ORIGINAL TO GENERAL FILES

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

OFFICE OF DESIGN POLICY & SUPPORT
INTERDEPARTMENTAL CORRESPONDENCE

FILE P.I. # 0012610
Coweta County
GDOT District 3 - Thomaston
SR 16 @ SR 74/Pylant Street &
CR 74/Pylant Street @ Dead Oak Creek

OFFICE Design Policy & Support

DATE April 28, 2015

FROM for Brent Story, State Design Policy Engineer

TO SEE DISTRIBUTION

SUBJECT **APPROVED CONCEPT REPORT**

Attached is the approved Concept Report for the above subject project.

Attachment

DISTRIBUTION:

Glenn Bowman, Director of Engineering
Joe Carpenter, Director of P3/Program Delivery
Genetha Rice-Singleton, Assistant Director of P3/Program Delivery
Albert Shelby, State Program Delivery Engineer
Bobby Hilliard, Program Control Administrator
Cindy VanDyke, State Transportation Planning Administrator
Hiral Patel, State Environmental Administrator
Ben Rabun, State Bridge Engineer
Andrew Heath, State Traffic Engineer
Angela Robinson, Financial Management Administrator
Lisa Myers, State Project Review Engineer
Charles "Chuck" Hasty, State Materials Engineer
Mike Bolden, State Utilities Engineer
Paul Tanner, Asst. State Transportation Data Administrator
Attn: Systems & Classification Branch
Richard Cobb, Statewide Location Bureau Chief
Michael Presley, District Engineer
Dan Pass, District Preconstruction Engineer
Kerry Gore, District Utilities Engineer
Justin Banks, Project Manager
BOARD MEMBER - 3rd Congressional District

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
PROJECT CONCEPT REPORT

Project Type:	Reconstruction/Rehab	P.I. Number:	0012610
GDOT District:	Three (3)	County:	Coweta
Federal Route Number:	N/A	State Route Number:	16
	Project Number:	*(if available)*	

The project consists of reconstruction of the intersection of State Route 16 and CR 74/Pylant Street to a more desirable skew with turn lanes and reconstruction of the bridge over Dead Oak Creek at CR 74/Pylant Street.

Submitted for approval: *(email to "Concept Reports"; remove notes in italics & delete any inapplicable signature lines)*

AMEC Environment and Infrastructure, Inc — 1/22/2015
Consultant Designer & Firm *or* GDOT Concept/Design Phase Office Head & Office — DATE

City of Senoia — 1/22/2015
Local Government *(if applicable)* — DATE

Albert Shelby — 1/23/2015
State Program Delivery Engineer — DATE

KED — 1/23/15
GDOT Project Manager — DATE

Recommendation for approval: *(Delete any inapplicable signature lines)*

Program Control Administrator — DATE

* Hiral Patel / KLP — 2-6-15
State Environmental Administrator — DATE

* Andrew Heath / KLP — 2-6-15
State Traffic Engineer — DATE

* Lisa Myers / KLP — 2-5-15
Project Review Engineer — DATE

FOR * Yulonda Pride-Foster / KLP — 2-13-15
State Utilities Engineer — DATE

* Thomas Howell / KLP — 2-3-15
District Engineer — DATE

* Ben Rabun / KLP — 2-9-15
State Bridge Design Engineer — DATE

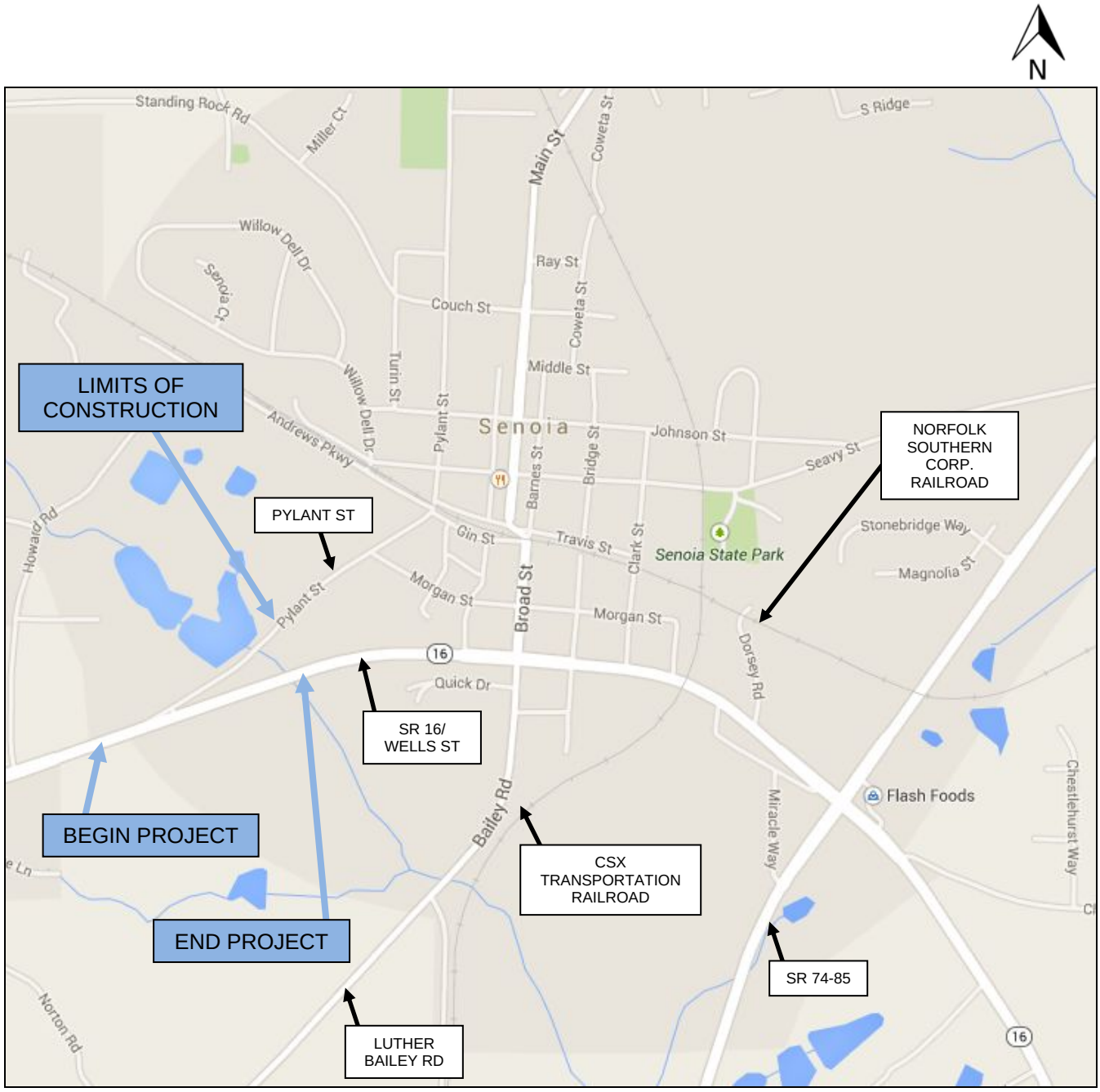
State Transportation Financial Management Administrator — DATE

The concept as presented herein and submitted for approval is consistent with that which is included in the Regional Transportation Plan (RTP) and/or the State Transportation Improvement Program (STIP).

