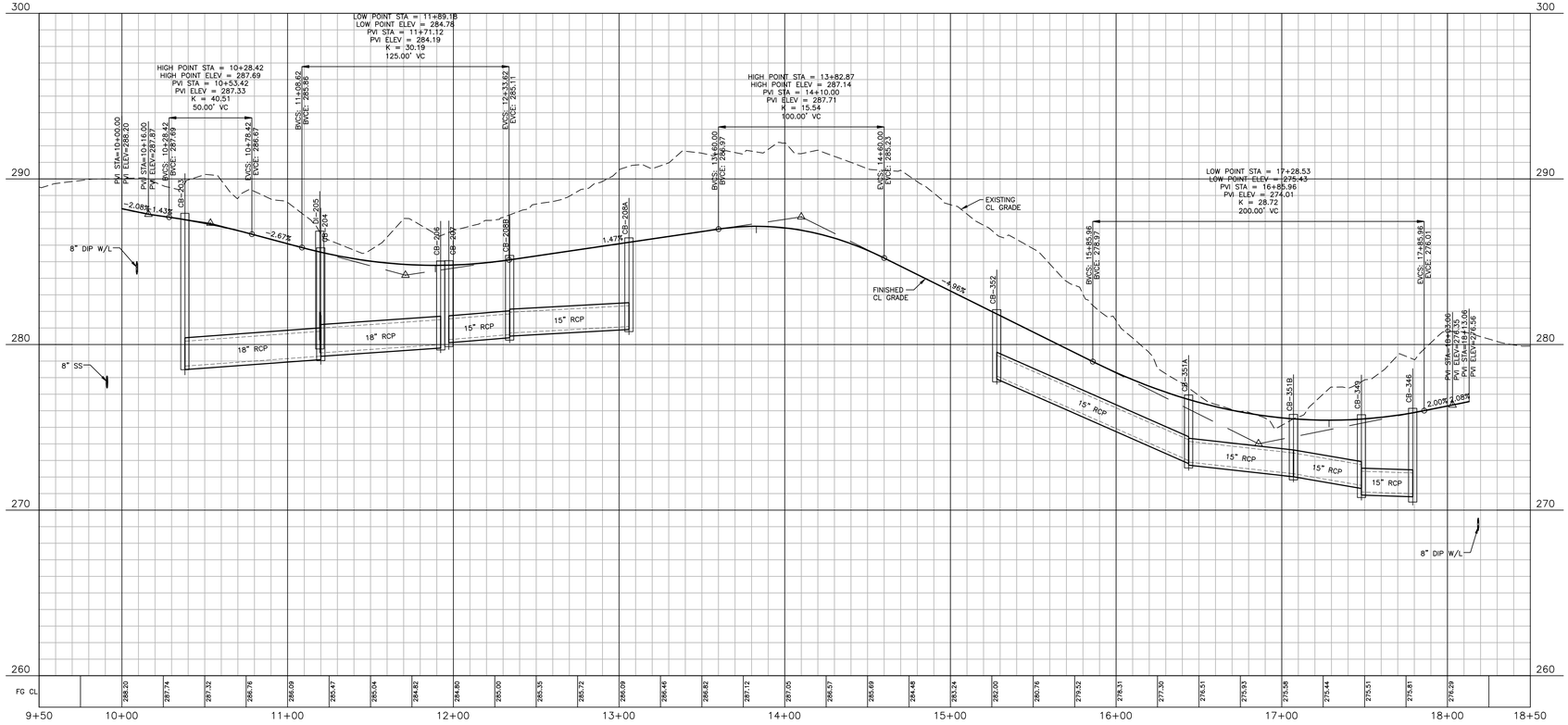
DI-205
STA 11+19.41
TC=286.85
INV OUT=280.50



NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

ALLEY "1"



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LENNAR

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1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 ENGINEER NICOLAS D. WILLIAMSON
DOCUMENT NOT CONSIDERED FINAL UNLESS SIGNED AND SEALED

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

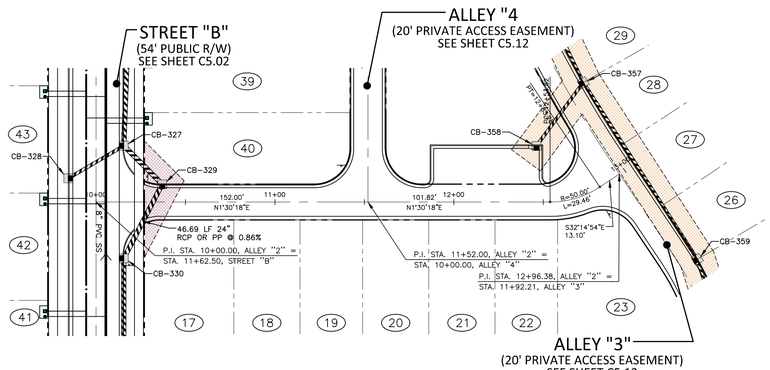
PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-P3
CHECKED BY	NDW
DRAWN BY	KWH
SCALE	1" = 40'/1" = 4'
DATE	11. 14. 2025

PLAN AND PROFILE
ALLEY "1", STA. 9+50 THRU STA. 18+50

C5.11

X:\Projects\LEN\LEN24015\04-Production\Engineering\3Production Drawings\Current Drawings\Construction Drawings\LEN24015-P3.dwg, 2/20/2026 1:45:59 PM, Kevin Hughes

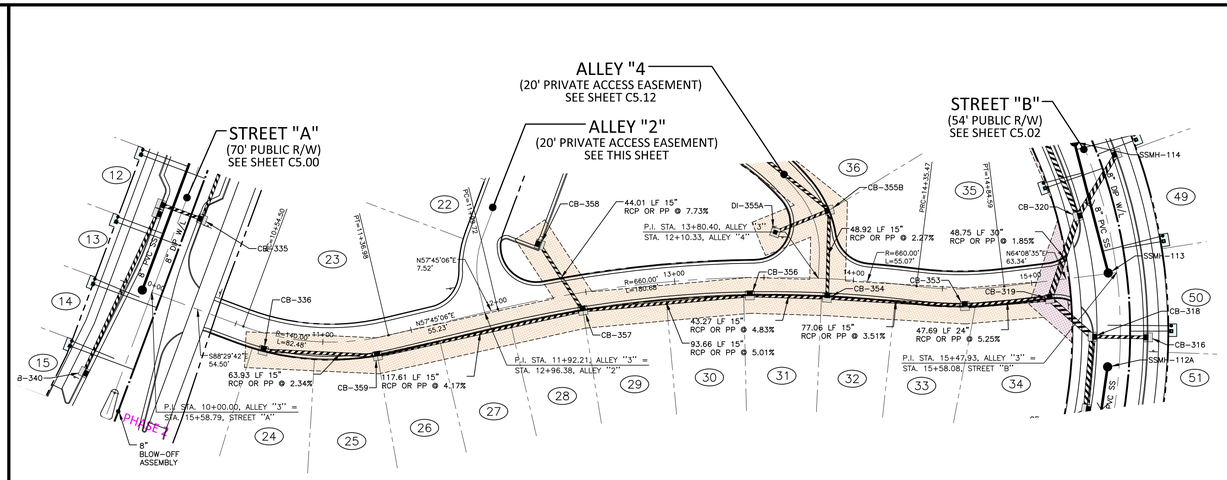


CB-329
STA 10+37.00
TC=274.40
INV IN=265.90 (CB-330)
INV OUT=265.80

CB-330
STA 11+31.03
TC=275.44
INV IN=266.40 (CB-331)
INV OUT=266.30

CB-358
STA 12+46.22
TC=276.71
INV OUT=272.90

NC GRID (NAD83)



PIPE MATERIAL FOR SEWER:	
<12'	SDR 35 PVC
12'-20'	SDR 26 PVC
>20'	DIP

CB-319
STA 15+09.05
TC=262.99
INV IN=254.70 (CB-320)
INV IN=255.80 (CB-353)
INV OUT=254.30

CB-320
STA 15+22.03
TC=263.71
INV IN=255.70 (CB-322)
INV IN=255.90 (CB-321)
INV OUT=255.60

CB-335
STA 15+10.73
TC=280.81
INV IN=275.00 (CB-337B)
INV OUT=274.90

CB-336
STA 10+68.68
TC=280.36
INV OUT=275.90

CB-353
STA 14+62.39
TC=264.19
INV IN=259.00 (CB-354)
INV OUT=258.30

CB-354
STA 13+85.83
TC=267.20
INV IN=262.40 (CB-356)
INV IN=262.60 (CB-355B)
INV OUT=261.70

CB-356
STA 13+41.87
TC=269.39
INV IN=264.60 (CB-357)
INV OUT=264.50

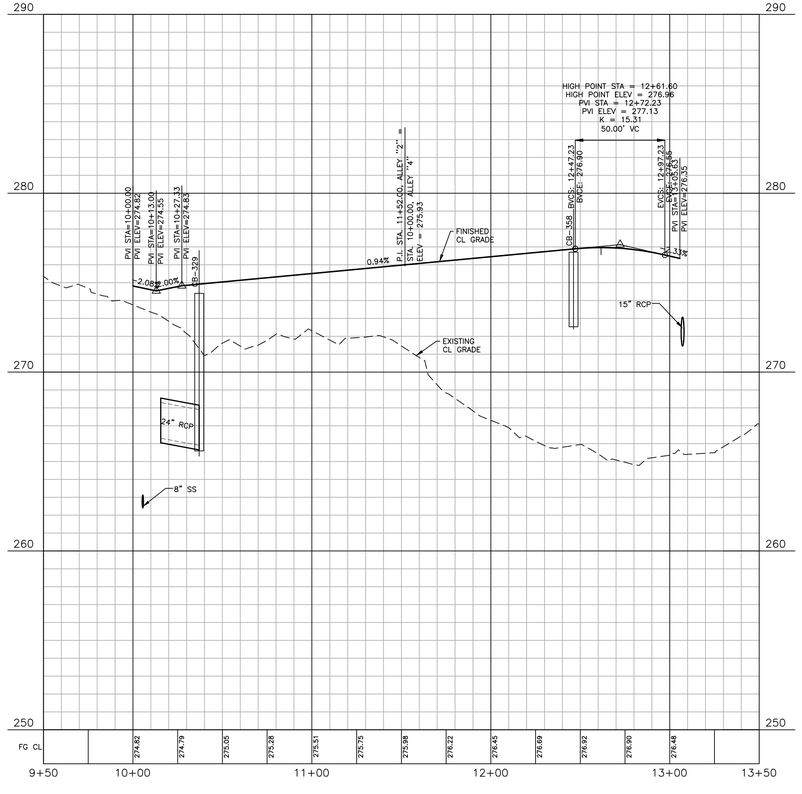
CB-357
STA 12+46.68
TC=274.13
INV IN=269.40 (CB-359)
INV IN=269.50 (CB-358)
INV OUT=269.30

CB-359
STA 11+28.91
TC=278.80
INV IN=274.40 (CB-336)
INV OUT=274.30

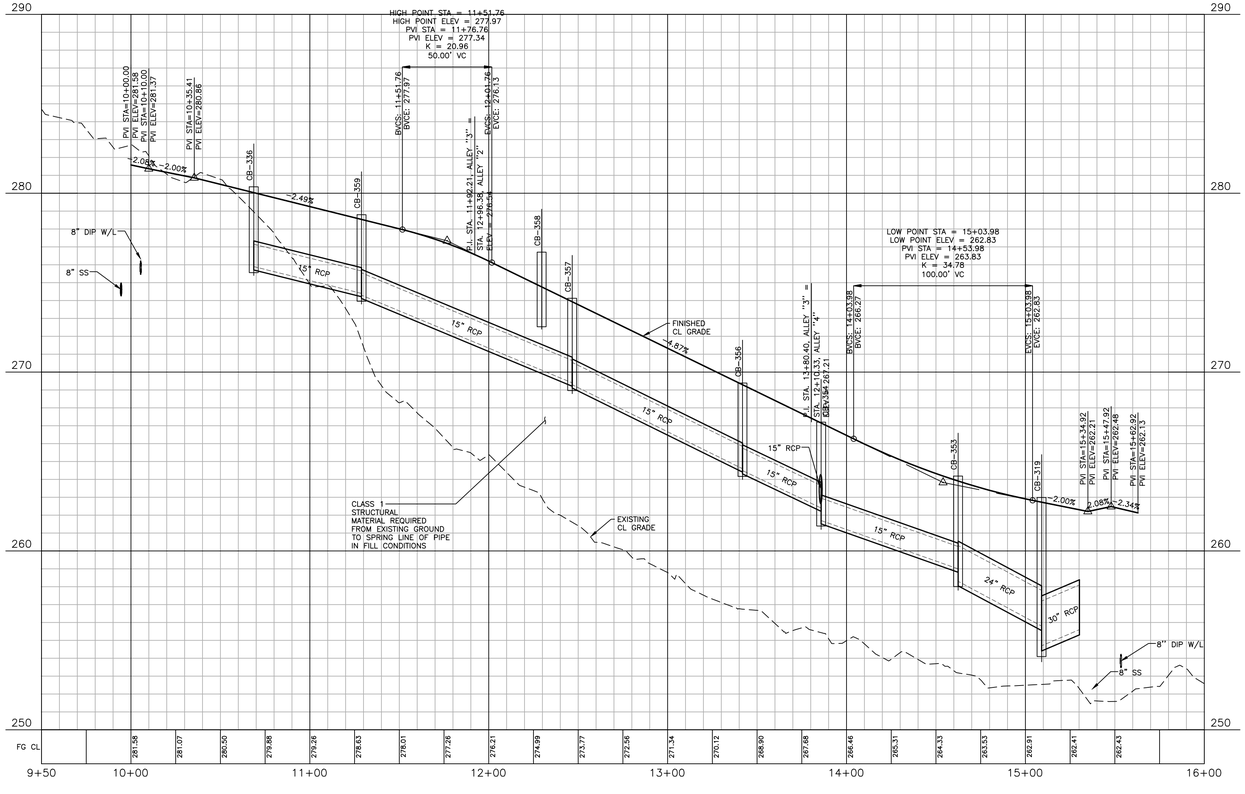
NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

ALLEY "2"



ALLEY "3"



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CONTACT: Tucker Ennis
PHONE: 919. 960. 7674
LENNAR

REVISIONS

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 THOMAS D. WILLIAMSON
PRELIMINARY NOT FOR CONSTRUCTION

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

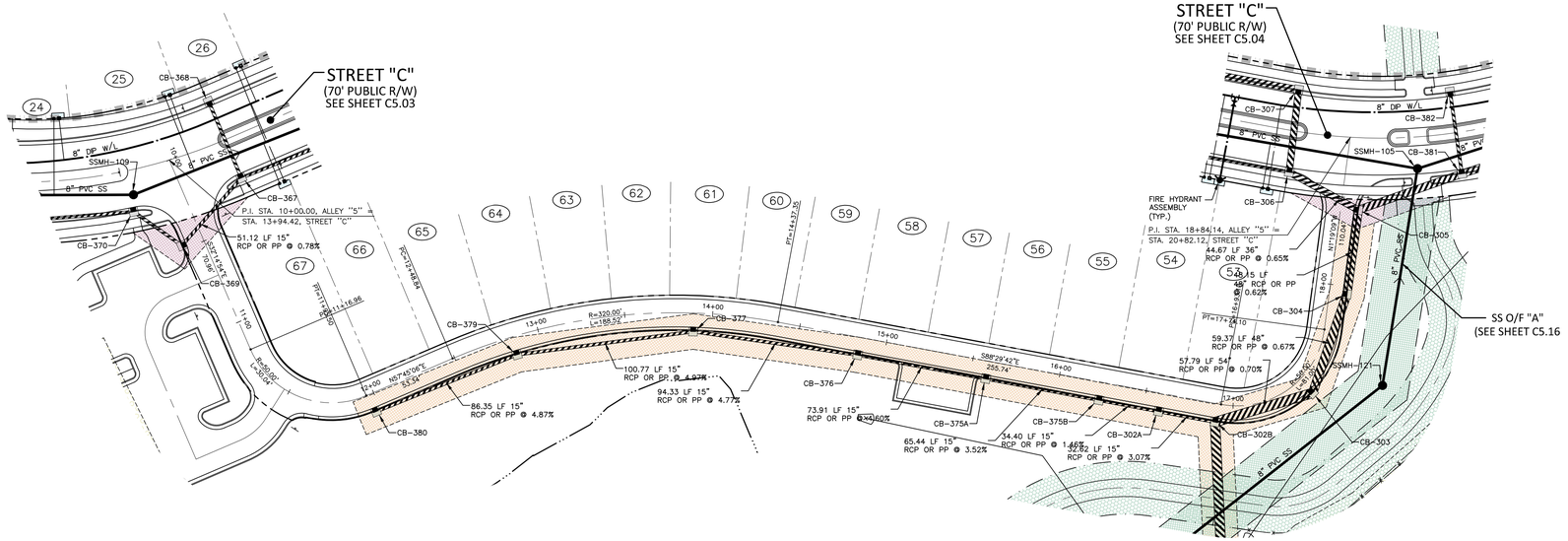
PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-P3
CHECKED BY	NDW
DRAWN BY	KWH
SCALE	1" = 40'/1" = 4'
DATE	11. 14. 2025

PLAN AND PROFILE
ALLEY "2", STA. 9+50 THRU STA. 13+50
ALLEY "3", STA. 9+50 THRU STA. 16+00

C5.12

X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawings\LEN24015-P3.dwg, 2/20/2026 1:46:03 PM, Kevin Hughes



PIPE MATERIAL FOR SEWER:	
<12'	SDR 35 PVC
12'-20'	SDR 26 PVC
>20'	DIP

CB-302B
STA 16+91.60
TC=251.41
INV IN=246.30 (CB-302A)
INV IN=233.40 (CB-303)
INV OUT=233.30

CB-303
STA 17+41.64
TC=250.91
INV IN=233.90 (CB-304)
INV OUT=233.80

CB-305
STA 18+43.86
TC=249.89
INV IN=236.50 (CB-306)
INV IN=234.80 (CB-381)
INV OUT=234.70

CB-306
STA 20+51.04
TC=250.24
INV IN=236.90 (CB-307)
INV IN=245.90 (CB-309)
INV OUT=236.80

CB-367
STA 14+28.17
TC=277.12
INV IN=271.50 (CB-369)
INV IN=271.80 (CB-368)
INV OUT=271.40

CB-369
STA 10+47.46
TC=277.53
INV IN=272.00 (CB-370)
INV OUT=271.90

CB-377
STA 13+89.22
TC=262.89
INV IN=258.50 (CB-379)
INV OUT=258.40

CB-379
STA 12+84.57
TC=267.94
INV IN=263.60 (CB-380)
INV OUT=263.50

CB-380
STA 11+97.00
TC=272.16
INV OUT=267.80

NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

ALLEY "5"

SEE SHEET C0.00 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

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X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawings\LEN24015-P3.dwg, 2/20/2026 1:46:08 PM, Kevin Hughes

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CONTACT: Tucker Ennis
PHONE: 919. 960. 7674
LENNAR

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
6		

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 KEVIN D. WILLIAMSON
ELECTRONIC COPIES OF THIS DOCUMENT ARE NOT CERTIFIED

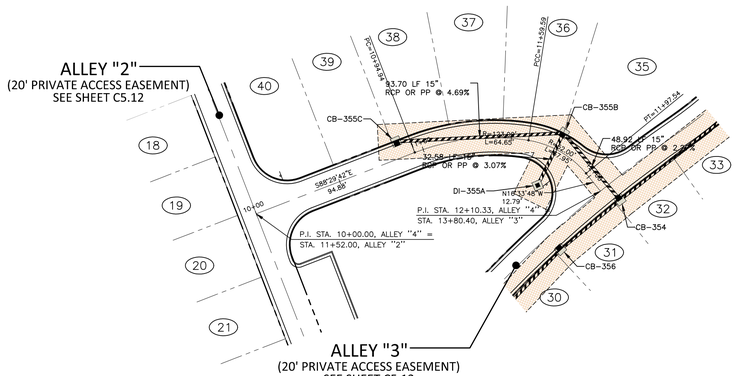
HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-P3
CHECKED BY	NDW
DRAWN BY	KWH
SCALE	1" = 40'/1" = 4'
DATE	11. 14. 2025

PLAN AND PROFILE
ALLEY "5", STA. 9+50 THRU STA. 19+50

C5.13

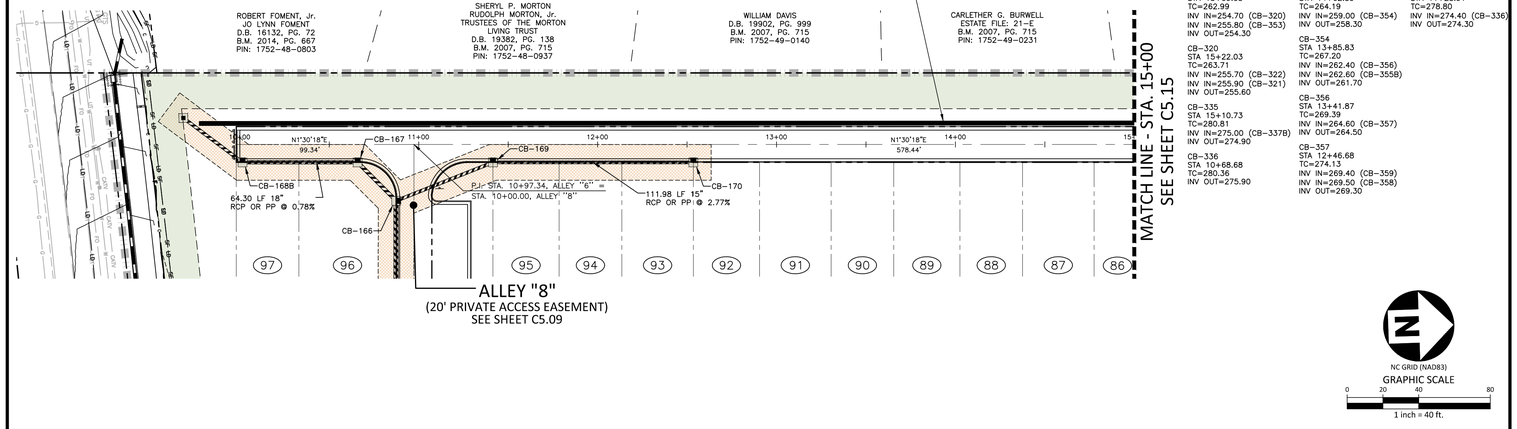


CB-354
STA 13+85.83
TC=267.20
INV IN=262.40 (CB-356)
INV IN=262.60 (CB-355B)
INV OUT=261.70

CB-355B
STA 11+75.56
TC=268.60
INV IN=264.00 (DI-355A)
INV IN=263.80 (CB-355C)
INV OUT=263.70

CB-355C
STA 10+87.45
TC=272.53
INV OUT=268.20

NC GRID (NAD83)



CB-319
STA 15+09.05
TC=262.99
INV IN=254.70 (CB-320)
INV IN=255.80 (CB-353)
INV OUT=254.30

CB-320
STA 15+22.03
TC=263.71
INV IN=255.70 (CB-322)
INV IN=255.90 (CB-321)
INV OUT=255.60

CB-335
STA 15+10.73
TC=280.81
INV IN=275.00 (CB-337B)
INV OUT=274.90

CB-336
STA 10+68.68
TC=280.36
INV OUT=275.90

CB-353
STA 14+62.39
TC=264.19
INV IN=259.00 (CB-354)
INV OUT=258.30

CB-354
STA 13+85.83
TC=267.20
INV IN=262.40 (CB-356)
INV IN=262.60 (CB-355B)
INV OUT=261.70

CB-356
STA 13+41.87
TC=269.39
INV IN=264.60 (CB-357)
INV OUT=264.50

CB-357
STA 12+46.68
TC=274.13
INV IN=269.40 (CB-359)
INV IN=269.50 (CB-358)
INV OUT=269.30

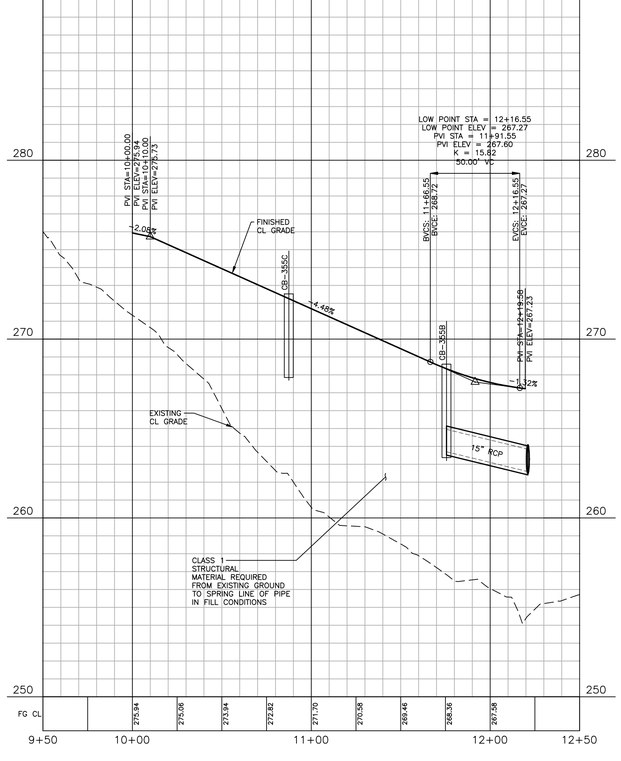
CB-359
STA 11+28.91
TC=278.80
INV IN=274.40 (CB-336)
INV OUT=274.30

PIPE MATERIAL FOR SEWER:	
<12'	SDR 35 PVC
12'-20'	SDR 26 PVC
>20'	DIP

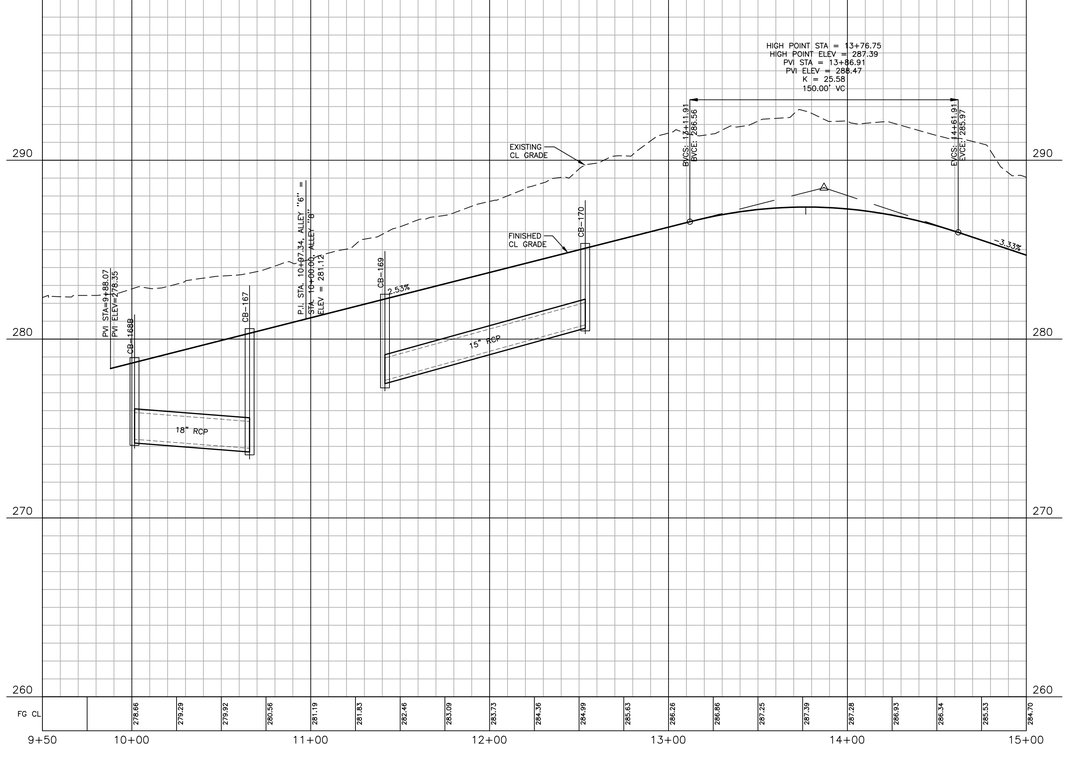
NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

ALLEY "4"



ALLEY "6"



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FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawings\LEN24015-P3.dwg, 2/20/2026 1:46:12 PM, Kevin Hughes

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LENNAR

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 ENGINEER NICHOLAS D. WILLIAMSON
NOT FOR CONSTRUCTION

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-P3
CHECKED BY	NDW
DRAWN BY	KWH
SCALE	1" = 40'/1" = 4'
DATE	11. 14. 2025

PLAN AND PROFILE
ALLEY "4", STA. 9+50 THRU STA. 12+50
ALLEY "6", STA. 9+50 THRU STA. 15+00

C5.14

PIPE MATERIAL FOR SEWER:	
<12'	SDR 35 PVC
12'-20'	SDR 26 PVC
>20'	DIP

CB-167
STA 10+65.84
TC=280.59
INV IN=273.90 (CB-168B)
INV OUT=273.80

CB-168B
STA 10+01.54
TC=278.96
INV IN=274.70 (DI-168A)
INV OUT=274.40

CB-169
STA 11+41.50
TC=282.51
INV IN=277.70 (CB-170)
INV OUT=277.60

CB-170
STA 12+53.48
TC=285.35
INV OUT=280.80

CB-218
STA 16+44.28
TC=280.16
INV IN=274.70 (CB-219)
INV OUT=274.60

CB-219
STA 15+14.50
TC=284.47
INV OUT=279.50

CB-221
STA 17+46.12
TC=277.60
INV IN=271.80 (CB-222)
INV OUT=271.70

CB-222
STA 17+69.19
TC=277.51
INV IN=272.50 (CB-223)
INV OUT=272.00

CB-223
STA 18+13.38
TC=277.90
INV IN=273.70 (CB-224C)
INV OUT=273.60

CB-224A
STA ???
TC=283.05
INV OUT=278.50

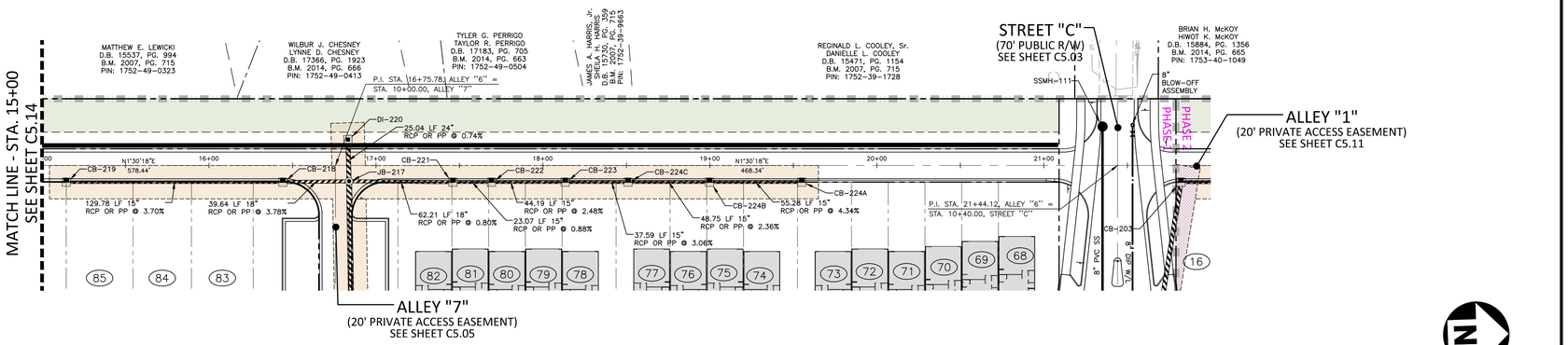
CB-224B
STA ???
TC=280.71
INV IN=276.10 (CB-224A)
INV OUT=276.00

CB-224C
STA ???
TC=278.81
INV IN=274.85 (CB-224B)
INV OUT=274.85

DI-168A
STA 9+68.44
TC=282.32
INV OUT=276.50

DI-220
STA 16+83.20
TC=280.10
INV OUT=270.49

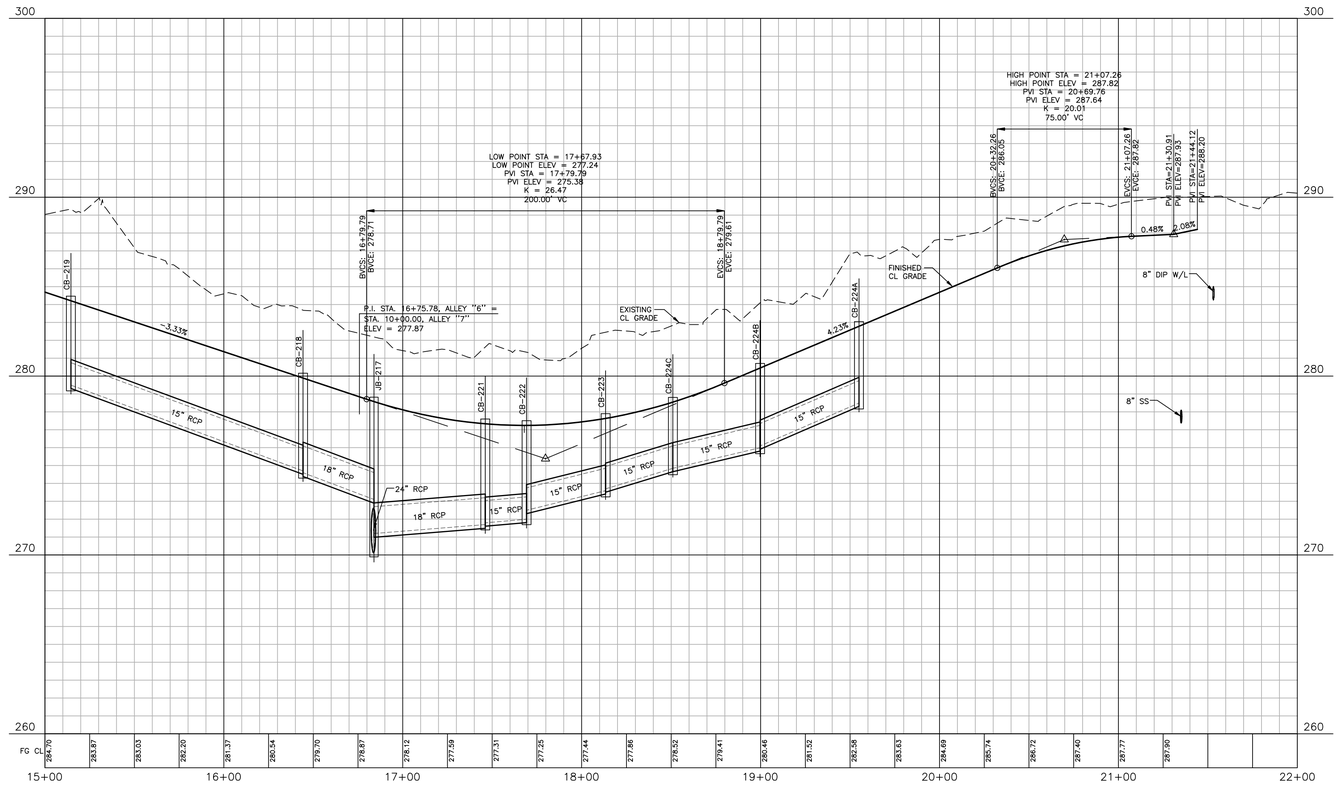
JB-217
STA 16+83.91
RIM=278.82
INV IN=273.10 (CB-218)
INV IN=271.20 (CB-221)
INV IN=270.30 (DI-220)
INV OUT=270.10



NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

ALLEY "6"



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Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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Durham, NC 27713

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CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 NICHOLAS D. WILLIAMSON

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

PLAN INFORMATION

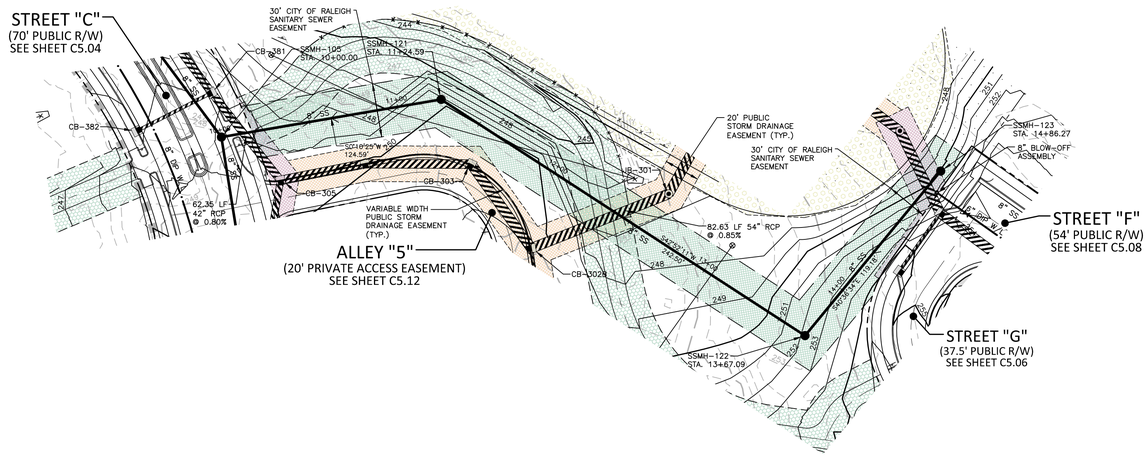
PROJECT NO.	LEN24015
FILENAME	LEN24015-P3
CHECKED BY	NDW
DRAWN BY	KWH
SCALE	1" = 40'/1" = 4'
DATE	11. 14. 2025

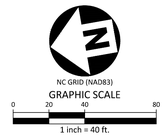
PLAN AND PROFILE
ALLEY "6", STA. 15+00 THRU STA. 22+00

C5.15

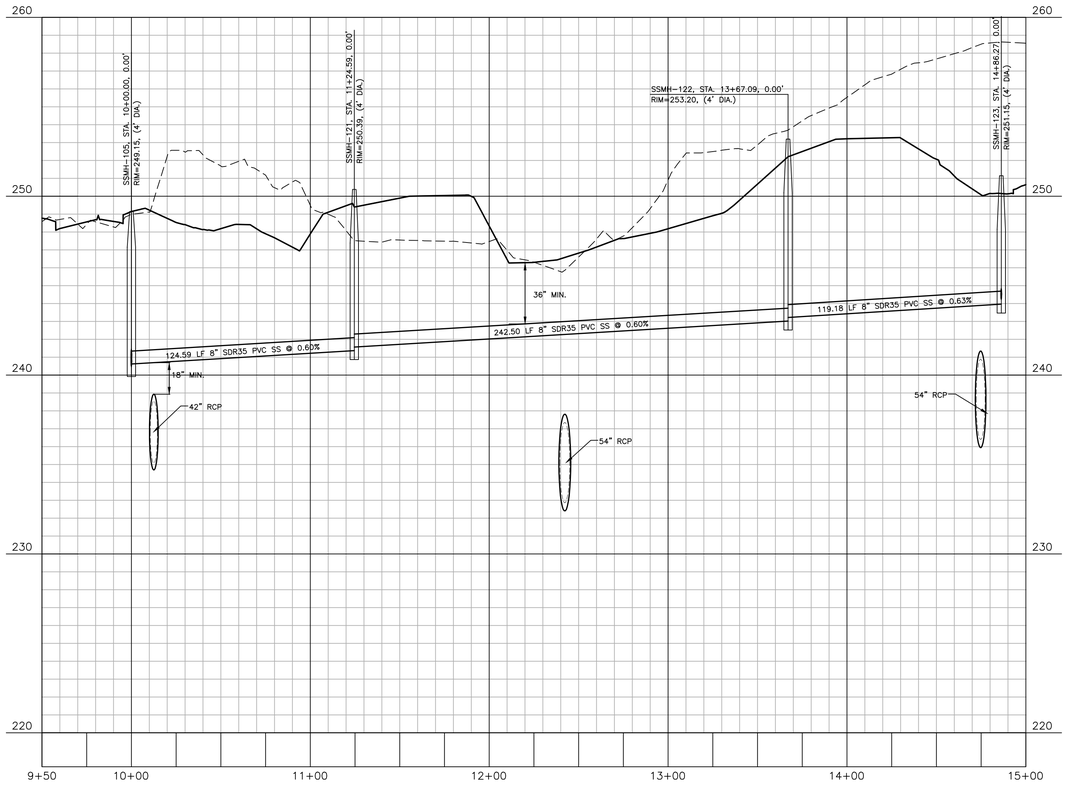
X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawings\LEN24015-P3.dwg, 2/20/2026 1:46:16 PM, Kevin Hughes

PIPE MATERIAL FOR SEWER:	
<12'	SDR 35 PVC
12'-20'	SDR 26 PVC
>20'	DIP





SS OUTFALL "A"



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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 THOMAS D. WILLIAMSON

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

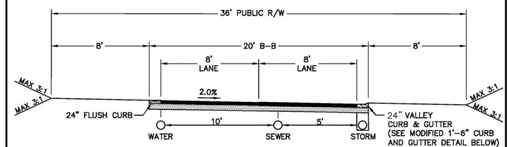
PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-P4
CHECKED BY	NDW
DRAWN BY	KWH
SCALE	1" = 40'/1" = 4'
DATE	11. 14. 2025

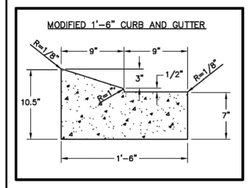
PLAN AND PROFILE
SS O/F "A", STA. 9+50 THRU STA. 15+00

C5.16

X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawings\LEN24015-P4.dwg, 2/20/2026 1:46:31 PM, Kevin Hughes



TYPICAL UTILITY ALLEY
(36' R/W, 20' B-B)



MINIMUM PAVEMENT DESIGN:

BITUMINOUS SURFACE COURSE: 1 1/2" S9.5B
INTERMEDIATE COURSE: 2 1/2" I 19.0B
BASE COURSE: 8" ABC

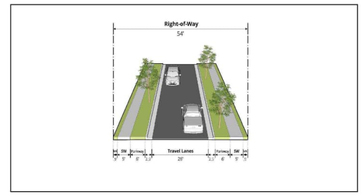
STREET FEATURES:

STREET WIDTH 16 FT. MINIMUM
REQUIRES 36 FT. OF RIGHT-OF-WAY
AVERAGE SPEED 10 MPH

REVISIONS	
DATE	DESCRIPTION

(ALLEY "10")

TOWN OF KNIGHTDALE STANDARD DETAILS	PUBLIC ALLEY SECTION	1 of 1 STD. NO. 3.01-2



NO SCALE

MINIMUM PAVEMENT DESIGN:

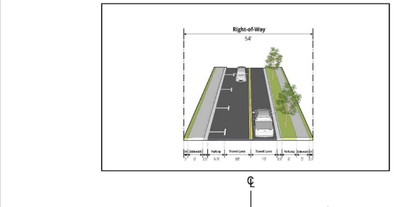
BITUMINOUS SURFACE COURSE: 1 1/2" S 9.5B
INTERMEDIATE COURSE: 2 1/2" I 19.0B
BASE COURSE: 8" ABC

STREET FEATURES:

FLEXIBLE STREET DESIGN
COORDINATE STREET DESIGN ELEMENTS WITH TOWN STAFF
STREET WIDTH OF 20 FT. FOR ONE-WAY
STREET WIDTH OF 31 FT. FOR TWO-WAY
CURB & GUTTER
INFORMAL PARKING – ONE SIDE ONLY
PARKWAY – 6 FT. ON EACH SIDE
SIDEWALK – 5 FT. ON EACH SIDE
UTILITY STRIP – 0.5 FT. ON EACH SIDE
REQUIRES 47 FT. OF RIGHT-OF-WAY FOR ONE-WAY
REQUIRES 54 FT. OF RIGHT-OF-WAY FOR TWO-WAY
UTILITY LOCATION UNDERGROUND
AVERAGE SPEED 20 MPH
STREET TREES LOCATED IN PARKWAY

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	LOCAL STREET - 2 LANES SIDEWALKS	STD. NO. 3.02-1



NO SCALE

MINIMUM PAVEMENT DESIGN:

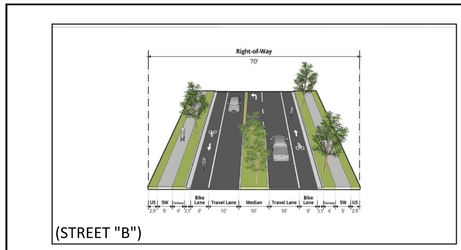
BITUMINOUS SURFACE COURSE: 1 1/2" S 9.5B
INTERMEDIATE COURSE: 2 1/2" I 19.0B
BASE COURSE: 8" ABC

STREET FEATURES:

FLEXIBLE STREET DESIGN
COORDINATE STREET DESIGN ELEMENTS WITH TOWN STAFF
TRAVEL LANES OF 10 FT.
CURB & GUTTER
STRIPED PARALLEL PARKING – ONE SIDE ONLY
PARKWAY – 6 FT. ON ONE SIDE
SIDEWALK – 6 FT. ON PARKING SIDE; 5 FT. ON OPPOSING SIDE
REQUIRES 54 FT. OF RIGHT-OF-WAY
UTILITY LOCATION UNDERGROUND
AVERAGE SPEED 20 MPH
STREET TREES LOCATED IN PARKWAY
STREET TREES LOCATED ON PARKING SIDE OF STREET WILL BE PLACED IN CURB BULB OUT OR BACK OF SIDEWALK

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	LOCAL STREET - ON STREET PARKING ONE SIDE ONLY	STD. NO. 3.02-2



NO SCALE

MINIMUM PAVEMENT DESIGN:

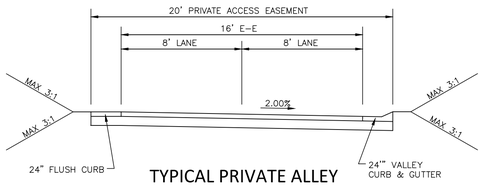
BITUMINOUS SURFACE COURSE: 1 1/2" S 9.5B
INTERMEDIATE COURSE: 2 1/2" I 19.0B
BASE COURSE: 8" ABC

STREET FEATURES:

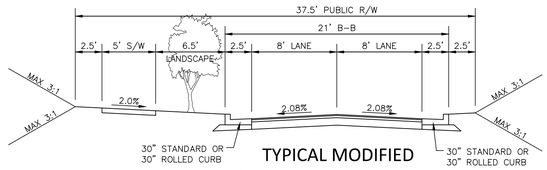
MEDIAN OF 10 FT.
TRAVEL LANES OF 10 FT.
CURB & GUTTER
BIKE LANE – 6 FT. ON EACH SIDE
PARKWAY – 4 FT. ON EACH SIDE
SIDEWALKS – 5 FT. ON EACH SIDE
REQUIRES 70 FT. OF RIGHT-OF-WAY
UTILITY LOCATION UNDERGROUND OR ALLEY
AVERAGE SPEED 20–25 MPH
STREET TREES LOCATED IN PARKWAY
UTILITY LOCATION BEHIND CURB ON NCDOT FACILITIES
BICYCLE FACILITY PAVEMENT MARKINGS SHALL ADHERE TO MUTCD STANDARDS

REVISIONS	
DATE	DESCRIPTION

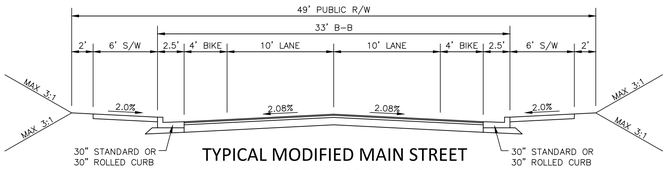
TOWN OF KNIGHTDALE STANDARD DETAILS	MAIN STREET - 3 LANES BIKE LANES	STD. NO. 3.03



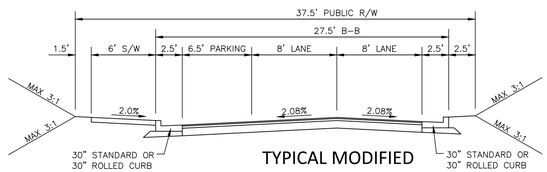
TYPICAL PRIVATE ALLEY
(20' PRIVATE ACCESS EASEMENT, 20' B-B)
(APPLIED AT ALLEY "1" - "9")



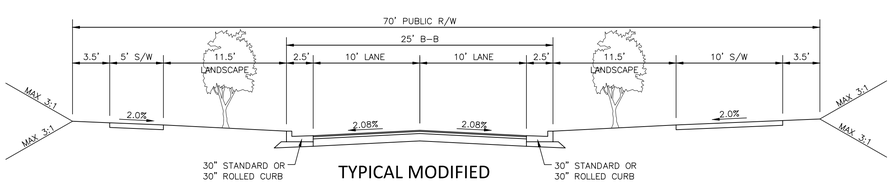
TYPICAL MODIFIED
ONE-WAY LOCAL STREET*
(37.5' R/W, 21' B-B)
(APPLIED AT END OF STREET "F")



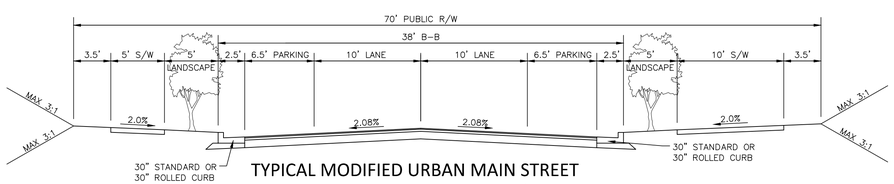
TYPICAL MODIFIED MAIN STREET
AT STREAM CROSSING
(49' R/W, 33' B-B)
(APPLIED TO STREET "B")



TYPICAL MODIFIED
ONE-WAY LOCAL STREET
WITH PARKING ON ONE-SIDE
(37.5' R/W, 27.5' B-B)
(APPLIED AT END OF STREET "F")



TYPICAL MODIFIED
URBAN MAIN STREET*
(70' R/W, 25' B-B)
(STREET "A" - WITHOUT PARKING)



TYPICAL MODIFIED URBAN MAIN STREET
WITH PARKING BOTH SIDES*
(70' R/W, 38' B-B)
(STREET "A" - WITH PARKING)

*MODIFIED URBAN MAIN STREET WILL HAVE A GRASSED PLANTING AREA WITH STREET TREES

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
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license number: C-0293, C-187

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1100 PERIMETER PARK DRIVE, SUITE 112
MORRISVILLE, NORTH CAROLINA 27560
CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 NICHOLAS D. WILLIAMSON — NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
6		

PLAN INFORMATION

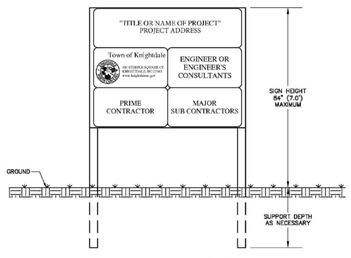
PROJECT NO.	LEN24015
FILENAME	LEN24015-D1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	N.T.S.
DATE	11. 14. 2025

SHEET

TYPICAL SECTIONS AND SITE DETAILS

C8.00

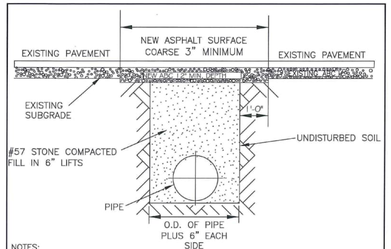
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* TOTAL SIGN AREA = 32 SF/SIDE (MAXIMUM)

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	PROJECT IDENTIFICATION SIGN	STD. NO. 2.01

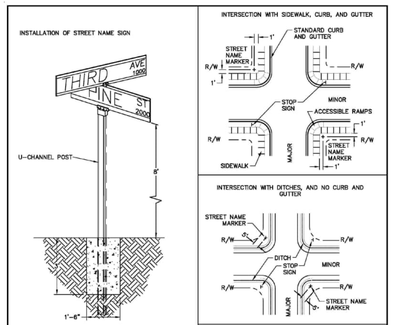


NOTES:

1. THE PAVEMENT CUT SHALL BE DEFINED BY A STRAIGHT EDGE AND CUT WITH AN APPROVED SAW CUT MACHINE.
2. THE TRENCH SUBGRADE MATERIAL SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED TO A DENSITY OF AT LEAST 95% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY NCDOT.
3. THE FINAL 1" OF FILL SHALL CONSIST OF ABC MATERIAL COMPACTED TO A DENSITY EQUAL TO 100% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-80 AS MODIFIED BY NCDOT.
4. THE ENTIRE THICKNESS/ VERTICAL EDGE OF CUT SHALL BE TACKED.
5. THE SAME DEPTH OF PAVEMENT MATERIAL WHICH EXISTS SHALL BE REINSTALLED, BUT IN NO CASE SHALL THE ASPHALT BE LESS THAN 3" THICK.
6. THE ASPHALT PAVEMENT MATERIAL SHALL BE INSTALLED AND COMPACTED THOROUGHLY WITH A SMOOTH DRUM ROLLER TO ACHIEVE A SMOOTH LEVEL PATCH.
7. NO HAND PATCHING ALLOWED.
8. PAVEMENT CUTS WITHIN NCDOT ROW SHALL CONFORM TO THE APPROVED ON SITE ENCROACHMENT PERMIT.
9. MINIMUM PATCH WIDTH TO BE WIDTH OF THE ROADWAY.
10. ANY EXISTING PAVEMENT MARKINGS DISTURBED BY WORK SHALL BE REPLACED.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	STANDARD ASPHALT PAVEMENT PATCH DETAIL	STD. NO. 3.14

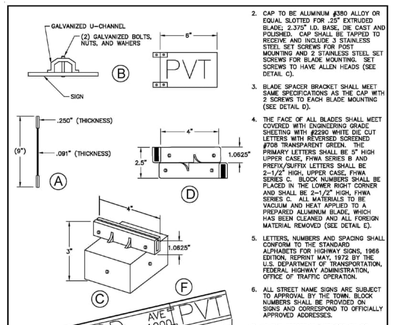


NOTES:

1. TWO STREET NAME MARKERS ARE REQUIRED IF THE MAJOR STREET HAS 3 OR MORE LANES.
2. ANY VARIANCE FROM THIS STANDARD MUST BE APPROVED BY THE TOWN OF KNIGHTDALE.
3. ALL DECORATIVE SIGNS MUST BE REVIEWED AND APPROVED BY THE TOWN.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	STREET NAME SIGN INSTALLATION LOCATIONS	STD. NO. 3.16-1



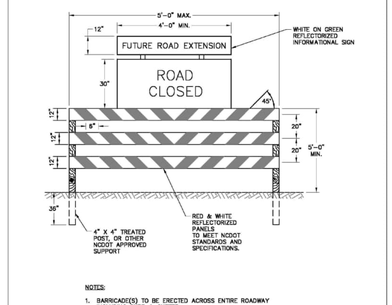
2. CAP TO BE ALUMINUM #380 ALLOY OR EQUAL SLOTTED FOR .125" EXTRUDED BLADE; 2.375" I.D. BASE, DIE CAST AND POLISHED. CAP SHALL BE TAPPED TO RECEIVE AND INCLUDE 3 STAINLESS STEEL SET SCREWS FOR POST MOUNTING AND 2 STAINLESS STEEL SET SCREWS FOR BLADE MOUNTING. SET SCREWS TO HAVE ALLEN HEADS (SEE DETAIL C).
3. BLADE SPACER BRACKET SHALL MEET SAME SPECIFICATIONS AS THE CAP WITH 2 SCREWS TO EACH BLADE MOUNTING (SEE DETAIL D).
4. THE FACE OF ALL BLADES SHALL MEET COVERED WITH ENGINEERING GRADE SHEETING WITH #2290 WHITE DIE CUT LETTERS WITH REVERSED SCREENED #708 TRANSPARENT GREEN. THE PRIMARY LETTERS SHALL BE 5" HIGH UPPER CASE, FHWA SERIES B AND PREFIX/SUFFIX LETTERS SHALL BE 2-1/2" HIGH, UPPER CASE, FHWA SERIES C. BLOCK NUMBERS SHALL BE PLACED IN THE LOWER RIGHT CORNER AND SHALL BE 2-1/2" HIGH, FHWA SERIES C. ALL MATERIALS TO BE VACUUM AND HEAT APPLIED TO A PREPARED ALUMINUM BLADE, WHICH HAS BEEN CLEANED AND ALL FOREIGN MATERIAL REMOVED (SEE DETAIL E).
5. LETTERS, NUMBERS AND SPACING SHALL CONFORM TO THE STANDARD ALPHABETS FOR HIGHWAY SIGNS, 1965 EDITION, REPRINT MAY, 1972 BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION, OFFICE OF TRAFFIC OPERATION.
6. ALL STREET NAME SIGNS ARE SUBJECT TO APPROVAL BY THE TOWN. BLOCK NUMBERS SHALL BE PROVIDED ON SIGNS AS CORRESPOND TO OFFICIALLY APPROVED ADDRESSES.
7. IF THE STREET IS INTENDED TO BE PRIVATE, A SUPPLEMENTAL PLATE IS REQUIRED. THE SUPPLEMENTAL PLATE MAY BE ATTACHED TO THE SIGN OR AN EXTENDED BLADE WITH BLACK ON YELLOW SHEETING MAY BE USED. THE SIGN SHALL HAVE BLACK LETTERS THAT SHOW PVT TO STAND FOR PRIVATE. THE LETTERS SHALL BE 2-1/2" HIGH, FHWA SERIES C. FHWA SERIES C. ON BACKGROUND OF YELLOW ENGINEERING GRADE SHEETING. (SEE DETAIL F).
8. ON ALL ROADWAYS EXCEPT STREETS WITH STANDARD CURB AND GUTTER AND SPEED LIMITS EQUAL TO OR LESS THAN 25 MPH, ALL SIGNS WITHIN CLEAR ZONE SHALL BE OF A BREAKAWAY DESIGN THAT COMPLIES WITH THE LATEST EDITION OF AASHTO MANUAL FOR ASSESSING SAFETY HARDWARE. (MASHAND NCHRP REPORT 350.

NOTES:

1. BLADES SHALL BE EXTRUDED ALUMINUM 6063T5 OR 6063T6 ALLOY .080" THICK. POST SHALL BE 10'-0" IN LENGTH, 3 LB. STEEL U-CHANNEL SUPPORTS PER NCDOT STD. 1064-1(B).

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	STREET NAME SIGN	STD. NO. 3.16-2

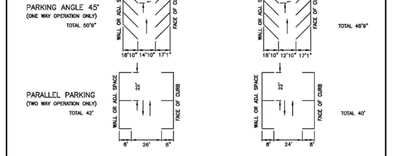


NOTES:

1. BARRICADE(S) TO BE ERECTED ACROSS ENTIRE ROADWAY INCLUDING CURB & GUTTER.
2. ADVANCE WARNING SIGN W14-1 (DEAD END) SHALL BE PLACED JUST AFTER LAST INTERSECTING STREET.
3. MARKINGS FOR BARRICADE RAILS SHALL BE REFLECTIVE AND ALTERNATE RED AND WHITE STRIPS.
4. "ROAD CLOSED" SIGN SHALL MEET SPECIFICATIONS OF M.U.T.C.D R11-2 AND BE REQUIRED ATOP EACH BARRICADE USED.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	TEMPORARY BARRICADE FOR DEAD END ROADS	STD. NO. 3.18

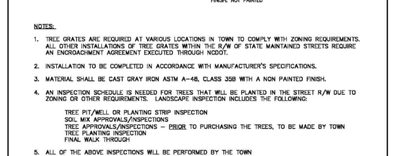


NOTE:

1. FOR ACCESSIBLE PARKING STANDARDS SEE TOWN UNIFIED DEVELOPMENT ORDINANCE.
2. PAVEMENT MARKINGS SHALL BE 4" WHITE PAINT TO TOWN STANDARDS.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	PARKING STANDARDS	STD. NO. 3.20



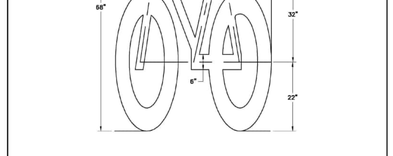
NOTE: MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B FINISH: NOT PAINTED

NOTES:

1. TREE GRATES ARE REQUIRED AT VARIOUS LOCATIONS IN TOWN TO COMPLY WITH ZONING REQUIREMENTS. ALL OTHER INSTALLATIONS OF TREE GRATES WITHIN THE R/W OF STATE MAINTAINED STREETS REQUIRE AN ENCROACHMENT AGREEMENT EXECUTED THROUGH NCDOT.
2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
3. MATERIAL SHALL BE CAST GRAY IRON ASTM A-48, CLASS 35B WITH A NON PAINTED FINISH.
4. AN INSPECTION SCHEDULE IS NEEDED FOR TREES THAT WILL BE PLANTED IN THE STREET R/W DUE TO ZONING OR OTHER REQUIREMENTS. LANDSCAPE INSPECTION INCLUDES THE FOLLOWING:
   - TREE PIT/WELL OR PLANTING STRIP INSPECTION
   - SOIL MIX APPROVALS/INSPECTIONS
   - TREE APPROVALS/INSPECTIONS – PRIOR TO PURCHASING THE TREES, TO BE MADE BY TOWN
   - TREE PLANTING INSPECTION
   - FINAL WALK THROUGH
5. ALL OF THE ABOVE INSPECTIONS WILL BE PERFORMED BY THE TOWN

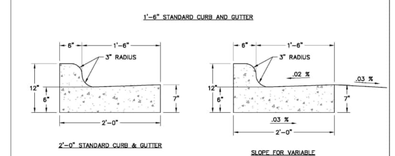
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	TREE GRATE DETAIL	STD. NO. 3.22



REVISIONS	
DATE	DESCRIPTION

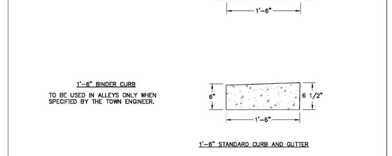
TOWN OF KNIGHTDALE STANDARD DETAILS	BICYCLE SHARED LANE MARKER	STD. NO. 3.27



REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	CURB AND GUTTER	STD. NO. 4.01

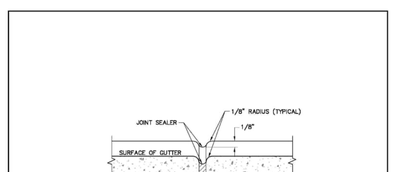
1 of 3



REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	CURB AND GUTTER	STD. NO. 4.01

2 of 3



TRANSVERSE EXPANSION JOINT

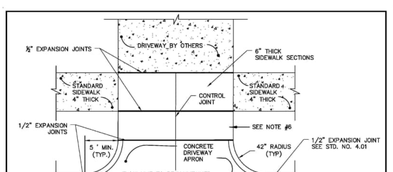
NOTES:

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

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	CURB AND GUTTER	STD. NO. 4.01

3 of 3

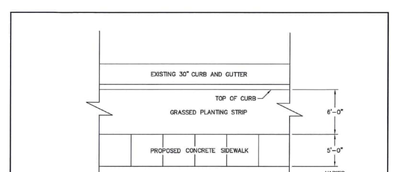


NOTES:

1. RESIDENTIAL DRIVEWAYS TO BE 12' TO 18' WIDE AT RIGHT-OF-WAY.
2. COMMERCIAL DRIVEWAYS TO BE A MAXIMUM OF 36' WIDE AT RIGHT-OF-WAY.
3. CONCRETE SHALL BE 3000 P.S.I.
4. CONTROL JOINTS NOT TO EXCEED 10' ON CENTER.
5. CURB RADIUS SHALL NOT RISE MORE THAN 1 (ONE) INCH.
6. IF THE DRIVEWAY SECTION BETWEEN THE SIDEWALK AND THE DRIVEWAY APRON IS 18" OR LESS THE SIDEWALK WILL BE WIDENED TO THE APRON AND AN EXPANSION JOINT ELIMINATED.
7. DRIVEWAY SHALL BE A MINIMUM OF 2 FEET FROM PROPERTY LINES.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	STANDARD DRIVEWAY APRON	STD. NO. 4.03



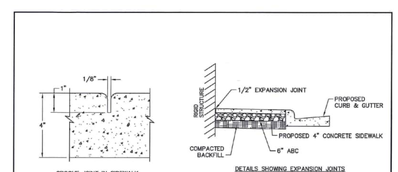
NOTES:

1. TRANSVERSE EXPANSION JOINTS TO BE A MAXIMUM OF 50 FEET APART.
2. CONTROL JOINTS TO BE AT 5 FEET O.C.
3. ALL CONCRETE TO BE FINISHED WITH CURING COMPOUND.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	CONCRETE SIDEWALKS	STD. NO. 4.04-1

1 of 2



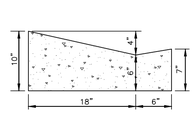
NOTES:

1. A GROOVE JOINT 1" DEEP WITH 1/8" RADII SHALL BE REQUIRED IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 40' INTERVALS NOT TO EXCEED 50' AND MATCHING EXPANSION/CONSTRUCTION JOINT IN ADJACENT CURB. A SEALED 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.
2. SIDEWALK AT DRIVEWAY ENTRANCES TO BE 6" THICK.
3. WIDTH OF SIDEWALK SHALL CORRESPOND TO STREET CROSS SECTION BUT SHALL BE 5' AT A MINIMUM.
4. SIDEWALK ADJACENT TO CURB AND GUTTER IN PARKING LOT OR ALONG STREET SHALL BE 6' WIDE AT A MINIMUM.
5. SIDEWALK TO BE POURED TO END OF RADIUS AT INTERSECTING STREETS.
6. CONCRETE COMPRESSIVE STRENGTH SHALL BE 3600 PSI IN 28 DAYS.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	CONCRETE SIDEWALKS	STD. NO. 4.04-2

2 of 2



NOTES:

1. 10' MAXIMUM BETWEEN DUMMY JOINTS. 15' MAXIMUM BETWEEN DUMMY JOINTS ON MACHINE POURS.
2. 1/2" EXPANSION JOINT EVERY 50'.
3. 3000 PSI CONCRETE MINIMUM, 4" SLUMP MAXIMUM.
4. LIQUID MEMBRANE CURING COMPOUND SHALL MEET THE REQUIREMENTS OF SECTION 1026-2 OF NCDOT STANDARDS AND SPECIFICATIONS FOR ROADS AND STRUCTURES.
5. ALL CONSTRUCTION JOINTS SHALL BE FILLED WITH FILLER AND SEALER IN ACCORDANCE WITH NCDOT ROADWAY STANDARD DETAIL 846.01. THE JOINT MATERIAL SHALL CONFORM TO SECTION 1028-2 OF THE NCDOT STANDARDS AND SPECIFICATIONS FOR ROADS AND STRUCTURES.
6. REFER TO NCDOT DETAIL 846.01 FOR CURB AND GUTTER SUPERELEVATION RATES.

24" VALLEY TYPE GUTTER

N.T.S.

(USED ON ALLEY SECTIONS)

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By: _____ Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: _____ Date: _____
Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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Durham, NC 27713

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CLIENT

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PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 THOMAS D. WILLIAMSON — NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
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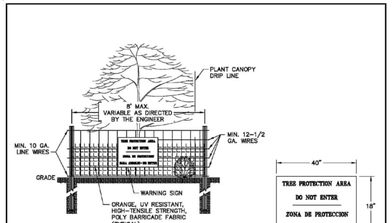
PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-D1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	N.T.S.
DATE	11. 14. 2025

SHEET

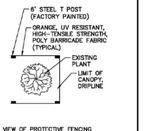
SITE DETAILS
C8.01

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PERFORATED PLASTIC FENCE DETAIL

NOTES:
1. REMOVE ALL BARRIERS UPON COMPLETION OF PROJECT.
2. LANDSCAPING PLANS SHALL SHOW LOCATIONS OF TREE PROTECTION FENCES.
3. ALL PLANTS TO BE SAVED SHALL BE PROTECTED BY FENCING AS SHOWN IN THIS DETAIL.
4. CONTRACTOR SHALL INSTALL FENCING PRIOR TO BEGINNING ANY CONSTRUCTION OR GRADING ACTIVITY.
5. ANY CONSTRUCTION WITHIN OR FOR INSPECTION AND APPROVAL OF PROTECTIVE FENCING PRIOR TO BEGINNING ANY CONSTRUCTION OR GRADING.
6. PROTECTIVE FENCING SHALL BE LOCATED 5' OUTSIDE DRIPLINE OF TREES AND 1' MINIMUM OUTSIDE SHRUBS OR OTHER PLANTS.

