FINAL

MONROE CONNECTOR / BYPASS SERVICE ROAD STUDY

Mecklenburg and Union Counties

STIP Project Numbers R-3329 and R-2259

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1. INTRODUCTION

This Service Road Study for the Monroe Connector/Bypass project (North Carolina State Transportation Improvement Program [STIP] Projects R-3329 and R-2259) was initiated by the North Carolina Turnpike Authority (NCTA). The objective of this study is to evaluate those parcels that would be directly impacted by the project such that existing road access to some, or all, of the parcel is eliminated. The evaluation includes a comparison between the cost associated with providing service road access with the cost of purchasing the isolated or remnant parcel.

The preliminary project design for the Preferred Alternative was reviewed to identify those parcels that would likely lose access with implementation of the project. Once the impacted parcels were identified they were then evaluated to determine the cost of constructing a service road from existing roadways near the project. This cost was then compared to the total acquisition cost for the isolated or remnant portions of the parcel. In order to adequately evaluate and establish this cost/benefit analysis, the study includes the approximate land and structure cost of purchasing the remaining portions of the parcel after the right of way (ROW) has been acquired versus the cost of providing a usable service road to service the remnant parcel. Several factors were included in formulating an approximate cost to provide service roads. These factors included the cost associated with constructing the service road including any major hydraulic structures that may be necessary, environmental mitigation costs, and additional ROW necessary to develop the service road.

The approach to evaluating the cost effectiveness of providing remnant parcels with service road access is a six-step process: 1) Identify those parcels that would potentially lose access through the existing network of roads effectively becoming "land-locked" as a direct result of construction of the project; 2) Evaluate existing cross accesses, adjacent parcel ownership, and existing access patterns; 3) Conduct additional analysis and identify; 4) Develop preliminary service road designs that meet minimum design and construction standards; 5) Quantify the costs associated with each service road, some of which would effectively serve several land-locked parcels (in these cases the cost of the service road is divided equitably between those parcels it serves; and, 6) Compare the costs associated with providing an service road (tabulated in step 5) with the cost of purchasing the remaining portions of parcels.

Steps one through three are discussed in **Section 2 Access Evaluation** of this study. Steps four and five are discussed in **Section 3 Design Options** of this study. Step six is discussed in **Section 4 Cost / Benefit Analysis**. Based on the information revealed through this six step process, recommendations to either provide a service road or purchase the remnant parcel(s) are made. These recommendations are included in **Section 5 Recommendations** of this study.

2. ACCESS EVALUATION

To begin the evaluation process, the design team compiled the latest available CADD mapping data for the project including the following files: 1) Design base files; 2) Existing property line files; 3) Proposed ROW and control of access files; and 4) Photogrammetric mapping files.

These files and their data were supplemented with available data from: 1) Bing® maps (www.bing.com/maps/ and 2) Union County GIS/Mapping System (http://maps.co.union.nc.us/gomaps/map/Index.cfm). Both web sites were accessed in June 2009.

The above noted information and data were utilized in the identification of parcels that would potentially lose access due to project design and/or control of access along the corridor. These parcels, once identified, were reviewed to determine existing access configuration, adjacent ownership connectivity, and potential access concepts to provide parcel access. This level of evaluation was conducted to identify any fatal flaws with the potential service road options. Engineering judgment was exercised to determine valid access solutions that meet NCDOT design standards and criteria and identify both avoidable and unavoidable impacts.

Table 2-1 catalogues the parcels affected by the project that would have land-locked remnant acreage outside of the proposed ROW and control of access for the project. Specifically, the first column lists each area with land-locked parcels alphabetically. This letter index corresponds to the area identified in the figures included in **Appendix A**. **Table 2-1** also includes a parcel identification number, known ownership information, approximate remnant acreage, existing access, whether or not a building structure occurs on the remnant portion of the parcel, and summary of access issues. This summarized information allowed the design team to review access for each parcel (or group of parcels) and determine the viability of providing access to each parcel. Parcels recommended for further evaluation are highlighted in green, and were carried into the next step of the study process where design solutions were developed and quantified.

TABLE 2-1: PARCEL EVALUATION

Area	Parcel I.D.	Property Owner	Acreage Remaining	Existing Access	Structure Remaining	Remarks
A	1	William Harold Mull & Joy Myers	3.75	Eastbound US 74	No	Access would not be allowed along US 74 due to interchange.
	2	Robert Wayne Cooke	0.54		No	Access would not be allowed along US 74 due to interchange. Remaining property appears too small to redevelop.
B	3	Max & Ruby Hargett McLeod	0.72	Westbound US 74 /Sherin Rd	No	Access would not be allowed along US 74 due to interchange.
	4	JLD Properties LLC	1.37	Westbound US 74	Yes	
	5		0.41		Yes	Access would not be allowed along US 74 due to interchange.
	6	Cascades LLC	2.38		Yes	Access would not be allowed along US 74 due to interchange.
	7	Gene A & Katherine Oxendine	1.21		Yes	
	8	Alobfazl & Mahnaz Hameda Tayebi	1.86		Yes	
	9	Scannell Properties #88 LLC	2.07	Union West Boulevard	No	Union West Boulevard would be severed by the project. Alternatives include connection to Van Buren Avenue or Indian Trail-Fairview Road.
	10	Landmark/Overterra II LTD Partnership	6.21		N/A	
	11		1.44		N/A	
	12	Harry S & Stephanie S Gretz	2.75		Yes	
	13	Two Little Indians LLC	0.16	Van Buren Avenue	Yes	Small undevelopable remnant remainder of the large tract maintains access along Van Buren Ave.
C	14	Ligo, LLC	0.44	Sherin Lane	No	Small remnant of a larger tract.
D	15	Two Little Indians LLC	0.11	Van Buren Avenue	Yes	Small undevelopable remnant remainder of the large tract maintains access along Van Buren Ave.
	16	Rushing Construction Co Inc.	3.68	Oscar Robinson Drive via Van Buren Ave.	N/A	Access could be provided through other parcels via Forest Park subdivision or Oak Spring Road.
	17	Robert D & Christy G Hicks	0.97		Yes	
	18	Roger W & Joyce P Sherin	0.61		Yes	
	19	Beatriz Nolasco	0.76		Yes	
	20	Blanche K Robinson	1.02		Yes	
	21	Johnnie Mae Robinson Hasty	2.18		Yes	
	22		2.72		Yes	
	23	Willene R Morris	2.81		N/A	
	24		2.75	Across other properties from Oscar Robinson Drive and Van Buren Ave.	Yes	
	25	Vader M Bullock Heirs	6.83	Oscar Robinson Drive via Van Buren Ave.	Yes	
	26		1.30		No	
	27	Mary Evelyn Forbis Strand	3.32	Across other properties from	No	

TABLE 2-1: PARCEL EVALUATION

Area	Parcel I.D.	Property Owner	Acreage Remaining	Existing Access	Structure Remaining	Remarks
E	28	Mary Evelyn Forbis Strand & HSBN Ell	1.34	Oscar Robinson Drive and Van Buren Avenue	No	Access could be provided across other parcels via Van Buren Ave.
F	29	Partners in Hoops LLC	2.40	Stinson-Hartis Road	N/A	Access could be provided across other parcels via Stinson-Hartis Road. Elevated bridge overpass may be problematic for road grades.
	30	NJV Investment LLC	0.34		N/A	
G	31A	LR & FR, LLC	3.28	Indian Trail-Fairview Road	N/A	Access would cross streams and wetlands.
	31B		1.88		N/A	Small remnant of a larger tract.
	32	Russell C & Danna R Hosaflook	4.09		No	Access could be provided off of Stinson-Hartis Road through unaffected parcels.
	33	Corene H Ritch	2.70		N/A	
	34	Hal D & Steven Howard& Linda Howard	3.35		N/A	
	35	Mildred H Spencer	4.96		No	
	36	Dwain & Deloris Roekle	2.06		No	
H	37	Ethel M Brooks	0.67		Yes	Access would not be allowed at the interchange. Closest access would be at Stinson-Hartis Road intersection.
	38	NC Telephone Co	1.15		Yes	
	39	Robert Keith & Fonda NAS Brooks	2.55	Through adjacent parcel via Indian Trail-Fairview Road	N/A	
	40	Billy M Stegall	4.89	Indian Trail-Fairview Road	Yes	
I	41A	Ruby S Williams	0.18		N/A	Undevelopable remnant. Access not needed.
	41B		0.88		N/A	
	41C		0.23		N/A	
	42		0.88		No	Access would not be allowed at the interchange. Access could be provided through other parcels via Reid Road.
	43	Barbara Brooks Taylor	2.11		Yes	
	44	Jodie & Nancy Stegall	7.80		Yes	Access could be provided off of Reid Road.
J	45	Billy A & Barbara Thompson	0.69		Yes	Access would not be allowed at the interchange. Access could not be provided in front of the property without taking the structure.
	46	Donald Reid & Catherine Baucom	0.68		Yes	
	47		0.67		N/A	Access would not be allowed at the interchange.
	48	Charles W & Shirley H Haney	1.45		Yes	Access would not be allowed at the interchange. Access could not be provided in front of the property without taking the structure.
	49	Jodie & Nancy Stegall	0.92		Yes	Access could be provided off of Reid Road.

TABLE 2-1: PARCEL EVALUATION

Area	Parcel I.D.	Property Owner	Acreage Remaining	Existing Access	Structure Remaining	Remarks
K	50	Roy N Jr & Carol G Beck	1.48	Oakland Avenue	N/A	Access could be provided off of Beverly Drive.
	51	Donald & Cleveland Atkinson	0.15		No	Remaining parcel taken with access.
	52	John H & Jeannine T Swindell	1.93		Yes	Access could be provided off of Beverly Drive.
	53	Mark J Trickey	1.97		Yes	
	54	David Jethro Oates III	0.34		No	Building would be impacted to provide access.
	55		0.18		No	Remaining parcel taken with access.
	56	Thomas W & Agnes Knowles	0.04		No	
L	57	Raymond Jr. &Rebecca Stegall	0.23		No	Access could be provided off of Oakland Avenue.
M	58	Sandra D Baird	0.31	Beverly Drive	No	Access could be provided off of Beverly Drive.
	59		1.82		Yes	
	60	Earl Vann Simpson	5.51	Secrest Shortcut Road	Yes	Access would be provided off of Secrest Shortcut Road through other affected properties.
	61	Norman Darrell & Mary M. Simpson	0.47		Yes	
	62	Norman Darrell Simpson Jr.	0.23		No	Access would be provided off of Secrest Shortcut Road.
	63	Robert Ney Mills	1.35		Yes	
	64		0.50		Yes	
	65	Norman Darrell & Mary M. Simpson	24.81		Yes	Access would be provided off of Secrest Shortcut Road and through existing driveways.
	66		7.16		Yes	
	67	Donald Kevin & Julie A Pressley	1.43		Yes	
N	68	James F Marlow	2.09		No	Access would be available from Faith Church Road through the center of the property to avoid dividing the adjacent property.
	69	The Williams Company	20.76		No	A building would be taken to provide access from Faith Church Road.
	70		6.29		No	Access would be provided from Faith Church Road.
	71		28.44		Yes	
	72		1.00	Secrest Shortcut Road and common properties	No	Access would be provided from Faith Church Road through existing properties.
	73		36.59		Yes	
N	74	Vivian S. Honeycutt & Trustee	9.85	Secrest Shortcut Road	No	Access could be provided from Poplin Road.
	75	Christopher L. & Shann Batchelor	0.76		No	
	76	Gene H. & Jackie K. Clark	11.09		Yes	
	77	David & Gylynn H. Honeycutt	3.76		No	
O	78	Thomas W. Jr. & Marie Stinson	5.61	Unionville Indian Trail Road	N/A	Access could be provided from Unionville Indian Trail Road beyond the control of access limits at the interchange.
	79	Zenobia Ann Quick Heggins & Terry Be Heggins	0.59	Unionville Indian Trail Road and adjacent properties	N/A	

TABLE 2-1: PARCEL EVALUATION

Area	Parcel I.D.	Property Owner	Acreage Remaining	Existing Access	Structure Remaining	Remarks
P	80	Harold & Pauline Funderburk Co-Trust	0.28	Rocky River Road through adjacent properties	N/A	Access could be provided from Secrest Shortcut Road.
	81		11.72		N/A	
	82	Franklin W. Howey, Jr.	14.78	Secrest Shortcut Road through adjacent properties	N/A	Access could be provided from Secrest Shortcut Road or new driveway connections across existing adjacent properties.
Q	83		13.33		N/A	Access could be provided from Rocky River Road.
	84	Carlton Tyson & Trustee ET AL	12.70		N/A	
	85	William J. & Janice H. Austin	1.12	Rocky River Road	Yes	Driveway access could be provided from service road just inside the control of access of the interchange.
	86	Dennis & Constance Ashley	0.28		No	Small remnant of larger tract.
	87	Michael & Jill Efird	0.32		No	
R	88	Harry A. Sr. & C. Jackie Stroud	6.73		Yes	Access would be provided from Rocky River Road outside the control of access at the interchange.
	89	Paul D. & Susan A. Lemmond	4.47	Rocky River Road through adjacent property(ies)	N/A	Service road from Rocky River Road would tie into existing shared driveway.
	90	Thomas R. & Willene Lemmond	5.83		Yes	
	91	Thomas Ray Lemmond	9.01		Yes	
	92		3.99		Yes	
	93	Helen Nisbet & Mary Ann Shepley	5.01		N/A	Service road could be extended across adjacent property.
	94	James Henry Jr. & Anita Elizab Harris	5.15		Yes	Service road could be extended across adjacent property to existing driveway.
S	95	Michael & Jill Efird	0.13	Rocky River Road	No	Small remnant of a larger tract.
	96	Carlton Tyson Trustee et al	1.22		N/A	Access from Rocky River Road would be difficult to provide between the control of access limits and the existing intersection.
	97	Garren Marc Thomas & Shane T. Anthony	1.39		N/A	
	98	Garry Wade Thomas	8.35		N/A	
	99	Garry Wade Thomas & Garren Thomas	2.08		Yes	
	100	Kim D. Kellett	1.29		Yes	
	101	William Neal & Jeanette Jarmon	6.30		Yes	
T	102	Iron Peddlers II, LLC	0.76		Yes	Access from Rocky River Road would be difficult to provide in front of the remaining building.
	103	Decorative Creations, Inc.	5.76		Yes	Access from Rocky River Road would be difficult to provide in front of the remaining building.
	104	Thomas H. & Edith H. Black	0.92	Rocky River Road through adjacent properties	N/A	Access from Rocky River Road would need to cross in front of existing buildings to tie into existing driveway access.
	105	Wayne B. & Pauline A. Radcliffe	6.17	Rocky River Road	Yes	

TABLE 2-1: PARCEL EVALUATION

Area	Parcel I.D.	Property Owner	Acreage Remaining	Existing Access	Structure Remaining	Remarks
T	106	Helen Nisbet & Mary Ann Shepley	9.03		No	Access from Rocky River Road would be difficult to provide. Adjacent properties would be impacted.
	107	Kenneth R. & Teresa H. McDow	2.98	Willis Long Road	N/A	Service road from Rocky River Road would have to extend across adjacent properties a substantial distance.
U	108	Norman C. Thomas & Cynthia Joyce L. Thomas	1.62		N/A	Access from Willis Long Road would need to be shifted away from bridge overpass which would impact the adjacent property more.
	109	Hurley Long & Trustee	2.41		N/A	
	110	Billy F. Aycoth	42.49	Secrest Shortcut Road through adjacent properties	Yes	Access from Willis Long Road will be tight across front of the property without impacting existing buildings.
	111	Frank & Sylvia Phung	14.20		Yes	
	112		1.15		No	Access from Willis Long Road would impact streams.
V	113	Thomas M. Aycoth	1.56		No	Access from Poplin Road would be costly and cross unaffected properties.
	114	Thomas Ray & Judy H. Poplin	3.52	Poplin Road	N/A	
	115	Darren & Susan Fitch	0.39		N/A	
	116	David Hatmaker	0.42		No	
	117	Ricky & Roxanne Malcomb	0.96	Clear Creek Drive	No	
	118	Wayne & Lisa Fike	0.77		No	
	119	David and Heather Canipe	0.18		No	
W	120	Michael & Marsha Graham	4.10	Poplin Road	No	
X	121	Leroy & Mary Hinson	4.19	Roanoke Church Road	N/A	Access from Roanoke Church Road would impact streams.
Y	122	Ronald & Catherine Fowler	0.62	Fowler Road	No	Access would impact buildings and adjacent properties.
Z	123	Christopher John & Ashley D. Hammonds	1.35	Fowler Road through an adjacent property	Yes	Access from Fowler Road would need to be moved to the south to keep grades reasonable and right of way to minimum.
	124	Grace F. Baucom	4.31	Fowler Road	Yes	
AA	125	Vann J. & Martha G. Love	12.43	NC 200 (Morgan Mill Road)	Yes	Access in front of the building on the property would be difficult. Access would likely be provided to the back of the building.
	126	Owen Wayne & Linda B. Montgomery	1.14		Yes	
	127	Donald Millard Baucom & Joyce D. Baucom	18.45		Yes	
	128	Rickey & Delores Taylor	2.62		Yes	Access would need to be extended beyond the control of access at the interchange and would affect non-impacted properties.
	129	James & Dorothy Wells	1.40		Yes	
	130	NCDOT	0.38		N/A	

TABLE 2-1: PARCEL EVALUATION

Area	Parcel I.D.	Property Owner	Acreage Remaining	Existing Access	Structure Remaining	Remarks
BB	131	Anthony M. & Brenda J. Spierings	0.80		Yes	
	132		4.37		Yes	
	133	Tommy Honeycutt, Jr.	0.84		Yes	
	134	Mark Bliss & Trustee	12.76	NC 200 (Morgan Mill Road) and a common driveway through adjacent properties	Yes	
	135	David L. & Angela S. Wilburn	1.00		Yes	
	136	Joseph H. & Lenell B. Porter	8.15	NC 200 (Morgan Mill Road)	Yes	
CC	137	Rickey & Delores Taylor	0.75		N/A	Small remnant of a larger tract.
	138	Lavinia E. Rollins	2.56	NC 200 (Morgan Mill Road) and a common driveway through adjacent properties	Yes	Access would utilize existing road along church property to tie to common driveway.
	139	Sherry Rollins & Olin Smith	2.00		Yes	
	140	Jeffrey Scot & Darlene T. Rollins	7.07		Yes	
	141	Rodney L. & Kandy R. Pierce	2.00		Yes	
	142	Olin & Sherry Smith	0.13	NC 200 (Morgan Mill Road)	N/A	Small remnant of a larger tract.
	143	Dorothy Edwards Rollins	1.59	NC 200 (Morgan Mill Road) and a common driveway through adjacent properties	Yes	Access would utilize existing road along church property to tie to common driveway.
	144	Wayne L. & Johnsie A. Barringer	11.41	NC 200 (Morgan Mill Road)	N/A	
	145	Sherry Rollins & Olin Smith	0.57		N/A	Access would need to be provided across common driveway.
	146	Scott & Cynthia Ann Smith	1.49		Yes	Access would utilize existing road along church property.
DD	147	Marshall Darrell & Angela M. Godwin	10.00	Monroe Olive Branch Road	Yes	Access would be provided through Monroe Olive Branch Road.
	148	Lynn E. & Brenda B. Godwin	6.01		Yes	
	149	Ricky Lynn Godwin	10.00	Monroe Olive Branch Road through adjacent properties	Yes	
	150	Hazel B. McCollum	103.07	Helms Pond Road	N/A	
	151	Robert H. Morrison	54.44	Farmwood Drive	N/A	
	152	Edwards Timber Company, Inc.	52.94	Farmwood Drive through adjacent properties	N/A	

TABLE 2-1: PARCEL EVALUATION

Area	Parcel I.D.	Property Owner	Acreage Remaining	Existing Access	Structure Remaining	Remarks
EE	153	Lisa T. Wilson & Thomas G. Tarlton	26.40	Forest Hills School Road through adjacent properties	N/A	Access would cross non-affected properties to gain access outside the control of access at the interchange. Existing access points across adjacent properties would be maintained.
	154	Nelson Reid Phifer	36.54	Forest Hills School Road	Yes	Access would cross non-affected properties to gain access outside the control of access at the interchange.
	155		7.90		Yes	
	156	Nelson Reid & Sandra Sue Phifer	2.13		Yes	
FF	157	Johnny C. Phifer	7.13		N/A	Access would cross non-affected properties to gain access outside the control of access at the interchange.
	158	Evelyn Irene Phifer	6.23		Yes	
	159		0.40		Yes	
GG	160	Futura Properties, LLC	29.50	US 74	N/A	Service road from Forest Hills School Road would have to be offset back from the intersection of US 74.
	161	Janice H. Huggins	13.40		Yes	
	162	Timothy Charles & Pamel Huggins	1.79		Yes	
	163	Ronnie & Denise Moore	2.35		Yes	
	164		12.30		N/A	

Legend:
- Design Access to Parcel (carry forward for further analysis)
- Access Not Provided (no further analysis)
- Redesign Allows Existing Access to Remain

3. DESIGN OPTIONS

3.1 Service Road Design

Those parcels with feasible options to provide new access (identified in green in **Table 2-1**) were carried forward in the study process. This step in the study process included the planning and the development of preliminary design alternatives for feasible service roads to land-locked parcels. Two factors were used in determining the location of each new service road. These factors include the location of the parcel and where its existing access occurs. If possible, the new service road was developed to connect to the existing access road for the land-locked parcel. In these cases, the new service road would parallel the new control of access limits and reconnect to the existing road. In addition to the factors utilized to determine the location of the new service road, certain design criteria were developed to guide the design of each service road. These criteria were developed to serve the land-locked parcel with safe and cost-effective access. The intended use and expected traffic volumes including vehicle mix were major considerations in developing the following design criteria:

1. **Design Speed.** The design speed selected for the service roads is 30 miles per hour (mph) with an anticipated posted speed of 25 mph. These facilities are intended to be low volume roadways providing access only to local, mainly residential, properties. Most of the service roads would provide access to only one parcel, but others could potentially serve two or more adjacent parcels off the same alignment. Design speed adjustments would be made for unusual circumstances and unique property use situations, as necessary.

2. **Typical Section.** The planned typical section to be utilized for the new service roads would consist of two 11-foot lanes with 2-foot unpaved shoulders on each side. Depending on the profile, roadside ditches would be provided to convey drainage away from the roadway facility and reduce future maintenance costs. Only major drainage conveyances would be included, as necessary.

3. **Alignment.** The alignments of the individual service roads would vary based on property configurations. Each situation is unique and would be treated as such to develop the best design solution. The goal would be to minimize the loss of adjacent properties by paralleling the control of access portion of the facility as closely as possible. Where following the control of access is not an option or would result in an unusually long service road, the alignment would typically parallel or straddle the property line to balance the loss of property between the two adjacent parcels.

   The alignment would follow the design speed considerations as to minimum radii and T-type intersections would be considered where appropriate. Super-elevation would not be proposed due to the low speed design of these facilities.

4. **Grade.** The profile grade of the proposed service roads would be in part dictated by the existing topography. To cost-effectively design these facilities, the service roads would need to follow the existing contour of the land closely to reduce cut and fill associated with significant departures from existing grades. Vertical grades would be set such that adequate sight distances are provided meeting the intended design speed of the facility. Unusually steep grades necessitating high cuts and fills would only be considered if necessary.

5. **Pavement Design.** The selection of an adequate pavement design would be based on the intended volume and traffic mix. With the local, mainly residential, use expected on these service facilities, pavement design would require a minimum structural value to provide adequate performance for the facility. The pavement design anticipated for these facilities was based on previous projects for NCDOT where low volume service roads were designed to serve cut-off parcels. **Exhibit 3-1** depicts the proposed typical section.

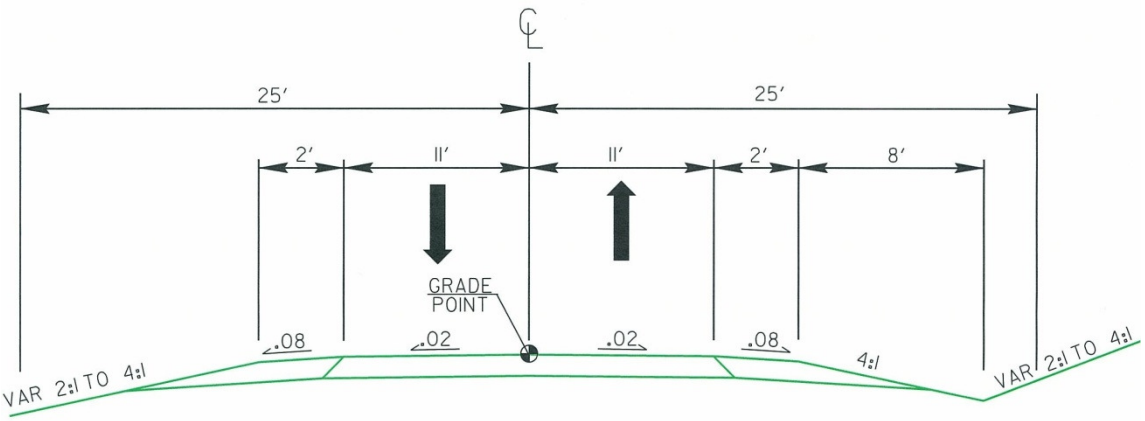


EXHIBIT 3-1: SERVICE ROAD TYPICAL SECTION

6. **Hydraulic/Environmental Feature Crossings.** A few of the service roads would cross drainage features and possibly some stream and wetland areas. In these cases, efforts to avoid impacting these resources would be made by adjusting the horizontal alignments as necessary. However, if unavoidable, the design would attempt to minimize "footprint" impacts to these environmental features to the extent possible by tightly controlling the profile and steepening side slopes as necessary through these areas. In the case of stream crossings, the nearest hydraulic crossing structure, upstream or downstream, would be used to evaluate and assist in the selection of the appropriate type and size of crossing conveyance to be considered in the design study.

3.2 Cost Quantification

With the facilities designed, the approximate construction cost of each service road was quantified using available average cost data from NCDOT and various sources. These

quantities are typical of the type NCDOT estimates for functional designs. These quantities and costs include:

- **Pavement Items.** These items include asphalt, asphalt binder, aggregate base course, fine grading, etc.
- **Earthwork/Grading.** Typically include cut/fill, borrow earthwork as necessary.
- **Clearing.** Includes any necessary clearing for the service road.
- **Drainage.** Includes any box culverts necessary to construct the road.
- **ROW Cost.** Includes the necessary additional ROW outside of the control of access limits to contain the facility. Costs for this additional ROW were based on a prorated value for each parcel obtained through the Union County GIS/Mapping system based on a per-acre or per-square foot cost plus the value of structures impacted.
- **Miscellaneous.** Includes a 15 percent contingency for structure items (e.g., culverts and bridges) and utility items (e.g., water lines, sewer, etc.) that may be necessary to construct the roadway or tie to the existing roadway.
- **Contingency.** Utilizes a 45 percent contingency to cover unforeseen elements that may need to be constructed with each facility.
- **Engineering.** Includes 15 percent to cover the development of the final designs and construction management of each service road.

Comparative land and structure values were used to evaluate if construction costs were outweighed by associated costs of completely acquiring the remnant parcels. These costs did not take into account any loss of use, relocation cost differentials, or other impacts associated with losing all rights to the property by the owner. These costs included the straight forward land value costs based on current parcel tax values and approximate appraised values from the Union County GIS/Mapping system and a prorated land value would be calculated for the remaining acreage. Structure and dwelling values would also be obtained from this resource. All estimates of property value and acquisition costs are approximate in nature and should not be used to determine actual appraised value or as the basis for any acquisition negotiations. These estimates are being used to reasonably evaluate the feasibility of providing access to impacted parcels along the project.

The designs for roads serving the impacted parcels are included in **Appendix B**. The supporting quantities and cost estimate data used to derive the construction cost for each land-locked parcel are included in **Appendix C**.

4. COST / BENEFIT ANALYSIS

With all the designs for the service roads developed and estimated costs compiled for each facility, the total acquisition cost versus the overall construction cost associated with providing permanent access to the land-locked parcels were calculated and are provided in

Table 4-1. The costs in this table were developed as part of the preliminary screening and do not necessarily match the more refined costs included in **Table 5-1** and **Appendix C**.

TABLE 4-1: COST COMPARISON

Area	Parcel I.D.	Remnant Parcel (Acre)	Remnant Value ($)	Parcel Buyout ($)	Road Construction Cost ($)	ROW & Environmental		Total Cost ($)
						Impact	Cost ($)	
A	1	3.75	938,179	938,179	362,085	ROW: 1.23ac	298,070	660,155
	2	0.54	107,450	107,450				
B	3	0.72	143,123	143,123	1,080,700	ROW: 2.80ac	363,218	1,444,918
	4	1.37	239,909	239,829				
	5	0.41	120,701	181,261				
	6	2.38	476,336	589,296				
	7	1.21	242,354	555,734				
	8	1.86	372,453	882,723				
	9	2.07	186,021	1,003,961				
	10	6.21	558,630	558,630				
	11	1.44	136,039	136,039				
	12	2.75	247,500	1,558,640				
	13	0.16	16,009	16,009				
C	14	0.44	39,904	137,264	118,675	ROW: 0.32ac	43,200	161,875
D	15	0.11	11,445	11,445	702,780	ROW: 2.60ac	33,735	736,515
	16	3.68	36,727	36,727				
	17	0.97	26,310	98,550				
	18	0.61	23,970	42,170				
	19	0.76	24,940	76,990				
	20	1.02	26,640	27,330				
	21	2.18	34,160	172,230				
	22	2.72	37,680	37,680				
	23	2.81	38,270	38,270				
	24	2.75	37,880	42,940				
	25	6.83	63,541	172,781				
	26	1.30	5,855	5,855				
	27	3.32	46,806	46,806				
E	28	1.34	18,883	18,883	176,750	ROW: 0.48ac	6,768	183,518
F	29	2.40	191,957	191,957	462,075	ROW: 1.26ac	68,900	530,975
	30	0.34	14,863	14,863				
G	31A	3.28	163,825	163,825	655,490	ROW: 1.78ac	62,734	718,224
	31B	1.88	93,852	93,852				
	32	4.09	50,778	50,778				
	33	2.70	35,839	35,839				
	34	3.35	31,254	31,254				
	35	4.96	68,668	68,668				
	36	2.06	29,295	29,295				
H	37	0.67	17,816	99,476	370,670	ROW: 1.01ac	15,603	368,273
	38	1.15	22,839	58,399				
	39	2.55	36,580	36,580				
	40	4.89	70,467	75,097				
	41A	0.18	2,561	2,561				

TABLE 4-1: COST COMPARISON

Area	Parcel I.D.	Remnant Parcel (Acre)	Remnant Value ($)	Parcel Buyout ($)	Road Construction Cost ($)	ROW & Environmental		Total Cost ($)
						Impact	Cost ($)	
I	41B	0.88	12,618	12,618	249,470	ROW: 0.68ac	10,026	259,496
	41C	0.23	3,373	3,373				
	42	0.88	23,383	23,383				
	43	2.11	30,494	30,494				
	44	7.80	107,707	109,307				
J	45	0.69	18,172	130,202	510,555	ROW: 1.39ac	41,794	552,349
	46	0.68	18,119	176,609				
	47	0.67	17,872	17,872				
	48	1.45	23,924	145,494				
	49	0.92	65,500	98,790				
K	50	1.48	6,181	6,181	396,425	ROW: 1.08ac Stream: 42ft	25,733 28,896	451,054
	51	0.15	2,530	2,530				
	52	4.57	114,305	253,585				
	53	1.97	32,790	32,790				
	54	0.34	21,601	21,601				
	55	0.18	12,280	12,280				
	56	0.04	2,871	2,871				
L	57	0.23	3,876	4,346	*Parcel recommended for purchase.*			
M	58	0.31	8,114	8,114	238,360	ROW: 0.65ac Stream: 42ft	9,562 28,896	276,818
	59	1.82	24,012	24,012				
	60	5.51	80,941	80,941				
	61	0.47	7,050	7,050				
	62	0.23	4,031	4,031				
	63	1.35	23,969	23,969				
	64	0.50	23,250	40,060				
	65	24.81	323,770	538,530				
	66	7.16	103,100	239,310				
	67	1.43	29,300	273,680				
N	68	2.09	75,629	75,629	3,438.040	ROW: 9.37ac Stream: 126ft	280,093 86,688	3,804,821
	69	20.76	629,750	629,750				
	70	6.29	232,256	232,256				
	71	28.44	890,721	890,721				
	72	1.00	41,500	43,670				
	73	36.59	622,880	623,410				
	74	9.85	299,466	347,450				
	75	0.76	18,074	18,074				
	76	11.09	389,366	608,165				
	77	3.76	144,959	144,959				
O	78	5.61	75,741	75,741	655,490	ROW: 1.78ac Stream: 42ft	19,141 28,896	703,527
	79	0.59	5,640	5,640				
P	80	0.28	1,287	1,287	583,275	ROW: 1.59ac Stream: 84ft	7,819 57,792	648,886
	81	11.72	53,959	53,959				
	82	14.78	86,830	86,830				

TABLE 4-1: COST COMPARISON

Area	Parcel I.D.	Remnant Parcel (Acre)	Remnant Value ($)	Parcel Buyout ($)	Road Construction Cost ($)	ROW & Environmental		Total Cost ($)
						Impact	Cost ($)	
Q	83	13.33	78,300	78,300	586,305	ROW: 1.60ac Stream: 84ft	9,257 57,792	653,354
	84	12.70	51,835	51,835				
	85	1.12	25,068	71,228				
	86	0.28	10,212	10,212				
	87	0.32	5,095	5,095				
R	88	6.73	96,991	279,881	1,067,065	ROW: 2.91ac Stream: 42ft	38,964 28,896	1,134,925
	89	4.47	65,743	65,743				
	90	5.83	87,450	160,100				
	91	9.01	124,340	128,580				
	92	3.99	64,610	64,610				
	93	5.01	61,579	61,579				
	94	5.15	77,370	154,840				
S	95	0.13	2,094	2,094	643,370	ROW: 1.751ac Stream: 42ft Wetland: 0.03ac	27,787 28,896 3,805	703,858
	96	1.22	19,307	19,307				
	97	1.39	23,796	23,796				
	98	8.35	117,729	218,839				
	99	2.08	33,597	33,597				
	100	1.29	35,559	148,509				
	101	6.30	92,585	157,895				
T	102	0.76	27,906	117,226	1,006,970	ROW: 2.74ac	37,351	1,044,321
	103	5.76	84,644	132,334				
	104	0.92	36,080	63,120				
	105	6.17	90,800	148,440				
	106	9.03	111,071	111,071				
	107	2.98	40,234	40,234				
U	108	1.62	22,776	145,276	1,031,715	ROW: 2.81ac	36,908	1,068,623
	109	2.41	30,348	30,348				
	110	42.49	556,020	645,380				
	111	14.20	187,467	292,377				
	112	1.15	16,609	16,609				
V	113	1.56	22,500	22,500	1,556,915	ROW: 4.24ac Stream: 168ft	51,711 115,584	1,724,210
	114	3.52	41,873	41,873				
	115	0.39	4,632	4,632				
	116	0.42	8,675	8,675				
	117	0.96	22,567	22,567				
	118	0.77	18,288	18,288				
	119	0.18	4,283	4,283				
W	120	4.10	52,402	52,402	227,250	ROW: 0.61ac Stream: 42ft	7,787 28,896	263,933
X	121	4.19	64,041	64,041	287,850	ROW: 0.78ac Stream: 42ft	11,934 28,896	328,680
Y	122	0.62	14,012	14,012	297,770	ROW: 0.76ac	17,282	297,052
Z	123	1.35	31,572	244,512	489,345	ROW: 1.33ac Stream: 42ft	20,133 28,896	583,374
	124	4.31	60,716	60,716				

TABLE 4-1: COST COMPARISON

Area	Parcel I.D.	Remnant Parcel (Acre)	Remnant Value ($)	Parcel Buyout ($)	Road Construction Cost ($)	ROW & Environmental		Total Cost ($)
						Impact	Cost ($)	
AA	126	1.14	30,092	193,502	652,460	ROW: 1.77ac Stream: 84ft	32,884 57,792	743,136
	125	12.43	194,503	194,503				
	127	18.45	282,277	282,277				
	128	2.62	46,200	171,640				
	129	1.40	33,221	113,181				
	130	0.38	23,613	23,613				
BB	131	0.80	25,921	25,921	426,725	ROW: 1.16ac	20,152	446,877
	132	4.37	63,535	349,795				
	133	0.84	26,157	89,397				
	134	12.76	203,390	297,330				
	135	1.00	30,000	90,410				
	136	8.15	133,250	133,250				
CC	137	0.75	3,241	3,241	516,110	ROW: 1.40ac	24,241	540,351
	138	2.56	45,600	121,880				
	139	2.00	40,000	147,630				
	140	7.07	115,656	272,086				
	141	2.00	40,000	162,230				
	142	0.14	2,825	2,825				
	143	1.59	33,591	105,611				
	144	11.41	178,597	326,767				
	145	0.57	14,300	14,300				
	146	1.49	34,575	125,265				
DD	147	10.00	63,230	298,330	2,539,135	Stream: 126ft Wetland: 0.14ac	86,688 17,756	2,643,579
	148	6.01	51,690	219,710				
	149	10.00	63,230	269,180				
	150	103.07	523,230	523,230				
	151	54.44	273,770	273,770				
	152	52.94	169,690	169,690				
EE	153	26.40	151,010	151,010	276,740	ROW: 0.75ac	5,078	281,818
	154	36.54	254,035	280,385				
	155	7.90	59,634	59,634				
	156	2.13	27,460	177,330				
FF	157	7.13	58,820	58,820	156,550	ROW: 0.43ac	4,114	160,664
	158	6.23	51,440	146,480				
	159	0.40	21,400	46,400				
GG	160	29.50	221,250	221,250	1,552,117	Stream: 84ft Wetland: 0.11ac	57,792 13,951	1,623,860
	161	13.40	101,170	192,110				
	162	1.79	26,280	79,150				
	163	2.35	28,230	101,120				
	164	12.30	89,600	89,600				

5. RECOMMENDATIONS

The analysis conducted and summarized in **Section 2** through **Section 5** was used to further refine the design for some service roads. It should be noted that the NCTA may elect to further modify the layout and design of the service roads based on potential cost and material savings or to suit modifications requested by individual land-locked property owners.

Table 5-1 was developed based on additional design details for each service road. To facilitate a comparison, the cost to purchase the properties and the total cost to provide a service road are listed in bold text.