Cynthia L. Vanke — 2-5-15
State Transportation Planning Administrator — DATE

* Recommendation on file

PROJECT LOCATION MAP



PLANNING AND BACKGROUND

Project Justification Statement:

- **Purpose**

The purpose of the reconstruction of the existing intersection of State Route 16 and Pylant Street and the existing bridge culvert of Pylant Street over Dead Oak Creek is to:

  - Facilitate efficient and safe operation of traffic at the intersection of State Route 16 and Pylant Street by reconfiguring the existing "T" intersection from 38 degrees to 90 degrees.
  - Alleviate traffic congestion and accommodate the need for mobility, access, and goods movement. Serve both turning movement and through movement efficiently by providing turning lanes on all three single lane approaches.
  - Enhance pedestrian activity by installation of sidewalk along Pylant Street and provide pedestrian connection to the City of Senoia Park trailhead.
  - Replace a structurally inadequate bridge culvert over Dead Oak Creek that is located within the Pylant Street approach to State Route 16.
  - Create a City Gateway at the intersection for traffic entering and exiting onto Pylant Street to access the City of Senoia to the east.

- **Need**
  - Deficient levels-of-service (LOS) for vehicular traffic within the intersection.
  - Accident rates and injury rates that exceed statewide averages for similar facilities.
  - Structurally inadequate bridge culvert.

- **Background**

The proposed Project No. 0012610 is proposed to reconstruct the existing intersection of State Route 16 and Pylant Street and to reconstruct the existing bridge culvert on Pylant Street over Dead Oak Creek. The major stakeholders of the proposed project are City of Senoia, ARC, and Georgia DOT. The area surrounding the project site is mixed with residential and institutional development (i.e. City of Senoia Park, Coweta County Library).

The overall project objective is to address current operational deficiencies and accommodate future traffic volumes in the intersection area. The reconstructed intersection will be at a new location along State Route 16 with a right angle intersecting Pylant Street. The proposed Pylant Street will have a new horizontal and vertical alignment while the proposed horizontal and vertical alignments on State Route 16 will very closely mimic the existing conditions. The project will also enhance pedestrian activity by adding sidewalks along Pylant Street. As part of the project, a City Gateway will be proposed on the northwest quadrant of the proposed intersection.

- **Land Use**

The properties immediately bounding the proposed project consists of residential and institutional development. There is a City of Senoia park located northwest of the proposed intersection and a County Library located northeast of the proposed intersection on Pylant Street. These properties will be impacted by required acquisition of right-of-way and easements; the impacts are expected to be relatively minor. The majority of the right of way acquisition is located on City owned property.

The proposed project is anticipated to have minor impact on property access.

- **Existing Conditions**

The project is located in the City of Senoia, Coweta County. The intersection of State Route 16 and Pylant Street intersect at an undesirable skew angle. Both State Route 16 and Pylant Street have two lanes, with no turn lanes and no sidewalk. There is an stop sign at the Pylant Street approach. Two structures exist within the project limits. The first is a 10' x 10' box culvert, located just east of the proposed intersection under State Route 16 that will need to be extended to accommodate left and right turn lanes. The other is a 20' bridge culvert on Pylant Street over Dead Oak Creek that is proposed to be replaced. Utilities in the corridor include water, sewer, gas, buried telephone, cable TV and a Georgia Power Transmission line. The 2013 Annual Average Daily Traffic (AADT) for State Route 16 is 10,705.

The existing right-of-way along State Route 16 is approximately 100 feet and the existing right-of-way along Pylant Street is approximately 80 feet. The posted speed limit is 45 mph along State Route 16, and 35 mph along Pylant Street.

- **Deficient Level of Service (LOS)**

The evaluation of future no build (2035) AM and PM peak hour traffic reveals the intersections of State Route 16 with Pylant Street will operate at a unacceptable LOS as shown in Table 1.

Table 1 Traffic Study Results - Ex-Int

Scenarios	HCM Level of Service (LOS)	Avg Control Delay(sec/veh)
2035 NO BUILD AM	D	33.8
2035 NO BUILD PM	F	56.6

The model analysis of the proposed intersection for the design year (2035) at the proposed intersection has indicated, as shown in Table 2, that the efficiency of the traffic operations will improve.

Table 9.1 TA Results - Improved Intersection

Scenarios	HCM Level of Service (LOS)	Avg Control Delay(sec/veh)
2035 DESIGN AM	B / C	10.2 / 23.2
2035 DESIGN PM	B / C	10.3 / 24.6

- **Accident History**

Crash data from 2010 through 2013 within the project limits of intersection of State Route 16 and Pylant Street was provided by Georgia DOT GeoTraqs. Crash data from 2004 through 2009 was provided by CARE 9 database for Georgia. The crash rate was estimated to be 300.96 crashes per 100,000,000 vehicle miles traveled with a severity/crash ratio of 6.32 on State Route 16 at the intersection, both of which are higher than Statewide Average Rates provided by GDOT for a Rural Minor Arterial, which is the functional classification for State Route 16 in the project area. See attached traffic study report for detail information of accident history.

- **Description of Proposed Project**

The project consists of the realignment of Pylant Street to intersect State Route 16 at a 90 degree angle. The project is approximately 1850 feet in length and includes a grade separation at Dead Oak Creek. The project includes turn lanes on both State Route 16 and Pylant Street along with a culvert extension on

State Route 16. The project is located completely within the city limits of Senoia with the proposed project beginning at the city limits and continuing east.

The existing bridge culvert at Pylant Street over Deak Oak Creek is proposed to be replaced by either a double barrel 10'x 8' box culvert or a single span 30' wide bridge. The results of hydraulic and hydrologic study of the crossing showed that both the culvert replacement options (bridge or box culvert) will achieve No-Rise status.

This project also proposes to construct sidewalks along Pylant Street and to extend the sidewalk/multi-use trail to the existing City Park trailhead located northwest of the proposed intersection. As part of the project, a City Gateway will be proposed on the northwest quadrant of the proposed intersection.

- **Logical Termini**

Logical Termini is defined as rational endpoints for a transportation improvement project, as well as for the assessment of the environmental impacts. The proposed project termini along State Route 16 will allow sufficient room to accommodate the development of turn lanes onto Pylant Street and eliminate the existing intersection. At both end of the project, State Route 16 will taper back to two lanes with grassed shoulders. The logical termini along Pylant Street is determined to be at the Coweta County Library entrance by tying back to the existing roadway horizontally and vertically beyond the construction of the proposed culvert over Dead Oak Creek.

- **Projects in the Area**

Currently, there are two projects in the project area either in the design or construction phases of development. The first project (M004859 – SR 16 from SR 14 to Spalding County Line) is a construction maintenance project. The second project (PI#333176 – SR 74 A NS#718831X in Senoia) is a bridge rehabilitation/upgrade project. Neither of them has significant impact on this project. No significant duplication of work is expected.

- **Bike and Pedestrian Facilities**

No specific bike facilities exist within the project limit. The proposed project will install sidewalks along Pylant Street and provide sidewalk/multi-use trail connection to the existing trailhead in the City Park.

- **Local Support**

Construction of the proposed intersection of State Route 16 and Pylant Street is a critical component for City of Senoia to establish their city gateway. The city council has already approved the City Gateway Master Plan. The stakeholders for this project are City of Senoia, ARC, and GDOT.

- **Summary**

As demonstrated within this section, the proposed project will alleviate traffic congestion and reduce crash frequency and severity for vehicular and pedestrian traffic movements throughout the intersection.

Existing conditions: The project is located in the City of Senoia, Coweta County. The intersection of State Route 16 and Pylant Street intersect at an undesirable skew angle. Both State Route 16 and Pylant Street have two lanes, with no turn lanes and no sidewalk. Two structures exist within the project limits. The first is a 10' x 10' box culvert, located just east of the proposed intersection under State Route 16 that will need to be extended to accommodate left and right turn lanes. The other is a 20' bridge culvert on Pylant Street over Dead Oak Creek that is proposed to be replaced. Utilities in the corridor include water, sewer, gas, buried telephone, cable TV and a Georgia Power Transmission line.

Other projects in the area: M004859 – SR 16 from SR 14 to Spalding County Line – Maintenance, Construction Work Program.
333176 – SR 74 A NS #718831X in Senoia – Bridge Upgrade, Construction Work Program.

