

Town of Knightdale Project

The Lawson of Knightdale Mulford Court Knightdale, NC Wake County

Table 2: Site Trip Generation Summary

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	AM Peak Hour Trips (vph)		PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Multifamily Housing (Mid-Rise) (221)	100 units	550	9	25	27	17
Medical-Dental Office Building (720)	9,000 s.f.	320	20	5	9	22
Total Trips		870	29	30	36	39

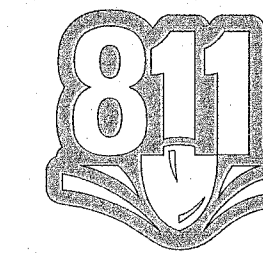
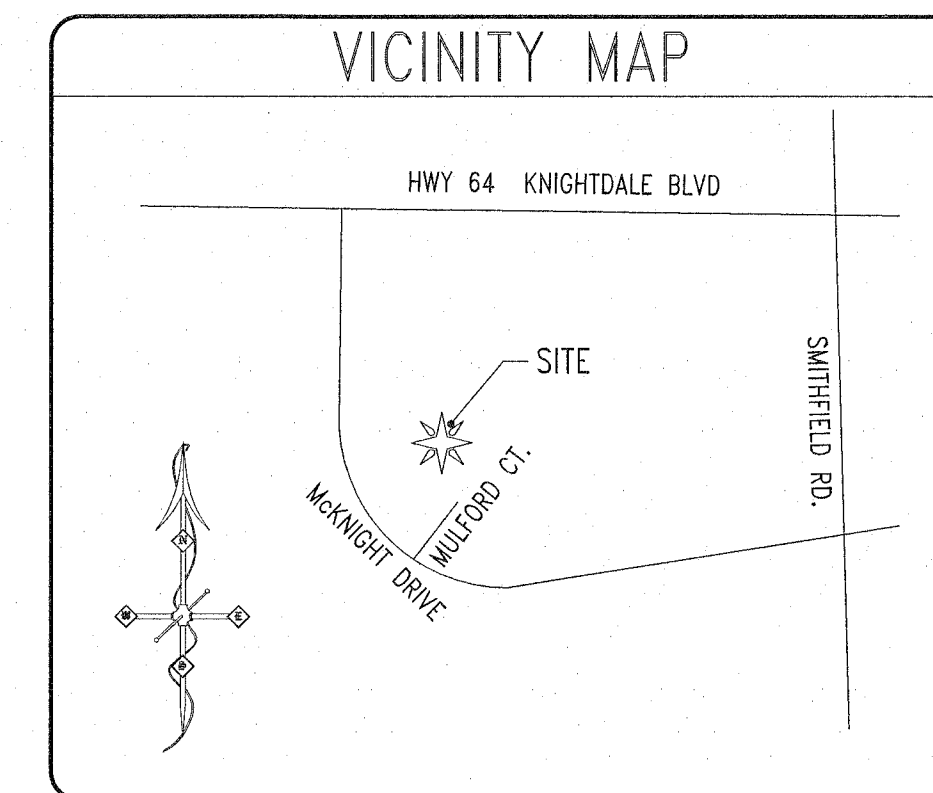
DEVELOPMENT DATA

PROPERTY IDENTIFICATION # (PIN):	1754-14-3746 & 1754-14-0570
ZONING DISTRICT(S):	NEIGHBORHOOD MIXED USE (NMU)
OVERLAY DISTRICT:	NONE
WATERSHED:	NEUSE RIVER
RECEIVING STREAM:	MANGO CREEK
STREAM CLASSIFICATION:	C; NSW
STREAM INDEX:	27-32
TOTAL SITE ACRES:	212,600 SF (4.88 AC)
INSIDE TOWN LIMITS:	YES
EXISTING USE:	VACANT
PROPOSED BUILDING USE:	MEDICAL OFFICE & SENIOR LIVING FACILITY (101 UNITS)
PROPOSED TOTAL BUILDING AREA:	9,000 SF MEDICAL OFFICE & 140,750 SF SENIOR LIVING FACILITY
MAX. BUILDING HEIGHT:	4 STORY
MIN LOT AREA:	N/A
MIN LOT WIDTH:	32 FT (COMMERCIAL)
FRONT SETBACK:	0 FT MIN, 10 FT MAX (COMMERCIAL) 0 FT MIN, 25 FT MAX (APARTMENT)
REAR SETBACK:	0 FT
SIDE SETBACK:	0 FT OR 5 FT (COMMERCIAL) 10 FT APARTMENT
PARKING LOT SCREENING:	10 FT TYPE A BUFFER (PARKING BUFFER)
OFF-STREET PARKING:	
MAXIMUM PARKING SPACES:	50 (MEDICAL SERVICES: 5.5 SPACES PER 1,000SF GROSS FLOOR AREA) (9,000SF*5.5/1,000=50 SPACES) 101 (SENIOR LIVING FACILITY: 1 SPACE PER UNIT) (101 UNITS*1=101 SPACES) 151 TOTAL SPACES
MINIMUM PARKING SPACES:	76 (MAXIMUM)
TOTAL PROVIDED:	130
ACCESSIBLE SPACES PROVIDED:	7
BICYCLE SPACES REQUIRED:	7
BICYCLE SPACES PROVIDED:	8
PARKING SPACE DIMENSIONS:	9'x18' MIN
LOADING AREA:	1 PROVIDED

UTILITY NOTE:	
PROPOSED	9,000 SF MEDICAL OFFICE BUILDING 101 UNIT SENIOR LIVING FACILITY
SANITARY SEWER FLOW CALCULATIONS:	
EXISTING CONDITIONS	0 GPD (VACANT)
PROPOSED:	25 GPD PER PERSON PER SHIFT ESTIMATE 63 PEOPLE PER DAY 1,575 GPD (25 GPD x 63 PEOPLE)
	101 UNITS @ 240 GPD/UNIT 24,240 GPD
NET INCREASE OF 25,815 GPD	

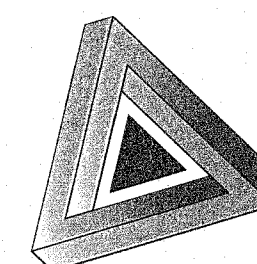
IMPERVIOUS AREA SUMMARY	
SITE AREA = 212,600 SF (4.88 AC)	
BUILDINGS	41,800 SF 0.96 ACRE(S) 19.7 %
PAVEMENT	66,330 SF 1.52 ACRE(S) 31.2 %
SIDEWALK	18,050 SF 0.41 ACRE(S) 8.5 %
EXISTING IMPERVIOUS AREA:	3,050 SF 0.07 ACRE(S) 1.4 %
TOTAL IMPERVIOUS AREA	129,230 SF 2.97 ACRE(S) 60.8 %
GREEN/OPEN SPACE	83,370 SF 1.91 ACRE(S) 39.2 %
INCREASE IN IMPERVIOUS AREA: 126,180 SF 2.90 ACRE(S)	

WATER ALLOCATION NOTE:
THE DEVELOPER IS PROPOSING TO MEET THE REQUIREMENTS OF THE TOWN OF KNIGHTDALE WATER ALLOCATION POLICY BY PROVIDING A BIO-RETENTION STORMWATER CONTROL MEASURE AND AN UNDERGROUND FILTER STORMWATER CONTROL MEASURE AND BY ALSO PROVIDING A PUBLIC DISPLAY OF ART



INDEX OF DRAWINGS

C0.0	COVER SHEET
D1.0	EXISTING CONDITIONS PLAN
C1.0	SITE PLAN
C1.1	GRADING & DRAINAGE PLAN
C1.2	UTILITY PLAN
C1.8	LANDSCAPE PLAN



TRIANGLE
SITE DESIGN

CURRENT PROPERTY OWNER
Parker & Associates, Inc
7515 Jefferson Highway #42
Baton Rouge, LA 70806

CIVIL ENGINEER
Triangle Site Design, PLLC
4004 Barrett Drive
Suite 101
Raleigh, NC 27609
(919)553-6570
mlowder@trianglesitedesign.com
NC LICENSE#P-0619

DEVELOPER
IGB Incorporated
Daniel Tharrington
252-432-1172
430 S. Woodland Rd.
Henderson, NC 27536
daniel@igbinc.com
www.igbinc.com

Town Approved Standards Shall Control: In the event of conflict or inconsistency between these construction drawing 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, 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 be the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By: _____ Date: _____
Development Services Engineer

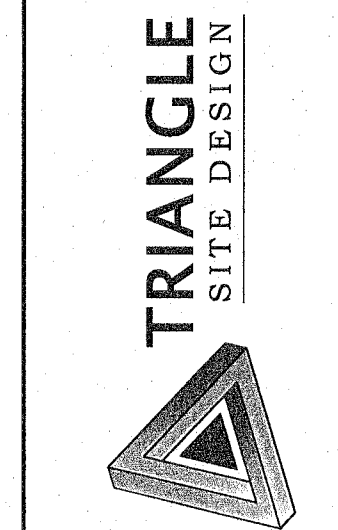
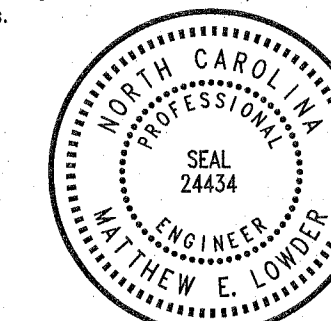
These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: _____ Date: _____
Administrator

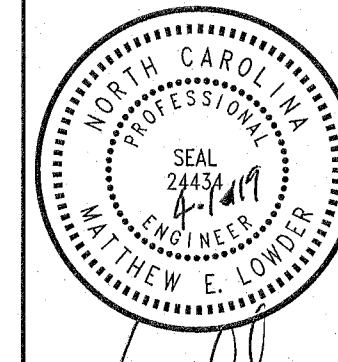
Professional Design Engineer Certification: These improvements shall be constructed in accordance with the following drawings and with the Standard Specifications of the Town of Knightdale.

I, Matthew Lowder, PE, certify that the Standard Specifications of the Town of Knightdale have been thoroughly checked and found to be applicable to this project. All exceptions to the applicable town standards have been previously approved by the Town of Knightdale and said exceptions are shown on Sheet(s) _____ of these drawings.