TABLE 5-1: COST SUMMARY

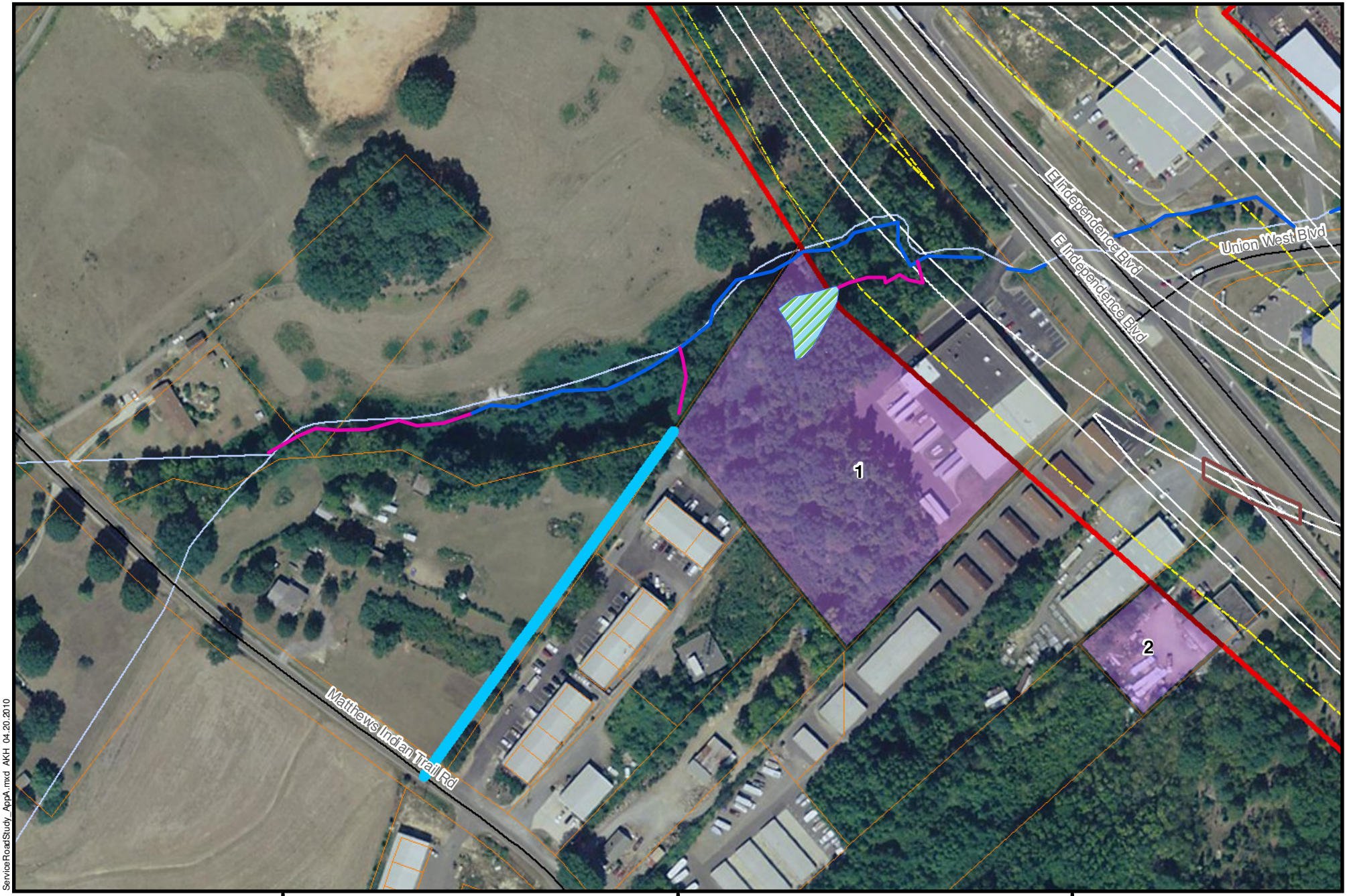
Area	Parcel I.D.	Purchase Cost ($)	Road Cost ($)	Environmental Cost ($)	ROW Cost ($)	Total Cost ($)
A	1	**938,179**	208,785	-	298,070	**506,855**
B	3 through 12	**5,903,236**	619,823	-	363,218	**983,041**
D	16 through 27	**798,328**	584,195	-	33,735	**617,930**
M	60 through 67	**1,207,571**	201,926	41,280	7,503	**250,709**
N	68 through 77	**3,614,084**	2,466,726	209,840	257,673	**2,934,239**
R	88 through 92	**698,915**	373,196	-	29,993	**403,189**
T	102 through 106	**608,271**	183,982	-	12,132	**196,114**
U	108 through 111	**1,113,381**	653,897	-	41,768	**695,665**
AA	126 through 130	**955,104**	382,714	-	38,829	**421,543**
BB	131 through 136	**986,104**	272,153	-	22,584	**294,737**
CC	137 through 141, 143, 144, 146	**1,261,470**	282,899	-	31,513	**314,412**
DD[1]	148 through 152	**1,753,910**	2,207,943	192,616	-	**2,400,559**
EE	153 through 156	**668,359**	157,428	-	4,807	**162,235**
GG[1]	160 through 164	**683,230**	1,392,039	159,227	-	**1,551,266**

Notes: 1 – Service Road for Area DD and GG were recommended under a previous service road study for project R-2259. Right of way has already been purchased for the service road and was not included in the road comparison cost.

With the exception of Areas DD and GG the provision of a service road is more cost effective than purchasing the landlocked properties within these areas. These two areas were originally evaluated and approved by NCDOT under STIP Project R-2559B and R-2559C (known as the Monroe Bypass). New cost data indicates that the service roads proposed for Areas DD and GG are not cost effective. However, the right of way in these areas was previously acquired by NCDOT at the culmination of a lengthy planning process for the Monroe Bypass project. In addition, draft designs for service roads in these areas were previously presented to the public. For these reasons, NCTA has elected to retain the service roads in Areas DD and GG as part of the project.

APPENDIX A

Property Access Figures



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

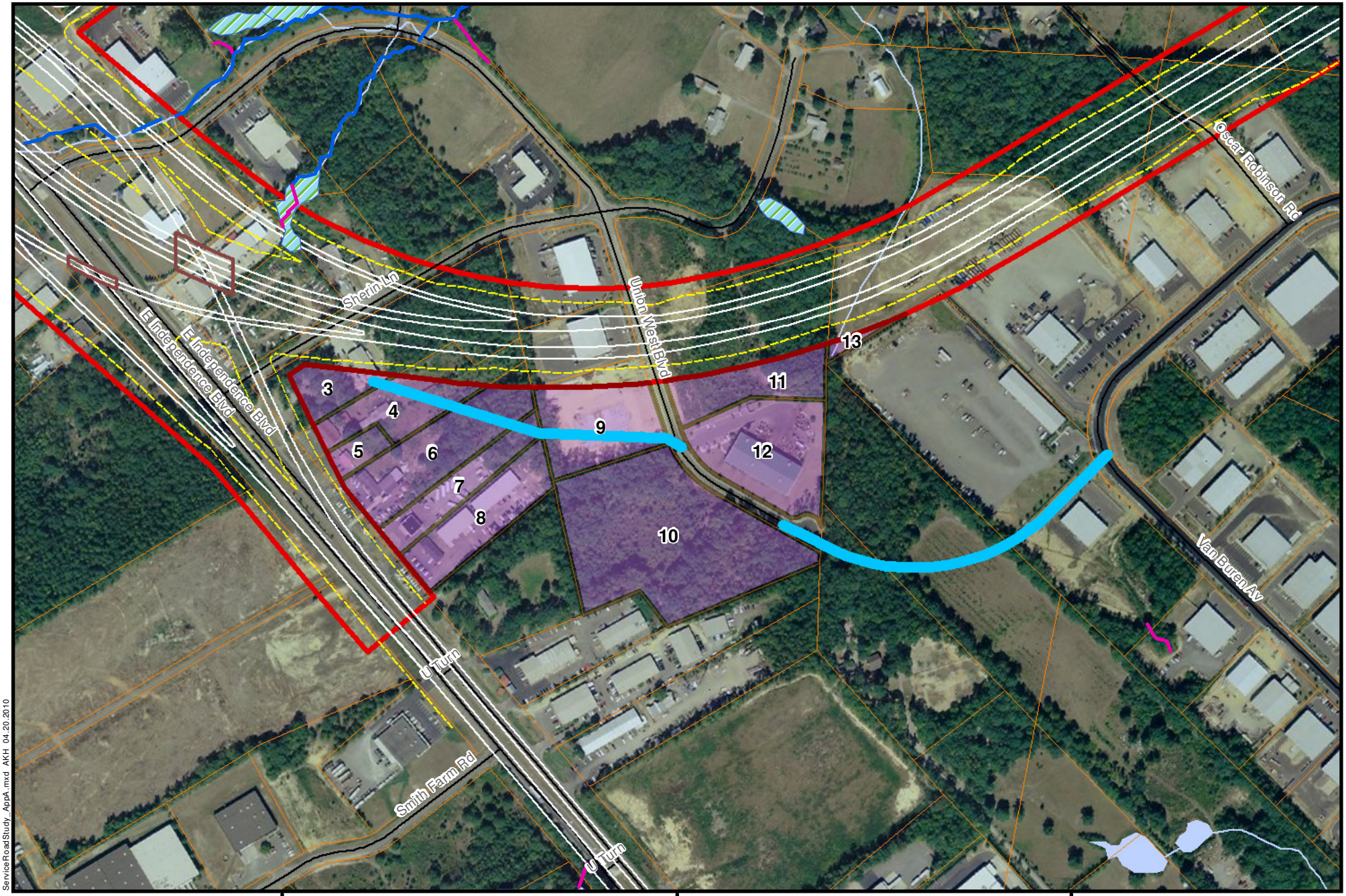
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

- Landlocked Parcels
- Service Road Initial Study
- Right of Way
- Parcels
- Slope Stakes
- Roadway Design
- Bridges
- Roads
- Surveyed Wetlands
- Surveyed Ponds
- Surveyed Intermittent
- Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: A | **Figure A- 1**



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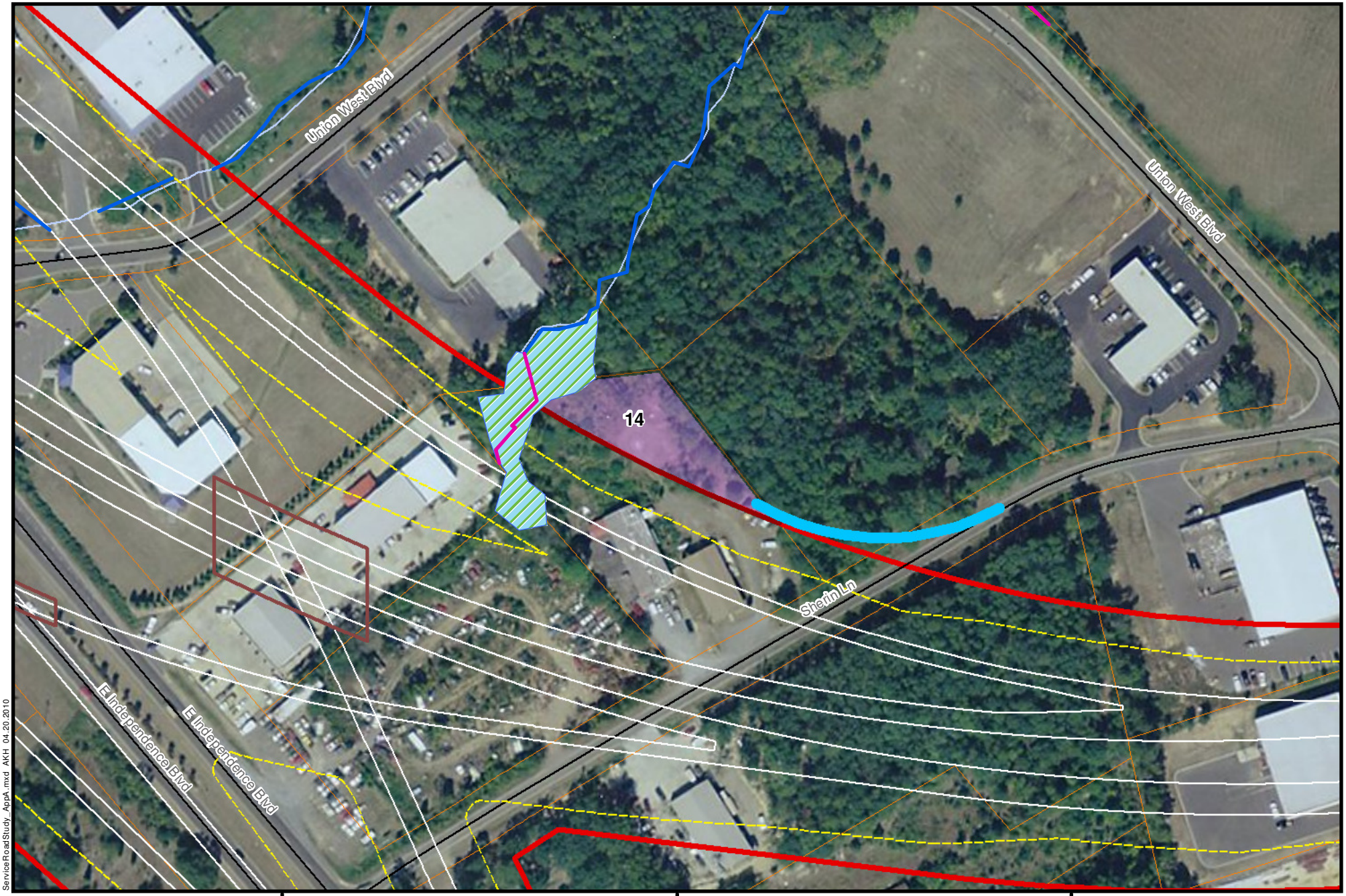
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: B | **Figure A- 2**



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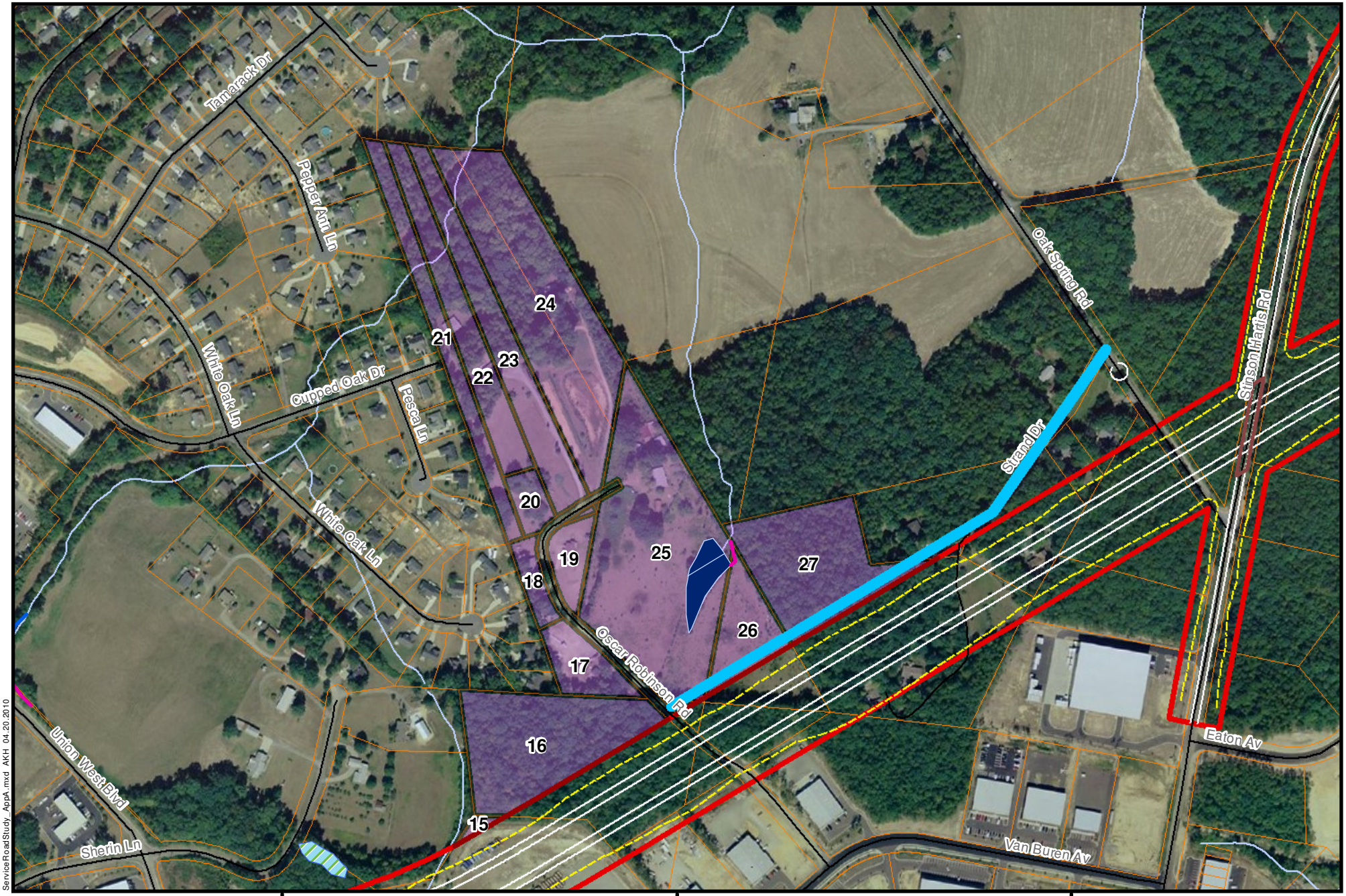
SERVICE ROAD STUDY
PROPERTY ACCESS

Area: C | **Figure A- 3**



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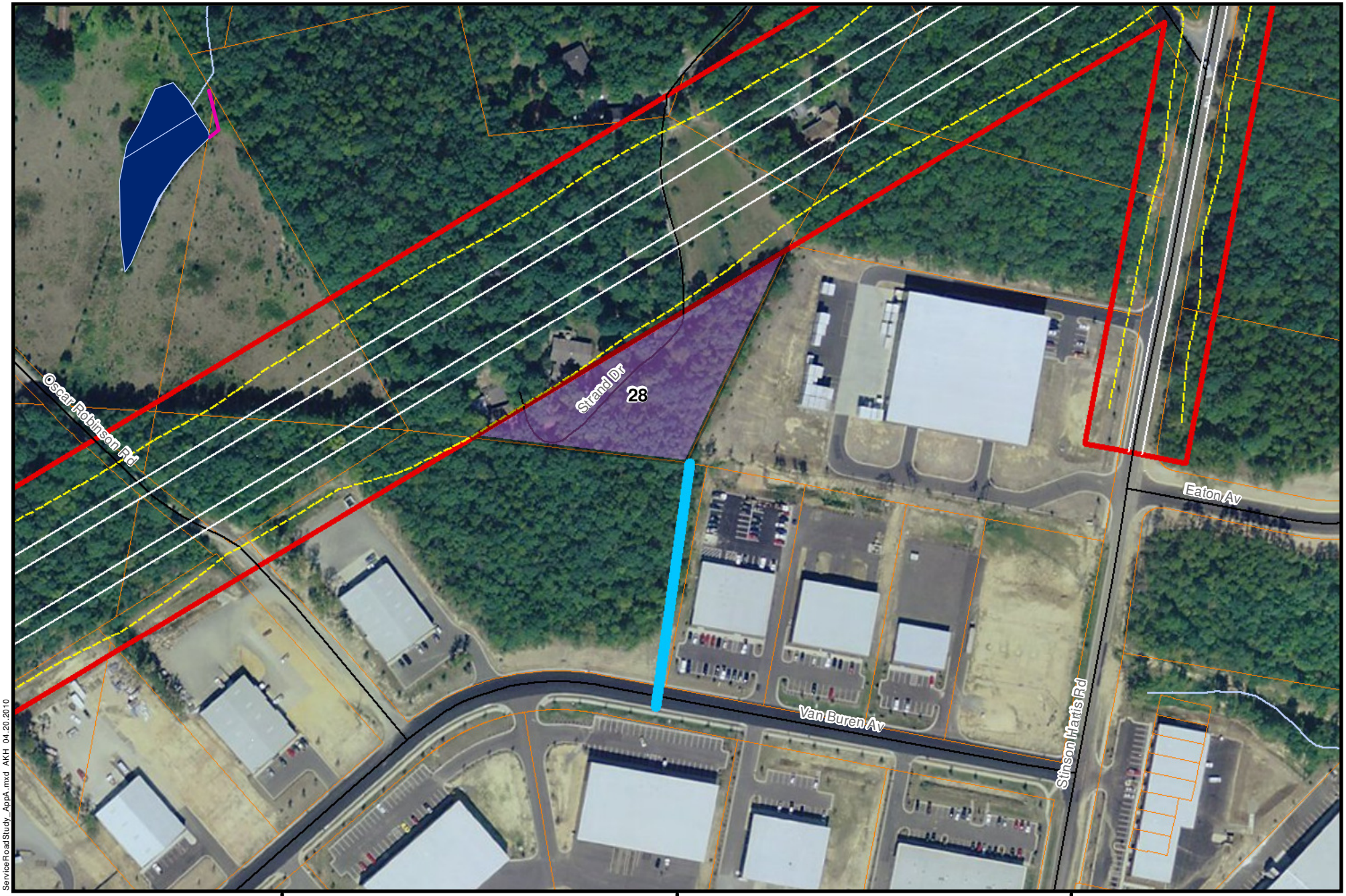
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: D | **Figure A- 4**



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MONROE CONNECTOR/BYPASS

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Mecklenburg and Union Counties

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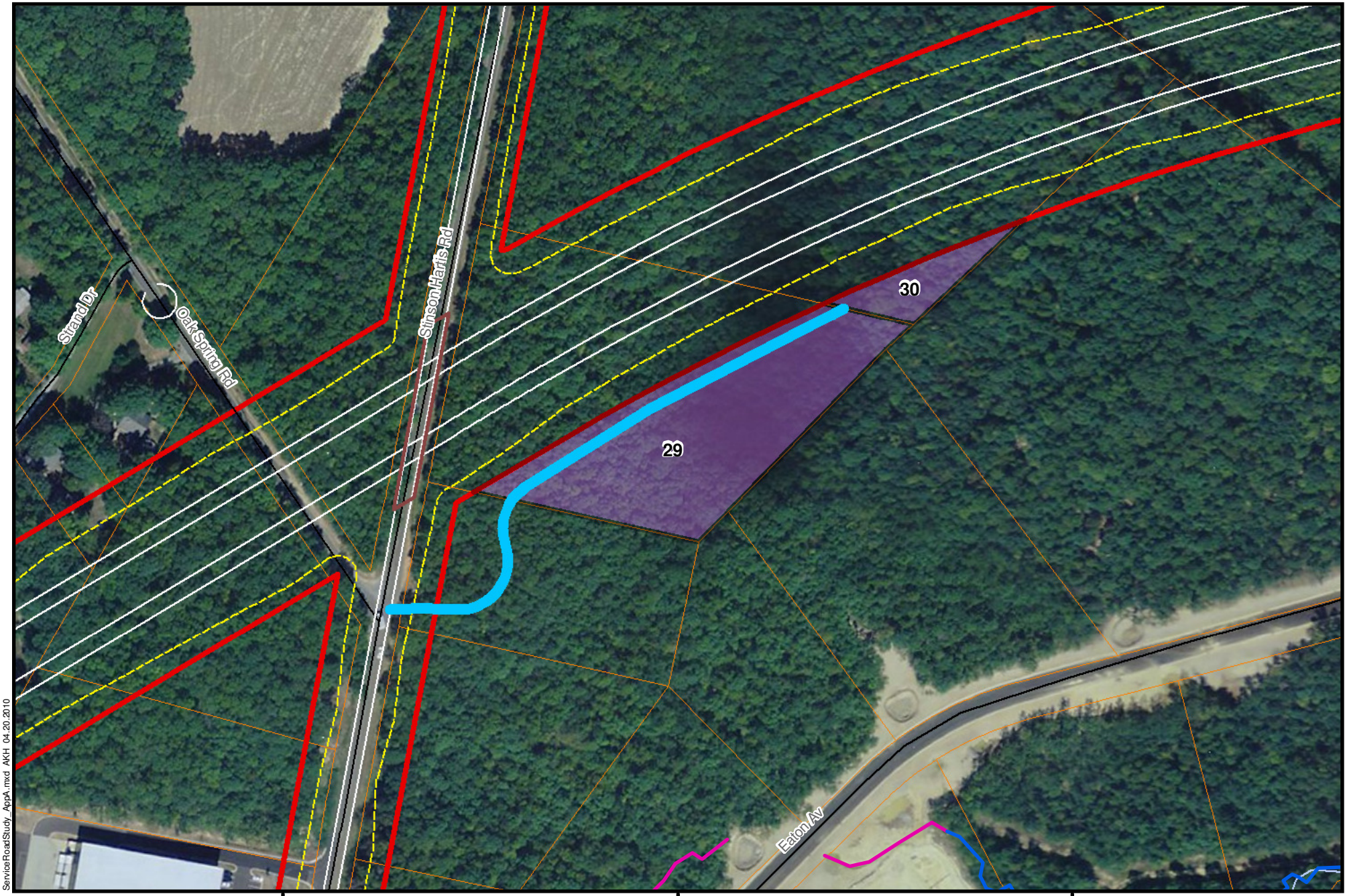
- Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: E | **Figure A- 5**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

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Mecklenburg and Union Counties

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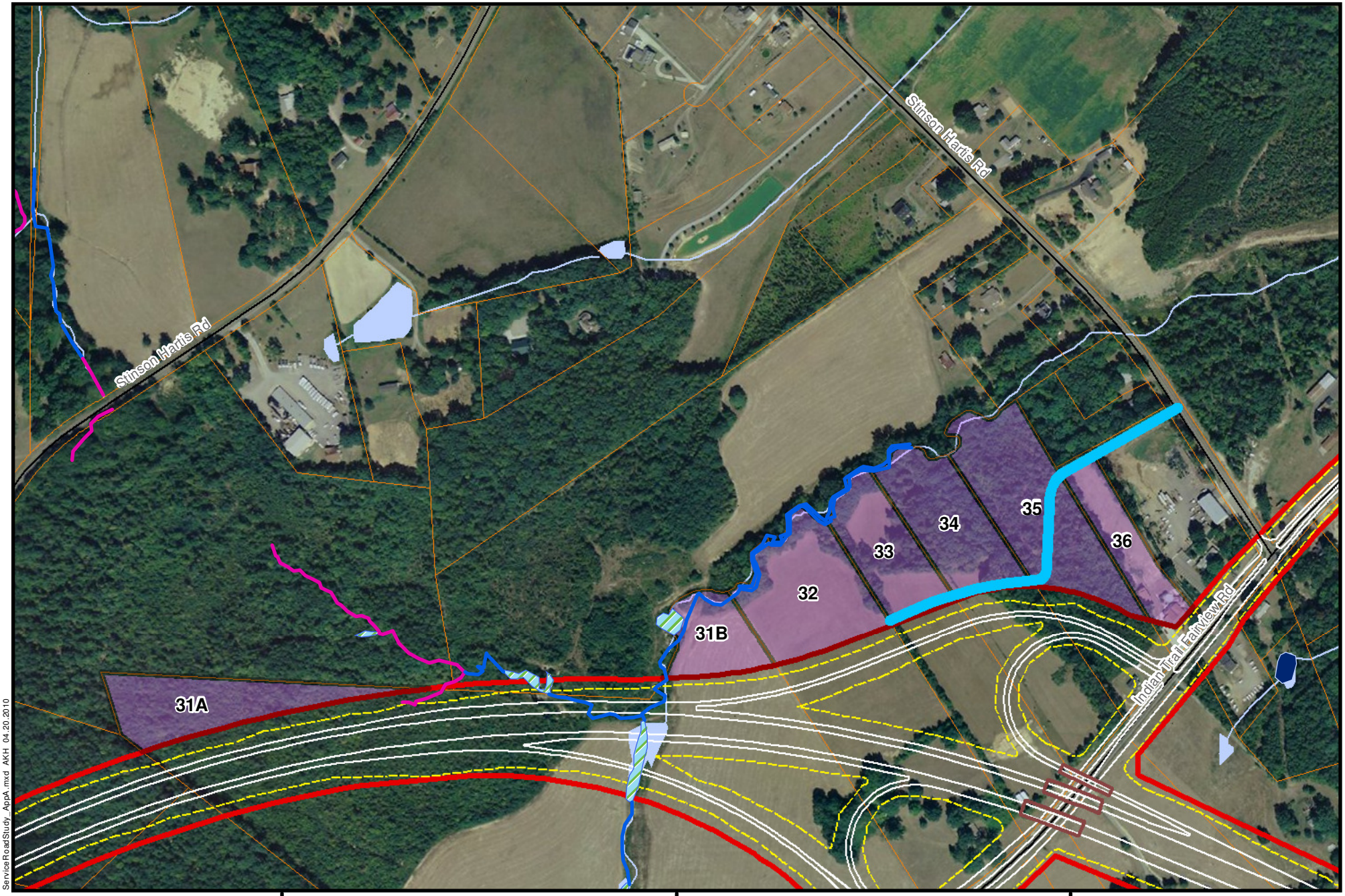
- Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: F | **Figure A- 6**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

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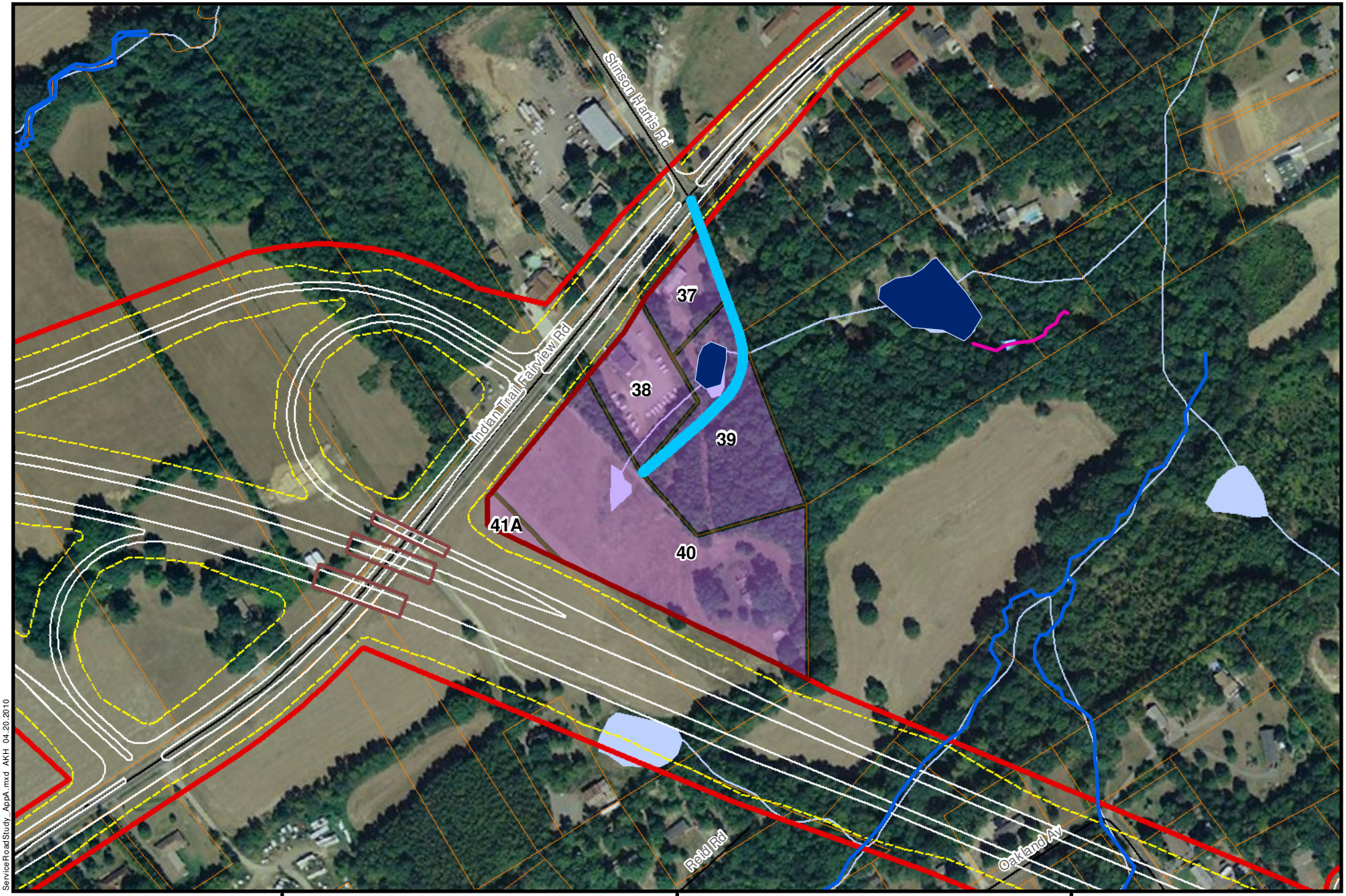
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: G | **Figure A- 7**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

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PRELIMINARY: SUBJECT TO CHANGE

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Roads
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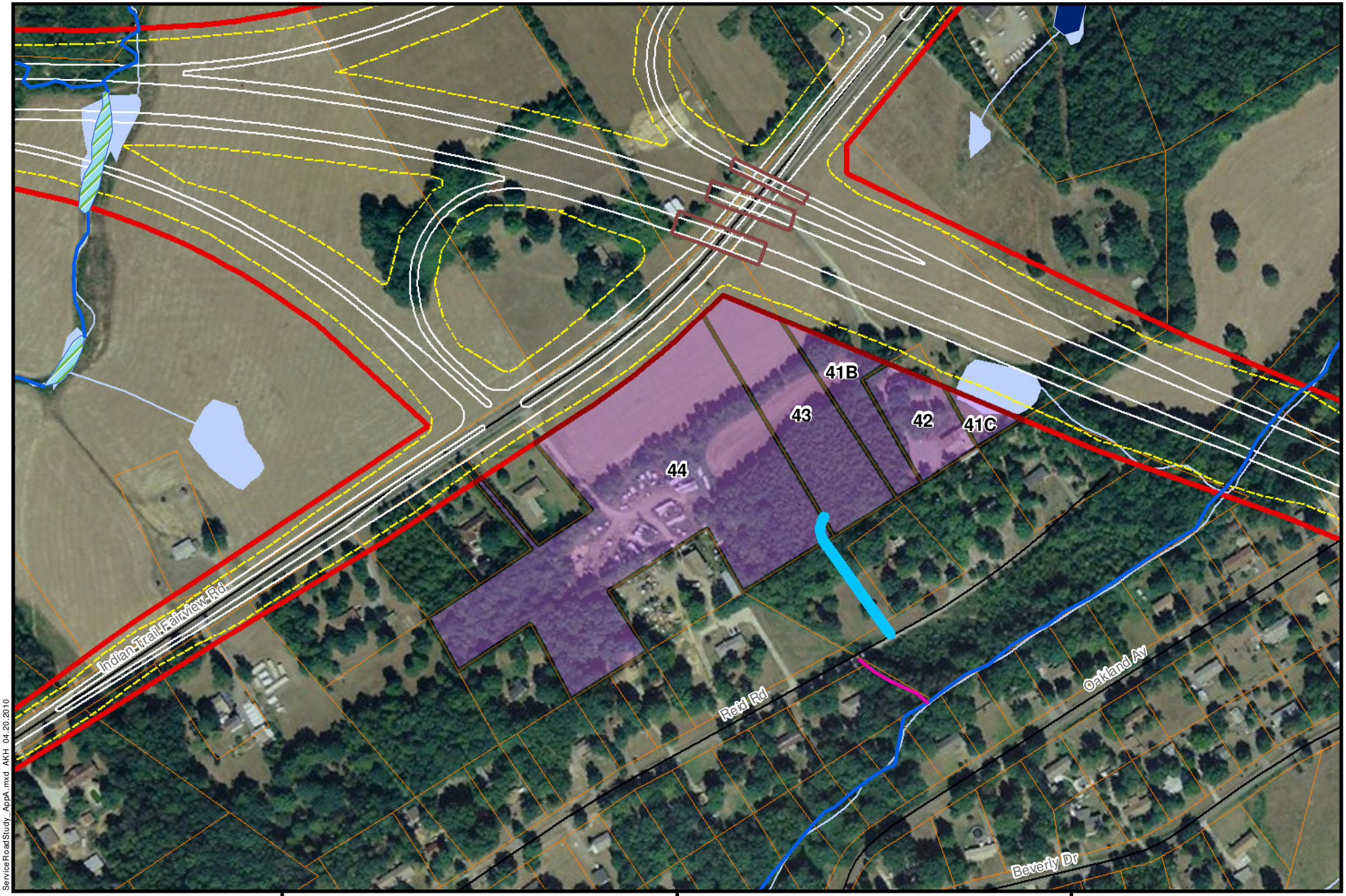
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: H | **Figure A- 8**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

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PRELIMINARY: SUBJECT TO CHANGE

NOT TO SCALE

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Service Road Initial Study
Right of Way
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Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: I | **Figure A- 9**

