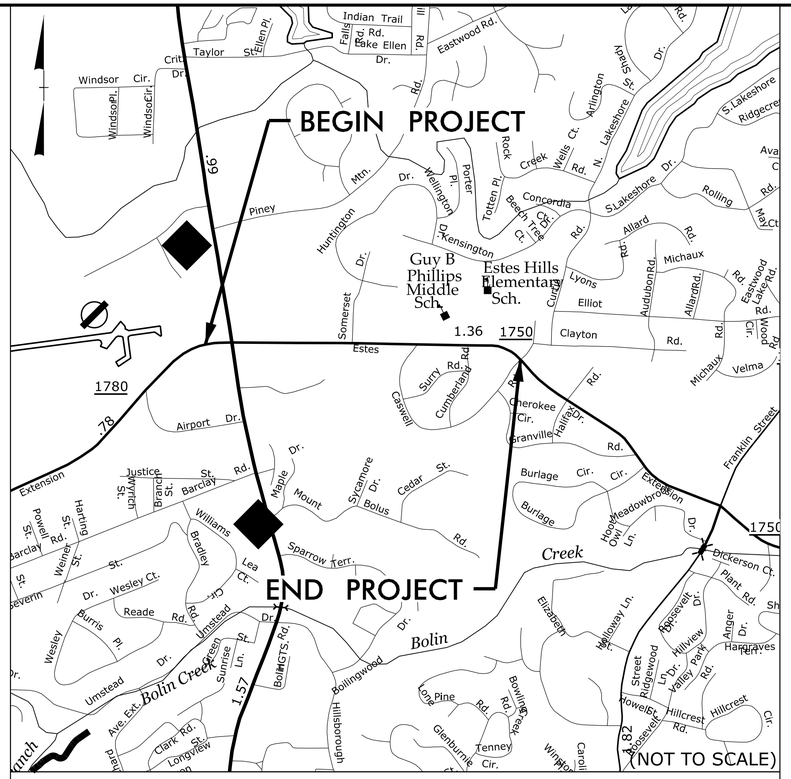
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TOWN OF CHAPEL HILL
NORTH CAROLINA

ESTES DRIVE BICYCLE & PEDESTRIAN IMPROVEMENTS

TYPE OF WORK:
GRADING, PAVING, DRAINAGE,
SIGNALS, & SIGNAGE
NCDOT TIP: C-5179



VICINITY MAP

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2B-1 & 2B-2	AMENITY DETAILS
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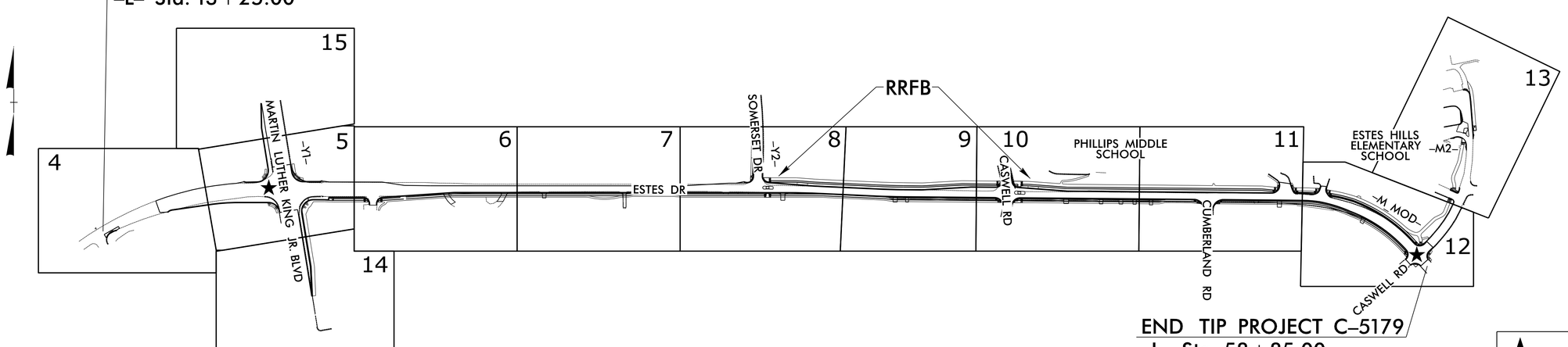
BEGIN TIP PROJECT C-5179
-L- Sta. 13+25.00



END TIP PROJECT C-5179
-L- Sta. 58+85.00

★ SIGNALS

DESIGN DATA	PROJECT LENGTH	GRAPHIC SCALES
DESIGN SPEED = 35 MPH FUNC. CLASSIFICATION = MINOR ARTERIAL	LENGTH OF PROJECT = 0.86 MILES	20 10 0 20 40 PLANS 50 25 0 50 100 PROFILE (HORIZONTAL) 10 5 0 10 20 PROFILE (VERTICAL)

C-5179 - ESTES DRIVE BICYCLE & PEDESTRIAN IMPROVEMENTS

ROADWAY ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — PRELIMINARY PLANS — NOT FOR CONSTRUCTION — ANDREW P. YOUNG

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DATE: OCTOBER 30, 2019

REVISIONS:

NO.	DATE

PROJECT NO.: A15005.00

SCALE: 1

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2018 NCDOT ROADWAY ENGLISH STD. DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" HIGHWAY DESIGN BRANCH - N.C. DEPARTMENT OR TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

DIVISION 2 - EARTHWORK
200.02 Method of Clearing II
225.02 Guide for Grading Subgrade - Secondary and Local
225.04 Method of Obtaining Superelevation - Two Lane Pavement

DIVISION 3 - PIPE CULVERTS
300.01 Method of Pipe Installation

DIVISION 8 - INCIDENTALS
838.01 Concrete Endwall for Single and Double Pipe Culverts
840.01 Brick Catch Basin
840.02 Concrete Catch Basin
840.03 Frame, Grates, and Hood
840.14 Concrete Drop Inlet
840.15 Brick Drop Inlet
840.16 Drop Inlet Frame & Grates
846.01 Concrete Curb, Gutter and Curb & Gutter
848.01 Concrete Sidewalk
848.03 Driveway Turnout - Drop Curb Type
848.04 Street Turnout
848.05 Curb Ramp
852.01 Concrete Islands
876.02 Guide for Rip Rap at Pipe Outlets

ADDITIONAL NCDOT STANDARDS NOT ON THE LIST ABOVE MAY BE REQUIRED AS PER PLAN DETAILS AND SPECIFICATIONS.

2018 NCDOT GENERAL NOTES

GENERAL NOTES: 2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

GRADE LINE:
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.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.05 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.

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.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.03 & 848.02 AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

TEMPORARY SHORING:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE AT&T - TELECOMMUNICATIONS
CHARTER COMMUNICATIONS - TELECOMMUNICATIONS
DOMINION ENERGY - NATURAL GAS
DUKE ENERGY PROGRESS - POWER
GOOGLE FIBER - TELECOMMUNICATIONS

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

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.05,848.06, OR DETAILS.

ROCK

ROCK IS ANTICIPATED BETWEEN -L- STA. 40+00± LT TO STA. 43+00± LT AND -Y1- STA. 15+50± LT TO STA. 15+90± LT. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

GENERAL NOTES

1. THE CONTRACTOR SHALL PERFORM ALL CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF THE JANUARY 2018 NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.
2. WHERE ASPHALT SECTION IS REMOVED, CONTRACTOR SHALL USE A SAW CUT AT THE LIMITS OF DEMOLITION TO OBTAIN A CLEAN EDGE.
3. NO GRADING IS TO OCCUR IN THE TREE PROTECTION AREAS OR TREE CRITICAL ROOT ZONES.
4. THE CONTRACTOR SHALL, AT ALL TIMES, KEEP THE PREMISES FREE FROM ACCUMULATIONS OF WASTE MATERIALS OR RUBBISH CAUSED BY HIM, HIS EMPLOYEES, OR HIS WORK. ALL DEBRIS SHALL BE REMOVED FROM THE SITE ON A DAILY BASIS.
5. EXISTING UTILITIES AND STRUCTURES SHOWN BOTH UNDERGROUND AND ABOVE ARE BASED ON THE BEST AVAILABLE RECORD DRAWINGS. THE CONTRACTOR SHALL VERIFY FIELD CONDITIONS PRIOR TO BEGINNING RELATED CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE IMMEDIATELY.
6. CONTRACTOR SHALL LOCATE ALL UTILITIES AND UTILITY ELEVATIONS PRIOR TO CONSTRUCTION. ALL UTILITIES TO REMAIN SHALL BE PROTECTED BY THE CONTRACTOR. ANY UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY CONTRACTOR AT THEIR EXPENSE.
7. CONTRACTOR SHALL RESTORE ALL LAY DOWN AND STAGING AREAS TO ORIGINAL CONDITIONS AND TO THE SATISFACTION OF THE OWNER, PRIOR TO DEMOBILIZATION AT THE CONCLUSION OF THE PROJECT.
8. ANY EXCAVATION MUST BE FILLED IN AND TAMPED AT THE CONCLUSION OF EACH WORK PERIOD, AND EQUIPMENT AND SUPPLIES RETURNED TO THE CONSTRUCTION STAGING AREA.
9. ORANGE CONSTRUCTION/SAFETY FENCING REMOVED TO FACILITATE ACCESS BY THE CONTRACTOR FOR CONSTRUCTION MUST BE REPLACED AT THE END OF EACH WORK PERIOD TO DIRECT PEDESTRIAN AND VEHICULAR TRAFFIC AWAY FROM HAZARDOUS AREAS.
10. CONTRACTOR SHALL REVIEW TREE REMOVAL WITH OWNER'S REPRESENTATIVE AND OBTAIN APPROVAL PRIOR TO TREE REMOVAL. TRIM UP BRANCHES OF TREES TO PROVIDE 10' VERTICAL CLEARANCE ABOVE PAVEMENT SURFACE.
11. THE ENGINEER AND/OR OWNER DISCLAIM ANY ROLE IN THE CONSTRUCTION MEANS AND METHODS ASSOCIATED WITH PROJECT AS SET FORTH IN THESE PLANS. IF DEPARTURES FROM THE SPECIFICATIONS OR DRAWINGS ARE DEEMED NECESSARY BY THE CONTRACTOR, DETAILS OF SUCH DEPARTURES AND REASONS THEREOF SHALL BE SUBMITTED TO THE OWNER IN WRITING FOR REVIEW. NO DEPARTURES FROM THE CONTRACT DOCUMENTS SHALL BE MADE WITHOUT THE WRITTEN PERMISSION OF THE OWNER.
12. MAILBOXES AFFECTED BY CONSTRUCTION SHALL BE RELOCATED AS NEEDED TO THE UTILITY STRIP BEHIND THE CURB OR APPROPRIATE ALTERNATE LOCATION.

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PROJECT NO.: A15005.00

SCALE: 1A

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STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential
- Existing Landfill Boundry — LF

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

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

VEGETATION:

- Single Tree
- Tree Removal
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — 2UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

TOWN OF CHAPEL HILL

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C-5179 - ESTES DRIVE BICYCLE & PEDESTRIAN IMPROVEMENTS

ROADWAY ENGINEER

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PRELIMINARY PLANS NOT FOR CONSTRUCTION 10/24/2019

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NO.	DATE

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SCALE: 1B

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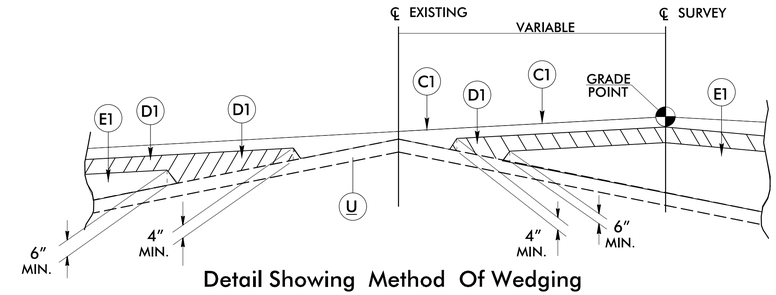
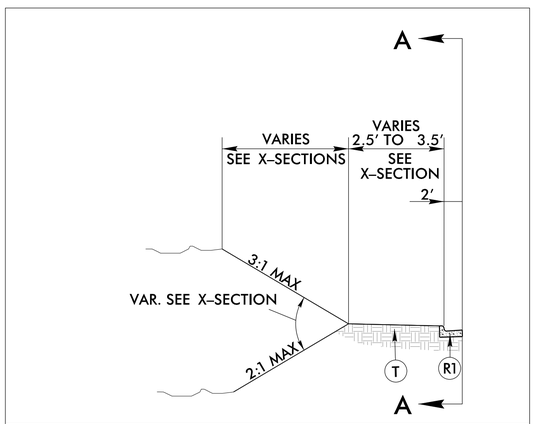
PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R1	2'-6" CONCRETE CURB AND GUTTER.
C2	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.	S	4" CONCRETE SIDEWALK.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
J	PROP. 6" AGGREGATE BASE COURSE.	V	MILLING BITUMINOUS PAVEMENT. 1 ½" DEPTH.

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.
EXISTING PAVEMENT TO BE MILLED AND RESURFACED.
MAINTAIN EXISTING CROSS SLOPE UNLESS NOTED OTHERWISE. (SEE PLANS)

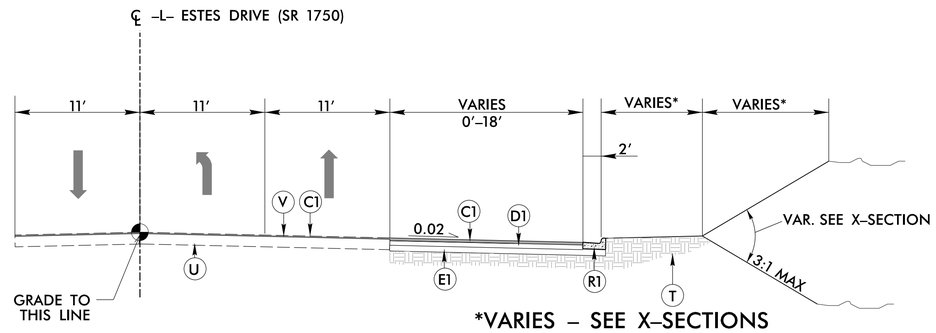


Detail Showing Method Of Wedging



DETAIL SHOWING CONC. CURB & GUTTER SECTION

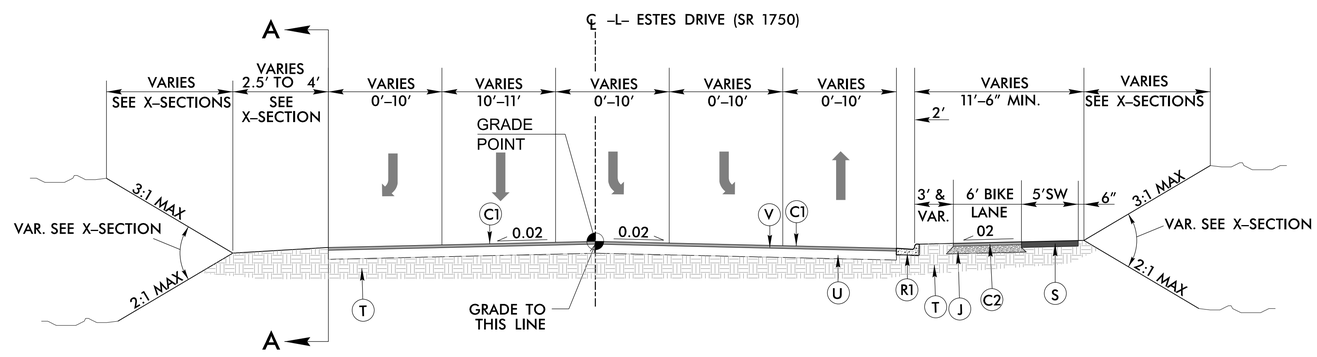
–L– STA. 20+25.00 TO –L– STA. 21+05.00



*VARIES – SEE X-SECTIONS

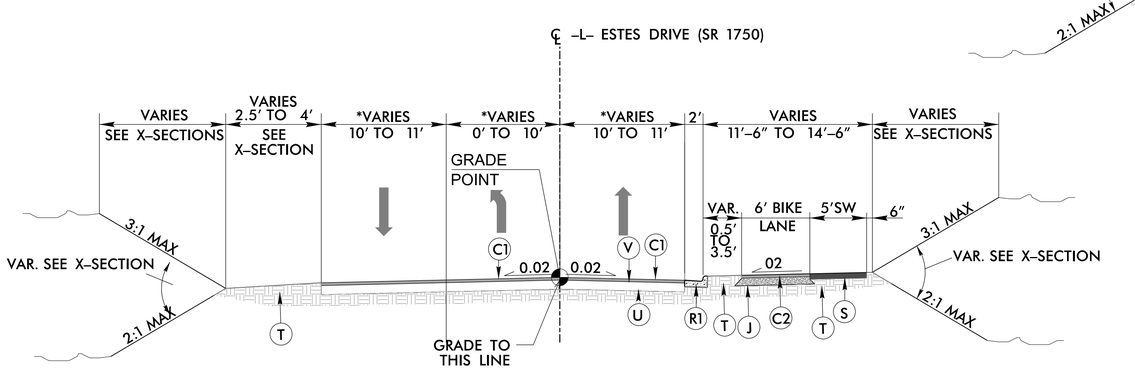
TYPICAL ROADWAY SECTION 1

–L– STA. 15+30.00 TO –L– STA. 20+25.00
–Y1– STA. 13+45.00 TO –Y1– STA. 15+00.00



TYPICAL ROADWAY SECTION 2

–L– STA. 20+25.00 TO –L– STA. 25+35.90



TYPICAL ROADWAY SECTION 3

–L– STA. 25+35.90 TO –L– STA. 35+15.00

*NOTE:
WESTBOUND THRU LANE AND TURN LANES FROM
–L– STA. 21+05.00 TO 24+56.36 ARE 10' LANES
WESTBOUND THRU LANE AND EAST BOUND TURN LANE
–L– STA. 34+63.48 TO 35+15.00 ARE 10' LANES

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PAVEMENT ENGINEER

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DATE: OCTOBER 30, 2019

REVISIONS:

NO.	DATE

PROJECT NO.: A15005.00

SCALE:

2A-1

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PAVEMENT SCHEDULE

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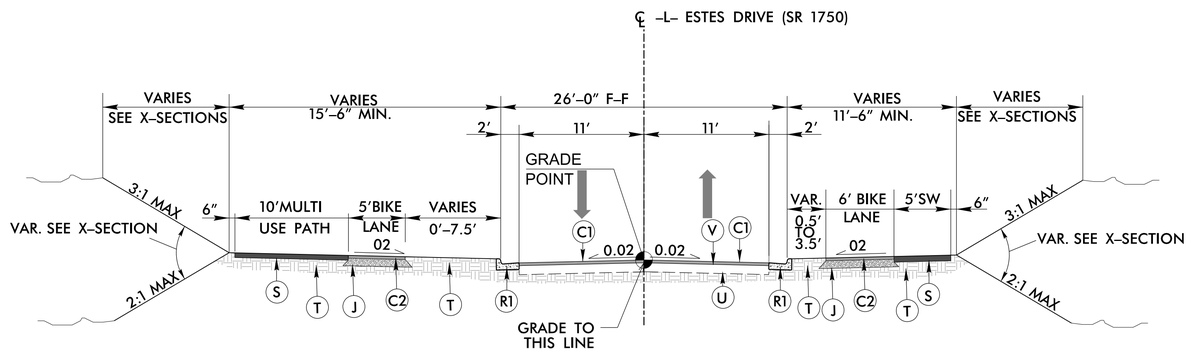
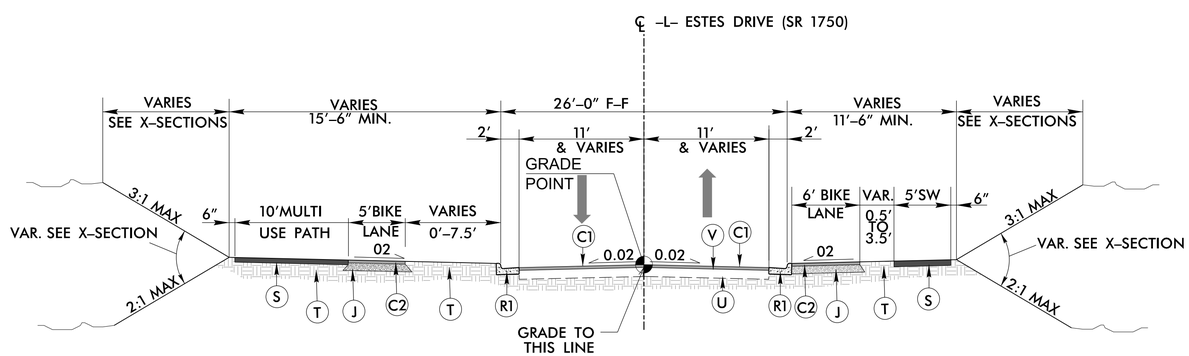


TYPICAL ROADWAY SECTION 5

–L– STA. 35+15.00 TO –L– STA. 37+74.93



TYPICAL ROADWAY SECTION 6

–L– STA. 37+74.93 TO 58+34.68

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NO.	DATE

PROJECT NO.: A15005.00

SCALE:

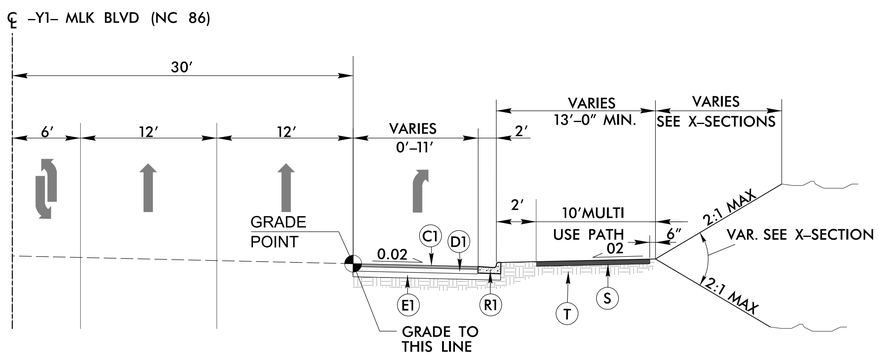
2A-2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE

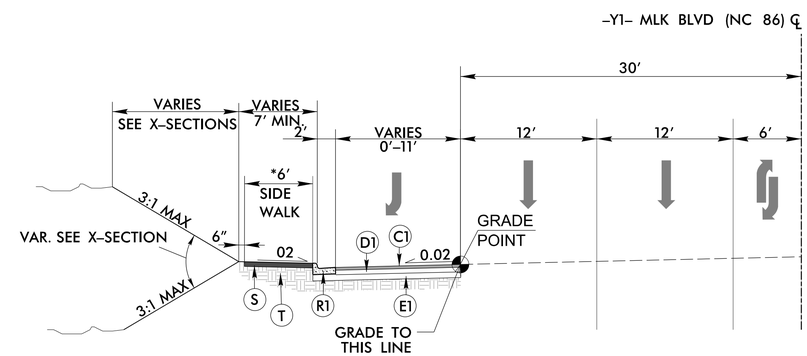
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R1	2'-6" CONCRETE CURB AND GUTTER.
C2	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.	S	4" CONCRETE SIDEWALK.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
J	PROP. 6" AGGREGATE BASE COURSE.	V	MILLING BITUMINOUS PAVEMENT. 1 ½" DEPTH.