Seal: _____ By: Matthew Lowder, PE
Date: _____



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RALEIGH, NC 27609
(919) 553-6570
NC LICENSE# P-0619
mlowder@trianglesitedesign.com



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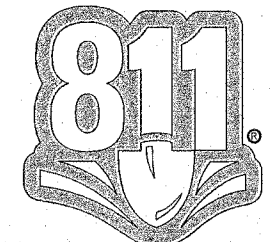
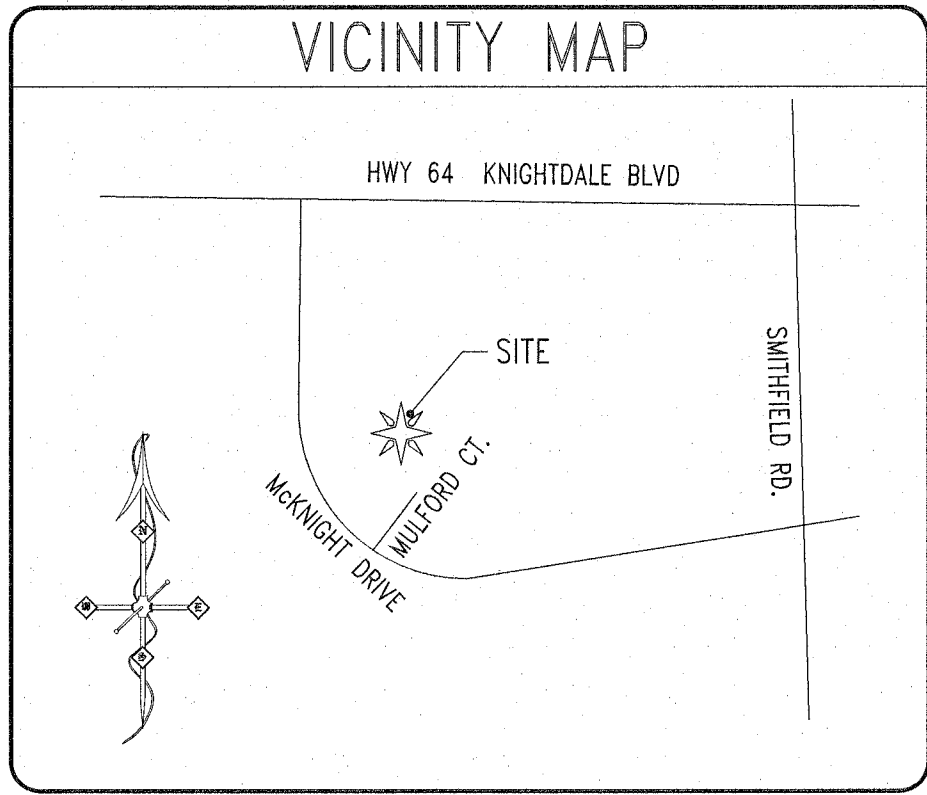
REVISIONS	Inc.	Date	Desc.

Drawn
Checked
Approved

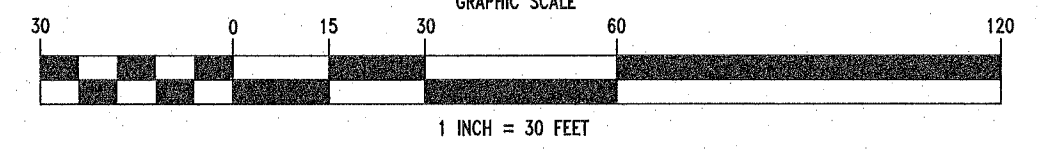
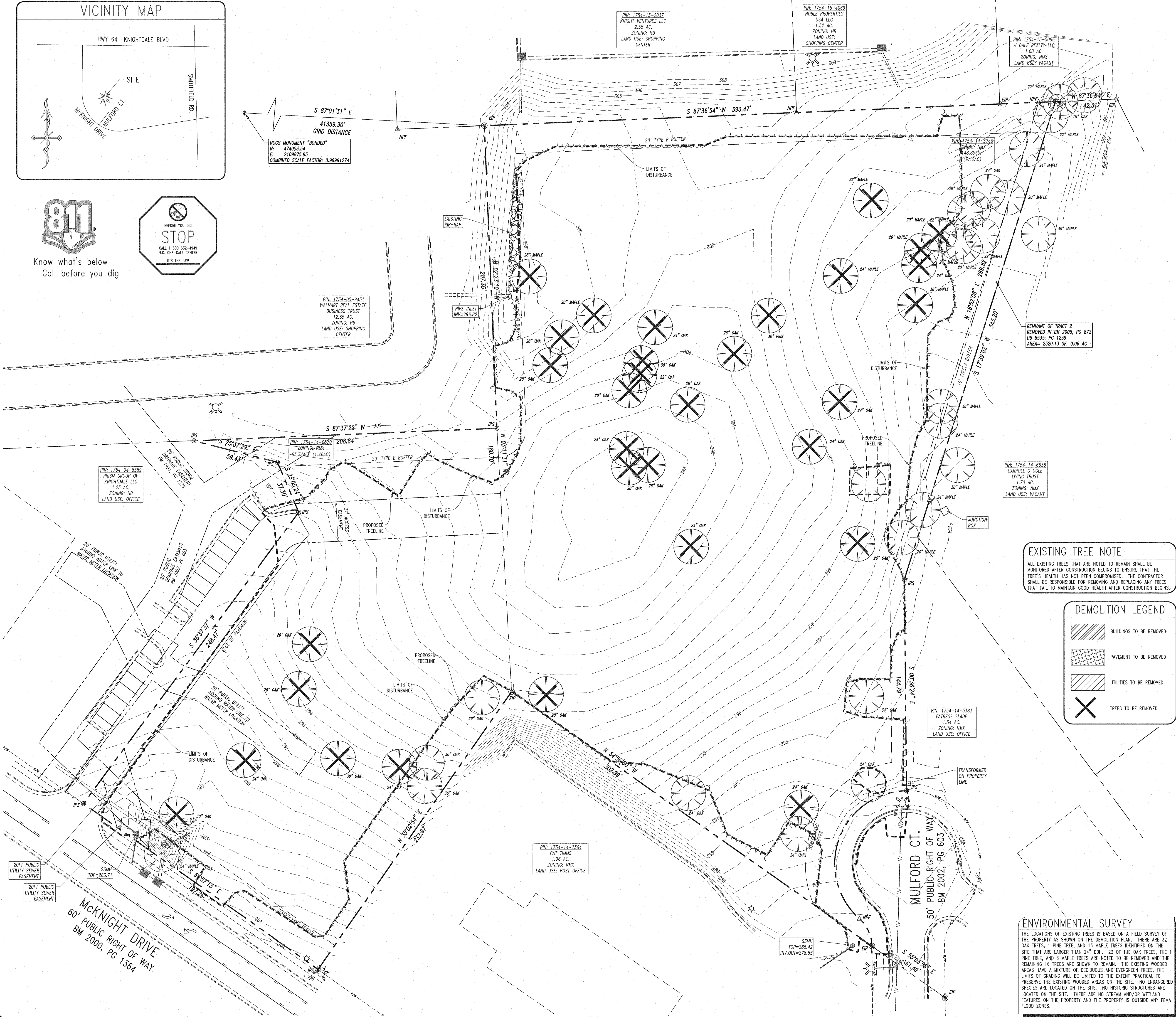
Project No. 008001
Date: April 1, 2019
Title

COVER
SHEET

Sheet No. C0.0



Know what's below
Call before you dig



EROSION CONTROL NOTES:

AN EROSION AND SEDIMENTATION CONTROL PERMIT SHALL BE REQUIRED BY WAKE COUNTY PRIOR TO START OF CONSTRUCTION.

SURVEY NOTE:

ALL EXISTING BOUNDARY AND TOPOGRAPHIC INFORMATION TAKEN FROM A LAND SURVEY PREPARED BY ANGLE RIGHT LAND SURVEYING, PLLC

STREAM/WETLAND NOTE:

THERE ARE NO JURISDICTIONAL STREAM AND/OR WETLAND FEATURES ON THE PROPOSED DEVELOPMENT PARCEL

FLOOD ZONE NOTE:

SUBJECT PROPERTY IS NOT LOCATED WITHIN A SPECIAL FLOOD HAZARD ZONE PER FEMA FLOOD INSURANCE RATE MAP (FIRM) #3720175400, EFFECTIVE DATE MAY 2, 2006. FEMA FIRM MAPS SUBJECT TO CHANGE

DEMOLITION NOTE

SIDEWALKS TO REMAIN SHALL BE REPAIRED IF DAMAGED DURING CONSTRUCTION

CAUTIONARY NOTE

THE LOCATIONS OF ALL EXISTING UNDERGROUND UTILITIES SHOWN ON THIS DRAWING ARE BASED ON ABOVE GROUND EVIDENCE OR INFORMATION GATHERED DURING THE FIELD SURVEY PORTION OF THIS PROJECT. AS SUCH, THIS INFORMATION IS SPECULATIVE IN NATURE ONLY AND SHOULD NOT BE CONSTRUED AS FACT. THERE MAY ALSO BE OTHER EXISTING UNDERGROUND UTILITIES FOR WHICH NO ABOVE GROUND EVIDENCE WAS OBSERVED. THE EXACT LOCATIONS OF THE UNDERGROUND UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF ANY AND ALL CONSTRUCTION.

UTILITY STATEMENT

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES 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 THE SURVEYOR DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

KEYNOTES

DEMOLITION

- 1 Remove trees and root system
- 2 Remove existing building and foundation
- 3 Remove existing fence and post
- 4 Remove all existing shrubs and debris
- 5 Remove existing sidewalks
- 6 Remove existing concrete curb
- 7 Remove existing driveway approaches
- 8 Remove existing pavement
- 9 Remove existing utilities including meters & service lines - coordinate with appropriate utility service providers

DEMOLITION NOTES

1. ALL WORK TO BE ACCOMPLISHED IN STRICT ACCORDANCE WITH ALL LOCAL ORDINANCES, CITY OR STATE.
2. WITHIN THE SUBJECT PROPERTY, THE INTENT IS TO HAVE A CLEAN, CLEAR SITE, FREE OF ALL EXISTING ITEMS NOTED TO BE REMOVED IN ORDER TO PERMIT THE CONSTRUCTION OF THE NEW PROJECT.
3. ALL ITEMS NOTED TO BE REMOVED BY THE SELLER SHALL BE ACCOMPLISHED PRIOR TO THE CLOSING OF THE REAL ESTATE TRANSACTION. ALL OTHER ITEMS NOTED TO BE REMOVED SHALL BE DONE SO AS PART OF THE CONTRACT FOR GENERAL CONSTRUCTION.
4. REMOVE AND DISPOSE OF ANY SIDEWALKS, FENCES, STAIRS, WALLS, DEBRIS AND RUBBISH REQUIRING REMOVAL FROM THE WORK AREA IN AN APPROVED OFF SITE LANDFILL.
5. THE CONTRACTOR SHALL SECURE ALL PERMITS FOR HIS DEMOLITION AND DISPOSAL OF HIS DEMOLITION MATERIAL TO BE REMOVED FROM THE SITE. THE CONTRACTOR SHALL POST BONDS AND PAY PERMIT FEES AS REQUIRED. BUILDING DEMOLITION CONTRACTOR SHALL BE RESPONSIBLE FOR PERMITS AND DISPOSAL OF BUILDING DEMOLITION DEBRIS.
6. THE DETAILED PLANS MAY NOT REFLECT ALL UTILITIES ON THE SITE OR SURROUNDING STREETS AND PROPERTIES. THE CONTRACTOR SHALL VERIFY LOCATIONS AND EXISTENCE OF UTILITY SERVICES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CALL UTILITY LOCATE, 72 HOURS PRIOR TO CONSTRUCTION.
7. THE CONTRACTOR TO REMOVE ALL UTILITIES TO EXISTING STRUCTURES WHETHER SHOWN OR NOT OR ARRANGE FOR THE APPROPRIATE UTILITY COMPANY TO CUT AND CAP SERVICE PIPING AT THE PROPERTY LINE OR MAIN (AS REQUIRED). ALL SERVICES MAY NOT BE SHOWN ON THIS PLAN.
8. FOR ALL ITEMS NOTED TO BE REMOVED - REMOVE NOT ONLY THE ABOVE GROUND ELEMENTS, BUT ALL UNDERGROUND ELEMENTS AS WELL INCLUDING BUT NOT NECESSARILY LIMITED TO: FOUNDATIONS, GRAVEL FILLS, TREE ROOTS, OLD PIPES, ETC.
9. BACK FILL ALL EXCAVATIONS RESULTING FROM THE DEMOLITION WORK TO MEET THE REQUIREMENTS FOR FILL OUTLINED IN THE GEOTECHNICAL REPORT.
10. THE CONTRACTOR SHALL PROTECT ALL IRON PINS, MONUMENTS AND PROPERTY CORNERS DURING CONSTRUCTION. ANY CONTRACTOR DISTURBED PINS, MONUMENTS, ETC. SHALL BE RESET BY A LICENSED LAND SURVEYOR AT THE EXPENSE OF THE CONTRACTOR.
11. THE CONTRACTOR SHALL RESTORE ANY UTILITY STRUCTURE, PIPES, PAVEMENT, CURBS, SIDEWALKS OR LANDSCAPED AREAS DISTURBED DURING DEMOLITION TO THEIR ORIGINAL CONDITION TO THE SATISFACTION.
12. ALL BUILDINGS, FOUNDATION WALLS AND FOOTINGS INDICATED ON THIS PLAN TO BE REMOVED FROM SITE. CONTRACTOR SHALL SECURE ANY PERMITS AND PAY ALL FEES AND PERFORM CLEARING AND GRUBBING AND DEBRIS REMOVAL PRIOR TO COMMENCEMENT OF GRADING OPERATIONS.
13. ASBESTOS AND ANY OTHER HAZARDOUS MATERIAL SHALL BE REMOVED BY THE GENERAL CONTRACTOR USING A LICENSED HAZARDOUS MATERIAL CONTRACTOR.

