DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
TIA PROJECT CONCEPT REPORT

Project Type:	Interchange Recon.	P.I. Number:	0012577
GDOT District:	Three	County:	Muscogee
Federal Route Number:	I-185	MPO ID Number:	RC08-000052
State Route Number:	SR 411		

The purpose of this project is to reconstruct the interchange at I-185 and CS 2228/Buena Vista Road.

Submitted for approval:

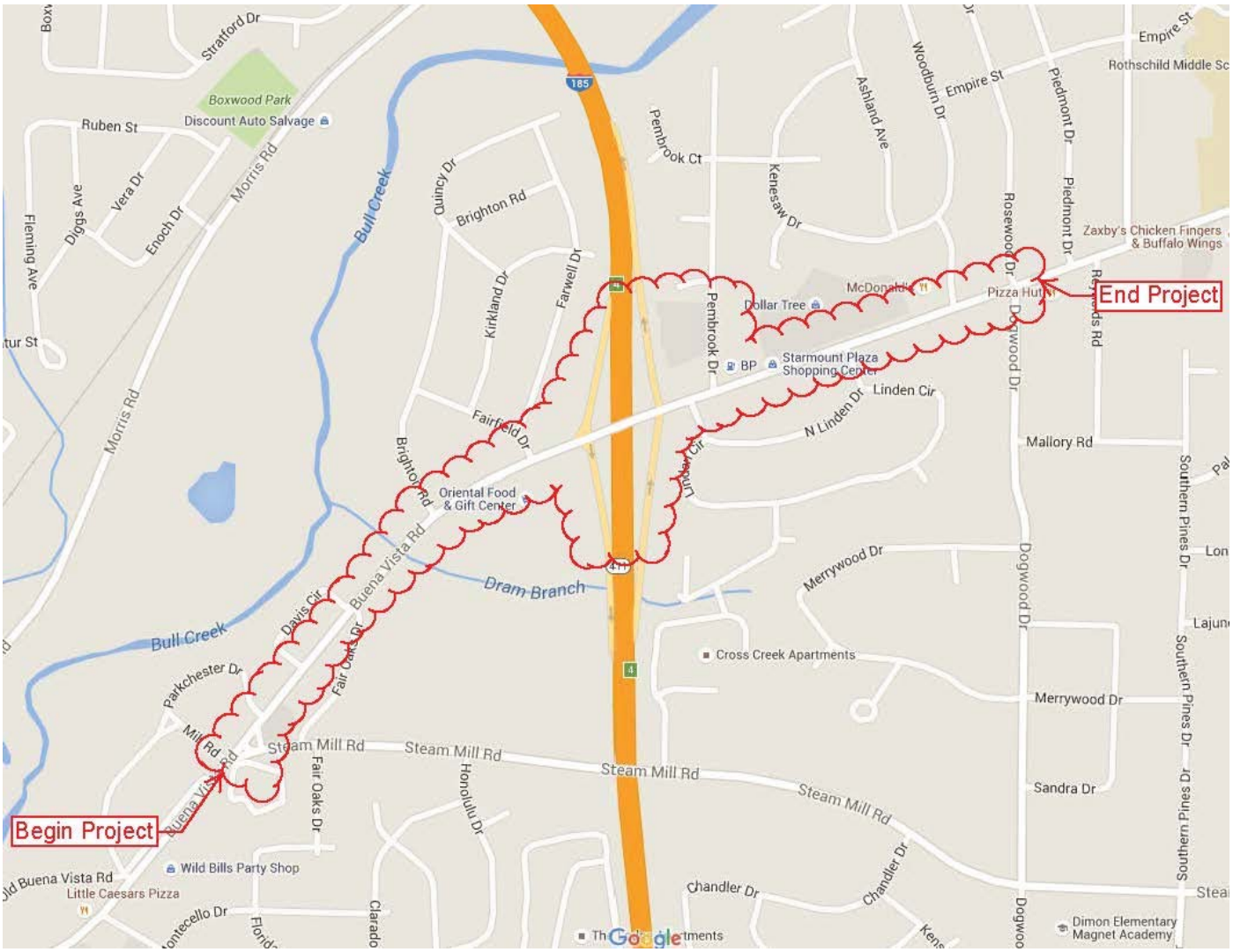
ATKINS Consultant & Firm	10/12/16 DATE
TIA Project Manager	10/12/16 DATE
GDOT TIA Regional Coordinator	10/12/16 DATE
TIA Program Manager	10/12/16 DATE
GDOT State TIA Administrator	10/20/2014 DATE

Approval:

Concur: GDOT Director of Engineering	10/25/2016 DATE
Approve: GDOT Chief Engineer	10/27/16 DATE

TIA

PROJECT LOCATION



PLANNING & BACKGROUND DATA

Project Intended Benefit:
This project would benefit the traveling public by alleviating the congestion at and along Buena Vista Road, improve operational efficiency, and provide improved access to I-185 in Southeast Columbus. This project could also potentially decrease the frequency and severity of crash incidents and provide a smoother surface for travel, optimizing capital asset management. The project has been in the MPO's LRTP for a number of years, but funding shortfalls have prevented the project from moving forward.

Description of the proposed project:
This project involves an innovative interchange design known as a Diverging Diamond Interchange (DDI). The DDI configuration crosses the traffic flow to either side of the interstate eliminating the left-turn phases at the traffic signals thus improving traffic operations. The purpose for improvements to the Buena Vista Road interchange is to address the primary needs of improved traffic congestion and better traffic flow management, improve mobility options for the traveling public, and provide safer travel conditions for motorist and pedestrians.

The project will reconstruct the interchange of I-185 and Buena Vista Road by replacing the existing bridge as the existing bridge's efficiency rating is 47.60. The existing bridge at the interchange will be replaced with a wider bridge and modified to a DDI. New improvements along Buena Vista Road will include 4 lanes with a raised median. Sidewalk (5' - on the south side) and multi-use path (10' - on the north side) will also be constructed along Buena Vista Road at the approaches to the bridge over I-185 and be provided in the center median area of the DDI. The proposed project will begin at the intersection of Buena Vista Road @ Steam Mill Road and end at the intersection of Buena Vista Road @ Rosewood Drive, a total of 1.04 miles.

Federal Oversight: ☐ Exempt ☐ State Funded ☒ TIA ☐ Other

Regional Commission: River Valley RC RC Project ID RC08-000052

Congressional District(s): 2

Projected Traffic: ADT
Current Year (2015): 43,360 vpd; Open Year (2020): 43,570 vpd; Design Year (2040): 44,430 vpd
Traffic Projections Performed by: ATKINS

Functional Classification (Mainline): Urban Principal Arterial

Complete Streets - Bicycle, Pedestrian, and/or Transit Warrants:
Warrants met: ☐ None ☒ Bicycle ☒ Pedestrian ☐ Transit

Is this a 3R (Resurfacing, Restoration, & Rehabilitation) Project? ☒ No ☐ Yes

Pavement Evaluation and Recommendations

Initial Pavement Evaluation Summary Report Required? ☒ No ☐ Yes

Initial Pavement Type Selection Report Required? ☒ No ☐ Yes

Feasible Pavement Alternatives: ☒ HMA ☐ PCC ☐ HMA & PCC

DESIGN AND STRUCTURAL DATA

Mainline Design Features: Buena Vista Road at I-185 Interchange

Feature	Existing	Standard*	Proposed
Typical Section			
- **Number of Lanes – Buena Vista Road**	**4**	**4**	**4**
- **Lane Width(s) – Buena Vista Road**	**11' – 12' +/-**	**11' – 12'**	**12'**
- *Lane Width(s) – Ramps*	*16' single lane, 12' multilane*	*16' single lane, 12' multilane*	*16' single lane, 12' multilane*
- **Median Width & Type – Buena Vista Road**	**N/A**	**20' raised curb**	**14'–20' Flush** **20'– ±71' Raised curb**
- **Outside Shoulder or Border Area Width – Buena Vista Road**		**16' Urban**	**12' Urban south side** **16'-20' Urban north side**
- *Outside Shoulder or Border Area Width – Ramps*	*12'/10' paved*	*12'/10' paved*	*12'/10' paved*
- **Outside Shoulder Slope – Buena Vista Road**	**2% +/-**	**2%**	**2%**
- *Outside Shoulder Slope – Ramps*	**6%**	**6%**	**6%**
- **Inside Shoulder Width – Buena Vista Road**	**N/A**	**N/A**	**N/A**
- *Inside Shoulder Width – Ramps*	*8'/4' paved*	*8'/4' paved*	*8'/4' paved*
- **Sidewalks – Buena Vista Road**	**0' – 5'**	**0' – 5'**	**5' sidewalk south side** **10' multi-use north side**
- **Auxiliary Lanes**	**N/A**	**12'**	**12'**
- **Bike Lanes**	**N/A**	**N/A**	**N/A**
Posted Speed (mph)	**35**		**35**
Design Speed (mph) – Buena Vista Road	**35**	**35**	**35**
Design Speed (mph) – Ramps	*N/A*	*35 min.*	*35 min*
Min Horizontal Curve Radius	**371'**	**371'**	**371'**

Maximum Superelevation Rate – Buena Vista Road	**4%**	**4%**	**4%**
Maximum Superelevation Rate – Ramps	*N/A*	*8%*	*8%*
Maximum Grade – Buena Vista Road	**N/A**	**7%**	**7%**
Maximum Grade – Ramps	*N/A*	*6%*	*6%*
Access Control	**N/A**	**300' – 600'**	**300'**
Design Vehicle – Buena Vista Road	**WB-62**	**WB-62**	**WB-62**
Design Vehicle - Ramps	*WB-67*	*WB-67*	*WB-67*
Pavement Type	**Asphalt**	**Asphalt**	**Asphalt**

*According to current GDOT design policy if applicable

Major Structures:

Structure	Existing	Proposed
I.D. # 215-0047-0 Buena Vista Road overpass	This bridge was constructed in 1966 and is 64'-9" wide X 234'-6" long. The typical section is a 5-lane, 52'-0" roadway width with minimal shoulders and 5'-0" sidewalks on both sides. Sufficiency rating: 47.60	Will not retain existing structure. New structure will be 110'-9" wide X 234'-6" long, consisting of six 13'-0" lanes (DDI configuration - 2 through lanes and 1 left free flow turn lane in each direction) along with 4' shoulders and a 21'-0" barrier protected raised concrete median/pedestrian/multi-use path facility.
N/A – slope paving was used at the existing abutments	*N/A*	Two 15'x145' abutment MSE walls

Major Interchanges/Intersections:

I-185/SR 411 and Buena Vista Rd – grade separated interchange located within project limits

Lighting required: ☒ No ☐ Yes

Off-site Detours Anticipated: ☒ No ☐ Yes ☐ Undetermined

**Bridge will be stage constructed.*

Transportation Management Plan [TMP] Required: ☒ No ☐ Yes

If Yes: Project classified as: ☐ Non-Significant ☐ Significant

TMP Components Anticipated: ☐ TTC ☐ TO ☐ PI

Design Exceptions to FHWA/AASHTO controlling criteria anticipated: ☒ No ☐ Yes

Design Variances to GDOT Standard Criteria anticipated: ☒ No ☐ Yes

Utility Involvements:

Liberty Utilities of Georgia – Gas
Flint EMC – Electric
Georgia Power Company – Electric
Fort Benning – Electric, Telephone, Gas, Water & Sewer
Columbus Water Works – Water & Sewer
Wide Open West Cable TV – CATV
Charter Communications – CATV
Mediacom - CATV
AT&T – Telephone

SUE Required: ☐ No ☒ Yes

Public Interest Determination Policy and Procedure recommended? (Utilities): ☒ No ☐ Yes

Railroad Involvement: N/A

Right-of-Way (ROW): Existing width: 75' to 115'
Proposed width: 90' to ±180' @ DDI bulb out

Required Right-of-Way anticipated: ☐ None ☒ Yes ☐ Undetermined
Easements anticipated: ☐ None ☒ Temporary ☒ Permanent ☐ Utility ☐ Other

Anticipated total number of impacted parcels: 62

Displacements anticipated:
Businesses: 17
Residences: 4
Other:
Total Displacements: 21

ENVIRONMENTAL DATA

Anticipated Environmental Document:

GEPA: ☐ Type A Letter ☐ Type B Letter ☒ Other–project less than $100MM

NEPA: ☐ CE ☐ EA/FONSI

Project Air Quality: *(On-system projects only)*

Is the project located in a PM 2.5 Non-attainment area?	☒ No	☐ Yes
Is the project located in an Ozone Non-attainment area?	☒ No	☐ Yes
Is a Carbon Monoxide hotspot analysis required?	☐ No	☒ Yes

MS4 Compliance – Is the project located in an MS4 area? ☐ No ☒ Yes

The GDOT MS4 permit requires proposed developments to provide best management practices (BMPs) for water quality treatment and to mitigate increased storm water flow rates if necessary and when feasible. A concept level assessment of the site indicates that it is infeasible to meet the water quality treatment and flow reduction criteria due to topographic site limitations that restricted the ability to outfall an underdrain system and/or cost of additional Right-of-Way needed to detain larger volumes.

Environmental Permits/Variances/Commitments/Coordination anticipated: The proposed improvements are expected to cause impacts to waters of the US and result in a Section 404 general permit and a stream buffer variance. Although structures aged 50 years or older exists in the project area, there would be no Section 4(f) use due to TIA funding.

NEPA/GEPA Comments & Information:

The proposed improvements will follow the GEPA environmental process and implement avoidance and minimization measures as applicable. Anticipated effects to resources include:

- Ecology: minor impacts to waters of the U.S. and buffered state waters. No effect expected to threatened and endangered species listed for the county.
- History: multiple properties aged 50 years or older exist in the project area and could potentially have ROW impacts as a result of project implementation. Impacts are not expected to result in a significant adverse effect. Because this is a state funded project, no coordination with SHPO or FHWA is anticipated and thus an MOA will not be required. However, GDOT may commit to some mitigation should any of the properties be eligible and the effects considered adverse.
- Archaeology: Phase I shovel testing is required to determine the presence of archaeological sites.
- Air: CO hot spot analysis required. Levels are not expected to exceed NAAQS.
- Noise: Proposed improvements are not expected to impact existing noise wall. Noise levels at NRHP eligible structures will need to be determined. Due to GEPA process, no noise assessment is required.
- Public Involvement: Additional outreach may be needed for the local urban community in the vicinity of the project. Stakeholders will be identified and public outreach conducted commensurate with interest as the project develops.

Other projects in the area:

- Project: MSL00-0005-00(134) (PI No. 0005134, Muscogee County) I-185 noise barriers east side from Macon Road to Airport Thruway
- Project: CSNHS-0008-00(376) (PI No. 0008376, Muscogee County) I-185 FROM CR 62/OLD CUSSETA ROAD TO SR 22 SPUR for a total distance of approximately 3.3 miles.
- Project: CSSTP-0008-00(483) (PI. No. 0008483, Muscogee County) CS 2228/BUENA VISTA ROAD FROM LINDEN CIRCLE TO FLOYD ROAD for a total distance of approximately 1.2 miles.
- Project: RC08-000057 (PI No. 0011436, Muscogee County) CS 2228/BUENA VISTA ROAD FROM MLK JR BLVD TO ST MARYS ROAD – TIA for a total distance of approximately 0.22 miles.
- PI No. 0013645, Muscogee County, I-185 FROM SR 520 TO NORTH OF SR 85 @ 32 BCT LOC for a total distance of approximately 7.7 miles.
- PI No. 0011434, Muscogee County, CR 62/CUSSETA RD FROM FORT BENNING RD TO STAUNTON DR – TIA for a total distance of approximately 1.72 miles.

Other coordination to date:

- 2/22/2016 Concept Alternative Review Meeting with City of Columbus
- The FHWA Guidance on Interstate Access Requests document - to demonstrate that the proposed project has no substantial modification to operations of I-185.

  The FHWA Guidance on Interstate Access Requests document provides the requirements for the justification and documentation necessary to substantiate any proposed changes in access to the Interstate System. This policy also facilitates decision making regarding proposed changes in access to the Interstate System in a manner that considers and is consistent with the vision, goals and long-range transportation plans of a metropolitan area, region and State.

  The FHWA's decision to approve a request is dependent on the proposal satisfying and documenting the following eight requirements.

1) ***The need being addressed by the request cannot be adequately satisfied by existing interchanges to the Interstate, and/or local roads and streets in the corridor can neither provide the desired access, nor can they be reasonably improved (such as access control along surface streets, improving traffic control, modifying ramp terminals and intersections, adding turn bays or lengthening storage) to satisfactorily accommodate the design-year traffic demands.***

   Through modifications to the surface street, the DDI enhances the efficiency of the traffic operations on Buena Vista Road, which satisfies this requirement. This is not a new access point, but a modification to an existing access point.

2) ***The need being addressed by the request cannot be adequately satisfied by reasonable transportation system management (such as ramp metering, mass transit, and HOV facilities), geometric design, and alternative improvements to the Interstate without the proposed change(s) in access.***

The DDI is an alternative improvement on the Buena Vista Road interchange that will have no impacts to operations along I-185. While the DDI could be constructed requiring only minor widening/modifications to the existing bridge, it was recommend for replacement by GDOT bridge group due to substructure condition per a bridge and condition survey conducted on 2/16/2016. No change in access to the interstate facility is proposed.

3) ***An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections.***

The DDI would not change the operations of the existing ramps. The initial conceptual traffic model has indicated that the DDI would also have no impacts to the operations of the I-185 corridor. The traffic model analysis of the DDI for the design year (2040) at the proposed interchange has indicated that the efficiency of the traffic operations on Buena Vista Road will improve. Reductions in delay are observed at the ramp terminal intersection locations.

4) ***The proposed access connects to a public road only and will provide for all traffic movements. Less than ``full interchanges'' may be considered on a case-by-case basis for applications requiring special access for managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards.***

The DDI does not change the access to the I-185 interchange. All current traffic movements are proposed to be maintained for this project. The DDI will be constructed to be as unobtrusive as possible to the existing infrastructure. The proposed access will be designed to meet exceed current standards.

5) ***The proposal considers and is consistent with local and regional land use and transportation plans. Prior to receiving final approval, all requests for new or revised access must be included in an adopted Metropolitan Transportation Plan, in the adopted Statewide or Metropolitan Transportation Improvement Program (STIP or TIP), and the Congestion Management Process within transportation management areas, as appropriate, the applicable provisions of 23 CFR part 450 and the transportation conformity requirements of 40 CFR parts 51 and 93.***

The existing interchange is planned for reconstruction as part of the Transportation Investment Act of 2010 (TIA – Band 2 – 2016 to 2019). The GDOT project identification number is 0012577 and the Regional Project ID/MPO TIP# is RC08-000052 (City of Columbus).

6) ***In corridors where the potential exists for future multiple interchange additions, a comprehensive corridor or network study must accompany all requests for new or revised access with recommendations that address all of the proposed and desired access changes within the context of a longer-range system or network plan.***

The TIP does not indicate any new or planned interchanges on I-185 adjacent to Buena Vista Road in the future. The I-185 corridor in this area already has interchanges spaced approximately 1-3 miles apart. However, with the proposed widening planned under PI 0011434, CR 62/CUSSETA RD FROM FORT BENNING RD TO STAUNTON DR, there is a potential to add an interchange to I-185 in the future.

7) ***When a new or revised access point is due to a new, expanded, or substantial change in current or planned future development or land use, requests must demonstrate appropriate coordination has occurred between the development and any proposed transportation system improvements. The request must describe the commitments agreed upon to assure adequate collection and dispersion of the traffic resulting from the development with the adjoining local street network and Interstate access point.***

This is not a new access point, but a modification to an existing access point.

8) ***The proposal can be expected to be included as an alternative in the required environmental evaluation, review and processing. The proposal should include supporting information and current status of the environmental processing.***

The proposed DDI project will follow the TIA Manual along with pertinent GDOT procedures, including environmental documentation/studies for state funded projects less than $100MM.

Project Cost Estimate and Funding Responsibilities:

	Breakdown of PE	**Breakdown of ROW**	**Breakdown of Reimbursable Utilities**	**Breakdown of CST [2]**	**Total Cost**
TIA Programmed Budget	$2,645,503	$28,700,000	$0	$16,324,497	**$47,670,000**
Funded By	TIA	TIA	TIA	TIA	
Date of Estimate	9/27/2016	9/27/2016	9/27/2016	9/27/2016	
Estimated Amount	$2,500,000	$15,491,630	$1,860,931	$19,195,941	
Budget Contingency [1]	$145,503	$1,578,500	$0	$897,848	
Total Estimated Cost	**$2,645,503**	**$17,070,130**	**$1,860,931**	**$20,093,789**	**$41,670,353**

Note: 1. Budget Contingency includes project contingency, program contingency, and program level of effort costs.
2. Construction estimate includes Construction, 5.85% CEI, and Environmental Mitigation (as applicable).

ALTERNATIVES DISCUSSION

Alternative selection:

Preferred Alternative: *Alt 2B (DDI - Alignment shifted south), two-13-foot lanes with exclusive 13 foot left-turn lane in each direction at the interchange. 5 feet sidewalk and 10 feet multi-use path provided for south and north side respectively along Buena Vista Rd. A bridge and condition survey was conducted on 2/16/2016 recommending a bridge replacement due to substructure condition.*			
Estimated Property Impacts:	**62**	**Estimated Total Cost:**	**$41,670,353**
Estimated ROW Cost:	**$17,070,130**	**Estimated CST Time:**	**18 months**
Rationale: *Meets the purpose of the project: to alleviate congestion, improve operational efficiency, improve access to I-185 and provide safer travel environment for both vehicles and pedestrians. This alternate is also preferred by the City of Columbus over alternate 1B (TUDI).*			

No-Build Alternative:			
Estimated Property Impacts:	**N/A**	**Estimated Total Cost:**	**N/A**
Estimated ROW Cost:	**N/A**	**Estimated CST Time:**	**N/A**
Rationale: *The operations of I-185 is currently affected by the congestion of traffic from the southbound exit ramp to Buena Vista Rd during peak hours. Without the proposed improvements, access to and from the interstate is severely limited. There is unacceptable LOS at the ramp intersections.*			

Alternative 1: *Alt 1B (TUDI - Alignment Shifted South), two-12-foot lanes with exclusive left-turn lane for each direction at the interchange. 5 feet sidewalk and 10 feet multi-use path provided for south and north side respectively along Buena Vista Rd. A bridge and condition survey was conducted on 2/16/2016 recommending a bridge replacement due to substructure condition.*			
Estimated Property Impacts:	**62**	**Estimated Total Cost:**	**$42,249,451**
Estimated ROW Cost:	**$17,898,545**	**Estimated CST Time:**	**18 months**
Rationale: *The TUDI will serve the same need and purpose & have similar property and overall cost impacts as the DDI. However, operational improvements are shown to be slightly better for the DDI preferred alternate.*			

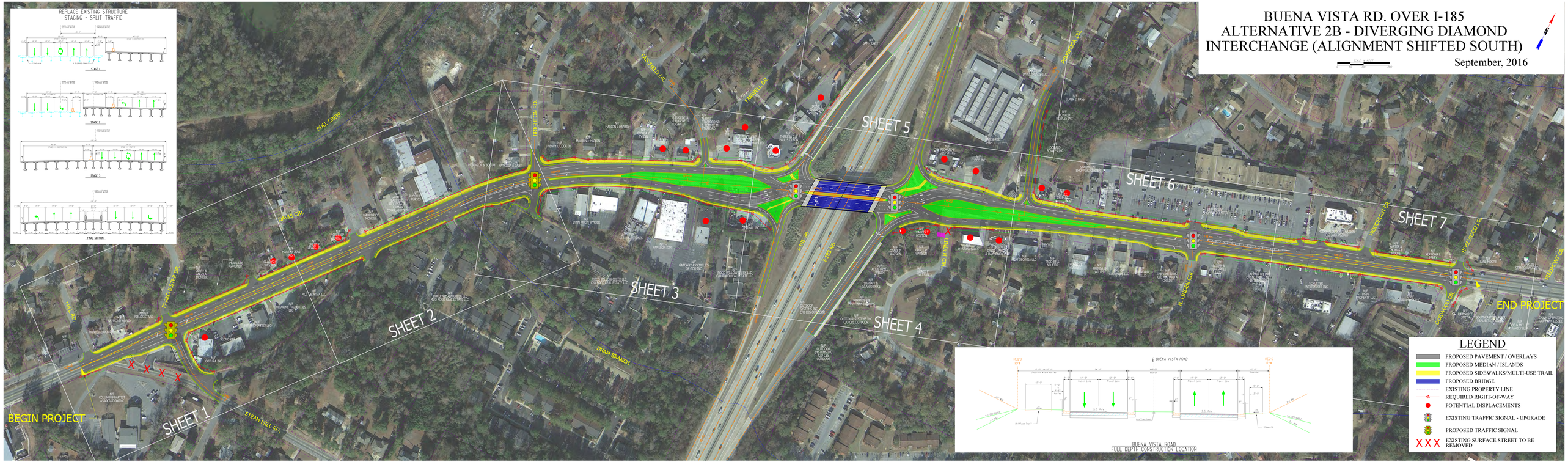
Comments/additional information: N/A

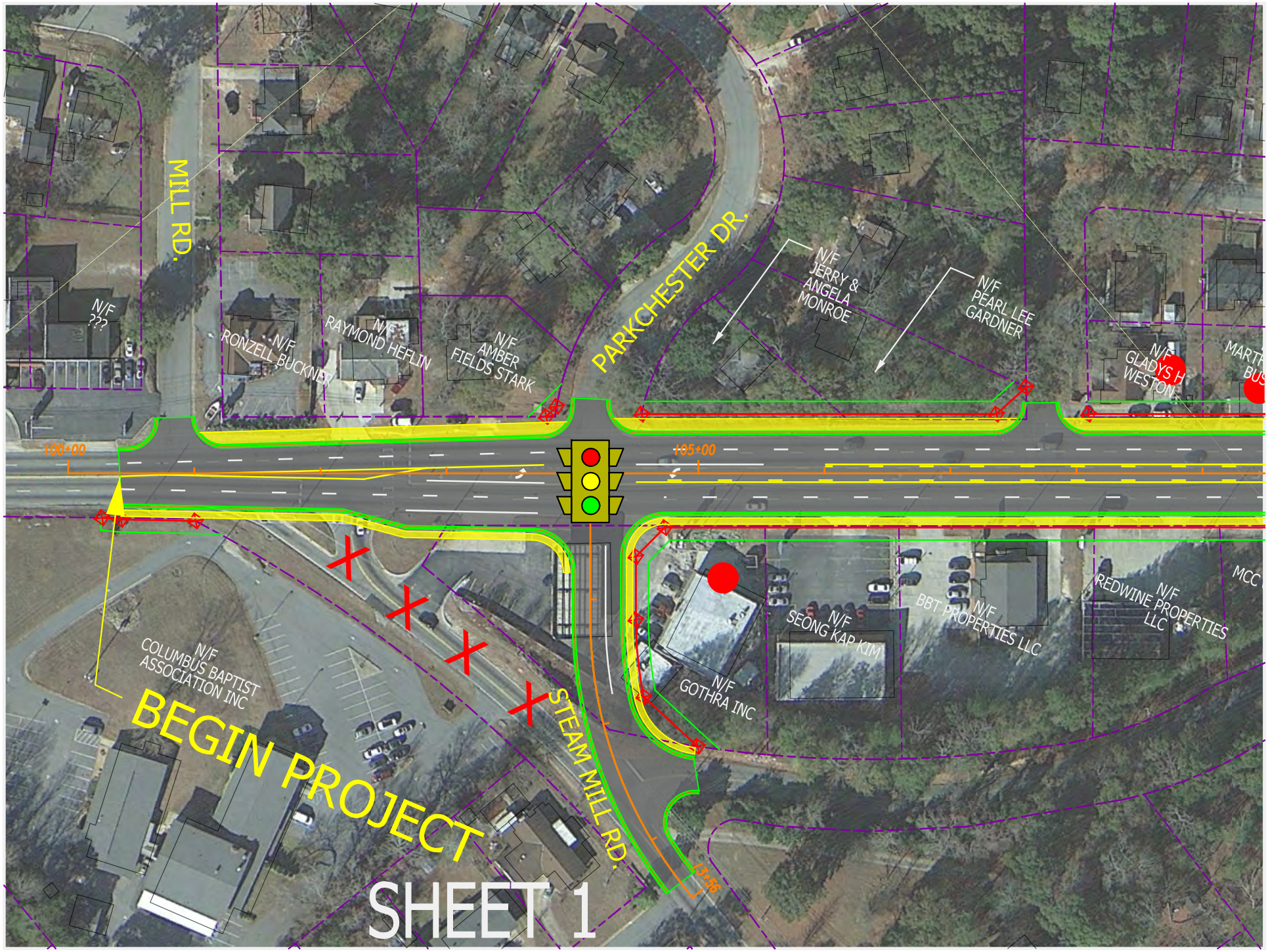
Attachments:

1. Concept Layout
2. Typical sections
3. Project Sheet
4. Cost Estimates including Utilities & ROW
5. Traffic Report Memo – 1/26/16
6. Bridge Survey Request & Recommendations – 1/25/16 & 4/15/16
7. Bridge Inventory & Inspection Report
8. Meeting Minutes – 2/22/16

BUENA VISTA RD. OVER I-185
ALTERNATIVE 2B - DIVERGING DIAMOND INTERCHANGE (ALIGNMENT SHIFTED SOUTH)

September, 2016

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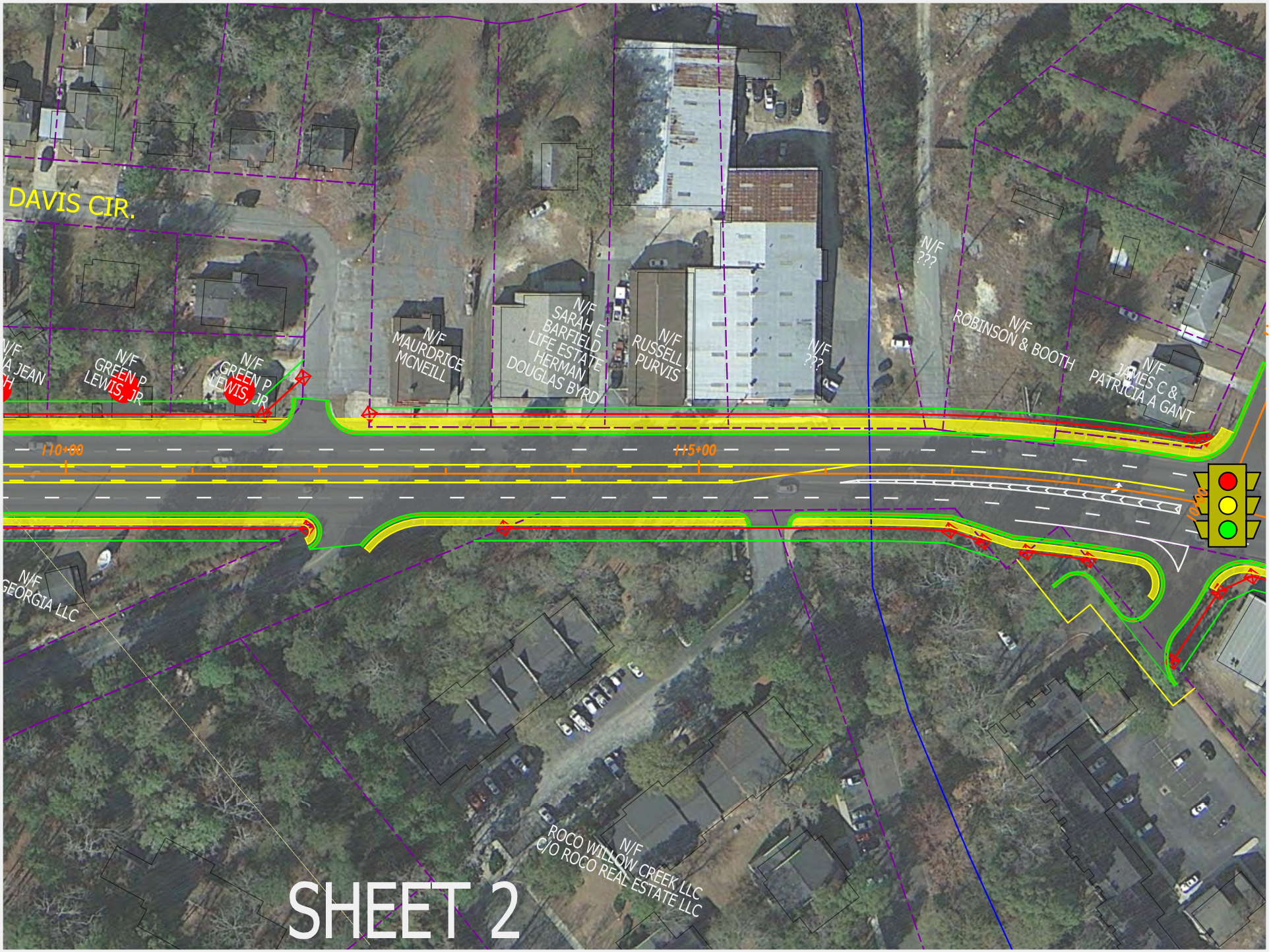
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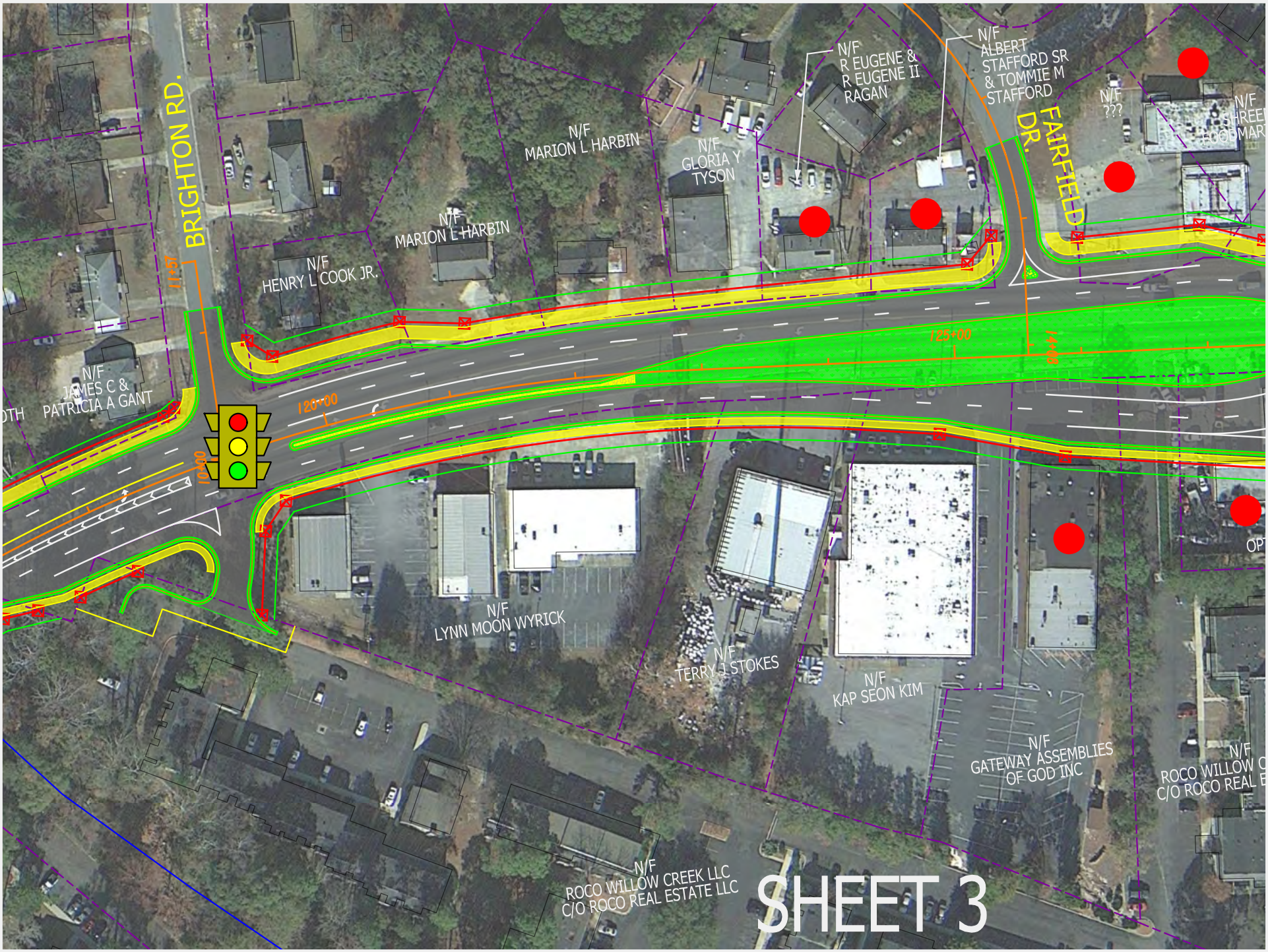
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TERRY J STOKES
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OF GOD INC
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C/O ROCO REAL ESTATE LLC
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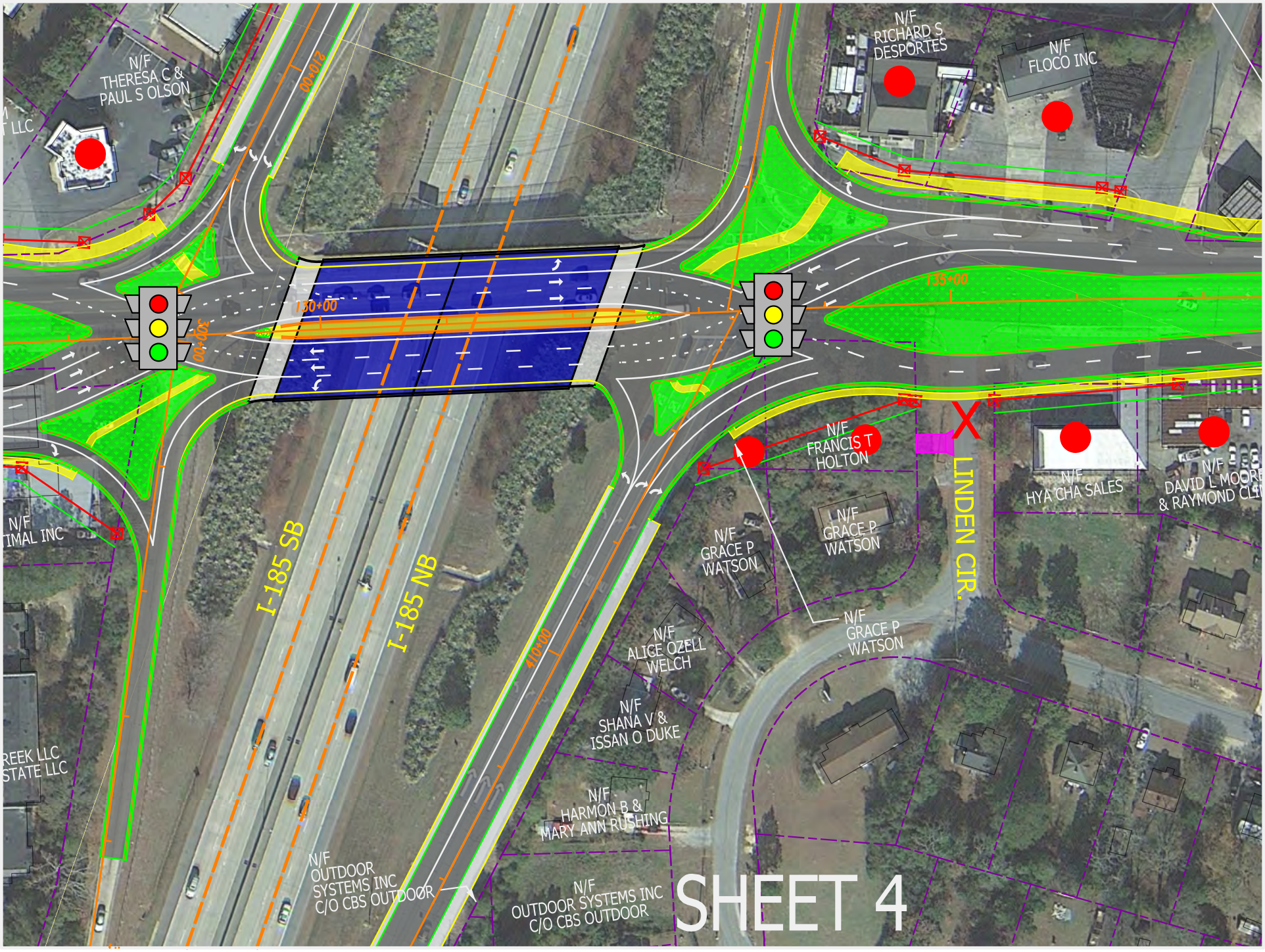
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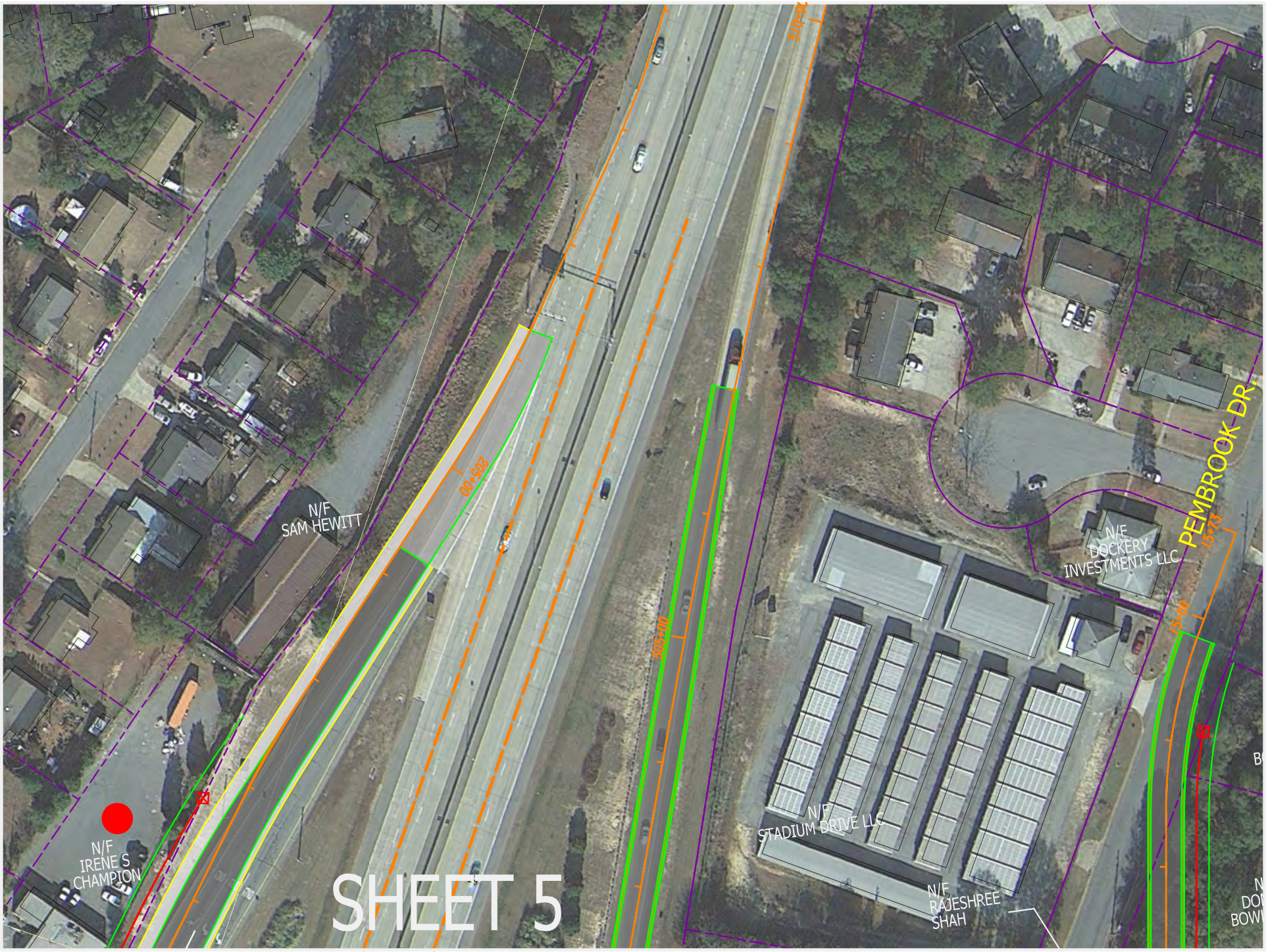
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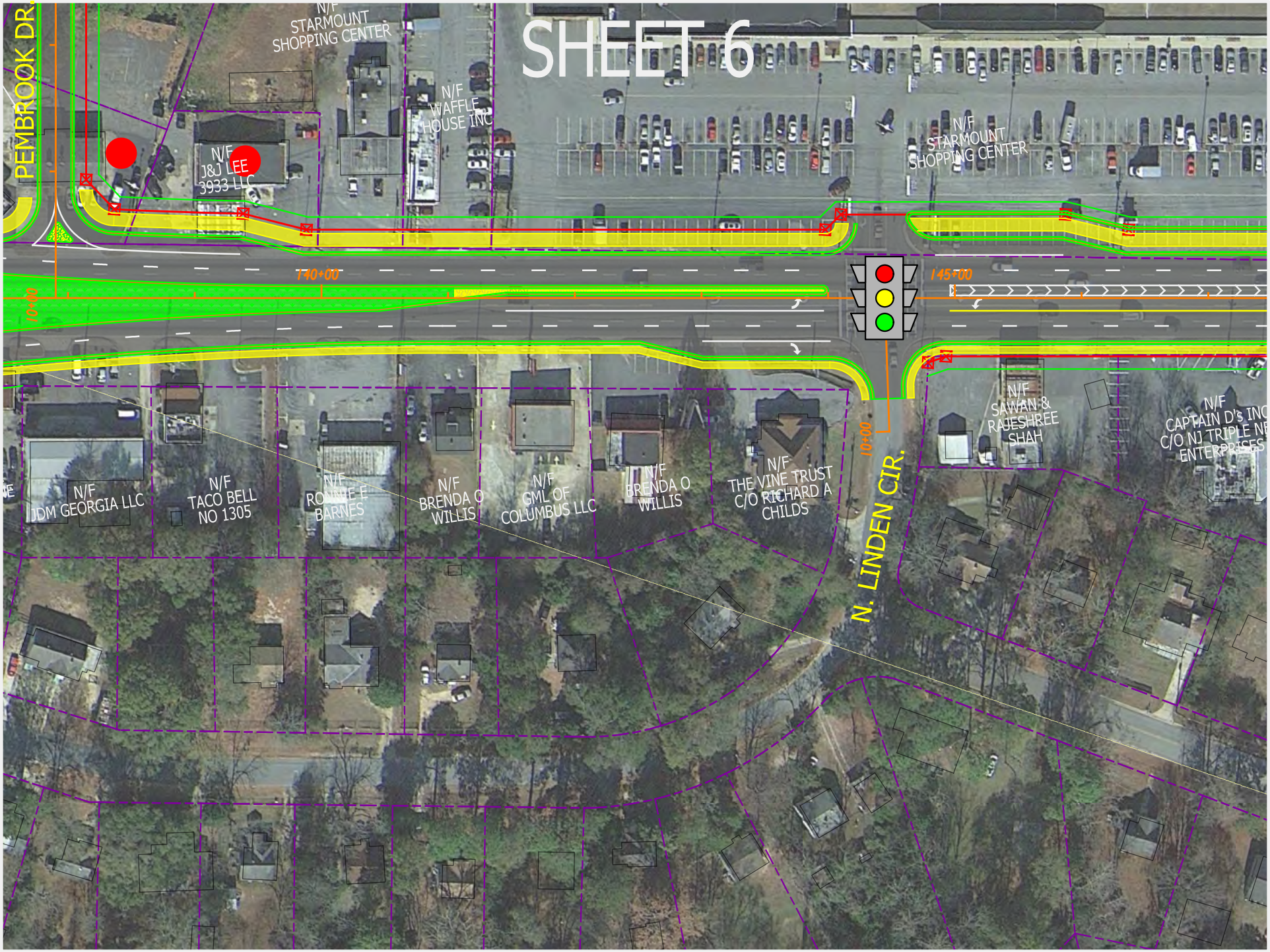
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N/F TACO BELL NO 1305
N/F ROBBIE E BARNES
N/F BRENDA O WILLIS
N/F GML OF COLUMBUS LLC
N/F BRENDA O WILLIS
N/F THE VINE TRUST C/O RICHARD A CHILDS
N. LINDEN CIR.
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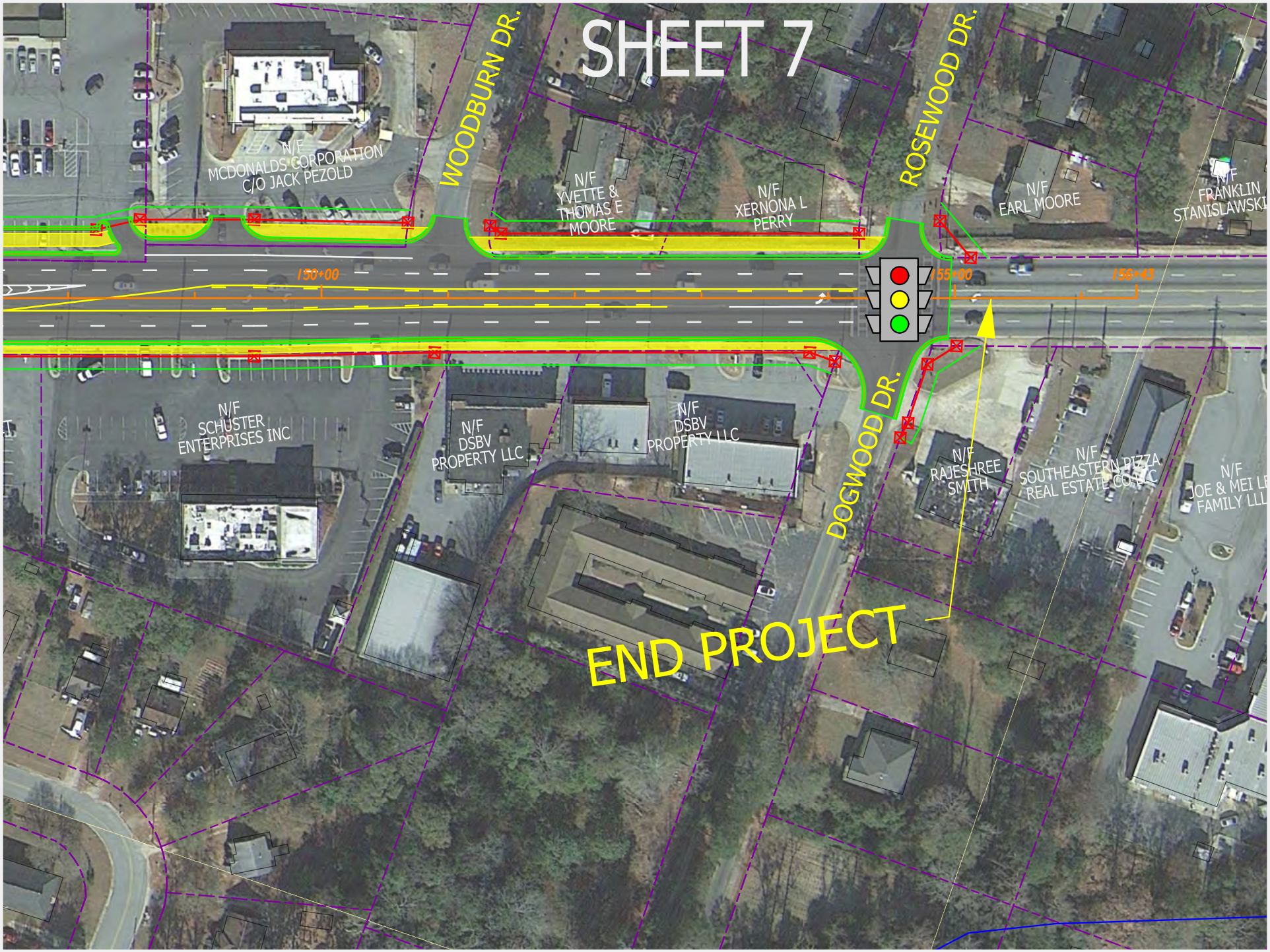
N/F CAPTAIN D's INC C/O NJ TRIPLE NE ENTERPRISES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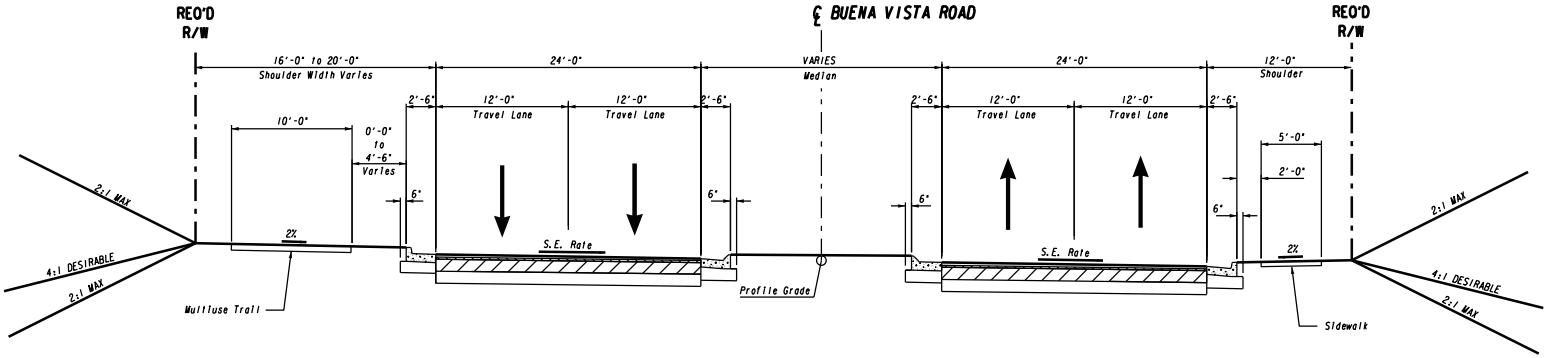
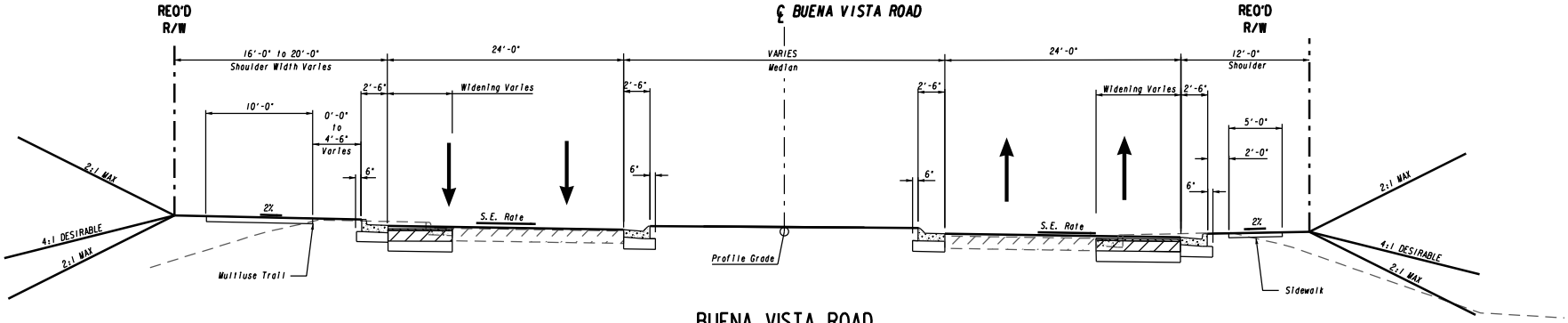
155+00
156+43
N/F
SCHUSTER
ENTERPRISES INC
N/F
DSBV
PROPERTY LLC
N/F
DSBV
PROPERTY LLC
N/F
RAJESHREE
SMITH
N/F
SOUTHEASTERN PIZZA
REAL ESTATE CO LLC
N/F
JOE & MEI LE
FAMILY LLC
END PROJECT