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.
EXISTING PAVEMENT TO BE MILLED AND RESURFACED.
MAINTAIN EXISTING CROSS SLOPE UNLESS NOTED OTHERWISE. (SEE PLANS)



TYPICAL ROADWAY SECTION 7

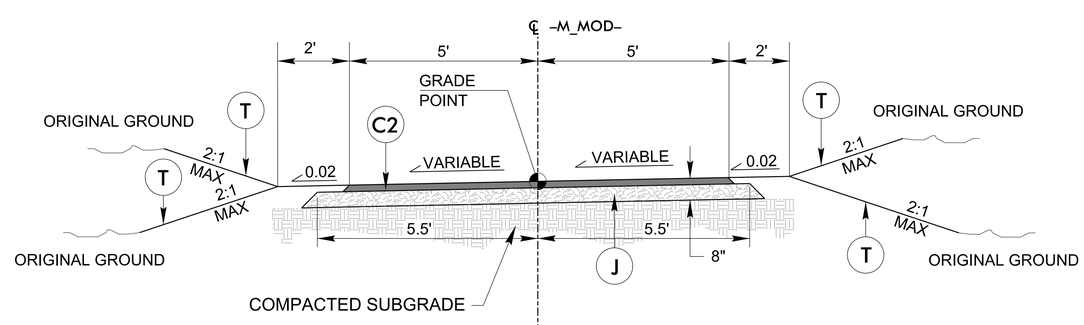
–Y1– STA. 10+48.56 TO 13+45.00



TYPICAL ROADWAY SECTION 8

–Y1– STA. 15+00.00 TO 17+19.10

*NOTE:
SIDEWALK FROM –Y1– STA. 14+73.09 TO –Y1– STA. 14+97.32



TYPICAL SECTION 9

MULTI-USE PATH - 10' ASPHALT

–M_MOD– STA. 12+75.00 TO 19+33.07

TOWN OF CHAPEL HILL

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

C-5179 - ESTES DRIVE BICYCLE & PEDESTRIAN IMPROVEMENTS

ROADWAY ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL ANDREW P. YOUNG

PRELIMINARY PLANS NOT FOR CONSTRUCTION

Firm License No. C-1051
223 S. West St.
Suite 1100
Raleigh, NC 27603
T: 919.360.8750
www.stewartinc.com
STEWART

PAVEMENT ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 28422 DONALD W. BROWN

DATE: OCTOBER 30, 2019

REVISIONS:

NO.	DATE

PROJECT NO.: A15005.00

SCALE:

2A-3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SUMMARY OF EARTHWORK

IN CUBIC YARDS

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L- Sta. 13+50.00 RT	-L- Sta. 58+25.00 RT	1,815	3,869	2,554	500
-L- Sta. 13+50.00 LT	-L- Sta. 58+25.00 LT	6,561	1,609	0	4,952
SUBTOTAL:		8,376	5,478	2,554	5,452
-Y1- Sta. 10+25.00	-Y1- Sta. 13+50.00	1,533	0	0	1,533
-Y1- Sta. 14+50.00	-Y1- Sta. 17+25.00	1,388	38	0	1,350
SUBTOTAL:		2,921	38	0	2,883
-Y2- Sta. 10+25.00	-Y2- Sta. 10+75.00	54	11	0	43
SUBTOTAL:		54	11	0	43
-M_MOD- Sta. 13+50.00	-M_MOD- Sta. 19+25.00	104	599	495	0
SUBTOTAL:		104	599	495	0
-M2- Sta. 10+00.00	-M2- Sta. 10+60.00	1	32	31	0
SUBTOTAL:		1	32	31	0
TOTAL		11,456	6,158	3,080	8,378
WASTE IN LIEU OF BORROW				-2,487	-2,487
PROJECT TOTAL:		11,456	6,158	593	5,891
GRAND TOTALS:		11,456			5,891
SAY:		**12,030**			**6,190**

SELECT GRANULAR MATERIAL = 100 CY (CONTINGENCY)
GEOTEXTILE FOR SUBGRADE STABALIZATION = 100 SY (CONTINGENCY)

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Shoulder Borrow, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for grading.

SAFETY FENCE

IN LINEAR FEET

LOCATION	STATION TO STATION	LENGTH (FT.)
-L- RT Side	23+02 TO 24+35	137.6135
-L- RT Side	30+40 TO 31+08	68.0296
-L- RT Side	31+18 TO 32+60	142.7844
-L- RT Side	34+90 TO 35+85	95
-L- RT Side	38+40 TO 39+35	95
-L- LT Side	38+72 TO 39+35	63
	TOTAL	601.4275
	SAY	610

CHAIN LINK FENCE, 60" FABRIC

IN LINEAR FEET

STATION TO STATION	LT. OR RT.	A FABRIC L.F.	B END BRACE	C CORNER BRACE	D LINE BRACE	E LINE POSTS	F TERMINAL POSTS
18+25.00 to 18+62.85	RT.	36.00			1	3.17	1
TOTAL		36.00				3.17	1
SAY		**36.00**				**4.00**	**1.00**

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
-L-	13+75	15+50	RT	44.58			
		TOTAL:		44.58			
		SAY:		50			

TOWN OF CHAPEL HILL

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

C-5179 - ESTES DRIVE BICYCLE & PEDESTRIAN IMPROVEMENTS

ROADWAY ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL ANDREW B. YOUNG 042407 PRELIMINARY PLANS NOT FOR CONSTRUCTION

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223 S. West St.
Suite 1100
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www.stewartinc.com
STEWART

HYDRAULICS ENGINEER

DATE: OCTOBER 30, 2019

REVISIONS:

NO.	DATE

PROJECT NO.: A15005.00

SCALE:

3B-1

COMPUTED BY: JMK DATE: 10/29/2019

CHECKED BY: VHB DATE: 10/29/2019

PROJECT NO.	SHEET NO.
A15005.00	3D–1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	DO NOT USE PVC	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
-L- 15+50	RT	0401		466.00	463.25																																						
-L- 15+50	RT	0401	0402		462.00	460.92																															96						
-L- 16+50	RT	0402		463.92	460.92																																						
-L- 16+50	RT	0402	0501		460.92	457.85																															144						
-L- 18+00	RT	0501		462.19	457.85																																						
-L- 18+00	RT	0501	0505		457.85	455.90																															92						
-L- 18+98	RT	0505		462.17																																							
-L- 18+98	RT	0505	0506		455.30	453.75																									56												
-L- 18+00	LT	0502		463.69	460.94																																						
-L- 18+00	LT	0502	0503		460.94	460.10																															92						
-L- 18+91	LT	0503		464.90																																							
-L- 18+96	RT	0504	0505		458.44	458.40																															16						
-Y1- 13+53	LT	0506		461.63																																							
-Y1- 17+25	LT	1501		466.30	463.55																																						
-Y1- 17+25	LT	1501	0507		463.55	461.32																															124						
-Y1- 16+00	LT	0507		464.32	461.32																																						
-Y1- 16+00	LT	0507	0508		461.32	460.42																															76						
-Y1- 15+24	LT	0508		463.42	457.00																																						
-Y1- 15+24	LT	0508	0509		457.00	456.62																															16						
-Y1- 15+24	LT	0509																																									
-Y1- 13+23	RT	0516		461.58	453.41																																						
-Y1- 13+29	RT	0515		461.18	454.00																																						
-L- 20+25	LT	0511		464.20	461.95																																						
-L- 20+25	LT	0511	0512		461.95	460.77																								12													
-L- 20+25	LT	0512		463.77	460.77																																						
-L- 20+25	LT	0512	0513		460.77	460.00																															48						
-L- 20+75	LT	0513		464.17	460.00																																						
-L- 20+75	LT	0513	0514		460.00	457.02																															60						
-L- 20+75	RT	0514		463.42	457.02																																						
-L- 24+06	RT	0602		462.46	456.90																																						
-L- 24+06	RT	0603	0604		456.52	456.40																									8												
-L- 27+11	RT	0605	0605		453.90	451.59																								28													
-L- 27+30	RT	0606		454.59	451.59																																						
-L- 27+30	RT	0606	0702		451.59	433.09																															360						
-L- 30+90	RT	0702		436.84	428.20																																						
-L- 30+96	RT	0701	0702		428.65	428.20																									44												
-L- 30+90	RT	0702	0706		428.20	427.00																																36					
-L- 31+28	LT	0703	0706		426.60	425.10																																				40	
-L- 31+29	RT	0706		435.73	425.10																																						
-L- 31+29	RT	0706	0707		425.10	423.30																														48								
-L- 32+26	RT	0705		434.57	431.57																																						
-L- 32+26	RT	0705	0706		431.57	427.00																															96						
-L- 33+00	RT	0704		435.23	432.23																																						
-L- 33+00	RT	0707	0705		432.23	431.57																															72						
SHEET TOTALS																													40	108				48			1292	36				40	

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	** " R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	CONCRETE PIPE PLUG, C.Y., STD. 840.71	FLOWABLE FILL, C.Y.	G.D.I. FRAME WITH TWO GRATES STD. 840.22	CONCRETE OPEN THROAT CATCH BASIN STD. 840.04	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	T.B.J.B. STD. 840.34	J.B. STD. 840.31 OR 840.32	CONVERT OTCB TO JB W/MH	MANHOLE COVER & FRAME STD. 840.54	DRAINAGE PIPE ELBOWS NO. & SIZE	REMOVE MH	ADJUST CB OR MH	REMOVE CB	REMOVE OTCB	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 15+50	0401									1												1					1													
-L- 15+50	0401	0402																																						
-L- 16+50	0402									1			1		1																									
-L- 16+50	0402	0501																																						
-L- 18+00	0501									1			1		1																									
-L- 18+00	0501	0505																																						
-L- 18+98	0505									1			1		1																									
-L- 18+98	0505	0506																																					63	
-L- 18+00	0502									1												1					1													
-L- 18+00	0502	0503																																						
-L- 18+91	0503																														1	1								
-L- 18+96	0504	0505																																				0.399		
-Y1- 13+53	0506																																		1					
-Y1- 17+25	1501									1												1					1													
-Y1- 17+25	1501	0507																																						
-Y1- 16+00	0507									1			1		1																									
-Y1- 16+00	0507	0508																																					72	
-Y1- 15+24	0508									1	1.42		1		1																									
-Y1- 15+24	0508	0509																																						
-Y1- 15+24	0509																																			1		0.399		
-Y1- 13+23	0516									1	3.17																		1			1				1				
-Y1- 13+29	0515									1	2.18		1			1																								INSTALL OVER EXISTING 15" RCP
-L- 20+25	0511									1									1	1																				
-L- 20+25	0511	0512																																						
-L- 20+25	0512									1			1		1																									
-L- 20+25	0512	0513																																						
-L- 20+75	0513									1			1		1								0.12	1.2												1				
-L- 20+75	0513	0514																																						
-L- 20+75	0514									1	1.40		1			1																		1		1			19	INSTALL OVER EXISTING 15" RCP
-L- 24+06	0602									1	0.56		1		1																									
-L- 24+06	0603	0604																																						
-L- 27+11	0605	0605																																					16	
-L- 27+30	0606									1			1		1																									
-L- 27+30	0606	0702																																					73	
-L- 30+90	0702									1	3.64		1		1																									
-L- 30+96	0701	0702																																			1		27	
-L- 30+90	0702	0706																																					36	
-L- 31+28	0703	0706						4.5																															56	
-L- 31+29	0706									1	5.00	0.63																									1			
-L- 31+29	0706	0707																																					30	
-L- 32+26	0705									1			1	1																										
-L- 32+26	0705	0706																																						
-L- 33+00	0704									1			1			1																								
-L- 33+00	0707	0705																																						
SHEET TOTALS								4.5		20	17.37	0.63	14	1	10	3			1	1		3	0.12	1.2			3		1		1	2		1	1	4	2	0.798	392	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

COMPUTED BY: JMK DATE: 10/29/2019

CHECKED BY: VHB DATE: 10/29/2019

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
A15005.00	3D–2

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	DO NOT USE PVC	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	CONCRETE PIPE PLUG, C.Y., STD. 840.71	FLOWABLE FILL, C.Y.	G.D.I. FRAME WITH TWO GRATES STD. 840.22	CONCRETE OPEN THROAT CATCH BASIN STD. 840.04	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	T.B.J.B. STD. 840.34	J.B. STD. 840.31 OR 840.32	CONVERT OTCB TO JB W/MH	MANHOLE COVER & FRAME STD. 840.54	DRAINAGE PIPE ELBOWS NO. & SIZE	REMOVE MH	ADJUST CB OR MH	REMOVE CB	REMOVE OTCB	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-Y2- 10+50	RT	0801		438.37	435.37																																																			1			1			1																								
-Y2- 10+50	RT	0801	0802		435.37	435.04																															28																																										
-Y2- 10+50	LT	0802		438.37	435.04																																																			1			1		1																									
-Y2- 10+50	LT	0802	0803		435.04	434.80																															20																																										
-L- 35+45	LT	0803		438.62	434.70																																																																										1				12	
-L- 35+43	LT	0804		437.56	432.00																																																			1	0.56		1		1																									
-L- 35+43	LT	0804	0805		432.00	430.00																								32																																																			
-L- 37+00	LT	0806		435.06	432.06																																																			1			1			1																								
-L- 37+00	LT	0806	0807		432.06	428.95																															100																																										
-L- 38+00	LT	0807		431.95	428.95																																																			1			1			1																								
-L- 38+00	LT	0807	0808		428.95	428.70																															24																																										
-L- 38+00	RT	0808		431.95	428.70																																																			1			1		1																									
-L- 38+00	RT	0808	0907		428.70	426.00																															88																																										
-L- 38+90	RT	0907		430.53	419.45																																																			1	5.00	1.08	1		1																									
-L- 38+99	LT	0901	0902		425.00	422.84																										36																																																	
-L- 38+99	LT	0902		430.52	422.84																																																			1	2.68		1	1																										
-L- 38+99	LT	0902	0907		422.84	421.40																																		24																																							55	
-L- 38+90	RT	0907	0908		419.45	419.20																										36																																												1		16	
-L- 38+98	RT	0906		430.52	426.00																																																			1			1	1																										
-L- 38+98	RT	0906	0907		426.00	425.50																															8																																										
-L- 40+00	RT	0905		431.96	428.78																																																			1			1			1																								
-L- 40+00	RT	0905	0906		428.78	426.00																															100																																										
-L- 40+00	LT	0904		432.02	429.02																																																			1			1		1																									
-L- 40+00	LT	0904	0905		429.02	428.78																															24																																										
-L- 41+00	LT	0903		434.67	431.67																																																			1			1		1																									
-L- 41+00	LT	0903	0904		431.67	429.02																															100																																										
-Y3- 11+40	LT	1002		439.27	436.27																																																			1			1		1																									
-Y3- 11+40	LT	1002	1003		436.27	433.00																															40																																										
-L- 44+07	LT	1003		436.79																																																														0.18	4.1											1	1				20	
-L- 43+60	RT	1001		435.54	432.54																																																			1			1		1																									
-L- 43+60	RT	1001	1004		432.54	430.36																															44																																										
-L- 44+03	RT	1004		435.02																																																																												1					
-L- 48+50	RT	1005		429.99	426.99																																																			1			1		1																									
-L- 48+50	RT	1005	1101		426.99	418.81																															172																																										
-L- 50+25	RT	1101		421.81	418.81																																																			1			1		1																									
-L- 50+25	RT	1001	1105		418.81	415.29																															48																																										
-Y4- 10+56	LT	1105		420.29																																																																												1					
-L- 50+58	LT	1102		421.60	419.27																																																			1															1													4 OTCB
-L- 50+58	LT	1102	1103		419.27	417.00																								24																																																25	
-L- 50+70	LT	1103		423.20	417.00																																																			1																			1		1								
-L- 51+40	RT	1104		424.14	421.14																																																			1			1			1																								
-L- 51+40	RT	1104	1105		421.14	415.29																															72																																										
SHEET TOTALS																													56		72					868			24													19	8.24	1.08	17	2	10	5							0.18	4.1		1				1		1		1	4		1		128	

ABBREVIATIONS

- C.B. CATCH BASIN
- N.D.I. NARROW DROP INLET
- D.I. DROP INLET
- G.D.I. GRATED DROP INLET
- G.D.I.(N.S.) (NARROW SLOT)
- J.B. JUNCTION BOX
- M.H. MANHOLE
- T.B.D.I. TRAFFIC BEARING DROP INLET
- T.B.J.B. TRAFFIC BEARING JUNCTION BOX

COMPUTED BY: JMK DATE: 10/29/2019

CHECKED BY: VHB DATE: 10/29/2019

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
A15005.00	3D-3

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION	LOCATION (LT, RT, OR CL)*	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE	DRAINAGE PIPE THICKNESS OR GAUGE	C.S. PIPE SIZE	C.S. PIPE THICKNESS OR GAUGE	R.C. PIPE CLASS III SIZE	R.C. PIPE CLASS IV SIZE	*** R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	***** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B')	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	CONCRETE PIPE PLUG, C.Y. STD. 840.71	FLOWABLE FILL, C.Y.	G.D.I. FRAME WITH TWO GRATES STD. 840.22	CONCRETE OPEN THROAT CATCH BASIN STD. 840.04	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	T.B.J.B. STD. 840.34	J.B. STD. 840.31 OR 840.32	CONVERT OTCB TO JB W/MH	MANHOLE COVER & FRAME STD. 840.54	DRAINAGE PIPE ELBOWS NO. & SIZE	REMOVE MH	ADJUST CB OR MH	REMOVE CB	REMOVE OTCB	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 57+82	LT	1201		420.10	416.35																1																													
-L- 57+82	LT	1201	1202		416.35	415.90						44																																								
-L- 58+09	LT	1202		418.66																																								1							
-L- 58+05	RT	1203		418.81	415.81																1				1		1																							
-L- 58+05	RT	1203	1204		415.81	413.00																																														
-M- 16+41	LT	1301																																											1 @ 18"						18" RCP ELBOW
-M- 16+41	LT	1301	1302		417.90	414.97																																														
-M- 16+12	LT	1302		417.30	414.97																1																1														4 OTCB
-M- 16+12	LT	1302	1303		414.97	413.57																																														
-M- 16+21	RT	1303		420.20	413.57																1										1	1																	1			
SHEET TOTALS												44	76	28							4				1		1				1	1	1				1	1					1 @ 18"		1		1			
PROJECT TOTALS												44	116	192		72		48		2160	36		24		40					4.5		43	25.61	1.71	32	3	21	8			2	2	1	3	0.3	5.3		2	4		1	1	1	3	1 @ 18"	2	6	4	4	0.798	520	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNERS NAMES	TOTAL ACREAGE	AREA TAKEN	AREA REMAINING RT.	AREA REMAINING LT.	TEMP. CONST. EASE.	PERM. DRAIN. EASE.	PERM. UTILITY EASE.	PERM. SIDEWALK EASE.
1	UNIVERSITY OF NC	206.68				8135 SF			
2	UNIVERSITY OF NC	60.01				5174 SF			
3	~~KATHRYN BUTLER (STEWART)~~								
4	AMITY METHODIST CHURCH	6.16	1409 SF	6.13		4904 SF			
5	CHAPEL HILL YMCA INC	7.2				388 SF	334 SF		
6	~~WHITCOMB RUMMEL~~								
7	EMMERSON, DAVIS, & RICHARDSON	1.1				2264 SF	702 SF		
8	EMMERSON, DAVIS, & RICHARDSON	2.67				1963 SF	468 SF		
9	ALTON HARRIS & MICHAEL HARRIS	1.83						88 SF	
10	CHAPEL HILL RETIREMENT RESIDENCE LLC	6.18	3990 SF		6.09	13710 SF	444 SF	303 SF	
11	JEFFERY ROMEO & LISA ROMEO	0.38				2799 SF	456 SF		
12	~~PAUL B. BAKER~~								
13	PHILLIPS JUNIOR HIGH	33.7	468 SF		33.69	0.99 AC	5179 SF	13034 SF	3667 SF
14	LEIGH SHAMBLIN & WILLIAM BROWN	0.49						73 SF	
15	MARVIN JOHNSON & KAY JOHNSON	0.33				150 SF			
16	GEORGE TILLER & CAROLYN TILLER	0.43				256 SF			
17	CHABAD OF DURHAM, INC.	0.65				2187 SF			

LIST OF PROPERTY OWNERS

PROPERTY	SHEET NUMBER	OWNER	ADDRESS	DEED BK	PG	RECORDED PLAT P.B.	RECORDED PLAT PG	PIN	TYPE
1/2	4/5/14/15	University of NC	Martin Luther King Jr Blvd.					9789150184	RIGHT OF ENTRY
								9789247373	RIGHT OF ENTRY
~~3~~	~~5,6,7,15~~	~~Kathryn Butler (STEWART)~~	~~404 Wooded Lake Dr.~~	~~3043~~	~~152~~	~~40~~	~~49~~	~~9789359617~~	~~EASEMENTS~~
4	5/6/7/14	Amity Methodist Church	825 N Estes Drive	2134	72	86	105	9789359195	EASEMENTS
5	7	Chapel Hil YMCA Inc.	980 Martin Luther King Jr. Blvd	254	1288	86	105	9789440825	EASEMENTS
~~6~~	~~7/8~~	~~Whitcomb Rummel~~	~~201 Hillcrest Rd.~~	~~1331~~	~~63~~	~~33~~	~~91~~	~~9789455646~~	~~EASEMENTS~~
7/8	7/8	Fred B. Emmerson, JR. & Lucy Carol Davis, Sherman W. Richardson & Kay	N Estes Drive	1874	50	82	156	9789454085	EASEMENTS
				1874	50	82	156	9789456088	EASEMENTS
9	8	Alton E. Harris, JR & Michael T. Harris, SR	801 N Estes Drive	08-E-81				9789550006	PUE
10	8/9	Chapel Hill Retirement Residence LLC	700 N Estes Drive	6155	173	31	85	9789551528	EASEMENTS
11	8/9	Parsons Property LLC	707 N Estes Drive	5167	423			9789551221	EASEMENTS
~~12~~	~~9~~	~~Paul B. Baker~~	~~705 N. Estes~~	~~4586~~	~~108~~	~~14~~	~~77~~	~~9789553131~~	~~TCE~~
13	9/10/11/12/13	Chapel Hill-Carrboro City School System	500/606 N Estes Drive	160	651	54	101	9789654784	AGREEMENT
14	11	Alan and Keting Zhou	1515 Cumberland Rd.	6314	519	9	55	9789653150	PUE
15	11	Marvin Earl & Kay Johnson	505 N Estes Drive	248	22	113	58	9789657147	TCE
16	12	Yongming Chen (formerly Sarah Tiller)	503 N Estes Drive	1097	13	9	55	9789658084	TCE
17	12	Chabad of Durham, Inc.	501 N Estes Drive	3933	109			9789659081	TCE

TOWN OF CHAPEL HILL

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

C-5179 - ESTES DRIVE BICYCLE & PEDESTRIAN IMPROVEMENTS

ROADWAY ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036240 ANDREW T. YOUNG

PRELIMINARY PLANS
not for construction
10/30/2019

Firm License No. C-1051
223 S. West St.
Suite 1100
Raleigh, NC 27603
T 919.380.8750
www.stewartinc.com

STEWART

HYDRAULICS ENGINEER

DATE: OCTOBER 30, 2019

REVISIONS:

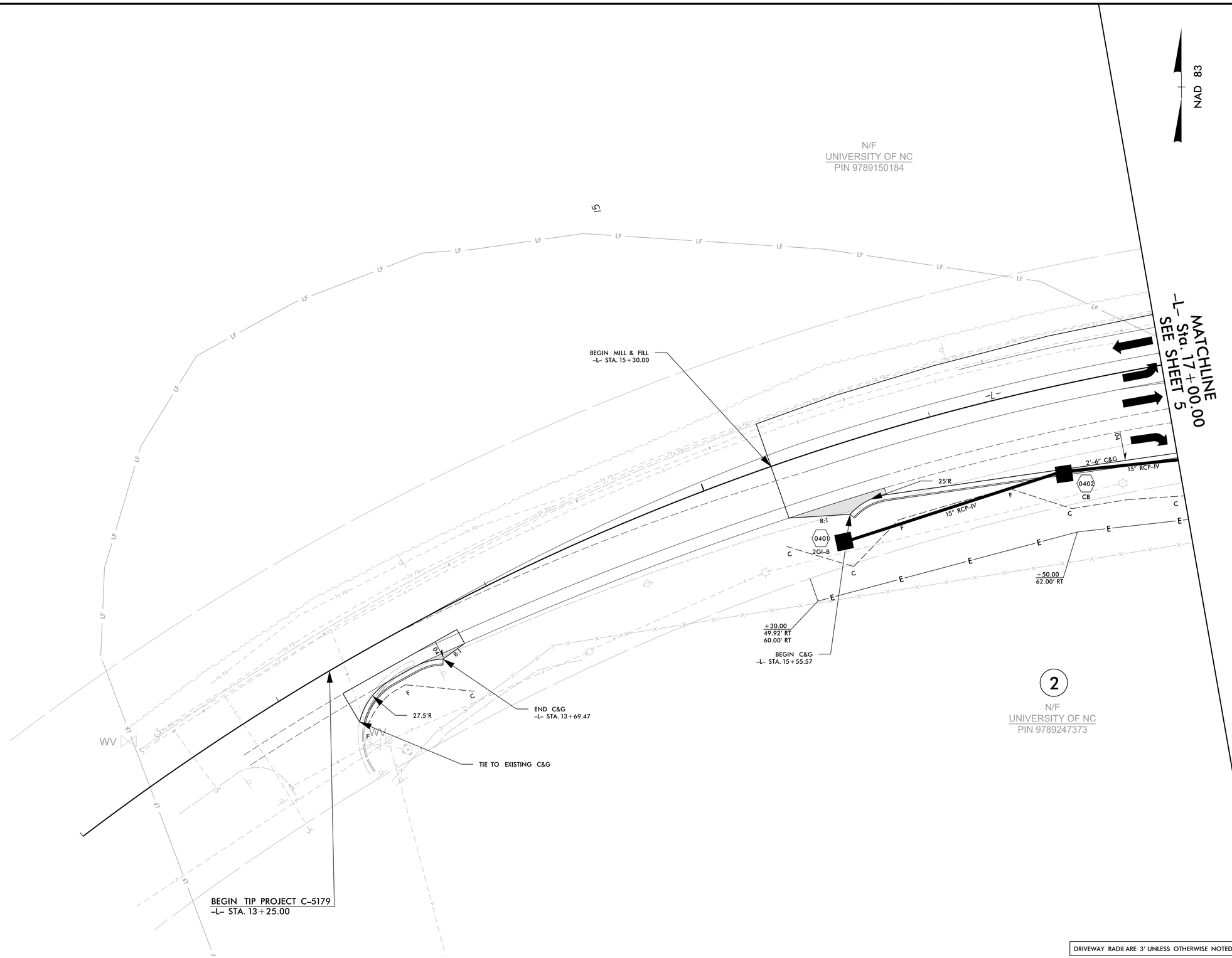
NO.	DATE

PROJECT NO.: A15005.00

SCALE:

3P

-L-
PI Sta 14+68.69
△ = 48° 18' 47.8" (RT)
D = 5° 28' 58.3"
L = 881.17'
T = 468.69'
R = 1,045.00'



DRIVEWAY RADII ARE 3' UNLESS OTHERWISE NOTED

FOR -L- PROFILE, SEE SHEET 16

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TOWN OF CHAPEL HILL

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

C-5179 - ESTES DRIVE BICYCLE & PEDESTRIAN IMPROVEMENTS

ROADWAY ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036407 ANDREW P. YOUNG

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HYDRAULICS ENGINEER

vhb
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

DATE: OCTOBER 30, 2019

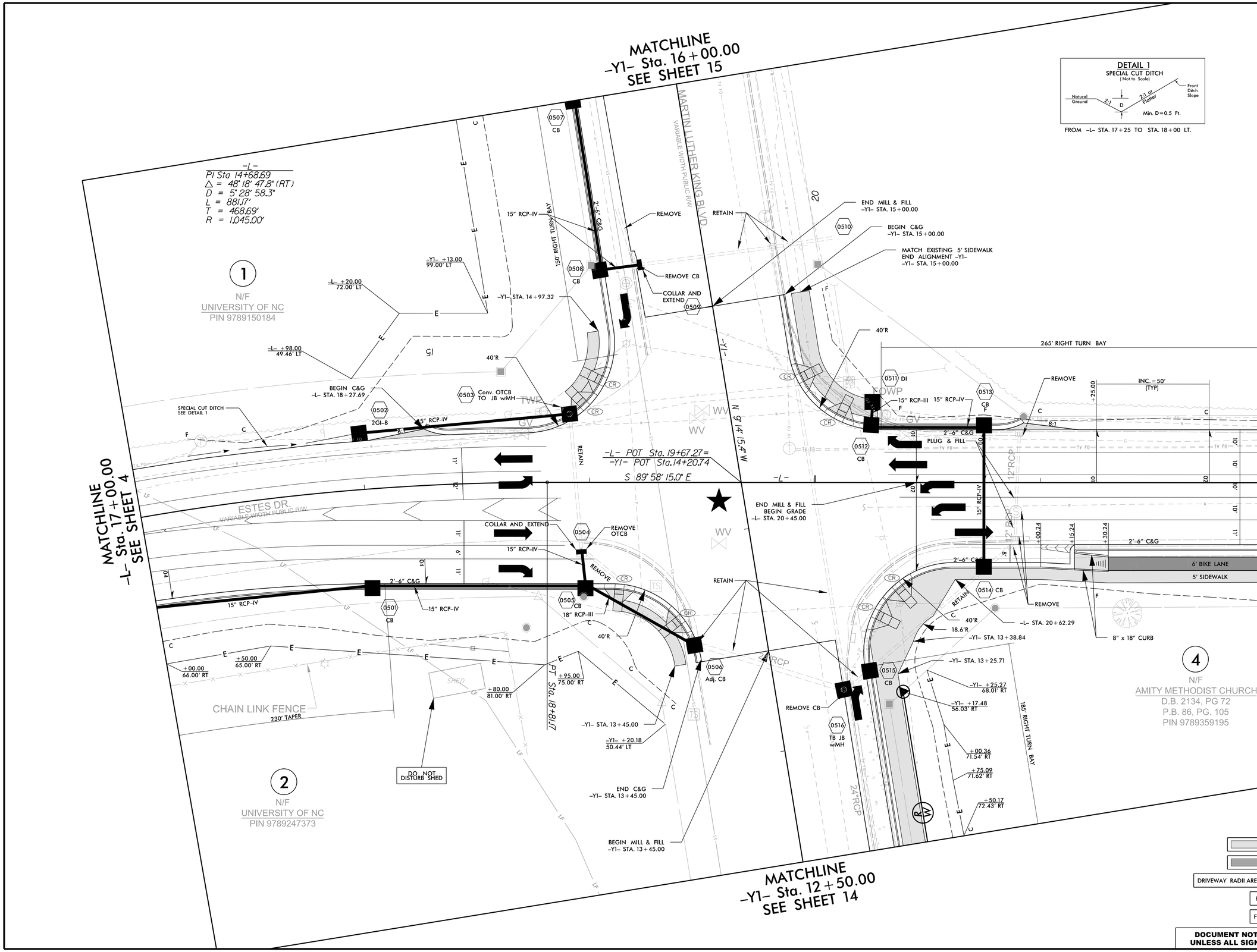
REVISIONS:

NO.	DATE

PROJECT NO.:
A15005.00

SCALE: 1"=20'

4



TOWN OF CHAPEL HILL

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

C-5179 - ESTES DRIVE BICYCLE & PEDESTRIAN IMPROVEMENTS

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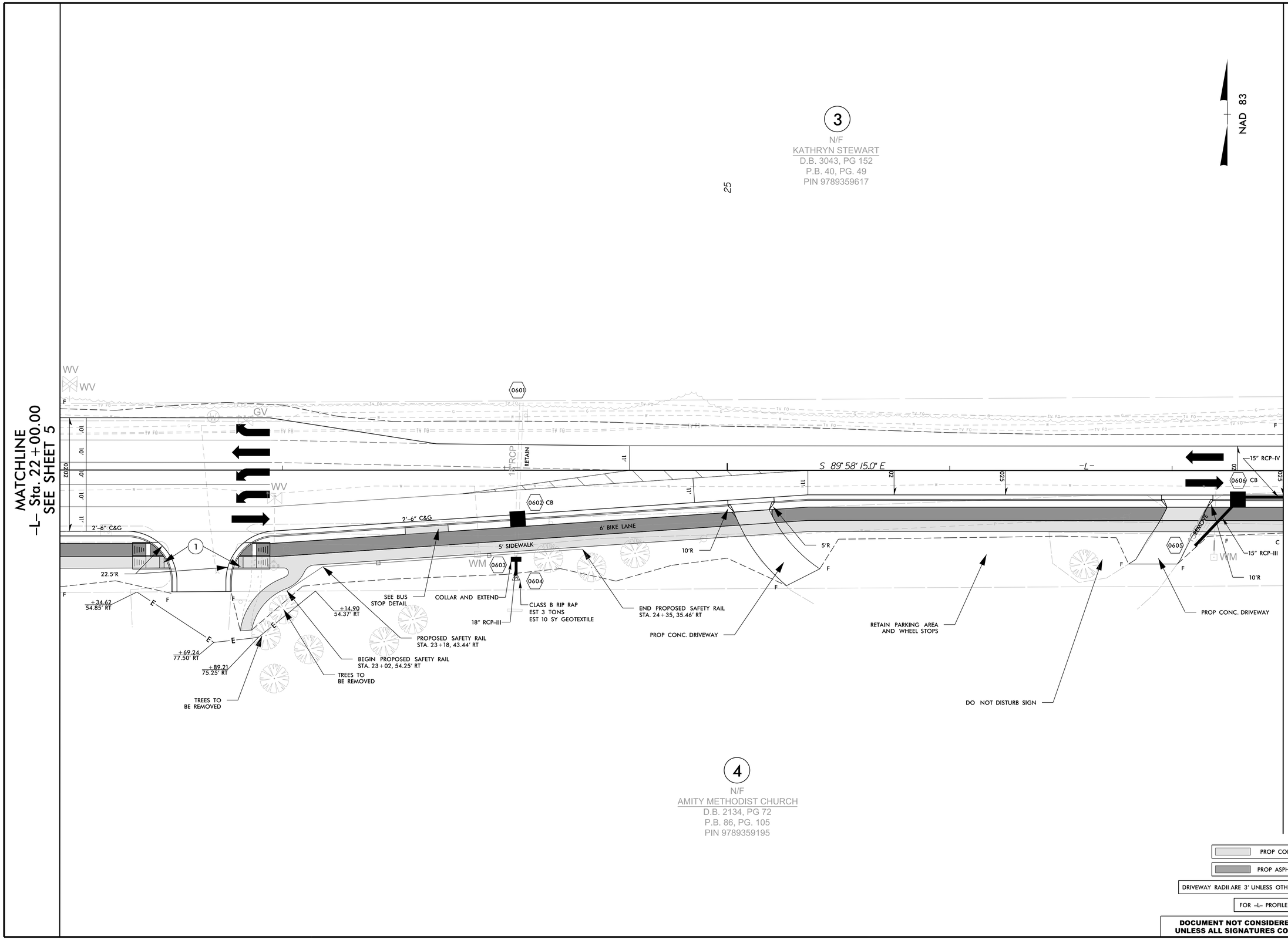
5



PROP CONC SIDEWALK

PROP ASPHALT BIKE LANE

DRIVEWAY RADII ARE 3' UNLESS OTHERWISE NOTED

FOR -L- PROFILE, SEE SHEET 16

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C-5179 - ESTES DRIVE BICYCLE & PEDESTRIAN IMPROVEMENTS

ROADWAY ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036967 ANDREW P. TOUTC

PRELIMINARY PLANS
NOT FOR CONSTRUCTION
2019.10.30

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www.stewartinc.com
STEWART

HYDRAULICS ENGINEER

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940 Main Campus Drive, Suite 500
Raleigh, NC 27606

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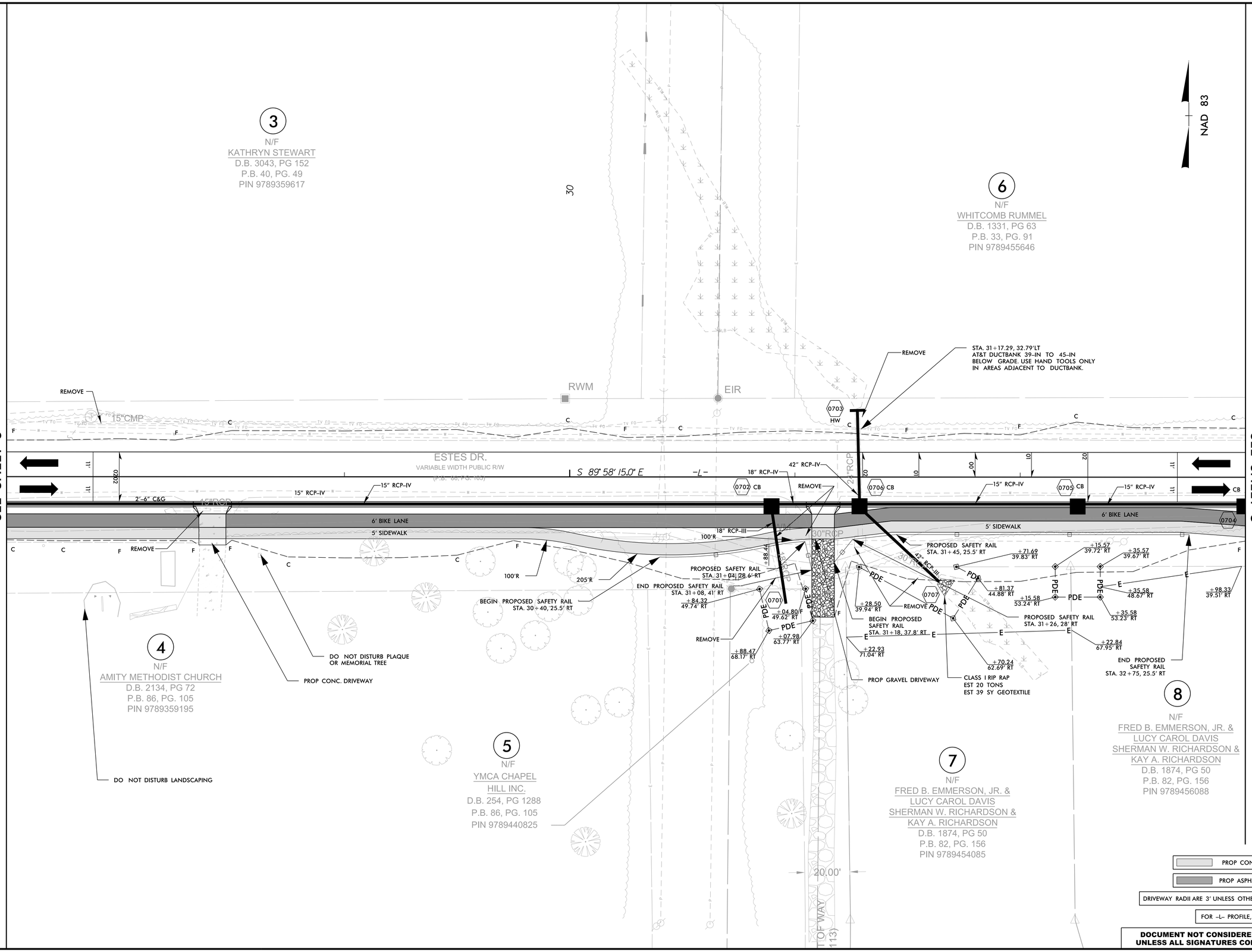
REVISIONS:

NO.	DATE

PROJECT NO.: A15005.00

SCALE: 1"=20'



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UNLESS ALL SIGNATURES COMPLETED

TOWN OF CHAPEL HILL

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

C-5179 - ESTES DRIVE BICYCLE & PEDESTRIAN IMPROVEMENTS

ROADWAY ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032407 ANDREW P. YOUNG
PRELIMINARY PLANS
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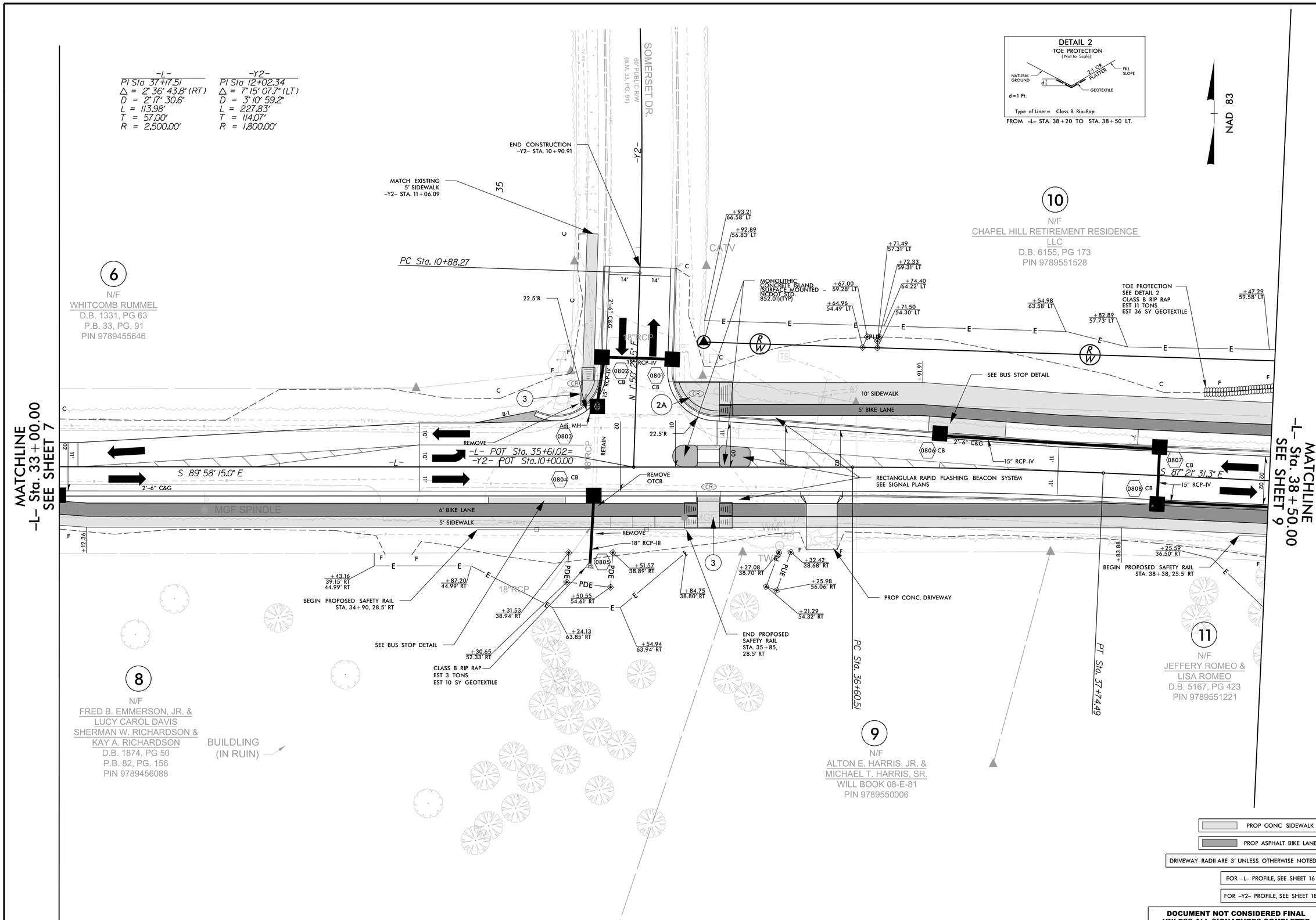
A15005.00

SCALE: 1"=20'

7



PROP CONC SIDEWALK

PROP ASPHALT BIKE LANE

DRIVEWAY RADII ARE 3' UNLESS OTHERWISE NOTED

FOR -L- PROFILE, SEE SHEET 16

FOR -Y2- PROFILE, SEE SHEET 18

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TOWN OF CHAPEL HILL

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

C-5179 - ESTES DRIVE BICYCLE & PEDESTRIAN IMPROVEMENTS

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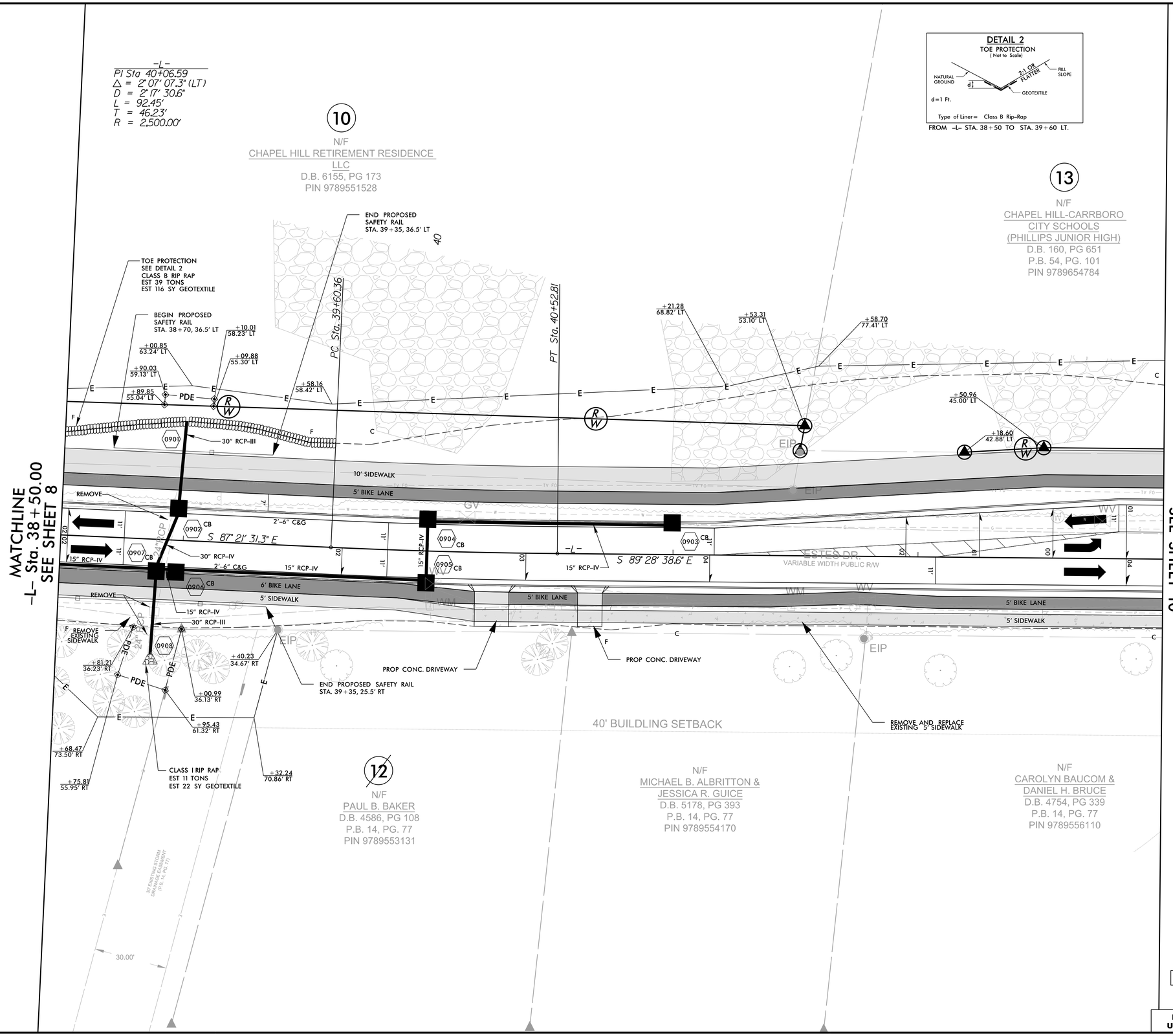
PROJECT NO.: A15005.00

SCALE: 1"=20'