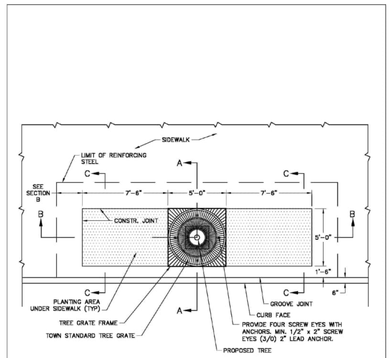


PLAN VIEW OF PROTECTIVE FENCING
AROUND SINGLE TREE- EXPAND AS NECESSARY

WARNING SIGN DETAIL

REVISIONS	
DATE	DESCRIPTION

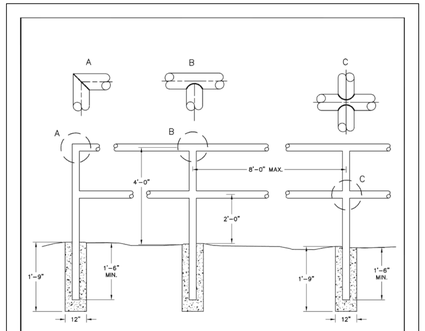
TOWN OF KNIGHTDALE STANDARD DETAILS	PLANT PROTECTIVE FENCING	STD. NO. 2.10-1



PLAN

REVISIONS	
DATE	DESCRIPTION

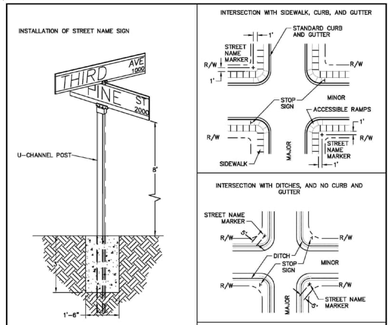
TOWN OF KNIGHTDALE STANDARD DETAILS	TREE PIT WITH GRATE IN SIDEWALK	1 of 4 STD. NO. 3.24



NOTES:
1. ALL CONCRETE TO BE 3600 PSI COMPRESSIVE STRENGTH.
2. TYPE OF PIPE TO BE USED IS 1-5/8" MAX. O.D. BLACK IRON, LOW CARBON PIPE.
3. ALL JOINTS TO HAVE A 1/2" FILLET WELD.
4. AFTER INSTALLATION, PAINT ASSEMBLY WITH BLACK ALL WEATHER ENAMEL.
5. TO BE USED AS REQUIRED BY THE TOWN ENGINEER.

REVISIONS	
DATE	DESCRIPTION

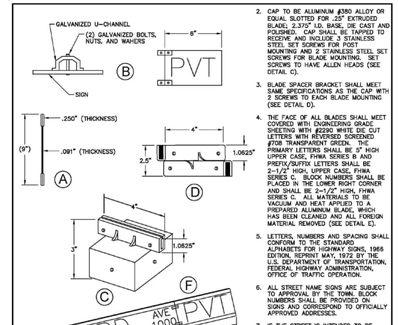
TOWN OF KNIGHTDALE STANDARD DETAILS	TYPICAL HANDRAIL	STD. NO. 4.13



NOTES:
1. TWO STREET NAME MARKERS ARE REQUIRED IF THE MAJOR STREET HAS 3 OR MORE LANES.
2. ANY VARIANCE FROM THIS STANDARD MUST BE APPROVED BY THE TOWN OF KNIGHTDALE.
3. ALL DECORATIVE SIGNS MUST BE REVIEWED AND APPROVED BY THE TOWN.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	STREET NAME SIGN INSTALLATION LOCATIONS	STD. NO. 3.16-1



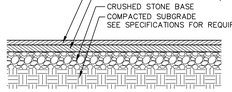
2. CAP TO BE ALUMINUM #380 ALLOY OR EQUAL SLOTTED FOR .25" EXTRUDED BLADE; 2.375" I.D. BASE, DIE CAST AND POLISHED. CAP SHALL BE TAPPED TO RECEIVE AND INCLUDE 3 STAINLESS STEEL SET SCREWS FOR POST MOUNTING AND 2 STAINLESS STEEL SET SCREWS FOR BLADE MOUNTING. SET SCREWS TO HAVE ALLEN HEADS (SEE DETAIL C).
3. BLADE SPACER BRACKET SHALL MEET SAME SPECIFICATIONS AS THE CAP WITH 3 SCREWS TO EACH BLADE MOUNTING (SEE DETAIL D).
4. THE FACE OF ALL BLADES SHALL MEET COVERED WITH ENGINEERING GRADE SHEETING WITH #2290 WHITE DIE CUT LETTERS WITH REVERSED SCREENED #708 TRANSPARENT GREEN. THE PRIMARY LETTERS SHALL BE 6" HIGH UPPER CASE, FHWA SERIES B AND PREFIX/SUFFIX LETTERS SHALL BE 2-1/2" HIGH, UPPER CASE, FHWA SERIES C. BLOCK NUMBERS SHALL BE PLACED IN THE LOWER RIGHT CORNER AND SHALL BE 2-1/2" HIGH, FHWA SERIES C. ALL MATERIALS TO BE VACUUM AND HEAT APPLIED TO A PREPARED ALUMINUM BLADE, WHICH HAS BEEN CLEANED AND ALL FOREIGN MATERIAL REMOVED (SEE SEE DETAIL E).
5. LETTERS, NUMBERS AND SPACING SHALL CONFORM TO THE STANDARD ALPHABETS FOR HIGHWAY SIGNS, 1965 EDITION, REPRINT MAY, 1972 BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION, OFFICE OF TRAFFIC OPERATION.
6. ALL STREET NAME SIGNS ARE SUBJECT TO APPROVAL BY THE TOWN. BLOCK NUMBERING SYSTEM TO BE PROVIDED ON SIGNS AND CORRESPOND TO OFFICIALLY APPROVED ADDRESS.
7. IF THE STREET IS INTENDED TO BE PRIVATE, A SUPPLEMENTAL PLATE IS REQUIRED. THE SUPPLEMENTAL PLATE MAY BE ATTACHED TO THE SIGN OR AN EXTENDED BLADE WITH BLACK ON YELLOW SHEETING MAY BE USED. THE SIGN SHALL HAVE BLACK LETTERS THAT SHOW PVT TO STAND FOR PRIVATE. THE LETTERS SHALL BE 2-1/2" HIGH, UPPER CASE, FHWA SERIES C ON THE BACKGROUND OF YELLOW ENGINEERING GRADE SHEETING. (SEE DETAIL F).
8. ON ALL ROADWAYS EXCEPT STREETS WITH STANDARD CURB AND GUTTER AND SPEED LIMITS EQUAL TO OR LESS THAN 25 MPH, ALL SIGNS WITHIN CLEAR ZONE SHALL BE OF A BREAKAWAY DESIGN THAT COMPLIES WITH THE LATEST EDITION OF AASHTO MANUAL FOR ASSESSING SAFETY HARDWARE (WASHTAND NCHRP REPORT 350.

NOTES:
1. BLADES SHALL BE EXTRUDED ALUMINUM 6063T6 OR 6063T6 ALLOY .080" THICK. POST SHALL BE 12'-0" IN LENGTH, 3 LB. STEEL U-CHANNEL SUPPORTS PER NCDOT STD. 1084-1(B).

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	STREET NAME SIGN	STD. NO. 3.16-2

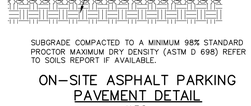
NOTE:
THE PAVEMENT SECTIONS SHOWN ARE PRELIMINARY. THE CONTRACTOR SHALL VERIFY PAVEMENT DESIGN WITH THE GEOTECHNICAL ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.



SUBGRADE COMPACTED TO A MINIMUM 98% STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D 698) REFER TO SOILS REPORT IF AVAILABLE.

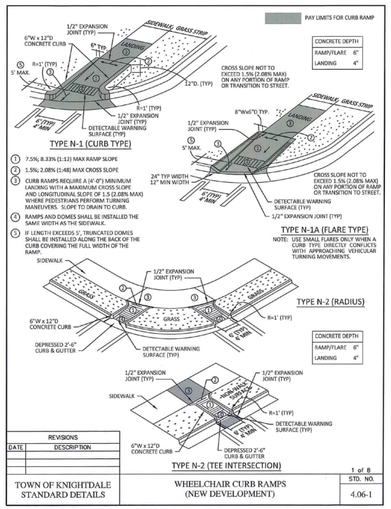
ON-SITE ASPHALT HEAVY DUTY
TRAFFIC PAVEMENT DETAIL
N.T.S.

NOTE:
THE PAVEMENT SECTIONS SHOWN ARE PRELIMINARY. THE CONTRACTOR SHALL VERIFY PAVEMENT DESIGN WITH THE GEOTECHNICAL ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.



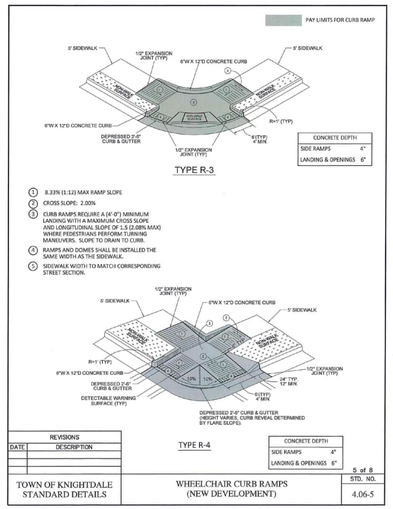
SUBGRADE COMPACTED TO A MINIMUM 98% STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D 698) REFER TO SOILS REPORT IF AVAILABLE.

ON-SITE ASPHALT PARKING
PAVEMENT DETAIL
N.T.S.



REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	WHEELCHAIR CURB RAMPS (NEW DEVELOPMENT)	1 of 8 STD. NO. 4.06-1



CONCRETE DEPTH	
SIDE RAMPS	4"
LANDING & OPENINGS	6"

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	WHEELCHAIR CURB RAMPS (NEW DEVELOPMENT)	5 of 8 STD. NO. 4.06-5

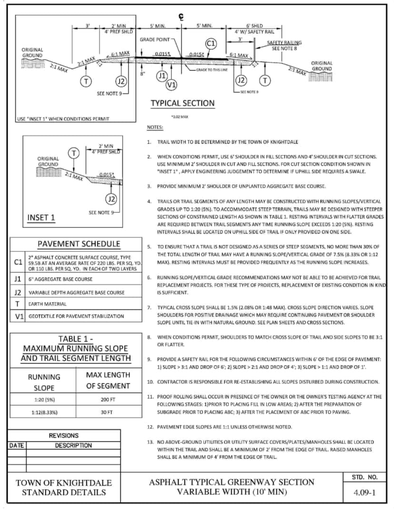


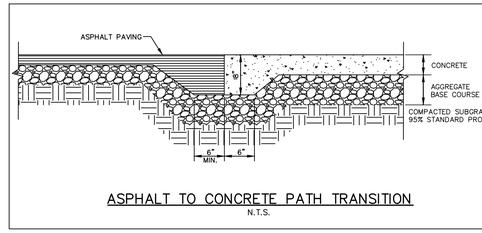
TABLE 1 - MAXIMUM RUNNING SLOPE AND TRAIL SEGMENT LENGTH

RUNNING SLOPE	MAX LENGTH OF SEGMENT
1:20 (5%)	200 FT
1:12(8.33%)	30 FT

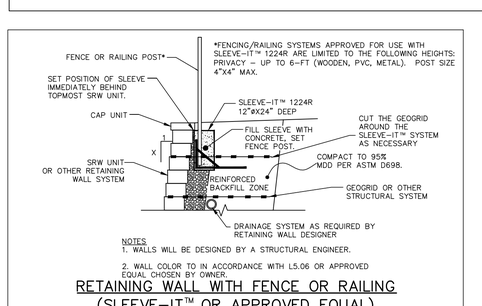
NOTES:
1. TRAIL WIDTH TO BE DETERMINED BY THE TOWN OF KNIGHTDALE
2. WHEN CONDITIONS PERMIT, USE 6' SHOULDER IN FILL SECTIONS AND 4' SHOULDER IN CUT SECTIONS. USE MINIMUM 2' SHOULDER IN CUT AND FILL SECTIONS, FOR CUT SECTION CONDITION SHOWN IN "INSET 1", APPLY ENGINEERING JUDGEMENT TO DETERMINE IF U-HALL SIDE REQUIRES A SWALE.
3. PROVIDE MINIMUM 3' SHOULDER OF UNPLANTED AGGREGATE BASE COURSE.
4. TRAILS OR TRAIL SEGMENTS OF ANY LENGTH MAY BE CONSTRUCTED WITH RUNNING SLOPES/VERTICAL GRADES UP TO 1:20 (5%). TO ACCOMMODATE STEEP TERRAIN, TRAILS MAY BE DESIGNED WITH STEEPER SECTIONS OF CONSTRAINED LENGTH AS SHOWN IN TABLE 1. RESTING INTERVALS WITH FLATTER GRADES ARE REQUIRED BETWEEN TRAIL SEGMENTS ANY TIME RUNNING SLOPE EXCEEDS 1:20 (5%). RESTING INTERVALS SHALL BE LOCATED ON UPHILL SIDE OF TRAIL IF ONLY PROVIDED ON ONE SIDE.
5. TO ENSURE THAT A TRAIL IS NOT DESIGNED AS A SERIES OF STEEP SEGMENTS, NO MORE THAN 30% OF THE TOTAL LENGTH OF TRAIL MAY HAVE A RUNNING SLOPE/VERTICAL GRADE OF 7.5% (8.33% OR 1:12 MAX). RESTING INTERVALS MUST BE PROVIDED FREQUENTLY AS THE RUNNING SLOPE INCREASES.
6. RUNNING SLOPE/VERTICAL GRADE RECOMMENDATIONS MAY NOT BE ABLE TO BE ACHIEVED FOR TRAIL REPLACEMENT PROJECTS. FOR THESE TYPE OF PROJECTS, REPLACEMENT OF EXISTING CONDITION IN KIND IS SUFFICIENT.
7. TYPICAL CROSS SLOPE SHALL BE 1.5% (2.08% OR 1:48 MAX). CROSS SLOPE DIRECTION VARIES. SLOPE SHOULDERS FOR POSITIVE DRAINAGE WHICH MAY REQUIRE CONTINUING PAVEMENT OR SHOULDER SLOPE UNTIL TIE IN WITH NATURAL GROUND. SEE PLAN SHEETS AND CROSS SECTIONS.
8. WHEN CONDITIONS PERMIT, SHOULDERS TO MATCH CROSS SLOPE OF TRAIL AND SIDE SLOPES TO BE 3:1 OR FLATTER.
9. PROVIDE A SAFETY RAIL FOR THE FOLLOWING CIRCUMSTANCES WITHIN 6' OF THE EDGE OF PAVEMENT: 1) SLOPE > 3:1 AND DROP OF 6'; 2) SLOPE > 2:1 AND DROP OF 4'; 3) SLOPE > 1:1 AND DROP OF 1'.
10. CONTRACTOR IS RESPONSIBLE FOR RE-ESTABLISHING ALL SLOPES DISTURBED DURING CONSTRUCTION.
11. PROOF ROLLING SHALL OCCUR IN PRESENCE OF THE OWNER OR THE OWNER'S TESTING AGENCY AT THE FOLLOWING STAGES: 1)PRIOR TO PLACING FILL IN LOW AREAS; 2) AFTER THE PREPARATION OF SUBGRADE PRIOR TO PLACING ABC; 3) AFTER THE PLACEMENT OF ABC PRIOR TO PAVING.
12. PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.
13. NO ABOVE-GROUND UTILITIES OR UTILITY SURFACE COVERS/PLATES/MANHOLES SHALL BE LOCATED WITHIN THE TRAIL AND SHALL BE A MINIMUM OF 2' FROM THE EDGE OF TRAIL. RAISED MANHOLES SHALL BE A MINIMUM OF 4' FROM THE EDGE OF TRAIL.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	ASPHALT TYPICAL GREENWAY SECTION VARIABLE WIDTH (10' MIN)	STD. NO. 4.09-1



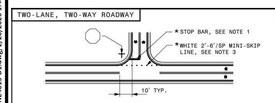
ASPHALT TO CONCRETE PATH TRANSITION
N.T.S.



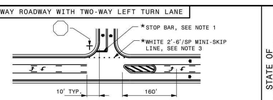
NOTES
1. WALLS WILL BE DESIGNED BY A STRUCTURAL ENGINEER.
2. WALL COLOR TO IN ACCORDANCE WITH L5.06 OR APPROVED EQUAL, CHOSEN BY OWNER.

RETAINING WALL WITH FENCE OR RAILING
(SLEEVE-IT™ OR APPROVED EQUAL)
N.T.S.

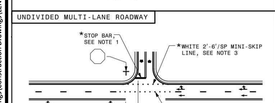
TWO-LANE, TWO-WAY ROADWAY



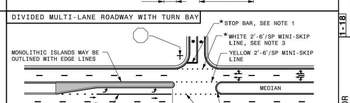
TWO-LANE, TWO-WAY ROADWAY WITH TWO-WAY LEFT TURN LANE



UNDIVIDED MULTI-LANE ROADWAY



DIVIDED MULTI-LANE ROADWAY WITH TURN BAY



DIVIDED MULTI-LANE ROADWAY WITH WIDE MEDIAN CROSSOVER



USE DOUBLE YELLOW CENTER LINE AND ARROW SYMBOLS IN MEDIAN CROSSOVER WHEN WIDTH OF MEDIAN EXCEEDS 30 FT, OTHERWISE THEY ARE NOT REQUIRED.

GENERAL NOTES:
1- PLACEMENT OF STOP BARS AT NON-SIGNALIZED INTERSECTIONS IS OPTIONAL AND USED WHERE IT IS IMPORTANT TO INDICATE THE POINT WHICH VEHICLES ARE REQUIRED TO STOP. PLACE STOP BARS NO LESS THAN 4 FEET AND NO MORE THAN 30 FEET FROM THE NEAREST EDGE OF THE INTERSECTING ROADWAY. USE 10 FEET AS THE TYPICAL SETBACK DISTANCE OR AS DIRECTED BY THE ENGINEER.

2- WINI-SKIP LANE LINE EXTENSIONS SHOULD BE USED AT INTERSECTIONS THAT HAVE REDUCED VISIBILITY CONDITIONS SUCH AS OFFSET, SKEWED, OR CURVED ROADWAYS.

3- MINI-SKIP EDGE LINE EXTENSIONS MAY BE PLACED THROUGH INTERSECTIONS AND MAJOR DRIVEWAYS.

4- REFER TO ROADWAY STANDARD DRAWINGS 1205.01, 1205.02, 1205.05, 1205.08 AND 1205.09 FOR ADDITIONAL PAVEMENT MARKING GUIDANCE.

LEGEND
STOP SIGN — STATIONARY SIGN
DIRECTION OF TRAFFIC FLOW — PAVEMENT MARKING SYMBOLS
OPTIONAL

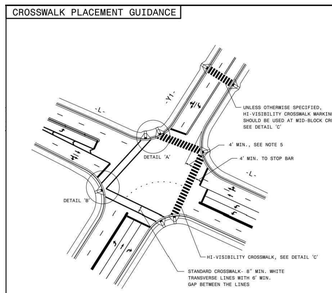
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

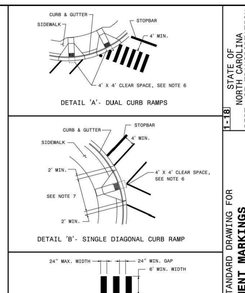
1.18

ROADWAY STANDARD DRAWING FOR **PAVEMENT MARKINGS** INTERSECTIONS

SHEET 2 OF 2
1205.04

CROSSWALK PLACEMENT GUIDANCE





GENERAL NOTES:
1- USE THE DETAILS ABOVE AND THE FOLLOWING NOTES FOR GUIDANCE IN PLACING CROSSWALK MARKINGS. REFER TO NCDOT ROADWAY STANDARD DRAWINGS, MUTCD AND ADA STANDARDS FOR ADDITIONAL GUIDANCE.

2- THE LOCATION AND TYPE OF CROSSWALK MARKINGS SHOWN ON THE ABOVE DETAILS ARE FOR REFERENCE ONLY. LOCATE CROSSWALK MARKINGS AS SHOWN ON THE PROJECT DETAIL SHEETS OR AS DIRECTED BY THE ENGINEER. THE CROSSWALK MARKING TYPE, STANDARD OR HI-VISIBILITY, SHALL BE INSTALLED AS SPECIFIED ON THE PROJECT DETAIL SHEETS OR AS DIRECTED BY THE ENGINEER.

3- THE STANDARD CROSSWALK IS TWO WHITE 6" MIN. TRANSVERSE LINES WITH A 6' MIN. GAP BETWEEN THE LINES. THE HI-VISIBILITY CROSSWALK IS WHITE 24" MAX. WIDE LONGITUDINAL LINES WITH 24" MIN. GAPS BETWEEN LINES, SEE DETAIL 'C'. HI-VISIBILITY CROSSWALKS SHOULD BE A MINIMUM OF 4' WIDE. CURB RAMPS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARES.

4- STOP BARS SHOULD BE PLACED A 4' MIN. IN ADVANCE OF NEAREST CROSSWALK LINE.

5- SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL IS 4' MIN.

6- BEYOND THE BOTTOM GRADE BREAK, A CLEAR SPACE OF 4' X 4' MIN. SHALL BE PROVIDED WITHIN THE MARKINGS.

7- SINGLE DIAGONAL CURB RAMPS WITH FLARED SIDES SHALL HAVE A SEGMENT OF CURB 2' MIN. LONG LOCATED ON EACH SIDE OF THE CURB RAMP AND WITHIN THE MARKED CROSSING, SEE DETAIL 'B'.

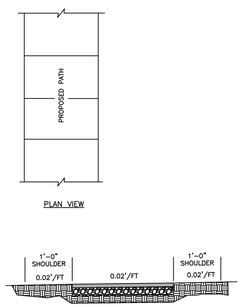
8- CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE TO THE LATEST NCDOT ROADWAY STANDARD DRAWINGS. CURB RAMPS THROUGH MEDIAN ISLANDS, SINGLE RAMPS AT DUAL CROSSWALKS OR LIMITED R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR DETAILS OR A SPECIAL DESIGN.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1.18

ROADWAY STANDARD DRAWING FOR **PAVEMENT MARKINGS** PEDESTRIAN CROSSWALKS

SHEET 1 OF 1
1205.07



PLAN VIEW

TYPICAL SECTION

NOTES:
1. CROSS SLOPE DIRECTION VARIES. SEE LAYOUT PLANS FOR DIRECTION OF SLOPE.
2. CONTRACTOR IS RESPONSIBLE FOR REESTABLISHING ALL SLOPES DISTURBED BY CONSTRUCTION.

HEAVY DUTY MULTI-USE PATH GREENWAY

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293, C-187

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CLIENT

LENNAR
1100 PERIMETER PARK DRIVE, SUITE 112
MORRISVILLE, NORTH CAROLINA 27560
CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
6		

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-D1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	N.T.S.
DATE	11. 14. 2025

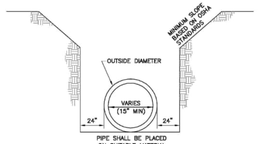
SHEET

SITE DETAILS
C8.02

X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawing\LEN24015-D1.dwg, 2/10/2026 1:46:47 PM, Kevin Hughes

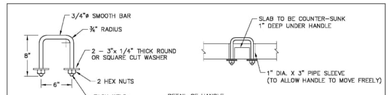
NOTES:

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

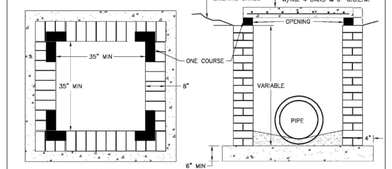


REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | TRENCH FOR STORM DRAIN PIPES | STD. NO. 5.02



DETAIL OF HANDLE

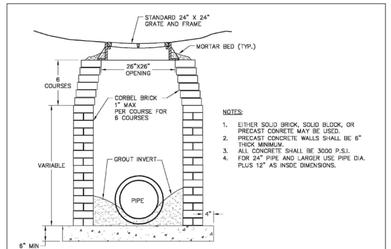


NOTES:

1. EITHER SOLID BRICK, SOLID BLOCK OR PRECAST CONCRETE MAY BE USED.
2. PRECAST CONCRETE WALLS SHALL BE 6" THICK MINIMUM.
3. ALL CONCRETE SHALL BE 3000 P.S.I.
4. FOR 24" PIPE AND LARGER USE PIPE DIA. PLUS 12" AS INSIDE DIMENSIONS.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | STANDARD YARD INLET WITH CONCRETE SLAB | STD. NO. 5.03

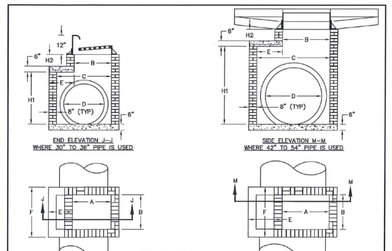


NOTES:

1. EITHER SOLID BRICK, SOLID BLOCK, OR PRECAST CONCRETE MAY BE USED.
2. PRECAST CONCRETE WALLS SHALL BE 6" THICK MINIMUM.
3. ALL CONCRETE SHALL BE 3000 P.S.I.
4. FOR 24" PIPE AND LARGER USE PIPE DIA. PLUS 12" AS INSIDE DIMENSIONS.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | STANDARD DROP INLET WITH GRATE AND FRAME | STD. NO. 5.04



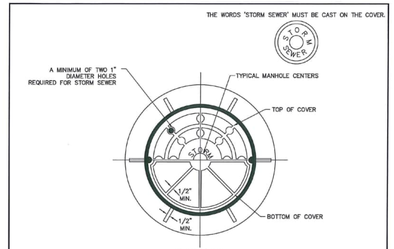
NOTES:

1. MORTAR JOINTS SHALL BE 1/2" THICK.
2. ALL CONCRETE SHALL BE 3000 P.S.I.
3. BASE SLABS SHALL BE FORMED PRIOR TO PLACING OF CONCRETE.
4. USE TYPE "A" GRATE AT SAG POINTS, OTHERWISE USE TYPE "B" OR "C" FOR THE APPROPRIATE FLOW DIRECTION.
5. MASONRY UNITS MAY BE JUMBO BRICK, CONCRETE BRICK, OR SOLID CONCRETE BLOCK.
6. ALL WALLS GREATER THAN 6' IN DEPTH SHALL BE CONSTRUCTED 12" THICK.

REVISIONS	
DATE	DESCRIPTION

1 of 4

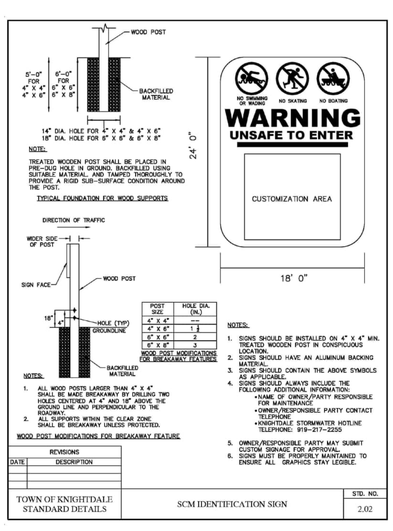
TOWN OF KNIGHTDALE STANDARD DETAILS | STANDARD CURB INLET BRICK BOX | STD. NO. 5.05-1



MINIMUM AVERAGE WEIGHT	
RING	160
COVER	120
TOTAL	310

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | STANDARD MANHOLE RING & COVER | STD. NO. 5.10



POST SIZE:	HOLE DIA. (IN.)
4" X 4"	1
4" X 6"	2
6" X 6"	3

WOOD POST MODIFICATIONS FOR BREAKAWAY FEATURE

NOTES:

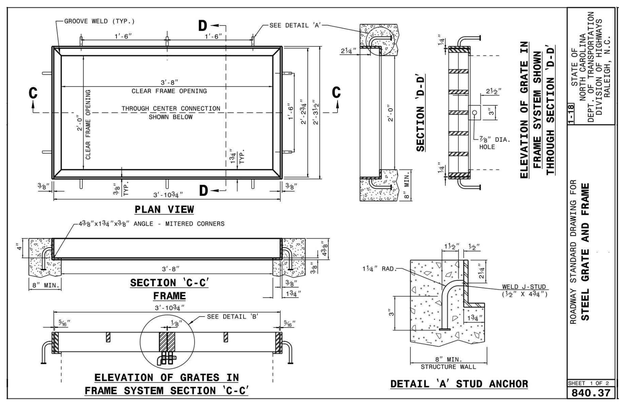
1. ALL WOOD POSTS LARGER THAN 4" X 4" SHALL BE MADE BREAKAWAY BY DRILLING TWO HOLES CENTERED AT 4" AND 16" ABOVE THE GROUND LINE AND PERPENDICULAR TO THE ROADWAY.
2. ALL SUPPORTS WITHIN THE CLEAR ZONE SHALL BE BREAKAWAY UNLESS PROTECTED.

WOOD POST MODIFICATIONS FOR BREAKAWAY FEATURE

1. SIGNS SHOULD BE INSTALLED ON 4" X 4" MIN. TREATED WOODEN POST IN CONSPICUOUS LOCATION.
2. SIGN SHOULD HAVE AN ALUMINUM BACKING MATERIAL.
3. SIGNS SHOULD CONTAIN THE ABOVE SYMBOLS AS APPLICABLE.
4. SIGNS SHOULD ALWAYS INCLUDE THE FOLLOWING ADDITIONAL INFORMATION:
   - NAME OF OWNER/PARTY RESPONSIBLE FOR MAINTENANCE
   - OWNER/RESPONSIBLE PARTY CONTACT TELEPHONE
   - KNIGHTDALE STORMWATER HOTLINE TELEPHONE: 919–217–2230
5. OWNER/RESPONSIBLE PARTY MAY SUBMIT CUSTOM SIGNAGE FOR APPROVAL.
6. SIGNS MUST BE PROPERLY MAINTAINED TO ENSURE ALL GRAPHICS STAY LEGIBLE.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | SCM IDENTIFICATION SIGN | STD. NO. 2.02

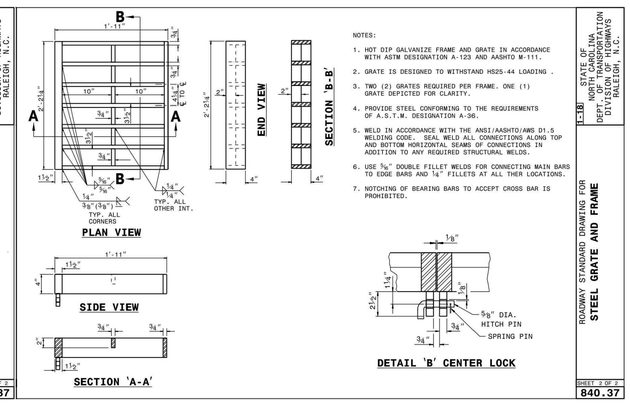


ROADWAY STANDARD DRAWING FOR STEEL GRATE AND FRAME

STATE OF NORTH CAROLINA DEPT. NO. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

SHEET 1 OF 2 | 840.37



NOTES:

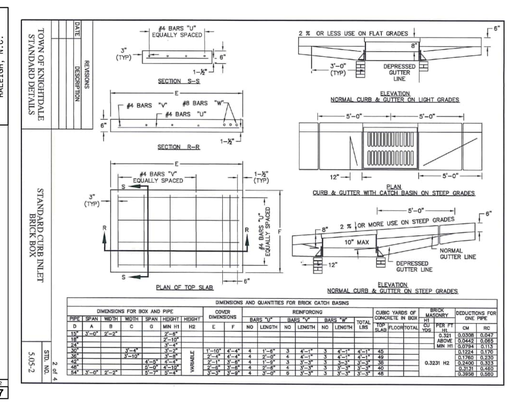
1. HOT DIP GALVANIZE FRAME AND GRATE IN ACCORDANCE WITH ASTM DESIGNATION A-123 AND AASHTO M-111.
2. GRATE IS DESIGNED TO WITHSTAND HS25-44 LOADING .
3. TWO (2) GRATES REQUIRED PER FRAME. ONE (1) GRATE DEPICTED FOR CLARITY.
4. PROVIDE STEEL CONFORMING TO THE REQUIREMENTS OF A.S.T.M. DESIGNATION A-36.
5. WELD IN ACCORDANCE WITH THE ANSI/AASHTO/AWS D1.5 WELDING CODE. SEAL WELD ALL CONNECTIONS ALONG TOP AND BOTTOM HORIZONTAL SEAMS OF CONNECTIONS IN ADDITION TO ANY REQUIRED STRUCTURAL WELDS.
6. USE ⅜" DOUBLE FILLET WELDS FOR CONNECTING MAIN BARS TO EDGE BARS AND ¼" FILLETS AT ALL THER LOCATIONS.
7. NOTCHING OF BEARING BARS TO ACCEPT CROSS BAR IS PROHIBITED.

ROADWAY STANDARD DRAWING FOR STEEL GRATE AND FRAME

STATE OF NORTH CAROLINA DEPT. NO. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

SHEET 2 OF 2 | 840.37

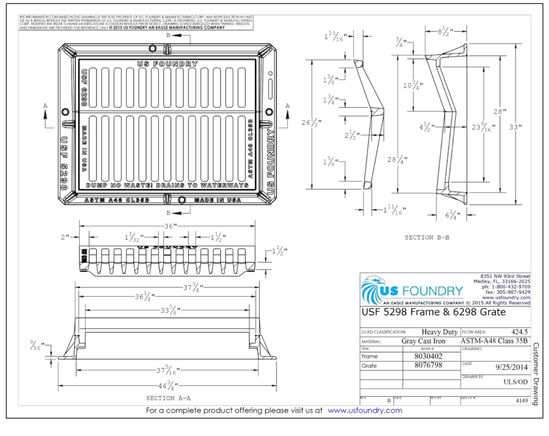


DIMENSIONS AND QUANTITIES FOR BRICK CATCH BASINS

DIMENSIONS FOR BOX AND PIPE						COVER DIMENSIONS	REINFORCING								CUBIC YARDS OF CONCRETE IN BOX		BRICK MASONRY		DEDUCTIONS FOR ONE PIPE	
PIPE	D	A	B	C	G	HEIGHT MIN	HEIGHT H2	BARS "U" E	F	NO	BARS "V" LENGTH	NO	BARS "W" LENGTH	NO	CONCRETE	TOTAL CONCRETE	CU YDS PER FT	TOTAL CU YDS	CM	RIC
18"	2'-0"	2'-0"	2'-0"			2'-0"											0.333	0.0308	0.0457	
24"						2'-0"											ABOVE	0.0442	0.0365	
30"						2'-0"											MIN 11	0.0764	0.1170	
36"	2'-6"	2'-6"	2'-6"			2'-0"												0.1024	0.1570	
42"	3'-0"	3'-0"	3'-0"			2'-0"	VARIABLE	1'-0"	4'-4"	4	1'-8"	3	4'-4"	3	4'-4"	48		0.1417	0.2170	
48"	3'-6"	3'-6"	3'-6"			2'-0"		1'-0"	5'-0"	4	2'-0"	3	5'-0"	3	5'-0"	48	0.333	0.1923	0.2950	
54"	4'-0"	4'-0"	4'-0"			2'-0"		1'-0"	5'-8"	4	2'-0"	3	5'-8"	3	5'-8"	48		0.2533	0.3883	
A	A'-0"	A'-0"	A'-0"			2'-0"		1'-0"	6'-4"	4	2'-0"	3	6'-4"	3	6'-4"	48		0.3292	0.4950	

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | STANDARD YARD INLET BRICK BOX | STD. NO. 5.05-2

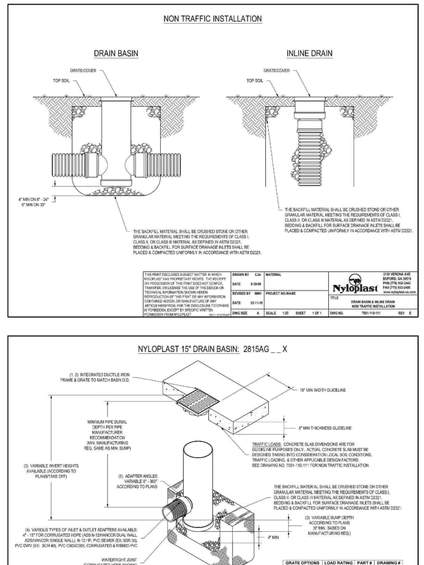


8351 NW 93rd Street
Medley, FL, 33166-2025
ph.: 1-800-437-9709
fax: 305-883-5426
www.usfoundry.com
AN EAGLE MANUFACTURING COMPANY

USF 5298 Frame & 6298 Grate

LOAD CLASSIFICATION	Heavy Duty	FLOW AREA	424.5
MATERIAL	Gray Cast Iron		ASTM-A48 Class 35B
	ITEM NO.	DRAWING	
Frame	8030402		
Grate	8076798	DATE	9/25/2014
		DESIGN BY	ULSOD
SCALE		SHEET	4149

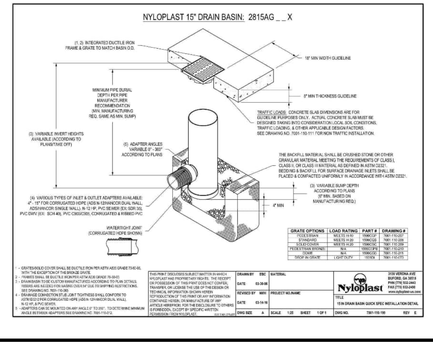
Customer Drawing



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DRAWN BY	ESC	MATERIAL	
DATE	03.09.06		
REVISED BY	MRR	PROJECT NO./NAME	
DATE	03.19.19		
DWG NO.	8	SCALE	1:20
		SHEET	1 OF 1

Nyloplast | 2150 VERONA AVE BUFFALO, NY 14207 (800) 9-NYLOPLAST (800) 969-5675 FAX (716) 852-0445 www.nyloplast-us.com
TITLE: DRAIN BASIN & INLINE DRAIN NON TRAFFIC INSTALLATION
DWG NO. 7001-110-151 REV 0



GRATE OPTIONS	LOAD RATING	PART #	DRAWING #
SOLID COVER	MEETS H-10	15MCSC	7001-110-155
STANDARD GRATE	MEETS H-20	15MCGR	7001-110-156
TWIST LOCK HINGED GRATE	N/A	15MCGRTL	7001-110-157
GRATE W/ LOCK	MEETS H-20	15MCGRLK	7001-110-158
SOLID W/ LOCK	MEETS H-20	15MCSCLK	7001-110-159

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DRAWN BY	ESC	MATERIAL	
DATE	03.09.06		
REVISED BY	MRR	PROJECT NO./NAME	
DATE	03.19.19		
DWG NO.	4	SCALE	1:40
		SHEET	1 OF 1

Nyloplast | 2150 VERONA AVE BUFFALO, NY 14207 (800) 9-NYLOPLAST (800) 969-5675 FAX (716) 852-0445 www.nyloplast-us.com
TITLE: 15-IN DRAIN BASIN QUICK SPEC INSTALLATION DETAIL
DWG NO. 7001-110-152 REV 0

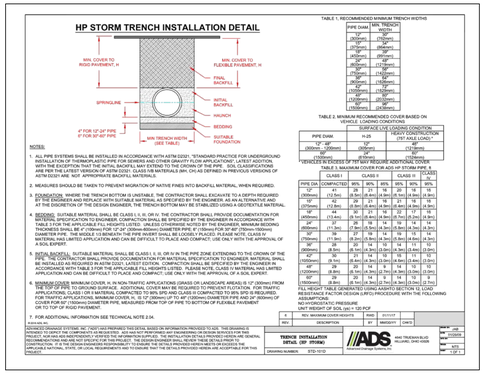


TABLE 1, RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM.	MIN. TRENCH WIDTH
12" (300mm)	1'-6" (1750mm)
15" (375mm)	1'-6" (1750mm)
18" (450mm)	1'-6" (1750mm)
24" (600mm)	2'-0" (2150mm)
30" (750mm)	2'-6" (2550mm)
36" (900mm)	3'-0" (2950mm)
42" (1050mm)	3'-6" (3350mm)
48" (1200mm)	4'-0" (3750mm)
54" (1350mm)	4'-6" (4150mm)
60" (1500mm)	5'-0" (4550mm)

TABLE 2, MINIMUM RECOMMENDED COVER BASED ON VEHICLE LOADING CONDITIONS

	SURFACE LIVE LOADING CONDITION	
PIPE DIAM.	H-20 (STANDARD AASHTO TRUCK LOADING)	H-25 (ONE LANE LOADED)
12" - 48" (300mm - 1200mm)	12" (300mm)	48" (1200mm)
54" - 60" (1350mm - 1500mm)	24" (600mm)	48" (1200mm)

*DENOTES DEPTH OF COVER FOR GROUND WATER CONDITIONS

TABLE 3, MAXIMUM COVER FOR ADS HP STORM PIPE *

PIPE DIA.	CLASS I COMPACTED	CLASS I	CLASS II	CLASS II (CCAD)
	95%	90%	95%	90%
12" (300mm)	35 (10.7m)	25 (7.6m)	16 (4.9m)	11 (3.4m)
15" (375mm)	42 (12.8m)	28 (8.5m)	21 (6.4m)	15 (4.6m)
18" (450mm)	44 (13.4m)	30 (9.1m)	21 (6.4m)	15 (4.6m)
24" (600mm)	35 (10.7m)	25 (7.6m)	16 (4.9m)	11 (3.4m)
30" (750mm)	36 (11m)	27 (8.2m)	18 (5.5m)	12 (3.7m)
36" (900mm)	36 (11m)	27 (8.2m)	18 (5.5m)	12 (3.7m)
42" (1050mm)	36 (11m)	27 (8.2m)	18 (5.5m)	12 (3.7m)
48" (1200mm)	36 (11m)	27 (8.2m)	18 (5.5m)	12 (3.7m)
54" (1350mm)	36 (11m)	27 (8.2m)	18 (5.5m)	12 (3.7m)
60" (1500mm)	36 (11m)	27 (8.2m)	18 (5.5m)	12 (3.7m)

NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS", AND IN ACCORDANCE WITH THE EXCEPTION THAT THE INITIAL BACKFILL MAY EXTEND TO THE CROWN OF THE PIPE. SOIL CLASSIFICATIONS ARE PER THE LATEST VERSION OF ASTM D2321. CLASS I/II MATERIALS (MIN. CH) AS DEFINED IN PREVIOUS VERSIONS OF ASTM D2321 ARE NOT APPROPRIATE BACKFILL MATERIALS.
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL WHEN REQUIRED.
3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER, AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II, OR IIIV. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATIONS TO ENGINEER. COMPACTION SHALL BE SPECIFIED BY THE ENGINEER IN ACCORDANCE WITH TABLE 3 FOR THE APPLICABLE FILL HEIGHTS LISTED. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS BELOW THE PIPE SHALL BE 4" (100mm) FOR 12"-24" (300mm-600mm) DIAMETER PIPE AND 6" (150mm) FOR 30"-60" (750mm-1500mm) DIAMETER PIPE. THE MIDDLE 1/3 BENEATH THE PIPE HAUNCH SHALL BE LOOSELY PLACED. PLEASE NOTE, CLASS IV MATERIAL HAS LIMITED APPLICATION AND CAN BE DIFFICULT TO PLACE AND COMPACT; USE ONLY WITH THE APPROVAL OF A SOIL EXPERT.
5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II, IIIV OR IV IN THE PIPE ZONE EXTENDING TO THE CROWN OF THE PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATIONS TO ENGINEER. COMPACTION SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION. COMPACTION SHALL BE SPECIFIED BY THE ENGINEER IN ACCORDANCE WITH TABLE 3 FOR THE APPLICABLE FILL HEIGHTS LISTED. PLEASE NOTE, CLASS IV MATERIAL HAS LIMITED APPLICATION AND CAN BE DIFFICULT TO PLACE AND COMPACT; USE ONLY WITH THE APPROVAL OF A SOIL EXPERT.
6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" (300mm) FROM THE TOP OF THE PIPE TO THE GROUND SURFACE. MINIMUM COVER, H, IN TRAFFIC APPLICATIONS IS 12" (300mm) FOR H-20 APPLICATIONS, CLASS I OR II MATERIAL COMPACTED TO 95% SPD AND CLASS III COMPACTED TO 95% SPD IS REQUIRED. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" (300mm) UP TO 48" (1200mm) DIAMETER PIPE AND 24" (600mm) OF COVER FOR 54" (1350mm) AND LARGER DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.
7. FOR ADDITIONAL INFORMATION SEE TECHNICAL NOTE 2.04.

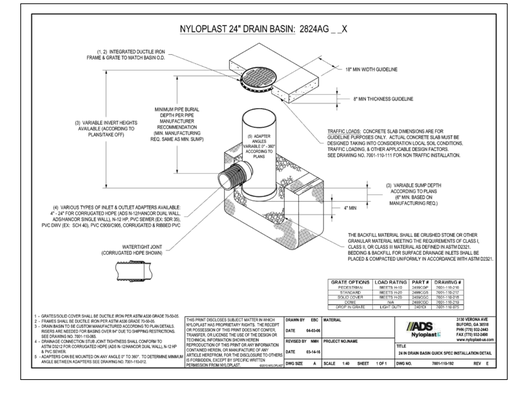
#	REV.	DESCRIPTION	DATE	INVERT	CHKD
1		REVISED MINIMUM HEIGHTS	5/11	MW/DOT	CHKD

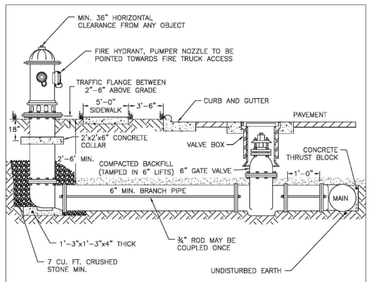
ENGINEERED SYSTEMS, INC. ("ADS") HAS PREPARED THIS DETAIL BASED ON INFORMATION PROVIDED TO ADS. THIS DRAWING IS INTENDED TO SUPPLY THE LIMITED INFO AVAILABLE AT THE TIME OF PREPARATION. ADS HAS NOT PERFORMED ANY ENGINEERING OR DESIGN SERVICES FOR THIS PROJECT. ADS MAKES NO REPRESENTATIONS OR WARRANTIES REGARDING THE ACCURACY OF THE INFORMATION CONTAINED HEREIN, THE RECOMMENDATIONS AND ARE NOT SPECIFIC FOR THIS PROJECT. THE DESIGN ENGINEER SHALL REVIEW THESE DETAILS PRIOR TO CONSTRUCTION TO DETERMINE APPLICABILITY TO THE PROJECT. THE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE APPLICABILITY OF THESE DETAILS TO THE PROJECT AND ENSURING COMPLIANCE WITH ALL APPLICABLE NATIONAL, STATE, OR LOCAL REQUIREMENTS AND TO ENSURE THAT THE DETAILS PROVIDED HEREIN ARE ACCEPTABLE FOR THE PROJECT.

DRAWING NUMBER:	STD-10122	DRAWN BY:	MW/DOT
		CHKD BY:	MW/DOT
		APVD BY:	MW/DOT
		Date:	MTS
		Scale:	1:20

TRENCH INSTALLATION DETAIL (HP STORM)

ADS TRUEFLOW PLUS ROLLERS, OHIO, USA

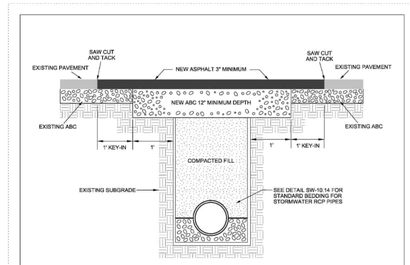

NYLOPLAST 24" DRAIN BASIN: 2824AG__X
(1, 2) INTEGRATED DUCTILE IRON FRAME & GRATE TO MATCH BASIN O.D.
18" MIN WIDTH GUIDELINE
4" MIN THICKNESS GUIDELINE
MINIMUM PIPE BURIAL DEPTH PER PIPE MANUFACTURER RECOMMENDATION (MIN. MANUFACTURING REQ. SAME AS MIN. SUMP)
(3) VARIABLE INVERT HEIGHTS AVAILABLE (ACCORDING TO PLANS/TYPE OFF)
(5) ADAPTER ANGLES (VARIABLE 0°..90° ACCORDING TO PLANS
TRAFFIC LOADS: CONCRETE SLAB DIMENSIONS ARE FOR GUIDELINE PURPOSES ONLY. ACTUAL CONCRETE SLAB MUST BE DESIGNED TAKING INTO CONSIDERATION LOCAL SOIL CONDITIONS, TRAFFIC LOADING, & OTHER APPLICABLE DESIGN FACTORS. SEE DRAWING NO. 7001-110-171 FOR NON TRAFFIC INSTALLATION.
(6) VARIOUS TYPES OF INLET & OUTLET ADAPTERS AVAILABLE: 4"..30" FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL, ADS/HANCOR SINGLE WALL) & 12 IN PVC SEWER (ES: SDR 35), PVC CSM35PA, CORRUGATED & RIBBED PVC
(3) VARIABLE SUMP D



NOTES:
1. FIRE HYDRANT SHALL BE AS MANUFACTURED: MUELLER, AMERICAN DARLING, KENNEDY OR CLOW.
2. BRANCH PIPE SHALL BE DUCTILE IRON AWWA C150.
3. 6" GATE VALVE SHALL BE AWWA C500 OPEN LEFT.
4. RODS AND BOLTS SHALL BE ¾" 316 STAINLESS STEEL.
5. FIRE HYDRANTS WILL BE INSTALLED IN TRUE VERTICAL POSITION.
6. RODS SHALL NOT BE COUPLED MORE THAN ONCE. IF THE LENGTH FROM THE VALVE TO THE HYDRANT EXCEEDS 20' THEN A MECHANICAL RESTRAINING GLAND WITH A REBAR CAGE SHALL BE INSTALLED NO MORE THAN 10' FROM HYDRANT AND POURED IN CONCRETE.
7. FIRE HYDRANTS TO BE LOCATED IN ROW OR 2.5 FOOT EASEMENT (ON ALL SIDES OF HYDRANT) FOOT EASEMENT ADJACENT TO ROW.
8. ANYTIME SITE WORK, CONSTRUCTION, ROAD WORK, OR ANY OTHER WORK CHANGES THE GRADE OF THE FIRE HYDRANT, THE PERSON RESPONSIBLE FOR THE WORK IS RESPONSIBLE FOR ADJUSTING THE FIRE HYDRANT TO STAY WITHIN COMPLIANCE.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 07/18/2024	NOT TO SCALE
	STANDARD FIRE HYDRANT INSTALLATION (RESTRAINT RODS)	
	W-4A	

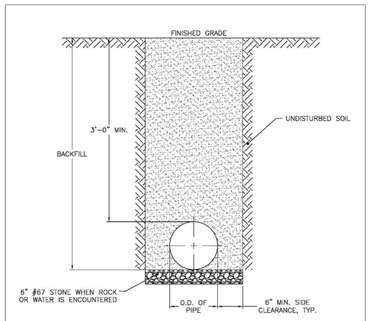


NOTES:
1. THE PAVEMENT EDGE SHALL BE DEFINED BY A STRAIGHT EDGE FORMED BY A MACHINED SAW CUT.
2. THE TRENCH SUBGRADE MATERIAL SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED TO A DENSITY OF AT LEAST 95% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY NCDOT.
3. THE FINAL 1' OF FILL SHALL CONSIST OF ABC MATERIAL COMPACTED TO A DENSITY EQUAL TO 100% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-80 AS MODIFIED BY NCDOT. BITUMINOUS BASE OR BINDER MAY BE SUBSTITUTED IF APPROVED BY TRANSPORTATION DIRECTOR OR DESIGNEE.
4. THE ENTIRE THICKNESS/VERTICAL EDGE OF THE CUT SHALL BE TACKED.
5. THE SAME DEPTH OF PAVEMENT MATERIAL WHICH EXISTS SHALL BE REINSTALLED, BUT IN NO CASE SHALL THE ASPHALT BE LESS THAN 3" THICK.
6. THE ASPHALT PAVEMENT MATERIAL SHALL BE INSTALLED AND COMPACTED THOROUGHLY AND ROLLED WITH A SMOOTH DRUM ROLLER TO ACHIEVE A SMOOTH, LEVEL PATCH.

SHEET 1 OF 2

CITY OF RALEIGH
STANDARD DETAIL

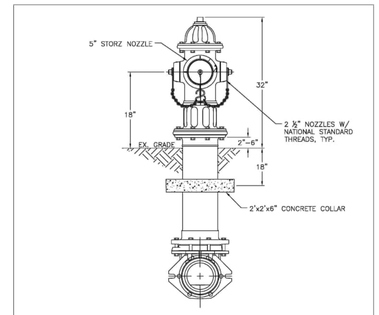
REVISIONS	DATE: 8/2021	NOT TO SCALE
DATE: 04/2022		
	ASPHALT PAVEMENT PATCH AND RCP PIPE BACKFILL	
	T-10.05.1	



NOTES:
1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS.
5. ACHIEVE 95% COMPACTION IN BACKFILL.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 07/18/2024	NOT TO SCALE
	TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS FOR DUCTILE IRON	
	W-3	



NOTES:
1. ALL PUBLIC FIRE HYDRANTS IN THE CITY OF RALEIGH AND THE MERGER TOWNS OF GARNER, ROLESVILLE, WAKE FOREST, KNIGHTDALE, WENDELL AND ZEBULON SHALL BE PAINTED CHROME YELLOW WITH HIGH REFLECTIVE ALUMINUM SILVER CAPS, BONNETS AND OPERATING NUTS.
2. ALL PRIVATE FIRE HYDRANTS SHALL BE RED.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 07/18/2024	NOT TO SCALE
	STANDARD FIRE HYDRANT WITH 5" STORZ PUMPER NOZZLE	
	W-5	

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 07/18/2024	NOT TO SCALE
	HYDRANT OPERATING NUT AND 2 ½" OUTLET THREADS	
	W-6	

REINFORCING REQUIREMENTS

I.D. PIPE	REBAR SIZE	"X" BAR LENGTH	"X" BAR WEIGHT	"Y" BAR LENGTH	"Y" BAR WEIGHT	NO. REQUIRED
6"–36"	#5	2'-2"± O.D. PIPE	1.043 LBS/FT	1'-1"	1.1 LBS. EACH	X–24 Y–12
≥48"	#6	3'-0"± O.D. PIPE	1.502 LBS/FT	1'-3"	1.9 LBS. EACH	X–24 Y–12

THRUST COLLAR AND THRUST SCHEDULE

I.D. PIPE	"A"	"B"	"C"	"D"
6"–16"	1'-4"	1'-7"	2"	⅜"
20"–24"	1'-4"	1'-7"	3"	½"
30"–36"	1'-4"	1'-7"	4"	⅝"
≥48"	1'-8"	1'-9"	6"	⅜"

NOTES:
1. SEE DETAIL W-9 FOR THRUST BLOCK LOCATIONS.
2. CONCRETE SHALL BE 3,000 PSI AND TRANSIT MIXED.
3. REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
4. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE THE MINIMUM WIDTH AS SHOWN ON DETAIL W-3.
5. BACKFILL TAMPED IN 6" LIFTS, SEE DETAIL W-3.
6. THRUST COLLAR MUST BE FACTORY WELDED ON BOTH SIDES ALONG BOTH EDGES OF COLLAR AROUND CIRCUMFERENCE.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 07/18/2024	NOT TO SCALE
	THRUST BLOCKING DESIGN DATA FOR WATER MAINS	
	W-7	

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS BASED ON TEST PRESSURE OF 200 PSI
ALL AREAS GIVEN IN SQUARE FEET

SIZE OF BEND	DEGREE OF BEND	STATIC THRUST IN POUNDS	MODERATELY DRY CLAY 4,000 LBS./FT²	SOFT CLAY 2,000 LBS./FT²	1,600 LBS./FT² GRAVEL/ COARSE SAND	8,000 LBS./FT² DRY CLAY (ALWAYS DRY)	SAND, COMPACT FIRM 8,000 LBS./FT²	SAND– CLEAN DRY 4,000 LBS./FT²	SOIL 1,000 LBS./FT² QUICKSAND (VERY POOR)	ROCK– POOR 10,000 LBS./FT²
6"	11 ¼°	1,108	1	1	1	1	1	1	2	1
	22 ½°	2,207	1	2	2	1	1	1	3	1
	45°	4,328	2	3	3	1	1	2	5	1
	90°	7,996	2	4	5	1	1	2	8	1
	PLUG	5,655	2	3	4	1	1	2	6	1
8"	11 ¼°	1,970	1	1	2	1	1	1	2	1
	22 ½°	3,922	1	2	3	1	1	1	4	1
	45°	7,694	2	4	5	1	1	2	8	1
	90°	14,215	4	8	9	2	2	4	15	2
	PLUG	10,053	3	5	6	2	2	3	10	1
12"	11 ¼°	4,433	2	3	3	1	1	2	5	1
	22 ½°	8,826	3	5	6	2	2	3	9	1
	45°	17,312	5	9	11	3	3	5	18	2
	90°	31,983	8	16	19	4	4	8	32	4
	PLUG	22,619	6	12	14	3	3	6	23	3
16"	11 ¼°	7,881	2	4	5	1	1	2	8	1
	22 ½°	15,691	4	8	10	2	2	4	16	2
	45°	30,779	8	16	19	4	4	8	31	4
	90°	56,861	15	29	35	8	8	15	57	6
	PLUG	40,213	10	21	25	5	5	10	41	5

NOTES:
1. REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.
2. USE 6" 90° BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 07/18/2024	NOT TO SCALE
	THRUST BLOCKING DESIGN QUANTITY TABLE	
	W-10	

NOTES:
1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
2. SEE DETAIL W-10 & W-11 (REACTION BLOCK TABLES) FOR AREA OF CONCRETE REQUIRED.
3. 3,000 PSI SOLID CONCRETE SHALL BE USED AS FOOTING FOR DUCTILE IRON PIPE.
4. FULL CIRCUMFERENCE SLEEVE, STAINLESS STEEL MATERIAL REQUIRED.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 07/18/2024	NOT TO SCALE
	4"–24" STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY	
	W-14	

ROD REQUIREMENTS

BRANCH SIZE	NO. OF RODS
4"	2
6"	2
8"	4
12"	4
16"	6
24"	6
30"	8
36"	8

NOTES:
1. STEEL RODS AND BOLTS SHALL BE ¾" 316 STAINLESS STEEL.
2. SEE DETAIL W-10 AND W-11 (THRUST BLOCK TABLES) FOR CONCRETE.
3. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL FITTINGS.
4. THIS RODDING REQUIREMENT DOES NOT APPLY TO FIRE HYDRANTS.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 07/18/2024	NOT TO SCALE
	VALVE RESTRAINT AT TEES AND CROSSES FOR LINES (4"–24")	
	W-15	

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MORRISVILLE, NORTH CAROLINA 27560
CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 JASON D. WILLIAMSON NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
6		

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-D1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	N.T.S.
DATE	11. 14. 2025

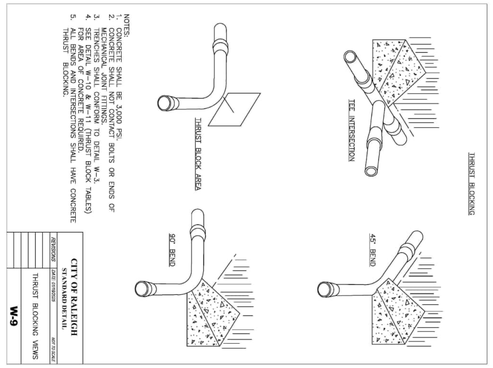
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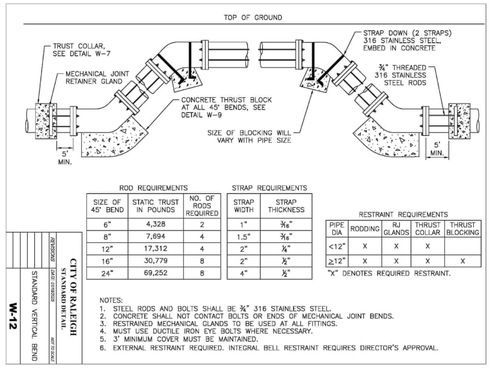
WATER DETAILS
C8.04

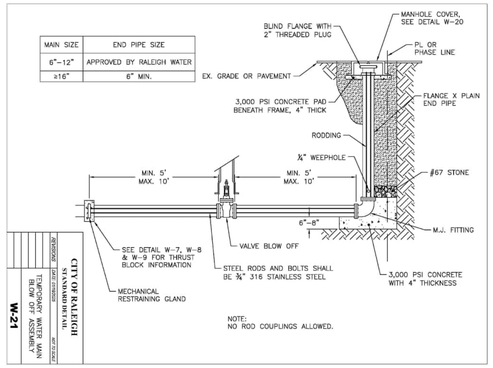
Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

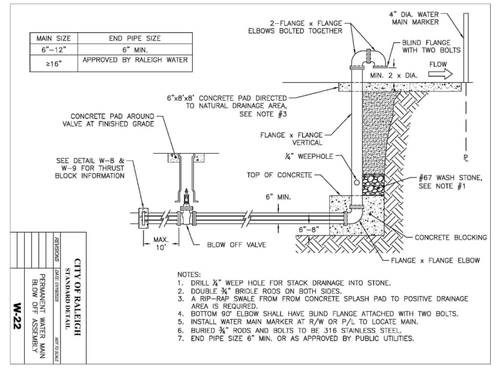
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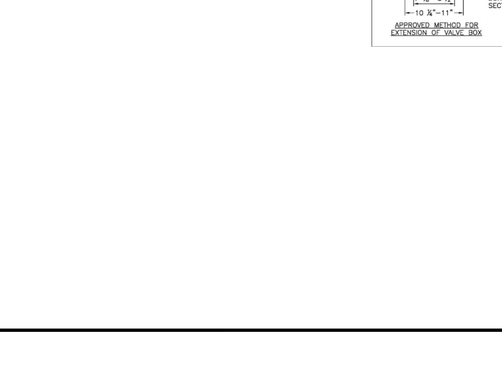
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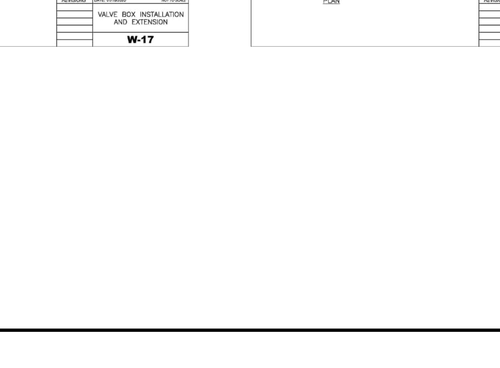


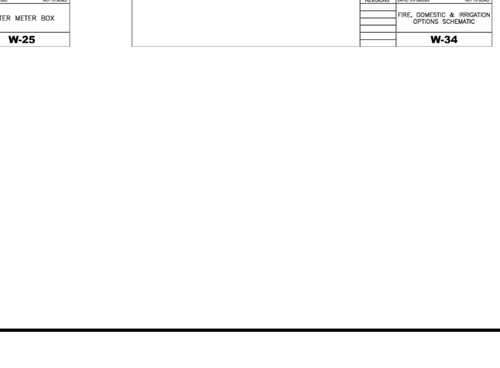


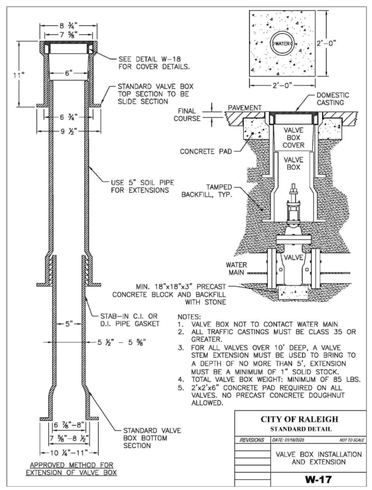


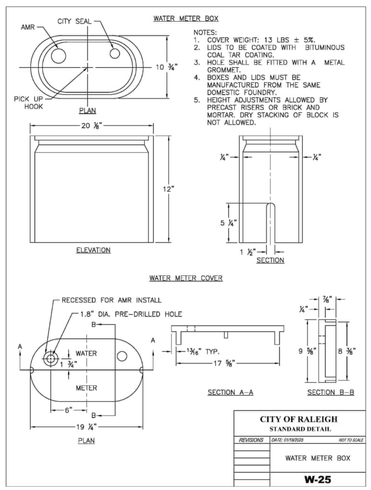


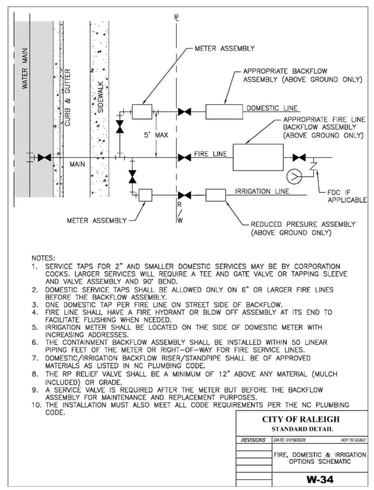












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HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 THOMAS D. WILLIAMSON

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
6		

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-D1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	N.T.S.
DATE	11. 14. 2025

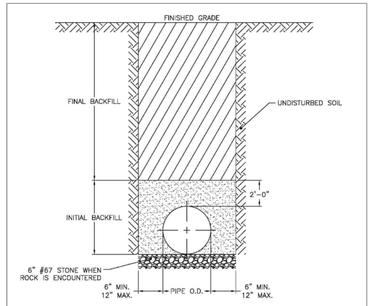
SHEET

WATER DETAILS
C8.05

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

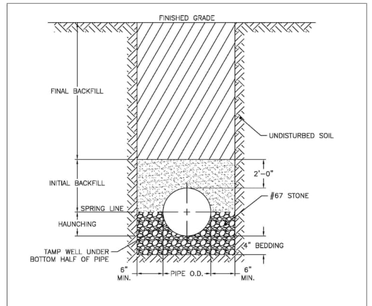
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NOTES:
1. FOR TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.
5. ACHIEVE 80% COMPACTION IN NON-TRAFFIC AREAS, AND 95% COMPACTION IN TRAFFIC AREAS.
6. IF IN EASEMENT, 4" TOPSOIL AND 12" CLEAN SELECT FILL MAY BE REQUIRED.
7. NO BOULDERS 8" IN DIAMETER OR GREATER ALLOWED IN FINAL BACKFILL.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2020	NOT TO SCALE
	TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON	
		S-4

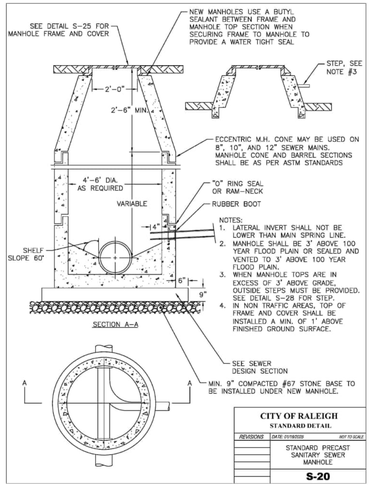


TYPICAL TRENCH BOTTOM DIMENSIONS FOR SDR 35 PVC GRAVITY PIPE

NOTES:
1. FOR TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS, 4" OR LARGER, TO BE USED IN INITIAL BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.

CITY OF RALEIGH
STANDARD DETAIL

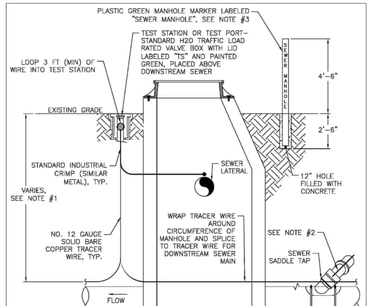
REVISIONS	DATE: 01/18/2020	NOT TO SCALE
	TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR PVC GRAVITY SEWER MAIN	
		S-5



NOTES:
1. LATERAL INVERT SHALL NOT BE LOWER THAN MAIN SPRING LINE.
2. MANHOLE SHALL BE 3' ABOVE 100 YEAR FLOOD PLAIN OR SEALED AND VENTED TO 3' ABOVE 100 YEAR FLOOD PLAIN.
3. WHEN MANHOLE TOPS ARE IN EXCESS OF 3' ABOVE GRADE, OUTSIDE STEPS MUST BE PROVIDED. SEE DETAIL S-28 FOR STEP.
4. IN NON TRAFFIC AREAS, TOP OF FRAME AND COVER SHALL BE INSTALLED A MIN. OF 1' ABOVE FINISHED GROUND SURFACE.

