RED STAG SKETCH PLAT

1695 NORRIS LAKE DR
SNELLVILLE GA, 30039

FOR

D.R. HORTON

1371 DOOGWOOD DR SW
CONYERS, GA 30012
PHONE: 470-774-4884

PREPARED BY:

PLANNERS AND ENGINEERS COLLABORATIVE
SITE PLANNING ▫ LANDSCAPE ARCHITECTURE ▫ CIVIL ENGINEERING ▫ LAND SURVEYING
▫ 350 RESEARCH COURT ▫ PEACHTREE CORNERS, GEORGIA 30092 ▫ (770) 451-2741 ▫ FAX (770) 451-3915 ▫

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GENERAL NOTES:

1. PRIOR TO LAND DISTURBING AND/OR CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE AREA EROSION CONTROL / SITE DEVELOPMENT INSPECTOR.
2. IF THE CONTRACTOR, DURING THE COURSE OF THE WORK, FINDS ANY DISCREPANCIES BETWEEN THE PLANS AND THE PHYSICAL CONDITIONS OF THE LOCALITY, OR ANY ERRORS OR OMISSIONS IN THE PLANS OR IN THE LAYOUT AS GIVEN BY THE ENGINEER, IT SHALL BE HIS DUTY TO IMMEDIATELY INFORM THE ENGINEER, IN WRITING, AND THE ENGINEER WILL PROMPTLY VERIFY THE SAME. ANY WORK DONE AFTER SUCH A DISCOVERY, UNTIL AUTHORIZED, WILL BE AT THE CONTRACTOR'S RISK.
3. THE EXISTING UTILITIES SHOWN ON THE PLANS HAVE BEEN PREPARED FROM THE INFORMATION AVAILABLE TO THE ENGINEER AND MAY NOT BE ACCURATE TO EXTENT OR LOCATIONS, PRIOR TO BEGINNING ANY WORK, THE CONTRACTOR SHALL NOTIFY UTILITIES AND THEN MARK OR REMARK THEIR FACILITIES.
4. THE CONTRACTOR SHALL PRESERVE AND PROTECT ALL EXISTING VEGETATION WHICH DOES NOT UNREASONABLY INTERFERE WITH CONSTRUCTION.
5. THE CONTRACTOR SHALL CAREFULLY PRESERVE BENCH MARKS, REFERENCE POINTS AND STAKES.
6. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS AND LICENSES FOR EXECUTION OF ALL MATERIALS. THE EXECUTION OF THE WORK SHALL BE IN ACCORDANCE WITH THE STATE AND LOCAL CODES, RULES, AND REGULATIONS.
7. TESTING SHALL BE DONE BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
8. SHORING SHALL BE DONE AS NECESSARY FOR THE PROTECTION OF THE WORK AND FOR THE SAFETY OF PERSONNEL. SHORING SHALL BE IN ACCORDANCE WITH SECTION 7 OF THE MANUAL OF ACCIDENT PROTECTION IN CONSTRUCTION AS PUBLISHED BY THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA, OSHA, AND THE LOCAL REGULATIONS.
9. ANY AND ALL WALLS SHOWN HEREIN ARE FOR LAYOUT PURPOSES ONLY. WALL STRUCTURAL DESIGN, DETAILS, CALCULATIONS, APPROVALS, PERMITS, FEES, INSPECTIONS AND CERTIFICATIONS REQUIRED BY THE GOVERNING AUTHORITY SHALL BE PROVIDED BY OTHERS, CONTRACTOR SHALL INSTALL FALL PROTECTION RAIL SYSTEM(s) FOR ALL WALLS 30 INCHES IN HEIGHT OR GREATER UNLESS OTHERWISE SPECIFIED BY STATE AND/OR LOCAL CODES, RULES, OR REGULATIONS. FALL PROTECTION RAIL SYSTEM(s) SHALL BE IN ACCORDANCE WITH OSHA STANDARD 1926, SUBPART M - FALL PROTECTION.
10. ALL STAIRWAYS HAVING MORE THAN THREE (3) RISERS ABOVE A FLOOR OR GRADE SHALL BE EQUIPPED WITH HANDRAILS LOCATED NOT LESS THAN 34 INCHES (34") NOR MORE THAN 38 INCHES (38") ABOVE THE LEADING EDGE OF A TREAD, EXCEPTION: HANDRAILS THAT FORM PART OF A GUARDRAIL MAY BE 42 INCHES (42") HIGH.
11. ALL WALL TOPS TO BE SIX INCHES (6") ABOVE GRADE UNLESS OTHERWISE NOTED.
12. MAXIMUM CUT OR FILL SLOPE IS 2H:1V UNLESS OTHERWISE SPECIFIED. SLOPES EQUAL TO OR STEEPER THAN 2.5H:1V AND WITH A HEIGHT OF 10' OR GREATER SHALL BE STABILIZED WITH APPROPRIATE MATTING OR BLANKETS.

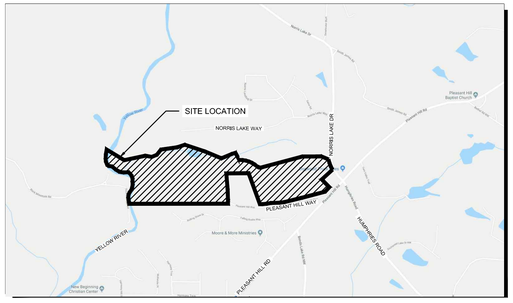
SITE INFORMATION

1. TOTAL ONSITE AREA: 122.772 ACRES / TOTAL AREA DISTURBED 88.580 ACRES.
2. BOUNDARY & TOPOGRAPHIC INFORMATION PROVIDED BY PLANNERS & ENGINEERS COLLABORATIVE, DATED 05/18/2018.
3. THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP FOR DEKALB COUNTY, GEORGIA AND INCORPORATED AREAS, COMMUNITY PANEL NUMBER(S) 13089C0181K, EFFECTIVE DATE 01/02/2015 WAS EXAMINED AND NO PORTION OF THE PROPERTY SHOWN HEREIN WAS FOUND TO FALL WITHIN A DESIGNATED FLOOD ZONE "A" (AREAS OF 100-YEAR FLOOD) OR SPECIAL FLOOD HAZARD ZONE (AREAS OF 500-YEAR FLOOD).
4. THERE ARE STATE WATERS LOCATED ON OR WITHIN 200 FEET OF THE SITE.
5. THERE ARE KNOWN WETLANDS ON THIS SITE
6. THE ORTHOMETRIC HEIGHTS (ELEVATIONS AND CONTOURS) SHOWN HEREON WERE DETERMINED BY A COMBINATION OF FIELD RUN SURVEY BY PLANNERS & ENGINEERS COLLABORATIVE, DATED 05/18/2018 AND DEKALB COUNTY GIS.

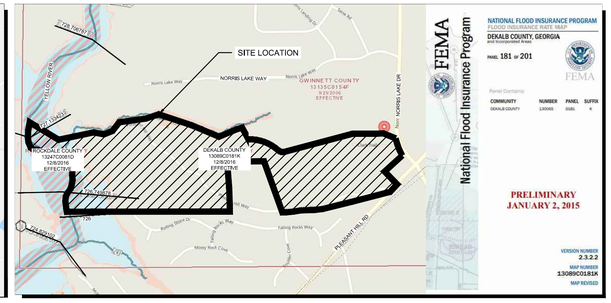
SITE DATA

ADDRESS: 1695 NORRIS LAKE DR
SNELLVILLE GA, 30039

SITE AREA: 122.772 AC
ZONING: RNC



SITE LOCATION MAP
NOT TO SCALE



FEMA FIRM MAP
FEMA FIRM PANEL NO.: 13089C0181K
NOT TO SCALE

24 HOUR CONTACT:
JAY COOMBE @ 470-774-4884

CONTACT INFORMATION:

ENGINEER:	MATTHEW E. KACZENSKI, P.E. PLANNERS AND ENGINEERS COLLABORATIVE	OWNER:	JAY COOMBE D.R. HORTON
ADDRESS:	350 RESEARCH COURT PEACHTREE CORNERS, GEORGIA 30092	ADDRESS:	1371 DOOGWOOD DR SW CONYERS, GA 30012
PHONE:	770.451.2741	PHONE:	470-774-4884
EMAIL:	MKACZENSKI@PECATL.COM		

DEVELOPMENT SERVICES PERMITTING DISCLAIMER:

THE APPROVAL OF THESE PLANS AND THE ISSUANCE OF THIS LAND DISTURBANCE PERMIT DOES NOT IN ANY WAY SUGGEST THAT ALL OTHER REQUIREMENTS FOR THE LEGAL OR APPROPRIATE OPERATIONS FOR THIS ACTIVITY, WHICH MAY REQUIRE ADDITIONAL PERMITTING, HAVE BEEN MET, THE ONUS IS ON THE OWNER/DEVELOPER/BUILDER TO DISCOVER WHAT ADDITIONAL PERMITTING OR APPROVALS MAY BE NECESSARY TO OPERATE FROM THIS POINT IN AN APPROPRIATE AND LEGAL MANNER. PLAN APPROVAL OR PERMIT ISSUANCE DOES NOT ABSOLVE THE APPLICANT FROM COMPLYING WITH ALL APPLICABLE LAWS, POLICIES, STANDARDS OR OTHER PERMITS WHICH MAY BE REQUIRED FOR THIS PROJECT.

SHEET INDEX:

THIS SKETCH PLAT HAS BEEN SUBMITTED TO AND APPROVED BY THE PLANNING COMMISSION OF DEKALB COUNTY, ON THIS_____DAY OF _____ 20___.

BY:_____(BY DIRECTOR)
PLANNING COMMISSION CHAIRMAN
DEKALB COUNTY, GEORGIA

RED STAG SKETCH PLAT
A MASTER PLANNED RESIDENTIAL DEVELOPMENT
FOR
D.R. HORTON
1371 DOOGWOOD DR SW
CONYERS, GA 30012
PHONE: 470-774-4884

CITY OF SNELLVILLE / LITHONIA
DEKALB COUNTY
GEORGIA

LAND LOT 228, 229, 253, 252, 257, 258
16TH DISTRICT

PLANNERS AND ENGINEERS COLLABORATIVE
SITE PLANNING ▫ LANDSCAPE ARCHITECTURE ▫ CIVIL ENGINEERING ▫ LAND SURVEYING
▫ 350 RESEARCH COURT ▫ PEACHTREE CORNERS, GEORGIA 30092 ▫ (770) 451-2741 ▫ FAX (770) 451-3915 ▫

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REVISIONS:

NO.	DATE	BY	DESCRIPTION
1	10/24/19	CAH	1ST SUBMITTAL
2	12/11/19	CAH	2ND SUBMITTAL
3	01/27/20	CAH	3RD SUBMITTAL

HANSEN FILE NO: 1243655

COVER SHEET

SCALE: N/A
DATE: 01/27/2020
PROJECT: 16309.00

THIS SEAL IS ONLY VALID IF COUNTER SIGNED AND DATED WITH AN ORIGINAL SIGNATURE.

GEORGIA REGISTERED No. 37096 PROFESSIONAL ENGINEER MATTHEW E. KACZENSKI 01/27/2020

GSWCC LEVEL II DESIGN PROFESSIONAL
CERTIFICATION # 0000066476 EXP. 06/22/2021

GRID NORTH

GEORGIA WEST ZONE

S1

SHEET

J:\16309\00\Sketch Plat\COVER SHEET - 16309.00.dwg, XRefs: 1/27/2020 8:37 PM

PLANNERS AND ENGINEERS COLLABORATIVE STANDARDS AND SPECIFICATIONS

CLEARING AND GRADING

INITIAL EROSION CONTROL MEASURES SHALL BE INSTALLED BEFORE ANY LAND DISTURBING ACTIVITY IS TO BE CONDUCTED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE INSTALLED EROSION AND SEDIMENT CONTROL MEASURES WITH THE APPROVED PLAN AND THE EROSION CONTROL DEVICES ARE FUNCTIONING PROPERLY.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR FILING A NOTICE OF INTENT, ALL REPORTING AND TESTING ASSOCIATED TO EROSION CONTROL, NOTICE OF TERMINATION, COORDINATION OF ALL SUBCONTRACTORS AND ALL SECONDARY PERMITEES, AND TERTIARY PERMITEES. CONTRACTOR SHALL PAY THE FEES ASSOCIATED WITH EROSION CONTROL MEASURES TO THE STATE OF GEORGIA. CONTRACTOR SHALL ARRANGE AND PAY FOR AN INSPECTION OF THE SITE 7 DAYS AFTER THE INSTALLATION OF INITIAL EROSION AND SEDIMENT CONTROL MEASURES AS REQUIRED FOR COMPLIANCE WITH NPDES PERMITS.

RELATED DOCUMENTS:
A. MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA, LATEST EDITION.
B. INITIAL AND INTERMEDIATE EROSION AND SEDIMENTATION CONTROL PLAN AS APPROVED BY ISSUING AGENCY.
C. NPDES GENERAL PERMIT GAR 100001 OR 100003 (SEE EROSION CONTROL NOTES SHEET C6.00 FOR FURTHER DETAILS).

PART 1 - GENERAL

1.1 DEFINITIONS
SURFACE SOILS: TOPSOIL WAS ENCOUNTERED AT THE SURFACE IN MOST OF THE BORING LOCATIONS. TOPSOIL IS A DARK-COLORED SURFACE MATERIAL WITH A HIGH ORGANIC CONTENT AND IS GENERALLY UNSUITABLE FOR STRUCTURAL SUPPORT
FILL MATERIALS: FILL MAY BE ANY MATERIAL THAT HAS BEEN TRANSPORTED AND DEPOSITED BY MAN. ALLUVIAL SOILS ARE STREAM-DEPOSITED MATERIALS. ALLUVIAL SOILS CONSISTED OF SILTY SANDS (BM) AND SANDY SILTS (ML).
RESIDUAL SOIL: RESIDUAL SOIL, FORMED BY IN-PLACE WEATHERING OF THE PARENT ROCK, WAS ENCOUNTERED BELOW THE SURFACE SOILS, FILL MATERIALS OR ALLUVIAL SOILS. THE RESIDUUM IS DESCRIBED AS SILTY SANDS (BM), SANDY SILTS (ML), SILTY CLAYS (CL), AND CLAYEY SANDS (BC). THE RESIDUAL SOILS ARE TYPICALLY STIFF TO VERY STIFF AND MEDIUM DENSE TO DENSE.
PARTIALLY WEATHERED ROCK: PARTIALLY WEATHERED ROCK IS A TRANSITIONAL MATERIAL BETWEEN SOIL AND ROCK, WHICH RETAINS THE STRUCTURE OF THE ROCK AND HAS VERY HARD OR VERY DENSE CONSISTENCIES. THE PARTIALLY WEATHERED ROCK IS GENERALLY DESCRIBED AS VERY DENSE SILTY SANDS (BM).
REFUSAL MATERIAL: REFUSAL IS A DESIGNATION APPLIED TO ANY MATERIAL THAT CANNOT BE FURTHER PENETRATED BY THE POWER AUGER AND IS NORMALLY INDICATIVE OF A VERY HARD OR VERY DENSE MATERIAL, SUCH AS BOULDERS OR LENSES OR THE UPPER SURFACE OF BEDROCK.
PLANT-PROTECTION ZONE: AREA SURROUNDING INDIVIDUAL TREES, GROUPS OF TREES, SHRUBS, OR OTHER VEGETATION TO BE PROTECTED DURING CONSTRUCTION, AND INDICATED ON DRAWINGS.
TREE-PROTECTION ZONE: AREA SURROUNDING INDIVIDUAL TREES OR GROUPS OF TREES TO BE PROTECTED DURING CONSTRUCTION, AND INDICATED ON DRAWINGS DEFINED BY A CIRCLE CONCENTRIC WITH EACH TREE WITH A RADIUS 1.5 TIMES THE DIAMETER OF THE DRIP LINE UNLESS OTHERWISE INDICATED BY THE LOCAL JURISDICTION.

1.2 MATERIAL OWNERSHIP
A. EXCEPT FOR STRIPPED TOPSOIL AND STRUCTURAL FILL THAT IS INDICATED TO BE STOCKPILED OR OTHERWISE REMAIN OWNER'S PROPERTY, CLEARED MATERIALS SHALL BECOME CONTRACTOR'S PROPERTY AND SHALL BE REMOVED FROM PROJECT SITE.

1.3 PROJECT CONDITIONS
A. A. TRAFFIC: MINIMIZE INTERFERENCE WITH ADJOINING ROADS, STREETS, WALKS, AND OTHER ADJACENT OCCUPIED OR USED FACILITIES DURING SITE-CLEARING OPERATIONS.
1. DO NOT CLOSE OR OBSTRUCT STREETS, WALKS, OR OTHER ADJACENT OCCUPIED OR USED FACILITIES WITHOUT PERMISSION FROM OWNER AND AUTHORITIES HAVING JURISDICTION.
2. PROVIDE ALTERNATE ROUTES AROUND CLOSED OR OBSTRUCTED TRAFFIC WAYS IF REQUIRED BY OWNER OR AUTHORITIES HAVING JURISDICTION.
B. IMPROVEMENTS ON ADJOINING PROPERTY: AUTHORITY FOR PERFORMING SITE CLEARING INDICATED ON PROPERTY ADJOINING OWNER'S PROPERTY WILL BE OBTAINED BY OWNER AND PROVIDE DOCUMENTATION OF CLEARING EASEMENT TO CONTRACTOR UPON REQUEST.
C. UTILITY LOCATOR SERVICE: NOTIFY ONE CALL FOR AREA WHERE PROJECT IS LOCATED BEFORE SITE CLEARING.
D. DO NOT COMMENCE SITE-CLEARING OPERATIONS UNTIL TEMPORARY EROSION- AND SEDIMENTATION-CONTROLS, SEDIMENT PONDS, AND TREE PROTECTION FENCE IN PLACE.
E. THE FOLLOWING PRACTICES ARE PROHIBITED WITHIN PROTECTION ZONES:
1. STORAGE OF CONSTRUCTION MATERIALS, DEBRIS, OR EXCAVATED MATERIAL.
2. PARKING VEHICLES OR EQUIPMENT.
3. FOOT TRAFFIC.
4. ERECTION OF SHEDS OR STRUCTURES.
5. IMPOUNDMENT OF WATER.
6. EXCAVATION OR OTHER DIGS UNLESS OTHERWISE INDICATED.
7. ATTACHMENT OF SIGNS OR WRAPPING MATERIALS AROUND TREES OR PLANTS UNLESS OTHERWISE INDICATED.
F. DO NOT DIRECT VEHICLE OR EQUIPMENT EXHAUST TOWARDS PROTECTION ZONES.
G. PROHIBIT HEAT SOURCES, FLAMES, IGNITION SOURCES, AND SMOKING WITHIN OR NEAR PROTECTION ZONES.
H. SOIL STRIPPING, HANDLING, AND STOCKPILING: PERFORM ONLY WHEN THE TOPSOIL IS DRY OR SLIGHTLY MOIST.

PART 2 - PRODUCTS

2.1 MATERIALS
A. SATISFACTORY SOIL MATERIAL: REQUIREMENTS FOR SATISFACTORY SOIL MATERIAL ARE SPECIFIED IN DIVISION 2 SECTION “EARTHWORK."
1. OBTAIN APPROVED BORROW SOIL MATERIAL OFF-SITE WHEN SATISFACTORY SOIL MATERIAL IS NOT AVAILABLE ON-SITE.

PART 3 - EXECUTION

3.1 PREPARATION
A. PROTECT AND MAINTAIN BENCHMARKS AND SURVEY CONTROL POINTS FROM DISTURBANCE DURING CONSTRUCTION.
B. PROTECT EXISTING SITE IMPROVEMENTS TO REMAIN FROM DAMAGE DURING CONSTRUCTION.
1. RESTORE DAMAGED IMPROVEMENTS TO THEIR ORIGINAL CONDITION, AS ACCEPTABLE TO OWNER.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL
A. PROVIDE TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES TO PREVENT SOIL EROSION AND DISCHARGE OF SOIL-BEARING WATER RUNOFF OR AIRBORNE DUST TO ADJACENT PROPERTIES AND WALKWAYS, ACCORDING TO EROSION AND SEDIMENTATION CONTROL DRAWINGS AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
B. VERIFY THAT FLOWS OF WATER REDIRECTED FROM CONSTRUCTION AREAS OR GENERATED BY CONSTRUCTION ACTIVITY DO NOT ENTER OR CROSS PROTECTION ZONES.
C. INSPECT, MAINTAIN, AND REPAIR EROSION AND SEDIMENTATION CONTROL MEASURES DAILY DURING CONSTRUCTION UNTIL PERMANENT VEGETATION HAS BEEN ESTABLISHED.
D. REMOVE EROSION AND SEDIMENTATION CONTROLS AND RESTORE AND STABILIZE AREAS DISTURBED DURING REMOVAL.

3.3 TREE AND PLANT PROTECTION
GENERAL: PROTECT TREES AND PLANTS REMAINING ON-SITE PER PLANS.

3.4 EXISTING UTILITIES
A. LOCATE, IDENTIFY, AND PROTECT ALL EXISTING UTILITIES.
1. ARRANGE WITH UTILITY COMPANIES TO SHUT OFF INDICATED UTILITIES.
B. LOCATE, IDENTIFY, AND DISCONNECT UTILITIES INDICATED TO BE ABANDONED IN PLACE.
C. INTERRUPTING EXISTING UTILITIES: DO NOT INTERRUPT UTILITIES SERVING FACILITIES OCCUPIED BY OWNER OR OTHERS UNLESS PERMITTED UNDER THE FOLLOWING CONDITIONS AND THEN ONLY AFTER ARRANGING TO PROVIDE TEMPORARY UTILITY SERVICES ACCORDING TO REQUIREMENTS INDICATED:
1. NOTIFY ARCHITECT NOT LESS THAN TWO DAYS IN ADVANCE OF PROPOSED UTILITY INTERRUPTIONS.
D. EXCAVATE FOR AND REMOVE UNDERGROUND UTILITIES INDICATED TO BE REMOVED.

3.5 CLEARING AND GRUBBING
A. REMOVE OBSTRUCTIONS, TREES, SHRUBS, AND OTHER VEGETATION TO PERMIT INSTALLATION OF NEW CONSTRUCTION.
1. DO NOT REMOVE TREES, SHRUBS, AND OTHER VEGETATION INDICATED TO REMAIN OR TO BE RELOCATED.
2. MECHANICAL REMOVE ALL STUMPS AND REMOVE ROOTS, OBSTRUCTIONS, AND DEBRIS.
3. USE ONLY HAND METHODS FOR GRUBBING WITHIN PROTECTION ZONES.
B. FILL DEPRESSIONS CAUSED BY CLEARING AND GRUBBING OPERATIONS WITH SATISFACTORY SOIL MATERIAL UNLESS FURTHER EXCAVATION OR EARTHWORK IS INDICATED.
1. 1. PLACE FILL MATERIAL IN HORIZONTAL LAYERS NOT EXCEEDING THOSE RECOMMENDED IN THE ATC GEOTECHNICAL REPORT.

3.6 TOPSOIL STRIPPING
A. STOCKPILE TOPSOIL AWAY FROM EDGE OF EXCAVATIONS WITHOUT INTERMIXING WITH SUBSOIL. GRADE AND SHAPE STOCKPILES TO RAIN SURFACE WATER. SEED AND STRAW STOCKPILE AREA AND PROTECT FROM EROSION.
1. DO NOT STOCKPILE TOPSOIL WITHIN PROTECTION ZONES.
2. DISPOSE OF SURPLUS TOPSOIL. SURPLUS TOPSOIL IS THAT WHICH EXCEEDS QUANTITY NEED TO BACKFILL LANDSCAPE AREAS.
3. STOCKPILE SURPLUS TOPSOIL TO ALLOW FOR RE-SPREADING AND REUSE IN LANDSCAPED AREAS.
B. STRUCTURAL FILL STOCKPILE: STOCKPILE STRUCTURAL FILL AWAY FROM EDGE OF EXCAVATIONS WITHOUT INTERMIXING WITH TOPSOIL. GRADE AND SHAPE STOCKPILES TO DRAIN SURFACE WATER. SEED AND STRAW STOCKPILE AREA AND PROTECT FROM EROSION
1. DO NOT STOCKPILE STRUCTURAL FILL WITHIN PROTECTION ZONES. STOCKPILE AS SHOWN ON PLANS
2. DO NOT DISPOSE OF ANY ADDITIONAL SURPLUS STRUCTURAL FILL. INCREASE STOCKPILE IF REQUIRED.
3. STOCKPILE SURPLUS TOPSOIL TO ALLOW FOR RE-SPREADING AND REUSE IN LANDSCAPED AREAS.

3.7 SITE IMPROVEMENTS
A. REMOVE EXISTING ABOVE- AND BELOW-GRADE IMPROVEMENTS AS INDICATED AND NECESSARY TO FACILITATE NEW CONSTRUCTION.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS
A. REMOVE SURPLUS SOIL MATERIAL, UNSUITABLE TOPSOIL, OBSTRUCTIONS, DEMOLISHED MATERIALS, AND WASTE MATERIALS INCLUDING TRASH AND DEBRIS, AND LEGALLY DISPOSE OF THEM OFF OWNER'S PROPERLY.

EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 1 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

1.2 SUMMARY
A. SECTION INCLUDES:
1. PREPARING SUBGRADES FOR SLABS-ON-GRADE WALKS PAVEMENTS.
2. EXCAVATING AND BACKFILLING FOR BUILDINGS AND STRUCTURES.
3. DRAINAGE COURSE FOR CONCRETE SLABS-ON-GRADE.
4. SUBBASE COURSE FOR CONCRETE [WALKS][PAVEMENTS].
5. SUBBASE COURSE [AND BASE COURSE] FOR ASPHALT PAVING.
6. SUBSURFACE DRAINAGE BACKFILL FOR WALLS AND TRENCHES.
7. EXCAVATING AND BACKFILLING TRENCHES FOR UTILITIES AND PITS FOR BURIED UTILITY STRUCTURES.
B. RELATED SECTIONS:
1. DIVISION 1 SECTION “FOR RECORDING PRE EXCAVATION AND EARTH MOVING PROGRESS.”
2. DIVISION 1 SECTION "TEMPORARY FACILITIES AND CONTROLS" FOR TEMPORARY CONTROLS, UTILITIES, AND SUPPORT FACILITIES; ALSO FOR TEMPORARY SITE FENCING IF NOT IN ANOTHER SECTION.
3. DIVISION 2 SECTION "SITE CLEARING" FOR SITE STRIPPING, GRUBBING, STRIPPING [AND STOCKPILING] TOPSOIL, AND REMOVAL OF ABOVE- AND BELOW-GRADE IMPROVEMENTS AND UTILITIES.
4. DIVISION 2 SECTION "SUBDRAINAGE" FOR DRAINAGE OF [FOUNDATIONS] [SLABS-ONGRADE][WALLS] [AND][LANDSCAPED AREAS].
5. DIVISIONS 2, 15, AND 16 SECTIONS FOR INSTALLING UNDERGROUND MECHANICAL AND ELECTRICAL UTILITIES AND BURIED MECHANICAL AND ELECTRICAL STRUCTURES.

1.3 DEFINITIONS
A. BACKFILL: SOIL MATERIAL OR CONTROLLED LOW-STRENGTH MATERIAL USED TO FILL AN EXCAVATION.
1. INITIAL BACKFILL: BACKFILL PLACED BESIDE AND OVER PIPE IN A TRENCH, INCLUDING HAUNCHES TO SUPPORT SIDES OF PIPE.
2. FINAL BACKFILL: BACKFILL PLACED OVER INITIAL BACKFILL TO FILL A TRENCH.
B. BASE COURSE: AGGREGATE LAYER PLACED BETWEEN THE SUBBASE COURSE AND HOT-MIX ASPHALT PAVING.
C. BEDDING COURSE: AGGREGATE LAYER PLACED OVER THE EXCAVATED SUBGRADE IN A TRENCH BEFORE LAYING PIPE.
D. BORROW SOIL: SATISFACTORY SOIL IMPORTED FROM OFF-SITE FOR USE AS FILL OR BACKFILL.
E. DRAINAGE COURSE: AGGREGATE LAYER UNDER THE SLAB-ON-GRADE TO MINIMIZES UPWARD CAPILLARY FLOW OF PORE WATER.
F. EXCAVATION: REMOVAL OF MATERIAL ENCOUNTERED ABOVE SUBGRADE ELEVATIONS AND TO LINES AND DIMENSIONS INDICATED.
G. FILL: SOIL MATERIALS USED TO RAISE EXISTING GRADES.
H. ROCK: ROCK MATERIAL IN BEDS, LEDGES, UNSTRATIFIED MASSES, CONGLOMERATE DEPOSITS, AND BOULDERS OF ROCK MATERIAL THAT EXCEED [1 CU. YD.] FOR BULK EXCAVATION OR [3/4 CU. YD.] FOR FOOTING, TRENCH, AND PIT EXCAVATION THAT CANNOT BE REMOVED BY ROCK EXCAVATING EQUIPMENT EQUIVALENT TO THE FOLLOWING IN SIZE AND PERFORMANCE RATINGS, WITHOUT SYSTEMATIC DRILLING, RAM HAMMERING, RIPPING, OR BLASTING, WHEN PERMITTED:
1. EXCAVATION OF FOOTINGS, TRENCHES, AND PITS: LATE-MODEL, TRACK-MOUNTED HYDRAULIC EXCAVATOR; EQUIPPED WITH A 42-INCH WIDE, MAXIMUM, SHORT-TIP-RADIUS ROCK BUCKET; RATED AT NOT LESS THAN 138-HP FLYWHEEL POWER WITH BUCKET-CURLING FORCE OF NOT LESS THAN 28,700 IBF AND STICK-CROWD FORCE OF NOT LESS THAN 18,400 IBF WITH EXTRA-LONG REACH BOOM; MEASURED ACCORDING TO SAE J-1179.
2. BULK EXCAVATION: LATE-MODEL, TRACK-MOUNTED LOADER; RATED NOT LESS THAN 230-HP FLYWHEEL POWER AND DEVELOPING A MINIMUM OF 47,992-LBF BREAKOUT FORCE WITH A GENERAL PURPOSE BARE BUCKET; MEASURED ACCORDING TO SAE J-732.
I. ROCK: ROCK MATERIAL IN BEDS, LEDGES, UNSTRATIFIED MASSES, CONGLOMERATE DEPOSITS, AND BOULDERS OF ROCK MATERIAL [3/4 CU. YD.] OR MORE IN VOLUME THAT EXCEED A STANDARD PENETRATION RESISTANCE OF [100 BLOWS/2 INCHES] WHEN TESTED BY A GEOTECHNICAL TESTING AGENCY, ACCORDING TO ASTM D 1586.
J. STRUCTURES: BUILDINGS, FOOTINGS, FOUNDATIONS, RETAINING WALLS, SLABS, TANKS, CURBS, MECHANICAL AND ELECTRICAL APPURTENANCES, OR OTHER MAN-MADE STATIONARY FEATURES CONSTRUCTED ABOVE OR BELOW THE GROUND SURFACE.
K. SUBBASE COURSE: AGGREGATE LAYER PLACED BETWEEN THE SUBGRADE AND BASE COURSE FOR HOT-MIX ASPHALT PAVEMENT, OR AGGREGATE LAYER PLACED BETWEEN THE SUBGRADE AND A CEMENT CONCRETE PAVEMENT OR A CEMENT CONCRETE OR HOT-MIX ASPHALT WALK.
L. SUBGRADE: UPPERMOST SURFACE OF AN EXCAVATION OR THE TOP SURFACE OF A FILL OR BACKFILL IMMEDIATELY BELOW SUBBASE, DRAINAGE FILL, DRAINAGE COURSE, OR TOPSOIL MATERIALS.
M. UTILITIES: ON-SITE UNDERGROUND PIPES, CONDUITS, DUCTS, AND CABLES, AS WELL AS UNDERGROUND SERVICES WITHIN BUILDINGS.

1.4 SUBMITTALS
A. PRODUCT DATA: FOR EACH TYPE OF THE FOLLOWING MANUFACTURED PRODUCTS REQUIRED:
1. GEOTEXTILES.
B. SAMPLES FOR VERIFICATION: FOR THE FOLLOWING PRODUCTS, IN SIZES INDICATED BELOW:
1. GEOTEXTILE: 12 BY 12 INCHES.
C. QUALIFICATION DATA: FOR QUALIFIED TESTING AGENCY.
D. MATERIAL TEST REPORTS: FOR EACH [ON-SITE][AND][BORROW] SOIL MATERIAL PROPOSED FOR FILL AND BACKFILL AS FOLLOWS:
1. CLASSIFICATION ACCORDING TO ASTM D 2487.

1.5 QUALITY ASSURANCE
A. GEOTECHNICAL TESTING AGENCY QUALIFICATIONS: QUALIFIED ACCORDING TO ASTM E 329 AND ASTM D 3740 FOR TESTING INDICATED.

1.6 PROJECT CONDITIONS
A. TRAFFIC: MINIMIZE INTERFERENCE WITH ADJOINING ROADS, STREETS, WALKS, AND OTHER ADJACENT OCCUPIED OR USED FACILITIES DURING EARTH MOVING OPERATIONS.
1. DO NOT CLOSE OR OBSTRUCT STREETS, WALKS, OR OTHER ADJACENT OCCUPIED OR USED FACILITIES WITHOUT PERMISSION FROM OWNER AND AUTHORITIES HAVING JURISDICTION.
2. PROVIDE ALTERNATE ROUTES AROUND CLOSED OR OBSTRUCTED TRAFFIC WAYS IF REQUIRED BY OWNER OR AUTHORITIES HAVING JURISDICTION.
B. IMPROVEMENTS ON ADJOINING PROPERTY: AUTHORITY FOR PERFORMING EARTH MOVING INDICATED ON PROPERTY ADJOINING OWNER'S PROPERTY WILL BE OBTAINED BY OWNER BEFORE AWARD OF CONTRACT.
1. DO NOT PROCEED WITH WORK ON ADJOINING PROPERTY UNTIL DIRECTED BY ARCHITECT.
C. UTILITY LOCATOR SERVICE: NOTIFY [UTILITY LOCATOR SERVICE] FOR AREA WHERE PROJECT IS LOCATED BEFORE BEGINNING EARTH-MOVING OPERATIONS.
D. DO NOT COMMENCE EARTH-MOVING OPERATIONS UNTIL TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES, SPECIFIED IN [DIVISION 1 SECTION "TEMPORARY FACILITIES AND CONTROLS,"][DIVISION 2 SECTION "SITE CLEARING,"] ARE IN PLACE.
E. DO NOT COMMENCE EARTH-MOVING OPERATIONS UNTIL PLANT-PROTECTION MEASURES SPECIFIED TO DIVISION 2 SECTION "TREE PROTECTION AND TRIMMING" ARE IN PLACE.
F. THE FOLLOWING PRACTICES ARE PROHIBITED WITHIN PROTECTION ZONES:
1. STORAGE OF CONSTRUCTION MATERIALS, DEBRIS, OR EXCAVATED MATERIAL.
2. PARKING VEHICLES OR EQUIPMENT.
3. FOOT TRAFFIC.
4. ERECTION OF SHEDS OR STRUCTURES.
5. IMPOUNDMENT OF WATER.
6. EXCAVATION OR OTHER DIGGING UNLESS OTHERWISE INDICATED.
7. ATTACHMENT OF SIGNS TO OR WRAPPING MATERIALS AROUND TREES OR PLANTS UNLESS OTHERWISE INDICATED.
G. DO NOT DIRECT VEHICLE OR EQUIPMENT EXHAUST TOWARDS PROTECTION ZONES.
H. PROHIBIT HEAT SOURCES, FLAMES, IGNITION SOURCES, AND SMOKING WITHIN OR NEAR PROTECTION ZONES.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS
A. GENERAL: PROVIDE BORROW SOIL MATERIALS WHEN SUFFICIENT SATISFACTORY SOIL MATERIALS ARE NOT AVAILABLE FROM EXCAVATIONS.
B. SATISFACTORY SOILS: SOIL CLASSIFICATION [GROUPS GW, GP, GM, SW, SP, AND SM ACCORDING TO ASTM D 2487][GROUPS A-1, A-2-4, A-2-5, AND A-3 ACCORDING TO AASHTO M 145], OR A COMBINATION OF THESE GROUPS FREE OF ROCK OR GRAVEL LARGER THAN [3 INCHES] IN ANY DIMENSION, DEBRIS, WASTE, FROZEN MATERIALS, VEGETATION, AND OTHER DELETERIOUS MATTER.
C. UNSATISFACTORY SOILS: SOIL CLASSIFICATION [GROUPS GC, SC, CL, ML, OL, CH, MH, OH, AND PT ACCORDING TO ASTM D 2487][GROUPS A-2-6, A-2-7, A-4, A-5, A-6, AND A-7 ACCORDING TO AASHTO M 145], OR A COMBINATION OF THESE GROUPS.
1. UNSATISFACTORY SOILS ALSO INCLUDE SATISFACTORY SOILS NOT MAINTAINED WITHIN 2 PERCENT OF OPTIMUM MOISTURE CONTENT AT TIME OF COMPACTION.
D. SUBBASE MATERIAL: NATURALLY OR ARTIFICIALLY GRADED MIXTURE OF NATURAL OR CRUSHED GRAVEL, CRUSHED STONE, AND NATURAL OR CRUSHED SAND; ASTM D 2940; WITH AT LEAST 90 PERCENT PASSING A 1-1/2-INCH SIEVE AND NOT MORE THAN 12 PERCENT PASSING A NO. 200 SIEVE.
E. BASE COURSE: NATURALLY OR ARTIFICIALLY GRADED MIXTURE OF NATURAL OR CRUSHED GRAVEL, CRUSHED STONE, AND NATURAL OR CRUSHED SAND; ASTM D 2940; WITH AT LEAST 95 PERCENT PASSING A 1-1/2 INCH SIEVE AND NOT MORE THAN 8 PERCENT PASSING A NO. 200 SIEVE.
F. BEDDING COURSE: NATURALLY OR ARTIFICIALLY GRADED MIXTURE OF NATURAL OR CRUSHED GRAVEL, CRUSHED STONE, AND NATURAL OR CRUSHED SAND; ASTM D 2940; EXCEPT WITH 100 PERCENT PASSING A 1 INCH SIEVE AND NOT MORE THAN 8 PERCENT PASSING A NO. 200 SIEVE.
G. DRAINAGE COURSE: NARROWLY GRADED MIXTURE OF [WASHED] CRUSHED STONE, OR CRUSHED OR UNCRUSHED GRAVEL; ASTM D 448; COARSE-AGGREGATE GRADING SIZE 57; WITH 100 PERCENT PASSING A 1-1/2 INCH SIEVE AND 0 TO 5 PERCENT PASSING A NO.8 SIEVE.
H. FILTER MATERIAL: NARROWLY GRADED MIXTURE OF NATURAL OR CRUSHED GRAVEL, OR CRUSHED STONE AND NATURAL SAND; ASTM D 448; COARSE-AGGREGATE GRADING SIZE 67; WITH 100 PERCENT PASSING A 1 INCH SIEVE AND 0 TO 5 PERCENT PASSING A NO.4 SIEVE.
I. SAND: ASTM C 33; FINE AGGREGATE.
J. IMPERVIOUS FILL: CLAYEY GRAVEL AND SAND MIXTURE CAPABLE OF COMPACTING TO A DENSE STATE.