8



PROP CONC SIDEWALK

PROP ASPHALT BIKE LANE

DRIVEWAY RADII ARE 3' UNLESS OTHERWISE NOTED

FOR -L- PROFILE, SEE SHEET 17

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TOWN OF CHAPEL HILL

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

C-5179 - ESTES DRIVE BICYCLE & PEDESTRIAN IMPROVEMENTS

ROADWAY ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052407 ANDREW P YOUNG

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940 Main Campus Drive, Suite 500
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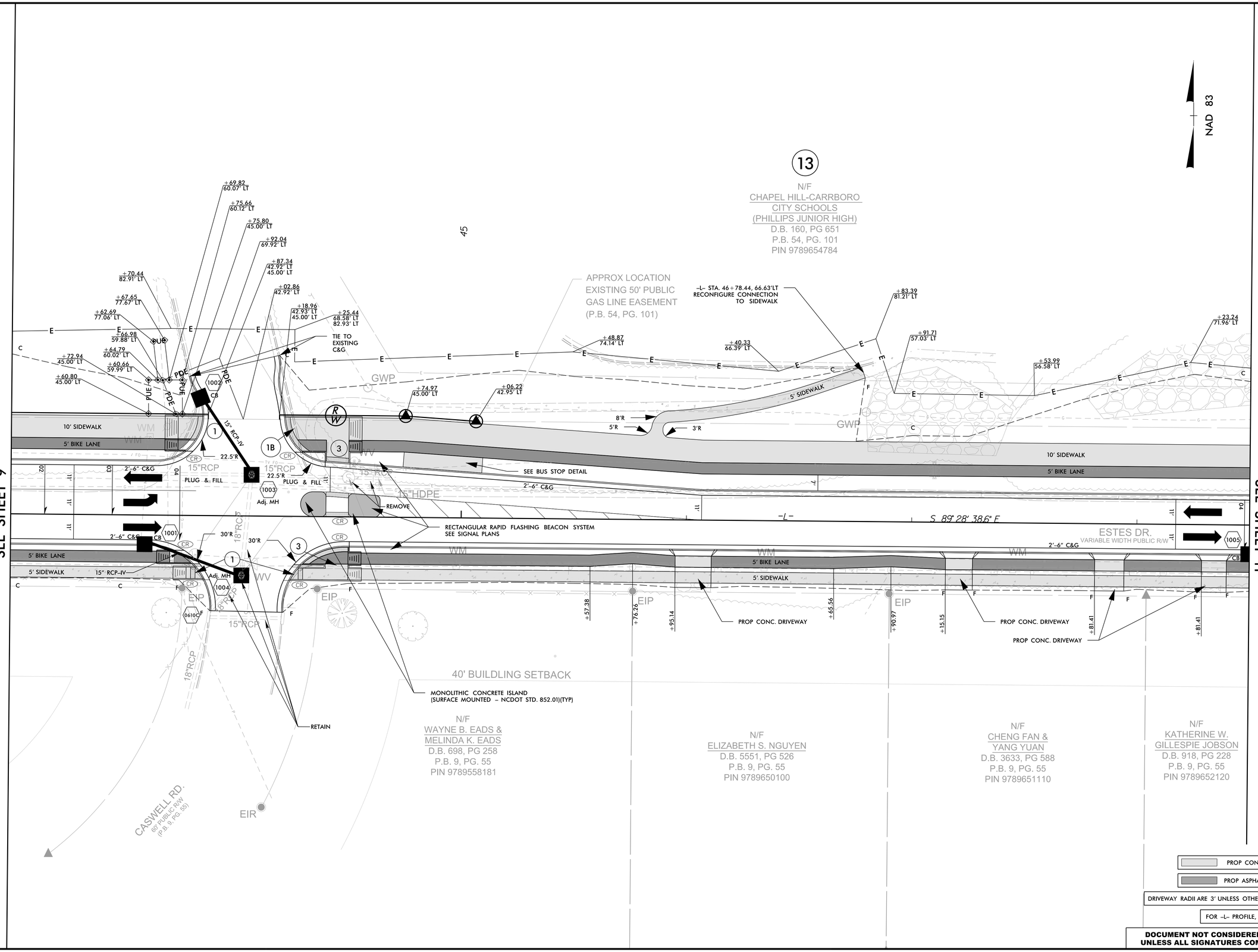
SCALE: 1"=20'

9



TOWN OF CHAPEL HILL

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL ANDREW P. YOUNG

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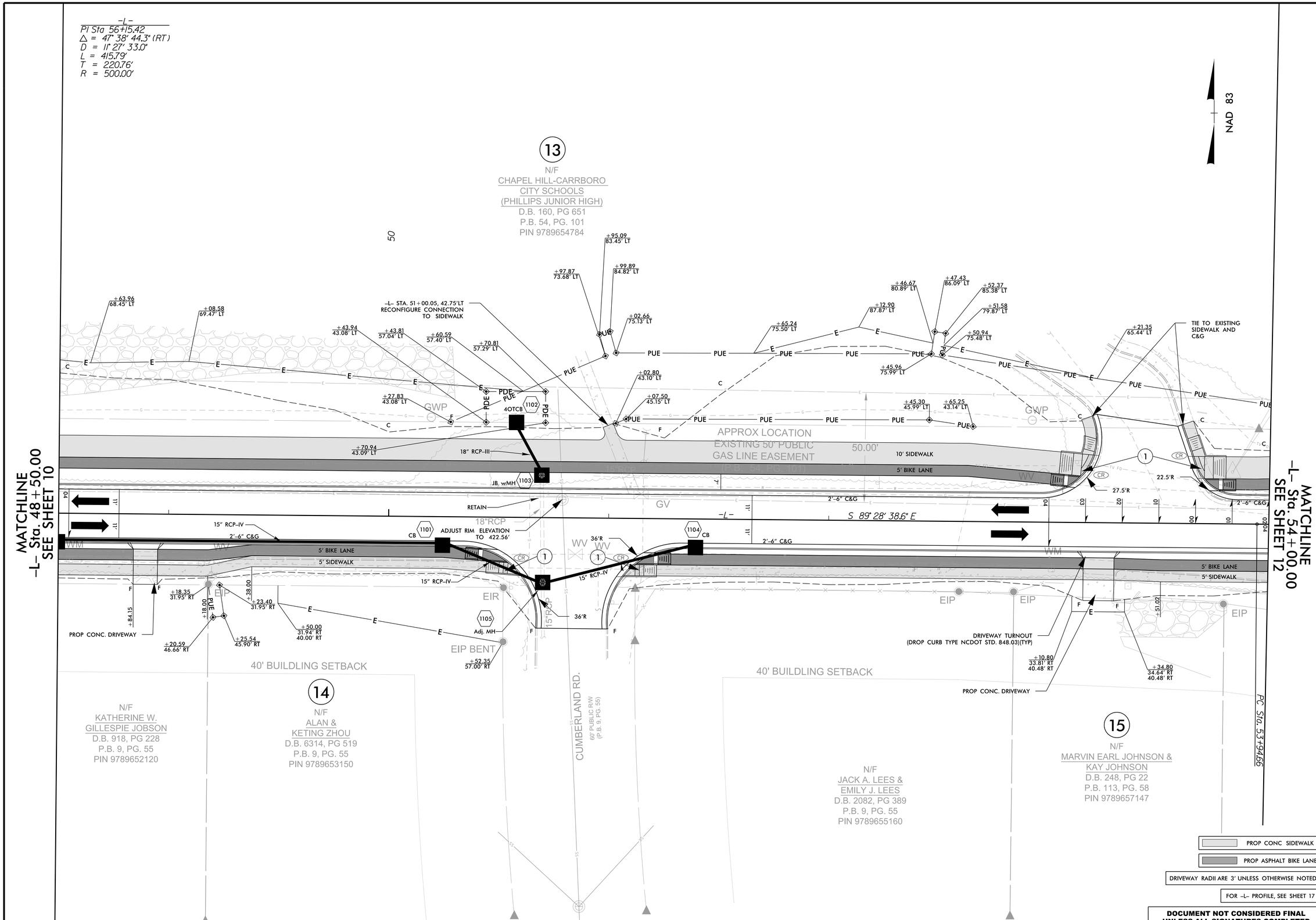
10



TOWN OF CHAPEL HILL

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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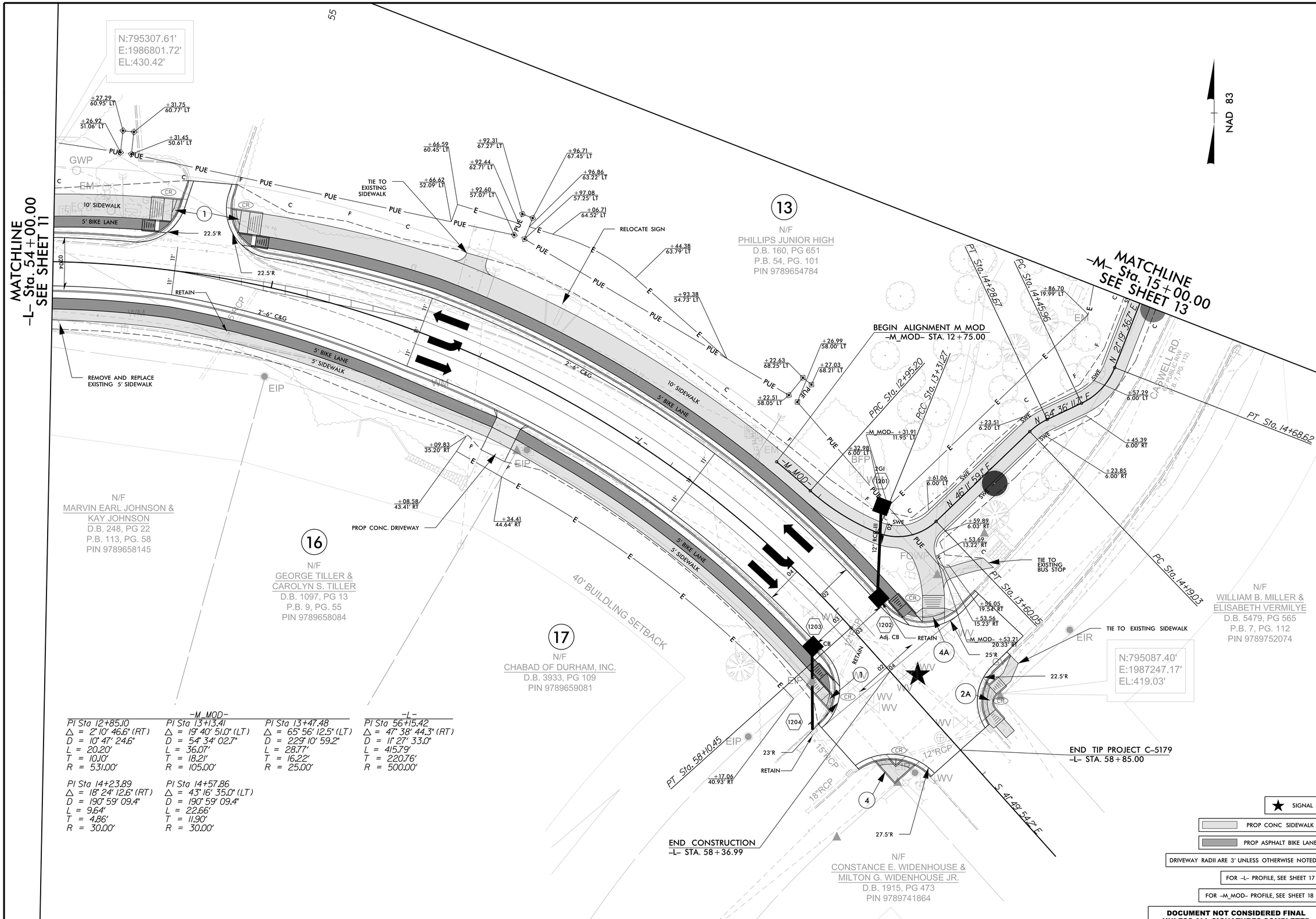
11



–M_MOD–			–L–
PI Sta 12+85.10	PI Sta 13+13.41	PI Sta 13+47.48	PI Sta 56+15.42
△ = 2° 10' 46.6" (RT)	△ = 19° 40' 51.0" (LT)	△ = 65° 56' 12.5" (LT)	△ = 47° 38' 44.3" (RT)
D = 10° 47' 24.6"	D = 54° 34' 02.7"	D = 229° 10' 59.2"	D = 11° 27' 33.0"
L = 20.20'	L = 36.07'	L = 28.77'	L = 415.79'
T = 10.10'	T = 18.21'	T = 16.22'	T = 220.76'
R = 531.00'	R = 105.00'	R = 25.00'	R = 500.00'
PI Sta 14+23.89	PI Sta 14+57.86		
△ = 18° 24' 12.6" (RT)	△ = 43° 16' 35.0" (LT)		
D = 190° 59' 09.4"	D = 190° 59' 09.4"		
L = 9.64'	L = 22.66'		
T = 4.86'	T = 11.90'		
R = 30.00'	R = 30.00'		

★ SIGNAL

PROP CONC SIDEWALK

PROP ASPHALT BIKE LANE

DRIVEWAY RADII ARE 3' UNLESS OTHERWISE NOTED

FOR –L– PROFILE, SEE SHEET 17

FOR –M_MOD– PROFILE, SEE SHEET 18

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TOWN OF CHAPEL HILL

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

C-5179 - ESTES DRIVE BICYCLE & PEDESTRIAN IMPROVEMENTS

ROADWAY ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER ANDREW T YOUNG PRELIMINARY PLANS NOT FOR CONSTRUCTION

STEWART

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HYDRAULICS ENGINEER

vhb

VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

DATE: OCTOBER 30, 2019

REVISIONS:

NO.	DATE

PROJECT NO.: A15005.00

SCALE: 1"=20'

12

-M_MOD-

PI Sta 15+56.90
Δ = 35° 38′ 31.3″ (LT)
D = 190° 59′ 09.4″
L = 18.66′
T = 9.64′
R = 30.00′

PI Sta 15+87.19
Δ = 36° 45′ 34.8″ (RT)
D = 190° 59′ 09.4″
L = 19.25′
T = 9.97′
R = 30.00′

PI Sta 16+45.91
Δ = 11° 29′ 40.2″ (LT)
D = 57° 17′ 44.8″
L = 20.06′
T = 10.06′
R = 100.00′

PI Sta 18+95.44
Δ = 5° 32′ 51.8″ (LT)
D = 15° 54′ 55.8″
L = 34.86′
T = 17.44′
R = 360.00′

PI Sta 19+29.46
Δ = 30° 56′ 51.4″ (LT)
D = 95° 29′ 34.7″
L = 32.41′
T = 16.61′
R = 60.00′

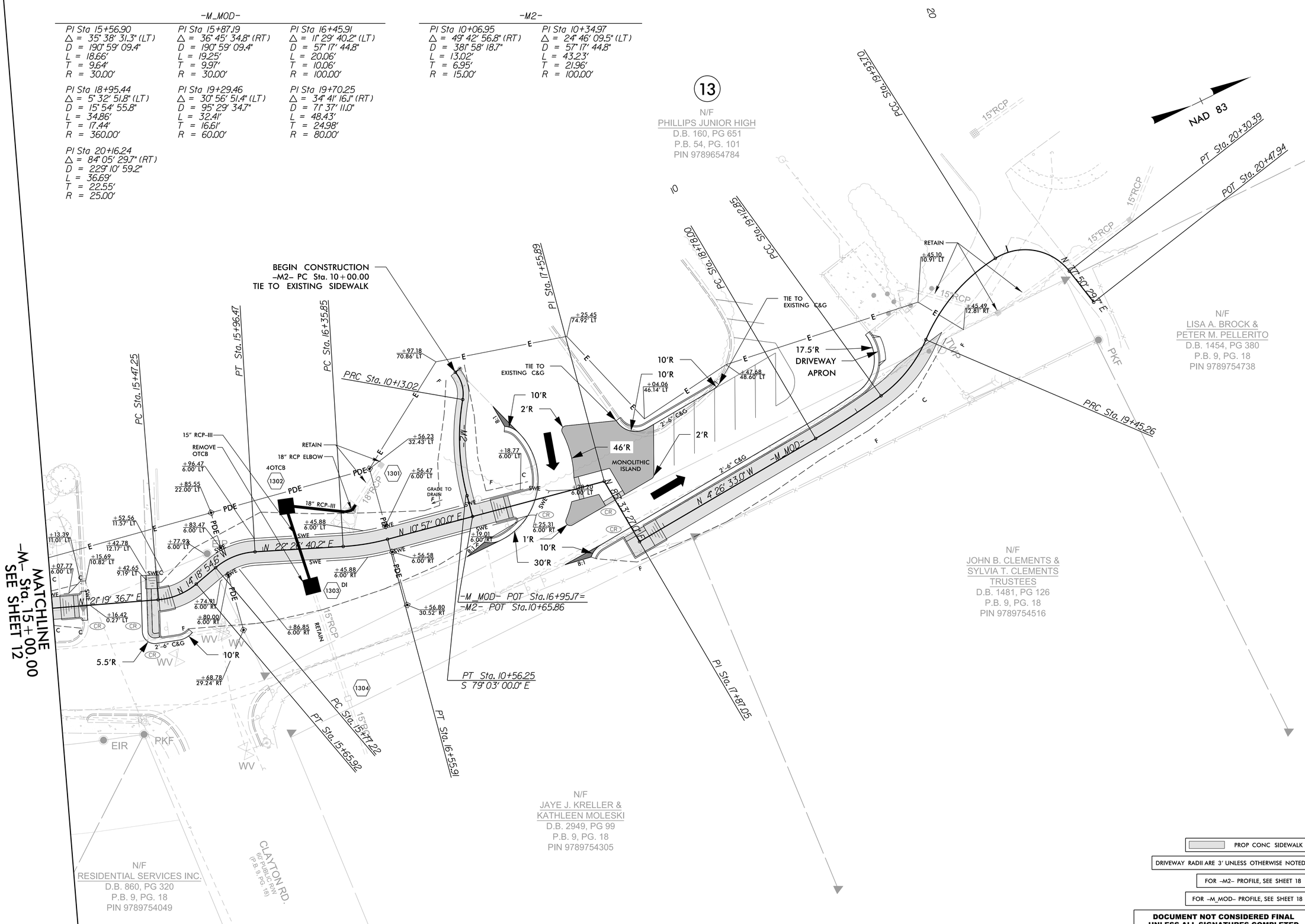
PI Sta 19+70.25
Δ = 34° 41′ 16.1″ (RT)
D = 71° 37′ 11.0″
L = 48.43′
T = 24.98′
R = 80.00′

PI Sta 20+16.24
Δ = 84° 05′ 29.7″ (RT)
D = 229° 10′ 59.2″
L = 36.69′
T = 22.55′
R = 25.00′

-M2-

PI Sta 10+06.95
Δ = 49° 42′ 56.8″ (RT)
D = 381° 58′ 18.7″
L = 13.02′
T = 6.95′
R = 15.00′

PI Sta 10+34.97
Δ = 24° 46′ 09.5″ (LT)
D = 57° 17′ 44.8″
L = 43.23′
T = 21.96′
R = 100.00′



PROP CONC SIDEWALK

DRIVEWAY RADII ARE 3′ UNLESS OTHERWISE NOTED

FOR -M2- PROFILE, SEE SHEET 18

FOR -M_MOD- PROFILE, SEE SHEET 18

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TOWN OF CHAPEL HILL

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

C-5179 - ESTES DRIVE BICYCLE & PEDESTRIAN IMPROVEMENTS

ROADWAY ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042407 ANDREW P. YOUNG

PRELIMINARY PLANS
NOT FOR CONSTRUCTION
04/24/2017

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HYDRAULICS ENGINEER

vhb
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

DATE: OCTOBER 30, 2019

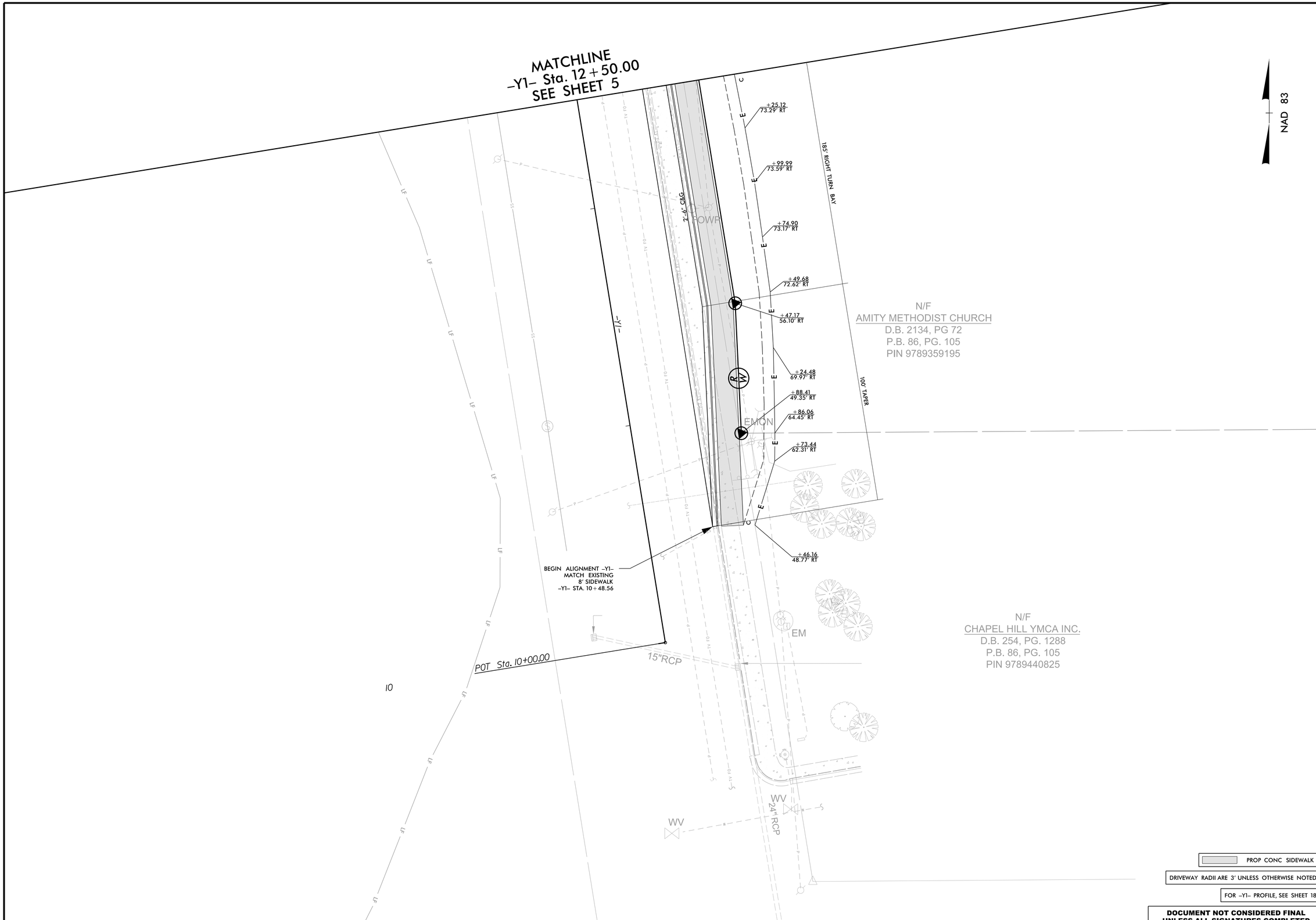
REVISIONS:

NO.	DATE

PROJECT NO.:
A15005.00

SCALE: 1″=20′

13



PROP CONC SIDEWALK

DRIVEWAY RADII ARE 3' UNLESS OTHERWISE NOTED

FOR -Y1- PROFILE, SEE SHEET 18

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TOWN OF CHAPEL HILL

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

C-5179 - ESTES DRIVE BICYCLE & PEDESTRIAN IMPROVEMENTS

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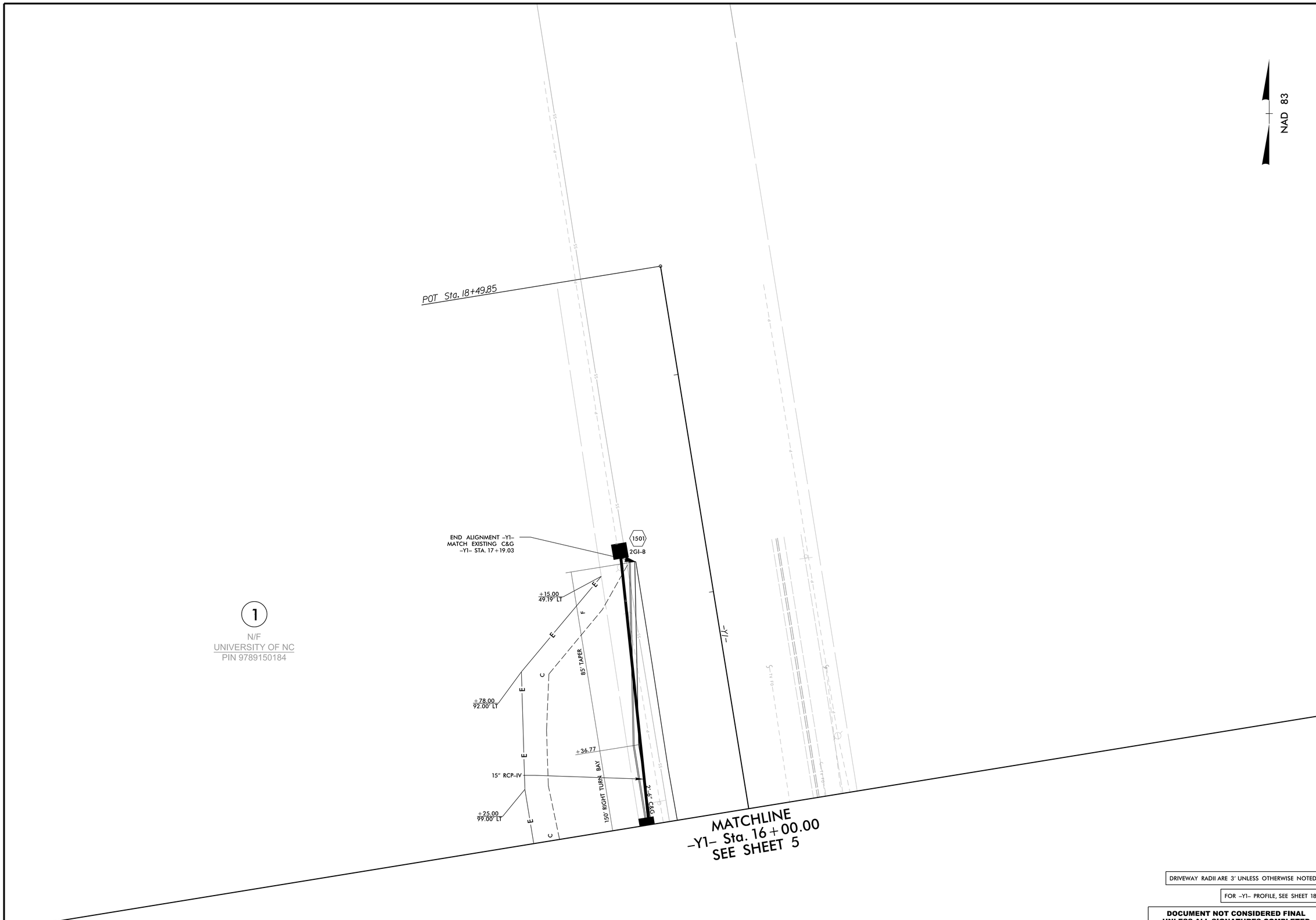

DRIVEWAY RADII ARE 3' UNLESS OTHERWISE NOTED

FOR –Y1– PROFILE, SEE SHEET 18

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TOWN OF CHAPEL HILL

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A15005.00

SCALE: 1"=20'

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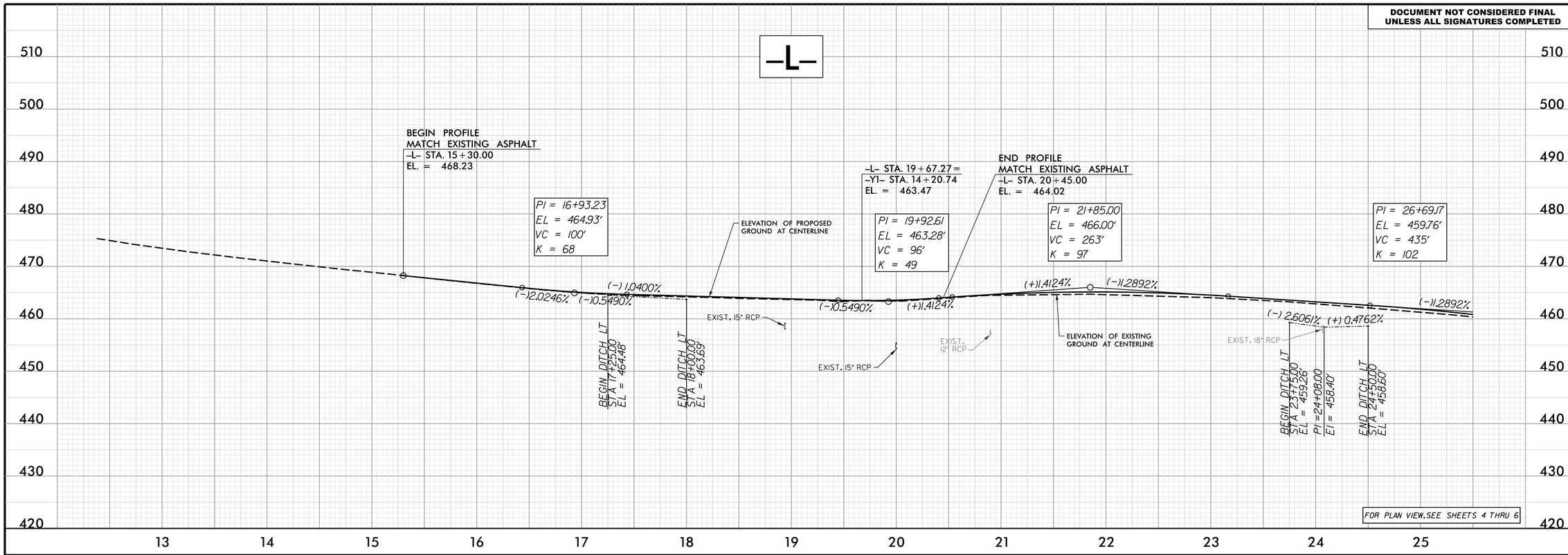

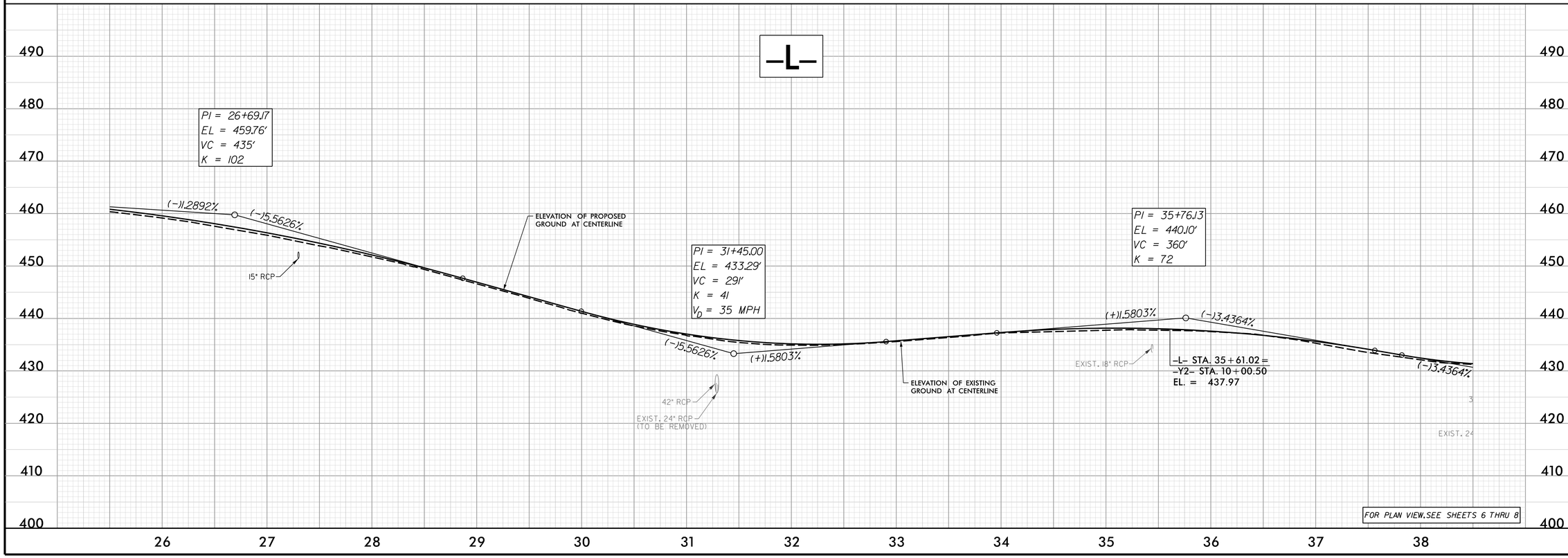

TOWN OF CHAPEL HILL

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

C-5179 - ESTES DRIVE BICYCLE & PEDESTRIAN IMPROVEMENTS

ROADWAY ENGINEER

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SCALE: 1"=50'

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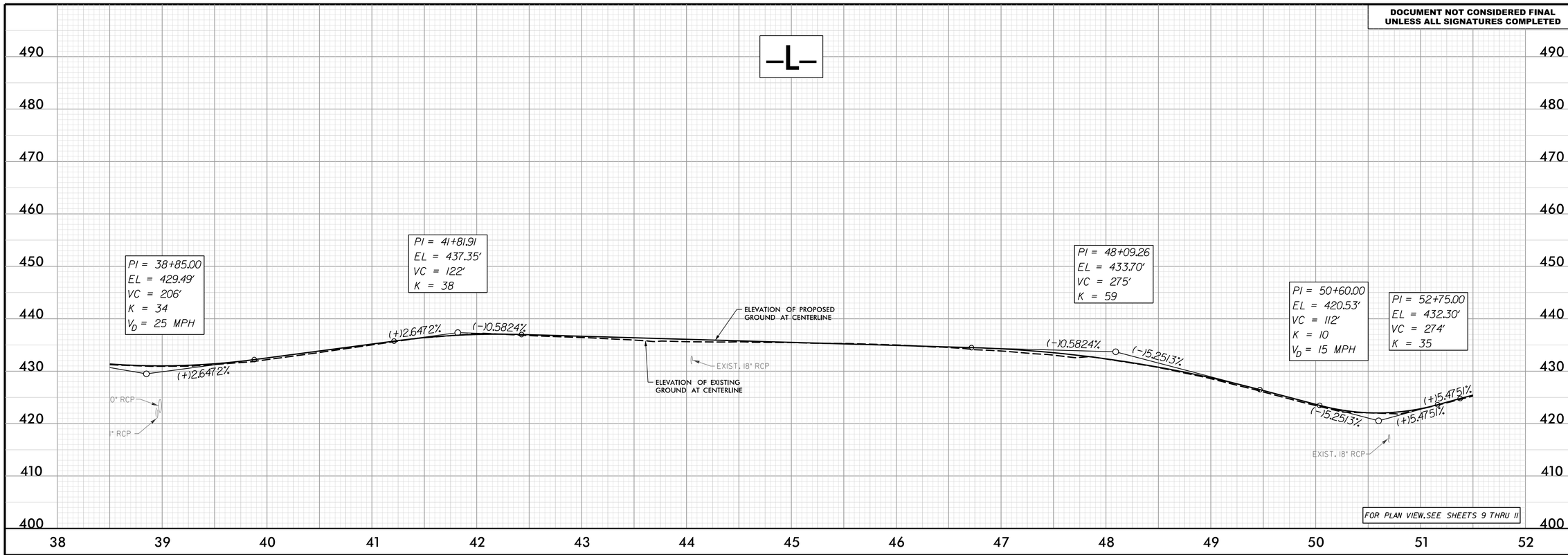

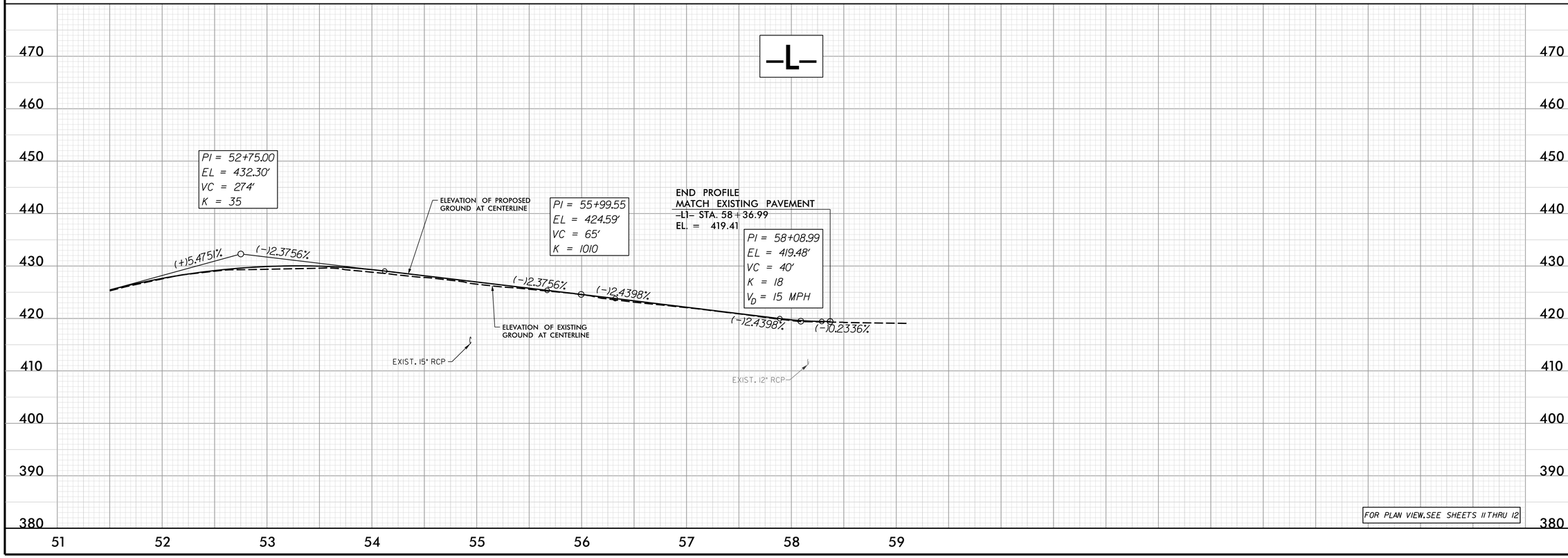

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SCALE: 1"=50'

17

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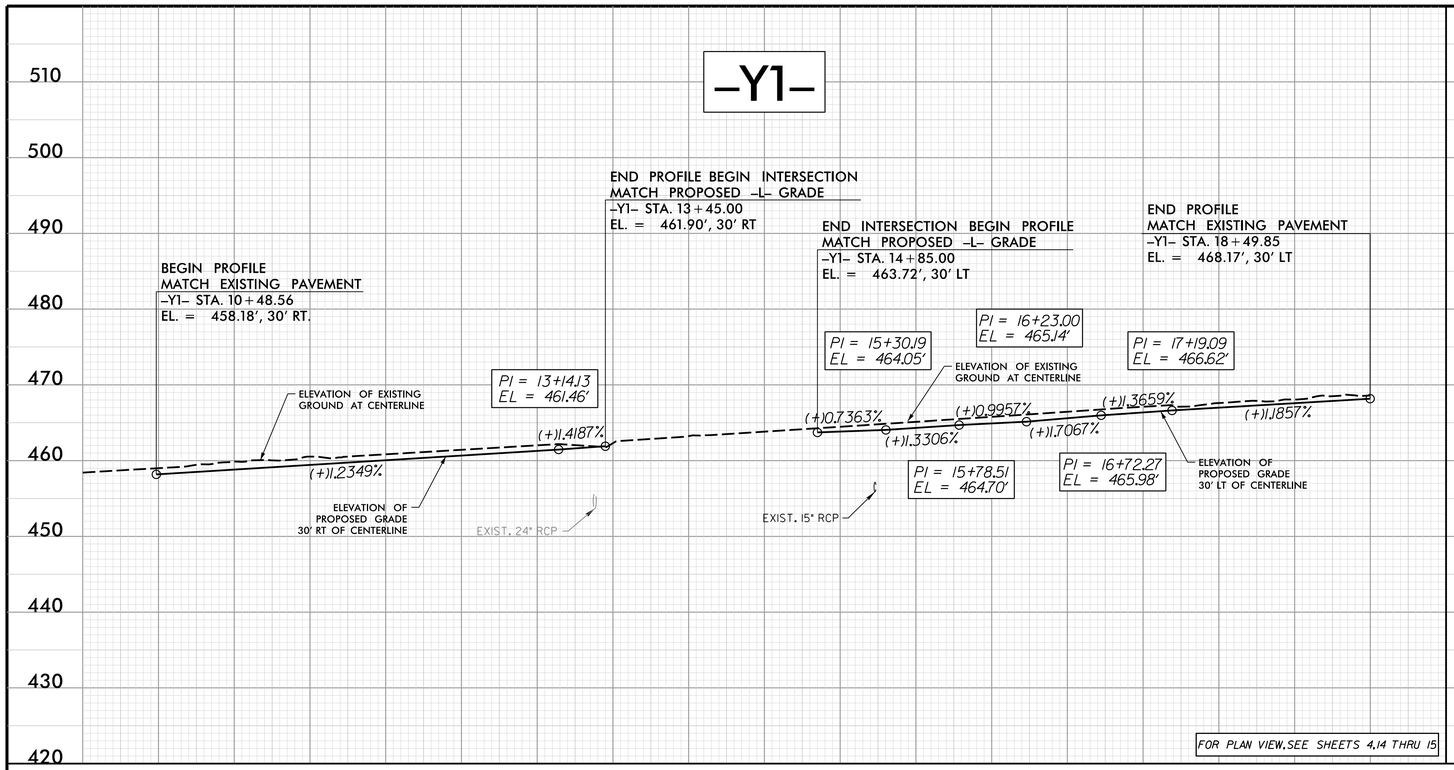

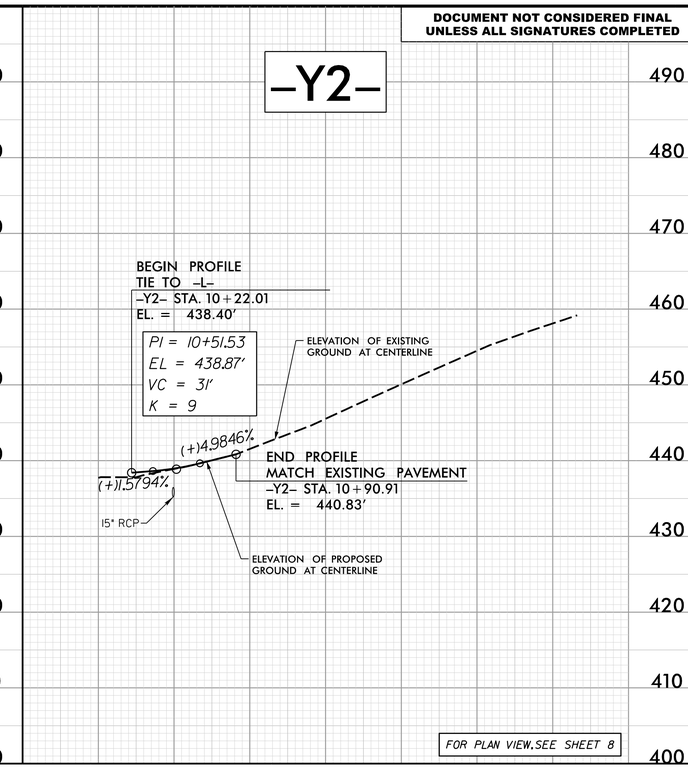

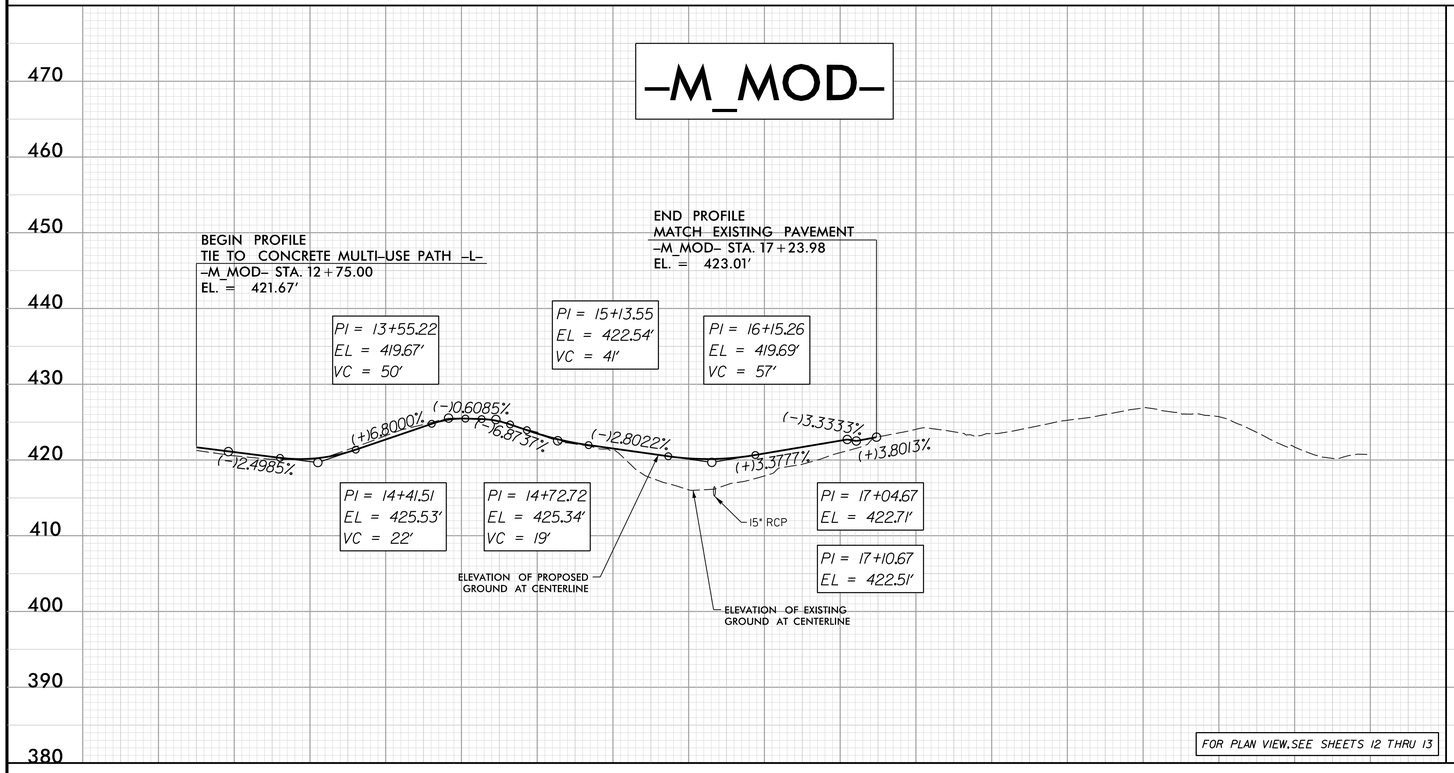

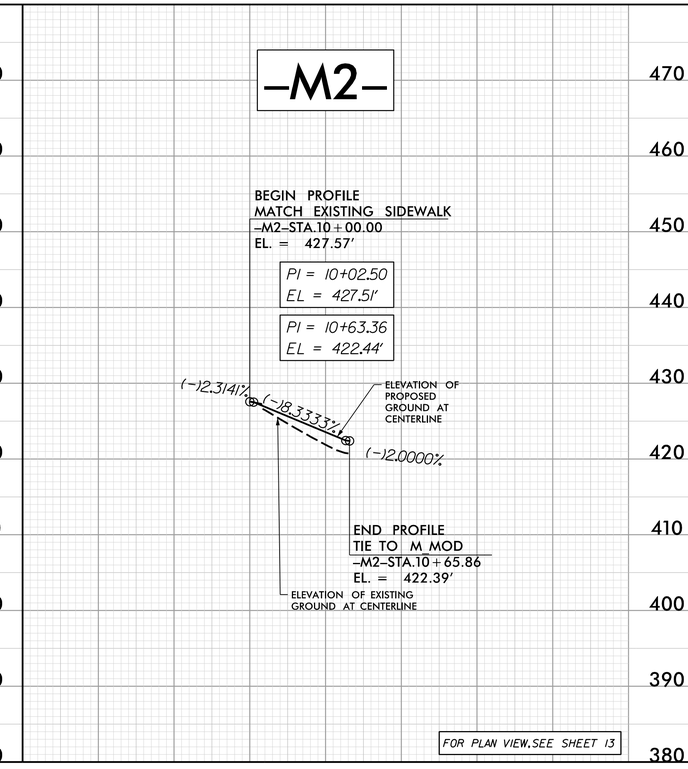

TOWN OF CHAPEL HILL

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C-5179 - ESTES DRIVE BICYCLE & PEDESTRIAN IMPROVEMENTS

ROADWAY ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032407 ANDREW P. YOUNG
PRELIMINARY PLANS
NOT FOR CONSTRUCTION

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DATE: OCTOBER 30, 2019

REVISIONS:

NO.	DATE

PROJECT NO.: A15005.00

SCALE: 1"=50'

T.I.P.: C-5179

CONTRACT:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
ORANGE COUNTY
LOCATION: ESTES DR. BETWEEN MLK JR. BLVD AND CASWELL RD.