CITY OF RALEIGH
STANDARD DETAIL

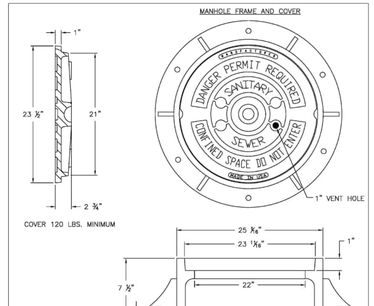
REVISIONS	DATE: 01/18/2020	NOT TO SCALE
	STANDARD PRECAST SANITARY SEWER MANHOLE	
		S-20



NOTES:
1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. FOR GRAVITY MAIN AND OR LATERAL INSTALLATIONS LESS THAN 8 FT, THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE. TRACER WIRE SHALL BE LAID FLAT AND SECURELY AFFIXED TO THE PIPE AT 10 FOOT INTERVALS. FOR GRAVITY MAIN AND OR LATERAL INSTALLATION DEEPER THAN 8 FT, THE TRACING WIRE SHALL BE INSTALLED AT A DEPTH OF 7-8 FT. THE WIRE SHALL BE PROTECTED FROM DAMAGE DURING THE EXECUTION OF THE WORK. NO BREAKS OF CUTS IN THE TRACER WIRE SHALL BE PERMITTED.
2. WHERE LATERAL TAPS ARE MADE BY SERVICE SADDLES, THE TRACER WIRE SHALL NOT BE ALLOWED TO TO BE PLACED BETWEEN THE SADDLE AND MAIN.
3. MANHOLE MARKERS SHALL BE PLACED ADJACENT TO MANHOLES AT THE DISCRETION OF OWNER OR OWNER'S REPRESENTATIVE.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2020	NOT TO SCALE
	GRAVITY SEWER MAIN TRACER WIRE AND MANHOLE MARKER	
		S-20A



NOTES:
1. ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST.
2. FRAME SHALL BE A MINIMUM WEIGHT OF 182 LBS. WITHIN PUBLIC ROW AND 160 LBS. WITHIN EASEMENTS.
3. COVER SHALL WEIGH A MIN. OF 120 LBS.
4. ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACES SHALL BE BOLTED TO THE CONE SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2020	NOT TO SCALE
	STANDARD MANHOLE COVER	
		S-25

NOTE:
1. WHEN WATERTIGHT NOT SPECIFIED, TOP SHALL HAVE ONE 1" VENT HOLE.
2. STANDARD: PENTAGON HEAD S.S. OPTIONAL: S.S. HEX HEAD BOLT.
3. RING MUST BE ANCHORED IN ACCORDANCE WITH DETAIL S-25.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2020	NOT TO SCALE
	WATERTIGHT MANHOLE FRAME WITH CAM LOCK COVER	
		S-27

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2020	NOT TO SCALE
	STANDARD SLIP RESISTANT MANHOLE STEP DETAIL	
		S-28

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2020	NOT TO SCALE
	STANDARD MANHOLE FRAME AND COVER DETAIL WITHIN FRAME SURFACE	
		S-29

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2020	NOT TO SCALE
	LATERAL SADDLE INSTALLATION DETAIL FOR PVC PIPE	
		S-31



CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2020	NOT TO SCALE
	LATERAL SADDLE INSTALLATION FOR VCP AND DUCTILE IRON PIPE	
		S-32

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HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 ENGINEER NICHOLAS D. WILLIAMSON NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
6		

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-D1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	N.T.S.
DATE	11. 14. 2025

SHEET

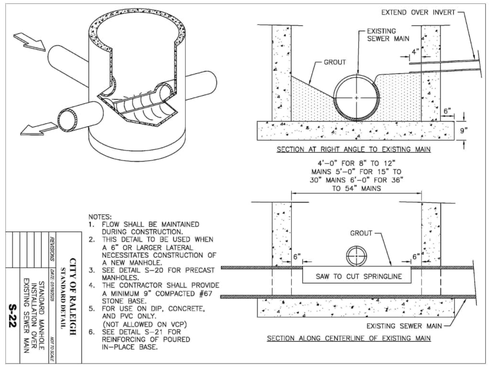
SANITARY SEWER DETAILS

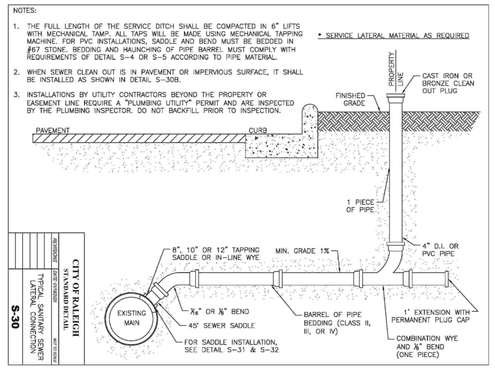
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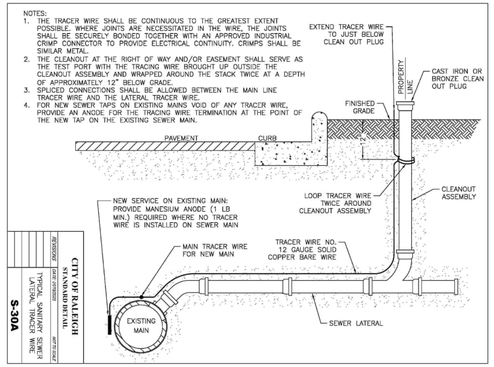
Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

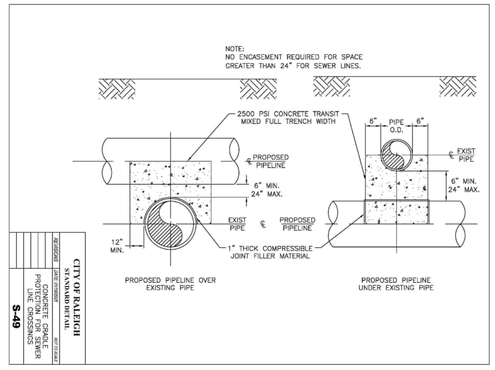
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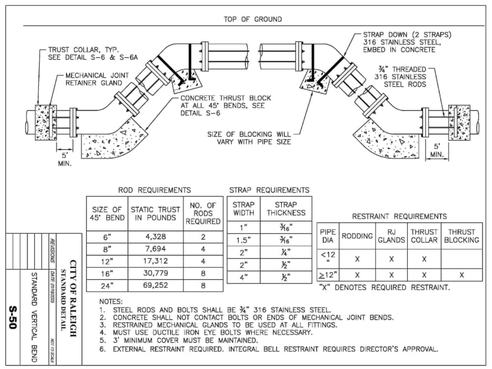
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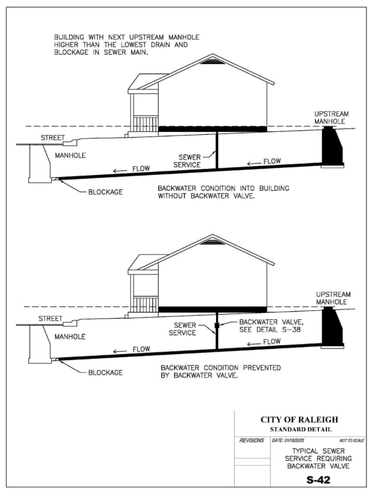


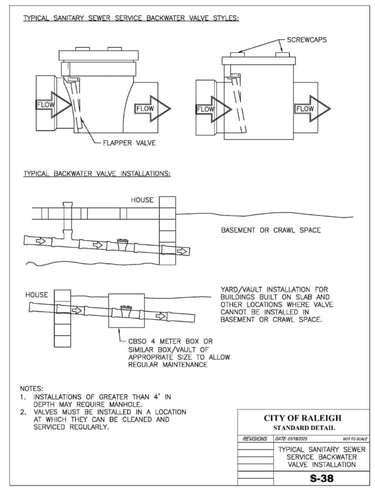












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LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 DOUGLAS D. WILLIAMSON
NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
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PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-D1
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	N.T.S.
DATE	11. 14. 2025

SHEET

SANITARY SEWER DETAILS
C8.07

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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STORMWATER CONTROL MEASURE "A" CONSTRUCTION SPECIFICATIONS

GENERAL NOTES

1. PRIOR TO CONSTRUCTION, ANY DISCREPANCIES IN THE PLANS AND NOTES SHALL BE BROUGHT TO THE DESIGN ENGINEER'S ATTENTION IMMEDIATELY. IF THE CONTRACTOR, IN THE COURSE OF WORK, FINDS ANY DISCREPANCIES IN THE PLANS OR NOTES GIVEN BY THE PROJECT ENGINEER, IT SHALL BE THEIR DUTY TO IMMEDIATELY INFORM THE PROJECT ENGINEER IN WRITING. ANY WORK DONE AFTER SUCH A DISCOVERY, UNTIL AUTHORIZED, WILL BE AT THE CONTRACTOR'S RISK.
2. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY LICENSES AND PERMITS REQUIRED TO COMPLETE THE WORK INCLUDED IN THE CONTRACT DOCUMENTS AT THE CONTRACTOR'S EXPENSE.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THAT THEY AND THEIR SUBCONTRACTORS HAVE THE CORRECT AND MOST UP-TO-DATE PLANS AVAILABLE.
4. THE PROJECT WILL MEET ALL RELEVANT DESIGN REQUIREMENTS IN THE NCDEQ MANUAL AND THE TOWN OF KNIGHTDALE REGULATIONS AND STANDARDS.
5. THE DESIGN ENGINEER OR THEIR REPRESENTATIVE SHALL BE ON SITE FOR THE INSTALLATION OF ESSENTIAL ELEMENTS OF THE PRINCIPAL SPILLWAY INCLUDING BUT NOT LIMITED TO THE ANTI-FLOAT BLOCK, RISER, CONCRETE COLLAR, CONCRETE CRADLE, AND THE OUTLET BARREL. THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER 72 HOURS PRIOR TO INSTALLATION OF THESE ITEMS TO ENSURE THAT A REPRESENTATIVE CAN BE ON-SITE. PHOTOGRAPHS OF THESE ITEMS MUST BE TAKEN PRIOR TO BACKFILLING FOR USE IN THE AS-BUILT PHASE. IF THE CONTRACTOR INSTALLS THESE WITHOUT THE ENGINEER OR ENGINEER'S REPRESENTATIVE ON-SITE, THEN THE ELEMENTS SHALL BE UNCOVERED FOR INSPECTION AT THE CONTRACTOR'S EXPENSE.
6. THE FINAL CERTIFICATION FOR THIS FACILITY WILL INCLUDE A CERTIFICATION BY THE ON-SITE GEOTECHNICAL ENGINEER THAT THE PROJECT WAS CONSTRUCTED PER THE APPROVED PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE ON-SITE GEOTECHNICAL ENGINEER FOR OBSERVATION AND TESTING SUCH THAT THE ON-SITE GEOTECHNICAL ENGINEER CAN CERTIFY THE CONSTRUCTION OF THE DAM EMBANKMENT AND SPILLWAY. THIS CERTIFICATION MUST ADDRESS THE TESTING FOR MATERIALS AND COMPACTION OF THE DAM EMBANKMENT AND SPILLWAY.
7. ALL CONSTRUCTION ACTIVITY RELATED TO THE PROPOSED STORMWATER CONTROL MEASURE SHALL BE PER THE DETAILS AND SPECIFICATIONS SHOWN IN THESE DRAWINGS. SOILS, COMPACTION, AND OTHER MISCELLANEOUS DETAILS AND SPECIFICATIONS MAY BE MODIFIED PER THE RECOMMENDATIONS OF THE ON-SITE GEOTECHNICAL ENGINEER. HOWEVER, PRIOR TO IMPLEMENTATION, THE DESIGN ENGINEER SHALL BE NOTIFIED OF ANY DEVIATION FROM THESE DESIGN DRAWINGS, INCLUDING SHOP DRAWINGS FOR ANY PROPOSED MODIFICATION.
8. DURING THE INITIAL STAGES OF CONSTRUCTION, THE STORMWATER CONTROL MEASURE MAY BE USED AS A SEDIMENT BASIN FOR EROSION CONTROL PURPOSES. IF SO, THE CONTRACTOR SHALL FOLLOW THE GENERAL CONSTRUCTION SEQUENCE BELOW:
   A. THE CONTRACTOR SHALL CONSTRUCT THE ENTIRE FACILITY (PERMANENT OUTLET STRUCTURE, DAM, ETC.) WITH THE EXCEPTION OF THE INTERIOR FINE GRADING FOR THE FACILITY. THE INTERIOR FINE GRADING WILL BE CONSTRUCTED ONCE THE EROSION CONTROL PHASE IS COMPLETE.
   B. THE TEMPORARY DRAWDOWN RISER (OR SKIMMER) SHALL BE CONNECTED TO THE PERMANENT 6"Ø DIP DRAIN PIPE.
   C. ONCE THE UPSTREAM DRAINAGE AREA IS STABILIZED AND THE EROSION CONTROL INSPECTOR APPROVES THE REMOVAL OF THE SEDIMENT BASIN, THE CONTRACTOR SHALL REMOVE THE TEMPORARY DRAWDOWN RISER (OR SKIMMER) AND CLEAN OUT THE BASIN IN ACCORDANCE WITH EROSION CONTROL STANDARD PRACTICES. ALL SEDIMENT, TRASH, ETC. SHALL BE DISPOSED OF PROPERLY (I.E. PLACED IN A LANDFILL) AND NOT STOCKPILED IN AN AREA WHERE WATER QUALITY COULD BE ADVERSELY AFFECTED.
   D. ONCE THE BASIN IS CLEANED OUT, AND ALL EROSION CONTROL DEVICES REMOVED, THE CONTRACTOR SHALL CONSTRUCT THE INTERIOR GRADING SHOWN ON THIS SHEET.
   E. ONCE THE GRADING IS COMPLETE, THE CONTRACTOR SHALL REQUEST AN ON-SITE INSPECTION AND AN AS-BUILT SURVEY PRIOR TO INSTALLATION OF THE STORMWATER CONTROL MEASURE PLANTS. IF THE CONTRACTOR PLANTS THE PROPOSED VEGETATION PRIOR TO AN AS-BUILT SURVEY (AND SUBSEQUENT APPROVAL), ANY CHANGES TO THE GRADING / RE-PLANTING OF PLANTS WILL BE AT THE CONTRACTOR'S EXPENSE.
   F. ONCE THE ENGINEER HAS APPROVED THE AS-BUILT GRADING, THE CONTRACTOR SHALL PLANT THE PROPOSED STORMWATER CONTROL MEASURE PLANTS SHOWN ON THE LANDSCAPE PLAN FOR THE FACILITY. AFTER COMPLETION OF THE PLANTING, THE LANDSCAPE CONTRACTOR SHALL PROVIDE A LETTER TO THE ENGINEER CERTIFYING THAT THE PLANTS HAVE BEEN INSTALLED PER THE APPROVED STORMWATER CONTROL MEASURE PLANTING PLAN.
9. ALL OSHA REQUIREMENTS FOR EXCAVATIONS (SHORING, DEPTH, ETC.) ARE THE RESPONSIBILITY OF THE CONTRACTOR. IF REQUIRED, THE CONTRACTOR SHALL PROVIDE AN EXCAVATION PLAN TO BE SEALED BY A NC P.E. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE IF AN EXCAVATION PLAN IS REQUIRED. THE JOHN R. MCADAMS COMPANY ASSUMES NO RESPONSIBILITY FOR ANY EXCAVATION DESIGN RELATED TO SAFETY OR OSHA REQUIREMENTS.
10. A LINER SHALL BE REQUIRED TO MAINTAIN THE PERMANENT POOL OF THE SCM. THE LINER SHALL BE CONSTRUCTED OR COMPACTED SUCH THAT THE INFILTRATION RATE IS NO MORE THAN 0.01 IN/HR. THE ON-SITE GEOTECHNICAL ENGINEER SHALL DETERMINE IF A LINER IS NOT REQUIRED FOR THE SCM GIVEN THE IN-SITU SOIL INFILTRATION RATE AND THE LOCATION OF THE SEASONAL HIGH WATER TABLE. THE DESIGN ENGINEER SHALL BE NOTIFIED FOLLOWING THIS DETERMINATION.
11. IT IS ANTICIPATED THAT DEWATERING WILL BE NECESSARY IN THE EXCAVATION AREAS (E.G. - EMBANKMENT SUB GRADE, INTERIOR PORTIONS OF THE STORMWATER CONTROL MEASURE, AND KEY TRENCH). THEREFORE, THE CONTRACTOR SHALL FURNISH, INSTALL, OPERATE, AND MAINTAIN ANY PUMPING EQUIPMENT, ETC. NEEDED FOR REMOVAL OF WATER FROM VARIOUS PARTS OF THE STORMWATER CONTROL MEASURE SITE. DURING PLACEMENT OF FILL WITHIN THESE AREAS, THE CONTRACTOR SHALL KEEP THE WATER LEVEL BELOW THE BOTTOM OF THE EXCAVATION / CONSTRUCTION AREAS. THE MANNER IN WHICH THE WATER IS REMOVED SHALL BE SUCH THAT THE EXCAVATION BOTTOM AND SIDE SLOPES ARE STABLE, WITH NO SEDIMENT DISCHARGED FROM THE SITE (I.E. PUMPED WATER MAY NEED TO BE DIRECTED TO AN APPROVED EROSION CONTROL DEVICE PRIOR TO DISCHARGE).
12. PRIOR TO TOPSOIL INSTALLATION, THE CONTRACTOR SHALL SCARIFY THE TOP 2-3" OF THE BERM SECTION TO PROMOTE BONDING OF THE TOPSOIL WITH THE COMPACTED FILL. THE TOPSOIL DEPTH SHALL RANGE FROM 3-4" ON THE DAM EMBANKMENT AND AQUATIC SHELF. PLEASE NOTE THE TOPSOIL SHALL BE AMENDED AS DIRECTED BY A LANDSCAPE PROFESSIONAL PRIOR TO INSTALLATION ON THE EMBANKMENT AND AQUATIC SHELF.
13. THE CONTRACTOR SHALL PROVIDE A ONE YEAR WARRANTY PERIOD FOR ALL PLANTINGS IN THE STORMWATER CONTROL MEASURE.
14. THE CONTRACTOR SHALL REFER TO THE LANDSCAPING PLAN FOR THE PERMANENT PLANTING PLAN/SCHEDULE FOR THIS FACILITY. CONTRACTOR SHALL COORDINATE WITH A LANDSCAPE PROFESSIONAL REGARDING SCHEDULING FOR PLANT INSTALLATION. PLEASE NOTE THAT NO TREES/SHRUBS OF ANY TYPE MAY BE PLANTED ON FILL AREAS OF THE PROPOSED DAM EMBANKMENT.
15. THE PROPOSED DISPLAY AERATING FOUNTAIN SHALL BE A 3/4 HP, SCOTT AERATOR® DA-20 DISPLAY AERATOR, OR ENGINEER APPROVED ALTERNATIVE. THE FOUNTAIN SHALL BE SECURED USING AT LEADT TWO TETHER POINTS CENTERED IN THE WIDEST PORTION OF THE MAIN POOL OF THE SCM.

OUTLET STRUCTURE MATERIAL SPECIFICATIONS

1. THE 42"Ø RCP OUTLET BARREL SHALL BE CLASS III O-RING RCP, MODIFIED BELL AND SPIGOT, MEETING THE REQUIREMENTS OF ASTM C76-LATEST. THE PIPES SHALL HAVE SINGLE OFFSET JOINTS MEETING ASTM C-443-LATEST.
2. THE STRUCTURAL DESIGN FOR THE 5' X 5' (INTERNAL DIMENSIONS) RISER BOX WITH EXTENDED BASE SHALL BE BY OTHERS. PRIOR TO ORDERING THE STRUCTURES, THE CONTRACTOR SHALL PROVIDE, TO THE DESIGN ENGINEER FOR REVIEW, SHOP DRAWINGS AND SUPPORTING STRUCTURAL CALCULATIONS SEALED BY A P.E. REGISTERED IN NORTH CAROLINA DEMONSTRATING THE PERTINENT VERTICAL LOADS ARE SUPPORTED BY THE CONCRETE RISER STRUCTURE.
3. THE RISER BOX OUTLET STRUCTURE SHALL BE PROVIDED WITH STEPS 16" ON CENTER. STEPS SHALL BE PROVIDED ON THE INNER WALL OF THE RISER BOX. STEPS SHALL BE IN ACCORDANCE WITH NCDOT STD. 840.66. PLEASE REFER TO SHEET C9.A02 FOR LOCATION OF THE RISER STEPS. NOTE THE STEPS SHALL LINE UP WITH THE ACCESS HATCH OF THE TRASH RACK.
4. THE CONCRETE ANTI-FLOTATION BLOCK SHALL BE CAST-IN-PLACE. STEEL REINFORCEMENT AND CONNECTION TO THE RISER SHALL BE PROVIDED IN ACCORDANCE WITH THE DETAIL ON SHEET C9.A02. THE CONTRACTOR SHALL ENSURE THE WEIGHT OF THE ENTIRE RISER STRUCTURE IS GREATER THAN OR EQUAL TO 34,648 LBS.
5. THE RISER BOX JOINTS SHALL BE SEALED USING BUTYL RUBBER SEALANT CONFORMING TO ASTM-C990-LATEST. IF NECESSARY, THE CONTRACTOR SHALL INCORPORATE A WATERSTOP INTO THE RISER BOX JOINT TO ENSURE A WATERTIGHT CONNECTION. THE CONTRACTOR SHALL PARGE JOINTS ON BOTH THE INSIDE AND OUTSIDE WITH NON-SHRINK GROUT AND INSTALL GALVANIZED STEEL STRAPS PER DETAIL ON SHEET C9.A02.
6. PRIOR TO ORDERING, THE CONTRACTOR SHALL SUBMIT TRASH RACK SHOP DRAWINGS TO THE ENGINEER FOR REVIEW. CONTRACTOR SHALL ENSURE THAT AN ACCESS HATCH IS PROVIDED ON THE TRASH RACK (SEE DETAIL SHEET C9.A02 FOR LOCATION) THAT WILL ALLOW FOR FUTURE MAINTENANCE ACCESS. NOTE THE ACCESS HATCH SHALL LINE UP WITH THE ACCESS STEPS AFTER INSTALLATION.
7. ALL POURED CONCRETE SHALL MEET THE FOLLOWING SPECIFICATIONS UNLESS OTHERWISE NOTED:

   -MINIMUM 3000 PSI (28 DAY)
   -SLUMP = 3" - 5"
   -ENTRAINED AIR = 5% - 7%

   PLEASE NOTE NO CONCRETE SHALL BE POURED WHEN THE AMBIENT AIR TEMPERATURES ARE EXPECTED TO BE ABOVE 85°F OR BELOW 40°F. CAST-IN-PLACE CONCRETE SHALL BE "WET CURED" AFTER FINISHING FOR A MINIMUM OF 48 HOURS.

   CAST-IN-PLACE CONCRETE TO BE VIBRATED AS NECESSARY.

   ON-SITE GEOTECHNICAL ENGINEER TO TEST AND CERTIFY ALL POURED CONCRETE MEETS THE ABOVE SPECIFICATIONS. CONCRETE CYLINDERS FOR TESTING TO BE OBTAINED AT TIME OF POURING OF CAST-IN-PLACE STRUCTURES.
8. GEOTEXTILE FABRIC FOR THE 42"Ø RCP OUTLET BARREL JOINTS SHALL BE MIRAFI 180N OR ENGINEER APPROVED EQUAL (NON-WOVEN FABRIC).
9. STORMWATER CONTROL MEASURE EMERGENCY DRAWDOWN IS VIA AN 6"Ø PLUG VALVE. THE VALVE SHALL BE A M&H STYLE 1820 ECCENTRIC VALVE OR APPROVED EQUAL. THIS VALVE IS IN ACCORDANCE WITH AWWA C-517, AND SHALL BE OPERABLE FROM TOP OF OUTLET STRUCTURE VIA A HAND WHEEL (SEE DETAIL SHEET C9.A01). THE CONTRACTOR SHALL PROVIDE A REMOVABLE VALVE WRENCH WITH A HAND WHEEL ON TOP FOR OPERATION OF THE 6"Ø PLUG VALVE.

TOWN OF KNIGHTDALE SCM CONVERSION THRESHOLD

WHERE SEDIMENT BASINS ARE TO BE CONVERTED TO STORMWATER CONTROL MEASURES, BASIN CONVERSION SHALL NOT TAKE PLACE UNTIL 75% OF UNITS HAVE RECEIVED A CERTIFICATE OF OCCUPANCY. ALL BASIN COMPONENTS (SKIMMER, BAFFLES, INLETS, STONE PAD, GROUND COVER, ETC.) AND THE MAINTENANCE OF THE BASIN WILL NEED TO CONTINUE UNTIL THE CONVERSION THRESHOLD IS MET

CONSTRUCTION SEQUENCE

1. PRIOR TO CONSTRUCTION, THE OWNER SHALL OBTAIN A LAND DISTURBING (GRADING) PERMIT AND AN "APPROVAL TO CONSTRUCT" FROM THE TOWN OF KNIGHTDALE AND ALL OTHER NECESSARY PERMITS FROM APPLICABLE AGENCIES (E.G. 404 / 401 PERMITS).
2. INSTALL ALL SEDIMENT AND EROSION CONTROL MEASURES PER THE APPROVED SEDIMENT AND EROSION CONTROL PLAN. THE CONTRACTOR SHALL MAINTAIN ALL APPROVED SEDIMENT AND EROSION CONTROL MEASURES THROUGHOUT THE ENTIRE PROJECT, AS REQUIRED. THE CONTRACTOR SHALL RECEIVE APPROVAL FROM THE EROSION CONTROL INSPECTOR, AS REQUIRED BY GOVERNING AGENCIES, PRIOR TO ANY CLEARING.
3. CLEAR AND GRUB AREA WITHIN THE LIMITS OF THE PROPOSED DAM CONSTRUCTION, ADHERING TO THE "BERM AND SOIL COMPACTION" NOTES. ALL TREES AND THEIR ENTIRE ROOT SYSTEMS MUST BE REMOVED FROM THE DAM FOOTPRINT AREA AND BACKFILLED WITH SUITABLE SOIL MATERIAL. THE BACKFILLED AREAS SHALL BE COMPACTED TO THE SAME STANDARDS AS THE DAM EMBANKMENT. THE REMAINING AREA OF THE EMBANKMENT SHALL BE STRIPPED TO A SUITABLE DEPTH AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER. ANY RESIDUAL SOILS TO BE LEFT IN PLACE MUST BE WELL SCARIFIED TO PROMOTE BONDING OF THE NEW EMBANKMENT FILL. NO EMBANKMENT MATERIAL SHALL BE PLACED FOR THE DAM OR KEY TRENCH UNTIL APPROVAL OF THE DAM SUBGRADE IS OBTAINED FROM THE ON-SITE GEOTECHNICAL ENGINEER.
4. EXCAVATE FOR THE NEW KEY TRENCH ALONG THE CENTERLINE OF THE PROPOSED DAM EMBANKMENT. THE TRENCH SHALL EXTEND A MINIMUM OF 5 FT BELOW EXISTING GRADE OR 2 FT BELOW THE 42"Ø RCP OUTLET BARREL AND SHALL HAVE A MINIMUM BOTTOM WIDTH OF 5 FEET. THE KEY TRENCH SIDESLOPES SHALL BE A MINIMUM OF 1:1 (H:V). WHEN EXCAVATING THE KEY TRENCH, IF ANY DEBRIS IS ENCOUNTERED TO AN EXTENT THAT SUCH DEBRIS MAY EXIST IN OTHER INSITU PORTIONS OF THE DAM EMBANKMENT, IT SHOULD ALSO BE REMOVED. THE KEY TRENCH SHALL BE COMPACTED TO THE SAME SPECIFICATION LISTED IN ITEM 4 OF THE "BERM AND SOIL COMPACTION SPECIFICATIONS" NOTES. DEPENDING UPON ON-SITE SOIL CONDITIONS ENCOUNTERED DURING EXCAVATION, THE ON-SITE GEOTECHNICAL ENGINEER MAY VARY THE DEPTH AND DIMENSIONS OF THE KEY TRENCH AS DEEMED NECESSARY. THE ON-SITE GEOTECHNICAL ENGINEER SHALL RETAIN DOCUMENTATION OF ANY VARIATION FOR FUTURE AS-BUILT SUBMITTALS TO THE TOWN OF KNIGHTDALE.
5. BEGIN PLACEMENT OF BACKFILL WITHIN THE KEY TRENCH. THE KEY TRENCH SHALL BE COMPACTED TO THE SPECIFICATIONS LISTED IN ITEM 4 OF THE "BERM AND SOIL COMPACTION SPECIFICATIONS" NOTES. THE KEY TRENCH SHALL BE TESTED PER THE SPECIFICATIONS LISTED IN THAT SECTION.
6. CONTRACTOR SHALL GIVE THE DESIGN ENGINEER A MINIMUM OF 72 HOURS NOTICE PRIOR TO THE INSTALLATION OF THE SPILLWAY.
7. PRIOR TO INSTALLATION, SUBGRADE CONDITIONS ALONG THE SPILLWAY PIPES SHOULD BE EVALUATED BY THE ON-SITE GEOTECHNICAL ENGINEER TO ASSESS WHETHER SUITABLE BEARING CONDITIONS EXIST AT THE SUBGRADE LEVEL. SHOULD SOFT OR OTHERWISE UNSUITABLE CONDITIONS BE ENCOUNTERED ALONG THE PIPE ALIGNMENTS, THESE MATERIALS SHOULD BE UNDERCUT AS DIRECTED BY THE GEOTECHNICAL ENGINEER. THE UNDERCUT MATERIALS SHALL BE REPLACED WITH ADEQUATELY COMPACTED STRUCTURAL FILL, LEAN CONCRETE OR FLOWABLE FILL AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER.
8. IN ORDER TO HELP PROTECT THE SOIL SUBGRADE FROM DETERIORATION (DUE TO EXPOSURE, RAINFALL, SEEPAGE, AND RUNOFF) BEFORE THE CRADLE CAN BE POURED, IT IS STRONGLY RECOMMENDED THAT A 3" TO 4" THICK CONCRETE MUD MAT BE POURED OVER THE SUBGRADE ONCE IT IS APPROVED BY THE ON-SITE GEOTECHNICAL ENGINEER. THE MUD MAT WILL ALSO PROVIDE BEARING FOR THE BLOCKS THAT TEMPORARILY SUPPORT THE SPILLWAY PIPE UNTIL THE CRADLE CAN BE POURED. THE METHOD OF BLOCK SUPPORT FOR THE PIPE PROPOSED BY THE CONTRACTOR SHOULD BE SUBMITTED TO THE JOHN R. MCADAMS COMPANY FOR REVIEW.
9. BEGIN CONSTRUCTION OF THE NEW EMBANKMENT. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8" THICK LIFTS PRIOR TO COMPACTION, UNLESS DIRECTED OTHERWISE BY THE ON-SITE GEOTECHNICAL ENGINEER. FILL LIFTS SHALL BE CONTINUOUS OVER THE ENTIRE LENGTH OF FILL. IF IT IS NECESSARY, THE EMBANKMENT FILL MATERIAL WILL BE OVERBUILT IN HORIZONTAL LIFTS AND CUT BACK TO FINAL GRADE IN ORDER TO ACHIEVE PROPER COMPACTION.
10. AS CONSTRUCTION OF THE EMBANKMENT MOVES FORWARD, IT WILL BE NECESSARY TO INSTALL THE CONCRETE CRADLE. SEE NOTE ON CRADLE DETAIL (SHEET C9.A02). THE PROPOSED STRUCTURAL FILL MATERIAL SHALL BE UTILIZED AS THE FORMWORK FOR THE CONCRETE CRADLE. THE STRUCTURAL FILL SHOULD BE INSTALLED AND COMPACTED UP TO THE TOP OF CONCRETE CRADLE ELEVATION. ONCE THE STRUCTURAL FILL REACHES THE NEXT DOWNSTREAM JUNCTION BOX OR HEADWALL AND IS COMPACTED TO THE ELEVATION OF THE TOP OF THE CONCRETE CRADLE, EXCAVATE THE CONCRETE CRADLE TRENCH PER THE PROVIDED DETAILS AND CONSTRUCT THE CONCRETE CRADLE AS PER THE PROVIDED CONCRETE CRADLE DETAIL. THE CRADLE SHALL NOT BE BEDDED ON STONE MATERIAL.
11. INSTALL RISER / BARREL ASSEMBLY, ALONG WITH THE EMERGENCY DRAIN SYSTEM. INSTALL 42" RCP OUTLET BARREL SPILLWAY FILTER FROM THE DETAILS SHOWN ON SHEET C9.A02.
12. CONSTRUCT EMBANKMENT PER SPECIFICATIONS LISTED IN THE "BERM AND SOIL COMPACTION SPECIFICATIONS" NOTES AND REQUIREMENTS OF THE ON-SITE GEOTECHNICAL ENGINEER. ALL CHARACTERISTICS OF THE EMBANKMENT FILL MATERIAL SHALL MEET THE STANDARDS SET FORTH IN THE "BERM AND SOIL COMPACTION SPECIFICATIONS" NOTES, INCLUDING COMPACTION AND MOISTURE REQUIREMENTS. IF NECESSARY TO ACHIEVE PROPER COMPACTION, THE EMBANKMENT FILL MATERIAL WILL BE OVERBUILT IN HORIZONTAL LIFTS AND CUT BACK TO PROPER FINAL GRADE. ANY HAND COMPACTION ACTIVITIES AROUND SPILLWAY OR DRAIN STRUCTURES SHALL BE CONDUCTED IN 4-INCH LOOSE LIFTS AND BE TO THE SAME COMPACTION AND MOISTURE REQUIREMENTS AS THE ENTIRE EMBANKMENT. ALL COMPACTION AND MOISTURE TESTING SHALL BE CARRIED OUT AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER AND AS LISTED IN THE "BERM AND SOIL COMPACTION SPECIFICATIONS" NOTES.
13. UPON COMPLETION OF DAM EMBANKMENT, PROMPTLY STABILIZE AND SEED DAM EMBANKMENT PER SEEDING SCHEDULE. PERMANENT GROUND COVER SHALL BE ESTABLISHED PER THE PERMANENT SEEDING SCHEDULE FOUND ON SHEET C9.A03.
14. SCHEDULE A FINAL AS-BUILT INSPECTION AND AS-BUILT SURVEY WITH THE ENGINEER AND SURVEYOR. AN AS-BUILT INSPECTION AND SURVEY SHALL BE SCHEDULED BEFORE IMPOUNDING WATER IN THE FACILITY AND A MINIMUM OF 60 DAYS PRIOR TO THE ANTICIPATED DATE OF CERTIFICATION APPROVAL. ANY COMMENTS OR DEFICIENCIES IN THE SCM CONSTRUCTION MUST BE CORRECTED TO THE SATISFACTION OF THE ENGINEER AND OWNER BEFORE CERTIFICATION SHALL BE GRANTED.

BERM AND SOIL COMPACTION SPECIFICATIONS

1. PRIOR TO CONSTRUCTION, THE ON-SITE GEOTECHNICAL ENGINEER SHALL IDENTIFY BORROW / FILL AREAS AND VERIFY THEIR SUITABILITY FOR USE WITHIN THE DAM EMBANKMENT. ALSO, THE ON-SITE GEOTECHNICAL ENGINEER SHALL PERFORM STANDARD PROCTORS ON THE PROPOSED BORROW MATERIAL TO ENSURE THAT OPTIMUM MOISTURE CONTENT AND COMPACTION CAN BE ACHIEVED / CONTROLLED DURING CONSTRUCTION.
2. ALL FILL MATERIALS TO BE USED FOR THE DAM EMBANKMENT SHALL BE TAKEN FROM BORROW AREAS APPROVED BY THE ON-SITE GEOTECHNICAL ENGINEER. THE FILL MATERIAL SHALL BE FREE FROM ROOTS, STUMPS, WOOD, STONES GREATER THAN 6", AND FROZEN OR OTHER OBJECTIONABLE MATERIAL. THE FOLLOWING SOIL TYPES ARE SUITABLE FOR USE AS FILL WITHIN THE DAM EMBANKMENT AND KEY TRENCH: ML AND CL. ALL FILL MATERIALS SHALL BE APPROVED BY THE ONSITE GEOTECHNICAL ENGINEER FOR THE INTENDED USE.
3. FILL PLACEMENT FOR THE EMBANKMENT SHALL NOT EXCEED A MAXIMUM 8" LIFT (UNCOMPACTED). EACH LIFT SHALL BE CONTINUOUS FOR THE ENTIRE LENGTH OF EMBANKMENT. BEFORE PLACEMENT OF FILL FOR THE BERM SECTION, ALL UNSUITABLE MATERIAL SHALL BE REMOVED AND THE SURFACE PROPERLY PREPARED FOR FILL PLACEMENT. FILL MATERIAL ADJACENT TO ALL SPILLWAY AND DRAINAGE STRUCTURES SHALL BE PLACED IN 4-INCH (UNCOMPACTED) LIFTS AND HAND-COMPACTED TO THE SAME COMPACTION AND MOISTURE REQUIREMENTS AS THE ENTIRE EMBANKMENT.
4. ALL FILL SOILS USED IN THE EMBANKMENT CONSTRUCTION SHALL BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). THE FILL SOILS SHALL BE COMPACTED AT A MOISTURE CONTENT WITHIN -1 TO +3 PERCENT OF ITS OPTIMUM MOISTURE CONTENT. COMPACTION TESTS SHALL BE PERFORMED BY THE ON-SITE GEOTECHNICAL ENGINEER DURING CONSTRUCTION TO VERIFY THAT THE PROPER COMPACTION LEVEL HAS BEEN REACHED. THE FILL SHOULD BE COMPACTED USING A SHEEPSFOOT TYPE COMPACTOR. IN ORDER TO PREVENT DAMAGE TO THE PIPE, NO COMPACTION EQUIPMENT SHALL CROSS ANY PIPE UNTIL MINIMUM COVER IS ESTABLISHED ALONG THE PIPE.
5. THE DESIGN ENGINEER SHALL BE PROVIDED WITH REPORTS AND CERTIFICATION BY THE ON-SITE GEOTECHNICAL ENGINEER THAT THE GEOTECHNICAL ASPECTS OF THE FACILITY HAVE BEEN CONSTRUCTED PER PLAN. THIS CERTIFICATION MUST ADDRESS THE TESTING FOR MATERIALS AND COMPACTION OF THE DAM EMBANKMENT AND SPILLWAY. THESE REPORTS AND CERTIFICATION WILL BE NEEDED DURING THE AS-BUILT CERTIFICATION PROCESS FOR THIS STORMWATER CONTROL MEASURE. THEREFORE, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE TESTING AND OBSERVATION WITH THE ON-SITE GEOTECHNICAL ENGINEER.
6. TESTING OF THE NEW FILL MATERIALS SHALL BE PERFORMED TO VERIFY THAT THE RECOMMENDED LEVEL OF COMPACTION IS ACHIEVED DURING CONSTRUCTION. THEREFORE, ONE DENSITY TEST SHALL BE PERFORMED FOR EVERY 2,500 SQUARE FEET OF AREA FOR EVERY LIFT OF FILL OR AS RECOMMENDED BY THE ON-SITE GEOTECHNICAL ENGINEER.
7. TESTING WILL BE REQUIRED ALONG THE 42"Ø RCP OUTLET BARREL AT A FREQUENCY OF ONE TEST PER 25 LF OF PIPE PER VERTICAL FOOT OF FILL OR AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER.

STATEMENT OF RESPONSIBILITY

1. ALL REQUIRED MAINTENANCE AND INSPECTIONS OF THE STORMWATER CONTROL MEASURE SHALL BE THE RESPONSIBILITY OF THE OWNER, PER THE EXECUTED OPERATION AND MAINTENANCE AGREEMENT FOR THIS FACILITY.

TOWN OF KNIGHTDALE SCM INSPECTION NOTES

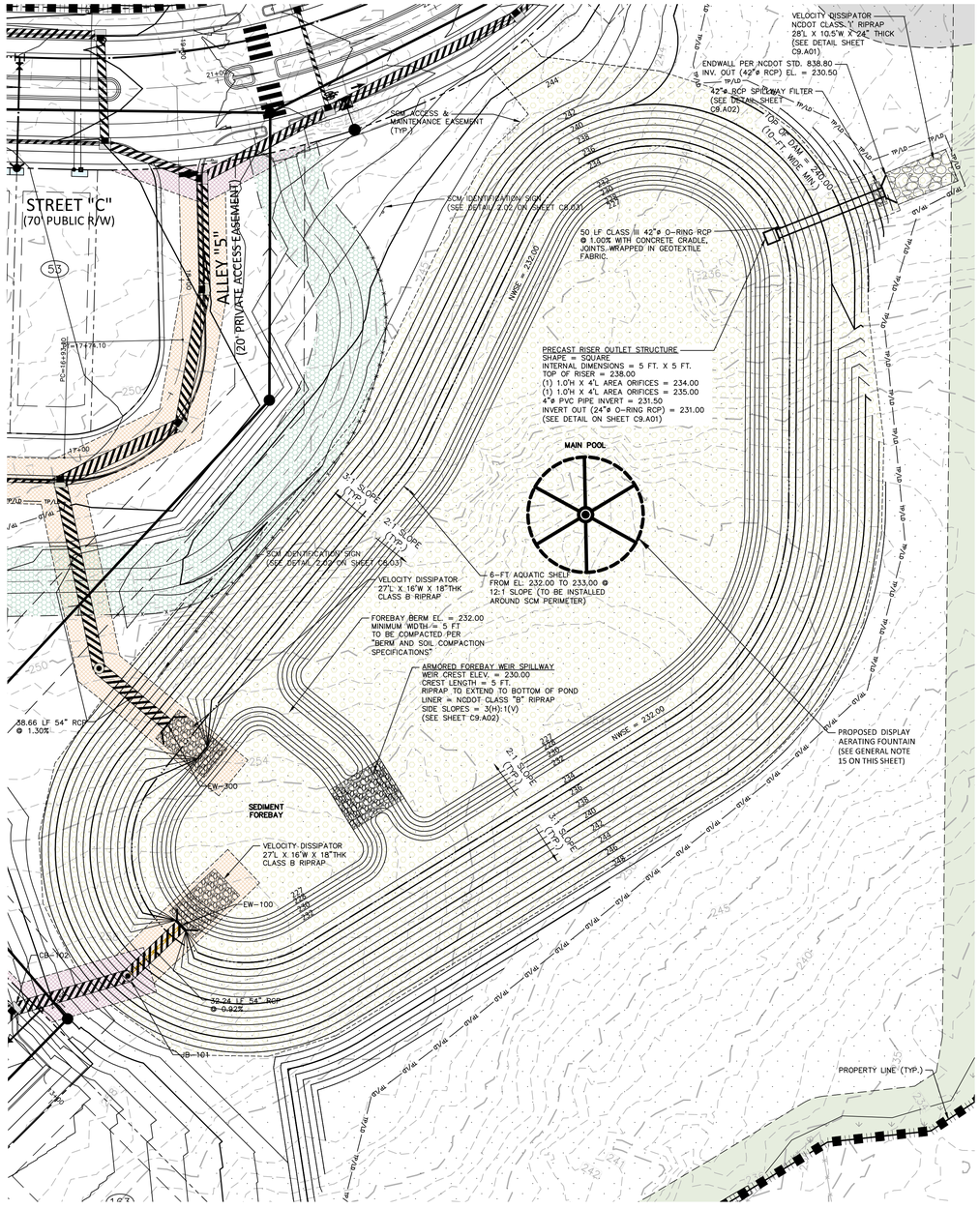
WHEN SCHEDULING INSPECTIONS, PLEASE CALL THE PUBLIC WORKS ADMINISTRATIVE ASSISTANT AT (919) 217-2250.

PLEASE NOTE: THE FOLLOWING PERSONNEL MUST BE PRESENT AT ALL INSPETIONS:
1. SITE SUPERVISOR
2. GEOTECH
3. AS-BUILT CERTIFYING ENGINEER OR SOMEONE UNDER THEIR SUPERVISION

THE FOLLOWING ITEMS MUST BE INSPECTED BY TOK STAFF DURING THE INSTALLATION OF ANY SCM WITH DAM:
1. KEY TRENCH EXCAVATION
2. PRINCIPAL SPILLWAY PIPE AND ASSOCIATED COMPONENTS:
   A. CONCRETE CRADLE
   B. ANTI-SEEP COLLAR
   C. SEEPAGE DIAPHRAGM
3. OUTLET STRUCTURE
4. ANTI-FLOTATION BALLAST
5. ANY SITE-CONSTRUCTED REINFORCED CONCRETE STRUCTURES

THE FOLLOWING ITEMS MUST BE INSPECTED BY TOK STAFF DURING THE INSTALLATION OF ANY SAND FILTERS OR BIORETENTION DEVICES:
   A. SUBRADE OR CONSTRUCTED FOUNDATION
   B. OUTLET OR RISER IN COMBINATION WITH CONNECTING UNDERDRAINS
   C. FILTER MEDIA
   D. DAM ITEMS ON PREVIOUS LIST IF APPLICABLE

GEOTECHNICAL TESTING AND CERTIFICATION
ALL REPORTS ARE TO BE SUBMITTED WITHIN 30-DAYS OF DAM COMPLETION
REQUIRED GEOTECHNICAL RECORDS INCLUDE:
1. DAM EMBANKMENT MATERIAL COMPOSITION AND DENSITY TESTING
2. MAP THAT LABELS ALL POINTS WHERE THE DAM AND DAM FOUNDATION AREAS WERE TESTED
3. DIGITAL PHOTOS SHOWING THE DAM FOUNDATION AREAS, THE RISER, THE PRINCIPAL SPILLWAY PIPE, THE CONCRETE CRADLE, THE SEEPAGE DIAPHRAGM, RELIEF DRAINS, ETC., BEING INSTALLED.

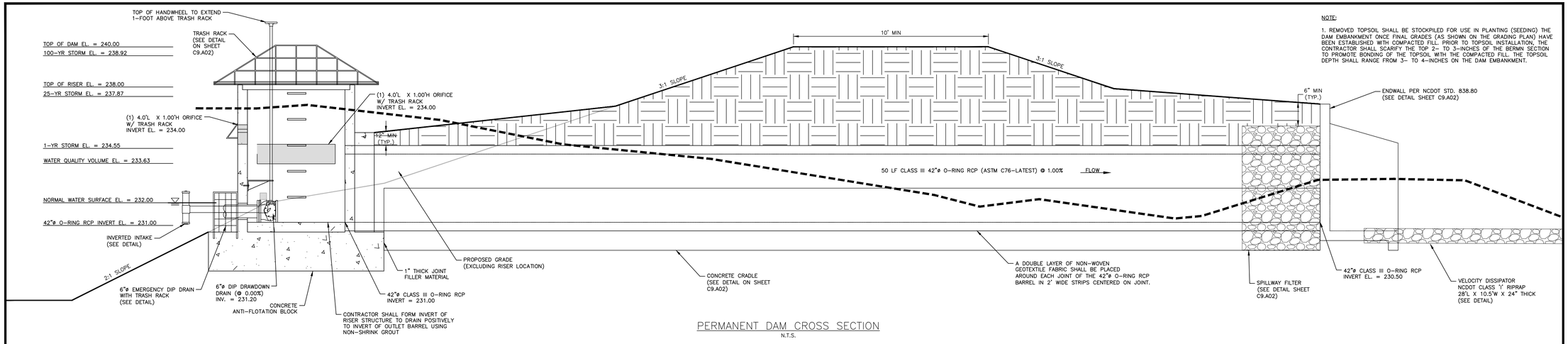


STORMWATER WET POND "A" PLAN VIEW

1" = 30'

GRAPHIC SCALE
0 15 30 60
1 inch = 30 ft.

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.

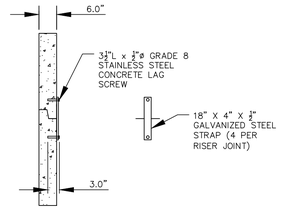


NOTE:

1. REMOVED TOPSOIL SHALL BE STOCKPILED FOR USE IN PLANTING (SEEDING) THE DAM EMBANKMENT ONCE FINAL GRADES (AS SHOWN ON THE GRADING PLAN) HAVE BEEN ESTABLISHED WITH COMPACTED FILL. PRIOR TO TOPSOIL INSTALLATION, THE CONTRACTOR SHALL SCARIFY THE TOP 2– TO 3–INCHES OF THE BERRM SECTION TO PROMOTE BONDING OF THE TOPSOIL WITH THE COMPACTED FILL. THE TOPSOIL DEPTH SHALL RANGE FROM 3– TO 4–INCHES ON THE DAM EMBANKMENT.

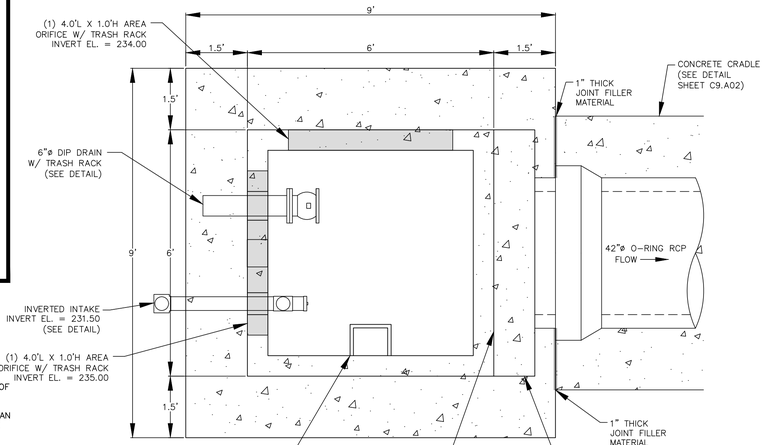
PERMANENT DAM CROSS SECTION

N.T.S.



RISER JOINT CONNECTION DETAIL

N.T.S.



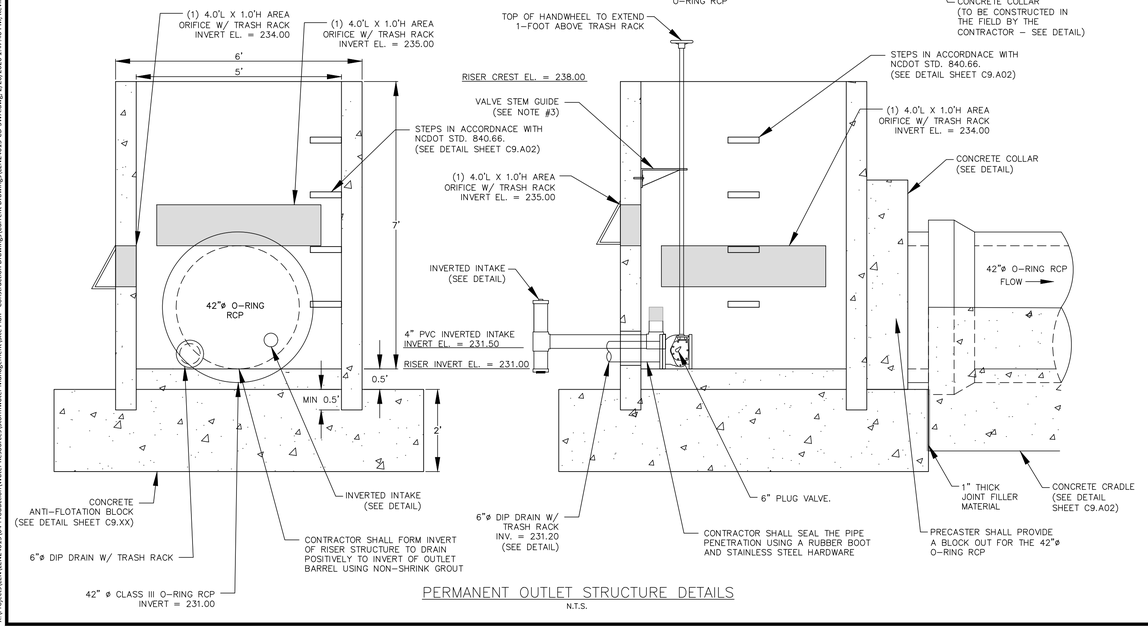
NOTES:

1. CONCRETE ANTI–FLOTATION BLOCK TO BE PROVIDED WITH MINIMUM TEMPERATURE AND SHRINKAGE STEEL REINFORCEMENT.

2. TRASH RACKS NOT SHOWN FOR CLARITY.

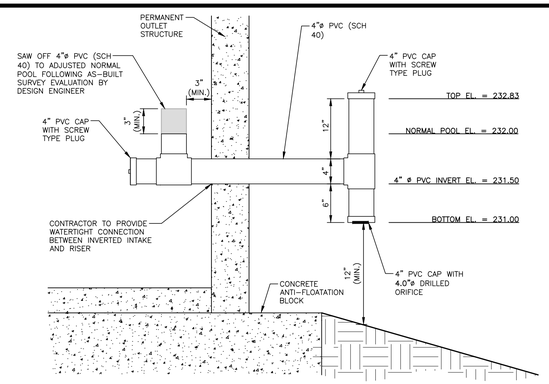
3. THE NUMBER OF GUIDES FOR THE VALVE STEM SHALL BE DETERMINED IN THE FIELD BY THE CONTRACTOR. THE VALVE STEM MUST BE OPERABLE FROM THE TOP OF THE RISER VIA THE HANDWHEEL WITH AN INSIGNIFICANT AMOUNT OF PLAY IN THE VALVE STEM.

4. CONTRACTOR SHALL PROVIDE A JOINT IN THE OUTLET BARREL NO MORE THAN 5–FT FROM THE RISER AND NEEDS TO BE IN ALIGNMENT WITH THE CONCRETE CRADLE AND THE CONCRETE ANTI–FLOATATION BLOCK.



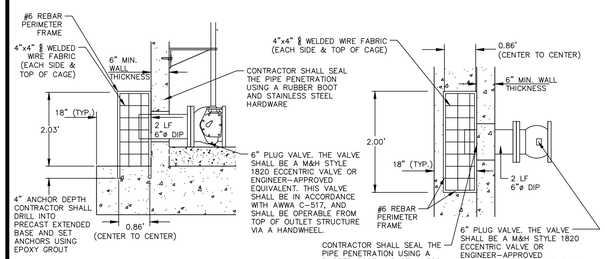
PERMANENT OUTLET STRUCTURE DETAILS

N.T.S.



INVERTED INTAKE OUTLET DETAIL

N.T.S.



6"ø EMERGENCY DIP DRAIN TRASH RACK DETAILS

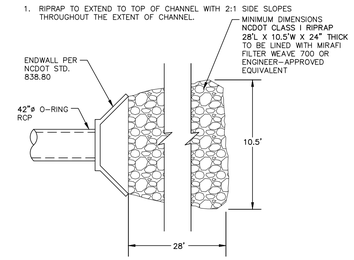
N.T.S.

NOTES:

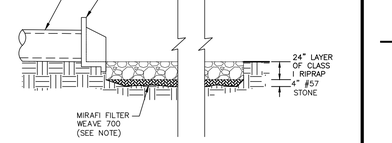
1. A FILTER BLANKET IS TO BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION. THE FILTER BLANKET WILL CONSIST OF A MINIMUM 4" THICK LAYER OF STONE (NCDOT #57) UNDERLAIN WITH MIRAFI FILTER WEAVE 700 OR ENGINEER–APPROVED EQUIVALENT.

ADDITIONAL NOTE TO INCLUDE IF OUTLETTING TO A CHANNEL:

1. RIPRAP TO EXTEND TO TOP OF CHANNEL WITH 2:1 SIDE SLOPES THROUGHOUT THE EXTENT OF CHANNEL.



PLAN



PROFILE VIEW

OUTLET BARREL VELOCITY DISSIPATOR

N.T.S.

McAdams
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293, C-187

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CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 NICHOLAS D. WILLIAMSON NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-CD-SWA
CHECKED BY	NDW
DRAWN BY	IAR
SCALE	N.T.S.
DATE	11. 14. 2025

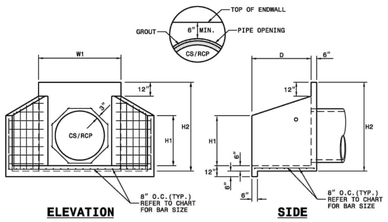
SHEET

STORMWATER CONTROL MEASURE "A" DETAILS

C9.A01

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

X:\Projects\LEN\LEN24015\04-Production\Water Resources\Stormwater Management\Site Plan - Construction Drawings\Current Drawings\LEN24015-CD-SWA.dwg, 2/20/2026 1:47:40 PM, Kevin Hughes



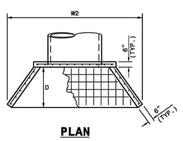
ELEVATION

SIDE

NOTES:

- THIS PRECAST ENDWALL MAY BE USED FOR THE FOLLOWING STANDARDS: 838.01, 838.11, 838.21, 838.27, 838.33, 838.39, 838.51, 838.57, 838.63 AND 838.69.
- INSTALL PRECAST ENDWALLS WITH WINGS AND PAY FOR IN ACCORDANCE WITH SPECIFICATION SECTION 838.
- USE 4000 PSI CONCRETE.
- PROVIDE ALL REINFORCING STEEL WHICH MEETS ASTM A615 FOR GRADE 60 AND WELDED WIRE FABRIC CONFORMING TO ASTM A185 WITH 2" MIN. CLEARANCE.
- PLACE LIFT HOLES OR PINS IN ACCORDANCE WITH OSHA STANDARD 1926.704.
- PIPE TO BE GROUTED INTO ENDWALL AT JOB SITE BY CONTRACTOR.
- ALL ELEMENTS PRECAST TO MEET ASTM C913.
- WELDED WIRE FABRIC MAY BE SUBSTITUTED FOR REBAR AS LONG AS THE SAME AREA OF STEEL IS PROVIDED.
- CHAMFER ALL CORNERS 1" OR HAVE A RADIUS OF 1".

NOTE: THE MINIMUM BAR SIZE SHALL BE #5 BARS AT 8" CTS.THE CONTRACTOR WILL HAVE THE OPTION TO INCREASE THIS BAR SIZE AS NEEDED.



PLAN

ENDWALL DIMENSIONS

	MINIMUM	MIN./MAX.	MIN./MAX.	MIN./MAX.	MIN./MAX.	MIN./MAX.
PIPE DIA.	BAR SIZE	H1	H2	D	W1	W2
12"	#5 @ 8"	15"/24"	33"/45"	15"/21"	36"/45"	66"/72"
15"	#5 @ 8"	15"/24"	37"/45"	15"/24"	42"/45"	78"/81"
18"	#5 @ 8"	15"/24"	40"/51"	15"/30"	42"/45"	78"/81"
24"	#5 @ 8"	18"/32"	47"/57"	21"/30"	48"/51"	90"/99"
30"	#5 @ 8"	30"/42"	54"/72"	24"/36"	54"/66"	120"/138"
36"	#5 @ 8"	36"/42"	61"/72"	33"/42"	63"/69"	138"/141"
42"	#5 @ 8"	39"/52"	68"/81"	39"/42"	72"/81"	144"/159"
48"	#5 @ 8"	42"/52"	75"/84"	39"/42"	78"/81"	156"/159"
54"	#5 @ 8"	48"/60"	82"/102"	39"/48"	84"/111"	162"/189"
60"	#5 @ 8"	54"/60"	89"/102"	39"/48"	89"/111"	165"/189"
66"	#5 @ 8"	54"/60"	96"/102"	39"/48"	96"/111"	168"/189"
72"	#5 @ 8"	54"/60"	103"/108"	39"/48"	103"/111"	177"/201"

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

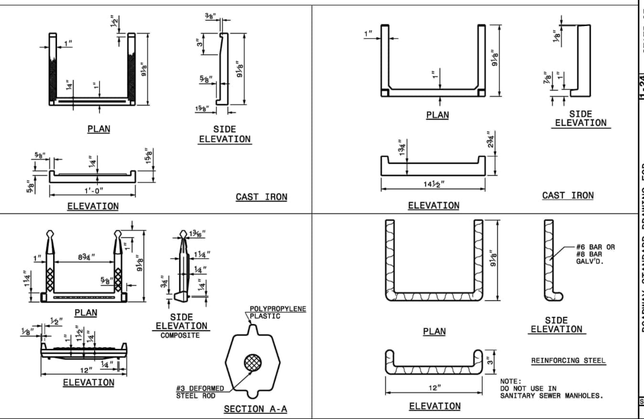
STD. NO. 838.80

ROADWAY STANDARD DRAWING FOR **PRECAST CONCRETE ENDWALL** FOR SINGLE 12" THRU 72" PIPE - 90° SKEW

SHEET 1 OF 1

838.80

NOTES:
INSTALL ALL STEPS PROTRUDING 4" FROM INSIDE FACE OF STRUCTURE WALL.
STEPS DIFFERING IN DIMENSIONS, CONFIGURATION, OR MATERIALS FROM THOSE SHOWN MAY ALSO BE USED PROVIDED THE CONTRACTOR HAS FURNISHED THE ENGINEER WITH DETAILS OF THE PROPOSED STEPS AND HAS RECEIVED WRITTEN APPROVAL FROM THE ENGINEER FOR THE USE OF SUCH STEPS.



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

STD. NO. 840.66

ROADWAY STANDARD DRAWING FOR **DRAINAGE STRUCTURE STEPS**

SHEET 1 OF 1

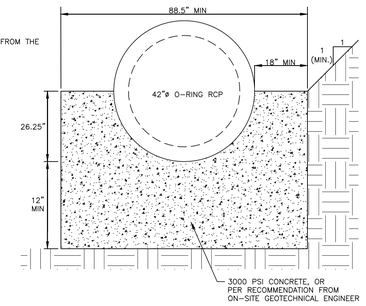
840.66

NOTE:

1. CONTRACTOR SHALL PROVIDE A JOINT IN THE OUTLET BARREL NO MORE THAN 5-FT FROM THE RISER.

BARREL PIPE CONCRETE CRADLE CONSTRUCTION SEQUENCE

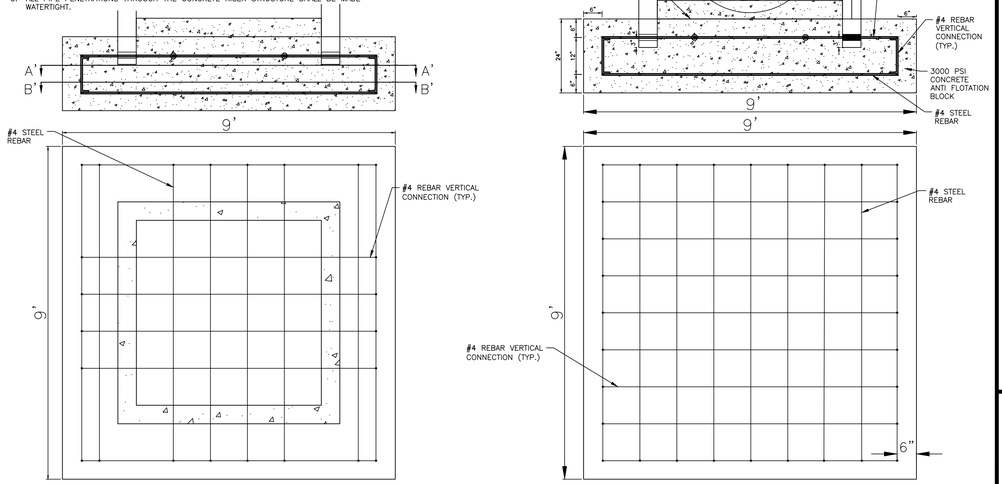
1. BRING GRADE OF DAM EMBANKMENT TO SPRINGLINE OF PIPE ELEVATION.
2. EXCAVATE TRENCH FOR CRADLE AND BARREL PER DIMENSIONS ON DRAWINGS.
3. PLACE BARREL PIPE ON CONCRETE BLOCKS TO GRADE. AT THIS STEP, CONTRACTOR SHALL WRAP A DOUBLE LAYER OF NON-WOVEN GEOTEXTILE FABRIC AROUND EACH JOINT OF THE 42"ø O-RING RCP BARREL IN 2' WIDE STRIPS CENTERED ON JOINT.
4. PLACE CONCRETE FOR CRADLE FOR EACH SECTION FROM ONE SIDE OF THE TRENCH. ALLOW CONCRETE TO FILL ENTIRE AREA UNDER PIPE AND PIPE HAUNCHES AS TO LEAVE NO VOIDS UNDER THE PIPE BEFORE PLACING CONCRETE ON THE OPPOSITE SIDE OF THE TRENCH. PLACE ENTIRE CRADLE AS ONE LIFT (VERTICALLY) PER DRAWINGS.
5. ALLOW CRADLE TO CURE FOR A MINIMUM OF 7 DAYS BEFORE ANY VIBRATING COMPACTION EQUIPMENT IS USED IN THE VICINITY OF THE BARREL PIPE.
6. TRENCH TO BE BACKFILLED IN 5" LIFTS WHEN COMPACTION IS BY HAND. BACKFILL IS IN 8" LIFTS WHEN CONDUCTED BY MACHINE. MINIMUM OF 2 FEET COVER MUST BE PRESENT ON 42"ø RCP BEFORE DRIVING OVER WITH HEAVY EQUIPMENT.



42" CONCRETE CRADLE DETAIL
N.T.S.

NOTES:

1. ALL REINFORCING STEEL IN RISER ANTI-FLOTATION BLOCK TO BE GRADE 60 #4 BARS FOR HORIZONTAL CROSSING AND GRADE 60 #4 BARS FOR VERTICAL CONNECTIONS.
2. INSIDE OF RISER BOTTOM TO BE FORMED WITH NON-SHRINK GROUT TO INVERT ELEVATION OF BARREL.
3. ALL PIPE PENETRATIONS THROUGH THE CONCRETE RISER STRUCTURE SHALL BE MADE WATERTIGHT.



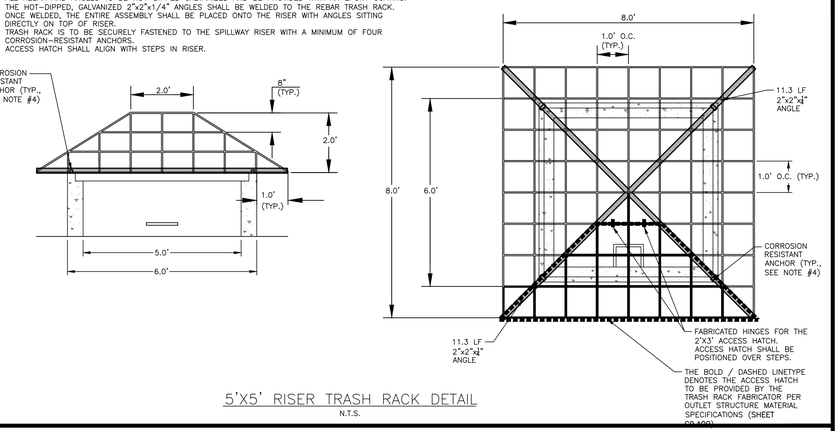
CROSS-SECTION 'A-A'
N.T.S

CROSS-SECTION 'B-B'
N.T.S

RISER/ANTI-FLOTATION BLOCK CONNECTION

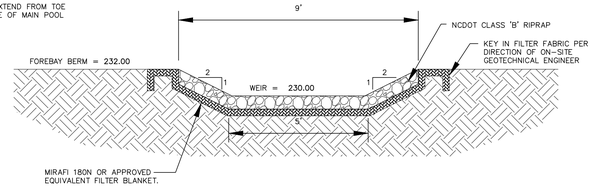
NOTES:

1. ALL REBAR TO BE #4 REBAR.
2. ALL REBAR AND ANGLES TO BE HOT-DIPPED GALVANIZED AND BE PROVIDED WITH AN EPOXY COATING.
3. THE HOT-DIPPED, GALVANIZED 2"x2"x1/4" ANGLES SHALL BE WELDED TO THE REBAR TRASH RACK. ONCE WELDED, THE ENTIRE ASSEMBLY SHALL BE PLACED ONTO THE RISER WITH ANGLES SITTING DIRECTLY ON TOP OF RISER.
4. TRASH RACK IS TO BE SECURELY FASTENED TO THE SPILLWAY RISER WITH A MINIMUM OF FOUR CORROSION-RESISTANT ANCHORS.
5. ACCESS HATCH SHALL ALIGN WITH STEPS IN RISER.