DEMOLITION LEGEND

- BUILDINGS TO BE REMOVED
- PAVEMENT TO BE REMOVED
- UTILITIES TO BE REMOVED
- TREES TO BE REMOVED

ENVIRONMENTAL SURVEY

THE LOCATIONS OF EXISTING TREES IS BASED ON A FIELD SURVEY OF THE PROPERTY AS SHOWN ON THE DEMOLITION PLAN. THERE ARE 32 OAK TREES, 1 PINE TREE, AND 13 MAPLE TREES IDENTIFIED ON THE SITE THAT ARE LARGER THAN 24" DBH. 23 OF THE OAK TREES, THE 1 PINE TREE, AND 6 MAPLE TREES ARE NOTED TO BE REMOVED AND THE REMAINING 16 TREES ARE SHOWN TO REMAIN. THE EXISTING WOODED AREAS HAVE A MIXTURE OF DECIDUOUS AND EVERGREEN TREES. THE LIMITS OF GRADING WILL BE LIMITED TO THE EXTENT PRACTICAL TO PRESERVE THE EXISTING WOODED AREAS ON THE SITE. NO ENDANGERED SPECIES ARE LOCATED ON THE SITE. NO HISTORIC STRUCTURES ARE LOCATED ON THE SITE. THERE ARE NO STREAM AND/OR WETLAND FEATURES ON THE PROPERTY AND THE PROPERTY IS OUTSIDE ANY FEMA FLOOD ZONES.

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

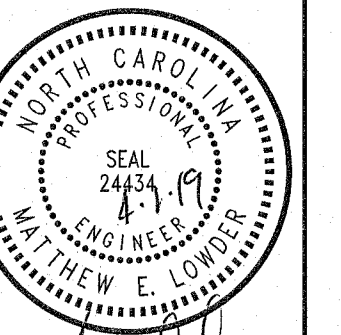
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REVISED	DATE	DESCRIPTION

Drawn
Checked
Approved

Project No. 008001
Date: April 1, 2019
Title

EXISTING
CONDITIONS
PLAN

Sheet No.
D1.0

IMPERVIOUS AREA SUMMARY

IMPERVIOUS AREA SUMMARY			
SITE AREA = 212,800 SF (4.88 AC)			
BUILDINGS	41,800 SF	0.96 ACRE(S)	19.7 %
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EXISTING IMPERVIOUS AREA:	3,050 SF	0.07 ACRE(S)	1.4 %
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PIN: 1754-05-9451
WALMART REAL ESTATE
BUSINESS TRUST
12.35 AC.
ZONING: HB
LAND USE: SHOPPING
CENTER

PIN: 1754-14-0870
ZONING: RMX
63,744SF (1.46AC)

PIN: 1754-04-8589
PRISM GROUP OF
KNIGHTDALE LLC
1.23 AC.
ZONING: HB
LAND USE: OFFICE

PIN: 1754-14-6638
CARROLL G OGLE
LIVING TRUST
1.70 AC.
ZONING: NMX
LAND USE: VACANT

PIN: 1754-14-5383
FATRESS SLADE
1.54 AC.
ZONING: NMX
LAND USE: OFFICE

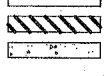
PIN: 1754-14-23
PAT TIMMS
1.96 AC.
ZONING: NMX
LAND USE: POST OFFICE

MCKNIGHT DRIVE
60' PUBLIC RIGHT OF WAY
BM 2000, PG 1364

GENERAL NOTES

1. THE CONTRACTOR SHALL EMPLOY ALL NECESSARY BARRICADES, SIGNS, FENCES, FLASHING LIGHTS, FLAGMEN, ETC. FOR MAINTENANCE AND PROTECTION OF TRAFFIC AS REQUIRED BY TOWN OF KINGNAHLE AND THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION. REFER TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION, FOR DETAILS OF TRAFFIC CONTROL STANDARDS AND DEVICES.
2. THE CONTRACTOR SHALL PROTECT ALL MONUMENTS, IRON PINS, AND PROPERTY CORNERS DURING CONSTRUCTION.
3. APPROVAL OF THESE PLANS IS NOT AN AUTHORIZATION TO GRADE ADJACENT PROPERTIES. WHEN FIELD CONDITIONS WARRANT OFF-SITE GRADING, PERMISSION MUST BE OBTAINED FROM THE AFFECTED PROPERTY OWNERS.
4. COORDINATE ALL CURB AND STREET GRADINGS IN INTERSECTIONS WITH INSPECTOR.
5. NON-STANDARD ITEMS (I.E. PAYERS, IRRIGATION SYSTEMS, ETC.) IN THE RIGHT-OF-WAY REQUIRE A RIGHT-OF-WAY ENCROACHMENT AGREEMENT WITH THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION BEFORE INSTALLATION.
6. ALL SITE DIMENSIONS ARE REFERENCED TO THE FACE OF CURBS OR EDGE OF PAVING UNLESS OTHERWISE NOTED. ALL BUILDING DIMENSIONS ARE REFERENCED TO THE OUTSIDE FACE OF THE STRUCTURE.
7. EXISTING SITE CONDITIONS, GRADES, CONTOURS, UTILITIES AND OTHER EXISTING FEATURES FROM A SURVEY PREPARED BY BONEY AND ASSOCIATES, PA
8. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION "STANDARD DETAILS AND SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AND APPLICABLE TOWN OF KINGNAHLE CODES AND ORDINANCES. THE CONTRACTOR SHALL PROVIDE A CURRENT EDITION OF THE STATE AND LOCAL CODES, ORDINANCES, STANDARD SPECIFICATION AND STANDARD DETAILS ON THE PROJECT SITE FOR REFERENCE DURING CONSTRUCTION OF THE PROJECT.
9. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIELD DIMENSIONS AND SHALL REPORT ANY DISCREPANCIES BETWEEN THE PLANS AND ACTUAL FIELD CONDITIONS THE OWNER OR OWNER'S REPRESENTATIVE IMMEDIATELY. CONTRACTOR SHALL WAIT FOR INSTRUCTION PRIOR TO PROCEEDING WITH WORK.
10. THE CONTRACTOR SHALL PROVIDE SMOOTH TRANSITIONS FROM PROPOSED FEATURES TO EXISTING FEATURES AS NECESSARY.
11. THE CONTRACTOR SHALL SEAL THE EDGE OF EXISTING ASPHALT PAVEMENT WITH TACK COAT IN ACCORDANCE WITH THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS WHERE NEW PAVEMENT JOINTS EXISTING PAVEMENT.
12. THE CONTRACTOR SHALL REPAIR, RESURFACE, SUBCONTRACTOR OR REFURBISH ANY AREAS DAMAGED DURING CONSTRUCTION BY THE CONTRACTOR, HIS SUBCONTRACTORS OR SUPPLIERS AT NO ADDITIONAL COST TO THE OWNER.
13. ALL PAVEMENT JOINTS SHALL BE SAW-CUT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.
14. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF TRUCK DOCKS, EXIT DOORS, SIDEWALKS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.
15. ALL PAINT STRIPING, PAVEMENT MARKINGS, AND SIGNAGE SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" OR AS OTHERWISE SPECIFIED. ALL REFERENCED SIGN STRIPING BE TAKEN FROM THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES". ALL NEW SIGNS SHALL BE MOUNTED ON GALVANIZED POSTS AND IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS.
16. CONTRACTOR SHALL INSTALL ACCESSIBLE RAMPS PER LOCAL MUNICIPALITY AND ADA STANDARDS AT ALL DRIVE AND BUILDING LOCATIONS AS REQUIRED.
17. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES DURING CONSTRUCTION. AT LEAST 48 HOURS PRIOR TO ANY DEMOLITION, GRADING, OR CONSTRUCTION ACTIVITY THE CONTRACTOR SHALL NOTIFY THE TOWN OF KINGNAHLE & CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENTS FOR PROPER IDENTIFICATION OF EXISTING UTILITIES WITHIN THE PROJECT SITE.
18. PROOF ROOF BUILDING AND ALL PARKING AREAS. NOTIFY OWNER OF ANY UNACCEPTABLE AREAS.
19. THE CONTRACTOR SHALL PROVIDE AS-BUILT RECORDS OF ALL CONSTRUCTION (INCLUDING UNDERGROUND UTILITIES AND STORM DRAINAGE) TO OWNER PRIOR TO COMPLETION OF CONSTRUCTION

KEYNOTES

1. LOADING AREA
2. CONCRETE PAVEMENT DESIGN AS PER GEOTECHNICAL REPORT SPECIFICATIONS - SEE DETAIL SHEET C1.4. EXPANSION AND CONTROL JOINTS - SEE DETAILS SHEET C1.4
3. ASPHALT PAVEMENT DESIGN AS PER GEOTECHNICAL REPORT SPECIFICATIONS - SEE DETAIL SHEET C1.4