ServiceRoadStudy_AppA.mxd AKH 04.20.2010

NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

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Service Road Initial Study
Right of Way
Parcels
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Surveyed Wetlands
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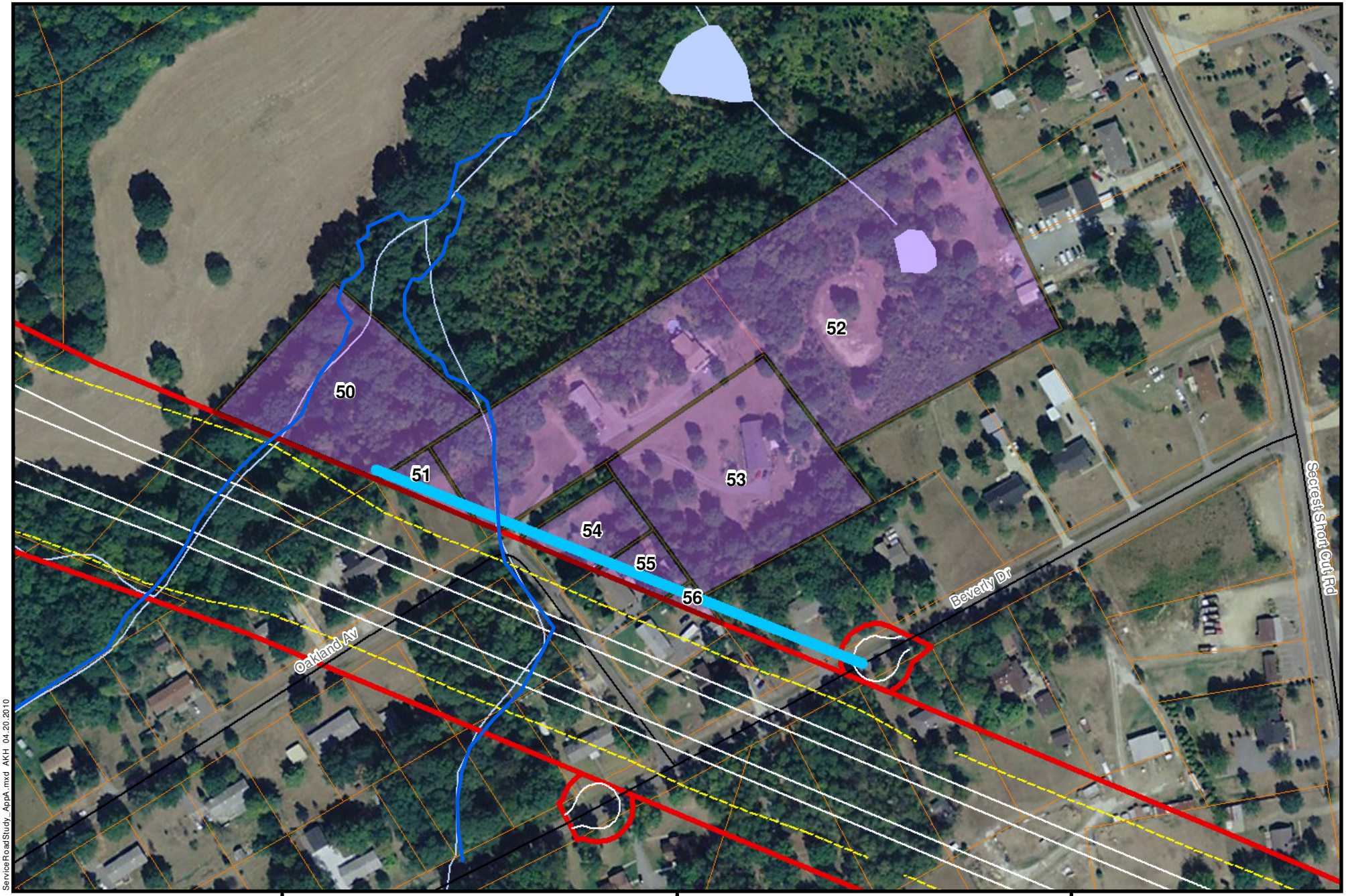
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: J | **Figure A-10**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

NOT TO SCALE

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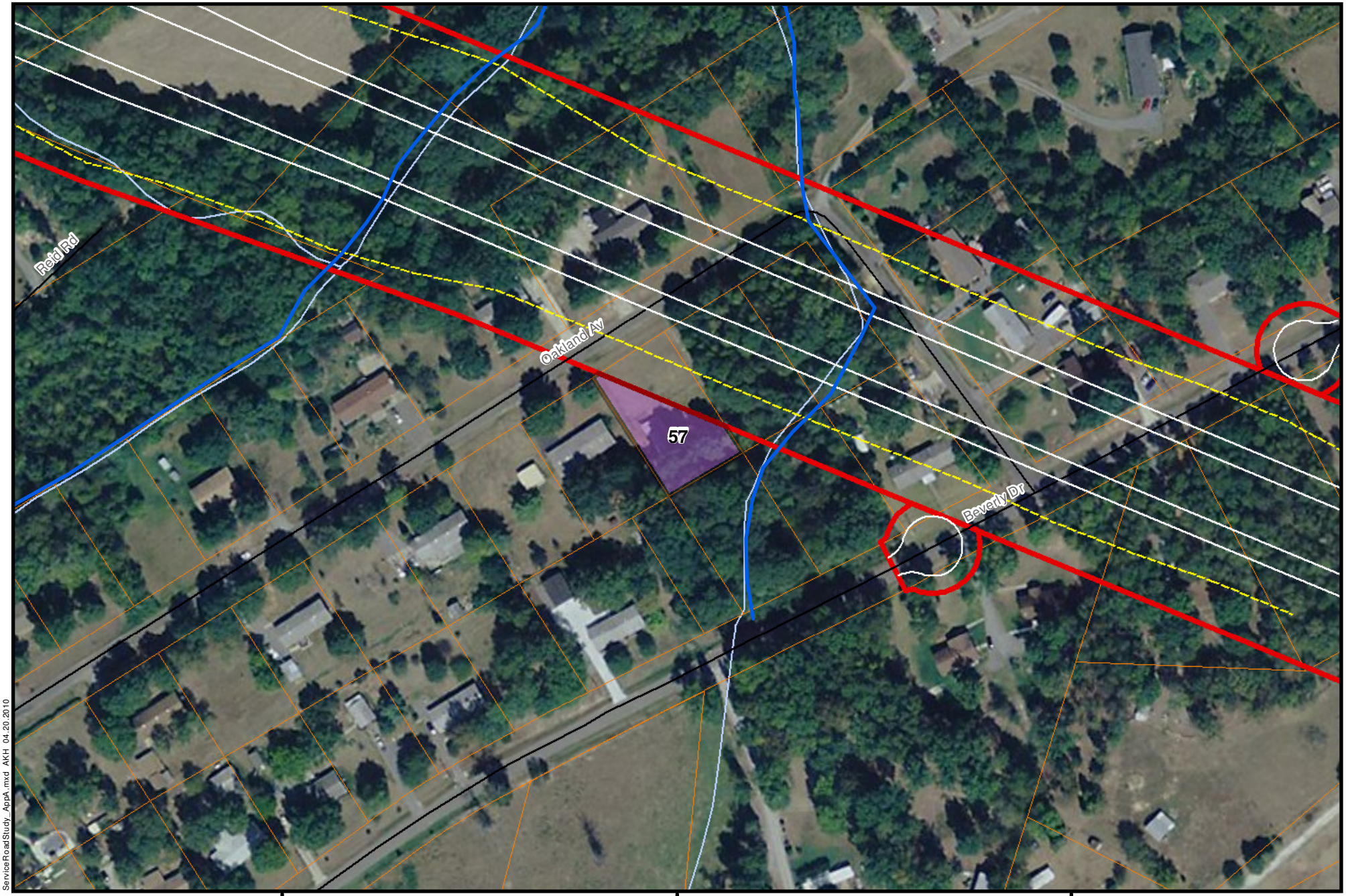
- Parcels
- Slope Stakes
- Roadway Design
- Bridges
- Roads
- Surveyed Wetlands
- Surveyed Ponds
- Surveyed Intermittent
- Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: K | **Figure A-11**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

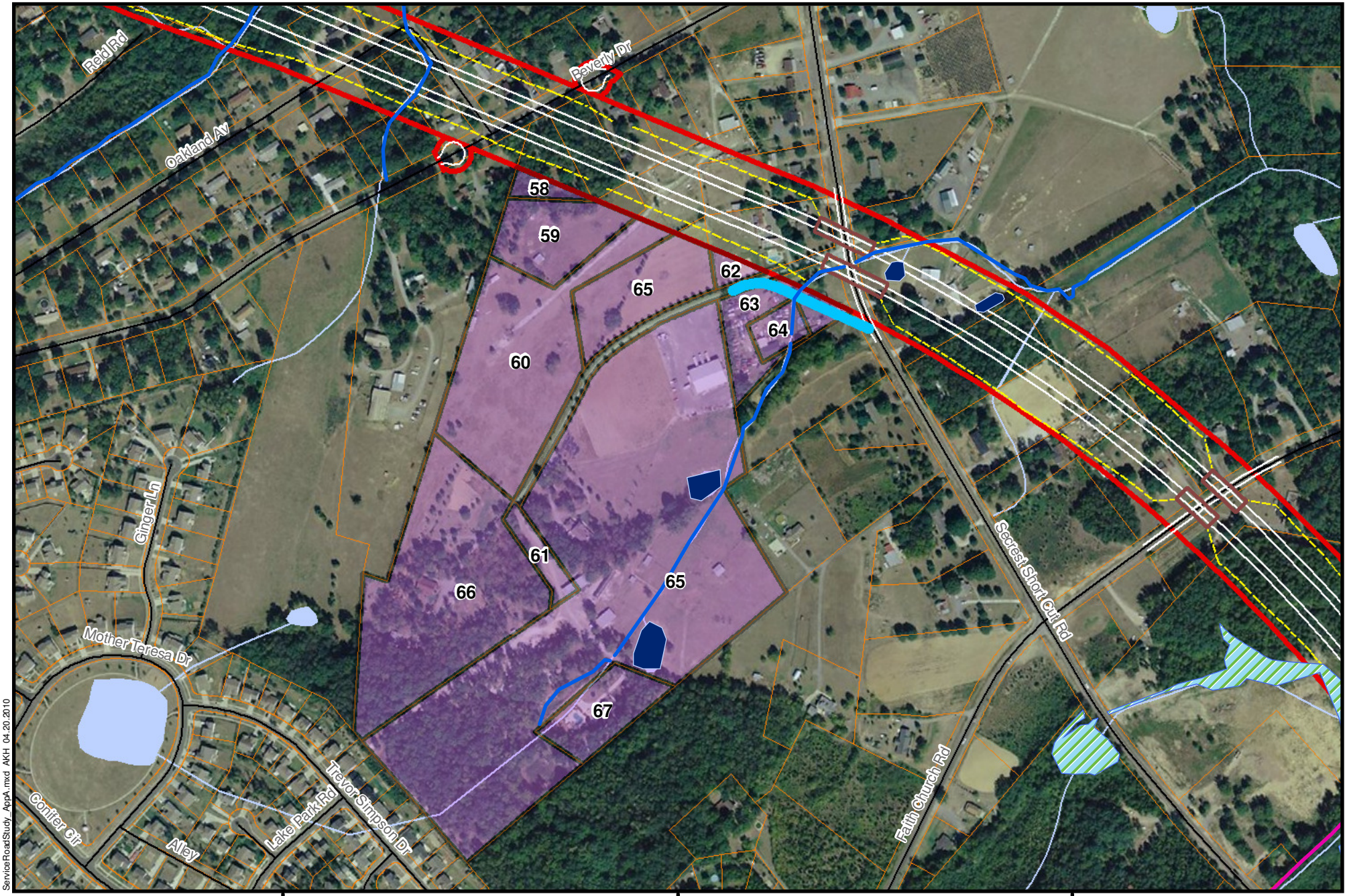
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Landlocked Parcels
Service Road Initial Study
Right of Way
Parcels
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: L | **Figure A-12**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

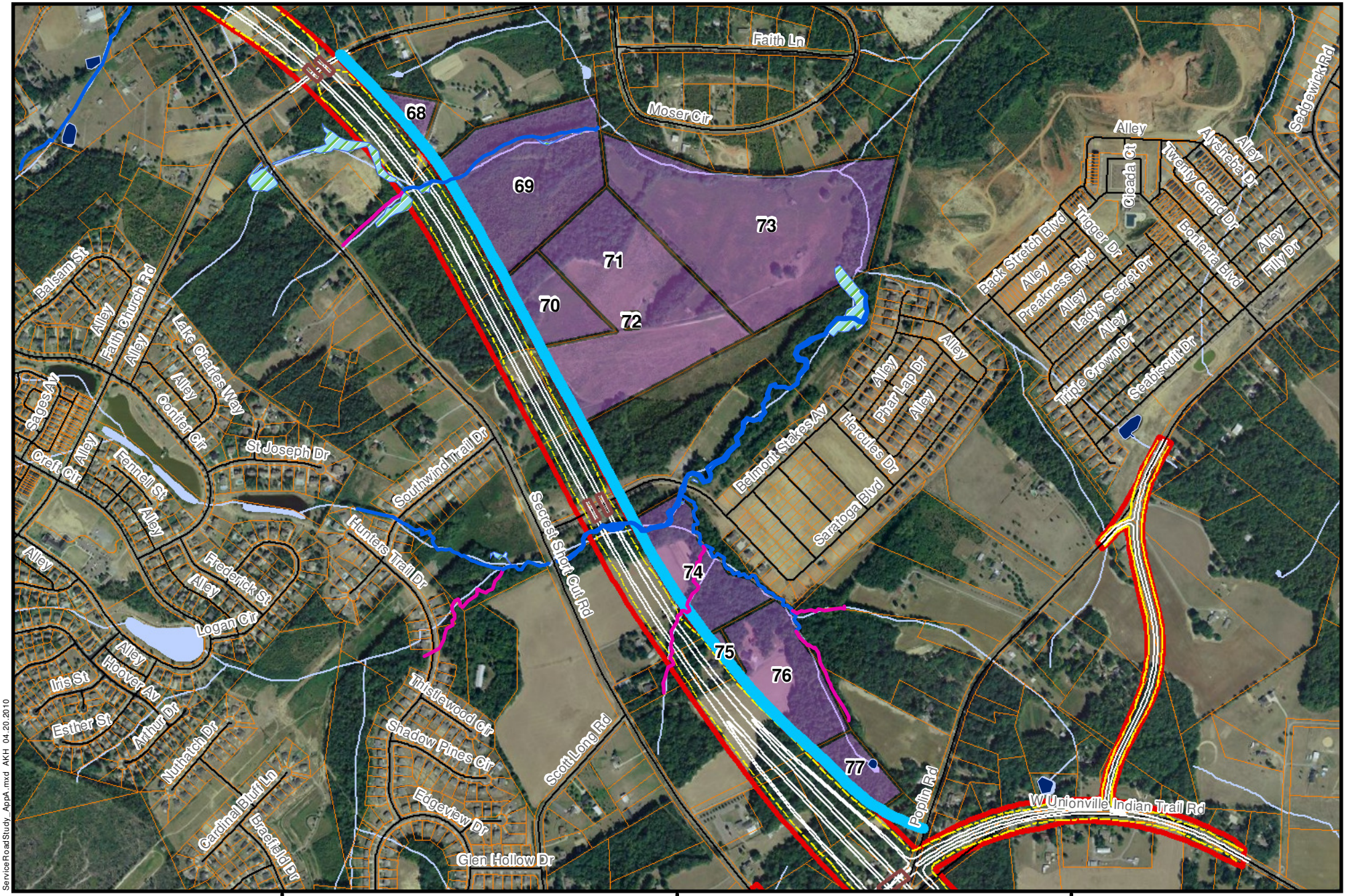
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

- Landlocked Parcels
- Service Road Initial Study
- Right of Way
- Parcels
- Slope Stakes
- Roadway Design
- Bridges
- Roads
- Surveyed Wetlands
- Surveyed Ponds
- Surveyed Intermittent
- Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: M | **Figure A-13**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

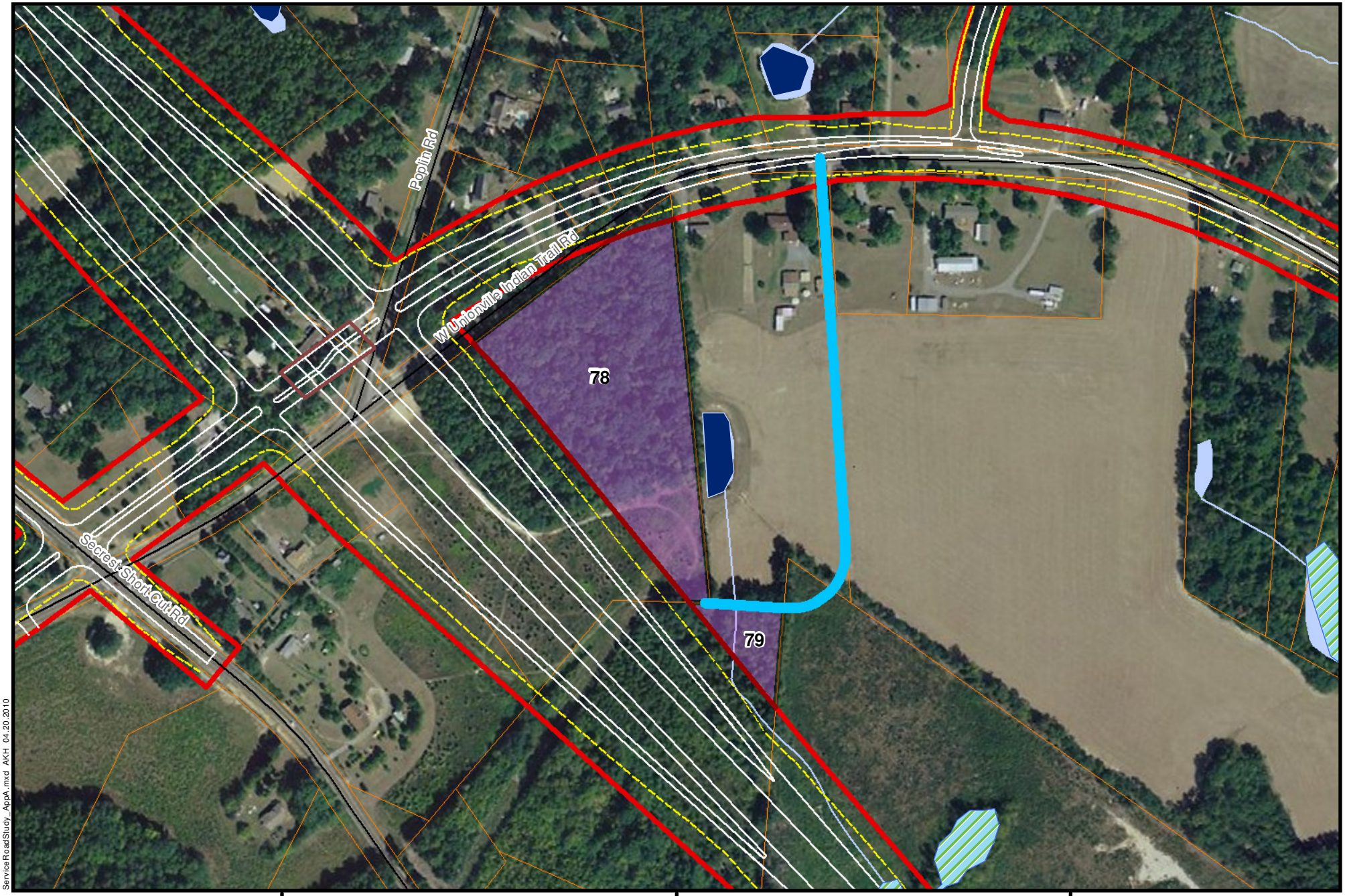
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Landlocked Parcels
Service Road Initial Study
Right of Way
Parcels
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: N | **Figure A-14**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

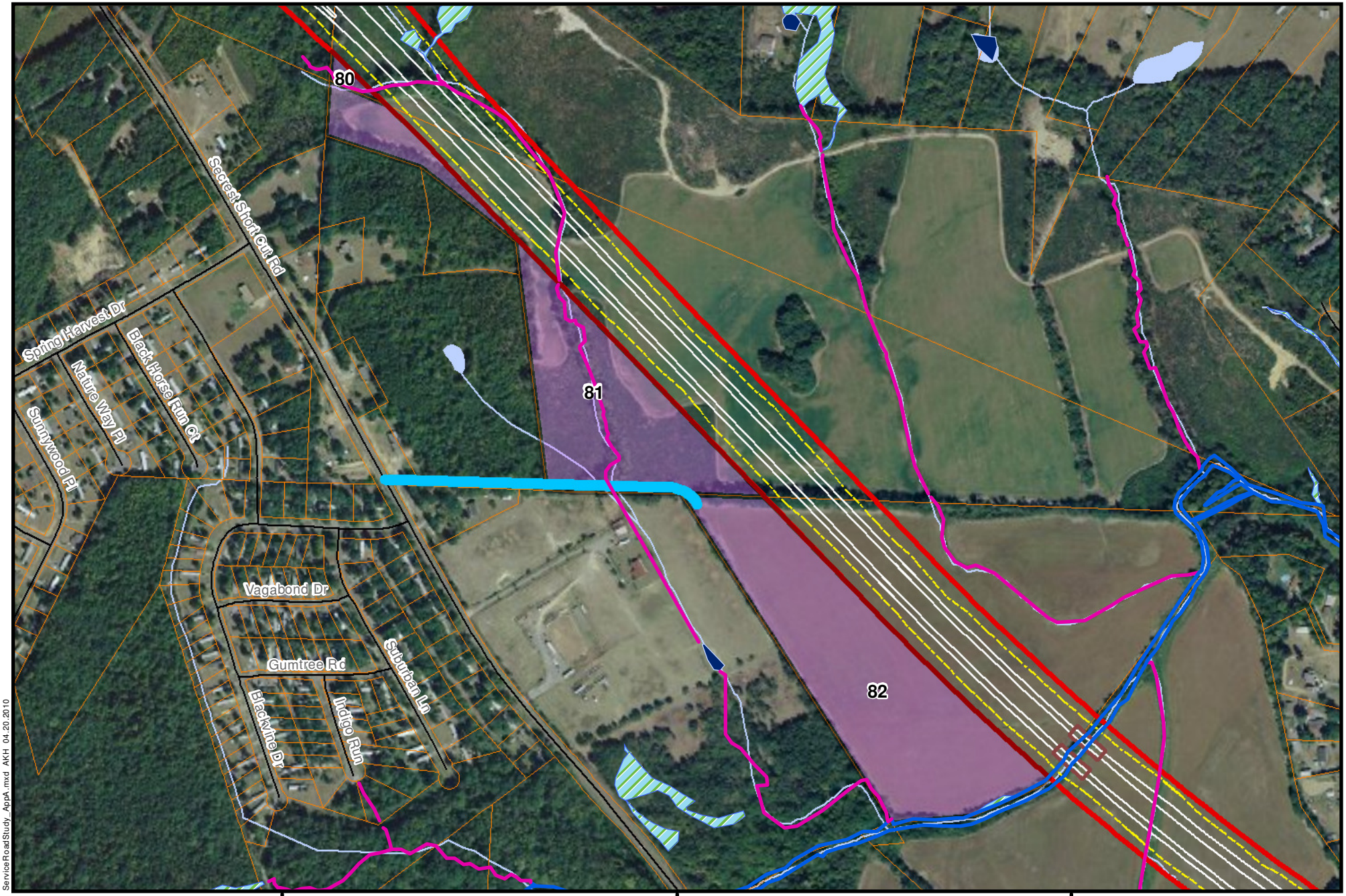
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Landlocked Parcels
Service Road Initial Study
Right of Way
Parcels
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: O | **Figure A-15**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

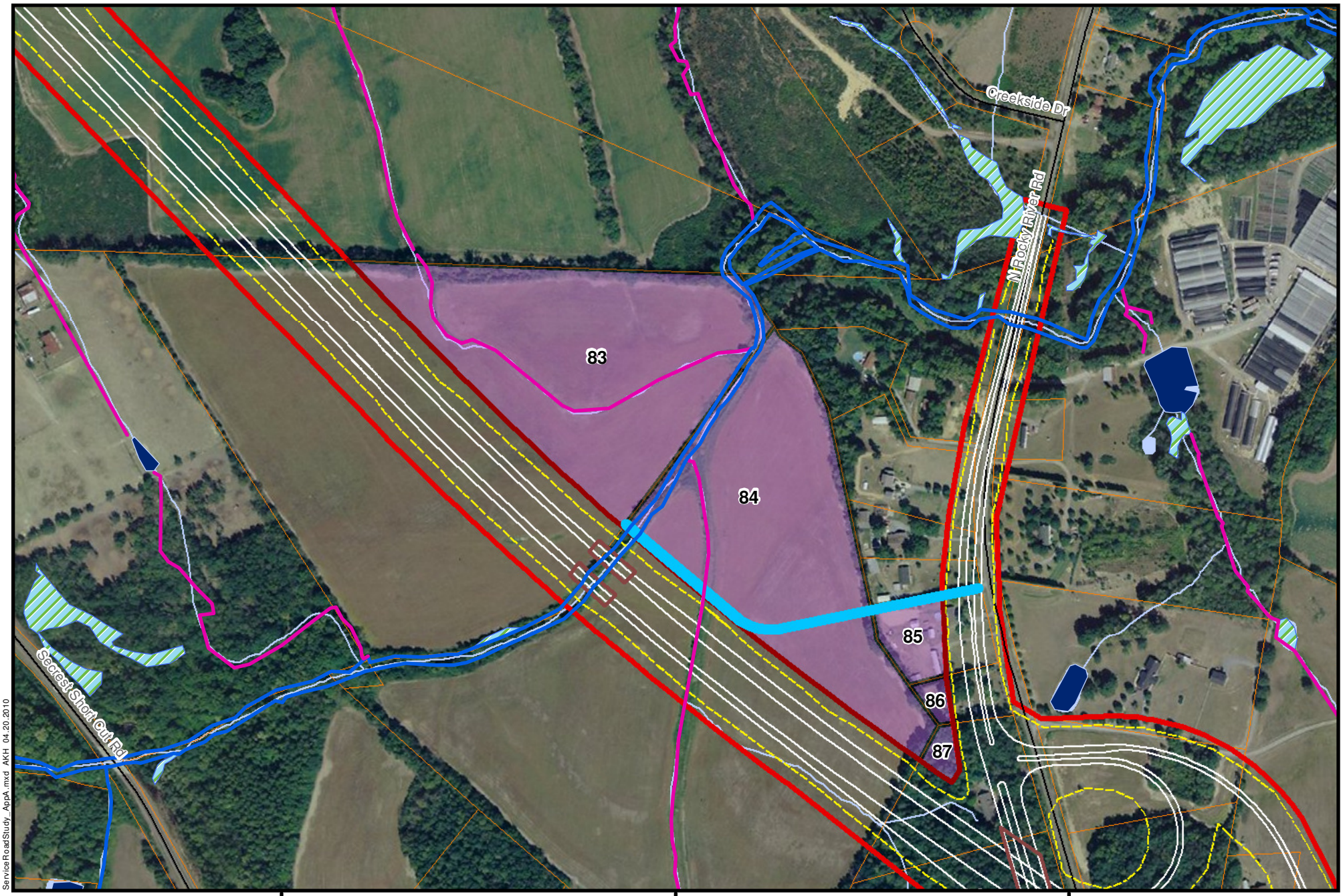
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Landlocked Parcels
Service Road Initial Study
Right of Way
Parcels
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: P | **Figure A-16**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

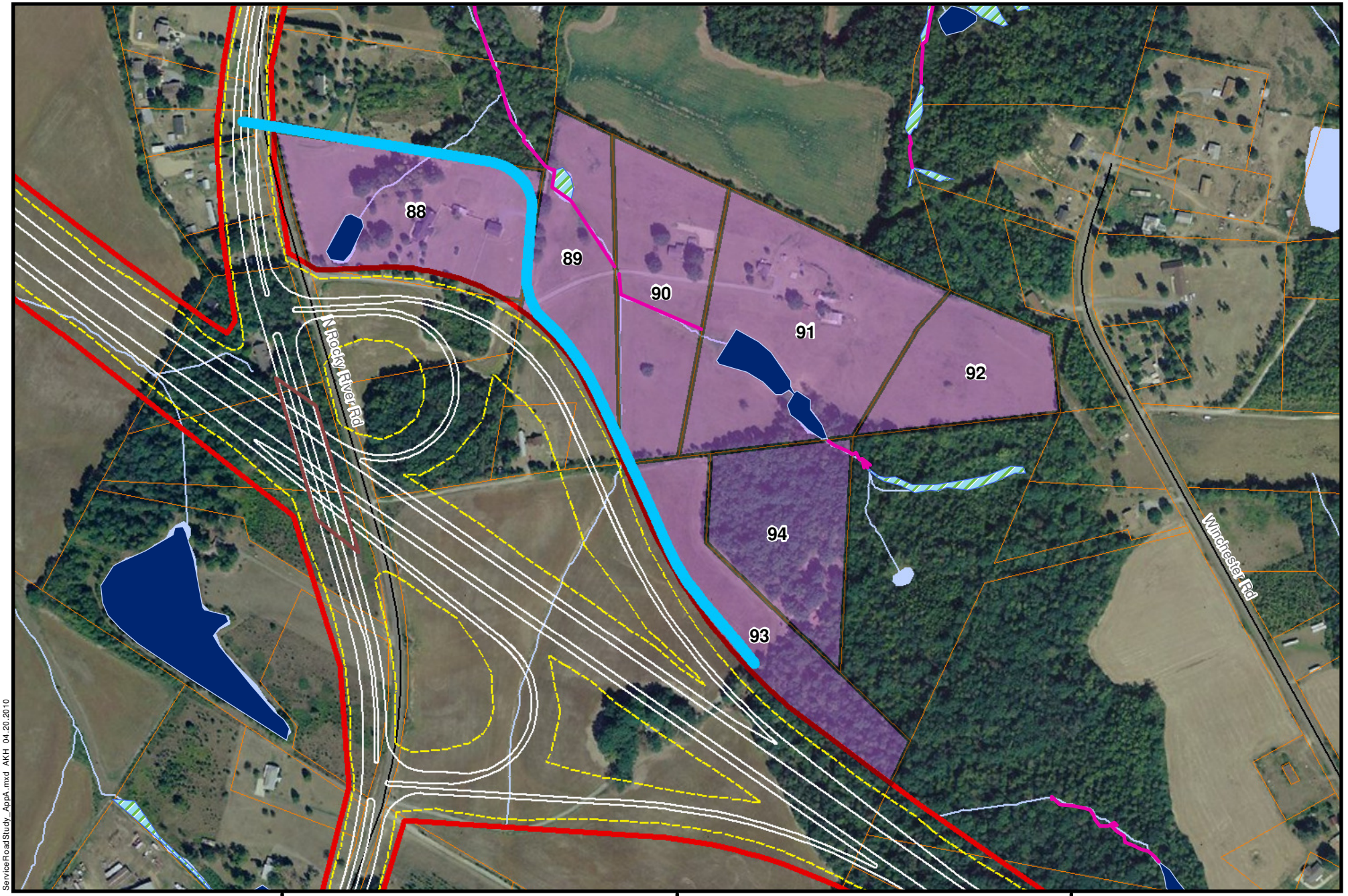
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

- Landlocked Parcels
- Service Road Initial Study
- Right of Way
- Parcels
- Slope Stakes
- Roadway Design
- Bridges
- Roads
- Surveyed Wetlands
- Surveyed Ponds
- Surveyed Intermittent
- Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: Q | **Figure A-17**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

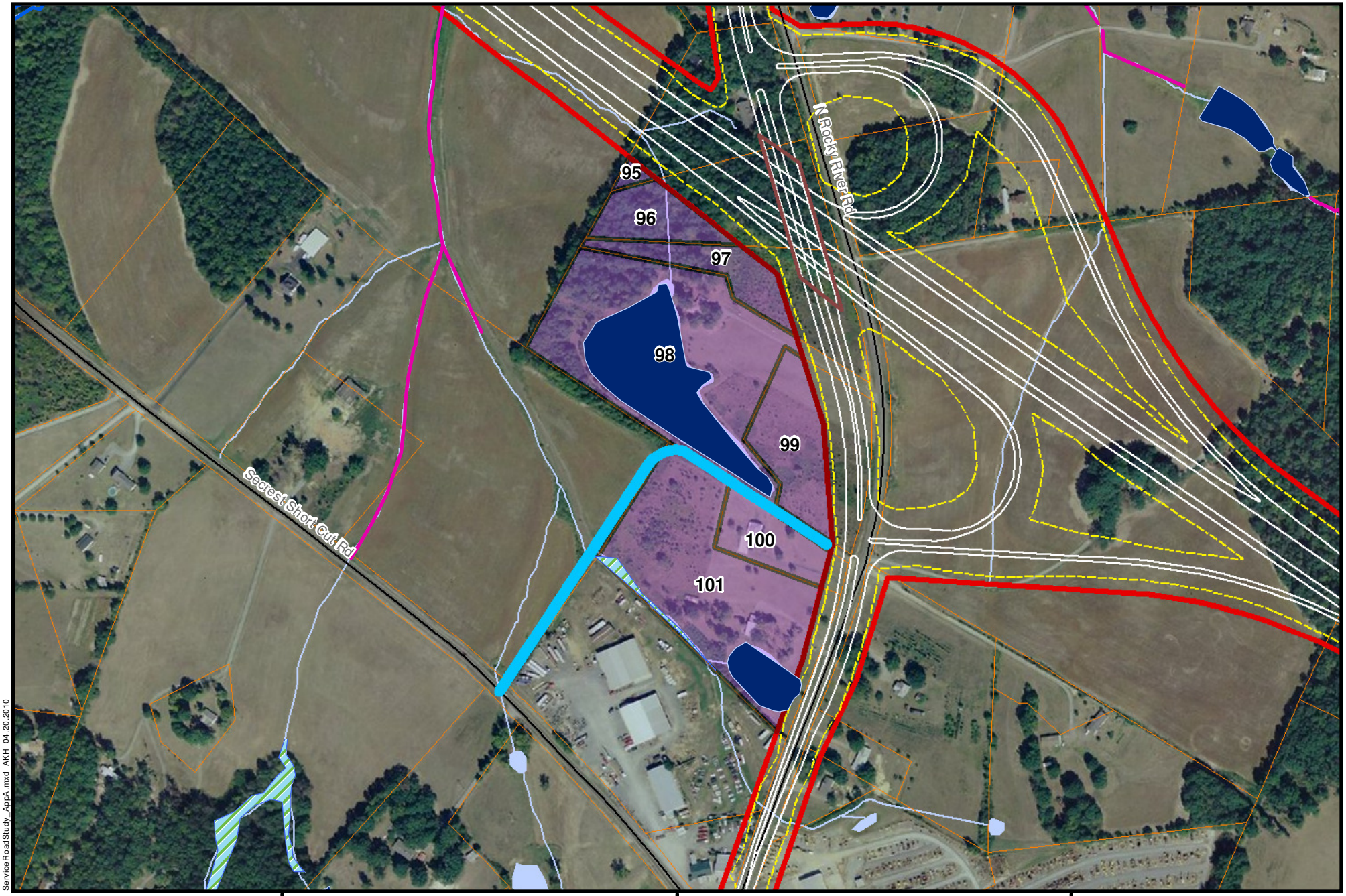
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Landlocked Parcels
Service Road Initial Study
Right of Way
Parcels
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: R | **Figure A-18**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

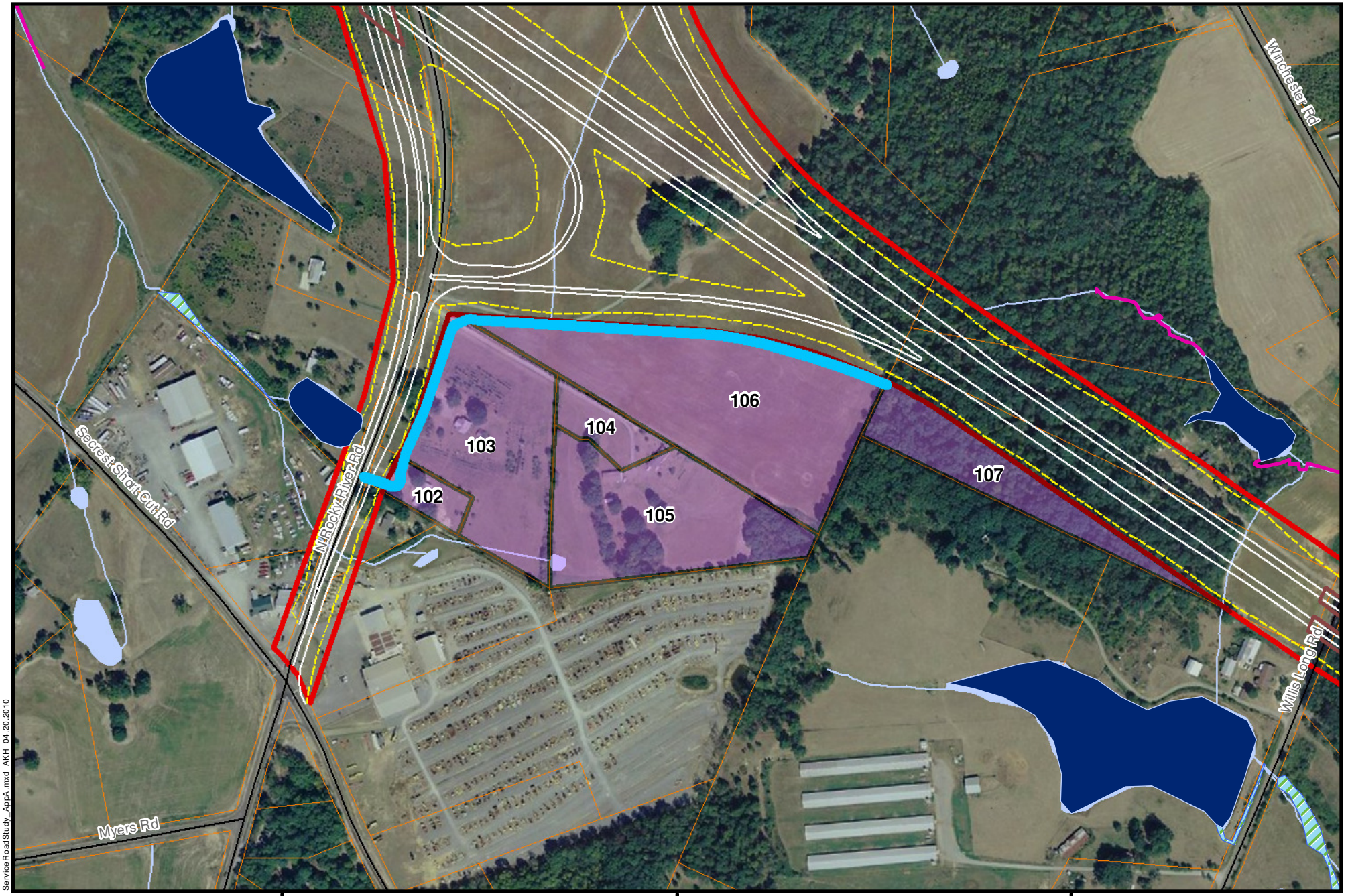
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Landlocked Parcels
Service Road Initial Study
Right of Way
Parcels
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: S | **Figure A-19**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