5'X5' RISER TRASH RACK DETAIL
N.T.S.

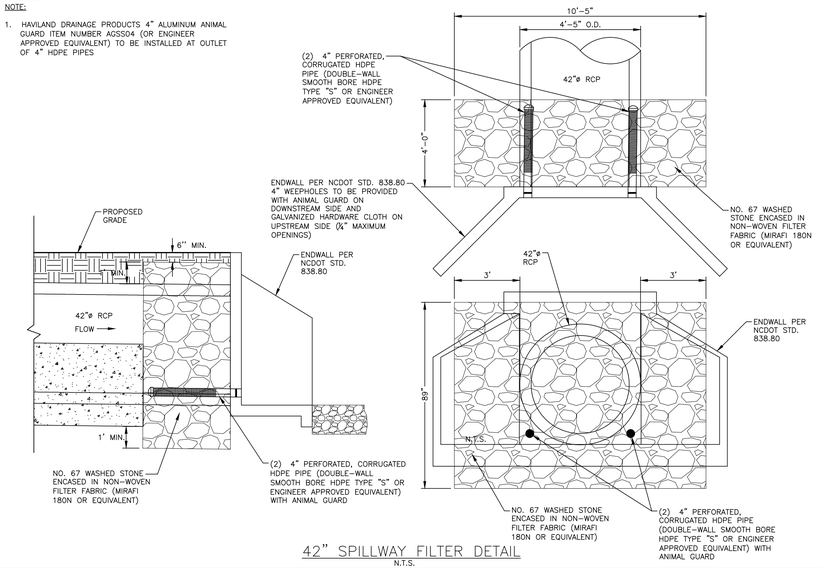
NOTE: RIPRAP TO EXTEND FROM TOE OF FOREBAY TO TOE OF MAIN POOL



FOREBAY WEIR SPILLWAY CROSS-SECTION
N.T.S.

NOTE:

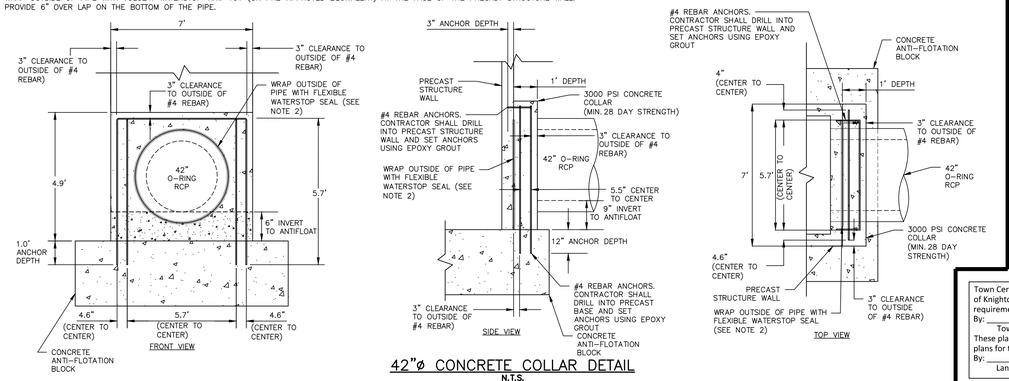
1. HAVILAND DRAINAGE PRODUCTS 4" ALUMINUM ANIMAL GUARD ITEM NUMBER AGSS04 (OR ENGINEER APPROVED EQUIVALENT) TO BE INSTALLED AT OUTLET OF 4" HDPE PIPES



42" SPILLWAY FILTER DETAIL
N.T.S.

NOTES:

1. ALL REBAR TO BE #4 REBAR.
2. WRAP OUTSIDE OF PIPE WITH VOLCLAY WATERSTOP-RX® 101 (OR PRE-APPROVED EQUIVALENT) AT THE FACE OF THE PRECAST STRUCTURE WALL. PROVIDE 6" OVER LAP ON THE BOTTOM OF THE PIPE.



42"ø CONCRETE COLLAR DETAIL
N.T.S.

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

McADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293, C-187

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CLIENT

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1100 PERIMETER PARK DRIVE, SUITE 112
MORRISVILLE, NORTH CAROLINA 27560
CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 NICHOLAS D. WILLIAMSON NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-CD-SWA
CHECKED BY	NDW
DRAWN BY	IAR
SCALE	N.T.S.
DATE	11. 14. 2025

SHEET

STORMWATER CONTROL MEASURE "A" DETAILS

C9.A02

X:\Projects\LEN\LEN24015\04-Production\Water Resources\Stormwater Management\Site Plan - Construction Drawings\Current Drawings\LEN24015-CD-SWA.dwg, 2/20/2026 1:47:43 PM, Kevin Hughes

STORMWATER CONTROL MEASURE ''A'' PLANTING PLAN SPECIFICATIONS

LEGEND

QTY.	SYM.	SCIENTIFIC NAME	COMMON NAME	HATCH	TYPE	SPACING
SHALLOW WATER						
231	IV	IRIS VERSICOLOR	BLUE FLAG IRIS		4-INCH CONTAINER	24" O.C.
242	PC	PONTEDERIA CORDATA	PICKEREL WEED		4-INCH CONTAINER	24" O.C.
242	ST	JUNCUS EFFUSUS	COMMON RUSH		4-INCH CONTAINER	24" O.C.
SHALLOW LAND						
282	CS	ASCLEPIAS INCARNATA	SWAMP MILKWEED		4-INCH CONTAINER	24" O.C.
295	CA	HELIOPSIS HELLIANTHOIDES	FALSE SUNFLOWER		4-INCH CONTAINER	24" O.C.
298	HA	LIATRIS SPECATA	BLAZING STAR		4-INCH CONTAINER	24" O.C.

(ASSUMED 1 STEM PER 4 SF FOR ALL CALCULATIONS)

SEEDBED PREPARATION

1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3-4 INCHES DEEP OVER ADVERSE SOIL CONDITIONS. TOPSOIL SHOULD BE INCORPORATED INTO THE FINAL GRADING OF THE BASIN SIDE SLOPES AND AQUATIC SHELF. CONTRACTOR SHOULD SCARIFY THE TOP 3-4 INCHES OF THE COMPACTED FILL TO PROMOTE BONDING WITH TOPSOIL.
2. RIP THE ENTIRE AREA TO 6 INCHES DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. PER ONE TIME ONLY, APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL.
5. CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. AFTER PERMANENT COVER IS ESTABLISHED.
9. CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT.

TEMPORARY SEEDING SCHEDULE

SEEDING DATE	SEEDING MIXTURE	APPLICATION RATE
JAN 1 - MAY 1	RYE (GRAIN)	120 LBS/AC
	KOBE LESPEDEZA	50 LBS/AC
MAY 1 - AUG 15	GERMAN MILLET	40 LBS/AC
AUG 15 - DEC 30	RYE (GRAIN)	120 LBS/AC

SOIL AMENDMENTS
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 LB/AC GROUND AGRICULTURE LIMESTONE AND 750 LB/AC 10-10-10 FERTILIZER (FROM AUG 15 - DEC 30, INCREASE 10-10-10 FERTILIZER TO 1000 LB/AC).

MULCH
APPLY 4000 LB/AC 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
JAN 1 - AUG 15: REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE, AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

AUG 15 - DEC 30: REPAIR AND REFERTILIZE DAMAGED AREAS IMMEDIATELY. TOP DRESS WITH 50 LB/AC OF NITROGEN IN MARCH. IF IT IS NECESSARY TO EXTEND TEMPORARY COVER BEYOND JUNE 15, OVERSEED WITH 50 LB/AC KOBE LESPEDEZA IN LATE FEBRUARY OR EARLY MARCH.

NOTE: USE THE TEMPORARY SEEDING SCHEDULE ONLY WHEN DATE IS NOT CORRECT TO USE THE PERMANENT SEEDING SCHEDULE.

PERMANENT SEEDING SCHEDULE (DAM EMBANKMENTS)

SEEDING DATE	SEEDING MIXTURE OPTIONS (CHOOSE ONE)	APPLICATION RATE
MARCH 1 - JUNE 31	HYBRID BERMUDA GRASS	1 LBS/1,000 SF (OR MANUFACTURER SPECIFICATIONS)
SEPT 1 - OCT 31		1 LBS/1,000 SF (OR MANUFACTURER SPECIFICATIONS)

SOIL AMENDMENTS
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 4,000 LB/AC GROUND AGRICULTURE LIMESTONE AND 1000 LB/AC 10-10-10 FERTILIZER.

MULCH
APPLY 4000 LB/AC 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
INSPECT AND REPAIR MULCH FREQUENTLY. REFERTILIZE IN LATE WINTER OF THE FOLLOWING YEAR; USE SOIL TESTS OR APPLY 150 LB/AC 10-10-10 FERTILIZER. MOW REGULARLY TO A HEIGHT OF 2-4 INCHES.

NOTE: PERMANENT SEEDING SCHEDULE IS FOR SLOPES OF THE BASIN AND TOP OF BERM. SEE REQUIRED TOWN OF KINIGHTDALE SCM BASIN REMOVAL SEQUENCE NOTE 13 ON SHEET C9.04 FOR PERMANENT SEEDING CONSTRUCTION SEQUENCE.

PLANTING INSTRUCTIONS

PLANTING TECHNIQUES
A. ENSURE THAT ROOTS, ONCE REMOVED FROM POT, ARE STRAIGHTENED AND FACE DOWNWARD.
B. CREATE PLANTING AREA FOR EACH PLANT AND EXCAVATE PIT.
C. PLACE PLANTS IN PIT, ENSURING ROOTS ARE FACING COMPLETELY DOWNWARD.
D. HEEL IN SOIL AROUND PLANT AND PROCEED TO NEXT PLANTING LOCATION.
E. NEWLY PLANTED PLANTS NEED TO BE FASTENED TO THE SUBSTRATE FOR THE ESTABLISHMENT OF NEW ROOTS.
F. ROOTS SHALL BE SPREAD IN THEIR NORMAL POSITION. ALL BROKEN OR FRAYED ROOTS SHALL BE CUT OFF CLEANLY.
G. THE DIAMETER OF THE PITS FOR ALL VEGETATIVE STOCK SHALL BE AT LEAST THREE TIMES THE DIAMETER OF THE ROOT MASS. PLANT PIT WALL SHALL BE SCARIFIED PRIOR TO PLANT INSTALLATION.
H. SET THE PLANTS UPRIGHT, IN THE CENTER OF THE PIT. THE BOTTOM OF THE ROOT MASS SHOULD BE RESTING ON UNDISTURBED SOIL.
I. PLACE THE BACKFILL AROUND THE BASE AND SIDES OF THE ROOT MASS, AND WORK EACH LAYER TO SETTLE BACKFILL AND TO ELIMINATE VOIDS AND AIR POCKETS. WHEN PIT IS APPROXIMATELY 2/3 FULL, WATER THOROUGHLY BEFORE PLACING REMAINDER OF THE BACKFILL. WATER AGAIN AFTER PLACING FINAL LAYER OF BACKFILL.
J. BROKEN OR DAMAGED PARTS WILL BE CUT BACK TO UNDAMAGED TISSUE, LEAVING AS MUCH GREEN BASAL TISSUE AS POSSIBLE ABOVE THE ROOTS. IF MORE THAN FIFTY PERCENT (50%) OF THE PLANT IS DAMAGED THEN CONTRACTOR SHALL REPLACE THE PLANT.

CONTAINER STOCK / BARE ROOT
A. STOCK SHALL HAVE BEEN GROWN IN A CONTAINER LONG ENOUGH FOR THE ROOT SYSTEM TO HAVE DEVELOPED SUFFICIENTLY TO HOLD ITS SOIL TOGETHER ONCE REMOVED FROM THE CONTAINER.
B. CONTAINER PLANTS WILL NEED TO BE WATERED REGULARLY AND PLACED IN SHADY CONDITIONS UNTIL PLANTING OCCURS.
C. BARE ROOT PLANTS ARE FOR IMMEDIATE PLANTING, OTHERWISE SEE D) BELOW.
D. IF BARE ROOTS SPECIMENS ARE NOT TO BE PLANTED WITHIN FOUR (4) DAYS, TEMPORARY HOLDING OF BARE ROOT SPECIMENS ARE TO BE COVERED ENTIRELY BY A SUITABLE MEDIUM (ETC. SOIL, SAWDUST, MULCH OR THE LIKE) AND WATERED REGULARLY SO AS TO NOT DRY OUT.

PLANT LOCATIONS
A. NEW PLANTINGS SHALL BE LOCATED WHERE SHOWN ON PLAN EXCEPT WHERE CHANGES HAVE BEEN MADE IN PROPOSED CONSTRUCTION.
B. NECESSARY ADJUSTMENTS SHALL BE MADE ONLY AFTER APPROVAL BY THE OWNER OR THE OWNER'S REPRESENTATIVE.

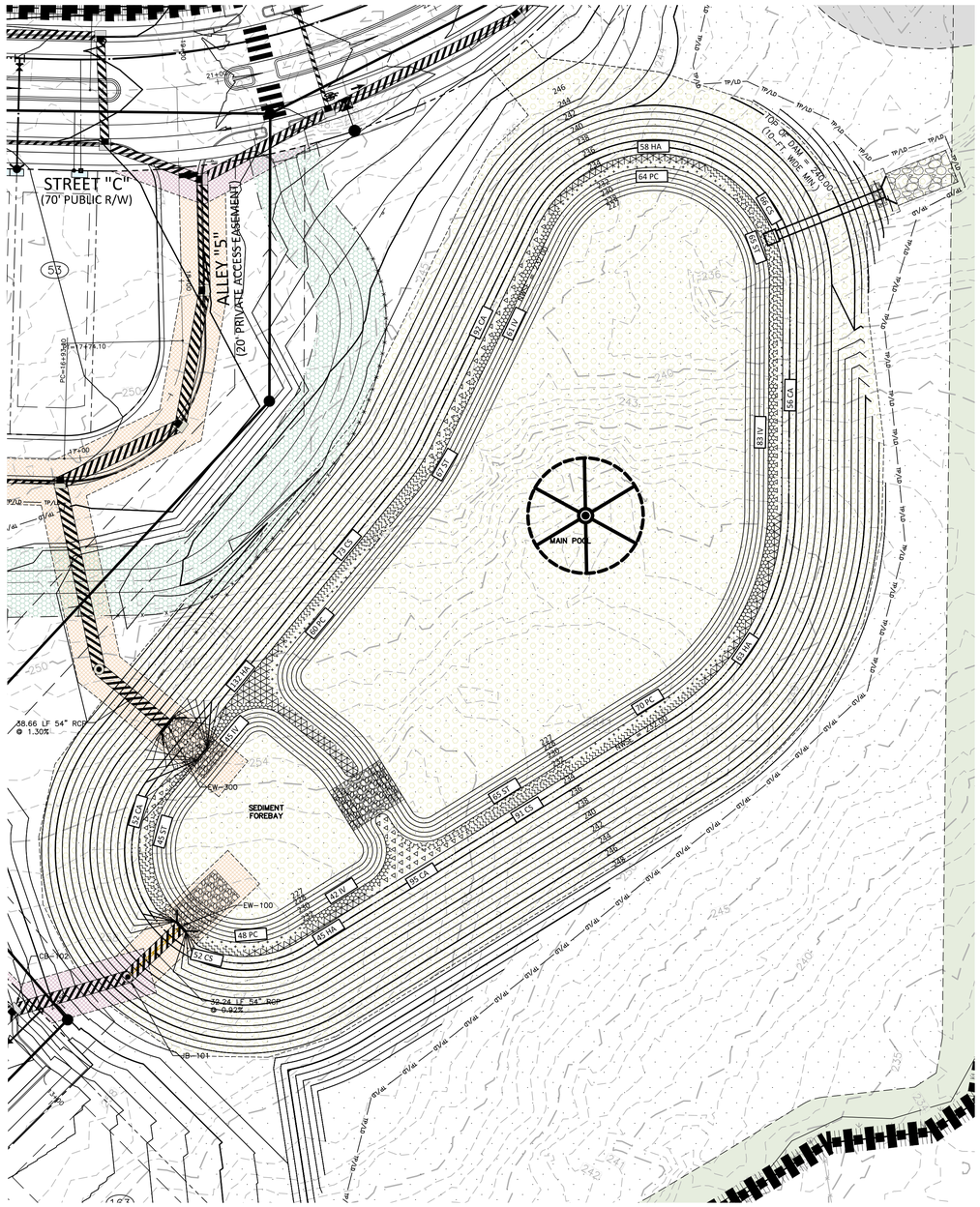
WATER
WATER SHALL BE POTABLE AND SHALL NOT CONTAIN ELEMENTS TOXIC TO PLANT LIFE.

PLANTING SCHEDULE

1. ONCE THE GRADING IS COMPLETE, THE CONTRACTOR SHALL REQUEST AN ON-SITE INSPECTION AND AN AS-BUILT SURVEY PRIOR TO INSTALLATION OF THE STORMWATER MANAGEMENT FACILITY PLANTS. IF THE CONTRACTOR PLANTS THE PROPOSED VEGETATION PRIOR TO AN AS-BUILT SURVEY (AND SUBSEQUENT APPROVAL), ANY CHANGES TO THE GRADING / RE-PLANTING OF PLANTS WILL BE AT THE CONTRACTOR'S EXPENSE.
2. ONCE THE ENGINEER HAS APPROVED THE AS-BUILT GRADING, THE CONTRACTOR SHALL PLANT THE PROPOSED STORMWATER MANAGEMENT FACILITY PLANTS SHOWN ON THE LANDSCAPE PLAN FOR THE FACILITY. AFTER COMPLETION OF THE PLANTING, THE LANDSCAPE CONTRACTOR SHALL PROVIDE A LETTER TO THE ENGINEER CERTIFYING THAT THE PLANTS HAVE BEEN INSTALLED PER THE APPROVED STORMWATER MANAGEMENT FACILITY PLANTING PLAN. 90% GERMINATION REQUIRED OF NON-CLUMPING TURF GRASS PRIOR TO FINAL CERTIFICATION.
3. OPTIMAL PLANTING PERIODS RANGE APPROXIMATELY FROM APRIL 15TH THRU JUNE 30TH AND SEPTEMBER 1ST THRU OCTOBER 31ST. FOR FINAL DETERMINATION OF THE SITE'S PLANTING PERIOD, THE CONTRACTOR SHALL COORDINATE WITH A LANDSCAPE PROFESSIONAL REGARDING SCHEDULING FOR PLANT INSTALLATION.
4. IT IS RECOMMENDED THAT THE CONTRACTOR TAKE MEASURES TO PREVENT WILDLIFE FROM DAMAGING OR CONSUMING WETLAND PLANTINGS.

TOWN OF KNIGHTDALE SCM PLANTING NOTES

1. THE DAM STRUCTURE, INCLUDING FRONT AND BACK EMBANKMENT SLOPES, OF THE POND SHALL BE VEGETATED WITH NON-CLUMPING TURF GRASS OR SOD. (CENTIPEDE/HYBRID-BERMUDA) 90% GERMINATION OF NON-CLUMPING TURF WILL BE REQUIRED PRIOR TO FINAL CERTIFICATION FORM THE TOWN.
2. THE 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 FEET OF SHELF AREA.
3. CONTRACTOR TO WORK WITH SOILS SCIENTIST TO ENSURE SOILS ARE ADEQUATE TO SUPPORT PROPER ESTABLISHMENT AND GROWTH OF THE AQUATIC PLANTINGS. CONTRACTOR TO AMEND SOILS AND INSTALL SOILS IN PLANT, SHRUB, AND TREE AREAS PER DETAILS, SOIL SPECIFICATIONS. NCDENR SPECIFICATION, AND SOIL SCIENTIST RECOMMENDATIONS.
4. ALL AQUATIC PLANTINGS ARE TO BE INSTALLED DURING THE APPROPRIATE TIME OF YEAR TO ENSURE SURVIVABILITY. (LAST SPRING FROST AND THE FIRST FALL FROST)
5. ALL DISTURBED AREAS AROUND THE OUTSIDE OF THE DEVICE SHALL BE SEEDED WITH A LAWN AREA SEED MIX (PER SEEDING SPECIFICATIONS) NATIVE GRASSES, LEGUMES, CLOVERS, AND WILDFLOWERS.
6. IF THE DEVICE WAS USED DURING CONSTRUCTION AS A SEDIMENT BASIN OR TRAP, THE BASIN MUST BE CLEANED OUT, GRADED, APPROPRIATE AREAS COVERED WITH 4" OF TOPSOIL AS SPECIFIED IN NOTE #2 ABOVE, AND VEGETATED WITHIN 14 DAYS OF THE COMPLETION OF CONSTRUCTION.
7. CONTRACTOR SHALL WATER ALL VEGETATION AND GRASS ON A WEEKLY BASIS AS NEEDED TO ENSURE GRASS AND PLANT SURVIVAL UNTIL AFTER THE SCM IS CERTIFIED AND ACCEPTED BY THE TOWN.



STORMWATER WET POND ''A'' PLAN VIEW

1" = 30'

GRAPHIC SCALE
0 15 30 60
1 inch = 30 ft.

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

McADAMS
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CLIENT

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LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 NICHOLAS D. WILLIAMSON NOT FOR CONSTRUCTION

REVISIONS

NO. DATE

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-CD-SWA
CHECKED BY	NDW
DRAWN BY	IAR
SCALE	1" = 30'
DATE	11. 14. 2025

SHEET

STORMWATER CONTROL MEASURE ''A'' PLANTING PLAN

C9.A03

X:\Projects\LEN\LEN24015\04-Production\Water Resource\Stormwater Management\Site Plan - Construction Drawings\Current Drawings\LEN24015-CD-SWA.dwg, 2/20/2026 1:47:46 PM, Kevin Hughes

GENERAL NOTES

1. PRIOR TO CONSTRUCTION, ANY DISCREPANCIES IN THE PLANS AND NOTES SHALL BE BROUGHT TO THE DESIGN ENGINEER'S ATTENTION IMMEDIATELY. IF THE CONTRACTOR, IN THE COURSE OF WORK, FINDS ANY DISCREPANCIES IN THE PLANS OR NOTES GIVEN BY THE PROJECT ENGINEER, IT SHALL BE THEIR DUTY TO IMMEDIATELY INFORM THE PROJECT ENGINEER IN WRITING. ANY WORK DONE AFTER SUCH A DISCOVERY, UNTIL AUTHORIZED, WILL BE AT THE CONTRACTOR'S RISK.
2. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY LICENSES AND PERMITS REQUIRED TO COMPLETE THE WORK INCLUDED IN THE CONTRACT DOCUMENTS AT THE CONTRACTOR'S EXPENSE.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THAT THEY AND THEIR SUBCONTRACTORS HAVE THE CORRECT AND MOST UP-TO-DATE PLANS AVAILABLE.
4. THE PROJECT WILL MEET ALL RELEVANT DESIGN REQUIREMENTS IN THE NCDEQ MANUAL AND THE TOWN OF KNIGHTDALE REGULATIONS AND STANDARDS.
5. THE DESIGN ENGINEER OR THEIR REPRESENTATIVE SHALL BE ON SITE FOR THE INSTALLATION OF ESSENTIAL ELEMENTS OF THE PRINCIPAL SPILLWAY INCLUDING BUT NOT LIMITED TO THE ANTI-FLOAT BLOCK, RISER, CONCRETE COLLAR, CONCRETE CRADLE, AND THE OUTLET BARREL. THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER 72 HOURS PRIOR TO INSTALLATION OF THESE ITEMS TO ENSURE THAT A REPRESENTATIVE CAN BE ON SITE. PHOTOGRAPHS OF THESE ITEMS MUST BE TAKEN PRIOR TO BACKFILLING FOR USE IN THE AS-BUILT PHASE. IF THE CONTRACTOR INSTALLS THESE ITEMS WITHOUT THE ENGINEER OR ENGINEER'S REPRESENTATIVE ON SITE, THEN THE ELEMENTS SHALL BE UNCOVERED FOR INSPECTION AT THE CONTRACTOR'S EXPENSE.
6. THE FINAL CERTIFICATION FOR THIS FACILITY WILL INCLUDE A CERTIFICATION BY THE ON-SITE GEOTECHNICAL ENGINEER THAT THE PROJECT WAS CONSTRUCTED PER THE APPROVED PLANS.
   A. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE ON-SITE GEOTECHNICAL ENGINEER FOR OBSERVATION AND TESTING SUCH THAT THE ON-SITE GEOTECHNICAL ENGINEER CAN CERTIFY THE CONSTRUCTION OF THE DAM EMBANKMENT AND SPILLWAY. THIS CERTIFICATION MUST ADDRESS THE TESTING FOR MATERIALS AND COMPACTION OF THE DAM EMBANKMENT AND SPILLWAY.
   B. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE ON SITE *GEOTECHNICAL ENGINEER*/SOIL SCIENTIST TO ENSURE THAT IN-PLACE INFILTRATION TESTING IS PERFORMED AFTER FINAL PLACEMENT OF MEDIA BUT PRIOR TO THE AS-BUILT PHASE TO ENSURE PROPER INFILTRATION RATES ARE ACHIEVED.
7. ALL CONSTRUCTION ACTIVITY RELATED TO THE PROPOSED STORMWATER CONTROL MEASURE SHALL BE PER THE DETAILS AND SPECIFICATIONS SHOWN IN THESE DRAWINGS. SOIL CLASSIFICATIONS, COMPACTION, SPECIAL MEDIA, AND OTHER DETAILS AND SPECIFICATIONS MAY BE MODIFIED PER THE RECOMMENDATIONS OF THE ON-SITE GEOTECHNICAL ENGINEER. HOWEVER, PRIOR TO IMPLEMENTATION, THE DESIGN ENGINEER SHALL BE NOTIFIED OF ANY DEVIATION FROM THESE DESIGN DRAWINGS, INCLUDING SHOP DRAWINGS FOR ANY PROPOSED MODIFICATION.
8. DURING THE INITIAL STAGES OF CONSTRUCTION, THE STORMWATER CONTROL MEASURE MAY BE USED AS A SEDIMENT BASIN FOR EROSION CONTROL PURPOSES. IF SO, THE CONTRACTOR SHALL FOLLOW THE GENERAL CONSTRUCTION SEQUENCE OUTLINED IN NOTES 2-17 OF THE 'CONSTRUCTION SEQUENCE FOR BIORETENTION AREA'.
9. ALL OSHA REQUIREMENTS FOR EXCAVATIONS (SHORING, DEPTH, ETC.) ARE THE RESPONSIBILITY OF THE CONTRACTOR. IF REQUIRED, THE CONTRACTOR SHALL PROVIDE AN EXCAVATION PLAN TO BE SEALED BY A NC P.E. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE IF AN EXCAVATION PLAN IS REQUIRED. THE JOHN R. MCADAMS COMPANY ASSUMES NO RESPONSIBILITY FOR ANY EXCAVATION DESIGN RELATED TO SAFETY OR OSHA REQUIREMENTS.
10. IT IS ANTICIPATED THAT DEWATERING MAY BE NECESSARY IN THE EXCAVATION AREAS (E.G. - EMBANKMENT SUB GRADE, INTERIOR PORTIONS OF THE STORMWATER CONTROL MEASURE, KEY TRENCH, ETC.). THEREFORE, THE CONTRACTOR SHALL FURNISH, INSTALL, OPERATE, AND MAINTAIN ANY PUMPING EQUIPMENT, ETC. NEEDED FOR REMOVAL OF WATER FROM VARIOUS PARTS OF THE STORMWATER CONTROL MEASURE SITE.
    A. DURING PLACEMENT OF FILL WITHIN THESE AREAS, THE CONTRACTOR SHALL KEEP THE WATER LEVEL BELOW THE BOTTOM OF THE EXCAVATION / CONSTRUCTION AREAS.
    B. THE MANNER IN WHICH THE WATER IS REMOVED SHALL BE SUCH THAT THE EXCAVATION BOTTOM AND SIDE SLOPES ARE STABLE, WITH NO SEDIMENT DISCHARGED FROM THE SITE (I.E. PUMPED WATER MAY NEED TO BE DIRECTED TO AN APPROVED EROSION CONTROL DEVICE PRIOR TO DISCHARGE).
11. PRIOR TO CONSTRUCTION, THE ONSITE GEOTECHNICAL ENGINEER OR SOIL SCIENTIST SHALL REVIEW THE FILTRATION AND PERMEABILITY ASPECTS OF THE PROPOSED BIORETENTION MATERIALS. THE GEOTECHNICAL ENGINEER SHALL ENSURE THAT THE METHODS UTILIZED MINIMIZE THE CREATION OF FINE SOIL PARTICLES AND MATERIAL SOURCES SELECTED MINIMIZE THE MIGRATION OF FINE SOIL PARTICLES THROUGH UNDERLYING GRAVEL LAYERS. MATERIALS SHALL MATCH THOSE SPECIFIED IN THE 'BIORETENTION AREA MATERIAL SPECIFICATIONS' AND 'BIORETENTION MEDIA MIX SPECIFICATIONS' NOTES.
12. THE GRADES SHOWN ON THIS PLAN ARE FINISHED GRADES. IF THE EXISTING SOIL LAYER AFTER CONSTRUCTION/COMPACTION IS NOT DETERMINED SUITABLE BY A LANDSCAPE PROFESSIONAL FOR THE BIORETENTION ADJACENT PLANTINGS, THEN THE CONTRACTOR SHALL AMEND THE AREAS ADJACENT TO THE BIORETENTION AREA AS DIRECTED BY A LANDSCAPE PROFESSIONAL.
13. THE CONTRACTOR SHALL REFER TO THE LANDSCAPE PLAN ON SHEET C9.XX FOR THE PERMANENT PLANTING PLAN/SCHEDULE FOR THE INTERIOR OF THE BIORETENTION AREA. CONTRACTOR SHALL COORDINATE WITH A LANDSCAPE PROFESSIONAL REGARDING SCHEDULING FOR PLANT INSTALLATION. THE PERMANENT VEGETATION FOR THE PROPOSED DAM EMBANKMENT SHALL BE [INSERT GRASS SPECIES HERE]. PLEASE NOTE THAT NO TREES, SHRUBS, OR WOODY VEGETATION OF ANY TYPE MAY BE PLANTED ON THE PROPOSED DAM EMBANKMENT (FILL AREAS). THE INTERIOR SLOPES OF THE BIORETENTION AREA ARE TO BE PROVIDED WITH A [INSERT GRASS SPECIES HERE] SOD STRIP AROUND THE ENTIRE PERIMETER OF THE CELL FROM ELEVATION 270.00-273.00FT.
14. ANY EXPOSED EDGE/SIDE OF THE BIORETENTION CELL SHALL BE SODDED AS SOON AS POSSIBLE AFTER CONSTRUCTION IS COMPLETE. PLEASE REFER TO THE LANDSCAPE PLAN FOR ADDITIONAL INFORMATION.
15. KEY MEASUREMENTS FOR EACH STORMWATER CONTROL ARE LISTED BELOW
    A. SCM B
        A.1. MINIMUM SURFACE AREA AT BOTTOM CONTOUR OF BASIN: 1,600 SF
        A.2. RISER BOX OUTLET STRUCTURE: 4 FT x 4 FT
        A.3. CLASS III O-RING RCP OUTLET PIPE: 18 IN DIAMETER
        A.4. PVC UNDERDRAIN / HDPE CLEAN-OUTS: 6 IN DIAMETER

BIORETENTION AREA MATERIAL SPECIFICATIONS

1. THE UNDERDRAIN PIPING AND FITTINGS FOR THE BIORETENTION AREA SHALL BE 6 IN Ø SCHEDULE 40 OR SDR 35 SMOOTH WALL SLOTTED OR PERFORATED PVC PIPE TYPE 'S' MEETING THE REQUIREMENTS OF AASHTO M-252. THE 6 IN Ø SLOTTED OR PERFORATED PIPE SHALL CONTAIN CIRCULAR PERFORATIONS MEETING AASHTO CLASS II, SEE DETAIL ON SHEET C9.B05.
2. THE UNDERDRAIN CLEAN-OUTS / OBSERVATION WELLS SHALL BE SOLID 6 IN Ø DUAL-WALLED HDPE PIPE. THE PIPE AND FITTINGS SHALL BE TYPE 'S' AND SHALL MEET THE REQUIREMENTS OF AASHTO M-252.
3. THE CONTRACTOR SHALL INSTALL WATER TIGHT PVC OR HDPE FITTINGS AS APPROPRIATE TO ACHIEVE THE REQUIRED INVERTS SHOWN IN DETAILS.
4. THE ROOT CONTROL FABRIC TO BE WRAPPED AROUND UNDERDRAINS SHALL BE TYPAR BIOBARRIER. EACH UNDERDRAIN PIPE SHALL BE WRAPPED IN ONE LAYER OF THE BIOBARRIER FABRIC.
5. THE DRAINAGE STONE LAYER SHALL CONSIST OF NCDOT WASHED #57 STONE OR ENGINEER-APPROVED EQUIVALENT.
6. THE CHOKING STONE LAYER SHALL BE WASHED #8 OR WASHED #89 STONE LAYER MEETING THE REQUIREMENTS OF ASTM-C-33.
7. THE WASHED SAND SHALL MEET REQUIREMENTS OF WASHED ASTM-C-33 FINE AGGREGATE CONCRETE SAND. IN ADDITION TO THE ASTM-C-33 SPECIFICATION, THE WASHED SAND MUST MEET THE FOLLOWING CONDITIONS:
   A. SAND MUST MEET GRADATION REQUIREMENTS FOR ASTM-C-33 FINE AGGREGATE CONCRETE SAND. AASHTO M-6/M-80, ASTMC330, AASHTO M195 GRADATION IS ALSO ACCEPTABLE.
   B. SAND MUST BE SILICA BASED. NO LIMESTONE BASED PRODUCTS MAY BE USED. IF THE MATERIAL IS WHITE OR GRAY IN COLOR, IT IS LIKELY NOT ACCEPTABLE.
   C. SAND MUST BE CLEAN. NATURAL, UNWASHED SAND DEPOSITS MAY NOT BE USED. LIKEWISE, SAND THAT HAS BECOME CONTAMINATED BY IMPROPER STORAGE OR INSTALLATION PRACTICES WILL BE REJECTED.
   D. MANUFACTURED SAND OR STONE DUST IS NOT ACCEPTABLE UNDER ANY CIRCUMSTANCE.
6. THE MULCH SHALL CONSIST OF TRIPLE-SHREDDED HARDWOOD OR STONE MULCH. MULCH OR STONE MULCH SHALL BE WELL-AGED AND UNIFORM IN COLOR. WELL-AGED MULCH IS DEFINED AS MULCH THAT HAS BEEN STOCKPILED OR STORED FOR AT LEAST 12 MONTHS. MULCH SHOULD BE FREE OF WEED SEEDS, SOIL, ROOTS, OR ANY OTHER SUBSTANCE NOT CONSISTING OF EITHER BOLE OR BRANCH WOOD AND BARK. THE MULCH DEPTH SHALL BE 3 IN UNIFORMLY PLACED. GRASS CLIPPINGS ARE UNSUITABLE FOR MULCH AND SHOULD BE AVOIDED FOR USE WITHIN THE BIORETENTION AREA.
7. THE SUBGRADE OF THE BIORETENTION CELL SHALL BE LINED WITH NON-WOVEN GEOTEXTILE FABRIC, TYPE MIRAFI 180N OR ENGINEER-APPROVED EQUIVALENT.

BIORETENTION MEDIA MIX SPECIFICATIONS

1. THE BIORETENTION MEDIA SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN 0.5 INCHES IN DIAMETER.
2. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE BIORETENTION AREA THAT MAY BE HARMFUL TO PLANT GROWTH OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, JOHNSON GRASS, QUACK GRASS, MUGWORT, NUTSEDGE, POISON IVY, CANADA THISTLE, OR OTHER NOXIOUS WEEDS.
3. THE MEDIA SHALL BE A HOMOGENOUS SOIL MIX ENGINEERED MEDIA BLEND WITH APPROXIMATE VOLUMES OF:
   A. 75% TO 85% MEDIUM TO COARSE WASHED SAND (ASTM C33, AASHTO M6/M80, ASTM C330, AASHTO M195, OR APPROVED EQUIVALENT)
   B. 8% TO 10% FINES (SILT AND CLAY, PASSING #200 SIEVE)
   C. 5% TO 10% ORGANIC MATTER
4. THE P-INDEX OF THE MEDIA SHALL NOT EXCEED 30.
5. ALL BIORETENTION AREAS SHALL HAVE A MINIMUM OF ONE COMPOSITION AND PHOSPHORUS LEVEL TEST PER 200 CUBIC YARDS. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR THE SPECIFIED MIX COMPOSITION AND PHOSPHORUS LEVEL. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED BIORETENTION SOIL.
   A. NOTE: DIFFERENT LABS CALIBRATE THEIR TESTING EQUIPMENT DIFFERENTLY. ALL TESTING RESULTS SHALL COME FROM THE SAME TESTING FACILITY.
6. AFTER INSTALLATION OF THE MEDIA, INFILTRATION TESTING SHALL BE PERFORMED FOR EVERY 4,000 SQUARE FT OF INSTALLED MEDIA.
7. THE MINIMUM INFILTRATION RATE OF THE INSTALLED MEDIA SHALL BE 2 IN/HR.
8. A VARIETY OF METHODS OF TESTING THE INSTALLED MEDIA ARE ACCEPTABLE. METHOD CHOSEN SHALL BE CERTIFIED BY AN ENGINEER, LANDSCAPE ARCHITECT, SOIL SCIENTIST, OR PROFESSIONAL GEOLOGIST.
9. THE MEDIA SHALL NOT BE MECHANICALLY COMPACTED. IT IS RECOMMENDED TO EITHER WATER OR WALK ON THE MEDIA AS IT IS PLACED.
10. IF THE BIORETENTION AREA IS TO BE PLANTED WITH VEGETATION OTHER THAN SOD, TRIPLE-SHREDDED HARDWOOD MULCH SHALL BE USED FOR THE BIORETENTION AREA. USE OF HARDWOOD MULCH IS PREFERRED OVER STONE MULCH FOR BIORETENTION AREAS, BUT STONE MULCH MAY BE ALLOWED ON PETITION AND WRITTEN APPROVAL FROM THE ENGINEER. MULCH SHALL BE UNIFORMLY PLACED 3 INCHES DEEP.

CONCRETE RISER STRUCTURE MATERIAL SPECIFICATIONS

1. THE 18 IN Ø RCP OUTLET BARREL SHALL BE CLASS III O-RING RCP, MODIFIED BELL AND SPIGOT, MEETING THE REQUIREMENTS OF ASTM C76-LATEST. THE PIPES SHALL HAVE SINGLE OFFSET JOINTS MEETING ASTM C-443-LATEST.
2. GEOTEXTILE FABRIC FOR THE 18 IN Ø CLASS III O-RING RCP OUTLET BARREL JOINTS SHALL BE MIRAFI 180N OR ENGINEER APPROVED EQUAL (NON-WOVEN FABRIC).
3. THE STRUCTURAL DESIGN FOR THE 4 FT x 4 FT (INTERNAL DIMENSIONS) RISER BOX WITH EXTENDED BASE SHALL BE BY OTHERS. PRIOR TO ORDERING THE STRUCTURES, THE CONTRACTOR SHALL PROVIDE, TO THE DESIGN ENGINEER FOR REVIEW, SHOP DRAWINGS AND SUPPORTING STRUCTURAL CALCULATIONS SEALED BY A P.E. REGISTERED IN NORTH CAROLINA DEMONSTRATING THE PERTINENT VERTICAL LOADS ARE SUPPORTED BY THE CONCRETE RISER STRUCTURE.
4. THE RISER BOX OUTLET STRUCTURE SHALL BE PROVIDED WITH STEPS 16 IN ON CENTER. STEPS SHALL BE PROVIDED ON THE INNER WALL OF THE RISER BOX. STEPS SHALL BE IN ACCORDANCE WITH NCDOT STD. 840.66. PLEASE REFER TO SHEET C9.B06 FOR LOCATION OF THE RISER STEPS. NOTE THE STEPS SHALL LINE UP WITH THE ACCESS HATCH OF THE TRASH RACK.
5. THE CONCRETE ANTI-FLOAT BLOCK SHALL BE CAST-IN-PLACE. STEEL REINFORCEMENT AND CONNECTION TO THE RISER SHALL BE PROVIDED IN ACCORDANCE WITH THE DETAIL ON SHEET C9.B06. THE CONTRACTOR SHALL ENSURE THE WEIGHT OF THE ENTIRE PRE-CAST RISER STRUCTURE NOT INCLUDING THE ANTI-FLOAT BLOCK IS GREATER THAN OR EQUAL TO 15,117 LB.
6. THE RISER BOX JOINTS SHALL BE SEALED USING BUTYL RUBBER SEALANT CONFORMING TO ASTM-C990-LATEST. IF NECESSARY, THE CONTRACTOR SHALL INCORPORATE A WATERSTOP INTO THE RISER BOX JOINT TO ENSURE A WATERTIGHT CONNECTION. THE CONTRACTOR SHALL PARGE JOINTS ON BOTH THE INSIDE AND OUTSIDE WITH NON-SHRINK GROUT AND INSTALL GALVANIZED STEEL STRAPS PER THE DETAIL ON C9.B06.
7. PRIOR TO ORDERING, THE CONTRACTOR SHALL SUBMIT TRASH RACK SHOP DRAWINGS TO THE ENGINEER FOR REVIEW. CONTRACTOR SHALL ENSURE THAT AN ACCESS HATCH IS PROVIDED WITHIN THE TRASH RACK (SEE DETAIL ON SHEET C9.B06 FOR LOCATION) THAT WILL ALLOW FOR FUTURE MAINTENANCE ACCESS. NOTE THAT THE ACCESS HATCH SHALL LINE UP WITH THE ACCESS STEPS AFTER INSTALLATION.
8. ALL POURED CONCRETE SHALL MEET THE FOLLOWING SPECIFICATIONS UNLESS OTHERWISE NOTED:
   A. MINIMUM 3000 PSI (28 DAY)
   B. SLUMP = 3 IN - 5 IN
   C. ENTRAINED AIR = 5% - 7%

   PLEASE NOTE NO CONCRETE SHALL BE POURED WHEN THE AMBIENT AIR TEMPERATURES ARE EXPECTED TO BE ABOVE 85°F OR BELOW 40°F. CAST-IN-PLACE CONCRETE SHALL BE "WET CURED" AFTER FINISHING FOR A MINIMUM OF 48 HOURS.

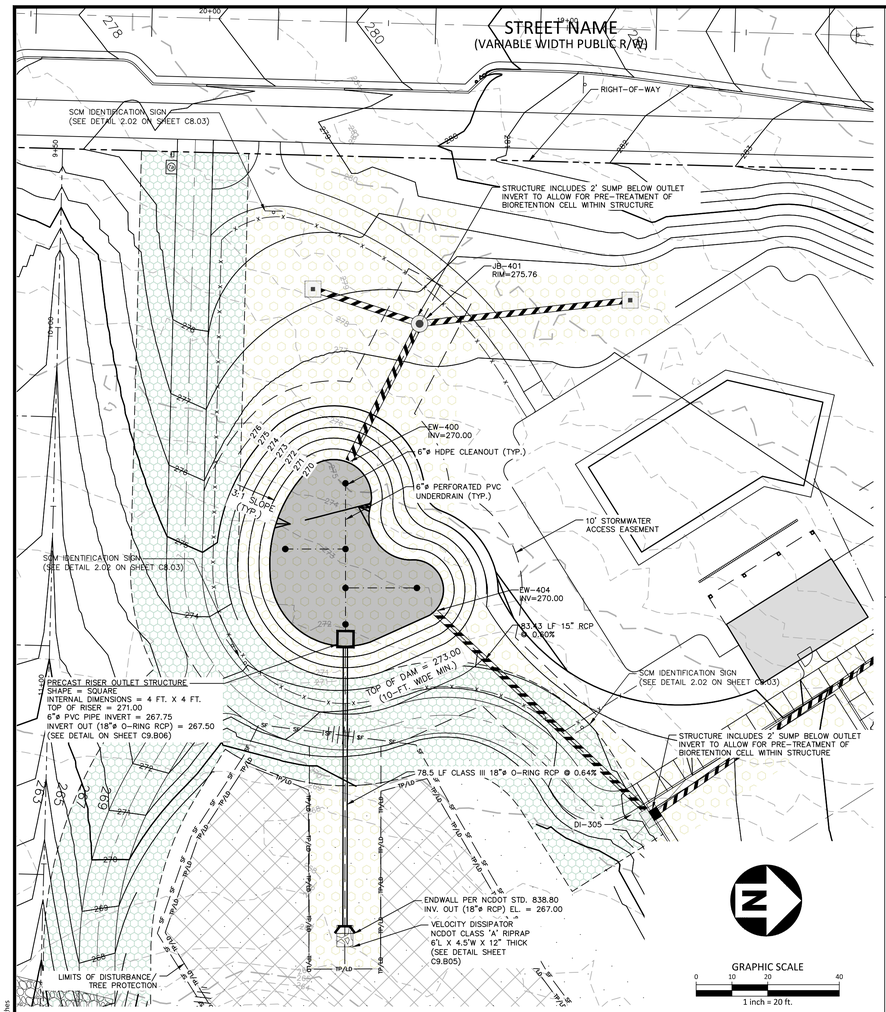
   ON-SITE GEOTECHNICAL ENGINEER TO TEST AND CERTIFY ALL POURED CONCRETE MEETS THE ABOVE SPECIFICATIONS. CONCRETE CYLINDERS FOR TESTING ARE TO BE OBTAINED AT TIME OF POURING OF CAST-IN-PLACE STRUCTURES.
9. GEOTEXTILE FABRIC FOR THE 18 IN Ø CLASS III O-RING RCP OUTLET BARREL JOINTS SHALL BE MIRAFI 180N OR ENGINEER APPROVED EQUAL (NON-WOVEN FABRIC).
10. IF DAM COMPACTION STANDARDS CANNOT BE MET AT THE OUTLET, A CONCRETE CRADLE SHALL BE REQUIRED. TO BE DETERMINED BY GEOTECHNICAL ENGINEER.

BERM SOIL AND COMPACTION SPECIFICATIONS

1. PRIOR TO CONSTRUCTION, THE ON-SITE GEOTECHNICAL ENGINEER SHALL IDENTIFY BORROW / FILL AREAS AND VERIFY THEIR SUITABILITY FOR USE WITHIN THE DAM EMBANKMENT. ALSO, THE ON-SITE GEOTECHNICAL ENGINEER SHALL PERFORM STANDARD PROCTORS ON THE PROPOSED BORROW MATERIAL TO ENSURE THAT OPTIMUM MOISTURE CONTENT AND COMPACTION CAN BE ACHIEVED / CONTROLLED DURING CONSTRUCTION.
2. ALL FILL MATERIALS TO BE USED FOR THE DAM EMBANKMENT SHALL BE TAKEN FROM BORROW AREAS APPROVED BY THE ON-SITE GEOTECHNICAL ENGINEER. THE FILL MATERIAL SHALL BE FREE FROM ROOTS, STUMPS, WOOD, STONES GREATER THAN 6 IN, AND FROZEN OR OTHER OBJECTIONABLE MATERIAL. THE FOLLOWING SOIL TYPES ARE SUITABLE FOR USE AS FILL WITHIN THE DAM EMBANKMENT AND KEY TRENCH: ML AND CL. ALL FILL MATERIALS SHALL BE APPROVED BY THE ONSITE GEOTECHNICAL ENGINEER FOR THE INTENDED USE.
3. FILL PLACEMENT FOR THE EMBANKMENT SHALL NOT EXCEED A MAXIMUM 8-IN LIFT (UNCOMPACTED). EACH LIFT SHALL BE CONTINUOUS FOR THE ENTIRE LENGTH OF EMBANKMENT. BEFORE PLACEMENT OF FILL FOR THE BERM SECTION, ALL UNSUITABLE MATERIAL SHALL BE REMOVED AND THE SURFACE PROPERLY PREPARED FOR FILL PLACEMENT. FILL MATERIAL ADJACENT TO ALL SPILLWAY AND DRAINAGE STRUCTURES SHALL BE PLACED IN 4-IN (UNCOMPACTED) LIFTS AND HAND-COMPACTED TO THE SAME COMPACTION AND MOISTURE REQUIREMENTS AS THE ENTIRE EMBANKMENT.
4. ALL FILL SOILS USED IN THE EMBANKMENT CONSTRUCTION SHALL BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). THE FILL SOILS SHALL BE COMPACTED AT A MOISTURE CONTENT WITHIN -1 TO +3 PERCENT OF ITS OPTIMUM MOISTURE CONTENT. COMPACTION TESTS SHALL BE PERFORMED BY THE ON-SITE GEOTECHNICAL ENGINEER DURING CONSTRUCTION TO VERIFY THAT THE PROPER COMPACTION LEVEL HAS BEEN REACHED. THE FILL SHOULD BE COMPACTED USING A SHEEPSFOOT TYPE COMPACTOR. IN ORDER TO PREVENT DAMAGE TO THE PIPE, NO COMPACTION EQUIPMENT SHALL CROSS ANY PIPE UNTIL MINIMUM COVER IS ESTABLISHED ALONG THE PIPE.
5. THE DESIGN ENGINEER SHALL BE PROVIDED WITH REPORTS AND CERTIFICATION, BY THE ON-SITE GEOTECHNICAL ENGINEER, THAT THE GEOTECHNICAL ASPECTS OF THE FACILITY HAVE BEEN CONSTRUCTED PER PLAN. THIS CERTIFICATION MUST ADDRESS THE TESTING FOR MATERIALS AND COMPACTION OF THE DAM EMBANKMENT AND SPILLWAY. THESE REPORTS AND CERTIFICATION WILL BE NEEDED DURING THE AS-BUILT CERTIFICATION PROCESS FOR THIS STORMWATER CONTROL MEASURE. THEREFORE, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE TESTING AND OBSERVATION WITH THE ON-SITE GEOTECHNICAL ENGINEER.
6. TESTING OF THE NEW FILL MATERIALS SHALL BE PERFORMED BY THE ON-SITE GEOTECHNICAL ENGINEER TO VERIFY THAT THE RECOMMENDED LEVEL OF COMPACTION IS ACHIEVED DURING CONSTRUCTION. THEREFORE, ONE DENSITY TEST SHALL BE PERFORMED FOR EVERY 2,500 SQUARE FT OF AREA FOR EVERY LIFT OF FILL OR AS RECOMMENDED BY THE ON-SITE GEOTECHNICAL ENGINEER.
7. TESTING OF THE DEGREE (%) OF COMPACTION OF THE PLACED FILL IN THE DAM SHALL BE PERFORMED AS A PART OF THE PERMITTEE'S NORMAL QUALITY CONTROL PROGRAM FOR THE CONSTRUCTION OF THE DAM. TESTS SHALL BE CONDUCTED CONCURRENT WITH THE INSTALLATION OF COMPACTED FILL AND THE CONTRACTOR SHALL COORDINATE THE CONSTRUCTION OF THE DAM SO THAT TESTING CAN BE COMPLETED. SHOULD THE RESULTS OF THE TESTS INDICATE THAT THE SPECIFIED DEGREE OF COMPACTION HAS NOT BEEN OBTAINED, THE PORTIONS OF THE DAM REPRESENTED BY SUCH TESTS SHALL BE REWORKED OR REBUILT. ALL PORTIONS OF THE DAM SHALL ACHIEVE THE SPECIFIED MINIMUM DEGREE OF COMPACTION.
8. TESTING WILL BE REQUIRED ALONG THE 18 IN Ø CLASS III O-RING RCP OUTLET BARREL AT A FREQUENCY OF ONE TEST PER 25 LF OF PIPE PER VERTICAL FT OF FILL OR AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER.

CONSTRUCTION SEQUENCE FOR BIORETENTION AREA

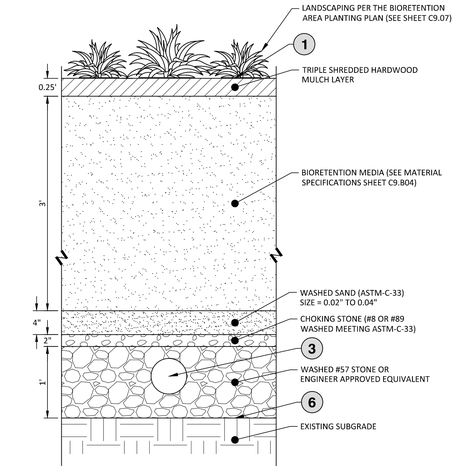
1. PRIOR TO CONSTRUCTION AS APPLICABLE, THE OWNER SHALL OBTAIN A LAND DISTURBING (GRADING OR EROSION CONTROL) PERMIT AND AN "APPROVAL TO CONSTRUCT" FROM THE TOWN OF KNIGHTDALE AND ALL OTHER NECESSARY PERMITS FROM APPLICABLE AGENCIES (E.G. 404/401 PERMITS).
2. INSTALL ALL SEDIMENT AND EROSION CONTROL MEASURES PER THE APPROVED SEDIMENT AND EROSION CONTROL PLAN. THE CONTRACTOR SHALL MAINTAIN ALL APPROVED SEDIMENT AND EROSION CONTROL MEASURES THROUGHOUT THE ENTIRE PROJECT SITE AND DURATION, AS REQUIRED. THE CONTRACTOR SHALL RECEIVE APPROVAL FROM THE EROSION CONTROL INSPECTOR, AS REQUIRED BY GOVERNING AGENCIES, PRIOR TO ANY CLEARING.
3. THE AREAS ON WHICH ANY FILL IS TO BE PLACED SHALL BE CLEARED AND STRIPPED OF TOPSOIL, TREES, ROOTS, VEGETATION, AND OTHER OBJECTIONABLE MATERIAL GREATER THAN 6-IN IN SIZE. THE AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED AT LEAST 6 IN DEEP PRIOR TO PLACEMENT OF NEW FILL.
4. FOUNDATION AREAS MAY REQUIRE UNDERCUTTING OF COMPRESSIBLE AND/OR UNSUITABLE SOILS IN ADDITION TO THAT INDICATED ON THE PLANS. ALL SUCH UNDERCUTTING SHALL BE PERFORMED AT THE DISCRETION OF THE GEOTECHNICAL ENGINEER AND SHALL BE MONITORED AND DOCUMENTED. IN NO CASE SHALL THERE BE AN ATTEMPT TO STABILIZE ANY PORTIONS OF THE FOUNDATION SOILS WITH CRUSHED STONE.
5. TREATMENT OF SEEPAGE AREAS, SUBGRADE PREPARATION, FOUNDATION DEWATERING AND ROCK FORMATION PREPARATION (I.E., TREATMENT WITH SLUSH GROUTING, DENTAL CONCRETE, ETC.) MAY BE REQUIRED AT THE DISCRETION OF THE GEOTECHNICAL ENGINEER. ALL SUCH ACTIVITIES SHALL BE CLOSELY MONITORED AND DOCUMENTED BY THE GEOTECHNICAL ENGINEER.
6. CLEAR AND GRUB AREA WITHIN THE LIMITS OF THE PROPOSED DAM CONSTRUCTION. ALL TREES AND THEIR ENTIRE ROOT SYSTEMS MUST BE REMOVED FROM THE DAM FOOTPRINT AREA AND BACKFILLED WITH SUITABLE SOIL MATERIAL. THE BACKFILLED AREAS SHALL BE COMPACTED TO THE SAME STANDARDS AS THE DAM EMBANKMENT (SEE 'BERM SOIL AND COMPACTION SPECIFICATIONS'). THE REMAINING AREA OF THE EMBANKMENT SHALL BE STRIPPED TO A SUITABLE DEPTH AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER. ANY RESIDUAL SOILS TO BE LEFT IN PLACE MUST BE WELL SCARIFIED TO PROMOTE BINDING OF THE NEW EMBANKMENT FILL. NO EMBANKMENT MATERIALS SHALL BE PLACED FOR THE DAM OR KEY TRENCH UNTIL APPROVAL OF THE DAM SUBGRADE IS OBTAINED FROM THE ON-SITE GEOTECHNICAL ENGINEER.
7. EXCAVATE FOR THE NEW KEY TRENCH ALONG WITH THE CENTERLINE OF THE PROPOSED DAM EMBANKMENT. THE TRENCH SHALL EXTEND A MINIMUM OF 5 FT BELOW EXISTING GRADE OR 2 FT BELOW THE 18 IN Ø CLASS III O-RING RCP OUTLET BARREL AND SHALL HAVE A MINIMUM BOTTOM WIDTH OF 5 FT. THE KEY TRENCH SIDE SLOPES SHALL BE A MINIMUM OF 1:1 (H:V).
   A. WHEN EXCAVATING THE KEY TRENCH, IF ANY DEBRIS IS ENCOUNTERED TO AN EXTENT THAT SUCH DEBRIS MAY EXIST IN OTHER IN SITU PORTIONS OF THE DAM EMBANKMENT, IT SHOULD ALSO BE REMOVED.
   B. DEPENDING UPON ON-SITE SOIL CONDITIONS ENCOUNTERED DURING EXCAVATION, THE ON-SITE GEOTECHNICAL ENGINEER MAY VARY THE DEPTH AND DIMENSIONS OF THE KEY TRENCH AS DEEMED NECESSARY. THE ON-SITE GEOTECHNICAL ENGINEER SHALL RETAIN DOCUMENTATION OF ANY VARIATION FOR FUTURE AS-BUILT SUBMITTALS TO THE TOWN OF KNIGHTDALE.
8. BEGIN PLACEMENT OF BACKFILL WITHIN THE KEY TRENCH. THE KEY TRENCH SHALL BE COMPACTED TO THE SPECIFICATIONS LISTED IN ITEM 4 OF THE SECTION TITLED 'BERM SOIL AND COMPACTION SPECIFICATIONS'. THE KEY TRENCH SHALL BE TESTED PER THE SPECIFICATIONS LISTED IN THAT SECTION.
9. CONTRACTOR SHALL GIVE THE DESIGN ENGINEER A MINIMUM OF 72 HOURS NOTICE PRIOR TO THE INSTALLATION OF THE SPILLWAY.
10. PRIOR TO INSTALLATION, SUBGRADE CONDITIONS ALONG THE SPILLWAY PIPES SHOULD BE EVALUATED BY THE ON-SITE GEOTECHNICAL ENGINEER TO ASSESS WHETHER SUITABLE BEARING CONDITIONS EXIST AT THE SUBGRADE LEVEL. SHOULD SOFT OR OTHERWISE UNSUITABLE CONDITIONS BE ENCOUNTERED ALONG THE PIPE ALIGNMENTS, THESE MATERIALS SHOULD BE UNDERCUT AS DIRECTED BY THE GEOTECHNICAL ENGINEER. THE UNDERCUT MATERIALS SHALL BE REPLACED WITH ADEQUATELY COMPACTED STRUCTURAL FILL, LEAN CONCRETE OR FLOWABLE FILL AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER.
11. BEGIN CONSTRUCTION OF THE NEW EMBANKMENT. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8-IN THICK LIFTS PRIOR TO COMPACTION, UNLESS DIRECTED OTHERWISE BY THE ON-SITE GEOTECHNICAL ENGINEER. FILL LIFTS SHALL BE CONTINUOUS OVER THE ENTIRE LENGTH OF FILL. IF IT IS NECESSARY, THE EMBANKMENT FILL MATERIAL WILL BE OVERBUILT IN HORIZONTAL LIFTS AND CUT BACK TO FINAL GRADE IN ORDER TO ACHIEVE PROPER COMPACTION.
12. THE CONTRACTOR SHALL CONSTRUCT THE ENTIRE FACILITY (PERMANENT OUTLET STRUCTURE, DAM, KEY TRENCH, ETC.) WITH THE EXCEPTION OF THE INTERIOR FINE GRADING AND THE BIORETENTION MEDIA AND UNDERDRAINS FOR THE FACILITY. THE INTERIOR FINE GRADING, BIORETENTION MEDIA, AND UNDERDRAINS WILL BE CONSTRUCTED ONCE THE EROSION CONTROL PHASE IS COMPLETE.
13. THE TEMPORARY DRAW DOWN RISER (OR SKIMMER) MAY BE CONNECTED TO THE 6 IN Ø UNDERDRAIN OUTLET ORIFICE.
14. ONCE THE UPSTREAM DRAINAGE AREA IS STABILIZED AND THE EROSION CONTROL INSPECTOR APPROVES THE REMOVAL OF THE SEDIMENT BASIN, THE CONTRACTOR SHALL REMOVE THE TEMPORARY DRAW DOWN RISER (OR SKIMMER) AND CLEAN OUT THE BASIN. ALL SEDIMENT, TRASH, ETC. SHALL BE DISPOSED OF PROPERLY (I.E. - PLACED IN A LANDFILL) AND NOT STOCKPILED IN AN AREA WHERE WATER QUALITY COULD BE ADVERSELY IMPACTED.
15. ONCE THE BASIN IS CLEANED OUT, THE FINAL EXCAVATION TO THE BOTTOM OF THE PERFORATED PIPE, STONE, OR OTHER LOWEST ELEVATION WITHIN THE BIORETENTION CELL MAY BE COMPLETED.
16. UPON COMPLETION TO THIS ELEVATION, IF AN INFILTRATION TYPE BIORETENTION SYSTEM IS INTENDED, THE ON-SITE GEOTECHNICAL ENGINEER OR SOIL SCIENTIST SHALL COMPLETE INFILTRATION TESTS OF THE IN SITE SOIL TO ENSURE PROPER SUBGRADE PERFORMANCE. THESE TESTS SHALL BE REPORTED BACK TO THE DESIGN ENGINEER FOR REVIEW BEFORE THE PLACEMENT OF BIORETENTION MEDIA.
17. PRIOR TO PLACING THE BIORETENTION AREA BACKFILL MATERIAL INCLUDING GRAVEL, CHOKING STONE, PERFORATED PIPES, WASHED SAND, AND SPECIFIED MEDIA, THE CONTRACTOR SHALL REQUEST AN ON-SITE MEETING WITH THE DESIGN ENGINEER'S REPRESENTATIVE AND THE EROSION CONTROL INSPECTOR T



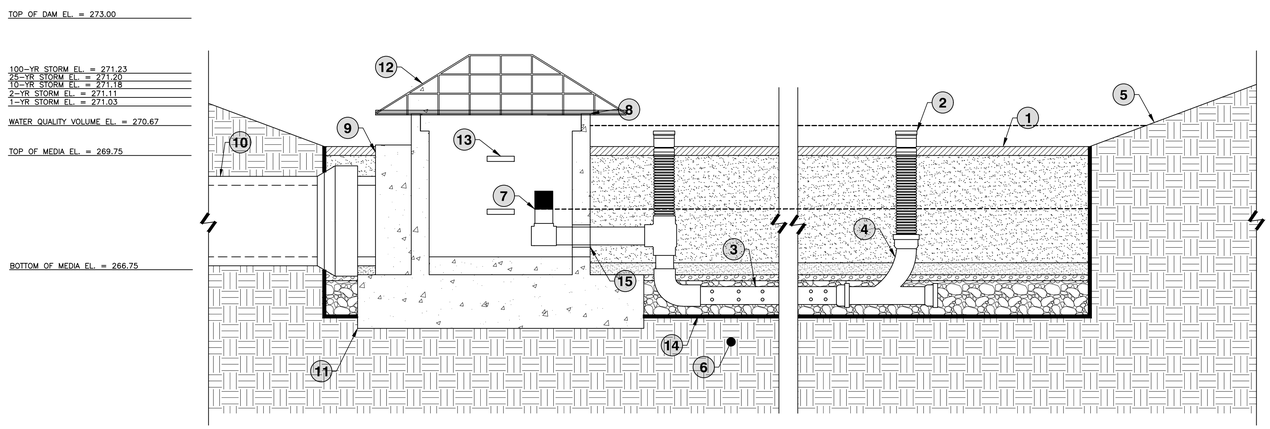
01 SCM "B" BIORETENTION PLAN VIEW
SCALE:

NO.	COMPONENT	INVERT (FT)	DIMENSIONS	NO.	COMPONENT	INVERT (FT)	DIMENSIONS
1	TOP OF MULCH/PLANTING SURFACE	270.00		9	CONCRETE COLLAR		SEE DETAIL
2	SOLID HDPE OBSERVATION WELL/CLEANOUT	270.50 (TOP OF CLEAN-OUT)	6" DIAMETER	10	CONCRETE OUTLET PIPE	267.50	18"
3	PERFORATED PVC UNDERDRAIN PIPE	VARIES, SEE DETAILS	6" DIAMETER	11	CONCRETE ANTI-FLOATATION BLOCK		X'L x X'W x X'H
4	PVC/HDPE UNDERDRAIN FITTINGS	VARIES	VARIES	12	RISER TRASH RACK	273.00	SEE DETAIL
5	PROPOSED GRADE	VARIES, SEE PLAN VIEW	N/A	13	RISER ACCESS STEPS	N/A	N/A
6	UNCOMPACTED SUBGRADE	265.25 (TOP OF SUBGRADE)	N/A	14	NON-WOVEN GEOTEXTILE LINER	265.25 (TOP OF SUBGRADE)	N/A
7	UPTURNED UNDERDRAIN OUTLET/ INTERNAL WATER STORAGE	268.50	6"	15	UNDERDRAIN PUNCH-THROUGH INVERT INTO OUTLET STRUCTURE	267.75	
8	PERMANENT OUTLET STRUCTURE	271.00 (TOP OF RISER)	4' x 4'				

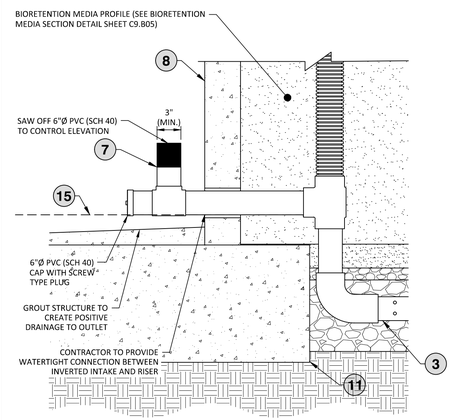
02 BIORETENTION DETAIL NUMBERING LEGEND
SCALE: N.T.S



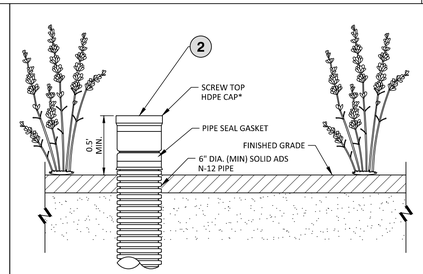
03 BIORETENTION MEDIA SECTION
SCALE: 1" = 1'-0"



04 BIORETENTION AREA SECTION WITH IWS
SCALE: N.T.S.



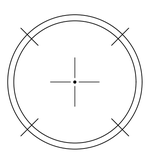
05 INVERTED UNDERDRAIN OUTLET (RISER)
SCALE: N.T.S



* DETAIL NOT PROVIDED FOR HDPE WELL CAPS, SCHEMATIC FOR DISPLAY PURPOSES ONLY

NOTES:
1. CLEANOUTS TO BE EXTENDED 6" ABOVE FINISHED GRADE UNLESS OTHERWISE NOTED ON PLANS (SEE PLANS FOR PONDING DEPTH)
2. FOR AN UNDERGROUND OBSERVATION WELL/CLEANOUT, PROVIDE A TUBE MADE OF NON-CORROSIVE MATERIAL, SCHEDULE 40 OR EQUAL, AT LEAST 3' LONG, WITH AN INSIDE DIAMETER OF AT LEAST 6".
3. THE TUBE SHALL HAVE A FACTORY ATTACHED CAST IRON OR HIGH IMPACT PLASTIC COLLAR WITH RIBS TO PREVENT ROTATION WHEN REMOVING SCREW TOP LID. THE SCREW TOP LID SHALL BE CAST IRON OR HIGH IMPACT PLASTIC THAT WILL WITHSTAND ULTRAVIOLET RAYS

06 OBSERVATION WELL/CLEANOUT DETAIL
SCALE: N.T.S



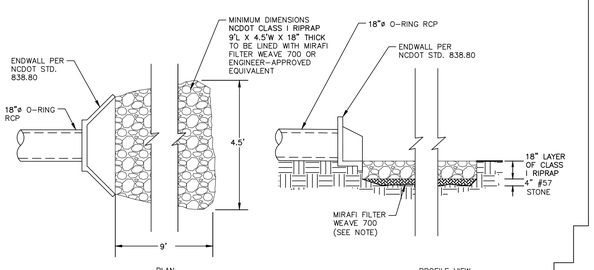
4"-10" PIPE

*60" PIPE HAS DOUBLE PERFORATIONS CENTERED AT EACH OF THE EIGHT LOCATIONS SHOWN

NOTES
1. PLACEMENT OF THE UNDERDRAIN SHALL BE IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DRAWINGS, OR AS INDICATED BY THE DESIGN ENGINEER. HORIZONTAL LOCATION MAY VARY AS LONG AS MINIMUM OFFSET DISTANCES AND BOTTOM SLOPES ARE MAINTAINED.
2. PERFORATED PLASTIC PIPE SHALL BE SMOOTH-WALL PVC PLASTIC PIPE HAVING A CELL CLASSIFICATION OF 12454 OR 13364, AS DEFINED IN ASTM D1784.
3. PIPE, FITTING, AND JOINT DIMENSIONS SHALL BE COMPATIBLE AND MEASURED IN ACCORDANCE WITH ASTM D 2122. FITTING AND JOINT MATERIAL SHALL BE COMPATIBLE WITH THE PIPE MATERIAL.
4. GLUE OR PRESS FIT ALL JOINTS PER MANUFACTURER'S SPECIFICATIONS. PIPE PENETRATIONS THROUGH IMPERMEABLE BARRIER SHALL BE SEALED ACCORDING TO PLANS.
5. DEPTH OF UNDERDRAIN MAY BE ADJUSTED TO TIE INTO THE ADJACENT CONNECTION POINT OF THE DOWNSTREAM DRAINAGE INFRASTRUCTURE, AS NEEDED, PER CITY ENGINEER'S APPROVAL.
6. DIMENSIONS OF PERFORATED PVC PIPE, SOLID PVC PIPE, AND ALL FITTINGS SPECIFIED IN PLANS.
7. ALL PIPE SHALL BE SCHEDULE 40 OR SDR 35 SMOOTH WALL PVC.

