

### DRAINAGE NOTES

- A MINIMUM GRADE OF 0.50% SHALL BE MAINTAINED ON ALL PIPES, UNLESS OTHERWISE NOTED.
- PIPE LENGTHS AND SLOPES INDICATED ON THE PLANS ARE APPROXIMATE ONLY.
- UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CODES:
  - NO MORE THAN 500 LF OF TRENCH MAY BE OPENED AT ONE TIME.
  - EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
  - EFFLUENT FROM Dewatering OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR ON-SITE PROPERTY.
  - MATERIAL USED FOR BACK-FILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
  - RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL REGULATIONS.
  - APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.
- CATCH BASINS, MANHOLES, FRAMES, GRATES, ETC. SHALL MEET THE REQUIREMENTS OF THE LATEST EDITION OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS. REFERENCE THE FOLLOWING STANDARD DETAILS:
 

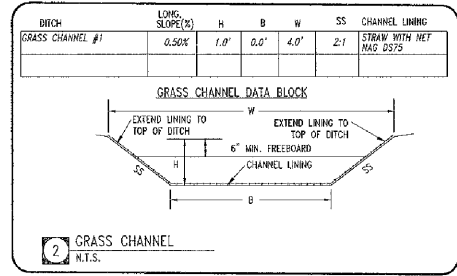
840.02 - CONCRETE CATCH BASIN	840.03 - FRAME, GRATES, AND HOOD FOR CATCH BASINS
840.14 - CONCRETE DROP INLET	840.04 - CONCRETE OPEN DROUGHT CATCH BASIN
840.14 - CONCRETE DROP INLET	840.18 - DROP INLET FRAME AND GRATES
840.31 - CONCRETE JUNCTION BOX	840.36 - TRAFFIC BEARING, GRADED DROP INLET
840.52 - PRECAST MANHOLE	840.45 - PRECAST DRAINAGE STRUCTURE
838.80 - PRECAST CONCRETE ENDWALL	
- ALL PIPES SHALL BE LAID ON STRAIGHT ALIGNMENTS AND EVEN GRADES USING A PIPE LASER OR OTHER ACCURATE METHOD.
- STORM PIPE SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED:
 

TYPE 1: ROP, CLASS III PER ASTM C-76, WITH FLEXIBLE PLASTIC BUTYRUM GASKETS AT JOINTS.

TYPE 2: HIGH DENSITY POLYETHYLENE PIPE (HDPE) - ASHKO designation M22 TYPE 5, 200# AND WPT-97 TYPE 2, SANDWICH INTERIOR/LAMINAR EXTERIOR. ONLY PERMITTED WHEN SPECIFICALLY REQUIRED BY THE CONSTRUCTION SPECIFICATIONS. PIPE SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION GUIDELINES. PIPE JOINTS AND FITTINGS SHALL MEET MANUFACTURER'S INSTALLATION GUIDELINES.
- ALL STORM DRAINAGE WITHIN THE PUBLIC ROADS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING NOTES:
  - EXISTING DRAINAGE STRUCTURES TO BE INSPECTED AND REPAIRED AS NEEDED. EXISTING TO BE CLEANED OUT TO REMOVE SILT AND DEBRIS.
  - IF ANY EXISTING STRUCTURES TO BE DAMAGED DURING CONSTRUCTION IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE AS NECESSARY TO RETURN IT TO ORIGINAL CONDITIONS.
  - ALL STORM PIPE EXTERIOR STRUCTURES SHALL BE GRADED TO ASSURE CONNECTION AT STRUCTURE IS WATER-TIGHT.
  - PRECAST STRUCTURES MAY BE SET AT CONTRACTOR'S OPTION.
  - ALL STORM SEWER MANHOLES IN AREAS SHALL BE FLUSH WITH PAVEMENT, AND SHALL HAVE TRAFFIC BEARING RATED COVERS MANHOLES IN UNPAVED AREAS SHALL BE 6" ABOVE FINISH GRADE. THIS SHALL BE LABELED "STORM COVER".
  - EXISTING TOP ELEVATIONS SHOWN HERE ARE APPROXIMATE. CONTRACTOR SHALL ADJUST AS NECESSARY.
  - MIN. SLOPES INDICATED ARE TO THE GUTTER FLOW LINE.