STANDARD DUTY PAVEMENT
HEAVY DUTY PAVEMENT
CONCRETE PAVEMENT
4. HANDICAP PARKING SIGN - SEE DETAIL SHEET C1.4
5. BOLLARD - SEE DETAIL SHEET C1.4
6. CONCRETE LIGHT POLE BASE
7. CONCRETE SIDEWALK - SEE DETAIL SHEET C1.4 FOR SIDEWALKS AROUND BUILDING.
8. DUMPSTER AREA
9. 6'-0" LONG CONCRETE WHEEL STOP, PINNED TO PAVEMENT - SEE DETAIL SHEET C1.4. LOCATE 2'-6" FROM FACE OF CURB OR SIDEWALK.
10. SIGN (UNDER SEPARATE PERMIT)
11. 4" WIDE PARKING STRIPE PAINTED WHITE (TYP)
12. 4" WIDE PARKING DIAGONAL STRIPES
13. ACCESSIBLE PARKING AREA - (PER A.D.A. REQUIREMENTS)
14. NEW GRASS/LANDSCAPE AREA
15. CONCRETE CURB AND GUTTER - SEE DETAIL SHEET C1.4
16. STOP SIGN - SEE DETAIL SHEET C1.4
17. PAVEMENT MARKINGS
18. NEW CURB CUT, MATCH EXISTING EDP & APPROACH PER LOCAL CODES & SPECS.
19. CONCRETE FLUME - REFER TO DETAIL ON SHEET C1.4
20. PROPOSED PARKING COUNT

ENVIRONMENTAL SURVEY

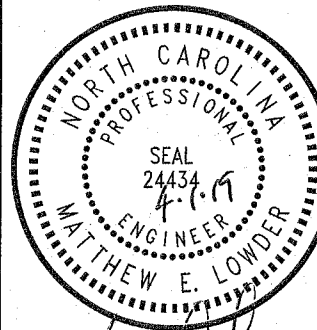
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252-432-1172
430 S. Woodland Rd.
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daniel@igbinc.com
www.igbinc.com

The Lawson of Knightdale
----- Mulford Court
Knightdale, North Carolina
Wake County

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Triangle Site Design, PLLC shall be without liability to Triangle Site Design, PLLC.

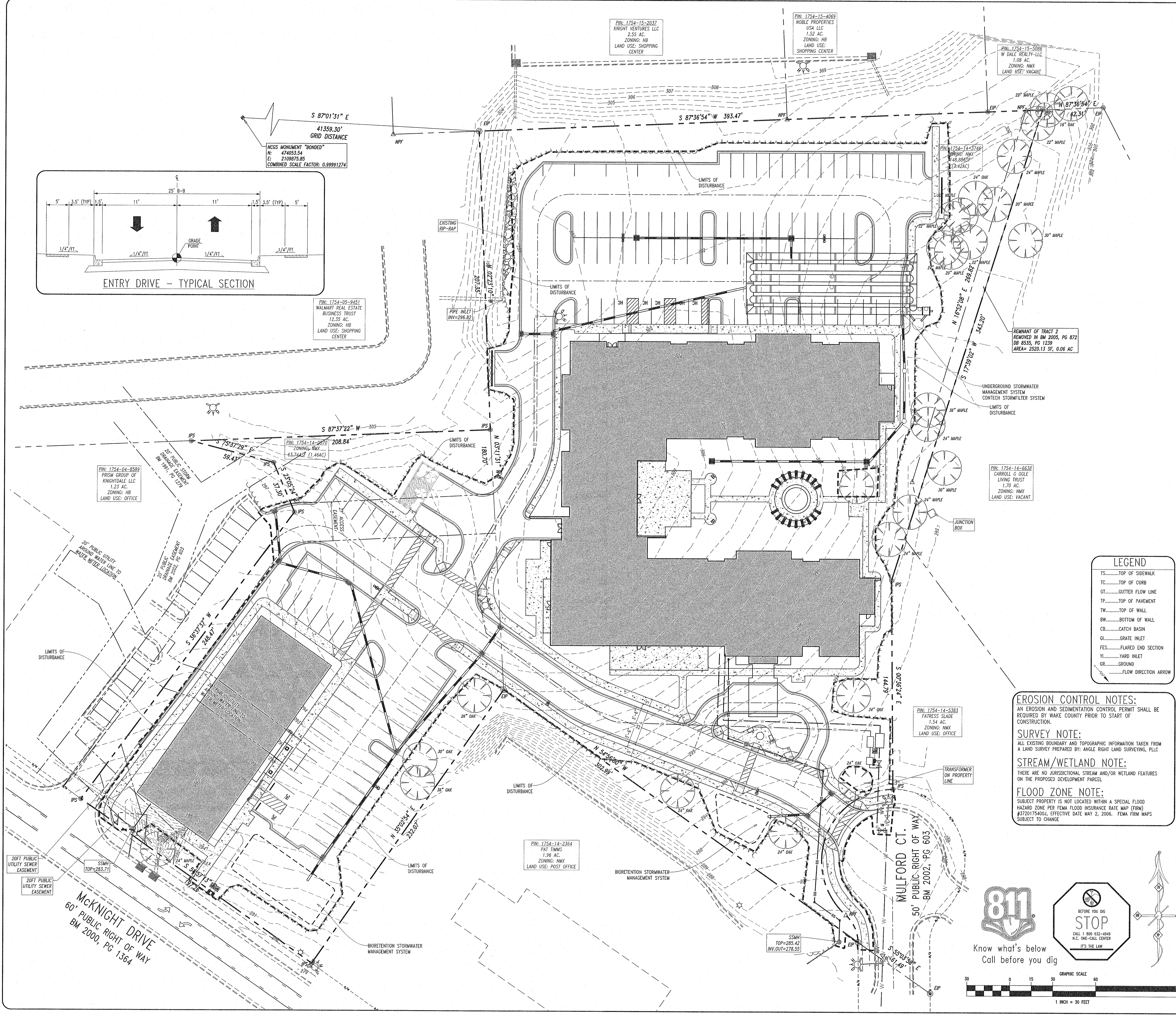
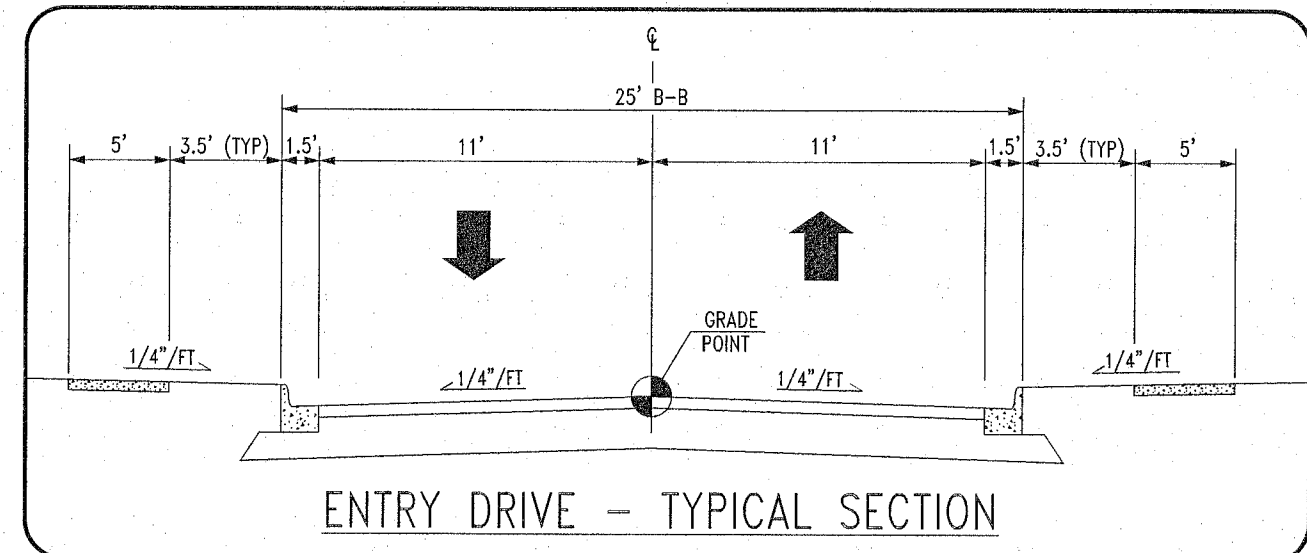
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Project No. 008001
Date: April 1, 2019
Title: _____

SITE PLAN

Sheet No.

C1.0



- ### DRAINAGE NOTES
- ALL DRAINAGE STRUCTURES SHALL BE PRE-CAST.
 - ALL DRAINAGE STRUCTURES AND STORM SEWER PIPES SHALL MEET HEAVY DUTY TRAFFIC (H20) LOADING AND BE INSTALLED ACCORDINGLY.
 - CATCH BASINS, MANHOLES, FRAMES, GRATES, ETC. SHALL MEET THE REQUIREMENTS OF THE LATEST EDITION OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD DETAILS AND SPECIFICATIONS.
 - STORM PIPE SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED:
TYPE 1: RCP, CLASS III PER ASTM C-76, WITH FLEXIBLE PLASTIC BITUMEN GASKETS AT JOINTS.
TYPE 2: HIGH DENSITY POLYETHYLENE PIPE (HDPE) - AASHTO DESIGNATION M252 TYPE S, M294 TYPE S AND M7-97 TYPE S, SMOOTH INTERIOR/ANNUAL EXTERIOR, ONLY PERMITTED WHEN SPECIFICALLY INDICATED ON THE CONSTRUCTION DRAWINGS. PIPE SHALL BE INSTALLED IN ACCORDANCE WITH PIPE MANUFACTURER'S INSTALLATION GUIDELINES. PIPE JOINTS AND FITTINGS SHALL CONFORM TO AASHTO M252 AND M294.
TYPE 3: RCP, CLASS IV PER ASTM C-76, WITH FLEXIBLE PLASTIC BITUMEN GASKETS AT JOINTS.
 - ALL STORM DRAINAGE WITHIN THE PUBLIC RIGHT-OF-WAY OR PUBLIC EASEMENTS SHALL BE CLASS III REINFORCED CONCRETE PIPE PER ASTM C-76, WITH FLEXIBLE PLASTIC BITUMEN GASKETS AT JOINTS.
 - A MINIMUM GRADE OF 0.50% SHALL BE MAINTAINED ON ALL PIPES, UNLESS OTHERWISE NOTED.
 - ALL PIPE LENGTHS AND SLOPES ARE APPROXIMATE.
 - ALL PIPES SHALL BE LAID ON STRAIGHT ALIGNMENTS AND EVEN GRADES USING A PIPE LASER OR OTHER ACCURATE METHOD.
 - EXISTING DRAINAGE STRUCTURES TO BE INSPECTED AND REPAIRED AS NEEDED, AND EXISTING PIPES TO BE CLEANED OUT TO REMOVE ALL SILT AND DEBRIS.
 - UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
A. NO MORE THAN 500 LF OF TRENCH MAY BE OPENED AT ONE TIME.
B. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
C. EFFLUENT FROM DE-WATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
D. MATERIAL USED FOR BACK-FILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
E. DESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL REGULATIONS.
F. APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.
 - IF ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE AS NECESSARY TO RETURN IT TO EXISTING CONDITIONS OR BETTER.
 - ALL STORM PIPES ENTERING STRUCTURES SHALL BE GROUTED OR SEALED TO MANUFACTURE'S SPECIFICATIONS TO ASSURE CONNECTION AT STRUCTURE IS WATER TIGHT.
 - ALL STORM STRUCTURES SHALL HAVE A SMOOTH UNIFORM POURED MORTAR INVERT FROM INVERT IN TO INVERT OUT.
 - ALL STORM SEWER MANHOLES IN PAVED AREAS SHALL BE FLUSH WITH PAVEMENT, AND SHALL HAVE TRAFFIC BEARING RING & COVERS. MANHOLES IN UNPAVED AREAS SHALL BE 6" ABOVE FINISH GRADE. LIDS SHALL BE LABELED "STORM SEWER".
 - STRUCTURE TOP ELEVATIONS SHOWN HERE ARE APPROXIMATE. CONTRACTOR SHALL ADJUST AS NECESSARY.
 - RIM ELEVATIONS AS NOTED ARE TO THE OUTER FLOW LINE.

