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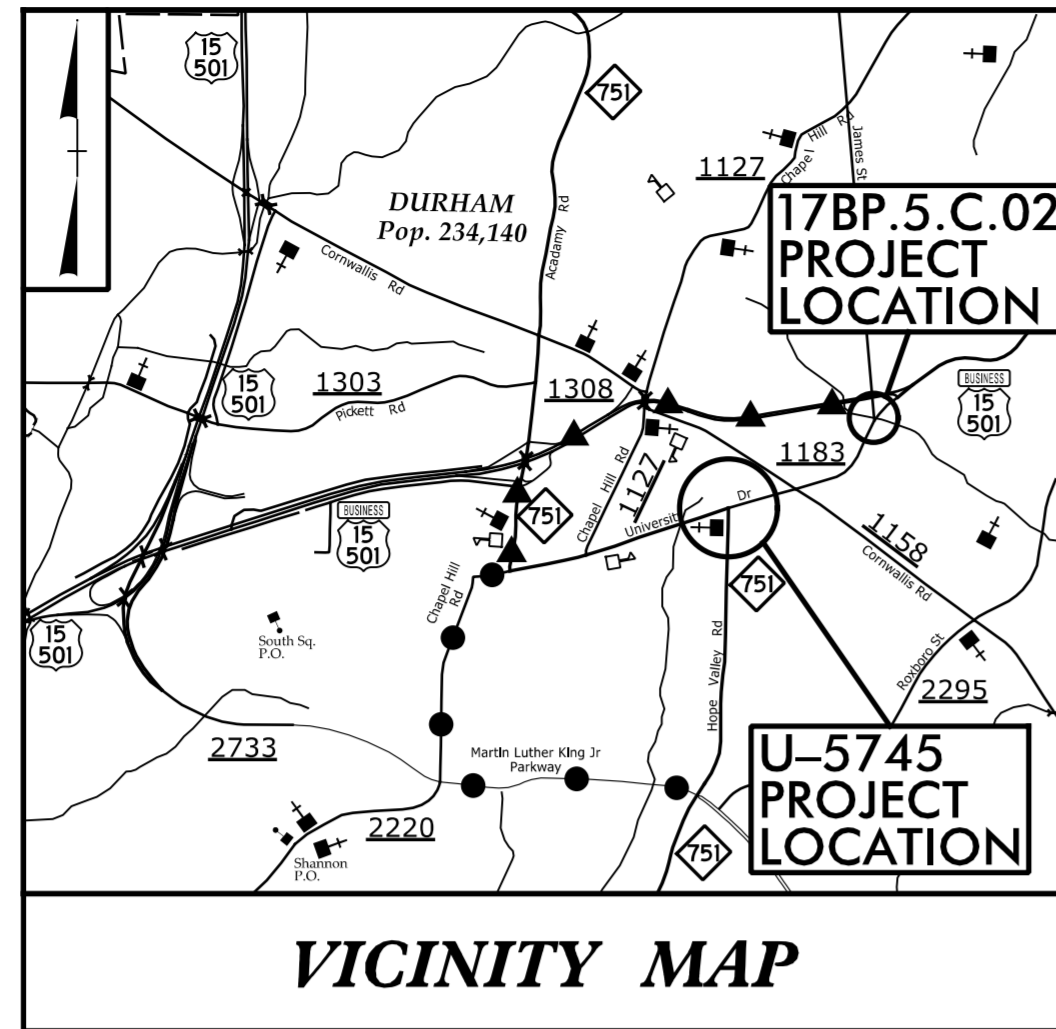