BUENA VISTA ROAD
FULL DEPTH CONSTRUCTION LOCATION

SLOPE CONTROLS		
SLOPE	CUT	FILL
4:1	0'-6'	6'-10'
* 2:1	OVER 6'	OVER 10'

* ALL FILL SLOPES > 4:1 AND > 6' HIGH REQUIRE GUARDRAIL

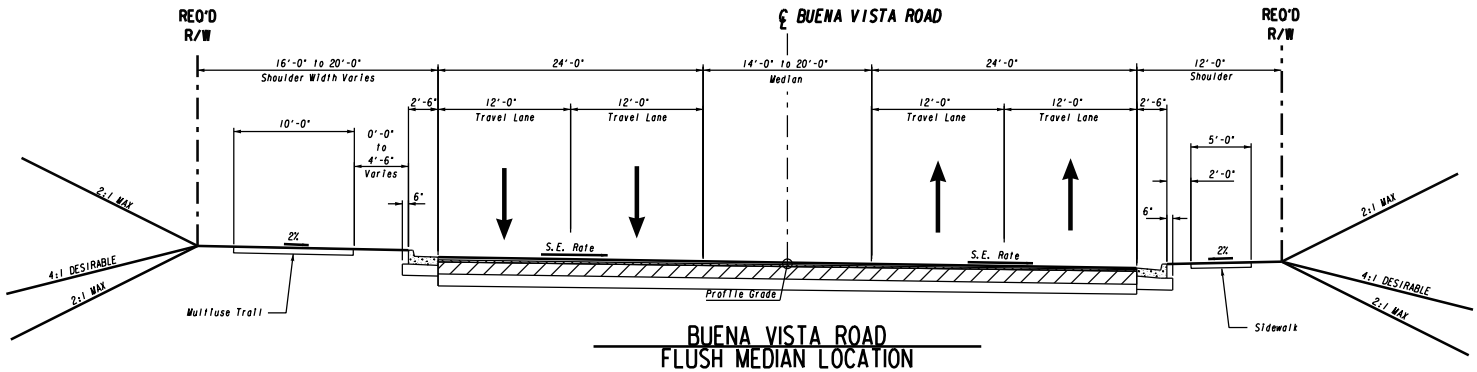


BUENA VISTA ROAD
PAVEMENT WIDENING LOCATION

REVISION DATES		

TYPICAL SECTIONS

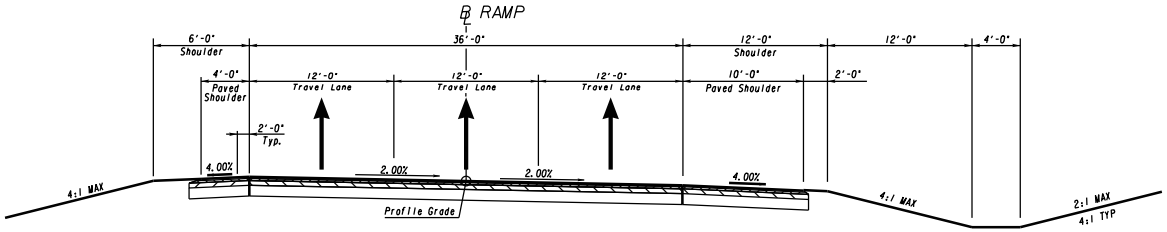
CHECKED:		DATE:		DRAWING No.
BACKCHECKED:		DATE:		
CORRECTED:		DATE:		
VERIFIED:		DATE:		



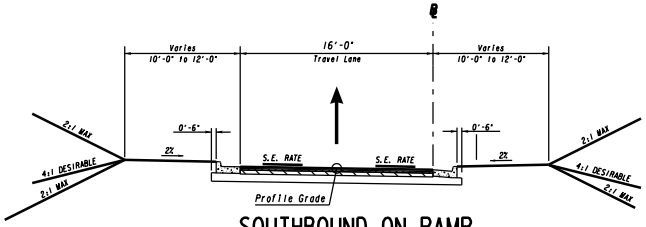
BUENA VISTA ROAD
FLUSH MEDIAN LOCATION

SLOPE CONTROLS		
SLOPE	CUT	FILL
4:1	0'-6'	6'-10'
2:1	OVER 6'	OVER 10'

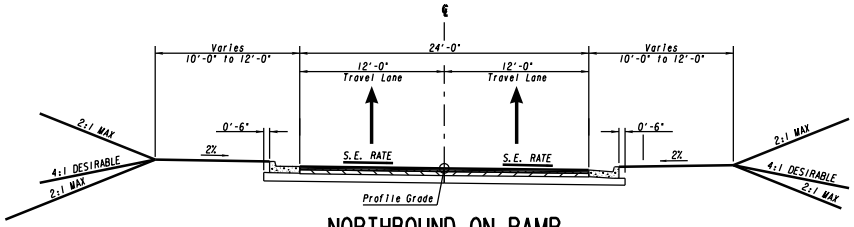
* ALL FILL SLOPES > 4:1 AND > 6' HIGH REQUIRE GUARDRAIL



THREE-LANE OFF RAMPS



SOUTHBOUND ON RAMP
ONE-LANE



NORTHBOUND ON RAMP
TWO-LANE

REVISION DATES

TYPICAL SECTIONS

CHECKED:		DATE:	DRAWING No.
BACKCHECKED:		DATE:	
CORRECTED:		DATE:	
VERIFIED:		DATE:	

10/23/2015 GPLN

Project Sheet

Project Number: RC08-000052 ***Project Name:*** Buena Vista Road Interchange

GDOT ID: 0012577

Project Description: The purpose of the project is to reconstruct the interchange at I-185 and Buena Vista Road.

Regional Commission: River Valley

County: Muscogee County

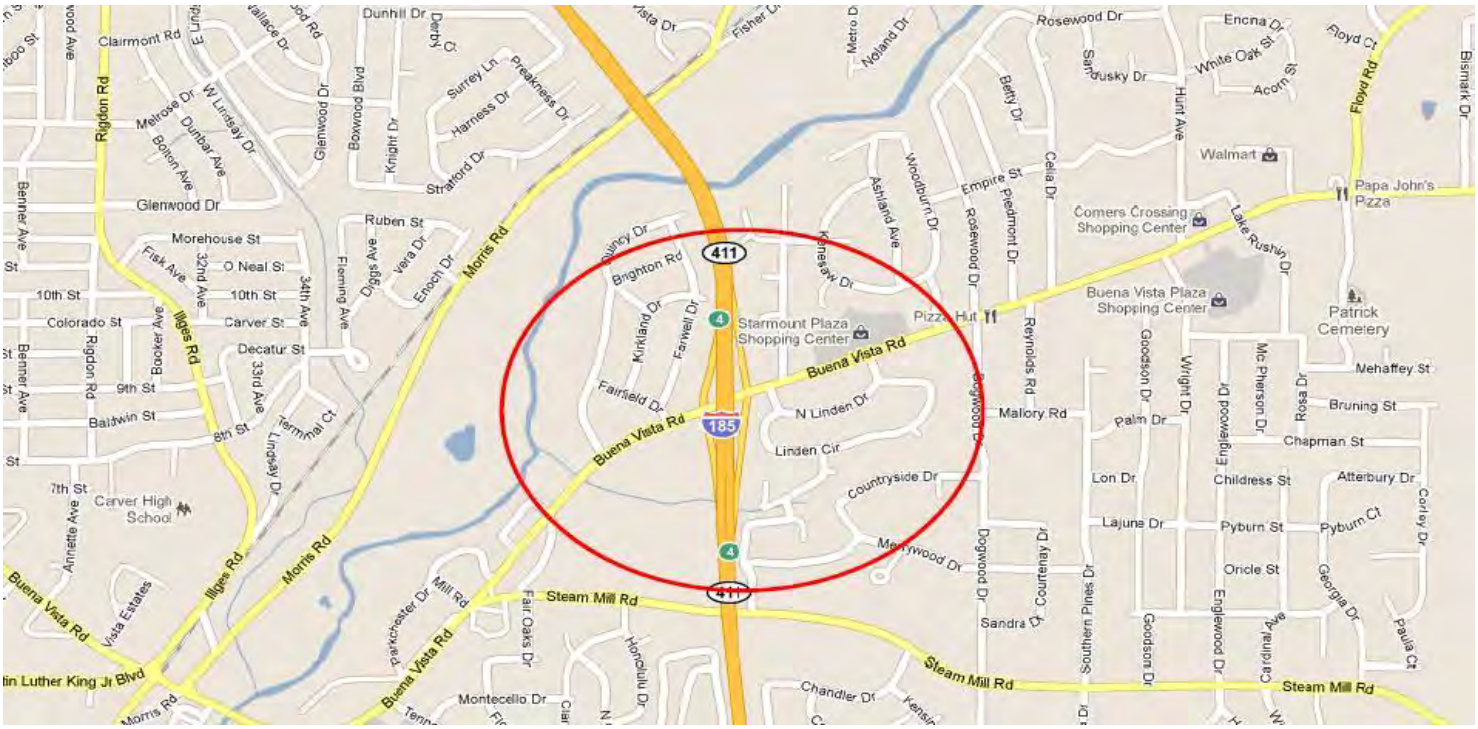
Phase	Total Project Cost	Total TIA Amount
ROW	$28,700,000	$28,700,000
CST	$18,970,000	$18,970,000
Total	**$47,670,000**	**$47,670,000**

Comments (Please note all cost estimates are in 2011 dollars and actual costs for all phases at year of expenditure will be higher):

PE was authorized in 2001 therefore design costs were removed from project total although it was included within initial request. Only ROW and CST are reflected in project total.

Public Benefit	Notes
Ensuring Safety and Security	This project would benefit the public by potentially reducing the incidence of crashes along this roadway segment, corridor, and/or intersection.
Maximizing the value of Georgia's Assets	This project could potentially maximize the full utility of an existing transportation facility(s). In some cases, bypasses will be necessary. Example benefits could be: mitigating congestion (e.g. operational improvements) and optimizing capital asset management (e.g. resurfacing, rehabilitation). The impacts would apply to this roadway segment, corridor, and/or intersection.
Additional Benefits	This project would benefit the traveling public by alleviating the congestion at and along Buena Vista Road and provide improved access to I-185 in Southeast Columbus. This project could also potentially decrease the frequency and severity of crash incidents and provide a smoother surface for travel, optimizing capital asset management. This project has been in the MPO's LRTP for a number of years, but funding shortfalls have prevented the project from moving forward.

Project Location



I-185 @ CS 2228/BUENA VISTA RD
PI 0012577
Alternative 2B - DDI (Alignment Shifted South)
Conceptual Cost Estimate

ROADWAY ITEMS

Item Number	Quantity	Units	Unit Price	Item Description	Cost
210-0100	1	LS	$ 4,000,000.00	GRADING COMPLETE -	$4,000,000.00
153-1300	1	EA	$ 91,197.84	FIELD ENGINEERS OFFICE TP 3	$91,197.84
310-5120	59,500	SY	$ 21.35	GR AGGR BASE CRS, 12 INCH, INCL MATL	$1,270,523.56
402-3121	28,800	TN	$ 67.37	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	$1,940,154.80
402-3130	4,370	TN	$ 70.83	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME	$309,540.40
402-3190	5,830	TN	$ 71.10	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2,INCL BITUM MATL & H LIME	$414,514.47
413-1000	9,270	GL	$ 2.32	BITUM TACK COAT	$21,485.66
433-1000	485	SY	$ 181.48	REINF CONC APPROACH SLAB	$88,019.59
439-0056	553	SY	$ 73.45	PLAIN PC CONC PVMT, CL HES CONC, 12 INCH THK	$40,617.85
441-0104	2,485	SY	$ 30.81	CONC SIDEWALK, 4 IN	$76,554.43
441-0106	4,690	SY	$ 42.67	CONC SIDEWALK, 6 IN	$200,122.30
441-0108	775	SY	$ 53.85	CONC SIDEWALK, 8 IN	$41,730.77
441-0740	208	SY	$ 30.77	CONCRETE MEDIAN, 4 IN	$6,399.94
441-0754	45	SY	$ 51.61	CONCRETE MEDIAN, 7 1/2 IN	$2,322.34
441-6222	15,790	LF	$ 16.04	CONC CURB & GUTTER, 8 IN X 30 IN, TP 2	$253,260.07
441-6740	3,730	LF	$ 15.09	CONC CURB & GUTTER, 8 IN X 30 IN, TP 7	$56,281.92
500-3115	328	LF	$ 665.00	CLASS A CONCRETE, TYPE P2, RETAINING WALL	$218,120.00
500-3201	108	CY	$ 708.87	CLASS B CONCRETE, RETAINING WALL	$76,558.01
627-1010	4,223	SF	$ 52.52	MSE WALL FACE, 10 - 20 FT HT, WALL NO - 1 & 2	$221,811.12
641-1100	320	LF	$ 31.87	GUARDRAIL, TP T	$10,196.91
641-1200	3,600	LF	$ 17.65	GUARDRAIL, TP W	$63,543.82
641-5001	8	EA	$ 993.48	GUARDRAIL ANCHORAGE, TP 1	$7,947.80
641-5006	7	EA	$ 277.18	GUARDRAIL ANCHORAGE, TP 6	$1,940.27
641-5012	10	EA	$ 2,315.07	GUARDRAIL ANCHORAGE, TP 12	$23,150.67
				Subtotal:	**$9,435,994.55**

MISCELLANEOUS ITEMS

Item Number	Quantity	Units	Unit Price	Item Description	Cost
150-1000	1	LS	$1,238,200.00	TRAFFIC CONTROL - (10 %)	$1,238,200.00
UNDEF	1	LS	$619,100.00	TEMORARY EROSION CONTROL (5%)	$619,100.00
UNDEF	1	LS	$309,600.00	PERMANENT EROSION CONTROL (2.5%)	$309,600.00
UNDEF	1	LS	$619,100.00	SIGNING AND MARKING (5%)	$619,100.00
647-1000	6	EA	$75,000.00	TRAFFIC SIGNAL INSTALLATION NO -	$450,000.00
UNDEF	1	LS	$1,857,300.00	DRAINAGE (15%)	$1,857,300.00
				Subtotal:	**$5,093,300.00**

BRIDGE ITEMS

Item Number	Quantity	Units	Unit Price	Item Description	Cost
540-1102	15,200	SF	$40.00	REMOVAL OF EXISTING BR, BR NO -	$608,000.00
UNDEF	25,971	SF	$90.00	CONSTRUCTION OF BRIDGE COMPLETE	$2,337,390.00
				Subtotal:	**$2,945,390.00**

Construction Cost	$17,474,684.55
Engineering and Inspection (5.85%)	$1,022,269.05
Contingency (4.0%)	$698,987.38
Total Liquid AC Adjustment	N/A
Total Construction Cost	**$19,195,940.98**

UTILITIES COST ESTIMATE

	ITEM	UNIT	QUANTITY	UNIT PRICE	COST	TOTAL COST
POWER/PHONE/CABLE						
Alt 1A - TUDI North	REGULAR POLE	EA	26	$10,000.00	$260,000.00	**$675,000.00**
	HIGH VOLTAGE POLE	EA	2	$200,000.00	$400,000.00	
	ADJUST ATT MH'S	EA	3	$5,000.00	$15,000.00	
Alt 1B - TUDI South	REGULAR POLE	EA	30	$10,000.00	$300,000.00	**$725,000.00**
	HIGH VOLTAGE POLE	EA	2	$200,000.00	$400,000.00	
	ADJUST ATT MH'S	EA	5	$5,000.00	$25,000.00	
Alt 2 - DDI	REGULAR POLE	EA	30	$10,000.00	$300,000.00	**$725,000.00**
	HIGH VOLTAGE POLE	EA	2	$200,000.00	$400,000.00	
	ADJUST ATT MH'S	EA	5	$5,000.00	$25,000.00	
WATER						
Alt 1A - TUDI North	6" DUCTILE IRON	LF	6810	$60.50	$412,005.00	**$902,131.40**
	8" DUCTILE IRON	LF	340	$63.80	$21,692.00	
	16" DUCTILE IRON	LF	4216	$103.40	$435,934.40	
	RELOCATE HYDRANTS	EA	5	$6,500.00	$32,500.00	
Alt 1B - TUDI South	6" DUCTILE IRON	LF	6810	$60.50	$412,005.00	**$994,571.00**
	8" DUCTILE IRON	LF	340	$63.80	$21,692.00	
	16" DUCTILE IRON	LF	5110	$103.40	$528,374.00	
	RELOCATE HYDRANTS	EA	5	$6,500.00	$32,500.00	
Alt 2 - DDI	6" DUCTILE IRON	LF	6810	$60.50	$412,005.00	**$994,571.00**
	8" DUCTILE IRON	LF	340	$63.80	$21,692.00	
	16" DUCTILE IRON	LF	5110	$103.40	$528,374.00	
	RELOCATE HYDRANTS	EA	5	$6,500.00	$32,500.00	
GAS						
Alt 1A - TUDI North	GAS LINE	LF	4367	$15.00	$65,505.00	**$65,505.00**
Alt 1B - TUDI South	GAS LINE	LF	2536	$15.00	$38,040.00	**$38,040.00**
Alt 2 - DDI	GAS LINE	LF	2536	$15.00	$38,040.00	**$38,040.00**
SEWER						
Alt 1A - TUDI North	8" GRAVITY SEWER	LF	2100	$24.20	$50,820.00	**$103,320.00**
	ADJUST SSMH'S	EA	15	$3,500.00	$52,500.00	
Alt 1B - TUDI South	8" GRAVITY SEWER	LF	2100	$24.20	$50,820.00	**$103,320.00**
	ADJUST SSMH'S	EA	15	$3,500.00	$52,500.00	
Alt 2 - DDI	8" GRAVITY SEWER	LF	2100	$24.20	$50,820.00	**$103,320.00**
	ADJUST SSMH'S	EA	15	$3,500.00	$52,500.00	

UTILITIES ATLERNATIVE 1A: $1,745,956.40

UTILITIES ATLERNATIVE 1B: $1,860,931.00

UTILITIES ALTERNATIVE 2: $1,860,931.00

Preliminary ROW Cost Estimate

PI No. 0012577
Project Name: I-285@CS2228/Buena Vista Road, Alternative 2B-DDI (Alignment Shifted South)
Date: Enter Date of Estimate (9/27/16)

Land and Improvements	Agriculture	Residential	Commercial	Industrial	Notes
Estimate ($/ac)	$0	$15,000	$200,000	$0	Enter Cost / Acre
Fee Simple Area (ac)	0.00	0.94	8.86	0.00	Enter Acreage
Fee Simple Estimate	$0	$14,100	$1,772,800	$0	CALCULATED FIELD
Perm Easement Area (ac)	0.00	0.25	1.05	0.00	Enter Acreage
Perm Easement Factor	50%	50%	50%	50%	Adjust Percentage as Appropriate
Perm Easement Estimate	$0	$48,700	$105,000	$0	CALCULATED FIELD
Temp Easement Area (ac)	0.00	0.00	0.00	0.00	Enter Acreage
Temp Easement Factor	25%	25%	25%	25%	Adjust Percentage as Appropriate
Temp Easement Estimate	$0	$0	$0	$0	CALCULATED FIELD
Proximity Damages	$0	$75,000	$0	$0	Enter Fees and Provide Notes as Appropriate
Consequential Damages	$0	$0	$0	$0	Enter Fees and Provide Notes as Appropriate
Cost to Cures	$0	$0	$750,000	$0	Enter Fees and Provide Notes as Appropriate
Improvements	$0	$100,000	$2,500,000	$0	Enter Fees and Provide Notes as Appropriate
Trade Fixtures	$0		$1,250,000	$0	Enter Fees and Provide Notes as Appropriate
PROPERTY TYPE TOTALS	**$0**	**$237,800**	**$6,377,800**	**$0**	CALCULATED FIELD
	Land and Improvements Sub Total		**$6,615,600**		CALCULATED FIELD

Relocation	Quantity	Estimated Cost	Totals	
Residential Tenant (Qty of Tenants)	4	$30,000	$120,000	Adjust Qty / Costs as required
Residential Owner	4	$50,000	$200,000	Adjust Qty / Costs as required
Business Displacement (Qty)	17	$45,000	$765,000	Adjust Qty / Costs as required
Pro Rata Taxes	62	$1,000	$62,000	Adjust Qty / Costs as required
Prop Pin Replacement	62	$1,250	$77,500	Adjust Qty / Costs as required
PROPERTY TYPE TOTALS	**149**		**$1,224,500**	CALCULATED FIELD
	Relocation Sub Total	**$1,224,500**		CALCULATED FIELD

Demolition	Residential	Commercial	
Asbestos Inspection	4	17	Adjust Qty as required
Estimated Fee (per structure)	$3,300	$15,000	Enter Estimated Fee per structure
Total Asbestos	$13,200	$255,000	CALCULATED FIELD
Abatement	4	17	Adjust Qty as required
Estimated Fee (per structure)	$20,000	$24,000	Enter Estimated Fee per structure
Total Abatement	$80,000	$408,000	CALCULATED FIELD
Demolition	4	17	Adjust Qty as required
Estimated Fee (per structure)	$25,000	$35,000	Enter Estimated Fee per structure
Total Demolition	$100,000	$595,000	CALCULATED FIELD
UST Removal	0	5	Adjust Qty as required
Estimated Fee (per structure)	$125,000	$125,000	Enter Estimated Fee per structure
Total UST Fee	$0	$625,000	CALCULATED FIELD
Post Clearance Inspection	4	17	Adjust Qty as required
Estimated Fee (per structure)	$300	$300	Enter Estimated Fee per structure
Total Inspection	$1,200	$5,100	CALCULATED FIELD
PROPERTY TYPE TOTALS	**$194,400**	**$1,888,100**	CALCULATED FIELD
	Demolition Sub Total	**$2,082,500**	CALCULATED FIELD