MPO: Atlanta Regional Commission (ARC) MPO Project ID CW-075

Regional Commission: Three Rivers RC RC Project ID N/A

Congressional District(s): 3

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

Projected Traffic: AADT

Current Year (2013): 10,705 Open Year (2017): 11,317 Design Year (2037): 14,945
Traffic Projections Performed by: Crescent View Engineering, LLC
Functional Classification (Mainline): Rural Minor 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
Preliminary Pavement Evaluation Summary Report Required? ☒ No ☐ Yes
Preliminary Pavement Type Selection Report Required? ☒ No ☐ Yes
Feasible Pavement Alternatives: ☒ HMA ☐ PCC ☐ HMA & PCC

DESIGN AND STRUCTURAL

Description of the proposed project: The project consists of the realignment of Pylant Street to intersect State Route 16 at a 90 degree angle. The project is approximately 1850 feet in length and includes a grade separation at Dead Oak Creek. The project includes turn lanes on both State Route 16 and Pylant Street along with a culvert extension on State Route 16. The project is located completely within the city limits of Senoia with the proposed project beginning at the city limits and continuing east.

Major Structures: Existing 20 foot bridge culvert over Dead Oak Creek proposed to be replaced.

Mainline Design Features: State Route 16 – Rural Minor Arterial

Feature	Existing	Standard*	Proposed
Typical Section			
- **Number of Lanes**	**2**	**2**	**2**
- **Lane Width(s)**	**12**	**12**	**12**
- **Median Width & Type**	**N/A**	**N/A**	**N/A**
- **Outside Shoulder or Border Area Width**	**10**	**8**	**10**
- **Outside Shoulder Slope**	**6%**	**6%**	**6%**
- **Inside Shoulder Width**	**N/A**	**N/A**	**N/A**
- **Sidewalks**	**N/A**	**N/A**	**N/A**
- **Auxiliary Lanes**	**None**	**Right & Left Turn**	**Right and Left Turn**
- **Bike Lanes**	**None**	**None**	**None**
Posted Speed	**45 mph**		**45 mph**
Design Speed	**45 mph**	**45 mph**	**45 mph**
Min Horizontal Curve Radius	**2865 ft**	**643 ft**	**2865 ft**
Maximum Superelevation Rate	**6%**	**6%**	**6%**
Maximum Grade	**5%**	**6%**	**5.04%**
Access Control	**By Permit**	**By Permit**	**By Permit**
Design Vehicle	**WB-67**	**WB-67**	**WB-67**
Pavement Type	**Hot Mix Asphalt**	**Hot Mix Asphalt**	**Hot Mix Asphalt**

*According to current GDOT design policy if applicable

CR 74/Pylant Street – Local Road

Feature	Existing	Standard*	Proposed
Typical Section			
- **Number of Lanes**	**2**	**2**	**2**
- **Lane Width(s)**	**12**	**12**	**12**
- **Median Width & Type**	**N/A**	**N/A**	**N/A**
- **Outside Shoulder or Border Area Width**	**4**	**16**	**16**
- **Outside Shoulder Slope**	**2%**	**2%**	**2%**
- **Inside Shoulder Width**	**N/A**	**N/A**	**N/A**
- **Sidewalks**	**None**	**5 ft**	**5 ft**
- **Auxiliary Lanes**	**None**	**Left Turn**	**Left Turn**
- **Bike Lanes**	**None**	**None**	**None**
Posted Speed	**35 mph**		**35 mph**
Design Speed	**35 mph**	**25 mph****	**35 mph****
Min Horizontal Curve Radius	**371 ft**	**154 ft**	**154 ft**
Maximum Superelevation Rate	**4%**	**4%**	**4%**
Maximum Grade	**5.5%**	**10%**	**5.56%**
Access Control	**By Permit**	**By Permit**	**By Permit**
Design Vehicle	**SU**	**SU**	**SU**
Pavement Type	**Hot Mix Asphalt**	**Hot Mix Asphalt**	**Hot Mix Asphalt**

**Design Speed for Pylant Street approach at State Route 16 intersection is proposed to be reduced to 25 MPH. This does not need a design variance because it approaches a stop sign controlled intersection. GDOT is in concurrence with this recommendation.

Major Interchanges/Intersections: *N/A*

Lighting required: ☒ No ☐ Yes

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

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:

FHWA/AASHTO Controlling Criteria	No	Undeter-mined	Yes	Appvl Date (if applicable)
1. Design Speed	☒	☐	☐	
2. Lane Width	☒	☐	☐	
3. Shoulder Width	☒	☐	☐	
4. Bridge Width	☒	☐	☐	
5. Horizontal Alignment	☒	☐	☐	
6. Superelevation	☒	☐	☐	
7. Vertical Alignment ***	☐	☒	☐	
8. Grade	☒	☐	☐	
9. Stopping Sight Distance	☒	☐	☐	
10. Cross Slope	☒	☐	☐	
11. Vertical Clearance	☒	☐	☐	
12. Lateral Offset to Obstruction	☒	☐	☐	
13. Bridge Structural Capacity	☒	☐	☐	

*** The design exception for vertical alignment is located at the existing sag curve on S.R. 16 (design speed 45MPH) near the existing box culvert for Dead Oak Creek. The existing sag curve has a K value of 56.46, which is less than the required K value of 79 for design speed 45 MPH, but more than the required K value of 49 for 35 MPH. In order to meet the K value requirement of 79, the sag curve will have to be lifted about 5 feet at the low point. As per GDOT GeoTraqs, in the past three years, there are a total of 19 accidents along S.R. 16 within project limits, all of which happened at the crest curve location at the intersection of S.R. 16 and Pylant Street, 1300 feet away from the sag curve. There is no accident record within or near the existing sag curve. Therefore, a design exception may be applicable to this location. Design team will continue working with GDOT PM during preliminary design phase for this design exception.

County: Coweta

Design Variances to GDOT Standard Criteria anticipated:

GDOT Standard Criteria	Reviewing Office	No	Undeter--mined	Yes	Appvl Date (if applicable)
1. Access Control/Median Openings	DP&S	☒	☐	☐	
2. Intersection Sight Distance	DP&S	☒	☐	☐	
3. Intersection Skew Angle	DP&S	☒	☐	☐	
4. Lateral Offset to Obstruction	DP&S	☒	☐	☐	
5. Rumble Strips	DP&S	☒	☐	☐	
6. Safety Edge	DP&S	☒	☐	☐	
7. Median Usage	DP&S	☒	☐	☐	
8. Roundabout Illumination Levels	DP&S	☒	☐	☐	
9. Complete Streets	DP&S	☒	☐	☐	
10. ADA & PROWAG	DP&S	☒	☐	☐	
11. GDOT Construction Standards	DP&S	☒	☐	☐	
12. GDOT Drainage Manual	DP&S	☒	☐	☐	
13. GDOT Bridge & Structural Manual	Bridges	☒	☐	☐	

VE Study anticipated: ☒ No ☐ Yes ☐ Completed – Date:

UTILITY AND PROPERTY

Temporary State Route needed: ☒ No ☐ Yes ☐ Undetermined

Railroad Involvement: *N/A*

Utility Involvements:
City of Senoia Water and Sewer
Coweta County Water
Georgia Power
Georgia Power Transmission
Atlanta Gas Light
AT&T
Comcast

SUE Required: ☐ No ☐ Yes ☒ Undetermined

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

Right-of-Way (ROW): Existing width: 100 ft Proposed width: 100 ft
Required Right-of-Way anticipated: ☐ None ☒ Yes ☐ Undetermined
Easements anticipated: ☐ None ☐ Temporary ☒ Permanent ☒ Utility ☐ Other

Anticipated total number of impacted parcels:	13
Displacements anticipated: Businesses:	0
Residences:	0
Other:	0
Total Displacements:	0

Location and Design approval: ☐ Not Required ☒ Required

CONTEXT SENSITIVE SOLUTIONS

Issues of Concern*:* None.