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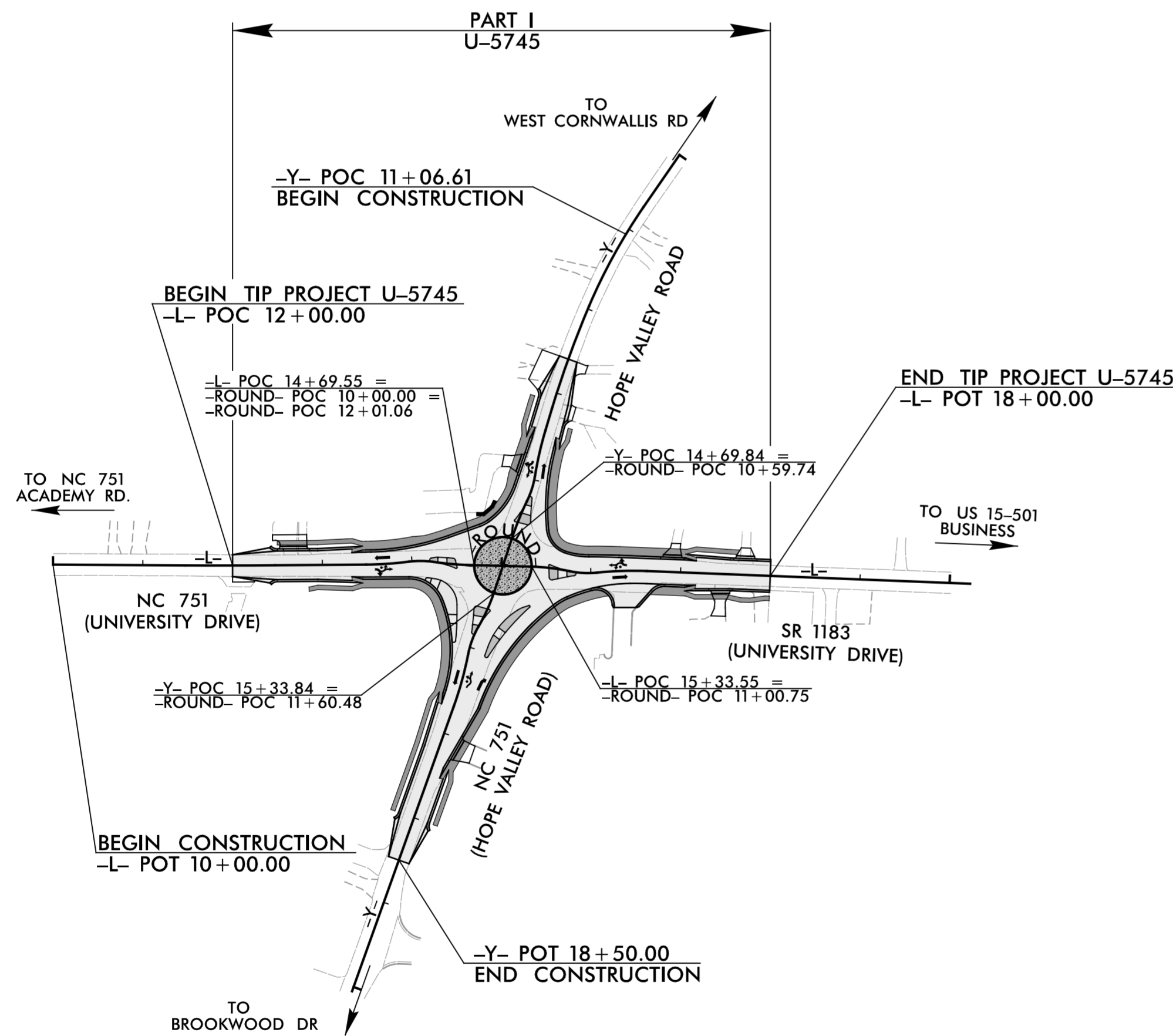
TIP PROJECT: U-5745/17BP.5.C.02