TIP NO.	SHEET NO.
C-5179	PMP-1

APPROVED:

DATE:

SEAL:

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ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - 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
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.10	PAVEMENT MARKINGS - SCHOOL AREAS

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
T1	WHITE EDGE LINE (4", 90 MIL)
T2	WHITE SOLID LANE LINE (4", 90 MIL)
T5	2 FT.-6 FT./SP WHITE MINISKIP (4", 90 MIL)
T13	YELLOW DOUBLE CENTER (4", 90 MIL)
T14	2 FT.-6 FT./SP YELLOW MINISKIP (4", 90 MIL)
T22	10 FT. WHITE SKIP (6", 90 MIL)
T23	3 FT.-9 FT./SP WHITE MINISKIP (6", 90 MIL)
T40	WHITE GORELINE (8", 90 MIL)
T41	WHITE DIAGONAL (8", 90 MIL)
T42	YELLOW DIAGONAL (8", 90 MIL)
T50	WHITE GORELINE (12", 90 MIL)
T61	WHITE STOPBAR (24", 90 MIL)
T62	WHITE CROSSWALK LINE (24", 90 MIL)
T70	LEFT TURN ARROW (90 MIL)
T71	RIGHT TURN ARROW (90 MIL)
T72	STRAIGHT ARROW (90 MIL)
T73	COMBO. LEFT/STRAIGHT ARROW (90 MIL)
T90	BICYCLE SYMBOL, HEATED-IN-PLACE (90 MIL)
T91	BICYCLE STRAIGHT ARROW, HEATED-IN-PLACE (90 MIL)
T92	BICYCLE LEFT ARROW, HEATED-IN-PLACE (90 MIL)
T94	SHARROW, HEATED-IN-PLACE (90 MIL)
T100	ALPHANUMERIC CHAR. (90 MIL)
T102	12" YIELD LINE TRIANGLE (90 MIL)
T103	24" YIELD LINE TRIANGLE (90 MIL)
AC	24" GREEN MARKING LINES, (90 MILS)

GENERAL NOTES

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
ESTES DR.	THERMOPLASTIC	NONE
MLK JR. BLVD	THERMOPLASTIC	NONE
CASWELL RD.	THERMOPLASTIC	NONE

B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS.

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE SHEET, INDEX OF SHEETS, GENERAL NOTES, PAVEMENT MARKING SCHEDULE, AND LIST OF STANDARD DRAWINGS
PMP-2	PAVEMENT MARKING DETAIL
PMP-3	PAVEMENT MARKING DETAIL
PMP-4	PAVEMENT MARKING DETAIL
PMP-5	PAVEMENT MARKING DETAIL
PMP-6	PAVEMENT MARKING DETAIL
PMP-7	PAVEMENT MARKING DETAIL
PMP-8	PAVEMENT MARKING DETAIL
PMP-9	PAVEMENT MARKING DETAIL
PMP-10	PAVEMENT MARKING DETAIL
PMP-11	PAVEMENT MARKING DETAIL
PMP-12	PAVEMENT MARKING DETAIL
PMP-13	PAVEMENT MARKING DETAIL

PLAN PREPARED BY: STEWART

ANDY YOUNG, PE — PROJECT ENGINEER

JODY COLE — PROJECT DESIGN ENGINEER

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1/23/2020
...\TIP\C5179_TC_PMP01.dgn
USER:hagan

TIP NO.	SHEET NO.
C-5179	PMP-2

APPROVED: _____

DATE: _____

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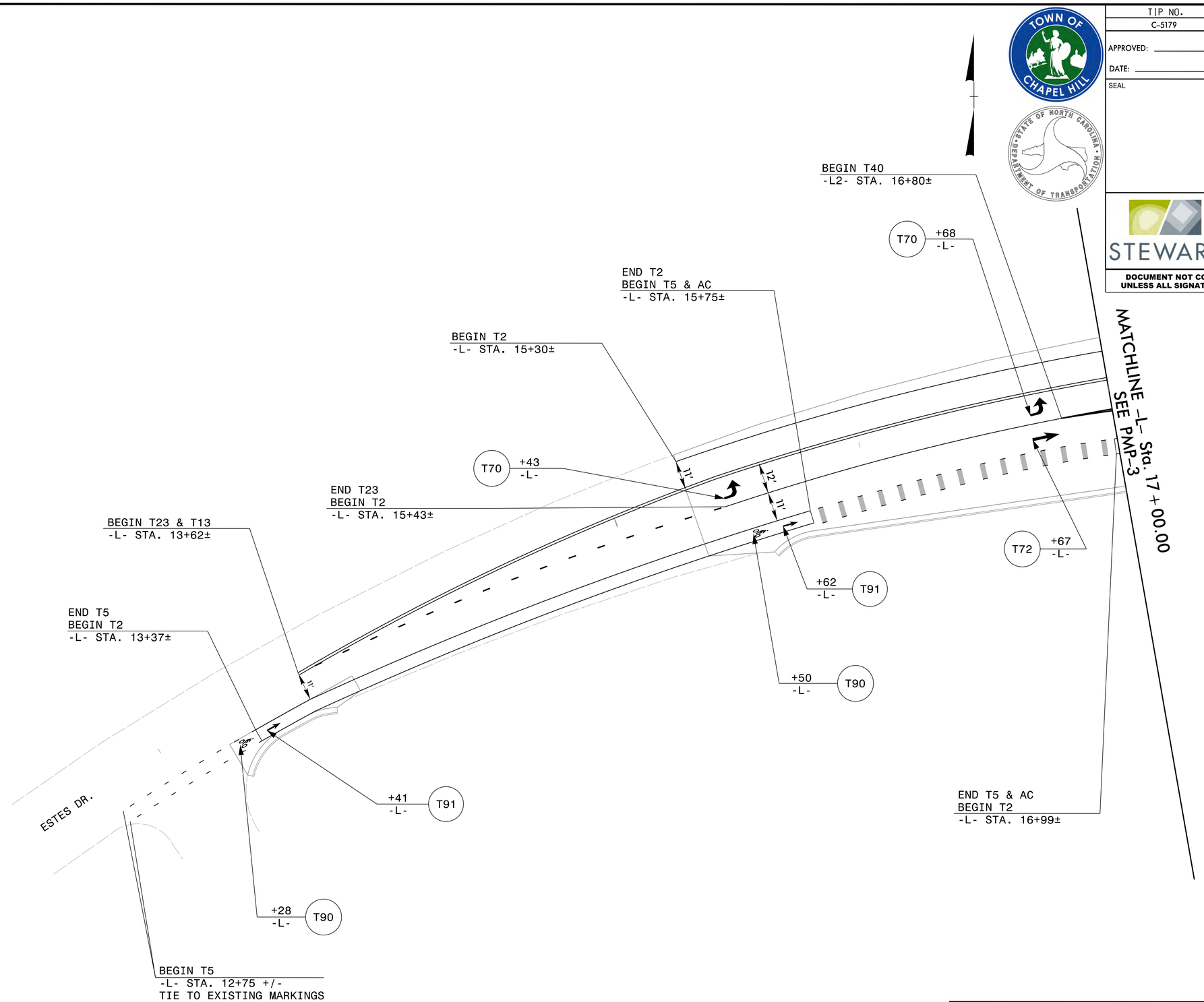

PAVEMENT MARKING DETAIL

1/23/2020
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USER:khagan

TIP NO.	SHEET NO.
C-5179	PMP-3

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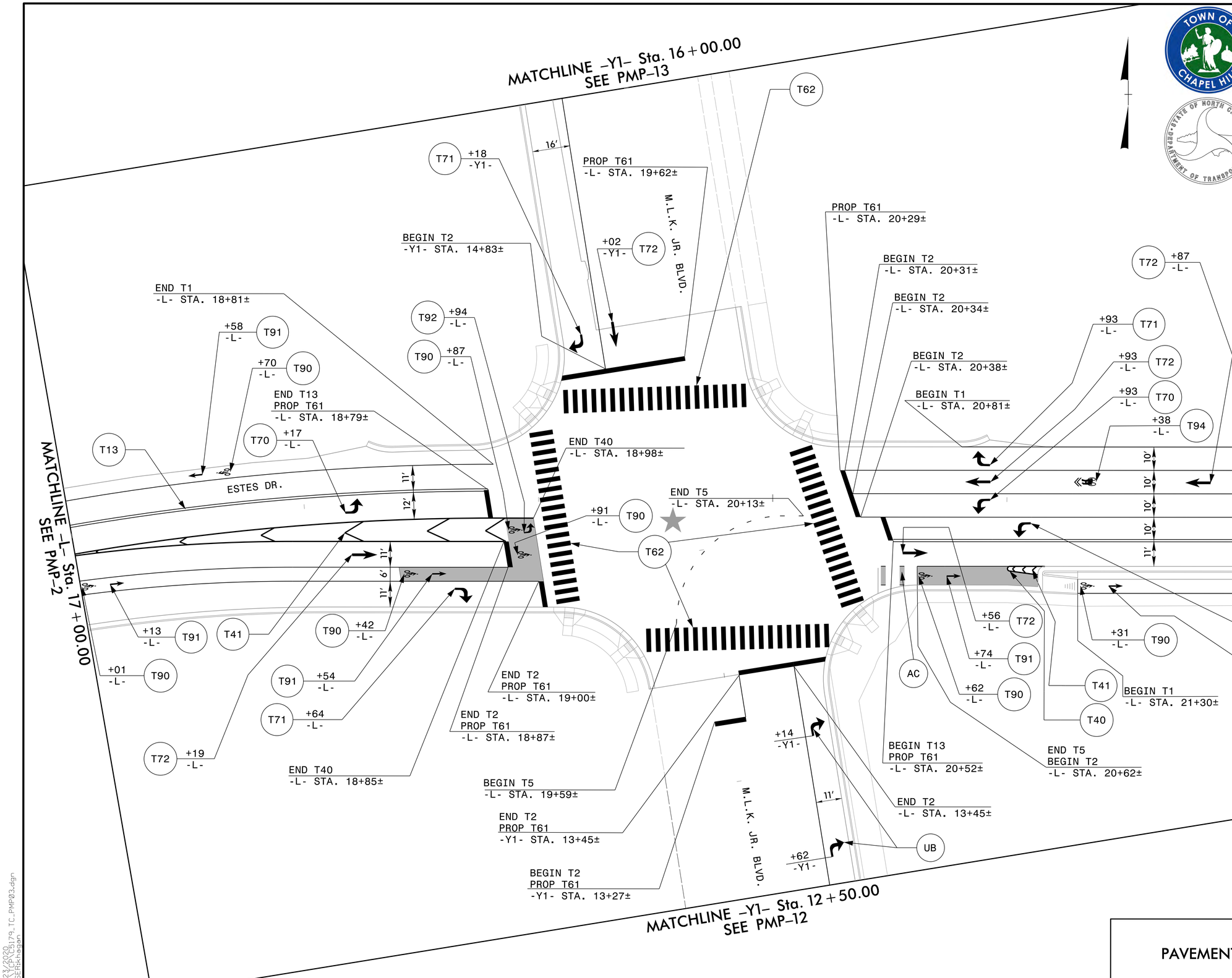

PAVEMENT MARKING DETAIL

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USER:khagan

TIP NO.	SHEET NO.
C-5179	PMP-4

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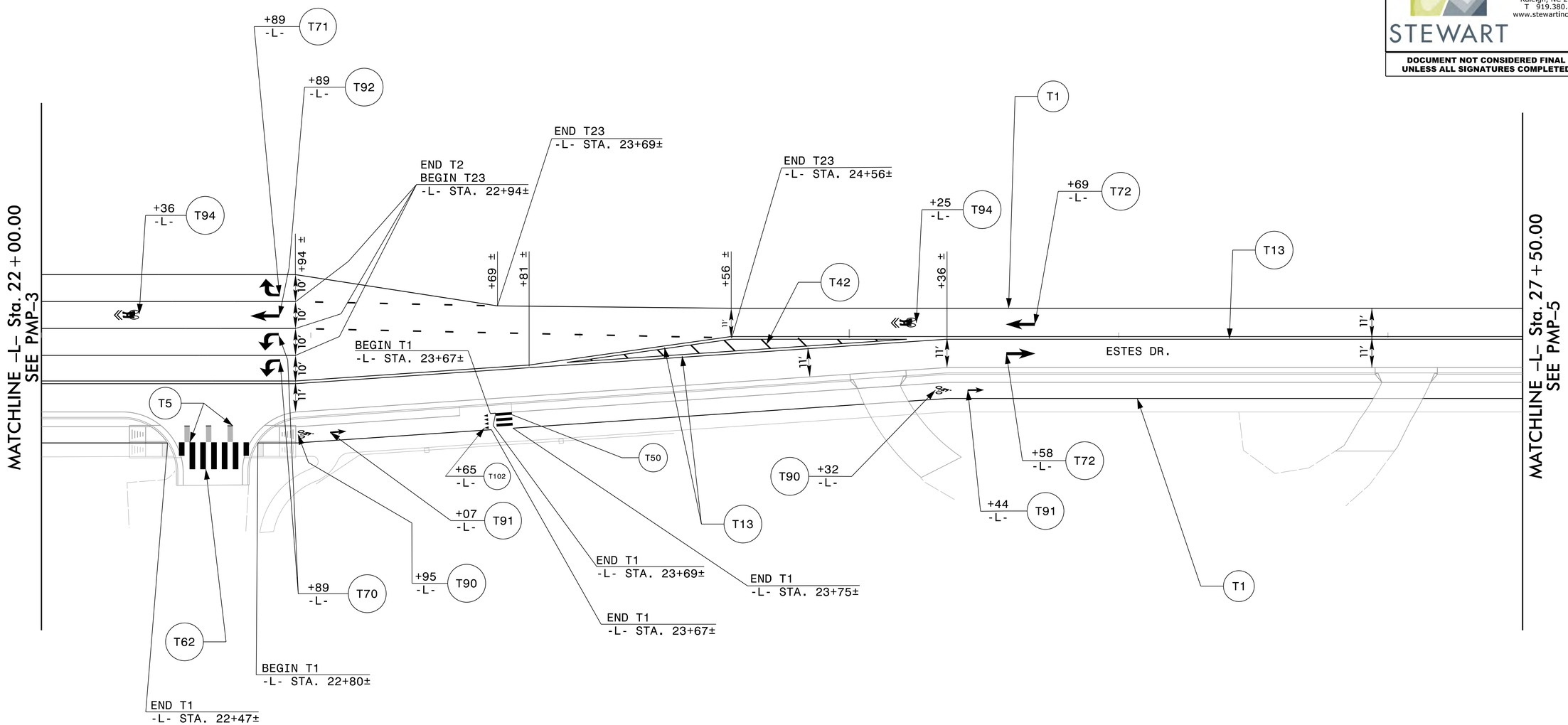

NOTE: T1 LINE SHALL NOT TRAVERSE DRIVEWAYS

PAVEMENT MARKING DETAIL

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USER:khagan

TIP NO.	SHEET NO.
C-5179	PMP-5

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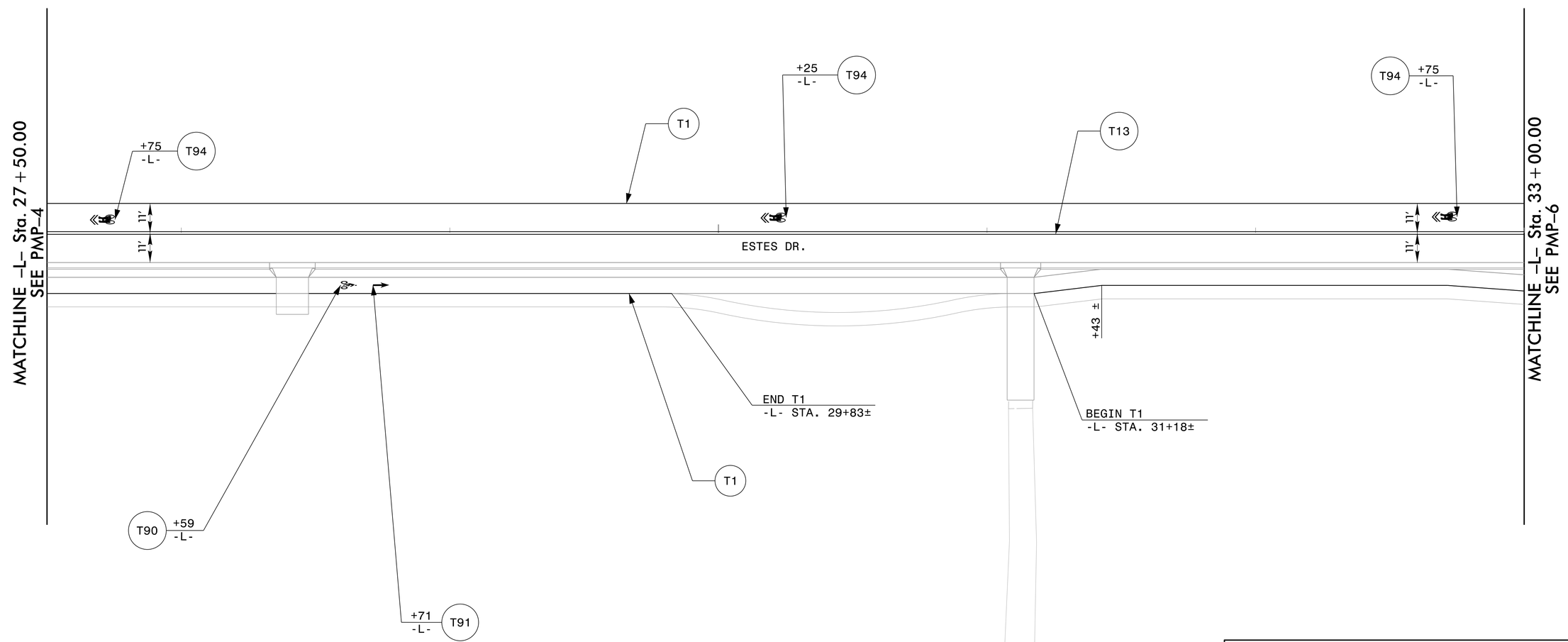

NOTE: T1 LINE SHALL NOT TRAVERSE DRIVEWAYS

PAVEMENT MARKING DETAIL

1/23/2020
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USER:khagan

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C-5179	PMP-6

APPROVED: _____

DATE: _____

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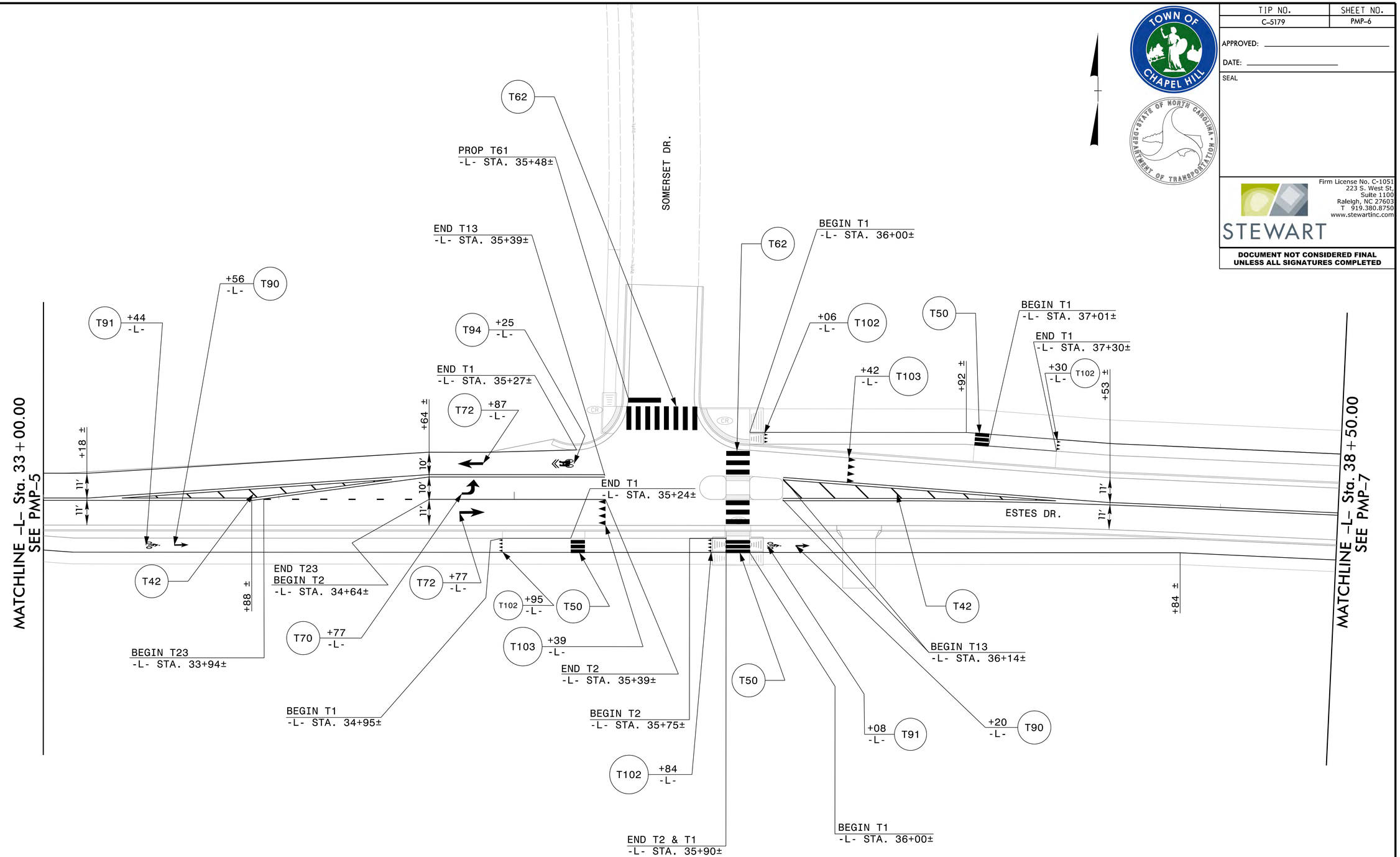