Context Sensitive Solutions Proposed: None.

ENVIRONMENTAL & PERMITS

Anticipated Environmental Document:

GEPA: ☐ **NEPA:** ☒ CE ☐ EA/FONSI ☐ EIS

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

Both State Route 16 and Pylant Street are in the system for MS4 compliance. The majority of this intersection improvement project is on Pylant Street. State Route 16 is mainly leveling, mill, inlay. Design team will discuss with review agency for the detail requirements for MS4 compliance during preliminary design phase.

Environmental Permits/Variances/Commitments/Coordination anticipated:

Permit/ Variance/ Commitment/ Coordination Anticipated	No	Yes	Remarks
1. U.S. Coast Guard Permit	☒	☐	
2. Forest Service/Corps Land	☒	☐	
3. CWA Section 404 Permit	☐	☒	
4. Tennessee Valley Authority Permit	☒	☐	
5. Buffer Variance	☐	☒	
6. Coastal Zone Management Coordination	☒	☐	
7. NPDES	☐	☒	
8. FEMA	☒	☐	No rise as shown in H&H study
9. Cemetery Permit	☒	☐	
10. Other Permits	☐	☒	City of Senoia
11. Other Commitments	☒	☐	
12. Other Coordination	☒	☐	

Is a PAR required? ☒ No ☐ Yes ☐ Completed – Date:

Environmental Comments and Information:

NEPA/GEPA: The expected document would be a Categorical Exclusion.

Ecology: A preliminary review has been performed. There are six T&E species: four mussels and two plants. Lack of suitable T&E species habitat will probably eliminate the need for a season specific field survey. So T&E should not be a factor in this area. Potential 404 permit and stream buffer variance. Assuming stream channel will not be disturbed.

History: A preliminary field review has been performed. The Pylant Street bridge is potentially eligible for the National Register of Historic Places (NHRP). Adjacent neighborhood is potentially eligible for NHRP.

Archeology: A preliminary field review has been performed. There are no archaeological sites reported in the vicinity of the project area. The soils in this location are severely eroded so

preservation of archaeological sites in Senoia is not very good. The likelihood for the presence of archaeological sites is relatively low. In addition, any archaeological sites that have been located in this area have likely been severely eroded so that significant archaeological sites will not likely be found.

Air Quality:

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

Design year traffic exceeds 10,000 vpd so a Carbon Monoxide hotspot analysis is required.

Noise Effects: Lower level noise assessment will be submitted.

Public Involvement: Public Information Open House, PIOH, for the proposed detour. 12/17/14

Major stakeholders: Traveling public, residents of Senoia, City of Senoia and Georgia DOT.

CONSTRUCTION

Issues potentially affecting constructability/construction schedule: A temporary offsite detour may be required in order to construct the bridge culvert on Pylant Street at Dead Oak Creek. Concept Detour Plan is provided in the Attachment 1 of this report.

Early Completion Incentives recommended for consideration: ☒ No ☐ Yes

COORDINATION, ACTIVITIES, RESPONSIBILITIES, AND COSTS

Initial Concept Meeting: *N/A*

Concept Meeting: Concept Meeting was held on September 4, 2014 in GDOT District 3 office. The meeting minutes are provided in Attachment 6.

Other coordination to date: As requested during Concept Team Meeting, Peng Zhang, the design engineer contacted Tom Woosley, the program manager for Georgia Safe Dam Program (SDP) for the existing dam and spillway structure located at the upstream of existing bridge culvert under Pylant Street. Mr. Woosley confirmed that the existing dam and spillway structure is a Category II dam and the proposed road improvement and bridge culvert replacement does not require their involvement or permitting.

Project Activity	Party Responsible for Performing Task(s)
Concept Development	City of Senoia
Design	City of Senoia
Right-of-Way Acquisition	City of Senoia
Utility Relocation (Construction)	Utility Company
Utility Coordination (Pre Let)	City of Senoia
Letting to Contract	GDOT
Construction Supervision	GDOT
Providing Material Pits	Contractor
Providing Detours	Contractor
Environmental Studies, Documents, & Permits	City of Senoia
Environmental Mitigation	City of Senoia
Construction Inspection & Materials Testing	GDOT

Project Cost Estimate Summary and Funding Responsibilities:

	Breakdown of PE	ROW	Reimbursable Utility	CST*	Environmental Mitigation	Total Cost
Funded By	Senoia	Senoia/GDOT	80% GDOT ($40,000) / 20% Senoia $10,000)	GDOT/Senoia	Senoia	
$ Amount	$215,000	$50,000	$50,000 **	$2,062,826	$200,000	$2,499,387
Date of Estimate	10/1/2013	10/25/2014	8/25/2014	8/20/2014	6/25/2014	

*CST Cost includes: Construction, Engineering and Inspection, Contingency, and Liquid AC Cost Adjustment.

** Utility Cost over $50,000 will be 100% responsibility of City of Senoia. GDOT is responsible for 100% Railroad.

ALTERNATIVES DISCUSSION

Alternative selection:

Preferred Alternative: *Realign Pylant Street to intersect State Route 16 at new location with right angle and turning lanes. Replace existing bridge culvert on Pylant Street at Dead Oak Creek with either a 22' bridge or a double 10x8 box culvert. Provide a construction detour during the construction of Pylant Street and its bridge replacement.*			
Estimated Property Impacts:	**13 parcels**	**Estimated Total Cost:**	**$2.5 million**
Estimated ROW Cost:	**$50,000**	**Estimated CST Time:**	**12 months**
Rationale: *The existing "T" intersection is reconfigured from 38 degrees to 90 degrees; Design year LOS are approved to acceptable level; The existing structurally inadequate bridge culvert over Dead Oak Creek is replaced with a new structure.*			

No-Build Alternative: *No build.*			
Estimated Property Impacts:	**0 parcels**	**Estimated Total Cost:**	**$0**
Estimated ROW Cost:	**$0**	**Estimated CST Time:**	**n/a**
Rationale: *Intersection angle deficiency still exists; intersection LOS deteriorate to D and E in Design year; Structurally inadequate bridge still exists.*			

Alternative 1: *Replace existing bridge culvert on Pylant Street at Dead Oak Creek with either a 22' bridge or a double 10x8 box culvert.*			
Estimated Property Impacts:	**2 parcels**	**Estimated Total Cost:**	**$90,000 or comparable**
Estimated ROW Cost:	**$0**	**Estimated CST Time:**	
Rationale: *The hydraulic and hydrologic study of the bridge culvert replacement was prepared by AMEC in October 2014 and is currently under review in GDOT. The conclusion of the study is that either a 22' bridge or a double 10x8 box culvert will meet the FEMA no rise condition as well as GDOT requirements on design policy manual. The construction cost is comparable with culvert option slightly cheaper.*			

Alternative 2: *Staging traffic on Pylant Street during construction. No detour routes provided*			
Estimated Property Impacts:	**5 parcels**	**Estimated Total Cost:**	**extra $60,000-$100,000**
Estimated ROW Cost:	**$15,000 easement**	**Estimated CST Time:**	**may extend const period 1 month**
Rationale: *Part of the Pylant Street reconstruction is at new location. Traffic could be maintained on existing pavement of Pylant Street during the part of construction. However, the bridge replacement section is on existing 2 lane pavement. It will be easier, faster, and cheaper to construct this section by detouring traffic off Pylant Street.*			

Comments:

LIST OF ATTACHMENTS/SUPPORTING DATA *(List supporting data in attached order)*

1. Concept Layout
    a. Concept Plan
    b. Concept Landscape Plan
    c. Concept Detour Plan
    d. Approved Detour Letter
2. Typical sections
3. Detailed Cost Estimates:
    a. Programmed Cost Estimate as per template on ROADS
    b. Transport CES
    c. Fuel & Asphalt Price Adjustment Form
    d. Right-of-Way Summary
    e. Utility Cost Estimate
4. Summary of TE study and Traffic Diagram
    a. Summary of TE Study including roundabout feasibility study
    b. GDOT Roundabout Analysis Tool data
        i. Planning level assessment
        ii. Roundabout design year capacity analysis
    c. Traffic Diagram
5. Hydrologic and Hydraulic Study for Bridge Culvert under Pylant Street
6. Minutes of Concept Meetings
7. ARC Scope Confirmation that shows support or objection to the concept

APPROVALS

Concur: _____
Director of Engineering

Approve: _____ 4.21.15
Chief Engineer Date

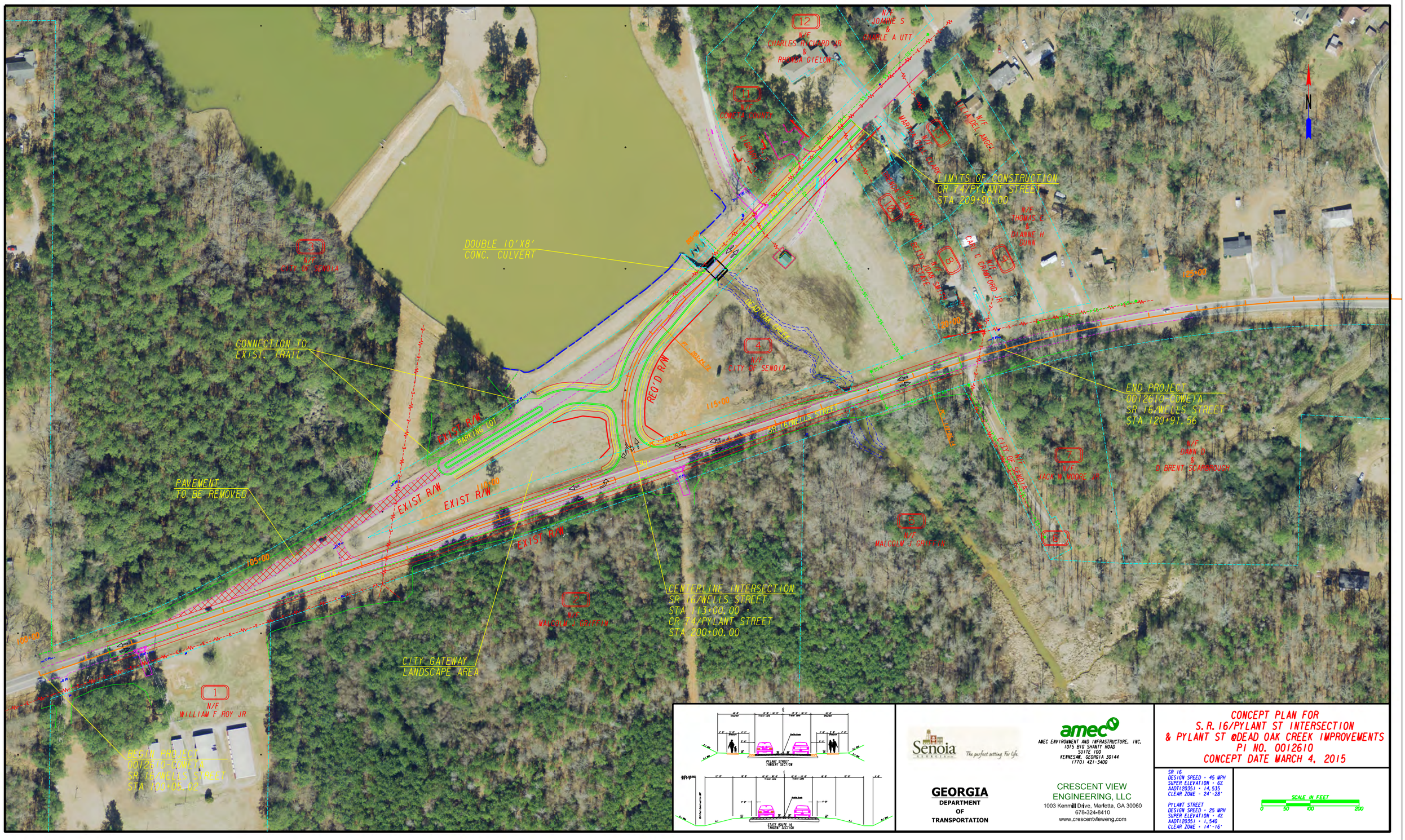
Attachment 1

Concept Plan

Concept Landscape Plan

Concept Detour Layout

Approved Detour Letter



Senoia
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amec
AMEC ENVIRONMENT AND INFRASTRUCTURE, INC.
1075 BIG SHANTY ROAD
SUITE 100
KENNESAW, GEORGIA 30144
(770) 421-3400

GEORGIA
DEPARTMENT
OF
TRANSPORTATION

CRESCENT VIEW
ENGINEERING, LLC
1003 Kennmill Drive, Marletta, GA 30060
678-324-8410
www.crescentviewengineering.com

CONCEPT PLAN FOR S.R. 16/PYLANT ST INTERSECTION & PYLANT ST @DEAD OAK CREEK IMPROVEMENTS PI NO. 0012610 CONCEPT DATE MARCH 4, 2015

SR 16
DESIGN SPEED = 45 MPH
SUPER ELEVATION = 6%
AADT(2035) = 14,535
CLEAR ZONE = 24'-28'

PYLANT STREET
DESIGN SPEED = 25 MPH
SUPER ELEVATION = 4%
AADT(2035) = 1,540
CLEAR ZONE = 14'-16'