2.2 GEOTEXTILES
A. SEPARATION GEOTEXTILE: WOVEN GEOTEXTILE FABRIC, MANUFACTURED FOR SEPARATION APPLICATIONS, MADE FROM POLYOLEFIN'S OR POLYESTERS; WITH ELONGATION LESS THAN 50 PERCENT; COMPLYING WITH AASHTO M 288 AND THE FOLLOWING, MEASURED PER TEST METHODS REFERENCED:
1. SURVIVABILITY: CLASS 2; AASHTO M 288.
2. GRAB TENSILE STRENGTH: 247 IBF; ASTM D 4632.
3. SEWN SEAM STRENGTH: 2221BF; ASTM D 4632.
4. TEAR STRENGTH: 90 LBF; ASTM D 4533.
5. PUNCTURE STRENGTH: 90 LBF; ASTM D 4833.
6. APPARENT OPENING SIZE: NO. 60 SIEVE, MAXIMUM; ASTM D 4751.
7. PERMEABILITY: 0.02 PER SECOND, MINIMUM; ASTM D 4491.
8. UV STABILITY: 50 PERCENT AFTER 500 HOURS' EXPOSURE; ASTM D 4355.

EARTHWORK (CONT'D)

PART 3 - EXECUTION

3.1 PREPARATION
A. PROTECT STRUCTURES, UTILITIES, SIDEWALKS, PAVEMENTS, AND OTHER FACILITIES FROM DAMAGE CAUSED BY SETTLEMENT, LATERAL MOVEMENT, UNDERMINING, WASHOUT, AND OTHER HAZARDS CREATED BY EARTH MOVING OPERATIONS.
B. PROTECT AND MAINTAIN EROSION AND SEDIMENTATION CONTROLS DURING EARTH MOVING OPERATIONS.
C. PROTECT SUBGRADES AND FOUNDATION SOILS FROM FREEZING TEMPERATURES AND FROST. REMOVE TEMPORARY PROTECTION BEFORE PLACING SUBSEQUENT MATERIALS.

3.2 DEWATERING
A. PREVENT SURFACE WATER AND GROUND WATER FROM ENTERING EXCAVATIONS, FROM PONDING ON PREPARED SUBGRADES, AND FROM FLOODING PROJECT SITE AND SURROUNDING AREA.
B. PROTECT SUBGRADES FROM SOFTENING, UNDERMINING, WASHOUT, AND DAMAGE BY RAM OR WATER ACCUMULATION.
1. REROUTE SURFACE WATER RUNOFF AWAY FROM EXCAVATED AREAS. DO NOT ALLOW WATER TO ACCUMULATE IN EXCAVATIONS. DO NOT USE EXCAVATED TRENCHES AS TEMPORARY DRAINAGE DITCHES.

3.3 EXCAVATION, GENERAL
A. UNCLASSIFIED EXCAVATION: EXCAVATE TO SUBGRADE ELEVATIONS REGARDLESS OF THE CHARACTER OF SURFACE AND SUBSURFACE CONDITIONS ENCOUNTERED. UNCLASSIFIED EXCAVATED MATERIALS MAY INCLUDE ROCK, SOIL MATERIALS, AND OBSTRUCTIONS. NO CHANGES IN THE CONTRACT SUM OR THE CONTRACT TIME WILL BE AUTHORIZED FOR ROCK EXCAVATION OR REMOVAL OF OBSTRUCTIONS.
1. IF EXCAVATED MATERIALS INTENDED FOR FILL AND BACKFILL INCLUDE UNSATISFACTORY SOIL MATERIALS AND ROCK, REPLACE WITH SATISFACTORY SOIL MATERIALS.
2. REMOVE ROCK TO LINES AND GRADES INDICATED TO PERMIT INSTALLATION OF PERMANENT CONSTRUCTION WITHOUT EXCEEDING THE FOLLOWING DIMENSIONS:
A. [24 INCHES] OUTSIDE OF CONCRETE FORMS OTHER THAN AT FOOTINGS.
B. [12 INCHES] OUTSIDE OF CONCRETE FORMS AT FOOTINGS.
C. [6 INCHES] OUTSIDE OF MINIMUM REQUIRED DIMENSIONS OF CONCRETE CAST AGAINST GRADE.
D. OUTSIDE DIMENSIONS OF CONCRETE WALLS INDICATED TO BE CAST AGAINST ROCK WITHOUT FORMS OR EXTERIOR WATERPROOFING TREATMENTS.
E. [6 INCHES] BENEATH BOTTOM OF CONCRETE SLABS-ON-GRADE.
F. [6 INCHES] BENEATH PIPE IN TRENCHES, AND THE GREATER OF [24 INCHES] WIDER THAN PIPE OR [42 INCHES] WIDE.

3.4 EXCAVATION FOR STRUCTURES
A. EXCAVATE TO INDICATED ELEVATIONS AND DIMENSIONS WITHIN A TOLERANCE OF PLUS OR MINUS 1 INCH. IF APPLICABLE, EXTEND EXCAVATIONS A SUFFICIENT DISTANCE FROM STRUCTURES FOR PLACING AND REMOVING CONCRETE FORMWORK, FOR INSTALLING SERVICES AND OTHER CONSTRUCTION, AND FOR INSPECTIONS.
1. EXCAVATIONS FOR FOOTINGS AND FOUNDATIONS: DO NOT DISTURB BOTTOM OF EXCAVATION. EXCAVATE BY HAND TO FINAL GRADE JUST BEFORE PLACING CONCRETE REINFORCEMENT. TRIM BOTTOMS TO REQUIRED LINES AND GRADES TO LEAVE SOLID BASE TO RECEIVE OTHER WORK.
2. EXCAVATION FOR UNDERGROUND TANKS, BASINS, AND MECHANICAL OR ELECTRICAL UTILITY STRUCTURES: EXCAVATE TO ELEVATIONS AND DIMENSIONS INDICATED WITHIN A TOLERANCE OF PLUS OR MINUS 1 INCH. DO NOT DISTURB BOTTOM OF EXCAVATIONS INTENDED AS BEARING SURFACES.
B. EXCAVATIONS AT EDGES OF TREE- AND PLANT-PROTECTION ZONES:
1. EXCAVATE BY HAND TO INDICATED LINES, CROSS SECTIONS, ELEVATIONS, AND SUBGRADES. USE NARROW-TINE SPADING FORKS TO COMB SOIL AND EXPOSE ROOTS. DO NOT BREAK, TEAR, OR CHOP EXPOSED ROOTS. DO NOT USE MECHANICAL EQUIPMENT THAT RIPS, TEARS, OR PULLS ROOTS.
2. CUT AND PROTECT ROOTS ACCORDING TO REQUIREMENTS IN DIVISION 2 SECTION "TREE PROTECTION AND TRIMMING."

3.5 EXCAVATION FOR WALKS AND PAVEMENTS
A. EXCAVATE SURFACES UNDER WALKS AND PAVEMENTS TO INDICATED LINES, CROSS SECTIONS, ELEVATIONS, AND SUBGRADES.

3.6 EXCAVATION FOR UTILITY TRENCHES
A. EXCAVATE TRENCHES TO INDICATED GRADIENTS, LINES, DEPTHS, AND ELEVATIONS.
B. EXCAVATE TRENCHES TO UNIFORM WIDTHS TO PROVIDE THE FOLLOWING CLEARANCE ON EACH SIDE OF PIPE OR CONDUIT. EXCAVATE TRENCH WALLS VERTICALLY FROM TRENCH BOTTOM TO 12 INCHES HIGHER THAN TOP OF PIPE OR CONDUIT UNLESS OTHERWISE INDICATED.
1. CLEARANCE: [12 INCHES EACH SIDE OF PIPE OR CONDUIT] [AS INDICATED].
C. TRENCH BOTTOMS: EXCAVATE AND SHAPE TRENCH BOTTOMS TO PROVIDE UNIFORM BEARING AND SUPPORT OF PIPES AND CONDUIT. SHAPE SUBGRADE TO PROVIDE CONTINUOUS SUPPORT FOR BELLS, JOINTS, AND BARRELS OF PIPES AND FOR JOINTS, FITTINGS, AND BODIES OF CONDUITS. REMOVE PROJECTING STONES AND SHARP OBJECTS ALONG TRENCH SUBGRADE.
1. FOR PIPES AND CONDUIT LESS THAN 6 INCHES IN NOMINAL DIAMETER, HAND-EXCAVATE TRENCH BOTTOMS AND SUPPORT PIPE AND CONDUIT ON AN UNDISTURBED SUBGRADE.
2. FOR PIPES AND CONDUIT 6 INCHES OR LARGER IN NOMINAL DIAMETER, SHAPE BOTTOM OF TRENCH TO SUPPORT BOTTOM 90 DEGREES OF PIPE OR CONDUIT CIRCUMFERENCE. FILL DEPRESSIONS WITH TAMPED SAND BACKFILL.
3. FOR FLAT-BOTTOMED, MULTIPLE-DUCT CONDUIT UNITS, HAND-EXCAVATE TRENCH BOTTOMS AND SUPPORT CONDUIT ON AN UNDISTURBED SUBGRADE.
4. EXCAVATE TRENCHES 6 INCHES DEEPER THAN ELEVATION REQUIRED IN ROCK OR OTHER UNYIELDING BEARING MATERIAL TO ALLOW FOR BEDDING COURSE.
D. TRENCH BOTTOMS: EXCAVATE TRENCHES 4 INCHES DEEPER THAN BOTTOM OF PIPE AND CONDUIT ELEVATIONS TO ALLOW FOR BEDDING COURSE. HAND-EXCAVATE DEEPER FOR BELLS OF PIPE.
1. EXCAVATE TRENCHES 6 INCHES DEEPER THAN ELEVATION REQUIRED IN ROCK OR OTHER UNYIELDING BEARING MATERIAL TO ALLOW FOR BEDDING COURSE.
E. TRENCHES IN TREE- AND PLANT-PROTECTION ZONES:
1. HAND-EXCAVATE TO INDICATED LINES, CROSS SECTIONS, ELEVATIONS, AND SUBGRADES. USE NARROW TINE SPADING FORKS TO COMB SOIL AND EXPOSE ROOTS. DO NOT BREAK, TEAR, OR CHOP EXPOSED ROOTS. DO NOT USE MECHANICAL EQUIPMENT THAT RIPS, TEARS, OR PULLS ROOTS.
2. DO NOT CUT MAIN LATERAL ROOTS OR TAPROOTS; CUT ONLY SMALLER ROOTS THAT INTERFERE WITH INSTALLATION OF UTILITIES.
3. CUT AND PROTECT ROOTS ACCORDING TO REQUIREMENTS IN DIVISION 2 SECTION "TREE PROTECTION AND TRIMMING."

3.7 SUBGRADE INSPECTION
A. NOTIFY ARCHITECT WHEN EXCAVATIONS HAVE REACHED REQUIRED SUBGRADE.
B. IF ARCHITECT DETERMINES THAT UNSATISFACTORY SOIL IS PRESENT, CONTINUE EXCAVATION AND REPLACE WITH COMPACTED BACKFILL OR FILL MATERIAL AS DIRECTED.
C. PROOF-ROLL SUBGRADE WITH A PNEUMATIC-TIRED [AND LOADED 10-WHEEL, TANDEM-AXLE DUMP TRUCK WEIGHING NOT LESS THAN 15 TONS] TO IDENTIFY SOFT POCKETS AND AREAS OF EXCESS YIELDING. DO NOT PROOF-ROLL WET OR SATURATED SUBGRADES.
1. COMPLETELY PROOF-ROLL SUBGRADE IN ONE DIRECTION [, REPEATING PROOF-ROLLING IN DIRECTION PERPENDICULAR TO FIRST DIRECTION]. LIMIT VEHICLE SPEED TO 3 MPH.
2. EXCAVATE SOFT SPOTS, UNSATISFACTORY SOILS, AND AREAS OF EXCESSIVE PUMPING OR RUTTING, AS DETERMINED BY ARCHITECT, AND REPLACE WITH COMPACTED BACKFILL OR FILL AS DIRECTED.
D. AUTHORIZED ADDITIONAL EXCAVATION AND REPLACEMENT MATERIAL WILL BE PAID FOR ACCORDING TO CONTRACT PROVISIONS FOR [UNIT PRICES].
E. RECONSTRUCT SUBGRADES DAMAGED BY FREEZING TEMPERATURES, FROST, RAIN, ACCUMULATED WATER, OR CONSTRUCTION ACTIVITIES, AS DIRECTED BY ARCHITECT, WITHOUT ADDITIONAL COMPENSATION.

3.8 UNAUTHORIZED EXCAVATION
A. FILL UNAUTHORIZED EXCAVATION UNDER FOUNDATIONS OR WALL FOOTINGS BY EXTENDING BOTTOM ELEVATION OF CONCRETE FOUNDATION OR FOOTING TO EXCAVATION BOTTOM, WITHOUT ALTERING TOP ELEVATION. LEAN CONCRETE FILL, WITH 28-DAY COMPRESSIVE STRENGTH OF 2500 PSI, MAY BE USED WHEN APPROVED BY ARCHITECT.
1. FILL UNAUTHORIZED EXCAVATIONS UNDER OTHER CONSTRUCTION, PIPE, OR CONDUIT AS DIRECTED BY ARCHITECT.

3.9 STORAGE OF SOIL MATERIALS
A. STOCKPILE BORROWS SOIL MATERIALS AND EXCAVATED SATISFACTORY SOIL MATERIALS WITHOUT INTERMIXING. PLACE GRADE, AND SHAPE STOCKPILES TO DRAIN SURFACE WATER. COVER WITH STRAW AND SEED TO PREVENT EROSION.
1. STOCKPILE SOIL MATERIALS AWAY FROM EDGE OF EXCAVATIONS. DO NOT STORE WITHIN DRIP LINE OF REMAINING TREES.

3.10 BACKFILL
A. PLACE AND COMPACT BACKFILL IN EXCAVATIONS PROMPTLY, BUT NOT BEFORE COMPLETING THE FOLLOWING:
1. CONSTRUCTION BELOW FINISH GRADE INCLUDING, WHERE APPLICABLE, SUBDRAINAGE, DAMP PROOFING, WATERPROOFING, AND PERIMETER INSULATION.
2. SURVEYING LOCATIONS OF UNDERGROUND UTILITIES FOR RECORD DOCUMENTS.
3. TESTING AND INSPECTING UNDERGROUND UTILITIES.
4. REMOVING CONCRETE FORMWORK.
5. REMOVING TRASH AND DEBRIS.
6. REMOVING TEMPORARY SHORING AND BRACING, AND SHEETING.
7. INSTALLING PERMANENT OR TEMPORARY HORIZONTAL BRACING ON HORIZONTALLY SUPPORTED WALLS.
B. PLACE BACKFILL ON SUBGRADES FREE OF MUD, FROST, SNOW, OR ICE.

3.11 UTILITY TRENCH BACKFILL
A. PLACE BACKFILL ON SUBGRADES FREE OF MUD, FROST, SNOW, OR ICE.
B. PLACE AND COMPACT BEDDING COURSE ON TRENCH BOTTOMS AND WHERE INDICATED. SHAPE BEDDING COURSE TO PROVIDE CONTINUOUS SUPPORT FOR BELLS, JOINTS, AND BARRELS OF PIPES AND FOR JOINTS, FITTINGS, AND BODIES OF CONDUITS.
C. TRENCHES UNDER FOOTINGS: BACKFILL TRENCHES EXCAVATED UNDER FOOTINGS AND WITHIN 18 INCHES OF FOOTING BOTTOM WITH SATISFACTORY SOIL; FILL WITH CONCRETE TO ELEVATION OF BOTTOM OF FOOTINGS. CONCRETE IS SPECIFIED IN DIVISION 3 SECTION.
D. BACKFILL VOIDS WITH SATISFACTORY SOIL WHILE REMOVING SHORING AND BRACING.
E. PLACE AND COMPACT INITIAL BACKFILL OF [SUBBASE MATERIAL] AND [SATISFACTORY SOIL], FREE OF PARTICLES LARGER THAN [1 INCH] IN ANY DIMENSION, TO A HEIGHT OF 12 INCHES OVER THE PIPE OR CONDUIT.
1. CAREFULLY COMPACT INITIAL BACKFILL UNDER PIPE HAUNCHES AND COMPACT EVENLY UP ON BOTH SIDES AND ALONG THE FULL LENGTH OF PIPING OR CONDUIT TO AVOID DAMAGE OR DISPLACEMENT OF PIPING OR CONDUIT. COORDINATE BACKFILLING WITH UTILITIES TESTING.
F. PLACE AND COMPACT FINAL BACKFILL OF SATISFACTORY SOIL TO FINAL SUBGRADE ELEVATION.

3.12 SOIL FILL
A. PLOW, SCARIFY, BENCH, OR BREAK UP SLOPED SURFACES STEEPER THAN I VERTICAL TO 4 HORIZONTAL SO FILL MATERIAL WILL BOND WITH EXISTING MATERIAL.
B. PLACE AND COMPACT FILL MATERIAL IN LAYERS TO REQUIRED ELEVATIONS AS FOLLOWS:
1. UNDER GRASS AND PLANTED AREAS, USE SATISFACTORY SOIL MATERIAL.
2. UNDER WALKS AND PAVEMENTS, USE SATISFACTORY SOIL MATERIAL.
3. UNDER STEPS AND RAMPS, USE ENGINEERED FILL.
4. UNDER BUILDING SLABS, USE ENGINEERED FILL.

EARTHWORK (CONT'D)

5. UNDER FOOTINGS AND FOUNDATIONS, USE ENGINEERED FILL.
C. PLACE SOIL FILL ON SUBGRADES FREE OF MUD, FROST, SNOW, OR ICE.

3.13 SOIL MOISTURE CONTROL
A. UNIFORMLY MOISTEN OR AERATE SUBGRADE AND EACH SUBSEQUENT FILL OR BACKFILL SOIL LAYER BEFORE COMPACTION TO WITHIN 2 PERCENT OF OPTIMUM MOISTURE CONTENT.
1. DO NOT PLACE BACKFILL OR FILL SOIL MATERIAL ON SURFACES THAT ARE MUDDY, FROZEN, OR CONTAIN FROST OR ICE.
2. REMOVE AND REPLACE, OR SCARIFY AND AIR DRY, OTHERWISE SATISFACTORY SOIL MATERIAL THAT EXCEEDS OPTIMUM MOISTURE CONTENT BY 2 PERCENT AND IS TOO WET TO COMPACT TO SPECIFIED DRY UNIT WEIGHT.

3.14 COMPACTION OF SOIL BACKFILLS AND FILLS
A. PLACE BACKFILL AND FILL SOIL MATERIALS IN LAYERS NOT MORE THAN 8 INCHES IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT, AND NOT MORE THAN 4 INCHES IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HAND-OPERATED TAMPERS.
B. PLACE BACKFILL AND FILL SOIL MATERIALS EVENLY ON ALL SIDES OF STRUCTURES TO REQUIRED ELEVATIONS, AND UNIFORMLY ALONG THE FULL LENGTH OF EACH STRUCTURE.
C. COMPACT SOIL MATERIALS TO NOT LESS THAN THE FOLLOWING PERCENTAGES OF MAXIMUM DRY UNIT WEIGHT ACCORDING TO [ASTM D 698][ASTM D 1557]:
1. UNDER STRUCTURES, BUILDING SLABS, STEPS, AND PAVEMENTS, SCARIFY AND RECOMPACT TOP 12 INCHES OF EXISTING SUBGRADE AND EACH LAYER OF BACKFILL OR FILL SOIL MATERIAL AT [98] PERCENT STANDARD PROCTOR.
2. UNDER WALKWAYS, SCARIFY AND RECOMPACT TOP 6 INCHES BELOW SUBGRADE AND COMPACT EACH LAYER OF BACKFILL OR FILL SOIL MATERIAL AT [92] PERCENT.
3. UNDER TURF OR UNPAVED AREAS, SCARIFY AND RECOMPACT TOP 6 INCHES BELOW SUBGRADE AND COMPACT EACH LAYER OF BACKFILL OR FILL SOIL MATERIAL AT [85] PERCENT.
4. FOR UTILITY TRENCHES, COMPACT EACH LAYER OF INITIAL AND FINAL BACKFILL SOIL MATERIAL AT [85] PERCENT.

3.15 GRADING
A. GENERAL: UNIFORMLY GRADE AREAS TO A SMOOTH SURFACE, FREE OF IRREGULAR SURFACE CHANGES. COMPLY WITH COMPACTION REQUIREMENTS AND GRADE TO CROSS SECTIONS, LINES, AND ELEVATIONS INDICATED.
1. PROVIDE A SMOOTH TRANSITION BETWEEN ADJACENT EXISTING GRADES AND NEW GRADES.
2. CUT OUT SOFT SPOTS, FILL LOW SPOTS, AND TRIM HIGH SPOTS TO COMPLY WITH REQUIRED SURFACE TOLERANCES.
B. SITE ROUGH GRADING: SLOPE GRADES TO DIRECT WATER AWAY FROM BUILDINGS AND TO PREVENT PONDING.FINISH SUBGRADES TO REQUIRED ELEVATIONS WITHIN THE FOLLOWING TOLERANCES:
1. TURF OR UNPAVED AREAS: PLUS OR MINUS [1 INCH].
2. WALKS: PLUS OR MINUS [1 INCH].
3. PAVEMENTS: PLUS OR MINUS [112 INCH].
C. GRADING INSIDE BUILDING LINES: FINISH SUBGRADE TO A TOLERANCE OF [112 INCH] WHEN TESTED WITH A LO-FOOT STRAIGHTEDGE.

3.16 SUBSURFACE DRAINAGE
A. SUBDRAINAGE PIPE: SPECIFIED IN DIVISION 2 SECTION "SUBDRAINAGE."
B. SUBSURFACE DRAIN: PLACE SUBSURFACE DRAINAGE GEOTEXTILE AROUND PERIMETER OF SUBDRAINAGE TRENCH. PLACE A 6-INCH COURSE OF FILTER MATERIAL ON SUBSURFACE DRAINAGE GEOTEXTILE TO SUPPORT SUBDRAINAGE PIPE. ENCASE SUBDRAINAGE PIPE IN A MINIMUM OF 12 INCHES OF FILTER MATERIAL, PLACED IN COMPACTED LAYERS 6 INCHES THICK, AND WRAP IN SUBSURFACE DRAINAGE GEOTEXTILE, OVERLAPPING SIDES AND ENDS AT LEAST 6 INCHES.
1. COMPACT EACH FILTER MATERIAL LAYER [TO 85 PERCENT OF MAXIMUM DRY UNIT WEIGHT ACCORDING TO ASTM D 698][WITH A MINIMUM OF TWO PASSES OF A PLATE-TYPE VIBRATORY COMPACTOR].
C. DRAINAGE BACKFILL: PLACE AND COMPACT FILTER MATERIAL OVER SUBSURFACE DRAIN, IN WIDTH INDICATED, TO WITHIN 12 INCHES OF FINAL SUBGRADE, IN COMPACTED LAYERS 6 INCHES THICK. OVERLAY DRAINAGE BACKFILL WITH ONE LAYER OF SUBSURFACE DRAINAGE GEOTEXTILE, OVERLAPPING SIDES AND ENDS AT LEAST 6 INCHES.
1. COMPACT EACH FILTER MATERIAL LAYER [TO 85 PERCENT OF MAXIMUM DRY UNIT WEIGHT ACCORDING TO ASTM D 698][WITH A MINIMUM OF TWO PASSES OF A PLATE-TYPE VIBRATORY COMPACTOR].
2. PLACE AND COMPACT IMPERVIOUS FILL OVER DRAINAGE BACKFILL IN 6-INCH THICK COMPACTED LAYERS TO FINAL SUBGRADE.

3.17 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS
A. PLACE SUBBASE COURSE AND BASE COURSE ON SUBGRADES FREE OF MUD, FROST, SNOW, OR ICE.
B. ON PREPARED SUBGRADE, PLACE SUBBASE COURSE UNDER PAVEMENTS AND WALKS AS FOLLOWS:
1. SHAPE SUBBASE COURSE TO REQUIRED CROWN ELEVATIONS AND CROSS-SLOPE GRADES.
2. PLACE SUBBASE COURSE 6 INCHES OR LESS IN COMPACTED THICKNESS IN A SINGLE LAYER.
3. PLACE SUBBASE COURSE THAT EXCEEDS 6 INCHES IN COMPACTED THICKNESS IN LAYERS OF EQUAL THICKNESS, WITH NO COMPACTED LAYER MORE THAN 6 INCHES THICK OR LESS THAN 3 INCHES THICK.
4. COMPACT SUBBASE COURSE AT OPTIMUM MOISTURE CONTENT TO REQUIRED GRADES, LINES, CROSS SECTIONS, AND THICKNESS TO NOT LESS THAN [95] PERCENT OF MAXIMUM DRY UNIT WEIGHT ACCORDING TO [ASTM D 698][ASTM D 1557].
C. PAVEMENT SHOULDERS: PLACE SHOULDERS ALONG EDGES OF SUBBASE COURSE [AND BASE COURSE] TO PREVENT LATERAL MOVEMENT. CONSTRUCT SHOULDERS, AT LEAST 12 INCHES WIDE, OF SATISFACTORY SOIL MATERIALS AND COMPACT SIMULTANEOUSLY WITH EACH SUBBASE [AND BASE] LAYER TO NOT LESS THAN [95] PERCENT OF MAXIMUM DRY UNIT WEIGHT ACCORDING TO [ASTM D 698][ASTM D 1557].

3.18 FIELD QUALITY CONTROL
A. SPECIAL INSPECTIONS: OWNER WILL ENGAGE A QUALIFIED SPECIAL INSPECTOR TO PERFORM THE FOLLOWING SPECIAL INSPECTIONS:
1. DETERMINE PRIOR TO PLACEMENT OF FILL THAT SITE HAS BEEN PREPARED IN COMPLIANCE WITH REQUIREMENTS.
2. DETERMINE THAT FILL MATERIAL AND MAXIMUM LIFT THICKNESS COMPLY WITH REQUIREMENTS.
3. DETERMINE, AT THE REQUIRED FREQUENCY, THAT IN-PLACE DENSITY OF COMPACTED FILL COMPLIES WITH REQUIREMENTS.
B. TESTING AGENCY: OWNER WILL ENGAGE A QUALIFIED GEOTECHNICAL ENGINEERING TESTING AGENCY TO PERFORM TESTS AND INSPECTIONS.
C. ALLOW TESTING AGENCY TO INSPECT AND TEST SUBGRADES AND EACH FILL OR BACKFILL LAYER. PROCEED WITH SUBSEQUENT EARTH MOVING ONLY AFTER TEST RESULTS FOR PREVIOUSLY COMPLETED WORK COMPLY WITH REQUIREMENTS.
D. FOOTING SUBGRADE: AT FOOTING SUBGRADES, AT LEAST ONE TEST OF EACH SOIL STRATUM WILL BE PERFORMED TO VERIFY DESIGN-BEARING CAPACITIES. SUBSEQUENT VERIFICATION AND APPROVAL OF OTHER FOOTING SUBGRADES MAY BE BASED ON A VISUAL COMPARISON OF SUBGRADE WITH TESTED SUBGRADE WHEN APPROVED BY ARCHITECT.
E. TESTING AGENCY WILL TEST COMPACTION OF SOILS IN PLACE ACCORDING TO ASTM D 1556, ASTM D 2167, ASTM D 2922, AND ASTM D 2937, AS APPLICABLE. TESTS WILL BE PERFORMED AT THE FOLLOWING LOCATIONS AND FREQUENCIES:
1. PAVED AND BUILDING SLAB AREAS: AT SUBGRADE AND AT EACH COMPACTED FILL AND BACKFILL LAYER, AT LEAST ONE TEST FOR EVERY [2000 SQ. FT.] OR LESS OF PAVED AREA OR BUILDING SLAB, BUT IN NO CASE FEWER THAN THREE TESTS.
2. FOUNDATION WALL BACKFILL: AT EACH COMPACTED BACKFILL LAYER, AT LEAST ONE TEST FOR EVERY [100 FEET] OR LESS OF WALL LENGTH, BUT NO FEWER THAN TWO TESTS.
3. TRENCH BACKFILL: AT EACH COMPACTED INITIAL AND FINAL BACKFILL LAYER, AT LEAST ONE TEST FOR EVERY [150 FEET] OR LESS OF TRENCH LENGTH, BUT NO FEWER THAN TWO TESTS.
F. WHEN TESTING AGENCY REPORTS THAT SUBGRADES, FILLS, OR BACKFILLS HAVE NOT ACHIEVED DEGREE OF COMPACTION SPECIFIED, SCARIFY AND MOISTEN OR AERATE, OR REMOVE AND REPLACE SOIL MATERIALS TO DEPTH REQUIRED; RECOMPACT AND RETEST UNTIL SPECIFIED COMPACTION IS OBTAINED.

3.19 PROTECTION
A. PROTECTING GRADED AREAS: PROTECT NEWLY GRADED AREAS FROM TRAFFIC, FREEZING, AND EROSION. KEEP FREE OF TRASH AND DEBRIS.
B. REPAIR AND RE-ESTABLISH GRADES TO SPECIFY TOLERANCES WHERE COMPLETED OR PARTIALLY COMPLETED SURFACES BECOME ERODED, RUTTED, SETTLED, OR WHERE THEY LOSE COMPACTION DUE TO SUBSEQUENT CONSTRUCTION OPERATIONS OR WEATHER CONDITIONS.
1. SCARIFY OR REMOVE AND REPLACE SOIL MATERIAL TO DEPTH AS DIRECTED BY ARCHITECT RESHAPE AND RECOMPACT.
C. WHERE SETTLING OCCURS BEFORE PROJECT CORRECTION PERIOD ELAPSES, REMOVE FINISHED SURFACING, BACKFILL WITH ADDITIONAL SOIL MATERIAL, COMPACT, AND RECONSTRUCT SURFACING.
1. RESTORE APPEARANCE, QUALITY, AND CONDITION OF FINISHED SURFACING TO MATCH ADJACENT WORK, AND ELIMINATE EVIDENCE OF RESTORATION TO GREATEST EXTENT POSSIBLE.

3.20 DISPOSAL OF SURPLUS AND WASTE MATERIALS
A. TRANSPORT SURPLUS SATISFACTORY SOIL TO DESIGNATED STORAGE AREAS ON OWNER'S PROPERTY. STOCKPILE OR SPREAD SOIL AS DIRECTED BY ARCHITECT.
1. REMOVE WASTE MATERIALS, INCLUDING UNSATISFACTORY SOIL, TRASH, AND DEBRIS, AND LEGALLY DISPOSE OF THEM OFF OWNER'S PROPERTY.

STORM DRAINAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 1 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.
B. COMPLETION SURVEY OF DETENTION POND AND CERTIFICATION REQUIREMENTS FOR POND AND STORM SYSTEM.

1.2 SUMMARY
A. SECTION INCLUDES:
1. PIPE AND FITTINGS.
2. DRAINS.
3. ENCASEMENT FOR PIPING.
4. MANHOLES.
5. CATCH BASINS.
6. STORMWATER INLETS.
7. STORMWATER DETENTION STRUCTURES.
8. PIPE OUTLETS.

1.3 SUBMITTALS
A. SHOP DRAWINGS:
1. MANHOLES: INCLUDE PLANS, ELEVATIONS, SECTIONS, DETAILS, FRAMES, AND COVERS.
2. CATCH BASIN STORMWATER INLETS. INCLUDE PLANS, ELEVATIONS, SECTIONS, DETAILS, FRAMES, COVERS, AND GRATES.
3. STORMWATER DETENTION STRUCTURES: INCLUDE PLANS, ELEVATIONS, SECTIONS, DETAILS, FRAMES, COVERS, DESIGN CALCULATIONS, AND CONCRETE DESIGN-MIX REPORTS.

RED STAG SKETCH PLAT
A MASTER PLANNED RESIDENTIAL DEVELOPMENT
FOR
D.R. HORTON
1371 DOOGWOOD DR SW
CONYERS, GA 30012
PHONE: 470-774-4884

LAND LOT 228, 229, 253, 252, 257, 258
16TH DISTRICT

CITY OF SNELLVILLE / LITHONIA
DEKALB COUNTY
GEORGIA

"WE PROVIDE SOLUTIONS"
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▫ 350 RESEARCH COURT ▫ PEACHTREE CORNERS, GEORGIA 30092 ▫ (770) 451-2741 ▫ FAX (770) 451-3915 ▫

REVISIONS:

NO.	DATE	BY	DESCRIPTION
1	10/24/19	CAH	1ST SUBMITTAL
2	12/11/19	CAH	2ND SUBMITTAL
3	01/27/20	CAH	3RD SUBMITTAL

HANSEN FILE NO: 1243655

STANDARD SPECIFICATIONS

SCALE: N/A
DATE: 01/27/2020
PROJECT: 16309.00

THIS SEAL IS ONLY VALID IF COUNTER SIGNED AND DATED WITH AN ORIGINAL SIGNATURE.

GEORGIA REGISTERED No. 37096 PROFESSIONAL ENGINEER MATTHEW E KACZENSKI
01/27/2020

GSWCC LEVEL II DESIGN PROFESSIONAL
CERTIFICATION # 0000066476 EXP. 06/22/2021

GRID NORTH
GEORGIA WEST ZONE

S1.1
SHEET

PLANNERS AND ENGINEERS COLLABORATIVE
STANDARDS AND SPECIFICATIONS

STORM DRAINAGE (CONT'D)

1.4 DELIVERY, STORAGE, AND HANDLING
A. PROTECT PIPE, PIPE FITTINGS, AND SEALS FROM DIRT AND DAMAGE.
B. HANDLE MANHOLES ACCORDING TO MANUFACTURER'S WRITTEN RIGGING INSTRUCTIONS.
C. HANDLE CATCH BASINS AND STORMWATER INLETS ACCORDING TO MANUFACTURER'S WRITTEN RIGGING INSTRUCTIONS.

1.5 PROJECT CONDITIONS
A. INTERRUPTION OF EXISTING STORM DRAINAGE SERVICE: DO NOT INTERRUPT SERVICE TO FACILITIES OCCUPIED BY OWNER OR OTHERS UNLESS PERMITTED UNDER THE FOLLOWING CONDITIONS AND THEN ONLY AFTER ARRANGING TO PROVIDE TEMPORARY SERVICE ACCORDING TO REQUIREMENTS INDICATED:
1. NOTIFY [ARCHITECT] [CONSTRUCTION MANAGER] [OWNER] NO FEWER THAN [TWO] DAYS IN ADVANCE OF PROPOSED INTERRUPTION OF SERVICE.
2. DO NOT PROCEED WITH INTERRUPTION OF SERVICE WITHOUT [ARCHITECT'S] [CONSTRUCTION MANAGER'S] [OWNER'S] WRITTEN PERMISSION.

PART 2 - PRODUCTS

2.1 STEEL PIPE AND FITTINGS
A. ALUMINIZED TYPE II CORRUGATED - STEEL PIPE AND FITTINGS: ASTM A 760/A 760M, TYPE L OR AASHTO M36 WITH FITTINGS OF SIMILAR FORM AND CONSTRUCTION AS PIPE.
1. SPECIAL-JOINT BANDS: CORRUGATED STEEL, H-12 HUGGER BANDS WITH BAR, BOLT AND STRAP CONNECTOR.

2.2 ALUMINUM PIPE AND FITTINGS
A. CORRUGATED ALUMINUM PIPE AND FITTINGS: ASTM B 745/B 745M, TYPE I WITH FITTINGS OF SIMILAR FORM AND CONSTRUCTION AS PIPE.
1. SPECIAL-JOINT BANDS: CORRUGATED STEEL WITH O-RING SEALS.

2.3 CONCRETE PIPE AND FITTINGS
A. REINFORCED-CONCRETE SEWER PIPE AND FITTINGS: ASTM C 76.
1. BELL-AND-SPIGOT ENDS AND [GASKETED JOINTS WITH ASTM C 443, RUBBER GASKETS] [SEALANT JOINTS WITH ASTM C 990, BITUMEN OR BUTYL-RUBBER SEALANT].
2. CLASS I, [WALL A] [WALL B].
3. CLASS IV, [WALL A] [WALL B][WALL C].