- ### GRADING NOTES
- REFER TO THE SITE PLAN FOR RELATED NOTES.
 - ALL CONTOURS AND SPOT ELEVATIONS REFLECT FINISHED GRADES.
 - ALL ELEVATIONS ARE IN REFERENCE TO THE BENCHMARK, AND THIS MUST BE VERIFIED BY THE GENERAL CONTRACTOR PRIOR TO GROUND BREAKING.
 - THE CONTRACTOR SHALL IMMEDIATELY REPORT TO OWNER ANY DISCREPANCIES FOUND BETWEEN ACTUAL FIELD CONDITIONS AND CONSTRUCTION DOCUMENTS AND SHALL WAIT FOR INSTRUCTION PRIOR TO PROCEEDING.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING EXISTING UTILITIES, AND SHALL REPAIR ALL DAMAGE TO EXISTING UTILITIES THAT OCCUR DURING CONSTRUCTION.
 - THE CONTRACTOR SHALL BLEND NEW EARTHWORK SMOOTHLY TO TRANSITION BACK TO EXISTING GRADE.
 - LIMITS OF CLEARING SHOWN ON GRADING PLAN ARE BASED UPON THE APPROXIMATE CUT AND FILL SLOPE LIMITS, OR OTHER GRADING REQUIREMENTS.
 - THE PROPOSED CONTOURS SHOWN IN DRIVES AND PARKING LOTS AND SIDEWALKS ARE FINISHED ELEVATIONS INCLUDING ASPHALT. REFER TO PAVEMENT CROSS SECTION DATA TO ESTABLISH CORRECT SUBBASE OR AGGREGATE BASE COURSE ELEVATIONS TO BE COMPLETED UNDER THIS CONTRACT.
 - THE CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE SO THAT RUNOFF WILL DRAIN BY GRAVITY FLOW ACROSS NEW PAVEMENT AREAS TO NEW OR EXISTING DRAINAGE INLETS OR SHEET OVERLAND.
 - ANY GRADING, BEYOND THE LIMITS OF CONSTRUCTION AS SHOWN ON THE GRADING PLAN, IS SUBJECT TO A FINE.
 - GRADING WITHOUT AN APPROVED EROSION CONTROL PLAN IS SUBJECT TO A FINE.
 - STABILIZATION IS THE BEST FORM OF EROSION CONTROL. TEMPORARY SEEDING IS NECESSARY TO ACHIEVE EROSION CONTROL ON DENUDE AREAS AND ESPECIALLY WHEN THE CONSTRUCTION SEQUENCE REQUIRES IT.
 - ALL GRADED SLOPES ARE TO BE SEED OR LANDSCAPED WITHIN 15 DAYS OF COMPLETION OF GRADING. ALL REMAINING AREAS ARE TO BE SEED WITHIN 30 DAYS.
 - EXISTING GRADES, CONTOURS, UTILITIES AND OTHER EXISTING FEATURES FROM FIELD RUN SURVEY. THE CONTRACTOR SHALL INCLUDE IN THE CONTRACT PRICE ANY DEWATERING NECESSARY TO CONSTRUCT THE PROJECT AS SHOWN ON THE PLANS.
 - THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND IMPLEMENTATION OF ALL SHEETING, SHORING, BRACING AND SPECIAL EXCAVATION MEASURES REQUIRED TO MEET OSHA, FEDERAL, STATE, AND LOCAL REGULATIONS PURSUANT TO THE INSTALLATION OF THE WORK INDICATED ON THESE DRAWINGS. THE DESIGN ENGINEER ACCEPTS NO RESPONSIBILITY FOR THE DESIGN(S) TO INSTALL SAID ITEMS.
 - THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATION, ELEVATION, AND DIMENSIONS OF EXISTING DOORS, RAMPS, BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.
 - ALL FILL MATERIALS, EXISTING BUILDING FOUNDATIONS, PAVEMENT AND UTILITY STRUCTURES, TOPSOIL, AND ANY OTHER DELETERIOUS MATERIALS SHALL BE COMPLETELY REMOVED FROM WITHIN THE BEARING ZONE BELOW THE STRUCTURE.
 - ALL FOUNDATION EXCAVATION SHALL BE INSPECTED BY A QUALIFIED GEOTECHNICAL REPRESENTATIVE TO DETERMINE WHETHER UNSUITABLE MATERIAL MUST BE REMOVED. ALL UNSUITABLE MATERIAL SHALL BE REMOVED, BACKFILLED AND COMPACTED AS REQUIRED BY THE GEOTECHNICAL REPRESENTATIVE.
 - ALL CUT OR FILL SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED OR DEPICTED.
 - THE CONTRACTOR SHALL ADHERE TO ALL TERMS & CONDITIONS AS OUTLINED IN THE GENERAL N.P.D.E.S. PERMIT FOR STORMWATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES.
 - CONTRACTOR SHALL ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH FIT AND CONTINUOUS GRADE.
 - CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS.
 - ALL UNSURFACED AREAS DISTURBED BY GRADING OPERATION SHALL RECEIVE 4 INCHES OF TOPSOIL. CONTRACTOR SHALL APPLY STABILIZATION FABRIC TO ALL SLOPES 3H:1V OR STEEPER.
 - CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED TO SAME.

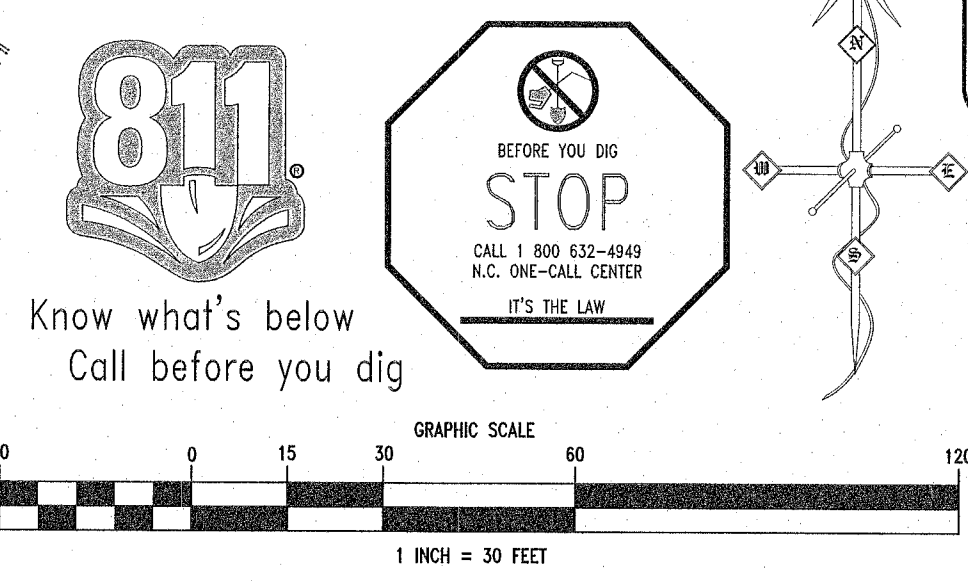
EROSION CONTROL NOTES:
AN EROSION AND SEDIMENTATION CONTROL PERMIT SHALL BE REQUIRED BY WAKE COUNTY PRIOR TO START OF CONSTRUCTION.

SURVEY NOTE:
ALL EXISTING BOUNDARY AND TOPOGRAPHIC INFORMATION TAKEN FROM A LAND SURVEY PREPARED BY: ANGLE RIGHT LAND SURVEYING, PLLC

STREAM/WETLAND NOTE:
THERE ARE NO JURISDICTIONAL STREAM AND/OR WETLAND FEATURES ON THE PROPOSED DEVELOPMENT PARCEL.

FLOOD ZONE NOTE:
SUBJECT PROPERTY IS NOT LOCATED WITHIN A SPECIAL FLOOD HAZARD ZONE PER FEMA FLOOD INSURANCE RATE MAP (FIRM) #3720175400J, EFFECTIVE DATE MAY 2, 2006. FEMA FIRM MAPS SUBJECT TO CHANGE.

- ### LEGEND
- TS.....TOP OF SIDEWALK
 - TC.....TOP OF CURB
 - GT.....GUTTER FLOW LINE
 - TP.....TOP OF PAVEMENT
 - TW.....TOP OF WALL
 - BW.....BOTTOM OF WALL
 - CB.....CATCH BASIN
 - GI.....GRATE INLET
 - FES.....FLARED END SECTION
 - TI.....TIE INLET
 - GR.....GROUND
 - FD.....FLOW DIRECTION ARROW



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: _____
Development Services Engineer

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

By: _____ Date: _____
Administrator

TRIANGLE SITE DESIGN

CONSULTANT:
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REVISED	Date	Description
No.		

Drawn _____
Checked _____
Approved _____

Project No. 008001
Date: April 1, 2019

GRADING & DRAINAGE PLAN

Sheet No. C1.1

UTILITY SERVICE NOTES

WATER SERVICE
GENERAL CONTRACTOR TO PROVIDE AND INSTALL A 1.5" WATER SERVICE LINE FROM EXISTING MAIN TO BUILDING PER MUNICIPAL REQUIREMENTS.
CONTACT: CITY OF RALEIGH UTILITY DEPARTMENT
TELEPHONE: 919-557-4540

ELECTRIC SERVICE
"POWER CO." TO PROVIDE UNDERGROUND SERVICE. GENERAL CONTRACTOR TO PROVIDE AND INSTALL TWO 4" DIA. CONDUIT W/ PULL WIRE FROM PHONE PANEL BOARD TO UTILITY COMPANY POINT OF CONNECTION.
CONTACT: DUNCAN PROGRESS ENERGY
TELEPHONE: 800-777-9898

TELEPHONE SERVICE
"TELEPHONE CO." TO PROVIDE NEW UNDERGROUND SERVICE. GENERAL CONTRACTOR TO PROVIDE AND INSTALL A 4" DIA. PVC CONDUIT W/ PULL WIRE FROM PHONE PANEL BOARD TO UTILITY COMPANY POINT OF CONNECTION.
CONTACT: AT&T
TELEPHONE: 888-944-4447

SANITARY SEWER
GENERAL CONTRACTOR TO PROVIDE AND INSTALL A 4" SCHEDULE 40 PVC FROM EXISTING SEWER TO LAST CLEAN OUT OUTSIDE OF BUILDING. (MIN. 2% SLOPE). PROVIDE CLEAN OUTS EVERY 75' (TYPICAL).
CONTACT: CITY OF RALEIGH UTILITY DEPARTMENT
TELEPHONE: 919-557-4540