PAVEMENT MARKING DETAIL

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USER:khagan

TIP NO.	SHEET NO.
C-5179	PMP-7

APPROVED: _____

DATE: _____

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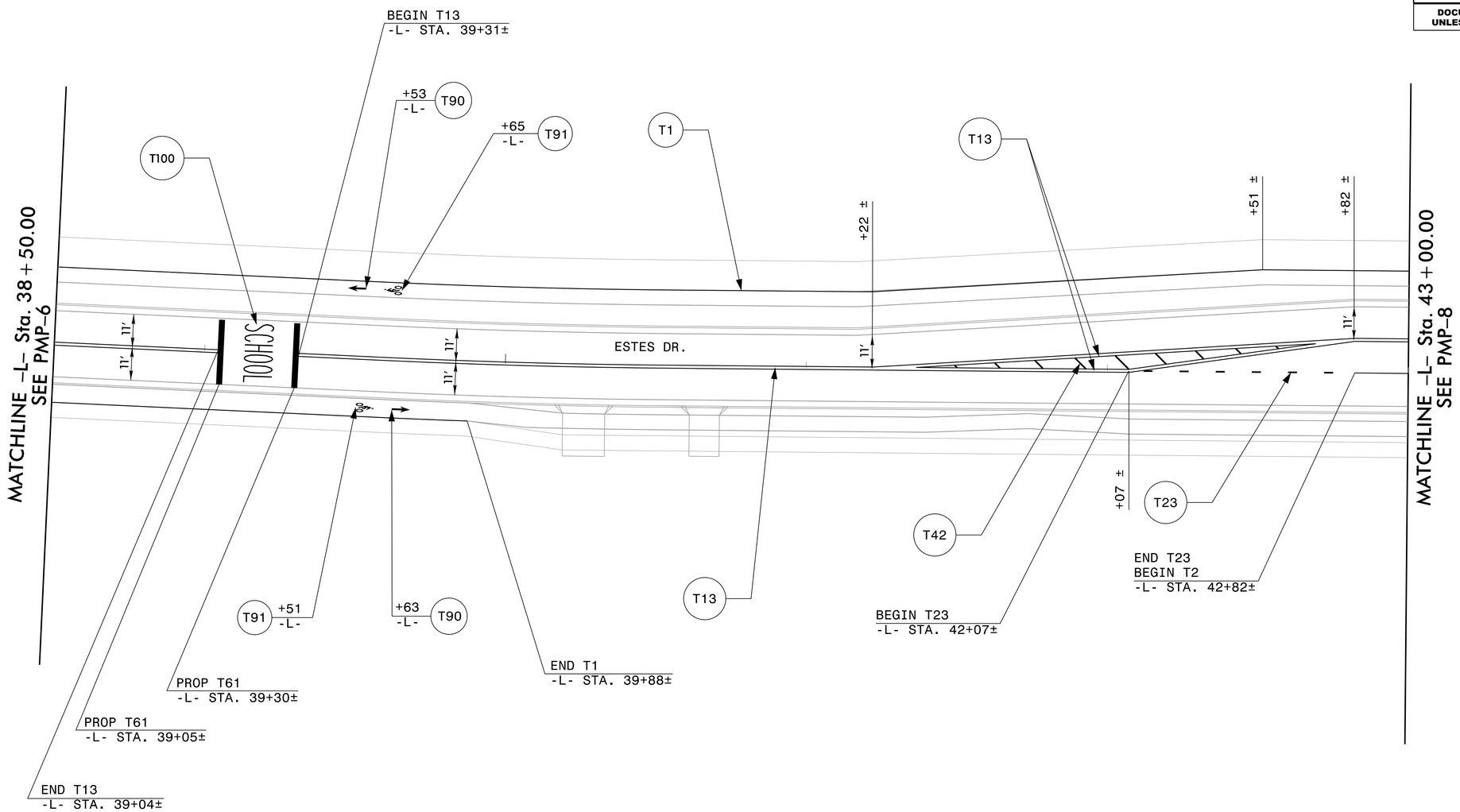

PAVEMENT MARKING DETAIL

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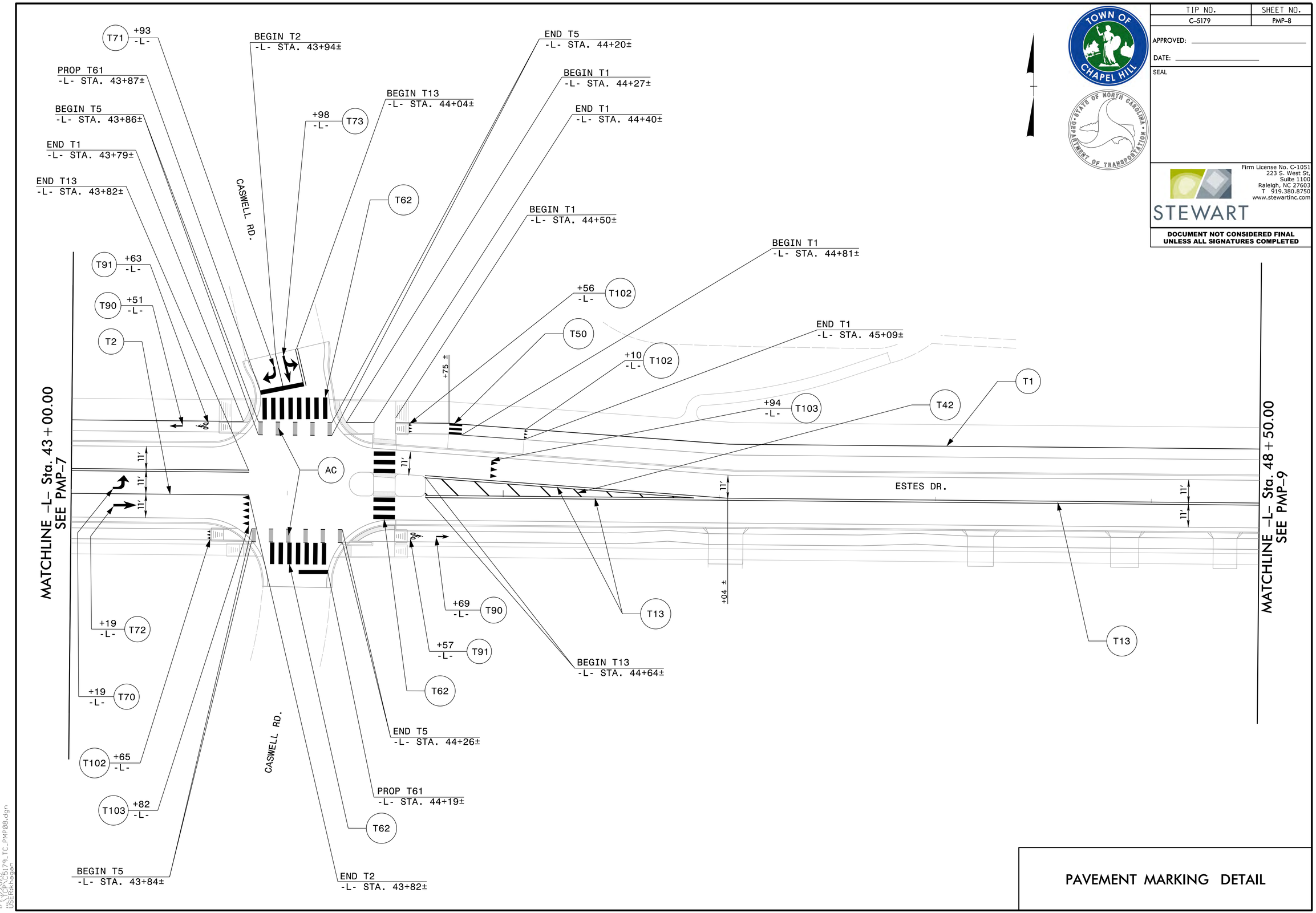

TIP NO.	SHEET NO.
C-5179	PMP-8

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DATE: _____

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PAVEMENT MARKING DETAIL

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\\TCP\C5179_TC_PMP08.dgn
USER:khagan

TIP NO.	SHEET NO.
C-5179	PMP-9

APPROVED: _____

DATE: _____

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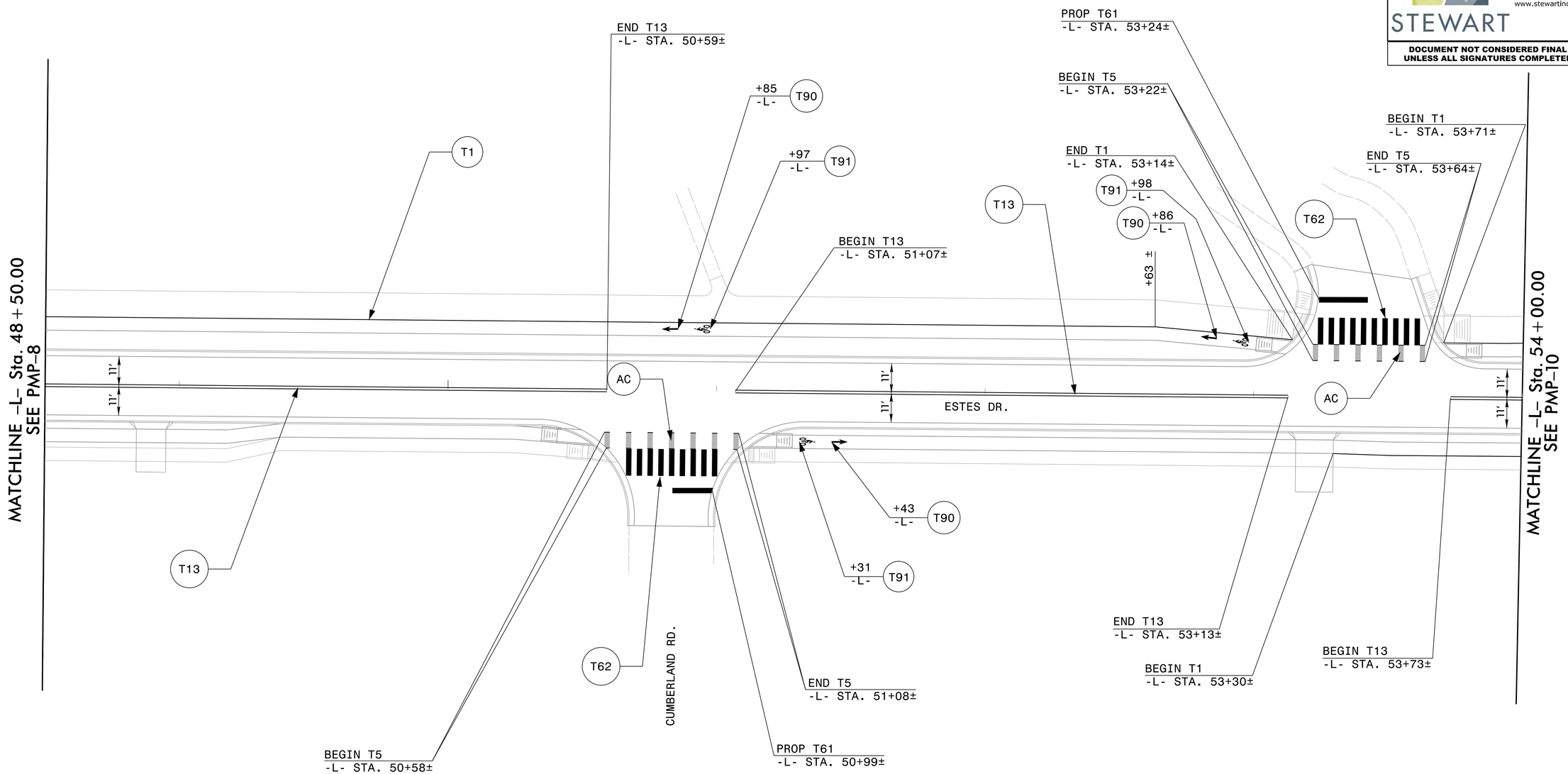

PAVEMENT MARKING DETAIL

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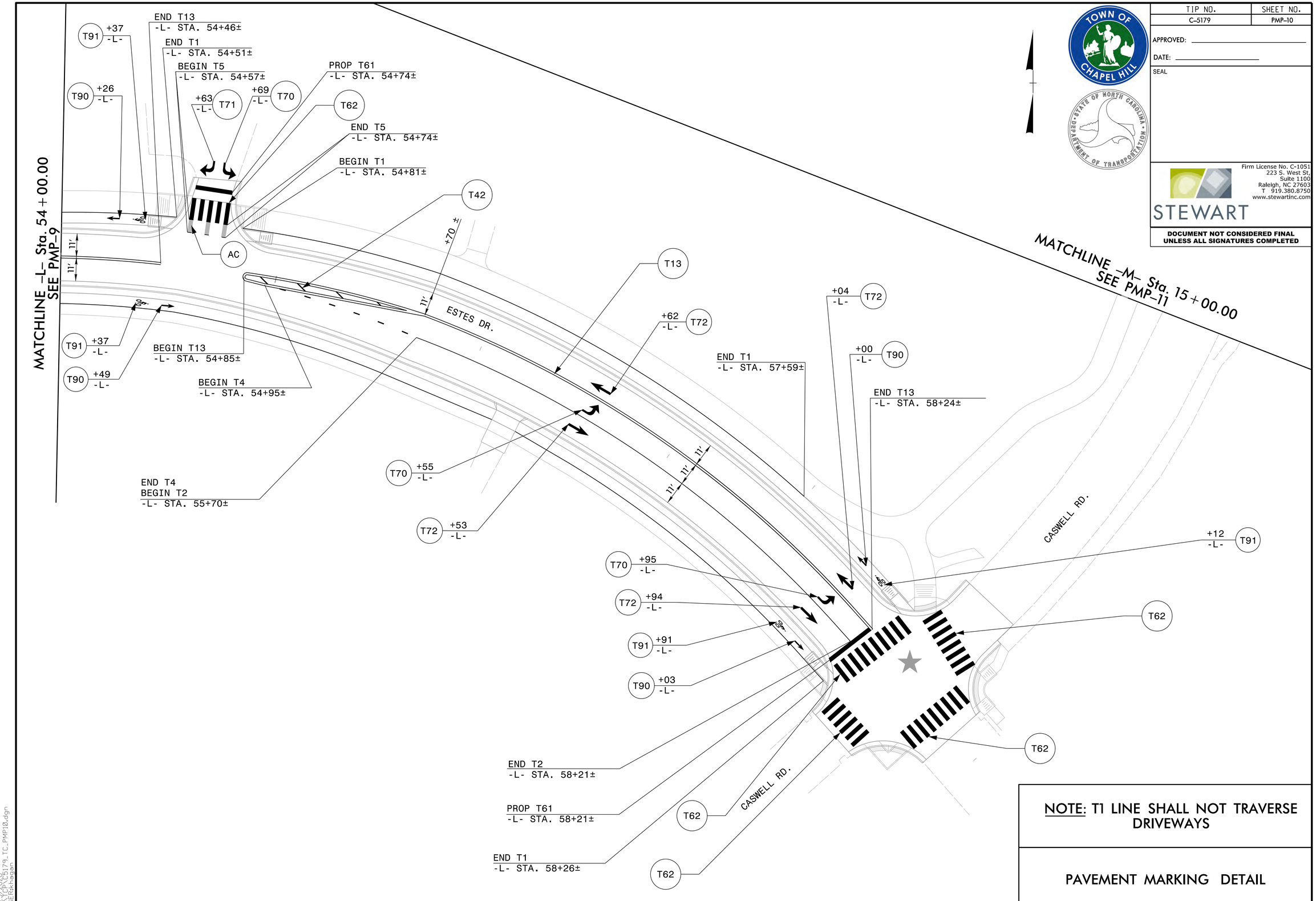

TIP NO.	SHEET NO.
C-5179	PMP-10

APPROVED: _____

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PAVEMENT MARKING DETAIL

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USER:hagan

TIP NO.	SHEET NO.
C-5179	PMP-11

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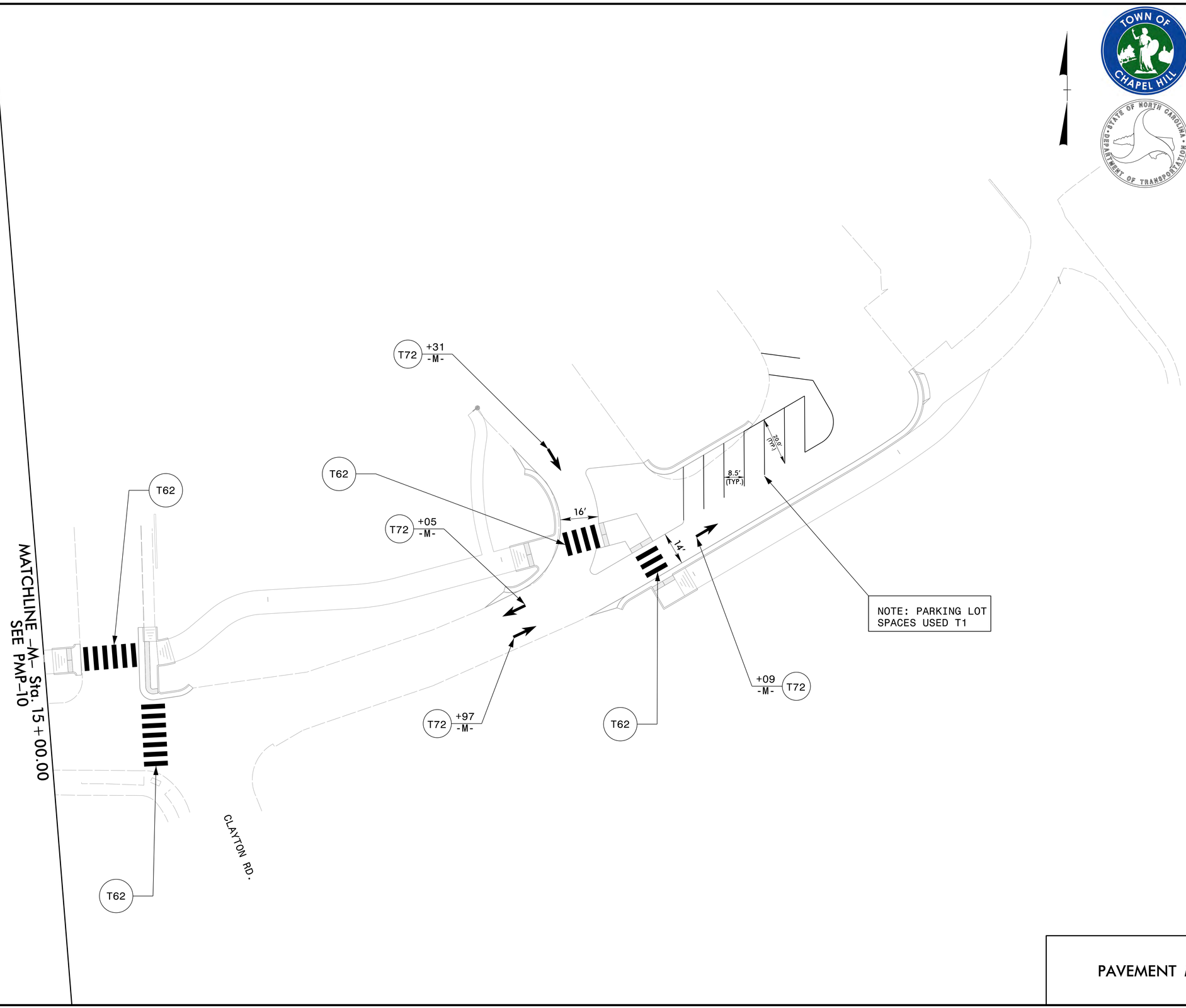

PAVEMENT MARKING DETAIL

1/23/2020
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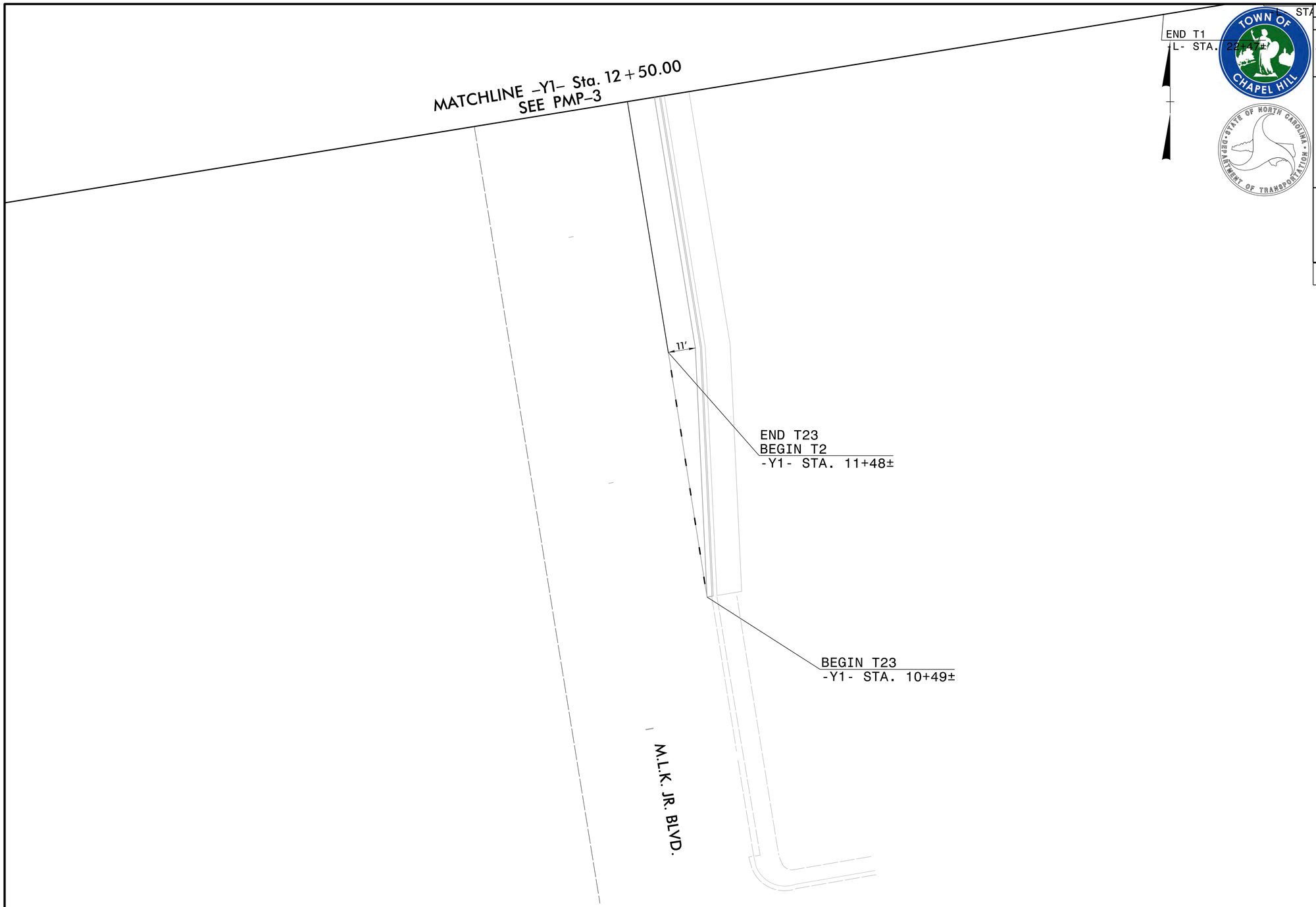
USER:kkhagan