07 PVC UNDERDRAIN PERFORATION SCHEMATIC
SCALE: N.T.S

NOTES:
1. A FILTER BLANKET IS TO BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION. THE FILTER BLANKET WILL CONSIST OF A MINIMUM 4" THICK LAYER OF STONE (NCDOT #57) UNDERLAIN WITH MIRAFI FILTER WEAVE 700 OR ENGINEER-APPROVED EQUIVALENT.



08 OUTLET BARREL VELOCITY DISSIPATOR
SCALE: N.T.S.

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

McADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293, C-187

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CLIENT

LENNAR
1100 PERIMETER PARK DRIVE, SUITE 112
MORRISVILLE, NORTH CAROLINA 27560
CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 059200 KATHLEEN E. BLAZE — NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-CD-SWB
CHECKED BY	KEB
DRAWN BY	RMB
SCALE	AS NOTED
DATE	11. 14. 2025

SHEET

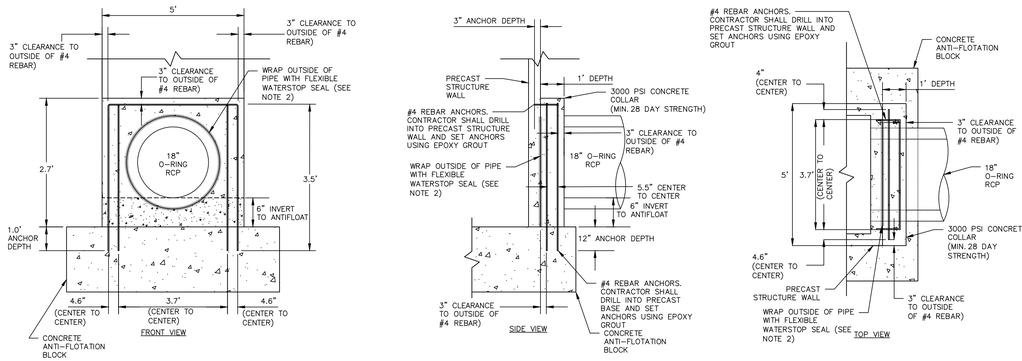
SCM "B" BIORETENTION PLAN VIEW AND DETAILS

C9.B01

X:\Projects\LEN\LEN24015\04-Production\Water Resources\Stormwater Management\Site Plan - Construction Drawing\Current Drawing\LEN24015-CD-SWB.dwg, 2/20/2026 1:48:06 PM, Kevin Hughes

NOTES:

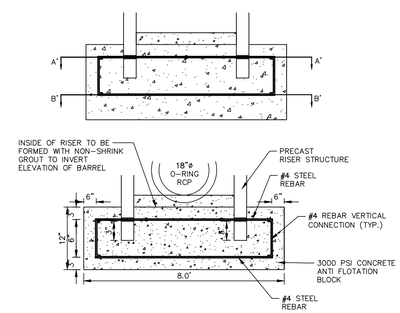
1. ALL REBAR TO BE #4 REBAR.
2. WRAP OUTSIDE OF PIPE WITH VOLCLAY WATERSTOP-RX® 101 (OR PRE-APPROVED EQUIVALENT) AT THE FACE OF THE PRECAST STRUCTURE WALL. PROVIDE 6" OVER LAP ON THE BOTTOM OF THE PIPE.

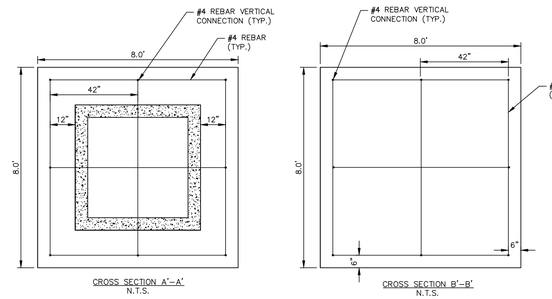


09 18" DIA. CONCRETE COLLAR DETAIL
SCALE: N.T.S.

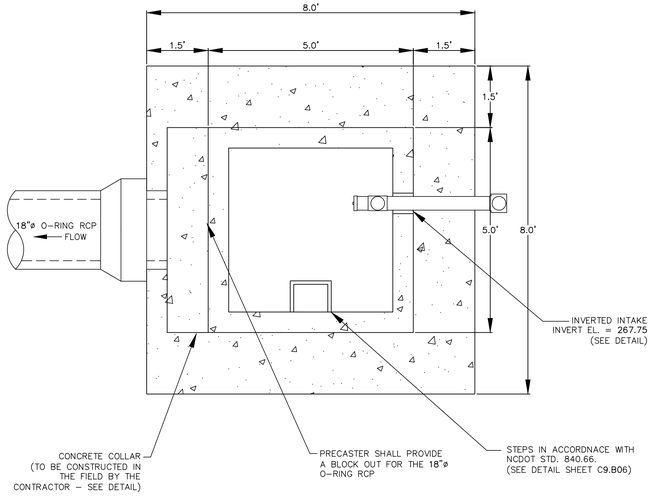
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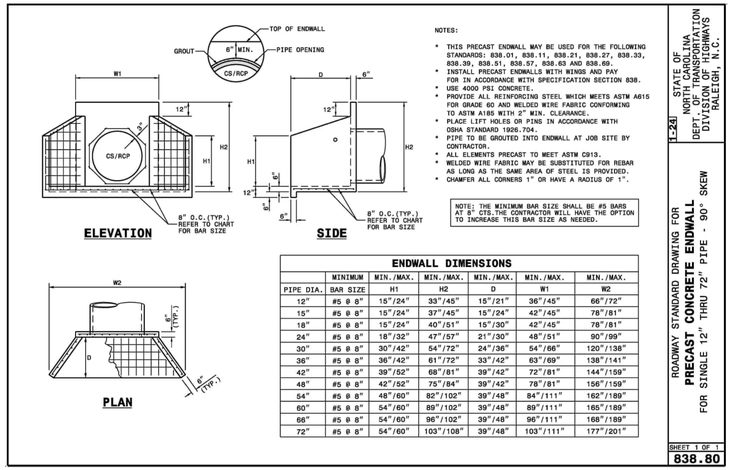
1. ALL REINFORCING STEEL IN RISER ANTI-FLOTATION BLOCK TO BE GRADE 60 #4 BARS FOR HORIZONTAL CROSSING AND GRADE 60 #4 BARS FOR VERTICAL CONNECTIONS.
2. INSIDE OF RISER BOTTOM TO BE FORMED WITH NON-SHRINK GROUT TO INVERT ELEVATION OF BARREL.
3. ALL PIPE PENETRATIONS THROUGH THE CONCRETE RISER STRUCTURE SHALL BE MADE WATERTIGHT.





10 RISER/ANTI-FLOTATION BLOCK CONNECTION
SCALE: N.T.S.





NOTES:

- THIS PRECAST ENDWALL MAY BE USED FOR THE FOLLOWING STANDARDS: 838.01, 838.11, 838.21, 838.27, 838.33, 838.39, 838.51, 838.57, 838.63 AND 838.69.
- INSTALL PRECAST ENDWALLS WITH WINGS AND PAY FOR IN ACCORDANCE WITH SPECIFICATION SECTION 830.
- USE 4000 PSI CONCRETE.
- PROVIDE ALL REINFORCING STEEL WHICH MEETS ASTM A615 FOR GRADE 60 AND WELDED WIRE FABRIC CONFORMING TO ASTM A185 WITH 2" MIN. CLEARANCE.
- PLACE LIFT HOLES OR PINS IN ACCORDANCE WITH OSHA STANDARD 1926.704.
- PIPE TO BE GROUTED INTO ENDWALL AT JOB SITE BY CONTRACTOR.
- ALL ELEMENTS PRECAST TO MEET ASTM C913.
- WELDED WIRE FABRIC MAY BE SUBSTITUTED FOR REBAR AS LONG AS THE SAME AREA OF STEEL IS PROVIDED.
- CHAMFER ALL CORNERS 1" OR HAVE A RADIUS OF 1".

NOTE: THE MINIMUM BAR SIZE SHALL BE #5 BARS AT 8" CTS.THE CONTRACTOR WILL HAVE THE OPTION TO INCREASE THIS BAR SIZE AS NEEDED.

ENDWALL DIMENSIONS

	MINIMUM	MIN./MAX.	MIN./MAX.	MIN./MAX.	MIN./MAX.	MIN./MAX.
PIPE DIA.	BAR SIZE	H1	H2	D	W1	W2
12"	#5 @ 8"	15"/24"	33"/45"	15"/21"	36"/45"	66"/72"
15"	#5 @ 8"	15"/24"	37"/45"	15"/24"	42"/45"	78"/81"
18"	#5 @ 8"	15"/24"	40"/51"	15"/30"	42"/45"	78"/81"
24"	#5 @ 8"	18"/32"	47"/57"	21"/30"	48"/51"	90"/99"
30"	#5 @ 8"	30"/42"	54"/72"	24"/36"	54"/66"	120"/138"
36"	#5 @ 8"	36"/42"	61"/72"	33"/42"	63"/69"	138"/141"
42"	#5 @ 8"	39"/52"	68"/81"	39"/42"	72"/81"	144"/159"
48"	#5 @ 8"	42"/52"	75"/84"	39"/42"	78"/81"	156"/159"
54"	#5 @ 8"	48"/60"	82"/102"	39"/48"	84"/111"	162"/189"
60"	#5 @ 8"	54"/60"	89"/102"	39"/48"	89"/111"	165"/189"
66"	#5 @ 8"	54"/60"	96"/102"	39"/48"	96"/111"	168"/189"
72"	#5 @ 8"	54"/60"	103"/108"	39"/48"	103"/111"	177"/201"

ROADWAY STANDARD DRAWING FOR **PRECAST CONCRETE ENDWALL** FOR SINGLE 12" THRU 72" PIPE - 90° SKEW

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

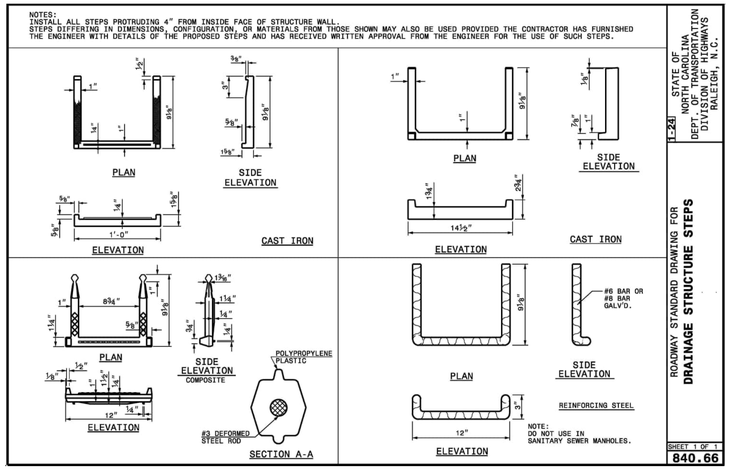
1-26

SHEET 1 OF 1

838.80

12 PRECAST CONCRETE ENDWALL
SCALE: N.T.S.

NOTES:
INSTALL ALL STEPS PROTRUDING 4" FROM INSIDE FACE OF STRUCTURE WALL.
STEPS DIFFERING IN DIMENSIONS, CONFIGURATION, OR MATERIALS FROM THOSE SHOWN MAY ALSO BE USED PROVIDED THE CONTRACTOR HAS FURNISHED THE ENGINEER WITH DETAILS OF THE PROPOSED STEPS AND HAS RECEIVED WRITTEN APPROVAL FROM THE ENGINEER FOR THE USE OF SUCH STEPS.



ROADWAY STANDARD DRAWING FOR **DRAINAGE STRUCTURE STEPS**

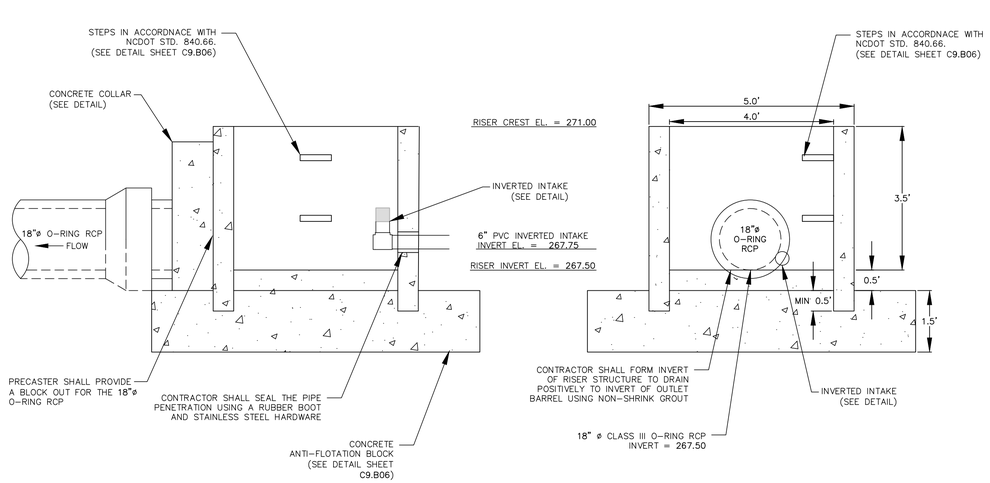
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-28

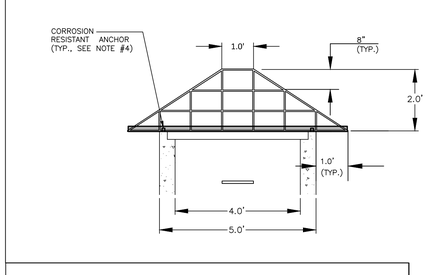
SHEET 1 OF 1

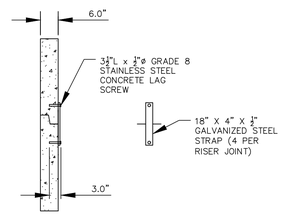
840.66

13 DRAINAGE STRUCTURE STEPS
SCALE: N.T.S.



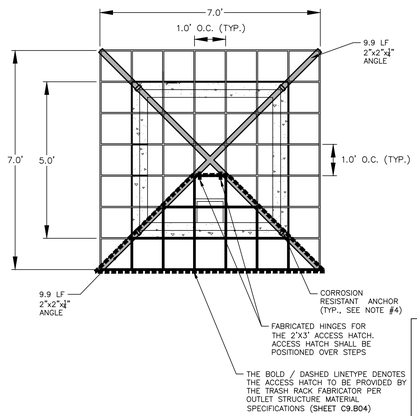
11 PERMANENT OUTLET STRUCTURE DETAILS
SCALE: N.T.S.





14 RISER CONNECTION DETAIL
SCALE: N.T.S.

NOTES:
1. ALL REBAR TO BE #4 REBAR.
2. ALL REBAR AND ANGLES TO BE HOT-DIPPED GALVANIZED AND BE PROVIDED WITH AN EPOXY COATING.
3. THE HOT-DIPPED, GALVANIZED 2"x2"x1/4" ANGLES SHALL BE WELDED TO THE REBAR TRASH RACK. ONCE WELDED, THE ENTIRE ASSEMBLY SHALL BE PLACED ONTO THE RISER WITH ANGLES SITTING DIRECTLY ON TOP OF RISER.
4. TRASH RACK IS TO BE SECURELY FASTENED TO THE SPILLWAY RISER WITH A MINIMUM OF FOUR CORROSION-RESISTANT ANCHORS.
5. ACCESS HATCH SHALL ALIGN WITH STEPS IN RISER.



15 4' X 4' RISER TRASH RACK DETAIL
SCALE: N.T.S.

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

McADAMS
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fax 919. 361. 2269
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www.mcadamsco.com

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MORRISVILLE, NORTH CAROLINA 27560
CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

LENNAR®

REVISIONS

NO.	DATE

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-CD-SWB
CHECKED BY	KEB
DRAWN BY	RMB
SCALE	AS NOTED
DATE	11. 14. 2025

SHEET

SCM "B' BIORETENTION DETAILS

C9.B02

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 059200 KATHLEEN E. BALAZ — NOT FOR CONSTRUCTION

X:\Projects\LEN\LEN24015\04-Production\Water Resources\Stormwater Management\Site Plan - Construction Drawings\Current Drawings\LEN24015-CD-SWB.dwg, 2/20/2026 1:48:09 PM, Kevin Hughes

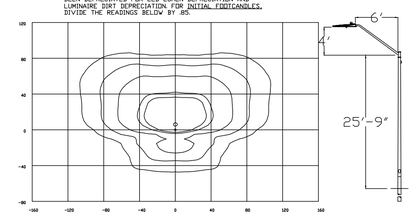


ISOFOOTCANDLE CURVES

FIXTURE: LED 150 - AEL
MOUNTING HEIGHT: 30 FT
LIGHT SOURCE: 40 LED'S, 4000K, 70 CRI
LUMENS = 16192
PATTERN: TYPE III, B3-U0-G3(zero light at or above 90 degrees)
B1-U0-G2 (MAX FOR LOCAL STREETS)

ASSY# LFIX-RW-LED-150-GRAY-III-MULTIV-___-P
POLE ASSY# LPOLE-DB-FG-30FT-GRAY-___-P (GRAY)

NOTE: THE FOOTCANDLE READINGS BELOW ARE MAINTAINED AND HAVE BEEN DEPRECIATED FOR LED LUMEN DEPRECIATION AND LUMINAIRE DIRT DEPRECIATION FOR INITIAL FOOTCANDLES. DIVIDE THE READINGS BELOW BY .85.



LEGEND (OUTER to INNER): 0.10 , 0.25 , 0.50 , 1.00 , 1.25

Schedule						
Symbol	Label	Quantity	Description	Number Lamps	Lumens Per Lamp	Light Loss Factor
	150A	XX	LED 150w Roadway - Type III - 4000K	1	16192	0.85

NOTE:

THE PROVIDED LIGHTING PLAN REPRESENTS A PRELIMINARY DESIGN BASED ON STANDARD KNIGHTDALE SPACING AND LIGHTING REQUIREMENTS AND IS SUBJECT TO CHANGE BASED ON FUTURE DESIGN BY DUKE ENERGY.

GRAPHIC SCALE
0 50 100 200
1 inch = 100 ft.

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
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Durham, NC 27713

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HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL SEAL 048250 ENGINEER NICHOLAS D. WILLIAMSON
NOT FOR CONSTRUCTION

REVISIONS

NO. DATE

PLAN INFORMATION

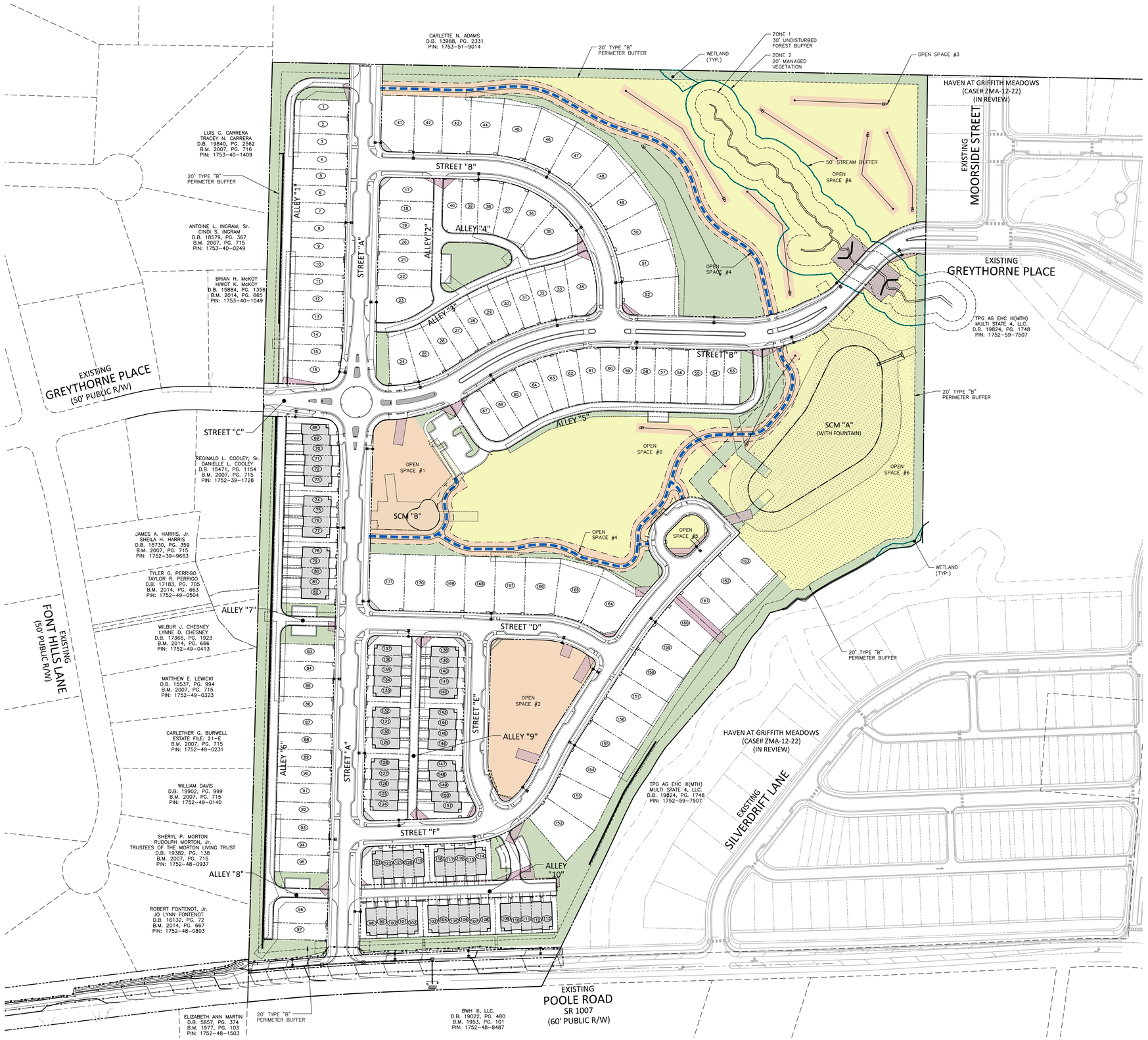
PROJECT NO.	LEN24015
FILENAME	LEN24015-LI1
CHECKED BY	
DRAWN BY	
SCALE	1" = 100'
DATE	11. 14. 2025

SHEET

PRELIMINARY LIGHTING PLAN

L6.00

X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawings\LEN24015-LI1.dwg, 2/10/2026 1:48:22 PM, Kevin Hughes



ACTIVE & PASSIVE OPEN SPACE SUMMARY

ACTIVE OPEN SPACE *		
OPEN SPACE 1	AMENITY CENTER (BATHHOUSE & POOL)	0.74 AC
OPEN SPACE 2	PLAYGROUND AND YARD GAMES	1.14 AC
OPEN SPACE 3	9-HOLE DISC GOLF COURSE	1.03 AC
OPEN SPACE 4	PUBLIC GREENWAY (30' EASEMENT) **	1.69 AC
	TOTAL	4.60 AC
PASSIVE OPEN SPACE *		
OPEN SPACE 5	POLLINATOR GARDEN	0.12 AC
OPEN SPACE 6	PRESERVATION OF NATURAL RESOURCES (INCLUDES SEATING AREAS AS SHOWN ON MASTER PLAN)	10.35 AC
	TOTAL	10.47 AC

* FEATURED OPEN SPACE AMENITIES LISTED IN THE TABLE ABOVE (EXCLUDING POOL AND BATHHOUSE) MAY BE TRANSFERRED FROM ONE DEFINED OPEN SPACE TO ANOTHER, OR SWAPPED WITH AN EQUIVALENT OPEN SPACE FEATURE (WITH PLANNING STAFF APPROVAL) WITHOUT NECESSITATING AN AMENDMENT TO THE APPROVED MASTER PLAN.

** AT A MINIMUM, PET WASTE STATIONS AND BENCHES SHALL BE PROVIDED ALONG THE PUBLIC GREENWAY EVERY 2000 FT. PET WASTE STATION AND BENCH DESIGN SHALL BE IN ACCORDANCE WITH THE TOWN'S STANDARD SPECIFICATIONS AND DETAILS MANUAL.

SITE LEGEND

OVERALL NET SITE AREA: 50.81 AC
OVERALL SITE OPEN SPACE: 21.86 AC

- ACTIVE OPEN SPACE — 4.60AC; 9.01% OF NET AREA; 21.04% OF TOTAL OPEN SPACE
- PASSIVE OPEN SPACE — 10.47 AC; 20.61% OF NET AREA; 47.90% OF TOTAL OPEN SPACE
- COMMON OPEN SPACE — 6.79 AC; 13.36% OF NET AREA; 31.06% OF TOTAL OPEN SPACE
- JURISDICTIONAL OPEN SPACE — 1.93 AC; 3.80% OF NET AREA; 8.83% OF TOTAL OPEN SPACE
- PRIVATE GREENWAY — 2,507 LF

NC GRID (NAD83)

GRAPHIC SCALE
0 50 100 200
1 inch = 100 ft.

SEE SHEET C0.00 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF KNIGHTDALE, CITY OF RALEIGH PUBLIC UTILITIES, AND NCDOT (WHERE APPLICABLE) ENGINEERING DESIGN AND CONSTRUCTION STANDARDS

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 ENGINEER NICHOLAS D. WILLIAMSON — NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
6		

PLAN INFORMATION

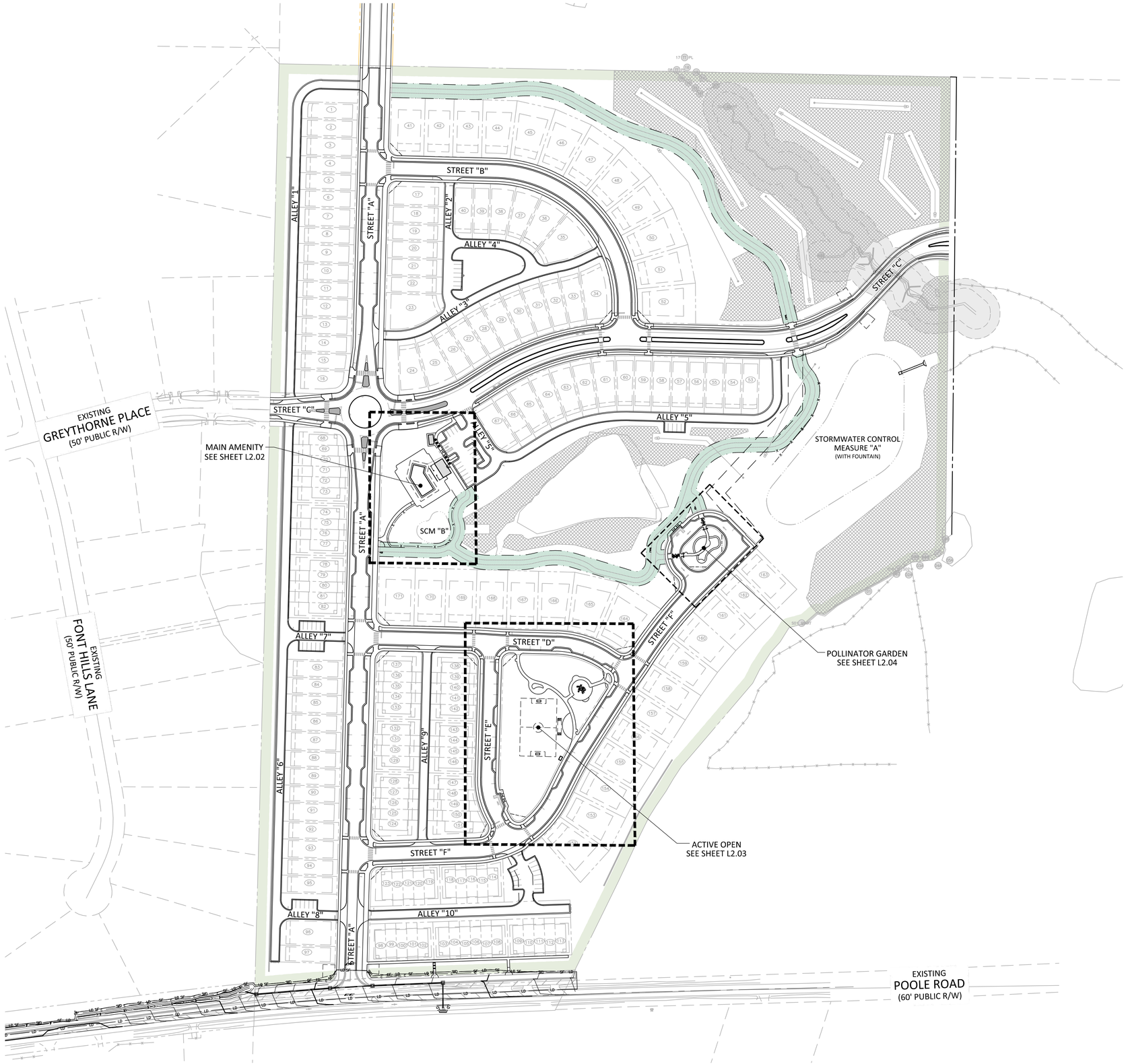
PROJECT NO.	LEN24015
FILENAME	LEN24015-OAS2
CHECKED BY	WMK
DRAWN BY	KWH
SCALE	1" = 100'
DATE	11. 14. 2025

SHEET

OVERALL OPEN SPACE PLAN

L2.00

X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawings\LEN24015-OAS2.dwg, 2/20/2026 2:10:03 PM, Kelby Stallings



SITE LEGEND

- SIGNAGE
- POWER POLE
- TRAFFIC DIRECTIONAL ARROW
- ACC — ACCESSIBLE PARKING STALL
- VAN — VAN ACCESSIBLE PARKING STALL
- XX — PARKING SPACE COUNT
- ACCESSIBLE RAMPS
- ACCESSIBLE ROUTE
- PHASE LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- LOT LINE
- CENTERLINE
- OS — OPEN SPACE
- TC — TREE CONSERVATION
- GUARDRAIL
- TREE CONSERVATION AREA
- PERIMETER BUFFER (SEE LANDSCAPE SHEETS)
- GREENWAY EASEMENT

EASEMENT LEGEND

- GW — GREENWAY EASEMENT
- SS — SANITARY SEWER EASEMENT
- SCM — SCM ACCESS AND MAINTENANCE EASEMENT
- SDT — SIGHT DISTANCE TRIANGLE EASEMENT
- PuSD — PUBLIC STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- PrSD — PRIVATE STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- UE — UTILITY EASEMENT
- WE — WATERLINE EASEMENT

GRAPHIC SCALE
0 50 100 200
1 inch = 100 ft.

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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CONTACT: Tucker Ennis
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LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 2894 JOHN RICHARD HAYTON
FOR PRELIMINARY REVIEW ONLY NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02.18.2026	TOWN OF KNIGHTDALE COMMENTS

PLAN INFORMATION

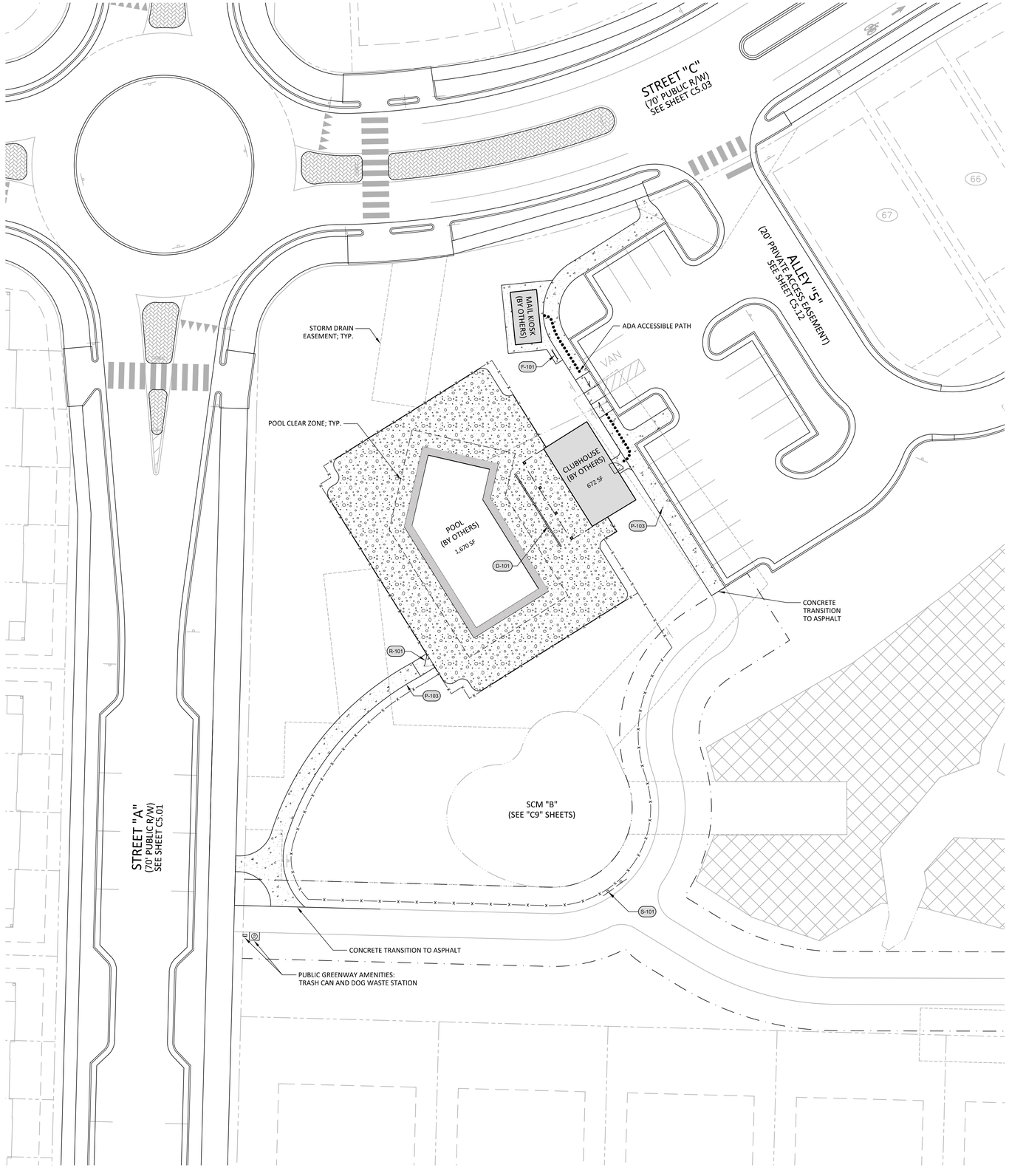
PROJECT NO.	LEN-24015
FILENAME	LEN2401-LANDARCH-HS1
CHECKED BY	JRH
DRAWN BY	KLS
SCALE	1"=100'
DATE	11. 14. 2025

SHEET

OVERALL HARDSCAPE

L2.01

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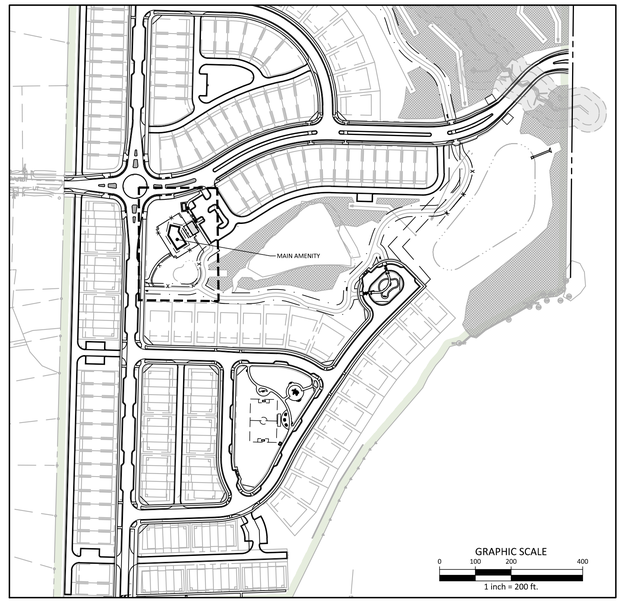
REFERENCE NOTES SCHEDULE MAIN AMENITY

SYMBOL	CODE	DESCRIPTION	QTY	DETAIL
DRAINAGE				
	D-101	TRENCH DRAIN, BY OTHERS		
FURNISHINGS				
	F-101	BIKE RACK	1	8/L4.01
PAVING				
	P-101	POOL COPING, BY OTHERS	2,170 SF	
	P-102	POOL, BY OTHERS	5,840 SF	
	P-103	STANDARD CONCRETE PAVING		1/L4.01
RAILING, FENCES, AND GATES				
	R-101	ALUMINUM POOL GATE AND FENCE		5/L4.01
SIGNAGE				
	S-101	EDUCATIONAL SIGNAGE		9/L4.02

SITE LEGEND

- SIGNAGE
- POWER POLE
- TRAFFIC DIRECTIONAL ARROW
- ACC — ACCESSIBLE PARKING STALL
- VAN — VAN ACCESSIBLE PARKING STALL
- XX — PARKING SPACE COUNT
- ACCESSIBLE RAMPS
- ACCESSIBLE ROUTE
- PHASE LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- LOT LINE
- CENTERLINE
- OS — OPEN SPACE
- TC — TREE CONSERVATION
- GUARDRAIL

KEY MAP



GRAPHIC SCALE
0 100 200 400
1 inch = 200 ft.

GRAPHIC SCALE
0 10 20 40
1 inch = 20 ft.

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
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license number: C-0293, C-187

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CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

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HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA
REGISTERED LANDSCAPE ARCHITECT
JOHN RICHARD HAYTON
2894
PRELIMINARY
NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02.18.2026	TOWN OF KNIGHTDALE COMMENTS

PLAN INFORMATION

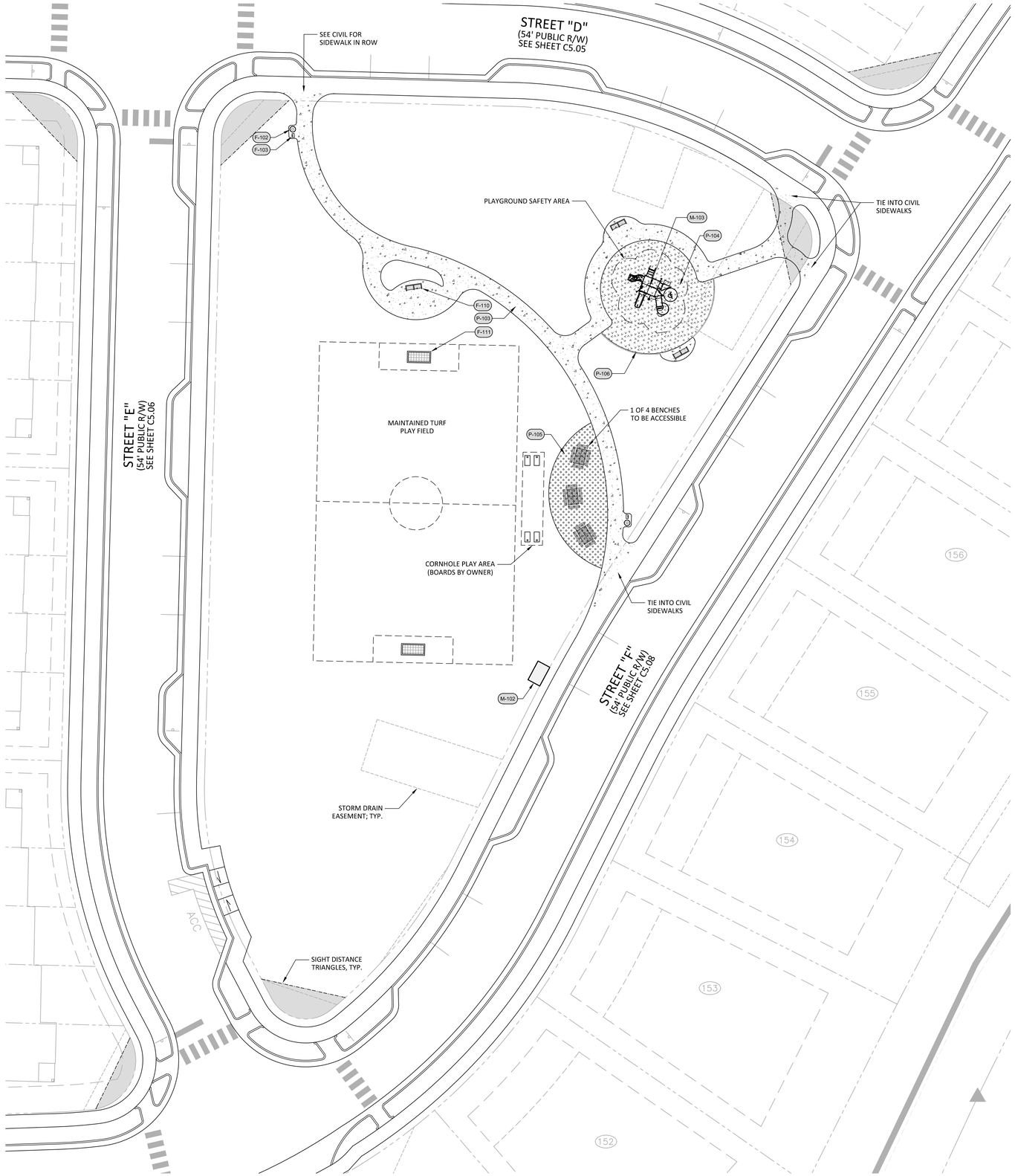
PROJECT NO.	LEN-24015
FILENAME	LEN2401-LandArch-HS1
CHECKED BY	JRH
DRAWN BY	KLS
SCALE	1"=20'
DATE	11. 14. 2025

SHEET

HARDSCAPE PLAN
- MAIN AMENITY

L2.01

X:\Projects\LEN\LEN24015\04-Production\Planning and Design\Construction Documents\Current Drawings\LEN24015-LandArch-HS1.dwg, 2/20/2026 2:04:56 PM, Kolby Stallings



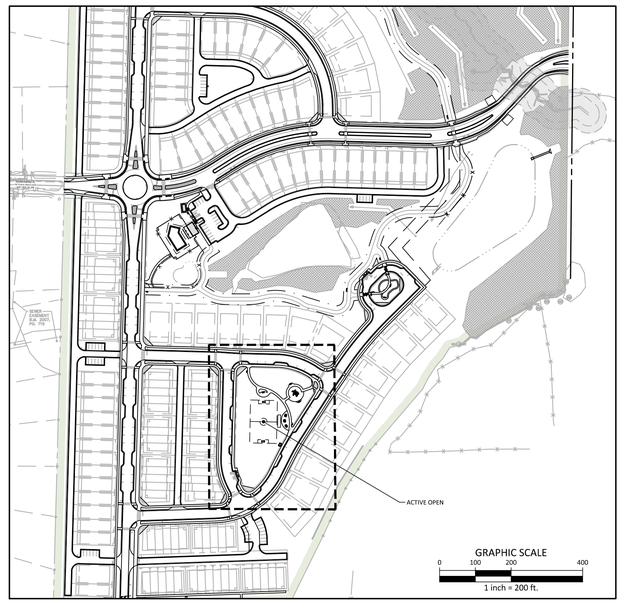
REFERENCE NOTES SCHEDULE ACTIVE OPEN SPACE - AMENITY 2

SYMBOL	CODE	DESCRIPTION	QTY	DETAIL
FURNISHINGS				
	F-102	TRASH RECEPTACLE		10/L4.01
	F-103	PET WASTE STATION	2	2/L4.02
	F-104	PICNIC TABLE	3	
	F-110	BENCH (TYP.)	3	8/L4.01
	F-111	SOCCER GOAL, BY OWNER		4/L4.02
MISCELLANEOUS				
	M-102	STORAGE SHED		3/L4.02
	M-103	PLAY STRUCTURE		6/L4.02
PAVING				
	P-103	STANDARD CONCRETE PAVING		1/L4.01
	P-104	PLAYGROUND MULCH		5/L4.01
	P-105	CHAPEL HILL GRIT		3/L4.01
	P-106	4" PLAYGROUND CURB	24 SF	

SITE LEGEND

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- VAN — VAN ACCESSIBLE PARKING STALL
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- ACCESSIBLE RAMPS
- ACCESSIBLE ROUTE
- PHASE LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- LOT LINE
- CENTERLINE
- OS — OS — OPEN SPACE
- TC — TC — TREE CONSERVATION
- GUARDRAIL

KEY MAP



GRAPHIC SCALE
0 10 20 40
1 inch = 20 ft.

N

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT JOHN RICHARD HAYTON 2894 — PRELIMINARY NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02.18.2026	TOWN OF KNIGHTDALE COMMENTS

PLAN INFORMATION

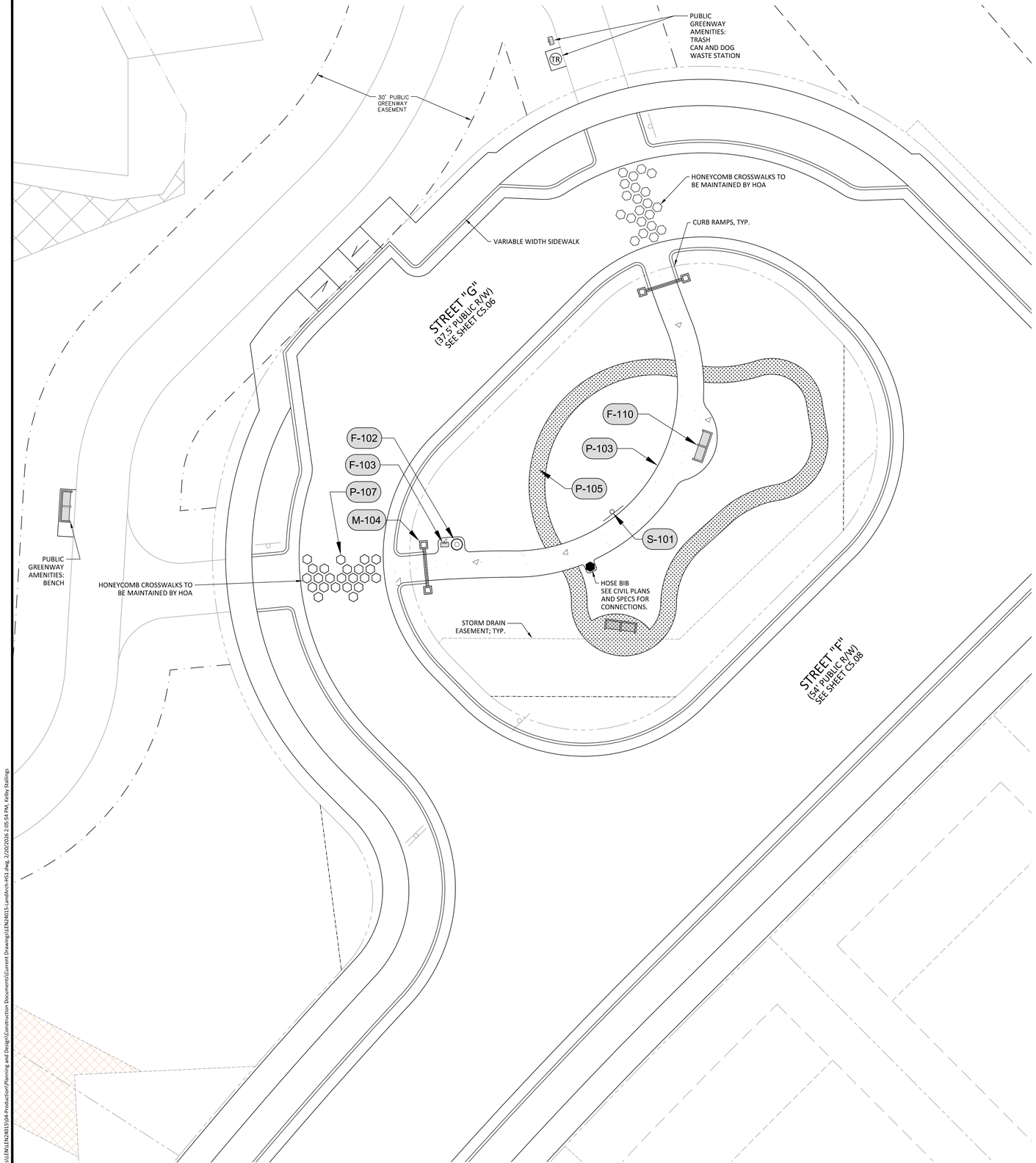
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FILENAME	LEN2401-LandArch-HS1
CHECKED BY	JRH
DRAWN BY	KLS
SCALE	1"=20'
DATE	11. 14. 2025

SHEET

HARDSCAPE PLAN - ACTIVE OPEN

L2.02

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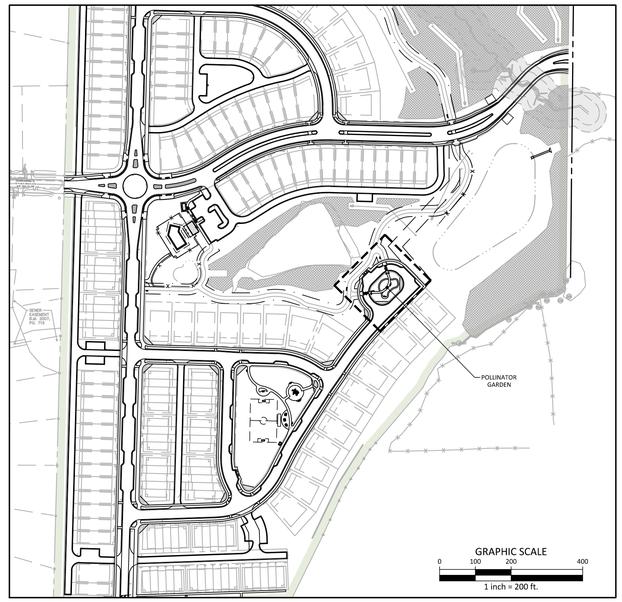
REFERENCE NOTES SCHEDULE POLLINATOR GARDEN - AMENITY 3

SYMBOL	CODE	DESCRIPTION	QTY	DETAIL
FURNISHINGS				
	F-102	TRASH RECEPTACLE	1	6/L4.01
	F-103	PET WASTE STATION	1	2/L4.02
	F-110	BENCH (TYP.)	2	7/L4.01
MISCELLANEOUS				
	M-104	ENTRY ARBOR	2	1/L4.02
PAVING				
	P-103	STANDARD CONCRETE PAVING	575 SF	1/L4.01
	P-105	CHAPEL HILL GRIT	526 SF	2/L4.01
	P-107	DECORATIVE THERMOPLASTIC CROSSWALK	44	3/L4.01
SIGNAGE				
	S-101	EDUCATIONAL SIGNAGE		9/L4.02

SITE LEGEND

- SIGNAGE
- POWER POLE
- TRAFFIC DIRECTIONAL ARROW
- ACC / VAN — ACCESSIBLE PARKING STALL / VAN ACCESSIBLE PARKING STALL
- XX — PARKING SPACE COUNT
- ACCESSIBLE RAMPS
- ACCESSIBLE ROUTE
- PHASE LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- LOT LINE
- CENTERLINE
- OS — OPEN SPACE
- TC — TREE CONSERVATION
- GUARDRAIL

KEY MAP



GRAPHIC SCALE
0 5 10 20
1 inch = 10 ft.

N

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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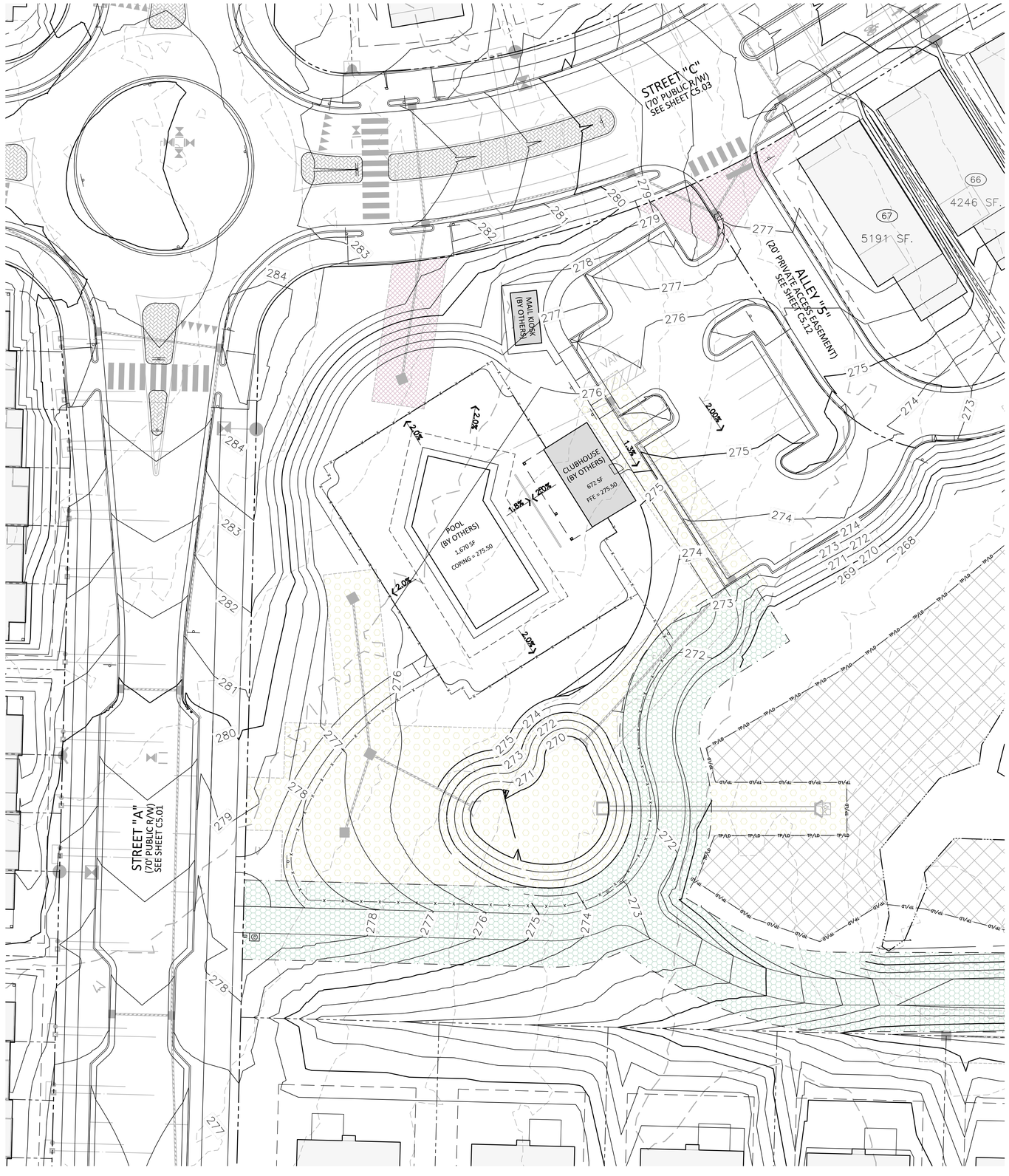
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FILENAME	LEN2401-LandArch-HS1
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DRAWN BY	KLS
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SHEET

HARDSCAPE PLAN - POLLINATOR GARDEN

L2.03

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FINE GRADING NOTES

1. REFER TO CIVIL PLANS FOR MASS GRADING AND DRAINAGE INFORMATION.
2. DUKE ENERGY TRANSMISSION POLES SHALL BE PROTECTED SUCH THAT NO GRADING OPERATIONS SHALL BE PERFORMED WITHIN 25' OF THE POLE AND OTHER DUKE ENERGY PROTECTION AND CLEARANCE REQUIREMENTS ARE MET.
3. AT CRITICAL LOCATIONS WHERE PROPOSED ELEMENTS TIE INTO EXISTING CONDITIONS, CONTRACTOR SHALL FIELD VERIFY THAT THE FIELD SURVEY MATCHES THE DESIGN SURVEY, REPORTING DISCREPANCIES TO THE OWNER'S REPRESENTATIVE IMMEDIATELY. TIE-IN LOCATIONS TO FIELD VERIFY ARE INDICATED ON THE PLANS AND MAY INCLUDE BUT ARE NOT LIMITED TO UTILITY CONNECTIONS, PAVEMENT, WALLS, OR FOUNDATIONS.
4. CONTRACTOR SHALL REPORT IN WRITING ANY GRADE DISCREPANCIES TO THE OWNER'S REPRESENTATIVE PRIOR TO BEGINNING CONSTRUCTION OPERATIONS.
5. ALL EXISTING DRAINAGE EASEMENTS SHALL REMAIN CLEAR FROM ANY CONSTRUCTION.
6. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDING FOUNDATIONS. ANY DEVIATION FROM THE GRADING PLAN THAT WAS NOT APPROVED BY OWNER'S REPRESENTATIVE THROUGH RFI'S OR FIELD CHANGES, ISSUED THROUGH BULLETIN DRAWINGS, OR THROUGH OWNER REQUESTED CHANGES, THAT CAUSES WATER TO DRAIN TOWARDS THE BUILDING SHALL BE CORRECTED BY THE CONTRACTOR AT THEIR OWN COST.
7. CONTRACTOR SHALL PROVIDE POSITIVE STORMWATER FLOW TO KEEP WATER FROM POOLING ALONG CURBS AND NON-PERVIOUS PAVED AREAS. ANY DEVIATION FROM THE GRADING PLAN THAT WAS NOT APPROVED BY OWNER'S REPRESENTATIVE THROUGH RFI'S OR FIELD CHANGES, ISSUED THROUGH BULLETIN DRAWINGS, OR THROUGH OWNER REQUESTED CHANGES, THAT CAUSES WATER TO POOL SHALL BE CORRECTED AT NO ADDITIONAL COST TO THE OWNER.
8. CONTRACTOR SHALL ADJUST RIM ELEVATIONS OF EXISTING MANHOLES, METERS, VALVES, ETC. AS REQUIRED TO MEET NEW FINISHED GRADES.
9. FINE GRADE PLANTING AREAS TO A SMOOTH, UNIFORM SURFACE PLANE WITH LOOSE, UNIFORMLY FINE TEXTURE. SEE LANDSCAPE NOTES FOR ADDITIONAL INFORMATION.
10. GRADING TOLERANCES SHALL BE WITHIN THE FOLLOWING:
    a. ROUGH GRADE: +/- 0.33' (4")
    b. FINE GRADE: +/- 0.083' (1")
    c. FINISH GRADE: +/- 0.010' (1/8")
    d. ELEVATION: 1/4 INCH
    e. RUNNING SLOPE: PLUS 0.5%, NO MINUS; BUT IN NO CASE SHALL SLOPE EXCEED THE CODE MAXIMUM
    f. CROSS SLOPE: PLUS 0.5%, NO MINUS; BUT IN NO CASE SHALL SLOPE EXCEED THE CODE MAXIMUM
11. ALL GRADIENT ON SIDEWALKS ALONG THE ADA ROUTE SHALL HAVE A MAXIMUM LONGITUDINAL SLOPE OF 5% (1:20) AND A MAXIMUM CROSS SLOPE OF 2% (1:48). RAMP CONDITIONS SHALL HAVE A MAXIMUM LONGITUDINAL SLOPE OF 8.33% (1:12) AND A MAXIMUM CROSS SLOPE OF 2% (1:48). ON CURVED SIDEWALKS AND RAMPS, MAXIMUM LONGITUDINAL SLOPE SHALL BE MEASURED USING THE INSIDE/MOST STRINGENT PART OF THE CURVE AND MAXIMUM LONGITUDINAL RUNS ON RAMPS SHALL BE MEASURED USING THE OUTSIDE PART OF THE CURVE. MAXIMUM SLOPE IN ANY DIRECTION ON AN ADA PARKING STALL OR ACCESS AISLE SHALL BE 2% (1:48). CONTRACTOR SHALL REVIEW AND VERIFY THE GRADIENT IN THE FIELD ALONG THE ADA ROUTES PRIOR TO PLACING CONCRETE OR BITUMINOUS PAVEMENT. CONTRACTOR SHALL NOTIFY THE DESIGN PROFESSIONAL IMMEDIATELY IF THERE IS A DISCREPANCY BETWEEN THE GRADIENT IN THE FIELD VERSUS THE DESIGN GRADIENT. COORDINATE ALL WORK WITH PAVING CONTRACTOR.
12. IF UNAUTHORIZED FIELD ADJUSTMENTS ARE MADE BY THE CONTRACTOR RESULTING IN A RAMP CONDITION (>5% (1:20) LONGITUDINAL SLOPE ALONG A WALKWAY) WHERE A RAMP WAS NOT ORIGINALLY PROPOSED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ALL ELEMENTS REQUIRED BY CODE FOR ACCESSIBLE RAMPS AT NO ADDITIONAL COST TO THE OWNER. THIS INCLUDES, BUT MAY NOT BE LIMITED TO, LANDINGS, HANDRAILS, CURBS, AND BARRIERS. THE MAXIMUM LENGTH OF A RAMP SHALL BE 30 FT. AND RAMPS SHALL NOT EXCEED 8.3% (1:12) LONGITUDINAL SLOPE OR 2% (1:48) CROSS SLOPE. LANDINGS SHALL BE PROVIDED AT THE TOP AND BOTTOM OF EACH RAMP RUN. LANDINGS SHALL BE A MINIMUM LENGTH OF 5 FT., EQUAL TO THE WIDTH OF THE RAMP, AND SHALL NOT EXCEED 2% SLOPE IN ANY DIRECTION. THE CHANGE IN ELEVATION BETWEEN LANDINGS SHALL NOT EXCEED 2'-6".
13. PROVIDE A MINIMUM OF 0.5% CROSS SLOPE AND 1.75% MAXIMUM CROSS SLOPE ON WALKWAYS, LANDINGS, AND TRAILS IN A MANNER THAT ENSURES POSITIVE DRAINAGE AND AVOIDS POOLING ON, OR ADJACENT TO, THESE SURFACES.
14. POOL DECK SLOPES SHALL NOT EXCEED 2% IN ANY DIRECTION.
15. APPROVAL OF THIS PLAN IS NOT AN AUTHORIZATION TO GRADE ADJACENT PROPERTIES. WHEN FIELD CONDITIONS WARRANT OFF-SITE GRADING, CONTRACTOR MUST OBTAIN WRITTEN PERMISSION AND TEMPORARY CONSTRUCTION EASEMENT(S) FROM THE AFFECTED PROPERTY OWNERS.
16. BOTTOM OF WALL ELEVATIONS INDICATE THE ELEVATION OF THE FINISHED GRADE AT FACE OF WALL.

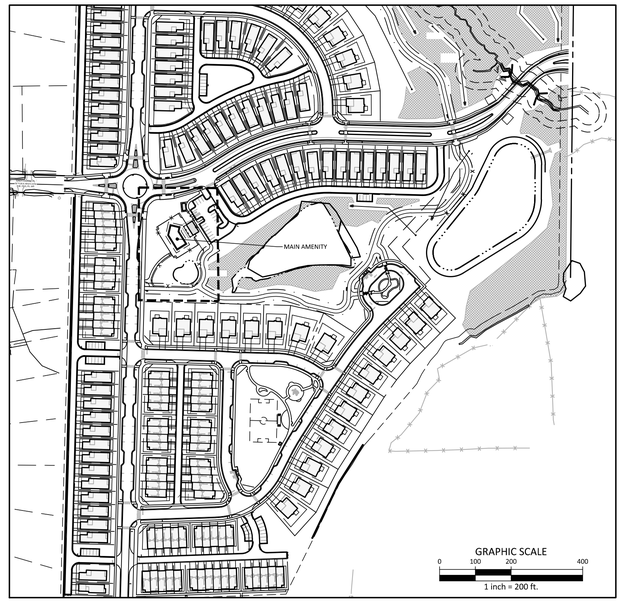
EASEMENT LEGEND

- GW — GREENWAY EASEMENT
- SS — SANITARY SEWER EASEMENT
- SCM — SCM ACCESS AND MAINTENANCE EASEMENT
- SDT — SIGHT DISTANCE TRIANGLE EASEMENT
- PuSD — PUBLIC STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- PrSD — PRIVATE STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- UE — UTILITY EASEMENT
- WE — WATERLINE EASEMENT

GRADING LEGEND

- FLARED END SECTION
- ENDWALL SECTION
- CATCH BASIN
- DROP INLET
- STORM SERVICE INLET
- STORM SERVICE ROOF-DRAIN
- JUNCTION BOX
- DRAINAGE FLOW ARROW
- 250.50 / 250.00 — TOP & BOTTOM CURB ELEVATIONS
- TW=223.00 / BW=213.00 — TOP OF WALL ELEVATION / BOTTOM OF WALL ELEVATION (NOTE: BOTTOM OF WALL IS GROUND ELEVATION NOT WALL FOUNDATION)
- + 250.60 — SPOT ELEVATION
- STORM DRAINAGE
- STORM SERVICE LINE
- TD — TRENCH DRAIN
- RD — ROOF DRAIN, 8" ADS NON-PERFORATED TUBING OR EQUAL 1.0% MIN. SLOPE 3' MIN. COVER PVC SCHEDULE 40 IN TRAFFIC AREAS
- TP — TREE PROTECTION FENCE
- LD — LIMITS OF DISTURBANCE
- TP/LD — TREE PROTECTION FENCE/ LIMITS OF DISTURBANCE
- SF/TP — COMBINATION SILT FENCE/ TREE PROTECTION FENCE
- TC — TREE CONSERVATION
- WOODED AREA
- 250 — PROPOSED MAJOR CONTOUR
- 251 — PROPOSED MINOR CONTOUR
- 250 — EXISTING MAJOR CONTOUR
- 251 — EXISTING MINOR CONTOUR
- ACCESSIBLE PARKING AREA (2% MAX. SLOPE IN ALL DIRECTIONS)
- WETLANDS
- TREE CONSERVATION AREA
- RECREATIONAL OPEN SPACE
- PASSIVE OPEN SPACE
- PERIMETER BUFFER
- SANITARY EASEMENT

KEY MAP



GRAPHIC SCALE
0 10 20 40
1 inch = 20 ft.