Valuation Services	Agriculture	Residential	Commercial	Industrial	
Appraisals (# of Parcels)	0	14	48	0	Adjust Parcels as required
Estimated Fee (per Parcel)	$1,500	$1,500	$2,500	$1,500	Enter Estimated Fee per Parcel
Total Appraisals	$0	$21,000	$120,000	$0	CALCULATED FIELD
Specialty Reports	0	0	34	0	Enter Number of Reports
Estimated Fees	$1,500	$1,500	$1,500	$1,500	Enter Estimated Fees and Provide Notes
Total Appraisals	$0	$0	$51,000	$0	CALCULATED FIELD
PROPERTY TYPE TOTALS	**$0**	**$21,000**	**$171,000**	**$0**	CALCULATED FIELD
	Valuation Services Sub Total		**$192,000**		CALCULATED FIELD

Legal Services	Parcels	Estimated Fees	Totals	
Meeting with Attorney	62	$125	$7,750	Adjust Parcels / Fees as required (using best judgement)
Preliminary Titles	62	$200	$12,400	Adjust Parcels / Fees as required
Closing and Final Title	62	$300	$18,600	Adjust Parcels / Fees as required
Recording Fees	62	$50	$3,100	Adjust Parcels / Fees as required
Condemnation	15	$30,000	$450,000	Adjust Parcels / Fees as required
	Legal Services Sub Total	**$491,850**		CALCULATED FIELD

Administrative	Parcels	Man Hours/Parcel	Totals	
Pre-Acquisition	62	40	$124,000	Adjust Parcels / Fees as required
Acquisition	62	100	$310,000	Adjust Parcels / Fees as required
Administrative Appeals	10	50	$25,000	Calculates as 15% of Acq Parcel Count (Adjust if Necessary)
	Administrative Sub Total	**$459,000**		CALCULATED FIELD

Contingency			
Overall Contingency	40%	$4,426,180	Enter Percentage for Contingency (Default = 20%)

Total Estimated Costs **$15,491,630** CALCULATED FIELD

Prepared By: _____ _____
Date

Approved By: _____ _____
Date

Updated 27Jul2016

TIA Plan Review

To: Kelvin Mullins, State TIA Administrator

From: Shrujal Amin, TIA Program Manager

Date: xx-xx-2016

PI: 0012577, Muscogee County

Submittal Description: Traffic Report dated 01/26/2016

Project Description: Buena Vista Road at I-185 Interchange Improvements

Submitted by: Atkins

Engineer of Record: Zhang Huang, PE

The TIA Program Manager has reviewed the subject submittal and recommends:

- ☑ Acceptance as Submitted
- ☐ Acceptance with Comments provided
  - ☐ Below
  - ☐ Marked on plans
  - ☐ Provided under separate cover
- ☐ Returned to the submitter for correction and resubmission in accordance with our comments

Comments:

See Attachments:

Recommendations:

List recommendations:

Respectfully submitted,

France Campbell, PE, PTOE

Reviewer

Memo

ATKINS

To:	Buena Vista Road @ I-185 Interchange Project Files
From:	Zhang Huang, P.E., Atkins
Date:	1-26-16
Ref:	PI #0012577
Subject:	Buena Vista Road at I-185 interchange traffic operational analysis

Executive Summary

This memo documents the traffic operational analysis for the Buena Vista Road interchange at Interstate 185 (I-185) in Columbus, Georgia as a part of a Transportation Investment Act (TIA) funded study, PI #0012577. Based on the most recent traffic data available and the Columbus Metropolitan Planning Organization's (MPO) growth assumptions for the region, this analysis indicates that there will be no significant adverse impact on traffic operations at the interchange for the future years 2020 or 2040 within the study area. The interchange and its adjacent intersections are expected to operate at acceptable levels-of-service (LOS) in both 2020 and 2040 as currently constructed. This analysis includes two alternatives, a tight urban diamond interchange (TUDI) and a diverging diamond interchange (DDI) that address potential queuing problems at the interchange in the future. Each of these alternatives provide for substantial improvement benefits for the existing interchange. The alternatives evaluated provide for additional storage capacity that can accommodate turning vehicles accessing I-185, increase through movement capacity along Buena Vista Road and reduce the potential for excessive queues along the I-185 exit ramps. It is noted that the alternatives will not have a negative impact on I-185 freeway mainline traffic operations. Therefore, it is recommended that one of these proposed alternatives be considered at the identified interchange for significant queue reduction benefits in traffic operation.

Introduction

This memorandum summarizes the results of the traffic operational analysis for the Buena Vista Road interchange at I-185 in the City of Columbus, Georgia. The purpose is to determine whether the interchange can operate with reasonable level of services under future year growth in traffic as well as to evaluate alternatives that can improve the traffic operational condition in the future. The analysis includes 2015 existing year, 2020 opening-year and 2040 design-year traffic conditions. Traffic counts were collected on October 6th, 2015. The existing traffic volumes that were collected were utilized to forecast the future year 2020 and 2040 traffic volumes based on the growth projected in Columbus Metropolitan Planning Organization (MPO) travel demand model. The analysis incorporated VISSIM models accounting for peak-hour traffic impacts on adjacent facilities. The scenarios that were evaluated include:

- 2015 Base Condition
- 2020 Opening-Year Condition
    - No-build
    - Tight Urban Diamond Interchange (TUDI)
    - Diverging Diamond Interchange (DDI)
- 2040 Design-Year Condition
    - No-build
    - TUDI
    - DDI

VISSIM Model Development

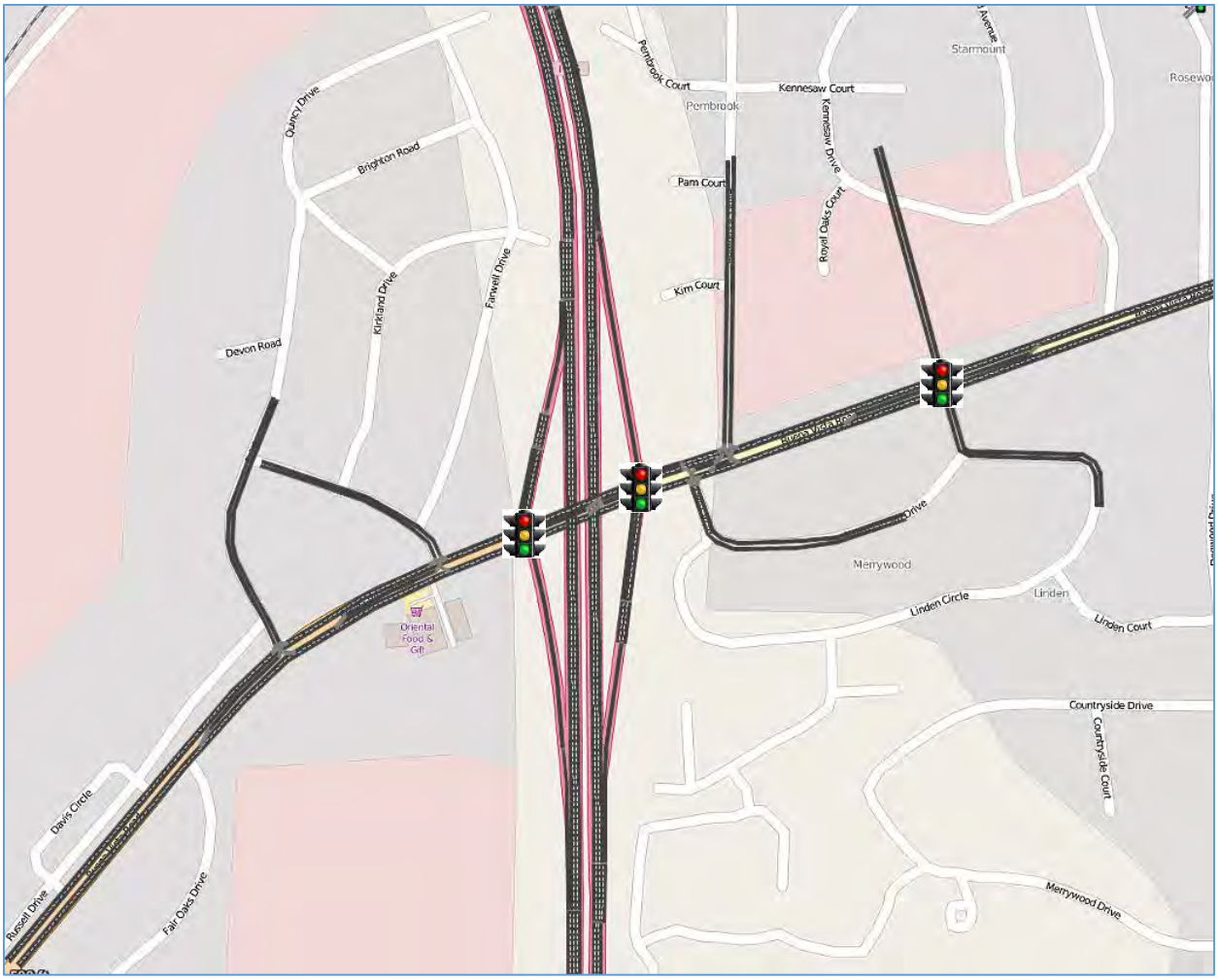
VISSIM is a traffic modeling software developed by PTV. The VISSIM modeling software is capable of simulating individual vehicle interactions on any given roadway. Delays, queues, and intersection levels-of-service (LOS) can be readily measured from the model outputs.

The study area for this evaluation has included roadway segments along Buena Vista Road, between Brighton Road to the west and North Linden Drive to the east, as well as freeway ramps to and from the I-185. There are a total of seven intersections included in the study area listed below that includes both signalized and un-signalized intersections. The study area is further illustrated on **Exhibit 1**.

- Buena Vista Road @ Brighton Road
- Buena Vista Road @ Fairfield Drive
- Buena Vista Road @ I-185 Southbound Ramp (signalized)
- Buena Vista Road @ I-185 Northbound Ramp (signalized)
- Buena Vista Road @ Linden Cir
- Buena Vista Road @ Pembrook Drive
- Buena Vista Road @ North Linden Drive (signalized)

The 2015 base year networks were coded to reflect existing highway conditions and include the most current signal timing plans available. Future year traffic volumes were increased, reflecting the future traffic forecasts for the years 2020 and 2040 and included on these same networks for the no-build condition. These future traffic forecasts were then utilized on future networks that assume either an alternative TUDI or a DDI interchange.

Exhibit 1-Study Area



Base Year Traffic Volume

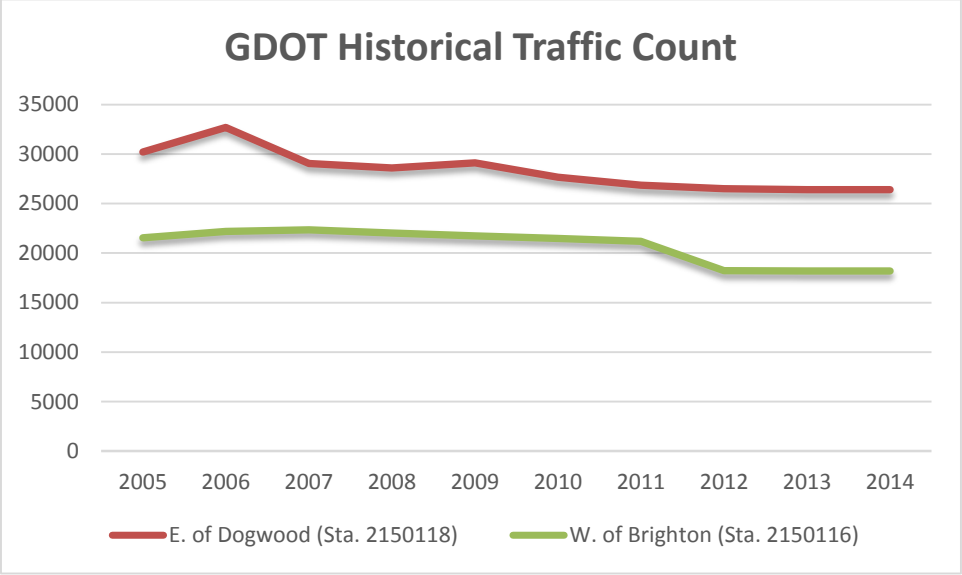
As indicated previously, traffic count data were collected on October 6th, 2015. This data includes both the AM and PM peak-hour intersection turning movement volumes at the seven identified intersections, as well as two 24-hour vehicle classification counts along Buena Vista Road located west of Fairfield Drive and east of N Linden Drive. I-185 mainline and ramp volumes were obtained from Georgia Department of Transportation (GDOT) traffic count stations. Peak-hour traffic counts along both Buena Vista Road and I-

185 were adjusted and balanced to reflect the peak-hour traffic conditions. Base Condition traffic volumes for the existing year, 2015, are provided in the **Appendix**.

Future Year Traffic Volume

Future year peak-hour volumes were calculated using the Base Condition traffic volumes by applying growth factors obtained from the Columbus MPO regional travel demand model. This travel demand model reflects any anticipated development, as well as any planned or committed transportation improvement projects in the region. An annual growth rate for each of the identified intersections was calculated from the travel demand model volume outputs. This growth rate was then applied to the existing year peak-hour traffic volumes to calculate the future traffic forecasts. The average annual traffic growth rate within the study area is 0.3 percent. This translates into total growth in traffic volumes of two percent and eight percent for the future years 2020 and 2040, respectively. These modest growth rates are reasonable considering that GDOT historical traffic counts in the study area reveal a general decline in traffic volumes over the last ten years. The GDOT traffic counts are summarized on **Exhibit 2**, and the future traffic forecasts for the years 2020 and 2040 are provided in the **Appendix**.

Exhibit 2-Buena Vista Road Historical Traffic Count in the Study Area



2015 Base Condition Operational Analysis

The traffic operational analysis results were summarized from the VISSIM model outputs. Performance measures included an overall network performance, intersection delays and levels of service, and 95th percentile queue length at the I-185 entrance and exit ramps. The operational analysis results for 2015 Base Condition are summarized below.

- Average delays per vehicle are 19 seconds and 20 seconds for the AM and PM peak-hours, respectively (**Exhibit 3**),
- Intersection LOS results are all equal or better than "B" (**Exhibit 4**),
- 95th percentile queue lengths for left turn movements from eastbound and westbound Buena Vista Road to I-185 entrance ramps (
- **Exhibit** 5) and,
    - 203 and 327 feet respectively during AM peak
    - 356 and 213 feet respectively during PM peak
- 424 feet queue for I-185 southbound exiting ramps to eastbound Buena Vista in the PM peak while 982 feet queue for westbound Buena Vista Road to I-185 northbound entrance ramp in the AM peak (**Exhibit 5**). These relatively long queues are consistent with field observations.

In the AM peak hour, higher volumes are observed on Buena Vista Road traveling westbound and vice versa for the PM peak hour. The eastbound and westbound volumes just east of the I-185 northbound ramp terminal are 935 vph and 1,665 vph respectively in the AM peak while 1,675 vph and 1,360 vph respectively in the PM peak. Over 700 vph right turning vehicles from westbound Buena Vista Road travel to I-185 entrance ramp in the AM. As a result, westbound queues form at the northbound I-185 ramp terminal in the AM peak and eastbound queues form at northbound I-185 ramp terminal in the PM peak. Overall, PM peak has slightly worse operational conditions than AM peak but is not significant. All intersections operate at an acceptable LOS. However, there is a potential shortage for left turn bay storage over the bridge accessing I-185 entrance ramps, as well as the right turn bay storage from westbound Buena Vista Road to northbound I-185 entrance ramp.

Exhibit 3-2015 Existing Network Performance Measures

Parameter	AM	PM
Average Delay (sec/veh)	19	20
VMT	8,841	11,042
VHT	739,604	929,899

Exhibit 4-2015 Existing Intersection Delays and LOS

Buena Vista Road Intersection	Delay (sec)		LOS	
	AM	PM	AM	PM
@ I-185 NB	7.9	10.0	A	A
@ I-185 SB	14.5	18.5	B	B
@ Linden Cir	2.0	1.0	A	A
@ Pembrook Drive	5.6	1.4	A	A
@ N. Linden Drive	5.6	7.2	A	A
@ Fairfield Drive	0.6	1.0	A	A
@ Brighton Road	0.3	0.4	A	A

Exhibit 5-2015 Existing 95th Queue Length (ft) at Buena Vista Road Interchange

Access	Movement	AM	PM
To I-185	Buena Vista Eastbound to I-185 Northbound (Left turn)	203	356
	Buena Vista Eastbound (Through)	137	387
	Buena Vista Eastbound to I-185 Southbound (Right turn)	236	318
	Buena Vista Westbound to I-185 Southbound (Left turn)	327	213
	Buena Vista Westbound (Through)	194	209
	Buena Vista Westbound to I-185 Northbound (Right turn)	982	303
From I-185	I-185 Northbound Off Ramp (Left turn)	51	90
	I-185 Northbound Off Ramp (Right turn)	102	174
	I-185 Southbound Off Ramp (Left turn)	176	424
	I-185 Southbound Off Ramp (Right turn)	30	112

Future Year No-build Operational Analysis

The future year No-build analysis for the years 2020 and 2040 applied the future forecasted peak-hour traffic volumes onto the Base Condition network. As the traffic volumes increased, the signal timings were optimized accordingly to reflect the future forecasted travel patterns.

The performance measures applied for the Base Condition were also utilized for the No-build analysis. These operational results are summarized below.

- An increase of an additional 1 and 4 seconds of delay per vehicle during the peak-hour of travel for the future years 2020 and 2040, respectively (**Exhibit 6** and **Exhibit 7**),
- Intersection LOS results are all equal or better than "B" (**Exhibit 8**),
- 95th percentile queue lengths for left-turn movements from eastbound and westbound Buena Vista Road to the I-185 entrance ramps in the future year 2040 (**Exhibit 9** and **Exhibit 10**),and

  - 280 and 480 feet, respectively during AM peak,
  - 483 and 255 feet, respectively during PM peak,
- In the future year 2040, a 568 foot queue for the I-185 southbound exiting ramp to eastbound Buena Vista in the PM peak while a 1,407 foot queue likely for the right turn movement from westbound Buena Vista Road to I-185 entrance ramp in the AM peak (**Exhibit 9** and **Exhibit 10**).

The generalized travel pattern along Buena Vista Road remains constant within the study area for each of the future years evaluated. However, the traffic operations are anticipated to degrade slightly; nevertheless, all of the identified intersections are expected to operate at an acceptable LOS. The increasing queues for the left-turns accessing the I-185 entrance ramps indicate that longer left-turn storage bays may be required to reduce delays for Buena Vista Road through movements and I-185 mainline exiting movements. Additionally, the longer queue from westbound Buena Vista Road to I-185 northbound entrance ramp may indicate insufficient right turn bay storage.

Exhibit 6-No-build Network Performance Measures - AM

Parameter	2015	2020	2040	2015-2040 % Growth
Average Delay (sec/veh)	19	20	23	24%
VMT	8,841	9,036	9,798	11%
VHT	739,604	762,889	846,991	15%

Exhibit 7-No-build Network Performance Measures - PM

Parameter	2015	2020	2040	2015-2040 % Growth
Average Delay (sec/veh)	20	20	24	20%
VMT	11,042	11,308	12,509	13%
VHT	929,899	949,496	1,081,025	16%

Exhibit 8-No-build Intersection Delays and LOS

Buena Vista Road Intersection	2015		2020		2040	
	AM	PM	AM	PM	AM	PM
@ I-185 NB	A	A	A	B	A	B
@ I-185 SB	B	B	B	B	B	B
@ Linden Cir	A	A	A	A	A	A
@ Pembrook Drive	A	A	A	A	A	A
@ N. Linden Drive	A	A	A	A	A	A
@ Fairfield Drive	A	A	A	A	A	A
@ Brighton Road	A	A	A	A	A	A

Exhibit 9-No-build 95th Queue Length (ft) at Buena Vista Road Interchange - AM

Access	Movement	2015	2020	2040	2015-2040 Growth
To I-185	Buena Vista Eastbound to I-185 Northbound (Left turn)	203	186	280	77
	Buena Vista Eastbound (Through)	137	153	163	26
	Buena Vista Eastbound to I-185 Southbound (Right turn)	236	231	257	21
	Buena Vista Westbound to I-185 Southbound (Left turn)	327	409	480	153
	Buena Vista Westbound (Through)	194	163	203	9
	Buena Vista Westbound to I-185 Northbound (Right turn)	982	1165	1407	425
From I-185	I-185 Northbound Off Ramp (Left turn)	51	77	90	39
	I-185 Northbound Off Ramp (Right turn)	102	107	100	-2
	I-185 Southbound Off Ramp (Left turn)	176	189	187	11
	I-185 Southbound Off Ramp (Right turn)	30	44	36	6

Exhibit 10-No-build 95th Queue Length (ft) at Buena Vista Road Interchange - PM

Access	Movement	2015	2020	2040	2015-2040 Growth
To I-185	Buena Vista Eastbound to I-185 Northbound (Left turn)	356	321	483	127
	Buena Vista Eastbound (Through)	387	394	505	118
	Buena Vista Eastbound to I-185 Southbound (Right turn)	318	342	396	78
	Buena Vista Westbound to I-185 Southbound (Left turn)	213	254	255	42
	Buena Vista Westbound (Through)	209	252	216	7
	Buena Vista Westbound to I-185 Northbound (Right turn)	303	333	425	122
From I-185	I-185 Northbound Off Ramp (Left turn)	90	93	125	35
	I-185 Northbound Off Ramp (Right turn)	174	184	205	31
	I-185 Southbound Off Ramp (Left turn)	424	371	568	144
	I-185 Southbound Off Ramp (Right turn)	112	112	128	16

Future Year Alternative Operational Analysis

Subsequent to the No-build analysis results, two future alternatives were developed and evaluated for the same future year traffic conditions. Since the No-build analysis results have indicated that the traffic operational conditions are acceptable in both 2020 and 2040, the proposed alternatives were developed to address potential queuing problems for left-turn movements accessing the I-185 entrance ramps from each approach along Buena Vista Road. Improving these left-turn movements can increase the through movement capacity on Buena Vista Road and reduce the delays for I-185 exit traffic. The two alternatives that were considered are summarized below. Each of the alternatives requires a six-lane bridge with three lanes in each direction. One additional taper lane on the I-185 northbound entrance ramp is also included in both alternatives to accommodate heavy right turn volumes from westbound Buena Vista Road. As a result of the alternative design, the current Linden Circle driveway will be closed. The peak hour traffic

from the driveway has approximately five vehicles per hour in 2040. These volumes can be diverted to the existing signalized intersection to the east at Linden Drive with no traffic impact. Additionally, the current intersection at Fairfield Road and Buena Vista Road will be converted into a right-in-right-out configuration. This requires the left turn movement from Fairfield Road to eastbound Buena Vista Road be diverted to Brighton Road. Therefore, a signal warrant analysis is conducted to determine whether new a signal will be required at Brighton Road intersection for this change.

- TUDI configuration with two through lanes and one dedicated left-turn lane for adequate storage (**Exhibit 11**), and
- DDI configuration that eliminates the left-turn queues over the bridge accessing the I-185 entrance ramps (**Exhibit 12**)

Exhibit 11-TUDI Alternative Concept

Exhibit 12-DDI Alternative Concept

Future year 2020 volumes that represent the opening year were applied to each of the alternatives and the performance measure results were compared with the No-build conditions for the same year. The operational results are summarized below.

- Each build alternative slightly reduces the delay per vehicle; 1 second reduction for each alternative except for the DDI in AM peak which has 5 seconds savings (**Exhibit 13**),
- A slight reduction in total VHTs as the result of reduced delays (**Exhibit 13**),
- No significant change in total VMTs,
- All of the identified intersections operate at LOS "B" and better (**Exhibit 14**) and,
- Each alternative reduces the average queue lengths at the interchange, while the DDI produces substantial queue reduction benefits on average, about 40 percent and 60 percent reduction in queues for TUDI and DDI, respectively (**Exhibit 15**, **Exhibit 16**, and **Exhibit 17**).