2.4 HDPE PIPE AND FITTINGS
A. SMOOTH INTERIOR AND ANNULAR EXTERIOR CORRUGATIONS AND FITTINGS:AASHTO M252 (4"-10" DIAMETER) AASHTO M294 (12"-48")
B. JOINT PERFORMANCE: PIPES SHALL BE JOINTED BY BELL AND SPIGOT ACCORDING AASHTO M252, M294, OR ASTM F2306. THE JOINT SHALL BE SOIL TIGHT AND GASKETS, WHEN APPLICABLE, SHALL MEET THE REQUIREMENTS OF ASTM F477.
C. FITTINGS: FITTINGS SHALL CONFORM TO AASHTO M252, M294, OR ASTM F2306. BELL AND SPIGOT CONNECTIONS SHALL UTILIZE A SPUN-ON OR WELDED BELL AND VALLEY OR SADDLE GASKET MEETING THE SOIL TIGHT JOINT PERFORMANCE REQUIREMENTS OF AASHTO M252, M294, OR ASTM F2306.

2.5 NONPRESSURE TRANSITION COUPLINGS
A. SLEEVE MATERIALS:
1. FOR CONCRETE PIPES: ASTM C 443, RUBBER.

2.6 DRAINS
A. CAST-IRON AREA DRAINS:
1. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, [PROVIDE PRODUCTS BY ONE OF THE FOLLOWING][AVAILABLE MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING]:

2.7 MANHOLES
A. STANDARD PRECAST CONCRETE MANHOLES:
1. DESCRIPTION: ASTM C 478, PRECAST, REINFORCED CONCRETE, OF DEPTH INDICATED, WITH PROVISION FOR SEALANT JOINTS.
2. DIAMETER: 48 INCHES MINIMUM UNLESS OTHERWISE INDICATED.
3. RISER SECTIONS: 4-INCH MINIMUM THICKNESS, AND LENGTHS TO PROVIDE DEPTH INDICATED.
4. TOP SECTION: ECCENTRIC-CONE TYPE UNLESS CONCENTRIC-CONE OR FLAT-SLAB-TOP TYPE IS INDICATED, AND TOP OF CONE OF SIZE THAT MATCHES GRADE RINGS.
5. JOINT SEALANT: ASTM C 990, BITUMEN OR BUTYL RUBBER.
6. STEPS: [INDIVIDUAL FRP STEPS OR FRP LADDER][INDIVIDUAL FRP STEPS; FRP LADDER; OR ASTM A 615/A 615M, DEFORMED, 1I2-INCH STEEL REINFORCING RODS ENCASED IN ASTM D 4101, PP][ASTM A 615/A 615M, DEFORMED, 1I2-INCH STEEL REINFORCING RODS ENCASED IN ASTM D 4101, PP] WIDE ENOUGH TO ALLOW WORKER TO PLACE BOTH FEET ON ONE STEP AND DESIGNED TO PREVENT LATERAL SLIPPAGE OFF STEP. CAST OR ANCHOR STEPS INTO SIDEWALLS AT 12- TO 16-INCH INTERVALS. OMIT STEPS IF TOTAL DEPTH FROM FLOOR OF MANHOLE TO FINISHED GRADE IS LESS THAN [60 INCHES].
7. GRADE RINGS: REINFORCED-CONCRETE RINGS, 6- TO 9-INCH TOTAL THICKNESS, TO MATCH DIAMETER OF MANHOLE FRAME AND COVER, AND HEIGHT AS REQUIRED TO ADJUST MANHOLE FRAME AND COVER TO INDICATED ELEVATION AND SLOPE.
B. MANHOLE FRAMES AND COVERS:
1. DESCRIPTION: FERROUS 24-INCH ILL BY 7- TO 9-INCH RISER WITH 4-INCH MINIMUM WIDTH FLANGE AND 26-INCH DIAMETER COVER. INCLUDE INDENTED TOP DESIGN WITH LETTERING CAST INTO COVER, USING WORDING EQUIVALENT TO "STORM SEWER."
2. MATERIAL: [ASTM A 536, GRADE 60-40-18 DUCTILE][ASTM A 48/A 48M, CLASS 35 GRAY] IRON UNLESS OTHERWISE INDICATED.

2.8 POLYMER-CONCRETE, CHANNEL DRAINAGE SYSTEMS
A. DRAINAGE SPECIALTIES: PRECAST, POLYMER-CONCRETE UNITS.

2.9 CATCH BASINS
A. STANDARD PRECAST CONCRETE CATCH BASINS:
1. DESCRIPTION: ASTM C 478, PRECAST, REINFORCED CONCRETE, OF DEPTH INDICATED, WITH PROVISION FOR SEALANT JOINTS.
2. BASE SECTION: 6-INCH MINIMUM THICKNESS FOR FLOOR SLAB AND 4-INCH MINIMUM THICKNESS FOR WALLS AND BASE RISER SECTION, AND SEPARATE BASE SLAB OR BASE SECTION WITH INTEGRAL FLOOR.
3. RISER SECTIONS: 4-INCH MINIMUM THICKNESS, 48-INCH DIAMETER, AND LENGTHS TO PROVIDE DEPTH INDICATED.
4. TOP SECTION: ECCENTRIC-CONE TYPE UNLESS CONCENTRIC-CONE OR FLAT-SLAB-TOP TYPE IS INDICATED. TOP OF CONE OF SIZE THAT MATCHES GRADE RINGS.
5. JOINT SEALANT: ASTM C 990, BITUMEN OR BUTYL RUBBER.
6. ADJUSTING RINGS: INTERLOCKING RINGS WITH LEVEL OR SLOPED EDGE IN THICKNESS AND SHAPE MATCHING CATCH BASIN FRAME AND GRATE. INCLUDE SEALANT RECOMMENDED BY RING MANUFACTURER.
7. GRADE RINGS: INCLUDE TWO OR THREE REINFORCED-CONCRETE RINGS, OF 6- TO 9-INCH TOTAL THICKNESS, THAT MATCH 24-INCH DIAMETER FRAME AND GRATE.
8. STEPS: [INDIVIDUAL FRP STEPS OR FRP LADDER][INDIVIDUAL FRP STEPS; FRP LADDER; OR ASTM A 615/A 615M, DEFORMED, 1/2-INCH STEEL REINFORCING RODS ENCASED IN ASTM D 4101, PP][ASTM A 615/A 615M, DEFORMED, 112-INCH STEEL REINFORCING RODS ENCASED IN ASTM D 4101, PP] WIDE ENOUGH TO ALLOW WORKER TO PLACE BOTH FEET ON ONE STEP AND DESIGNED TO PREVENT LATERAL SLIPPAGE OFF STEP. CAST OR ANCHOR STEPS INTO SIDEWALLS AT 12- TO 16-INCH INTERVALS. OMIT STEPS IF TOTAL DEPTH FROM FLOOR OF CATCH BASIN TO FINISHED GRADE IS LESS THAN [60 INCHES].
9. PIPE CONNECTORS: ASTM C 923, RESILIENT, OF SIZE REQUIRED, FOR EACH PIPE CONNECTING TO BASE SECTION.
B. FRAMES AND GRATES: ASTM A 536, GRADE 60-40-18, DUCTILE IRON DESIGNED FOR A-16, STRUCTURAL LOADING. INCLUDE FLAT GRATE WITH SMALL SQUARE OR SHORT-SLOTTED DRAINAGE OPENINGS.
1. SIZE: 24 BY 24 INCHES MINIMUM UNLESS OTHERWISE INDICATED.

2.10 STORMWATER INLETS
A. CURB INLETS: MADE WITH VERTICAL CURB OPENING [OF MATERIALS AND DIMENSIONS ACCORDING TO UTILITY STANDARDS].
B. COMBINATION INLETS: MADE WITH VERTICAL CURB AND HORIZONTAL GUTTER OPENINGS [OF MATERIALS AND DIMENSIONS ACCORDING TO UTILITY STANDARDS]. INCLUDE HEAVY-DUTY FRAMES AND GRATES.

2.11 STORMWATER DETENTION OUTLET CONTROL STRUCTURES
A. CAST-IN-PLACE CONCRETE, STORMWATER DETENTION OUTLET CONTROL STRUCTURES: CONSTRUCTED OF REINFORCED-CONCRETE BOTTOM, WALLS, AND TOP; DESIGNED ACCORDING TO ASTM C 890 FOR A-16 (AASHTO HS20-44), HEAVY-TRAFFIC, STRUCTURAL LOADING; OF DEPTH, SHAPE, DIMENSIONS, AND APPURTENANCES INDICATED.
1. BALLAST: INCREASE THICKNESS OF CONCRETE AS REQUIRED TO PREVENT FLOTATION.

2.12 PIPE OUTLETS
A. HEAD WALLS: CAST-IN-PLACE REINFORCED CONCRETE, WITH APRON AND TAPERED SIDES.
B. RIPRAP BASINS: BROKEN, IRREGULARLY SIZED AND SHAPED, GRADED STONE ACCORDING TO NSSGA'S "QUARRIED STONE FOR EROSION AND SEDIMENT CONTROL."
C. FILTER STONE: ACCORDING TO NSSGA'S "QUARRIED STONE FOR EROSION AND SEDIMENT CONTROL," NO. FS-2, NO.4 SCREEN OPENING, AVERAGE-SIZE GRADED STONE.
D. ENERGY DISSIPATERS: ACCORDING TO NSSGA'S "QUARRIED STONE FOR EROSION AND SEDIMENT CONTROL," NO. A-I, 3-TON AVERAGE WEIGHT ARMOR STONE, UNLESS OTHERWISE INDICATED.

PART 3 - EXECUTION

3.1 EARTHWORK
A. EXCAVATION, TRENCHING, AND BACKFILLING ARE SPECIFIED IN DIVISION 2 SECTION "EARTHWORK."

3.2 PIPING INSTALLATION
A. GENERAL LOCATIONS AND ARRANGEMENTS: DRAWING PLANS AND DETAILS INDICATE GENERAL LOCATION AND ARRANGEMENT OF UNDERGROUND STORM DRAINAGE PIPING. LOCATION AND ARRANGEMENT OF PIPING LAYOUT TAKE INTO ACCOUNT DESIGN CONSIDERATIONS. INSTALL PIPING AS INDICATED, TO EXTENT PRACTICAL. WHERE SPECIFIC INSTALLATION IS NOT INDICATED, FOLLOW PIPING MANUFACTURER'S WRITTEN INSTRUCTIONS.
B. INSTALL PIPING BEGINNING AT LOW POINT, TRUE TO GRADES AND ALIGNMENT INDICATED WITH UNBROKEN CONTINUITY OF INVERT. PLACE BELL ENDS OF PIPING FACING UPSTREAM. INSTALL GASKETS, SEALS, SLEEVES, AND COUPLINGS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS FOR USE OF LUBRICANTS, CEMENTS, AND OTHER INSTALLATION REQUIREMENTS.
C. INSTALL MANHOLES FOR CHANGES IN DIRECTION UNLESS FITTINGS ARE INDICATED. USE FITTINGS FOR BRANCH CONNECTIONS UNLESS DIRECT TAP INTO EXISTING SEWER IS INDICATED.
D. INSTALL PROPER SIZE INCREASERS, REDUCERS, AND COUPLINGS WHERE DIFFERENT SIZES OR MATERIALS OF PIPES AND FITTINGS ARE CONNECTED. REDUCING SIZE OF PIPING IN DIRECTION OF FLOW IS PROHIBITED.
E. WHEN INSTALLING PIPE UNDER STREETS OR OTHER OBSTRUCTIONS THAT CANNOT BE DISTURBED, USE PIPEJACKING PROCESS OF MICRO-TUNNELING.

STORM DRAINAGE (CONT'D)

F. INSTALL GRAVITY-FLOW, NON-PRESSURE DRAINAGE PIPING ACCORDING TO THE FOLLOWING:
1. INSTALL PIPING PITCHED DOWN IN DIRECTION OF FLOW.
2. INSTALL PIPING WITH 36-INCH MINIMUM COVER.
3. INSTALL CORRUGATED STEEL PIPING ACCORDING TO ASTM A 798/A 798M.
4. INSTALL CORRUGATED ALUMINUM PIPING ACCORDING TO ASTM B 788/B 788M.
5. INSTALL REINFORCED-CONCRETE SEWER PIPING ACCORDING TO ASTM C 1479 AND ACPA'S "CONCRETE PIPE INSTALLATION MANUAL."
6. INSTALL HDPE PIPE ACCORDING TO SECTION 550 OF THE GDOT STANDARD SPECIFICATIONS

3.3 PIPE JOINT CONSTRUCTION
A. JOIN GRAVITY-FLOW, NON-PRESSURE DRAINAGE PIPING ACCORDING TO THE FOLLOWING:
1. JOIN CORRUGATED STEEL SEWER PIPING ACCORDING TO ASTM A 798/A 798M.
2. JOIN CORRUGATED ALUMINUM SEWER PIPING ACCORDING TO ASTM B 788/B 788M.
3. JOIN REINFORCED-CONCRETE SEWER PIPING ACCORDING TO ACPA'S "CONCRETE PIPE INSTALLATION MANUAL" FOR RUBBER-GASKETED JOINTS.
4. JOIN HDPE PIPING ACCORDING TO AASHTO M252, M294, OR ASTM F2306.

3.4 DRAIN INSTALLATION
A. INSTALL TYPE OF DRAINS IN LOCATIONS INDICATED.
1. USE HEAVY-DUTY, TOP-LOADING CLASSIFICATION DRAINS IN [VEHICLE-TRAFFIC SERVICE] AREAS.

3.5 MANHOLE INSTALLATION
A. GENERAL: INSTALL MANHOLES, COMPLETE WITH APPURTENANCES AND ACCESSORIES INDICATED.
B. INSTALL PRECAST CONCRETE MANHOLE SECTIONS WITH SEALANTS ACCORDING TO ASTM C 891.
C. SET TOPS OF FRAMES AND COVERS FLUSH WITH FINISHED SURFACE OF MANHOLES THAT OCCUR IN PAVEMENTS. SET TOPS [3 INCHES] ABOVE FINISHED SURFACE ELSEWHERE UNLESS OTHERWISE INDICATED.

3.6 CATCH BASIN INSTALLATION
A. CONSTRUCT CATCH BASINS TO SIZES AND SHAPES INDICATED.
B. SET FRAMES AND GRATES TO ELEVATIONS INDICATED.

3.7 STORMWATER INLET INSTALLATION
A. CONSTRUCT INLET HEAD WALLS, APRONS, AND SIDES OF REINFORCED CONCRETE, AS INDICATED.
B. CONSTRUCT RIPRAP OF BROKEN STONE, AS INDICATED.
C. INSTALL OUTLETS THAT SPILL ONTO GRADE, WITH FLARED END SECTIONS THAT MATCH PIPE, WHERE INDICATED.
D. CONSTRUCT ENERGY DISSIPATERS AT OUTLETS, AS INDICATED.

3.8 CONCRETE PLACEMENT
A. PLACE CAST-IN-PLACE CONCRETE ACCORDING TO ACI 318. 3.9

3.10 CHANNEL DRAINAGE SYSTEM INSTALLATION
A. INSTALL WITH TOP SURFACES OF COMPONENTS, EXCEPT PIPING, FLUSH WITH FINISHED SURFACE.
B. ASSEMBLE CHANNEL SECTIONS TO FORM SLOPE DOWN TOWARD DRAIN OUTLETS. USE SEALANTS, ADHESIVES, FASTENERS, AND OTHER MATERIALS RECOMMENDED BY SYSTEM MANUFACTURER.
C. EMBED CHANNEL SECTIONS AND DRAINAGE SPECIALTIES IN [4-INCH] MINIMUM CONCRETE AROUND BOTTOM AND SIDES.
D. FASTEN GRATES TO CHANNEL SECTIONS IF INDICATED.
E. ASSEMBLE CHANNEL SECTIONS WITH FLANGED OR INTERLOCKING JOINTS.
F. EMBED CHANNEL SECTIONS IN [4-INCH] MINIMUM CONCRETE AROUND BOTTOM AND SIDES.

3.10 CONNECTIONS
A. CONNECT NON-PRESSURE; GRAVITY-FLOW DRAINAGE PIPING IN BUILDING'S STORM BUILDING DRAINS SPECIFIED IN DIVISION 15 SECTION "STORM DRAINAGE PIPING."
B. CONNECT FORCE-MAIN PIPING TO BUILDING'S STORM DRAINAGE FORCE MAINS SPECIFIED IN DIVISION 15 SECTION "STORM DRAINAGE PIPING." TERMINATE PIPING WHERE INDICATED.
C. MAKE CONNECTIONS TO EXISTING PIPING AND UNDERGROUND MANHOLES.
1. USE COMMERCIALLY MANUFACTURED WYE FITTINGS FOR PIPING BRANCH CONNECTIONS. REMOVE SECTION OF EXISTING PIPE; INSTALL WYE FITTING INTO EXISTING PIPING; AND ENCASE ENTIRE WYE FITTING, PLUS 6-INCH OVERLAP, WITH NOT LESS THAN 6 INCHES OF CONCRETE WITH 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI.
2. MAKE BRANCH CONNECTIONS FROM SIDE INTO EXISTING PIPING, NPS 4 TO NPS 20. REMOVE SECTION OF EXISTING PIPE, INSTALL WYE FITTING INTO EXISTING PIPING, AND ENCASE ENTIRE WYE WITH NOT LESS THAN 6 INCHES OF CONCRETE WITH 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI.
3. MAKE BRANCH CONNECTIONS FROM SIDE INTO EXISTING PIPING, NPS 21 OR LARGER, OR TO UNDERGROUND MANHOLES AND STRUCTURES BY CUTTING INTO EXISTING UNIT AND CREATING AN OPENING LARGE ENOUGH TO ALLOW 3 INCHES OF CONCRETE TO BE PACKED AROUND ENTERING CONNECTION. CUT END OF CONNECTION PIPE PASSING THROUGH PIPE OR STRUCTURE WALL TO CONFORM TO SHAPE OF AND BE FLUSH WITH INSIDE WALL UNLESS OTHERWISE INDICATED. ON OUTSIDE OF PIPE, MANHOLE, OR STRUCTURE WALL, ENCASE ENTERING CONNECTION IN 6 INCHES OF CONCRETE FOR MINIMUM LENGTH OF 12 INCHES TO PROVIDE ADDITIONAL SUPPORT OF COLLAR FROM CONNECTION TO UNDISTURBED GROUND.
a. USE CONCRETE THAT WILL ATTAIN A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI UNLESS OTHERWISE INDICATED.
b. USE EPOXY-BONDING COMPOUND AS INTERFACE BETWEEN NEW AND EXISTING CONCRETE AND PIPING MATERIALS.
4. PROTECT EXISTING PIPING, MANHOLES, AND STRUCTURES TO PREVENT CONCRETE OR DEBRIS FROM ENTERING WHILE MAKING TAP CONNECTIONS. REMOVE DEBRIS OR OTHER EXTRANEOUS MATERIAL THAT MAY ACCUMULATE.
D. CONNECT TO SEDIMENT INTERCEPTORS SPECIFIED IN DIVISION 2 SECTION "INTERCEPTORS."
E. PIPE COUPLINGS, EXPANSION JOINTS, AND DEFLECTION FITTINGS WITH PRESSURE RATINGS AT LEAST EQUAL TO PIPING RATING MAY BE USED IN APPLICATIONS BELOW UNLESS OTHERWISE INDICATED.
1. USE NON-PRESSURE-TYPE FLEXIBLE COUPLINGS WHERE REQUIRED TO JOIN GRAVITY-FLOW, NON-PRESSURE SEWER PIPING UNLESS OTHERWISE INDICATED.
a. [UNSHIELDED][SHIELDED] FLEXIBLE COUPLINGS FOR SAME OR MINOR DIFFERENCE OD PIPES.
b. UNSHIELDED, INCREASER/REDUCER-PATTERN, FLEXIBLE COUPLINGS FOR PIPES WITH DIFFERENT OD.
c. RING-TYPE FLEXIBLE COUPLINGS FOR PIPING OF DIFFERENT SIZES WHERE ANNULAR SPACE BETWEEN SMALLER PIPING'S OD AND LARGER PIPING'S ID PERMITS INSTALLATION.
2. USE PRESSURE-TYPE PIPE COUPLINGS FOR FORCE-MAIN JOINTS.

3.11 CLOSING ABANDONED STORM DRAINAGE SYSTEMS
A. ABANDONED PIPING: CLOSE OPEN ENDS OF ABANDONED UNDERGROUND PIPING INDICATED TO REMAIN IN PLACE. INCLUDE CLOSURES STRONG ENOUGH TO WITHSTAND HYDROSTATIC AND EARTH PRESSURES THAT MAY RESULT AFTER ENDS OF ABANDONED PIPING HAVE BEEN CLOSED. USE EITHER PROCEDURE BELOW:
1. CLOSE OPEN ENDS OF PIPING WITH AT LEAST [8-INCH] THICK, BRICK MASONRY BULKHEADS.
2. CLOSE OPEN ENDS OF PIPING WITH THREADED METAL CAPS, PLASTIC PLUGS, OR OTHER ACCEPTABLE METHODS SUITABLE FOR SIZE AND TYPE OF MATERIAL BEING CLOSED. DO NOT USE WOOD PLUGS.
B. ABANDONED MANHOLES AND STRUCTURES: EXCAVATE AROUND MANHOLES AND STRUCTURES AS REQUIRED AND USE ONE PROCEDURE BELOW:
1. REMOVE MANHOLE OR STRUCTURE AND CLOSE OPEN ENDS OF REMAINING PIPING.
2. REMOVE TOP OF MANHOLE OR STRUCTURE DOWN TO AT LEAST [36 INCHES] BELOW FINAL GRADE. FILL TO WITHIN [12 INCHES] OF TOP WITH STONE, RUBBLE, GRAVEL, OR COMPACTED DIRT. FILL TO TOP WITH CONCRETE.
C. BACKFILL TO GRADE ACCORDING TO DIVISION 2 SECTION "EARTHWORK."

3.12 IDENTIFICATION
A. MATERIALS AND THEIR INSTALLATION ARE SPECIFIED IN DIVISION 2 SECTION "EARTHWORK." ARRANGE FOR INSTALLATION OF GREEN WARNING TAPE DIRECTLY OVER PIPING AND AT OUTSIDE EDGE OF UNDERGROUND STRUCTURES.
1. USE [WARNING TAPE OR] DETECTABLE WARNING TAPE OVER FERROUS PIPING.
2. USE DETECTABLE WARNING TAPE OVER NONFERROUS PIPING AND OVER EDGES OF UNDERGROUND STRUCTURES.

3.13 FIELD QUALITY CONTROL
A. INSPECT INTERIOR OF PIPING TO DETERMINE WHETHER LINE DISPLACEMENT OR OTHER DAMAGE HAS OCCURRED. INSPECT AFTER APPROXIMATELY 24 INCHES OF BACKFILL IS IN PLACE, AND AGAIN AT COMPLETION OF PROJECT.
1. SUBMIT SEPARATE REPORTS FOR EACH SYSTEM INSPECTION.
2. DEFECTS REQUIRING CORRECTION INCLUDE THE FOLLOWING:
a. ALIGNMENT: LESS THAN FULL DIAMETER OF INSIDE OF PIPE IS VISIBLE BETWEEN STRUCTURES.
b. DEFLECTION: FLEXIBLE PIPING WITH DEFLECTION THAT PREVENTS PASSAGE OF BALL OR CYLINDER OF SIZE NOT LESS THAN 92.5 PERCENT OF PIPING DIAMETER.
c. DAMAGE: CRUSHED, BROKEN, CRACKED, OR OTHERWISE DAMAGED PIPING.
d. INFILTRATION: WATER LEAKAGE INTO PIPING.
e. EXFILTRATION: WATER LEAKAGE FROM OR AROUND PIPING.
3. REPLACE DEFECTIVE PIPING USING NEW MATERIALS, AND REPEAT INSPECTIONS UNTIL DEFECTS ARE WITHIN ALLOWANCES SPECIFIED.
4. RE-INSPECT AND REPEAT PROCEDURE UNTIL RESULTS ARE SATISFACTORY.
B. TEST NEW PIPING SYSTEMS, AND PARTS OF EXISTING SYSTEMS THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED, FOR LEAKS AND DEFECTS.
1. DO NOT ENCLOSE, COVER, OR PUT INTO SERVICE BEFORE INSPECTION AND APPROVAL.
2. TEST COMPLETED PIPING SYSTEMS ACCORDING TO REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
3. SCHEDULE TESTS AND INSPECTIONS BY AUTHORITIES HAVING JURISDICTION WITH AT LEAST 24 HOURS ADVANCE NOTICE.
4. SUBMIT SEPARATE REPORT FOR EACH TEST.
5. GRAVITY-FLOW STORM DRAINAGE PIPING: TEST ACCORDING TO REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION, UNI-B-6, AND THE FOLLOWING:
a. EXCEPTION: PIPING WITH SOIL TIGHT JOINTS UNLESS REQUIRED BY AUTHORITIES HAVING JURISDICTION.
b. OPTION: TEST CONCRETE PIPING ACCORDING TO ASTM C 924.
C. REPLACE LEAKING PIPING USING NEW MATERIALS, AND REPEAT TESTING UNTIL LEAKAGE IS WITHIN ALLOWANCES SPECIFIED.

SANITARY SEWER

PART 1 GENERAL

1.1 SCOPE OF WORK
A. SUPPLY ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO INSTALL AND TEST ALL PIPING AND APPURTENANCES AS SPECIFIED.
B. WORK SHALL INCLUDE BUT NOT BE LIMITED TO ALL EXCAVATION, BACKFILLING, SHEETING, SLOPE PROTECTION, DRAINAGE, CONCRETE WORK, RIP-RAP, GRADING, AND ALL OTHER WORK NECESSARY TO COMPLETE THE CONSTRUCTION, INSTALLATION, AND TESTING OF THE PIPE.

1.2 QUALIFICATIONS
A. THE PIPE AND FITTINGS SHALL BE DESIGNED, CONSTRUCTED, AND INSTALLED IN ACCORDANCE WITH THESE SPECIFICATIONS AS APPLICABLE.

SANITARY (CONT'D)

1.3 SUBMITTALS AND TESTING
A. IF REQUIRED, THE CONTRACTOR SHALL SUBMIT TO THE OWNER A LIST OF MATERIALS TO BE FURNISHED PRIOR TO THE START OF CONSTRUCTION.
B. SUBMIT SHOP DRAWINGS TO THE OWNER, IF REQUIRED.

1.4 INSPECTION
A. ALL PIPE AND FITTINGS TO BE INSTALLED UNDER THIS CONTRACT MAY BE INSPECTED BY THE OWNER AT THE SITE OF MANUFACTURE FOR COMPLIANCE WITH THESE SPECIFICATIONS.

1.5 CONNECTION TO WORK BY OTHERS OR EXISTING LINES
A. FOR EXISTING LINES OR LINES INSTALLED UNDER OTHER CONTRACTS, TO WHICH PIPING OF THIS CONTRACT MUST CONNECT, THE CONTRACTOR SHALL EXPOSE BURIED LINES TO CONFIRM OR DETERMINE END CONNECTION DETAILS, PIPE MATERIAL AND DIAMETER, FURNISH AND INSTALL APPROPRIATE PIPING, AND MAKE PROPER CONNECTIONS.

PART 1 - PRODUCTS

2.1 DUCTILE IRON PIPE AND FITTINGS
A. DUCTILE IRON PIPE SHALL MEET THE FOLLOWING REQUIREMENTS AND BE AS SPECIFIED HEREINAFTER:
B. ALL DUCTILE IRON PIPE USED FOR BELOW-GRADE SERVICE IN THE PROJECT SHALL HAVE PUSH-ON JOINTS AND SHALL MEET THE REQUIREMENTS OF ANSI A21.11 OR AWWA C111, LATEST REVISIONS. DUCTILE IRON PIPE USED IN THE PROJECT FOR ABOVE-GROUND SERVICE OR IN BELOWGROUND VAULTS SHALL HAVE FLANGED JOINTS CONFORMING TO THE REQUIREMENTS OF ANSI A21.15, LATEST REVISION.
C. ALL DUCTILE IRON JOINTS USED IN THE PROJECT, UNLESS OTHERWISE NOTED, SHALL BE PUSH-ON OR AS SPECIFIED AND SHALL MEET THE REQUIREMENTS OF ANSI SPECIFICATIONS A 21.11 OR AWWA C111, LATEST REVISIONS.

FITTINGS:
MECHANICAL JOINT FITTINGS:
FITTINGS SHALL BE DUCTILE IRON COMPACT FITTINGS CONFORMING TO ANSI A21.53. THE RUBBER GASKET JOINTS SHALL CONFORM TO ANSI A21.11. BOLTS SHALL BE LOW ALLOY, HIGH STRENGTH EQUAL TO "ACIPOLLY", "USALLOY", OR "CORTEN" BOLTS.

FLANGED FITTINGS:
SHALL CONFORM TO ANSI A21.10 OR A21.11 AND SHALL HAVE FLANGES FACED AND DRILLED IN CONFORMANCE WITH ANSI STANDARD A21.15. JOINTS SHALL BE INSTALLED WITH FULL RING RUBBER GASKET. BOLTS SHALL BE LOW ALLOY, HIGH STRENGTH EQUAL TO "ACIPOLLY", "USALLOY", OR "CORTEN" BOLTS.

2.2 OTHER PIPE MATERIAL
A. OTHER PIPE MATERIALS FOR 10" INTERCEPTORS AND LARGER MAY ONLY BE CONSIDERED AND APPROVED AFTER EVALUATION FOR COMPLIANCE WITH SPECIFICATIONS USED BY LOCAL JURISDICTION FOR PIPE INSTALLATION.

PART 3 - EXECUTION

3.1 GENERAL
A. CARE SHALL BE TAKEN IN LOADING, TRANSPORTING, AND UNLOADING TO PREVENT INJURY TO THE PIPE OR COATINGS. PIPE OR FITTINGS SHALL NOT BE DROPPED. ALL PIPE OR FITTINGS SHALL BE EXAMINED BEFORE LAYING, AND NO PIECE SHALL BE INSTALLED WHICH IS FOUND TO BE DEFECTIVE. ANY DAMAGE TO THE PIPE COATINGS SHALL BE REPAIRED AS DIRECTED BY THE OWNER.
B. PIPE AND FITTINGS SHALL BE SUBJECTED TO A CAREFUL INSPECTION JUST PRIOR TO BEING LAID OR INSTALLED. IF ANY DEFECTIVE PIPE IS DISCOVERED AFTER IT HAS BEEN LAID, IT SHALL BE REMOVED AND REPLACED WITH A SOUND PIPE IN A SATISFACTORY MANNER AT NO ADDITIONAL EXPENSE TO THE OWNER. ALL PIPE AND FITTINGS SHALL BE THOROUGHLY CLEANED BEFORE LAYING, SHALL BE KEPT CLEAN UNTIL THEY ARE USED IN THE WORK, AND WHEN INSTALLED OR LAID SHALL CONFORM TO THE LINES AND GRADES REQUIRED.
C. UNLESS SPECIFICALLY INDICATED OTHERWISE, UNDERGROUND PIPING SHALL SLOPE UNIFORMLY BETWEEN JOINTS.
D. CONTRACTOR SHALL EXERCISE EXTREME CARE WHEN CONSTRUCTING PIPING TO PROTECT ALL EXISTING UNDERGROUND UTILITIES AND ALL EXISTING STRUCTURES FROM DAMAGE.

3.2 INSTALLATION
A. PIPE AND FITTINGS SHALL BE INSTALLED USING BEDDING, AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH REQUIREMENTS OF AWWA STANDARD SPECIFICATIONS, EXCEPT AS OTHERWISE PROVIDED HEREIN. A FIRM EVEN BEARING THROUGHOUT THE LENGTH OF THE PIPE SHALL BE CONSTRUCTED BY PLACING AND TAMPING GRANULAR BEDDING MATERIAL AT THE SIDES OF THE PIPE UP TO THE SPRINGLINE. BLOCKING WILL NOT BE PERMITTED. BELL HOLES SHALL BE HAND EXCAVATED TO INSURE UNIFORM BEARING ALONG THE PIPE BARREL.
B. ALL PIPES SHALL BE SOUND AND CLEAN BEFORE INSTALLING. WHEN INSTALLING IS NOT IN PROGRESS, INCLUDING LUNCHTIME, THE OPEN ENDS OF THE PIPE SHALL BE CLOSED BY WATERTIGHT PLUG OR OTHER APPROVED MEANS. GOOD ALIGNMENT SHALL BE PRESERVED IN LAYING. THE DEFLECTION AT JOINTS SHALL NOT EXCEED THAT RECOMMENDED BY MANUFACTURER.
C. WHEN CUTTING PIPE IS REQUIRED, THE CUTTING SHALL BE DONE BY MACHINE, LEAVING A SMOOTH CUT AT RIGHT ANGLES TO THE AXIS OF THE PIPE. CUT ENDS OF PIPE TO BE USED WITH A BELL SHALL BE BEVELED TO CONFORM TO THE MANUFACTURED SPIGOT END. LINING SHALL BE UNDAMAGED.
D. PUSH-ON JOINTS SHALL BE MADE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. PIPE SHALL BE LAID WITH BELL ENDS LOOKING AHEAD. A RUBBER GASKET SHALL BE INSERTED IN THE GROOVE OF THE BELL END OF THE PIPE, AND THE JOINT SURFACES CLEANED AND LUBRICATED. THE PLAIN END OF THE PIPE IS TO BE ALIGNED WITH THE BELL OF THE PIPE TO WHICH IT IS TO BE JOINED, AND PUSHED HOME WITH A JACK OR BY OTHER MEANS. AFTER JOINING THE PIPE, A METAL FEELER SHALL BE USED TO MAKE CERTAIN THAT THE RUBBER GASKET IS CORRECTLY LOCATED.
E. JOINTS AT FITTINGS, AND WHERE DESIGNATED ON THE DRAWINGS AND/OR AS SPECIFIED, SHALL BE IN ACCORDANCE WITH THE "NOTES ON METHOD OF INSTALLATION" UNDER ANSI SPECIFICATION A21.11 AND THE INSTRUCTIONS OF THE MANUFACTURER. TO ASSEMBLE THE JOINTS IN THE FIELD, THOROUGHLY CLEAN THE JOINT SURFACES AND RUBBER GASKET WITH SOAPY WATER BEFORE ASSEMBLY.
F. UNLESS OTHERWISE NOTED, UNDERGROUND PIPING SHALL BE PUSH-ON.
G. ALL FITTINGS AND OTHER APPURTENANCES NEEDED UPON THE PIPELINES SHALL BE SET AND JOINTED AS INDICATED ON THE DRAWINGS OR AS REQUIRED BY THE MANUFACTURER.
H. THE CONTRACTOR SHALL ARRANGE, IF REQUESTED, FOR THE PIPE MANUFACTURER TO FURNISH INFORMATION AND SUPERVISE THE INSTALLATION OF AT LEAST THE FIRST FIVE PUSH-ON JOINTS.
I. THE CONTRACTOR SHALL CAREFULLY REGULATE HIS EQUIPMENT AND CONSTRUCTION OPERATIONS SUCH THAT THE LOADING OF THE PIPE DOES NOT EXCEED THE LOADS FOR WHICH THE PIPE IS DESIGNED AND MANUFACTURED. ANY PIPE DAMAGED DURING CONSTRUCTION OPERATIONS SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
J. ALL PIPING SHALL BE PROPERLY AND ADEQUATELY SUPPORTED. SUPPORTS SHALL BE PROVIDED AS INDICATED ON THE DRAWINGS. IF THE METHOD OF SUPPORT IS NOT INDICATED ON THE DRAWINGS, PIPING SHALL BE SUPPORTED AS DIRECTED BY THE DESIGN CONSULTANT.
K. THE PROPER NUMBER OF GASKETS AND ALL NECESSARY JOINT MATERIALS, PLUS ONE EXTRA GASKET FOR EVERY 50 JOINTS OR FRACTION THEREOF, SHALL BE FURNISHED WITH THE PIPE AND FITTINGS.
L. PIPE EMBEDMENT SHALL CONFORM TO MANUFACTURER'S RECOMMENDATIONS. BEDDING AND BACKFILL FOR PIPE SHALL BE AS SPECIFIED HEREIN AND/OR SHOWN ON THE DRAWINGS.

3.3 BEDDING OF SEWER PIPE
A. UNLESS OTHERWISE INDICATED, BEDDING FOR ALL SEWER PIPES SHALL BE CLASS B. CLASS B BEDDING SHALL BE DEFINED AS THAT METHOD OF BEDDING TRENCH CONDUITS IN WHICH THE CONDUIT IS SET IN THOROUGHLY TAMPED, COMPACTED, GRANULAR MATERIALS PLACED TO THE TRENCH WIDTH B AND UP TO THE CENTERLINE OF THE CONDUIT. THE REMAINDER OF THE CONDUIT IS ENTIRELY SURROUNDED TO A HEIGHT OF AT LEAST ONE FOOT ABOVE ITS TOP BY DENSELY COMPACTED BACKFILL CAREFULLY PLACED BY HAND TO COMPLETELY FILL ALL SPACES ABOVE AND ADJACENT TO THE CONDUIT. COMPLIANCE WITH SECTION 410.060.02 IS REQUIRED.