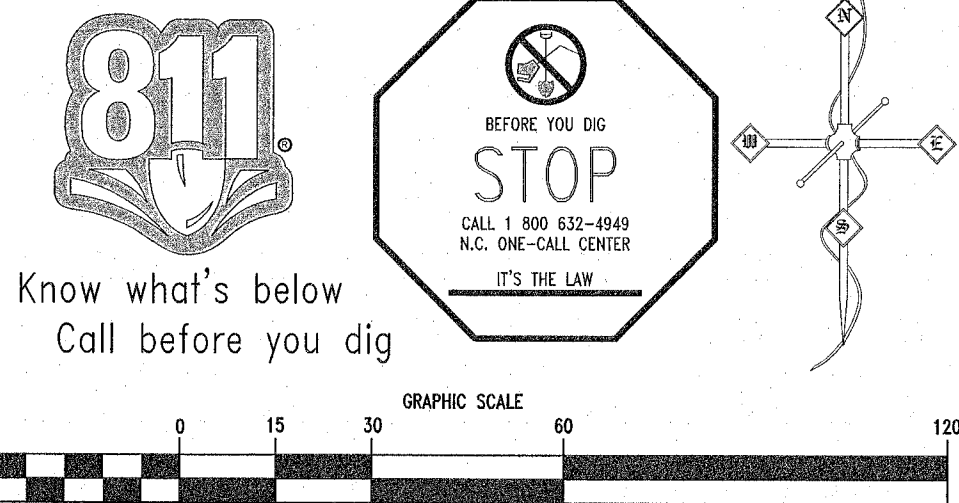
NATURAL GAS
GENERAL CONTRACTOR TO COORDINATE WITH NATURAL GAS UTILITY FOR SERVICE LINE TO PROPOSED BUILDING.
CONTACT: PNC ENERGY
TELEPHONE: 919-501-7668

WATER SERVICE NOTE

CONTRACTOR TO COORDINATE WITH CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT FOR WATER METER & BACKFLOW PREVENTION REQUIREMENTS

FIRE PROTECTION NOTE

THE PROPOSED OFFICE BUILDING WILL NOT HAVE A FIRE SPRINKLER SYSTEM.
THE PROPOSED RESIDENTIAL SENIOR LIVING BUILDING WILL HAVE A FIRE SPRINKLER SYSTEM.



NGCS MONUMENT "BONDED"
N: 47005.54
E: 2109875.85
COMBINED SCALE FACTOR: 0.99991274

PIN: 1754-05-2451
WALMART REAL ESTATE
BUSINESS TRUST
12.35 AC.
ZONING: HB
LAND USE: SHOPPING CENTER

PIN: 1754-04-8589
PRISM GROUP OF
KNIGHTDALE LLC
1.23 AC.
ZONING: HB
LAND USE: OFFICE

PIN: 1754-14-2976
ZONING: NMK
63.74 AC (1.45 AC)

PIN: 1754-14-5383
FATNESS SLADE
1.54 AC.
ZONING: NMK
LAND USE: OFFICE

PIN: 1754-14-2364
PAT TIMMS
1.96 AC.
ZONING: NMK
LAND USE: POST OFFICE

PIN: 1754-15-2037
KNIGHT VENTURES LLC
2.55 AC.
ZONING: HB
LAND USE: SHOPPING CENTER

PIN: 1754-15-4069
NOBLE PROPERTIES
USA LLC
1.52 AC.
ZONING: HB
LAND USE: SHOPPING CENTER

PIN: 1754-15-5086
W DALE REALTY LLC
1.08 AC.
ZONING: NMK
LAND USE: VACANT

PIN: 1754-14-3746
ZONING: NMK
148.85 AC
(3.42 AC)

REMNANT OF TRACT 2
REMOVED IN BM 2005, PG 872
DB 8535, PG 1239
AREA= 2520.13 SF, 0.06 AC

PIN: 1754-14-6638
CARROLL G OGLE
LIVING TRUST
1.70 AC.
ZONING: NMK
LAND USE: VACANT

UTILITY LEGEND

- PP NEW POWER POLE
- WM NEW WATER METER
- WM NEW GAS METER
- NEW ELECTRIC METER
- W NEW WATER SERVICE
- GAS GAS GAS NEW GAS SERVICE
- SSW NEW SANITARY SEWER
- NEW SANITARY SEWER CLEANOUT
- UT NEW UNDERGROUND POWER SERVICE.
- UT NEW UNDERGROUND TELEPHONE SERVICE.

NOTE:

- CONTRACTOR TO BE RESPONSIBLE FOR VERIFYING & APPLYING FOR UTILITY SERVICE WITH EACH UTILITY COMPANY PRIOR TO STARTING CONSTRUCTION.
- CONTRACTOR TO BE RESPONSIBLE FOR STREET BORE, IF REQUIRED BY CITY OF RALEIGH PUBLIC WORKS DEPARTMENT

UTILITY NOTE:

PROPOSED 9,000 SF MEDICAL OFFICE BUILDING
101 UNIT SENIOR LIVING FACILITY

SANITARY SEWER FLOW CALCULATIONS:
EXISTING CONDITIONS 0 GPD (VACANT)
PROPOSED:
25 GPD PER PERSON PER SHIFT
ESTIMATE 63 PEOPLE PER DAY
1,575 GPD (25 GPD x 63 PEOPLE)
101 UNITS @ 240 GPD/UNIT
24,240 GPD
NET INCREASE OF 25,815 GPD

UTILITY NOTES

- ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH CITY OF RALEIGH STANDARD DRAWINGS AND SPECIFICATIONS.
- IN THE EVENT THAT A UTILITY ITEM IS NOT COVERED BY THESE PLANS, THEN THE STANDARDS AND SPECIFICATIONS CONTAINED IN THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT HANDBOOK COVERING SUCH ITEMS SHALL APPLY.
- CLEAN-OUT SYMBOLS SHOWN ON THESE PLANS REPRESENT LOCATION OF SURFACE ACCESS POINT. CONTRACTOR SHALL LOCATE WYE APPROPRIATELY BASED ON PIPE DEPTH.
- ALL MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF RALEIGH STANDARDS. MANHOLE DIAMETER SHALL VARY DEPENDING ON PIPE DIAMETER AND DEPTH, PER CITY OF RALEIGH STANDARDS.
- LOCATIONS AND SIZES OF EXISTING UTILITIES SHOWN ON THESE PLANS WERE TAKEN FROM MAPS PREPARED BY OTHERS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR FIELD LOCATING ALL UTILITIES AND FOR DAMAGES RESULTING FROM FAILURE TO DO SO.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING RECORD DRAWINGS TO THE ENGINEER SHOWING THE LOCATION OF WATER AND SEWER SERVICES AND ANY DEVIATIONS FROM PLANS MADE DURING CONSTRUCTION. THE ENGINEER WILL PROVIDE THESE RECORD DRAWINGS TO THE OWNER.
- ALL UNDERGROUND UTILITIES AND FIRE HYDRANTS MUST BE FUNCTIONALLY APPROVED PRIOR TO STRUCTURAL CONSTRUCTION.
- THRUST BLOCKS SHALL BE PROVIDED AT ALL BENDS, TEES, AND FIRE HYDRANTS.
- DIMENSIONS SHOWN ARE TO CENTERLINE OF PIPE OR FITTING.
- ALL WATER AND SANITARY LEADS TO BUILDING SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLAN AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AT END.
- ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS. MINIMUM TRENCH WIDTH SHALL BE 2 FEET.
- GENERAL CONTRACTOR SHALL HAVE APPROVAL OF ALL GOVERNING AGENCIES HAVING JURISDICTION OVER THIS SYSTEM PRIOR TO INSTALLATION.
- ALL FILL MATERIAL IS TO BE IN PLACE, AND COMPACTED BEFORE INSTALLATION OF PROPOSED UTILITIES.
- CONTRACTOR SHALL NOTIFY THE WATER AUTHORITY INSPECTORS 72 HOURS BEFORE CONNECTING TO ANY EXISTING LINE.
- ALL UTILITIES SHOULD BE KEPT TEN (10') APART (PARALLEL) OR WHEN CROSSING 24" VERTICAL CLEARANCE (OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE).
- PRESSURE REDUCING VALVES WILL BE REQUIRED ON THE DOMESTIC WATER MAINS IF THE STATIC PRESSURE AT THE BUILDING EXCEEDS 80PSI.
- DRAWINGS DO NOT PURPORT TO SHOW ALL EXISTING UTILITIES. EXISTING UTILITIES SHALL BE VERIFIED IN FIELD PRIOR TO INSTALLATION OF ANY NEW LINES.
- CONTRACTOR IS RESPONSIBLE FOR COMPLYING TO THE STANDARDS AND SPECIFICATIONS OF THE CITY OF RALEIGH WITH REGARDS TO MATERIALS AND INSTALLATION OF THE WATER AND SEWER LINES.
- THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES OR UTILITIES BY OTHERS AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
- ALL CONSTRUCTION METHODS & MATERIALS SHALL CONFORM WITH THE CURRENT SPECIFICATIONS AND STANDARDS OF THE AMERICAN WATER WORKS ASSOCIATION (AWWA). THE AWWA CONSTRUCTION STANDARDS ARE SET FORTH IN THEIR CONSTRUCTION SPECIFICATIONS AND STANDARD FOR WATER AND SANITARY SEWERAGE FACILITIES. A COPY OF WHICH MUST BE PURCHASED FROM THE AWWA BY THE CONTRACTOR AND KEPT AT THE JOB SITE AT ALL TIMES. REFERENCE TO NCOT SHALL MEAN THE CURRENT STANDARDS AND/OR SPECIFICATIONS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.
- THE CONTRACTOR SHALL BE REQUIRED TO EXCAVATE BELOW PLAN GRADE ANY MATERIALS WHICH ARE UNSUITABLE FOR FOUNDATIONS, SUB GRADES, PIPE TRENCH BOTTOMS OR OTHER PURPOSES AND BACKFILL THESE AREAS WITH AN APPROVED MATERIAL. THE EXTENT OF UNDERDIGGING AND BACKFILLING SHALL BE DETERMINED BY THE CITY OF RALEIGH AS TO AREAS WITHIN STREET RIGHT-OF-WAY AND THE ENGINEER IN OTHER AREAS. COMPENSATION SHALL BE AS SET FORTH IN THE CONTRACT DOCUMENTS.
- ALL WATERLINES SHALL HAVE BURIED WITH THE PIPE # 12 COATED ELECTRIC WIRE AND BROUGHT UP INTO THE METER BOXES.
- THE CONTRACTOR SHALL PROVIDE A SURVEY AS-BUILT RECORD DRAWING OF THE SANITARY SEWER SYSTEM AND THE WATER DISTRIBUTION SYSTEM IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY OF RALEIGH UTILITY DEPARTMENT.