Exhibit 13-2020 Alternative Network Performance Measure

Parameter	No Build		TUDI		DDI	
	AM	PM	AM	PM	AM	PM
Average Delay (sec/veh)	20	20	19	19	15	19
VMT	9,036	11,308	9,036	11,308	9,021	11,296
VHT	762,889	949,496	755,161	946,296	729,763	942,593

Exhibit 14-2020 Alternative Intersection Delays and LOS (AM/PM)

Buena Vista Road Intersection	No Build		TUDI		DDI	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
@ I-185 NB	8.3 / 10.5	A / B	8.0 / 10.0	A / A	9.1 / 12.1	A / B
@ I-185 SB	14.2 / 18.4	B / B	13.9 / 18.0	B / B	12.9 / 13.7	B / B
@ Linden Cir	2.1 / 1.1	A / A	2.0 / 1.0	A / A	1.3 / 1.2	A / A
@ Pembrook Drive	6.3 / 1.4	A / A	5.8 / 1.4	A / A	2.9 / 1.7	A / A
@ N. Linden Drive	6.3 / 6.9	A / A	5.9 / 7.0	A / A	3.9 / 6.8	A / A
@ Fairfield Drive	0.7 / 1.0	A / A	0.7 / 1.1	A / A	0.4 / 0.5	A / A
@ Brighton Road	0.3 / 0.4	A / A	0.3 / 0.4	A / A	0.4 / 0.5	A / A

Exhibit 15-2020 Alternative 95th Average Approach Queue Length (ft) at I-185 Ramp Terminal- AM

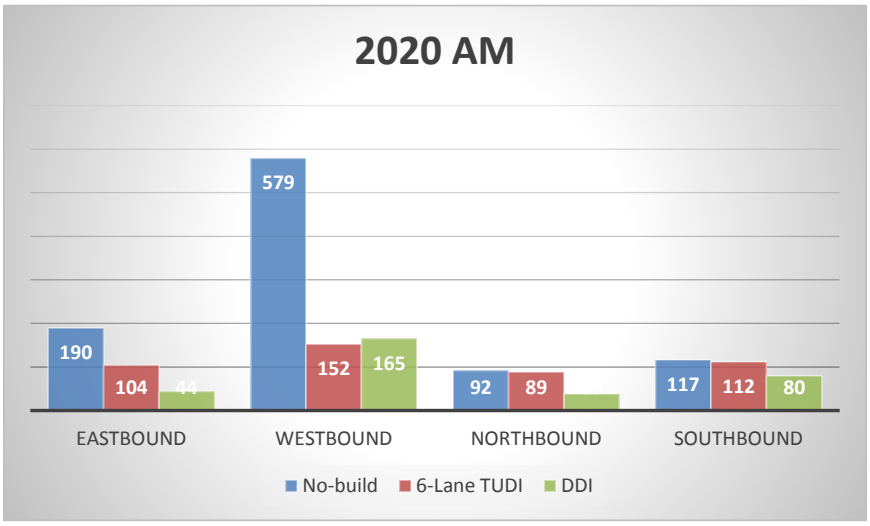


Exhibit 16-2020 Alternative 95th Average Approach Queue Length (ft) at I-185 Ramp Terminal - PM

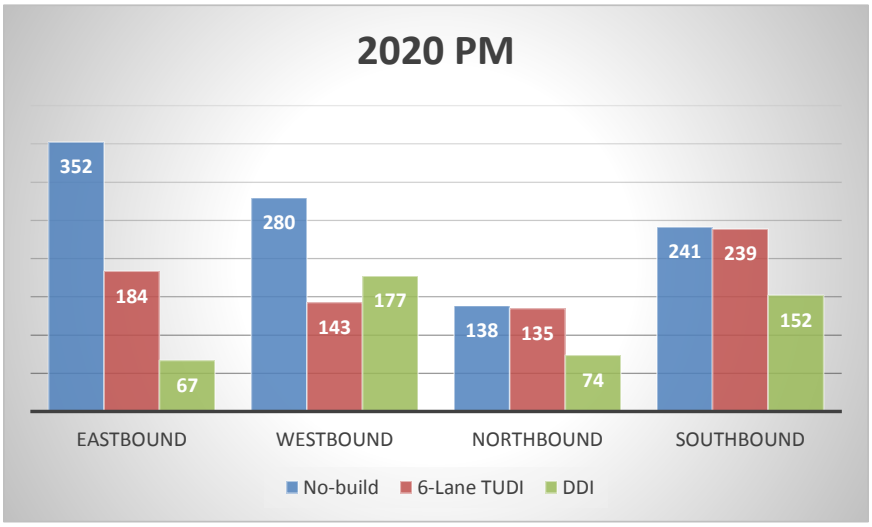


Exhibit 17-2020 Alternative 95th Queue Length (ft) at Buena Vista Road Interchange

Dir	Movement	No Build		TUDI		DDI	
		AM	PM	AM	PM	AM	PM
EB	Buena Vista Eastbound to I-185 Northbound (Left turn)	186	321	145	203	0	0
	Buena Vista Eastbound (Through)	153	394	130	330	131	201
	Buena Vista Eastbound to I-185 Southbound (Right turn)	231	342	36	18	0	0
	Average Eastbound Queue Length	**190**	**352**	**104**	**184**	**44**	**67**
WB	Buena Vista Westbound to I-185 Southbound (Left turn)	409	254	268	216	0	0
	Buena Vista Westbound (Through)	163	252	178	208	354	357
	Buena Vista Westbound to I-185 Northbound (Right turn)	1165	333	11	4	141	175
	Average Westbound Queue Length	**579**	**280**	**152**	**143**	**165**	**177**
NB	I-185 Northbound Off Ramp (Left turn)	77	93	75	96	49	55
	I-185 Northbound Off Ramp (Right turn)	107	184	103	174	28	92
	Average Northbound Queue Length	**92**	**138**	**89**	**135**	**39**	**74**
SB	I-185 Southbound Off Ramp (Left turn)	189	371	191	388	143	223
	I-185 Southbound Off Ramp (Right turn)	44	112	33	90	17	81
	Average Southbound Queue Length	**117**	**241**	**112**	**239**	**80**	**152**

The future year 2040 volumes were then applied to each alternative and the performance measure results were compared with the No-build conditions for the same year. The operational results are summarized below.

- Each build alternative slightly reduces the delay per vehicle; 1 second reduction for each alternative except for the DDI in AM peak which has 7 seconds savings (**Exhibit 18**),

- A slight reduction in total VHTs as the result of the reduced delays (**Exhibit 18**),
- No significant change in total VMTs,
- All of the identified intersections operate at LOS "B" and better (**Exhibit 19**) and,
- Each alternative reduces the average queue lengths at the interchange, while the DDI alternative produces substantial queue reduction benefits on average, about 50 percent and 60 percent reduction in queue for TUDI and DDI, respectively (**Exhibit 20**,
- Exhibit 20, and **Exhibit 22**)

Exhibit 18-2040 Alternative Network Performance Measures

Parameter	No Build		TUDI		DDI	
	AM	PM	AM	PM	AM	PM
Average Delay (sec/veh)	23	24	22	23	16	23
VMT	9,798	12,509	9,800	12,511	9,782	12,497
VHT	846,991	1,081,025	834,988	1,075,220	790,145	1,068,131

Exhibit 19-2040 Alternative Intersection Delays and LOSs (AM/PM)

Buena Vista Road Intersection	No Build		TUDI		DDI	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
@ I-185 NB	9.2 / 11.6	A / B	8.7 / 10.9	A / B	9.3 / 12.0	A / B
@ I-185 SB	15.1 / 19.5	B / B	14.0 / 18.5	B / B	12.6 / 13.7	B / B
@ Linden Cir	2.4 / 1.2	A / A	2.4 / 1.2	A / A	1.5 / 1.3	A / A
@ Pembrook Drive	7.8 / 1.7	A / A	7.4 / 1.6	A / A	3.7 / 1.9	A / A
@ N. Linden Drive	8.3 / 7.6	A / A	7.8 / 7.5	A / A	3.9 / 8.0	A / A
@ Fairfield Drive	0.8 / 1.5	A / A	0.7 / 1.6	A / A	0.4 / 0.6	A / A
@ Brighton Road	0.3 / 0.4	A / A	0.3 / 0.4	A / A	0.4 / 0.5	A / A

Exhibit 20-2040 Alternative 95th Average Approach Queue Length (ft) at I-185 Ramp Terminal - AM

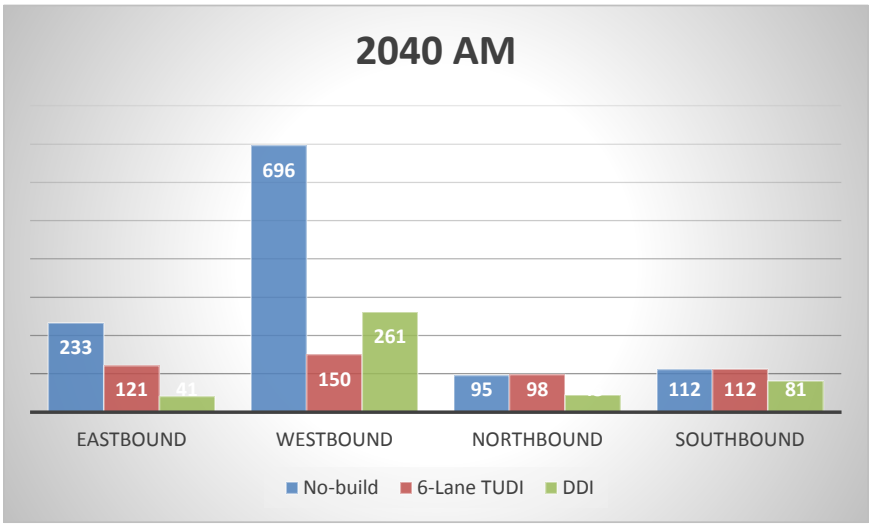


Exhibit 21-2040 Alternative 95th Average Approach Queue Length (ft) at I-185 Ramp Terminal - PM

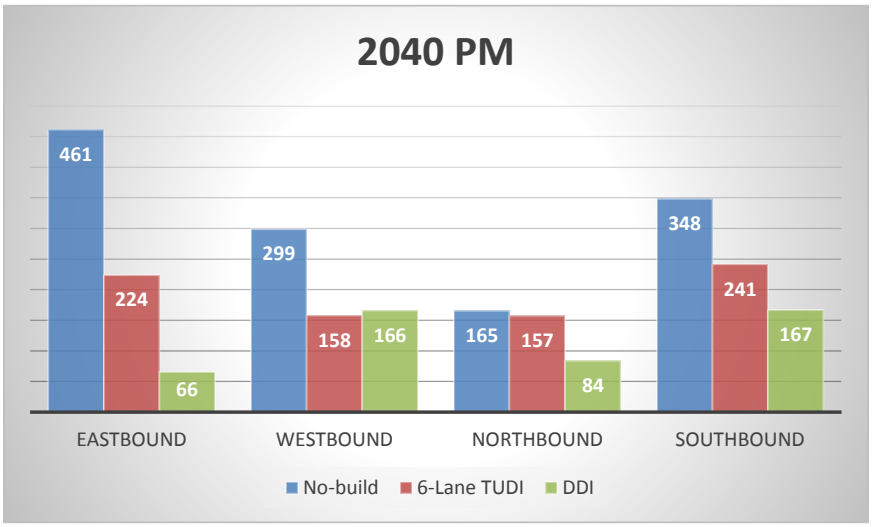


Exhibit 22-2040 Alternative 95th Queue Length (ft) at Buena Vista Road Interchange

Dir	Movement	No Build		TUDI		DDI	
		AM	PM	AM	PM	AM	PM
EB	Buena Vista Eastbound to I-185 Northbound (Left turn)	280	483	185	274	0	0
	Buena Vista Eastbound (Through)	163	505	138	387	122	197
	Buena Vista Eastbound to I-185 Southbound (Right turn)	257	396	41	10	0	0
	Average Eastbound Queue Length	**233**	**461**	**121**	**224**	**41**	**66**
WB	Buena Vista Westbound to I-185 Southbound (Left turn)	480	255	270	201	0	0
	Buena Vista Westbound (Through)	203	216	163	224	433	354
	Buena Vista Westbound to I-185 Northbound (Right turn)	1407	425	18	49	351	144
	Average Westbound Queue Length	**696**	**299**	**150**	**158**	**261**	**166**
NB	I-185 Northbound Off Ramp (Left turn)	90	125	95	127	66	67
	I-185 Northbound Off Ramp (Right turn)	100	205	100	188	24	100
	Average Northbound Queue Length	**95**	**165**	**98**	**157**	**45**	**84**
SB	I-185 Southbound Off Ramp (Left turn)	187	568	193	378	134	243
	I-185 Southbound Off Ramp (Right turn)	36	128	31	105	28	90
	Average Southbound Queue Length	**112**	**348**	**112**	**241**	**81**	**167**

The results of TUDI and DDI from VISSIM simulations are analyzed to determine whether there is an adversary impact on the freeway mainline traffic operation on I-185. The level of services for freeway sections upstream and downstream of Buena Vista Road is compared between the No-build condition and TUDI and DDI alternatives. The analysis reveals that both alternatives impose no negative impact on the traffic operation on the freeway mainline compared with the No-build condition (**Exhibit 23**).

Exhibit 23-I-185 Freeway Section Level of Services Comparisons

Dir	Freeway Section	2020						2040					
		AM			PM			AM			PM		
		NB	TUDI	DDI	NB	TUDI	DDI	NB	TUDI	DDI	NB	TUDI	DDI
I-185 NB	Basic Section (S. of Buena Vista Rd)	A	A	A	C	C	C	A	A	A	D	D	D
	Exit to Buena Vista Rd	A	A	A	C	C	C	A	A	A	D	D	D
	Entry from Buena Vista Rd	A	A	A	C	C	C	A	A	A	D	D	D
	Basic Section (N. of Buena Vista Rd)	B	B	B	C	C	C	B	B	B	D	D	D
I-185 SB	Basic Section (N. of Buena Vista Rd)	B	B	B	A	A	A	B	B	B	A	A	A
	Exit to Buena Vista Rd	B	B	B	A	A	A	B	B	B	A	A	A
	Entry from Buena Vista Rd	B	B	B	A	A	A	B	B	B	A	A	A
	Basic Section (S. of Buena Vista Rd)	B	B	B	A	A	A	B	B	B	A	A	A

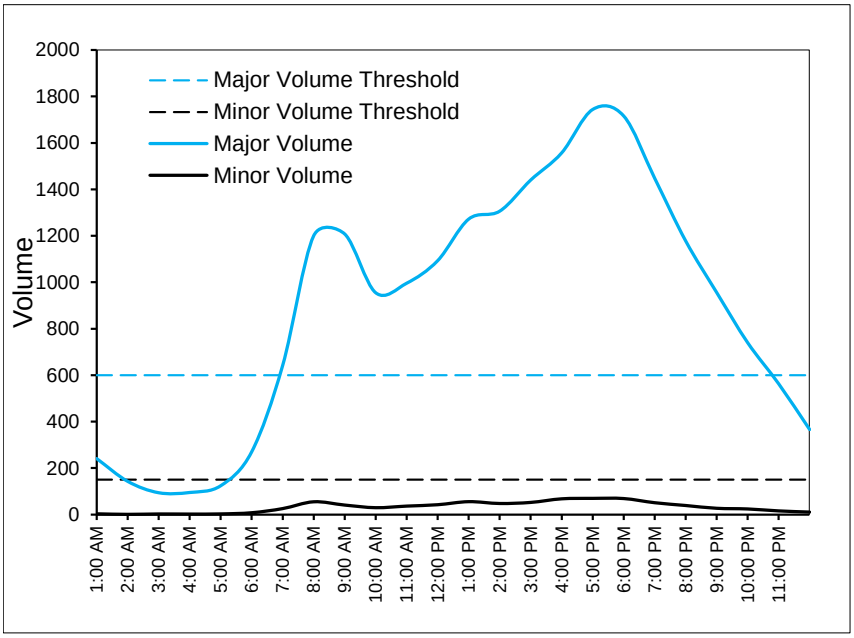
Signal Warrant Analysis

As the result of the right-in-right-out conversion at the intersection of Fairfield Road and Buena Vista Road, current left turn movements from Fairfield Road approach will be diverted to Brighton Road to the west. A signal warrant analysis is conducted to determine whether a signal is needed at the Brighton Road intersection.

Two signal warrants were investigated; Warrant 1: Eight-Hour Vehicular Volume and Warrant 2: Four-Hour Vehicular Volume. The analysis method is based on 2009 Manual on Uniform Traffic Control Devices (MUTCD).

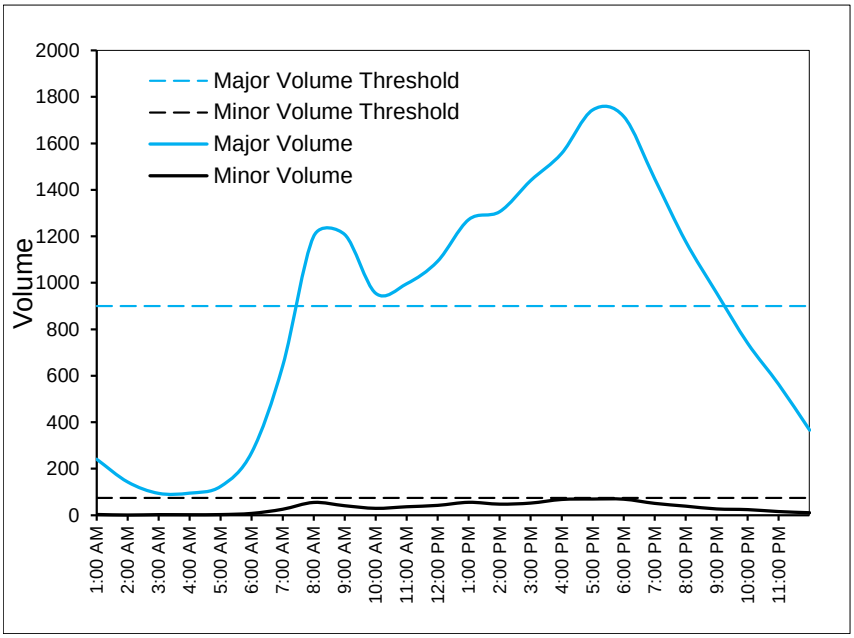
Warrant 1: The Eight-Hour Minimum Vehicular Volume, Condition A, is intended for application where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal. "The Interruption of Continuous Traffic, Condition B, is intended for application where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street." (MUTCD, Section 4C.02). It is noticed that the hourly volumes on Brighton Road never exceed the minimum volumes threshold for the minor street approach under 2040 traffic condition (**Exhibit 24** and **Exhibit 25)**. Warrant 1 is not satisfied.

Exhibit 24-2040 Signal Warrant 1-Condition A (Brighton Road and Buena Vista Road)



Source: MUTCD Chapter 4C. Table 4C-1

Exhibit 25-2040 Signal Warrant 1-Condition B (Brighton Road and Buena Vista Road)

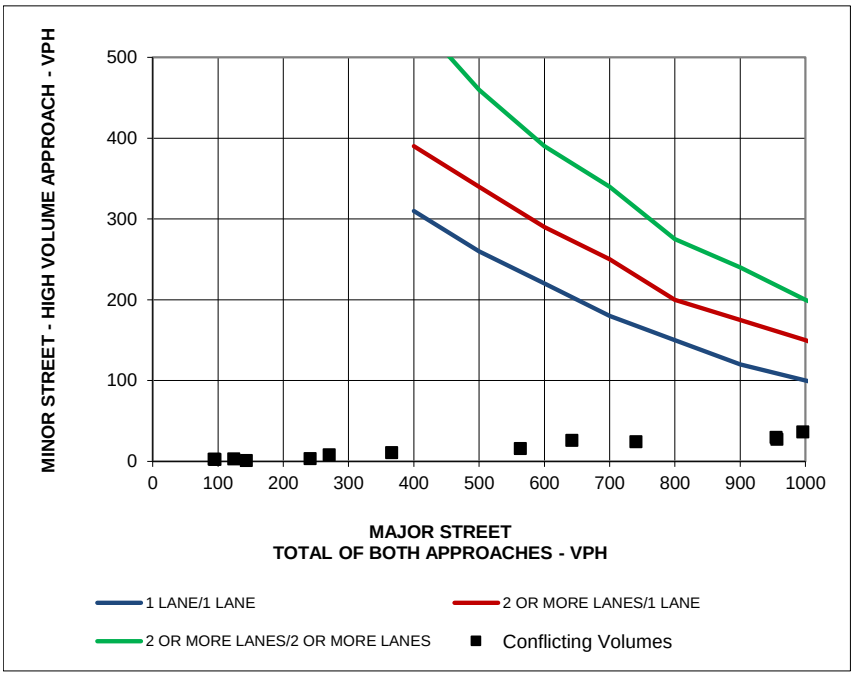


Source: MUTCD Chapter 4C. Table 4C-1

Warrant 2: The Four-Hour Vehicular Volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal. "The need for a traffic control signal shall be considered if an engineering study finds that for each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher volume minor-street approach (one direction only) all fall above the applicable curve." (MUTCD, Section 4C.03)

Exhibit 26 plots the major and minor street volumes together with the minimum volume threshold curves. None of the hourly volumes meet the minimum requirements. Warrant 2 is not satisfied.

Exhibit 26-2040 Signal Warrant 2-Condition B (Brighton Road and Buena Vista Road)



Source: MUTCD Chapter 4C. Figure 4C-1

Based on the signal warrant analysis, a signal will not likely be required at the intersection of Brighton Road and Buena Vista Road.

Conclusions

Based upon the most recent traffic data, this analysis has revealed that there are no significant traffic operational issues at any of the identified intersections along Buena Vista Road, which includes the I-185 interchange. The anticipated growth rate for the future years 2020 and 2040 are minimal based upon both GDOT historical traffic counts and the Columbus MPO travel demand models. As a result, this slight

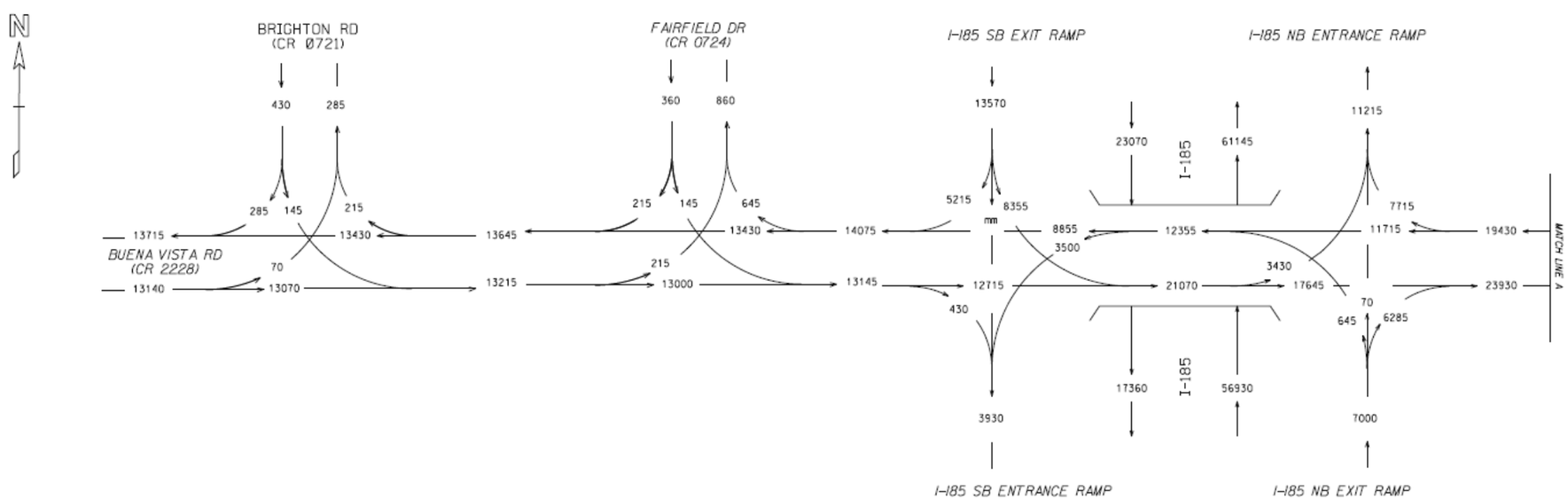
increase in traffic volumes does not have a significant adverse impact on the traffic operations in the study area. All of the identified intersections are expected to operate at acceptable conditions without the construction of any proposed improvements.

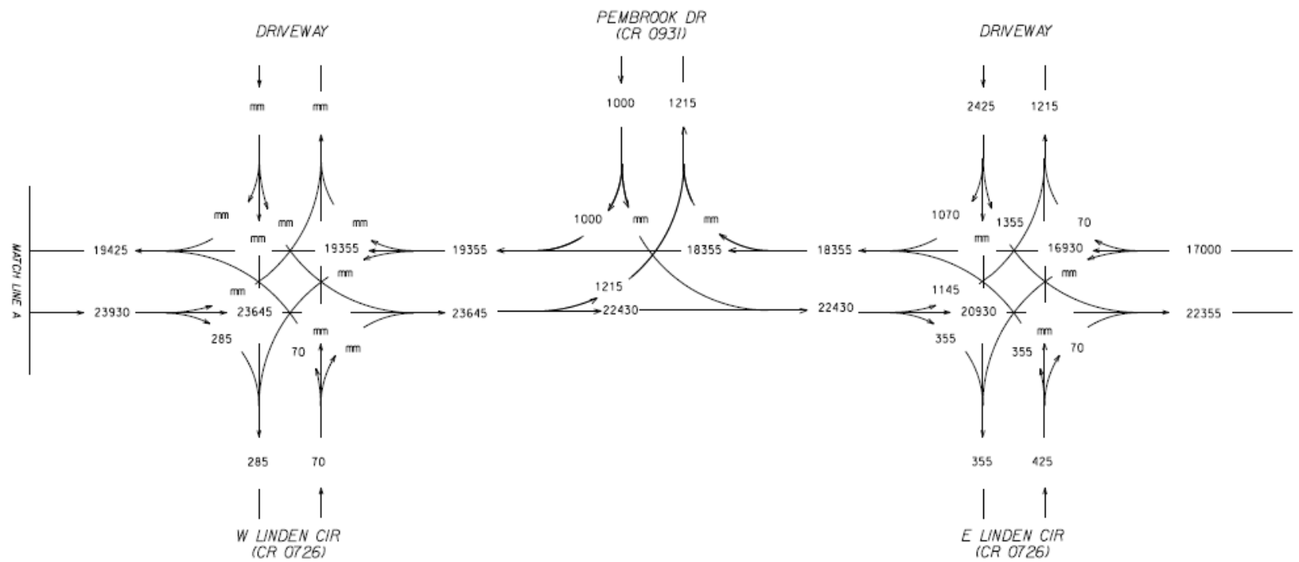
Nevertheless, this analysis has been proven that it would be beneficial to provide for additional queue storage for the left-turn movements accessing the I-185 entrance ramps as well as additional taper lane on I-185 northbound entrance ramp to accommodate right-turn movement from westbound Buena Vista Road. This additional capacity would better accommodate the turning vehicles accessing I-185, increase through movement capacity along Buena Vista Road, and reduce potential longer queues for those travelers exiting the I-185 mainline, particularly along the southbound I-185 exit ramp. Thus, either a TUDI or DDI can achieve the stated benefits. Both alternatives do not impose any negative impact on the traffic operations on the I-185 freeway mainline. Finally, the right-in-right-out conversion of the existing intersection at Fairfield Road and Buena Vista Road as a result of the improvements will not significantly impact traffic operations at Brighton Road intersection and will not require a signal.