3.4 CLEANING MAINS
AT THE CONCLUSION OF THE WORK AND PRIOR TO PRESSURE TESTING, THE CONTRACTOR SHALL THOROUGHLY CLEAN THE NEW PIPELINE BY FLUSHING WITH WATER OR OTHER MEANS TO REMOVE ALL DIRT, STONES, AND PIECES OF WOOD OR OTHER MATERIAL THAT MAY HAVE ENTERED DURING THE CONSTRUCTION PERIOD. THE FLUSHING WATER AND DEBRIS WILL BE TRAPPED AT THE LAST DOWNSTREAM MANHOLE AND REMOVED FROM THE SYSTEM. IF, AFTER THIS CLEARING, OBSTRUCTIONS REMAIN, THEY SHALL BE REMOVED.

WATER

PART 1 - GENERAL

1.1 SCOPE OF WORK
A. SUPPLY ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO INSTALL AND TEST ALL WATER SUPPLY PIPING AND APPURTENANCES AS SPECIFIED.
B. WORK SHALL INCLUDE BUT NOT BE LIMITED TO ALL EXCAVATION, BACKFILLING, SHEETING, SLOPE PROTECTION, DRAINAGE, CONCRETE WORK, RIP-RAP, GRADING, AND ALL OTHER WORK NECESSARY TO COMPLETE THE CONSTRUCTION, INSTALLATION, AND TESTING OF THE PIPE.

1.2 QUALIFICATIONS
A. THE PIPE AND FITTINGS SHALL BE DESIGNED, CONSTRUCTED, AND INSTALLED IN ACCORDANCE WITH THESE SPECIFICATIONS AS APPLICABLE.

1.3 SUBMITTALS AND TESTING
A. THE CONTRACTOR SHALL SUBMIT TO THE OWNER A LIST OF MATERIALS TO BE FURNISHED PRIOR TO START OF CONSTRUCTION.
B. SUBMIT SHOP DRAWINGS TO THE OWNER.

1.4 INSPECTION
A. ALL PIPE AND FITTINGS INSTALLED UNDER THIS CONTRACT MAY BE INSPECTED BY THE OWNER AT THE SITE OF MANUFACTURE FOR COMPLIANCE WITH THESE SPECIFICATIONS.

1.5 CONNECTION TO WORK BY OTHERS OR EXISTING LINES
A. FOR EXISTING LINES OR LINES INSTALLED UNDER OTHER CONTRACTS TO WHICH PIPING OF THIS CONTRACT MUST CONNECT, THE CONTRACTOR SHALL EXPOSE BURIED LINES TO CONFIRM OR DETERMINE END CONNECTION DETAILS, PIPE MATERIAL AND DIAMETER, AND FURNISH AND INSTALL APPROPRIATE PIPING, AND MAKE PROPER CONNECTIONS.

PART 2 - PRODUCTS

2.1 GENERAL
A. ALL MATERIALS SHALL BE OF STANDARD MANUFACTURED DESIGN THAT THE MANUFACTURER RECOMMENDS FOR THE SERVICE INTENDED IN ACCORDANCE WITH AWWA OR ASTM STANDARD SPECIFICATIONS.
B. ALL PIPE AND APPURTENANCES SHALL BE OF THE SIZE SHOWN ON THE DRAWINGS AND ALL EQUIPMENT OF THE SAME TYPE SHALL BE FROM ONE MANUFACTURER.
C. PIPE MATERIALS SHALL BE AS FOLLOWS:
1. MAINS (PUBLIC) 4" AND LARGER, DUCTILE IRON
2. MAINS (PRIVATE) 6" AND LARGER, DUCTILE IRON
3. SERVICE LINES, ¾" AND LARGER, COPPER

WATER (CONT'D)

2.2 DUCTILE IRON PIPE AND FITTINGS
A. DUCTILE IRON PIPE SHALL MEET THE FOLLOWING REQUIREMENTS AND BE AS SPECIFIED HEREINAFTER:
B. DUCTILE IRON PIPE SHALL BE OF THE CENTRIFUGALLY CAST TYPE, EITHER IN METAL OR CAST MOLDS, AND SHALL CONFORM TO ANSI A21.51 OR AWWA C151. DUCTILE IRON SHALL HAVE A MINIMUM TENSILE STRENGTH OF 60,000 PSI WITH A MINIMUM YIELD STRENGTH OF 42,000 PSI, PRESSURE RATED AT A MINIMUM OF 350 PSI AND HAVE A MINIMAL WALL THICKNESS OF ¼" UNLESS FIELD CONDITIONS DETERMINE THAT A HEAVIER WALL THICKNESS IS REQUIRED. THE PRESSURE RATING AND MANUFACTURE DATE SHALL BE SHOWN ON EACH PIECE. ALL PIPES SHALL BE FURNISHED COMPLETE WITH ALL NECESSARY GLANDS, JOINT MATERIALS INCLUDING RUBBER GASKET LUBRICANT, BOLTS, NUTS, ETC. PIPE FURNISHED SHALL BE MANUFACTURED BY U.S. PIPE AND FOUNDRY; AMERICAN CAST IRON PIPE; OR EQUAL IN INDUSTRY STANDARD LENGTHS.
C. ALL DUCTILE IRON JOINTS USED, UNLESS OTHERWISE NOTED, SHALL BE PUSH-ON JOINT OR AS SPECIFIED AND SHALL MEET THE REQUIREMENTS OF ANSI SPECIFICATIONS A 21.11 OR AWWA C111, LATEST REVISIONS.
D. ALL DUCTILE IRON PIPEFITTINGS SHALL BE OF DUCTILE IRON OR CAST IRON AND SHALL BE OF A STANDARD DESIGN FOR USE WITH THE PIPE PURCHASED UNDER THESE SPECIFICATIONS. FITTINGS SHALL CONFORM TO THE FOLLOWING APPLICABLE SPECIFICATION:
E. MECHANICAL JOINT FITTINGS: FITTINGS WITH RUBBER GASKET JOINTS SHALL CONFORM TO ANSI SPECIFICATION A 21.11. BOLTS
SHALL BE LOW ALLOYS, HIGH STRENGTH, EQUAL TO "ACIPALLY", "USALLOY", OR "CORTEN" BOLTS.
F. THE PROPER NUMBER OF GASKETS, BOLTS, AND ALL NECESSARY JOINT MATERIALS, PLUS ONE EXTRA GASKET FOR EVERY 50 JOINTS OR FRACTION THEREOF, SHALL BE FURNISHED WITH THE PIPE FITTINGS.
G. PIPE AND FITTINGS SHALL HAVE A CEMENT MORTAR LINING AND A BITUMINOUS SEAL COAT ON THE INSIDE IN ACCORDANCE WITH ANSI A21.4 AND BE COATED ON THE EXTERIOR WITH A 1.0 MILS THICK BITUMINOUS COAT IN ACCORDANCE WITH ANSI A21.51. A CERAMIC COATING SHALL BE SUBSTITUTED FOR THE CEMENT MORTAR LINING WHERE SHOWN ON THE DRAWINGS.
H. WHERE INDICATED ON THE DRAWINGS, THE CONTRACTOR SHALL PROVIDE A POLYETHYLENE ENCASEMENT OVER PIPE, FITTINGS, AND VALVES. THE MATERIAL, INSTALLATION, AND WORKMANSHIP SHALL CONFORM TO APPLICABLE SECTIONS OF ANSI STANDARD A21.5. INSTALLATION SHALL BE EMPLOYED USING FLAT TUBE POLYETHYLENE.

2.3 COPPER PIPE
A. ALL COPPER PIPES SHALL CONFORM TO FEDERAL SPECIFICATIONS WW-T-799, TYPE "K" AS A MINIMUM WITH PLAIN ENDS AND LENGTHS STANDARDIZED AT 12 FEET.

2.4 COPPER TUBING
A. ALL COPPER TUBING SHALL CONFORM TO ASTM DESIGNATION B88 FOR THE TYPE "K" SOFT TEMPER AND AWWA 7S-CR TYPE "K" AND MAY BE USED IN 20-FOOT STRAIGHT LENGTHS OR 60/100-FOOT COILS.

2.5 GATE VALVES
A. ALL VALVES 3" TO 16" IN DIAMETER SHALL BE GATE VALVES CONFORMING TO THE REQUIREMENTS OF AWWA SPECIFICATION C-509. SIZES SMALLER THAN THREE INCHES SHALL MEET FEDERAL SPECIFICATION WW-V-54, CLASS "A", RATED FOR 200 PSI WORKING PRESSURE. GATE VALVES SHALL BE AS MANUFACTURED BY DRESSER, MUELLER, DARLING, CLOW CORPORATION, KENNEDY, WALWORTH, OR SIMILAR APPROVED EQUAL.

2.6 BUTTERFLY VALVES
A. ALL VALVES 16" AND LARGER SHALL BE BUTTERFLY VALVES OF THE TIGHT CLOSING, RUBBER-SEAT TYPE AND SHALL CONFORM TO THE REQUIREMENTS OF AWWA SPECIFICATION C-504 FOR CLASS 150 B AND AS FURTHER SPECIFIED HEREIN. THE BUTTERFLY VALVES SHALL BE OF THE RUBBER-SEAT TYPES THAT ARE SECURELY FASTENED TO THE VALVE BODY. NO METAL-TO-METAL SEATING SURFACES SHALL BE PERMITTED. VALVES SHALL BE BUBBLE-LIGHT AT RATED PRESSURES WITH FLOW IN EITHER DIRECTION, AND SHALL BE SATISFACTORY FOR APPLICATIONS INVOLVING THROTTLING SERVICE AND/OR FREQUENT OPERATION AND FOR APPLICATIONS INVOLVING VALVE OPERATION AFTER LONG PERIODS OF INACTIVITY. BUTTERFLY VALVES SHALL BE AS MANUFACTURED BY BIF INDUSTRIES, HENRY PRATT COMPANY, DRESSER, OR SIMILAR APPROVED EQUAL.

2.7 AIR/VACUUM RELEASE VALVES
A. THE VALVES SHALL HAVE A CAST IRON BODY, COVER AND BAFFLE, STAINLESS STEEL FLOAT, BRONZE WATER DIFFUSER, AND BUNA-N SEAT WITH THREADED FITTINGS. THE VALVES SHALL BE MANUFACTURED BY GA INDUSTRIES, APCO VALVE AND PRIMER CORPORATION, OR EQUAL.

2.8 CORPORATION STOPS
A. CORPORATION STOPS SHALL BE ALL BRASS OR BRONZE SUITABLE FOR 200 PSI OPERATING PRESSURE AND SIMILAR TO MUELLER CO. H-15000 OR HAYS 5200.

2.9 VALVE BOXES, VALVE ASSEMBLIES, VALVE PADS
A. VALVE BOXES SHALL BE CAST IRON TWO OR THREE PIECE WITH CAST IRON COVERS. THE BARREL SHALL BE ONE OR TWO-PIECE, SCREW TYPE, HAVING 5¼" SHAFT. COVERS SHALL HAVE "WATER" CAST INTO THE TOP. VALVE STEM EXTENSIONS SHALL BE PROVIDED AND INSTALLED FOR ALL VALVES WHERE THE OPERATING NUT IS 5 FEET OR DEEPER. WHERE DIRECTED, VALVE ASSEMBLIES SHALL INCLUDE FULLY ADJUSTABLE VALVE BOX AND EXTENSION STEM COMBINATIONS EQUAL TO AMERICAN FLOW CONTROL "TRENCH ADAPTER". CONCRETE VALVE PADS/COLLARS ARE REQUIRED FOR ALL VALVE BOXES NOT IN A PAVED AREA. CONCRETE VALVE MARKERS SHALL BE FURNISHED AND INSTALLED ON EXISTING ROADS WHERE DIRECTED BY COUNTY.

2.10 FLEXIBLE (TRANSITION) COUPLINGS
A. FLEXIBLE COUPLINGS SHALL BE CATALOG NO. 441 AS MANUFACTURED BY SMITH-BLAIR, STYLE NO. 38, AS MANUFACTURED BY DRESSER MANUFACTURING COMPANY OR EQUAL.

2.11 FIRE HYDRANTS
A. FIRE HYDRANTS SHALL CONFORM TO AWWA C502-85 FOR DRY-BARREL FIRE HYDRANTS. HYDRANTS SHALL BE TRAFFIC TYPES WITH SAFETY FLANGE, WHICH ALLOWS THE VALVE TO REMAIN CLOSED WHEN THE HYDRANT IS BROKEN OR DAMAGED ABOVE OR NEAR GRADE LEVEL. THE DESIGN OF HYDRANT SHALL BE OF THE COMPRESSION TYPE WITH MAIN VALVES AND "O" RING SEAL BETWEEN THE OPERATING NUT AND THE BONNET. HYDRANT COLOR SHALL BE SILVER.
B. HYDRANT INLET SHALL BE 6", MECHANICAL JOINT WITH HARNESSING LUGS. HYDRANT MAIN VALVE OPENING SHALL BE 5¼". VALVE SEATS SHALL BE BRONZE TO BRONZE.
C. OPERATING NUT SHALL BE SOLID PENTAGON, 1½" MEASURED FLAT AT POINT (31/32 ON SIDE). OPERATING NUT SHALL TURN COUNTER CLOCKWISE TO OPEN.
D. HYDRANT SHALL HAVE TWO 2½" DIAMETERS AND ONE 4½" DIAMETER NOZZLES. NOZZLE THREADS SHALL BE THE STANDARD ADOPTED BY NFPA. NOZZLES SHALL ALL HAVE GASKET CAPS FITTED WITH CHAIN.
E. MATERIALS SHALL CONFORM TO AWWA STANDARD C-502, LATEST REVISION.

2.12 CURB STOPS
A. CURB STOPS SHALL BE OF BRONZE CONSTRUCTION WITH TEE HANDLE OPERATOR. CURB STOPS SHALL BE HAYS 5060 OR APPROVED EQUAL.

2.13 TAPPING SLEEVES
TAPPING SLEEVES SHALL BE CLASS 250 PIPE FOR 200 PSI COLD WATER WORKING PRESSURE. SLEEVES SHALL BE M & H FIG. #74-M, MUELLER #H-615, OR APPROVED EQUAL.

2.14 TAPPING SADDLES
DOUBLE STRAP SADDLES: SADDLES SHALL BE EITHER SMITH BLAIR 313 DOUBLE STRAP OR SUPERIOR STYLE 32.

2.15 ADAPTERS AND UNIONS
COPPER FEMALE IRON PIPE ADAPTERS SHALL BE HAYS 5600 CF OR APPROVED EQUAL IN MUELLER. COPPER BY COPPER UNIONS SHALL BE HAYS 5615 CF OR APPROVED EQUAL IN MUELLER. COPPER BY MALE IRON PIPE ADAPTERS SHALL BE HAYS 5605 OR EQUAL IN MUELLER.

PART 3 - EXECUTION

3.1 GENERAL
A. CARE SHALL BE TAKEN IN LOADING, TRANSPORTING, AND UNLOADING TO PREVENT INJURY TO THE PIPE OR COATINGS. PIPE OR FITTINGS SHALL NOT BE DROPPED. ALL PIPE OR FITTINGS SHALL BE EXAMINED BEFORE LAYING, AND NO PIECE SHALL BE INSTALLED WHICH IS FOUND TO BE DEFECTIVE. ANY DAMAGE TO THE PIPE COATINGS SHALL BE REPAIRED AS DIRECTED BY THE OWNER.
B. PIPE AND FITTINGS SHALL BE SUBJECTED TO A CAREFUL INSPECTION JUST PRIOR TO BEING LAID OR INSTALLED. IF ANY DEFECTIVE PIPE IS DISCOVERED AFTER IT HAS BEEN LAID, IT SHALL BE REMOVED AND REPLACED WITH A SOUND PIPE IN A SATISFACTORY MANNER AT NO ADDITIONAL EXPENSE TO THE OWNER. ALL PIPE AND FITTINGS SHALL BE THOROUGHLY CLEANED BEFORE LAYING, SHALL BE KEPT CLEAN UNTIL THEY ARE USED IN THE WORK, AND WHEN INSTALLED OR LAID, SHALL CONFORM TO THE LINES AND GRADES REQUIRED.
C. UNLESS SPECIFICALLY INDICATED OTHERWISE, UNDERGROUND PIPING SHALL SLOPE UNIFORMLY BETWEEN JOINTS.
D. WHEN CONSTRUCTING PIPING, CONTRACTOR SHALL EXERCISE EXTREME CARE TO PROTECT ALL EXISTING UNDERGROUND UTILITIES, AND ALL EXISTING STRUCTURES FROM DAMAGE.

3.2 INSTALLATION
A. PIPE AND FITTINGS SHALL BE INSTALLED USING BEDDING, AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH REQUIREMENTS OF AWWA STANDARD SPECIFICATIONS EXCEPT AS OTHERWISE PROVIDED HEREIN. A FIRM, EVEN BEARING THROUGHOUT THE LENGTH OF THE PIPE SHALL BE CONSTRUCTED BY TAMPING SELECTED MATERIAL AT THE SIDES OF THE PIPE UP TO THE SPRINGLINE. BLOCKING SUPPORTS WILL NOT BE PERMITTED. BELL HOLES SHALL BE HAND EXCAVATED TO INSURE UNIFORM BEARING ALONG THE PIPE BARREL.
B. ALL PIPES SHALL BE SOUND AND CLEAN BEFORE LAYING. WHEN LAYING IS NOT IN PROGRESS, INCLUDING LUNCHTIME, THE OPEN ENDS OF THE PIPE SHALL BE CLOSED BY WATERTIGHT PLUG OR OTHER APPROVED MEANS. GOOD ALIGNMENT SHALL BE PRESERVED IN LAYING. THE DEFLECTION AT JOINTS SHALL NOT EXCEED THAT RECOMMENDED BY MANUFACTURER.
C. WHEN CUTTING PIPE IS REQUIRED, THE CUTTING SHALL BE DONE BY MACHINE, LEAVING A SMOOTH CUT AT RIGHT ANGLES TO THE AXIS OF THE PIPE. CUT ENDS OF PIPE TO BE USED WITH A BELL SHALL BE BEVELED TO CONFORM TO THE MANUFACTURED SPIGOT END. LINING SHALL BE UNDAMAGED.
D. PUSH-ON JOINTS SHALL BE MADE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. PIPE SHALL BE LAID WITH BELL ENDS LOOKING AHEAD. A RUBBER GASKET SHALL BE INSERTED IN THE GROOVE OF THE BELL END OF THE PIPE, AND THE JOINT SURFACES CLEANED AND LUBRICATED. THE PLAIN END OF THE PIPE IS TO BE ALIGNED WITH THE BELL OF THE PIPE TO WHICH IT IS TO BE JOINED, AND PUSHED HOME WITH A JACK OR BY OTHER MEANS. AFTER JOINING THE PIPE, A METAL FEELER SHALL BE USED TO MAKE CERTAIN THAT THE RUBBER GASKET IS CORRECTLY LOCATED.
E. JOINTS AT FITTINGS, AND WHERE DESIGNATED ON THE DRAWINGS AND/OR AS SPECIFIED, SHALL BE IN ACCORDANCE WITH THE "NOTES ON METHOD OF INSTALLATION" UNDER ANSI SPECIFICATION A21.11 AND THE INSTRUCTIONS OF THE MANUFACTURER. TO ASSEMBLE THE JOINTS IN THE FIELD, THOROUGHLY CLEAN THE JOINT SURFACES AND RUBBER GASKET WITH SOAPY WATER BEFORE ASSEMBLY.
F. UNLESS OTHERWISE NOTED, UNDERGROUND DUCTILE IRON PIPING SHALL BE PUSH-ON WITH MECHANICAL JOINT FITTINGS, VALVES, FIRE HYDRANTS, ETC.
G. ALL FITTINGS AND OTHER APPURTENANCES NEEDED UPON THE PIPELINES SHALL BE SET AND JOINTED AS INDICATED ON THE DRAWINGS OR AS REQUIRED BY THE MANUFACTURER.
H. THE CONTRACTOR SHALL ARRANGE, IF REQUESTED, FOR THE PIPE MANUFACTURER TO FURNISH INFORMATION AND SUPERVISE THE INSTALLATION OF AT LEAST THE FIRST FIVE PUSH-ON JOINTS.
I. THE CONTRACTOR SHALL CAREFULLY REGULATE HIS EQUIPMENT AND CONSTRUCTION OPERATIONS SUCH THAT THE LOADING OF THE PIPE DOES NOT EXCEED THE LOADS FOR WHICH THE PIPE IS DESIGNED AND MANUFACTURED. ANY PIPE DAMAGED DURING CONSTRUCTION OPERATIONS SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

RED STAG SKETCH PLAT
A MASTER PLANNED RESIDENTIAL DEVELOPMENT
FOR
D.R. HORTON
1371 DOOGWOOD DR SW
CONYERS, GA 30012
PHONE: 470-774-4884

CITY OF SNELLVILLE / LITHONIA
DEKALB COUNTY
GEORGIA

LAND LOT 228, 229, 253, 252, 257, 258
16TH DISTRICT

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REVISIONS:

NO.	DATE	BY	DESCRIPTION
1	10/24/19	CAH	1ST SUBMITTAL
2	12/11/19	CAH	2ND SUBMITTAL
3	01/27/20	CAH	3RD SUBMITTAL

HANSEN FILE NO: 1243655

STANDARD SPECIFICATIONS

SCALE: N/A
DATE: 01/27/2020
PROJECT: 16309.00

THIS SEAL IS ONLY VALID IF COUNTER SIGNED AND DATED WITH AN ORIGINAL SIGNATURE.

GEORGIA REGISTERED No. 37096 PROFESSIONAL ENGINEER MATTHEW E KACZENSKI
01/27/2020

GSWCC LEVEL II DESIGN PROFESSIONAL CERTIFICATION # 0000066476 EXP. 06/22/2021

GRID NORTH
GEORGIA WEST ZONE

S1.2
SHEET

PLANNERS AND ENGINEERS COLLABORATIVE STANDARDS AND SPECIFICATIONS

WATER (CONT'D)

J. ALL PIPING SHALL BE PROPERLY AND ADEQUATELY SUPPORTED. SUPPORTS SHALL BE PROVIDED AS INDICATED ON THE DRAWINGS. IF THE METHOD OF SUPPORT IS NOT INDICATED ON THE DRAWINGS, PIPING SHALL BE SUPPORTED AS DIRECTED BY THE OWNER.
K. THE PROPER NUMBER OF GASKETS AND ALL NECESSARY JOINT MATERIALS, PLUS ONE EXTRA GASKET FOR EVERY 50 JOINTS OR FRACTION THEREOF, SHALL BE FURNISHED WITH THE PIPE AND FITTINGS.
L. PIPE EMBEDMENT SHALL CONFORM TO MANUFACTURER'S RECOMMENDATIONS. BEDDING AND BACKFILL FOR PIPE SHALL BE AS SHOWN ON THE DRAWINGS.

3.3 PIPE SUPPORTS AND THRUST BLOCKS

A. ALL PIPING SHALL BE PROPERLY AND ADEQUATELY SUPPORTED. CONCRETE PIERS AND PADS SHALL BE PROVIDED AS INDICATED ON THE DRAWINGS. IF THE METHOD OF SUPPORT IS NOT INDICATED ON THE DRAWINGS, EXPOSED PIPING SHALL BE SUPPORTED AS DIRECTED BY THE OWNER.
B. LONGITUDINAL THRUST ALONG PRESSURIZED PIPELINES AT BENDS, TEES, REDUCERS, AND CAPS/PLUGS SHALL BE COUNTERACTED BY ENOUGH WEIGHT OF CONCRETE TO COUNTERBALANCE THE VERTICAL AND HORIZONTAL THRUST FORCES.
C. JOINTS SHALL BE PROTECTED BY FELT ROOFING PAPER PRIOR TO PLACING CONCRETE THRUST BLOCK.
D. BEARING AREA OF THRUST BLOCKS SHALL BE ADEQUATE TO PREVENT ANY MOVEMENT OF THE FITTING AND SHALL BE OF THE SIZE AND DIMENSIONS AS SHOWN ON THE DRAWINGS.
E. CONCRETE FOR THRUST BLOCKING SHALL BE 3,000-PSI MINIMUM. CONCRETE SHALL BE PLACED AGAINST UNDISTURBED MATERIAL, AND SHALL NOT COVER JOINTS, BOLTS, OR NUTS, OR INTERFERE WITH THE REMOVAL OF ANY JOINT. WOODEN SIDE FORMS SHALL BE PROVIDED FOR THRUST BLOCKS.
F. RESTRAINED JOINTS, ANCHOR COUPLINGS, RODDING, WEDGE ACTION RETAINER GLANDS, ETC. SHALL BE USED IN ACCORDANCE WITH STANDARD DETAILS AND/OR WHERE SPECIFICALLY INDICATED.

3.4 CLEANING MAINS

A. AT THE CONCLUSION OF THE WORK, THE CONTRACTOR SHALL THOROUGHLY CLEAN THE NEW PIPE LINE BY FLUSHING WITH WATER OR OTHER MEANS TO REMOVE ALL DIRT, STONES, PIECES OF WOOD, OR OTHER MATERIALS, WHICH MAY HAVE ENTERED DURING THE CONSTRUCTION PERIOD. IF OBSTRUCTIONS REMAIN AFTER THIS CLEANING, THEY SHALL BE REMOVED.

ACCESSIBILITY

CONTRACTOR TO DEVELOP SITE TO ENSURE COMPLIANCE WITH THE FOLLOWING:

- AMERICANS WITH DISABILITIES ACT, TITLE III (AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES, 2010 EDITION)
- SECTION 3604 OF THE FAIR HOUSING AMENDMENTS ACT OF 1988 (FAIR HOUSING ACCESSIBILITY GUIDELINES) SAFE HARBOR ANSI A117.1 2017
- ANSI A117.1 2017 AS THE ACCESSIBILITY CODE REFERRED IN IBC 2018

SOME COMMON ISSUES THAT NEED TO BE CONSIDERED ARE AS FOLLOWS:

ADA (2010) 502.4 FLOOR OR GROUND SURFACES:
PARKING SPACES AND ACCESS AISLES SERVING THEM SHALL COMPLY WITH 302. ACCESS AISLES SHALL BE AT THE SAME LEVEL AS THE PARKING SPACES THEY SERVE. CHANGES IN LEVEL ARE NOT PERMITTED.
EXCEPTION: SLOPES NOT STEEPER THAN 1:48 SHALL BE PERMITTED.

ADA (2010) 502.6 IDENTIFICATION:
PARKING SPACE IDENTIFICATION SIGNS SHALL INCLUDE THE INTERNATIONAL SYMBOL OF ACCESSIBILITY COMPLYING WITH 703.7.2.1. SIGNS IDENTIFYING VAN PARKING SPACES SHALL CONTAIN THE DESIGNATION "VAN ACCESSIBLE". SIGNS SHALL BE 60 INCHES MINIMUM ABOVE THE FINISH FLOOR OR GROUND SURFACE MEASURED TO THE BOTTOM OF THE SIGN.

FAIR HOUSING DESIGN MANUAL, PAGE 1.8 - ACCESSIBLE SITE FACILITIES ON ACCESSIBLE ROUTES. THE GUIDELINES REQUIRE ACCESSIBLE AND USABLE PUBLIC AND COMMON USE AREAS. ALL FACILITIES, ELEMENTS, AND SPACES THAT ARE PART OF PUBLIC AND COMMON USE AREAS MUST MEET ANSI 4.1 THROUGH 4.30 AND MUST BE ON AN ACCESSIBLE ROUTE FROM COVERED DWELLING UNITS. SUCH FACILITIES MIGHT INCLUDE OUTSIDE MAILBOXES, SITE FURNISHINGS, OUTSIDE STORAGE AREAS, REFUSE DISPOSAL AREAS, PLAYING FIELDS, AMPHITHEATERS, PICNIC SITES, SWIMMING POOLS AND SUN DECKS, TENNIS COURTS, CLUBHOUSE, PLAYGROUNDS, GAZEBOS, PARKING AREAS, AND ALL OR PART OF NATURE TRAILS AND JOGGING PATHS.

ANSI A117.1 (2017) 302.1 GENERAL:
FLOOR SURFACES SHALL BE STABLE, FIRM, AND SLIP RESISTANT, AND SHALL COMPLY WITH SECTION 302. CHANGES IN LEVEL IN FLOOR SURFACES SHALL COMPLY WITH SECTION 303.

ANSI A117.1 (2017) 303.3 BEVELED:
CHANGES IN LEVEL GREATER THAN ¼ INCH (6.4 MM) IN HEIGHT AND NOT MORE THAN ½ INCH (13 MM) MAXIMUM HEIGHT SHALL BE BEVELED WITH A SLOPE NOT STEEPER THAN 1:2.

ANSI A117.1 (2017) 303.4 RAMPS:
CHANGES IN LEVEL GREATER THAN ½ INCH (13 MM) IN HEIGHT SHALL BE BY A RAMP COMPLYING WITH SECTION 405 OR BY A CURB RAMP COMPLYING WITH SECTION 406.

ANSI A117.1 (2003) 307.2 PROTRUSION LIMITS:
OBJECTS WITH LEADING EDGES MORE THAN 27 INCHES (685 MM) AND NOT MORE THAN 80 INCHES (2030 MM) ABOVE THE FLOOR SHALL PROTRUDE 4 INCHES (100 MM) MAXIMUM HORIZONTALLY INTO A CIRCULATION PATH, EXCEPTION: HANDRAILS SHALL BE PERMITTED TO PROTRUDE 4½ INCHES (115 MM) MAXIMUM.

ANSI A117.1 (2017) 307.3 POST-MOUNTED OBJECTS:
OBJECTS ON POSTS OR PYLONS SHALL BE PERMITTED TO OVERHANG 4 INCHES (100 MM) MAXIMUM WHERE MORE THAN 27 INCHES (685 MM) AND NOT MORE THAN 80 INCHES (2030 MM) ABOVE THE FLOOR. OBJECTS ON MULTIPLE POSTS OR PYLONS WHERE THE CLEAR DISTANCE BETWEEN POSTS OR PYLONS IS GREATER THAN 12 INCHES (305 MM) SHALL HAVE THE LOWEST EDGE OF SUCH OBJECT EITHER 27 INCHES (685 MM) MAXIMUM OR 80 INCHES (2030 MM) MINIMUM ABOVE THE FLOOR. EXCEPTION: SLOPING PORTIONS OF HANDRAILS BETWEEN THE TOP AND BOTTOM RISER OF STAIRS AND ABOVE THE RAMP RUN SHALL NOT BE REQUIRED TO COMPLY WITH THIS SECTION.

ANSI A117.1 (2017) 307.4 VERTICAL CLEARANCE:
VERTICAL CLEARANCE SHALL BE 80 INCHES (2030 MM) MINIMUM. RAILS OR OTHER BARRIERS SHALL BE PROVIDED WHERE THE VERTICAL CLEARANCE IS LESS THAN 80 INCHES (2030 MM). THE LEADING EDGE OF SUCH RAILS OR BARRIER SHALL BE LOCATED 27 INCHES (685 MM) MAXIMUM ABOVE THE FLOOR.

ANSI A117.1 (2017) 308.3.1 UNOBSTRUCTED:
WHERE A CLEAR FLOOR SPACE COMPLYING WITH SECTION 305 ALLOWS A PARALLEL APPROACH TO AN ELEMENT AND THE EDGE OF THE CLEAR FLOOR SPACE IS 10 INCHES (255 MM) MAXIMUM FROM THE ELEMENT, THE HIGH SIDE REACH SHALL BE 48 INCHES (1220 MM) MAXIMUM AND THE LOW SIDE REACH SHALL BE 15 INCHES (380 MM) MINIMUM ABOVE THE FLOOR.

ANSI A117.1 (2017) 309.3 HEIGHT:
OPERABLE PARTS SHALL BE PLACED WITHIN ONE OR MORE OF THE REACH RANGES SPECIFIED IN SECTION 308.

ANSI A117.1 (2017) 402.2 COMPONENTS:
ACCESSIBLE ROUTES SHALL CONSIST OF ONE OR MORE OF THE FOLLOWING COMPONENTS: WALKING SURFACES WITH A RUNNING SLOPE NOT STEEPER THAN 1:20, DOORS AND DOORWAYS, GATES, RAMPS, CURB RAMPS EXCLUDING THE FLARED SIDES, BLENDED TRANSITIONS, ELEVATORS AND PLATFORM LIFTS. ALL COMPONENTS OF AN ACCESSIBLE ROUTE SHALL COMPLY WITH THE APPLICABLE PORTIONS OF THIS STANDARD

ANSI A117.1 (2017) 403.2 FLOOR SURFACE:
FLOOR SURFACES SHALL COMPLY WITH SECTION 302.

ANSI A117.1 (2017) 403.3 SLOPE:
THE RUNNING SLOPE OF WALKING SURFACES SHALL NOT BE STEEPER THAN 1:20. THE CROSS SLOPE OF A WALKING SURFACE SHALL NOT BE STEEPER THAN 1:48.

ANSI A117.1 (2017) 404.2.3.1 FLOOR SURFACE:
FLOOR SURFACE WITHIN THE MANEUVERING CLEARANCES SHALL HAVE A SLOPE NOT STEEPER THAN 1:48 AND SHALL COMPLY WITH SECTION 302.

ANSI A117.1 (2017) 404.2.3.2 SWINGING DOORS AND GATES:
SWINGING DOORS AND GATES SHALL HAVE MANEUVERING CLEARANCES COMPLYING WITH TABLE 404.2.3.2.

TABLE 404.2.3.2-MANUVERING CLEARANCES AT MANUAL SWINGING DOORS

TYPE OF USE		MANEUVERING CLEARANCES AT MANUAL SWINGING DOORS	
APPROACH DIRECTION	DOOR SIDE	PERPENDICULAR TO DOORWAY	PARALLEL TO DOORWAY (BEYOND LATCH UNLESS NOTED)
FROM FRONT	PULL	60 INCHES	18 INCHES
FROM FRONT	PUSH	52 INCHES[4]	0 INCHES[3]
FROM HINGE SIDE	PULL	60 INCHES	36 INCHES
FROM HINGE SIDE	PULL	54 INCHES	42 INCHES
FROM HINGE SIDE	PUSH	42 INCHES[1]	22 INCHES[3&4]
FROM LATCH SIDE	PULL	48 INCHES[2]	24 INCHES
FROM LATCH SIDE	PUSH	42 INCHES[2]	24 INCHES

[1] ADD 6 INCHES (150 MM) IF CLOSER AND LATCH PROVIDED.
[2] ADD 6 INCHES (150 MM) IF CLOSER PROVIDED.
[3] BEYOND HINGE SIDE.
[4] IN EXISTING BUILDINGS AND FACILITIES, THE DIMENSION PERPENDICULAR TO THE DOOR OR GATE FOR THE FRONT DIRECTION ON THE PUSH SIDE SHALL BE 48 INCHES (1220 MM).

ANSI A117.1 (2017) 405.2 SLOPE:
RAMP RUNS SHALL HAVE A RUNNING SLOPE GREATER THAN 1:20 AND NOT STEEPER THAN 1:12.

ANSI A117.1 (2017) 405.8 HANDRAILS:
RAMP RUNS WITH A RISE GREATER THAN 6 INCHES (150 MM) SHALL HAVE HANDRAILS COMPLYING WITH SECTION 505.

ANSI A117.1 (2017) 406.1 GENERAL:
CURB RAMPS AND BLENDED TRANSITIONS ON ACCESSIBLE ROUTES SHALL COMPLY WITH SECTION 406.

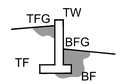
ANSI A117.1 (2017) 502.5 FLOOR SURFACES:
PARKING SPACES AND ACCESS AISLES SHALL COMPLY WITH SECTION 302 AND HAVE SURFACE SLOPES NOT STEEPER THAN 1:48. ACCESS AISLES SHALL BE AT THE SAME LEVEL AS THE PARKING SPACES THEY SERVE.

ANSI A117.1 (2017) 502.7 IDENTIFICATION:
WHERE PARKING SPACES ARE REQUIRED TO BE IDENTIFIED BY SIGNS, THE SIGNS SHALL INCLUDE THE INTERNATIONAL SYMBOL OF ACCESSIBILITY COMPLYING WITH SECTION 703.6.3.1. SIGNS IDENTIFYING VAN PARKING SPACES SHALL CONTAIN THE DESIGNATION "VAN ACCESSIBLE." SIGNS SHALL BE 60 INCHES (1525 MM) MINIMUM ABOVE THE FLOOR OF THE PARKING SPACE, MEASURED TO THE BOTTOM OF THE SIGN.