SCALE IN FEET
0 50 100 200

Gateway Landscape Plan

HIGHWAY 16 INTERSECTION W/ TYLANT ST. IN THE CITY OF SENOIA

MARCH 2015

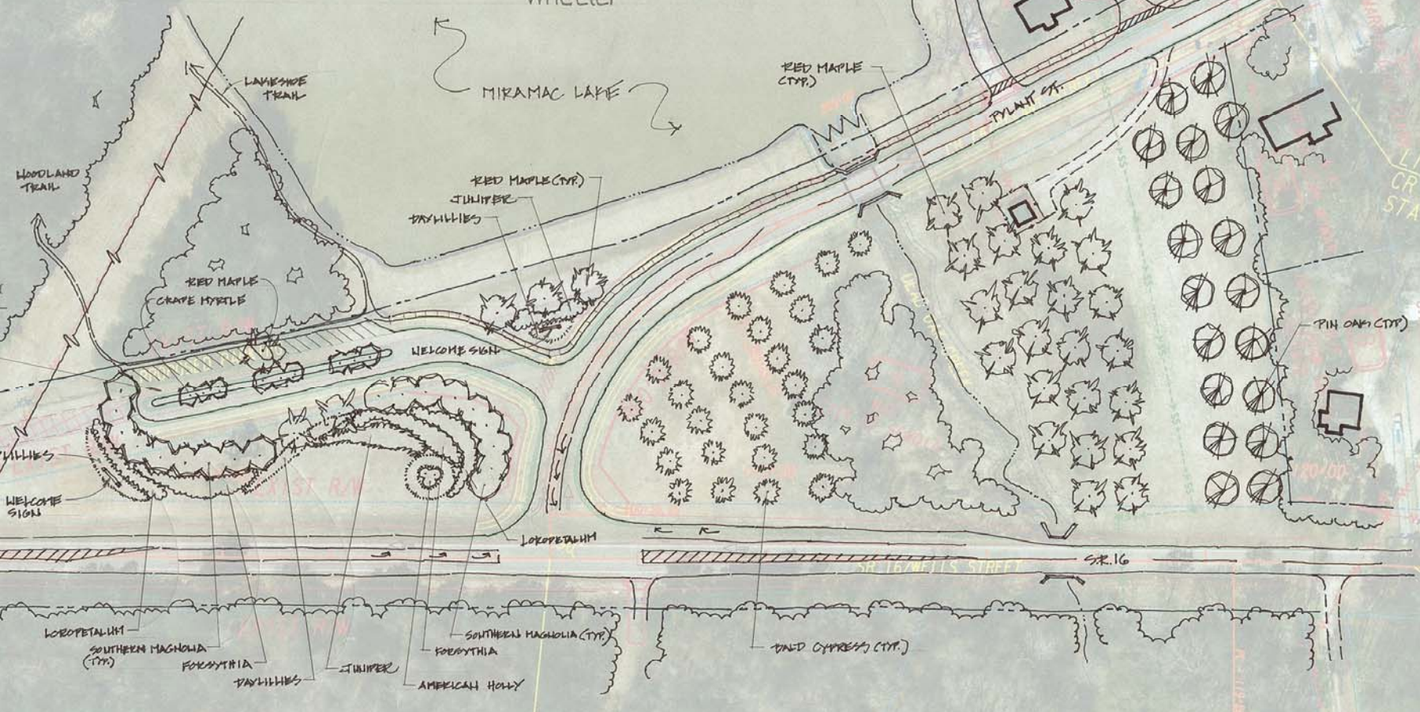
SCALE 50 0 50 100 150

NORTH

amec foster wheeler

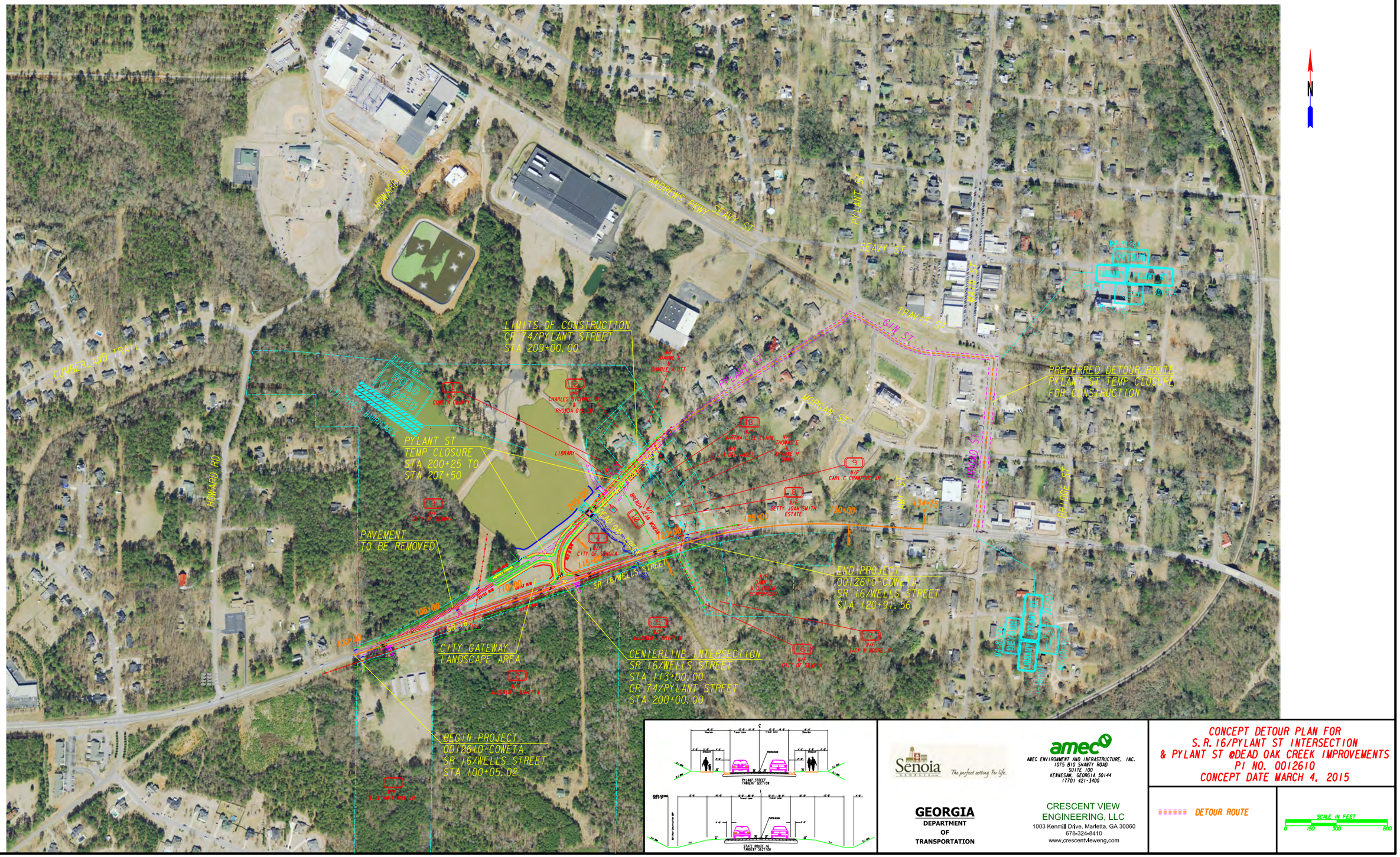
WELCOME SIGN ELEVATION

SCALE 1/4"=1'0"



DESIGNED & DRAWN BY ROY HUFFMAN, ASLA, ALCP FOR AMEC FOSTER WHEELER, 1075-B16 SAWNEY RD., MACON, GA 31211

NOT FOR CONSTRUCTION



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CRESCENT VIEW ENGINEERING, LLC
1003 Kenmill Drive, Marietta, GA 30060
678-324-8410
www.crescentvieweng.com

CONCEPT DETOUR PLAN FOR S.R. 16/PYLANT ST INTERSECTION & PYLANT ST @DEAD OAK CREEK IMPROVEMENTS

PI NO. 0012610
CONCEPT DATE MARCH 4, 2015

====== DETOUR ROUTE

SCALE IN FEET
0 150 300 600

amec foster wheeler

Crescent View Engineering, LLC

January 28, 2015

Mr. Richard Ferry, City Administrator
City of Senoia
80 Main Street
Senoia, Georgia 30276

Re: 0012610-Coweta, SR 16 @ CR 74/Pylant Street & CR 74/Pylant Street @ Dead Oak Creek, offsite detour.

Dear Mr. Ferry:

As you are aware, the Georgia Department of Transportation is currently in the concept phase of the subject project located within the city limits of Senoia. Because of the need to replace the existing bridge, located on Pylant Street within the project corridor, an off-site detour will be required.

The preferred detour route has been identified by AMEC Foster Wheeler and Crescent View Engineering:

A. Eastbound traffic on State Route 16 that would normally take Pylant Street to the City of Senoia Library would continue past the current intersection and proceed to Broad Street, turning north, then continue to Gin Street and turn west and finally to Pylant Street turning west.

B. Westbound traffic on State Route 16 that would normally take Pylant Street to the library would, before reaching Pylant Street, proceed to Broad Street, turning north, then continue to Gin Street and turn west and finally to Pylant Street turning west.

Although we are currently still in the concept phase of the project, concurrence with local government, emergency medical services and local schools will be needed to ensure that travel routes are maintained throughout construction.

Please acknowledge receipt of this detour notice by signing and dating on the line provided and returning a copy for our records.

If you have any questions, please feel free to call Glenn at 770-421-3470 or Peng at 678-324-8410.

Sincerely,

AMEC Environment & Infrastructure, Inc. & Crescent View Engineering, LLC.