Appendix

DATE: 11/2015
USER: JRA

MUSCOGEE COUNTY





TIA-RC08-000052
P.I.# 0012577
MUSCOGEE COUNTY
BUENA VISTA ROAD
FROM BRIGHTON ROAD TO
E LINDEN CIRCLE

ADT
2015 AVERAGE DAILY TRAFFIC = 000

BUENA VISTA RD (CR 2228)
24-Hour Truck % - 6%
SU - 4%
Comb - 2%

REVISION DATES		
02/2016	JRA	

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: TIA OFFICE

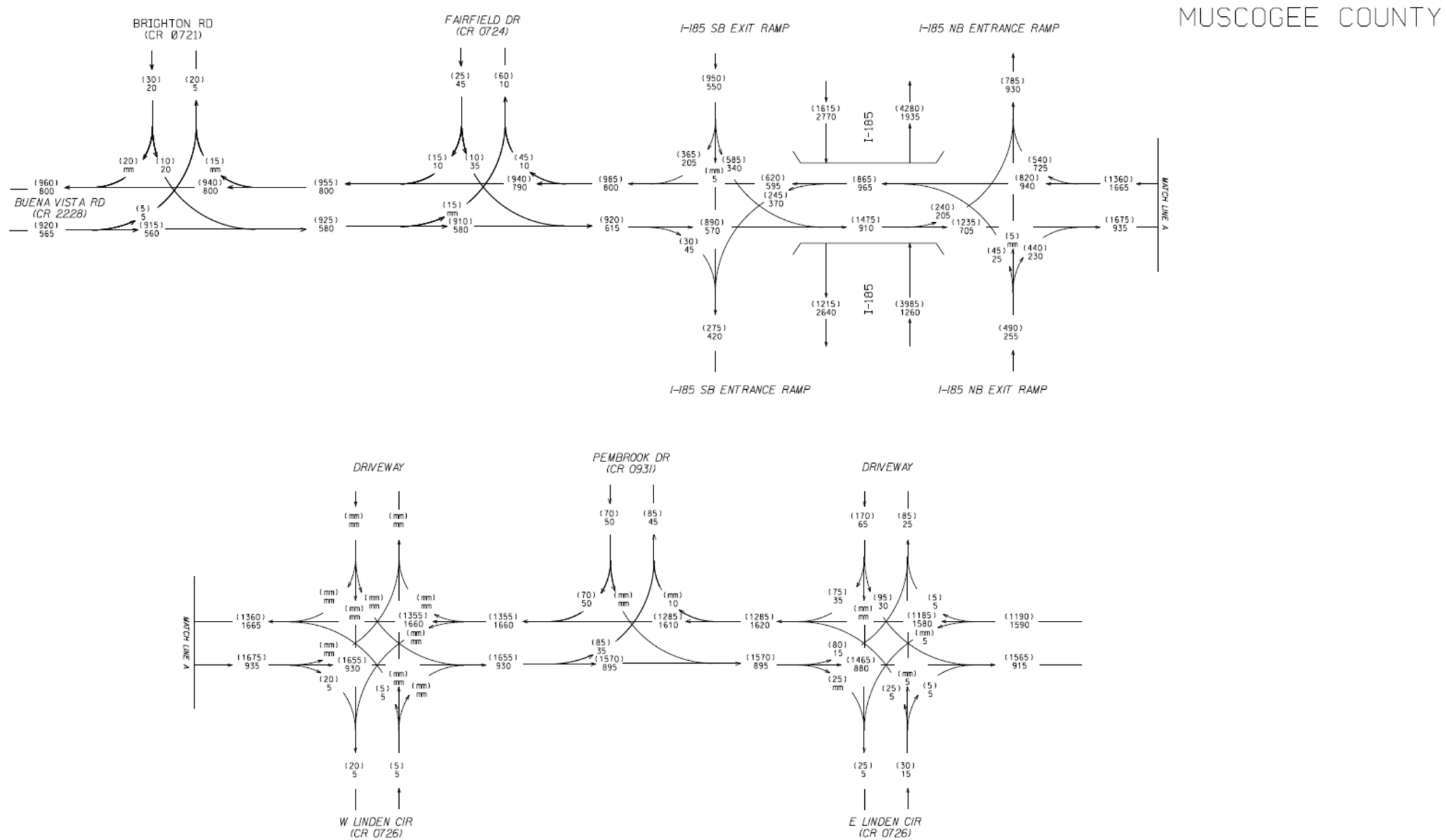
EXISTING (2015) TRAFFIC
ADT PROJECTIONS

DATE: NOV. 2015
PREPARED BY: JRA

DRAWING No.
10-0001

DATE: 11/2015
USER: JRA

STATE	PROJECT NUMBER	SHEET No.	TOTAL SHEETS
GA	120246923	2	6



TIA-RC08-000052
P.I.# 0012577
MUSCOGEE COUNTY
BUENA VISTA ROAD
FROM BRIGHTON ROAD TO
E LINDEN CIRCLE

DHV
AM PEAK HOUR TURNING MOVEMENT VOLUME - 000
PM PEAK HOUR TURNING MOVEMENT VOLUME - (000)

BUENA VISTA RD (CR 2228)
K - 7%
D - 53%
Peak Truck % - 6%
SU - 4%
Comb - 2%

REVISION DATES		
02/2016	JRA	

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: TIA OFFICE

EXISTING (2015) TRAFFIC
DHV PROJECTIONS

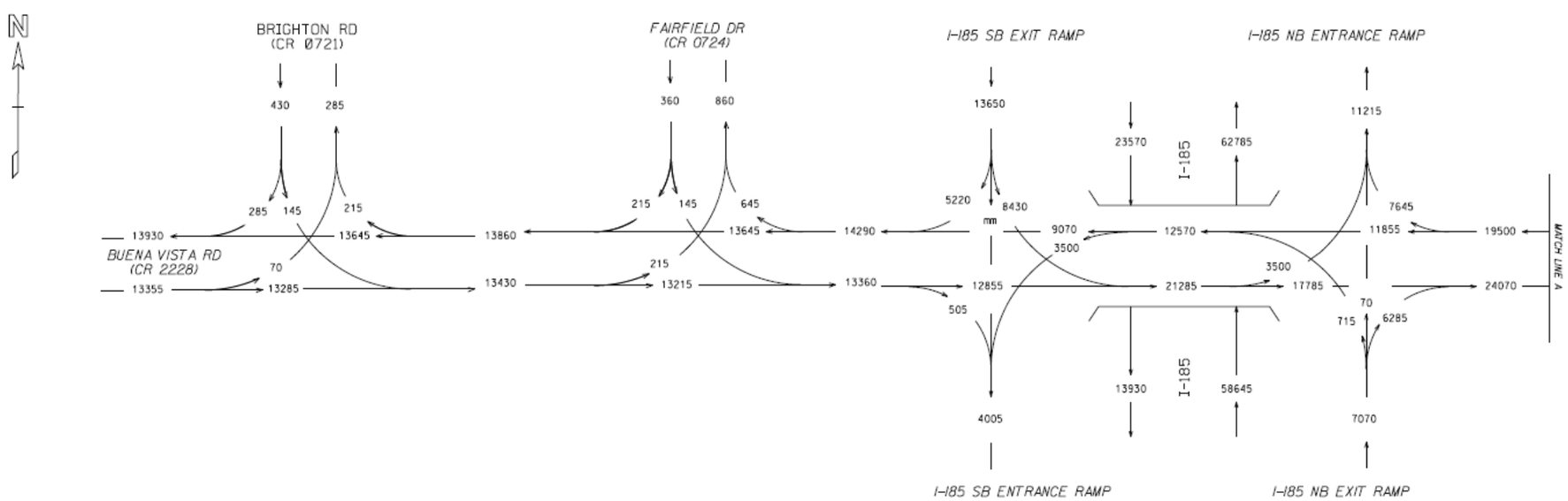
DATE: NOV. 2015
PREPARED BY: JRA

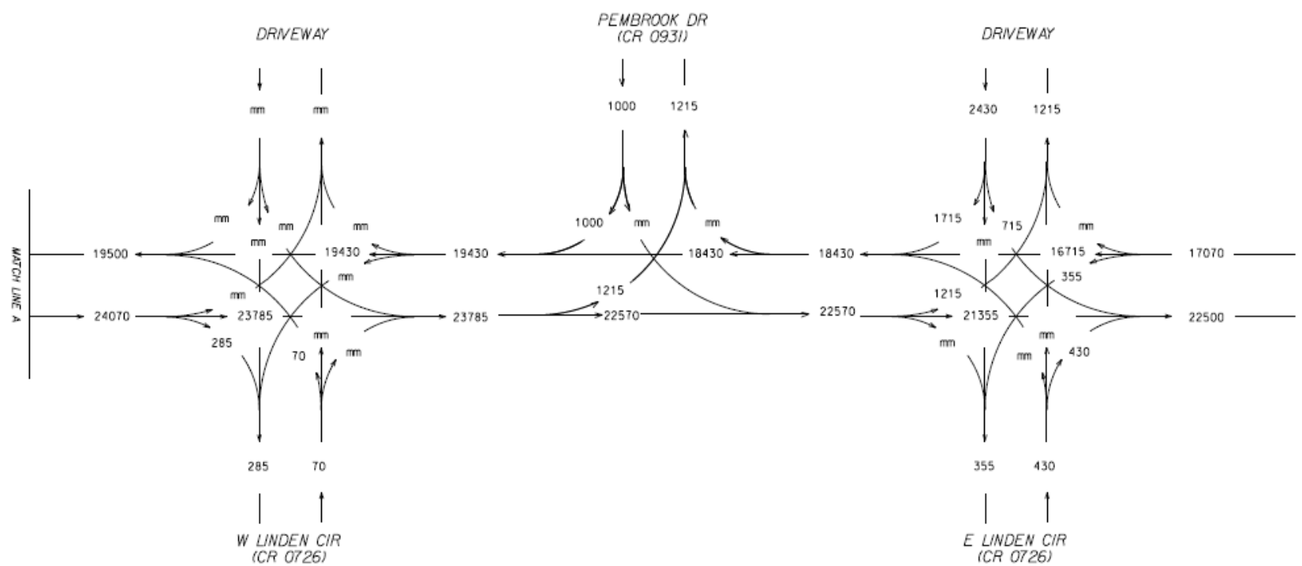
DRAWING No.
10-0002

DATE: 11/2015
USER: JRA

STATE: GA | PROJECT NUMBER: 120246923 | SHEET NO. 1 | TOTAL SHEETS 6

MUSCOGEE COUNTY





TIA-RC08-000052
P.I.# 0012577
MUSCOGEE COUNTY
BUENA VISTA ROAD
FROM BRIGHTON ROAD TO
E LINDEN CIRCLE

ADT
2020 AVERAGE DAILY TRAFFIC = 000

BUENA VISTA RD (CR 2228)
24-Hour Truck % - 6%
SU - 4%
Comb - 2%

REVISION DATES		
02/2016	JRA	

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: TIA OFFICE

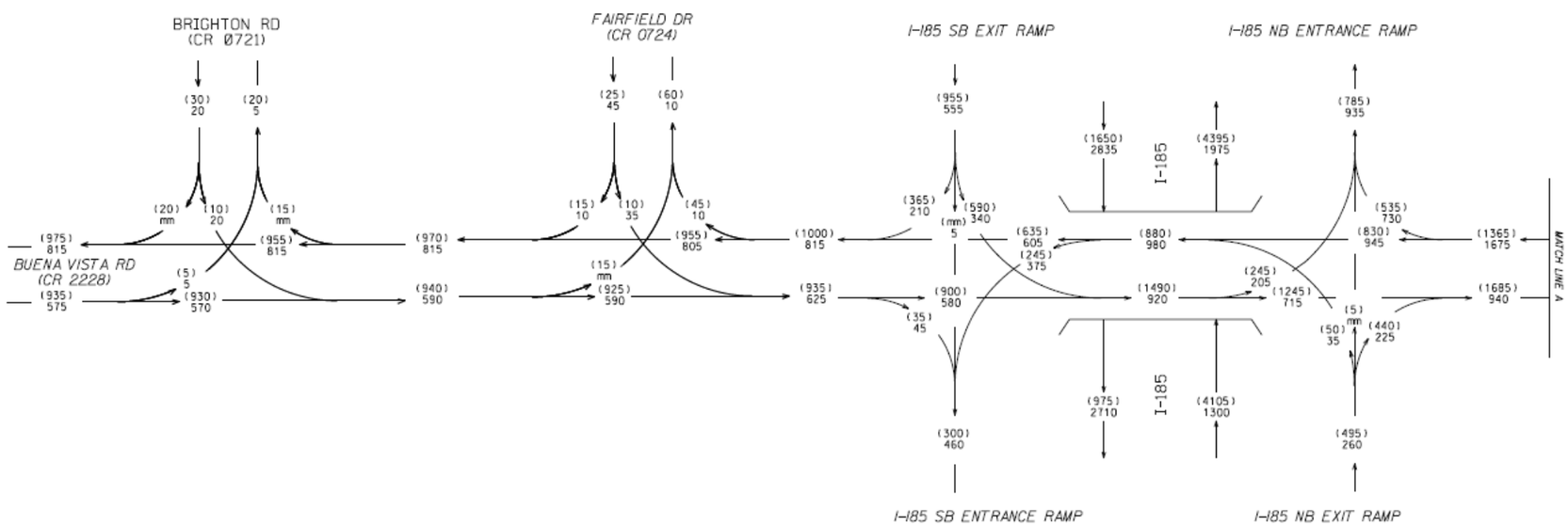
FUTURE (2020) TRAFFIC
ADT PROJECTIONS

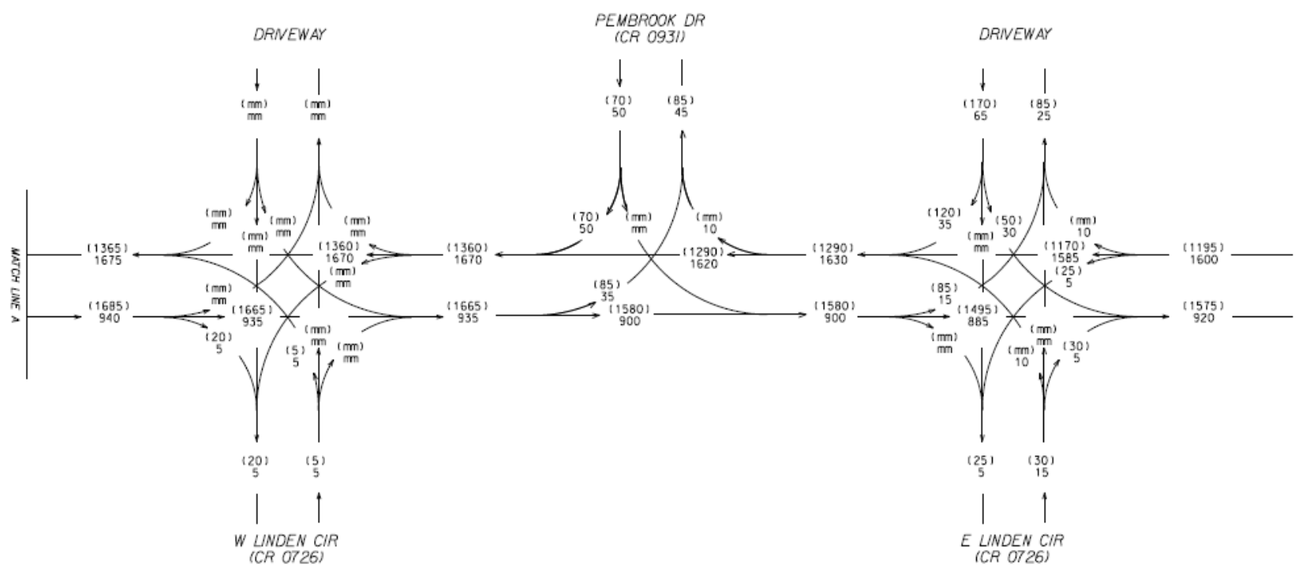
DATE: NOV. 2015
PREPARED BY: JRA

DRAWING No. 10-0003

DATE: 11/2015
USER: JRA

MUSCOGEE COUNTY





TIA-RC08-000052
P.I.# 0012577
MUSCOGEE COUNTY
BUENA VISTA ROAD
FROM BRIGHTON ROAD TO
E LINDEN CIRCLE

DHV
AM PEAK HOUR TURNING MOVEMENT VOLUME - 000
PM PEAK HOUR TURNING MOVEMENT VOLUME - (000)

BUENA VISTA RD (CR 2228)
K - 7%
D - 53%
Peak Truck % - 6%
SU - 4%
Comb - 2%

REVISION DATES
02/2016 JRA

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: TIA OFFICE

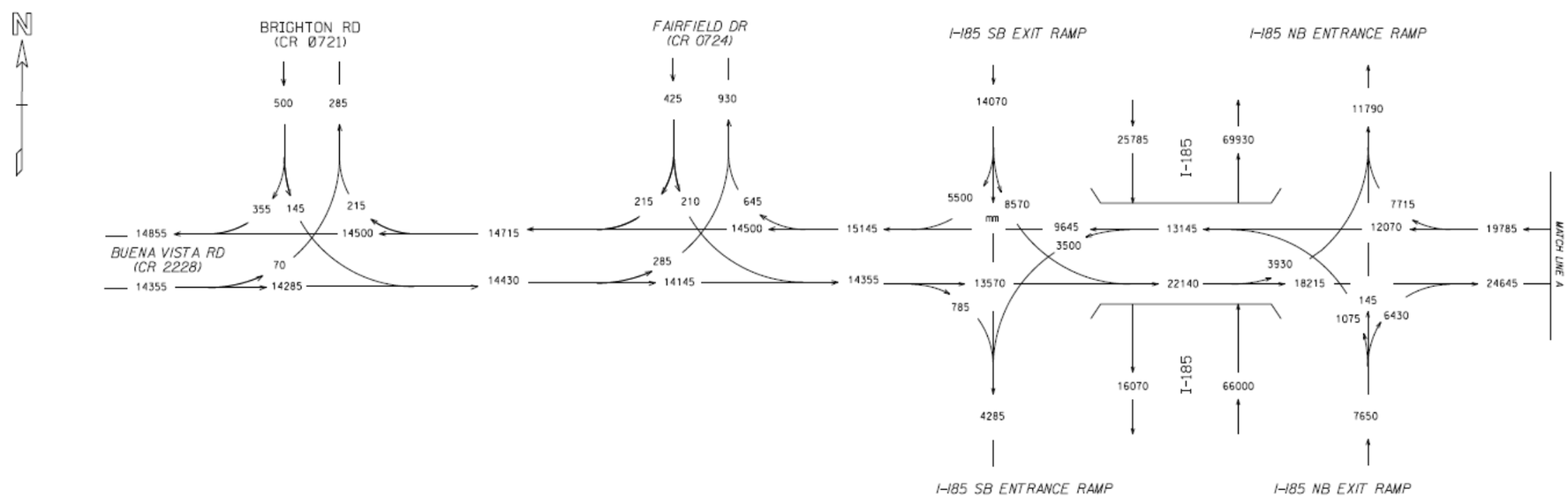
FUTURE (2020) TRAFFIC
DHV PROJECTIONS

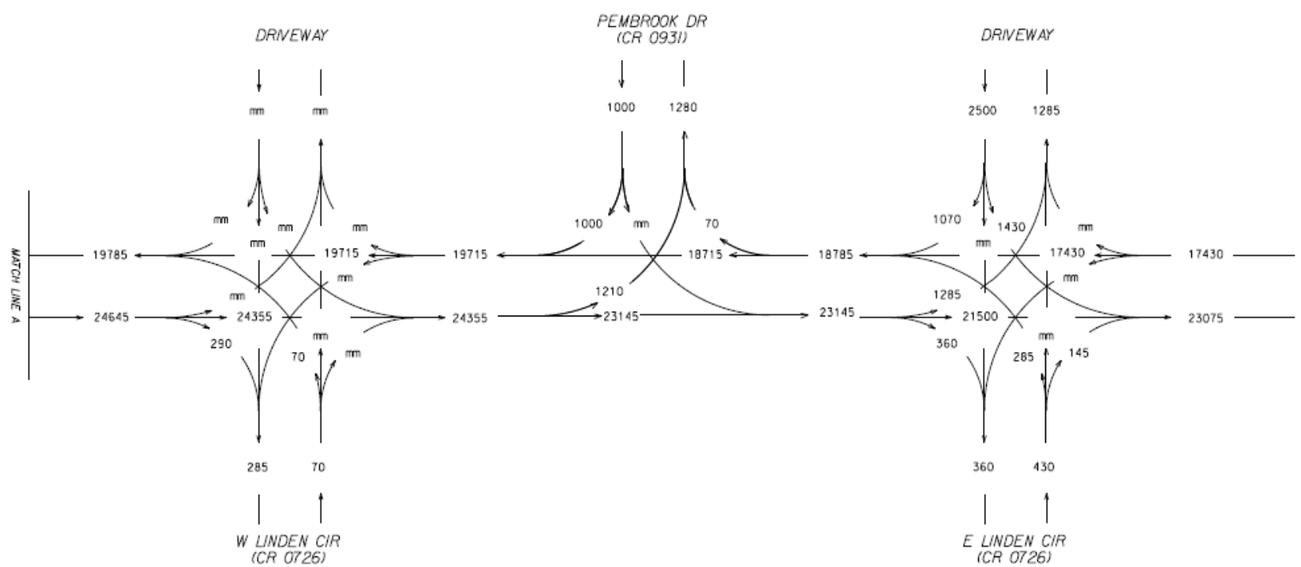
DATE: NOV. 2015
PREPARED BY: JRA

DRAWING NO.
10-0004

DATE: 11/2015
USER: JRA

MUSCOGEE COUNTY





TIA-RC08-000052
P.I.# 0012577
MUSCOGEE COUNTY
BUENA VISTA ROAD
FROM BRIGHTON ROAD TO
E LINDEN CIRCLE

ADT
2040 AVERAGE DAILY TRAFFIC = 000

BUENA VISTA RD (CR 2228)
24-Hour Truck % - 6%
SU - 4%
Comb - 2%

REVISION DATES		
02/2016	JRA	

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: TIA OFFICE

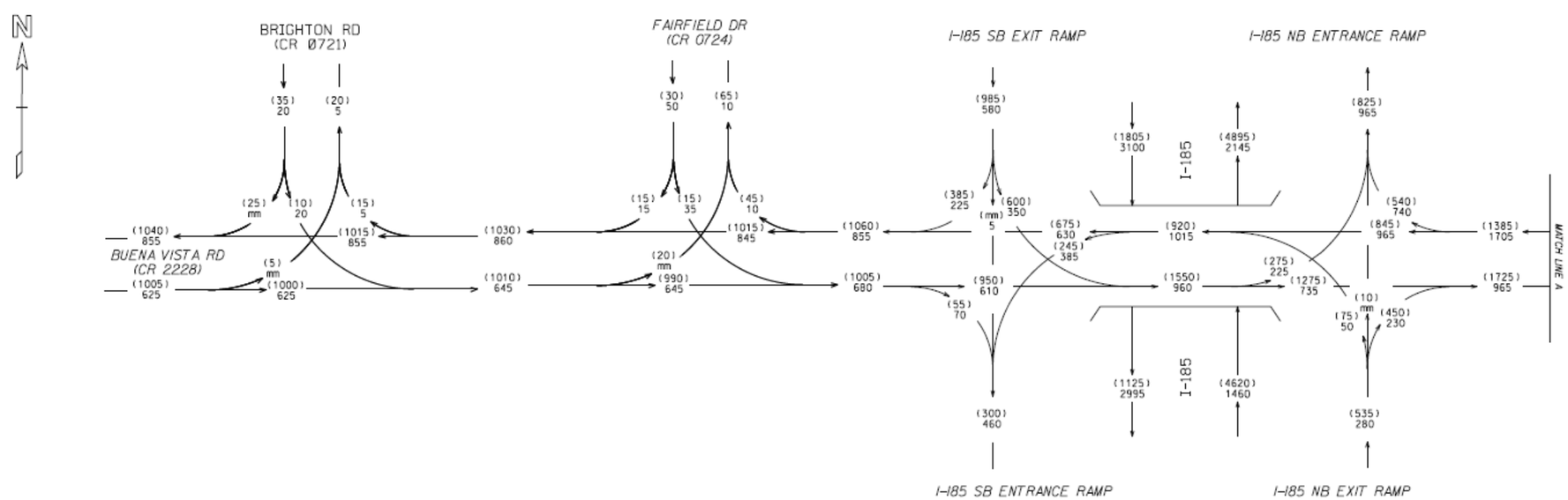
FUTURE (2040) TRAFFIC
ADT PROJECTIONS

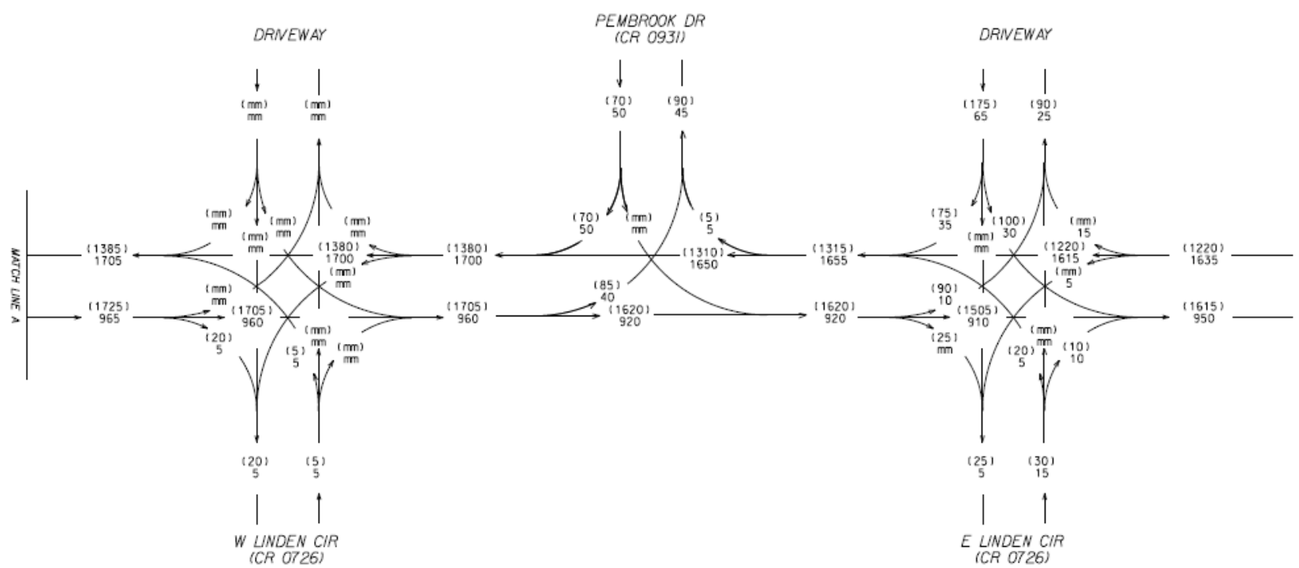
DATE: NOV. 2015
PREPARED BY: JRA

DRAWING No.
10-0005

DATE: 11/2015
USER: JRA

MUSCOGEE COUNTY





TIA-RC08-000052
P.I.# 0012577
MUSCOGEE COUNTY
BUENA VISTA ROAD
FROM BRIGHTON ROAD TO
E LINDEN CIRCLE

DHV
AM PEAK HOUR TURNING MOVEMENT VOLUME - 000
PM PEAK HOUR TURNING MOVEMENT VOLUME - (000)

BUENA VISTA RD (CR 2228)
K - 7%
D - 53%
Peak Truck % - 6%
SU - 4%
Comb - 2%

REVISION DATES		
02/2016	JRA	

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: TIA OFFICE

FUTURE (2040) TRAFFIC
DHV PROJECTIONS

DATE: NOV. 2015
PREPARED BY: JRA

DRAWING NO.
10-0006

ATKINS

Atkins North America, Inc.
1600 RiverEdge Parkway NW
Suite 600
Atlanta GA 30328

Tel: +1 770-933-0280
Direct no: +1 678-247-2485

info@atkinsglobal.com
www.atkinsglobal.com/northamerica

Project No.: 100046923

Mr. Bill DuVall, PE
State Bridge Engineer
One Georgia Center
600 West Peachtree St NW
Atlanta, GA 30308

January 25, 2016

RE: PI 0012577 I-185/Buena Vista
Muscogee County, GA

Dear Bill

This project involves the reconstruction of the I-185 Interchange with Buena Vista Road in Muscogee County, GA. As part of the Conceptual Design we are investigating the conditions and capacity of the existing bridge 215-0047-0 (Buena Vista Road over I-185). The purpose of this investigation is to provide information so that the Department can determine if it is desired to rehabilitate and widen the existing bridge, or to replace it with a new bridge. To assist in the evaluation, please see the following attachments related to the existing bridge:

1. Bridge Inventory Data Listing (SIA Report)
2. Bridge Load Rating Summary
3. Bridge Inspection Report

Bridge Inventory Data Listing (SIA Report)

According to the SIA Report, the Sufficiency Rating for the existing bridge is 47.60. Typically, a bridge is slated for replacement instead of rehabilitation if the Sufficiency Rating is less than 50. However, there are several factors which go into the sufficiency rating including:

- Structural Adequacy and Safety
- Serviceability and Functional Obsolescence
- Essentiality for Public Use
- Special Reductions (Detour Length, Structure Type, Safety Features)

Structural Adequacy and Safety

The bridge is currently in good to satisfactory condition; any repairs performed as part of the rehabilitation will not improve the Sufficiency Rating. Related to structural capacity, the HS20 Inventory Rating of the bridge is 20 Tons compared to the HS20 Design Loading of 36 Tons. This capacity can possibly be increased by rehabilitation and thus improve the Sufficiency Rating (see the Bridge Load Summary below).