DRAWING LEGEND

FFE XX.XX	FINISHED FLOOR ELEVATION
BFE XX.XX	BASEMENT FLOOR ELEVATION
10.72	SPOT ELEVATION
10 / 8	EXISTING CONTOURS
10 / 8	PROPOSED CONTOURS
W	PROPOSED WATER LINE
	PROPOSED WATER METER
	PROPOSED VALVE & END CAP
	PROPOSED FIRE HYDRANT & FDC
	PROPOSED TEE, BEND & INTERSECTION
	PROPOSED SANITARY SEWER LINE
	PROPOSED SANITARY MANHOLE
	PROPOSED SANITARY CLEANOUT
	PROPOSED GREASE TRAP
	PROPOSED STORM LINE
	PROPOSED JUNCTION BOX
	PROPOSED DROP INLET
	PROPOSED YARD INLET
	PROPOSED CURB INLET
	PROPOSED WEIR INLET
	PROPOSED CATCH BASIN
	PROPOSED HEADWALL
	PROPOSED OUTLET CONTROL STRUCTURE

TYPICAL WALL LABELS



TW = TOP OF WALL
TFG = TOP FINISHED GRADE
BFG = BOTTOM FINISHED GRADE
TF = TOP OF FOOTING
BF = BOTTOM OF FOOTING

SHEET NUMBERING STANDARDS

C0.00	COVER SHEET
C0.01 - C0.99	STANDARD SPECIFICATIONS & GENERAL NOTES
C1.00 - C1.49	ZONING CONDITIONS
C1.50 - C1.99	PRELIMINARY PLAT & ZONING SITE PLANS
C2.00 - C2.99	DEMOLITION PLAN
C3.00 - C3.09	SITE PLAN
C3.10 - C3.19	DIMENSION PLAN
C3.20 - C3.29	SIGNAGE & STRIPING PLAN
C3.30 - C3.39	LOT LAYOUT
C3.40 - C3.49	FIRE ACCESS
C3.50 - C3.59	ADA ACCESSIBILITY PLAN
C3.60 - C3.99	MISCELLANEOUS SITE PLANS
C4.00 - C4.19	GRADING PLAN
C4.20 - C4.39	DRAINAGE PLAN
C4.40 - C4.99	STORMWATER MANAGEMENT
C5.00 - C5.49	UTILITY PLAN
C5.50 - C5.69	WATER PLAN
C5.70 - C5.99	MISCELLANEOUS UTILITY PLANS
C6.00 - C6.09	EROSION CONTROL NOTES
C6.10 - C6.19	INITIAL EROSION CONTROL
C6.20 - C6.29	INTERMEDIATE EROSION CONTROL
C6.30 - C6.39	FINAL EROSION CONTROL
C6.40 - C6.99	EROSION CONTROL DETAILS
C7.00 - C7.49	SANITARY SEWER PROFILES
C7.50 - C7.99	STORM SEWER PROFILES
C8.00 - C8.49	SIGHT DISTANCE PROFILES
C8.50 - C8.99	ROAD PROFILES
C9.00 - C9.99	CONSTRUCTION DETAILS

NOTE: THE ABOVE TABLE SHOWS THE TYPICAL NUMBERING SCHEME FOR CONSTRUCTION PLANS AND IS NOT REPRESENTATIVE OF THE DRAWINGS INCLUDED IN THIS SET OF PLANS. REFER TO THE SHEET INDEX SHOWN ON THE COVER SHEET (C0.00) FOR THE SHEET INDEX REPRESENTATIVE OF THIS SET OF PLANS.

DETAIL
TYPICAL DRAWING SET

RED STAG SKETCH PLAT

A MASTER PLANNED RESIDENTIAL DEVELOPMENT

FOR

D.R. HORTON
1371 DOOGWOOD DR SW
CONYERS, GA 30012
PHONE: 470-774-4884

CITY OF SNELLVILLE / LITHONIA
DEKALB COUNTY
GEORGIA

LAND LOT 228, 229, 253, 252, 257, 258
16TH DISTRICT

"WE PROVIDE SOLUTIONS"
PLANNERS AND ENGINEERS COLLABORATIVE
SITE PLANNING ▣ LANDSCAPE ARCHITECTURE ▣ CIVIL ENGINEERING ▣ LAND SURVEYING
▣ 350 RESEARCH COURT ▣ PEACHTREE CORNERS, GEORGIA 30092 ▣ (770) 451-2741 ▣ FAX (770) 451-3915 ▣

REVISIONS:

NO.	DATE	BY	DESCRIPTION
1	10/24/19	CAH	1ST SUBMITTAL
2	12/11/19	CAH	2ND SUBMITTAL
3	01/27/20	CAH	3RD SUBMITTAL

HANSEN FILE NO: 1243655

STANDARD SPECIFICATIONS

SCALE: N/A
DATE: 01/27/2020
PROJECT: 16309.00

THIS SEAL IS ONLY VALID IF COUNTER SIGNED AND DATED WITH AN ORIGINAL SIGNATURE.

GEORGIA REGISTERED No. 37096 PROFESSIONAL ENGINEER MATTHEW F. KACZENSKI 01/27/2020

GSWCC LEVEL II DESIGN PROFESSIONAL CERTIFICATION # 0000066476 EXP. 06/22/2021

UTM NORTH

GEORGIA WEST ZONE

S1.3

SHEET

J:\16309\DWG\Sketch Plat\COVER SHEET - 16309D.dwg, 4/Sketch - 1/27/2020 8:39 PM

LEGAL DESCRIPTION SOUTH TRACT

ALL THAT TRACT OR PARCEL OF LAND LYING AND BEING IN LAND LOTS 228, 229, 252, 253, 257 AND 258 OF THE 16TH DISTRICT DEKALB COUNTY, GEORGIA AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

TO FIND THE TRUE POINT OF BEGINNING, COMMENCE FROM AN IRON PIN FOUND AT THE INTERSECTION OF THE SOUTHWESTERLY RIGHT-OF-WAY LINE OF NORRIS LAKE DRIVE (60' R/W) WITH THE NORTHWESTERLY RIGHT-OF-WAY LINE OF PLEASANT HILL ROAD (60' R/W); THENCE ALONG SAID RIGHT-OF-WAY LINE OF PLEASANT HILL WAY SOUTH 43 DEGREES 28 MINUTES 35 SECONDS WEST A DISTANCE OF 327.61 FEET TO AN IRON PIN FOUND AND THE TRUE POINT OF BEGINNING; FROM THE TRUE POINT OF BEGINNING AS THUS ESTABLISHED; THENCE ALONG THE NORTHERN RIGHT-OF-WAY LINE OF PLEASANT HILL ROAD SOUTH 43 DEGREES 3 MINUTES 3 SECONDS WEST A DISTANCE OF 156.12 FEET TO A POINT AT THE INTERSECTION OF THE NORTHERN RIGHT-OF-WAY LINE OF PLEASANT HILL ROAD AND THE NORTHERN RIGHT-OF-WAY LINE OF PLEASANT HILL WAY (50' R/W); THENCE ALONG SAID NORTHERLY RIGHT-OF-WAY LINE OF PLEASANT HILL WAY THE FOLLOWING COURSES AND DISTANCES: THENCE SOUTH 75 DEGREES 25 MINUTES 50 SECONDS WEST A DISTANCE OF 606.01 FEET TO A POINT; THENCE SOUTH 76 DEGREES 4 MINUTES 34 SECONDS WEST A DISTANCE OF 447.46 FEET TO A POINT; THENCE SOUTH 83 DEGREES 33 MINUTES 41 SECONDS WEST A DISTANCE OF 121.33 FEET TO A POINT; THENCE SOUTH 87 DEGREES 59 MINUTES 32 SECONDS WEST A DISTANCE OF 215.09 FEET TO A POINT; THENCE SOUTH 79 DEGREES 49 MINUTES 0 SECONDS WEST A DISTANCE OF 95.31 FEET TO A POINT; THENCE SOUTH 84 DEGREES 5 MINUTES 22 SECONDS WEST A DISTANCE OF 119.53 FEET TO A POINT; THENCE SOUTH 89 DEGREES 39 MINUTES 39 SECONDS WEST A DISTANCE OF 60.23 FEET TO A POINT;

THENCE LEAVING SAID RIGHT-OF-WAY LINE NORTH 19 DEGREES 45 MINUTES 33 SECONDS WEST A DISTANCE OF 821.84 FEET TO A POINT; THENCE SOUTH 89 DEGREES 27 MINUTES 0 SECONDS WEST A DISTANCE OF 559.61 FEET TO A POINT; THENCE SOUTH 4 DEGREES 41 MINUTES 46 SECONDS EAST A DISTANCE OF 398.25 FEET TO A POINT; THENCE SOUTH 01 DEGREE 56 MINUTES 30 SECONDS EAST A DISTANCE OF 251.82 FEET TO A POINT; THENCE SOUTH 0 DEGREES 22 MINUTES 39 SECONDS EAST A DISTANCE OF 54.53 FEET TO A POINT; THENCE SOUTH 0 DEGREES 31 MINUTES 54 SECONDS EAST A DISTANCE OF 52.28 FEET TO A POINT; THENCE SOUTH 89 DEGREES 55 MINUTES 48 SECONDS WEST A DISTANCE OF 2,466.47 FEET MORE OR LESS TO A POINT IN THE CENTER OF YELLOW RIVER; THENCE ALONG SAID CENTERLINE OF YELLOW RIVER AND THE MEANDERINGS THEREOF FOR THE FOLLOWING BEARINGS AND DISTANCES: NORTH 9 DEGREES 39 MINUTES 31 SECONDS WEST A DISTANCE OF 49.76 FEET TO A POINT; THENCE NORTH 7 DEGREES 37 MINUTES 29 SECONDS WEST A DISTANCE OF 111.24 FEET TO A POINT; THENCE NORTH 6 DEGREES 26 MINUTES 13 SECONDS EAST A DISTANCE OF 73.23 FEET TO A POINT; THENCE NORTH 26 DEGREES 21 MINUTES 57 SECONDS EAST A DISTANCE OF 64.31 FEET TO A POINT; THENCE NORTH 36 DEGREES 7 MINUTES 27 SECONDS EAST A DISTANCE OF 74.38 FEET TO A POINT; THENCE NORTH 14 DEGREES 58 MINUTES 23 SECONDS EAST A DISTANCE OF 59.33 FEET TO A POINT; THENCE NORTH 11 DEGREES 24 MINUTES 15 SECONDS EAST A DISTANCE OF 76.27 FEET TO A POINT; THENCE NORTH 6 DEGREES 17 MINUTES 37 SECONDS WEST A DISTANCE OF 73.16 FEET TO A POINT; THENCE NORTH 2 DEGREES 47 MINUTES 41 SECONDS EAST A DISTANCE OF 79.99 FEET TO A POINT; THENCE NORTH 20 DEGREES 36 MINUTES 15 SECONDS WEST A DISTANCE OF 72.35 FEET TO A POINT; THENCE NORTH 34 DEGREES 58 MINUTES 57 SECONDS WEST A DISTANCE OF 54.11 FEET TO A POINT; THENCE NORTH 47 DEGREES 43 MINUTES 39 SECONDS WEST A DISTANCE OF 63.15 FEET TO A POINT; THENCE SOUTH 86 DEGREES 53 MINUTES 4 SECONDS WEST A DISTANCE OF 117.94 FEET TO A POINT; THENCE NORTH 80 DEGREES 28 MINUTES 25 SECONDS WEST A DISTANCE OF 106.04 FEET TO A POINT; THENCE NORTH 59 DEGREES 37 MINUTES 11 SECONDS WEST A DISTANCE OF 107.13 FEET TO A POINT; THENCE NORTH 50 DEGREES 7 MINUTES 59 SECONDS WEST A DISTANCE OF 126.46 FEET TO A POINT; THENCE NORTH 82 DEGREES 27 MINUTES 17 SECONDS WEST A DISTANCE OF 82.86 FEET TO A POINT; THENCE NORTH 57 DEGREES 23 MINUTES 26 SECONDS WEST A DISTANCE OF 39.41 FEET TO A POINT; THENCE NORTH 21 DEGREES 45 MINUTES 29 SECONDS WEST A DISTANCE OF 93.12 FEET TO A POINT; THENCE NORTH 6 DEGREES 55 MINUTES 18 SECONDS WEST A DISTANCE OF 74.43 FEET TO A POINT; THENCE NORTH 3 DEGREES 11 MINUTES 45 SECONDS EAST A DISTANCE OF 106.37 FEET TO A POINT; THENCE NORTH 10 DEGREES 9 MINUTES 33 SECONDS EAST A DISTANCE OF 121.67 FEET TO A POINT;

THENCE LEAVING SAID CENTERLINE OF YELLOW RIVER SOUTH 58 DEGREES 57 MINUTES 22 SECONDS EAST A DISTANCE OF 511.41 FEET TO A POINT; THENCE NORTH 78 DEGREES 9 MINUTES 11 SECONDS EAST A DISTANCE OF 540.13 FEET TO A POINT AT THE CENTERLINE OF A CREEK;

THENCE FOLLOWING THE CENTERLINE OF SAID CREEK FOR THE FOLLOWING BEARINGS AND DISTANCES:SOUTH 79 DEGREES 17 MINUTES 32 SECONDS EAST A DISTANCE OF 161.37 FEET TO A POINT; THENCE NORTH 67 DEGREES 47 MINUTES 54 SECONDS EAST A DISTANCE OF 138.86 FEET TO A POINT; THENCE NORTH 37 DEGREES 41 MINUTES 42 SECONDS EAST A DISTANCE OF 166.46 FEET TO A POINT; THENCE NORTH 82 DEGREES 9 MINUTES 53 SECONDS EAST A DISTANCE OF 409.15 FEET TO A POINT; THENCE NORTH 71 DEGREES 28 MINUTES 40 SECONDS EAST A DISTANCE OF 202.25 FEET TO A POINT; THENCE SOUTH 71 DEGREES 40 MINUTES 40 SECONDS EAST A DISTANCE OF 530.99 FEET TO A POINT; THENCE SOUTH 67 DEGREES 0 MINUTES 56 SECONDS EAST A DISTANCE OF 443.17 FEET TO A POINT; THENCE NORTH 67 DEGREES 2 MINUTES 28 SECONDS EAST A DISTANCE OF 281.11 FEET TO A POINT; THENCE NORTH 72 DEGREES 49 MINUTES 17 SECONDS EAST A DISTANCE OF 95.48 FEET TO A POINT;

THENCE LEAVING THE CENTERLINE OF SAID CREEK SOUTH 28 DEGREES 31 MINUTES 38 SECONDS EAST A DISTANCE OF 201.11 FEET TO A POINT; THENCE 494.04 FEET ALONG AN ARC OF A CURVE TO THE RIGHT, (SAID CURVE HAVING A RADIUS OF 645.00 FEET AND A CHORD BEARING OF SOUTH 69 DEGREES 41 MINUTES 56 SECONDS EAST AND A CHORD DISTANCE OF 482.05 FEET) TO A POINT; THENCE 99.68 FEET ALONG AN ARC OF A CURVE TO THE LEFT, (SAID CURVE HAVING A RADIUS OF 100.00 FEET AND A CHORD BEARING OF SOUTH 76 DEGREES 18 MINUTES 42 SECONDS EAST AND A CHORD DISTANCE OF 95.60 FEET) TO A POINT; THENCE NORTH 75 DEGREES 7 MINUTES 57 SECONDS EAST A DISTANCE OF 1,069.95 FEET TO A POINT; THENCE NORTH 90 DEGREES 00 MINUTES 00 SECONDS EAST A DISTANCE OF 347.14 FEET TO A POINT; THENCE NORTH 87 DEGREES 25 MINUTES 41 SECONDS EAST A DISTANCE OF 116.44 FEET TO A POINT; THENCE SOUTH 67 DEGREES 45 MINUTES 18 SECONDS EAST A DISTANCE OF 200.06 FEET TO A POINT ON SAID WESTERLY RIGHT-OF-WAY LINE OF NORRIS LAKE ROAD; THENCE ALONG SAID RIGHT-OF-WAY LINE 278.59 FEET ALONG AN ARC OF A CURVE TO THE LEFT, SAID CURVE HAVING A RADIUS OF 1,047.12 FEET AND A CHORD BEARING AND DISTANCE OF SOUTH 20 DEGREES 53 MINUTES 40 SECONDS EAST 277.77 FEET TO A POINT; THENCE LEAVING SAID RIGHT-OF-WAY LINE SOUTH 47 DEGREES 40 MINUTES 17 SECONDS WEST A DISTANCE OF 359.24 FEET TO AN IRON PIN FOUND; THENCE SOUTH 44 DEGREES 8 MINUTES 24 SECONDS EAST A DISTANCE OF 270.28 FEET TO AN IRON PIN FOUND AND THE TRUE POINT OF BEGINNING.

SAID TRACT CONTAINING 122.77 ACRES, MORE OR LESS.

NOTES

1. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THIS 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 SUPPLIED AND TO THE SURVEYOR'S BEST KNOWLEDGE. ARE APPROXIMATELY AS SHOWN. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

2. I HAVE EXAMINED THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP FOR DEKALB COUNTY, GEORGIA AND INCORPORATED AREAS, COMMUNITY PANEL NUMBERS 13089C0181K, PANEL 181 OF 201, AND 13089C0118K, PANEL 118 OF 201 EFFECTIVE DATE DECEMBER 8, 2016 AND FOUND A PORTION OF THE PROPERTY SHOWN HEREON TO FALL WITHIN A DESIGNATED FLOOD ZONE "AE" (AREAS OF 100 YEAR FLOOD).

3. THIS SITE IS TIED TO A GRID NORTH BASED ON GPS OBSERVATIONS AND WERE ADJUSTED BY PLANNERS AND ENGINEERS COLLABORATIVE IN MAY 2018. NORTH AMERICAN DATUM OF 1983 (NAD83), NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), GEORGIA WEST ZONE STATE PLANE COORDINATES.

4. THE TERM "CERTIFICATION" RELATING TO PROFESSIONAL ENGINEERING AND LAND SURVEYING SERVICES SHALL MEAN A SIGNED STATEMENT BASED UPON FACTS AND KNOWLEDGE KNOWN TO THE REGISTRANT AND IS NOT A GUARANTEE OR WARRANTY, EITHER EXPRESSED OR IMPLIED.

5. NO ZONING INFORMATION PROVIDED FOR BUILDING SETBACKS.

6. THERE IS NO EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION, OR BUILDING ADDITIONS OBSERVED IN THE PROCESS OF CONDUCTING THE FIELDWORK.

7. THE CENTERLINE OF YELLOW RIVER AS LOCATED ON MAY 18, 2018 IS SUBJECT TO CHANGE DUE TO NATURAL CAUSES AND MAY OR MAY NOT REPRESENT THE ACTUAL LIMITS OF TITLE.

8. A COMPREHENSIVE FIELD REVIEW OF THE WETLANDS, INTERMITTENT STREAMS, PERENNIAL STREAMS AND OPEN WATERS WAS COMPLETE ON MAY 17, 2018 BY TUPELO ECOLOGICAL ASPECTS, INC.

9. PARCEL LINES DEPICTED HEREON NOTED AS PROPOSED ARE TENTATIVE AND DO NOT REPRESENT AN ACTUAL SUBDIVISION OF THE PROPERTY THAT HAS BEEN REVIEWED AND APPROVED BY THE JURISDICTIONAL GOVERNING AUTHORITY(S).

THIS SURVEY IS A RETRACEMENT OF EXISTING PROPERTY.

10. THE LEGAL DESCRIPTION SHOWN IS TRUE AND CORRECT DEPICTION OF THE SURVEYED PROPERTY.

TITLE EXCEPTIONS

Commonwealth Land Title Insurance Company Commitment number 1353.0089 with an effective date of February 8, 2018 was used in the preparation of this survey and the listed exceptions are as follows:

10. Easement for Right-of-Way from Harry Mullinax to Georgia Power Company, dated January 19, 1971, filed for record February 8, 1971 at 10:50 a.m., recorded in Deed Book 2612, Page 686, Records of DeKalb County, Georgia. Affects the subject property; the deed is nonspecific on its description and surveyor is unable to plot.

11. Easement for Right-of-Way from Charles M. Marbut to Georgia Power Company, dated January 2, 1971, filed for record February 8, 1971 at 10:50 a.m., recorded in Deed Book 2612, Page 688, aforesaid Records. Affects the subject property, the deed is nonspecific on its description and surveyor is unable to plot.

12. Driveway Agreement contained in Warranty Deed between Arthur Henry Clark and Thomas D. Broadnax and Angela C. Broadnax, dated June 18, 1971, filed for record June 21, 1971 at 10:12 a.m., recorded in Deed Book 2659, Page 336, aforesaid Records. Affects the subject property as shown on the survey.

13. Right-of-Way Easement from Dorthy K. S. to Southern Bell Telephone and Telegraph Company, dated September 19, 1985, filed for record June 4, 1986 at 9:39 a.m., recorded in Deed Book 5486, Page 546, aforesaid Records. Affects the subject property, the deed is nonspecific on its description and surveyor is unable to plot.

14. Easement from Beatrice Ezzie Gattis Clark, as Executrix under the Last Will and Testament of Arthur Henry Clark to Thomas D. Broadnax and Angela C. Broadnax, dated December 1, 1989, filed for record January 8, 1990 at 4:15p.m., recorded in Deed Book 6613, Page 247, aforesaid Records. Affects the subject property as shown on the survey.

15. Right-of-Way Easement from Julie Diane Mullinax to Walton Electric Membership Corporation, a corporation, dated March 29, 1989, filed for record June 28, 1991 at 8:30 a.m., recorded in Deed Book 6989, Page 540, aforesaid Records. Affects the subject property, the deed is nonspecific on its description and surveyor is unable to plot.

16. Right-of-Way Easement from Sandra G. Gaylor to Walton Electric Membership Corporation, a corporation, dated February 12, 1991, filed for record January 23, 1992 at 8:30a.m., recorded in Deed Book 7159, Page 255, aforesaid Records. Affects the subject property, the deed is nonspecific on its description and surveyor is unable to plot.

17. Ingress and egress easement contained in Warranty Deed between Margrethe Grace Marbut, Executrix of the Last Will and Testament of Charles Mercer Marbut a/k/a Charles M. Marbut, deceased, and James R. Deason, dated July 11, 1996, filed for record July 17, 1996 at 8:30a.m., recorded in Deed Book 9069, Page 77, aforesaid Records; as re-recorded in Deed Book 9150, Page 162, aforesaid Records. Affects the subject property as show on the survey.

18. Right-of-Way Easement from James R. Deason to Walton Electric Membership Corporation, a corporation, dated April18, 1998, filed for record March 18, 1999 at 2:46p.m., recorded in Deed Book 10585, Page 112, aforesaid Records. Affects the subject property, the deed is nonspecific on its description and surveyor is unable to plot.

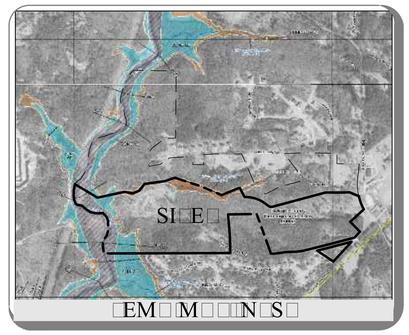
19. Water Rights Agreement and Easement by James Smith and James and Patricia Deason, dated May 1, 2001, filed for record May 4, 2001 at 2:13p.m., recorded in Deed Book 12075, Page 535, aforesaid Records. Affects the subject property, the deed is nonspecific on its water well and waterlines descriptions and surveyor is unable to plot.

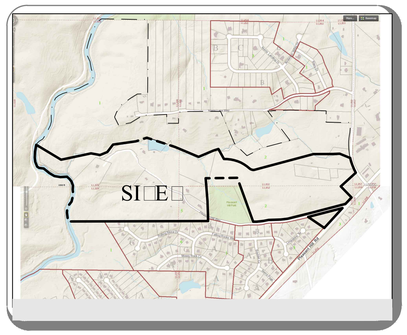
20. Easement contained in Right of Way Deed by and between Julie Corene Mullinax, and DeKalb County, Georgia, a political subdivision of the State of Georgia, dated April 22, 2004, filed for record May 21, 2004 at 11:45 a.m., recorded in Deed Book 16169, Page 111, aforesaid Records. Affects the subject property as shown on the survey.

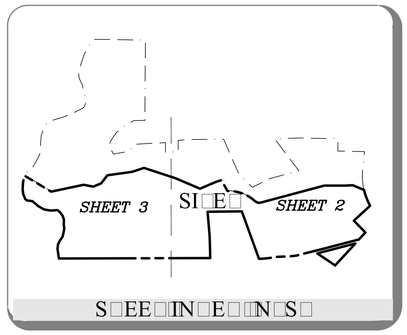
21. Easement contained in Right of Way Deed by and between Tony Love and Deanda Love, and DeKalb County, Georgia, a political subdivision of the State of Georgia, dated April 22, 2004, filed for record May 21, 2004 at 11:45 a.m., recorded in Deed Book 16169, Page 125, aforesaid Records. Affects the subject property as shown on the survey.

22. All matters disclosed by Plat recorded in Plat Book 171, Page 26, aforesaid Records.

23. Any security interest created at closing.







LEGEND

- IRON PIN FOUND (#4 Re-Rod unless noted otherwise)
- IRON PIN SET (#4 Re-Rod unless noted otherwise)
- IRON PIN WITH CAP FOUND
- POINT
- OPEN TOP PIPE FOUND
- CRIMP TOP PIPE FOUND
- ANGLE IRON
- PK NAIL FOUND
- PK NAIL SET
- CONCRETE MONUMENT FOUND
- RIGHT OF WAY MONUMENT FOUND
- UTILITY POLE (CARRIES MULTIPLE UTILITIES)
- POWER POLE (WOOD)
- SERVICE POLE W/ LIGHT
- POWER POLE W/ GUY WIRE
- OVERHEAD POWER / TELEPHONE LINE
- ELECTRIC METER
- WATER VALVE
- FH FIRE HYDRANT
- WATER METER
- GAS METER
- STORM SEWER LINE
- SINGLE WING CATCH BASIN
- DOUBLE WING CATCH BASIN
- CURB INLET
- DROP INLET
- JUNCTION BOX
- —S— SANITARY SEWER LINE
- SANITARY SEWER CLEANOUT
- SANITARY SEWER MANHOLE
- TELEPHONE BOX
- TELEPHONE MANHOLE
- MONITORING WELL
- FIBER OPTIC MARKER
- —W— UNDERGROUND WATER LINE
- —G— UNDERGROUND GAS LINE
- —E— UNDERGROUND ELECTRIC LINE
- —T— UNDERGROUND TELEPHONE LINE
- —C— UNDERGROUND CABLE LINE
- —FO— UNDERGROUND FIBER OPTIC LINE

ABBREVIATIONS

APPROX.	APPROXIMATE
BM	BENCH MARK
C&G	CURB & GUTTER
CMP	CORRUGATED METAL PIPE
CL	CENTERLINE
DB	DEED BOOK
DIP	DUCTILE IRON PIPE
DIR.	DIRECTION
INV.	INVERT
P.O.B.	POINT OF BEGINNING
SWCB	SINGLE WING CATCH BASIN
DWCB	DOUBLE WING CATCH BASIN
PB	PLAT BOOK
N/F	NOW OR FORMALLY
RCP	REINFORCED CONCRETE PIPE
LP	LIGHT POLE
LPP	LAMP POST
MB	MAILBOX

811 Know what's below. Call before you dig.

The field data upon which this map or plat is based has a closure precision of one foot in 44,619 feet and an angular error of 00° 00' 01" per angle point and was adjusted using the compass adjustment rule.

This map or plat has been calculated for closure and is found to be accurate to within one foot in 583,862 feet.

EQUIPMENT USED:

ANGULAR: TOPCON TOTAL STATION

LINEAR: TOPCON TOTAL STATION

TO: D.R. HORTON – CROWN, LLC, A DELAWARE LIMITED LIABILITY COMPANY, DEKALB COUNTY, GEORGIA, COMMONWEALTH LAND TITLE INSURANCE COMPANY, HOLT NEY ZATCOFF & WASSERMAN, LLP:

This plat is a retracement of an existing parcel or parcels of land and does not subdivide or create a new parcel or make any changes to any real property boundaries. The recording information of the documents, maps, plats, or other instruments which created the parcel or parcels are stated hereon. RECORDATION OF THIS PLAT DOES NOT IMPLY APPROVAL OF ANY LOCAL JURISDICTION, AVAILABILITY OF PERMITS, COMPLIANCE WITH LOCAL REGULATIONS OR REQUIREMENTS, OR SUITABILITY FOR ANY USE OR PURPOSE OF THE LAND. Furthermore, the undersigned land surveyor certifies that this plat complies with the minimum technical standards for property surveys in Georgia as set forth in the rules and regulations of the Georgia Board of Registration for Professional Engineers and Land Surveyors and as set forth in O.C.G.A Section 15-6-67.

Date of Map or Plat: MAY 18, 2018.

SHEET 1 OF 2

PLANNERS AND ENGINEERS COLLABORATIVE
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■CIVIL ENGINEERING ■LAND SURVEYING
350 RESEARCH COURT PEACHTREE CORNERS, GEORGIA 30092
(770)451-2741 ■ WWW.PECATL.COM

REV	DATE	DESCRIPTION	BY
5			
4			
3			
2			
1			

REV	DATE	DESCRIPTION	BY
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7			
6			

BOUNDARY SURVEY
OF
PLEASANT HILL WAY (SOUTH TRACT)

LAND LOT(S) 228, 229, 252, 253, 257 & 258
DISTRICT 16th
DEKALB COUNTY GEORGIA

GEORGIA REGISTERED No. 3044 PROFESSIONAL LAND SURVEYOR JONATHAN H. NOWLIN

DRAWN BY: FA
CHECKED BY: JHN
FILE NO.: 16309.00
DATE: MAY 18, 2018
SCALE: 0
DATE OF FIELD WORK: MAY 18, 2018

NORRIS LAKE WAY
(40' R/W PUBLIC)

NORTH TRACT
113.335± ACRES

SOUTH TRACT
122.772± ACRES

NORRIS LAKE DRIVE
(60' R/W PUBLIC)

PLEASANT HILL ROAD
(60' R/W PUBLIC)

PLEASANT HILL WAY
(50' R/W PUBLIC)

APPROXIMATE LAND LOT LINE

N/F DITECH FINANCIAL, LLC TAX ID 16-228-1-005 DB.26869 PG.794

N/F JAMES C. KING TAX ID 16-253-2-15 DB.16421 PG.47

N/F JOLEY A. COVINGTON TAX ID 16-253-2-23 DB.19533 PG.696

N/F JOLEY A. COVINGTON TAX ID 16-253-2-24 DB.17373 PG.4

N/F MAHMOUD B. BARRIE TAX ID 16-253-2-25 DB.18565 PG.7

N/F ALEXANDER ANDERSON TAX ID 16-253-2-32 DB.11699 PG.495

N/F EVADNE R. CHRISTIE TAX ID 16-253-2-28 DB.21972 PG.215

N/F LLEWELLYN FALCHER TAX ID 16-253-2-29 DB.23198 PG.782

N/F DONOVAN POTTINGER TAX ID 16-253-2-30 DB.17590 PG.244

N/F JOHNNY OLASINDE TAX ID 16-253-2-31 DB.22422 PG.608

JAMES R. DILLARD TAX ID 16-253-2-1 DB.19092 PG.624

N/F VILA TOVAR RUIZ TAX ID 16-253-2-22 DB.24739 PG.327

N/F D.R. HORTON CROWN LLC TAX ID 16-228-1-7 DB.24398 PG.703

N/F DEKALB COUNTY PLEASANT HILL PARK TAX ID 16-252-2-2 DB.4306 PG.141

N/F SIERRA HIGHLANDS S/D PB.98 PG.80

N/F TERRY A. JOSEPH TAX ID 16-252-5-34 PB.96 PG.19

N/F SUPERANNUATION PEREZ RONDEROS TAX ID 16-252-5-33 PB.96 PG.19

N/F ALBERT R. KING TAX ID 16-252-5-32 PB.96 PG.19

N/A CAROLYN CLARK DUTTON TAX ID 16-253-2-6 DB.19895 PG.146

N/F D.R. HORTON CROWN LLC TAX ID/ADDRESS
16-228-01-003 8657 PLEASANT HILL WAY
16-228-01-006 8612 PLEASANT HILL WAY
16-228-01-007 8277 NORRIS LAKE WAY
16-228-01-008 8620 PLEASANT HILL WAY
16-228-01-013 8615 PLEASANT HILL WAY
16-229-01-002 6564 PLEASANT HILL WAY
16-252-02-001 8682 PLEASANT HILL ROAD
16-252-02-003 8550 PLEASANT HILL WAY
16-252-02-005 8565 PLEASANT HILL WAY
16-253-02-004 1679 NORRIS LAKE DRIVE
16-253-02-005 1735 NORRIS LAKE DRIVE
16-253-02-007 1729 NORRIS LAKE DRIVE
16-253-02-008 1695 NORRIS LAKE DRIVE
16-253-02-009 1709 NORRIS LAKE DRIVE
16-253-02-011 1719 NORRIS LAKE DRIVE
16-253-02-026 8455 NORRIS LAKE DRIVE
16-253-02-027 8581 PLEASANT HILL WAY
DB.24398 PG.703

PROPOSED PARCEL LINE (SEE NOTE 9)

APPROXIMATE FEMA FLOOD ZONE 0.2% ANNUAL CHANCE FLOOD HAZARD

APPROXIMATE WETLAND #1

APPROXIMATE WETLAND #2

APPROXIMATE WETLAND #3

POND #3

STREAM #5 (SEE NOTE #8)

STREAM #6 (SEE NOTE #8)

STREAM #7 (SEE NOTE #8)

STREAM #8 (SEE NOTE #8)

STREAM #9 (SEE NOTE #8)

POSSIBLE GAP

EXCEPTION #12 APPROX. LOCATION OF DRIVEWAY AGREEMENT DB. 2659 PG.336

EXCEPTION #14 APPROX. LOCATION OF DRIVEWAY AGREEMENT DB. 6613 PG. 247

TEMP. CONST. AND CONST. OF DRIVEWAYS EASEMENTS DB. 16169 PG.128

PREVIOUS RIGHT OF WAY DB. 16169 PG.126

PREVIOUS R/W DB. 16169 PG.467

PREVIOUS R/W DB. 16169 PG.129

MATCHLINE (SEE SHEET 3)

MATCHLINE (SEE SHEET 2)

P.O.C. SOUTH TRACT & SEPARATE TRACT

P.O.B. SOUTH TRACT

P.O.B. SEPARATE TRACT

GEORGIA WEST ZONE

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REV	DATE	DESCRIPTION	BY
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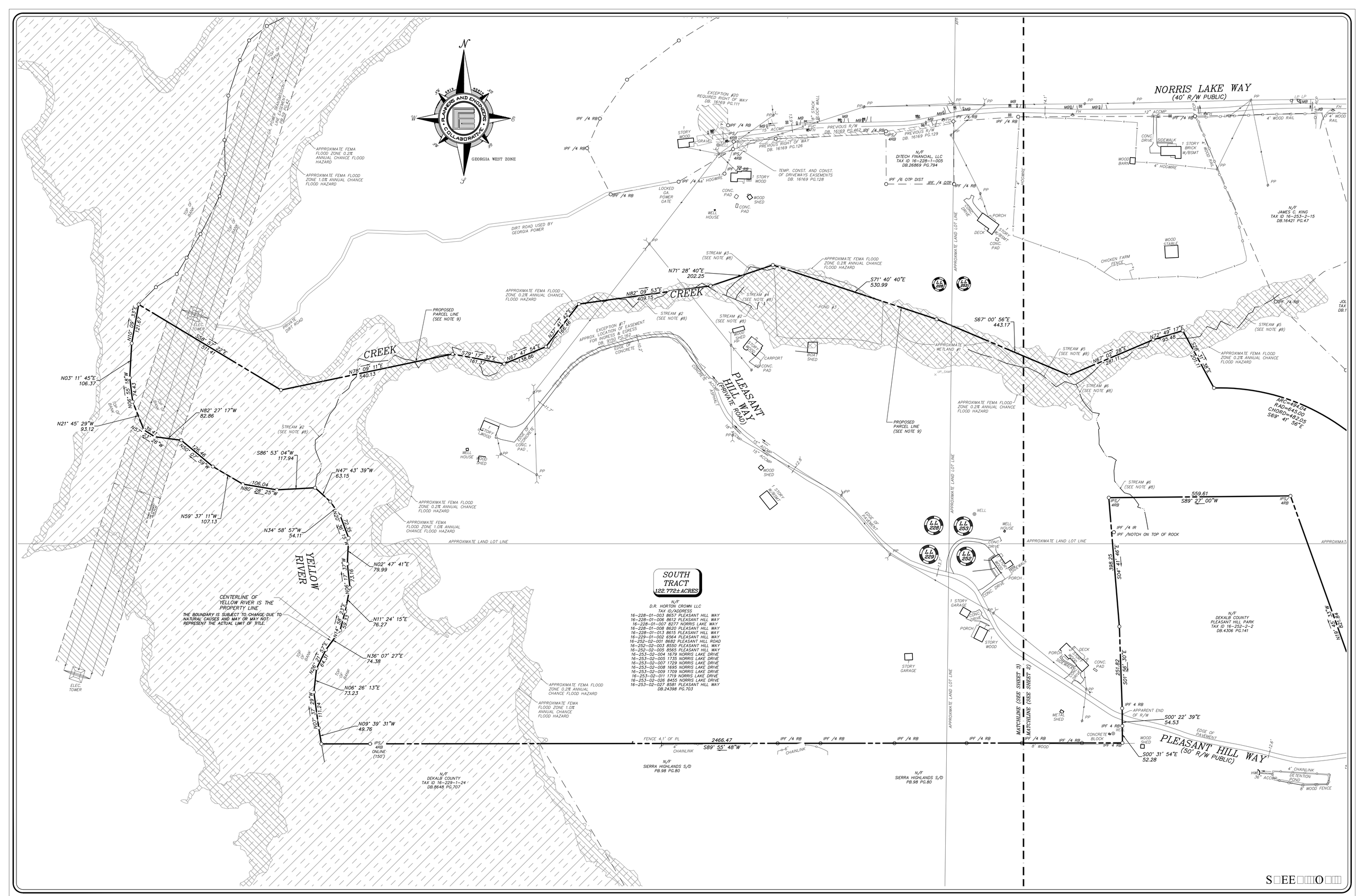
8			
7			
6			

BOUNDARY SURVEY
OF
PLEASANT HILL WAY (SOUTH TRACT)

LAND LOT(S) 228, 229, 252, 253, 257 & 258
DISTRICT 16th
DEKALB COUNTY GEORGIA

GEORGIA REGISTERED No. 3084 LAND SURVEYOR JONATHAN N. HOWARD

DRAWN BY: FA
CHECKED BY: JHN
FILE NO.: 16309.00
DATE: MAY 18, 2018
SCALE:
DATE OF FIELD WORK: MAY 18, 2018



SHEET 1 OF 3

PLANNERS AND ENGINEERS COLLABORATIVE
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■CIVIL ENGINEERING ■LAND SURVEYING
350 RESEARCH COURT PEACHTREE CORNERS, GEORGIA 30092
(770)451-2741 ■ WWW.PECAIL.COM