Peng Zhang

Peng Zhang, PE, PTOE
Design Engineer

Glenn N. Coffman, PE
Project Manager

Richard W Ferry

Mr. Richard Ferry

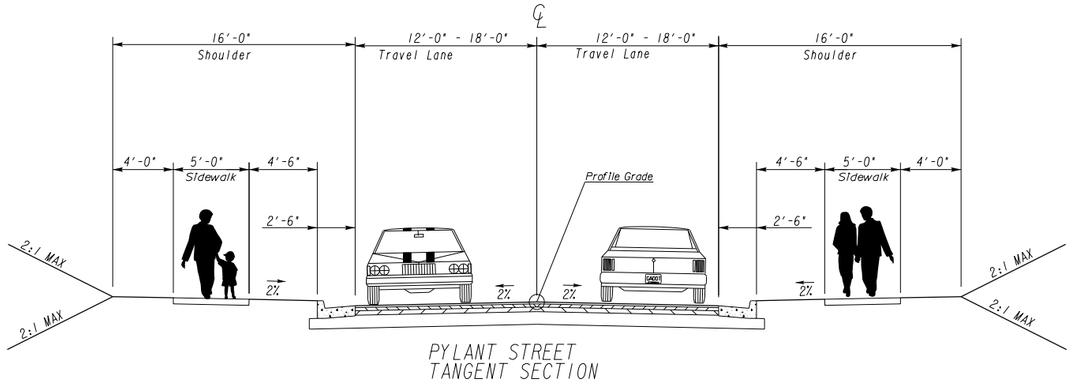
1/28/2015

Date

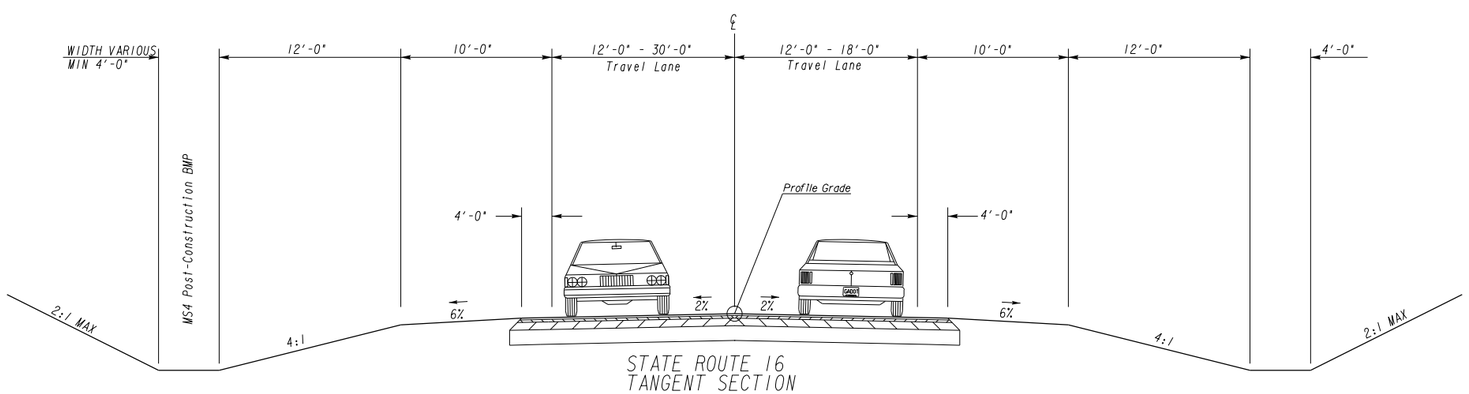
Attachment 2

Typical Sections

			STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
			GA			



PYLANT STREET
TANGENT SECTION



STATE ROUTE 16
TANGENT SECTION

amec

AMEC ENVIRONMENT AND INFRASTRUCTURE, INC.
1075 BIG SHANTY ROAD
SUITE 100
KENNESAW, GEORGIA 30144
(770) 421-3400

CRESCENT VIEW
ENGINEERING, LLC
1003 Kenmill Drive, Marietta, GA 30060
678-324-8410
www.crescentvieweng.com

REVISION DATES		

CITY OF SENOIA

DEPARTMENT OF ADMINISTRATIVE SERVICES

TYPICAL SECTIONS

DRAWING No.
05-

Attachment 3

Total Cost Estimate

Trnsport CES Cost Estimate

Fuel and Liquid AC Cost Estimate

ROW Summary

Utility Cost Estimate

DATE March 3, 2015

Project: 0012610, Coweta County, P.I. # 0012610
SR16 @CR74/Pylant St & CR74/Pylant St @Dead Oak Creek

PRELIMINARY PROJECT TOTAL COST (ESTIMATE)

The table below is the Preliminary Project Total Cost (Estimate).

Project Cost Item	**USD**
Construction Cost Estimate (Trnsport CES)	1,693,965.85
E & I (5%)	84,698.29
Contingency (10%)	177,866.41
Liquid AC Adjustment	106,295.17
TOTALS	**$ 2,062,825.73**

Total Preliminary Project Total Cost Estimate **$2,062,825.73**.

JOB ESTIMATE REPORT

JOB NUMBER : 0012610 SPEC YEAR: 01
DESCRIPTION: SR 16 @ PYLANT ST. & PYLANT ST.@ DEAD OAK CREEK

ITEMS FOR JOB 0012610

LINE	ITEM	ALT	UNITS	DESCRIPTION	QUANTITY	PRICE	AMOUNT
TRAFFIC CONTROL							
0005	150-1000		LS	TRAFFIC CONTROL - TRAFFIC CONTROL	1.000	50000.00	50000.00
ROADWAY							
0010	207-0203		CY	FOUND BKFILL MATL, TP II	27.000	49.01	1323.52
0015	210-0100		LS	GRADING COMPLETE - GRADING COMPLETE	1.000	250000.00	250000.00
0020	310-1101		TN	GR AGGR BASE CRS, INCL MATL	2670.000	21.50	57407.62
0025	318-3000		TN	AGGR SURF CRS	50.000	22.20	1110.29
0030	402-1812		TN	RECYL AC LEVELING,INC BM&HL	5000.000	76.61	383096.75
0035	402-3121		TN	RECYL AC 25MM SP,GP1/2,BM&HL	820.000	78.44	64321.61
0040	402-3130		TN	RECYL AC 12.5MM SP,GP2,BM&HL	350.000	104.19	36469.04
0045	402-3190		TN	RECYL AC 19 MM SP,GP 1 OR 2 ,INC BM&HL	460.000	86.21	39658.14
0050	413-1000		GL	BITUM TACK COAT	60.000	4.35	261.24
0055	441-0104		SY	CONC SIDEWALK, 4 IN	990.000	31.90	31582.86
0060	441-6222		LF	CONC CURB & GUTTER/ 8"X30"TP2	1810.000	28.91	52327.73
0065	446-1100		LF	PVMT REF FAB STRIPS, TP2,18 INCH WIDTH	5000.000	3.99	19995.65
0070	500-3101		CY	CLASS A CONCRETE	135.000	565.41	76330.71
0075	500-9999		CY	CL B CONC,BASE OR PVMT WIDEN	10.000	189.29	1892.97
0080	511-1000		LB	BAR REINF STEEL	18160.000	1.44	26209.24
0085	550-1180		LF	STM DR PIPE 18",H 1-10	250.000	39.71	9928.89
0090	550-4218		EA	FLARED END SECT 18 IN, ST DR	10.000	454.26	4542.61
0095	573-2006		LF	UNDDR PIPE INCL DRAIN AGGR 6"	900.000	16.46	14814.50
0100	634-1200		EA	RIGHT OF WAY MARKERS	16.000	114.97	1839.67
0105	641-1200		LF	GUARDRAIL, TP W	300.000	19.58	5874.63
0110	641-5001		EA	GUARDRAIL ANCHORAGE, TP 1	2.000	842.70	1685.42
0115	641-5012		EA	GUARDRAIL ANCHORAGE, TP 12	2.000	1890.29	3780.59
0120	643-8200		LF	BARRIER FENCE (ORANGE), 4 FT	2000.000	1.30	2606.94
0125	668-1100		EA	CATCH BASIN, GP 1	5.000	2150.91	10754.57
0130	668-1110		LF	CATCH BASIN, GP 1, ADDL DEPTH	10.000	185.83	1858.39
PERMANENT EROSION CONTROL							
0135	441-0204		SY	PLAIN CONC DITCH PAVING, 4 IN	100.000	33.17	3317.85
0140	603-2024		SY	STN DUMPED RIP RAP, TP 1, 24"	100.000	49.42	4942.46
0145	603-7000		SY	PLASTIC FILTER FABRIC	100.000	3.78	378.26
0150	700-6910		AC	PERMANENT GRASSING	5.000	963.14	4815.71
0155	700-7000		TN	AGRICULTURAL LIME	20.000	129.71	2594.33
0160	700-8000		TN	FERTILIZER MIXED GRADE	4.000	555.89	2223.58
0165	700-8100		LB	FERTILIZER NITROGEN CONTENT	250.000	2.21	552.92
0170	710-9000		SY	PERM SOIL REINFORCING MAT	4000.000	3.95	15805.28
0175	716-2000		SY	EROSION CONTROL MATS, SLOPES	2000.000	1.09	2182.32