Serviceability and Functional Obsolescence

Many of the features currently reducing the Sufficiency Rating can be improved as a normal part of the rehabilitation by widening. Some substandard features may be improved at more cost, if desired (current clearance over I-185 is 16'-10; jack the bridge up to achieve the 17'-0" minimum required).

Essentiality for Public Use

This part of the Sufficiency Rating is primarily a function of the ADT and detour length, and to a lesser extent a function of the previous 2 ratings. The rehabilitation will not have much effect on this part of the Sufficiency Rating.

Special Reductions

The rehabilitation will not change the detour length and structure type, and therefore will not change the Sufficiency Rating. The Safety Features will be updated and thus will improve the Sufficiency Rating.

Bridge Load Rating Summary

The Bridge Load Rating Summary was provided by GDOT, which indicated the areas of the existing bridge which controlled the Inventory Rating (Design Loads) and Operating Rating (reduced factors for bridge posting). The summary indicated that the rating was primarily controlled by the intermediate bents.

As shown in the Rating Summary and the SIA Report, the bridge does not require a load posting. Note that this analysis and rating is performed in accordance with the AASHTO Standard Specifications in accordance with when the bridge was built, not by the current AASHTO LRFD Design Specifications.

A Bridge Load Rating was performed to investigate the controlling portions of the bridge and to determine what repairs would be needed to improve the bridge capacity. The existing pier caps are controlled by Shear. At this stage it is assumed that the piers can be retrofitted to improve the strength.

Bridge Inspection Report

A summary of bridge components indicated in the inspection report is as follows:

- Concrete Deck: Satisfactory condition with some cracking and surface abrasion.
- Steel Girders: Good condition with no noted deficiencies.
- Intermediate Bents: Satisfactory condition with vertical cracks in the faces of the caps and cracks in all column faces. Pier 4 cap has a horizontal cap running the full length. Pier 2 has a spall with exposed rebar in the bottom face under Beam 7.

As part of the rehabilitation, these deficiencies can be addressed by replacing the deck, and performing concrete repairs on the intermediate bents, in addition to installing pier strengthening retrofits.

Summary

In summary, the existing bridge can be rehabilitated and widened as an option to total replacement. The condition and capacity of the existing bridge can be improved by the rehabilitation, but it will almost certainly not be improved enough to meet current design standards. The existing portion of the bridge will also have a lower service life than the widened portion of the bridge, or that of an entire bridge replacement. Cost estimates were not prepared as part of this study, and a comparison of widening vs. replacement can be subjective as the rehabilitation costs can be difficult to predict. In addition to service life, or life cycle costs associated with the existing portion of the bridge, the square-foot cost of the widened portion of the bridge would probably be more than the square-foot cost of the replacement bridge as the widening would probably need to utilize steel girders to meet clearance over I-185.

We trust that this information is sufficient for you to make the decision regarding widening vs. replacement of the existing bridge. If you require additional information or wish to discuss, please contact me at (770) 933-0280 or daniel.burgundy@atkinsglobal.com .

Sincerely

Daniel R. Burgundy, PE

Attachments

CC: File
Mr. Dan Bodycomb, GDOT TIA Preconstruction Manager
Mr. Kenneth Franks, GDOT TIA Regional Coordinator

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENTAL CORRESPONDENCE

FILE: P.I. No. 0012577
Muscogee County

OFFICE: Bridge Maintenance Unit
DATE: April 15, 2016

FROM: Andy Doyle, P.E., State Bridge Maintenance Engineer

TO: Kevin Mullins, State TIA Administrator
ATTN: Kenneth Franks, TIA regional Coordinator

SUBJECT: Bridge and Deck Condition Survey

On February 16, 2016 our office received the request for a Bridge and Bridge Deck Condition Survey to be conducted. These Surveys have been completed for the bridge.

Structure ID 215-0047-0
Buena Vista Road over I-185

This bridge is an HS-20 design and was constructed in 1966. The superstructure consists of a concrete deck and four (4) spans of steel rolled beams on concrete caps and columns.

After conducting a field inspection of the structure our office recommends the following rehabilitation:

- **Deck:**
  - Replace all expansion joints with a Preformed Silicone Joint Seal.
  - Seal the deck and approach slabs by using a two-part polymer overlay system. Wait a minimum of 60 days after completion of the deck on the widened section to overlay both the original and new widened portions of the deck.
- **Superstructure**
  - No maintenance repair is needed. No painting of the steel superstructure is needed.
- **Substructure:**
  - Load rating shows the substructure to only have 1.6 tons of reserve capacity do to shear calculations in the cap. We would recommend replacement of the caps or if possible replacement of the bridge.

If you have any questions, please contact Clayton Bennett at (404) 635-2889.
JAD:cbb

Reading File

DRAFT

Processed Date:1/15/2016

Parameters: Bridge Serial Num

Bridge Inventory Data Listing

Structure ID:215-0047-0 | **Muscogee** | **SUFF. RATING: 47.60**

Location & Geography

Structure ID:	215-0047-0
200 Brdge Information:	06
*6A Feature Int:	I-185 (SR 411) EXIT 4
*6B Critical Bridge:	
*7A Route No Carried:	CS02228
*7B Facility Carried:	BUENA VISTA ROAD
9 Location:	CENTRAL COLUMBUS
2 Dot District:	4841300000 - D3 District Three Thomaston
207 Year Photo:	2012
*91 Inspection Frequency:	24 Date: 12/15/2014
92A Fract Crit Insp Freq:	0 Date: 02/01/1901
92B Underwater Insp Freq:	00 Date: 02/01/1901
92C Other Spc. Insp Freq:	00 Date: 02/01/1901
* 4 Place Code:	19000
*5 Inventory Route(O/U):	1
Type:	5 - City Street
Designation:	1- Mainline
Number:	08042
Direction:	0. Not applicable
*16 Latitude:	32.0000- 27.7373 HMMS Prefix:
*17 Longtitude:	84.0000- 55.7525 HMMS Suffix:
	MP: 0.00
98 Border Bridge:	% Shared:00
99 ID Number:	000000000000000
*100 STRAHNET:	1- The Feature is on an Interstate STRAHNET route
12 Base Highway Network:	1
13A LRS Inventory Route:	2153222803
13B Sub Inventory Route:	0.00
*101 Parallel Structure:	N. No parallel structure exists
*102 Direction of Traffic:	2- Two Way
*264 Road Inventory Mile Post:	004.43
*208 Inspection Area:	Area 08 Initials: JKP
Engineer's Initials:	bcn
* Location ID No:	215-08042M-002.45N

*104 Highway System:	1-Inventory Route is on the NHS
*26 Functional Classification:	14- Urban - Other Principal Arterial
*204 Federal Route Type:	M - Urban. No: 08042
105 Federal Lands Highway:	0. Not applicable
*110 Truck Route:	0
206 School Bus Route:	1
217 Benchmark Elevation:	0000.00
218 Datum:	0- Not Applicable
*19 Bypass Length:	3
*20 Toll:	3- On a Free Road or Non-Highway
*21 Maintanance:	01-State Highway Agency.
*22 Owner:	01-State Highway Agency.
*31 Design Load:	6- HS 20 + Mod (2-24,000# Axles @ 4ft Ctrs., when they govern)
37 Historical Significance:	5- Not eligible for the National Register of Historic Places
205 Congressional District:	002
27 Year Constructed:	1966
106 Year Reconsrtucted:	0
33 Bridge Median	0-None
34 Skew:	21
35 Structure Flared:	No
38 Navigation Control:	N- Bridge is not over water
213 Special Steel Design:	0- Not applicable or other
267 Type of Paint:	5- Waterborne System (Type VI or VII)
*42 Type of Service On:	5-Highway-Pedestrian
Type of Service Under:	1-Highway (with or without pedestrians)
214 Movable Bridge:	0
203 Type Bridge:	O - Multip - O. Concrete M. Steel - O. Concrete
259 Pile Encasement	3
*43 Structure Type Main:	3-Steel 2-Stringer/Multi-Beam or Girder
45 No.Spans Main:	4
44 Structure Type Appr:	0- Other 0- Other
46 No Spans Appr:	0
226 Bridge Curve Horz	0 Vert: 0.00
111 Pier Protection	N - Navigation Control item coded 0, or Feature not a waterway
107 Deck Structure Type:	
108 Wearing Structure Type:	
Membrane Type:	
Deck Protection:	

Signs & Attachments

225 Expansion Joint Type:	02- Open or sealed concrete joint (silicone sealant)
242 Deck Drains:	0- None.
243 Parapet Location:	0- None present.
Height:	0.00
Width:	0.00
238 Curb Height:	1
Curb Material:	1- Concrete.
239 Handrail	7- Aluminum. 7- Aluminum.
*240 Median Barrier Rail:	0- None.
241 Bridge Median Height:	0
* Bridge Median Width:	0
230 Guardrail Loc. Dir. Rear:	3- Both sides.
Fwrd:	3- Both sides.
Oppo. Dir. Rear:	0- None.
Oppo. Fwrd:	0- None.
244 Aproach Slab	3- Forward and Rear.
224 Retaining Wall:	0- None.
233Posted Speed Limit:	35
236 Warning Sign:	0.00
234 Delineator:	1.00
235 Hazard Boards:	0
237 Utilities Gas:	21- Bottom Left.
Water:	00- Not Applicable
Electric:	00- Not Applicable
Telephone:	22- Bottom Right.
Sewer:	00- Not Applicable
247 Lighting Street:	0
Navigation:	0
Aerial:	0- Not
*248 County Continuity No.:	00

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Bridge Inventory Data Listing

Structure ID:215-0047-0

Programming Data

201 Project No:	U-106-1 (1) CT.2
202 Plans Available:	4- Plans in InfoImage.
249 Prop Proj No:	00000000000000000000000
250 Approval Status:	0000
251 PI Number:	0000000
252 Contract Date:	02/01/1901
260 Seismic No:	00000
75 Type Work:	0- Not Applicable 0- Initial Inventory
94 Bridge Imp: Cost:	$1,669
95 Roadway Imp. Cost:	$167
96 Total Imp Cost:	$2504
76 Imp Length:	0
97 Imp Year:	2013
114 Furure ADT:	32235 Year:2031

Hydralic Data

215Waterway Data:	
High Water Elev:	0000.0 Year:1900
Flood Elev:	0000.0 Freq:00
Avg Streambed Elev:	0000.0
Drainage Area:	00000
Area of Opening:	000000
113 Scour Critical	N. Bridge not over waterway.
216 Water Depth:	00.0 Br.Height:00.0
222 Slope Protection:	4
221Spur Dikes Rear	0 Fwd:0
219 Fender System	0- None.
220 Dolphin:	
223 Culvert Cover:	000
Type:	0- Not Applicable
No. Barrels:	0
Width:	0.00 Height:0
Length:	0 Apron:0
*265 U/W Insp. Area	0 Diver:ZZZ
*Location ID No:	215-08042M-002.45N

Measurements:

*29 ADT	21490 Year:2011
109 %Trucks:	1
* 28 Lanes On:	5 Under:6
210 No. Tracks On:	00 Under:00
* 48 Max. Span Length	63
* 49 Structure Length:	235
51 Br. Rwdy. Width	52.00
52 Deck Width:	64.30
* 47 Tot. Horiz. Cl:	52
50 Curb / Sidewalk Width	5.00 / 5.00
32 Approach Rdwy. Width	53
*229 Shoulder Width:	
Rear Lt:	2.00 Type:1 - Rt:2
Fwd. Lt:	2.00 Type:1 - Rt:2
Pavement Width:	
Rear:	49.00 Type: 2- Asphalt.
	49.00 Type: 2- Asphalt.
Intersaction Rear:	1 Fwd: 1
36Safety Features Br. Rail:	2- Inspected feature meets acceptable construction date standards.
Transition:	3- Inspected feature exists but does not meet current or construction date standards
App. G. Rail:	2- Inspected feature meets acceptable construction date standards.
App. Rail End:	3- Inspected feature exists but does not meet current or construction date standards
53 Minimum Cl. Over:	99'99"
Under:	H- Highway beneath structure. 16.00'10.00"
*228 Minimum Vertical Cl	
Act. Odm Dir::	99 ' 99"
Oppo. Dir:	99' 99"
Posted Odm. Dir:	00' 00"
Oppo. Dir:	00'00 "
55 Lateral Undercl. Rt:	H- Highway beneath structure. 10.70
56 Lateral Undercl. Lt:	4.70
*10 Max Min Vert Cl:	99' 99" Dir:0
39 Nav Vert Cl:	000 Horiz:0
116 Nav Vert Cl Closed:	000
245 Deck Thickness Main	7.50
Deck Thick Approach:	0.00
246 Overlay Thickness:	0.00
212 Year Last Painted:	Sup:1998 Sub:0000

65 Inventory Rating Method:	1-Load Factor (LF)
63 Operating Rating Method:	1-Load Factor (LF)
66 Inventory Type:	2 - HS loading. Rating: 20
64 Operating Type:	2 - HS loading. Rating: 34
231Calculated Loads:	
H-Modified:	21 0
HS-Modified:	30 0
Type 3:	33 0
Type 3s2:	40 0
Timber:	37 0
Piggyback:	40 0
261 H Inventory Rating:	19
262 H Operating Rating	33
67 Structural Evaluation:	4
58 Deck Condition:	6 - Satisfactory Condition
59 Superstructure Condition:	7 - Good Condition
* 227 Collision Damage:	
60A Substructure Condition:	6 - Satisfactory Condition
60B Scour Condition:	N - Not Applicable
60C Underwater Condition	N - Not Applicable
71 Waterway Adequacy:	Not Applicable.
61 Channel Protection Cond.:	10
68 Deck Geometry:	2
69 UnderClr. Horz/Vert:	5
72 Appr. Alignment:	8-No reduction of vehicle operating speed required.
62 Culvert:	N - Not Applicable

Posting Data

70 Bridge Posting Required	5. Equal to or above legal loads
41 Struct Open, Posted, CL:	A. Open, no restriction
* 103 Temporary Structure:	0
232 Posted Loads	
H-Modified:	00
HS-Modified:	00
Type 3:	00
Type 3s2:	00
Timber:	00
Piggyback	00
253 Notification Date:	02/01/1901
258 Fed Notify Date:	02/01/1901

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Rating Summary Report for Bridge: 215-0047-0-Z

GENERAL

Serial No.:	215-0047-0-Z
Rated By:	UP
Location ID:	215-08042M-002.45N
Route (Owner):	CS02228 (State)
Printed On	10/5/2015 8:23:49 AM
Unit:	Tons

DECK RATING (HS-20)

	Inv.	Op.
1 ORIG	31.09	51.89
2 ORIG	31.09	51.89
4 ORIG	31.09	51.89
1 ORIGEXT	38.02	63.46
2 ORIGEXT	38.02	63.46
4 ORIGEXT	38.02	63.46

SUPER-STRUCTURE RATING

Case	H-20		HS-20		H20-MOD		TANDEM		TIMBER		HS20-MOD		3S2		PIGGYBACK	
	Inv.	Op.	Inv.	Op.	Inv.	Op.	Inv.	Op.	Inv.	Op.	Inv.	Op.	Inv.	Op.	Inv.	Op.
1 ORIG	47.70	79.60	63.50	105.90	57.90	96.50	56.60	94.40	80.00	133.40	67.40	112.30	90.10	150.20	126.20	210.40
2 ORIG	52.70	87.90	66.40	110.60	62.90	104.80	61.40	102.40	80.80	134.70	69.00	115.00	100.70	167.80	132.70	221.10
4 ORIG	56.20	93.70	70.40	117.40	66.60	110.90	65.00	108.30	86.20	143.70	73.30	122.20	106.20	177.00	142.40	237.40
1 ORIGEXT	63.20	105.30	84.10	140.10	76.40	127.30	74.90	124.90	105.60	176.00	89.10	148.60	119.20	198.70	167.00	278.30
2 ORIGEXT	70.90	118.20	89.30	148.90	84.60	141.00	82.60	137.70	108.30	180.50	92.80	154.70	135.40	225.70	178.50	297.50
4 ORIGEXT	75.30	125.50	94.30	157.20	89.10	148.50	87.00	144.90	114.80	191.30	98.20	163.60	142.20	237.00	190.70	317.90

SUB-STRUCTURE RATING

Case	H-20		HS-20		H20-MOD		TANDEM		TIMBER		HS20-MOD		3S2		PIGGYBACK	
	Inv.	Op.	Inv.	Op.	Inv.	Op.	Inv.	Op.	Inv.	Op.	Inv.	Op.	Inv.	Op.	Inv.	Op.
3 ORIG	19.67	32.85	20.50	34.23	20.97	35.02	20.76	34.67	23.46	39.18	21.80	36.40	26.14	43.66	29.32	48.96
2 ORIG	19.50	32.57	21.46	35.84	20.79	34.73	20.74	34.63	25.00	41.74	22.02	36.77	28.74	48.00	32.03	53.49
4 ORIG	19.94	33.30	20.88	34.87	21.26	35.51	21.06	35.16	23.87	39.87	22.12	36.94	26.64	44.49	29.87	49.89

COMBINED SUMMARY

	H-20		HS-20		H20-MOD		TANDEM		TIMBER		HS20-MOD		3S2		PIGGYBACK	
	Inv.	Op.	Inv.	Op.	Inv.	Op.	Inv.	Op.	Inv.	Op.	Inv.	Op.	Inv.	Op.	Inv.	Op.
	19.50	32.57	20.50	34.23	20.79	34.73	20.74	34.63	23.46	39.18	21.80	36.40	26.14	43.66	29.32	48.96
Posting Values >>						***34.73***		***34.63***		***39.18***		***36.40***		***43.66***		***48.96***
Gross Posting						No.		No.		No.		No.		No.		No.

OVERSTRESS

% Overstress >>	.00	.00	.00	.00	.00	.00

Overstress Code of this bridge is: 5

COMMENTS

Super-Rating Case: 1 ORIG Rating controlled by overload provisions.

Super-Rating Case: 2 ORIG	Rating controlled by overload provisions.
Super-Rating Case: 4 ORIG	Rating controlled by overload provisions.
Super-Rating Case: 1 ORIGEXT	Rating controlled by overload provisions.
Super-Rating Case: 2 ORIGEXT	Rating controlled by overload provisions.
Super-Rating Case: 4 ORIGEXT	The rating is controlled by compact moment strength.
Sub-Rating Case: 3 ORIG	Rating controlled by cap shear.
Sub-Rating Case: 2 ORIG	Rating controlled by cap shear.
Sub-Rating Case: 4 ORIG	Rating controlled by cap shear.

Georgia Department of Transportation

Bridge Inspection Report

District: 4841300000 - D3 District Three
Location ID: 215-08042M-002.45N
Structure ID: 215-0047-0
Road Name: BUENA VISTA ROAD

Inspection Area: 8
Over: I-185 (SR 411) EXIT 4
County: Muscogee
Bridge Information: 6-Revised inventory or operating ratings; load limits

Georgia Department of Transportation

Evaluation

Topside Inspection Team **Inspection Type:** General **Inspection Date:** 09/23/2014

Team Leader: James Keith Pinckard

Assistants: Justin Martin

Deck

NBIS Condition 6 - Satisfactory Condition **Material:** Concrete

7.5" thick concrete deck.

Deck Top:
There are up to 1/16" wide diagonal and transverse cracks in all spans.
Deck surface has moderate abrasion.

Deck Underside:
The deck underside has up to 1/32" wide diagonal and transverse cracks in all bays.

Superstructure

NBIS Condition 7 - Good Condition **Material:** Concrete **Year Painted:** 1998

Paint Type : 5- Waterborne System (Type VI or VII) **Temperature (F):**

Four spans with nine W36x135 steel beams spaced at 7.3'. 61' / 63' / 63' / 48' = 235'
Superstructure = H-44 Calculated 2009 by Central Office (load Factor)

No deficiencies noted at this time.

Substructure

NBIS Condition 6 - Satisfactory Condition **Material:** Concrete **Year Painted:**

Paint Type : 0- Not Applicable

The abutments have 48" H x 36" D x 69' L concrete caps on unknown foundations.
The piers have 48" H x 36" D x 69' L concrete caps with three 36" x 36" concrete columns on spread footers.
Substructure = H-20 Calculated 2009 by Central Office (Load Factor).

Abutments:
Both abutment caps have vertical cracks up to 1/16" wide throughout.
There is a vertical crack up to 1/32" wide in the back wall of Bay 6 at Abutment 1.
Both abutments have 1/32" horizontal crack for length of abutment.

Caps:
The concrete pier caps have up to 1/32" wide vertical cracks in both faces throughout and typically noted at the steps.
Both faces of Pier 4 cap have an up to 1/16" wide horizontal crack for the full length of cap.
Pier 2, 3 and 4 cap have exposed steel chairs in the bottom faces.
Pier 2 cap has a 16" x 6" x 1" spall with exposed rebar in the bottom face under Beam 7. Refer to photo

Piles:
There are up to 1/32" wide cracks in all faces of the columns at Piers 2 through 4.

General

This Bridge:

General Evaluation:

Year built 1966; 64.3' x 235' on a 21 degree skew; Buena Vista Road (Exit 4)
Project # U-106-1(1)CT.2

The approach slabs have up to 1/4" wide longitudinal and diagonal cracks. Refer to photo

Repairs:
Repair spall with exposed rebar in the bottom face of Pier 2 cap.
Clean and seal cracks larger than 1/4" wide in the approach slabs.

District: 4841300000 - D3 District Three **Inspection Area:** 8 **County:** Muscogee
Location ID: 215-08042M-002.45N **Over:** I-185 (SR 411) EXIT 4
Structure ID: 215-0047-0 **Road Name:** BUENA VISTA ROAD

Conditional Situations

Confined Space: No **Traffic Control Needed:** No

Equipment Used

Access Equipment: None **Topside Boat:** None
Waders: Hip boots **Special Imaging Device:** None

Load Rating and Posting

Truck Type	Gross/H-Modified	HSModified	Tandem	3-S-2	Log	Piggy
Calculated Posting	21	30	33	40	37	40
Posting Required	No	No	No	No	No	No
Existing Posting	00	00	00	00	00	00

Item 103 Temporarily Shored : No **Posting Required:** No

Element Data

Element	Parent Element	Measurement Unit	Env*	Quantity	State 1	State 2	State 3	State 4
107-Steel Open Web Girder/Beam		Linear Foot	2	2115	2115			
12-Reinforced Concrete Deck		SQUARE FEET	2	15111	14193	918		
205-Reinforced Conc Column or Pile		Each	2	12	12			
215-Reinforced Conc Abutment		Linear Foot	2	138	127	11		
234-Reinforced Conc Pier Cap		Linear Foot	2	482	460	22		
301-Pourable Joint Seal		Linear Foot	2	256	256			
305-Assembly Joint / without seal		Linear Foot	2	320	320			
311-Moveable Bearing (roller,		Each	2	45	45			
313-Fixed Bearing		Each	2	36	36			
321-Reinforced Concrete Approach		SQUARE FEET	2	3858	3858			
330-Metal Bridge Railing		Linear Foot	2	470	470			
515-Steel Protective Coating	107-Steel Open Web Girder/Beam	SQUARE FEET	2	17873	17873			

Env* = Environment

Deficiencies

Element	Defect	State 2	State 3	State 4
12-Reinforced Concrete Deck	Cracking (RC and Other)	103		
12-Reinforced Concrete Deck	Abrasion/Wear (PSC/RC)	815		
215-Reinforced Conc Abutment	Cracking (RC and Other)	11		
234-Reinforced Conc Pier Cap	Exposed Rebar	10		
234-Reinforced Conc Pier Cap	Cracking (RC and Other)	12		

Maintenance Items

Activity	Work Quantity	Priority	Location	Inspection Date	Completion Date	Comments
830 - REP MAIN STRUCT MEMBERS (PERSON HOURS)	112	B		10/31/2000		
830 - REP MAIN STRUCT MEMBERS (PERSON HOURS)	56	B	See Comments	10/11/2010		
845 - OTHER BRIDGE MAINT (PERSON HOURS)	48	B	See Comments	10/11/2010		

Specialized Inspection

Specialized Inspection Team

Team Leader : Christopher Ryan Beasley **Specialized Inspection Date :** 12/15/2014

Assistants : Matt Butler, Lee Stevenson

Deck

NBIS Condition Code : 6 - Satisfactory Condition
7.5" thick concrete deck.