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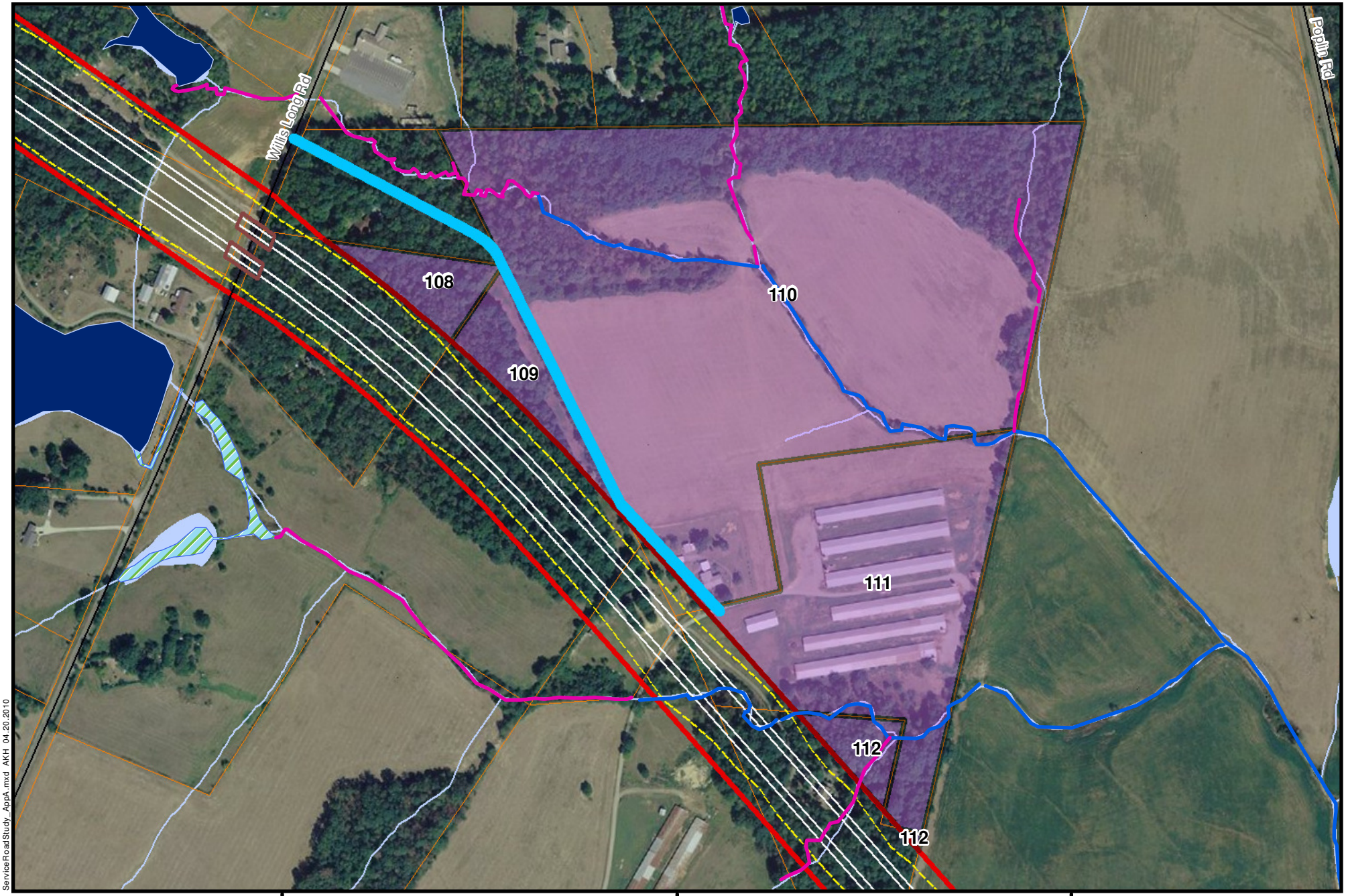
Landlocked Parcels
Service Road Initial Study
Right of Way
Parcels
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: T | **Figure A-20**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

PRELIMINARY: SUBJECT TO CHANGE

NOT TO SCALE

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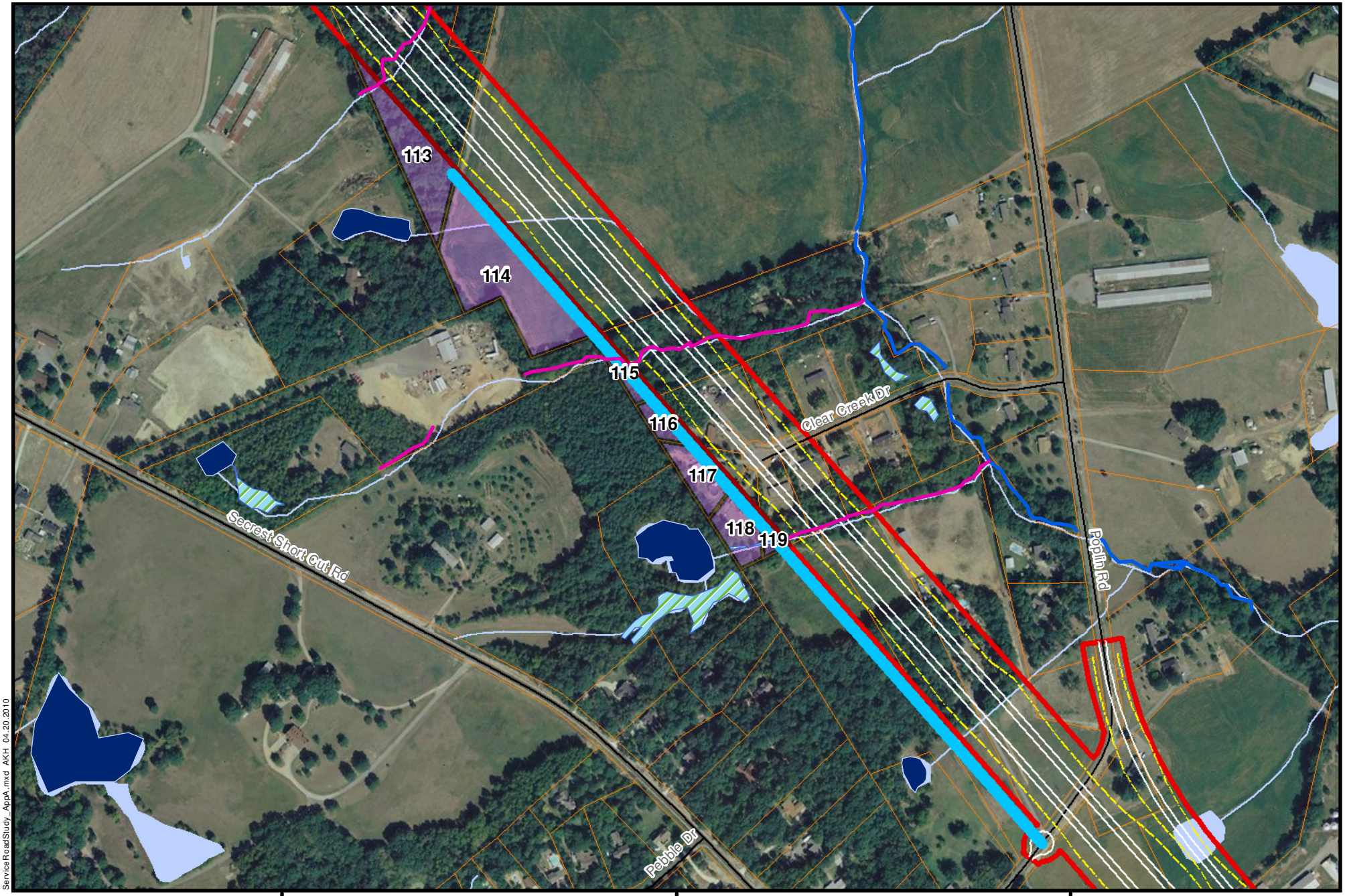
Landlocked Parcels
Service Road Initial Study
Right of Way
Parcels
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: U | **Figure A-21**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

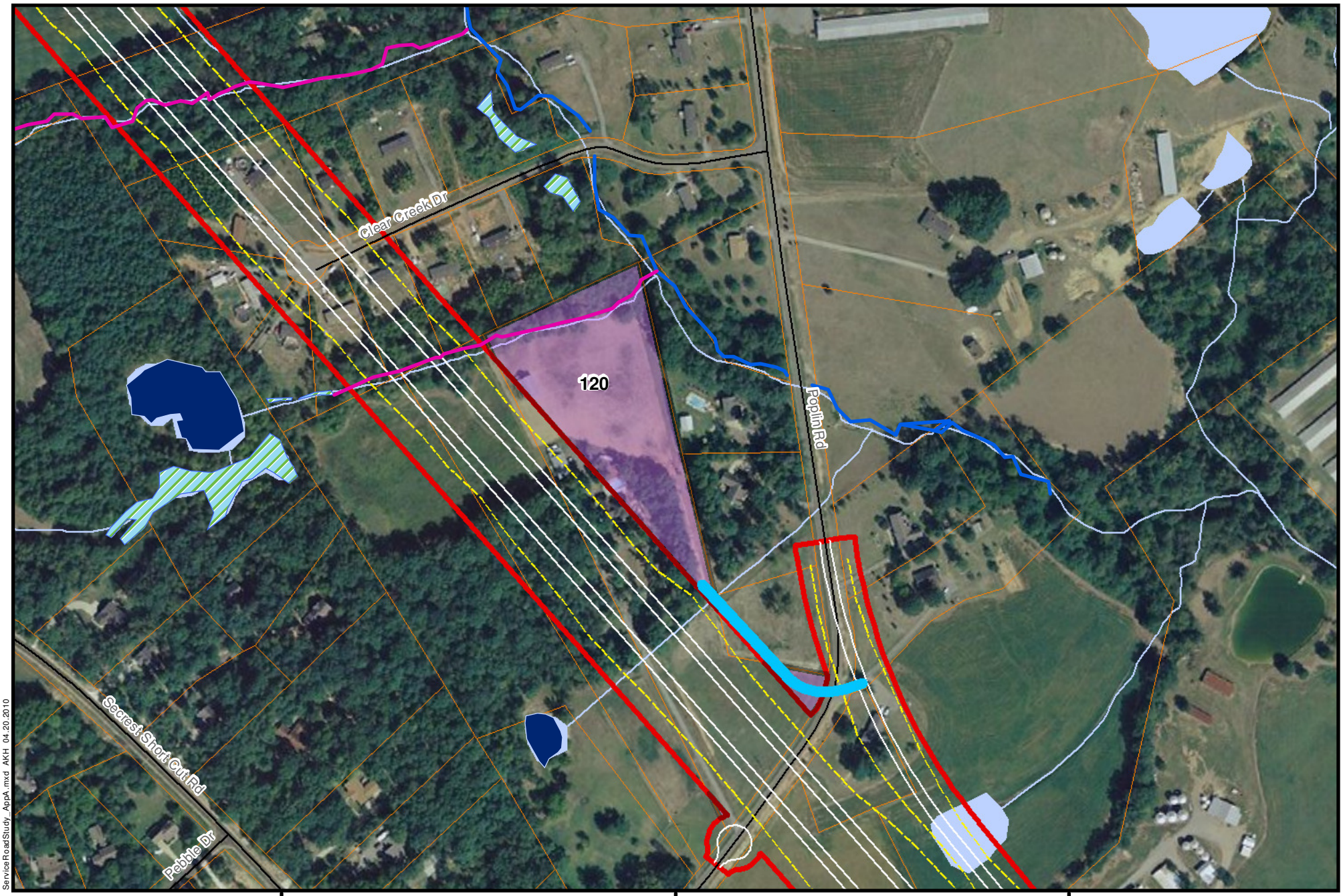
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

- Landlocked Parcels
- Service Road Initial Study
- Right of Way
- Parcels
- Slope Stakes
- Roadway Design
- Bridges
- Roads
- Surveyed Wetlands
- Surveyed Ponds
- Surveyed Intermittent
- Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: V | **Figure A-22**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

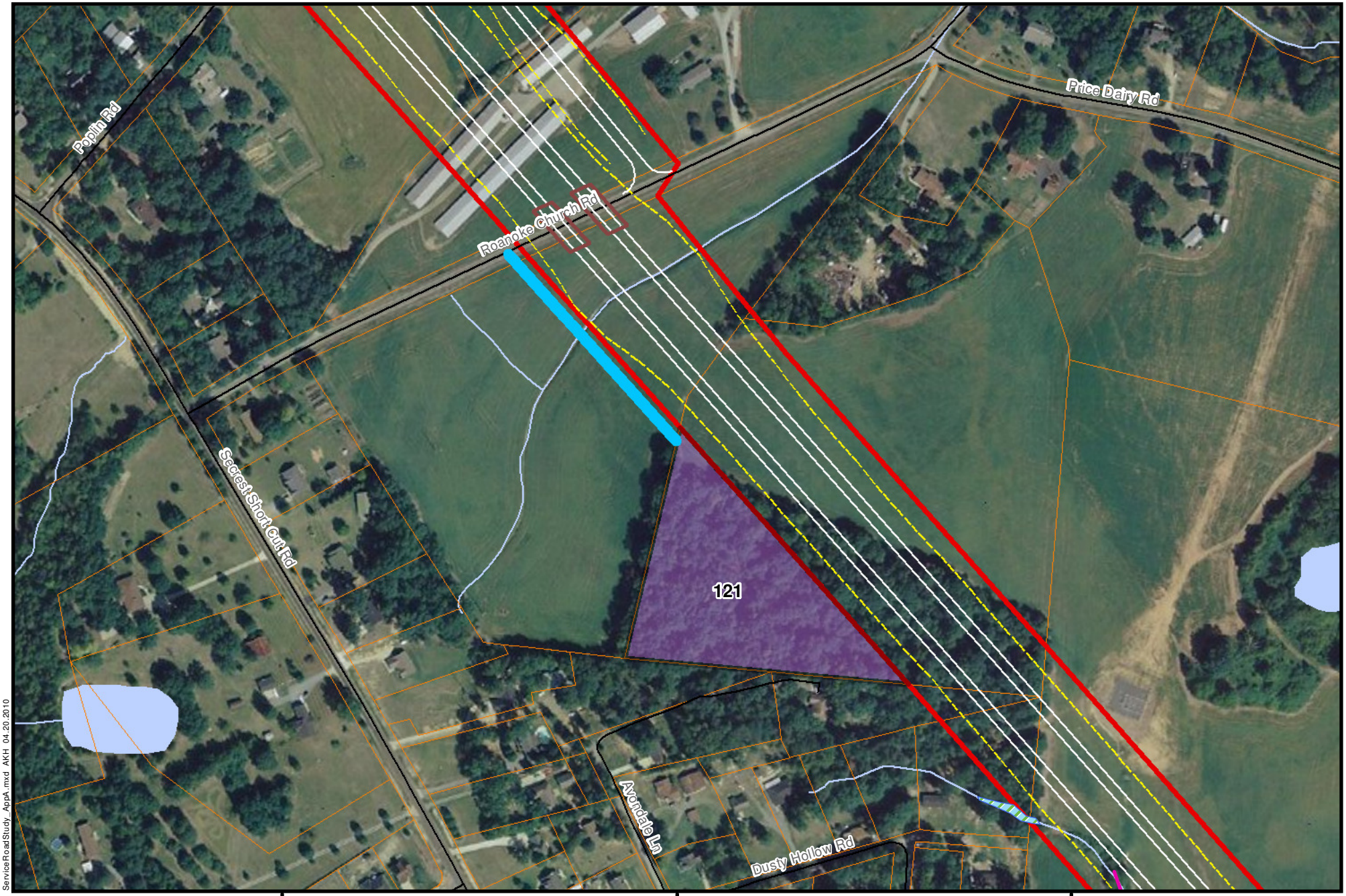
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

- Landlocked Parcels
- Service Road Initial Study
- Right of Way
- Parcels
- Slope Stakes
- Roadway Design
- Bridges
- Roads
- Surveyed Wetlands
- Surveyed Ponds
- Surveyed Intermittent
- Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: W | **Figure A-23**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

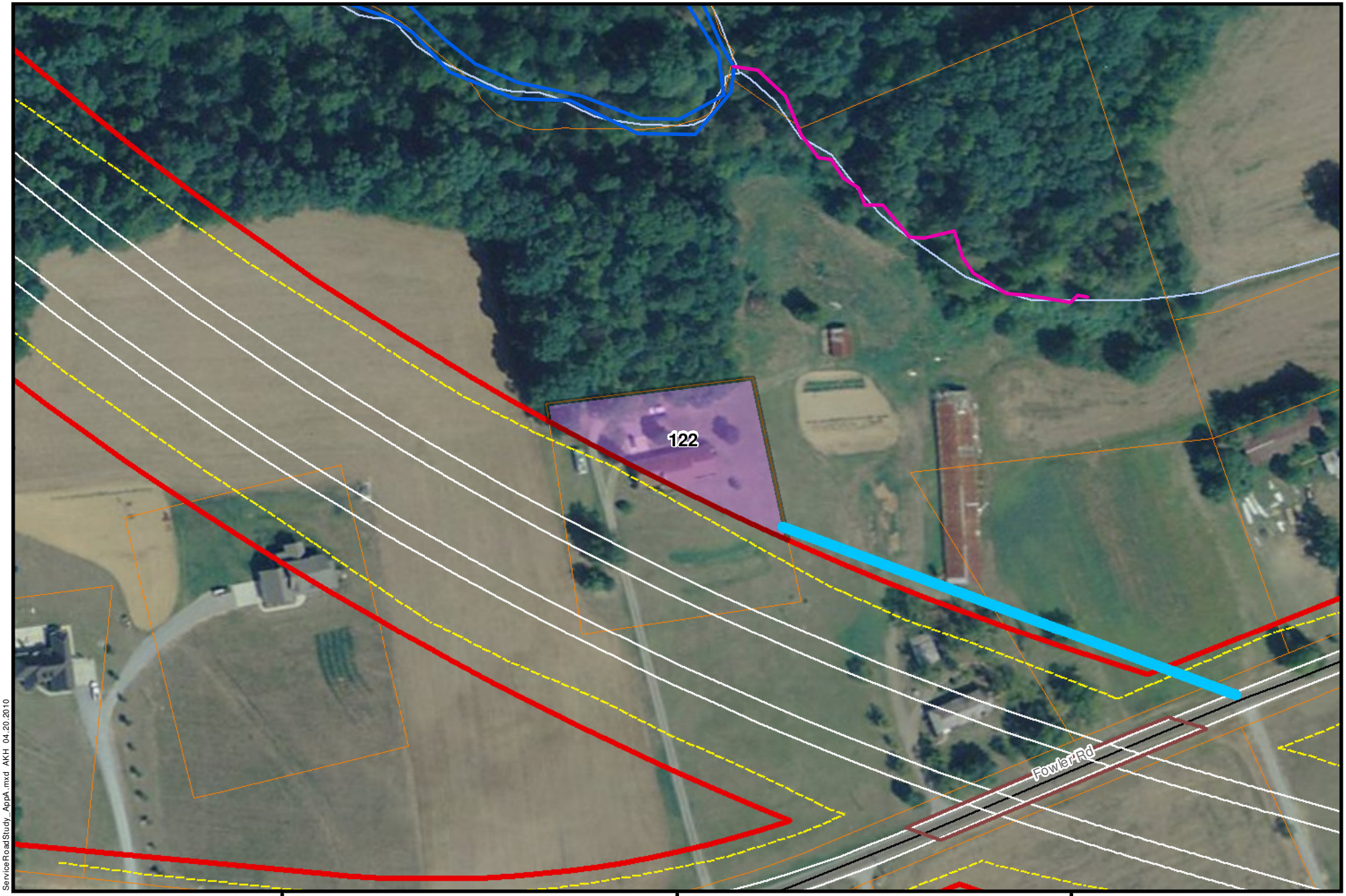
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Landlocked Parcels
Service Road Initial Study
Right of Way
Parcels
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: X | **Figure A-24**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

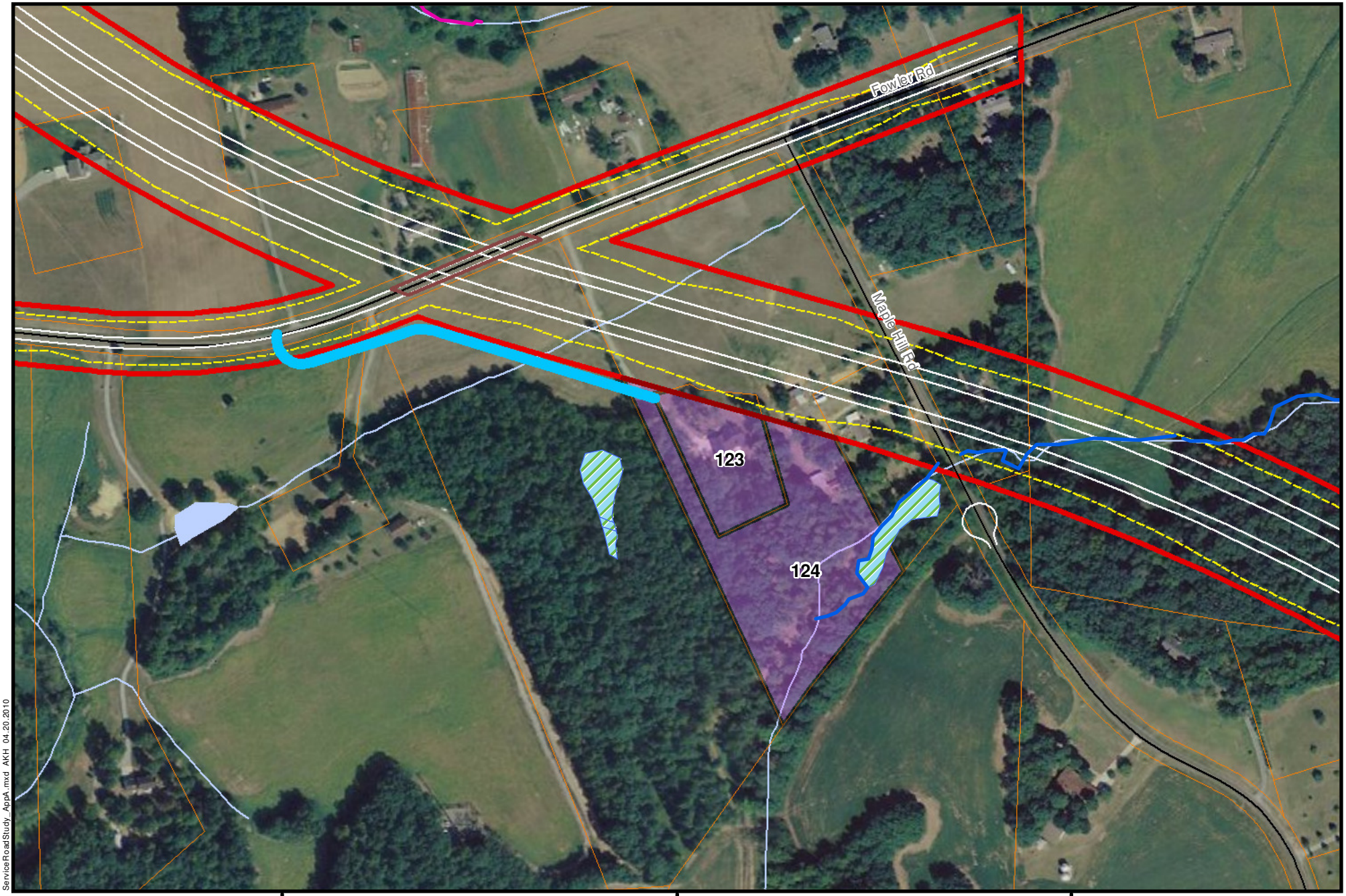
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Landlocked Parcels
Service Road Initial Study
Right of Way
Parcels
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: Y | **Figure A-25**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

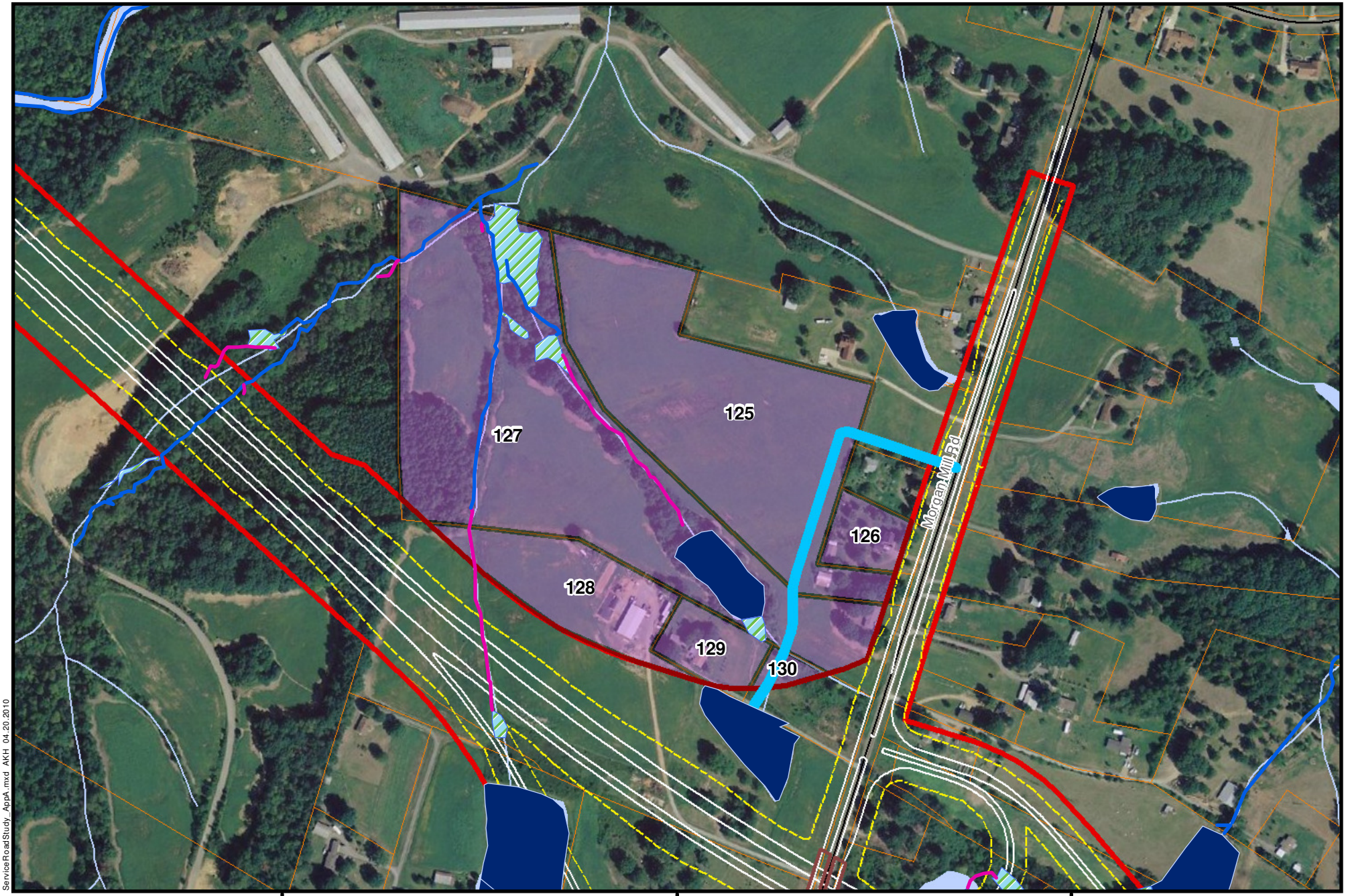
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Landlocked Parcels
Service Road Initial Study
Right of Way
Parcels
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: Z | **Figure A-26**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

NOT TO SCALE

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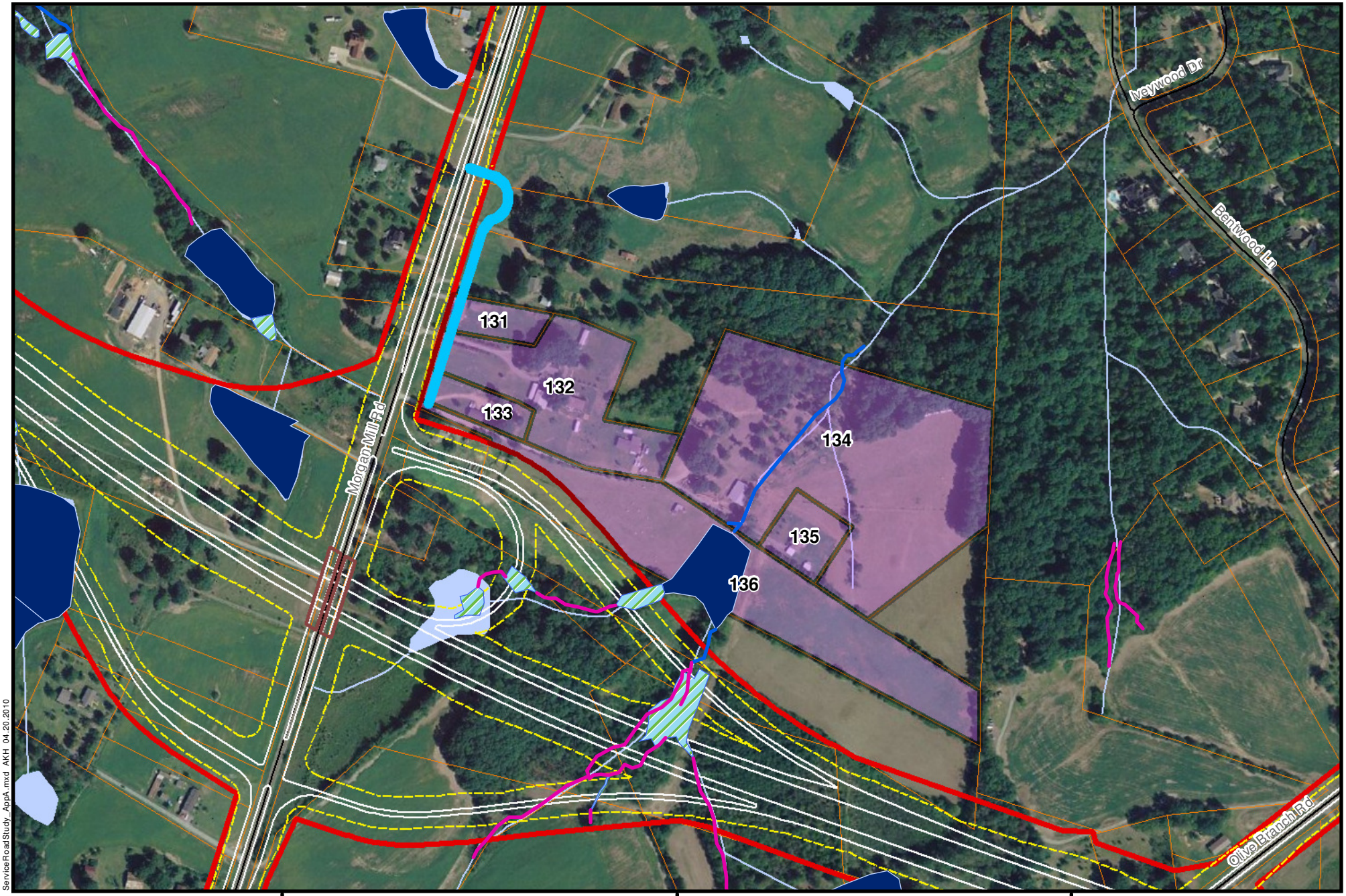
Landlocked Parcels
Service Road Initial Study
Right of Way
Parcels
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: AA | **Figure A-27**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

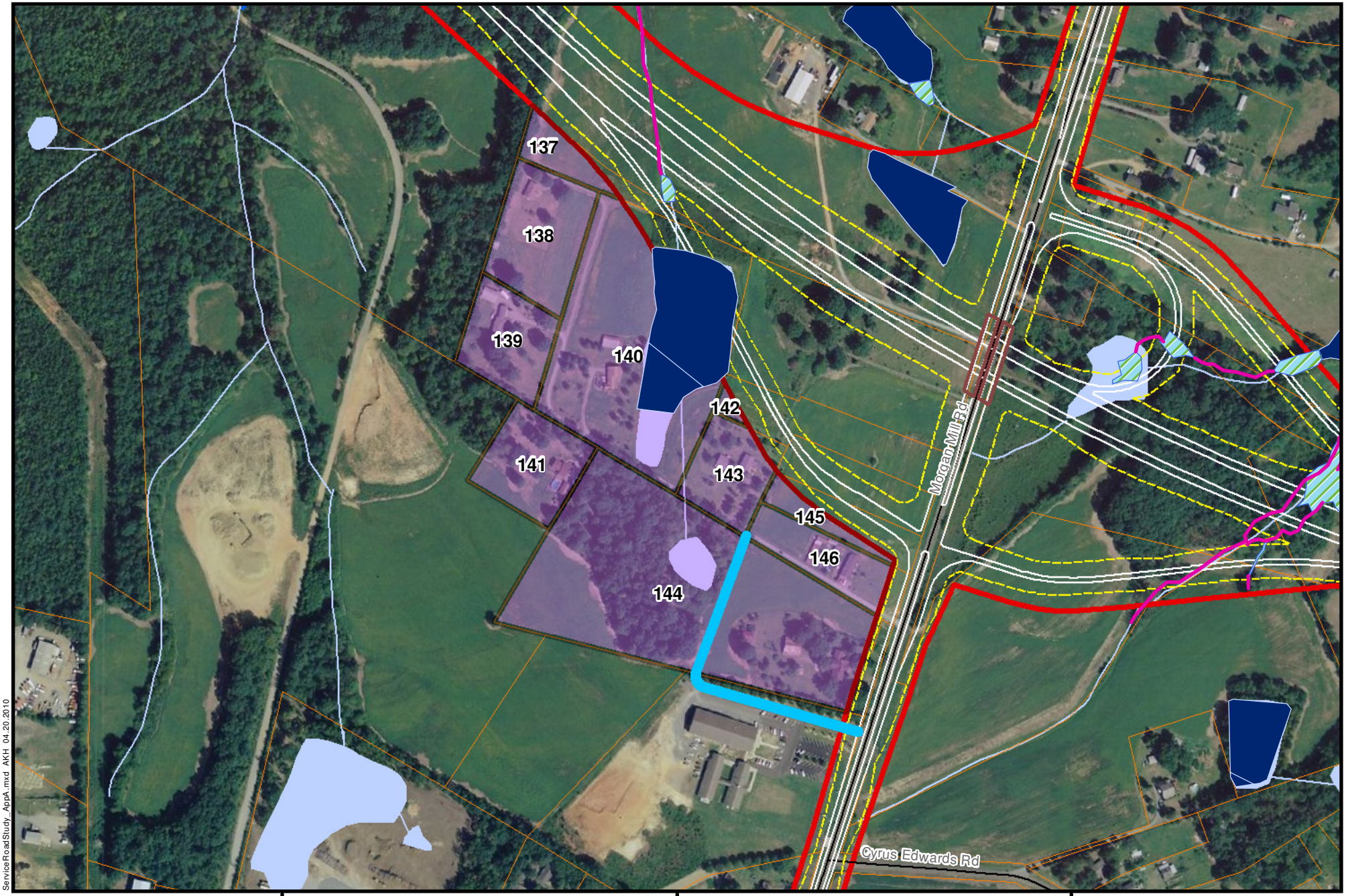
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

- Landlocked Parcels
- Service Road Initial Study
- Right of Way
- Parcels
- Slope Stakes
- Roadway Design
- Bridges
- Roads
- Surveyed Wetlands
- Surveyed Ponds
- Surveyed Intermittent
- Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: BB | **Figure A-28**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

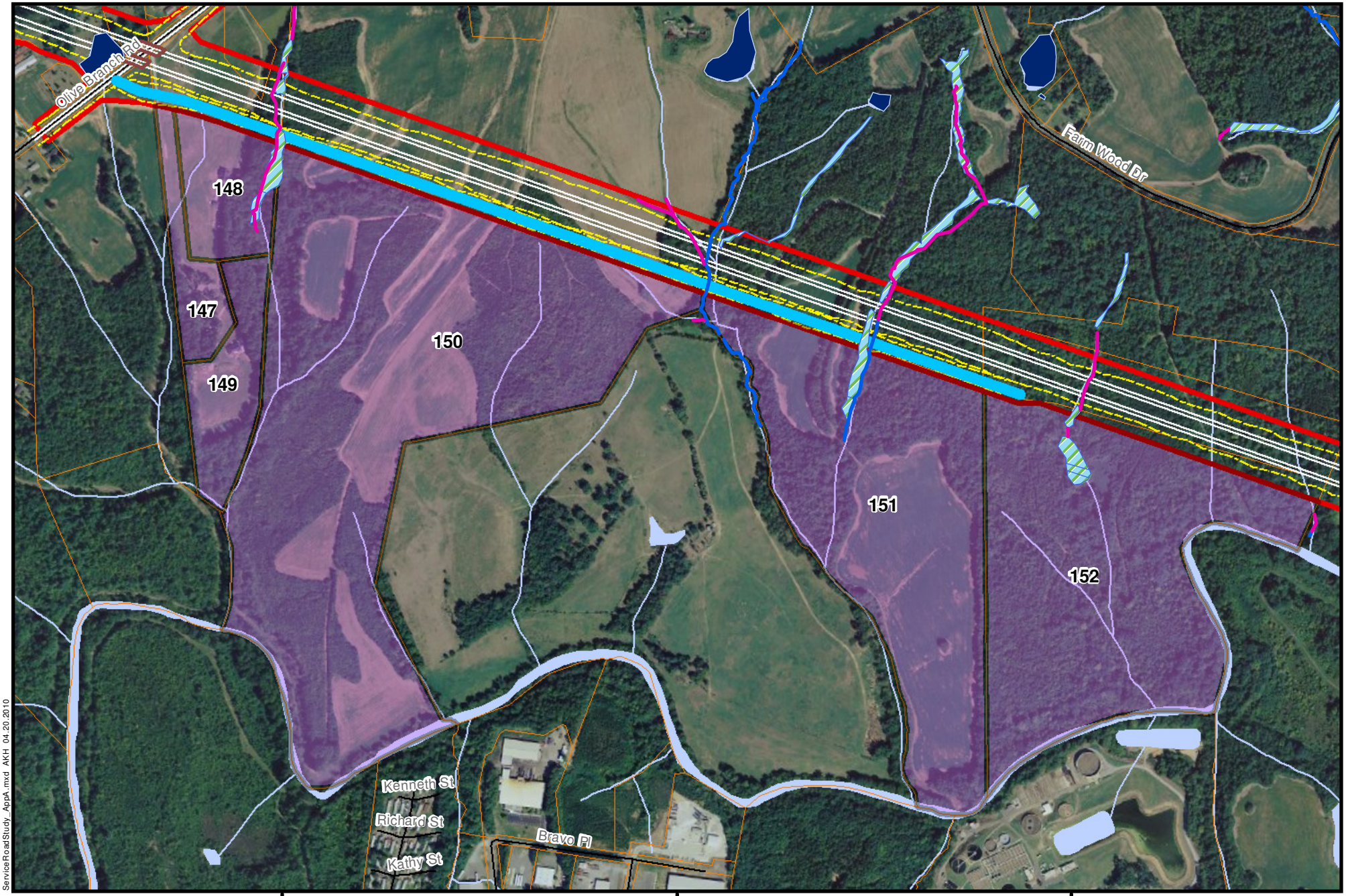
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Landlocked Parcels
Service Road Initial Study
Right of Way
Parcels
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: CC | **Figure A-29**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