CONTRACT: C204270

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols
See Sheet 1C For Survey Control Sheet



●●●●● DETOUR ROUTES
▲▲▲▲▲

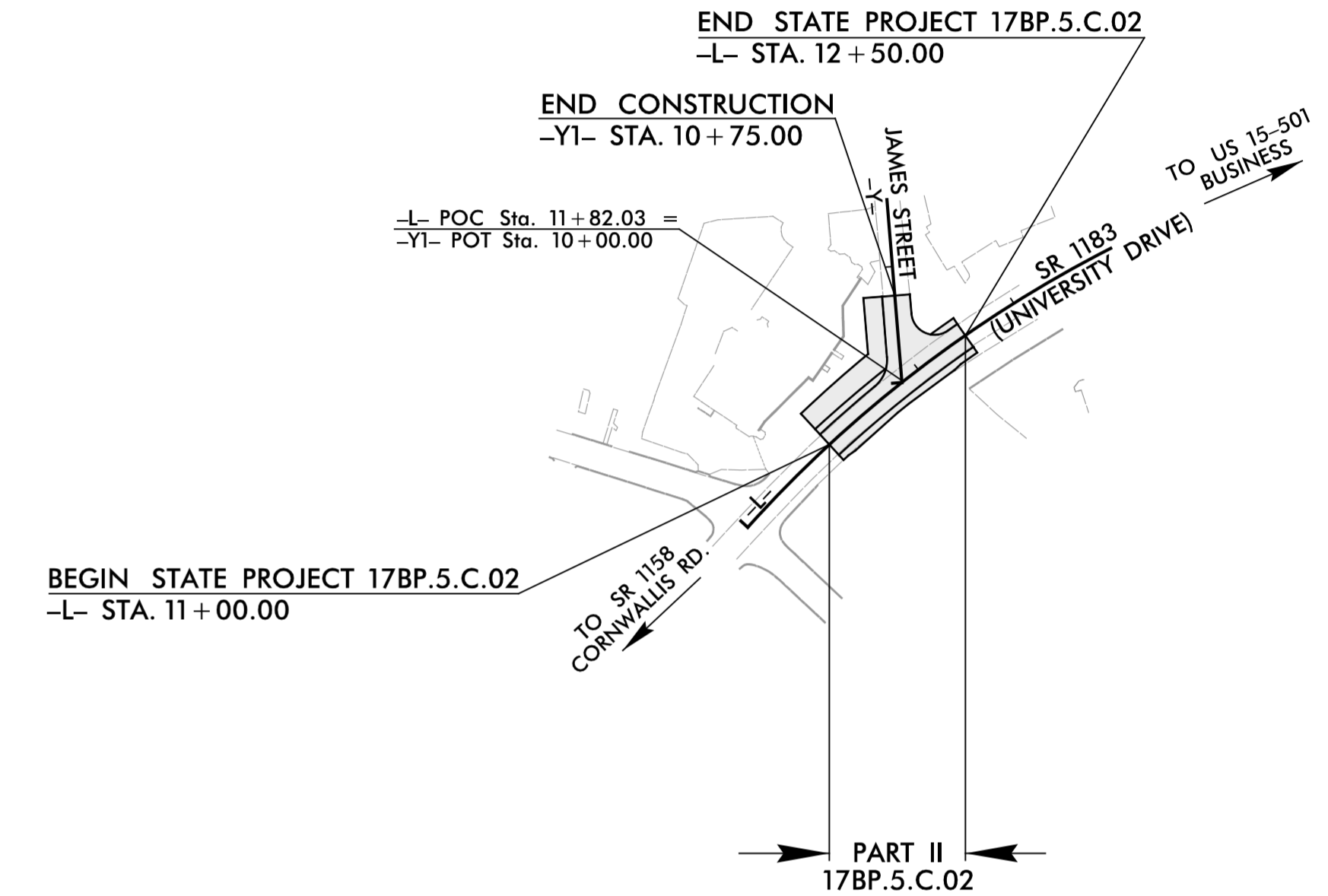


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DURHAM COUNTY

LOCATION: INTERSECTION IMPROVEMENTS (ROUNDBOUT) AT NC 751 (HOPE VALLEY RD) AND SR 1183 (UNIVERSITY DR) AND PIPE REPLACEMENT AT SR 1183 (UNIVERSITY DR) AND JAMES ST
TYPE OF WORK: GRADING, PAVING, & DRAINAGE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5745/ 17BP.5.C.02	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50166.1.1		PE (U-5745)	
50166.2.1		R/W & UTIL (U-5745)	
50166.3.1		CONST (U-5745)	
17BP.5.C.02		PE (17BP.5.C.02)	
17BP.5.C.02		R/W (17BP.5.C.02)	
17BP.5.C.02		UTIL (17BP.5.C.02)	
17BP.5.C.02		CONST (17BP.5.C.02)	



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJECT LENGTH	
LENGTH ROADWAY TIP PROJECT U-5745	= 0.114 MILE
TOTAL LENGTH TIP PROJECT U-5745	= 0.114 MILE
LENGTH ROADWAY TIP PROJECT 17BP.5.C.02	= 0.028 MILE
TOTAL LENGTH TIP PROJECT 17BP.5.C.02	= 0.028 MILE
TOTAL LENGTH TIP PROJECTS U-5745/17BP.5.C.02	= 0.142 MILE

Prepared In the offices of:

HDR HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

STEWART
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223 S. West Street,
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Raleigh, NC 27603
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www.stewartinc.com

for the North Carolina Department of Transportation

Prepared In the Office of:

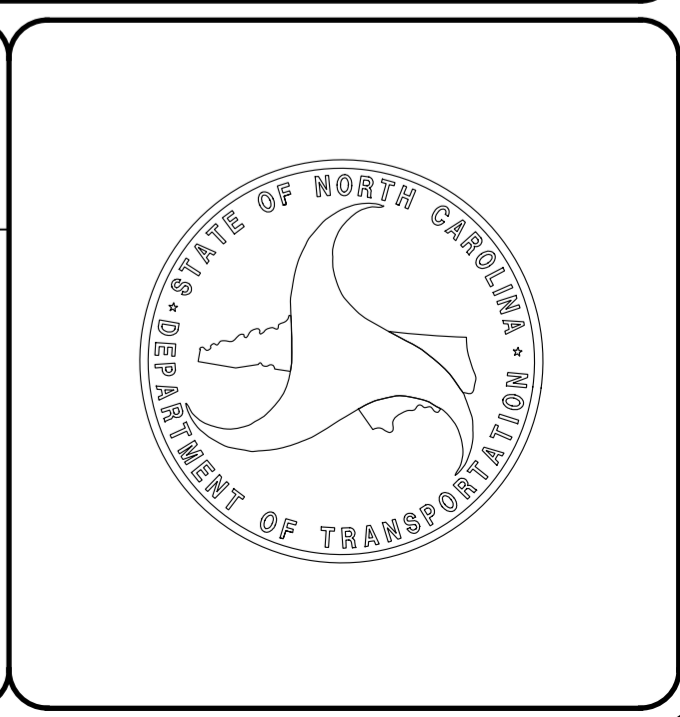
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: (U-5745) AUGUST 17, 2017

RIGHT OF WAY DATE: (17BP.5.C.02) MARCH 9, 2018

LETTING DATE: JANUARY 15, 2019



8/17/19

HDR HDR Engineering, Inc. of the Carolinas
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PROJECT REFERENCE NO. <i>U-5745/17BP.5.C.02</i>	SHEET NO. <i>1A</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	ROADWAY DESIGN ENGINEER
12/17/2018	12/17/2018
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS

PART I (U-5745)	
1	TITLE SHEET
1C-1	SURVEY CONTROL SHEET
2A-1 THRU 2A-2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1	PAVEMENT SLOPE TRANSITION DETAIL
2B-2	INTERSECTION DETAIL
2B-3	SUPERELEVATION DTEAIL
2B-4	WALL ENVELOPE
2C-1	ROUNDABOUT TRUCK APRON DETAIL
2C-2	DETAIL OF 2" ROLLED CURB
2C-3	CURB RAMPS DETAIL
3B-1	EARTHWORK AND PAVEMENT REMOVAL SUMMARIES
3D-1 THRU 3D-2	DRAINAGE SUMMARIES
4 THRU 5	PLAN AND PROFILE SHEETS
TMP-1 THRU TMP-5	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-5	SIGNING PLANS
UC-1 THRU UC-5	UTILITIES CONSTRUCTION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-17	CROSS-SECTIONS
W-1	WALL PLANS

PART II (17BP.5.C.02)	
1	TITLE SHEET
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1	TRAFFIC BEARING JUNCTION BOX DETAIL
2C-2	GUARDRAIL INSTALLATION DETAIL
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
RW01	RIGHT OF WAY TITLE SHEET
RW02C-1	SURVEY CONTROL SHEET
RW02D-1	PROPOSED ALIGNMENT CONTROL SHEET
RW03E-2	RIGHT OF WAY CONTROL SHEET
RW04	RIGHT OF WAY SHEET
TMP-1 THRU TMP-6	TRAFFIC MANAGEMENT PLANS
PMP-1	PAVEMENT MARKING PLANS
EC-1 THRU EC-4	EROSION CONTROL PLANS
RF-1	REFORESTATION PLAN
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
UC-1 THRU UC-10	UTILITY CONSTRUCTION PLANS
X-1A	CROSS SECTION SUMMARY SHEET
X-1 THRU X-4	CROSS SECTIONS
C-1 THRU C-4	CULVERT PLANS