Superstructure

NBIS Condition Code : 7 - Good Condition
Four spans with nine W36x135 steel beams spaced at 7.3'. 61' / 63' / 63' / 48' = 235'

Substructure

NBIS Condition Code : 6 - Satisfactory Condition
The abutments have 48" H x 36" D x 69' L concrete caps on unknown foundations.

Conditional Situations

Confined Space: No **Traffic Control Needed:** Yes

Equipment Used

Access Equipment: Basket Truck **Special Imaging Device:** None

Bridge Components

Superstructure Data

Span #	Beam Type	Beam Spacing	Length	# Beams	Remarks
1	Steel	7.3	61	9	W36X135
2	Steel	7.3	63	9	W36X135
3	Steel	7.3	63	9	W36X135
4	Steel	7.3	48	9	W36X135

Bearing Data

Span #	Rear Type Bearing	Forward Type Bearing	Remarks
1	02 - Fixed Plate	01 - Sliding Plate	
2	01 - Sliding Plate	02 - Fixed Plate	
3	01 - Sliding Plate	02 - Fixed Plate	
4	01 - Sliding Plate	02 - Fixed Plate	

Vertical Clearance

7B - Facility Carried: I-185

Cross Reference Location ID: 215-00411D-004.01N

Cross Reference ID : 215-0047-0-2

10 - Maximum Minimum Vertical Clearance (ft-in): 18-10

53 - Minimum Clearance Over (ft-in): 99-99

54A - Clearance Type: H- Highway beneath structure.

54B - Minimum Clearance Under (ft-in): 99-99

228A - Actual Minimum Vertical Odometer (ft-in): 18-02 **228B - Actual Minimum Vertical Opposite (ft-in):** 16-10

228C - Posted Minimum Vertical Odometer (ft-in): 00-00 **228D - Posted Minimum Vertical Opposite (ft-in):** 00-00

5E - Direction : 0. Not applicable

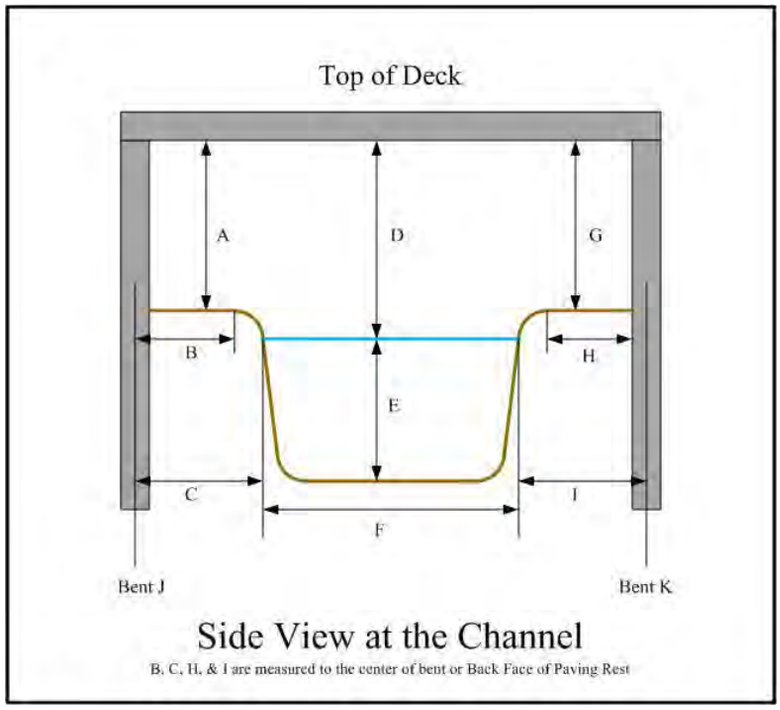
55A Lateral Type : H- Highway beneath structure.

55B Lateral Under Clearance Right (ft): 10.7 **56 Lateral Under Clearance Left (ft):** 4.7

69 - Rating - Under Clearance Horizontal/Vertical : 5 **47 - Total Horizontal Clearance (ft) :** 51.5

No Underwater Inspection performed on this bridge.

Waterway Information



A :
B :
C :
D : 00.0
E : 00.0
F :
G :
H :
I :
J :
K :

Location of Bridge Height :
Bridge Height Taken:
Scour Condition : N
Waterway Adequacy : N
Channel Protection : N

Comments :

Substructure Skew = **Channel Skew =** **Stream Angle =**

Collision Information

Beam Type :

Span # with Beam Damage :

Total # of Beams in Span :

# of Damaged Beams :

Minimum Vertical Clearance : ft - in

Actual Vertical Clearance at Point of Impact : ft - in

Posted Vertical Clearance : ft - in

Report Type :

Report Date :

Damage Location in Span :

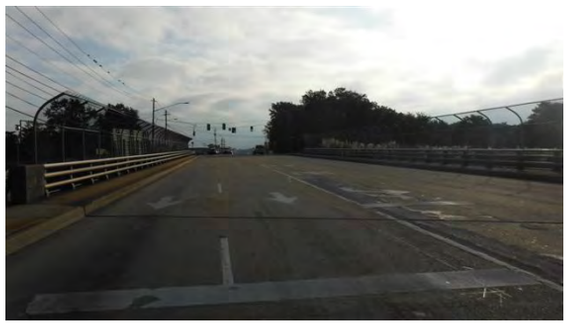
Damage Type :
Damage Details :

Repairs Required : No **Repairs Made :** No
Repair Details :

Additional Comments :

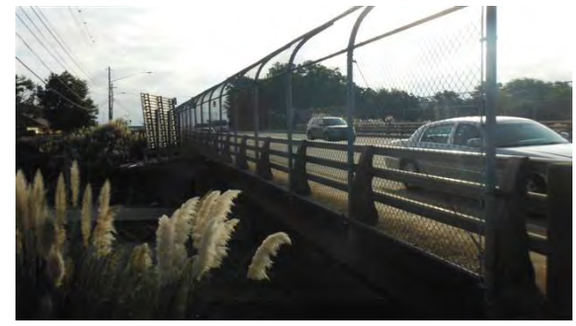
Photographs

215-0047-0 roadway.jpg



facing east

215-0047-0 left.jpg



left elevation

215-0047-0-3.JPG

Gas Utility Bay 1

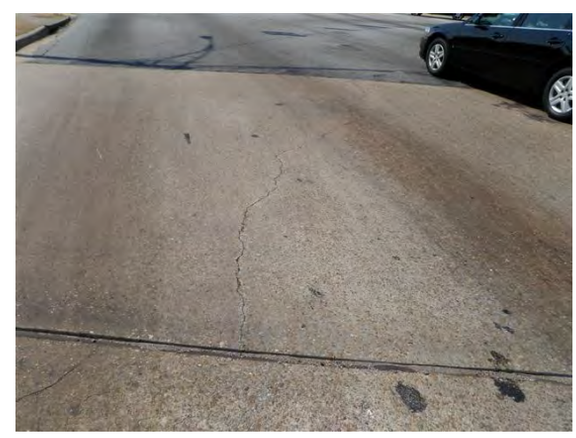
215-0047-0-4.JPG

Telephone Utilities Bay 8

215-0047-0-5.JPG

Spall with exposed rebar in the bottom face of Pier 2 cap

215-0047-0-6.JPG



Longitudinal crack in the near approach slab

Meeting Minutes

Project:	I-185 @ CS 2228/Buena Vista Road Interchange Reconstruction & Widening PI 0012577, Muscogee County		
Subject:	Project Kickoff/TIA procedures Meeting		
Date and time:	September 3, 2015 - 10:30 AM	**Meeting no:**	02
Meeting place:	GDOT – GO Room 405	**Minutes by:**	CCK

Attendees:

Kelvin Mullins – TIA Regional Coord.
Shrujal Amin – TIA Program Mgr.
Dan Bodycomb – TIA Regional PM
Nona Guilford – TIA Utility Coord.
Chris Sheahan – TIA Deputy PM
Scott Dubord - Atkins PM
Chris King – Atkins Deputy PM
Henry Borovich – Atkins NEPA
Rick Jones - City of Columbus
Logan Kipp – City of Columbus

Discussion Items:

This meeting was held to highlight TIA procedures and kickoff the Buena Vista Road project. An agenda (attached) was handed out and adhered to for the majority of the meeting.

1. **Introductions**

2. **Project Budget**

   Mr. Bodycomb briefly went over the $47.7M budget and stressed that Atkins was responsible to actively manage it throughout all project phases (PE, ROW Const., Utilities and risk items such as level of effort (LOE), program costs and other contingencies). The first PE TO (thru concept approval) is for $310k. This project is 100% TIA funded, therefore, money can shift between phases if needed. Areas to pay close attention to are ROW and Utilities. Mr. Dubord mentioned the possibility of swapping out the ROW and Construction dollar amounts to minimize ROW impacts to commercial property along the corridor. This would increase construction cost with addition of walls, etc.

3. **Invoicing & TIA specific procedures**

   Atkins was instructed to follow the TIA manual and use sample invoicing/DBE forms (hard copies provided; electronic versions to be sent via e-mail). CMIS invoicing procedure will NOT be followed. All invoices should be separated by GDOT phasing and routed through TIAInvoices@dot.ga.gov. All invoicing questions should be directed to Cathy McQuade.

   All correspondence/submittals shall go through Dan Bodycomb, not the GDOT GO. Mr. Mullins reiterated that this project would not need to adhere strictly to the GDOT PDP and that an "outside the box" approach should be considered in order to best utilize TIA funding and streamline the schedule.

4. **Project Scope**

   100% TIA funded
   Off-system (local road
   GDOT let (est. Feb. 2019) – assume typical GDOT PDP pre-let deliverable schedule

   Task Order #1 - Concept Phase shall include the following:
   - Prepare for and attend one meeting with Columbus /Muscogee Co
   - Prepare concept property database from GIS
   - Prepare concept alternatives

- Prepare construction cost estimates
- Prepare concept report

Concept Phase Requirements

- Concept report should be prepared using TIA format/template
- Submittals should go to thru TIA PM Dan Bodycomb for distribution/review
- Concept team meeting is done on a smaller scale than typical PDP

Environmental Phase Requirements

- GEPA vs. NEPA will depend on interchange configuration selection
- Atkins shall follow the Environmental Procedures Manual as well as 404 & SBV requirements.
- Special studies submittals should go to Laura Dawood (no OES involvement) w/ Dan Bodycomb cc'd.

Design Phase Requirements

- Field work – All Field work will require Right of Entry letter (modified for TIA) prior to starting work. Minor survey and aerial mapping (LIDAR) to be required in TO #1. The database shall be submitted to GDOT location for approval depending on alternate chosen.

- Utilities - Mr. Amin stressed that Atkins will be asked to share in utility coordination responsibility. Atkins will submit plans directly to the owners for markups, provide status updates, as well as track submittal dates for accountability to keep the schedule moving. District utilities will not be involved in the coordination process. Ms. Nona Guilford will assist the utility coordination by providing a local owner list, setting up any meetings, etc.

- Right-of Way – Atkins to use TIA ROW cost estimate spreadsheet; monitor and update throughout process

- Plan Production - The PFPR to be held near start of final plans, preferable after and approved GEPA document. A second PFPR could be requested due to the complexity of the project. All plan submittals go through the TIA PM. S&E packages to follow GDOT's normal let procedures.

5. Project Schedule

The first deliverable task for review will be the project schedule (to be flexible for funding needs). Traffic analysis will initially drive the schedule in order to identify operational deficiencies for the corridor and help test feasible alternatives. Mr. Borovich and Mr. Dubord both noted that if the alternate selected changed the existing interchange traffic operations, an IMR (a federal action) would be required. This would trigger the NEPA process in lieu of GEPA, impacting the schedule by several months. Furthermore, if an environmental effects report (EER) is needed, the schedule would be impacted by a few more months. All agreed that it would be preferred to keep the project following GEPA procedures if possible, but that viable interchange options that would trigger NEPA should still be tested.

TO #2 shall start near the end of TO #1 with probable overlap to keep schedule moving.

6. Project History and alternate solutions

Mr. Dubord briefly went over the project history highlighting the original concept that Atkins (formerly PBS&J) did in 2005. The original concept provided an interchange reconstruction (with a 5 lane section; three eastbound, two westbound) and raised medians and a 16' urban

shoulder. The concept construction limits along Buena Vista Road began west of Brighton Road and ended west of Rosewood Drive. This was dictated by logical termini requirements. The concept also included ramp rework impacting I-185 tie-ins as well as possible a bridge modification at Steam Mill Road over I-185 and bridge widening at I-185 over Bull Creek. Ultimately, the footprint had many costly impacts to ROW that ended up shelving the project. Since the project is now 100% TIA funded, the construction limits can now be pulled back. This will allow flexibility with regards to construction and ROW costs.

Mr. Jones, with the City of Columbus briefly went over the following issues/concerns:

- Operational issues - AM/PM peak hour backups; left turns onto I-185; off ramp backups onto I-185
- New development - Technology Parkway project and new BC/BS building will only make problems worse.
- Volatile stakeholders are a concern, therefore Atkins needs to vet out all interchange/corridor options to reduce impacts to ROW.

Mr. Dubord added that Atkins had been in contact with Brian Lackey with the City's GIS/Engineering Dept. to obtain GIS data to begin concept work prior to the mapping & survey work. Mr. Jones said he would follow-up with Mr. Lackey to check status.

Mr. Kipp asked Atkins to provide a copy of the old project concept and about what software would be utilized to conduct the traffic analyses.

Action Items:

- Atkins to submit draft baseline schedule for approval
- Atkins to draft ROE letter; begin traffic analysis and field work
- Two to three interchange alternates (line diagrams) will be presented during concept phase. TUDI, DDI and traditional diamond are the likely options to be considered. Atkins to look at reducing ROW by providing reduced section (smaller median, 11 foot lanes, retaining walls, etc.).
- TIA PM to provide all electronic TIA forms as discussed.
- City of Columbus (Brian Lackey) to provide GIS data
- Atkins to provide City of Columbus (Logan Kipp) with the old concept layout.

This document represents Atkins' interpretation of the meeting. Please contact the project manager if you have any questions.

Sincerely,

Scott M. Dubord, P.E.
Atkins

KICK OFF MEETING

PI 0012577, BUENA VISTA ROAD

RV - MUSCOGEE

September 3, 2015

TRANSPORTATION INVESTMENT ACT

SIGN-IN SHEET

Name	Organization	Email	Phone
SCOTT DUBORD	ATKINS	scott.dubord@atkinsglobal.com	678-247-2426
HENRY BOROVICH	Atkins	henry.borovich " " "	770 933 0280
CHRIS KING	ATKINS	CHARLES.C.KING@ATKINSGLOBAL.COM	770 933 0280
Logan Kipp	CUG Planning Dept	Lkipp@columbusga.org	706-225-3940
Rick Jones	" " "	rjones@columbusga.org	706.225-3940
Shrujal Amin	GDOT- TIA	samin@dot.ga.gov	404-631-1637
Nona GUILFORD	GDOT - TIA	nguilford@dot.ga.gov	404-631-1193
KELVIN MULLINS	GDOT- TIA	Kemullins@dot.ga.gov	404-631-1675
Don Bodycomb	GDOT - TIA	dbodycomb@dot.ga.gov	4- 631-1715

Meeting Minutes

ATKINS

Project:	I-185 @ CS 2228/Buena Vista Road Interchange Reconstruction & Widening PI 0012577, Muscogee County		
Subject:	Concept Review Meeting		
Date and time:	February 22, 2016 - 11:00 AM	**Meeting no:**	03
Meeting place:	Columbus - Government Annex Building	**Minutes by:**	CCK

Attendees:

Scott Dubord - Atkins PM (Roadway)
Chris King – Atkins DPM (Roadway)
Dan Burgundy – Atkins (Bridge)
Wendy Dyson – Atkins (NEPA)
Zhang Huang – Atkins (Traffic)
Dan Bodycomb – GDOT TIA
Kenneth Franks – GDOT TIA
Rick Jones – City of Columbus/MPO
Logan Kip – City of Columbus/MPO
Felton Grant – City of Columbus/MPO
Lynda Temples - City of Columbus/MPO

Discussion Items:

This meeting was held to present and evaluate the concept alternatives for the Buena Vista Road project. An agenda (attached) was handed out and adhered to for the majority of the meeting.

1. **Introductions**

   Following attendee introductions, Mr. Jones opened the meeting by giving a brief project history describing the funding, environmental, and public involvement hurdles encountered which ultimately stalled the project back in 2004. As noted in the project kickoff meeting, the original concept construction limits along Buena Vista Road began west of Brighton Road and ended west of Rosewood Drive. This was dictated by logical termini requirements. The concept also included ramp rework impacting I-185 tie-ins as well as a possible bridge modification at Steam Mill Road over I-185 and bridge widening at I-185 over Bull Creek. Ultimately, the footprint had many costly impacts to ROW that ended up shelving the project. Since the project is now 100% TIA funded, the construction limits can now be pulled back. This will allow flexibility with regards to construction and ROW costs.

   Mr. Dubord went over the meeting agenda briefly highlighting the controlling criteria that impacted the concept layouts. These criteria include traffic operations, safety, project costs, construction & property impacts, as well as environmental impacts.

2. **Traffic**

   Mr. Huang proceeded to go over a handout (attached) summarizing the traffic analysis. From an engineering standpoint, the interchange does not appear to be operationally deficient. The analysis shows intersection levels of service in the range of A and B for both AM and PM peak hours. GDOT traffic counts indicate a decline in traffic volumes over the last 10 years (13-15%). Low historic population growth (0.2% annually) as well as low projected future traffic growth (0.19% annually) in the area result in an interchange levels of service in the range of A and B for future 'No-Build' as well. It is understood that there could be potential queuing problems at the interchange due to insufficient left turn bays for vehicles accessing I-185 entrance ramps.

   Mr. Jones was concerned that these traffic data results showing no existing LOS problems will make it very hard to justify interchange improvements. In Columbus, all operational

improvement projects are built to improve LOS 'C' or worse. He suggested that the traffic be looked at further by taking traffic counts for at least a 1 week time frame prior to school being let out for summer (the current study includes traffic counts for 1 day).

Mr. Huang continued to go over the analysis highlighting the following existing problems that can help justify a reconstructed interchange:

- Queue problems for left turns to both I-185 NB and SB ramps as well as Buena Vista Road WB right turns to I-185 NB ramp.
- Crash History shows that over two thirds of crashes from 2013-2015 along the Buena Vista corridor occur at the I-185 interchange ramps with left turns and rear ends being in the majority.

The recommended interchange improvements will decrease the queue lengths from 301 feet to 158 feet (TUDI) or 114 feet (DDI) as well as increase safety due coordinated signal timing through the interchange, wider lanes, and divided highway features. Finally, any improvements done at the interchange will show no operational impacts on I-185.

3. Review of project – Concept Alternatives

Mr. King began presenting the concept alternatives noting that all were laid out based on the traffic analysis results. This gave Atkins a roadway section from which to build upon regardless of the interchange type ultimately decided upon. Mr. King highlighted the below key points considered for the alternate layouts:

- Typical Section
  - The existing bridge is to be widened from a section consisting of five 10' lanes to a section consisting of six 12' lanes (2 through lanes and 1 left turn lane in each direction).
  - The typical section outside of the bridge limits will consist of four 12' lanes with a variable width raised grassed median as well as 12' urban shoulders with 5' sidewalks.
  - Mr. Jones asked if bike lanes were to be considered due to public comments received in the past on other project public meetings. The consensus in the room was that the bike lanes would not be implemented due the project length being such a short distance as well as additional ROW cost that would be needed. *Note: After the meeting, Mr. King also confirmed that Buena Vista Road is not currently designated as a bicycle route according to 2010 Georgia Official Bicycle Map.*

- Side of relocation – Due to the construction staging of the bridge, an alignment shift from existing conditions will be required. The alternates presented show shifts to both the north and the south of the existing alignment for both of the interchange types considered (TUDI and DDI). This will help determine which alternate will have the least property access and ROW impacts.

- Access Control – Mr. Dubord pointed out that Limit of Access control needed consideration to improve safety and streamline traffic operations near the interchange. All agreed that using the GDOT design policy (minimum 300' from ramp radius returns) for new or reconstructed interchanges would be a good idea where feasible.

- Construction staging for ramps – Mr. King pointed out that, regardless of the alternate selected, all of the ramp locations could be constructed very near to existing locations (horizontally) while still allowing proper turning movements for WB-67 vehicles. This helps to minimize the ROW impacts for parcels located along the ramps. Vertically,

however, a 2-3 foot grade change over the interstate is anticipated due to a deeper proposed bridge structure than currently exists. This will likely require construction easement along these parcels in order to build temporary pavement for MOT during construction.

- Utilities – GIS data obtained from the City and existing bridge plans both show only telephone and gas facilities along the corridor. Dan Bodycomb suggested further looking into utilities and getting with the GDOT contact (Nona Guilford) to determine all utility impacts and costs.

4. Alternates Presented

- Alternate 1A – TUDI (Alignment shifted north)
- Alternate 1B – TUDI (Alignment shifted south)
- Alternate 2A – DDI (Alignment shifted north)
- Alternate 2B – DDI (Alignment shifted south)

Mr. Jones asked if a roundabout alternate had been considered. Mr. Dubord stated that there has not been any roundabout feasibility study done at the project location and that a roundabout alternate has not been considered due to heavy truck traffic and major property impacts required for a roundabout footprint. It was noted that there is also an increase in heavy truck traffic anticipated due to the development of the Technology Parkway project which would further limit roundabout consideration.

5. Alternatives Evaluation Matrix (attached)

Mr. King briefly summarized the prepared matrix which considered 6 controlling criteria (traffic operations, project costs, safety, property access & construction impacts, property (R/W) impacts, & environmental impacts). Mr. Grant asked specifically to go through the property displacements and R/W areas needed for each alternate. It was noted that that more properties at the three commercial corners should be labeled as potential displacements due to the GDOT limit of access control requirement discussed earlier. Mr. Grant also requested UST information along the corridor.

Cost, safety and environmental impacts rated to be relatively close among all alternates. Property and ROW impacts, however, had Alternate 1B rating the highest among the alternates. Mr. Bodycomb noted that Atkins will need to coordinate with GDOT TIA ROW group (Cheryl Brewer) to obtain the acquisition costs.

While the DDI alternates had many more ROW impacts, Mr. Jones didn't want to rule out DDI Alternate 2B since the traffic operations rated slightly higher than for the TUDI alternates. The interchange type selected would ultimately be determined by a final decision made on FHWA involvement. (See environmental concerns below.)

6. Bridge Concerns

Mr. Burgundy went over the option for a retrofit widening of the existing structure in lieu of a full bridge replacement as shown in the concept alternates presented. A memo to the GDOT state bridge engineer (Mr. Bill Duvall) was previously drafted requesting a decision on the viability of this as an option. Atkins is still waiting to hear back from Mr. Duvall while a deck coring is being done to help determine the deck condition.

Mr. Burgundy noted that project costs for a retrofit would be hard to estimate at this point. However, the construction costs could be very comparable to a full replacement due to the below factors:

- Increased cost of structure per square foot due to steel beams being used for an existing widening
- A possible need to replace the deck
- The need to jack up the existing bridge to meet vertical clearance requirements
- Retrofit substructure improvements
- It was also noted that a new bridge would still provide more service life.

Based on all of the above factors, Mr. Jones suggested to keep the structure as a full replacement. However, although the retrofit viability is unlikely (pending a GDOT bridge decision), Atkins will continue to monitor it as an option since a symmetrical widening could save significant ROW costs along the corridor when compared to an alignment shift necessary for the full bridge replacement alternates.

7. Environmental Concerns

Mrs. Dyson referenced meeting minutes from a meeting held 1/28/15 with GDOT TIA and FHWA. The meeting minutes noted that if the DDI alternate was selected it will change the existing interchange traffic operations, and an IMR (a federal action) would be required. This would trigger the NEPA process in lieu of GEPA, impacting the schedule by several months.

Mr. Franks disagreed and stated that he has seen full FHWA involvement hinging on whether or not the ramps impacted the interstate beyond the gore points. There seems to be differing opinions on this issue. The argument was made that, regardless of interchange type, if the reconstruction had no impact on the LOS of I-185 (as is the case for this project), FHWA involvement would be oversight only and the GEPA process could be adhered to.

All agreed that it would be preferred to keep the project following GEPA procedures if possible. Mr. Jones wanted a final documented decision on this to be determined before making any alternate selection.

Action Items:

- Atkins to wait for GDOT TIA for approval to get additional 1 week traffic counts to further back up the analysis already done.
- Atkins to provide TIA PM with ROW area information and CAD files necessary for ROW estimate on all presented alternates.
- Atkins to update Alternate layouts per displacement comments made in the meeting.
- Atkins to provide the City with UST information.
- Atkins to provide the City with meeting minutes for the meeting with FHWA concerning environmental permitting (1/28/2015).
- Atkins to contact GDOT TIA utilities to get reimbursable utility costs started.
- GDOT TIA to obtain final decision from FHWA on DDI alternate impacts on IMR

This document represents Atkins' interpretation of the meeting. Please contact the deputy project manager if you have any questions.

Sincerely,

C. Chris King, P.E.
Atkins

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