STANDARD UTILITY NOTES

(As applicable)

- ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS (REFERENCE: CORPUS HANDBOOK, CURRENT EDITION)
- UTILITY SEPARATION REQUIREMENTS:
A) A DISTANCE OF 100' SHALL BE MAINTAINED BETWEEN SANITARY SEWER & ANY PRIVATE OR PUBLIC WATER SUPPLY SOURCES SUCH AS AN IMPROVED 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 TO 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, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUS DETAILS W-41 & S-49).
F) ALL OTHER UNDERGROUND UTILITIES SHALL CROSS WATER & SEWER FACILITIES WITH 18" MIN. VERTICAL SEPARATION REQUIRED.
- 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
- 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
- 3.0 MINIMUM COVER IS REQUIRED ON ALL WATER MAINS & SEWER FORCE MAINS. 4.0 MINIMUM COVER IS REQUIRED ON ALL SEWER MAINS
- 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 CORPUS HANDBOOK PROCEDURE
- INSTALL 1" COPPER* WATER SERVICES WITH METERS LOCATED AT ROW OR WITHIN A 2' 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
- INSTALL 4" PVC* SEWER SERVICES @ 1.0% MINIMUM GRADE WITH CLEANOUTS LOCATED AT ROW OR EASEMENT LINE & SPACED EVERY 75' LINEAR FEET MAXIMUM
- PRESSURE REDUCING VALVES ARE REQUIRED ON ALL WATER SERVICES EXCEEDING 80 PSI; BACKFLOW VALVES ARE REQUIRED ON ALL SANITARY SEWER SERVICES HAVING BUILDING DRAINS LOWER THAN 1.0' ABOVE THE NEXT UPSTREAM MANHOLE
- ALL ENVIRONMENTAL PERMITS APPLICABLE TO THE PROJECT MUST BE OBTAINED FROM NCDOW, USACE &/OR FEMA FOR ANY RIPARIAN BUFFER, WETLAND &/OR FLOODPLAIN IMPACTS (RESPECTIVELY) PRIOR TO CONSTRUCTION.
- NCDOT / RAILROAD ENCROACHMENT AGREEMENTS ARE REQUIRED FOR ANY UTILITY WORK (INCLUDING MAIN EXTENSIONS & SERVICE TAPS) WITHIN STATE OR RAILROAD ROW PRIOR TO CONSTRUCTION
- GREASE INTERCEPTOR / OIL WATER SEPARATOR SIZING CALCULATIONS & INSTALLATION SPECIFICATIONS SHALL BE APPROVED BY THE CORPUS TCG PROGRAM COORDINATOR PRIOR TO ISSUANCE OF A BUILDING PERMIT. CONTACT TIM BEASLEY AT (919) 996-2334 OR TIMOTHY.BEASLEY@RALEIGHNC.GOV FOR MORE INFORMATION
- 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

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

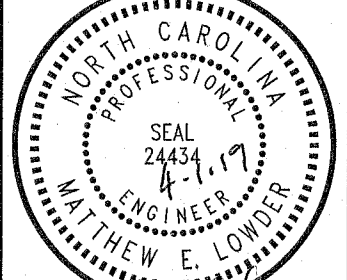
By: _____ Date: _____
Development Services Engineer

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

By: _____ Date: _____
Administrator

TRIANGLE
SITE DESIGN

CONSULTANT:
TRIANGLE SITE DESIGN, PLLC
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RALEIGH, NC 27609
(919) 553-6570
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mowder@trianglesitedesign.com



DEVELOPER:
IGB INCORPORATED
DANIEL THARRINGTON
252-432-1172
430 S. Woodland Rd.
Henderson, NC 27536
daniel@igbinc.com
www.igbinc.com

The Lawson of Knightdale
Mulford Court
Knightdale, North Carolina
Wake County

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adoption by Triangle Site Design, PLLC, shall be without liability to Triangle Site Design, PLLC.

REV	NO.	DATE	DESCRIPTION

Drawn: _____
Checked: _____
Approved: _____

Project No. 008001
Date: April 1, 2019
Title: _____

UTILITY
PLAN

Sheet No. C1.2

- GENERAL LANDSCAPE NOTES**
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 2. NO PLANT SUBSTITUTIONS ARE PERMITTED WITHOUT WRITTEN APPROVAL OF THE OWNER'S REPRESENTATIVE AND TOWN OF KNIGHTDALE.
 3. ALL PLANT AND BED LINE LOCATIONS SHALL BE STAKED IN THE FIELD AND APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
 4. ALL PLANTINGS SHALL BE INSTALLED WITH THE SPECIFIED LAYER OF MULCH. REFERENCE DETAILS AND SPECIFICATIONS FOR DEPTH AND TYPE OF MULCH. ALL TREES AND SHRUBS SHALL BE PLANTED IN MULCH BEDS AND SHALL BE SEPARATED FROM TURF GRASS AREAS.
 5. GRASS COVERAGE TO EXTEND FROM PROPERTY LINES TO BACK OF CITY SIDEWALKS AND/OR CURBS.
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 11. SEED ON A FRESHLY PREPARED SEEDED AND COVER SEED LIGHTLY WITH SEEING EQUIPMENT OR CULTIPACK AFTER SEEING.
 12. MULCH IMMEDIATELY AFTER SEEING AND ANCHOR MULCH.
 13. INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE MORE THAN 60% DAMAGED, RE-ESTABLISH FOLLOWING THE ORIGINAL LINE, FERTILIZER AND SEEING RATES.
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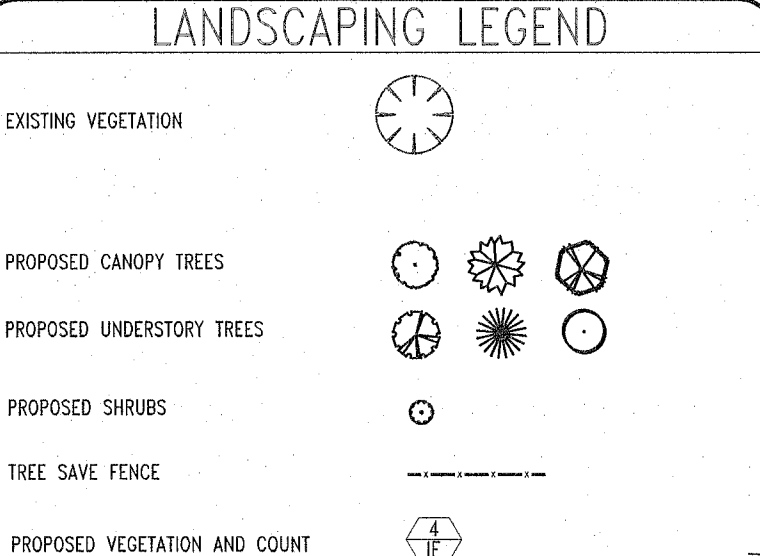
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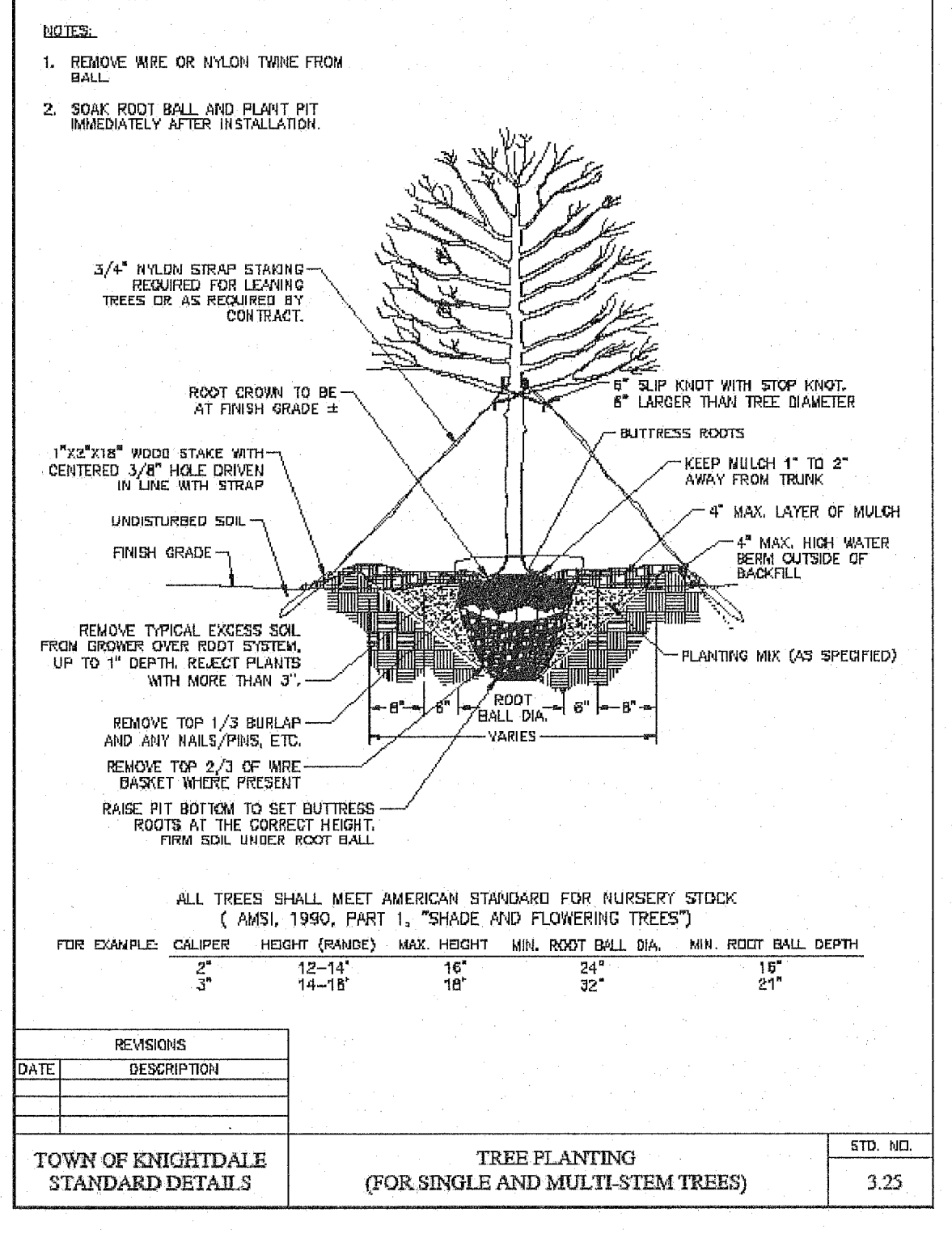
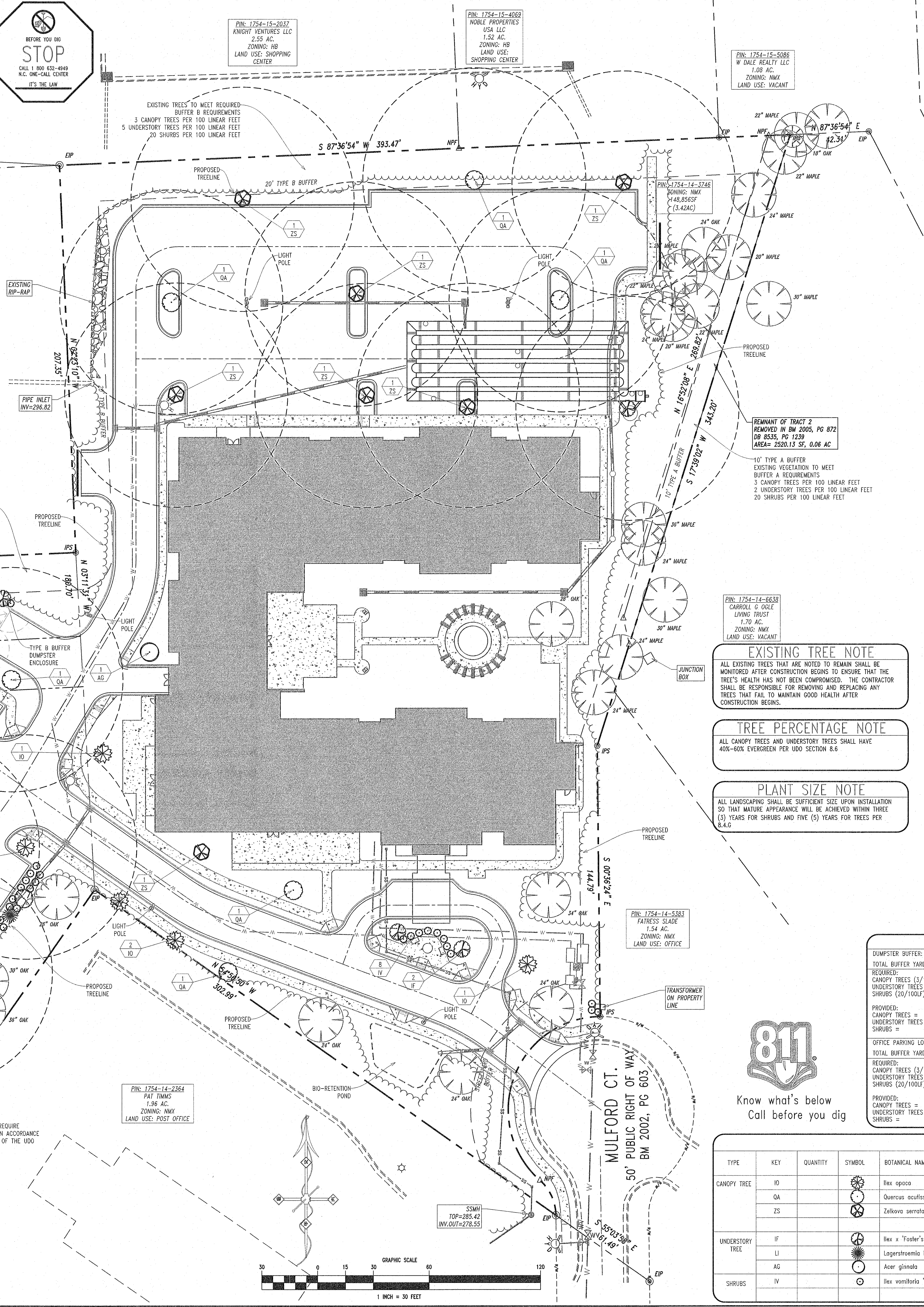
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4. IN THE EVENT THAT PLANTING BEDS AND MULCH ARE REQUIRED, THE CONTRACTOR SHALL INSTALL BLACK FABRIC WEED BLOCK LANDSCAPE MESH UNDER THE MULCH TO PREVENT WEED GROWTH.
5. CONTRACTOR SHALL PROVIDE NATURAL TOPSOIL THAT IS FERTILE, FRABLE, WITHOUT MIXTURE OF SUBSOL, MATERIALS, AND OBTAINED FROM A WELL DRAINED, AVAILABLE SITE. IT SHALL NOT CONTAIN SUBSTANCES WHICH MAY BE HARMFUL TO PLANT GROWTH. TOPSOIL SHALL BE SCREENED AND FREE FROM CLAY, LUMPS, STONES, ROOTS, PLANTS, OR SIMILAR SUBSTANCES 1" OR MORE IN DIAMETER. DEBRIS, OR OTHER OBJECTS WHICH MIGHT BE A HINDRANCE TO PLANTING OPERATIONS. TOPSOIL SHALL CONTAIN AT LEAST 4-6% ORGANIC MATTER BY WEIGHT AND HAVE A PH RANGE OF 5.5 TO 7.0.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR THE WATERING AND THE MAINTENANCE OF ALL LANDSCAPED AREAS UNTIL THE LATER OF: (a) THIRTY (30) DAYS FOLLOWING THE PLANTING OF THE GRASS AND SHRUBS, OR (b) THE DATE THAT DOLLAR GENERAL OPENS FOR BUSINESS TO THE PUBLIC.
7. GENERAL CONTRACTOR IS TO CLEAN ENTIRE SITE OF ALL CONSTRUCTION DEBRIS AND HAVE ALL GRASS AREAS.
8. PROVIDE LANDSCAPE PLANS TO DOLLAR GENERAL AND AS REQUIRED BY LOCAL JURISDICTION TO THE BLDG. DEPT. FOR REVIEW AND APPROVAL PRIOR TO START OF WORK.
9. ALL LANDSCAPING, TREES, SHRUBS, ETC. SHALL NOT INTERFERE WITH THE VISIBILITY OF DOLLAR GENERAL SIGNAGE.
10. CONTRACTOR TO VERIFY QUANTITIES PRIOR TO COMMENCING WORK.
11. OPEN AREAS WITHIN PLANTING BEDS SHALL BE MULCHED.