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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PLAN INFORMATION

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FINE GRADING PLAN - MAIN AMENITY

L3.01

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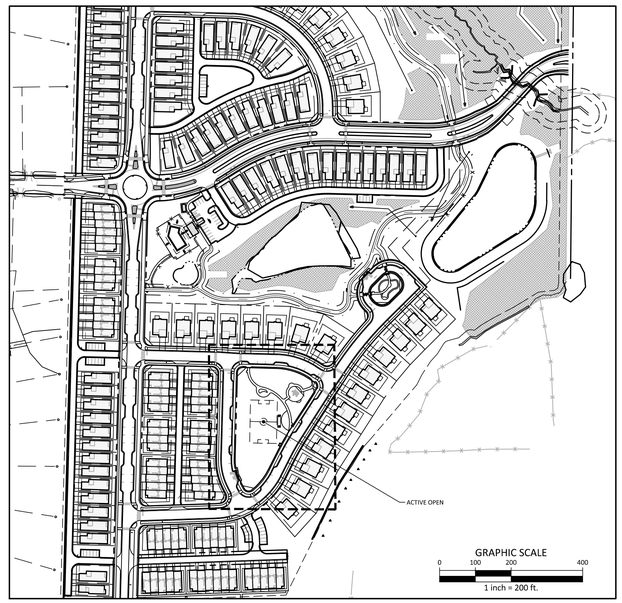
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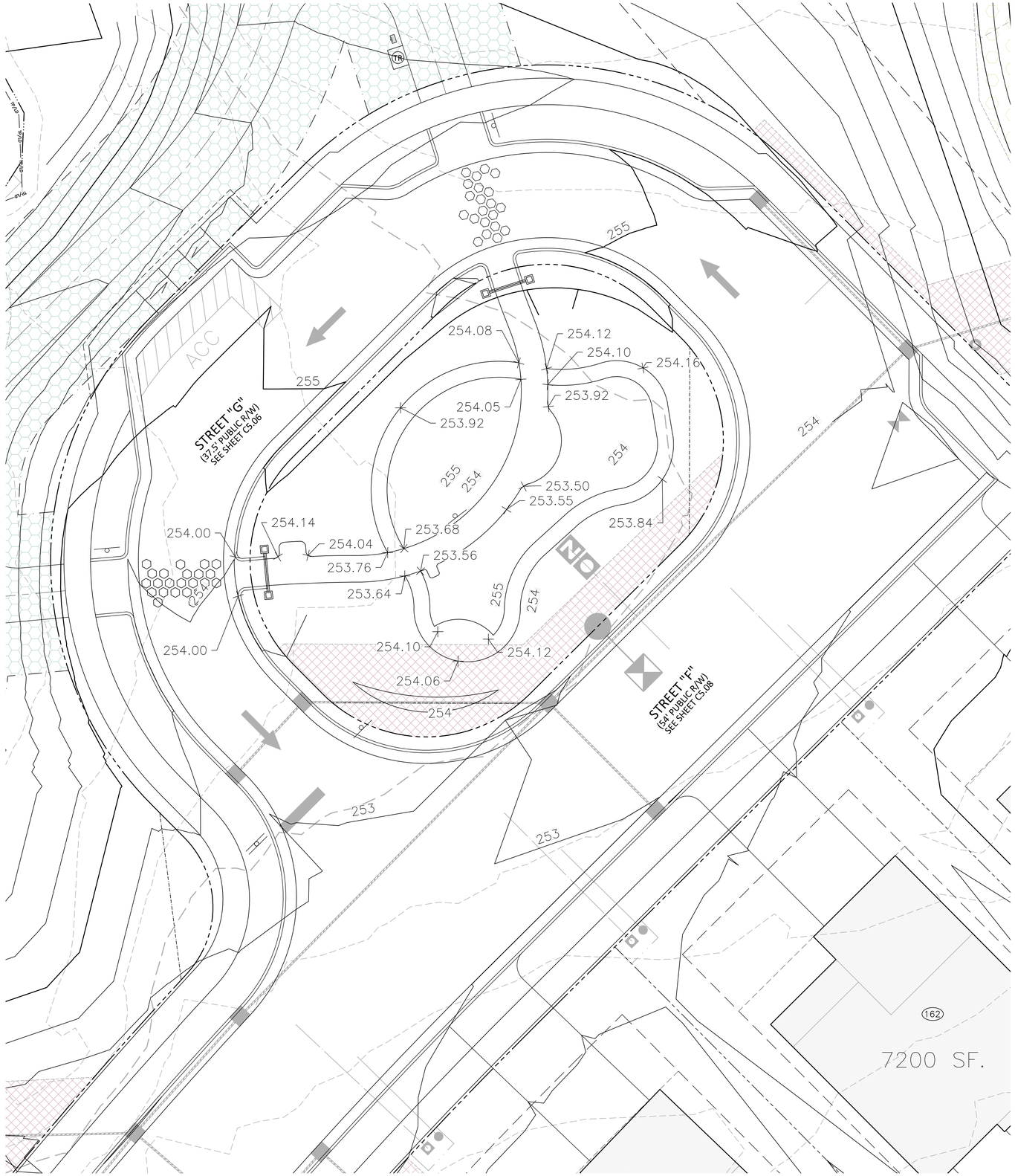
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SHEET

FINE GRADING PLAN - ACTIVE OPEN

L3.02

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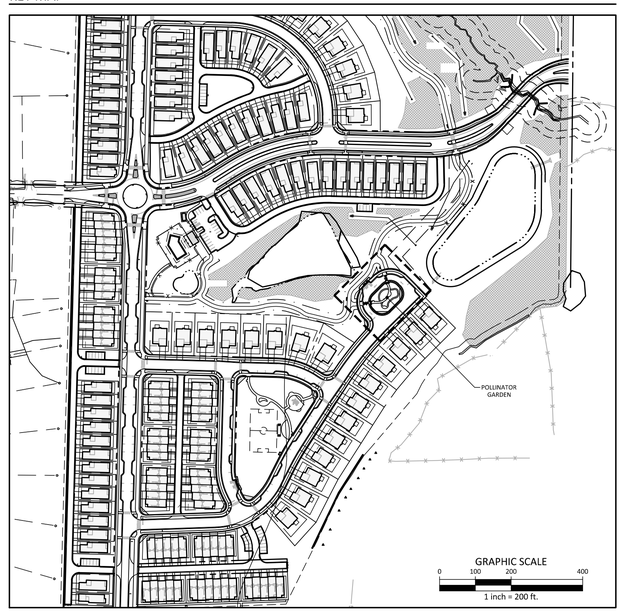
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KEY MAP



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0 100 200 400
1 inch = 200 ft.

GRAPHIC SCALE
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1 inch = 10 ft.

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FINE GRADING PLAN - POLLINATOR GARDEN

L3.03

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GENERAL HARDSCAPE NOTES:

1. THE CONTRACTOR SHALL WORK CLOSELY WITH THE OWNER'S REP. AND/OR LANDSCAPE ARCHITECT AND NOTIFY HIM/HER AS ADDITIONAL INFORMATION IS NEEDED TO PROPERLY CONSTRUCT/INSTALL/BUILD ELEMENTS DEPICTED HEREIN.

2. THE CONTRACTOR SHALL PERFORM HIS/HER OWN INVESTIGATIONS TO THE EXTENT NECESSARY TO DETERMINE EFFECTS OF SUB-SURFACE CONDITIONS ON WORK AND SHALL BID AND CONSTRUCT WORK IN ACCORDANCE WITH FINDINGS.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL EXISTING UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES AND FOR AVOIDING ALL CONFLICTS WITH SAME. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.

4. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND REPORT ANY DISCREPANCIES AND UNUSUAL CONDITIONS TO OWNER'S REP. AND/OR LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION.

5. ALL DISTURBED AREAS AND PROPOSED EARTH GRADING NOT TO BE COVERED BY OTHER SURFACES SHALL BE STABILIZED BY SEEDING, FERTILIZING, MULCHING, AND WATERING AS REQUIRED TO OBTAIN AN ACCEPTABLE GROUND COVER, UNLESS SPECIFIED OTHERWISE. ALL AREAS THAT ARE DISTURBED BY CONSTRUCTION INSIDE OR OUTSIDE THE LIMITS OF WORK SHALL BE REPAIRED, GRADED, AND GRASSED AT THE CONTRACTOR'S EXPENSE.

6. SEE CIVIL DRAWINGS FOR ADDITIONAL GRADING AND DRAINAGE INFORMATION.

7. CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING PROPER DRAINAGE OF ANY AND ALL AREAS WHICH ARE FIELD ADJUSTED DURING CONSTRICTION.

8. CONTRACTOR SHALL RESTORE DAMAGED FINISHES AND REPLACE DAMAGED OR DEFECTIVE PAVER OR CONCRETE UNITS.

9. CONTRACTOR SHALL STAKE ALL WALKS, HARDSCAPE AND OTHER PAVED AREAS TO BE COMPLETED AND OBTAIN APPROVAL FROM OWNER'S REP. AND/OR LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE RESOLVED PRIOR TO CONSTRUCTION. ANY WORK PERFORMED WITHOUT APPROVAL IS AT RISK FOR REPLACEMENT BY THE CONTRACTOR.

10. ALL FIELD ADJUSTMENTS SHALL RECEIVE APPROVAL FROM OWNER'S REP. PRIOR TO CONSTRUCTION.

11. CONSTRUCT EXPANSION JOINTS WHERE WALKS MEET CURBS, STEPS, WALLS, FIXED SLABS OR VERTICAL STRUCTURES.

12. TEMPORARY EROSION & SEDIMENT CONTROLS (SILT FENCES, ETC.) SHALL BE INSTALLED AT INLETS, PIPES, AND LIMITS OF WORK AREAS WHERE SURFACE RUN-OFF OCCURS UNTIL SOIL STABILIZATION IS COMPLETE. SEE CIVIL DRAWINGS FOR SEDIMENTATION AND EROSION CONTROL INFORMATION.

13. SEE ARCHITECTURAL PLANS FOR BUILDING INFORMATION.

14. CONTRACTOR SHALL MAINTAIN ALL GRASSED AREAS, INCLUDING REPAIR OF EROSION AREAS UNTIL GRASS HAS REACHED LEVEL OF FINAL ACCEPTANCE.

15. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH CONTRACT DOCUMENTS AND ALL LOCAL, STATE, AND FEDERAL AGENCIES AND REGULATIONS.

16. CONTRACTOR SHALL PROTECT THE PUBLIC FROM CONSTRUCTION AREAS AND ASSOCIATED ACTIVITY DURING CONSTRUCTION.

17. DIGITAL BASE FILE SHALL BE MADE AVAILABLE FOR USE IN FIELD LOCATION OF ELEMENTS AND SITE FEATURES. ANY HARDCOPY INFORMATION THAT CONFLICTS SHALL BE BROUGHT TO OWNER'S REP AND/OR LANDSCAPE ARCHITECT'S ATTENTION.

18. CONTRACTOR SHALL COORDINATE CONDUIT LOCATIONS (I.E. IRRIGATION, ELECTRICAL, NATURAL GAS ETC.) PRIOR TO CONCRETE INSTALLATION

19. GRATES FOR YARD INLETS SHOULD MEET OR EXCEED A PEDESTRIAN RATING AS INDICATED BY DETAILS. SEE CIVIL DRAWINGS.

GENERAL LAYOUT NOTES:

1. ALL DIMENSIONS ARE TO EDGE OF PAVING UNLESS OTHERWISE INDICATED.

2. ALL CONCRETE SHALL BE 3,000 PSI UNLESS OTHERWISE SPECIFIED BY GEOTECHNICAL REPORT.

3. DIGITAL BASE FILE SHALL BE MADE AVAILABLE FOR USE IN FIELD LOCATION OF ELEMENTS AND SITE FEATURES. HARDCOPY INFORMATION SHALL PREVAIL.

GENERAL DETAIL NOTES:

APPLIES TO ALL DETAIL SHEETS

1. THESE NOTES SHALL APPLY TO ALL DETAILS INCLUDED IN THIS SET OF CONTRACT DOCUMENTS.

2. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND REPORT ANY DISCREPANCIES AND UNUSUAL CONDITIONS TO LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION.

3. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH FEDERAL, STATE, AND LOCAL CODES AND REGULATIONS.

4. ALL CONCRETE SHALL BE 3,000 PSI.

5. CONSTRUCT EXPANSION JOINTS WHERE WALKS MEET CURBS, STEPS, WALLS, OR FIXED SLABS.

6. ALL WOOD, IN CONTACT WITH GROUND, UNLESS OTHERWISE SPECIFIED, SHALL BE SOUTHERN YELLOW PINE, SPIB GRADE NO. 2 COMMON OR BETTER, S4S, SIZED AS SHOWN ON DRAWINGS, TREATED AWPB LP22, 10% MAXIMUM MOISTURE CONTENT.

7. BOLTS, THREADED RODS, WASHERS, NUTS AND ALL BUILDING HARDWARE SHALL BE HOT-DIPPED GALVANIZED.

8. ALL THROUGH BOLTS TO BE SMOOTH SHAFT WITH GALVANIZED NUTS, BOLTS AND WASHERS.

9. ALL NAILS SHALL BE HOT DIPPED GALVANIZED. FINISH NAILS SHALL BE ANNULAR ALLOY ALUMINUM.

10. ALL WELDS CONTINUOUS.

11. INSTALL ALL SITE FURNISHINGS PLUMB, LEVEL, TRUE TO LINE AND AT ELEVATIONS INDICATED.

12. RESTORE DAMAGED FINISHES AND REPLACE DAMAGED OR DEFECTIVE UNITS.

13. SUBMIT SHOP DRAWINGS, PRODUCT DATA AND MAINTENANCE DATA FOR APPROVAL PRIOR TO PURCHASING, FABRICATION AND INSTALLATION.

14. CONTRACTOR TO PROVIDE MOCK-UPS FOR ALL SITE PAVING TO BE USED THROUGHOUT PROJECT TO DEMONSTRATE ALL JOINT PATTERNS, EDGE TREATMENTS AND PAVING PATTERNS.

15. WALL DETAILS SHOWN FOR DESIGN INTENT. REFER TO STRUCTURAL DRAWINGS FOR ALL WALL REINFORCEMENT AND CONSTRUCTION.

GENERAL FURNISHING NOTES:

1. LOOSE FURNISHINGS BY OWNER. CONTRACTOR TO COORDINATE WITH OWNER/OWNER'S REPRESENTATIVE FOR FURTHER INFORMATION.

2. LIGHTING PLAN TO SHOW LOCATION AND FIXTURE SELECTION ONLY. CONTRACTOR TO TO COORDINATE WITH ELECTRICAL ENGINEER/CONTRACTOR FOR ALL REQUIRED SPECIFICATIONS, DATA, CONNECTIONS, OUTLETS, EQUIPMENT AND CODE REQUIREMENTS.

3. BRING ANY DISCREPANCIES THAT MIGHT EXIST BETWEEN THIS PLAN AND ANY OTHER SUBSEQUENT DRAWINGS TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR RESOLUTION PRIOR TO PURCHASING EQUIPMENT OR INSTALLATION.

CONCRETE PAVING SPECIFICATIONS:

GENERAL

1. THIS SECTION INCLUDES THE FOLLOWING:
   1.1. WALKWAYS

2. CONTRACTOR TO SUBMIT PRODUCT DATA FOR EACH TYPE OF PRODUCT AND DESIGN MIXTURES.

3. CONTRACTOR TO BUILD MOCKUPS OF FULL-THICKNESS SECTIONS OF CONCRETE PAVING TO DEMONSTRATE TYPICAL SURFACE FINISH, TEXTURE, AND COLOR; CURING; AND STANDARD OF WORKMANSHIP. MOCKUPS SHALL BE NO LESS THAN 96 INCHES BY 96 INCHES. APPROVED MOCKUPS MAY BECOME PART OF THE COMPLETED WORK IF APPROVED BY OWNER AND LANDSCAPE ARCHITECT.

4. PROTECT CONCRETE WORK FROM PHYSICAL DAMAGE OR REDUCED STRENGTH THAT COULD BE CAUSED BY HOT TEMPERATURES OR COLD TEMPERATURES, INCLUDING FROST AND FREEZING.

PRODUCTS

1. CONCRETE MATERIALS
   1.1. PORTLAND CEMENT: ASTM C 150, TYPE I OR II, GRAY. SUPPLEMENT WITH FLY ASH MEETING ASTM C 618.
   1.2. NORMAL WEIGHT AGGREGATE: ASTM C 33, WITH COARSE AGGREGATE AS FOLLOWS: CLASS 4M MAXIMUM SIZE 3/4 INCH, COARSE AGGREGATE, UNIFORMLY GRADED. PROVIDE FROM SINGLE SOURCE.
   1.3. WATER: ASTM C 94/C 94M.
   1.4. AIR ENTRAINING ADMIXTURE: ASTM C 260. ADD ADMIXTURE AT MANUFACTURER'S PRESCRIBED RATE. AIR CONTENT 6 PERCENT FOR 3/4 INCH MAXIMUM AGGREGATE.
   1.5. CHEMICAL ADMIXTURE: ASTM C 494/C 494 M, OF TYPE SUITABLE FOR APPLICATION, CERTIFIED BY MANUFACTURER TO BE COMPATIBLE WITH OTHER ADMIXTURES AND TO CONTAIN NOT MORE THAN 0.1 PERCENT WATER-SOLUABLE CHLORIDE IRON BY MASS OF CEMENTIOUS MATERIAL.
2. FORMS: PLYWOOD, METAL, OR OTHER APPROVED PANEL-TYPE MATERIAL TO PROVIDE FULL-DEPTH, CONTINUOUS, STRAIGHT AND SMOOTH EXPOSED SURFACES. FORM RELEASE AGENT COMMERCIALLY FORMULATED THAT WILL NOT BOND WITH, STAIN OR ADVERSELY AFFECT CONCRETE SURFACES.
3. STEEL REINFORCEMENT
   3.1. PLAIN-STEEL WELDED WIRE REINFORCEMENT: ASTM A 185 FABRICATED FROM STEEL WIRE INTO FLAT SHEETS.
   3.2. REINFORCING BARS: ASTM A 615/A 615M, GRADE 60; DEFORMED.
   3.3. PLAIN STEEL WIRE: ASTM A 82 AS DRAWN
   3.4. BAR SUPPORTS: BOLSTERS, CHAIRS, SPACERS AND OTHER DEVICES FOR SPACING, SUPPORTING AND FASTENING REINFORCING BARS, WELDED WIRE REINFORCEMENT, AND DOWELS IN PLACE. MANUFACTURE BAR SUPPORTS ACCORDING TO CRSI'S "MANUAL OF STANDARD PRACTICE". EQUIP WIRE BAR SUPPORTS WITH SAND PLATES OR HORIZONTAL RUNNERS WHERE BASE MATERIAL WILL NOT SUPPORT CHAIR LEGS.
4. CURING MATERIALS:
   4.1. ABSORPTIVE COVER: AASHTO M 182, CLASS 2, BURLAP CLOTH.
   4.2. MOISTURE RETAINING COVER: ASTM C 171, POLYETHLENE FILM OR WHITE BURLAP-PLYETHYLENE SHEET.
   4.3. WATER: POTABLE.
   4.4. EVAPORATION RETARDER: WATERBORNE, NON MOLECULAR FILM FORMING, MANUFACTURED FOR APPLICATION TO FRESH CONCRETE.
   4.5. CLEAR WATERBORNE MEMBRANE-FORMING CURING COMPOUND: ASTM C309, TYPE 1, CLASS B, DISSIPATING.
   4.6. WHITE WATERBORNE MEMBRANE-FORMING CURING COMPOUND: ASTM C 309, TYPE 2, CLASS B.
   4.7. EXPANSION AND ISOLATION JOINT FILLER STRIPS: ASTM D 1751, ASPHALT-SATURATED CELLULOSIC FIBER.
5. CONCRETE MIXTURES
   5.1. PREPARE DESIGN MIXES TO ACI 211.1 AND ACI 301 FOR EACH TYPE AND STRENGTH OF NORMAL-WEIGHT CONCRETE. USE QUALIFIED INDEPENDENT TESTING AGENCY FOR PREPARING AND REPORTING PROPOSED MIX DESIGNS FOR THE TRIAL BATCH METHOD.
      5.1.1. PROPORTION MIXES TO PROVIDE CONCRETE WITH THE FOLLOWING PROPERTIES:
         5.1.1.1. COMPRESSIVE STRENGTH (28 DAYS) HEAVY DUTY: 4000 PSI
         5.1.1.2. COMPRESSIVE STRENGTH (28 DAYS) LIGHT DUTY: 3000 PSI
         5.1.1.3. MAXIMUM WATER-CEMENTIOUS MATERIALS RATIO: 0.45
         5.1.1.4. SLUMP LIMIT: 4 INCHES
6. CONCRETE MIXING: READY MIX CONCRETE. MEASURE, BATCH AND MIX CONCRETE MATERIALS AND CONCRETE ACCORDING TO ASTM C 94/C 94M AND ASTM C 1116.

INSTALLATION

1. PREPARATION: PROOF-ROLL SUBBASE WITH GEOTECHNICAL ENGINEER IN ATTENDANCE TO CHECK FOR UNSTABLE AREAS AND VERIFY NEED FOR ADDITIONAL COMPACTION. PROCEED WITH PAVEMENT ONLY AFTER NONCONFORMING CONDITIONS HAVE BEEN CORRECTED. PROOF ROLL WITHIN 72 HOURS OF CONCRETE PLACEMENT. FINAL OKAY OF SUBGRADE BY GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF CONCRETE. REMOVE LOOSE MATERIAL FROM COMPACTED SUBBASE IMMEDIATELY BEFORE PLACING CONCRETE.
2. FORMWORK: SET, BRACE AND SECURE EDGE FORMS AND GUIDES FOR PAVEMENT TO REQUIRED LINES, GRADES AND ELEVATIONS. INSTALL FORMS TO ALLOW FOR CONTINUOUS PROGRESS OF WORK SO NO FORMS CAN REMAIN IN PLACE AT LEAST 24 HOURS AFTER CONCRETE PLACEMENT. CLEAN FORMS AFTER EACH USE.
3. STEEL REINFORCEMENT: COMPLY WITH CRSI'S "MANUAL OF STANDARD PRACTICE" FOR FABRICATING REINFORCEMENTS WITH RECOMMENDATIONS IN CRSI'S "PLACING REINFORCING BARS" FOR PLACING AND SUPPORTING REINFORCEMENT. MAINTAIN MINIMUM COVER TO REINFORCEMENT.
4. JOINTS AND SCORE LINES: CONSTRUCT EXPANSION JOINTS, CONTROL JOINTS AND SCORE LINES TRUE TO LINE WITH FACES PERPINDICULAR TO SURFACE PLANE OF CONCRETE. STRAIGHTNESS, LOCATION AND TYPE APPROVED BY LANDSCAPE ARCHITECT.
   4.1. EXPANSION JOINTS: AS INDICATED ON PLANS AND DETAILS.
   4.2. INSTALL DOWEL BARS AND SUPPORT ASSEMBLIES WHERE INDICATED.
   4.3. CONTROL JOINTS: SAW CUT AS INDICATED ON PLANS AND DETAILS.
5. CONCRETE PLACEMENT: BEFORE PLACEMENT, INSPECT FORMWORK AND STEEL REINFORCEMENT. COMPLY WITH ACI 304R FOR MEASURING, MIXING, TRANSPORTING AND PLACING CONCRETE.
6. CONCRETE FINISHING: MEDIUM TO COARSE TEXTURED BROOM FINISH: PROVIDE A COARSE FINISH BY STRIATING FLOAT-FINISHED CONCRETE SURFACE 1/16 TO 1/8 INCH DEEP WITH A STIFF-BRISTLED BROOM PERPENDICULAR TO LINE OF TRAFFIC.
7. TOLERANCES:
   7.1. ELEVATION: 1/4 INCH
   7.2. THICKNESS: PLUS 3/8 INCH, MINUS 1/4 INCH
   7.3. SURFACE: GAP BELOW 10-FOOT-LONG, UNLEVELED STRAIGHTEDGE NOT TO EXCEED 1/4 INCH
   7.4. JOINT AND SCORING SPACING: 1/2 INCH
   7.5. CONTRACTION JOINT DEPTH: PLUS 1/4 INCH, NO MINUS
   7.6. JOINT WIDTH: PLUS 1/8 INCH, NO MINUS
   7.7. JOINT AND SCORING LINES SHOULD BE IN STRAIGHT ALIGNMENT
8. REPAIRS AND PROTECTION: REMOVE AND REPLACE CONCRETE PAVEMENT THAT IS BROKEN, DAMAGED OR DEFECTIVE. EXCLUDE TRAFFIC FROM PAVEMENT FOR AT LEAST 14 DAYS AFTER PLACEMENT. MAINTAIN CONCRETE FREE OF STAINS, DISCOLORATION, DIRT AND OTHER FOREIGN MATERIAL.

SITE FURNISHING SPECIFICATIONS:

GENERAL

1. CONTRACTOR TO SUBMIT PRODUCT DATA FOR FURNISHINGS INDICATED.

INSTALLATION

1. COMPLY WITH MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS UNLESS MORE STRINGENT REQUIREMENTS ARE INDICATED. COMPLETE FIELD ASSEMBLY OF SITE FURNISHINGS WHERE REQUIRED.
2. UNLESS OTHERWISE INDICATED, INSTALL SITE FURNISHINGS AFTER LANDSCAPING AND PAVING HAVE BEEN COMPLETED.
3. INSTALL SITE FURNISHINGS LEVEL, PLUMB, TRUE, AND SECURELY ANCHORED AT LOCATIONS INDICATED ON DRAWINGS.
4. POST SETTING: SET CAST-IN SUPPORT POSTS IN CONCRETE FOOTING WITH SMOOTH TOP, SHAPED TO SHED WATER. PROTECT PORTION OF POSTS ABOVE FOOT FROM CONCRETE SPLATTER. VERIFY THAT POSTS ARE SET PLUMB OR AT CORRECT ANGLE AND ARE ALIGNED AND AT CORRECT HEIGHT AND SPACING. HOLD POSTS IN POSITION DURING PLACEMENT AND FINISHING OPERATIONS UNTIL CONCRETE IS SUFFICIENTLY CURED.
5. POSTS SET INTO VOIDS IN CONCRETE: FORM OR CORE-DRILL HOLES FOR INSTALLING POSTS IN CONCRETE TO DEPTH RECOMMENDED IN WRITING BY MANUFACTURER OF SITE FURNISHINGS AND 3/4 INCH LARGER THAN OUTSIDE DIAMETER OF POST. CLEAN HOLES OF LOOSE MATERIAL, INSERT POSTS, AND FILL ANNUAL SPACE BETWEEN POST AND CONCRETE WITH NONSHRINK, NONMETALLIC GROUT OR ANCHORING CEMENT, MIXED AND PLACED TO COMPLY WITH ANCHORING MATERIAL MANUFACTURER'S WRITTEN INSTRUCTIONS, WITH TOP SMOOTHED AND SHAPED TO SHED WATER.
6. PIPE SLEEVES: USE STEEL PIPE SLEEVES PRESET AND ANCHORED INTO CONCRETE FOR INSTALLING POSTS. AFTER POSTS HAVE BEEN INSERTED INTO SLEEVES, FULL ANNULAR SPACE BETWEEN POST AND SLEEVE WITH NONSHRINK, NONMETALLIC GROUT OR ANCHORING CEMENT, MIXED AND PLACED TO COMPLY WITH ANCHORING MATERIAL MANUFACTURER'S WRITTEN INSTRUCTIONS, WITH TOP SMOOTHED AND SHAPED TO SHED WATER.
7. AFTER COMPLETING SITE FURNISHING INSTALLATION, INSPECT COMPONENTS. REMOVE SPOTS, DIRT AND DEBRIS. REPAIR DAMAGED FINISHES TO MATCH ORIGINAL FINISH OR REPLACE COMPONENT.

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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CLIENT

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PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA LANDSCAPE ARCHITECT
JOHN RICHARD HAYDON
2594
FOR PRELIMINARY NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02.18.2026	TOWN OF KNIGHTDALE COMMENTS

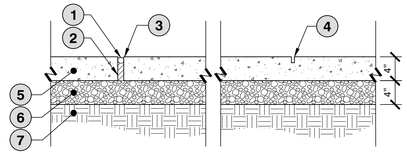
PLAN INFORMATION

PROJECT NO.	LEN-24015
FILENAME	LEN24015-LandArch-HD1
CHECKED BY	JRH
DRAWN BY	KLS
SCALE	NTS
DATE	11. 14. 2025

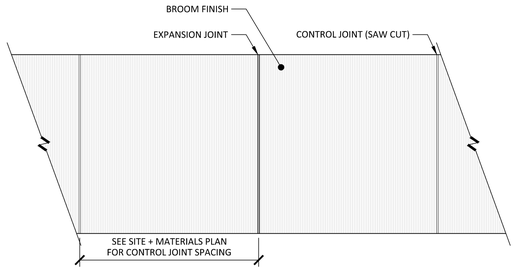
SHEET

HARDSCAPE NOTES AND SCHEDULE

L4.00



1. BACKER ROD (STRAIGHT JOINTS ONLY)
2. SEAL PREFORMED FIBER EXPANSION JOINT WITH COLORED JOINT SEALANT/CAULK. COLOR SHALL MATCH ADJACENT CONCRETE AND BE APPROVED BY OWNER'S REPRESENTATIVE
3. TOOLED EDGE (1/8" RADIUS)
4. SCORE JOINT (TYP) SAW CUT 1" DEEP OR 1/4 SLAB THICKNESS MIN.
5. ADJACENT PAVING OR VERTICAL SURFACE
6. COMPACTED AGGREGATE BASE COURSE PER GEOTECHNICAL REQUIREMENTS
7. COMPACTED SUBGRADE MEETING GEOTECHNICAL AND STRUCTURAL REQUIREMENTS, MINIMUM 95% STANDARD PROCTOR

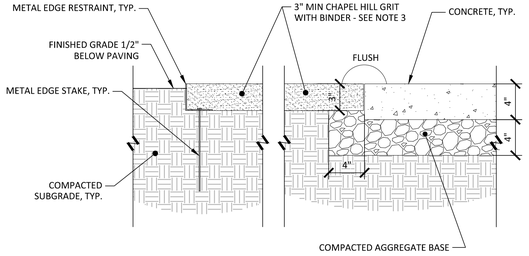


NOTES:
1. EXPANSION JOINTS SHALL BE INSTALLED WHERE CONCRETE PAVEMENT ABUTS ALL VERTICAL SURFACES INCLUDING BUT NOT LIMITED TO ALL BUILDINGS, STRUCTURES, STAIRS, CURBS, COLUMNS, WALLS, LIGHT POLES, ETC.
2. WHERE WALK ABUTS RIGID STRUCTURE, JOINT SHALL BE WATERTIGHT.
3. PROVIDE EXPANSION JOINTS @ 30' O.C. MAX UNLESS OTHERWISE SHOWN/ REQUIRED. (SEE HARDSCAPE PLANS)
4. CONTROL JOINT SPACING SHALL BE EQUAL TO SIDEWALK WIDTH BUT IN NO INSTANCE EXCEED 8'. (SEE HARDSCAPE PLAN)
5. SAW CUT TO A MIN. DEPTH OF 1". CONTRACTOR TO CLOSELY COORDINATE LOCATIONS AND DESIGNS PRIOR TO AND DURING CONSTRUCTION.
6. ALL CONCRETE SHALL BE 3,000 PSI UNLESS OTHERWISE REQUIRED BY PROJECT SPECIFICATIONS.
7. CONCRETE AND BASE DEPTH TO BE VERIFIED BY GEOTECHNICAL ENGINEER. DEPTHS MAY BE MODIFIED TO MEET ALL LOADING REQUIREMENTS.
8. REFER TO STRUCTURAL FOR CONCRETE REINFORCEMENT.
9. REFER TO DETAILED LAYOUT, MATERIALS, AND PAVING PATTERNS PLANS FOR SIDEWALK LOCATIONS, TYPES AND WIDTHS.
10. USE THIS DETAIL FOR TYPICAL JOINT SPACING WHEN NO SPECIFIC JOINT SPACING IS INDICATED ON PLANS.
11. MAXIMUM SIDEWALK CROSS-SLOPE IS 2%.

FINISH NOTES:
1. STANDARD CONCRETE - BROOM FINISH

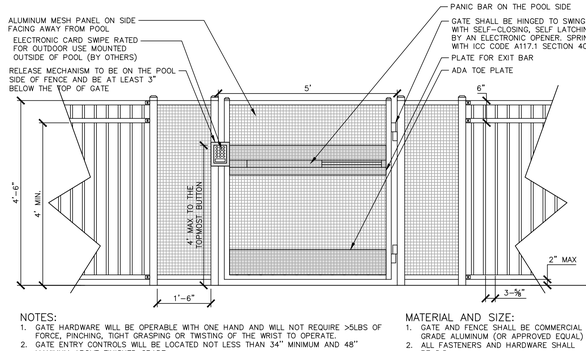
CONCRETE TO BE COARSE BRUSHED BROOM FINISH; FINISH PERPENDICULAR TO PATH OF TRAVEL

1 CONCRETE PAVING
SCALE: 1" = 1'-0"



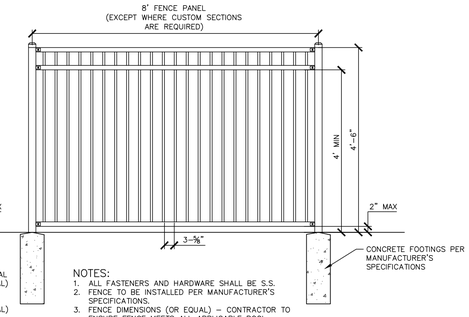
NOTES:
1. PROVIDE 2% MAX. CROSS-SLOPE FOR ADEQUATE DRAINAGE
2. LAY DECOMPOSED GRANITE IN (2) 1.5" LIFTS, SOAK THOROUGHLY, SIT FOR 2-4 HOURS AND COMPACT WITH HEAVY ROLLER OR VIBRATING PLATE COMPACTOR UNTIL 3" DEPTH ACHIEVED
3. BINDER PRODUCT TO BE ORGANIC LOCK DECOMPOSED GRANITE BINDER OR APPROVED EQUAL. PROVIDE PRODUCT SAMPLE AND PRODUCT DATA FOR APPROVAL BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
4. INSTALL ALL PRODUCTS PER MFR. RECOMMENDATIONS
5. REMOVE ANY LARGE AGGREGATE PIECES FOUND ON THE SURFACE SO IT MEETS ADA SLIP RESISTANT REQUIREMENTS
6. SUBMIT PRODUCT DATA AND SAMPLE TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION.

2 CHAPEL HILL GRIT
SCALE: 1 1/2" = 1'-0"



NOTES:
1. GATE HARDWARE WILL BE OPERABLE WITH ONE HAND AND WILL NOT REQUIRE >5LBS OF FORCE, PINCHING, TIGHT GRASPING OR TWISTING OF THE WRIST TO OPERATE.
2. GATE ENTRY CONTROLS WILL BE LOCATED NOT LESS THAN 34" MINIMUM AND 48" MAXIMUM ABOVE FINISHED GRADE.
3. CONTRACTOR TO SUBMIT MANUFACTURER INFORMATION AND CUT SHEETS FOR LATCH PRIOR TO ORDERING. COORDINATE THE SYSTEM WITH OTHER SITE ACCESS CONTROLS AS REQUIRED.
4. CONFIRM POOL FENCE MEETS LOCAL CODE CRITERIA.
5. POOL GATE AND POOL FENCE TO BE FLUSH.
6. SELF-CLOSING LATCH IS TO BE MOUNTED ON THE POOL SIDE OF THE GATE AT A MAXIMUM 48" ABOVE FINISHED GRADE.
7. POOL GATE SHALL MEET ADA & ALL CODES. BRING ANY DISCREPANCIES TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE/LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION.
8. ALUMINUM MESH PANEL SHALL BE USED ON GATE AND 18" MINIMUM ON EITHER SIDE OF GATE PER CODE. THE BARRIER SHALL HAVE NO OPENINGS GREATER THAN ½" WITHIN 18" OF THE RELEASE MECHANISM.
9. MESH PANEL PATTERN TO BE APPROVED BY OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
10. GATE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.

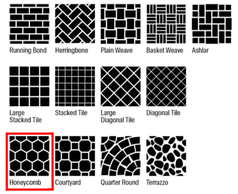
MATERIAL AND SIZE:
1. GATE AND FENCE SHALL BE COMMERCIAL GRADE ALUMINUM (OR APPROVED EQUAL)
2. ALL FASTENERS AND HARDWARE SHALL BE S.S.
3. GATE DIMENSIONS (OR APPROVED EQUAL)
POSTS: 2 ½" X 2 ½"
RAILS: 1 ½" X 1 ½" – NO EXPOSED SCREW SYSTEM
PICKETS: ¾" X ¾" W/ 3 ⅝" SPACING
FINISH: BLACK FINISH, TO MATCH ARCHITECTURAL RAILINGS, SHOP APPLIED POWDER COAT



NOTES:
1. ALL FASTENERS AND HARDWARE SHALL BE S.S.
2. FENCE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
3. FENCE DIMENSIONS (OR EQUAL) – CONTRACTOR TO ENSURE FENCE MEETS ALL APPLICABLE POOL CODES COMMERCIAL STRENGTH ALUMINUM
POSTS: 2 ½" X 2 ½"
RAILS: 1 ½" X 1 ½" – NO EXPOSED SCREW SYSTEM
PICKETS: ¾" X ¾" W/ 3 ⅝" SPACING
COLOR: BLACK FINISH, TO MATCH ARCHITECTURAL RAILINGS, SHOP APPLIED POWDER COAT
4. FENCE MANUFACTURER TO BE APPROVED BY OWNER'S REP PRIOR TO INSTALLATION

3 DECORATIVE THERMOPLASTIC
SCALE: NTS

Standard Patterns (2' x 2' sheets)



Standard Borders



Standard Colors



Premium Colors

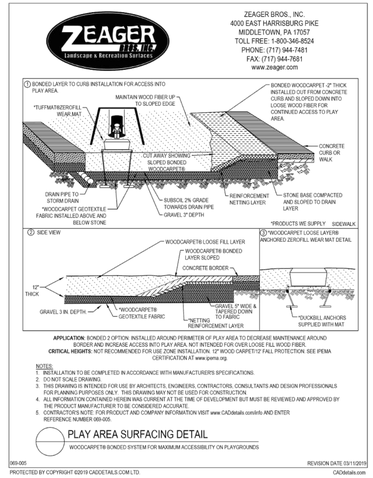
PRODUCT: ENNIS–FLINT® BY PPG TRAFFICPATTERNS®

MANUFACTURER: PPG

SOURCE: HTTPS://WWW.PPG.COM/EN-US/TRAFFIC/PRODUCTS/PREFORMED-THERMOPLASTIC/TRAFFICSCAPES-8QUXBGN6LP/TRAFFICPATTERNS

NOTES: HONEYCOMB TO BE YELLOW WITH NO BORDER.

4 PLAYGROUND MULCH
SCALE: NTS



ANOVA
TR35VBT
Madison 35 Gallon Recycled Plastic Receptacle with Visor Hood Top

(800) 231-1327
specify@anovafurnishings.com
anovafurnishings.com



Material
The receptacle is composed of 5" x 2.5" recycled plastic slats made of 95% recycled content by weight and 12-gauge steel side panels. The slats are attached to three inner steel bands for maximum support.
The top is made of 16-gauge galvannealed spun steel with a large waste opening on each side. The reusable plastic liner is made of high-density polyethylene.

Features
The visor hood top features a 4" tall and 15.33" wide waste opening on each side covered by a visor to keep the weather out. The top has a 14" web security strap and lifts off for easy waste disposal.
The rubber feet are adjustable to assist in leveling the receptacle. The receptacle is designed to be portable for flexibility in placement or surface mounted using pre-drilled .50" diameter holes inside the base to prevent movement. **Mounting hardware is not included.**

Finish
The recycled plastic planks are impervious to moisture and corrosion, do not require the application of sealants or preservatives, and will never need painting or staining throughout the product's life. Recycled plastic is eligible for LEED points.
Fade-resistant, powder coated steel components feature a state-of-the art primer proven to prevent rusting. Treated components exceed the industry standard by 34% in testing by independent sources.

Assembly
This product ships fully assembled and ready-to-use. Assembled with stainless steel hardware.

Color
See website or sales representative for color choices.

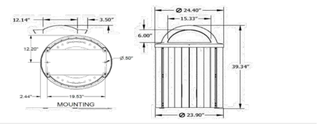
Maintenance
The product is virtually maintenance-free and requires only periodic cleaning with a sponge and a solution of mild detergent and water to remove surface dirt. Do not clean with solvent or petroleum base products.

Warranty
20-year limited structural warranty, 20-year warranty on recycled plastic, and 3-year finish warranty from the date of purchase. See full details on multi-year warranties for components at anovafurnishings.com/warranty.
Manufactured in the U.S.

Replacement Parts	
Black Plastic Liner	R-DOM1055
Visor Hood Top	F3209
Accessories	
Ash/Trash Top	R-5518
Bonnet Top	F3203
Cigarette Ash Top	R-5519
Open Top	R-5205
Open Hood Top	F3207
Dome Recycler Top	F3205
Visor Recycler Top	F3206

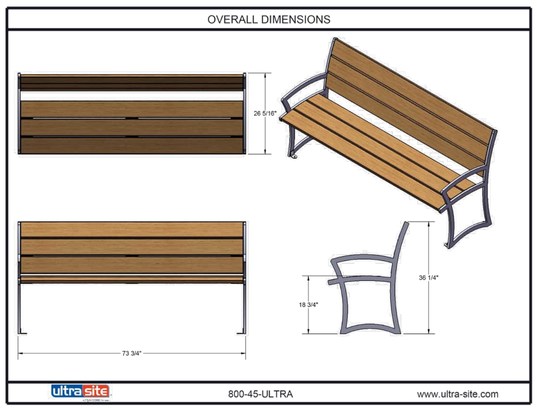


NOTE: ALL METAL COMPONENTS SHALL BE BLACK, PLASTIC SLATS SHALL BE CEDAR



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Jan - 2024

5 POOL GATE AND FENCE
SCALE: 1/2" = 1'-0"



2/3/2017 Page 7 of 7

NOTES:
1. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

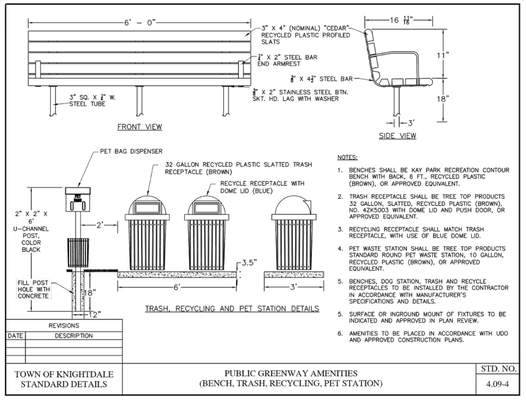
PRODUCT: MADISON BENCH WITH BACK, IPE WOOD
MANUFACTURER: ULTRASITE
SOURCE: ULTRA-SITE.COM
ITEM NUMBER: 71-I6
NOTES: 6' LENGTH, SURFACE MOUNT, WOOD FINISH, BLACK FRAME

7 BENCH
SCALE: NTS



NOTES:
1. PRODUCT: 1-LOOP WAVE STYLE BIKE RACK BY ULINE
2. COLOR: GALVANIZED
3. MODEL NO. H-2892GALV
4. 2-3/8 IN. O.D. SCHEDULE 40 GALVANIZED PIPE
5. INSTALL PER MFR RECOMMENDATIONS.

8 WAVE STYLE ULINE BIKE RACK
SCALE: NTS



NOTES:
1. BENCHES SHALL BE KAY PARK RECREATION CONTOUR BENCH WITH BACK, 6 FT., RECYCLED PLASTIC (BROWN), OR APPROVED EQUIVALENT.
2. TRASH RECEPTACLE SHALL BE TREE TOP PRODUCTS 32 GALLON, SLATTED, RECYCLED PLASTIC (BROWN), NO. 42X5003 WITH DOME LID AND PUSH DOOR, OR APPROVED EQUIVALENT.
3. RECYCLING RECEPTACLE SHALL MATCH TRASH RECEPTACLE, WITH USE OF BLUE DOME LID.
4. PET WASTE STATION SHALL BE TREE TOP PRODUCTS STANDARD ROUND PET WASTE STATION, 10 GALLON, RECYCLED PLASTIC (BROWN), OR APPROVED EQUIVALENT.
5. BENCHES, DOG STATION, TRASH AND RECYCLE RECEPTACLES TO BE INSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND DETAILS.
5. SURFACE OR INGROUND MOUNT OF FIXTURES TO BE INDICATED AND APPROVED IN PLAN REVIEW.
6. AMENITIES TO BE PLACED IN ACCORDANCE WITH UDO AND APPROVED CONSTRUCTION PLANS.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS

PUBLIC GREENWAY AMENITIES (BENCH, TRASH, RECYCLING, PET STATION)

STD. NO. 4.09-4

09 TOWN OF KNIGHTDALE PUBLIC GREENWAY AMENITIES
SCALE: NTS

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293, C-187

www.mcadamsco.com

CLIENT

LENNAR
1100 PERIMETER PARK DRIVE, SUITE 112
MORRISVILLE, NORTH CAROLINA 27560
CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 25944 JOHN RICHARD HAYTON NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02.18.2026	TOWN OF KNIGHTDALE COMMENTS

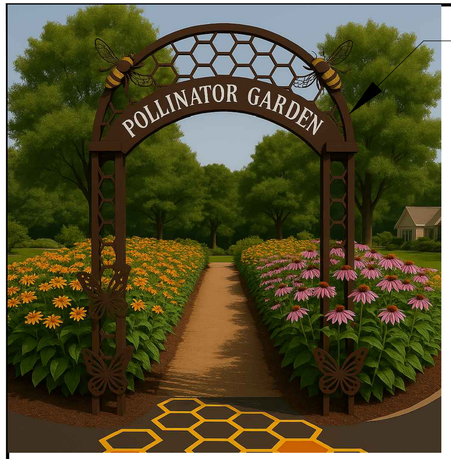
PLAN INFORMATION

PROJECT NO.	LEN-24015
FILENAME	LEN24015-LandArch-HD1
CHECKED BY	JRH
DRAWN BY	KLS
SCALE	NTS
DATE	11. 14. 2025

SHEET

HARDSCAPE DETAILS
L4.01

X:\Projects\LEN\LEN24015\04-Production\Planning and Design\Construction Documents\Current Drawing\LEN24015-LandArch-HD1.dwg, 2/20/2026 2:00:31 PM, Kelby Stallings



METAL ARBOR STRUCTURE BY OTHERS, IMAGE SHOWN FOR DESIGN INTENT ONLY.

NOTES:
1. SUBMIT SHOP DRAWINGS FOR APPROVAL BY LANDSCAPE ARCHITECT PRIOR TO FABRICATION.
2. FOOTINGS AND REINFORCEMENT TO BE COORDINATED WITH STRUCTURAL ENGINEER PRIOR TO INSTALLATION.

1 ENTRY ARBOR - DESIGN INTENT ONLY
SCALE: NTS



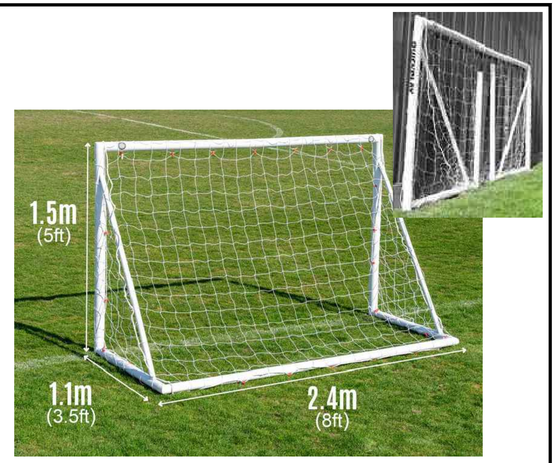
SUPERIOR METAL PET WASTE ELIMINATOR STATION BY PET WASTE ELIMINATOR
ITEM NUMBER: SKU: E3
COLOR: GREEN
NO FINE ON SIGN

2 PET WASTE STATION
SCALE: NTS



NOTES:
1. CONTRACTOR TO PROVIDE DRAWINGS FROM TUFF SHED TO BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
2. INSTALL PER MANUFACTURER'S RECOMMENDATION.

3 TUFF SHED - PREMIER LEAN-TO
SCALE: NTS



NOTES:
1. SOCCER GOALS TO BE PROVIDED BY OWNER. PRODUCT DETAILS PROVIDED FOR REFERENCE.

4 QUICKPLAY - Q-FOLD FOLDING SOCCER GOAL, 8X5'
SCALE: NTS

This unit offers no anti-siphon or backflow protection.

WOODFORD

Freezeless
Post Yard Hydrants
Model Y30

Post hydrants are intended for irrigation purposes on golf courses, in parks and recreation areas and landscaped areas around buildings.

FEATURES:
ONE PIECE VARIABLE FLOW PLUNGER - Large cushion type seal for longer life - is not easily damaged and assures shut-off even when foreign particles are present. Automatic drain feature - plunger opens drain to prevent freezing.

REPLACEMENT PARTS – Head nut assembly can be removed for ready access to internal parts.

SPECIFICATIONS:
PACKING – EPDM rubber with adjustable packing nut.

VALVE SEAT – Permanent type brass valve body with hemispherical seating surface.

OPERATION – **Y30BR** Oval, Metal Wheel Handle. **Y30CH** Round Clear Wheel Handle **Optional:** Tee Key.

FINISHES – **Y30BR** - Brass. **Y30CH** - Chrome

FEMALE INLET – 3/4" N.P.T

CASING – 1" Galvanized steel pipe

OPERATING ROD – 3/8" Stainless steel pipe

DRAIN HOLE – 1/8" N.P.T.

NOZZLE – 3/4" Brass male hose nozzle

MAX PRESSURE – 125 p.s.i.

MAX TEMPERATURE - 120° F

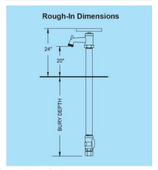
SHIPPING WEIGHT –

Bury Depth (ft)	1	2	3	4	5	6	7*
Weight (lbs)	8	10	13	15	17	19	21

*Must ship by truck line due to length.

For Installation / Troubleshooting Instructions go to www.woodfordmfg.com or call 1-800-621-6032

Rough-In Dimensions



When ordering, specify finish and bury depth.

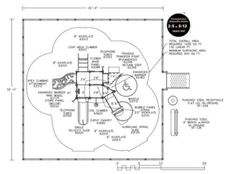
©2021 WOODFORD Mfg. Form Y30 Rev. 109 05/21

NOTES:
1. REFER TO CIVIL UTILITY SHEETS.
2. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
3. SUBMIT PRODUCT DATA AND CUT SHEETS FOR APPROVAL PRIOR TO INSTALLATION.

5 HOSE BIB
SCALE: NTS

LENNAR

$25k – 40k
Drawing 630-140387
Estimated Price for Unit, Timbers and EWF:
$26,810.00
*these prices do not include surcharge, freight, taxes or installation

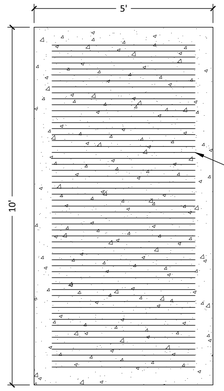


play&park structures



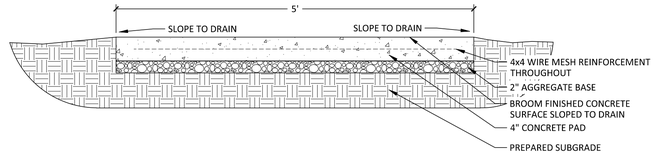
Drawing 630-140387
User capacity 25-35

6 PLAYGROUND
SCALE: NTS



BROOM FINISH IN THE DIRECTION AS SHOWN FOR NON-SLIP SURFACE.

PLAN VIEW
SCALE = 1/2" = 1'-0"



SECTION
SCALE = 1" = 1'-0"

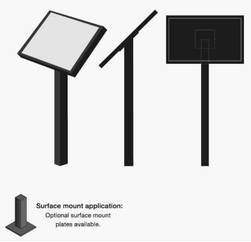
7 CONCRETE TEE PAD
SCALE: 1" = 1'-0"



NOTES:
1. DYNAMIC DISCS VETERAN PERMANENT DISC GOLF BASKET OR APPROVED EQUAL.
2. 2. WHITE IN COLOR.
3. FOOTER TO MEET MANUFACTURER'S SPECIFICATIONS.

8 DISC GOLF BASKET
SCALE: NTS

VACKERSIGN
SIGNS FOR PARKS AND TRAILS



Standard Angle Mount Frame & Post(s)
Our standard frame mechanically fastens to an aluminum post(s). The post(s) consists of 3"x3" aluminum tube with a welded plate at 30 or 45 degrees. Stainless steel fasteners pass through the frame back plate and attach to the plate.

Panel Size
8.5x11 (single post)
8x12 (single post)
11x17 (single post)
12x18 (single post)
18x24 (single post)
18x24 (double post)
24x30 (single post)
24x30 (double post)
24x36 (single post)
24x36 (double post)
24x42 (double post)



Surface mount application:
Optional surface mount plates available.

vackersign.com | (877) 487-3101 | (651) 487-3100

NOTES:
1. DESIGN TO BE FINALIZED AS DESIGN DEVELOPS THROUGH CONSTRUCTION DRAWING PHASE.
2. SIGN INFORMATION AND CONTENT SUBJECT TO CHANGE PER OWNERS REQUEST.

9 EDUCATIONAL SIGNAGE
SCALE: NTS



PRODUCT: 12"X12"NATIVE PRAIRIE SIGN: DO NOT MOW OR SPRAY (K2-6319)
MANUFACTURER: MY SAFETY SIGN
SOURCE: MYSAFETYSIGN.COM
MATERIAL: REFLECTIVE ALUMINUM
NOTES: INSTALL PER MANUFACTURERS INSTRUCTIONS, CONTRACTOR TO SUBMIT PRODUCT SAMPLES FOR REVIEW BY LANDSCAPE ARCHITECT PRIOR TO COMMENCEMENT OF INSTALLATION

10 NO MOW SIGN
SCALE: NTS

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT JOHN RICHARD HAYTON 2594 NOT FOR CONSTRUCTION

REVISIONS

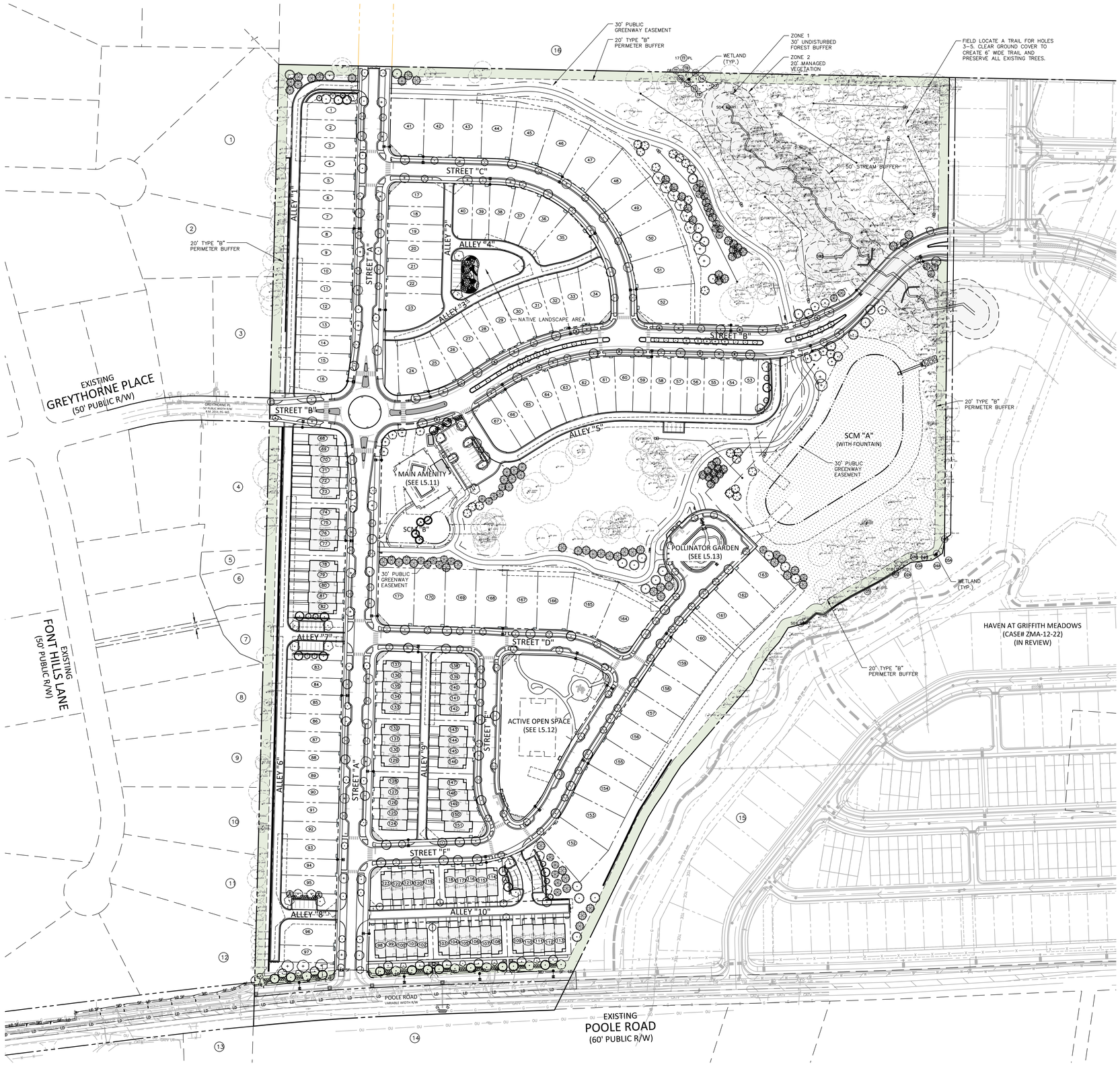
NO.	DATE	
1	02.18.2026	TOWN OF KNIGHTDALE COMMENTS

PLAN INFORMATION

PROJECT NO.	LEN-24015
FILENAME	LEN24015-LandArch-HD1
CHECKED BY	JRH
DRAWN BY	KLS
SCALE	NTS
DATE	11. 14. 2025

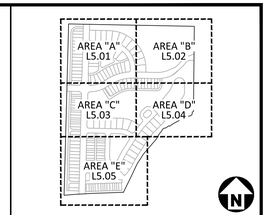
SHEET
HARDSCAPE DETAILS
L4.02

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SITE LEGEND

- SIGNAGE
- POWER POLE
- TRAFFIC DIRECTIONAL ARROW
- ACC — ACCESSIBLE PARKING STALL
- VAN — VAN ACCESSIBLE PARKING STALL
- XX — PARKING SPACE COUNT
- ACCESSIBLE RAMPS
- ACCESSIBLE ROUTE
- PHASE LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- LOT LINE
- CENTERLINE
- GUARDRAIL
- WETLANDS
- TREE CONSERVATION AREA (NOTE: A 20' WIDE AREA ALONG EACH DISC GOLF HOLE IS DEDUCTED FROM TREE SAVE CALCULATIONS)
- 20' TYPE 'B' BUFFER
- 10' TYPE 'A' BUFFER
- GROUNDCOVER AND SMALL SHRUBS NOT TO EXCEED 2' HT.



KEY MAP

BUFFER PLANT LIST

- PINUS TAEDA / LOBLOLLY PINE
- ILEX OPACA / AMERICAN HOLLY
- PRUNUS CAROLINIANA / CAROLINA CHERRY LAUREL
- ILEX VOMITORIA / YAUPON HOLLY
- MYRICA CERIFERA / WAX MYRTLE

EASEMENT LEGEND

- GW — GREENWAY EASEMENT
- SS — SANITARY SEWER EASEMENT
- SCM — SCM ACCESS AND MAINTENANCE EASEMENT
- SDT — SIGHT DISTANCE TRIANGLE EASEMENT
- PuSD — PUBLIC STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- PrSD — PRIVATE STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- UE — UTILITY EASEMENT
- WE — WATERLINE EASEMENT

PLANT SCHEDULE REPLACEMENT TREES

SYMBOL	CODE	BOTANICAL / COMMON NAME
REPLACEMENT TREES		
	ACRU(R)	ACER RUBRUM RED MAPLE
	ILOP(R)	ILEX OPACA AMERICAN HOLLY
	LITA(R)	LIRIODENDRON TULIPIFERA 'ARNOLD' ARNOLD TULIP POPLAR
	PTLP(R)	PINUS TAEDA LOBLOLLY PINE
	QUSH(R)	QUERCUS SHUMARDII SHUMARD OAK
	TAD(R)	TAXODIUM DISTICHUM BALD CYPRESS

PLANT SCHEDULE

SYMBOL	CODE	BOTANICAL / COMMON NAME
POOLE ROAD BUFFER TREES		
	CVWF	CHIONANTHUS VIRGINICUS WHITE FRINGETREE
	MGDB	MAGNOLIA GRANDIFLORA 'D.D. BLANCHARD' D.D BLANCHARD SOUTHERN MAGNOLIA
	PNLP	PINUS TAEDA 'NANA' DWARF LOBLOLLY PINE
	TAAL	TILIA AMERICANA AMERICAN LINDEN
MEDIAN TREES		
	MSAS	MAGNOLIA X SOULANGEANA 'ALEXANDRINA' ALEXANDRINA SAUCER MAGNOLIA SINGLE TRUNK
	MGLG	MAGNOLIA GRANDIFLORA 'LITTLE GEM' LITTLE GEM DWARF SOUTHERN MAGNOLIA
VSA BUFFER TREES		
	PTLP	PINUS TAEDA LOBLOLLY PINE
	IOAH	ILEX OPACA AMERICAN HOLLY
	IVYH	ILEX VOMITORIA 'YAUPON HOLLY
	PCCL	PRUNUS CAROLINIANA CAROLINA CHERRY LAUREL
PARKING ISLAND TREES		
	QSPO	QUERCUS STELLATA POST OAK
STREET TREES		
	ASLM	ACER SACCHARUM 'LEGACY' LEGACY SUGAR MAPLE
	LINC	LAGERSTROEMIA INDICA 'NEAR EAST' NEAR EAST CRAPE MYRTLE
	QPWO	QUERCUS PHELLOS WILLOW OAK
	PSJC	PRUNUS SERRULATA JAPANESE FLOWERING CHERRY
	UPAL	ULMUS PARVIFOLIA 'EMER II' ALLEE® LACEBARK ELM
	ZSGV	ZELKOVA SERRATA 'GREEN VASE' GREEN VASE JAPANESE ZELKOVA
EVERGREEN SHRUBS		
	ILCR	ILEX CRENATA JAPANESE HOLLY
	MCWM	MYRICA CERIFERA WAX MYRTLE
SOD		
	SOD	PASPALUM NOTATUM 'ARGENTINE' ARGENTINE BAHIAGRASS

NC GRID (NAD83)

GRAPHIC SCALE
0 50 100 200
1 inch = 100 ft.