REV	DATE	DESCRIPTION	BY
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REV	DATE	DESCRIPTION	BY
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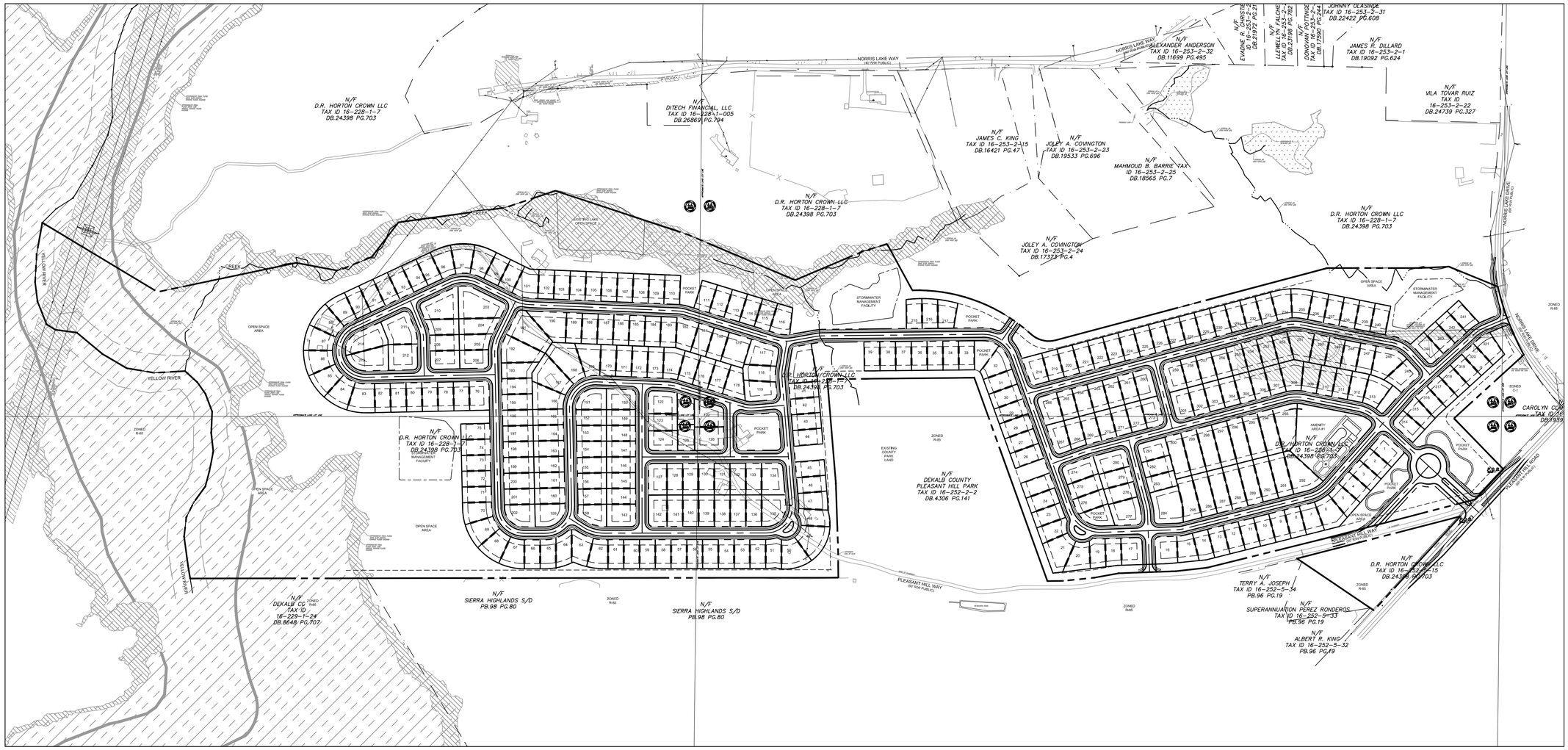
8			
7			
6			

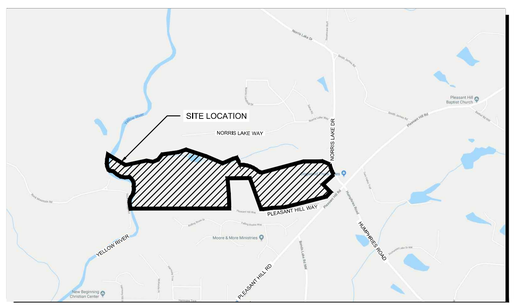
BOUNDARY SURVEY
OF
PLEASANT HILL WAY (SOUTH TRACT)

LAND LOT(S) 228, 229, 252, 253, 257 & 258
DISTRICT 16th
DEKALB COUNTY GEORGIA

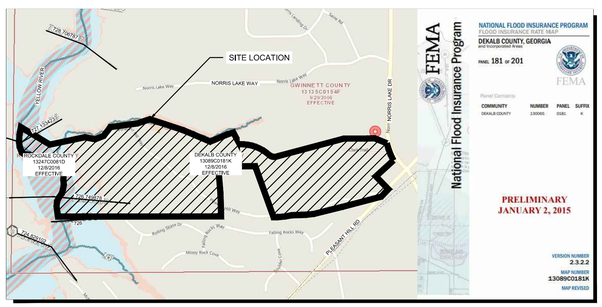
GEORGIA REGISTERED No. 3004 PROFESSIONAL LAND SURVEYOR JONATHAN N. HOWARD

DRAWN BY: FA
CHECKED BY: JHN
FILE NO.: 16309.00
DATE: MAY 18, 2018
SCALE:
DATE OF FIELD WORK: MAY 18, 2018
0





SITE LOCATION MAP
NOT TO SCALE



FEMA FIRM MAP
FEMA FIRM PANEL NO.: 13089C0181K
NOT TO SCALE

SITE DATA	
SITE AREA	122.772 AC
ZONING	
EXISTING ZONING	RNC
ZONING JURISDICTION	DEKALB COUNTY
DENSITY CALCULATIONS	
BASE / BONUS MAX	
X' PRODUCT TYPE	
X' PRODUCT TYPE	
TOTAL RESIDENTIAL UNITS PROPOSED	321 UNITS
PROPOSED DENSITY (UNITS/AC)	2.61
BUILDING SETBACK SUMMARY	
PERIMETER SETBACKS	30 FEET
FRONT SETBACK	20 FEET
SIDE SETBACK	3 FEET (MIN. 10' SEPERATION BETWEEN BUILDINGS)
REAR SETBACK	20 FEET
MINIMUM LOT AREA	5000 SF
MIMIMUM LOT WIDTH	50 FEET
MAXIMUM LOT COVERAGE	50%
OPEN SPACE SUMMARY	
MINIMUM OPEN SPACE REQUIRED	24.554 AC (20% TOTAL SITE AREA)
OPEN SPACE PROVIDED	29.197 AC (23.8% TOTAL SITE AREA
PARKING SUMMARY	
MINIMUM PARKING REQUIRED	2 SPACES / DWELLING UNIT
MAXIMUM PARKING REQUIRED	4 SPACES / DWELLING UNIT
TOTAL PARKING PROVIDED	

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24 HOUR CONTACT:
JAY COOMBE @ 470-774-4884

THIS SKETCH PLAT HAS BEEN SUBMITTED TO AND APPROVED BY THE PLANNING COMMISSION OF DEKALB COUNTY, ON THIS_____DAY OF _____ 20___.

BY:_____(BY DIRECTOR)
PLANNING COMMISSION CHAIRMAN
DEKALB COUNTY, GEORGIA

RED STAG SKETCH PLAT

A MASTER PLANNED RESIDENTIAL DEVELOPMENT
FOR
D.R. HORTON
1371 DOOGWOOD DR SW
CONYERS, GA 30012
PHONE: 470-774-4884

CITY OF SNELLVILLE // LITHONIA
DEKALB COUNTY
GEORGIA

LAND LOT 228, 229, 253, 252, 257, 258
16TH DISTRICT

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SITE PLANNING @ LANDSCAPE ARCHITECTURE @ CIVIL ENGINEERING @ LAND SURVEYING
@ 350 RESEARCH COURT @ PEACHTREE CORNERS, GEORGIA 30092 @ (770) 451-2741 @ FAX (770) 451-3915 @

REVISIONS:

NO.	DATE	BY	DESCRIPTION
1	10/24/19	CAH	1ST SUBMITTAL
2	12/11/19	CAH	2ND SUBMITTAL
3	01/27/20	CAH	3RD SUBMITTAL

HANSEN FILE NO: 1243655

OVERALL SITE PLAN

0 100 200 400 600

SCALE: 1" = 200'
DATE: 01/27/2020
PROJECT: 16309.00

THIS SEAL IS ONLY VALID IF COUNTER SIGNED AND DATED WITH AN ORIGINAL SIGNATURE.

GEORGIA REGISTERED No. 37095 PROFESSIONAL ENGINEER MATTHEW F. KRZYNSKI 01/27/2020

GSWCC LEVEL II DESIGN PROFESSIONAL
CERTIFICATION # 0000066476 EXP. 06/22/2021

GRID NORTH
GEORGIA WEST ZONE

S4
SHEET

J:\16309\DOCS\Sketch Plat\SKETCH PLAT - 163090D.dwg - Attention - 1/27/2020 3:00 PM

RED STAG SKETCH PLAT

A MASTER PLANNED RESIDENTIAL DEVELOPMENT

FOR

D.R. HORTON

1371 DOOGWOOD DR SW

CONYERS, GA 30012

PHONE: 470-774-4884

CITY OF SNELLVILLE / LITHONIA

DEKALB COUNTY

GEORGIA

LAND LOT 228, 229, 253, 252, 257, 258

16TH DISTRICT

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▫ 350 RESEARCH COURT ▫ PEACHTREE CORNERS, GEORGIA 30092 ▫ (770) 451-2741 ▫ FAX (770) 451-3915 ▫

REVISIONS:

NO.	DATE	BY	DESCRIPTION
1	10/24/19	CAH	1ST SUBMITTAL
2	12/11/19	CAH	2ND SUBMITTAL
3	01/27/20	CAH	3RD SUBMITTAL

HANSEN FILE NO: 1243655

SKETCH PLAT

0 100 200 400 600

SCALE: 1" = 200'

DATE: 01/27/2020

PROJECT: 16309.00

THIS SEAL IS ONLY VALID IF COUNTER SIGNED AND DATED WITH AN ORIGINAL SIGNATURE.

GEORGIA REGISTERED No. 37096 PROFESSIONAL ENGINEER MATTHEW E KACZENSKI 01/27/2020

GSWCC LEVEL II DESIGN PROFESSIONAL CERTIFICATION # 0000066476 EXP. 06/22/2021

GRID NORTH

GEORGIA WEST ZONE

S5

SHEET

SITE LOCATION MAP

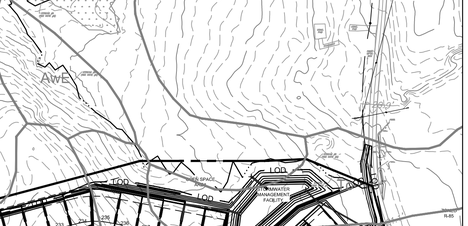
NOT TO SCALE

FEMA FIRM MAP

FEMA FIRM PANEL NO.: 13089C0181K

NOT TO SCALE

SOIL SERIES CLASSIFICATION	
AmB	appling sandy loam, 2 to 6 percent slopes
AmC	appling sandy loam, 6 to 10 percent slopes
AvD	ashlar sandy loam, very rocky, 6 to 15 percent slopes
AvF	ashlar sandy loam, very rocky, 15 to 45 percent slopes
AwC	ashlar-wedowee complex. 2 to 10 percent slopes
AwE	ashlar-wedowee complex. 10 to 25 percent slopes
Ca	cartecay silt loam, frequently flooded
CeB	cecil sandy loam, 2 to 6 percent slopes
CeC	cecil sandy loam, 6 to 10 percent slopes
PfC	pacolet sandy loam, 2 to 10 percent slopes
PfD	pacolet sandy loam, 10 to 15 percent slopes
PfE	pacolet sandy loam, 15 to 30 percent slopes
PgC2	pacolet sandy clay loam, 2 to 10 percent slopes, eroded
PgD2	pacolet sandy clay loam, 10 to 15 percent slopes, moderately eroded
Rx	rock outcrop
Tf	toccoa sandy loam, 0 to 2 percent slopes, frequently flooded
To	toccoa sandy loam, high
W	water
WeB	wedowee sandy loam, 2 to 6 percent slopes
WeC	wedowee sandy loam, 6 to 10 percent slopes
WeE	wedowee sandy loam, 10 to 25 percent slopes
Wf	wehadkee silt loam, frequently flooded
WoB	worsham sandy loam, 2 to 6 percent slopes
AmB	appling sandy loam, 2 to 6 percent slopes
AmC	appling sandy loam, 6 to 10 percent slopes
CCA	carteccay and chewacla soils, frequently flooded
PaD	pacolet sandy loam, 10 to 15 percent slopes
Ta	toccoa fine sandy loam, rarely flooded
WeB	wedowee sandy loam, 2 to 6 percent slopes
WeC	wedowee sandy loam, 6 to 10 percent slopes
WeD	wedowee sandy loam, 10 to 15 percent slopes



THERE ARE KNOWN STATE WATERS ON THE PROPERTY
THERE ARE NO IMPAIRED STREAMS NEAR THE SITE
THERE ARE WETLANDS INTERIOR TO THE PROPERTY

24 HOUR CONTACT:
JAY COOMBE @ 470-774-4884

THIS SKETCH PLAT HAS BEEN SUBMITTED TO AND APPROVED BY THE PLANNING COMMISSION OF DEKALB COUNTY, ON THIS_____DAY OF _____ 20___.

BY:_____(BY DIRECTOR)
PLANNING COMMISSION CHAIRMAN
DEKALB COUNTY, GEORGIA

NOTE:

- DEKALB COUNTY SANITATION WILL BE RESPONSIBLE FOR HANDLING HOUSEHOLD WASTE, YARD DEBRIS AND RECYCLABLE MATERIAL.

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RED STAG SKETCH PLAT

A MASTER PLANNED RESIDENTIAL DEVELOPMENT

FOR

D.R. HORTON

1371 DOOGWOOD DR SW

CONYERS, GA 30012

PHONE: 470-774-4884

CITY OF SNELLVILLE // LITHONIA

DEKALB COUNTY, GEORGIA

LAND LOT 228, 229, 253, 252, 257, 258

16TH DISTRICT

"WE PROVIDE SOLUTIONS"

PLANNERS AND ENGINEERS COLLABORATIVE

SITE PLANNING ▣ LANDSCAPE ARCHITECTURE ▣ CIVIL ENGINEERING ▣ LAND SURVEYING

▣ 350 RESEARCH COURT ▣ PEACHTREE CORNERS, GEORGIA 30092 ▣ (770) 451-2741 ▣ FAX (770) 451-3915 ▣

REVISIONS:

NO.	DATE	BY	DESCRIPTION
1	10/24/19	CAH	1ST SUBMITTAL
2	12/11/19	CAH	2ND SUBMITTAL
3	01/27/20	CAH	3RD SUBMITTAL

HANSEN FILE NO: 1243655

SKETCH PLAT A

0 50 100 200 300

SCALE: 1" = 100'

DATE: 01/27/2020

PROJECT: 16309.00

THIS SEAL IS ONLY VALID IF COUNTER SIGNED AND DATED WITH AN ORIGINAL SIGNATURE.

GEORGIA REGISTERED No. 37096 PROFESSIONAL ENGINEER MATTHEW E KACZENSKI 01/27/2020

GSWCC LEVEL II DESIGN PROFESSIONAL CERTIFICATION # 0000066476 EXP. 06/22/2021

GRID NORTH

GEORGIA WEST ZONE

S5.1

SHEET

GEORGIA811 www.Georgia811.com Know what's below. Call before you dig.

24 HOUR CONTACT:
JAY COOMBE @ 470-774-4884

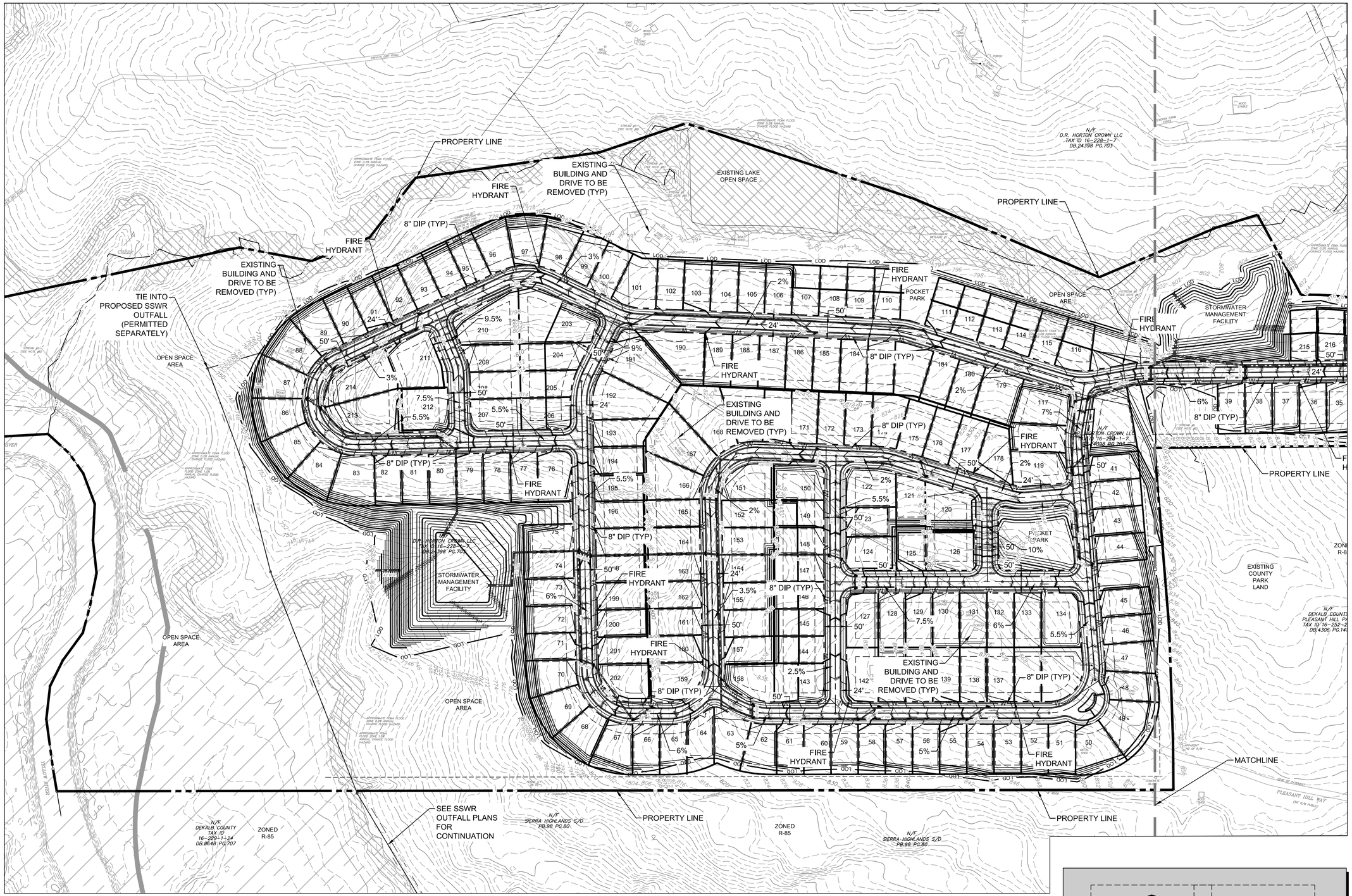
THIS SKETCH PLAT HAS BEEN SUBMITTED TO AND APPROVED BY THE PLANNING COMMISSION OF DEKALB COUNTY, ON THIS_____DAY OF _____ 20___.

BY:_____(BY DIRECTOR)
PLANNING COMMISSION CHAIRMAN
DEKALB COUNTY, GEORGIA

A

SHEET LEGEND

J:\16300\Dwg\Sheets\SKETCH PLAT - 16309.00.dwg - Attention - 1/27/2020 9:01 PM



RED STAG SKETCH PLAT

A MASTER PLANNED RESIDENTIAL DEVELOPMENT

FOR

D.R. HORTON

1371 DOOGWOOD DR SW

CONYERS, GA 30012

PHONE: 470-774-4884

CITY OF SNELLVILLE / LITHONIA

DEKALB COUNTY

GEORGIA

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HANSEN FILE NO: 1243655

SKETCH PLAT B

0 50 100 200 300

SCALE: 1" = 100'

DATE: 01/27/2020

PROJECT: 16309.00

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GEORGIA REGISTERED No. 37096 PROFESSIONAL ENGINEER MATTHEW E KRZENSKI 01/27/2020

GSWCC LEVEL II DESIGN PROFESSIONAL CERTIFICATION # 0000066476 EXP. 06/22/2021

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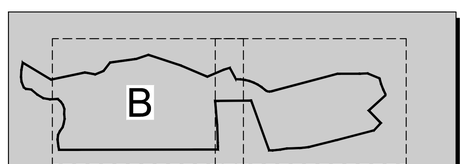
DEKALB COUNTY, GEORGIA



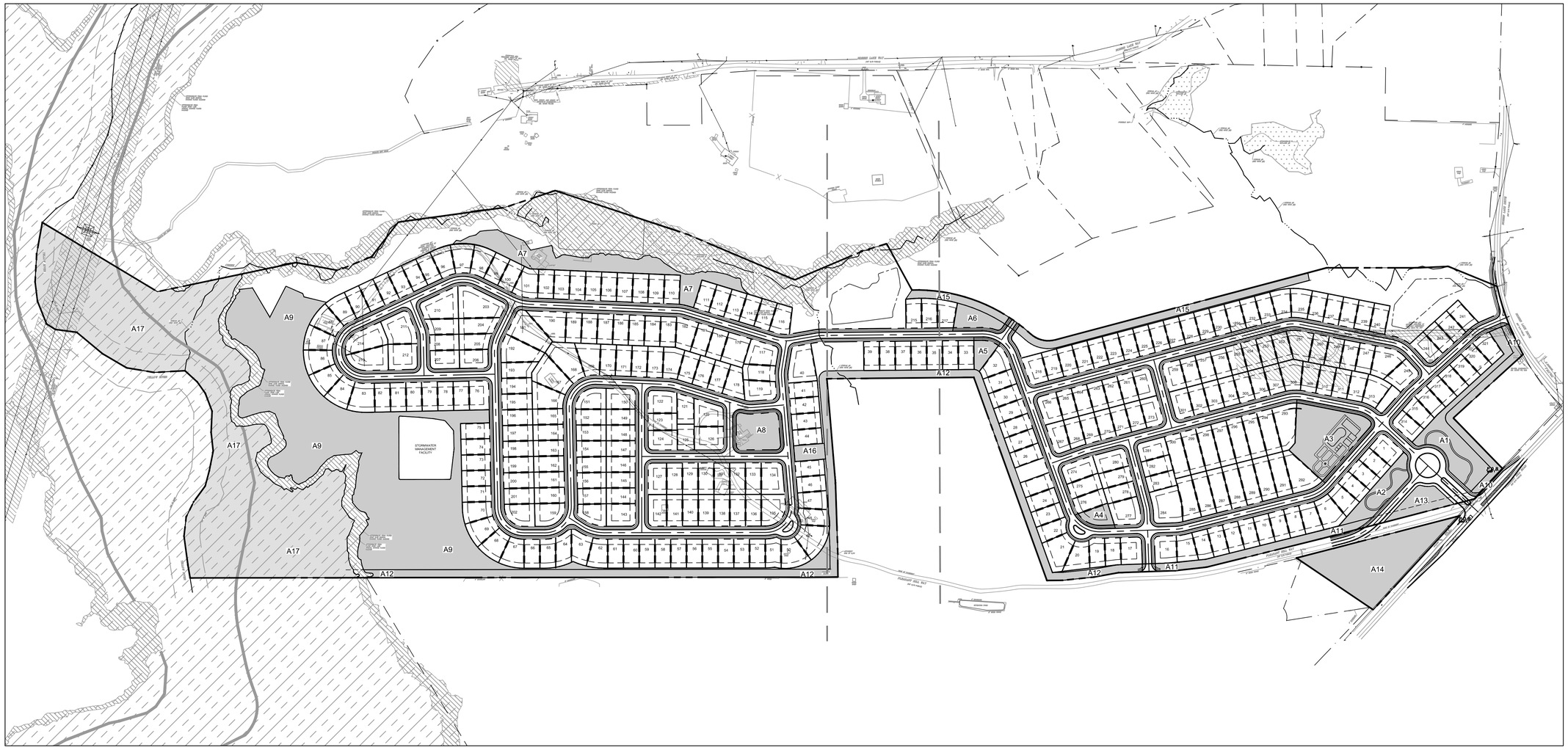
SHEET LEGEND

GRID NORTH

GEORGIA WEST ZONE

S5.2

SHEET



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HANSEN FILE NO: 1243655

OPEN SPACE PLAN

0 100 200 400 600

SCALE: 1" = 200'

DATE: 01/27/2020

PROJECT: 16309.00

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GEORGIA REGISTERED No. 37095 PROFESSIONAL ENGINEER MATTHEW F. KRZYNSKY 01/27/2020

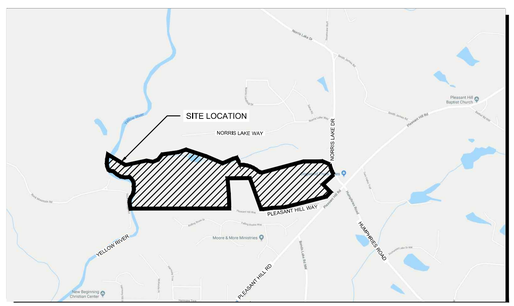
GSWCC LEVEL II DESIGN PROFESSIONAL CERTIFICATION # 0000066476 EXP. 06/22/2021

GRID NORTH

GEORGIA WEST ZONE

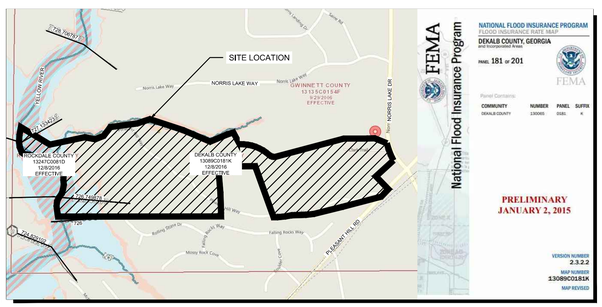
S7

SHEET



SITE LOCATION MAP

NOT TO SCALE



FEMA FIRM MAP

FEMA FIRM PANEL NO.: 13089C0181K

NOT TO SCALE

OPEN SPACE

LABEL	DESCRIPTION	AREA (SF)
A1	POCKET PARK	44341
A2	POCKET PARK	22695
A3	AMENITY AREA	61097
A4	POCKET PARK	9173
A5	POCKET PARK	8169
A6	POCKET PARK	14337
A7	GREEN SPACE	68661
A8	POCKET PARK	30271
A9	GREEN SPACE	405925
A10	30' PERIMETER SETBACK	26048
A11	30' PERIMETER SETBACK	24604
A12	30' PERIMETER SETBACK	128753
A13	GREEN SPACE	16603
A14	OUTPARCEL	84875
A15	PERIMETER SETBACK	47933
A16	POCKET PARK	7002
A17	50% 100 YR FLOODPLAIN*	271315.5
	TOTAL (SF)	1271802.5
	TOTAL (AC)	**29.197**

*100% 500 YR FLOODPLAIN = 542631 SF

50% OK TO USE PER MATTHEW WILLIAMS 12/10

24 HOUR CONTACT:
JAY COOMBE @ 470-774-4884

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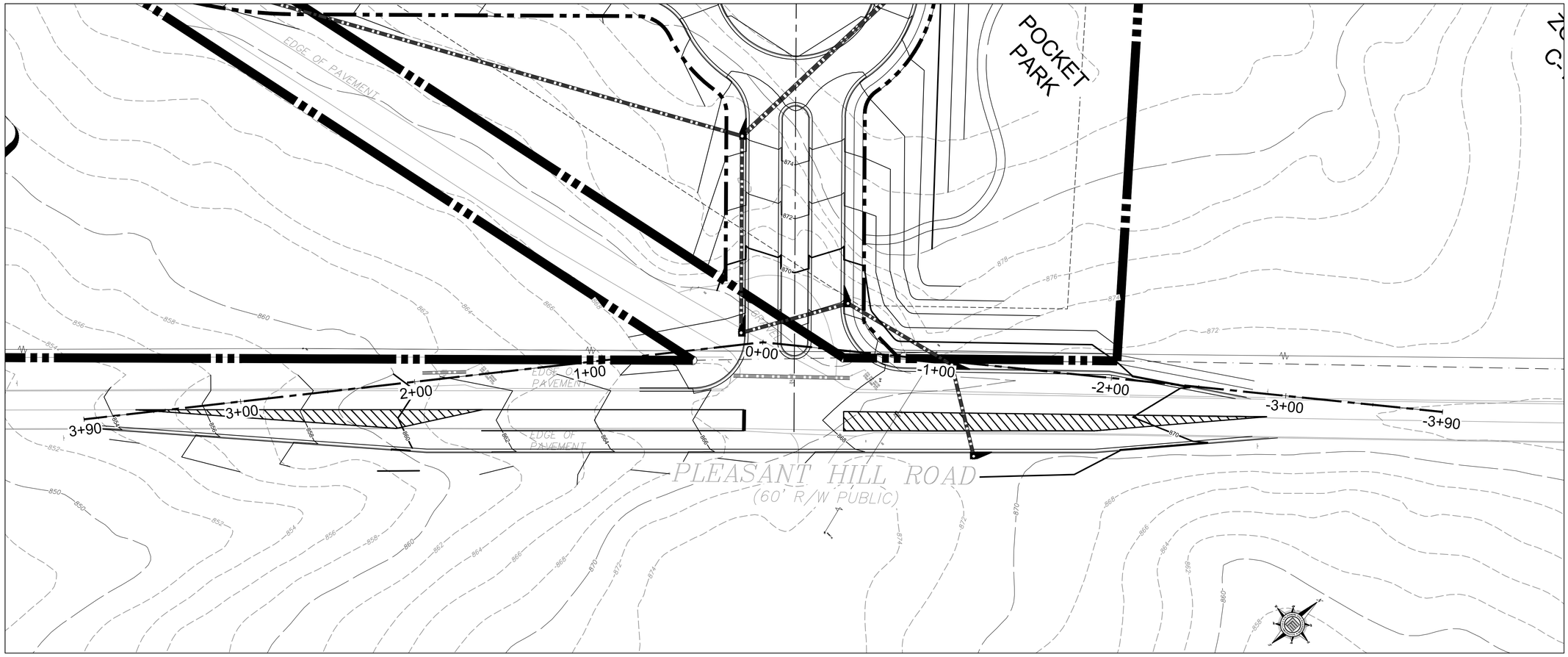
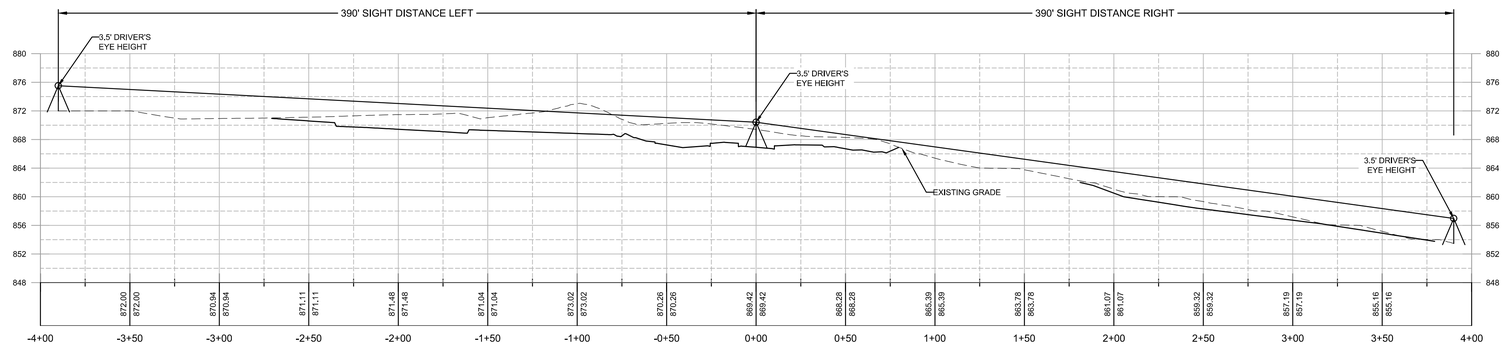
DEKALB COUNTY, GEORGIA

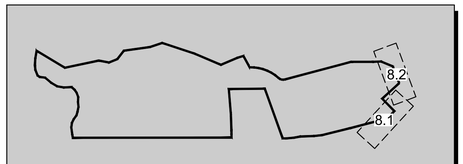
GEORGIA811 www.Georgia811.com Know what's below. Call before you dig.