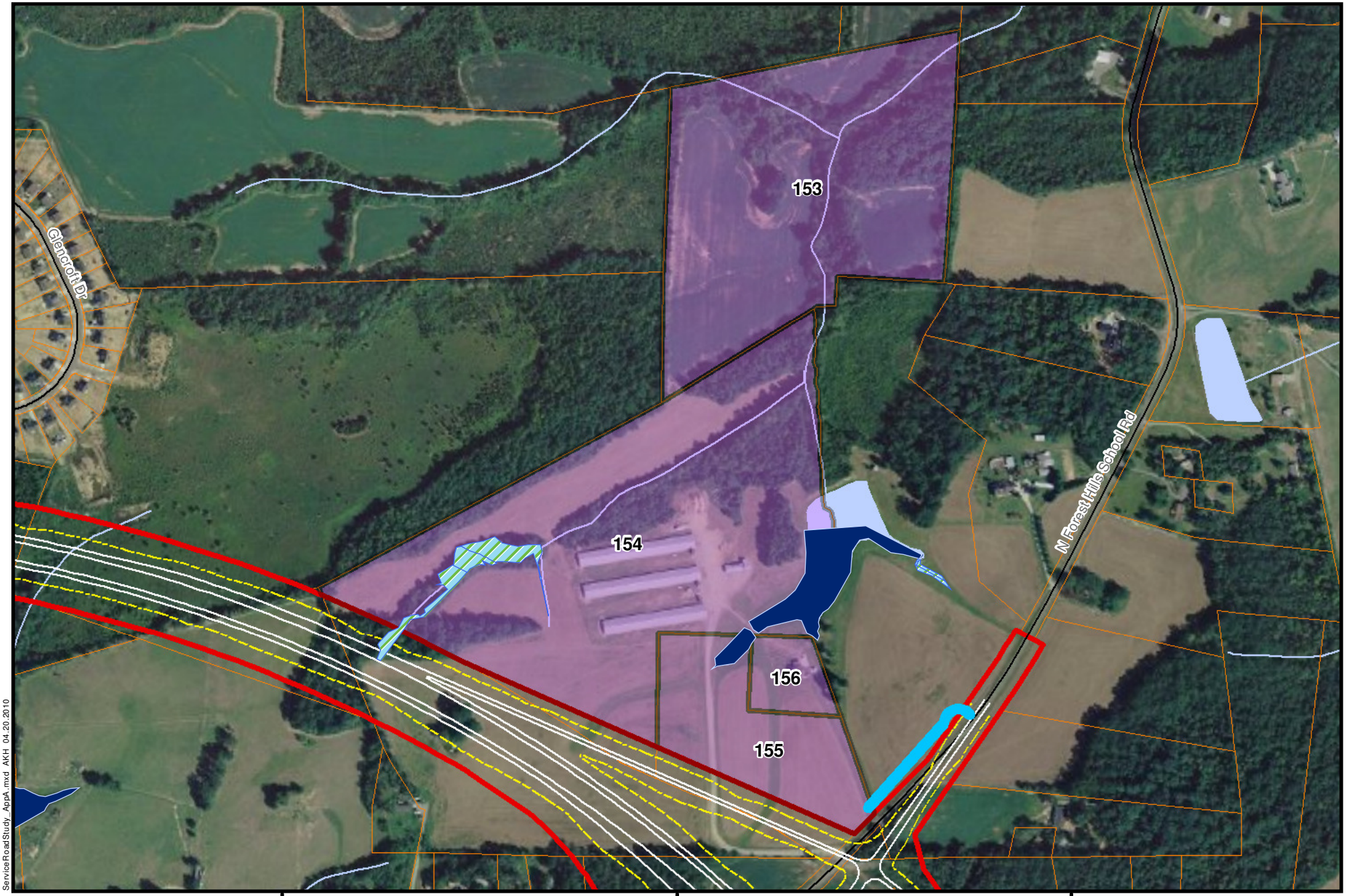
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

- Landlocked Parcels
- Service Road Initial Study
- Right of Way
- Parcels
- Slope Stakes
- Roadway Design
- Bridges
- Roads
- Surveyed Wetlands
- Surveyed Ponds
- Surveyed Intermittent
- Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: DD | **Figure A-30**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

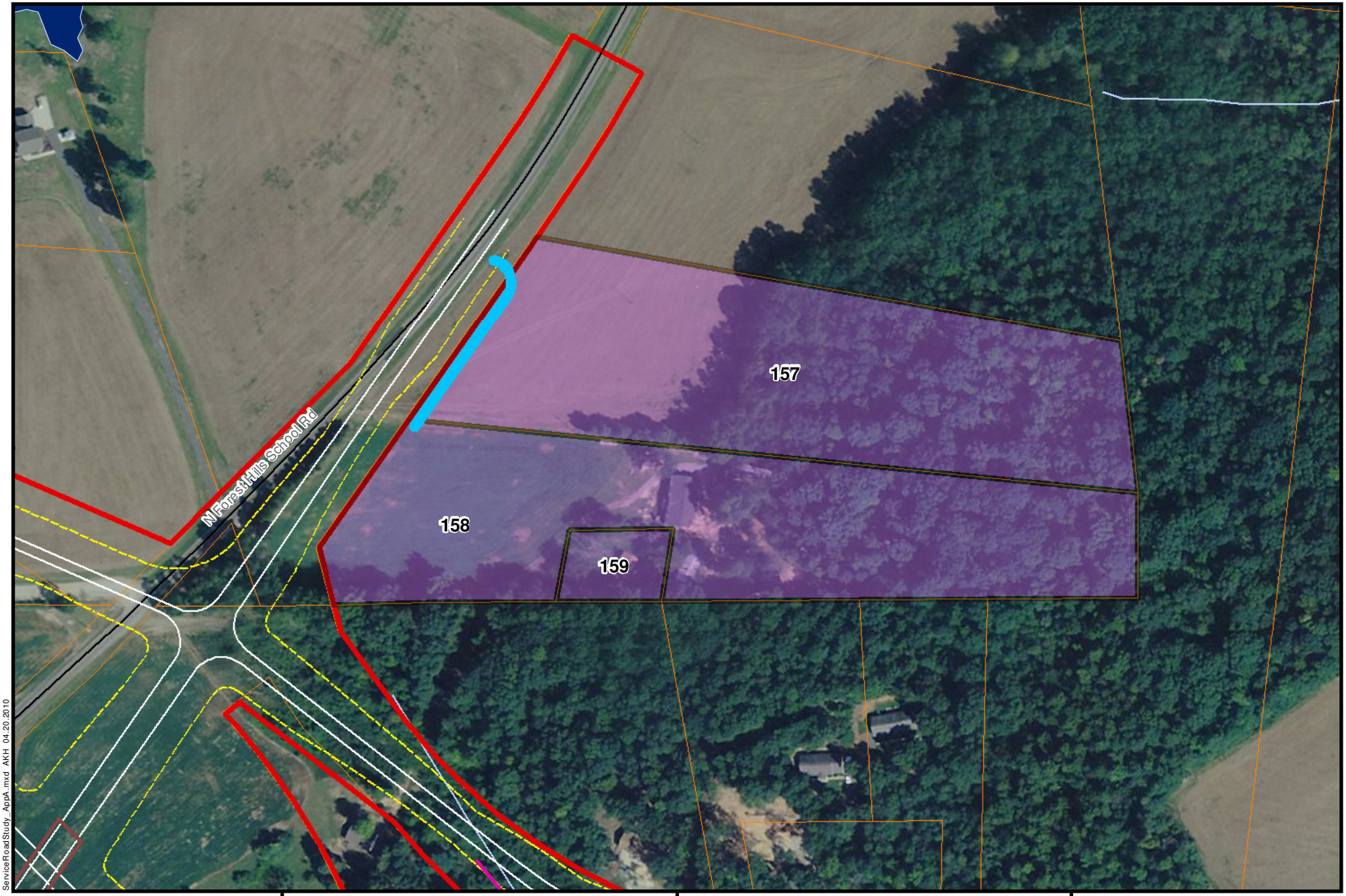
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Landlocked Parcels
Service Road Initial Study
Right of Way
Parcels
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: EE | **Figure A-31**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

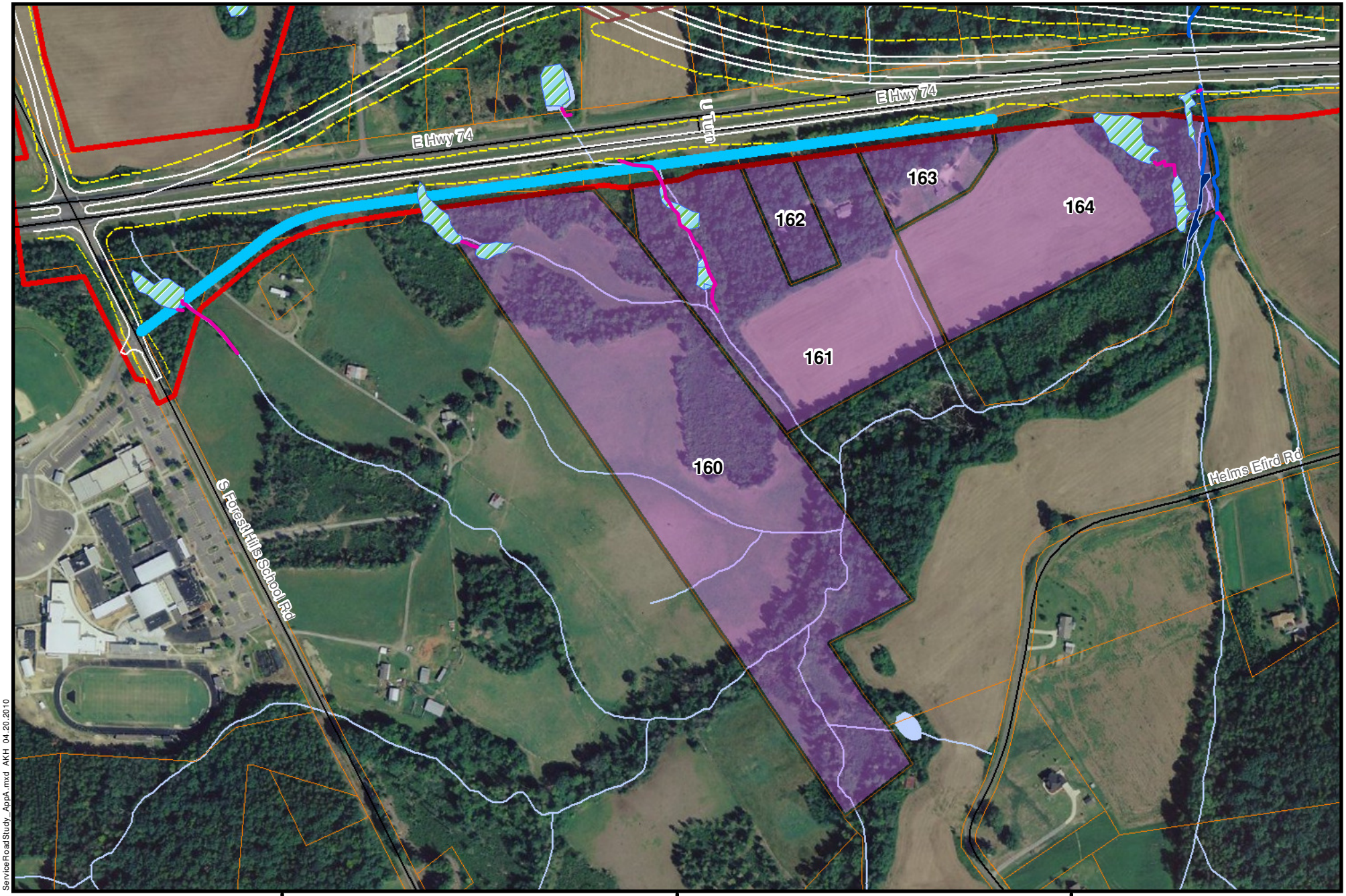
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Landlocked Parcels
Service Road Initial Study
Right of Way
Parcels
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: FF | **Figure A-32**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

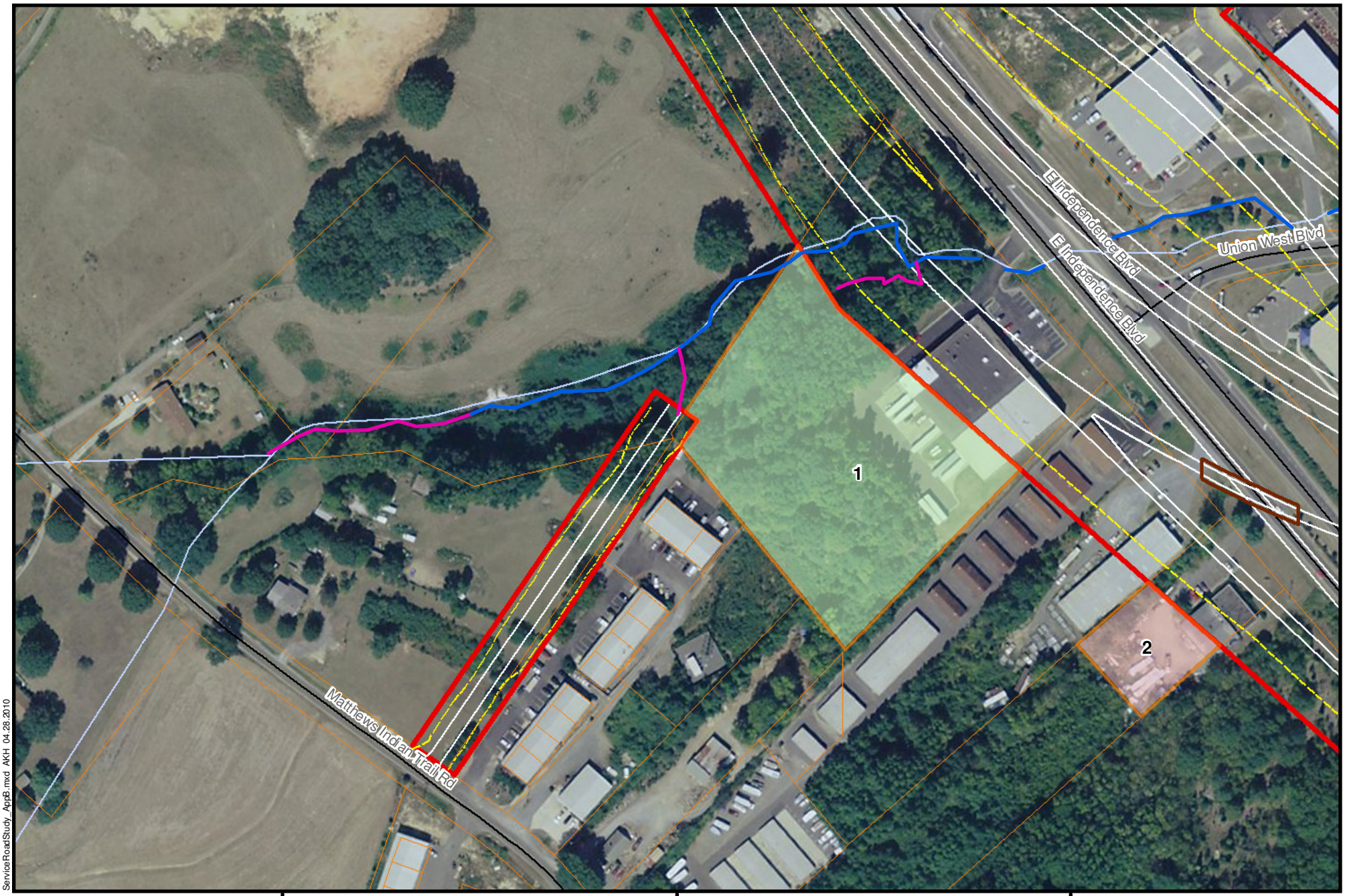
- Landlocked Parcels
- Service Road Initial Study
- Right of Way
- Parcels
- Slope Stakes
- Roadway Design
- Bridges
- Roads
- Surveyed Wetlands
- Surveyed Ponds
- Surveyed Intermittent
- Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area:GG | **Figure A-33**

APPENDIX B

Service Road Designs



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

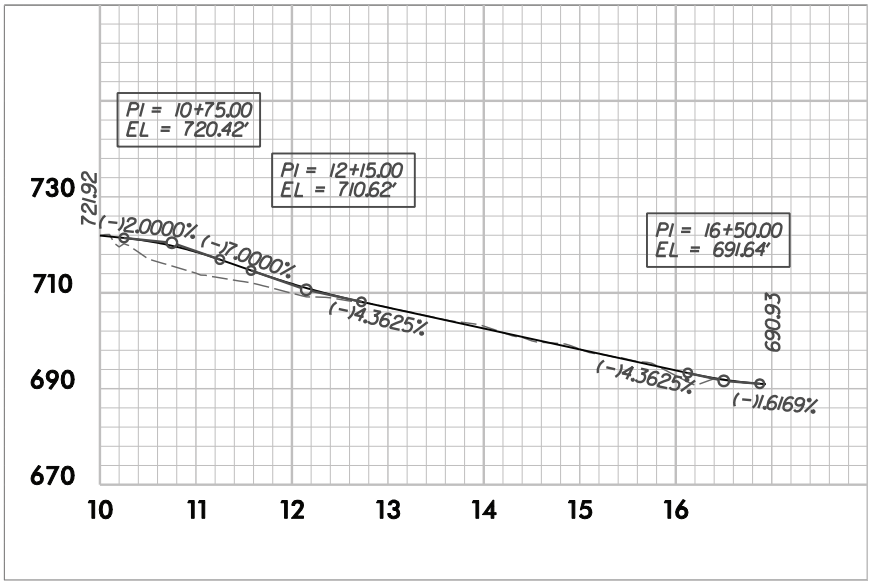
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Access
No Access
Parcels
Right of Way
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: A | **Figure B- 1**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

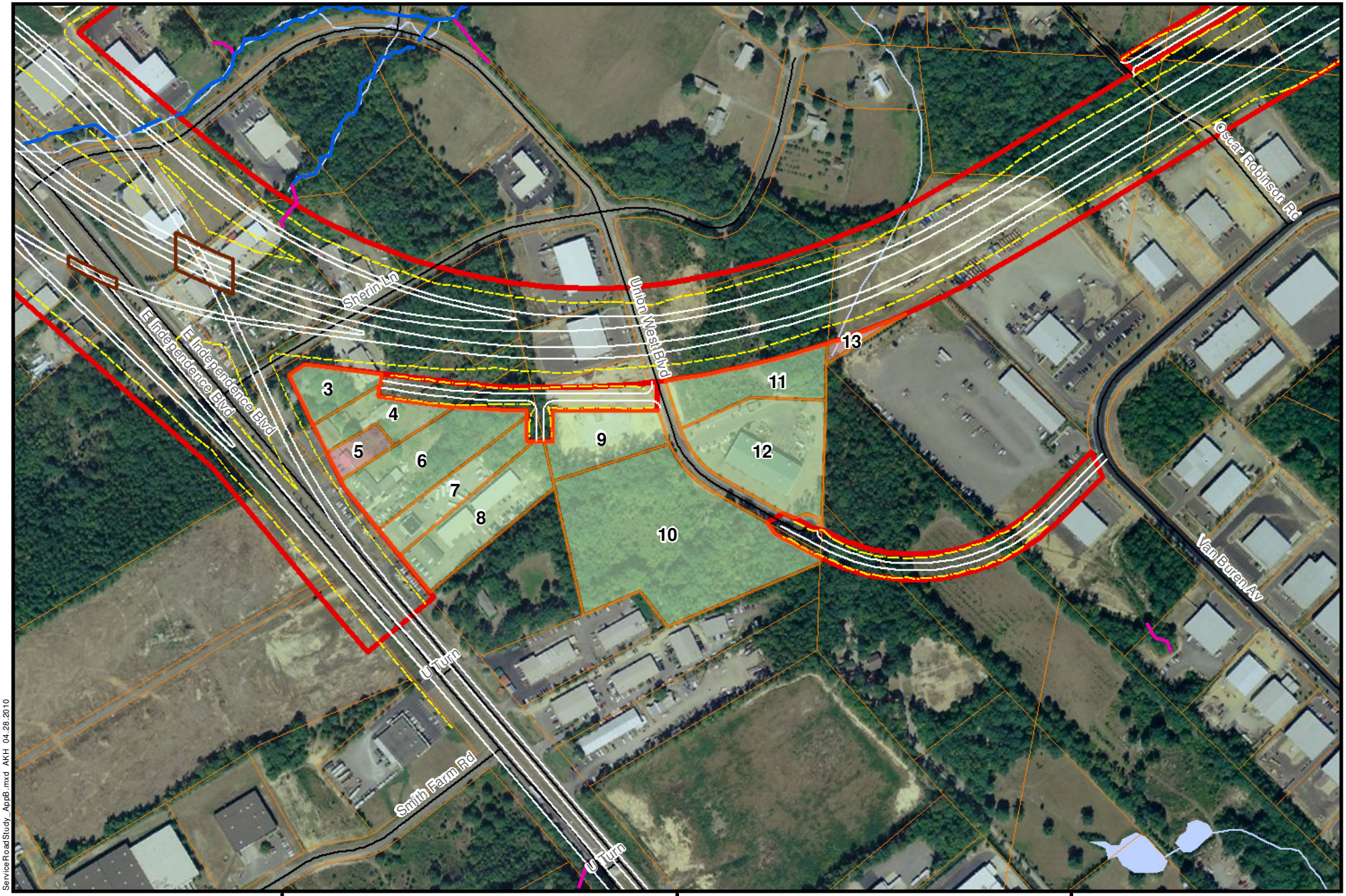
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: A | **Figure B-2**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

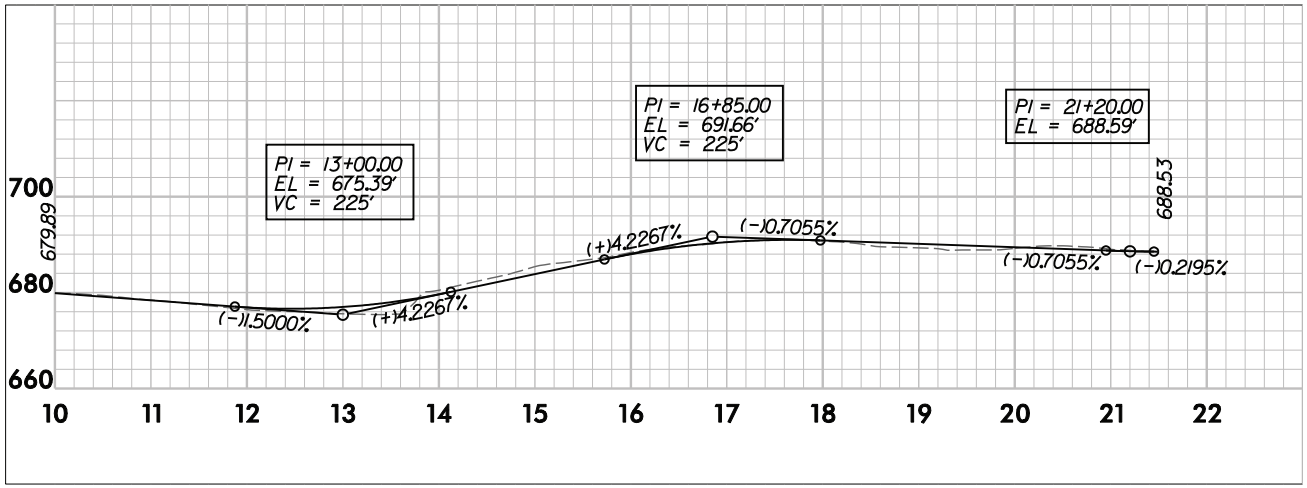
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Access
No Access
Parcels
Right of Way
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: B | **Figure B- 3**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

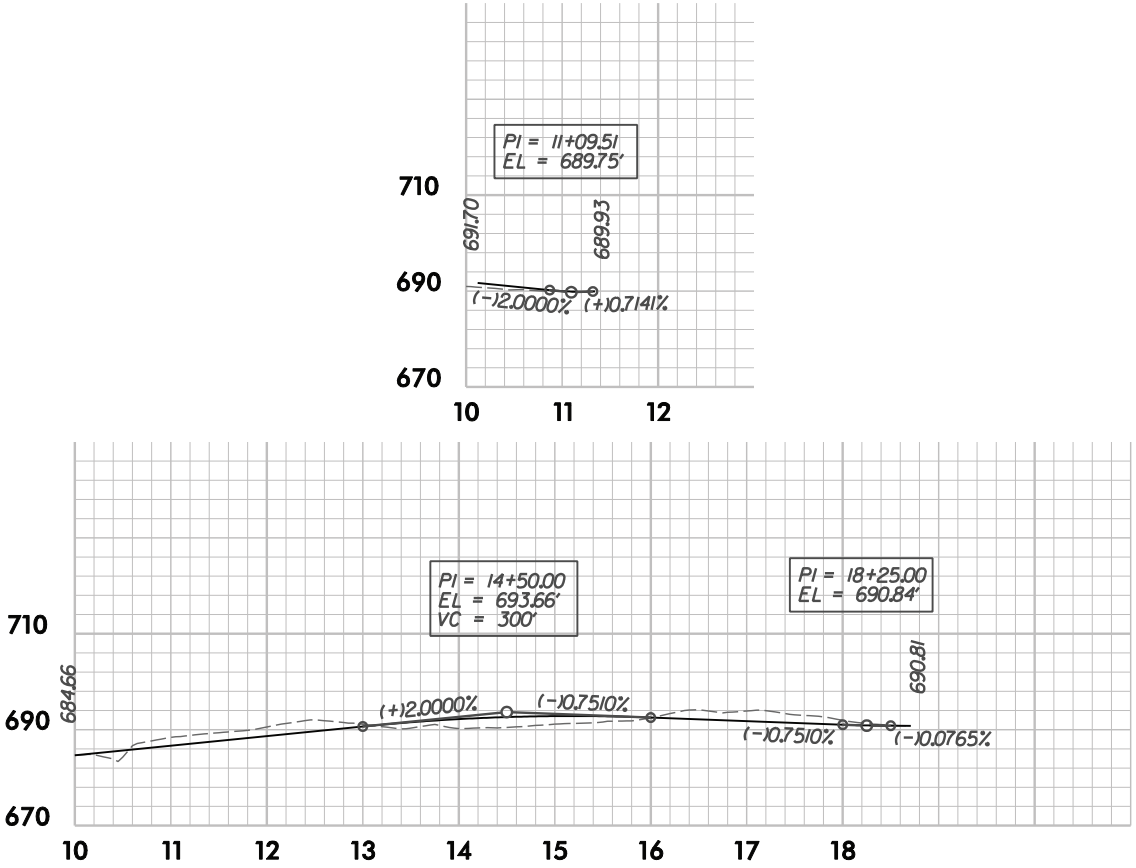
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: B | **Figure B-4**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally

1" = 40' vertically

NORTH CAROLINA Turnpike Authority

STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: B | **Figure B-5**

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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

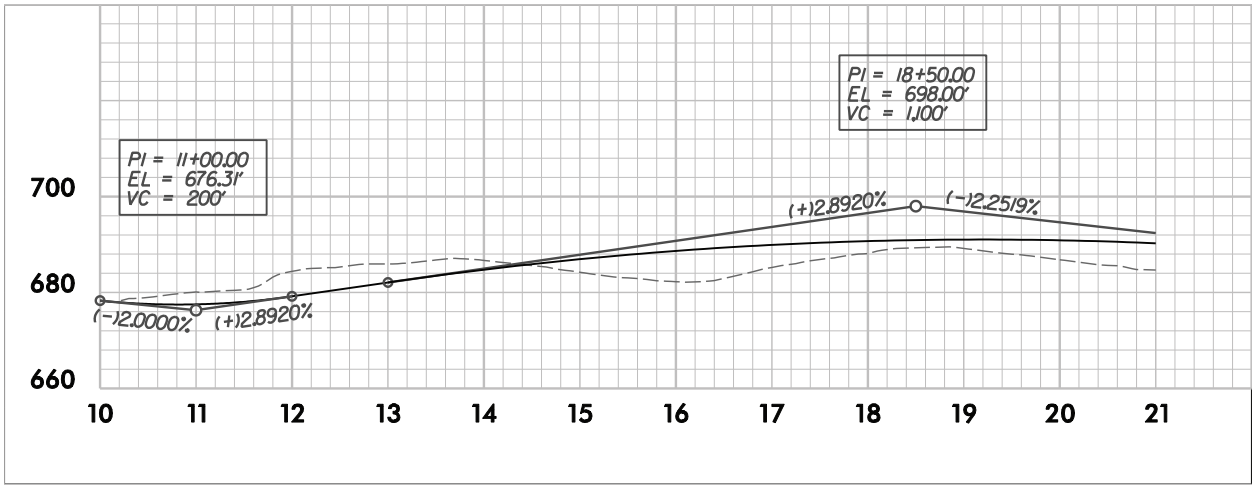
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Access
No Access
Parcels
Right of Way
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: D | **Figure B- 6**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

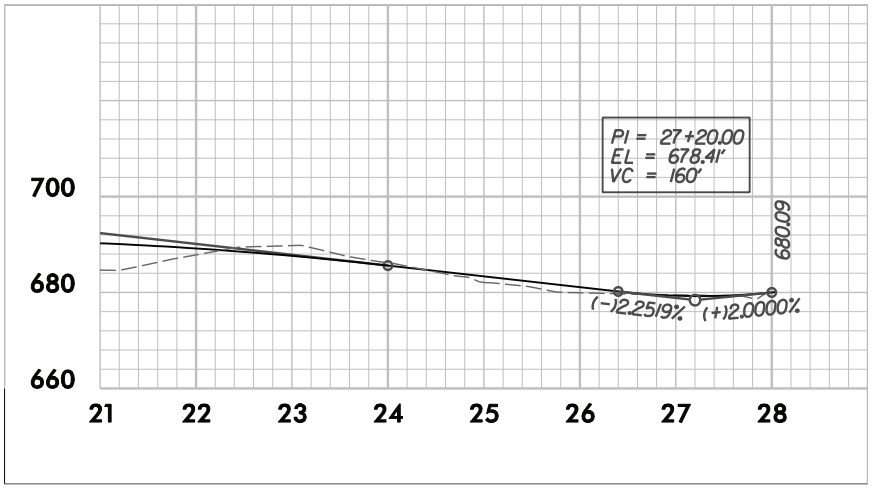
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: D | **Figure B-7**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

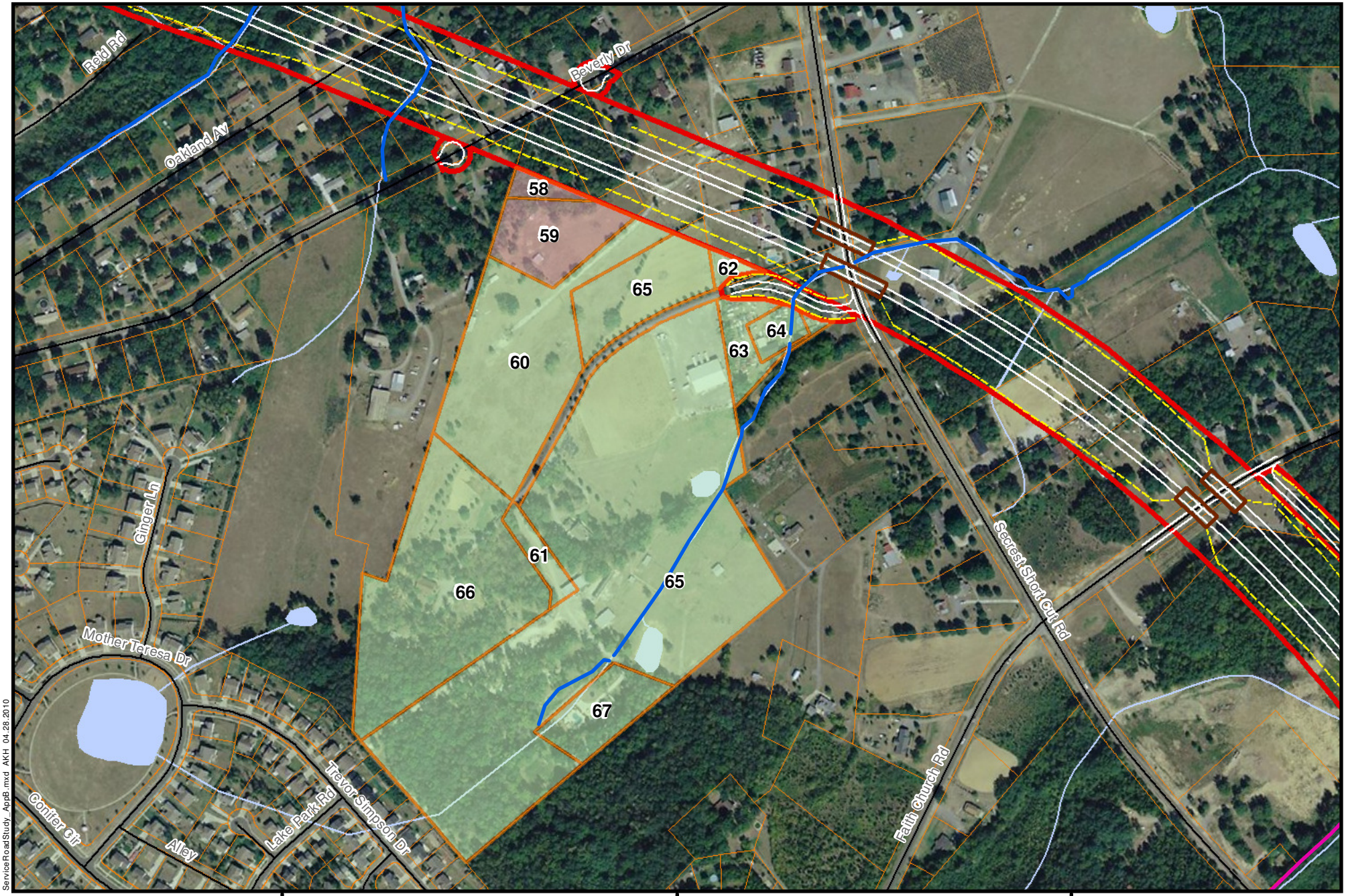
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: D | **Figure B-8**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

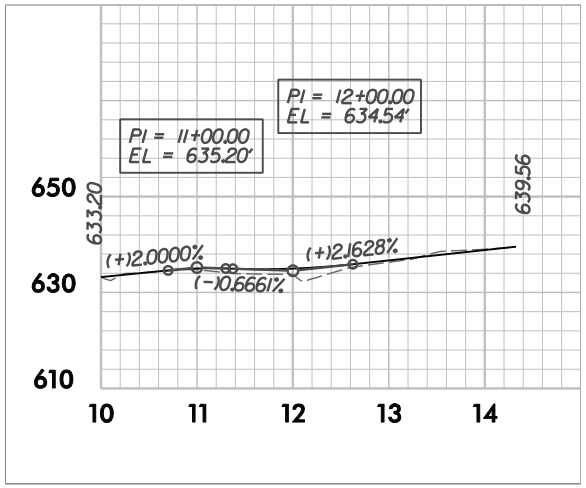
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Access
No Access
Parcels
Right of Way
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: M | **Figure B- 9**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

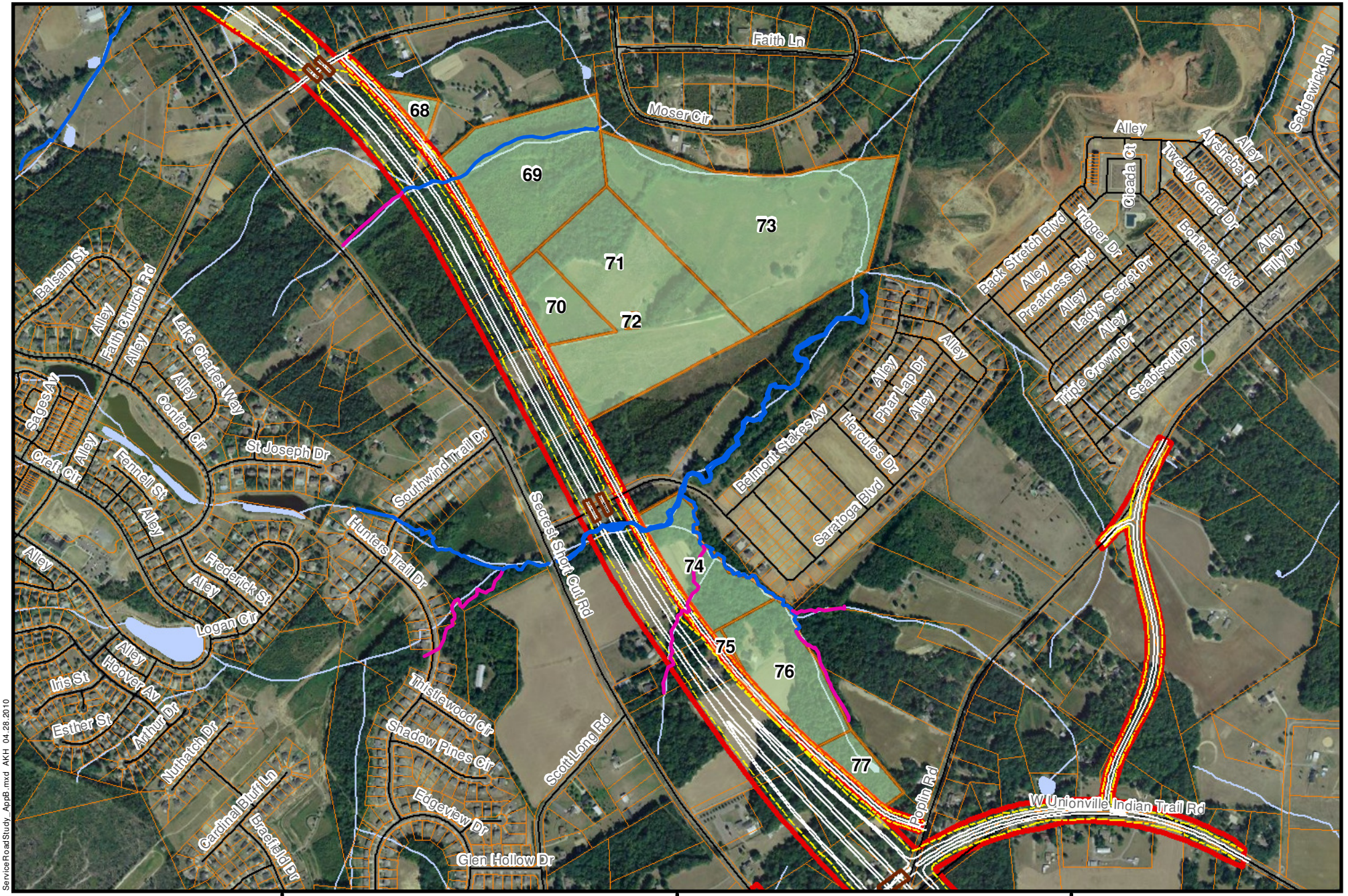
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: M | **Figure B-10**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