EFF. 01-16-2018
REV.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Super-elevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Super-elevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 7 - CONCRETE PAVEMENTS AND SHOULDERS	
700.01	Concrete Pavement Joints - Construction and Contraction Joints
DIVISION 8 - INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet
840.36	Traffic Bearing Grated Drop Inlet - for Steel (840.37) Double Frame and Grates
840.37	Steel Grate and Frame
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
852.01	Concrete Islands
852.02	Concrete Mountable Median - for Use with Rigid or Flexible Pavement
852.06	Method for Placement of Drop Inlets in Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation (Special Detail for Sheet 6 of 8)
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

GENERAL NOTES:

2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN. (17BP.5.C.02)

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN. (U-5745)

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II. (U-5745)

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III. (17BP.5.C.02)

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01. (17BP.5.C.02)

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.02. (U-5745)

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED. (U-5745)

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADIUS OR RADIUS AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. (U-5745)

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADIUS NOTED ON PLANS. (U-5745)

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL. (17BP.5.C.02)

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING". (17BP.5.C.02)

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7. (U-5745)

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS. (U-5745)

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE CITY OF DURHAM, DUKE ENERGY CAROLINAS, FRONTIER COMMUNICATIONS, AT&T DISTRIBUTION, TWC/CHARTER/SPECTRUM, AND PSNC.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

CURB RAMPS:



















CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD. 848.05 and/or 848.06. (U-5745)

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








STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

12/2/2016
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









BOUNDARIES AND PROPERTY:

- State Line _____
- County Line _____
- Township Line _____
- City Line _____
- Reservation Line _____
- Property Line _____
- Existing Iron Pin 
- Computed Property Corner 
- Property Monument 
- Parcel/Sequence Number 
- Existing Fence Line 
- Proposed Woven Wire Fence 
- Proposed Chain Link Fence 
- Proposed Barbed Wire Fence 
- Existing Wetland Boundary 
- Proposed Wetland Boundary 
- Existing Endangered Animal Boundary 
- Existing Endangered Plant Boundary 
- Existing Historic Property Boundary 
- Known Contamination Area: Soil 
- Potential Contamination Area: Soil 
- Known Contamination Area: Water 
- Potential Contamination Area: Water 
- Contaminated Site: Known or Potential 

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap 
- Sign 
- Well 
- Small Mine 
- Foundation 
- Area Outline 
- Cemetery 
- Building 
- School 
- Church 
- Dam 

HYDROLOGY:

- Stream or Body of Water 
- Hydro, Pool or Reservoir 
- Jurisdictional Stream 
- Buffer Zone 1 
- Buffer Zone 2 
- Flow Arrow 
- Disappearing Stream 
- Spring 
- Wetland 
- Proposed Lateral, Tail, Head Ditch 
- False Sump 























RAILROADS:

Note: Not to Scale

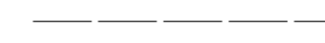
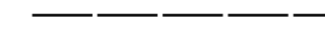
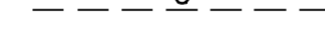
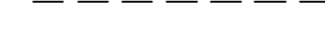







**S.U.E. = Subsurface Utility Engineering*

- Standard Gauge 
- RR Signal Milepost 
- Switch 
- RR Abandoned 
- RR Dismantled 



RIGHT OF WAY & PROJECT CONTROL:





- Secondary Horiz and Vert Control Point 
- Primary Horiz Control Point 
- Primary Horiz and Vert Control Point 
- Exist Permanent Easement Pin and Cap 
- New Permanent Easement Pin and Cap 
- Vertical Benchmark 
- Existing Right of Way Marker 
- Existing Right of Way Line 
- New Right of Way Line 
- New Right of Way Line with Pin and Cap 
- New Right of Way Line with Concrete or Granite RW Marker 
- New Control of Access Line with Concrete C/A Marker 
- Existing Control of Access 
- New Control of Access 
- Existing Easement Line 
- New Temporary Construction Easement 
- New Temporary Drainage Easement 
- New Permanent Drainage Easement 
- New Permanent Drainage / Utility Easement 
- New Permanent Utility Easement 
- New Temporary Utility Easement 
- New Aerial Utility Easement 

ROADS AND RELATED FEATURES:










- Existing Edge of Pavement 
- Existing Curb 
- Proposed Slope Stakes Cut 
- Proposed Slope Stakes Fill 
- Proposed Curb Ramp 
- Existing Metal Guardrail 
- Proposed Guardrail 
- Existing Cable Guiderail 
- Proposed Cable Guiderail 
- Equality Symbol 
- Pavement Removal 

VEGETATION:






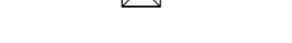



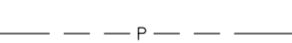
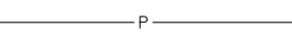

- Single Tree 
- Single Shrub 

- Hedge 
- Woods Line 
- Orchard 
- Vineyard 





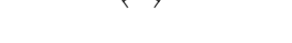



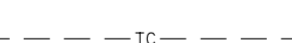
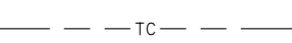
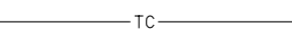

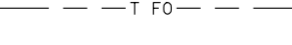


EXISTING STRUCTURES:

- MAJOR:
- Bridge, Tunnel or Box Culvert 
 - Bridge Wing Wall, Head Wall and End Wall 
- MINOR:
- Head and End Wall 
 - Pipe Culvert 
 - Footbridge 
 - Drainage Box: Catch Basin, DI or JB 
 - Paved Ditch Gutter 
 - Storm Sewer Manhole 
 - Storm Sewer 









UTILITIES:

- POWER:
- Existing Power Pole 
 - Proposed Power Pole 
 - Existing Joint Use Pole 
 - Proposed Joint Use Pole 
 - Power Manhole 
 - Power Line Tower 
 - Power Transformer 
 - U/G Power Cable Hand Hole 
 - H-Frame Pole 
 - U/G Power Line LOS B (S.U.E.*) 
 - U/G Power Line LOS C (S.U.E.*) 
 - U/G Power Line LOS D (S.U.E.*) 










TELEPHONE:

- Existing Telephone Pole 
- Proposed Telephone Pole 
- Telephone Manhole 
- Telephone Pedestal 
- Telephone Cell Tower 
- U/G Telephone Cable Hand Hole 
- U/G Telephone Cable LOS B (S.U.E.*) 
- U/G Telephone Cable LOS C (S.U.E.*) 
- U/G Telephone Cable LOS D (S.U.E.*) 
- U/G Telephone Conduit LOS B (S.U.E.*) 
- U/G Telephone Conduit LOS C (S.U.E.*) 
- U/G Telephone Conduit LOS D (S.U.E.*) 
- U/G Fiber Optics Cable LOS B (S.U.E.*) 
- U/G Fiber Optics Cable LOS C (S.U.E.*) 
- U/G Fiber Optics Cable LOS D (S.U.E.*) 







WATER:

- Water Manhole 
- Water Meter 
- Water Valve 
- Water Hydrant 
- U/G Water Line LOS B (S.U.E.*) 
- U/G Water Line LOS C (S.U.E.*) 
- U/G Water Line LOS D (S.U.E.*) 
- Above Ground Water Line 








TV:

- TV Pedestal 
- TV Tower 
- U/G TV Cable Hand Hole 
- U/G TV Cable LOS B (S.U.E.*) 
- U/G TV Cable LOS C (S.U.E.*) 
- U/G TV Cable LOS D (S.U.E.*) 
- U/G Fiber Optic Cable LOS B (S.U.E.*) 
- U/G Fiber Optic Cable LOS C (S.U.E.*) 
- U/G Fiber Optic Cable LOS D (S.U.E.*) 












GAS:

- Gas Valve 
- Gas Meter 
- U/G Gas Line LOS B (S.U.E.*) 
- U/G Gas Line LOS C (S.U.E.*) 
- U/G Gas Line LOS D (S.U.E.*) 
- Above Ground Gas Line 

SANITARY SEWER:

- Sanitary Sewer Manhole 
- Sanitary Sewer Cleanout 
- U/G Sanitary Sewer Line 
- Above Ground Sanitary Sewer 
- SS Forced Main Line LOS B (S.U.E.*) 
- SS Forced Main Line LOS C (S.U.E.*) 
- SS Forced Main Line LOS D (S.U.E.*) 

MISCELLANEOUS:

- Utility Pole 
- Utility Pole with Base 
- Utility Located Object 
- Utility Traffic Signal Box 
- Utility Unknown U/G Line LOS B (S.U.E.*) 
- U/G Tank; Water, Gas, Oil 
- Underground Storage Tank, Approx. Loc. 
- A/G Tank; Water, Gas, Oil 
- Geoenvironmental Boring 
- U/G Test Hole LOS A (S.U.E.*) 
- Abandoned According to Utility Records 
- End of Information 