J:\16309\DWG\Sketch Plat\SKETCH PLAT - 16309.dwg, cbenson - 1/27/2020 9:07 PM





PLEASANT HILL RD. SIGHT DISTANCE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 10'



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FOR
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1371 DOOGWOOD DR SW
CONYERS, GA 30012
PHONE: 470-774-4884

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HANSEN FILE NO: 1243655

SIGHT DISTANCE PROFILES

0 15 30 60 90

SCALE: 1" = 30'
DATE: 01/27/2020
PROJECT: 16309.00

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GEORGIA REGISTERED No. 37095 PROFESSIONAL ENGINEER MATTHEW F. KRZYNSKI 01/27/2020

GSWCC LEVEL II DESIGN PROFESSIONAL CERTIFICATION # 0000066476 EXP. 06/22/2021

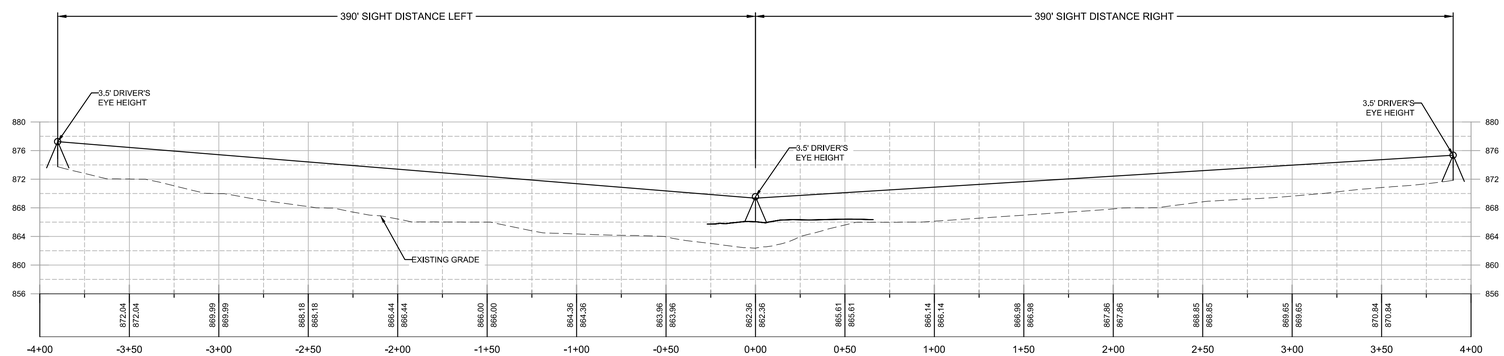
GRID NORTH

GEORGIA WEST ZONE

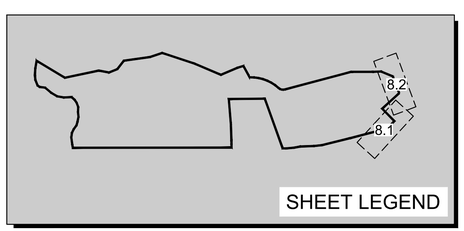
S8.1

SHEET

J:\16309\DWG\Sheet Pics\SIGHT DISTANCE - 16309.dwg - Kristen - 1/27/2020 4:39 PM



NORRIS LAKE DR SIGHT DISTANCE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 10'



SHEET LEGEND

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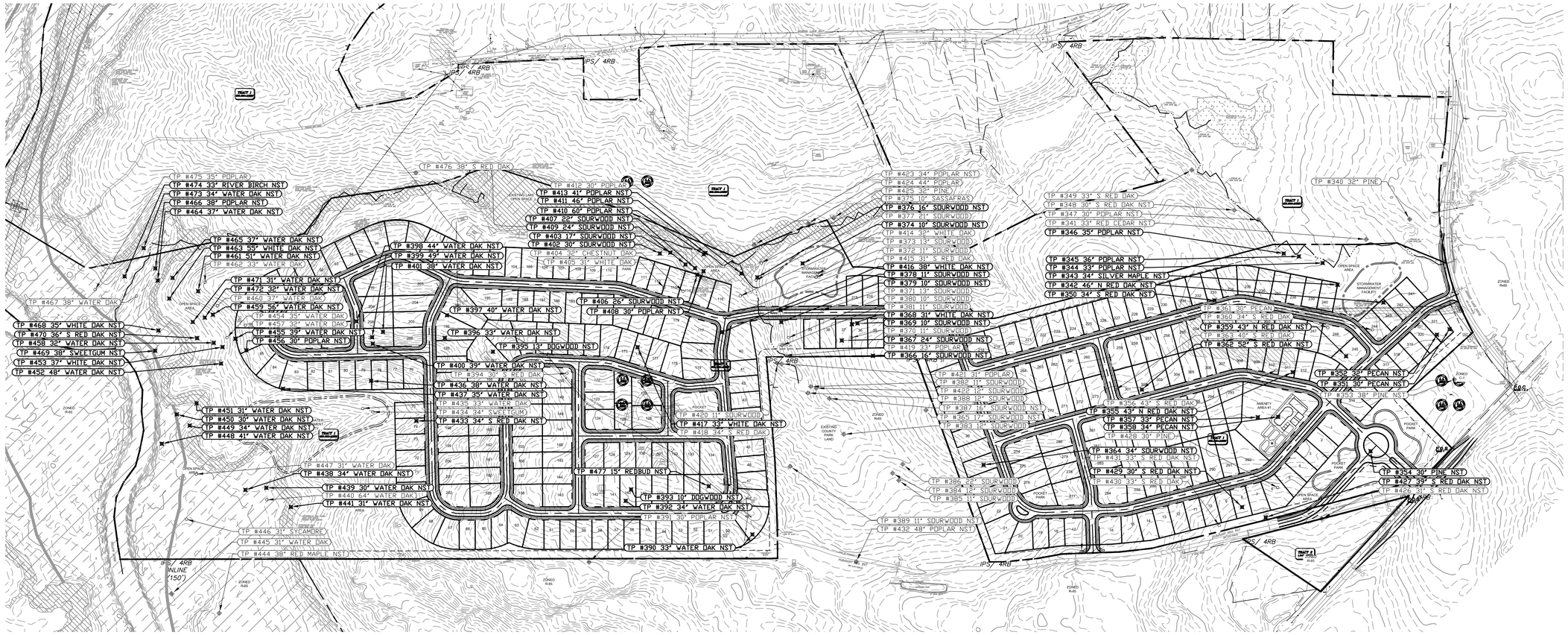
GSWCC LEVEL II DESIGN PROFESSIONAL
CERTIFICATION # 0000066476 EXP. 06/22/2021

GRID NORTH
GEORGIA WEST ZONE

S8.2
SHEET

J:\16309\00\Sketch Plat\SIGHT DISTANCE - 16309.00.dwg, XHasin - 1/27/2020 8:39 PM



SPECIMEN TREE LEGEND

- SPECIMEN TREE & CRZ (1' RADIUS TO 1" DBH)
- NON SPECIMEN TREE
- TREE TO BE SAVED
- OFFSITE TREE TO BE SAVED

SPECIMEN TREE SIZE

OVERSTORY HARDWOOD TREES	30 INCHES
OVERSTORY SOFTWOOD TREES	30 INCHES
FLOWERING UNDERSTORY TREES	10 INCHES

SPECIMEN TREE NOTE

SPECIMEN TREE REPORT COMPLETED ON 10/18/2019 BY ROOT ZONE TREE CONSULTANTS:
JAMES MAHONEY
ISA CERTIFIED ARBORIST SO #10291A

ADDITIONAL NOTES

1. THE TREE FEATURES SHOWN HEREON WERE DETERMINED BY GPS OBSERVATIONS AND WERE ADJUSTED BY PLANNERS AND ENGINEERS COLLABORATIVE IN SEPTEMBER 2018. NORTH AMERICAN DATUM OF 1983 (NAD83), NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), GEORGIA WEST ZONE STATE PLANE COORDINATES.
2. THE FIELD DATA UPON WHICH THIS MAP IS BASED HAS A PRECISION OF SUB 1-METER.
3. EQUIPMENT USED:
HORIZONTAL - TRIMBLE GEO 7X SERIES

EXISTING SPECIMEN TREES

QTY	TAG	SPECIES	DBH	NST	OFFSITE	INCHES
1	340	PINE	32	-	X	0
2	341	red cedar	33	NST	X	0
3	342	N RED OAK	46	NST		0
4	343	SILVER MAPLE	34	NST		0
5	344	POPLAR	33	NST		0
6	345	POPLAR	36	NST		0
7	346	POPLAR	35	NST		0
8	347	POPLAR	30	NST	X	0
9	348	S RED OAK	30	NST	X	0
10	349	S RED OAK	33	-	X	0
11	350	S RED OAK	34	NST		0
12	351	pecan	30	NST		0
13	352	pecan	32	NST		0
14	353	PINE	38	NST	X	0
15	354	PINE	30	NST		0
16	355	N RED OAK	43	NST		0
17	356	S RED OAK	43	-		43
18	357	pecan	33	NST		0
19	358	pecan	34	NST		0
20	359	N RED OAK	43	NST		0
21	360	S RED OAK	34	-		34
22	361	pecan	30	-		30
23	362	S RED OAK	52	NST		0
24	363	S RED OAK	40	-		40
25	364	sourwood	34	NST		0
26	365	SOURWOOD	17	NST	X	0
27	366	SOURWOOD	16	NST		0
28	367	SOURWOOD	24	NST		0
29	368	WHITE OAK	31	NST		0
30	369	SOURWOOD	10	NST		0
31	370	SOURWOOD	11	-		11
32	371	SOURWOOD	13	-		13
33	372	SOURWOOD	11	-		11
34	373	SOURWOOD	13	-		13
35	374	SOURWOOD	10	NST		0
36	375	SASSAFRAS	10	NST		0
37	376	SOURWOOD	16	NST		0
38	377	SOURWOOD	21	-		21
39	378	SOURWOOD	11	NST		0
40	379	SOURWOOD	10	NST		0
41	380	SOURWOOD	10	-		10

EXISTING SPECIMEN TREES

QTY	TAG	SPECIES	DBH	NST	OFFSITE	INCHES
42	381	SOURWOOD	11	-		11
43	382	SOURWOOD	11	-	X	0
44	383	SOURWOOD	12	-	X	0
45	384	SOURWOOD	12	-	X	0
46	385	SOURWOOD	11	-	X	0
47	386	SOURWOOD	22	-	X	0
48	387	SOURWOOD	16	NST	X	0
49	388	SOURWOOD	12	-	X	0
50	389	SOURWOOD	11	NST	X	0
51	390	WATER OAK	33	NST		0
52	391	POPLAR	30	NST	X	0
53	392	WATER OAK	34	NST		0
54	393	DOGWOOD	10	NST		0
55	394	S RED OAK	30	-		30
56	395	DOGWOOD	13	NST		0
57	396	WATER OAK	33	NST		0
58	397	WATER OAK	40	NST		0
59	398	WATER OAK	44	NST		0
60	399	WATER OAK	49	NST		0
61	400	WATER OAK	39	NST		0
62	401	WATER OAK	38	NST		0
63	402	SOURWOOD	30	NST		0
64	403	SOURWOOD	17	NST		0
65	404	CHESTNUT OAK	32	-		32
66	405	WHITE OAK	31	-		31
67	406	SOURWOOD	26	NST		0
68	407	SOURWOOD	22	NST		0
69	408	POPLAR	30	NST		0
70	409	SOURWOOD	24	NST		0
71	410	POPLAR	60	NST		0
72	411	POPLAR	46	NST		0
73	412	POPLAR	30	-		30
74	413	POPLAR	41	NST		0
75	414	WHITE OAK	32	-		32
76	415	S RED OAK	31	-		31
77	416	WHITE OAK	38	NST		0
78	417	WHITE OAK	33	NST		0
79	418	S RED OAK	34	-		34
80	419	POPLAR	33	-		33
81	420	SOURWOOD	11	-	X	0
82	421	POPLAR	31	-		31

EXISTING SPECIMEN TREES

QTY	TAG	SPECIES	DBH	NST	OFFSITE	INCHES
83	422	SOURWOOD	12	-	X	0
84	423	POPLAR	34	NST	X	0
85	424	POPLAR	44	-	X	0
86	425	PINE	32	-	X	0
87	426	S RED OAK	31	NST	X	0
88	427	S RED OAK	39	NST		0
89	428	PINE	30	-		30
90	429	S RED OAK	30	NST		0
91	430	S RED OAK	33	-		33
92	431	S RED OAK	33	NST	X	0
93	432	POPLAR	48	NST	X	0
94	433	S RED OAK	34	NST		0
95	434	SWEETGUM	34	-		34
96	435	WATER OAK	33	-		33
97	436	WATER OAK	38	NST		0
98	437	WATER OAK	35	NST		0
99	438	WATER OAK	34	NST		0
100	439	WATER OAK	30	NST		0
101	440	WATER OAK	64	-		64
102	441	WATER OAK	31	NST		0
103	442	PINE	38	NST		0
104	443	SYCAMORE	49	NST		0
105	444	RED MAPLE	38	NST	X	0
106	445	WATER OAK	31	-	X	0
107	446	SYCAMORE	31	-		31
108	447	WATER OAK	31	-		31
109	448	WATER OAK	41	NST		0
110	449	WATER OAK	34	NST		0
111	450	WATER OAK	30	NST		0
112	451	WATER OAK	31	NST		0
113	452	WATER OAK	48	NST		0
115	454	WATER OAK	35	-		35
116	455	WATER OAK	39	NST		0
117	456	POPLAR	30	NST		0
118	457	WATER OAK	32	-		32
119	458	WATER OAK	32	NST		0
120	459	WATER OAK	56	NST		0
121	460	WATER OAK	37	-		37
122	461	WATER OAK	51	NST		0
123	462	WATER OAK	33	-		33

EXISTING SPECIMEN TREES

QTY	TAG	SPECIES	DBH	NST	OFFSITE	INCHES
124	463	WHITE OAK	55	NST		0
125	464	WATER OAK	37	NST		0
126	465	WATER OAK	37	NST		0
127	466	POPLAR	38	NST		0
128	467	WATER OAK	38	-		38
129	468	WHITE OAK	35	NST		0
130	469	SWEETGUM	38	NST		0
131	470	S RED OAK	36	NST		0
132	471	WATER OAK	31	NST		0
133	472	WATER OAK	32	NST		0
134	473	WATER OAK	34	NST		0
135	474	RIVER BIRCH	33	NST		0
136	475	POPLAR	35	-		35
137	476	S RED OAK	38	-	X	0
138	477	REDBUD	15	NST		0
TOTAL:			**4284**			987

RED STAG

A MASTER PLANNED RESIDENTIAL COMMUNITY
FOR
D. R. HORTON - CROWN, LLC
1371 DOGWOOD DR. SW
CONYERS, GEORGIA 30012
PHONE: 470-774-4804

LAND LOT(S): 228, 229, 252, 253, 257, & 258
DISTRICT: 4TH

DEKALB COUNTY GEORGIA

ROOT ZONE TREE CONSULTANTS
350 RESEARCH COURT PEACHTREE CORNERS, GEORGIA 30092 (678) 684-6202 WWW.RZCONSULTANTS.COM
A DIVISION OF PLANNERS AND ENGINEERS COLLABORATIVE WWW.PECATL.COM

JOB # 16309.00

REVISIONS:

NO.	DATE	BY	DESCRIPTION

SHEET TITLE

0 100 200 400 800

SCALE: 1" - 200'
DATE: OCT 21, 2019
PROJECT: 16309.00

ISA REGISTERED ARBORIST
ISA
No. SO-10291A
ARBORIST
JAMES A. MAHONEY

N

SHEET #

SL

1 OF 1

STAND A CALCULATIONS	
TREE DENSITY	
UNIT AVERAGE =	28.13333
UNITS PER ACRE =	490.1952
TOTAL ACREAGE =	15.67
UNITS IN STAND =	7681.359

STAND B CALCULATIONS	
TREE DENSITY	
UNIT AVERAGE =	43.775
UNITS PER ACRE =	762.7356
TOTAL ACREAGE =	7.06
UNITS IN STAND =	5384.913

STAND C CALCULATIONS	
TREE DENSITY	
UNIT AVERAGE =	57.525
UNITS PER ACRE =	1002.316
TOTAL ACREAGE =	26.27
UNITS IN STAND =	26330.83

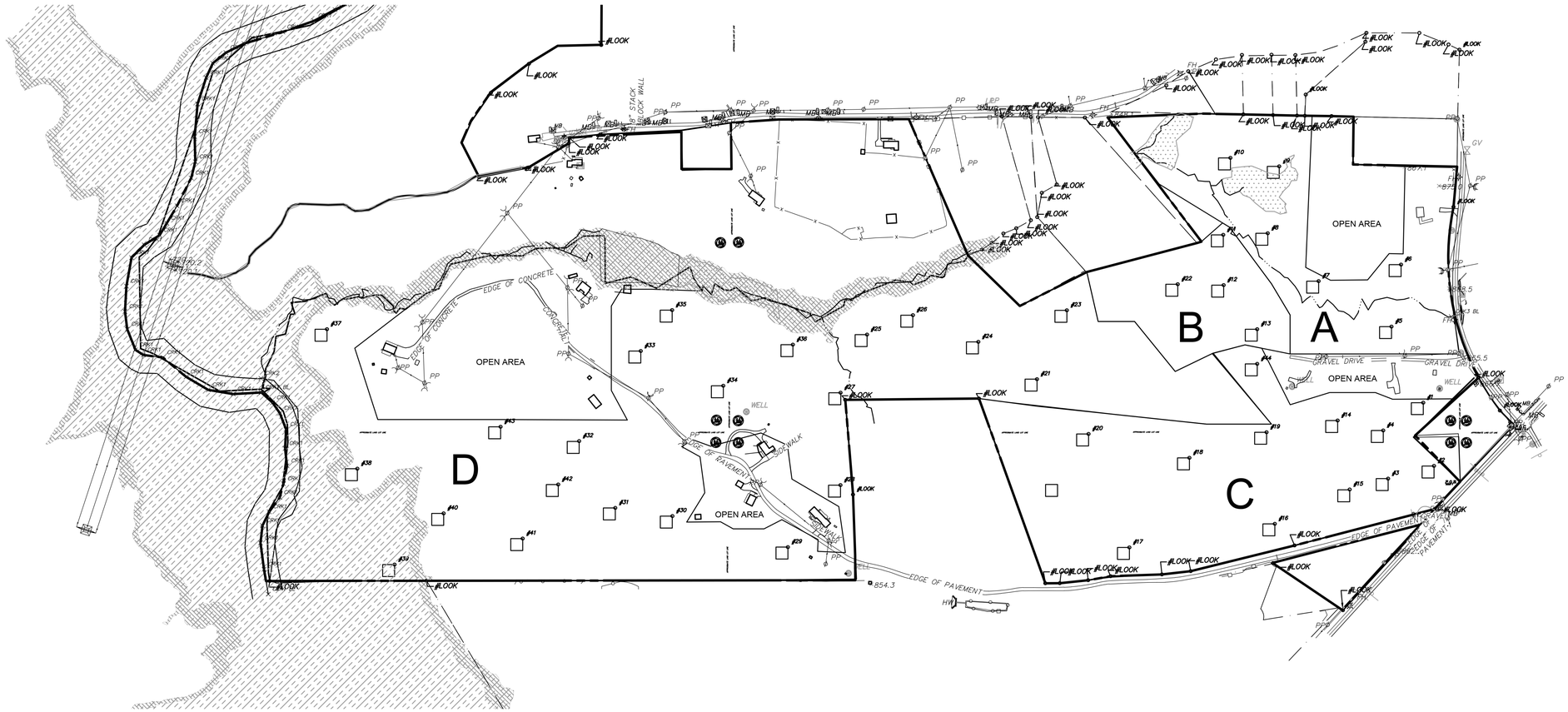
STAND D CALCULATIONS	
TREE DENSITY	
UNIT AVERAGE =	35.46364
UNITS PER ACRE =	617.9184
TOTAL ACREAGE =	68.69
UNITS IN STAND =	42444.81

SPECIMEN TREE NOTE

SAMPLING COMPLETED ON 6/8/2018 BY ROOT ZONE TREE CONSULTANTS:
HALLIE HARRIMAN, SO-10044A
ISA CERTIFIED ARBORIST®

ADDITIONAL NOTES

1. THE TREE FEATURES SHOWN HEREON WERE DETERMINED BY GPS OBSERVATIONS AND WERE ADJUSTED BY PLANNERS AND ENGINEERS COLLABORATIVE IN FEBRUARY 2018. NORTH AMERICAN DATUM OF 1983 (NAD83), NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), GEORGIA WEST ZONE STATE PLANE COORDINATES.
2. THE FIELD DATA UPON WHICH THIS MAP IS BASED HAS A PRECISION OF SUB 1-METER.
3. EQUIPMENT USED:
HORIZONTAL - TRIMBLE GEO 7X SERIES



24 HOUR CONTACT
JAY COOMBE @ 470-774-4884

RED STAG

A MASTER PLANNED RESIDENTIAL COMMUNITY
FOR
D. R. HORTON - CROWN, LLC
1371 DOGWOOD DR. SW
CONYERS, GEORGIA 30012
PHONE: 470-774-4884

LAND LOT 228, 229, 252, 253, 257, & 258
14TH DISTRICT

DEKALB COUNTY
GEORGIA

ROOT ZONE TREE CONSULTANTS
350 RESEARCH COURT PEACHTREE CORNERS, GEORGIA 30092 (678) 684-6202 WWW.RZCONSULTANTS.COM
A DIVISION OF PLANNERS AND ENGINEERS COLLABORATIVE WWW.PECATL.COM

JOB # 16309.00

REVISIONS:

NO.	DATE	BY	DESCRIPTION

SHEET TITLE

SAMPLE LOCATION

0 125 250 500 750

SCALE: 1" - 250'
DATE: JUNE 8, 2018
PROJECT: 16309.00

HALLIE HARRIMAN
ISA
CERTIFIED
ARBORIST
SO-10044A

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SHEET #

SL

1 OF 1

RED STAG

SPECIMEN TREE REPORT
DEKALB COUNTY

Tree Report for:
D.R. Horton
1371 Dogwood Dr. SW
Conyers, GA 30012

Property Address:
1695 Norris Lake Dr.
Dekalb County, GA 30033

Project 16309.00 Red Stag

Survey Date
10/14/2019-10/17-2019

ROOT ZONE TREE CONSULTANTS
350 RESEARCH CT. PEACHTREE CORNERS, GA 30092
PHONE: 770-451-3915
A PEC DIVISION

Consulting Arborist
James Mahoney
ISA Certified Arborist #SO-10291A

Red Stag

Specimen Tree Inventory

Some trees on a site warrant special consideration and encouragement for preservation. Specifications for these trees are established under the Dekalb County Tree Preservation and Replacement Ordinance. The intent of these specifications is to provide the necessary information to facilitate project design, plan review and enforcement processes. The purpose is to make Dekalb County a more attractive place to live, provide a healthy living environment, and better control of stormwater runoff, noise, glare and soil erosion.

Dekalb County Specimen tree specifications are organized by size:

Deciduous Hardwood trees over 30" DBH

Conifer Softwood trees over 30" DBH

Flowering Understory trees over 10" DBH

And condition:

Life expectancy greater than 15 years

Relatively sound and solid trunk with no visible decay

No more than one major and several minor dead limbs (hardwoods)

No major insect or pathological problems

Site Location

This site is located east of an existing quarry, north of the housing devlopment Sierra highlands and is bordered along its northern and eastern edges by horse ranches.

The site is bordered by the Yellow River to the east and slopes downhill 20'+ towards the river. There is an additional stream along the northern border of the property. A portion of the site is within the buffer area and 100-yr floodplain of the river and stream.

The majority of specimen trees are trees that have grown naturally onsite. Most of the site has has been clear cut within the last 30 years and as a result there is not a high concentration of specimen trees. The site is dominated by oak and pine scrub. The southern edge of the site is predominately pine forest with the northern area being more densly forested by oaks, sourwoods and poplars. Overall, the surveyed areas appear to be healthy, and free from insect and disease.

Red Stag

Definitions

Tree Number:
Trees are tagged with an aluminum disk that shows a unique number to identify the tree.

Species:
Trees are listed by a regional common name and botanical name.

Diameter at Breast Height (DBH):
The diameter of a trunk at 4.5' above ground level and is measured in inches.

Condition:

Specimen:

Good: A specimen tree with healthy productive tip growth. A sound trunk with no visible damage or decay. No major limb loss and healthy branch unions. No visible insect or disease infestations. Life expectancy of more than 15 years.

Fair: A specimen tree with healthy but not vigorous tip growth. Less than 30% of crown is dead. No major dead limbs and no major trunk cavities or damage. Branch unions show some signs of stress. Tree is expected to live longer than 10 years.

Non-Specimen

Poor: More than 30% of the crown is dead or has significant tip die back. More than one major limb is dead and are large trunk cavities with visible decay. Severe insect or disease damage leading to immediate death. Roots are visible and show signs of decay and rot. Life expectancy is less than 5 years.

Dead: Tree has no bud or leaf production. All limbs are barren and rot is visible.
Invasive: Tree species whose native range is not within the Piedmont classification.

Hazardous: Severe or uncorrectable damage that will lead to a loss of property or life if there is tree failure.

Red Stag

Specimen Tree Report

Tree #	Species	DBH	Condition	Comments
340	Pine *Pinus spp.*	32	SPECIMEN	TREE IS IN GOOD HEALTH
341	Eastern Red Cedar *Juniperus virginiana*	33	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
342	Northern Red Oak *Quercus rubrum*	46	NON-SPECIMEN	BROKEN MAJOR BRANCHES
343	Silver Maple *Acer saccharinum*	34	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
344	Tulip Poplar *Liriodendron tulipifera*	33	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
345	Tulip Poplar *Liriodendron tulipifera*	36	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
346	Tulip Poplar *Liriodendron tulipifera*	35	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
347	Tulip Poplar *Liriodendron tulipifera*	30	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
348	Southern Red Oak *Quercus falcata*	30	NON-SPECIMEN	BROKEN MAJOR BRANCHES
349	Southern Red Oak *Quercus falcata*	33	SPECIMEN	TREE IS IN GOOD HEALTH
350	Southern Red Oak *Quercus falcata*	34	NON-SPECIMEN	WOUND WITH VISIBLE DECAY
351	Pecan *Carya illinoinensis*	30	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
352	Pecan *Carya illinoinensis*	32	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
353	Pine *Pinus spp.*	38	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
354	Pine *Pinus spp.*	30	NON-SPECIMEN	TRUNK WOUND WITH VISIBLE DECAY
355	Northern Red Oak *Quercus rubrum*	43	NON-SPECIMEN	LEADER IS DEAD WITH VISIBLE DECAY
356	Southern Red Oak *Quercus falcata*	43	SPECIMEN	TREE IS IN GOOD HEALTH
357	Pecan *Carya illinoinensis*	33	NON-SPECIMEN	BROKEN MAJOR BRANCHES
358	Pecan *Carya illinoinensis*	34	NON-SPECIMEN	BROKEN MAJOR BRANCHES
359	Northern Red Oak *Quercus rubrum*	43	NON-SPECIMEN	BROKEN MAJOR BRANCHES
360	Southern Red Oak *Quercus falcata*	34	SPECIMEN	TREE IS IN GOOD HEALTH

Red Stag

Specimen Tree Report

Tree #	Species	DBH "	Condition	Comments
361	Pecan *Carya illinoinensis*	30	SPECIMEN	TREE IS IN GOOD HEALTH
362	Southern Red Oak *Quercus falcata*	52	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
363	Southern Red Oak *Quercus falcata*	40	SPECIMEN	TREE IS IN GOOD HEALTH
364	Sourwood *Oxydendrum arboreum*	34	NON-SPECIMEN	LEADER IS DEAD WITH VISIBLE DECAY
365	Sourwood *Oxydendrum arboreum*	17	NON-SPECIMEN	TRUNK WOUND WITH VISIBLE DECAY
366	Sourwood *Oxydendrum arboreum*	16	NON-SPECIMEN	TRUNK WOUND WITH VISIBLE DECAY
367	Sourwood *Oxydendrum arboreum*	24	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
368	White Oak *Quercus alba*	31	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
369	Sourwood *Oxydendrum arboreum*	10	NON-SPECIMEN	TRUNK IS HOLLOW PAST 30%
370	Sourwood *Oxydendrum arboreum*	11	SPECIMEN	TREE IS IN GOOD HEALTH
371	Sourwood *Oxydendrum arboreum*	13	SPECIMEN	TREE IS IN GOOD HEALTH
372	Sourwood *Oxydendrum arboreum*	11	SPECIMEN	TREE IS IN GOOD HEALTH
373	Sourwood *Oxydendrum arboreum*	13	SPECIMEN	TREE IS IN GOOD HEALTH
374	Sourwood *Oxydendrum arboreum*	10	NON-SPECIMEN	LEADER IS DEAD WITH VISIBLE DECAY
375	Sassafras *Sassafras albidum*	10	NON-SPECIMEN	TREE IS IN GOOD HEALTH
376	Sourwood *Oxydendrum arboreum*	16	NON-SPECIMEN	TRUNK WOUND WITH VISIBLE DECAY
377	Sourwood *Oxydendrum arboreum*	21	SPECIMEN	TREE IS IN GOOD HEALTH
378	Sourwood *Oxydendrum arboreum*	11	NON-SPECIMEN	TRUNK WOUND WITH VISIBLE DECAY
379	Sourwood *Oxydendrum arboreum*	10	NON-SPECIMEN	TRUNK WOUND WITH VISIBLE DECAY
380	Sourwood *Oxydendrum arboreum*	10	SPECIMEN	TREE IS IN GOOD HEALTH
381	Sourwood *Oxydendrum arboreum*	11	SPECIMEN	TREE IS IN GOOD HEALTH

Red Stag

Specimen Tree Report

Tree #	Species	DBH "	Condition	Comments
382	Sourwood *Oxydendrum arboreum*	11	SPECIMEN	TREE IS IN GOOD HEALTH
383	Sourwood *Oxydendrum arboreum*	12	SPECIMEN	TREE IS IN GOOD HEALTH
384	Sourwood *Oxydendrum arboreum*	12	SPECIMEN	TREE IS IN GOOD HEALTH
385	Sourwood *Oxydendrum arboreum*	11	SPECIMEN	TREE IS IN GOOD HEALTH
386	Sourwood *Oxydendrum arboreum*	22	SPECIMEN	TREE IS IN GOOD HEALTH
387	Sourwood *Oxydendrum arboreum*	16	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
388	Sourwood *Oxydendrum arboreum*	12	SPECIMEN	TREE IS IN GOOD HEALTH
389	Sourwood *Oxydendrum arboreum*	11	NON-SPECIMEN	BROKEN MAJOR BRANCHES
390	Water Oak *Quercus nigra*	33	NON-SPECIMEN	BROKEN MAJOR BRANCHES
391	Tulip Poplar *Liriodendron tulipifera*	30	NON-SPECIMEN	BROKEN MAJOR BRANCHES
392	Water Oak *Quercus nigra*	34	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
393	Dogwood *Cornus spp.*	10	NON-SPECIMEN	CANOPY IS DEAD
394	Southern Red Oak *Quercus falcata*	30	SPECIMEN	TREE IS IN GOOD HEALTH
395	Dogwood *Cornus spp.*	13	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
396	Water Oak *Quercus nigra*	33	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
397	Water Oak *Quercus nigra*	40	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
398	Water Oak *Quercus nigra*	44	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
399	Water Oak *Quercus nigra*	49	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
400	Water Oak *Quercus nigra*	39	NON-SPECIMEN	TRUNK WOUND WITH VISIBLE DECAY
401	Water Oak *Quercus nigra*	38	NON-SPECIMEN	TRUNK WOUND WITH VISIBLE DECAY
402	Sourwood *Oxydendrum arboreum*	30	NON-SPECIMEN	TRUNK WOUND WITH VISIBLE DECAY

Red Stag

Specimen Tree Report

Tree #	Species	DBH "	Condition	Comments
403	Sourwood *Oxydendrum arboreum*	17	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
404	Chestnut Oak *Quercus prinus*	32	SPECIMEN	TREE IS IN GOOD HEALTH
405	White Oak *Quercus alba*	31	SPECIMEN	TREE IS IN GOOD HEALTH
406	Sourwood *Oxydendrum arboreum*	26	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
407	Sourwood *Oxydendrum arboreum*	22	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
408	Tulip Poplar *Liriodendron tulipifera*	30	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK, VISIBLE DECAY
409	Sourwood *Oxydendrum arboreum*	24	NON-SPECIMEN	LOW SPLIT, LEAN EXCEEDING 30%
410	Tulip Poplar *Liriodendron tulipifera*	60	NON-SPECIMEN	TRUNK WOUND WITH VISIBLE DECAY
411	Tulip Poplar *Liriodendron tulipifera*	46	NON-SPECIMEN	TRUNK WOUND WITH VISIBLE DECAY
412	Tulip Poplar *Liriodendron tulipifera*	30	SPECIMEN	TREE IS IN GOOD HEALTH
413	Tulip Poplar *Liriodendron tulipifera*	41	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
414	White Oak *Quercus alba*	32	SPECIMEN	TREE IS IN GOOD HEALTH
415	Southern Red Oak *Quercus falcata*	31	SPECIMEN	TREE IS IN GOOD HEALTH
416	White Oak *Quercus alba*	38	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
417	White Oak *Quercus alba*	33	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
418	Southern Red Oak *Quercus falcata*	34	SPECIMEN	TREE IS IN GOOD HEALTH
419	Tulip Poplar *Liriodendron tulipifera*	33	SPECIMEN	TREE IS IN GOOD HEALTH
420	Sourwood *Oxydendrum arboreum*	11	SPECIMEN	TREE IS IN GOOD HEALTH
421	Tulip Poplar *Liriodendron tulipifera*	31	SPECIMEN	TREE IS IN GOOD HEALTH
422	Sourwood *Oxydendrum arboreum*	12	SPECIMEN	TREE IS IN GOOD HEALTH
423	Tulip Poplar *Liriodendron tulipifera*	34	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK

Red Stag

Specimen Tree Report

Tree #	Species	DBH "	Condition	Comments
424	Tulip Poplar *Liriodendron tulipifera*	44	SPECIMEN	TREE IS IN GOOD HEALTH
425	Pine *Pinus spp.*	32	SPECIMEN	TREE IS IN GOOD HEALTH
426	Southern Red Oak *Quercus falcata*	31	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
427	Southern red Oak *Quercus falcata*	39	NON-SPECIMEN	BROKEN MAJOR BRANCHES, WITH VISIBLE DECAY
428	Pine *Pinus spp.*	30	SPECIMEN	TREE IS IN GOOD HEALTH
429	Southern Red Oak *Quercus falcata*	30	NON-SPECIMEN	BROKEN MAJOR BRANCHES, WITH VISIBLE DECAY
430	Southern Red Oak *Quercus falcata*	33	SPECIMEN	TREE IS IN GOOD HEALTH
431	Southern Red Oak *Quercus falcata*	33	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
432	Tulip Poplar *Liriodendron tulipifera*	48	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
433	Southern Red Oak *Quercus falcata*	34	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK, WITH VISIBLE DECAY
434	Sweetgum *Liquidambar styraciflua*	34	SPECIMEN	TREE IS IN GOOD HEALTH
435	Water Oak *Quercus nigra*	33	SPECIMEN	TREE IS IN GOOD HEALTH
436	Water Oak *Quercus nigra*	38	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
437	Water Oak *Quercus nigra*	35	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
438	Water Oak *Quercus nigra*	34	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
439	Water Oak *Quercus nigra*	30	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
440	Water Oak *Quercus nigra*	64	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
441	Water Oak *Quercus nigra*	31	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
442	Pine *Pinus spp.*	38	SPECIMEN	TREE IS IN GOOD HEALTH
443	Sycamore *Platanus occidentalis*	49	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
444	Red Maple *Acer Rubrum*	38	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK

Red Stag

Specimen Tree Report

Tree #	Species	DBH "	Condition	Comments
445	Water Oak *Quercus nigra*	31	SPECIMEN	TREE IS IN GOOD HEALTH
446	Sycamore *Platanus accidentalis*	31	SPECIMEN	TREE IS IN GOOD HEALTH
447	Water Oak *Quercus nigra*	31	SPECIMEN	TREE IS IN GOOD HEALTH
448	Water Oak *Quercus nigra*	41	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
449	Water Oak *Quercus nigra*	34	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
450	Water Oak *Quercus nigra*	30	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
451	Water Oak *Quercus nigra*	31	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
452	Water Oak *Quercus nigra*	48	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
453	White Oak *Quercus alba*	37	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
454	Water Oak *Quercus nigra*	35	SPECIMEN	TREE IS IN GOOD HEALTH
455	Water Oak *Quercus nigra*	39	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
456	Tulip Poplar *Liriodendron tulipifera*	30	SPECIMEN	TREE IS IN GOOD HEALTH
457	Water Oak *Quercus nigra*	32	SPECIMEN	TREE IS IN GOOD HEALTH
458	Water Oak *Quercus nigra*	32	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
459	Water Oak *Quercus nigra*	56	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
460	Water Oak *Quercus nigra*	37	SPECIMEN	TREE IS IN GOOD HEALTH
461	Water Oak *Quercus nigra*	51	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
462	Water Oak *Quercus nigra*	33	SPECIMEN	TREE IS IN GOOD HEALTH
463	White Oak *Quercus alba*	55	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
464	Water Oak *Quercus nigra*	37	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
465	Water Oak *Quercus nigra*	37	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK

Red Stag

Specimen Tree Report

Tree #	Species	DBH "	Condition	Comments
466	Tulip Poplar *Liriodendron tulipifera*	38	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
467	Water Oak *Quercus nigra*	38	SPECIMEN	TREE IS IN GOOD HEALTH
468	White Oak *Quercus alba*	35	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
469	Sweetgum *Liquidambar styraciflua*	38	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
470	Southern Red Oak *Quercus falcata*	36	NON-SPECIMEN	TRUNK WOUND WITH VISIBLE DECAY
471	Water Oak *Quercus nigra*	31	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
472	Water Oak *Quercus nigra*	32	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
473	Water Oak *Quercus nigra*	34	NON-SPECIMEN	LEAN EXCEEDING 30%
474	River birch *Betula nigra*	33	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK
475	Tulip Poplar *Liriodendron tulipifera*	35	SPECIMEN	TREE IS IN GOOD HEALTH
476	Southern Red Oak *Quercus falcata*	38	SPECIMEN	TREE IS IN GOOD HEALTH
477	Eastern redbud *Cercis canadensis*	15	NON-SPECIMEN	LOW SPLIT WITH INCLUDED BARK

Total Specimen Sized Trees: 138
Specimen Condition: 47
Non-Specimen Condition: 91

Specimen Tree Site Condition:
Some specimen sized trees on site do not meet the Dekalb county standard for specimen trees due to splits, included bark, infections, tree wounds, tip dieback, broken

Red Stag

Photo Evidence

Pic # 1: Split with included bark
Tree #341

Pic # 2: Broken major branch, rot
Tree #342

Pic # 3: Split with included bark
Tree #343

Pic # 4: Split with included bark
Tree #344

Red Stag

Pic # 5: Split with included bark
Tree #345

Pic # 6: Split with included bark
Tree #346

Pic # 7: Split with included bark
Tree #347

Pic # 8: Broken major branches
Tree #348

Red Stag

Pic # 9: Trunk wound with fruiting bodies
Tree #350

Pic # 10: Split with included bark
Tree #351

Pic # 11: Split with included bark
Tree #352

Pic # 12: More than 50% tip dieback
Tree #353

Red Stag

Pic # 13: Trunk wound
Tree # 354

Pic # 14: Trunk wound with fruiting bodies
Tree # 355

Pic # 15: Broken major branches
Tree #357

Pic # 16: Broken major branches
Tree # 358

Red Stag

Pic # 17: Broken major branches
Tree # 359

Pic # 18: Split with included bark
Tree # 362

Pic # 19: Dead leader
Tree # 364

Pic # 20: Trunk wound with visible decay
Tree # 365

DEKALB COUNTY GEORGIA

LAND LOT 228, 229, 252, 253, 257, & 258
16th DISTRICT

RED STAG
A MASTER PLANNED RESIDENTIAL COMMUNITY
FOR
D. R. HORTON - CROWN, LLC
1371 DOGWOOD DR. SW
CONYERS, GEORGIA 30012
PHONE: 470-774-4884

ROOT ZONE TREE CONSULTANTS
350 RESEARCH COURT PEACHTREE CORNERS, GEORGIA 30092 (678) 684-6202 WWW.RZCONSULTANTS.COM
A DIVISION OF PLANNERS AND ENGINEERS COLLABORATIVE WWW.PECATL.COM

JOB # 16309.00

REVISIONS:

NO.	DATE	BY	DESCRIPTION

SHEET TITLE

0 100 200 400 800

SCALE: N/A
DATE: OCT 21, 2019
PROJECT: 16309.00

ISA REGISTERED ARBORIST
ISA
No. SO-10291A
ARBORIST
JAMES A. MAHONEY

N

SHEET #
STR
1 OF 3

Red Stag


Pic # 21: Trunk wound with visible decay
Tree # 366


Pic # 22: Split with included bark
Tree # 367


Pic # 23: Split with included bark
Tree # 368


Pic # 24: Trunk hollow past 30%
Tree # 369

Red Stag


Pic # 25: Leader dead with visible decay
Tree # 374


Pic # 26: Trunk wound with visible decay
Tree # 375


Pic # 27: Trunk wound with visible decay
Tree # 376


Pic # 28: Trunk wound with visible decay
Tree # 378

Red Stag


Pic # 29: Trunk wound with visible decay
Tree # 379


Pic # 30: Split with included bark
Tree # 387


Pic # 31: Broken major branches
Tree # 389


Pic # 32: Broken Major Branches
Tree # 390

Red Stag


Pic # 33: Broken major branches
Tree # 391


Pic # 34: Split with included bark
Tree # 392


Pic # 35: Canopy is dead
Tree # 393


Pic # 36: Split with included bark
Tree # 395

Red Stag


Pic # 37: Split with included bark
Tree # 396


Pic # 38: Split with included bark
Tree # 397


Pic # 39: Split with included bark
Tree # 398


Pic # 40: Split with included bark
Tree # 399

Red Stag


Pic # 41: Trunk wound with visible decay
Tree # 400


Pic # 42: Trunk wound with visible decay
Tree # 401


Pic # 43: Trunk wound with visible decay
Tree # 402


Pic # 44: Split with included bark
Tree #403

Red Stag


Pic # 45: Split with included bark
Tree # 406


Pic # 46: Split with included bark
Tree # 407


Pic # 47: Split with included bark
Tree #408


Pic # 48: Split with included bark
Tree # 409

Red Stag


Pic # 49: Trunk wound with visible decay
Tree # 410


Pic # 50: Trunk wound with visible decay
Tree # 411


Pic # 51: Split with included bark
Tree # 413

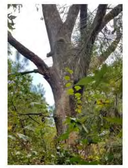

Pic # 52: Split with included bark
Tree # 416

Red Stag


Pic # 53: Split with included bark
Tree # 417


Pic # 54: Split with included bark
Tree # 423


Pic # 55: Split with included bark
Tree # 426


Pic # 56: Broken branches with visible decay
Tree # 427

Red Stag


Pic # 57: Broken branches with visible decay
Tree # 429


Pic # 58: Split with included bark
Tree # 431


Pic # 59: Split with included bark
Tree # 432


Pic # 60: Split with included bark, Visible decay
Tree # 433

Red Stag

Pic # 61: Split with included bark
Tree # 436

Pic # 62: Split with included bark
Tree # 437

Pic # 63: Split with included bark
Tree # 438

Pic # 64: Split with included bark
Tree # 439

Red Stag

Pic # 65: Split with included bark
Tree # 440

Pic # 66: Split with included bark
Tree # 441

Pic # 67: Split with included bark
Tree # 443

Pic # 68: Split with included bark
Tree # 444

Red Stag

Pic # 69: Split with included bark
Tree # 448

Pic # 70: Split with included bark
Tree # 449

Pic # 71: Split with included bark
Tree # 450

Pic # 72: Split with included bark
Tree # 451

Red Stag

Pic # 73: Split with included bark
Tree # 452

Pic # 74: Split with included bark
Tree # 453

Pic # 75: Split with included bark
Tree # 455

Pic # 76: Split with included bark
Tree # 458

Red Stag

Pic # 77: Split with included bark
Tree # 459

Pic # 78: Split with included bark
Tree # 461

Pic # 79: Split with included bark
Tree # 463

Pic # 80: Split with included bark
Tree # 464

RED STAG

A MASTER PLANNED RESIDENTIAL COMMUNITY
FOR
D. R. HORTON - CROWN, LLC
1371 DOGWOOD DR. SW
CONYERS, GEORGIA 30012
PHONE: 470-774-4884

LAND LOT 228, 229, 232, 233, 257, & 258
6TH DISTRICT

DEKALB COUNTY
GEORGIA

ROOT ZONE TREE CONSULTANTS
350 RESEARCH COURT PEACHTREE CORNERS, GEORGIA 30092 (678) 684-6202 WWW.R2CONSULTANTS.COM
A DIVISION OF PLANNERS AND ENGINEERS COLLABORATIVE WWW.PECATL.COM

JOB # 16309.00

REVISIONS:

NO.	DATE	BY	DESCRIPTION

SHEET TITLE

0 100 200 400 800

SCALE: N/A
DATE: OCT 21, 2019
PROJECT: 16309.00

ISA REGISTERED ARBORIST
ISA
No. SO-10291A
ARBORIST
JAMES A. MAHONEY

N

SHEET #
STR
2 OF 3

Red Stag

Pic # 81: Split with included bark
Tree # 465

Pic # 82: Split with included bark
Tree # 466

Pic # 83: Split with included bark
Tree # 468

Pic # 84: Split with included bark
Tree # 469

Red Stag

Pic # 85 : Trunk wound with visible decay
Tree # 470

Pic # 86: Split with included bark
Tree # 471

Pic # 87: Split with included bark
Tree # 472

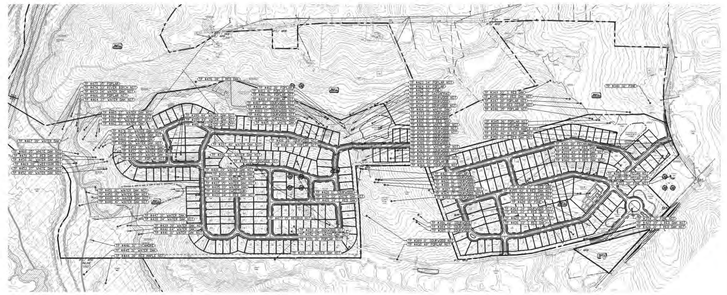
Pic # 88: Lean exceeding 30%
Tree # 473

Red Stag

Pic # 89: Split with included bark
Tree # 474

Pic # 90: Split with included bark
Tree # 477

Red Stag



Spacimen Tree Location

RED STAG

A MASTER PLANNED RESIDENTIAL COMMUNITY
FOR
D. R. HORTON - CROWN, LLC
1371 DOGWOOD DR. SW
CONYERS, GEORGIA 30012
PHONE: 470-774-4884

LAND LOT 228, 229, 232, 233, 257, & 258
6TH DISTRICT

DEKALB COUNTY
GEORGIA

ROOT ZONE TREE CONSULTANTS
350 RESEARCH COURT PEACHTREE CORNERS, GEORGIA 30092 (678) 684-6202 WWW.RZCONSULTANTS.COM
A DIVISION OF PLANNERS AND ENGINEERS COLLABORATIVE WWW.PECATL.COM

JOB # 16309.00

REVISIONS:

NO.	DATE	BY	DESCRIPTION

SHEET TITLE

0 100 200 400 800

SCALE: N/A
DATE: OCT 21, 2019
PROJECT: 16309.00

ISA REGISTERED ARBORIST
ISA
No. SO-10291A
ARBORIST
JAMES A. MAHONEY

N

SHEET #

STR

3 OF 3

Project Name: Red Stag
Project Number: 16309.00

Client: D. R. Horton – Crown, LLC
1371 Dogwood Dr. SW Conyers, GA 30012

Contact: Jay Coombe
(470) 774-4884

Services Rendered: Tree Sampling
Completed: June 8, 2018 by Hallie Harriman (ISA Certified Arborist: #SO-10044A)

A certified arborist from Root Zone Tree Consultants will use a sample methodology to estimate the tree canopy coverage for large (greater than 50' deep), contiguous tree save areas of the site. The Arborist will conduct a survey of trees 3" and larger in a 50 'x 50' sample area. The arborist will perform a minimum of three samples, in the contiguous tree save areas. The surveyed sample areas will be averaged to find the estimated tree canopy density. RZTC will delineate with marking tape all sample areas and tag all individually identified trees with paint.

Four individual stands were located and sampled. Below are their respective site descriptions and stand calculations.

Stand A Site Description: Stand A is primarily in a transitional stage from field to forest. A small wetland is present as well. Trees within this sample are typically small and grow closely together. In open areas, thick groves of Autumn Olive, Privet, and Blackberry are present. Six samples were taken.

STAND A CALCULATIONS	
TREE DENSITY	
UNIT AVERAGE =	28.13333
UNITS PER ACRE =	490.1952
TOTAL ACREAGE =	15.67
UNITS IN STAND =	7681.359

Stand B Site Description: Stand B is a young pine-dominated area, with few trees reaching over 12” DBH. Four samples were taken.

STAND B CALCULATIONS	
TREE DENSITY	
UNIT AVERAGE =	43.775
UNITS PER ACRE =	762.7356
TOTAL ACREAGE =	7.06
UNITS IN STAND =	5384.913336

Stand C Site Description: Stand C is a more mature pine-dominated area. Trees here are generally larger than 12” DBH and widely spaced out. The canopy composition is primarily pine, with the mid-story containing Sweetgum, Water Oak, Southern Red Oak, and Cherry. Twelve samples were taken.

STAND C CALCULATIONS	
TREE DENSITY	
UNIT AVERAGE =	57.525
UNITS PER ACRE =	1002.3156
TOTAL ACREAGE =	26.27
UNITS IN STAND =	26330.83081

Stand D Site Description: Stand D is the largest of stands, and is approximately 65 acres. This area is dominated by mature hardwoods, such as Oak, Hickory, and Sweetgum. The mid-story is comprised of Cherry, Dogwood, Sourwood, and Hophornbeam. Twenty-two samples were taken.

STAND D CALCULATIONS	
TREE DENSITY	
UNIT AVERAGE =	35.46364
UNITS PER ACRE =	617.9184
TOTAL ACREAGE =	68.69
UNITS IN STAND =	42444.81

STAND A DATA

SAMPLE 5		
DBH	SPECIES	UNITS
3	BRADFORD PEAR	0.8
3	ELM	0.8
3	SWEETGUM	0.8
4	SWEETGUM	1.6
4	BRADFORD PEAR	1.6
4	CHERRY	1.6
5	BRADFORD PEAR	1.6
5	BRADFORD PEAR	1.6
5	BRADFORD PEAR	1.6
6	BRADFORD PEAR	1.6
6	BRADFORD PEAR	1.6
6	BRADFORD PEAR	1.6
7	SWEETGUM	2.4
7	BRADFORD PEAR	2.4
8	SWEETGUM	2.4
11	BRADFORD PEAR	3.2
	TOTAL UNITS:	**27.2**

SAMPLE 6		
DBH	SPECIES	UNITS
3	CHERRY	0.8
4	WATER OAK	1.6
5	CEDAR	1.4
5	CHERRY	1.6
12	CEDAR	3.1
22	PECAN	6
	TOTAL UNITS:	**14.5**

SAMPLE 7		
DBH	SPECIES	UNITS
4	RED MAPLE	1.6
5	SWEETGUM	1.6
5	SWEETGUM	1.6
5	SWEETGUM	1.6
6	RED MAPLE	1.6
7	CHERRY	2.4
8	WATER OAK	2.4
8	WATER OAK	2.4
9	WATER OAK	2.4
10	SWEETGUM	3.2
10	SWEETGUM	3.2
11	SWEETGUM	3.2
16	CHERRY	4.8
17	POPLAR	4.8
	TOTAL UNITS:	**36.8**

STAND A DATA

SAMPLE 8		
DBH	SPECIES	UNITS
3	WATER OAK	0.8
3	SWEETGUM	0.8
3	WATER OAK	0.8
3	SWEETGUM	0.8
3	SWEETGUM	0.8
3	SWEETGUM	0.8
3	WATER OAK	0.8
4	SWEETGUM	1.6
4	SWEETGUM	1.6
4	PINE	1.4
5	CEDAR	1.4
6	SWEETGUM	1.6
6	SWEETGUM	1.6
8	SWEETGUM	2.4
9	SWEETGUM	2.4
12	SWEETGUM	3.2
14	CEDAR	3.9
19	SWEETGUM	5.4
	TOTAL UNITS:	**32.1**

SAMPLE 9		
DBH	SPECIES	UNITS
3	RED MAPLE	0.8
3	SWEETGUM	0.8
4	SWEETGUM	1.6
4	SWEETGUM	1.6
7	RED MAPLE	2.4
12	SWEETGUM	3.2
19	RED MAPLE	5.4
	TOTAL UNITS:	**15.8**

SAMPLE 10		
DBH	SPECIES	UNITS
3	RED MAPLE	0.8
3	SWEETGUM	0.8
3	SWEETGUM	0.8
4	BLACKGUM	1.6
4	SWEETGUM	1.6
4	SWEETGUM	1.6
4	SWEETGUM	1.6
4	SWEETGUM	1.6
6	SWEETGUM	1.6
7	BLACKGUM	2.4
7	RED MAPLE	2.4
8	BEECH	2.4
8	RED MAPLE	2.4
9	SWEETGUM	2.4
9	SWEETGUM	2.4
10	RED MAPLE	3.2
16	RED MAPLE	4.8
27	SWEETGUM	8
	TOTAL UNITS:	**42.4**

STAND A DATA

STAND A CALCULATIONS	
TREE DENSITY	
UNIT AVERAGE =	28.13333333
UNITS PER ACRE =	490.1952
TOTAL ACREAGE =	15.67
UNITS IN STAND =	7681.358784

STAND B DATA

SAMPLE 11		
DBH	SPECIES	UNITS
3	PINE	0.6
3	PINE	0.6
4	PINE	1.4
4	PINE	1.4
5	SWEETGUM	1.6
5	PINE	1.4
5	CEDAR	1.4
6	PINE	1.4
21	CEDAR	5.4
	TOTAL UNITS:	**15.2**

SAMPLE 12		
DBH	SPECIES	UNITS
3	CEDAR	0.6
3	SWEETGUM	0.8
3	RED MAPLE	0.8
3	SWEETGUM	0.8
4	S RED OAK	1.6
4	RED MAPLE	1.6
5	PERSIMMON	1.6
5	PINE	1.4
5	PINE	1.4
5	PINE	1.4
6	PINE	1.4
6	PINE	1.4
6	PINE	1.4
7	PINE	2.2
8	WATER OAK	2.4
8	PINE	2.2
8	PINE	2.2
8	PINE	2.2
9	PINE	2.2
9	PINE	2.2
9	PINE	2.2
11	PINE	3.1
11	PINE	3.1
11	PINE	3.1
11	PINE	3.1
12	PINE	3.1

SAMPLE 12 CONTINUED		
DBH	SPECIES	UNITS
12	PINE	3.1
13	PINE	12.9
13	PINE	12.9
	TOTAL UNITS:	**78.4**

STAND B DATA

SAMPLE 13		
DBH	SPECIES	UNITS
3	PINE	0.6
3	PINE	0.6
4	PINE	1.4
4	PINE	1.4
4	PINE	1.4
4	PINE	1.4
4	PINE	1.4
4	PINE	1.4
5	PINE	1.4
5	PINE	1.4
5	PINE	1.4
5	PINE	1.4
5	PINE	1.4
5	PINE	1.4
6	PINE	1.4
6	PINE	1.4
6	PINE	1.4
6	PINE	1.4
7	PINE	2.2
7	PINE	2.2
7	PINE	2.2
8	PINE	2.2
8	PINE	2.2
8	PINE	2.2
8	PINE	2.2
8	PINE	2.2
	TOTAL UNITS:	**41.2**

SAMPLE 22		
DBH	SPECIES	UNITS
3	WATER OAK	0.8
3	WATER OAK	0.8
3	WATER OAK	0.8
3	S RED OAK	0.8
4	SWEETGUM	1.6
4	SWEETGUM	1.6
4	S RED OAK	1.6
5	WATER OAK	1.6
5	S RED OAK	1.6
5	S RED OAK	1.6
6	WATER OAK	1.6
6	WATER OAK	1.6
6	PINE	1.4
6	PINE	1.4
7	PINE	2.2
7	S RED OAK	2.4
8	PINE	2.2
9	PINE	2.2
10	SWEETGUM	3.2
13	PINE	3.1
16	PINE	3.1
18	PINE	3.1
	TOTAL UNITS:	**40.3**

STAND B CALCULATIONS	
TREE DENSITY	
UNIT AVERAGE =	43.775
UNITS PER ACRE =	762.7356
TOTAL ACREAGE =	7.06
UNITS IN STAND =	5384.913

STAND C DATA

SAMPLE 1		
DBH	SPECIES	UNITS
3	PINE	0.6
3	PINE	0.6
3	PINE	0.6
3	PINE	0.6
4	PINE	1.4
4	PINE	1.4
4	PINE	1.4
4	PINE	1.4
5	PINE	1.4
6	PINE	1.4
15	PINE	3.9
24	WALNUT	6
32	WATER OAK	11.2
	TOTAL UNITS:	**31.9**

SAMPLE 2		
DBH	SPECIES	UNITS
3	SWEETGUM	0.8
3	SWEETGUM	0.8
4	SCARLET OAK	1.6
5	CHERRY	1.6
5	WATER OAK	1.6
6	PINE	1.4
7	SWEETGUM	2.4
7	HOPHORNBEAM	2.4
7	HOPHORNBEAM	2.4
7	HOPHORNBEAM	2.4
8	PINE	2.2
10	HOPHORNBEAM	3.2
10	PINE	3.1
10	PINE	3.1
11	PINE	3.1
12	PINE	3.1
13	PINE	3.9
13	PINE	3.9
13	PINE	3.9
14	PINE	3.9
20	PINE	5.4
	TOTAL UNITS:	**56.2**

SAMPLE 3		
DBH	SPECIES	UNITS
3	CEDAR	0.6
3	SWEETGUM	0.8
3	SWEETGUM	0.8
3	PINE	0.6
4	PINE	1.4
5	SWEETGUM	1.6
5	PINE	1.4
5	SWEETGUM	1.6
6	PINE	1.4
6	PINE	1.4
6	PINE	1.4
6	PINE	1.4
7	PINE	2.2
7	PINE	2.2
8	CEDAR	2.2
8	RED MAPLE	2.4
9	PINE	2.2
11	PINE	3.1
11	PINE	3.1
12	PINE	3.1
12	PINE	3.1
13	PINE	3.9
14	CEDAR	3.9
15	PINE	3.9
22	PINE	6
30	PINE	9.8
	TOTAL UNITS:	**65.5**

STAND C DATA

SAMPLE 4		
DBH	SPECIES	UNITS
3	SWEETGUM	0.8
3	RED MAPLE	0.8
4	SWEETGUM	1.6
4	PINE	1.4
4	RED MAPLE	1.6
5	RED MAPLE	1.6
7	PINE	2.2
7	PINE	2.2
8	PINE	2.2
12	PINE	3.1
12	PINE	3.1
13	PINE	3.9
13	PINE	3.9
13	PINE	3.9
14	S RED OAK	4
14	PINE	3.9
14	PINE	3.9
14	PINE	3.9
16	PINE	4.8
17	PINE	4.8
	TOTAL UNITS:	**57.6**

SAMPLE 14		
DBH	SPECIES	UNITS
3	S RED OAK	0.8
3	WATER OAK	0.8
4	CHERRY	1.6
4	CHERRY	1.6
5	PINE	1.61.4
6	CHERRY	1.6
6	WATER OAK	1.6
6	PINE	1.4
7	WATER OAK	2.4
7	CHERRY	2.4
7	CHERRY	2.4
11	PINE	3.1
12	WATER OAK	3.2
12	PINE	3.1
13	S RED OAK	4
14	PINE	3.9
14	PINE	3.9
16	PINE	4.8
17	PINE	4.8
18	PINE	4.8
18	PINE	4.8
21	S RED OAK	5.4
	TOTAL UNITS:	**62.4**

SAMPLE 15		
DBH	SPECIES	UNITS
3	PINE	0.6
3	PINE	0.6
3	PINE	0.6
3	PINE	0.6
5	PINE	1.4
5	PINE	1.4
5	PINE	1.4
5	PINE	1.4
5	PINE	1.4
5	WATER OAK	1.6
6	WATER OAK	1.6
6	PINE	1.4
6	PINE	1.4
7	PINE	2.2
7	PINE	2.2
7	PINE	2.2
7	PINE	2.2
7	PINE	2.2
8	PINE	2.2
8	WATER OAK	2.4
8	CEDAR	2.4
8	PINE	2.2
8	PINE	2.2
8	PINE	2.2
8	PINE	2.2
8	PINE	2.2

STAND C DATA

SAMPLE 15 CONTINUED		
DBH	SPECIES	UNITS
9	PINE	2.2
12	PINE	3.1
13	CEDAR	3.9
	TOTAL UNITS:	**53.6**

SAMPLE 16		
DBH	SPECIES	UNITS
3	CHERRY	0.8
3	CHERRY	0.8
3	CHERRY	0.8
3	CHERRY	0.8
3	CHERRY	0.8
3	S RED OAK	0.8
4	S RED OAK	1.6
4	S RED OAK	1.6
4	S RED OAK	1.6
5	HOPHORNBEAM	1.6
5	S RED OAK	1.6
5	PINE	1.4
5	PINE	1.4
6	PINE	1.4
6	PINE	1.4
6	PINE	1.4
6	PINE	1.4
7	SWEETGUM	2.4
8	PINE	2.2
10	PINE	3.1
10	PINE	3.1
10	PINE	3.1
29	PINE	9.2
	TOTAL UNITS:	**44.3**

SAMPLE 17		
DBH	SPECIES	UNITS
3	S RED OAK	0.8
3	RED MAPLE	0.8
3	S RED OAK	0.8
4	WATER OAK	1.6
4	S RED OAK	1.6
4	SWEETGUM	1.6
4	WATER OAK	1.6
4	WATER OAK	1.6
4	PINE	1.4
5	SWEETGUM	1.6
5	PINE	1.4
5	PINE	1.4
6	PINE	1.4
6	WATER OAK	1.6
6	WATER OAK	1.6
6	WATER OAK	1.6
6	WATER OAK	1.6
6	SOURWOOD	1.6
7	SWEETGUM	2.4
8	PINE	2.2
8	PINE	2.2
9	HOPHORNBEAM	2.4
10	S RED OAK	3.2
10	HOPHORNBEAM	3.2
10	PINE	3.1
12	PINE	3.1
12	PINE	3.1

STAND C DATA

SAMPLE 17 CONTINUED		
DBH	SPECIES	UNITS
12	PINE	3.1
12	PINE	3.1
12	PINE	3.1
14	PINE	3.9
	TOTAL UNITS:	**63.7**

SAMPLE 18		
DBH	SPECIES	UNITS
3	SWEETGUM	0.8
3	SWEETGUM	0.8
4	SWEETGUM	1.6
4	SWEETGUM	1.6
5	SWEETGUM	1.6
5	SWEETGUM	1.6
5	SWEETGUM	1.6
5	SWEETGUM	1.6
5	CHERRY	1.6
5	RED MAPLE	1.6
6	RED MAPLE	1.6
6	SWEETGUM	1.6
6	SWEETGUM	1.6
7	SWEETGUM	2.4
9	SWEETGUM	2.4
10	PINE	3.1
12	PINE	3.1
14	PINE	3.9
14	PINE	3.9
16	PINE	4.8
16	PINE	4.8
16	PINE	4.8
16	PINE	4.8
17	PINE	4.8
20	PINE	5.4
20	PINE	5.4
	TOTAL UNITS:	**72.8**

SAMPLE 19		
DBH	SPECIES	UNITS
3	CEDAR	0.6
3	CEDAR	0.6
3	PINE	0.6
4	POPLAR	1.6
4	SWEETGUM	1.6
5	CEDAR	1.4
5	SWEETGUM	1.6
6	PINE	1.4
6	SWEETGUM	1.6
8	PINE	2.2
8	PINE	2.2
8	PINE	2.2
8	PINE	2.2
8	SWEETGUM	2.4
9	PINE	2.2
9	PINE	2.2
9	PINE	2.2
10	PINE	3.1
11	PINE	3.1
11	PINE	3.1
11	PINE	3.1
13	PINE	3.9
15	PINE	3.9
17	PINE	17
18	PINE	18
	TOTAL UNITS:	**84**

STAND C DATA

SAMPLE 20		
DBH	SPECIES	UNITS
3	SWEETGUM	0.8
3	DOGWOOD	0.8
3	SWEETGUM	0.8
3	SWEETGUM	0.8
3	RED MAPLE	0.8
4	SWEETGUM	1.6
4	SWEETGUM	1.6
4	RED MAPLE	1.6
4	SWEETGUM	1.6
5	SWEETGUM	1.6
5	SWEETGUM	1.6
5	SWEETGUM	1.6
5	PINE	1.4
5	PINE	1.4
5	PINE	1.4
6	SWEETGUM	1.6
7	PINE	2.2
7	PINE	2.2
7	SWEETGUM	2.4
8	SWEETGUM	2.4
8	PINE	2.2
9	PINE	2.2
9	PINE	2.2
10	PINE	3.1
12	PINE	3.1
13	PINE	3.9
14	PINE	3.9

SAMPLE 20 CONTINUED		
DBH	SPECIES	UNITS
14	PINE	3.9
15	PINE	3.9
17	PINE	17
	TOTAL UNITS:	**75.6**

SAMPLE 44		
DBH	SPECIES	UNITS
3	CHERRY	0.8
3	PINE	0.6
3	WATER OAK	0.8
3	CEDAR	0.6
3	SWEETGUM	0.8
4	PINE	1.4
4	PINE	1.4
4	CEDAR	1.4
5	PINE	1.4
15	PINE	3.9
16	PINE	4.8
17	PINE	4.8
	TOTAL UNITS:	**22.7**

STAND C DATA

STAND C CALCULATIONS	
TREE DENSITY	
UNIT AVERAGE =	57.525
UNITS PER ACRE =	1002.3156
TOTAL ACREAGE =	26.27
UNITS IN STAND =	26330.83081

STAND D DATA

SAMPLE 21		
DBH	SPECIES	UNITS
3	CHERRY	0.8
3	CHERRY	0.8
3	POPLAR	0.8
3	DOGWOOD	0.8
3	CHERRY	0.8
4	DOGWOOD	1.6
6	CHERRY	1.6
6	POPLAR	1.6
6	POPLAR	1.6
10	WHITE OAK	3.2
12	WHITE OAK	3.2
12	HICKORY	3.2
13	WHITE OAK	4
14	WHITE OAK	4
14	N RED OAK	4
15	WHITE OAK	4
	TOTAL UNITS:	**36**

SAMPLE 23		
DBH	SPECIES	UNITS
3	SWEETGUM	0.8
3	WHITE OAK	0.8
4	S RED OAK	1.6
4	SWEETGUM	1.6
4	SWEETGUM	1.6
5	SWEETGUM	1.6
6	WATER OAK	1.6
6	WATER OAK	1.6
6	WATER OAK	1.6
8	SWEETGUM	2.4
8	WATER OAK	2.4
9	SWEETGUM	2.4
9	S RED OAK	2.4
11	PINE	3.1
12	PINE	3.1
13	PINE	3.9
16	PINE	16
	TOTAL UNITS:	**48.5**

SAMPLE 24		
DBH	SPECIES	UNITS
3	POPLAR	0.8
3	POPLAR	0.8
3	WHITE OAK	0.8
3	CHERRY	0.8
3	POPLAR	0.8
3	CHERRY	0.8
4	POPLAR	1.6
4	N RED OAK	1.6
4	CHERRY	1.6
4	POPLAR	1.6
5	RED MAPLE	1.6
5	PINE	1.4
5	PINE	1.4
5	POPLAR	1.6
5	POPLAR	1.6
5	CHERRY	1.6
6	PINE	1.4
8	PINE	2.2
13	WHITE OAK	4
14	WHITE OAK	4
14	WHITE OAK	4
	TOTAL UNITS:	**36**

STAND D DATA

SAMPLE 25		
DBH	SPECIES	UNITS
3	RED MAPLE	0.8
4	HICKORY	1.6
4	HICKORY	1.6
5	HICKORY	1.6
7	SOURWOOD	2.4
7	HICKORY	2.4
9	WATER OAK	2.4
10	WHITE OAK	3.2
17	WHITE OAK	4.8
19	PINE	5.4
19	POPLAR	5.4
19	N RED OAK	5.4
20	POPLAR	5.4
20	POST OAK	5.4
22	POPLAR	6
	TOTAL UNITS:	**53.8**

SAMPLE 26		
DBH	SPECIES	UNITS
3	N RED OAK	0.8
3	HICKORY	0.8
3	PINE	0.6
3	PINE	0.6
3	SWEETGUM	0.8
4	PINE	1.4
4	SOURWOOD	1.6
4	HICKORY	1.6
5	SOURWOOD	1.6
5	PINE	1.4
5	PINE	1.4
7	DOGWOOD	2.4
7	RED MAPLE	2.4
8	RED MAPLE	2.4
9	PINE	2.2
10	PINE	3.1
11	POPLAR	3.2
12	WATER OAK	3.2
13	WATER OAK	4
15	N RED OAK	4
15	WHITE OAK	4
	TOTAL UNITS:	**43.5**

SAMPLE 27		
DBH	SPECIES	UNITS
3	CHERRY	0.8
3	SWEETGUM	0.8
3	POPLAR	0.8
3	WHITE OAK	0.8
4	DOGWOOD	1.6
4	CHERRY	1.6
4	CHERRY	1.6
4	HICKORY	1.6
4	HICKORY	1.6
5	WHITE OAK	1.6
5	N RED OAK	1.6
5	SWEETGUM	1.6
6	BEECH	1.6
6	CHERRY	1.6
6	WHITE OAK	1.6
6	SWEETGUM	1.6
6	SOURWOOD	1.6
10	N RED OAK	3.2
	TOTAL UNITS:	**27.2**

STAND D DATA

SAMPLE 28		
DBH	SPECIES	UNITS
3	N RED OAK	0.8
4	WATER OAK	1.6
4	SWEETGUM	1.6
5	WHITE OAK	1.6
6	PINE	1.4
6	PINE	1.4
7	S RED OAK	2.4
8	SWEETGUM	2.4
12	SWEETGUM	3.2
12	WHITE OAK	3.2
15	POPLAR	4
15	SWEETGUM	4
17	SOURWOOD	4.8
	TOTAL UNITS:	**32.4**

SAMPLE 29		
DBH	SPECIES	UNITS
3	WATER OAK	0.8
3	WATER OAK	0.8
3	CEDAR	0.80.6
3	WATER OAK	0.8
4	WATER OAK	1.6
4	DOGWOOD	1.6
5	PINE	1.4
5	CHERRY	1.6
6	DOGWOOD	1.6
8	HOPHORNBEAM	2.4
8	PINE	2.2
8	RED MAPLE	2.4
11	SWEETGUM	3.2
11	SWEETGUM	3.2
12	HICKORY	3.2
15	SWEETGUM	4
17	PINE	4.8
	TOTAL UNITS:	**35.6**

SAMPLE 30		
DBH	SPECIES	UNITS
3	WATER OAK	0.8
4	WATER OAK	1.6
5	WATER OAK	1.6
6	CHERRY	1.6
7	WATER OAK	2.4
7	CEDAR	2.2
8	WATER OAK	2.4
8	WATER OAK	2.4
8	PINE	2.2
9	WATER OAK	2.4
11	PINE	3.1
12	PINE	3.1
12	PINE	3.1
12	PINE	3.1
15	PINE	3.9
	TOTAL UNITS:	**35.9**

STAND D DATA

SAMPLE 31		
DBH	SPECIES	UNITS
3	N RED OAK	0.8
4	CEDAR	1.4
4	CEDAR	1.4
4	SYCAMORE	1.6
5	CEDAR	1.4
5	HICKORY	1.6
8	POST OAK	2.4
11	WATER OAK	3.2
14	PINE	3.9
17	POST OAK	4.8
	TOTAL UNITS:	**22.5**

SAMPLE 32		
DBH	SPECIES	UNITS
3	SWEETGUM	0.8
3	SWEETGUM	0.8
3	SWEETGUM	0.8
3	POPLAR	0.8
4	WATER OAK	1.6
4	SWEETGUM	1.6
4	POPLAR	1.6
5	SWEETGUM	1.6
5	WATER OAK	1.6
5	WATER OAK	1.6
5	WATER OAK	1.6
5	WATER OAK	1.6
5	WATER OAK	1.6
5	WATER OAK	1.6
6	WATER OAK	1.6
7	S RED OAK	2.4
12	SWEETGUM	3.2
	TOTAL UNITS:	**26.4**

SAMPLE 33		
DBH	SPECIES	UNITS
3	HICKORY	0.8
3	HICKORY	0.8
3	RED MAPLE	0.8
7	S RED OAK	2.4
7	RED MAPLE	2.4
8	S RED OAK	2.4
8	PINE	2.2
8	S RED OAK	2.4
9	PINE	2.2
10	WATER OAK	3.2
11	PINE	3.1
11	S RED OAK	3.2
12	S RED OAK	3.2
14	POPLAR	4
	TOTAL UNITS:	**33.1**

STAND D DATA

SAMPLE 34		
DBH	SPECIES	UNITS
3	WHITE OAK	0.8
4	HICKORY	1.6
6	WHITE OAK	1.6
6	WHITE OAK	1.6
7	WHITE OAK	2.4
7	N RED OAK	2.4
7	WHITE OAK	2.4
7	WHITE OAK	2.4
9	WHITE OAK	2.4
10	S RED OAK	3.2
11	WHITE OAK	3.2
11	N RED OAK	3.2
14	S RED OAK	4
18	N RED OAK	4.8
	TOTAL UNITS:	**36**

SAMPLE 35		
DBH	SPECIES	UNITS
3	HOPHORNBEAM	0.8
3	POPLAR	0.8
3	HICKORY	0.8
3	HOPHORNBEAM	0.8
3	HOPHORNBEAM	0.8
4	HOPHORNBEAM	1.6
4	MUSCLEWOOD	1.6
4	CHERRY	1.6
4	HOPHORNBEAM	1.6
7	BEECH	2.4
8	HOPHORNBEAM	2.4
8	HOPHORNBEAM	2.4
10	S RED OAK	3.2
13	WATER OAK	4
15	WATER OAK	4
18	RED MAPLE	4.8
22	RED MAPLE	6
	TOTAL UNITS:	**39.6**

SAMPLE 36		
DBH	SPECIES	UNITS
3	HOPHORNBEAM	0.8
3	HOPHORNBEAM	0.8
3	WHITE OAK	0.8
3	MUSCLEWOOD	0.8
3	N RED OAK	0.8
4	CHERRY	1.6
4	HOPHORNBEAM	1.6
4	WHITE OAK	1.6
5	WHITE OAK	1.6
5	HICKORY	1.6
12	WHITE OAK	3.2
19	POPLAR	5.4
25	WHITE OAK	6.8
	TOTAL UNITS:	**27.4**

STAND D DATA

SAMPLE 37		
DBH	SPECIES	UNITS
4	HOPHORNBEAM	1.6
4	HOPHORNBEAM	1.6
4	HOPHORNBEAM	1.6
5	HOPHORNBEAM	1.6
5	HOPHORNBEAM	1.6
8	HOPHORNBEAM	2.4
9	PINE	2.4
13	SWEETGUM	4
15	POPLAR	4
18	POPLAR	4.8
22	POPLAR	6
	TOTAL UNITS:	**31.6**

SAMPLE 38		
DBH	SPECIES	UNITS
3	RED MAPLE	0.8
4	HOPHORNBEAM	1.6
5	WATER OAK	1.6
5	BEECH	1.6
5	WATER OAK	1.6
5	WATER OAK	1.6
6	PINE	1.4
7	SWEETGUM	2.4
7	PINE	2.2
8	PINE	2.2
9	PINE	2.2
14	SWEETGUM	4
14	PINE	3.9
15	PINE	3.9
32	WATER OAK	11.2
	TOTAL UNITS:	**42.2**

SAMPLE 39		
DBH	SPECIES	UNITS
3	SWEETGUM	0.8
4	SWEETGUM	1.6
4	SWEETGUM	1.6
4	WATER OAK	1.6
4	WATER OAK	1.6
5	WATER OAK	1.6
8	HOPHORNBEAM	2.4
8	HOPHORNBEAM	2.4
20	PINE	5.4
20	POPLAR	5.4
20	SWEETGUM	5.4
24	PINE	6
	TOTAL UNITS:	**35.8**

STAND D DATA

SAMPLE 40		
DBH	SPECIES	UNITS
3	CHERRY	0.8
3	WATER OAK	0.8
3	WATER OAK	0.8
3	PINE	0.6
3	WATER OAK	0.8
4	PINE	1.4
4	WATER OAK	1.6
5	SWEETGUM	1.6
5	PINE	1.4
5	WATER OAK	1.6
7	PINE	2.2
7	PINE	2.2
9	SWEETGUM	2.4
10	PINE	3.1
19	PINE	5.4
30	SWEETGUM	9.8
	TOTAL UNITS:	**36.5**

SAMPLE 41		
DBH	SPECIES	UNITS
3	PINE	0.6
3	CEDAR	0.6
4	CEDAR	1.4
4	WATER OAK	1.6
4	SWEETGUM	1.6
5	PINE	1.4
5	WATER OAK	1.6
9	PINE	2.2
13	PINE	3.9
13	PINE	3.9
14	HICKORY	4
22	HICKORY	6
	TOTAL UNITS:	**28.8**

SAMPLE 42		
DBH	SPECIES	UNITS
3	WATER OAK	0.8
3	WATER OAK	0.8
3	N RED OAK	0.8
4	WATER OAK	1.6
4	SWEETGUM	1.6
4	HOPHORNBEAM	1.6
5	HOLLY	1.6
5	SWEETGUM	1.6
7	PINE	2.2
7	N RED OAK	2.4
9	N RED OAK	2.4
9	SWEETGUM	2.4
13	PINE	3.9
13	PINE	3.9
19	PINE	5.4
	TOTAL UNITS:	**33**

STAND D DATA

SAMPLE 43		
DBH	SPECIES	UNITS
3	SWEETGUM	0.8
3	SWEETGUM	0.8
3	SWEETGUM	0.8
4	SWEETGUM	1.6
4	SWEETGUM	1.6
5	SWEETGUM	1.6
5	BOX ELDER	1.6
5	SWEETGUM	1.6
6	SWEETGUM	1.6
8	SWEETGUM	2.4
8	HOPHORNBEAM	2.4
9	SWEETGUM	2.4
10	SWEETGUM	3.2
11	SWEETGUM	3.2
11	SWEETGUM	3.2
16	POPLAR	4.8
16	POPLAR	4.8
	TOTAL UNITS:	**38.4**

STAND D CALCULATIONS	
TREE DENSITY	
UNIT AVERAGE =	35.46363636
UNITS PER ACRE =	617.9184
TOTAL ACREAGE =	68.69
UNITS IN STAND =	42444.8149