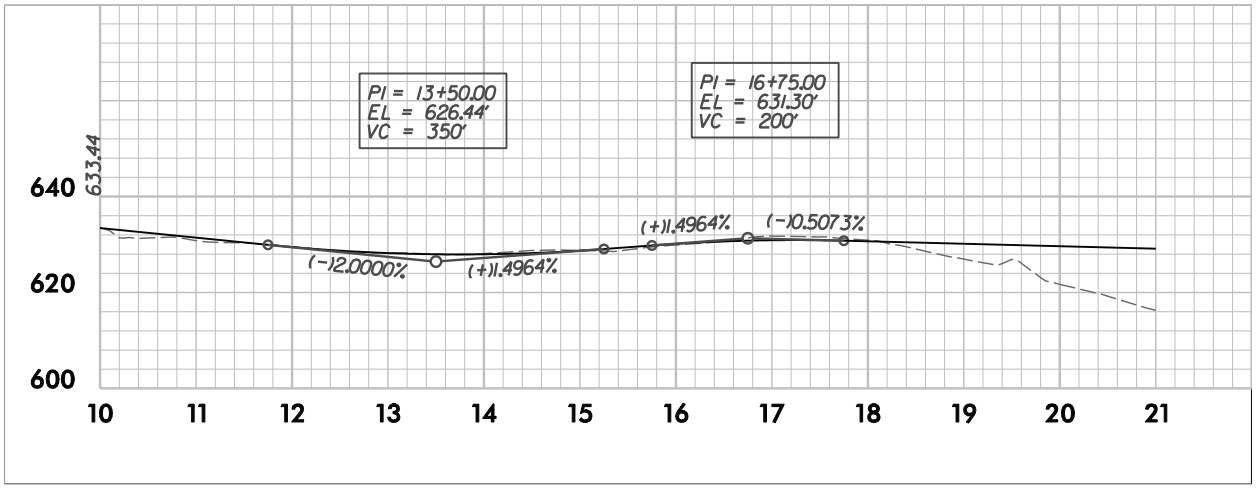
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

- Access
- No Access
- Parcels
- Right of Way
- Slope Stakes
- Roadway Design
- Bridges
- Roads
- Surveyed Wetlands
- Surveyed Ponds
- Surveyed Intermittent
- Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: N | **Figure B-11**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

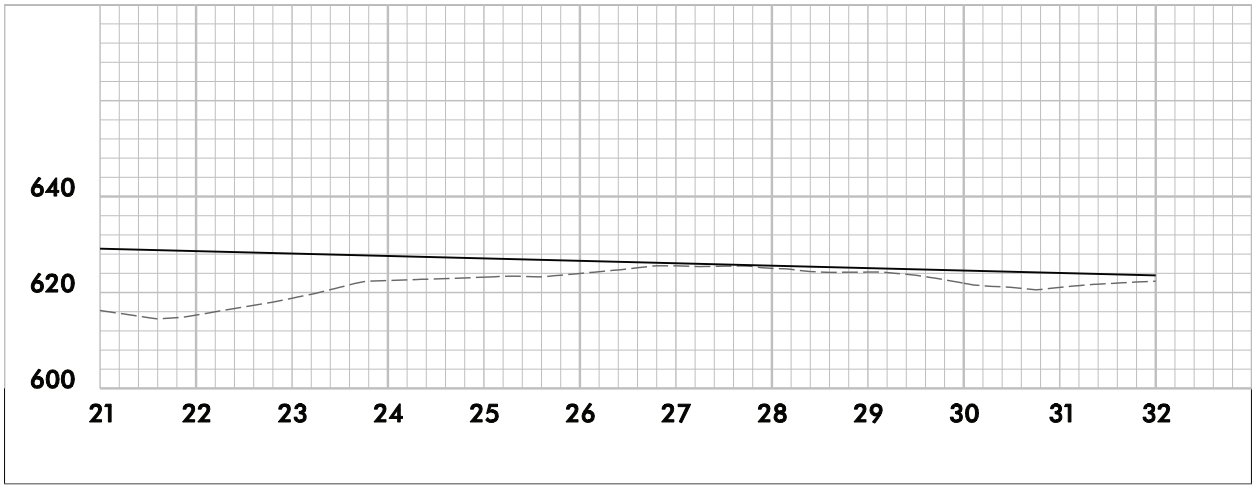
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: N | **Figure B-12**



Legend

Proposed Profile

Existing Ground

Scale

1” = 200’ horizontally
1” = 40’ vertically

NORTH CAROLINA Turnpike Authority

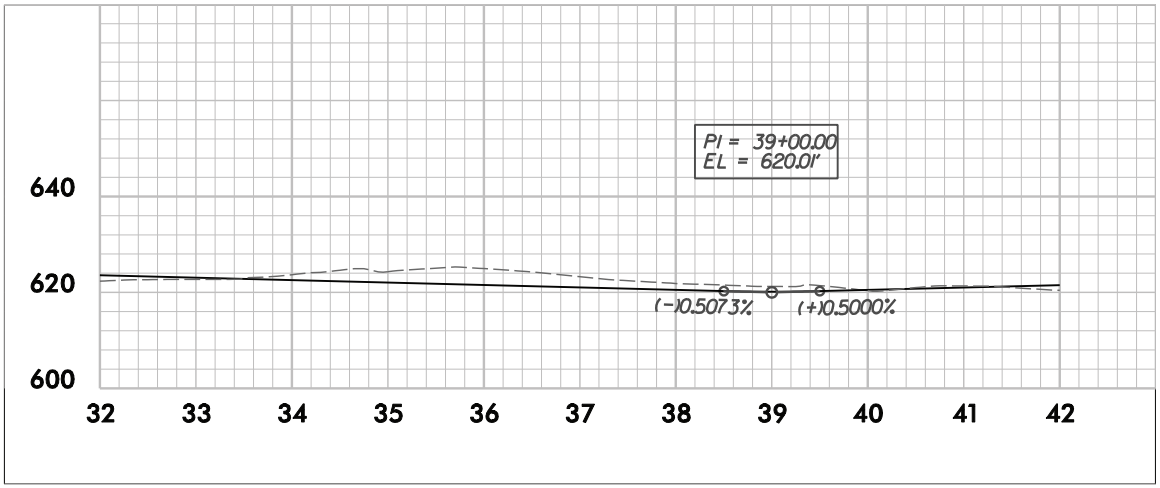
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: N | **Figure B-13**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

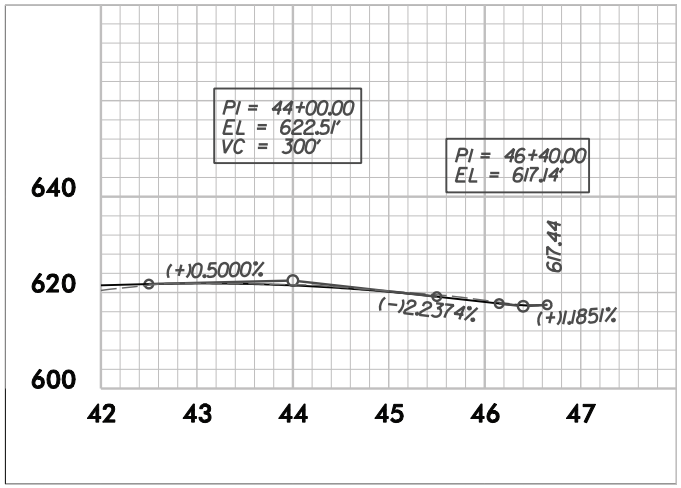
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: N | **Figure B-14**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

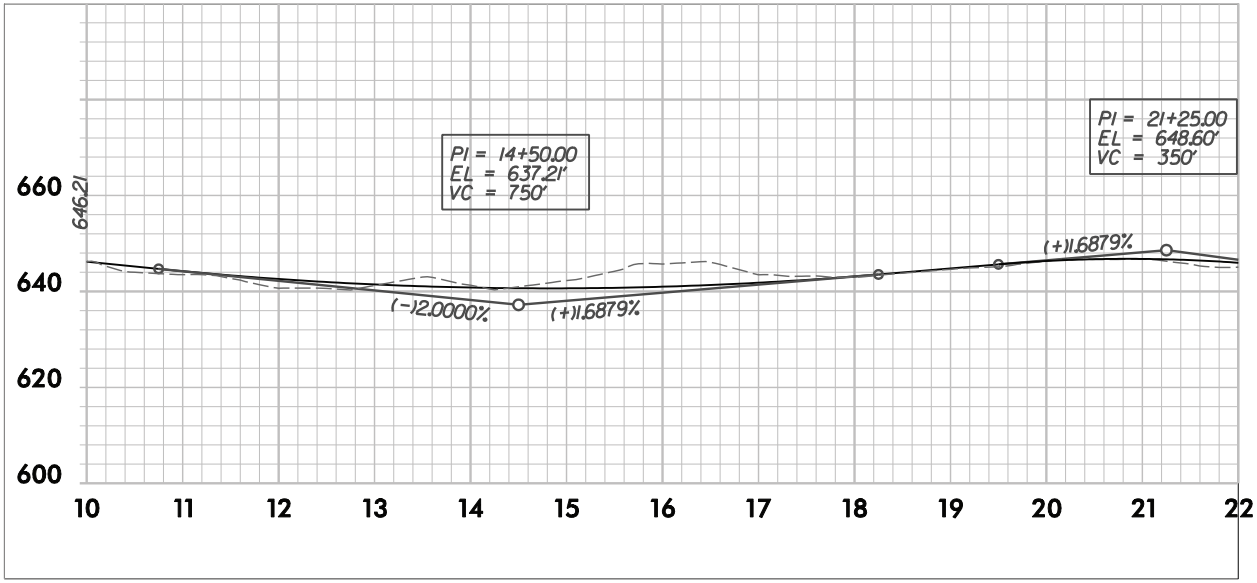
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: N | **Figure B-15**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

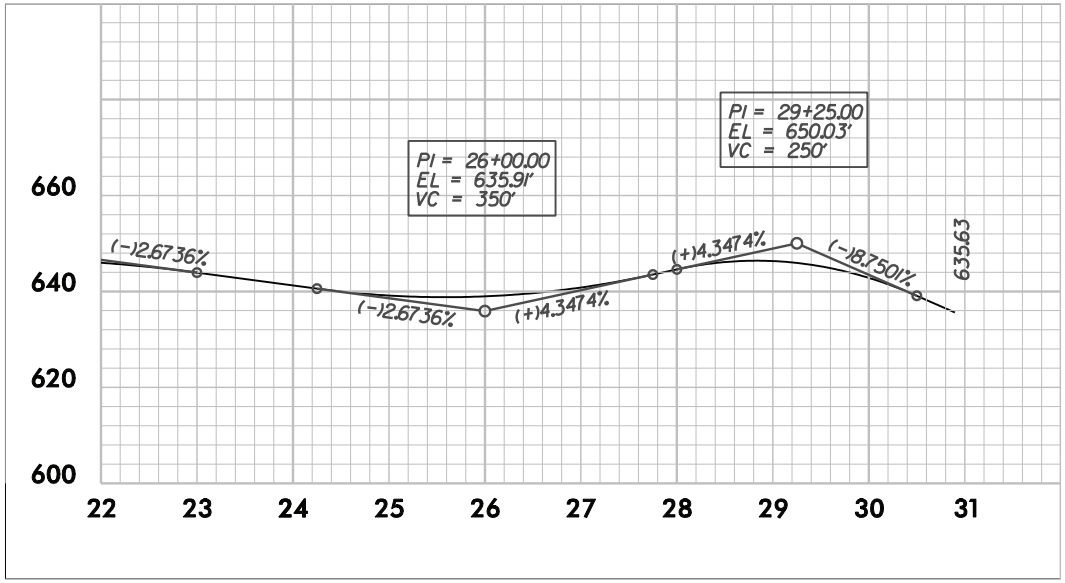
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: N | **Figure B-16**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

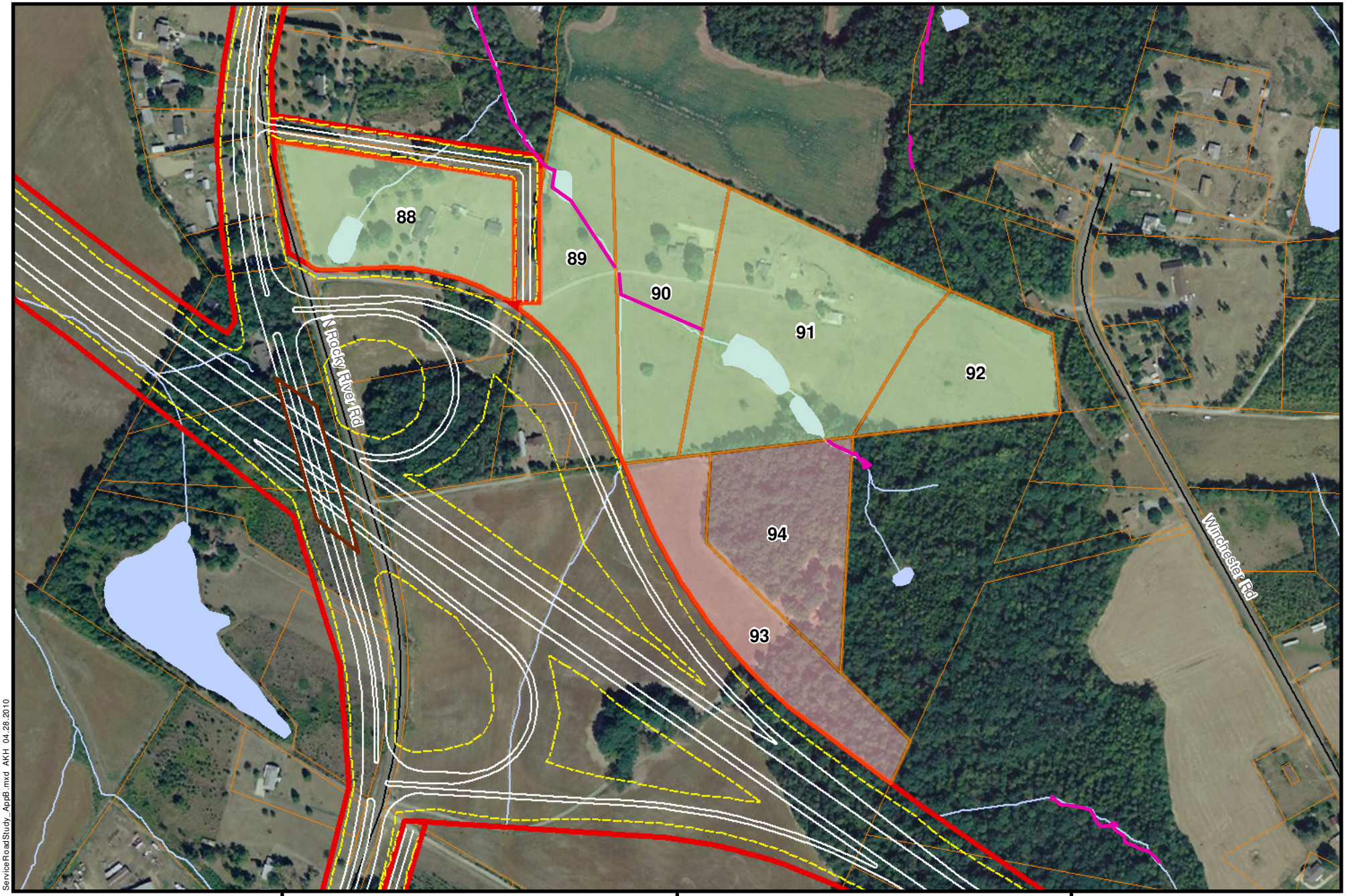
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: N | **Figure B-17**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

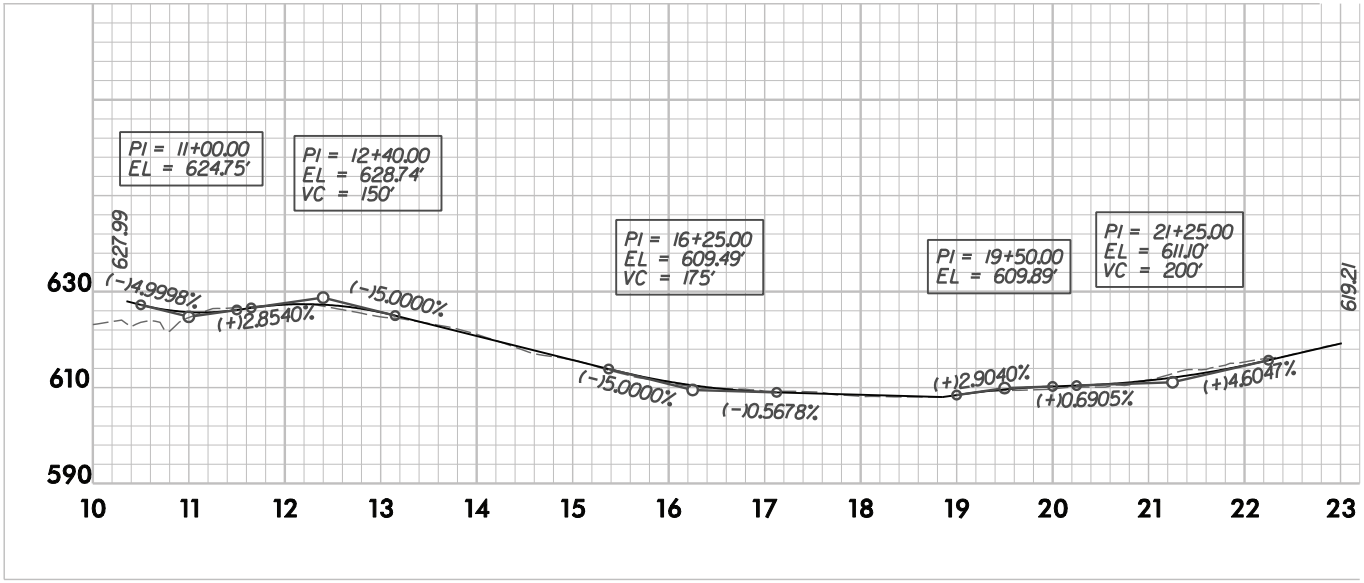
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Access
No Access
Parcels
Right of Way
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: R | **Figure B-18**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

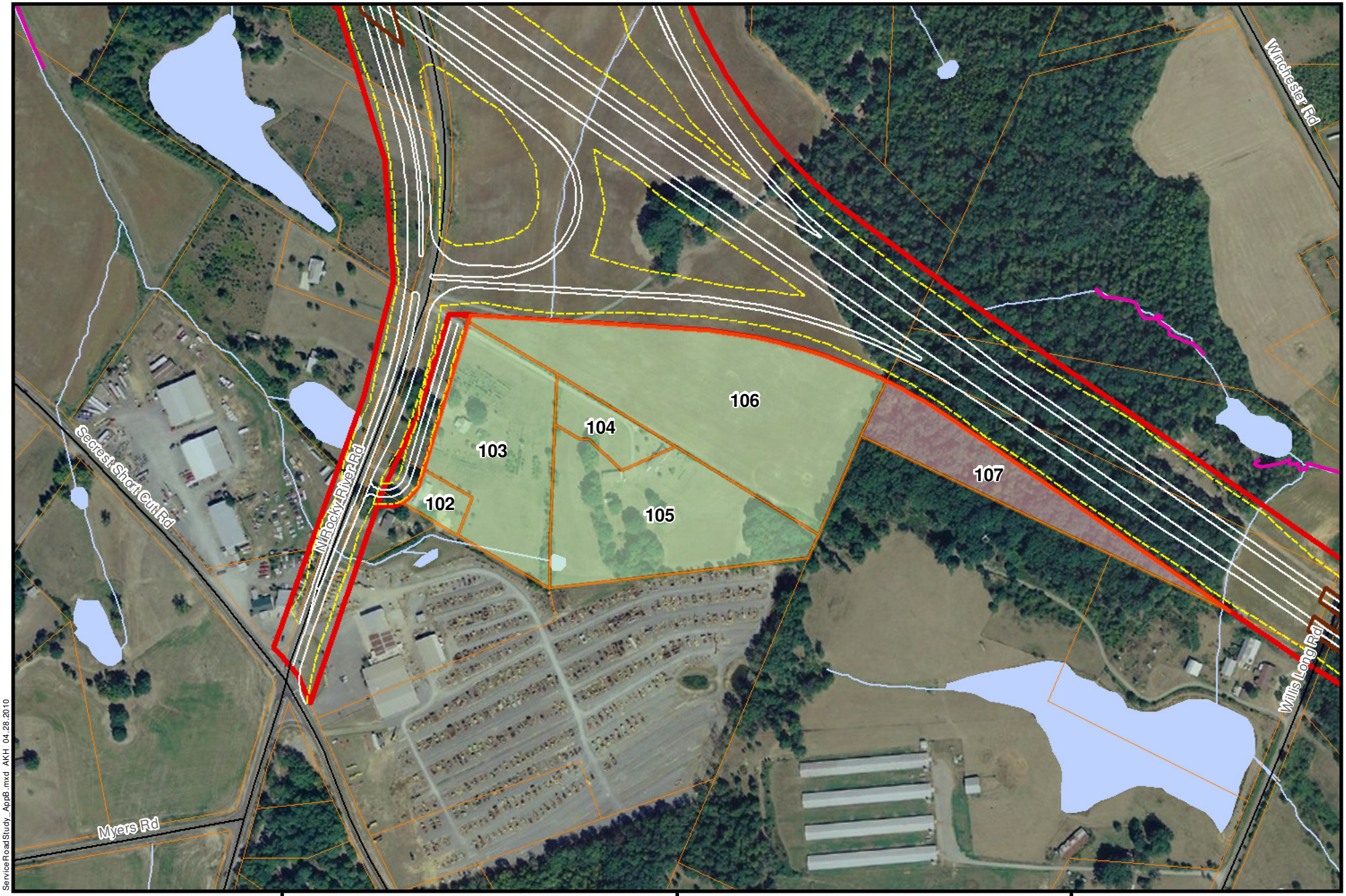
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: R | **Figure B-19**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS
STIP R-3329/R-2559
Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

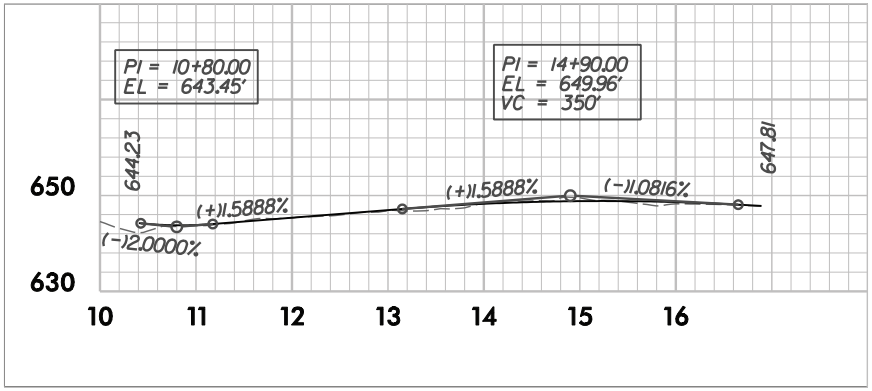
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Access
No Access
Parcels
Right of Way
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: T | **Figure B-20**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

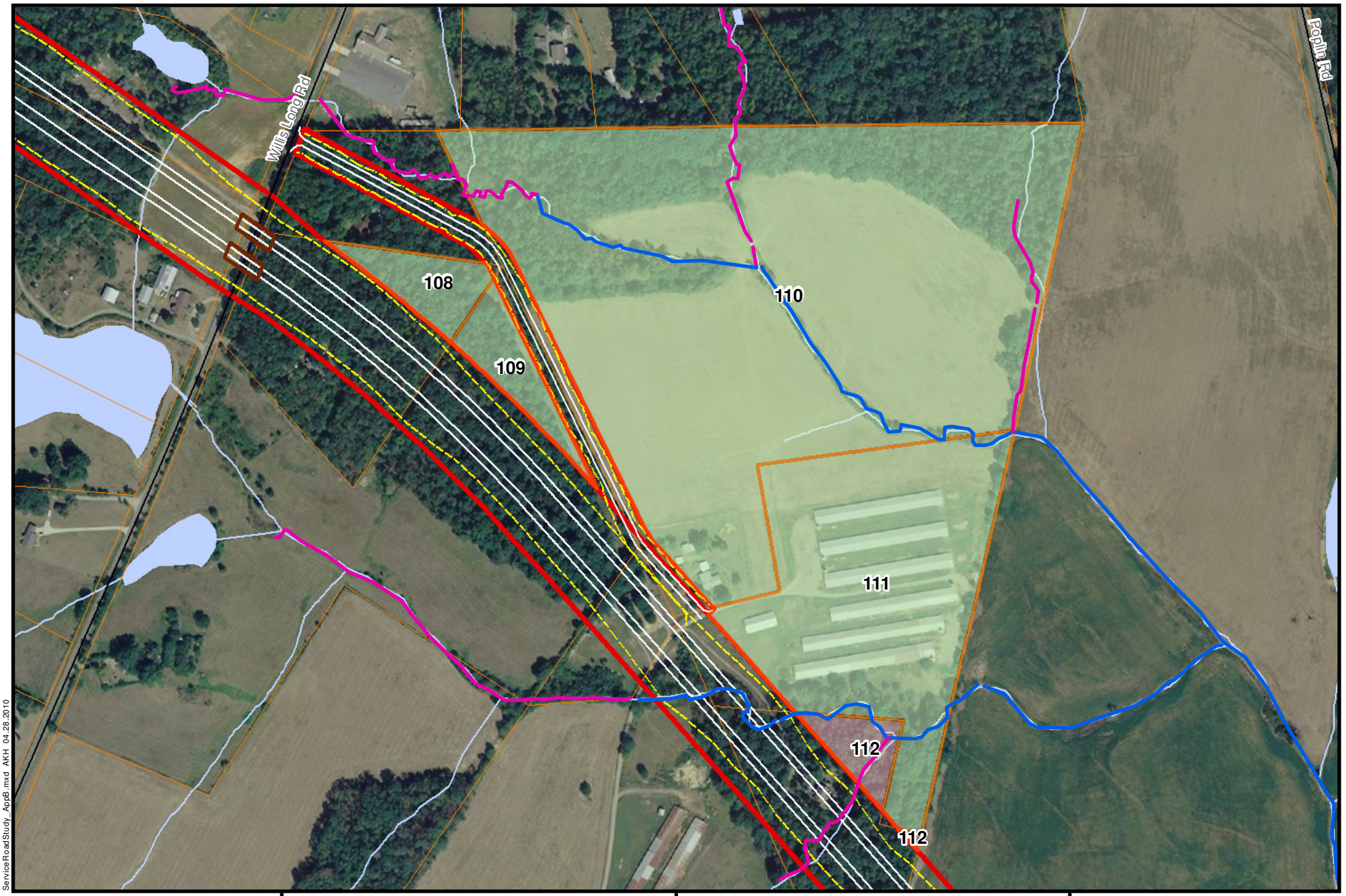
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: T | **Figure B-21**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

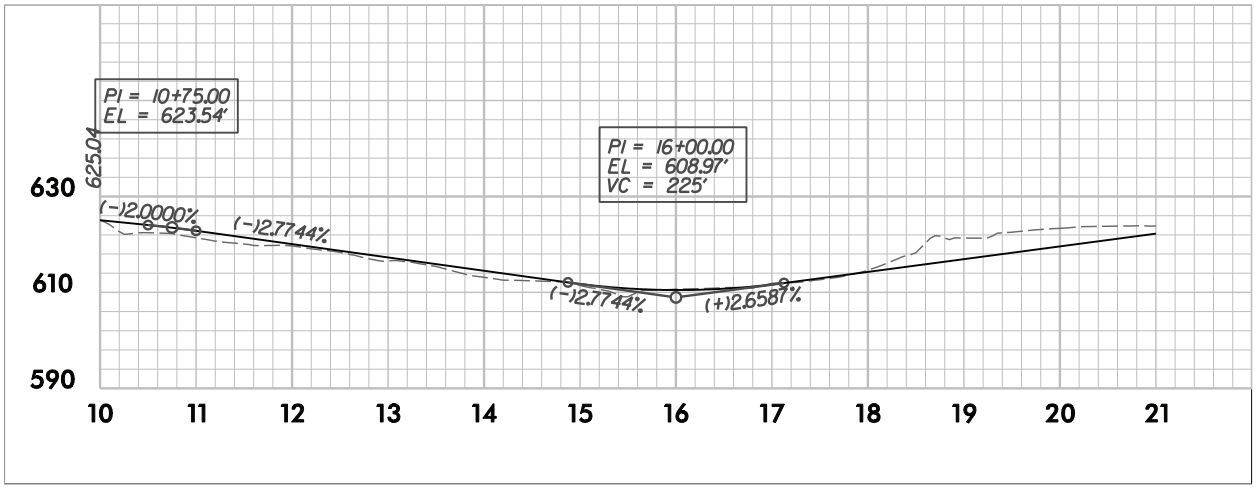
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Access
No Access
Parcels
Right of Way
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: U | **Figure B-22**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

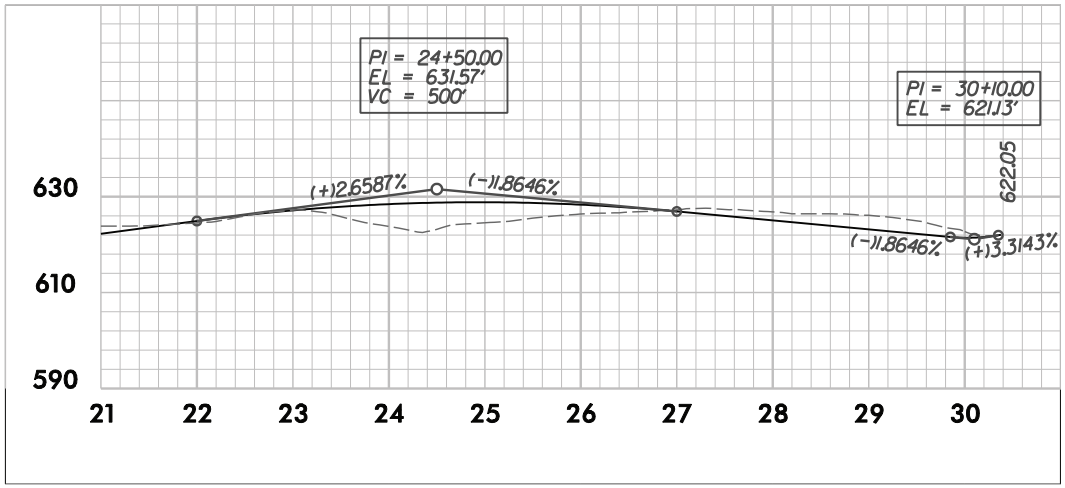
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: U | **Figure B-23**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

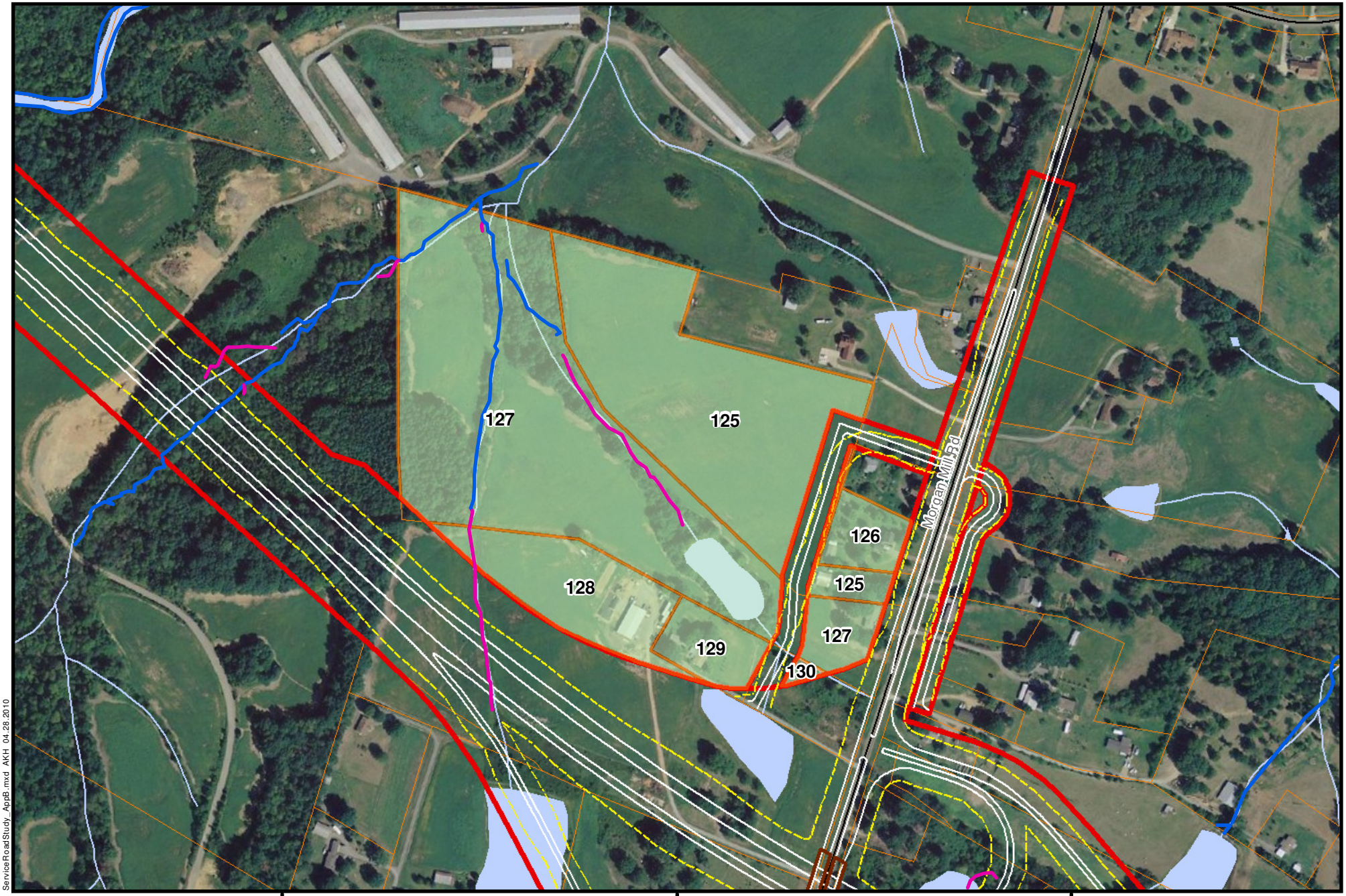
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: U | **Figure B-24**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

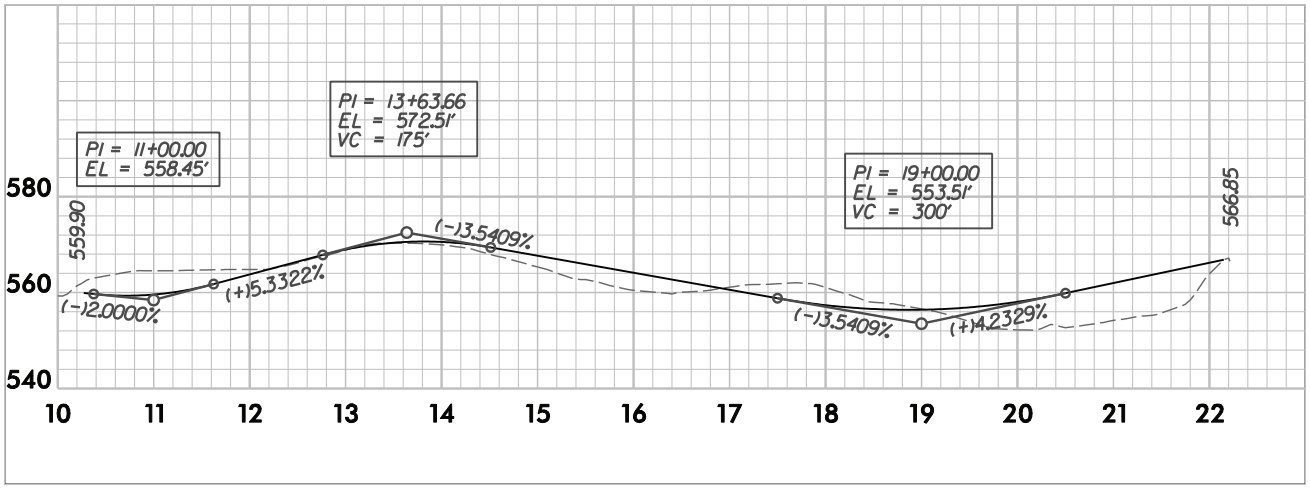
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Access
No Access
Parcels
Right of Way
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: AA | **Figure B-25**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

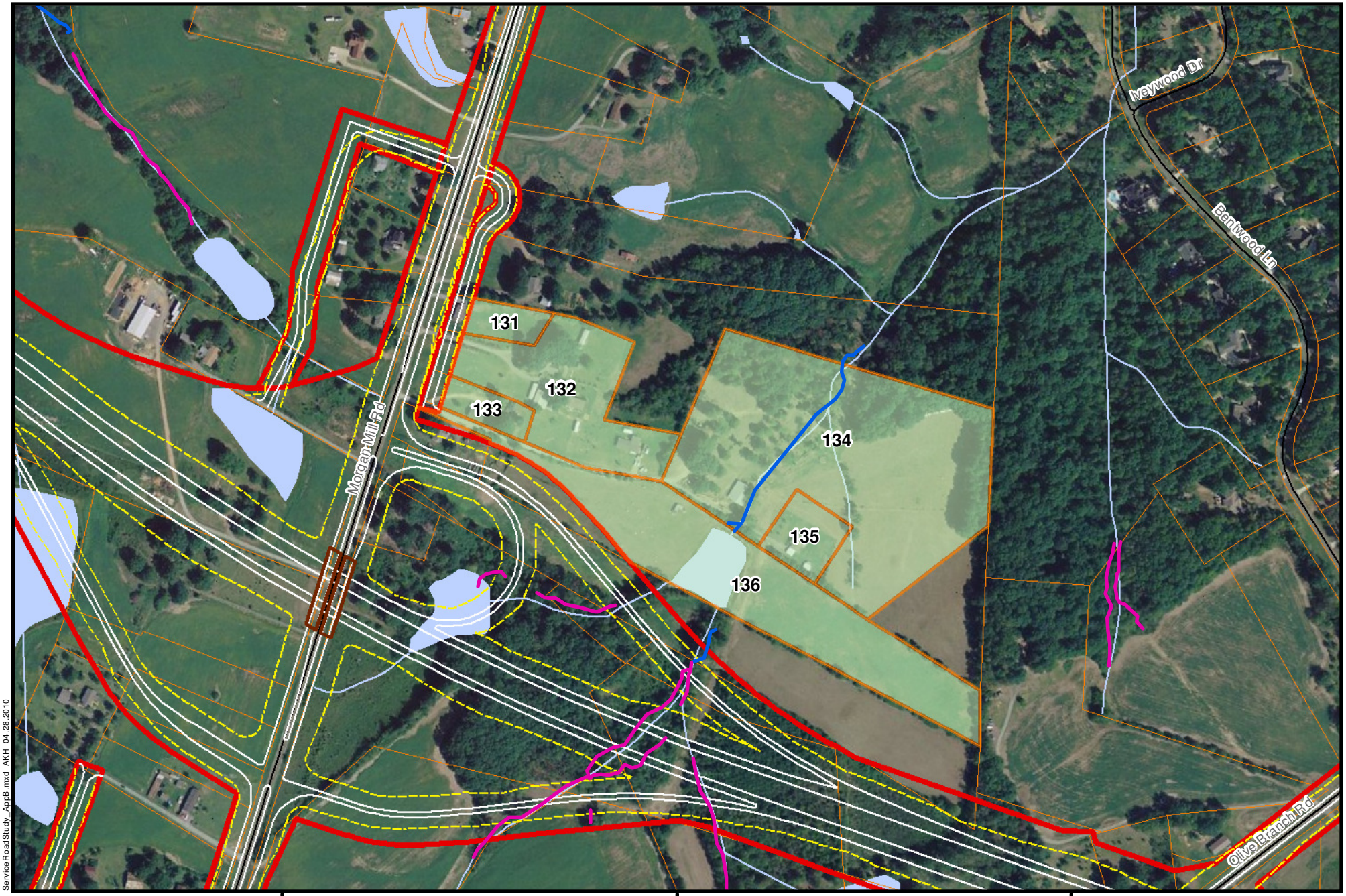
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: AA | **Figure B-26**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