**LEGEND:**

- TS.....TOP OF SIDEWALK
- TC.....TOP OF CURB
- GL.....GUTTER FLOW LINE
- TP.....TOP OF PAVEMENT
- TW.....TOP OF WALL
- SW.....BOTTOM OF WALL
- CB.....CATCH BASIN
- GI.....GRATE INLET
- FES.....FLARED END SECTION
- Y.....YARD GROUND
- GR.....GROUND
- .....FLOW DIRECTION ARROW

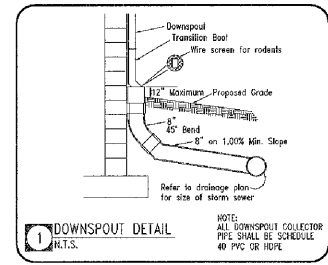


**IMPERVIOUS AREA SUMMARY**

SITE AREA = 65,585 SF (1.51 AC)			
BUILDINGS	2,496 SF	0.06 ACRE(S)	3.81 %
PAVEMENT	22,490 SF	0.52 ACRE(S)	34.29 %
SIDEWALK	2,257 SF	0.05 ACRE(S)	3.44 %
TOTAL IMPERVIOUS AREA (ON-SITE)	27,243 SF	0.63 ACRE(S)	41.54 %
GREEN/WETLAND SPACE	36,342 SF	0.83 ACRE(S)	58.46 %
INCREASE IN ON-SITE IMPERVIOUS AREA	27,243 SF		
PROPOSED OFF-SITE SHARED ROAD	3,355 SF	0.08 ACRE(S)	

### GRADING NOTES

- PLAN FOR RELATED NOTES.
- SPOT ELEVATIONS REFLECT FINISHED GRADES.
  - REFER TO THE BENCHMARK, AND THIS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO GROUND BREAKING.
  - CONTRACTOR SHALL IMMEDIATELY REPORT TO OWNER ANY DISCREPANCIES FOUND BETWEEN ACTUAL FIELD CONDITIONS AND CONSTRUCTION DOCUMENTS AND SHALL WAIT FOR INSTRUCTIONS PRIOR TO PROCEEDING.
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING EXISTING UTILITIES, AND SHALL REPAIR ALL DAMAGE TO EXISTING UTILITIES THAT OCCUR DURING CONSTRUCTION.
  - THE CONTRACTOR SHALL BLEND NEW EARTHWORK SMOOTHLY TO TRANSITION BACK TO EXISTING GRADE.
  - LIMITS OF CLEARING SHOWN ON GRADING PLAN ARE BASED UPON THE APPROXIMATE CUT AND FILL SLOPE LIMITS, OR OTHER GRADING REQUIREMENTS.
  - THE PROPOSED CONTOURS SHOWN IN DRIVES AND PARKING LOTS AND SIDEWALKS ARE FINISHED ELEVATIONS INCLUDING ASPHALT. REFER TO PAVEMENT CROSS SECTION DATA TO ESTABLISH CORRECT SUBGRADE OR AGGREGATE BASE COURSE ELEVATIONS TO BE COMPLETED UNDER THIS CONTRACT.
  - THE CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE SO THAT RUNOFF WILL DRAIN BY GRAVITY FLOW ACROSS NEW PAVEMENT AREAS AND/OR EXISTING DRAINAGE INLETS OR SHEET OVERLAND.
  - ANY GRADING BEYOND THE LIMITS OF CONSTRUCTION AS SHOWN ON THE GRADING PLAN, IS SUBJECT TO A SEPARATE CONTRACT.
  - GRADING WITHIN AN APPROVED EROSION CONTROL PLAN IS SUBJECT TO A FINE.
  - SEEDING IS THE BEST METHOD FOR EROSION CONTROL. TEMPORARY SEEDING IS NECESSARY TO ACHIEVE EROSION CONTROL IN DEMONSTRATED AREAS AND ESPECIALLY WHEN THE CONSTRUCTION SEQUENCE REQUIRES.
  - GRADED AREAS ARE TO BE SEED OR LANDSCAPED WITHIN 15 DAYS OF COMPLETION OF REMAINING AREAS ARE TO BE SEED WITHIN 30 DAYS.
  - EXISTING GRADES, CONTOURS, UTILITIES AND OTHER EXISTING FEATURES FROM FIELD RUN SURVEY.
  - THE CONTRACTOR SHALL INCLUDE IN THE CONTRACT PRICE ANY Dewatering NECESSARY TO CONSTRUCT THE PROJECT AS SHOWN ON THE PLANS.
  - THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND IMPLEMENTATION OF ALL SHIELDING, SHORING, BRACING AND SPECIAL EXCAVATION MEASURES REQUIRED TO MEET OHSA, FEDERAL, STATE AND LOCAL REGULATIONS PURSUANT TO THE INSTALLATION OF THE WORK INDICATED ON THESE DRAWINGS. THE DESIGN ENGINEER ACCEPTS NO RESPONSIBILITY FOR THE (DESIGN) TO INSTALL SAND BENS.
  - THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATION, ELEVATION, AND DIMENSIONS OF EXIT DOORS, RAMPS, BUILDING DIMENSIONS, AND EXIST BUILDING UTILITY ENTRANCE LOCATIONS.
  - ALL FILL MATERIALS, EXISTING BUILDING FOUNDATIONS, PAVEMENT AND UTILITY STRUCTURES, TOPSOIL, AND ANY OTHER DELETERIOUS MATERIALS SHALL BE COMPLETELY REMOVED FROM WITHIN THE BEARING ZONE BELOW THE STRUCTURE.
  - ALL FOUNDATION EXCAVATION SHALL BE INSPECTED BY A QUALIFIED GEOTECHNICAL REPRESENTATIVE TO DETERMINE WHETHER UNSUITABLE MATERIAL MUST BE REMOVED. ALL UNSUITABLE MATERIAL SHALL BE REMOVED, BACKFILLED AND COMPACTED AS REQUIRED BY THE GEOTECHNICAL REPRESENTATIVE.
  - ALL CUT OR FILL SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED OR DEPICTED.
  - THE CONTRACTOR SHALL ADHERE TO ALL TERMS & CONDITIONS AS OUTLINED IN THE GENERAL R.F.D.E.'S PERMIT FOR STORMWATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES.
  - CONTRACTOR SHALL ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH FIT AND CONTINUOUS GRADE.
  - CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS.
  - ALL UNSURFACED AREAS DISTURBED BY GRADING OPERATION SHALL RECEIVE 4 INCHES OF TOPSOIL. CONTRACTOR SHALL APPLY STABILIZATION FABRIC TO ALL SLOPES SHALY OR STEEPER.
  - CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED TO SAME.