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 2894 JOHN RICHARD HAYTON
PRELIMINARY PLANS NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
5		
6		

PLAN INFORMATION

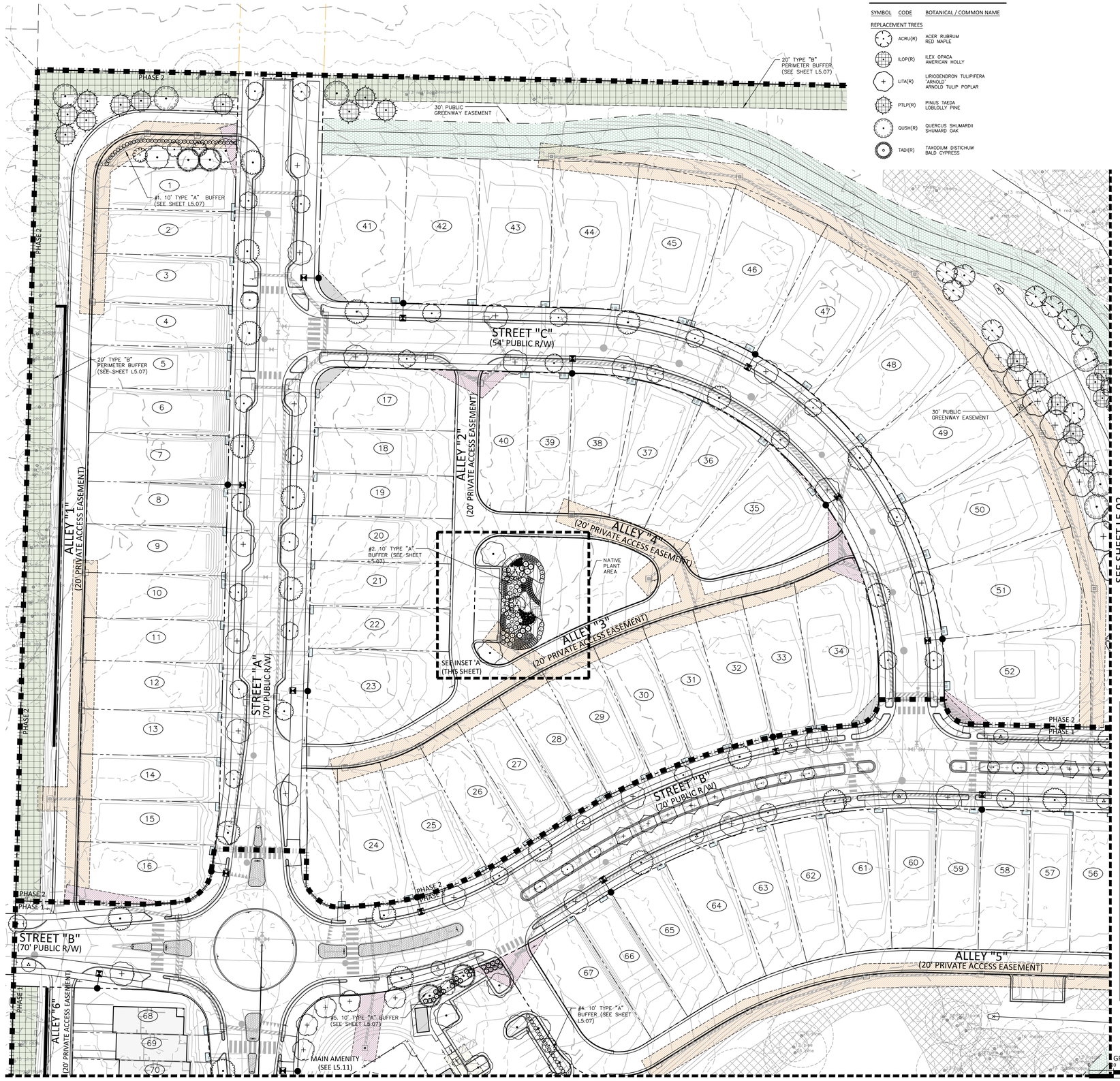
PROJECT NO.	LEN24015
FILENAME	LEN24015-LS1
CHECKED BY	WMK
DRAWN BY	RLU
SCALE	1" = 100'
DATE	11. 14. 2025

SHEET

OVERALL CODE LANDSCAPE PLAN

L5.00

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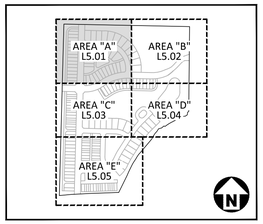


PLANT SCHEDULE REPLACEMENT TREES

SYMBOL	CODE	BOTANICAL / COMMON NAME
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	IVYH	ILEX VOMITORIA 'YAUPON' YAUPON HOLLY
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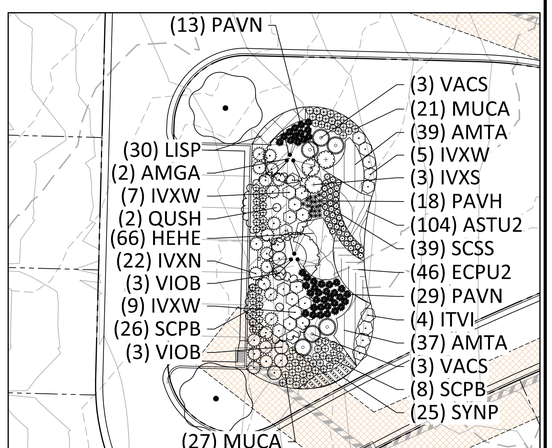
KEY MAP

EASEMENT LEGEND

	GW	GREENWAY EASEMENT
	SS	SANITARY SEWER EASEMENT
	SCM	SCM ACCESS AND MAINTENANCE EASEMENT
	SDT	SIGHT DISTANCE TRIANGLE EASEMENT
	PuSD	PUBLIC STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
	PrSD	PRIVATE STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
	UE	UTILITY EASEMENT
	WE	WATERLINE EASEMENT

SITE LEGEND

	SIGNAGE
	POWER POLE
	TRAFFIC DIRECTIONAL ARROW
ACC	ACCESSIBLE PARKING STALL
VAN	VAN ACCESSIBLE PARKING STALL
XX	PARKING SPACE COUNT
	ACCESSIBLE RAMPS
	ACCESSIBLE ROUTE
	PHASE LINE
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	LOT LINE
	CENTERLINE
	GUARDRAIL
	WETLANDS
	TREE CONSERVATION AREA (NOTE: A 20' WIDE AREA ALONG EACH DISC GOLF HOLE IS DEDUCTED FROM TREE SAVE CALCULATIONS)
	20' TYPE 'B' BUFFER
	10' TYPE 'A' BUFFER



INSET 'A'
SCALE = 1" = 20'

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

NC GRID (NAD83)

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
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CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 2594 JOHN RICHARD HATTON NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
2		
3		
4		
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6		

PLAN INFORMATION

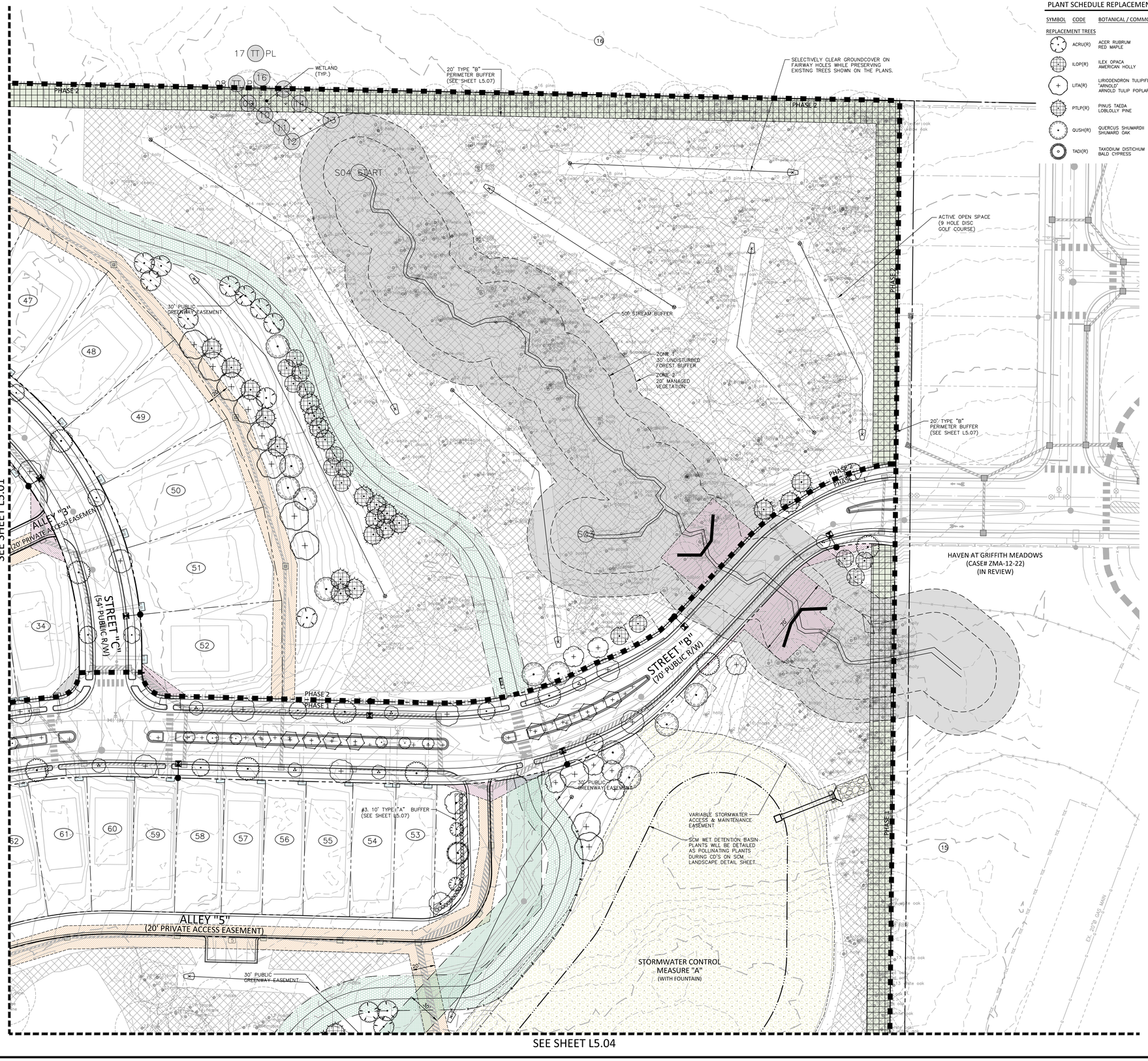
PROJECT NO.	LEN24015
FILENAME	LEN24015-LS1
CHECKED BY	WMK
DRAWN BY	RLU
SCALE	#######
DATE	11. 14. 2025

SHEET

CODE LANDSCAPE PLAN - AREA "A"

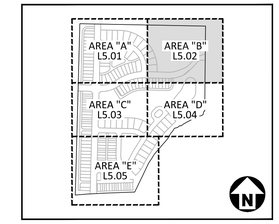
L5.01

X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawings\LEN24015-LS1.dwg, 2/20/2026 1:53:49 PM, Kelby Stallings



PLANT SCHEDULE REPLACEMENT TREES

SYMBOL	CODE	BOTANICAL / COMMON NAME
REPLACEMENT TREES		
	ACRU(R)	ACER RUBRUM RED MAPLE
	ILOP(R)	ILEX OPACA AMERICAN HOLLY
	LITA(R)	LIRIODENDRON TULIPIFERA 'ARNOLD' ARNOLD TULIP POPLAR
	PTLP(R)	PINUS TAEDA LOBLOLLY PINE
	QUSH(R)	QUERCUS SHUMARDII SHUMARD OAK
	TADI(R)	TAXODIUM DISTICHUM BALD CYPRESS



KEY MAP

SITE LEGEND

- SIGNAGE
- POWER POLE
- TRAFFIC DIRECTIONAL ARROW
- ACCESSIBLE PARKING STALL (ACC)
- VAN ACCESSIBLE PARKING STALL (VAN)
- PARKING SPACE COUNT
- ACCESSIBLE RAMPS
- ACCESSIBLE ROUTE
- PHASE LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- LOT LINE
- CENTERLINE
- GUARDRAIL
- WETLANDS
- TREE CONSERVATION AREA (NOTE: A 20' WIDE AREA ALONG EACH DISC GOLF HOLE IS DEDUCTED FROM TREE SAVE CALCULATIONS)
- 20' TYPE 'B' BUFFER
- 10' TYPE 'A' BUFFER

EASEMENT LEGEND

- GW GREENWAY EASEMENT
- SS SANITARY SEWER EASEMENT
- SCM SCM ACCESS AND MAINTENANCE EASEMENT
- SDT SIGHT DISTANCE TRIANGLE EASEMENT
- PuSD PUBLIC STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- PrSD PRIVATE STORM DRAINAGE EASEMENT (UNLESS NOTED, VARIABLE WIDTH)
- UE UTILITY EASEMENT
- WE WATERLINE EASEMENT

PLANT SCHEDULE

SYMBOL	CODE	BOTANICAL / COMMON NAME
POOLE ROAD BUFFER TREES		
	CVWF	CHIONANTHUS VIRGINICUS WHITE FRINGETREE
	MGDB	MAGNOLIA GRANDIFLORA 'D.D. BLANCHARD' D.D BLANCHARD SOUTHERN MAGNOLIA
	PNLP	PINUS TAEDA 'NANA' DWARF LOBLOLLY PINE
	TAAL	TILIA AMERICANA AMERICAN LINDEN
MEDIAN TREES		
	MSAS	MAGNOLIA X SOULANGEANA 'ALEXANDRINA' ALEXANDRINA SAUCER MAGNOLIA SINGLE TRUNK
	MGLG	MAGNOLIA GRANDIFLORA 'LITTLE GEM' LITTLE GEM DWARF SOUTHERN MAGNOLIA
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PARKING ISLAND TREES		
	QSPO	QUERCUS STELLATA POST OAK
STREET TREES		
	ASLM	ACER SACCHARUM 'LEGACY' LEGACY SUGAR MAPLE
	LINC	LAGERSTROEMIA INDICA 'NEAR EAST' NEAR EAST CRAPE MYRTLE
	QPWO	QUERCUS PHELLOS WILLOW OAK
	PSJC	PRUNUS SERRULATA JAPANESE FLOWERING CHERRY
	UPAL	ULMUS PARVIFOLIA 'EMER II' ALLEE® LACEBARK ELM
	ZSGV	ZELKOVA SERRATA 'GREEN VASE' GREEN VASE JAPANESE ZELKOVA
EVERGREEN SHRUBS		
	ILCR	ILEX CRENATA JAPANESE HOLLY
	MCWM	MYRICA CERIFERA WAX MYRTLE
SOD		
	SOD	PASPALUM NOTATUM 'ARGENTINE' ARGENTINE BAHIAGRASS

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

NC GRID (NAD83)

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
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FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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The John R. McAdams Company, Inc.
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Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
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CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA LANDSCAPE ARCHITECT 2894 JOHN RICHARD HAYDON
PRELIMINARY NOT FOR CONSTRUCTION

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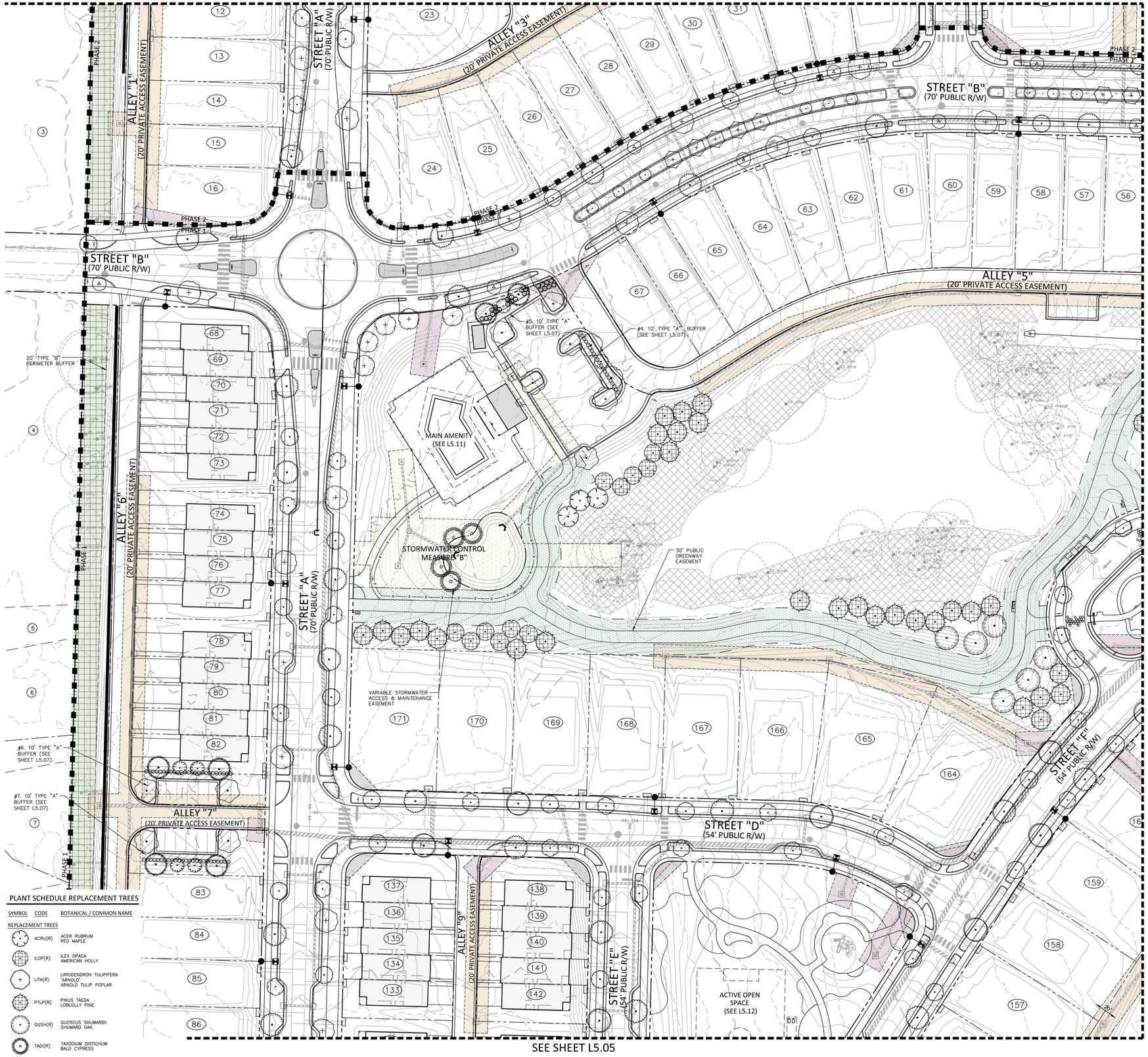
SHEET

CODE LANDSCAPE PLAN - AREA "B"

L5.02

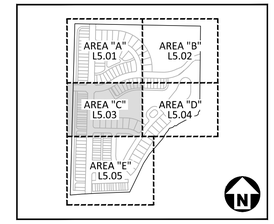
X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawings\LEN24015-LS1.dwg, 2/20/2026 1:54:21 PM, Kolby Stallings

SEE SHEET L5.01



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CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 2894 JOHN RICHARD HAYTON NOT FOR RECORDATION, CONVEYANCE OR SALE

REVISIONS

NO.	DATE	
1	02. 18. 2026	TOWN OF KNIGHTDALE COMMENTS
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PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-LS1
CHECKED BY	WMK
DRAWN BY	RLU
SCALE	1" = 40'
DATE	11. 14. 2025

SHEET

CODE LANDSCAPE PLAN - AREA "C"

L5.03

X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Construction Drawings\LEN24015-LS1.dwg, 2/20/2026 1:54:51 PM, Kolby Stallings

SEE SHEET L5.02

SEE SHEET L5.03

SEE SHEET L5.05

STREET "C" (64' PUBLIC R/W)

PHASE 2
PHASE 1

STREET "B" (70' PUBLIC R/W)

ZONE 1 50' UNDISTURBED FOREST BUFFER

ZONE 2 20' MANAGED VEGETATION

50' STREAM BUFFER

30' PUBLIC GREENWAY EASEMENT

#3. 10' TYPE "A" BUFFER (SEE SHEET L5.07)

SCM WET DETENTION BASIN PLANTS WILL BE DETAILED AS POLLINATING PLANTS DURING CD'S ON SCM LANDSCAPE DETAIL SHEET.

VARIABLE STORMWATER ACCESS & MAINTENANCE EASEMENT

ALLEY "5" (20' PRIVATE ACCESS EASEMENT)

STORMWATER CONTROL MEASURE "A" (WITH FOUNTAIN)

20' TYPE "B" PERIMETER BUFFER (SEE SHEET L5.07)

PHASE 1

POLLINATOR GARDEN (SEE L5.13)

STREET "A" (54' PUBLIC R/W)

STREET "D" (54' PUBLIC R/W)

ACTIVE OPEN SPACE (SEE L5.12)

WETLAND (EXP.)

HAVEN AT GRIFFITH MEADOWS
(CASE# ZMA-12-22)
(IN REVIEW)

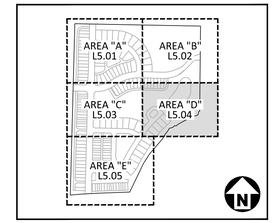
Ex. 20"Ø GAS MAIN

61 60 59 58 57 56 55 54 53 62 163 162 161 160 159 158 157 165 164

01 02 02A 02B 03A 03B 04A 04B 05A S01 S02

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SYMBOL	CODE	BOTANICAL / COMMON NAME
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- 20' TYPE 'B' BUFFER
- 10' TYPE 'A' BUFFER

EASEMENT LEGEND

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PLANT SCHEDULE

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GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

NC GRID (NAD83)

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LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
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PLAN INFORMATION

PROJECT NO.	LEN24015
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DRAWN BY	RLU
SCALE	1" = 40'
DATE	11. 14. 2025

SHEET

CODE LANDSCAPE PLAN - AREA "D"

L5.04

X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawings\LEN24015-LS1.dwg, 2/20/2026 1:55:24 PM, Kelby Stallings

SEE SHEET L5.03

#6. 10' TYPE "A" BUFFER (SEE SHEET L5.07)

#7. 10' TYPE "A" BUFFER (SEE SHEET L5.07)

ALLEY "7"
(20' PRIVATE ACCESS EASEMENT)

STREET "D"
(54' PUBLIC R/W)

PHASE 1

ALLEY "6"
(20' PRIVATE ACCESS EASEMENT)

STREET "A"
(70' PUBLIC R/W)

ALLEY "9"
(20' PRIVATE ACCESS EASEMENT)

STREET "E"
(54' PUBLIC R/W)

ACTIVE OPEN SPACE
(SEE L5.12)

STREET "F"
(54' PUBLIC R/W)

PHASE 2

20' TYPE "B" PERIMETER BUFFER (SEE SHEET L5.07)

#8. 10' TYPE "A" BUFFER (SEE SHEET L5.07)

ALLEY "8"
(20' PRIVATE ACCESS EASEMENT)

#10. 10' TYPE "A" BUFFER (SEE SHEET L5.07)

RETAINING WALL (DESIGN BY OTHERS)

20' TYPE "B" PERIMETER BUFFER (SEE SHEET L5.07)

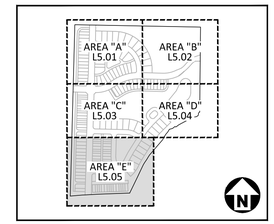
#9. 10' TYPE "A" BUFFER

ALLEY "10"
(36' PUBLIC UTILITY ALLEY)

HAVEN AT GRIFFITH MEADOWS
(CASE# ZMA-12-22)
(IN REVIEW)

POOLE ROAD
VARIABLE WIDTH R/W

EXISTING
POOLE ROAD
SR 1007
(60' PUBLIC R/W)



KEY MAP

SITE LEGEND

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Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawings\LEN24015-LS1.dwg, 2/20/2026 1:55:58 PM, Kelby Stallings

McADAMS
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LENNAR
1100 PERIMETER PARK DRIVE, SUITE 112
MORRISVILLE, NORTH CAROLINA 27560
CONTACT: Tucker Ennis
PHONE: 919. 960. 7674

LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 2594 JOHN RICHARD HAYTON — NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE

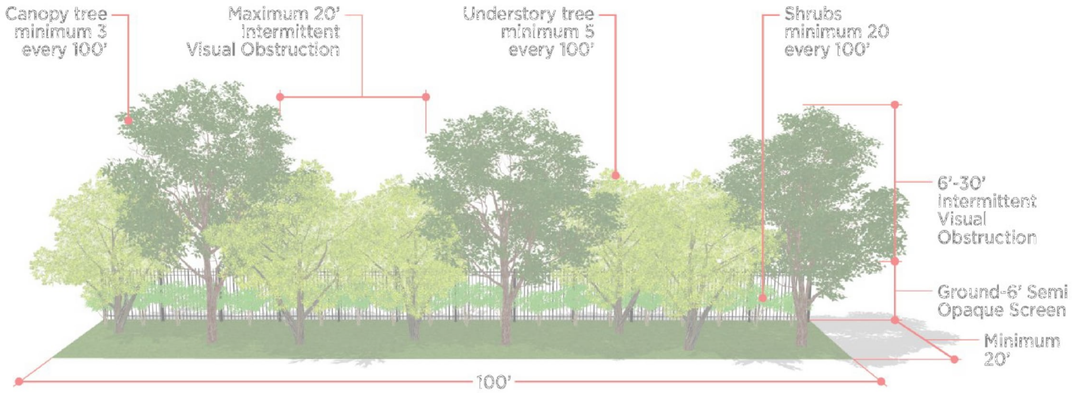
PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-LS1
CHECKED BY	WMK
DRAWN BY	RLU
SCALE	1" = 40'
DATE	11. 14. 2025

SHEET

CODE LANDSCAPE PLAN - AREA "E"

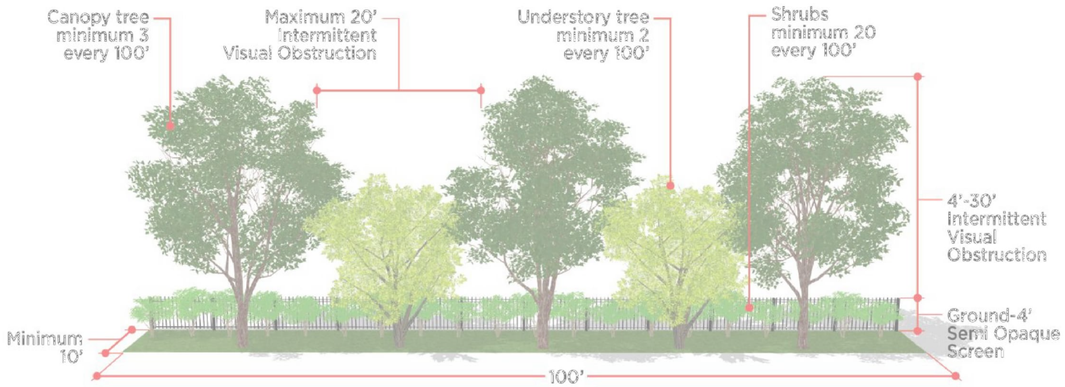
L5.05



20' TYPE B PERIMETER BUFFER

TYPE "B" BUFFER IS TO BE LEFT IN IT'S NATURAL CONDITION. EXISTING PLANT MATERIAL TO BE FIELD VERIFIED BY LANDSCAPE ARCHITECT OR OTHER QUALIFIED PROFESSIONAL. SEE BUFFER DETAIL FOR REQUIREMENTS.

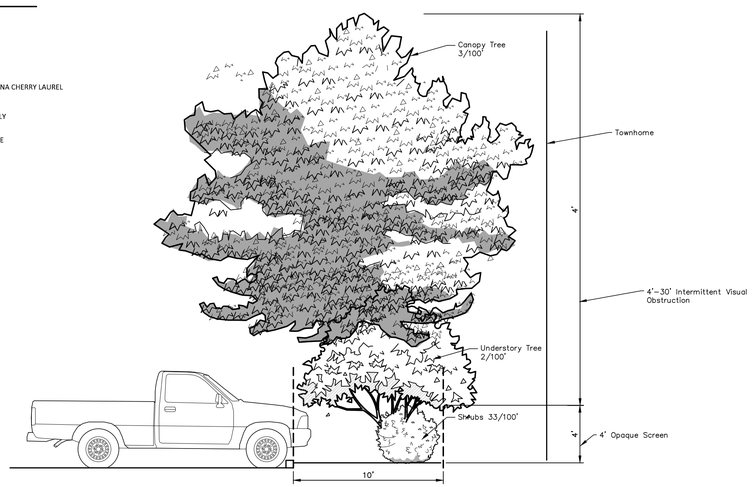
WHERE EXISTING BUFFER DOES NOT MEET THE MINIMUM BUFFER REQUIREMENTS, ADDITIONAL PLANT MATERIAL WILL BE ADDED.



BUFFER PLANT LIST

- PINUS TAEDA / LOBLOLLY PINE
- ILEX OPACA / AMERICAN HOLLY
- PRUNUS CAROLINIANA / CAROLINA CHERRY LAUREL
- ILEX VOMITORIA / YAUPON HOLLY
- MYRICA CERIFERA / WAX MYRTLE

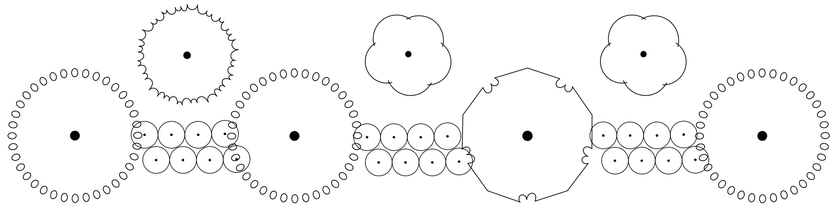
10' TYPE A BUFFER



10' TYPE A BUFFER BETWEEN PARKING & TOWNHOME
SCALE: NTS

GENERAL NOTES

1. STREET TREES SHALL BE LOCATED WITHIN THE RIGHT OF WAY.
2. STREET TREES SHALL BE PLANTED BY EACH BUILDER PRIOR TO RECEIVING C.O. FOR HOUSE.
3. ALL LANDSCAPING SHOULD BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE TOWN OF KNIGHTDALE'S UDO.
4. ALL ABOVE GROUND UTILITIES MUST BE SCREENED.

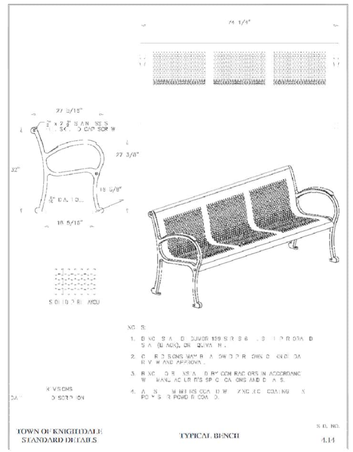


TYPICAL POOLE ROAD BUFFER

4 CANOPY TREES PER 100'
3 UNDERSTORY TREES PER 100'
24 SHRUBS PER 100'

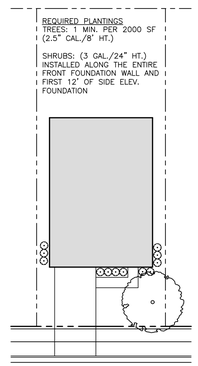
NOTE:

STREETYARD BUFFER WILL INCLUDE A HARDSCAPED ENTRY FEATURE (BENCH) ALONG EITHER SIDE OF THE 2 PEDESTRIAN CONNECTIONS LINKING THE TOWHOMES TO POOLE RD. SEE SHEET C2.00.



LOT TREE REQUIREMENTS

1. Each single-family or duplex lot shall contain a minimum of one (1) canopy tree for every two thousand (2,000) square feet of lot area or fraction thereof up to twenty-thousand (20,000) square feet in lot area. Any portion of the residential lot occupied by a recorded utility easement shall not be included as part of the total lot area. The location of planting to account for physical conditions may be adjusted by the Land Use Administrator.
2. The use of existing trees meeting the following standards to satisfy this requirement is encouraged. Existing large shade trees measuring more than six (6) inches in DBH may be counted towards fulfilling this requirement.
3. Required street trees (Section 7.4 (L)) may not be counted towards the fulfillment of the residential landscaping requirement. Apart from required street trees, all other trees required under this Chapter shall be planted within the private lot.
4. Within the development, single family dwelling foundation plantings (Evergreen Shrubs) will be installed along the entire front elevation, as well as any elevation directly facing public Right of Way or improved open space and the first 12' of the side elevations closes to the front elevation.



NOTES:

1. PLANTING LOCATIONS AND SPECIES MAY VARY AND MAY BE FIELD ADJUSTED AS NECESSARY.
2. ALL TREES AND SHRUBS TO BE INSTALLED SHALL BE ON THE TOWN OF KNIGHTDALE APPROVED CANOPY TREE LIST.
3. SHRUBS SHALL BE LOCATED WITHIN 12' FEET OF THE BUILDING FOUNDATION BUT NO CLOSER THEN 4' MEASURED FROM CENTER OF SHRUB TO BUILDING.
4. TREES AND/OR SHRUBS MAY NOT BE PLANTED WITHIN ANY UNDERGROUND UTILITY EASEMENT WHEN A MUNICIPALITY IS THE HOLDER OF THE EASEMENT.
5. THE LOCATION OF LOT LANDSCAPING SHOWN MAY BE ADJUSTED WITHIN THE LOT PROVIDED IT DOES NOT CONFLICT WITH THE RIGHT-OF-WAY OR ANY UTILITY EASEMENTS.

TYPICAL RESIDENTIAL LOT LANDSCAPE DETAIL
SCALE: NTS

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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PRELIMINARY NOT FOR CONSTRUCTION

REVISIONS

NO. DATE

PLAN INFORMATION

PROJECT NO.	LEN24015
FILENAME	LEN24015-LS1
CHECKED BY	WMK
DRAWN BY	RLU
SCALE	NTS
DATE	11. 14. 2025

SHEET

CODE LANDSCAPE NOTES AND DETAILS

L5.06

X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Construction Drawings\LEN24015-LS1.dwg, 2/20/2026 1:56:25 PM, Kolby Stallings

LANDSCAPE CALCULATIONS

STREET TREES
STREET TREES PLACED 1 PER 40' O.C.

STREET A: 2,979 L.F.
REQUIRED: = 74 TREES
PROVIDED: = 74 TREES

STREET B: 1,660 L.F.
REQUIRED: = 42 TREES
PROVIDED: = 42 TREES

STREET C: 939 L.F.
REQUIRED: = 23 TREES
PROVIDED: = 23 TREES

STREET D: 740 L.F.
REQUIRED: = 18 TREES
PROVIDED: = 18 TREES

STREET E: 500 L.F.
REQUIRED: = 13 TREES
PROVIDED: = 13 TREES

STREET F: 1,740 L.F.
REQUIRED: = 44 TREES
PROVIDED: = 44 TREES

LANDSCAPE SPECIES DIVERSITY TOTAL TREES: 333
MAX SPECIES TREES ALLOWED - 20%

MAX SPECIES ALLOWED: 67 TREES

BUFFER REQUIREMENTS

POODLE ROAD BUFFER: 462 L.F.
(4 CANOPY TREES, 3 UNDERSTORY TREES, AND 24 SHRUBS PER 100')
REQUIRED: = 18 CANOPY TREES, 14 UNDERSTORY TREES, 111 SHRUBS
PROVIDED: = 18 CANOPY TREES, 14 UNDERSTORY TREES, 111 SHRUBS

VSA BUFFERS: TYPE A
(3 CANOPY TREES, 2 UNDERSTORY TREES, 33 SHRUBS PER 100 L.F.)

BUFFER #1 (N ALLEY 1): 116 L.F.
REQUIRED: = 4 CANOPY TREES, 3 UNDERSTORY TREESS, 39 SHRUBS
PROVIDED: = 4 CANOPY TREES, 3 UNDERSTORY TREESS, 39 SHRUBS

BUFFER #2 (E ALLEY 2): 63 L.F.
REQUIRED: = 2 CANOPY TREES, 2 UNDERSTORY TREESS, 22 SHRUBS
PROVIDED: = 2 CANOPY TREES, 2 UNDERSTORY TREESS, 22 SHRUBS

BUFFER #3 (E ALLEY 5): 110 L.F.
REQUIRED: = 3 CANOPY TREES, 2 UNDERSTORY TREESS, 37 SHRUBS
PROVIDED: = 3 CANOPY TREES, 2 UNDERSTORY TREESS, 37 SHRUBS

BUFFER #4 (W ALLEY 5): 63 L.F.
REQUIRED: = 2 CANOPY TREES, 1 UNDERSTORY TREESS, 21 SHRUBS
PROVIDED: = 2 CANOPY TREES, 1 UNDERSTORY TREESS, 21 SHRUBS

BUFFER #5 (SW STREET B): 71 L.F.
REQUIRED: = 2 CANOPY TREES, 1 UNDERSTORY TREESS, 23 SHRUBS
PROVIDED: = 2 CANOPY TREES, 1 UNDERSTORY TREESS, 23 SHRUBS

BUFFER #6 (NW ALLEY 7): 75 L.F.
REQUIRED: = 2 CANOPY TREES, 2 UNDERSTORY TREESS, 25 SHRUBS
PROVIDED: = 2 CANOPY TREES, 2 UNDERSTORY TREESS, 25 SHRUBS

BUFFER #7 (SW ALLEY 7): 75 L.F.
REQUIRED: = 2 CANOPY TREES, 2 UNDERSTORY TREESS, 25 SHRUBS
PROVIDED: = 2 CANOPY TREES, 2 UNDERSTORY TREESS, 25 SHRUBS

BUFFER #8 (NW ALLEY 8): 75 L.F.
REQUIRED: = 2 CANOPY TREES, 2 UNDERSTORY TREESS, 25 SHRUBS
PROVIDED: = 2 CANOPY TREES, 2 UNDERSTORY TREESS, 25 SHRUBS

BUFFER #9 (W STREET E): 62 L.F.
REQUIRED: = 2 CANOPY TREES, 1 UNDERSTORY TREESS, 21 SHRUBS
PROVIDED: = 2 CANOPY TREES, 1 UNDERSTORY TREESS, 21 SHRUBS

BUFFER #10 (E STREET E): 107 L.F.
REQUIRED: = 3 CANOPY TREES, 2 UNDERSTORY TREESS, 36 SHRUBS
PROVIDED: = 3 CANOPY TREES, 2 UNDERSTORY TREESS, 36 SHRUBS

GENERAL LANDSCAPE NOTES:

1. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF KNIGHTDALE AND THE STATE OF NORTH CAROLINA STANDARDS AND SPECIFICATIONS.
2. CONTRACTOR IS RESPONSIBLE FOR THE SITE INSPECTION BEFORE LANDSCAPE CONSTRUCTION AND INSTALLATION IN ORDER TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS.
3. LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE BEGINNING DEMOLITION OR INSTALLATION.
4. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES BETWEEN THE NOTES, SPECIFICATIONS, DRAWINGS OR SITE CONDITIONS FOR RESOLUTION PRIOR TO INSTALLATION.
5. ANY DAMAGE TO UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
6. THIS PLAN IS FOR PLANTING PURPOSES ONLY. FOR INFORMATION REGARDING BUILDINGS, GRADING, WALLS, ETC., REFER TO ARCHITECTURE, SITE AND GRADING PLANS.
7. VERIFICATION OF TOTAL PLANT QUANTITIES AS SHOWN IN THE PLANT SCHEDULE SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT.
8. CONTRACTOR TO ENSURE PROPER STABILIZATION AND SEEDING OF THE SITE IN ACCORDANCE WITH APPLICABLE REGULATIONS.
9. LANDSCAPE MATERIAL SHALL BE WELL FORMED, VIGOROUS, GROWING SPECIMENS WITH GROWTH TYPICAL OF VARIETIES SPECIFIED AND SHALL BE FREE FROM DAMAGE, INSECTS AND DISEASES. MATERIAL SHALL EQUAL OR SURPASS #1 QUALITY AS DEFINED IN THE CURRENT ISSUE OF "AMERICAN STANDARD FOR NURSERY STOCK" AS PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION.
10. ALL PLANT MATERIAL IS TO BE CAREFULLY HANDLED BY THE ROOT BALL, NOT THE TRUNK, BRANCHES AND/OR FOLIAGE OF THE PLANT. MISHANDLED PLANT MATERIAL MAY BE REJECTED BY THE LANDSCAPE ARCHITECT.
11. ALL PLANT MATERIAL IS TO BE WELL ROOTED, NOT ROOT BOUND, SUCH THAT THE ROOT BALL REMAINS INTACT THROUGHOUT THE PLANTING PROCESS. DEFICIENT PLANT MATERIAL MAY BE REJECTED BY THE LANDSCAPE ARCHITECT OR OWNER.
12. ALL PLANTS TO BE A MINIMUM OF WHAT IS SPECIFIED IN THE PLANT SCHEDULE. ANY CHANGES OR SUBSTITUTIONS SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT AND GOVERNING JURISDICTION PRIOR TO ANY HOLE BEING DUG.
13. CONTRACTOR TO COORDINATE WITH OWNER'S REPRESENTATIVE AND LANDSCAPE ARCHITECT TO ESTABLISH THE EXTENTS OF MULCH/SEED/SOD IF NOT SPECIFICALLY SHOWN ON PLANS.
14. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE IN ALL PLANTING AREAS.
15. PROPOSED TREES TO BE PLANTED A MINIMUM 10 FEET FROM ANY LIGHT POLE AS MEASURED FROM TRUNK OF THE TREE TO THE POLE.
16. PROPOSED TREES TO BE PLANTED A MINIMUM 5 FEET FROM ANY FIRE HYDRANT AS MEASURED FROM TRUNK OF THE TREE TO THE HYDRANT.
17. CONTRACTOR SHALL COMPLETE SOIL TEST IN ALL PLANTING AREAS TO DETERMINE SOIL AMENDMENT REQUIREMENTS UNLESS WAIVED BY OWNER'S REPRESENTATIVE. CONTRACTOR SHALL ADJUST PH AND FERTILITY BASED UPON THE SOIL TEST RESULTS.
18. TOPSOIL SHALL BE FREE OF MATERIAL LARGER THAN 1.0 INCH IN DIAMETER OR LENGTH AND SHALL NOT CONTAIN SLAG, CINDERS, STONES, LUMPS OF SOIL, STICKS, ROOTS, TRASH, OR OTHER EXTRANEOUS MATERIAL.
19. LOOSEN SUBGRADE / SURFACE SOIL TO A MINIMUM DEPTH OF 6 INCHES. APPLY SOIL AMENDMENTS AND FERTILIZERS AS REQUIRED BY THE SOIL TEST RESULTS TO ACHIEVE A HEALTHY GROWING MEDIA AND MIX THOROUGHLY INTO TOP 4 INCHES OF SOIL. SPREAD PLANTING SOIL MIX TO A DEPTH OF 6 INCHES BUT NOT LESS THAN REQUIRED TO MEET FINISH GRADES AFTER NATURAL SETTLEMENT. DO NOT SPREAD IF PLANTING SOIL OR SUBGRADE IS FROZEN, MUDDY, OR EXCESSIVELY WET.
20. IF IMPORTED TOPSOIL IS REQUIRED, THE SUBGRADE SHALL BE SCARIFIED OR TILLED TO A DEPTH OF AT LEAST 6 INCHES PRIOR TO INSTALLATION OF IMPORTED TOPSOIL. FOLLOWING INSTALLATION OF IMPORTED TOPSOIL, THE TOPSOIL SHALL BE TILLED TO INTEGRATE THE SOIL PROFILES.
21. PLANT MATERIALS ARE TO BE GUARANTEED FOR A PERIOD OF 12 MONTHS. PLANT MATERIALS WHICH REMAIN UNHEALTHY WILL BE REPLACED BY THE LANDSCAPE CONTRACTOR BEFORE THE EXPIRATION OF THE GUARANTEE PERIOD OR IMMEDIATELY IF SO DIRECTED BY THE OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT.
22. ALL TREE PLANTINGS SHALL BE MULCHED TO A DEPTH OF 3 INCHES, AND WITH A MINIMUM 3 FOOT RADIUS FROM BASE OF TREE OR TO DRIPLINE. MULCH SHALL BE FREE OF TRASH AND MAINTAINED WEED FREE. MULCH SHALL NOT COVER THE ROOT FLARE. CONFIRM MULCH SPECIFICATIONS WITH OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT.
23. DO NOT PRUNE TREES AND SHRUBS BEFORE DELIVERY. PROTECT BARK, BRANCHES, AND ROOT SYSTEMS FROM SUN SCALD, DRYING, SWEATING, WHIPPING, AND OTHER HANDLING AND TYING DAMAGE. DO NOT BEND OR BIND-TIE TREES OR SHRUBS IN SUCH A MANNER AS TO DESTROY THEIR NATURAL SHAPE. PROVIDE PROTECTIVE COVERING OF EXTERIOR PLANTS DURING DELIVERY. DO NOT DROP EXTERIOR PLANTS DURING DELIVERY AND HANDLING.
24. DELIVER EXTERIOR PLANTS AFTER PREPARATIONS FOR PLANTING HAVE BEEN COMPLETED AND INSTALL IMMEDIATELY. IMMEDIATELY AFTER UNLOADING, STAND THE TREES UP TO REDUCE THE RISK OF SUN SCALD. PROPERLY STAGED TREES ARE STANDING, UNTIED AND SPACED. UNLESS IMMEDIATELY INSTALLED, SET EXTERIOR PLANTS AND TREES IN SHADE, PROTECT FROM WEATHER AND MECHANICAL DAMAGE, AND KEEP ROOTS MOIST.
25. SEE LANDSCAPE DETAILS FOR TREE STAKING REQUIREMENTS.
26. EXCAVATE EDGES OF ALL PLANTING BEDS TO 2 INCH DEPTH TO FORM A NEAT AND CRISP DEFINITION.
27. CONTRACTOR SHALL REMOVE DEBRIS AND FINE GRADE ALL PLANTING AREAS PRIOR TO INSTALLATION.
28. REMOVE GUY WIRES AND STAKES AT END OF WARRANTY PERIOD OR ESTABLISHMENT.
29. FINISH GRADING: GRADE PLANTING AREAS TO A SMOOTH, UNIFORM SURFACE PLANE WITH LOOSE, UNIFORMLY FINE TEXTURE. GRADE TO WITHIN PLUS OR MINUS 1/2 INCH OF FINISH ELEVATION. ROLL AND RAKE, REMOVE RIDGES, AND FILL DEPRESSIONS TO MEET FINISH GRADES. LIMIT FINISHED GRADING TO AREAS THAT CAN BE PLANTED IN THE IMMEDIATE FUTURE.

TREE REMOVAL TABLE

TOTAL DBH REMOVED: 2,899"
1 TREE PER 12" DBH REMOVED

TOTAL REPLACEMENT TREES REQUIRED: 242 TREES

TOTAL REPLACEMENT TREES PROVIDED: 202 TREES

REMAINDER OF REPLACEMENT TREES (40) LOCATED ON L5.11-15

1	25" maple
2	25" pine
3	25" pine
4	25" pine
5	25" pine
6	25" poplar
7	25" poplar
8	25" poplar
9	25" red oak
10	25" red oak
11	26" maple
12	26" maple
13	26" pecan
14	26" pine
15	26" poplar
16	26" poplar
17	26" poplar
18	26" red oak
19	26" white oak
20	27" pine
21	27" pine
22	27" poplar
23	27" poplar
24	27" poplar
25	27" red oak
26	27" white oak
27	27" white oak
28	27" white oak
29	28" maple
30	28" pine
31	28" pine
32	28" pine
33	28" poplar
34	28" poplar
35	28" poplar
36	28" poplar
37	28" poplar
38	28" poplar
39	28" poplar
40	28" poplar
41	28" post oak
42	28" red oak
43	28" white oak
44	29" poplar
45	29" poplar
46	29" poplar
47	29" poplar
48	29" water oak
49	29" willow oak
50	29" willow oak
51	30" red oak
52	30" pine
53	30" poplar
54	30" white oak
55	30" white oak
56	30" white oak
57	31" poplar
58	31" red oak
59	31" white oak
60	31" white oak
61	32" maple
62	32" poplar
63	32" poplar
64	32" poplar
65	32" poplar
66	32" red oak
67	32" red oak
68	32" red oak
69	33" poplar
70	33.7" red oak
71	34" maple
72	34" maple
73	34" poplar
74	34" red oak
75	34" red oak
76	34" red oak
77	35" pine
78	35" pine
79	36" poplar
80	36" post oak
81	37.8" poplar
82	38" red oak
83	39" maple
84	39" white oak
85	39" willow oak
86	39.2" white oak
87	39.6" post oak
88	40" poplar
89	40" poplar
90	41.5" red oak
91	42.2" red oak
92	43" white oak
93	46" red oak
94	52" maple

PLANT SCHEDULE

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	CONT	HEIGHT	SPREAD
SHRUBS						
	DIST	24	DISTYLIUM X 'PIIDIST-II' BLUE CASCADE® DISTYLIUM	–	24" MIN	
	DIVI	21	DISTYLIUM X 'VINTAGE JADE' FIRST EDITIONS® VINTAGE JADE DISTYLIUM	#5	12" MIN	18" MIN
	ITVI	4	ITEA VIRGINICA VIRGINIA SWEETSPIRE	3 GAL		
	IVXS	4	ILEX VERTICILLATA 'SOUTHERN GENTLEMAN' SOUTHERN GENTLEMAN WINTERBERRY	3 GAL		
	IVXW	21	ILEX VERTICILLATA 'WINTER RED' WINTER RED WINTERBERRY	3 GAL	24" MIN	
	VACS	6	VACCINIUM CORYMBOSUM 'SHARPBLUE' SHARPBLUE HIGHBUSH BLUEBERRY	#7	36" MIN	24" MIN
	VIOB	6	VIBURNUM OBOVATUM WALTER'S VIBURNUM	–	18" – 24"	
EVERGREEN SHRUBS						
	ILCR	111	ILEX CRENATA JAPANESE HOLLY	3 GAL		
	IVXN	22	ILEX VOMITORIA 'NANA' DWARF YAUPON HOLLY	3 GAL		
	MCWM	221	MYRICA CERIFERA WAX MYRTLE	3 GAL	18"	
ORNAMENTAL GRASSES + SEDGES						
	MUCA	48	MUHLENBERGIA CAPILLARIS PINK MUHLY GRASS	3 GAL		
	PAVH	18	PANICUM VIRGATUM 'HEAVY METAL' HEAVY METAL SWITCH GRASS	#3		
	PAVN	42	PANICUM VIRGATUM 'NORTHWIND' NORTHWIND SWITCH GRASS	#3		
	SCPB	34	SCHIZACHYRIUM SCOPARIUM 'PRAIRIE BLUES' PRAIRIE BLUES LITTLE BLUESTEM	3 GAL		
	SCSS	39	SCHIZACHYRIUM SCOPARIUM 'STANDING OVATION' STANDING OVATION LITTLE BLUESTEM	#2		
SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	CONT		
GROUND COVERS						
	HEHE	66	HELIOPSIS HELIANTHOIDES FALSE SUNFLOWER	SEED		
GROUND COVERS + PERENNIALS						
	AMTA	76	AMSONIA TABERNAEMONTANA EASTERN BLUESTAR	#SP4		
	ASTU2	104	ASCLEPIAS TUBEROSA BUTTERFLY MILKWEED	#1		
	ECPU2	46	ECHINACEA PURPUREA CONEFLOWER	#1		
	LISP	30	LIATRIS SPICATA BLAZING STAR	#1		
	SYNP	25	SYMPHYOTRICHUM NOVAE-ANGLIAE 'PURPLE DOME' PURPLE DOME NEW ENGLAND ASTER	#1		

PLANT SCHEDULE REPLACEMENT TREES

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	CAL	HEIGHT
REPLACEMENT TREES					
	ACRU(R)	10	ACER RUBRUM RED MAPLE	2" MIN	8' MIN
	ILOP(R)	9	ILEX OPACA AMERICAN HOLLY	2" MIN	8' MIN
	LITA(R)	8	LIRIODENDRON TULIPIFERA 'ARNOLD' ARNOLD TULIP POPLAR	2" MIN	8' MIN
	PTLP(R)	19	PINUS TAEDA LOBLOLLY PINE	2" MIN	8' MIN
	QUSH(R)	5	QUERCUS SHUMARDII SHUMARD OAK	2" MIN	8' MIN
	TADI(R)	4	TAXODIUM DISTICHUM BALD CYPRESS	2" MIN	8' MIN

PLANT SCHEDULE

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	CAL	HEIGHT
TREES					
	AMGA	5	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE' AUTUMN BRILLIANCE APPLE SERVICEBERRY	–	8' MIN
	CVWF	6	CHIONANTHUS VIRGINICUS WHITE FRINGETREE	1.5" MIN	6' MIN
	MGDB	11	MAGNOLIA GRANDIFLORA 'D.D. BLANCHARD' D.D BLANCHARD SOUTHERN MAGNOLIA	2" MIN	8' MIN
	MSAS	12	MAGNOLIA X SOULANGEANA 'ALEXANDRINA' ALEXANDRINA SAUCER MAGNOLIA SINGLE TRUNK	1.5" MIN	6' MIN
	PCCL	3	PRUNUS CAROLINIANA CAROLINA CHERRY LAUREL	1.5" MIN	6' MIN
	PNLP	8	PINUS TAEDA 'NANA' DWARF LOBLOLLY PINE	2" MIN	8' MIN
	QSPO	16	QUERCUS STELLATA POST OAK	2" MIN	8' MIN
	QUSH	2	QUERCUS SHUMARDII SHUMARD OAK	3" MIN	12' MIN
	TAAL	7	TILIA AMERICANA AMERICAN LINDEN	2" MIN	8' MIN
CANOPY TREES					
	QPWO	17	QUERCUS PHELLOS WILLOW OAK	2" MIN	8' MIN
EVERGREEN CANOPY TREE					
	PTLP	12	PINUS TAEDA LOBLOLLY PINE	2" MIN	8' MIN
EVERGREEN UNDERSTORY					
	IOAH	10	ILEX OPACA AMERICAN HOLLY	2" MIN	8' MIN
	IVYH	11	ILEX VOMITORIA YAUPON HOLLY	1.5" MIN	6' MIN
REPLACEMENT TREES					
	ACRU(R)	22	ACER RUBRUM RED MAPLE	2" MIN	8' MIN
	ILOP(R)	34	ILEX OPACA AMERICAN HOLLY	2" MIN	8' MIN
	LITA(R)	15	LIRIODENDRON TULIPIFERA 'ARNOLD' ARNOLD TULIP POPLAR	2" MIN	8' MIN
	MAGR(R)	14	MAGNOLIA GRANDIFLORA SOUTHERN MAGNOLIA	2" MIN	8' MIN
	PTLP(R)	85	PINUS TAEDA LOBLOLLY PINE	2" MIN	8' MIN
	QUSH(R)	28	QUERCUS SHUMARDII SHUMARD OAK	2" MIN	8' MIN
	TADI(R)	4	TAXODIUM DISTICHUM BALD CYPRESS	2" MIN	8' MIN
STREET TREE					
	ASLM	46	ACER SACCHARUM 'LEGACY' LEGACY SUGAR MAPLE	2" MIN	8' MIN
	LAIN	12	LAGERSTROEMIA INDICA X FAURIEI 'NATCHEZ' NATCHEZ CRAPE MYRTLE	1.5" MIN	6' MIN
	MGLG	14	MAGNOLIA GRANDIFLORA 'LITTLE GEM' LITTLE GEM DWARF SOUTHERN MAGNOLIA	1.5" MIN	6' MIN
	PSJC	61	PRUNUS SERRULATA JAPANESE FLOWERING CHERRY	1.5" MIN	6' MIN
	UPAL	52	ULMUS PARVIFOLIA 'EMER II' ALLEE® LACEBARK ELM	2" MIN	8' MIN
	ZSGV	36	ZELKOVA SERRATA 'GREEN VASE' GREEN VASE JAPANESE ZELKOVA	2" MIN	8' MIN

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: _____
Land Use Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA LANDSCAPE ARCHITECT JOHN RICHARD HATTON 2594 PRELIMINARY NOT FOR CONSTRUCTION

REVISIONS

NO. DATE

PLAN INFORMATION

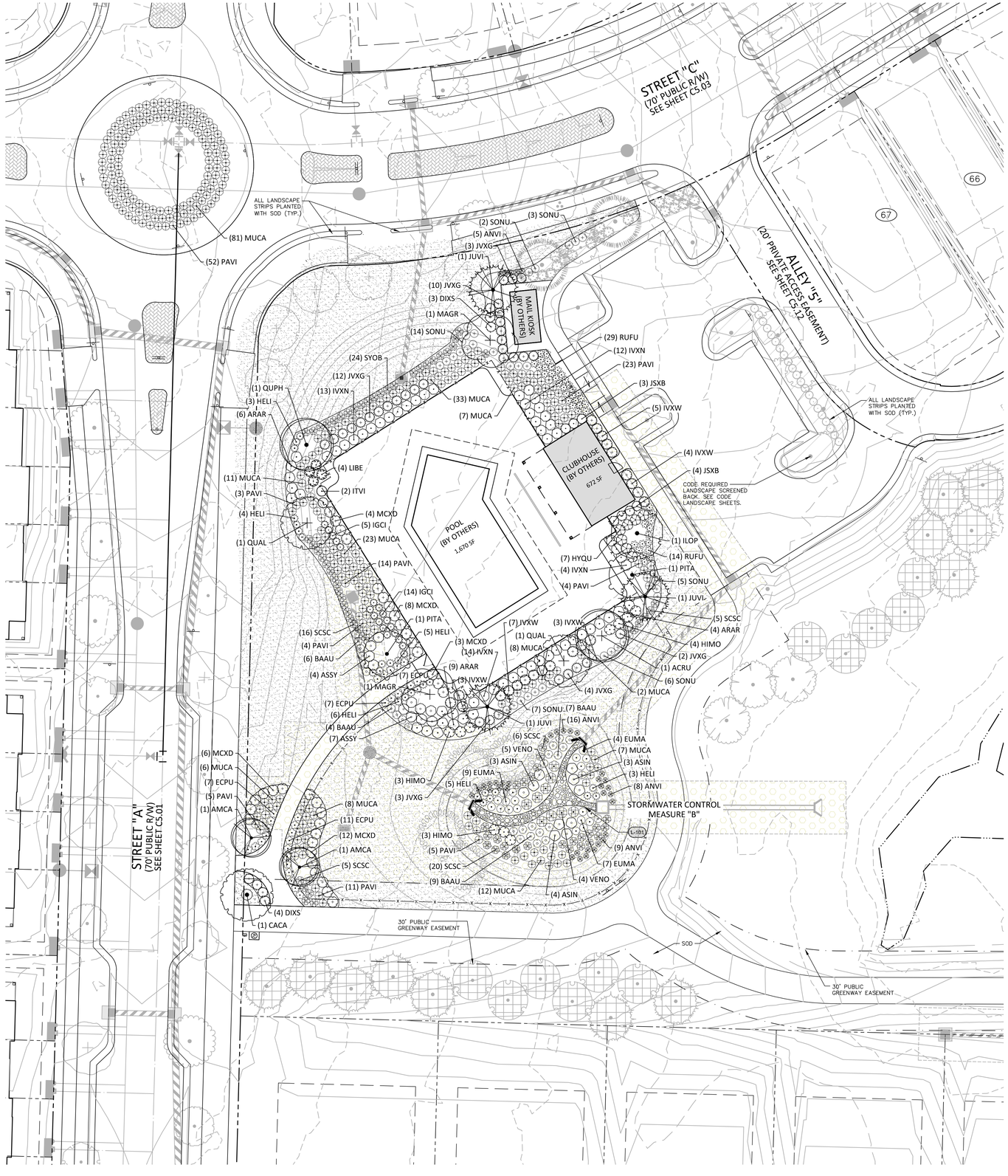
PROJECT NO.	LEN24015
FILENAME	LEN24015-LS1
CHECKED BY	WMK
DRAWN BY	RLU
SCALE	NTS
DATE	11. 14. 2025

SHEET

CODE LANDSCAPE DETAILS & NOTES

L5.07

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REFERENCE NOTES SCHEDULE MAIN AMENITY

SYMBOL	CODE	DESCRIPTION	QTY
LANDSCAPE FEATURES			
	L-101	STONE	266 SF

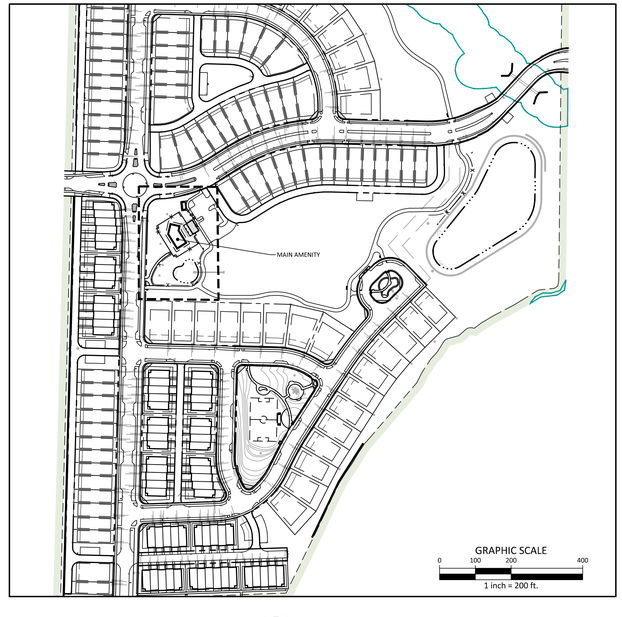
PLANT SCHEDULE MAIN AMENITY

SYMBOL	CODE	BOTANICAL / COMMON NAME
CANOPY TREES		
	ACRU	ACER RUBRUM RED MAPLE
	QUAL	QUERCUS ALBA WHITE OAK
	QUPH	QUERCUS PHELLOS WILLOW OAK
DECIDUOUS UNDERSTORY TREES		
	AMCA	AMELANCHIER CANADENSIS CANADIAN SERVICEBERRY
	CACA	CARPINUS CAROLINIANA AMERICAN HORNBEAM
EVERGREEN CANOPY TREE		
	JUVI	JUNIPERUS VIRGINIANA EASTERN REDCEDAR
	MAGR	MAGNOLIA GRANDIFLORA SOUTHERN MAGNOLIA
	PITA	PINUS TAEDA LOBLOLLY PINE
EVERGREEN UNDERSTORY		
	ILOP	ILEX OPACA AMERICAN HOLLY
SOD		
	CDXT	CYNODON DACTYLON X TRANSVAALENSIS 'DT-1' TIFTUF™ BERMUDAGRASS

PLANT SCHEDULE MAIN AMENITY

SYMBOL	CODE	BOTANICAL / COMMON NAME
SHRUBS		
	ARAR	ARONIA ARBUTIFOLIA RED CHOKEBERRY
	HYQU	HYDRANGEA QUERCIFOLIA OAKLEAF HYDRANGEA
	ITVI	ITEA VIRGINICA VIRGINIA SWEETSPIRE
	IVXW	ILEX VERTICILLATA `WINTER RED` WINTER RED WINTERBERRY
	LIBE	LINDERA BENZOIN SPICEBUSH
PERENNIALS		
	ASIN	ASCLEPIAS INCARNATA SWAMP MILKWEED
	ASSY	ASCLEPIAS SYRIACA COMMON MILKWEED
	BAAU	BAPTISIA AUSTRALIS BLUE WILD INDIGO
	ECPU	ECHINACEA PURPUREA CONEFLOWER
	EUMA	EUTROCHIUM MACULATUM SPOTTED JOE PYE WEED
	HELI	HELIANTHUS SCHWEINITZII SCHWEINITZ'S SUNFLOWER
	HIMO	HIBISCUS MOSCHEUTOS ROSE MALLOW
	RUFU	RUDBECKIA FULGIDA CONEFLOWER
	SYOB	SYMPHYOTRICHUM OBLONGIFOLIUM FALL ASTER
	VENO	VERNONIA NOVEBORACENSIS COMON IRONWEED
EVERGREEN SHRUBS		
	DIXS	DISTYLIUM X 'PIIDIST-VI' SWING LOW® DISTYLIUM
	IGCI	ILEX GLABRA 'COMPACTA' COMPACT INKBERRY
	IVXN	ILEX VOMITORIA 'NANA' DWARF YAUPON HOLLY
	JSXB	JUNIPERUS SCOPULORUM 'BLUE ARROW' BLUE ARROW JUNIPER
	JVXG	JUNIPERUS VIRGINIANA 'GREY OWL' GREY OWL EASTERN REDCEDAR
	MCXD	MORELLA CERIFERA 'DON'S DWARF' DON'S DWARF WAX MYRTLE
ORNAMENTAL GRASSES + SEDGES		
	ANVI	ANDROPOGON VIRGINICUS BROOMSEDGE BLUESTEM
	MUCA	MUHLENBERGIA CAPILLARIS PINK MUHLY GRASS
	PAVI	PANICUM VIRGATUM SWITCH GRASS
	SCSC	SCHIZACHYRIUM SCOPARIUM LITTLE BLUESTEM
	SONU	SORGHASTRUM NUTANS INDAN GRASS

KEY MAP



GRAPHIC SCALE
0 10 20 40
1 inch = 20 ft.

N

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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PRELIMINARY NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02.18.2026	TOWN OF KNIGHTDALE COMMENTS

PLAN INFORMATION

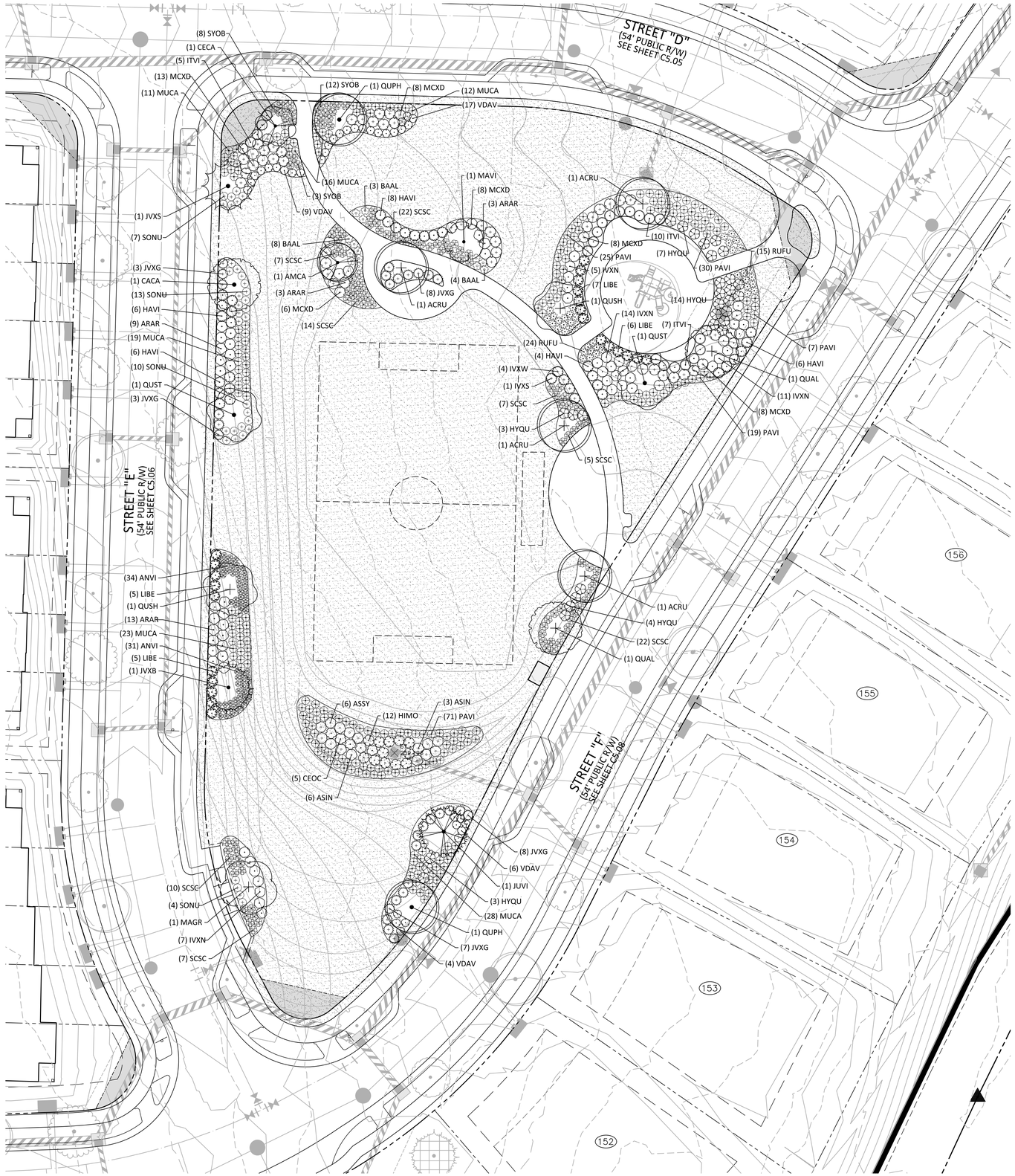
PROJECT NO.	LEN-24015
FILENAME	LEN24015-LandArch-LP1
CHECKED BY	JRH
DRAWN BY	KLS
SCALE	1" = 20'
DATE	11. 14. 2025

SHEET

ENHANCED LANDSCAPE PLAN - MAIN AMENITY

L5.11

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PLANT SCHEDULE ACTIVE OPEN SPACE - AMENITY 2

SYMBOL	CODE	BOTANICAL / COMMON NAME
TREES		
	QUSH	QUERCUS SHUMARDII SHUMARD OAK
CANOPY TREES		
	ACRU	ACER RUBRUM RED MAPLE
	QUAL	QUERCUS ALBA WHITE OAK
	QUPH	QUERCUS PHELLOS WILLOW OAK
	QUST	QUERCUS STELLATA POST OAK
DECIDUOUS UNDERSTORY TREES		
	AMCA	AMELANCHIER CANADENSIS CANADIAN SERVICEBERRY
	CACA	CARPINUS CAROLINIANA AMERICAN HORNBEAM
	CECA	CERCIS CANADENSIS EASTERN REDBUD
EVERGREEN CANOPY TREE		
	JUVI	JUNIPERUS VIRGINIANA EASTERN REDCEDAR
	JVXB	JUNIPERUS VIRGINIANA 'BRODIE' BRODIE EASTERN REDCEDAR
	JVXS	JUNIPERUS VIRGINIANA 'SPARTAN' SPARTAN EASTERN REDCEDAR
	MAGR	MAGNOLIA GRANDIFLORA SOUTHERN MAGNOLIA
EVERGREEN UNDERSTORY		
	MAVI	MAGNOLIA VIRGINIANA SWEETBAY MAGNOLIA

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME
SOD			
	CDXT	37,767 SF	CYNODON DACTYLON X TRANSVAALENSIS 'DT-1' TIFTUF™ BERMUDAGRASS

PLANT SCHEDULE ACTIVE OPEN SPACE - AMENITY 2

SYMBOL	CODE	BOTANICAL / COMMON NAME
SHRUBS		
	ARAR	ARONIA ARBUTIFOLIA RED CHOKEBERRY
	CEOC	CEPHALANTHUS OCCIDENTALIS BUTTONBUSH
	HAVI	HAMAMELIS VIRGINIANA COMMON WITCH HAZEL
	HYQU	HYDRANGEA QUERCIFOLIA OAKLEAF HYDRANGEA
	ITVI	ITEA VIRGINICA VIRGINIA SWEETSPIRE
	IVXS	ILEX VERTICILLATA 'SOUTHERN GENTLEMAN' SOUTHERN GENTLEMAN WINTERBERRY
	IVXW	ILEX VERTICILLATA `WINTER RED` WINTER RED WINTERBERRY
	LIBE	LINDERA BENZOIN SPICEBUSH
	VDAV	VIBURNUM DENTATUM 'ARROWWOOD' ARROWWOOD VIBURNUM
PERENNIALS		
	ASIN	ASCLEPIAS INCARNATA SWAMP MILKWEED
	ASSY	ASCLEPIAS SYRIACA COMMON MILKWEED
	BAAL	BAPTISIA ALBA WHITE WILD INDIGO
	HIMO	HIBISCUS MOSCHEUTOS ROSE MALLOW
	RUFU	RUDBECKIA FULGIDA CONEFLOWER
	SYOB	SYMPHYOTRICHUM OBLONGIFOLIUM FALL ASTER
EVERGREEN SHRUBS		
	IVXN	ILEX VOMITORIA 'NANA' DWARF YAUPON HOLLY
	JVXG	JUNIPERUS VIRGINIANA 'GREY OWL' GREY OWL EASTERN REDCEDAR
	MCXD	MORELLA CERIFERA 'DON'S DWARF' DON'S DWARF WAX MYRTLE
ORNAMENTAL GRASSES + SEDGES		
	ANVI	ANDROPOGON VIRGINICUS BROOMSEDGE BLUESTEM
	MUCA	MUHLENBERGIA CAPILLARIS PINK MUHLY GRASS
	PAVI	PANICUM VIRGATUM SWITCH GRASS
	SCSC	SCHIZACHYRIUM SCOPARIUM LITTLE BLUESTEM
	SONU	SORGHASTRUM NUTANS INDIAN GRASS

KEY MAP



GRAPHIC SCALE
0 10 20 40
1 inch = 20 ft.