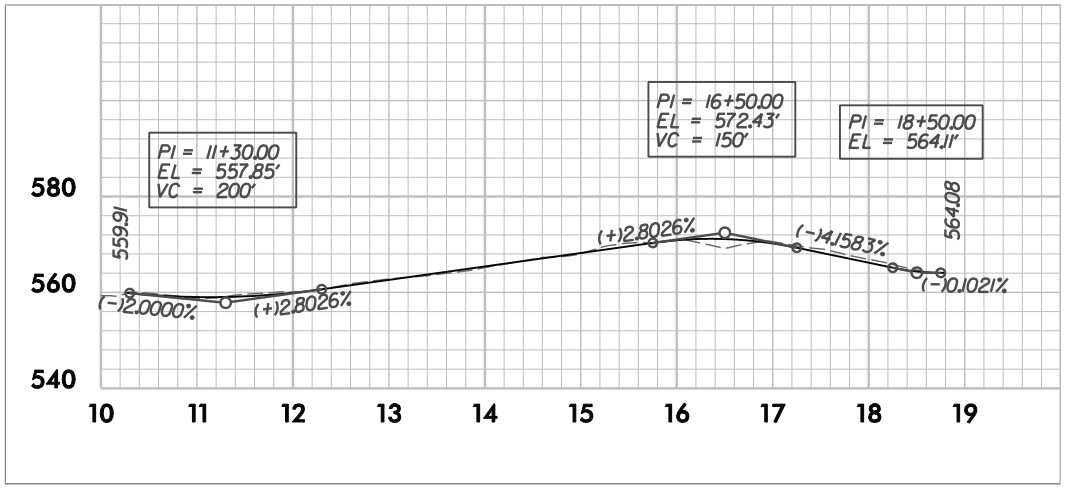
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Access
No Access
Parcels
Right of Way
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: BB | **Figure B-27**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

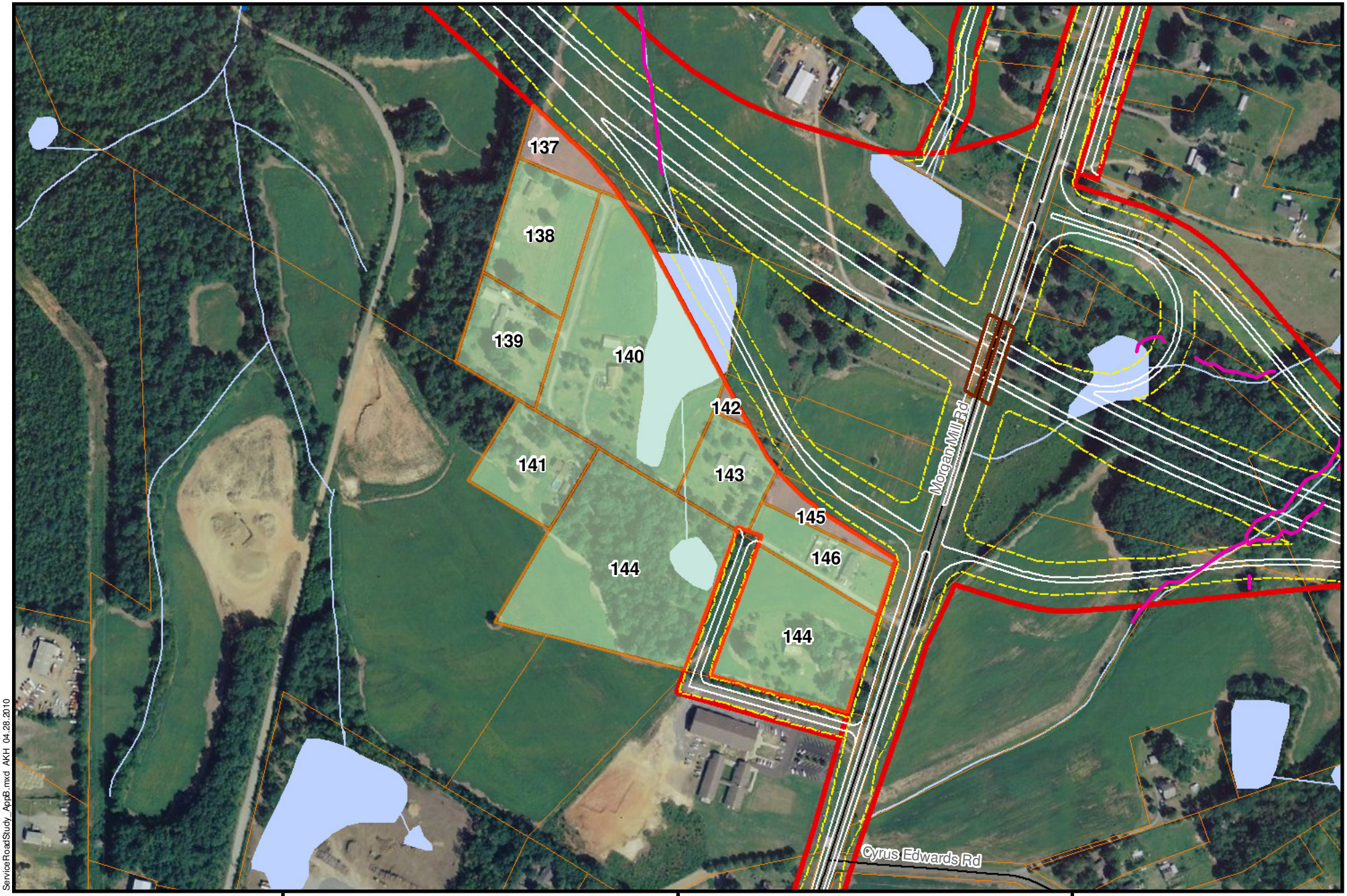
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: BB | **Figure B-28**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

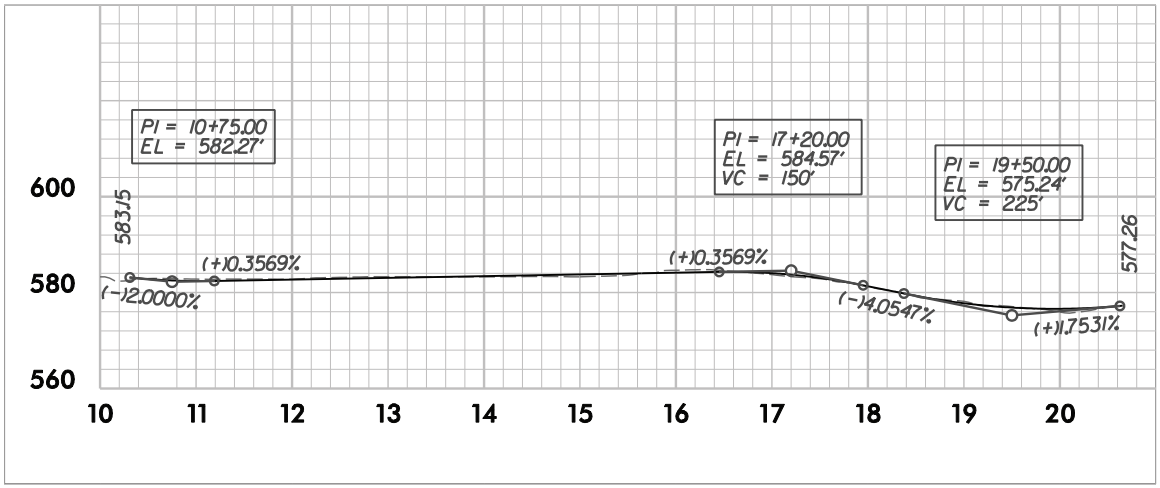
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Access
No Access
Parcels
Right of Way
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: CC | **Figure B-29**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

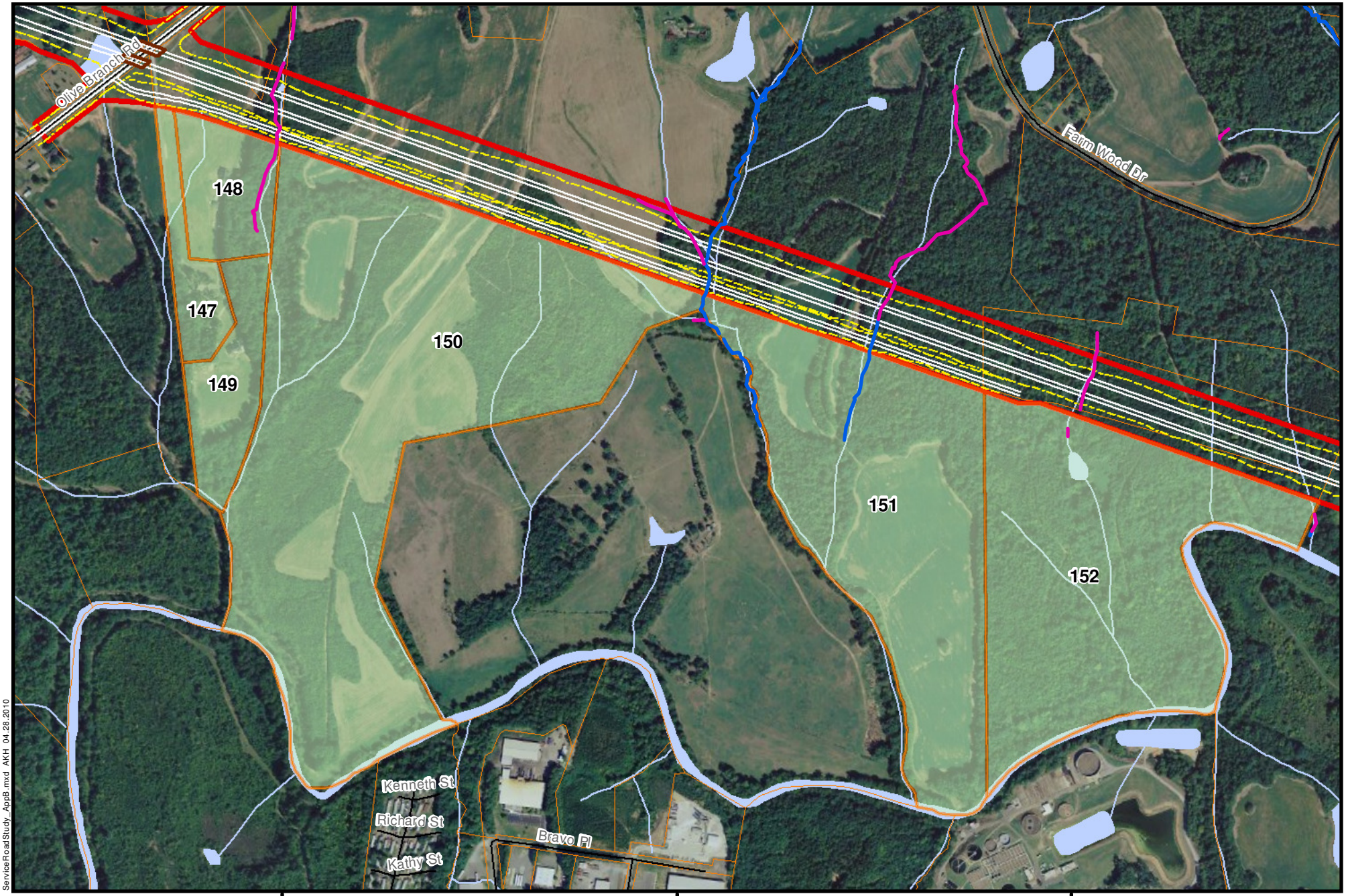
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: CC | **Figure B-30**



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NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

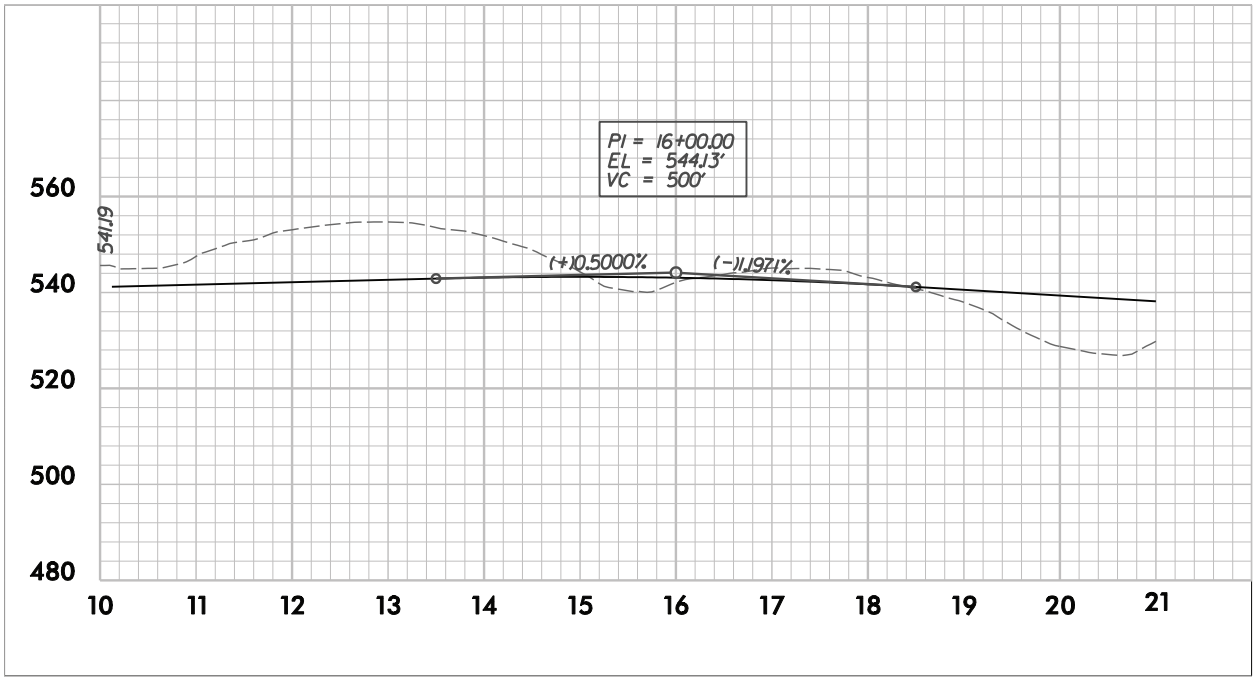
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

- Access
- No Access
- Parcels
- Right of Way
- Slope Stakes
- Roadway Design
- Bridges
- Roads
- Surveyed Wetlands
- Surveyed Ponds
- Surveyed Intermittent
- Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area: DD | **Figure B-31**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

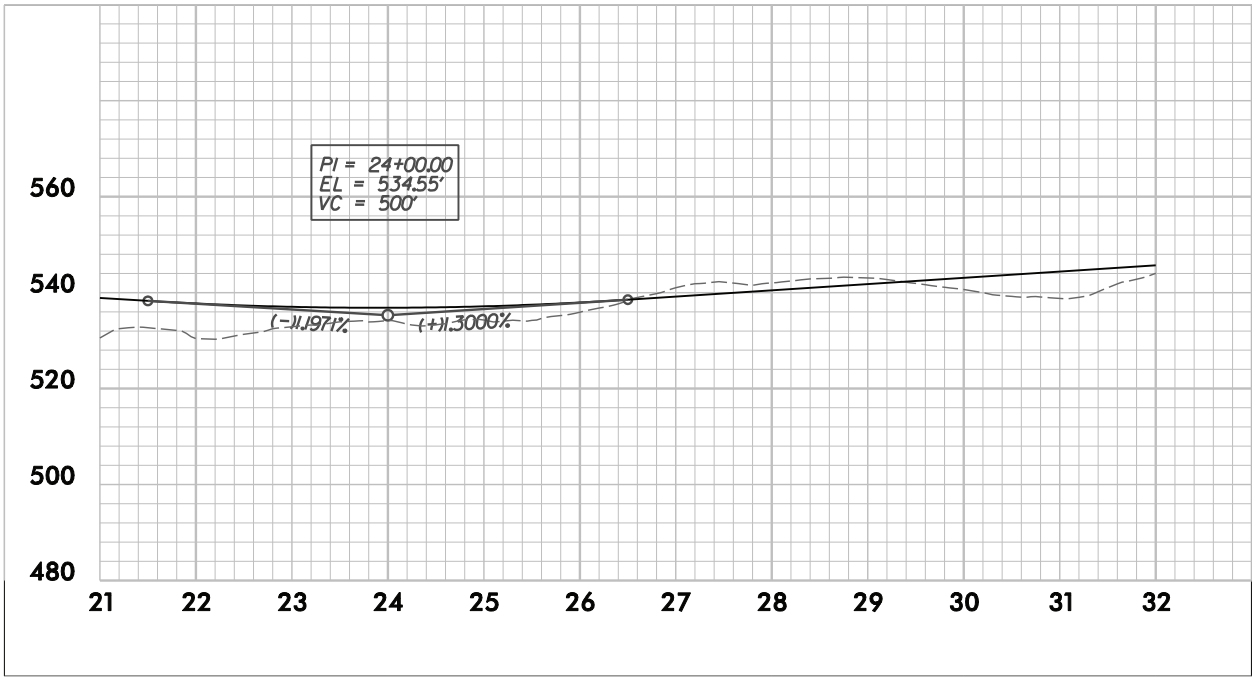
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: DD | **Figure B-32**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

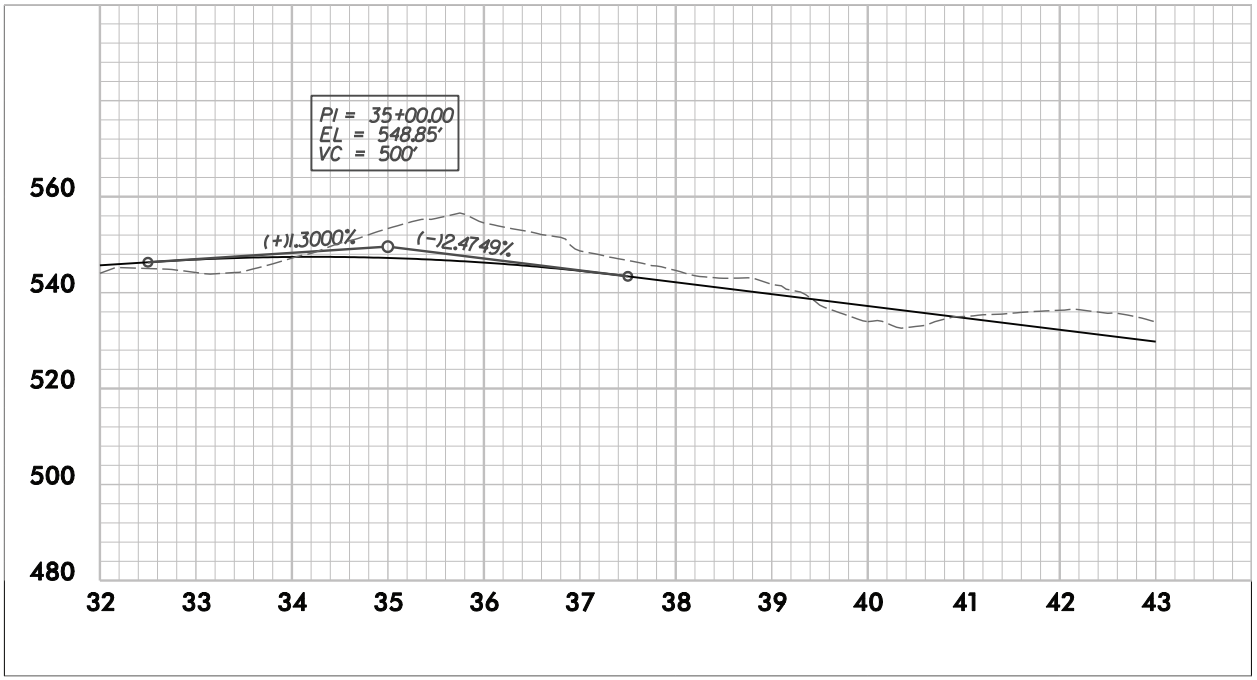
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: DD | **Figure B-33**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

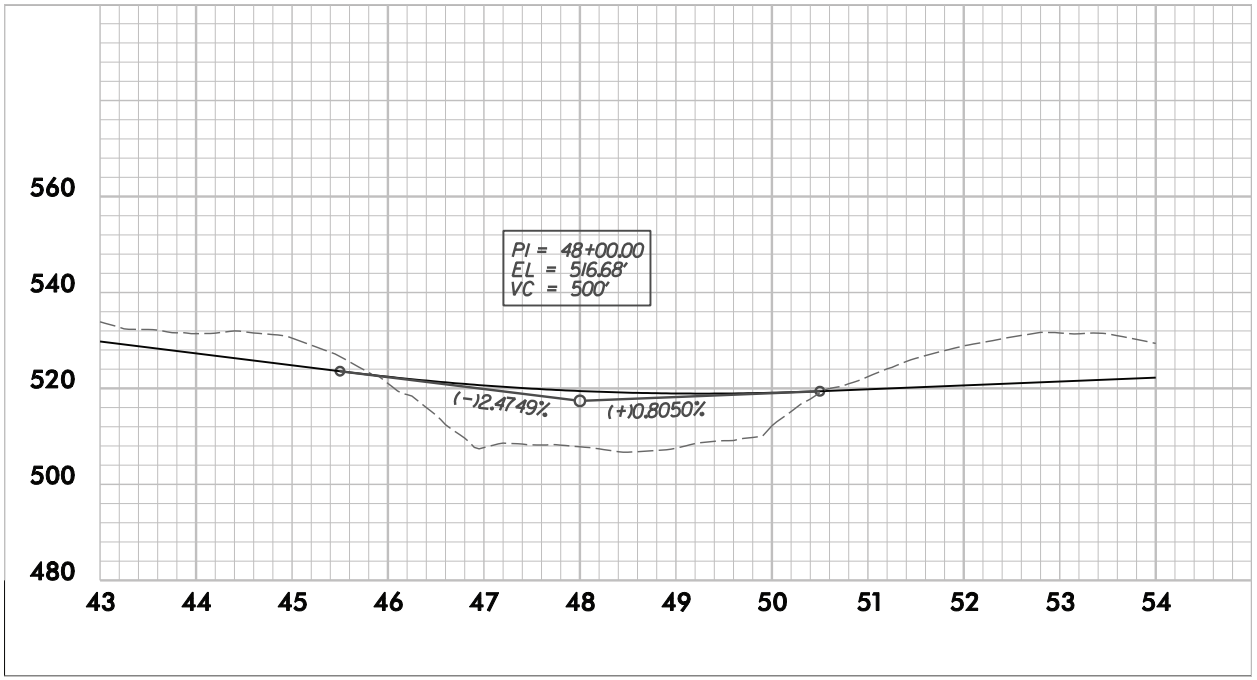
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: DD | **Figure B-34**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

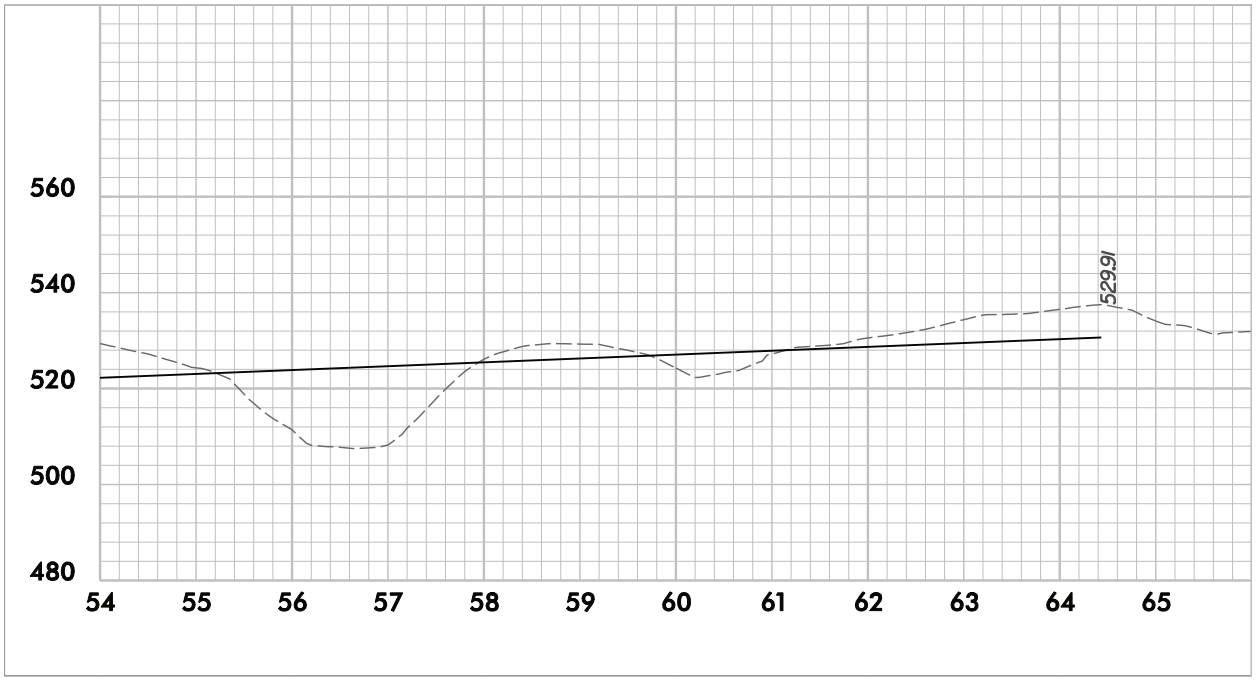
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: DD | **Figure B-35**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

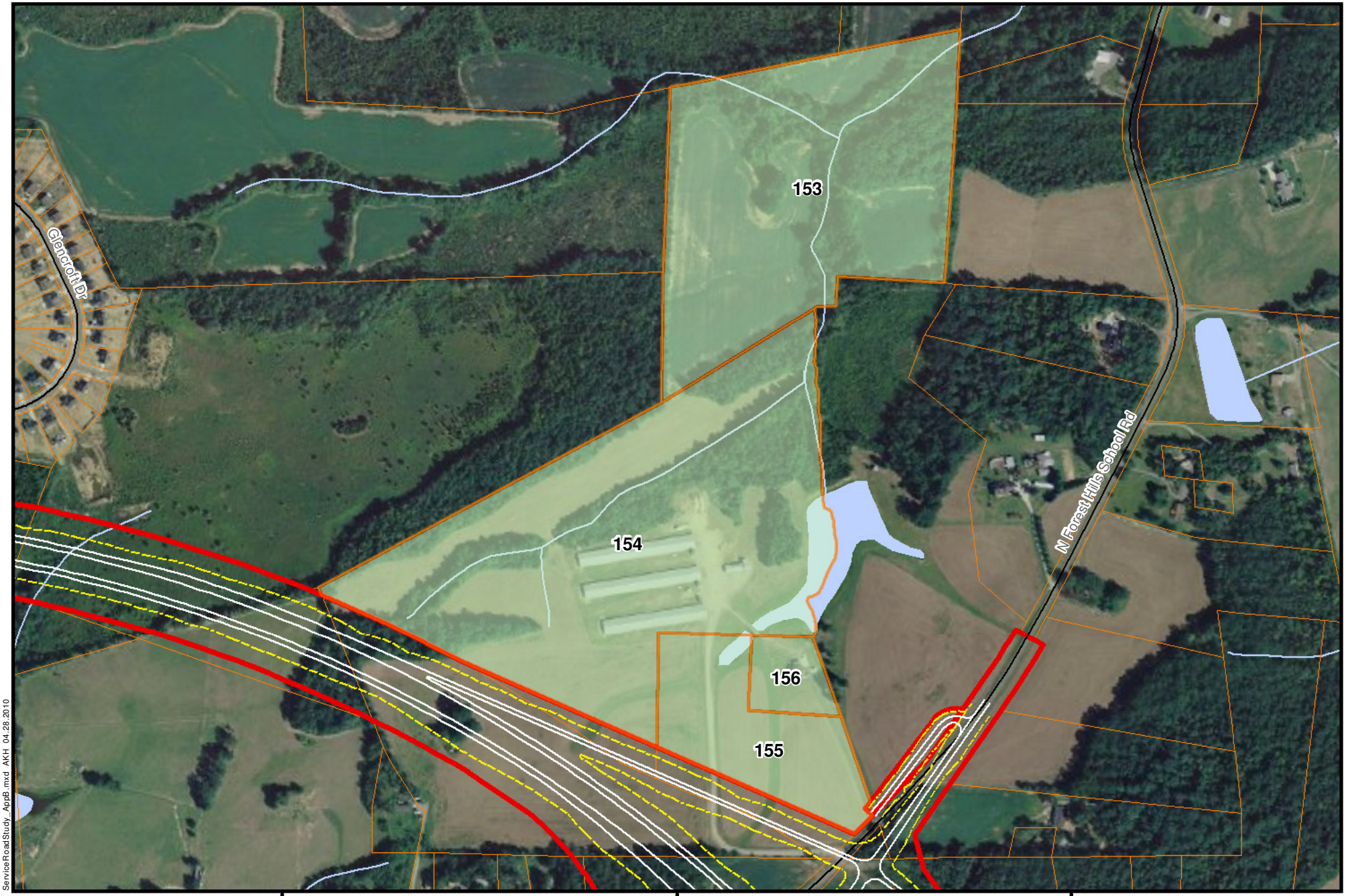
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: DD | **Figure B-36**



ServiceRoadStudy_AppB.mxd AKH 04.28.2010

NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

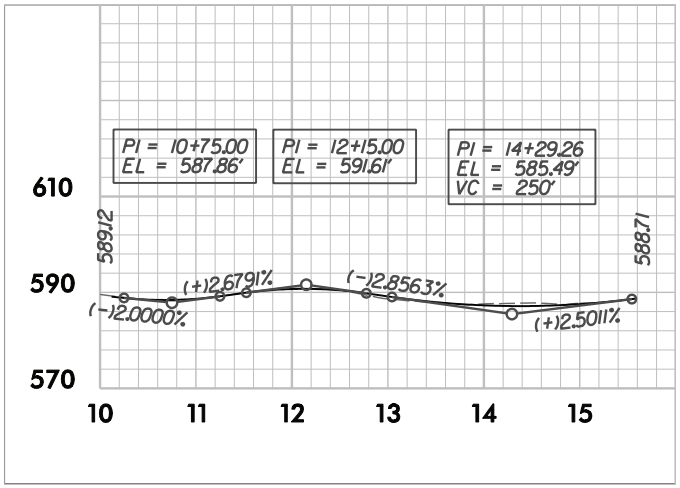
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Access
No Access
Parcels
Right of Way
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY PROPERTY ACCESS

Area: EE | **Figure B-37**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

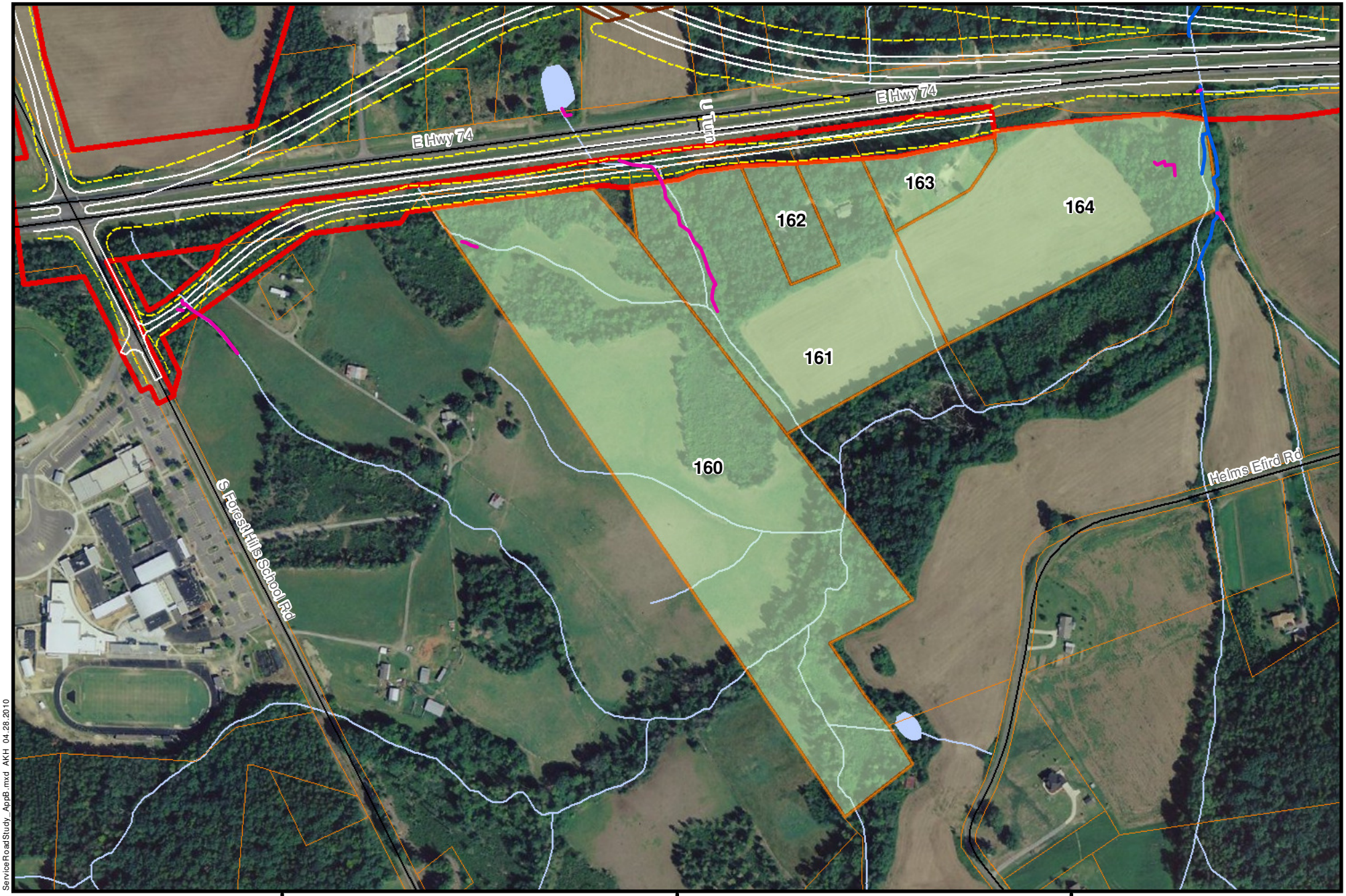
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: EE | **Figure B-38**



ServiceRoadStudy_AppB.mxd AKH 04.28.2010

NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR/BYPASS

STIP R-3329/R-2559

Mecklenburg and Union Counties

N

PRELIMINARY: SUBJECT TO CHANGE

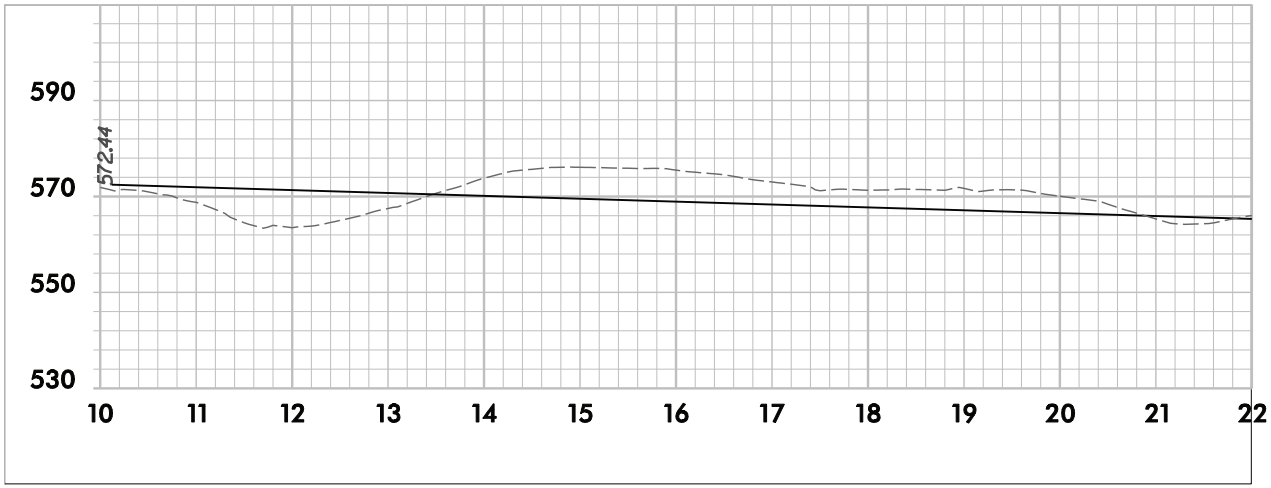
NOT TO SCALE

Source: Imagery Prime World, Mecklenburg & Union Counties GIS

Access
No Access
Parcels
Right of Way
Slope Stakes
Roadway Design
Bridges
Roads
Surveyed Wetlands
Surveyed Ponds
Surveyed Intermittent
Surveyed Perennial