TIP NO.	SHEET NO.
C-5179	PMP-12

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DATE: _____

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PAVEMENT MARKING DETAIL

1/23/2020
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USER:khagan

TIP NO.	SHEET NO.
C-5179	PMP-13

APPROVED: _____

DATE: _____

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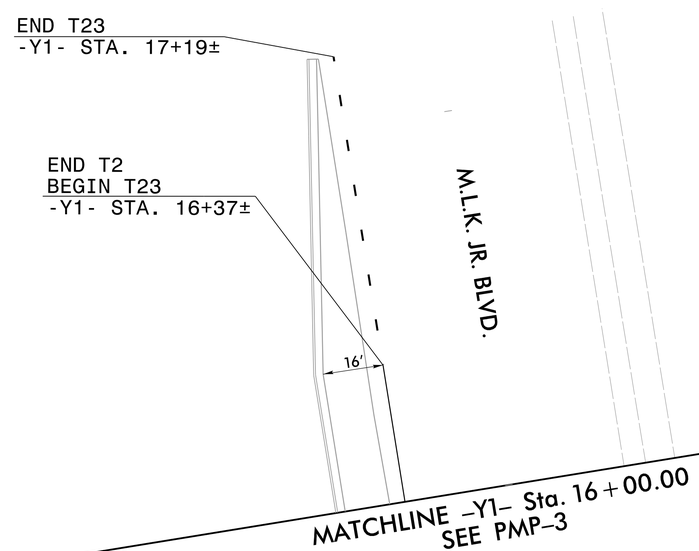

PAVEMENT MARKING DETAIL

1/23/2020
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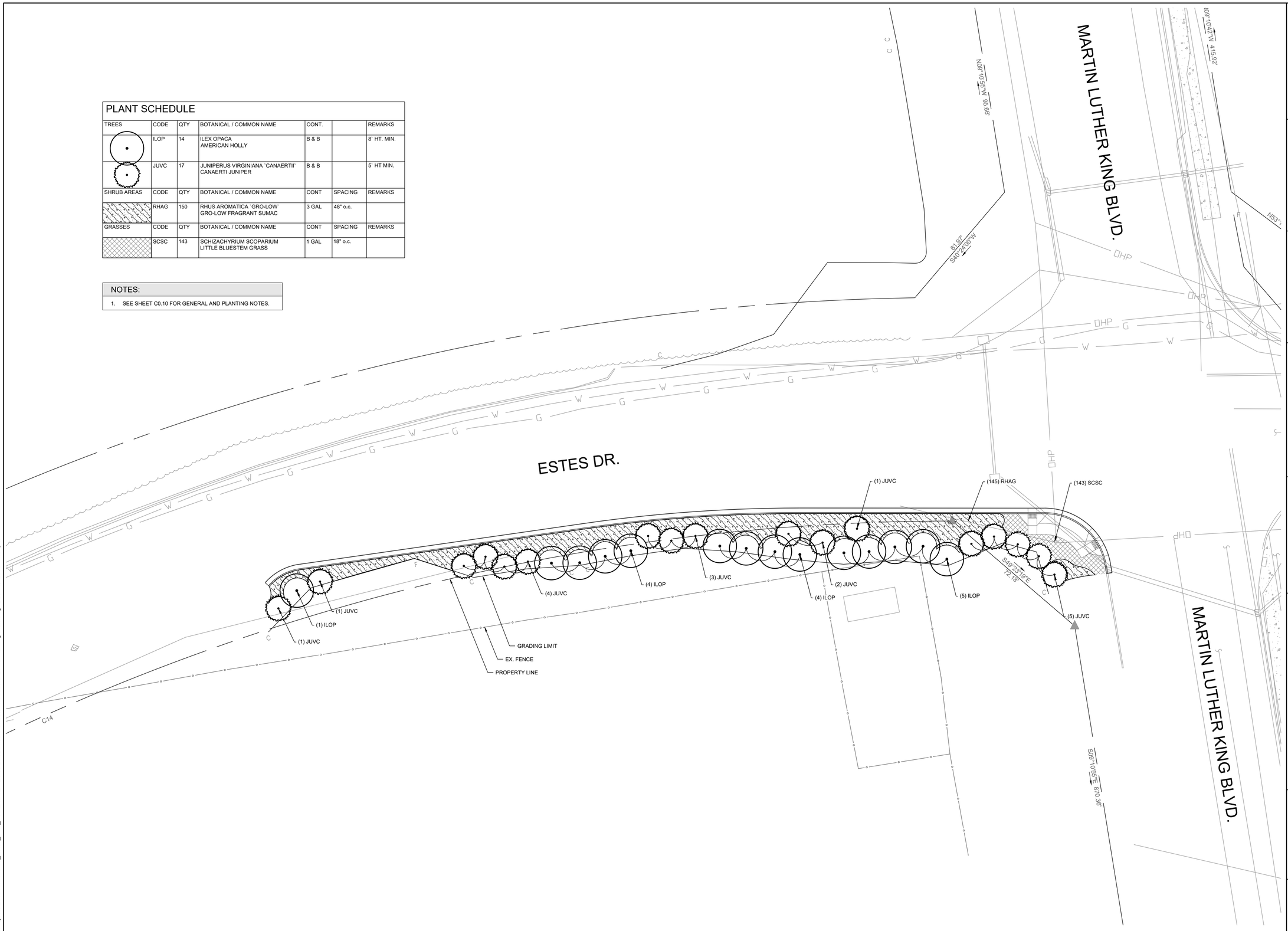
PLANT SCHEDULE

TREES	CODE	QTY	BOTANICAL / COMMON NAME	CONT.		REMARKS
	ILOP	14	ILEX OPACA AMERICAN HOLLY	B & B		8' HT. MIN.
	JUVC	17	JUNIPERUS VIRGINIANA `CANAERTII` CANAERTI JUNIPER	B & B		5' HT MIN.
SHRUB AREAS	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**CONT**	**SPACING**	**REMARKS**
	RHAG	150	RHUS AROMATICA `GRO-LOW` GRO-LOW FRAGRANT SUMAC	3 GAL	48" o.c.	
GRASSES	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**CONT**	**SPACING**	**REMARKS**
	SCSC	143	SCHIZACHYRIUM SCOPARIUM LITTLE BLUESTEM GRASS	1 GAL	18" o.c.	

NOTES:

1. SEE SHEET C0.10 FOR GENERAL AND PLANTING NOTES.



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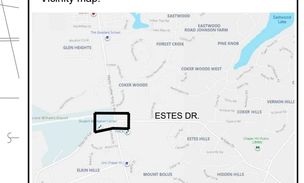
Project:

ESTES DRIVE BICYCLE & PEDESTRIAN IMPROVEMENTS

Vicinity map:



Seal:

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1886 CHRISTOPHER J. MILLER

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0 10 20 40

SCALE: 1" = 20'

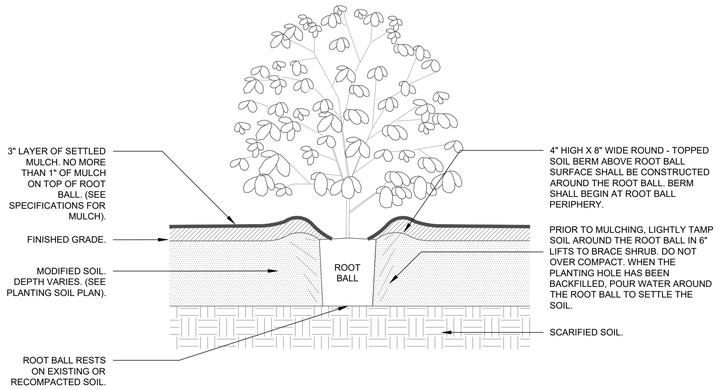
NORTH

Title:

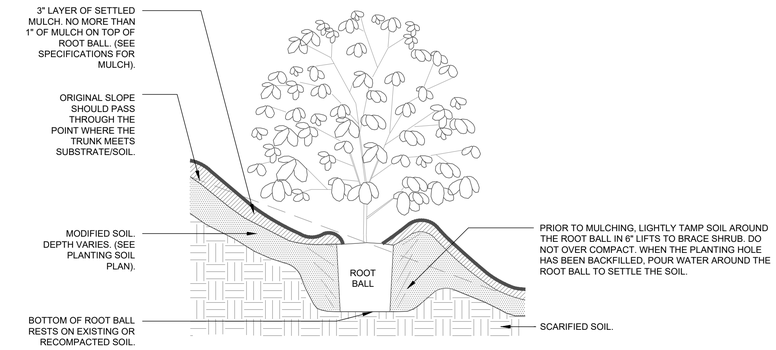
PLANTING PLAN

Project number: A15005 Sheet:
Date: 12/12/2019
Drawn by: JW
Approved by: CM

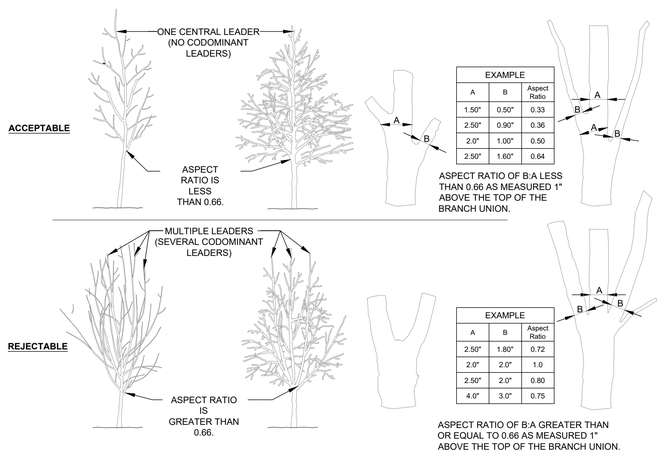
L1.00



1 SHRUB (TYPICAL)
SECTION — NTS



2 SHRUB ON SLOPE (TYPICAL)
SECTION — NTS



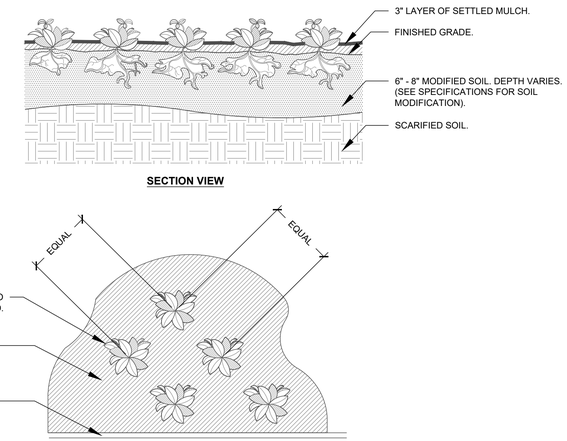
EXAMPLE		
A	B	Aspect Ratio
1.50"	0.50"	0.33
2.50"	0.90"	0.36
2.0"	1.00"	0.50
2.50"	1.60"	0.64

ASPECT RATIO OF B:A LESS THAN 0.66 AS MEASURED 1" ABOVE THE TOP OF THE BRANCH UNION.

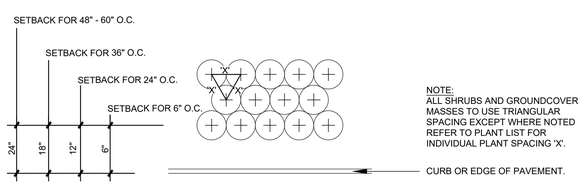
EXAMPLE		
A	B	Aspect Ratio
2.50"	1.80"	0.72
2.0"	2.0"	1.0
2.50"	2.0"	0.80
4.0"	3.0"	0.75

ASPECT RATIO OF B:A GREATER THAN OR EQUAL TO 0.66 AS MEASURED 1" ABOVE THE TOP OF THE BRANCH UNION.

3 CROWN OBSERVATIONS - HIGH BRANCHED
SECTION — NTS



4 GROUNDCOVER PLANTING (TYPICAL)
SECTION — NTS



NOTE:
ALL SHRUBS AND GROUNDCOVER MASSES TO USE TRIANGULAR SPACING EXCEPT WHERE NOTED REFER TO PLANT LIST FOR INDIVIDUAL PLANT SPACING 'X'.

NOTES:

1. SEE PLANTING LEGEND FOR GROUNDCOVER SPECIES, SIZE AND SPACING DIMENSION.
2. SMALL ROOTS (¼" OR LESS) THAT GROW AROUND, UP OR DOWN THE ROOT BALL PERIPHERY ARE CONSIDERED A NORMAL CONDITION IN CONTAINER PRODUCTION AND ARE ACCEPTABLE, HOWEVER THEY SHOULD BE ELIMINATED AT THE TIME OF PLANTING. ROOTS ON THE PERIPHERY CAN BE REMOVED AT THE TIME OF PLANTING (SEE ROOT BALL SHAVING DETAIL).
3. SETTLE SOIL AROUND ROOT BALL OF EACH GROUNCOVER PRIOR TO MULCHING.
4. WHEN GROUNDCOVER PLANTINGS ARE USED IN MASSES, ENTIRE BED SHALL BE EXCAVATED AND TILLED WITH SOIL AMENDMENTS PER SPECIFICATIONS.
5. CONTRACTORS SHALL ASSURE PERCOLATION OF A ALL PLANTING PITS PRIOR TO INSTALLATION.

5 SHRUB AND GROUNDCOVER SPACING
SECTION — NTS

PLANTING NOTES:

1. DO NOT STAKE TREES EXCEPT WHERE SPECIFIED BY LANDSCAPE ARCHITECT. STAKING IS REQUIRED FOR TREES PLANTED ON SLOPES.
2. WHERE SEVERAL TREES WILL BE PLANTED CLOSE TOGETHER SUCH THAT THEY WILL LIKELY SHARE ROOT SPACE, TILL IN SOIL AMENDMENTS TO A DEPTH OF 4-6" OVER THE ENTIRE AREA.
3. FOR CONTAINER GROWN TREES, USE FINGERS OR SMALL HAND TOOLS TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.
4. FOR FIELD GROWN TREES, CUT BURLAP, ROPE AND WIRE BASKET AWAY FROM TOP AND SIDES OF ROOT BALL.
5. THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
6. THE PLANTING PROCESS IS SIMILAR FOR DECIDUOUS AND EVERGREEN TREES.
7. DO NOT WRAP TRUNK; MARK NORTH SIDE OF TREE IN THE NURSERY AND LOCATE TO THE NORTH IN THE FIELD.
8. WIDTH OF PLANTING HOLE IS 3X ROOT BALL AT THE SURFACE, SLOPING TO 2X THE ROOT BALL DIAMETER AT THE DEPTH OF THE ROOT BALL.
9. BEFORE PLANTING, ADD 3-4" OF WELL COMPOSTED LEAVES, RECYCLED YARD WASTE OR OTHER COMPOST AND TILL INTO TOP 6" OF PREPARED SOIL. ADD COMPOST AT 20-35% BY VOLUME TO BACKFILL.
10. PERFORM PERCOLATION TEST FOR EACH TREE PIT TO CONFIRM THAT WATER DRAINS OUT OF THE SOIL. PROVIDE GRAVEL SUMP FILTER FABRIC & VENT PIPE IF DRAINAGE DOES NOT OCCUR WITHIN 24 HOURS. INCLUDE ALL SUMPS IN BASE BID. SHOULD SUMPS NOT BE NECESSARY AFTER PERCOLATION TEST, PROVIDE CHANGE ORDER DEDUCT TO OWNER.
11. IF PLANTING HOLES ARE DUG WITH A LARGE AUGER BREAKING DOWN THE SIDES WITH A SHOVEL CAN ELIMINATE GLAZING AND CREATE THE PREFERRED SLOPING SIDE.
12. TREES SHALL HAVE SINGLE LEADERS. TREES WITH 2 LEADERS WILL BE REJECTED.
13. DO NOT PLACE MULCH IN CONTACT WITH TRUNK.
14. PROVIDE GATOR BAGS FOR ALL TREES WHERE IRRIGATION IS NOT PROVIDED.

6 PLANTING NOTES
PLAN — NTS

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Project:

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PLANTING & SOILS DETAILS

Project number: A15005 Sheet:
Date: 12/12/2019
Drawn by: JW
Approved by: CM

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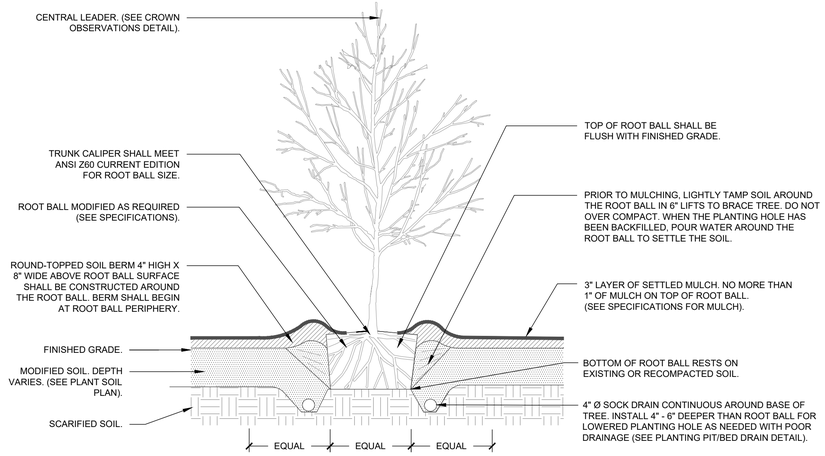
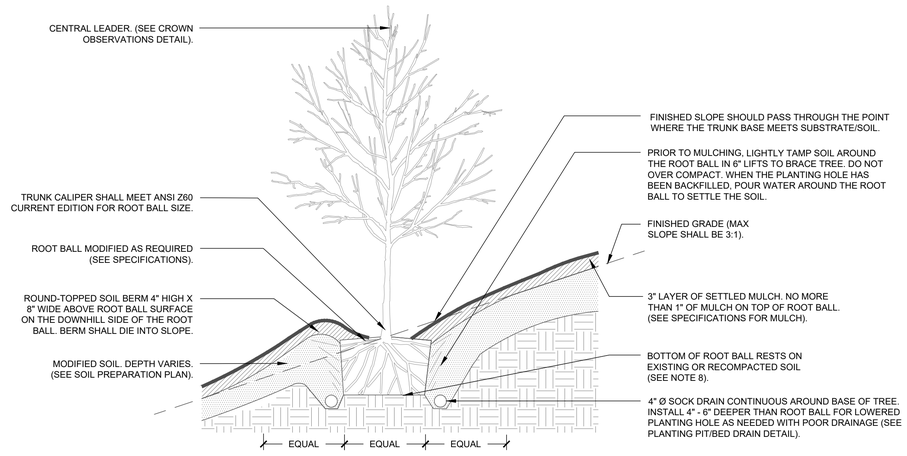


1 TREE (TYPICAL)
SECTION

NTS



2 TREE ON SLOPE (TYPICAL)
SECTION

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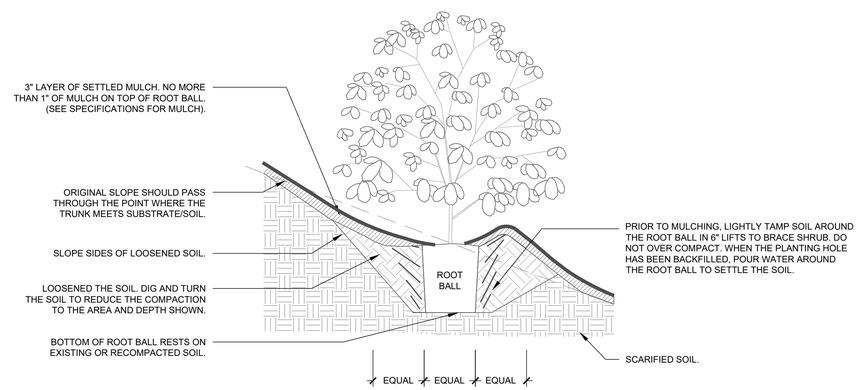
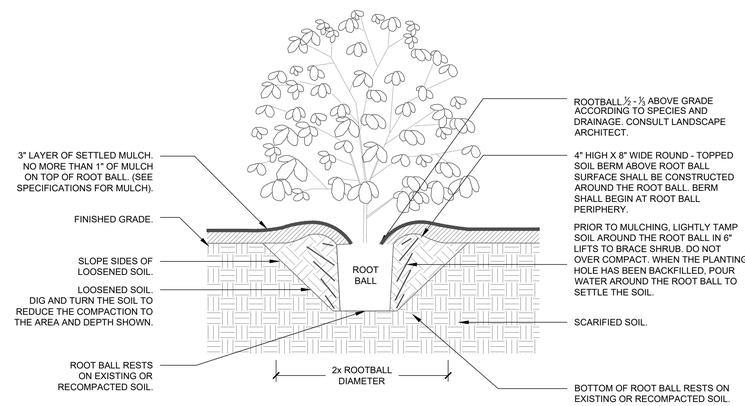


3 SHRUB ON SLOPE - EXISTING IN-SITU SOIL
SECTION

NTS



NOTES:

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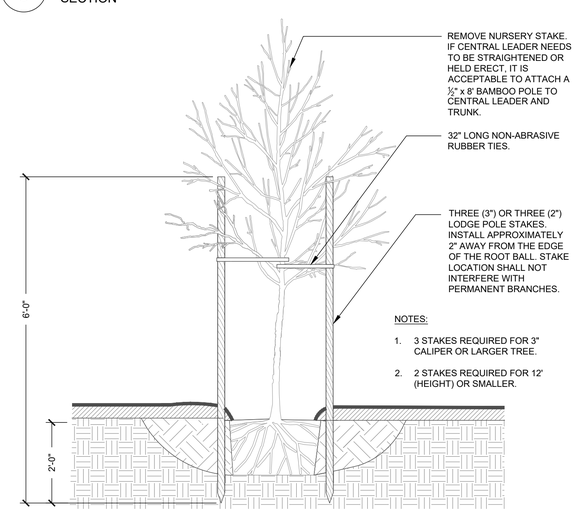
2. WHEN SHRUBS AND GROUNDCOVER ARE PLANTED IN MASSES, ENTIRE BED SHALL BE EXCAVATED AND TILLED WITH SOIL AMENDMENTS PER SPECIFICATIONS.

4 SHRUB - EXISTING IN-SITU SOIL
SECTION

NTS

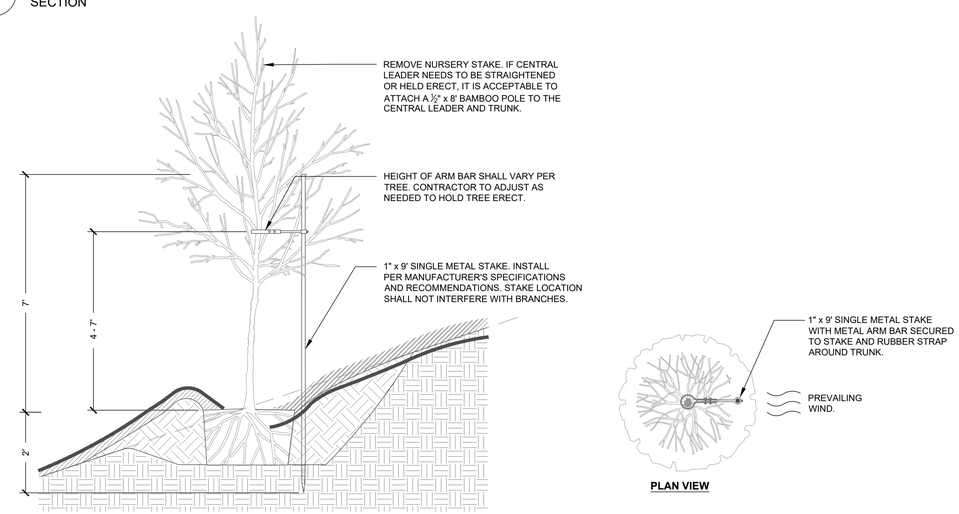


NOTES:

1. 3 STAKES REQUIRED FOR 3" CALIPER OR LARGER TREE.
2. 2 STAKES REQUIRED FOR 12' (HEIGHT) OR SMALLER.

5 TREE STAKING - LODGE POLES
PLAN

3/8" = 1'-0"



6 TREE STAKING - ON SLOPE
PLAN

3/8" = 1'-0"

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