N

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REVISIONS

NO.	DATE	
1	02.18.2026	TOWN OF KNIGHTDALE COMMENTS

PLAN INFORMATION

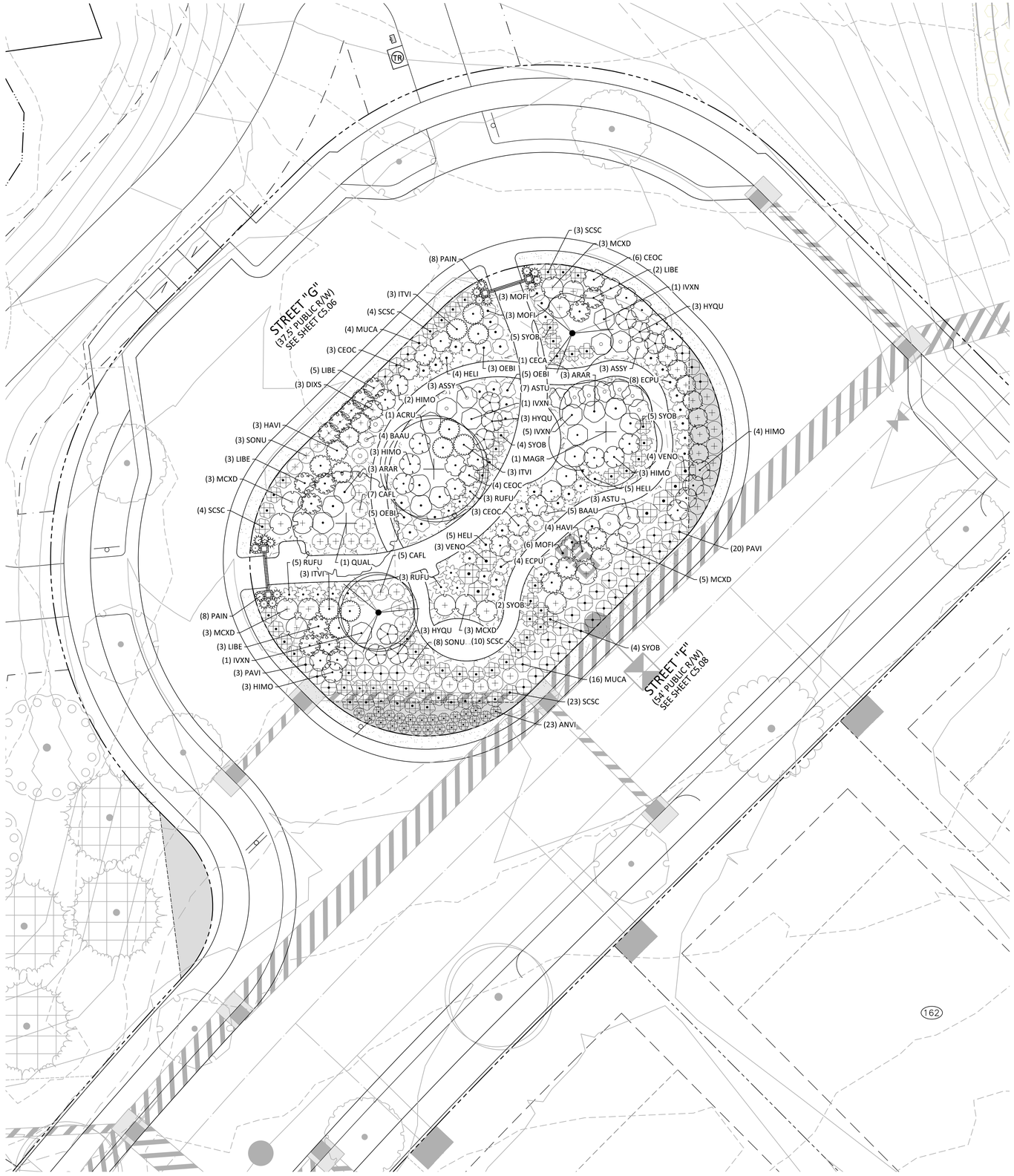
PROJECT NO.	LEN-24015
FILENAME	LEN24015-LandArch-LP1
CHECKED BY	JRH
DRAWN BY	KLS
SCALE	1" = 20'
DATE	11. 14. 2025

SHEET

ENHANCED LANDSCAPE PLAN - ACTIVE OPEN

L5.12

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PLANT SCHEDULE - POLLINATOR GARDEN

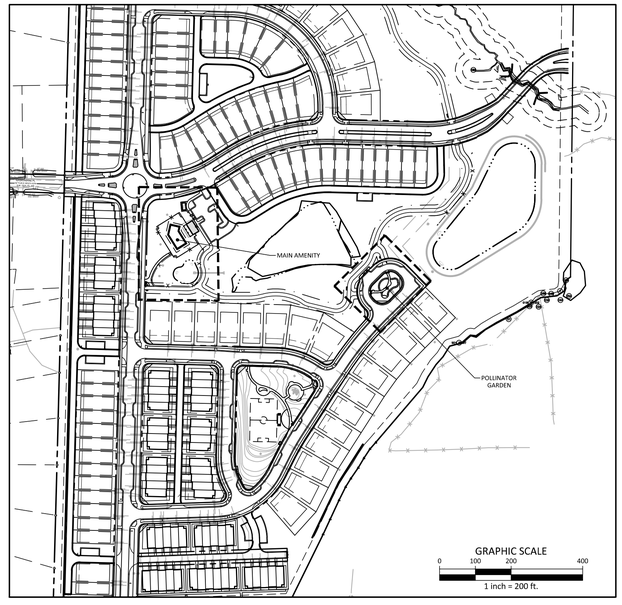
SYMBOL	CODE	BOTANICAL / COMMON NAME
CANOPY TREES		
	ACRU	ACER RUBRUM RED MAPLE
	QUAL	QUERCUS ALBA WHITE OAK
DECIDUOUS UNDERSTORY TREES		
	AMCA	AMELANCHIER CANADENSIS CANADIAN SERVICEBERRY
	CECA	CERCIS CANADENSIS EASTERN REDBUD
EVERGREEN CANOPY TREE		
	MAGR	MAGNOLIA GRANDIFLORA SOUTHERN MAGNOLIA

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME
SOD			
	CDXT	667 SF	CYNODON DACTYLON X TRANSVAALENSIS 'DT-1' TIFTUF™ BERMUDAGRASS

PLANT SCHEDULE POLLINATOR GARDEN - AMENITY 3

SYMBOL	CODE	BOTANICAL / COMMON NAME
SHRUBS		
	ARAR	ARONIA ARBUTIFOLIA RED CHOKEBERRY
	CEOC	CEPHALANTHUS OCCIDENTALIS BUTTONBUSH
	HAVI	HAMAMELIS VIRGINIANA COMMON WITCH HAZEL
	HYQU	HYDRANGEA QUERCIFOLIA OAKLEAF HYDRANGEA
	ITVI	ITEA VIRGINICA VIRGINIA SWEETSPIRE
	LIBE	LINDERA BENZOIN SPICEBUSH
PERENNIALS		
	ASSY	ASCLEPIAS SYRIACA COMMON MILKWEED
	ASTU	ASCLEPIAS TUBEROSA BUTTERFLY MILKWEED
	BAAU	BAPTISIA AUSTRALIS BLUE WILD INDIGO
	ECPU	ECHINACEA PURPUREA CONEFLOWER
	HELI	HELIANTHUS SCHWEINITZII SCHWEINITZ'S SUNFLOWER
	HIMO	HIBISCUS MOSCHEUTOS ROSE MALLOW
	MOFI	MONARDA FISTULOSA BERGAMOT
	OEBI	OENOTHERA BIENNIS COMMON EVENING PRIMROSE
	RUFU	RUDBECKIA FULGIDA CONEFLOWER
	SYOB	SYMPHYOTRICHUM OBLONGIFOLIUM FALL ASTER
	VENO	VERNONIA NOVEBORACENSIS COMON IRONWEED
EVERGREEN SHRUBS		
	DIXS	DISTYLIUM X 'PIIDIST-VI' SWING LOW® DISTYLIUM
	IVXN	ILEX VOMITORIA 'NANA' DWARF YAUPON HOLLY
	MCXD	MORELLA CERIFERA 'DON'S DWARF' DON'S DWARF WAX MYRTLE
ORNAMENTAL GRASSES + SEDGES		
	ANVI	ANDROPOGON VIRGINICUS BROOMSEDGE BLUESTEM
	CAFL	CAREX FLACCOSPERMA BLUE WOOD SEDGE
	MUCA	MUHLENBERGIA CAPILLARIS PINK MUHLY GRASS
	PAVI	PANICUM VIRGATUM SWITCH GRASS
	SCSC	SCHIZACHYRIUM SCOPARIUM LITTLE BLUESTEM
	SONU	SORGHASTRUM NUTANS INDIAN GRASS
VINES/CLIMBERS		
	PAIN	PASSIFLORA INCARNATA PASSION FLOWER VINE

KEY MAP



GRAPHIC SCALE
0 10 20 40
1 inch = 20 ft.

N

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 2694 JOHN RICHARD HAYTON
NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02.18.2026	TOWN OF KNIGHTDALE COMMENTS

PLAN INFORMATION

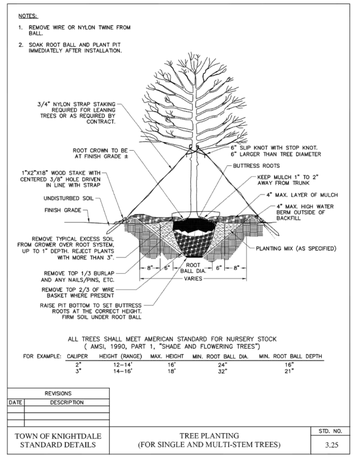
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CHECKED BY	JRH
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DATE	11. 14. 2025

SHEET

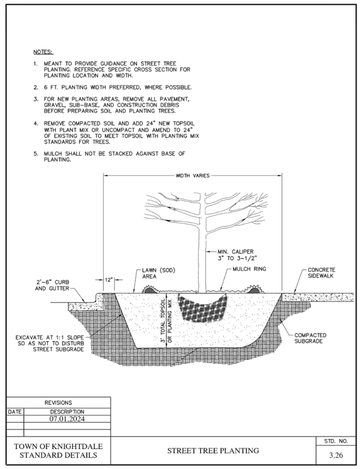
ENHANCED LANDSCAPE PLAN - POLLINATOR GARDEN

L5.13

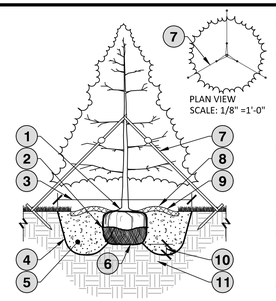
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1 TREE PLANTING
SCALE: NTS



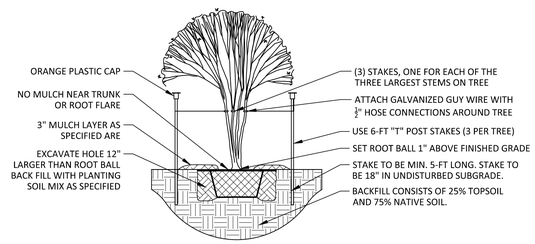
2 STREET TREE PLANTING
SCALE: NTS



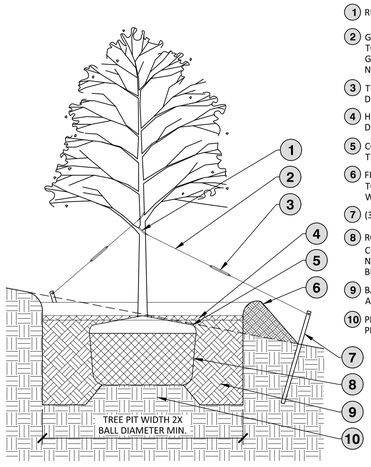
1. TRUNK FLARE AND TOP OF ROOT BALL SHOULD BE 2" ABOVE FINISHED GRADE AFTER SETTLING
2. CUT BURLAP, ROPE AND WIRE BASKET AWAY FROM TOP AND SIDES OF ROOT BALL AND REMOVE DURING BACKFILL PROCESS. IF USING CONTAINER GROWN TREES, USE FINGERS OR SMALL HAND TOOLS TO PULL ROOTS OUR OF THE OUTER LAYER OF POTTING SOIL; CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER
3. WIDTH OF PLANTING HOLE SHALL BE 3 TIMES THE ROOT BALL DIAMETER IN HIGHLY COMPACTED OR CLAY SOIL; 2 TIMES THE ROOT BALL DIAMETER IN ALL OTHERS (12" MIN. OF PLANTING SOIL ON ALL SIDES)
4. DIG WIDE PLANTING HOLE WITH TAPERED SIDES
5. TO STABILIZE, COMPACT THE PLANTING SOIL MIX BACKFILL AROUND ROOT BALL; COMPACT SOIL BY SOAKING WITH WATER AND OR LIGHTLY HAND TAMPING
6. SET ROOT BALL ON UNDISTURBED SOIL TO PREVENT SETTLING AND LOOSEN SUBGRADE
7. STAKE TREES ON THREE SIDES WITH ARBORTIES AND NAIL/STAPPLE STRAPS TO 2"X2"X18" WOOD STAKE OR APPROVED EQUAL. REMOVE STAKING AT END OF SECOND GROWING SEASON.
8. 4" RAISED RING OF SOIL TO DIRECT WATER INTO ROOT BALL - ESPECIALLY IMPORTANT IF TOP OF ROOT BALL IS RAISED ABOVE GRADE
9. 3" BARK MULCH; DO NOT PLACE MULCH WITHIN 3" OF TREE TRUNK
10. 5"-7" DEEPER THAN ROOT BALL FOR LOWERED PLANTING HOLE AS NEEDED WITH POOR DRAINAGE
11. MOUNT STAKES IN UNDISTURBED SOIL AT 45 DEGREE ANGLE. LEAVE TOP 6" OF STAKE ABOVE GROUND

NOTES:
1. SELECT TREES THAT HAVE: STRONG CENTRAL LEADER; DISEASE AND PEST FREE; GROWN IN HEAVY CLAY SOIL WITH DRIP IRRIGATION.
2. PROVIDE WATER STORING CRYSTALS PER NURSERY RECOMMENDATIONS FOR PINE TREES.
3. BEFORE INSTALLING PLANTING SOIL MIX BACKFILL AROUND ROOT BALL, SOAK HOLE TO CONFIRM WATER FILTERS THROUGH UNDISTURBED SOIL. DESIGN ALTERNATIVE DRAINAGE SYSTEM IF REQUIRED.
4. A SOIL EXPERT CAN BE CONSULTED TO HELP MODIFY AND FERTILIZE TOPSOIL TO CREATE AN ACCEPTABLE PLANTING SOIL MIX FOR THE SITE CONDITIONS AND SPECIFIC TREE SPECIES.
5. THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND DURING DRY PERIODS.

3 EVERGREEN TREE PLANTING
SCALE: 1/4" = 1'-0"

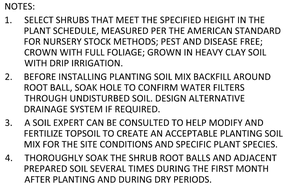


4 ORNAMENTAL TREE PLANTING
SCALE: 1/4" = 1'-0"



1. RUBBER HOSE AT BARK
2. GUY WIRE (3) - WHITE FLAG ON EACH TO INCREASE VISIBILITY. AVOID TIGHT GUY WIRES AS THEY PREVENT NATURAL SWAY
3. TURNBUCKLE (3) GALVANIZED OR DIP-PAINTED
4. HARDWOOD BARK MULCH, 3" MIN. DEPTH
5. CORNER OF ROOT SYSTEM TO BE AT THE LINE OF ORIGINAL GRADE
6. FIRMLY FORMED SAUCER (USE TOPSOIL). ANGLE OF REPOSE VARIES WITH STEEPNESS AND SOIL TYPE
7. (3) WOOD STAKES
8. ROPES AT TOP OF ROOT BALL SHALL BE CUT. REMOVE TOP ⅓ OF BURLAP. NON-BIODEGRABLE MATERIAL SHALL BE COMPLETELY REMOVED.
9. BACKFILL CONSISTS OF 25% TOPSOIL AND 75% NATIVE SOIL
10. PREPARED SUBSOIL TO FORM PEDESTAL TO PREVENT SETTLING

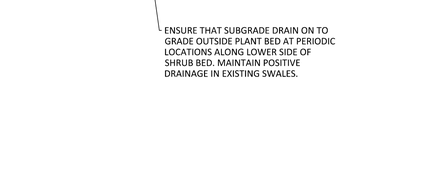
5 TREE PLANTING ON A SLOPE
SCALE: 1/4" = 1'-0"



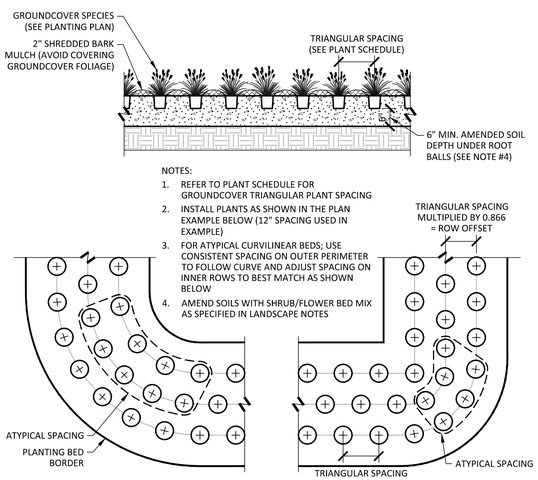
1. PRUNE PROPORTIONALLY TO COMPENSATE FOR REDUCTION OF ROOTS AND TO PROMOTE NATURAL GROWTH CHARACTER.
2. FORM 2" DEEP SAUCER
3. 3" BARK MULCH; DO NOT PLACE MULCH WITHIN 3" OF TRUNK/STEM
4. PLANTING SOIL MIX BACKFILL TO BE COMPACTED BY SOAKING WITH WATER AND OR LIGHTLY HAND TAMPED
5. PLANTING SOIL MIX TO BE TAMPED TO AVOID SETTLING
6. TOP OF ROOTBALL SHALL BE 1" HIGHER THAN ADJACENT FINISHED GRADE
7. 6" MIN. GAP BETWEEN ROOT BALL AND UNDISTURBED SOIL. WHERE THERE IS HEAVY CLAY SOIL, THE HOLE SHOULD BE 3 TIMES THE CONTAINER DIAMETER.
8. SUBSOIL BROKEN WITH PICK ON SIDES AND BOTTOM OF HOLE
9. FOR CONTAINERS, USE FINGERS OR SMALL HAND TOOLS TO PULL ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER. IF USING BALED AND BURLAP; CUT BURLAP, ROPE AND WIRE BASKET AWAY FROM TOP AND SIDES OF ROOT BALL AND REMOVE DURING BACKFILL PROCESS.

NOTES:
1. SELECT SHRUBS THAT MEET THE SPECIFIED HEIGHT IN THE PLANT SCHEDULE, MEASURED PER THE AMERICAN STANDARD FOR NURSERY STOCK METHODS; PEST AND DISEASE FREE; GROWN WITH FULL FOLIAGE; GROWN IN HEAVY CLAY SOIL WITH DRIP IRRIGATION.
2. BEFORE INSTALLING PLANTING SOIL MIX BACKFILL AROUND ROOT BALL, SOAK HOLE TO CONFIRM WATER FILTERS THROUGH UNDISTURBED SOIL. DESIGN ALTERNATIVE DRAINAGE SYSTEM IF REQUIRED.
3. A SOIL EXPERT CAN BE CONSULTED TO HELP MODIFY AND FERTILIZE TOPSOIL TO CREATE AN ACCEPTABLE PLANTING SOIL MIX FOR THE SITE CONDITIONS AND SPECIFIC PLANT SPECIES.
4. THOROUGHLY SOAK THE SHRUB ROOT BALLS AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND DURING DRY PERIODS.

6 SHRUB PLANTING
SCALE: 1/2" = 1'-0"



7 ORNAMENTAL GRASS
SCALE: 3/8" = 1'-0"



NOTES:
1. REFER TO PLANT SCHEDULE FOR GROUNDCOVER TRIANGULAR PLANT SPACING
2. INSTALL PLANTS AS SHOWN IN THE PLAN EXAMPLE BELOW (12" SPACING USED IN EXAMPLE)
3. FOR ATYPICAL CURVILINEAR BEDS; USE CONSISTENT SPACING ON OUTER PERIMETER TO FOLLOW CURVE AND ADJUST SPACING ON INNER ROWS TO BEST MATCH AS SHOWN BELOW
4. AMEND SOILS WITH SHRUB/FLOWER BED MIX AS SPECIFIED IN LANDSCAPE NOTES

8 GROUNDCOVER PLANTING
SCALE: 1/2" = 1'-0"

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LENNAR

HOPKINS FARM
CONSTRUCTION DRAWINGS
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT JOHN RICHARD HAYTON 2594 PRELIMINARY NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	02.18.2026	TOWN OF KNIGHTDALE COMMENTS

PLAN INFORMATION

PROJECT NO.	LEN-24015
FILENAME	LEN24015-LandArch-LP1
CHECKED BY	JRH
DRAWN BY	KLS
SCALE	NTS
DATE	11. 14. 2025

SHEET

ENHANCED LANDSCAPE DETAILS
L5.14

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

X:\Projects\LEN\LEN24015\04-Production\Planning and Design\Construction Documents\Current Drawings\LEN24015-LandArch-LP1.dwg, 2/20/2026 2:08:28 PM, Kelby Stallings

PLANT SCHEDULE

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	CAL	HEIGHT
TREES					
	QUSH	2	QUERCUS SHUMARDII SHUMARD OAK	3" MIN	12` MIN
CANOPY TREES					
	ACRU	6	ACER RUBRUM RED MAPLE	5" MIN	8` MIN
	QUAL	5	QUERCUS ALBA WHITE OAK	5" MIN	8` MIN
	QUPH	3	QUERCUS PHELLOS WILLOW OAK	2" MIN	8` MIN
	QUST	2	QUERCUS STELLATA POST OAK	2" MIN	8` MIN
DECIDUOUS UNDERSTORY TREES					
	AMCA	4	AMELANCHIER CANADENSIS CANADIAN SERVICEBERRY	5" MIN	6` MIN
	CACA	2	CARPINUS CAROLINIANA AMERICAN HORNBEAM	2" MIN	6` MIN
	CECA	2	CERCIS CANADENSIS EASTERN REDBUD	5" MIN	6` MIN
EVERGREEN CANOPY TREE					
	JUVI	4	JUNIPERUS VIRGINIANA EASTERN REDCEDAR	5" MIN	8` MIN
	JVXB	1	JUNIPERUS VIRGINIANA 'BRODIE' BRODIE EASTERN REDCEDAR	5" MIN	8` MIN
	JVXS	1	JUNIPERUS VIRGINIANA 'SPARTAN' SPARTAN EASTERN REDCEDAR	5" MIN	8` MIN
	MAGR	4	MAGNOLIA GRANDIFLORA SOUTHERN MAGNOLIA	5" MIN	8` MIN
	PITA	2	PINUS TAEDA LOBLOLLY PINE	2" MIN	8` MIN
EVERGREEN UNDERSTORY					
	ILOP	1	ILEX OPACA AMERICAN HOLLY	2" MIN	6` MIN
	MAVI	1	MAGNOLIA VIRGINIANA SWEETBAY MAGNOLIA	5" MIN	6` MIN

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	CONT
SOD				
	CDXT	58,373 SF	CYNODON DACTYLON X TRANSVAALENSIS 'DT-1' TIFTUF™ BERMUDAGRASS	SEED

PLANT SCHEDULE

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	CONT	HEIGHT
SHRUBS					
	ARAR	56	ARONIA ARBUTIFOLIA RED CHOKEBERRY	3 GAL	
	CEOC	21	CEPHALANTHUS OCCIDENTALIS BUTTONBUSH	3 GAL	
	HAVI	37	HAMAMELIS VIRGINIANA COMMON WITCH HAZEL	3 GAL	
	HYQU	47	HYDRANGEA QUERCIFOLIA OAKLEAF HYDRANGEA	3 GAL	
	ITVI	33	ITEA VIRGINICA VIRGINIA SWEETSPIRE	3 GAL	
	IVXS	1	ILEX VERTICILLATA 'SOUTHERN GENTLEMAN' SOUTHERN GENTLEMAN WINTERBERRY	3 GAL	
	IVXW	26	ILEX VERTICILLATA `WINTER RED' WINTER RED WINTERBERRY	3 GAL	24" MIN
	LIBE	40	LINDERA BENZOIN SPICEBUSH	3 GAL	
	VDAV	36	VIBURNUM DENTATUM 'ARROWWOOD' ARROWWOOD VIBURNUM	3 GAL	
PERENNIALS					
	ASIN	19	ASCLEPIAS INCARNATA SWAMP MILKWEED	3 GAL	
	ASSY	23	ASCLEPIAS SYRIACA COMMON MILKWEED	3 GAL	
	ASTU	10	ASCLEPIAS TUBEROSA BUTTERFLY MILKWEED	3 GAL	
	BAAL	15	BAPTISIA ALBA WHITE WILD INDIGO	3 GAL	
	BAAU	35	BAPTISIA AUSTRALIS BLUE WILD INDIGO	3 GAL	
	ECPU	44	ECHINACEA PURPUREA CONEFLOWER	3 GAL	
	EUMA	20	EUTROCHIUM MACULATUM SPOTTED JOE PYE WEED	3 GAL	
	HELI	40	HELIANTHUS SCHWEINITZII SCHWEINITZ'S SUNFLOWER	3 GAL	
	HIMO	37	HIBISCUS MOSCHEUTOS ROSE MALLOW	3 GAL	
	MOFI	12	MONARDA FISTULOSA BERGAMOT	3 GAL	
	OEBI	13	OENOTHERA BIENNIS COMMON EVENING PRIMROSE	3 GAL	
	RUFU	93	RUDBECKIA FULGIDA CONEFLOWER	3 GAL	
	SYOB	67	SYMPHYOTRICHUM OBLONGIFOLIUM FALL ASTER	3 GAL	
	VENO	16	VERNONIA NOVEBORACENSIS COMON IRONWEED	3 GAL	
EVERGREEN SHRUBS					
	DIXS	17	DISTYLIUM X 'PIIDIST-VI' SWING LOW® DISTYLIUM	3 GAL	
	IGCI	19	ILEX GLABRA 'COMPACTA' COMPACT INKBERRY	3 GAL	
	IVXN	88	ILEX VOMITORIA 'NANA' DWARF YAUPON HOLLY	3 GAL	
	JSXB	7	JUNIPERUS SCOPULORUM 'BLUE ARROW' BLUE ARROW JUNIPER	3 GAL	
	JVXG	63	JUNIPERUS VIRGINIANA 'GREY OWL' GREY OWL EASTERN REDCEDAR	3 GAL	
	MCXD	101	MORELLA CERIFERA 'DON'S DWARF' DON'S DWARF WAX MYRTLE	3 GAL	
ORNAMENTAL GRASSES + SEDGES					
	ANVI	126	ANDROPOGON VIRGINICUS BROOMSEDGE BLUESTEM	3 GAL	
	CAFL	12	CAREX FLACCOSPERMA BLUE WOOD SEDGE	3 GAL	
	MUCA	327	MUHLENBERGIA CAPILLARIS PINK MUHLY GRASS	3 GAL	
	PAVI	296	PANICUM VIRGATUM SWITCH GRASS	3 GAL	
	SCSC	190	SCHIZACHYRIUM SCOPARIUM LITTLE BLUESTEM	3 GAL	
	SONU	93	SORGHASTRUM NUTANS INDIAN GRASS	3 GAL	
VINES/CLIMBERS					
	PAIN	16	PASSIFLORA INCARNATA PASSION FLOWER VINE	3 GAL	

LANDSCAPE NOTES

1. MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT APPLICABLE TOWN OF KNIGHTDALE AND THE STATE OF NORTH CAROLINA STANDARDS AND SPECIFICATIONS.
2. CONTRACTOR IS RESPONSIBLE FOR INSPECTING THE SITE BEFORE LANDSCAPE CONSTRUCTION AND INSTALLATION IN ORDER TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS.
3. CONTRACTOR IS RESPONSIBLE FOR LOCATING UNDERGROUND UTILITIES, NEW AND PRIOR EXISTING, BEFORE BEGINNING LANDSCAPE INSTALLATION. DAMAGE TO UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
4. THE LANDSCAPE PLAN IS FOR PLANTING PURPOSES ONLY. FOR INFORMATION REGARDING BUILDINGS, GRADING, WALLS, ETC., REFER TO ARCHITECTURE, SITE, GRADING DRAWINGS, ETC.
5. CONTRACTOR SHALL FULLY REVIEW PLANS PRIOR TO INSTALLATION AND SHALL NOTIFY LANDSCAPE ARCHITECT OF DISCREPANCIES BETWEEN THE NOTES, SPECIFICATIONS, DRAWINGS, OR SITE CONDITIONS FOR RESOLUTION PRIOR TO INSTALLATION.
6. VERIFICATION OF TOTAL PLANT QUANTITIES AS SHOWN IN THE PLANT SCHEDULE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. DISCREPANCIES BETWEEN THE PLANT SCHEDULE AND LANDSCAPE PLAN SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT PRIOR TO SUBMITTING THE BID/PROPOSAL.
7. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THAT PLANT MATERIAL IS AVAILABLE AS SPECIFIED WHEN BID/PROPOSAL IS SUBMITTED AND RESERVING / SECURING PLANT MATERIAL AS NECESSARY TO MEET THE REQUIREMENTS OF THE LANDSCAPE PLAN.
8. PLANTS TO MEET MINIMUM REQUIREMENTS AS SPECIFIED IN THE PLANT SCHEDULE. ROOT TYPE MAY BE FREELY SUBSTITUTED FOR BALLED AND BURLAPPED OR CONTAINER GROWN TREES, WITH OTHER SPECIFICATIONS REMAINING UNCHANGED. OTHER CHANGES OR SUBSTITUTIONS SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT AND GOVERNING JURISDICTION PRIOR TO PROCUREMENT OF PLANT MATERIAL.
9. DEVIATION FROM THESE PLANS MUST BE SPECIFICALLY APPROVED BY LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL NOT MAKE SUBSTITUTIONS OR REVISIONS WITHOUT APPROVAL.
10. CONTRACTOR TO COORDINATE WITH LANDSCAPE ARCHITECT TO ESTABLISH THE EXTENTS OF MULCH/SEED/SOD IF NOT SPECIFICALLY SHOWN ON PLANS.
11. CONTRACTOR SHALL VERIFY CONDITIONS AND ELEVATIONS OF EXISTING TREES TO REMAIN ADJACENT TO OR WITHIN LIMITS OF DISTURBANCE PRIOR TO INSTALLATION OF NEW PLANT MATERIAL. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT OF DISCREPANCIES.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR THE TESTING, AMENDING AND SPREADING OF TOPSOIL PRIOR TO PLANT INSTALLATION, SUPPLEMENTING WITH AMENDMENTS TO ADJUST PH AND FERTILITY AS NECESSARY BASED ON THE TEST RESULTS.
13. TOPSOIL SHALL BE FREE OF MATERIAL LARGER THAN 1.0 INCH IN DIAMETER OR LENGTH AND SHALL NOT CONTAIN SLAG, CINDERS, STONES, LUMPS OF SOIL, STICKS, ROOTS, TRASH, OR OTHER EXTRANEOUS MATERIAL.
14. CONTRACTOR SHALL PREPARE PLANTING BEDS BY TILLING SOIL TO A 12" DEPTH PRIOR TO INSTALLING PLANT MATERIAL. CONTRACTOR SHALL ENSURE THAT SHALLOW BEDROCK WILL NOT INHIBIT THE ROOT GROWTH OF PLANT MATERIAL. PLANTING BEDS SHALL NOT BE BACKFILLED WITH ANY MATERIAL OTHER THAN AMENDED OR IMPORTED PLANTING SOIL.
15. APPLY SOIL AMENDMENTS AND FERTILIZERS AS REQUIRED BY THE SOIL TEST RESULTS TO ACHIEVE A HEALTHY GROWING MEDIA AND MIX THOROUGHLY INTO TOP 4 INCHES OF SOIL. SPREAD PLANTING SOIL MIX TO A DEPTH OF 6 INCHES BUT NOT LESS THAN REQUIRED TO MEET FINISH GRADES AFTER NATURAL SETTLEMENT. DO NOT SPREAD IF PLANTING SOIL OR SUBGRADE IS FROZEN, MUDDY, OR EXCESSIVELY WET.
16. IF IMPORTED TOPSOIL IS REQUIRED, THE SUBGRADE SHALL BE SCARIFIED OR TILLED TO A DEPTH OF AT LEAST 6 INCHES PRIOR TO INSTALLATION OF IMPORTED TOPSOIL. FOLLOWING INSTALLATION OF IMPORTED TOPSOIL, THE TOPSOIL SHALL BE TILLED TO INTEGRATE THE SOIL PROFILES.
17. FINE GRADE PLANTING AREAS TO A SMOOTH, UNIFORM SURFACE PLANE WITH LOOSE, UNIFORMLY FINE TEXTURE. GRADE TO WITHIN PLUS OR MINUS 1/2 INCH OF FINISH ELEVATION. HAND ROLL AND RAKE, REMOVE RIDGES AND DEBRIS, AND FILL DEPRESSIONS TO MEET FINISH GRADES. LIMIT FINISHED GRADING TO AREAS THAT CAN BE PLANTED IN THE IMMEDIATE FUTURE.
18. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE IN PLANTING AREAS.
19. AFTER TREE PLANTING HOLES HAVE BEEN DUG AND PRIOR TO INSTALLATION OF TREES, CONTRACTOR TO CONFIRM THAT WATER DRAINS OUT OF THE SOIL. USE LOWERED PLANTING HOLE DEPTH AND INSTALL ALTERNATIVE DRAINAGE AND AERATION SYSTEMS AS REQUIRED.
20. PERFORM PERCOLATION TEST FOR EACH TREE PIT. PROVIDE GRAVEL SUMP FILTER FABRIC & VENT PIPE IF DRAINAGE DOES NOT OCCUR WITHIN 24 HOURS. INCLUDE ALL SUMPS IN BASE BID. SHOULD SUMPS NOT BE NECESSARY AFTER PERCOLATION TEST, PROVIDE CHANGE ORDER DEDUCT TO OWNER.
21. IF PLANTING HOLES ARE DUG WITH A LARGE AUGER, BREAK DOWN THE SIDES OF THE HOLE WITH A SHOVEL TO ELIMINATE GLAZING AND TO CREATE THE SPECIFIED SIDE SLOPE ON THE INSIDE OF THE PLANTING HOLE.
22. CONTRACTOR SHALL KEEP AREAS OF WORK CLEAN, NEAT, AND ORDERLY. PAVED SURFACES ARE TO BE CLEANED OF SOIL AND DEBRIS AT THE CLOSE OF EACH WORKDAY.
23. LANDSCAPE MATERIAL SHALL BE WELL FORMED, VIGOROUS, GROWING SPECIMENS WITH GROWTH TYPICAL OF VARIETIES SPECIFIED AND SHALL BE FREE FROM DAMAGE, INSECTS, AND DISEASES. MATERIAL SHALL EQUAL OR SURPASS #1 QUALITY AS DEFINED IN THE CURRENT ISSUE OF "AMERICAN STANDARD FOR NURSERY STOCK" AS PUBLISHED BY THE AMERICANHORT (F.K.A. AMERICAN NURSERY & LANDSCAPE ASSOCIATION).
24. PLANT MATERIAL IS TO BE WELL ROOTED, NOT ROOT BOUND, SUCH THAT THE ROOT BALL REMAINS INTACT THROUGHOUT THE PLANTING PROCESS. DEFICIENT PLANT MATERIAL SHALL BE REJECTED BY THE LANDSCAPE ARCHITECT.
25. CONTAINER GROWN STOCK SHALL HAVE BEEN GROWN IN A CONTAINER LONG ENOUGH FOR THE ROOT SYSTEM TO HAVE DEVELOPED SUFFICIENTLY TO HOLD THE SOIL TOGETHER FIRMLY, BUT NOT SO LONG AS TO HAVE BECOME POT BOUND. CONTAINER GROWN STOCK SHALL HAVE A WELL-ESTABLISHED ROOT SYSTEM REACHING THE SIDES OF THE CONTAINER TO MAINTAIN A FIRM BALL BUT SHALL NOT HAVE EXCESSIVE ROOT GROWTH ENCIRCLING THE INSIDE OF THE CONTAINER.
26. DO NOT PRUNE TREES AND SHRUBS BEFORE DELIVERY. PROTECT BARK, BRANCHES, AND ROOT SYSTEMS FROM SUN SCALD, DRYING, SWEATING, WHIPPING, AND OTHER HANDLING AND TYING DAMAGE. DO NOT BEND OR BIND-TIE TREES OR SHRUBS IN SUCH A MANNER AS TO DESTROY THEIR NATURAL SHAPE. PROVIDE PROTECTIVE COVERING OF EXTERIOR PLANTS DURING DELIVERY.
27. DELIVER EXTERIOR PLANTS AFTER PREPARATIONS FOR PLANTING HAVE BEEN COMPLETED AND INSTALL IMMEDIATELY. IMMEDIATELY AFTER UNLOADING, STAND THE TREES UP TO REDUCE THE RISK OF SUN SCALD. PROPERLY STAGED TREES ARE STANDING, UNTIED AND SPACED. UNLESS IMMEDIATELY INSTALLED, SET EXTERIOR PLANTS AND TREES IN SHADE, PROTECT FROM WEATHER AND MECHANICAL DAMAGE, AND KEEP ROOTS MOIST.
28. PLANT MATERIAL IS TO BE CAREFULLY HANDLED BY THE ROOT BALL, NOT THE TRUNK, BRANCHES, AND/OR FOLIAGE OF THE PLANT. DO NOT DROP EXTERIOR PLANTS DURING DELIVERY AND HANDLING. MISHANDLED PLANT MATERIAL SHALL BE REJECTED BY THE LANDSCAPE ARCHITECT. PLANTS WITH BROKEN ROOT BALLS OR SUBSTANTIAL DAMAGE SHALL BE REPLACED PRIOR TO PLANTING.
29. CONTRACTOR SHALL STAKE TREE LOCATIONS FOR APPROVAL PRIOR TO INSTALLATION. CONFLICTS OR DISCREPANCIES SHALL BE FIELD ADJUSTED AND APPROVED BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. NOTIFY THE GOVERNING JURISDICTION AND OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT OF SIGNS, POWER LINES, OR OTHER CONFLICTS BEFORE PLANTING TREES.
30. NO TREE PLANTING SHALL OCCUR WITHIN SIGHT DISTANCE TRIANGLE AREAS INDICATED ON THE PLAN SET. CONTRACTOR SHALL STAKE THE LOCATION OF TREE PLANTING IN THE RIGHT-OF-WAY IN THE FIELD PRIOR TO INSTALLATION FOR REVIEW AND APPROVAL BY LANDSCAPE ARCHITECT AND AUTHORITIES HAVING JURISDICTION. OWNER SHALL AGREE TO MAINTAIN THE STRUCTURE OF TREE PLANTING IN THE RIGHT-OF-WAY TO ELIMINATE SIGHT DISTANCE CONFLICTS.
31. PROPOSED TREES TO BE PLANTED A MINIMUM 10 FEET FROM LIGHT POLES AS MEASURED FROM TRUNK OF THE TREE TO THE POLE.
32. PROPOSED TREES TO BE PLANTED A MINIMUM 10 FEET FROM FIRE HYDRANTS AS MEASURED FROM TRUNK OF THE TREE TO THE HYDRANT.
33. CONTRACTOR SHALL LAY OUT ON THE GROUND SHRUBS, ORNAMENTAL GRASSES, AND GROUNDCOVERS FOR APPROVAL BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. CONTRACTOR SHALL ANTICIPATE THAT SOME REARRANGEMENT OF MATERIAL WILL OCCUR.
34. SEE LANDSCAPE DETAILS FOR TREE STAKING REQUIREMENTS.
35. ALL TREE PLANTINGS SHALL BE MULCHED TO A DEPTH OF 3 INCHES AND WITH A MINIMUM 3 FOOT RADIUS FROM BASE OF TREE OR TO DRIPLINE. MULCH SHALL NOT COVER THE ROOT FLARE.
36. MULCH SHALL BE ORGANIC, FREE OF TRASH, AND MAINTAINED WEED FREE. MULCH SHALL BE APPLIED IMMEDIATELY AFTER COMPLETION OF PLANTING OPERATIONS.
37. EXCAVATE EDGES OF ALL PLANTING BEDS TO 2 INCH DEPTH TO FORM A NEAT AND CRISP DEFINITION.
38. PLANT MATERIALS ARE TO BE GUARANTEED FOR A PERIOD OF 12 MONTHS. CONTRACTOR WILL REPLACE PLANT MATERIAL WHICH REMAINS UNHEALTHY BEFORE THE EXPIRATION OF THE GUARANTEE PERIOD OR IMMEDIATELY IF SO DIRECTED BY THE OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT.
39. CONTRACTOR IS RESPONSIBLE FOR WATERING PLANTED AREAS THROUGHOUT THE WARRANTY PERIOD TO ENSURE PLANT ESTABLISHMENT.
40. REPAIR OR REPLACE, IN A MANNER APPROVED BY THE LANDSCAPE ARCHITECT, NEW TREES AND OTHER PLANTS THAT ARE DAMAGED AFTER INSTALLATION BY CONSTRUCTION OPERATIONS.
41. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MONITOR THE PROJECT DURING THE GUARANTEE PERIOD AND INFORM THE OWNER IF PROBLEMS DEVELOP WITH THE PLANT MATERIAL. CONTRACTOR SHALL REMOVE DEAD AND UNHEALTHY PLANT MATERIAL AND IMMEDIATELY REPLACE AT THE CONTRACTOR'S EXPENSE.
42. CONTRACTOR SHALL REMOVE GUYS AND STAKES AT END OF WARRANTY PERIOD OR ESTABLISHMENT.
43. LANDSCAPE WORK SHALL INCLUDE THE FURNISHING, INSTALLATION, AND WARRANTY OF ALL PLANTING MATERIALS WITHIN THE PROJECT AREA.
44. CONTRACTOR TO ENSURE PROPER STABILIZATION AND SEEDING OF THE SITE IN ACCORDANCE WITH APPLICABLE REGULATIONS.

PLANTING SPECIFICATIONS:

GENERAL

1. REFER TO CIVIL DRAWINGS FOR NOTES AND DETAILS ON SITE GRADING AND EROSION AND SEDIMENT CONTROL. REFER TO SEEDING AND SODDING NOTES FOR TURF GRASS INSTALLATION.
2. CONTRACTOR TO SUBMIT A LIST OF PLANT MATERIALS AND SOURCES FOR REVIEW BY LANDSCAPE ARCHITECT PRIOR TO PURCHASE AND INSTALLATION. CONTRACTOR TO COORDINATE ANY DISCREPANCIES OR SUBSTITUTIONS WITH LANDSCAPE ARCHITECT.
3. DURING DELIVERY, STORAGE AND HANDLING, CONTRACTOR TO PROTECT AND MAINTAIN PLANT LIFE UNTIL PLANTED. PROVIDE PROTECTIVE COVERING OVER ALL PLANTINGS DURING TRANSPORT. ADEQUATELY PROTECT PLANTS FROM DRYING OUT, EXPOSURE OF ROOTS TO SUN, WIND OR EXTREMES OF HEAT AND COLD TEMPERATURES. IF PLANTING IS DELAYED MORE THAN 24 HOURS AFTER DELIVERY, STORE PLANTS IN LOCATION PROTECTED FROM SUN AND WIND AND PROVIDE ADEQUATE WATER TO THE ROOT BALL PACKAGE. PLANT MATERIAL DAMAGED AS A RESULT OF DELIVERY, STORAGE OR HANDLING WILL BE REJECTED.
4. PLANTS, INCLUDING TREES, SHRUBS, GROUNDCOVERS, VINES AND ORNAMENTAL GRASSES, TO BE INSTALLED BETWEEN THE FOLLOWING DATES:
   SPRING PLANTING SEASON: MARCH 15 TO JUNE 1
   FALL PLANTING SEASON: SEPTEMBER 15 TO DECEMBER 1
5. PROCEED WITH PLANTING ONLY WHEN EXISTING AND FORECASTED WEATHER CONDITIONS PERMIT. PLANT TREES AND SHRUBS AFTER FINISH GRADES ARE ESTABLISHED AND BEFORE PLANTING LAWNS. PROTECT LAWN AREAS TO REMAIN AND PROMPTLY REPAIR DAMAGE CAUSED BY PLANTING OPERATIONS.
6. CONTRACTOR SHALL CAREFULLY EXAMINE THE CIVIL, RECORD AND SURVEY DRAWINGS TO BECOME FAMILIAR WITH EXISTING UNDERGROUND CONDITIONS BEFORE DIGGING. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BE AWARE OF ALL SURFACE AND SUBSURFACE CONDITIONS, AND TO NOTIFY THE LANDSCAPE ARCHITECT OF ANY CIRCUMSTANCES THAT WOULD NEGATIVELY IMPACT UNDERGROUND CONDITIONS OR THE HEALTH OF THE PLANTINGS.

PRODUCTS

1. TREE AND SHRUB MATERIAL: FURNISH NURSERY-GROWN, TYPICAL OF THEIR SPECIES OR VARIETY, WITH NORMAL GROWTH HABIT, WELL-DEVELOPED BRANCH STRUCTURE, HEALTHY FOLIAGE, AND VIGOROUS ROOT SYSTEMS IN ACCORDANCE WITH APPLICABLE REQUIREMENTS IN ANSIZ60.1 "AMERICAN STANDARD FOR NURSERY STOCK". PLANTS SHALL BE FREE FROM DEFECTS OR DAMAGE, INCLUDING BUT NOT LIMITED TO, DISFIGURING KNOTS, SUNSCALD INJURIES, FROST CRACKS, ABRASION OF THE BARK, PLANT DISEASES, INSECT EGGS, BORERS, FIRE ANTS, AND ALL FORMS OF INFESTATION.
2. SOIL: ASTM D 5268 TOPSOIL, pH RANGE OF 5.5 TO 7, A MINIMUM OF 6 PERCENT ORGANIC MATERIAL CONTENT; FREE OF STONES 1 INCH OR LARGER IN ANY DIMENSION AND OTHER EXTRANEOUS MATERIALS HARMFUL TO PLANT GROWTH.
3. SOIL AMENDMENTS:
   A. ORGANIC COMPOST: WELL-COMPOSTED, STABLE AND WEED-FREE ORGANIC MATTER, pH RANGE OF 5.5 TO 8; MOISTURE CONTENT 35 TO 55 PERCENT BY WEIGHT; 100 PERCENT PASSING THROUGH 3/4" SIEVE; SOLUBLE SALT CONTENT OF 5 TO 10 DECISIEMENS/M; NOT EXCEEDING 0.5 PERCENT INERT CONTAMINANTS AND FREE OF SUBSTANCES TOXIC TO PLANTINGS.
   B. INORGANIC SOIL AMENDMENTS: COMMERCIAL GRADE, FREE OF TOXIC MATERIALS.
4. FERTILIZER: GRANULAR OR PELLET SLOW-RELEASE FERTILIZER CONSISTING OF 50 PERCENT WATER-INSOLUBLE NITROGEN, PHOSPHOROUS AND POTASSIUM IN THE COMPOSITION AS DIRECTED BY SOIL ANALYSIS TESTING.
5. ORGANIC MULCH: SHREDDED HARDWOOD IN NATURAL BROWN COLOR; 3" MAXIMUM SIZE IN LONGEST DIMENSION; FREE FROM DELETERIOUS MATERIALS AND SUITABLE FOR A TOP DRESSING OF TREES AND SHRUBS.
6. STAKES AND GUYS: DEEPROOT ARBORTIE STAKING AND GUYING MATERIAL OR APPROVED EQUAL.

TREE PROTECTION AND ROOT ZONE DISTURBANCE NOTES

1. AS RECOMMENDED BY A CERTIFIED ARBORIST, AFTER TREE PROTECTION FENCING IS INSTALLED ALONG THE PROPERTY, TREE ROOTS WILL BE EXPOSED BY AIR SPADING ALONG PROTECTION FENCING AND LIMITS OF DISTURBANCE LINE AND THEN PRECISELY BE PRUNED BY HAND. AFTER ROOTS HAVE BEEN PRUNED, THE PROTECTIVE ROOT ZONE AREA WITHIN THE PROPERTY WILL BE AIR SPADED TO LESSON SOIL COMPACTION AND INVIGORATE ROOT GROWTH. A PRESCRIBED MIX OF FERTILIZER (BASED ON SOIL SAMPLES) AND ORGANIC MATERIAL WILL BE INCORPORATED INTO THE SOIL TO BOOST THE TREE'S VITALITY.

2. A CERTIFIED ARBORIST MUST PERIODICALLY INSPECT THE TREES ALONG THE PROPERTY DURING THE COURSE OF CONSTRUCTION TO MONITOR THE HEALTH OF THE ESTABLISHED TREES ON THE PROPERTY. THESE INSPECTIONS ARE TO BE COORDINATED WITH THE SITE SUPERINTENDENT AND THE TOWN OF APEX ZONING COMPLIANCE OFFICER, THE TOWN WILL REQUIRE AN ARBORIST CERTIFICATION LETTER FOR EACH STAGE OF CONSTRUCTION AND PRIOR TO ISSUING THE FINAL CERTIFICATE OF OCCUPANCY. THE FIRST INSPECTION CERTIFICATION MUST BE DONE AFTER THE TREE PROTECTION FENCE INSTALLATION, ROOT PRUNING AND SOIL INVIGORATION MEASURES HAVE BEEN COMPLETED. THE SECOND INSPECTION MUST BE DONE AFTER THE PERIMETER GRADING AND/OR RETAINING WALLS ARE COMPLETED AND BACKFILLED. THE THIRD AND FINAL INSPECTION MUST BE DONE WHEN ALL SITE WORK INCLUDING BUFFER LANDSCAPING IS COMPLETE.

3. TREE PRUNING AND FIRST ROOT INVIGORATION AS SUGGESTED BY THE ARBORIST IS TO BE COMPLETED IMMEDIATELY AFTER TREE PROTECTION FENCING IS INSTALLED AND PRIOR TO COMMENCEMENT OF ANY GRADING OPERATION.

GENERAL LANDSCAPE NOTES:

1. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF KNIGHTDALE AND THE STATE OF NORTH CAROLINA STANDARDS AND SPECIFICATIONS.
2. CONTRACTOR IS RESPONSIBLE FOR THE SITE INSPECTION BEFORE LANDSCAPE CONSTRUCTION AND INSTALLATION IN ORDER TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS.
3. LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE BEGINNING DEMOLITION OR INSTALLATION.
4. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES BETWEEN THE NOTES, SPECIFICATIONS, DRAWINGS OR SITE CONDITIONS FOR RESOLUTION PRIOR TO INSTALLATION.
5. ANY DAMAGE TO UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
6. VERIFICATION OF TOTAL PLANT QUANTITIES AS SHOWN IN THE PLANT SCHEDULE SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR. ANY DISCRPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT.
13. SUBSTITUTIONS OF SPECIFIC PLANTS CAN ONLY OCCUR WITH PRIOR WRITTEN PERMISSION OF BOTH OWNER AND LANDSCAPE ARCHITECT.
14. CONTRACTOR TO ENSURE PROPER STABILIZATION AND SEEDING OF THE SITE IN ACCORDANCE WITH APPLICABLE REGULATIONS.
15. LANDSCAPE MATERIAL SHALL BE WELL FORMED, VIGOROUS, GROWING SPECIMENS WITH GROWTH TYPICAL OF VARIETIES SPECIFIED AND SHALL BE FREE FROM DAMAGE, INSECTS AND DISEASES. MATERIAL SHALL EQUAL OR SURPASS #1 QUALITY AS DEFINED IN THE CURRENT ISSUE OF "AMERICAN STANDARD FOR NURSERY STOCK" AS PUBLISHED BY AMERICAN HORT - AMERICANHORT.ORG.
16. ALL PLANT MATERIAL IS TO BE CAREFULLY HANDLED BY THE ROOT BALL, NOT THE TRUNK, BRANCHES AND/OR FOLIAGE OF THE PLANT. MISHANDLED PLANT MATERIAL MAY BE REJECTED BY THE LANDSCAPE ARCHITECT.
17. ALL PLANT MATERIAL IS TO BE WELL ROOTED, NOT ROOT BOUND, SUCH THAT THE ROOT BALL REMAINS INTACT THROUGHOUT THE PLANTING PROCESS. DEFICIENT PLANT MATERIAL MAY BE REJECTED BY THE LANDSCAPE ARCHITECT OR OWNER.
18. ALL PLANTS TO BE A MINIMUM OF WHAT IS SPECIFIED IN THE PLANT SCHEDULE. ANY CHANGES OR SUBSTITUTIONS SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT AND GOVERNING JURISDICTION PRIOR TO ANY HOLE BEING DUG.
19. ALL TREES MUST BE PLANTED AFTER OCTOBER 1 AND BEFORE MARCH 31.
20. CONTRACTOR TO COORDINATE WITH OWNER'S REPRESENTATIVE AND LANDSCAPE ARCHITECT TO ESTABLISH THE EXTENTS OF MULCH/SEED/SOD IF NOT SPECIFICALLY SHOWN ON PLANS.
21. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE IN ALL PLANTING AREAS.
22. PROPOSED TREES TO BE PLANTED A MINIMUM 10 FEET FROM ANY LIGHT POLE AS MEASURED FROM TRUNK OF THE TREE TO THE POLE.
23. PROPOSED TREES TO BE PLANTED A MINIMUM 5 FEET FROM ANY FIRE HYDRANT AS MEASURED FROM TRUNK OF THE TREE TO THE HYDRANT.
24. ALL TREE PLANTINGS SHALL BE MULCHED WITH 3 INCHES OF SHREDDED BARK OR 4 INCHES OF PINE STRAW IN A 3 FOOT RADIUS AROUND THE TREE, OR TO THE DRIPLINE, WHICHEVER IS GREATER. THE MULCH SHALL BE FREE OF TRASH AND MAINTAINED WEED FREE THEREAFTER. MULCH SHALL NOT COVER THE ROOT COLLAR.

WARRANTY & MAINTENANCE:

1. WARRANTY: INSTALLER SHALL REPAIR OR REPLACE ANY PLANTINGS THAT FAIL IN MATERIALS, WORKMANSHIP, OR GROWTH WITHIN ONE YEAR AFTER THE DATE OF SUBSTANTIAL COMPLETION. FAILURES INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
   - DEATH AND UNSATISFACTORY GROWTH, EXCEPT FOR DEFECTS RESULTING FROM LACK OF ADEQUATE MAINTENANCE, NEGLECT, ABUSE BY OWNER, OR INCIDENTS THAT ARE BEYOND CONTRACTOR'S CONTROL.
   - STRUCTURAL FAILURES INCLUDING PLANTINGS FALLING OR BLOWING OVER.
2. MAINTENANCE: INITIAL MAINTENANCE SHALL BE PROVIDED IMMEDIATELY AFTER EACH AREA IS PLANTED AND CONTINUE UNTIL SUBSTANTIAL COMPLETION. UPON SUBSTANTIAL COMPLETION, MAINTENANCE FOR ALL PLANT MATERIAL SHALL BE PROVIDED FOR ONE YEAR AT A MINIMUM SHALL INCLUDE:
   - TREE AND SHRUB MAINTENANCE: MAINTAIN PLANTINGS BY PRUNING, CULTIVATING, WATERING, WEEDING, FERTILIZING, RESTORING PLANTING SAUCERS, AND RESETTING TO PROPER GRADES OR VERTICAL POSITION, AS REQUIRED TO ESTABLISH HEALTHY, VIABLE PLANTINGS. SPRAY OR TREAT AS REQUIRED TO KEEP TREES AND SHRUBS FREE OF INSECTS AND DISEASE.
   - GROUND COVER AND PLANT MAINTENANCE: MAINTAIN AND ESTABLISH PLANTINGS BY WATERING, WEEDING, FERTILIZING, MULCHING, AND OTHER OPERATIONS AS REQUIRED TO ESTABLISH HE

MATERIAL LEGEND

ROOF - ASPHALT SHINGLES
COLOR: CHARCOAL

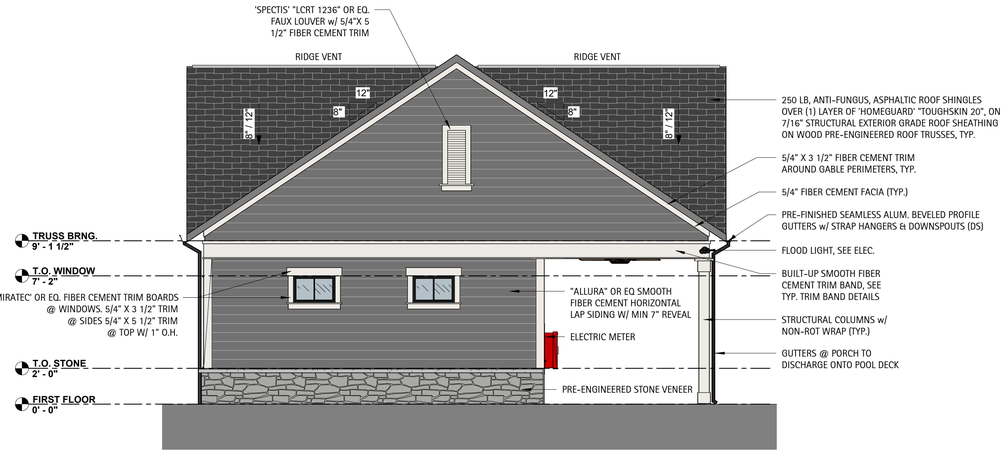
GUTTER - PRE-FINISHED SEAMLESS ALUM

STONE VENEER - PROVIA
COLOR: FLINTRIDGE TERRA CUT

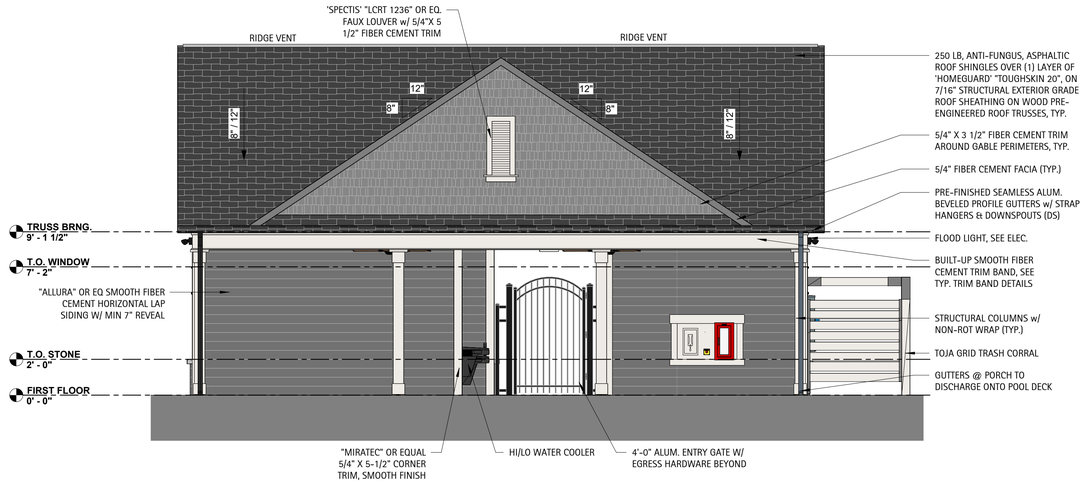
COLUMNS - SW
COLOR: 7004 SNOWBOUND

EXTERIOR TRIM - SW
COLOR: 7004 SNOWBOUND

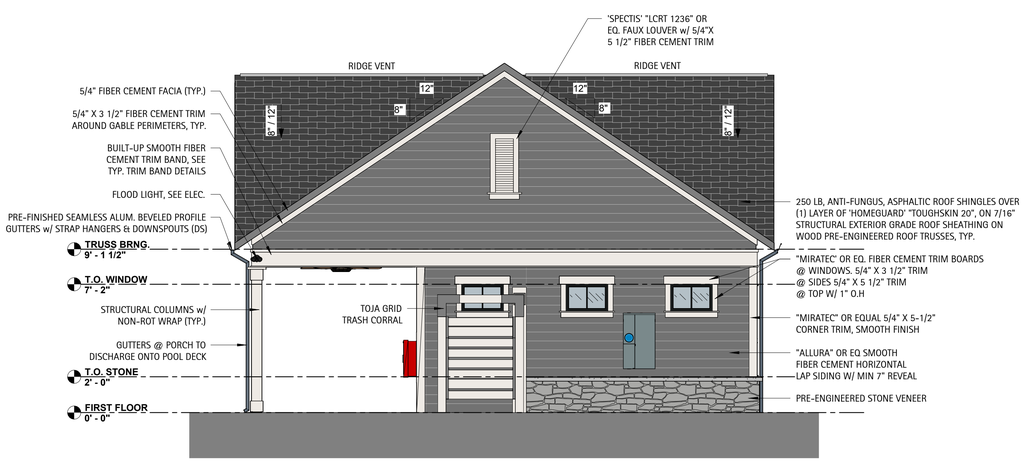
LAP AND SHAKE SIDING - JH COLOR PLUS
COLOR: GRAY SLATE



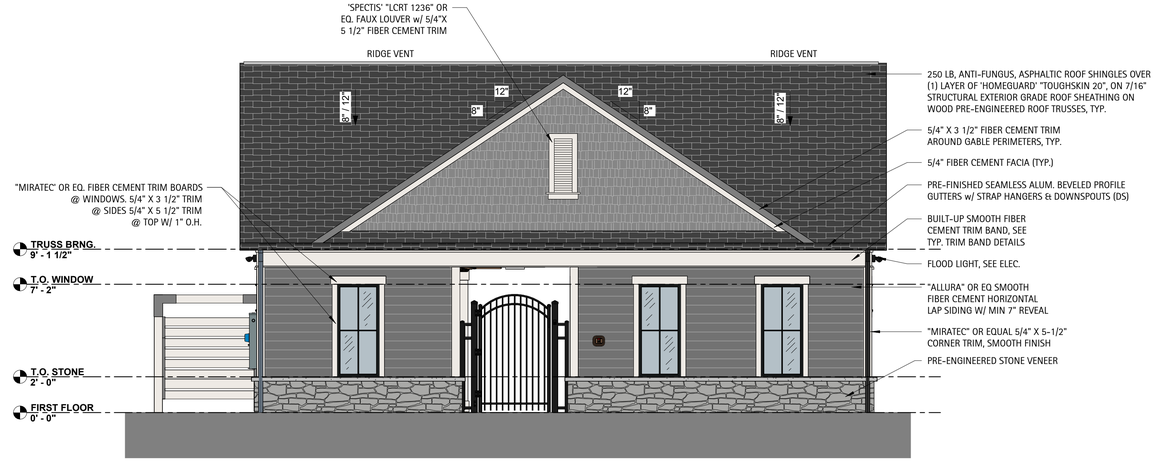
4 A00.2 **ELEVATION - RIGHT (NORTHWEST)**
1/4" = 1'-0"



3 A00.2 **ELEVATION - REAR (SOUTHWEST)**
1/4" = 1'-0"



2 A00.2 **ELEVATION - LEFT (SOUTHEAST)**
1/4" = 1'-0"



1 A00.2 **ELEVATION - FRONT (NORTHEAST)**
1/4" = 1'-0"

a. **Town Certification.** This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By: _____ Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: _____ Date: _____
Administrator

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D.CLUGSTON

PRELIMINARY NOT FOR CONSTRUCTION

HOPKINS FARM AMENITY

LENNAR

KNIGHTDALE, NC

DATE

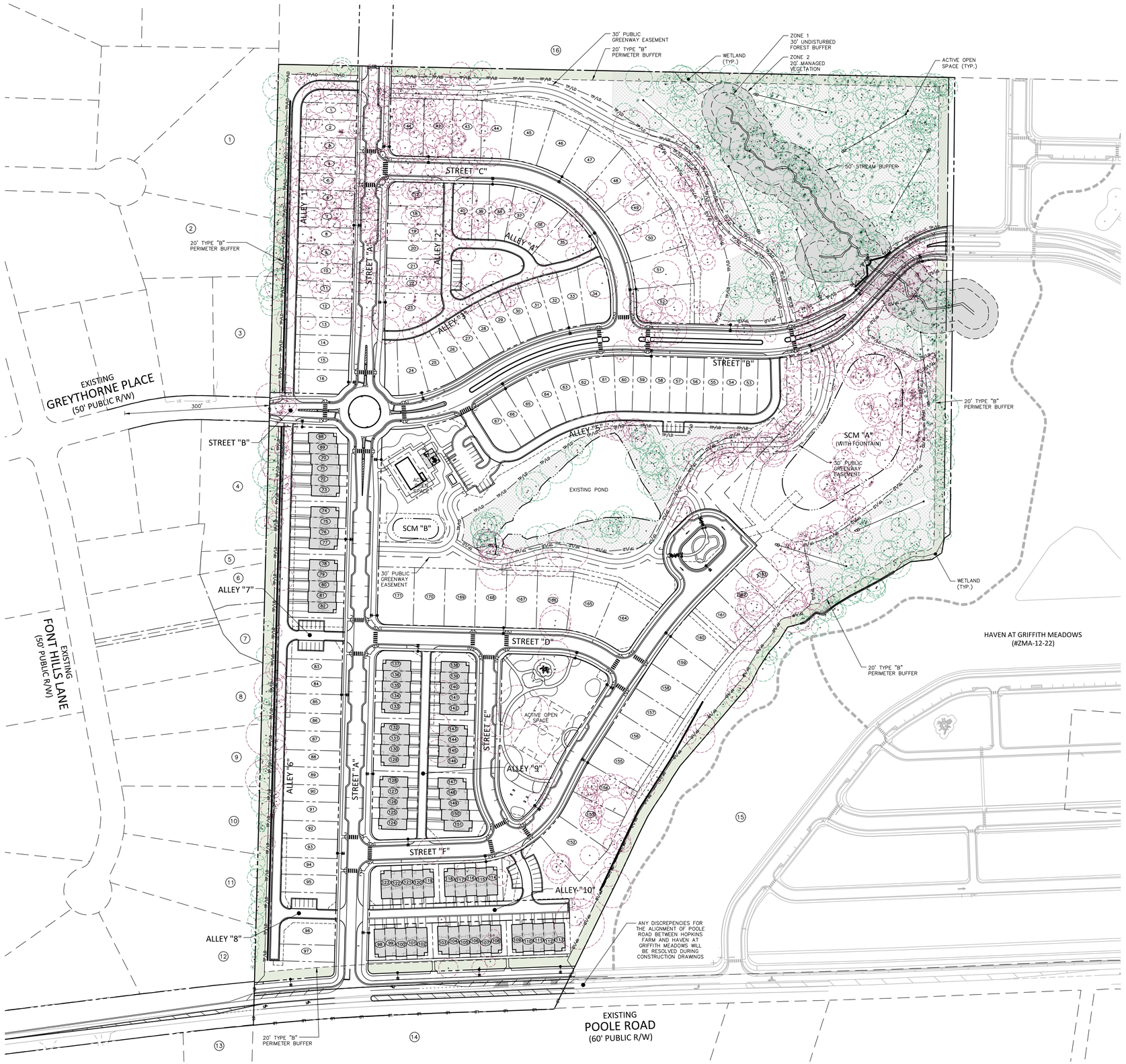
REVISION

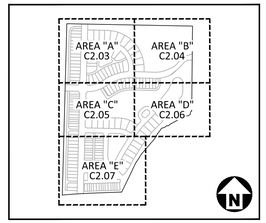
NO.

PROJECT #:	2025075
DATE ISSUED:	01/15/2026
DRAWING BY:	JWM
CHECKED BY:	JVD
100% DD	

PLANNING ELEVATIONS

A00.2





KEY MAP

SITE LEGEND

- SIGNAGE
- POWER POLE
- TRAFFIC DIRECTIONAL ARROW
- ACC — ACCESSIBLE PARKING STALL
- VAN — VAN ACCESSIBLE PARKING STALL
- XX — PARKING SPACE COUNT
- ACCESSIBLE RAMPS
- ACCESSIBLE ROUTE
- PHASE LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- LOT LINE
- CENTERLINE
- GUARDRAIL
- WETLANDS
- TREE CONSERVATION AREA (NOTE: A 20' WIDE AREA ALONG EACH DISC GOLF HOLE IS DEDUCTED FROM TREE SAVE CALCULATIONS)
- PERIMETER BUFFER
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED

GRAPHIC SCALE
0 50 100 200
1 inch = 100 ft.

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

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CLIENT

LENNAR
1100 PERIMETER PARK DRIVE
MORRISVILLE, NC 27560
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LENNAR

HOPKINS FARM
MASTER PLAN
8501 POOLE ROAD
KNIGHTDALE, NORTH CAROLINA 27545

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048250 ENGINEER NICHOLAS D. WILLIAMSON
NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	06. 26. 2025	PER TOWN COMMENTS
2	07. 30. 2025	PER TOWN COMMENTS
3	08. 26. 2025	PER TOWN COMMENTS
4		
5		
6		

PLAN INFORMATION

PROJECT NO.	LEN-24015
FILENAME	LEN24015-OAS3
CHECKED BY	WMK
DRAWN BY	RLU
SCALE	1" = 100'
DATE	04. 28. 2025

SHEET

SPECIMEN TREE PRESERVATION EXHIBIT

C2.02

X:\Projects\LEN\LEN24015\04-Production\Engineering\Production Drawings\Current Drawings\Master Plan\LEN24015-OAS3.dwg, 8/26/2025 9:22:10 AM, Cody James