SERVICE ROAD STUDY
PROPERTY ACCESS

Area:GG | **Figure B-39**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

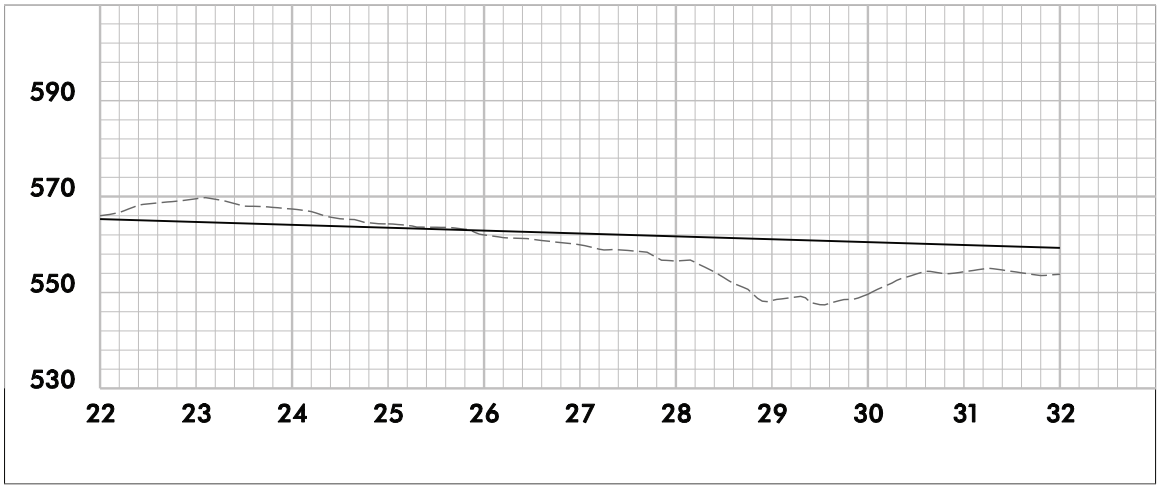
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: GG | **Figure B-40**



Legend

Proposed Profile

Existing Ground

Scale

1” = 200’ horizontally
1” = 40’ vertically

NORTH CAROLINA Turnpike Authority

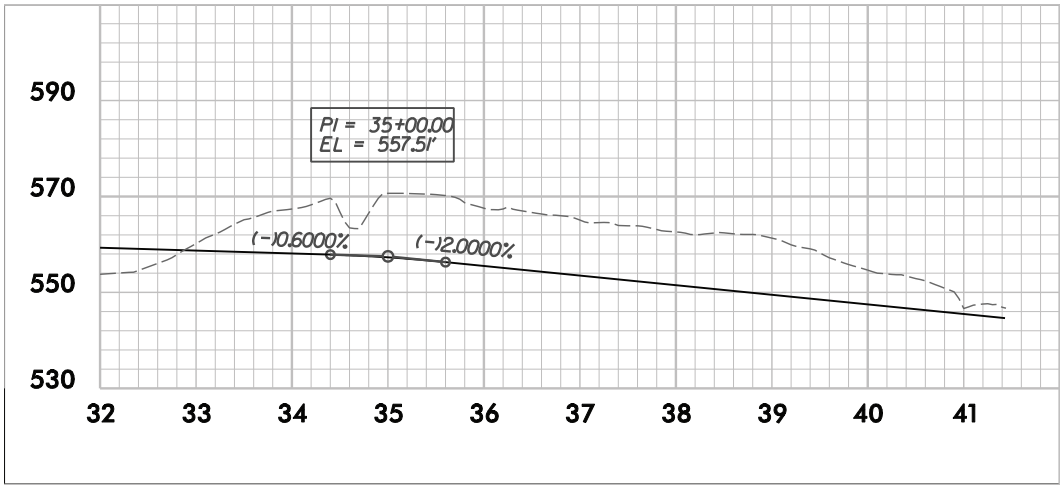
STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: GG | **Figure B-41**



Legend

Proposed Profile

Existing Ground

Scale

1" = 200' horizontally
1" = 40' vertically

NORTH CAROLINA Turnpike Authority

STIP R-3329 & R-2559

Mecklenburg & Union Counties

MONROE CONNECTOR/BYPASS

SERVICE ROAD DESIGN (VERTICAL)

AREA: GG | **Figure B-42**

APPENDIX C

Cost Estimates

SERVICE ROAD CONSTRUCTION COST
AREA A

Line Item	Des	Sec No.	Description	Quantity	Unit	Price	Amount
			Clearing and Grubbing	0.3	Acre	$ 21,000.00	$ 6,300.00
			Unclassified Excavation	1,359	CY	$ 4.30	$ 6,428.07
			Borrow	801	CY	$ 5.70	$ 5,022.27
			Drainage New Location	0.13	Miles	$ 150,000.00	$ 19,500.00
			Fine Grading	2,147	SY	$ 2.30	$ 4,937.18
			Pavement Widening		SY	$ 51.00	$ -
			New Pavement	1,840	SY	$ 30.00	$ 55,200.00
			Pavement Resurfacing		SY	$ 11.00	$ -
			_._"Average Asphalt Wedging		SY	$ 6.90	$ -
			Subgrade Stabilization	1,993	SY	$ 6.00	$ 11,958.00
			1'-6" Concrete Curb and Gutter		LF		$ -
			2'-6" Concrete Curb and Gutter		LF		$ -
			4" Concrete Sidewalk both sides		SY		$ -
			7" Monolithic Islands		SY		$ -
			Erosion Control	0.9	Acres	$ 14,600.00	$ 12,483.00
			New RR Signal with Gates		Each		$ -
			Rubber Railroad Crossing		Each		$ -
			Upgrade Traffic Signal		Each		$ -
			Traffic Control	0.1	Miles	$ 20,000.00	$ 2,600.00
			Thermo and Markers	0.1	Miles	$ 6,000.00	$ 780.00
			Building Removal - Large		Each	$ 50,000.00	$ -
			Building Removal - Small		Each	$ 20,000.00	$ -
			Utility Construction				
			Relocate Existing Water Line		LF		$ -
			Relocate Existing Sewer Line		LF		$ -
			Misc. & Mob (15% Strs&Util)				$ -
			Misc. & Mob (45% Functional)				$ 56,343.83

Contract Cost	.....	.....	$ 181,552.35
E. & C. 15%	.....	.....	$ 27,232.85
Construction Cost	.....	.....	$ 208,785.21
ROW Cost	.....	1.23 Acres	$ 298,070.00
Stream Impact Cost	.....	0 LF	$ -
Wetland Impact Cost	.....	0.0 Acres	$ -
Total Cost	.....	.....	**$ 506,855.21**

Property Aquistion Cost if not constructed	$ 938,179.00
Amount saved by constructing service Road	$ 431,323.79
Additional Cost of Service Road	$ -

SERVICE ROAD CONSTRUCTION COST
AREA B

Line Item	Des	Sec No.	Description	Quantity	Unit	Price	Amount
			Clearing and Grubbing	1.5	Acre	$ 21,000.00	$ 30,870.00
			Unclassified Excavation	6,543	CY	$ 4.30	$ 30,948.39
			Borrow	490	CY	$ 5.70	$ 3,072.30
			Drainage New Location	0.41	Miles	$ 150,000.00	$ 61,050.00
			Fine Grading	6,211	SY	$ 2.30	$ 14,285.30
			Pavement Widening		SY	$ 51.00	$ -
			New Pavement	5,256	SY	$ 30.00	$ 157,665.00
			Pavement Resurfacing		SY	$ 11.00	$ -
			_._"Average Asphalt Wedging		SY	$ 6.90	$ -
			Subgrade Stabilization	5,733	SY	$ 6.00	$ 34,399.80
			1'-6" Concrete Curb and Gutter		LF		$ -
			2'-6" Concrete Curb and Gutter		LF		$ -
			4" Concrete Sidewalk both sides		SY		$ -
			7" Monolithic Islands		SY		$ -
			Erosion Control	2.0	Acres	$ 14,600.00	$ 28,835.00
			New RR Signal with Gates		Each		$ -
			Rubber Railroad Crossing		Each		$ -
			Upgrade Traffic Signal		Each		$ -
			Traffic Control	0.4	Miles	$ 20,000.00	$ 8,140.00
			Thermo and Markers	0.4	Miles	$ 6,000.00	$ 2,442.00
			Building Removal - Large		Each	$ 50,000.00	$ -
			Building Removal - Small		Each	$ 20,000.00	$ -
			Utility Construction				
			Relocate Existing Water Line		LF		$ -
			Relocate Existing Sewer Line		LF		$ -
			Misc. & Mob (15% Strs&Util)				$ -
			Misc. & Mob (45% Functional)				$ 167,268.51

Contract Cost	.....	.....	$ 538,976.30
E. & C. 15%	.....	.....	$ 80,846.44
Construction Cost	.....	.....	**$ 619,822.74**
ROW Cost	.....	2.80 Acres	$ 363,218.00
Stream Impact Cost	.....	0 LF	$ -
Wetland Impact Cost	.....	0.0 Acres	$ -
Total Cost	.....	.....	**$ 983,040.74**

Property Aquistion Cost if not constructed	$ 5,903,236.00
Amount saved by constructing service Road	$ 4,920,195.26
Additional Cost of Service Road	$ -

SERVICE ROAD CONSTRUCTION COST
AREA D

Line Item	Des	Sec No.	Description	Quantity	Unit	Price	Amount
			Clearing and Grubbing	1.6	Acre	$ 21,000.00	$ 33,936.00
			Unclassified Excavation	5,840	CY	$ 4.30	$ 27,623.20
			Borrow	4,350	CY	$ 5.70	$ 27,274.50
			Drainage New Location	0.34	Miles	$ 150,000.00	$ 51,000.00
			Fine Grading	5,200	SY	$ 2.30	$ 11,960.00
			Pavement Widening		SY	$ 51.00	$ -
			New Pavement	4,400	SY	$ 30.00	$ 132,000.00
			Pavement Resurfacing		SY	$ 11.00	$ -
			_._"Average Asphalt Wedging		SY	$ 6.90	$ -
			Subgrade Stabilization	4,800	SY	$ 6.00	$ 28,800.00
			1'-6" Concrete Curb and Gutter		LF		$ -
			2'-6" Concrete Curb and Gutter		LF		$ -
			4" Concrete Sidewalk both sides		SY		$ -
			7" Monolithic Islands		SY		$ -
			Erosion Control	2.0	Acres	$ 14,600.00	$ 28,908.00
			New RR Signal with Gates		Each		$ -
			Rubber Railroad Crossing		Each		$ -
			Upgrade Traffic Signal		Each		$ -
			Traffic Control	0.34	Miles	$ 20,000.00	$ 6,800.00
			Thermo and Markers	0.34	Miles	$ 6,000.00	$ 2,040.00
			Building Removal - Large		Each	$ 50,000.00	$ -
			Building Removal - Small		Each	$ 20,000.00	$ -
			Utility Construction				
			Relocate Existing Water Line		LF		$ -
			Relocate Existing Sewer Line		LF		$ -
			Misc. & Mob (15% Strs&Util)				$ -
			Misc. & Mob (45% Functional)				$ 157,653.77

Contract Cost	.....	.....	$ 507,995.47
E. & C. 15%	.....	.....	$ 76,199.32
Construction Cost	.....	.....	**$ 584,194.78**
ROW Cost	.....	2.60 Acres	$ 33,735.00
Stream Impact Cost	.....	0 LF	$ -
Wetland Impact Cost	.....	0.0 Acres	$ -
Total Cost	.....	.....	**$ 617,929.78**

Property Aquistion Cost if not constructed	$ 798,328.00
Amount saved by constructing service Road	$ 180,398.22
Additional Cost of Service Road	$ -

SERVICE ROAD CONSTRUCTION COST
AREA M

Line Item	Des	Sec No.	Description	Quantity	Unit	Price	Amount
			Clearing and Grubbing		Acre	$ 21,000.00	$ -
			Unclassified Excavation	737	CY	$ 4.30	$ 3,486.01
			Borrow	85	CY	$ 5.70	$ 532.95
			Drainage New Location	0.08	Miles	$ 150,000.00	$ 12,000.00
			Fine Grading	1,242	SY	$ 2.30	$ 2,856.60
			Pavement Widening		SY	$ 51.00	$ -
			New Pavement	1,051	SY	$ 30.00	$ 31,530.00
			Pavement Resurfacing		SY	$ 11.00	$ -
			_._"Average Asphalt Wedging		SY	$ 6.90	$ -
			Subgrade Stabilization	1,147	SY	$ 6.00	$ 6,879.60
			1'-6" Concrete Curb and Gutter		LF		$ -
			2'-6" Concrete Curb and Gutter		LF		$ -
			4" Concrete Sidewalk both sides		SY		$ -
			7" Monolithic Islands		SY		$ -
			Erosion Control	0.6	Acres	$ 14,600.00	$ 8,358.50
			7' X 7' RCB Culvert	1,428.0	SF	$ 32.50	$ 46,410.00
			New RR Signal with Gates		Each		$ -
			Rubber Railroad Crossing		Each		$ -
			Upgrade Traffic Signal		Each		$ -
			Traffic Control	0.1	Miles	$ 20,000.00	$ 1,600.00
			Thermo and Markers	0.1	Miles	$ 6,000.00	$ 480.00
			Building Removal - Large		Each	$ 50,000.00	$ -
			Building Removal - Small		Each	$ 20,000.00	$ -
			Utility Construction				
			Relocate Existing Water Line		LF		$ -
			Relocate Existing Sewer Line		LF		$ -
			Misc. & Mob (15% Strs&Util)				$ 6,961.50
			Misc. & Mob (45% Functional)				$ 54,492.82

Contract Cost	.....	.....	$ 175,587.98
E. & C. 15%	.....	.....	$ 26,338.20
Construction Cost	.....	.....	**$ 201,926.18**
ROW Cost	.....	0.51 Acres	$ 7,503.00
Stream Impact Cost	.....	60 LF	$ 41,280.00
Wetland Impact Cost	.....	0.0 Acres	$ -
Total Cost	.....	.....	**$ 250,709.18**

Property Aquistion Cost if not constructed	$ 1,207,571.00
Amount saved by constructing service Road	$ 956,861.82
Additional Cost of Service Road	$ -

SERVICE ROAD CONSTRUCTION COST
AREA N

Line Item	Des	Sec No.	Description	Quantity	Unit	Price	Amount
			Clearing and Grubbing	5.3	Acre	$ 21,000.00	$ 111,300.00
			Unclassified Excavation	24,682	CY	$ 4.30	$ 116,745.86
			Borrow	16,121	CY	$ 5.70	$ 101,078.67
			Drainage New Location - 2 lane shldr	1.30	Miles	$ 150,000.00	$ 195,000.00
			Fine Grading	19,893	SY	$ 2.30	$ 45,753.90
			Pavement Widening		SY	$ 51.00	$ -
			New Pavement - Service Road	16,832	SY	$ 30.00	$ 504,960.00
			Pavement Resurfacing		SY	$ 11.00	$ -
			_._"Average Asphalt Wedging		SY	$ 6.90	$ -
			Subgrade Stabilization	18,362	SY	$ 6.00	$ 110,172.00
			1'-6" Concrete Curb and Gutter		LF		$ -
			2'-6" Concrete Curb and Gutter		LF		$ -
			4" Concrete Sidewalk both sides		SY		$ -
			7" Monolithic Islands		SY		$ -
			Erosion Control	6.8	Acres	$ 14,600.00	$ 99,280.00
			7' X 6' RCB Culvert	3,236.0	SF	$ 32.50	$ 105,170.00
			New RR Signal with Gates		Each		$ -
			Rubber Railroad Crossing		Each		$ -
			Upgrade Traffic Signal		Each		$ -
			Traffic Control	1.3	Miles	$ 20,000.00	$ 26,200.00
			Thermo and Markers- 2 lanes	1.3	Miles	$ 6,000.00	$ 7,860.00
			Building Removal - Large		Each	$ 50,000.00	$ -
			Building Removal - Small	2.0	Each	$ 20,000.00	$ 40,000.00
			Utility Construction				
			Relocate Existing Water Line		LF		$ -
			Relocate Existing Sewer Line		LF		$ -
			Misc. & Mob (15% Strs&Util)				$ 15,775.50
			Misc. & Mob (45% Functional)				$ 665,683.17

Contract Cost	....	$	2,144,979.10
E. & C. 15%	....	$	321,746.86
Construction Cost	....	**$**	**2,466,725.96**
ROW Cost	..... 8.62 Acres	$	257,673.00
Stream Impact Cost	..... 305 LF	$	209,840.00
Wetland Impact Cost	..... 0.0 Acres	$	-
Total Cost	....	**$**	**2,934,238.96**

Property Aquistion Cost if not constructed	$	3,614,084.00
Amount saved by constructing service Road	$	679,845.04
Additional Cost of Service Road	$	-

SERVICE ROAD CONSTRUCTION COST
AREA R

Line Item	Des	Sec No.	Description	Quantity	Unit	Price	Amount
			Clearing and Grubbing	0.7	Acre	$ 21,000.00	$ 14,280.00
			Unclassified Excavation	3,317	CY	$ 4.30	$ 15,689.41
			Borrow	80	CY	$ 5.70	$ 501.60
			Drainage New Location	0.25	Miles	$ 150,000.00	$ 36,900.00
			Fine Grading	3,756	SY	$ 2.30	$ 8,638.80
			Pavement Widening		SY	$ 51.00	$ -
			New Pavement	3,178	SY	$ 30.00	$ 95,340.00
			Pavement Resurfacing		SY	$ 11.00	$ -
			_._"Average Asphalt Wedging		SY	$ 6.90	$ -
			Subgrade Stabilization	3,467	SY	$ 6.00	$ 20,802.00
			1'-6" Concrete Curb and Gutter		LF		$ -
			2'-6" Concrete Curb and Gutter		LF		$ -
			4" Concrete Sidewalk both sides		SY		$ -
			7" Monolithic Islands		SY		$ -
			Erosion Control	1.7	Acres	$ 14,600.00	$ 25,258.00
			New RR Signal with Gates		Each		$ -
			Rubber Railroad Crossing		Each		$ -
			Upgrade Traffic Signal		Each		$ -
			Traffic Control	0.25	Miles	$ 20,000.00	$ 4,920.00
			Thermo and Markers	0.25	Miles	$ 6,000.00	$ 1,476.00
			Building Removal - Large		Each	$ 50,000.00	$ -
			Building Removal - Small		Each	$ 20,000.00	$ -
			Utility Construction				
			Relocate Existing Water Line		LF		$ -
			Relocate Existing Sewer Line		LF		$ -
			Misc. & Mob (15% Strs&Util)				$ -
			Misc. & Mob (45% Functional)				$ 100,712.61

Contract Cost	.....	.....	$ 324,518.42
E. & C. 15%	.....	.....	$ 48,677.76
Construction Cost	.....	.....	**$ 373,196.19**
ROW Cost	.....	2.24 Acres	$ 29,993.00
Stream Impact Cost	.....	0 LF	$ -
Wetland Impact Cost	.....	0.0 Acres	$ -
Total Cost	.....	.....	**$ 403,189.19**

Property Aquistion Cost if not constructed	$ 698,915.00
Amount saved by constructing service Road	$ 295,725.81
Additional Cost of Service Road	$ -

SERVICE ROAD CONSTRUCTION COST
AREA T

Line Item	Des	Sec No.	Description	Quantity	Unit	Price	Amount
			Clearing and Grubbing	0.2	Acre	$ 21,000.00	$ 4,809.00
			Unclassified Excavation	1,591	CY	$ 4.30	$ 7,525.43
			Borrow	22	CY	$ 5.70	$ 137.94
			Drainage New Location	0.13	Miles	$ 150,000.00	$ 19,500.00
			Fine Grading	1,993	SY	$ 2.30	$ 4,583.90
			Pavement Widening		SY	$ 51.00	$ -
			New Pavement	1,687	SY	$ 30.00	$ 50,598.00
			Pavement Resurfacing		SY	$ 11.00	$ -
			_._"Average Asphalt Wedging		SY	$ 6.90	$ -
			Subgrade Stabilization	1,840	SY	$ 6.00	$ 11,040.00
			1'-6" Concrete Curb and Gutter		LF		$ -
			2'-6" Concrete Curb and Gutter		LF		$ -
			4" Concrete Sidewalk both sides		SY		$ -
			7" Monolithic Islands		SY		$ -
			Erosion Control	0.6	Acres	$ 14,600.00	$ 8,760.00
			New RR Signal with Gates		Each		$ -
			Rubber Railroad Crossing		Each		$ -
			Upgrade Traffic Signal		Each		$ -
			Traffic Control	0.1	Miles	$ 20,000.00	$ 2,600.00
			Thermo and Markers	0.1	Miles	$ 6,000.00	$ 780.00
			Building Removal - Large		Each	$ 50,000.00	$ -
			Building Removal - Small		Each	$ 20,000.00	$ -
			Utility Construction				
			Relocate Existing Water Line		LF		$ -
			Relocate Existing Sewer Line		LF		$ -
			Misc. & Mob (15% Strs&Util)				$ -
			Misc. & Mob (45% Functional)				$ 49,650.42

Contract Cost	.....	.....	$ 159,984.69
E. & C. 15%	.....	.....	$ 23,997.70
Construction Cost	.....	.....	**$ 183,982.40**
ROW Cost	.....	0.89 Acres	$ 12,132.00
Stream Impact Cost	.....	0 LF	$ -
Wetland Impact Cost	.....	0.0 Acres	$ -
Total Cost	.....	.....	**$ 196,114.40**

Property Aquistion Cost if not constructed	$ 608,271.00
Amount saved by constructing service Road	$ 412,156.60
Additional Cost of Service Road	$ -

SERVICE ROAD CONSTRUCTION COST
AREA U

Line Item	Des	Sec No.	Description	Quantity	Unit	Price	Amount
			Clearing and Grubbing	2.0	Acre	$ 21,000.00	$ 42,420.00
			Unclassified Excavation	7,219	CY	$ 4.30	$ 34,145.87
			Borrow	1,943	CY	$ 5.70	$ 12,182.61
			Drainage New Location	0.39	Miles	$ 150,000.00	$ 57,900.00
			Fine Grading	5,893	SY	$ 2.30	$ 13,553.90
			Pavement Widening		SY	$ 51.00	$ -
			New Pavement	4,987	SY	$ 30.00	$ 149,610.00
			Pavement Resurfacing		SY	$ 11.00	$ -
			_._"Average Asphalt Wedging		SY	$ 6.90	$ -
			Subgrade Stabilization	5,440	SY	$ 6.00	$ 32,640.00
			1'-6" Concrete Curb and Gutter		LF		$ -
			2'-6" Concrete Curb and Gutter		LF		$ -
			4" Concrete Sidewalk both sides		SY		$ -
			7" Monolithic Islands		SY		$ -
			Erosion Control	2.7	Acres	$ 14,600.00	$ 39,653.60
			New RR Signal with Gates		Each		$ -
			Rubber Railroad Crossing		Each		$ -
			Upgrade Traffic Signal		Each		$ -
			Traffic Control	0.4	Miles	$ 20,000.00	$ 7,720.00
			Thermo and Markers	0.4	Miles	$ 6,000.00	$ 2,316.00
			Building Removal - Large		Each	$ 50,000.00	$ -
			Building Removal - Small		Each	$ 20,000.00	$ -
			Utility Construction				
			Relocate Existing Water Line		LF		$ -
			Relocate Existing Sewer Line		LF		$ -
			Misc. & Mob (15% Strs&Util)				$ -
			Misc. & Mob (45% Functional)				$ 176,463.89

Contract Cost	.....	.....	$ 568,605.87
E. & C. 15%	.....	.....	$ 85,290.88
Construction Cost	.....	.....	**$ 653,896.75**
ROW Cost	.....	3.18 Acres	$ 41,768.00
Stream Impact Cost	.....	0 LF	$ -
Wetland Impact Cost	.....	0.0 Acres	$ -
Total Cost	.....	.....	**$ 695,664.75**

Property Aquistion Cost if not constructed	$ 1,113,381.00
Amount saved by constructing service Road	$ 417,716.25
Additional Cost of Service Road	$ -

SERVICE ROAD CONSTRUCTION COST
AREA AA

Line Item	Des	Sec No.	Description	Quantity	Unit	Price	Amount
			Clearing and Grubbing	0.4	Acre	$ 21,000.00	$ 7,413.00
			Unclassified Excavation	3,897	CY	$ 4.30	$ 18,432.81
			Borrow	3,581	CY	$ 5.70	$ 22,452.87
			Drainage New Location	0.23	Miles	$ 150,000.00	$ 34,500.00
			Fine Grading	3,524	SY	$ 2.30	$ 8,105.20
			Pavement Widening		SY	$ 51.00	$ -
			New Pavement	2,982	SY	$ 30.00	$ 89,460.00
			Pavement Resurfacing		SY	$ 11.00	$ -
			_._"Average Asphalt Wedging		SY	$ 6.90	$ -
			Subgrade Stabilization	3,253	SY	$ 6.00	$ 19,518.00
			1'-6" Concrete Curb and Gutter		LF		$ -
			2'-6" Concrete Curb and Gutter		LF		$ -
			4" Concrete Sidewalk both sides		SY		$ -
			7" Monolithic Islands		SY		$ -
			Erosion Control	1.6	Acres	$ 14,600.00	$ 23,652.00
			New RR Signal with Gates		Each		$ -
			Rubber Railroad Crossing		Each		$ -
			Upgrade Traffic Signal		Each		$ -
			Traffic Control	0.2	Miles	$ 20,000.00	$ 4,600.00
			Thermo and Markers	0.2	Miles	$ 6,000.00	$ 1,380.00
			Building Removal - Large		Each	$ 50,000.00	$ -
			Building Removal - Small		Each	$ 20,000.00	$ -
			Utility Construction				
			Relocate Existing Water Line		LF		$ -
			Relocate Existing Sewer Line		LF		$ -
			Misc. & Mob (15% Strs&Util)				$ -
			Misc. & Mob (45% Functional)				$ 103,281.25

Contract Cost	.....	.....	$ 332,795.13
E. & C. 15%	.....	.....	$ 49,919.27
Construction Cost	.....	.....	**$ 382,714.39**
ROW Cost	.....	2.09 Acres	$ 38,829.00
Stream Impact Cost	.....	0 LF	$ -
Wetland Impact Cost	.....	0.0 Acres	$ -
Total Cost	.....	.....	**$ 421,543.39**

Property Aquistion Cost if not constructed	$ 955,104.00
Amount saved by constructing service Road	$ 533,560.61
Additional Cost of Service Road	$ -

SERVICE ROAD CONSTRUCTION COST
AREA BB

Line Item	Des	Sec No.	Description	Quantity	Unit	Price	Amount
			Clearing and Grubbing	0.0	Acre	$ 21,000.00	$ 777.00
			Unclassified Excavation	2,409	CY	$ 4.30	$ 11,394.57
			Borrow	45	CY	$ 5.70	$ 282.15
			Drainage New Location	0.17	Miles	$ 150,000.00	$ 24,900.00
			Fine Grading	2,542	SY	$ 2.30	$ 5,846.60
			Pavement Widening		SY	$ 51.00	$ -
			New Pavement	2,151	SY	$ 30.00	$ 64,530.00
			Pavement Resurfacing		SY	$ 11.00	$ -
			_._"Average Asphalt Wedging		SY	$ 6.90	$ -
			Subgrade Stabilization	2,347	SY	$ 6.00	$ 14,082.00
			1'-6" Concrete Curb and Gutter		LF		$ -
			2'-6" Concrete Curb and Gutter		LF		$ -
			4" Concrete Sidewalk both sides		SY		$ -
			7" Monolithic Islands		SY		$ -
			Erosion Control	1.2	Acres	$ 14,600.00	$ 17,082.00
			New RR Signal with Gates		Each		$ -
			Rubber Railroad Crossing		Each		$ -
			Upgrade Traffic Signal		Each		$ -
			Traffic Control	0.2	Miles	$ 20,000.00	$ 3,320.00
			Thermo and Markers	0.2	Miles	$ 6,000.00	$ 996.00
			Building Removal - Large		Each	$ 50,000.00	$ -
			Building Removal - Small	1.0	Each	$ 20,000.00	$ 20,000.00
			Utility Construction				
			Relocate Existing Water Line		LF		$ -
			Relocate Existing Sewer Line		LF		$ -
			Misc. & Mob (15% Strs&Util)				$ -
			Misc. & Mob (45% Functional)				$ 73,444.64

Contract Cost	.....	.....	$ 236,654.96
E. & C. 15%	.....	.....	$ 35,498.24
Construction Cost	.....	.....	**$ 272,153.21**
ROW Cost	.....	1.30 Acres	$ 22,584.00
Stream Impact Cost	.....	0 LF	$ -
Wetland Impact Cost	.....	0.0 Acres	$ -
Total Cost	.....	.....	**$ 294,737.21**

Property Aquistion Cost if not constructed	$ 986,104.00
Amount saved by constructing service Road	$ 691,366.79
Additional Cost of Service Road	$ -

SERVICE ROAD CONSTRUCTION COST
AREA CC

Line Item	Des	Sec No.	Description	Quantity	Unit	Price	Amount
			Clearing and Grubbing	0.3	Acre	$ 21,000.00	$ 5,575.50
			Unclassified Excavation	2,926	CY	$ 4.30	$ 13,839.98
			Borrow		CY	$ 5.70	$ -
			Drainage New Location	0.20	Miles	$ 150,000.00	$ 30,300.00
			Fine Grading	2,224	SY	$ 2.30	$ 5,115.20
			Pavement Widening		SY	$ 51.00	$ -
			New Pavement	1,750	SY	$ 30.00	$ 52,500.00
			Pavement Resurfacing	853	SY	$ 11.00	$ 9,383.00
			_._"Average Asphalt Wedging		SY	$ 6.90	$ -
			Subgrade Stabilization	1,987	SY	$ 6.00	$ 11,922.00
			8"-6" Median Curb	540	LF	$ 16.00	$ 8,640.00
			2'-6" Concrete Curb and Gutter	540	LF	$ 17.25	$ 9,315.00
			4" Concrete Sidewalk both sides		SY		$ -
			7" Monolithic Islands		SY		$ -
			Erosion Control	1.2	Acres	$ 14,600.00	$ 17,812.00
			New RR Signal with Gates		Each		$ -
			Rubber Railroad Crossing		Each		$ -
			Upgrade Traffic Signal		Each		$ -
			Traffic Control	0.2	Miles	$ 20,000.00	$ 4,040.00
			Thermo and Markers	0.2	Miles	$ 6,000.00	$ 1,212.00
			Building Removal - Large		Each	$ 50,000.00	$ -
			Building Removal - Small		Each	$ 20,000.00	$ -
			Utility Construction				
			Relocate Existing Water Line		LF		$ -
			Relocate Existing Sewer Line		LF		$ -
			Misc. & Mob (15% Strs&Util)				$ -
			Misc. & Mob (45% Functional)				$ 76,344.61

Contract Cost	.....	.....	$ 245,999.29
E. & C. 15%	.....	.....	$ 36,899.89
Construction Cost	.....	.....	**$ 282,899.18**
ROW Cost	.....	1.82 Acres	$ 31,513.00
Stream Impact Cost	.....	0 LF	$ -
Wetland Impact Cost	.....	0.0 Acres	$ -
Total Cost	.....	.....	**$ 314,412.18**

Property Aquistion Cost if not constructed	$ 1,261,470.00
Amount saved by constructing service Road	$ 947,057.82
Additional Cost of Service Road	$ -

SERVICE ROAD CONSTRUCTION COST
AREA DD

Line Item	Des	Sec No.	Description	Quantity	Unit	Price	Amount
			Clearing and Grubbing	5.6	Acre	$ 21,000.00	$ 116,697.00
			Unclassified Excavation	50,833	CY	$ 4.30	$ 240,440.09
			Borrow	23,955	CY	$ 5.70	$ 150,197.85
			Drainage New Location	1.06	Miles	$ 150,000.00	$ 159,000.00
			Fine Grading	14,933	SY	$ 2.30	$ 34,345.90
			Pavement Widening		SY	$ 51.00	$ -
			New Pavement	12,445	SY	$ 30.00	$ 373,350.00
			Pavement Resurfacing		SY	$ 11.00	$ -
			_._"Average Asphalt Wedging		SY	$ 6.90	$ -
			Subgrade Stabilization	13,689	SY	$ 6.00	$ 82,134.00
			1'-6" Concrete Curb and Gutter		LF		$ -
			2'-6" Concrete Curb and Gutter		LF		$ -
			4" Concrete Sidewalk both sides		SY		$ -
			7" Monolithic Islands		SY		$ -
			Erosion Control	9.6	Acres	$ 14,600.00	$ 140,379.00
			7' X 6' RCB Culvert	71.0	LF		$ -
			New RR Signal with Gates		Each		$ -
			Rubber Railroad Crossing		Each		$ -
			Upgrade Traffic Signal		Each		$ -
			Traffic Control	1.1	Miles	$ 20,000.00	$ 21,200.00
			Thermo and Markers	1.1	Miles	$ 6,000.00	$ 6,360.00
			Building Removal - Large		Each	$ 50,000.00	$ -
			Building Removal - Small		Each	$ 20,000.00	$ -
			Utility Construction				
			Relocate Existing Water Line		LF		$ -
			Relocate Existing Sewer Line		LF		$ -
			Misc. & Mob (15% Strs&Util)				$ -
			Misc. & Mob (45% Functional)				$ 595,846.73

Contract Cost	.....	.....	$ 1,919,950.57
E. & C. 15%	.....	.....	$ 287,992.59
Construction Cost	.....	.....	**$ 2,207,943.15**
ROW Cost	.....	0 Acres	$ -
Stream Impact Cost	.....	256 LF	$ 176,128.00
Wetland Impact Cost	.....	0.13 Acres	$ 16,487.64
Total Cost	.....	.....	**$ 2,400,558.79**

Property Aquistion Cost if not constructed	$ 1,753,910.00
Amount saved by constructing service Road	$ -
Additional Cost of Service Road	$ 646,648.79

SERVICE ROAD CONSTRUCTION COST
AREA EE

Line Item	Des	Sec No.	Description	Quantity	Unit	Price	Amount
			Clearing and Grubbing		Acre	$ 21,000.00	$ -
			Unclassified Excavation	1,479	CY	$ 4.30	$ 6,995.67
			Borrow		CY	$ 5.70	$ -
			Drainage New Location	0.11	Miles	$ 150,000.00	$ 15,900.00
			Fine Grading	1,618	SY	$ 2.30	$ 3,721.40
			Pavement Widening		SY	$ 51.00	$ -
			New Pavement	1,369	SY	$ 30.00	$ 41,070.00
			Pavement Resurfacing		SY	$ 11.00	$ -
			_._"Average Asphalt Wedging		SY	$ 6.90	$ -
			Subgrade Stabilization	1,493	SY	$ 6.00	$ 8,958.00
			1'-6" Concrete Curb and Gutter		LF		$ -
			2'-6" Concrete Curb and Gutter		LF		$ -
			4" Concrete Sidewalk both sides		SY		$ -
			7" Monolithic Islands		SY		$ -
			Erosion Control	1.0	Acres	$ 14,600.00	$ 15,008.80
			New RR Signal with Gates		Each		$ -
			Rubber Railroad Crossing		Each		$ -
			Upgrade Traffic Signal		Each		$ -
			Traffic Control	0.1	Miles	$ 20,000.00	$ 2,120.00
			Thermo and Markers	0.1	Miles	$ 6,000.00	$ 636.00
			Building Removal - Large		Each	$ 50,000.00	$ -
			Building Removal - Small		Each	$ 20,000.00	$ -
			Utility Construction				
			Relocate Existing Water Line		LF		$ -
			Relocate Existing Sewer Line		LF		$ -
			Misc. & Mob (15% Strs&Util)				$ -
			Misc. & Mob (45% Functional)				$ 42,484.44

Contract Cost	.....	.....	$ 136,894.31
E. & C. 15%	.....	.....	$ 20,534.15
Construction Cost	.....	.....	**$ 157,428.46**
ROW Cost	.....	0.71 Acres	$ 4,807.00
Stream Impact Cost	.....	0 LF	$ -
Wetland Impact Cost	.....	0.0 Acres	$ -
Total Cost	.....	.....	**$ 162,235.46**

Property Aquistion Cost if not constructed	$ 668,359.00
Amount saved by constructing service Road	$ 506,123.54
Additional Cost of Service Road	$ -

SERVICE ROAD CONSTRUCTION COST
AREA GG

Line Item	Des	Sec No.	Description	Quantity	Unit	Price	Amount
			Clearing and Grubbing	5.6	Acre	$ 21,000.00	$ 116,550.00
			Unclassified Excavation	44,463	CY	$ 4.30	$ 210,309.99
			Borrow	9,506	CY	$ 5.70	$ 59,602.62
			Drainage New Location	0.60	Miles	$ 150,000.00	$ 89,250.00
			Fine Grading	8,384	SY	$ 2.30	$ 19,283.20
			Pavement Widening		SY	$ 51.00	$ -
			New Pavement	6,987	SY	$ 30.00	$ 209,610.00
			Pavement Resurfacing		SY	$ 11.00	$ -
			_._"Average Asphalt Wedging		SY	$ 6.90	$ -
			Subgrade Stabilization	7,685	SY	$ 6.00	$ 46,110.00
			1'-6" Concrete Curb and Gutter		LF		$ -
			2'-6" Concrete Curb and Gutter		LF		$ -
			4" Concrete Sidewalk both sides		SY		$ -
			7" Monolithic Islands		SY		$ -
			Erosion Control	4.7	Acres	$ 14,600.00	$ 68,620.00
			New RR Signal with Gates		Each		$ -
			Rubber Railroad Crossing		Each		$ -
			Upgrade Traffic Signal		Each		$ -
			Traffic Control	0.6	Miles	$ 20,000.00	$ 11,900.00
			Thermo and Markers	0.6	Miles	$ 6,000.00	$ 3,570.00
			Building Removal - Large		Each	$ 50,000.00	$ -
			Building Removal - Small		Each	$ 20,000.00	$ -
			Utility Construction				
			Relocate Existing Water Line		LF		$ -
			Relocate Existing Sewer Line		LF		$ -
			Misc. & Mob (15% Strs&Util)				$ -
			Misc. & Mob (45% Functional)				$ 375,662.61

Contract Cost	.....	.....	$ 1,210,468.42
E. & C. 15%	.....	.....	$ 181,570.26
Construction Cost	.....	.....	**$ 1,392,038.69**
ROW Cost	.....	0 Acres	$ -
Stream Impact Cost	.....	213 LF	$ 146,544.00
Wetland Impact Cost	.....	0.10 Acres	$ 12,682.80
Total Cost	.....	.....	**$ 1,551,265.49**

Property Aquistion Cost if not constructed	$ 683,230.00
Amount saved by constructing service Road	$ -
Additional Cost of Service Road	$ 868,035.49