SEEDING SCHEDULE

MAXIMUM SLOPE 3:1

SEEDING PERIOD	SEEDING TYPE	APPLICATION RATE (LBS./ACRE)
AUGUST 15 - NOVEMBER 01	TALL FESCUE	300
NOVEMBER 01 - MARCH 01	TALL FESCUE AND ABRUZZI RYE	300
MARCH 01 - APRIL 15	TALL FESCUE	25
APRIL 15 - JUNE 30	HULLED COMMON BERMUDAGRASS	25
JULY 01 - AUGUST 15	TALL FESCUE AND HIRWINTOP MILLET OR HIRWINTOP-MILLET HYBRIDS	120
MARCH 01 - JUNE 01	SENECA LESPEDEZA (SCARIFIED) AND	50
MARCH 01 - APRIL 15	TALL FESCUE OR	120
MARCH 01 - JUNE 30	WEEDING LOVEGRASS OR HULLED COMMON BERMUDAGRASS	10
JUNE 01 - SEPTEMBER 01	TALL FESCUE AND HIRWINTOP MILLET OR HIRWINTOP-MILLET HYBRIDS	25
SEPTEMBER 01 - MARCH 01	SENECA LESPEDEZA (UNHULLED, UNSCARIFIED) AND	35
NOVEMBER 01 - MARCH 01	TALL FESCUE OR ABRUZZI RYE	70

TEMPORARY - RESEED ACCORDING TO OPTIMUM SEASON FOR DESIRED PERMANENT VEGETATION. DO NOT ALLOW TEMPORARY COVER TO GROW OVER 12" IN HEIGHT BEFORE MOWING. OTHERWISE FESCUE MAY BE SHAVED OUT. CONSULT CONSERVATION ENGINEER OR SOIL CONSERVATION SERVICE FOR ADDITIONAL INFORMATION CONCERNING OTHER ALTERNATIVES FOR VEGETATION OF DISTURBED AREAS. THE ABOVE VEGETATION RATES ARE THOSE WHICH DO WELL UNDER LOCAL CONDITIONS. OTHER SEEDING RATE COMBINATIONS ARE POSSIBLE.

GROUND COVER - WHEREVER LAND DISTURBING ACTIVITY IS UNDERTAKEN ON A TRACT COMPRISING MORE THAN ONE (1) ACRE, A GROUND COVER SUFFICIENT TO RESTRAIN EROSION MUST BE PLANTED OR PROVIDED WITHIN 15 WORKING DAYS OR 90 CALENDAR DAYS.

GRADED SLOPES AND FILLS - WITHIN 15 WORKING DAYS OR 90 CALENDAR DAYS, OR COMPLETION OF ANY PHASE OF GRADING, WHICHEVER PERIOD IS SHORTER, SLOPES SHALL BE PLANTED OR OTHERWISE PROVIDED WITH GROUND COVER, DEVICES, OR STRUCTURES SUFFICIENT TO RESTRAIN EROSION.

REVISIONS

DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS

SEEDING SCHEDULE

STD. NO.

2.01

BUFFER YARD CALCULATIONS:

NORTH & WEST PROPERTY LINES - 20' TYPE B	
TOTAL BUFFER YARD LENGTH = 810'	
REQUIRED:	
CANOPY TREES (3/100LF) = 24	40%-60% SHALL BE EVERGREEN
UNDERSTORY TREES (5/100LF) = 41	40%-60% SHALL BE EVERGREEN
SHRUBS (20/100LF) = 162	80%+ SHALL BE EVERGREEN
PROVIDED:	
EXISTING WOODED AREAS TO REMAIN TO MEET BUFFER REQUIREMENTS	

EAST PROPERTY LINES - 10' TYPE A	
TOTAL BUFFER YARD LENGTH = 488'	
REQUIRED:	
CANOPY TREES (3/100LF) = 15	40%-60% SHALL BE EVERGREEN
UNDERSTORY TREES (2/100LF) = 10	40%-60% SHALL BE EVERGREEN
SHRUBS (20/100LF) = 98	80%+ SHALL BE EVERGREEN
PROVIDED:	
EXISTING WOODED AREAS TO REMAIN TO MEET BUFFER REQUIREMENTS	

H = 60'	
2	40%-60% SHALL BE EVERGREEN
3	40%-60% SHALL BE EVERGREEN
	80%+ SHALL BE EVERGREEN
2 PROPOSED (100% EVERGREEN)	
3 PROPOSED (80% EVERGREEN)	
12 PROPOSED (100% EVERGREEN)	

H = 165' PARKING AREA ONLY	
5	40%-60% SHALL BE EVERGREEN
3	40%-60% SHALL BE EVERGREEN
	80%+ SHALL BE EVERGREEN
5 PROPOSED (50% EVERGREEN)	
3 PROPOSED (67% EVERGREEN)	
33 PROPOSED (100% EVERGREEN)	

MASTER PLANT LIST

TYPE	KEY	QUANTITY	SYMBOL	BOTANICAL NAME	COMMON NAME	SPECIFICATION			
						CALIPER	HEIGHT	ROOT	SPACING
CANOPY TREE	IO			Ilex opaca	American Holly	2"	8' MIN.	8/8	AS SHOWN
	OA			Quercus acutissima	Sawtooth Oak	2"	8' MIN	8/8	AS SHOWN
	ZS			Zelkova serota 'Village Green'	Village Green Zelkova	2"	8' MIN	8/8	AS SHOWN
UNDERSTORY TREE	IF			Ilex x 'Foster's No. 2'	Foster's No. 2 Holly	1-1/4"	6' MIN	8/8	AS SHOWN
	LI			Lagerstroemia indica 'Catawba'	Catawba Crape Myrtle	1-1/4"	6' MIN	8/8	AS SHOWN
	AG			Acer ginnala	Amur Maple	1-1/4"	6' MIN	8/8	AS SHOWN
SHRUBS	IV			Ilex vomitoria 'Shillings'	Shillings' Holly	-	3 gal	CONTAINER	36" O.C.

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The Lawson of Knightdale
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LANDSCAPE PLAN

Sheet No. **C1.8**