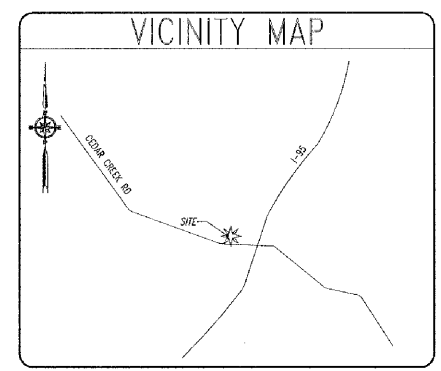


**EROSION CONTROL NOTES:**  
AN EROSION AND SEDIMENTATION CONTROL PERMIT SHALL BE REQUIRED BY MDC PRIOR TO START OF CONSTRUCTION.

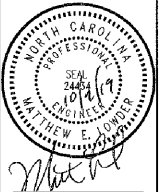
**SURVEY NOTE:**  
ALL EXISTING BOUNDARY AND TOPOGRAPHIC INFORMATION TAKEN FROM A LAND SURVEY PREPARED BY: LARRY KING & ASSOCIATES, RLS, PA

**STREAM/WETLAND NOTE:**  
THERE IS AN EXISTING JURISDICTIONAL WETLAND FEATURE ON THE PROPERTY. THERE ARE NO PROPOSED IMPACTS TO THE EXISTING WETLAND FEATURE AS PART OF THE DEVELOPMENT OF THE PROPERTY.

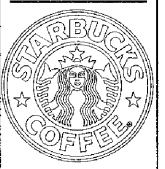
**FLOOD ZONE NOTE:**  
THIS SITE IS LOCATED IN FLOOD ZONE SHADEN X AS SHOWN ON F.F.R.M. MAP 2720045000, EFFECTIVE DATE: JANUARY 5, 2007. FLOOD ZONES ARE SUBJECT TO CHANGE BY FEMA.



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803-361-6718  
collos@hartzogholdings.com



Starbucks  
Cedar Creek Road  
Fayetteville, NC  
Cumberland County

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REVISED	Date	Description

Drawn  
Checked  
Approved

Project No. 050017  
Date: October 9, 2018

Title  
**GRADING & DRAINAGE PLAN**

Sheet No.  
**C1.1**