JOB ESTIMATE REPORT

TEMPORARY EROSION CONTROL						
0180	163-0232	AC	TEMPORARY GRASSING	3.000	420.17	1260.53
0185	163-0240	TN	MULCH	24.000	268.05	6433.25
0190	163-0300	EA	CONSTRUCTION EXIT	2.000	1229.51	2459.04
0195	163-0501	EA	CONSTR AND REMOVE SILT CONTROL GATE,TP 1	5.000	461.81	2309.07
0200	163-0503	EA	CONSTR AND REMOVE SILT CONTROL GATE,TP 3	1.000	416.58	416.59
0205	163-0520	LF	CONSTR AND REMOVE TEMP PIPE SLOPE DRAIN	500.000	14.14	7073.37
0210	163-0527	EA	CNST/REM RIP RAP CKDM,STN P RIPRAP/SNBG	25.000	343.97	8599.39
0215	163-0529	LF	CNST/REM TEMP SED BAR OR BLD STRW CK DM	5500.000	3.70	20359.68
0220	163-0531	EA	CONSTR & REM SEDIMENT BASIN,TP 1,STA NO- SD3 SEDIMENT BASIN	1.000	9883.08	9883.08
0225	163-0550	EA	CONS & REM INLET SEDIMENT TRAP	5.000	161.56	807.82
0230	165-0030	LF	MAINT OF TEMP SILT FENCE, TP C	3000.000	0.62	1882.71
0235	165-0041	LF	MAINT OF CHECK DAMS - ALL TYPES	5500.000	0.71	3931.90
0240	165-0060	EA	MAINT OF TEMP SEDIMENT BASIN,STA NO -	1.000	1350.08	1350.08
0245	165-0071	LF	MAINT OF SEDIMENT BARRIER - BALED STRAW	5500.000	0.77	4255.41
0250	165-0085	EA	MAINT OF SILT CONTROL GATE, TP 1	5.000	138.38	691.93
0255	165-0087	EA	MAINT OF SILT CONTROL GATE, TP 3	1.000	148.80	148.81
0260	165-0101	EA	MAINT OF CONST EXIT	2.000	447.92	895.84
0265	165-0105	EA	MAINT OF INLET SEDIMENT TRAP	5.000	66.81	334.07
0270	167-1000	EA	WATER QUALITY MONITORING AND SAMPLING	2.000	214.50	429.00
0275	167-1500	MO	WATER QUALITY INSPECTIONS	9.000	560.85	5047.70
0280	171-0030	LF	TEMPORARY SILT FENCE, TYPE C	6000.000	2.72	16363.74
SIGNING AND MARKING						
0285	636-1020	SF	HWY SGN,TP1MAT,REFL SH TP3	18.000	15.25	274.59
0290	636-1033	SF	HWY SIGNS, TP1MAT,REFL SH TP 9	34.000	17.95	610.41
0295	636-2070	LF	GALV STEEL POSTS, TP 7	84.000	8.02	674.25
0300	653-1501	LF	THERMO SOLID TRAF ST 5 IN, WHI	4150.000	0.50	2075.33
0305	653-1502	LF	THERMO SOLID TRAF ST, 5 IN YEL	5400.000	0.48	2644.11
0310	653-1704	LF	THERM SOLID TRAF STRIPE,24",WH	36.000	5.62	202.46
0315	653-6006	SY	THERM TRAF STRIPING, YELLOW	3900.000	3.07	12006.42
0320	654-1001	EA	RAISED PVMT MARKERS TP 1	70.000	4.68	327.73
0325	654-1003	EA	RAISED PVMT MARKERS TP 3	10.000	5.12	51.27
LANDSCAPE						
0330	009-3500	LS	MISC LANDSCAPE ITEMS - PLANT MATERIAL INCL TREES AND SHRUBS	1.000	192000.00	192000.00
0335	009-3500	LS	MISC LANDSCAPE ITEMS - PARKING LOT - TRAILHEAD	1.000	31680.00	31680.00
0340	009-3500	LS	MISC LANDSCAPE ITEMS - SITE FURNISHINGS	1.000	5000.00	5000.00
0345	009-3500	LS	MISC LANDSCAPE ITEMS - DECORATIVE SIGN	1.000	25000.00	25000.00
BRIDGE						
0350	543-9000	LS	CONSTR OF BRIDGE COMPLETE - BRIDGE NO 1	1.000	90000.00	90000.00
UTILITY						
0355	001-5000	*	UTILITY CONTINGENCY - UTILITY ALLOWANCE	1.000	50000.00	50000.00
ITEM TOTAL						1693965.85
INFLATED ITEM TOTAL						1693965.85

TOTALS FOR JOB 0012610

ESTIMATED COST:	1693965.85
CONTINGENCY PERCENT (0.0):	0.00
ESTIMATED TOTAL:	1693965.85

PROJ. NO.	12610	CALL NO.	9/29/2009
P.I. NO.	0012610		
DATE	3/2/2015		

INDEX (TYPE)	DATE	INDEX
REG. UNLEADED	Feb-15	$ 1.998
DIESEL		$ 2.777
LIQUID AC		$ 534.00

Link to Fuel and AC Index:
http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx

LIQUID AC ADJUSTMENTS

PA=[((APM-APL)/APL)]xTMTxAPL

Asphalt

Price Adjustment (PA)			**106212.6**	**$**	**106,212.60**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$ 854.40		
Monthly Asphalt Cement Price month project let (APL)			$ 534.00		
Total Monthly Tonnage of asphalt cement (TMT)			331.5		

ASPHALT	Tons	%AC	AC ton
Leveling	5000	5.0%	250
12.5 OGFC		5.0%	0
12.5 mm	350	5.0%	17.5
9.5 mm SP		5.0%	0
25 mm SP	820	5.0%	41
19 mm SP	460	5.0%	23
	6630		**331.5**

BITUMINOUS TACK COAT

Price Adjustment (PA)			**$ 82.57**	**$**	**82.57**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$ 854.40		
Monthly Asphalt Cement Price month project let (APL)			$ 534.00		
Total Monthly Tonnage of asphalt cement (TMT)			0.257706055		

Bitum Tack Gals	gals/ton	tons
60	232.8234	0.25770606

BITUMINOUS TACK COAT (surface treatment)

Price Adjustment (PA)			**0**	**$**	**-**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$ 854.40		
Monthly Asphalt Cement Price month project let (APL)			$ 534.00		
Total Monthly Tonnage of asphalt cement (TMT)			0		

Bitum Tack	SY	Gals/SY	Gals	gals/ton	tons
Single Surf. Trmt.		0.20	0	232.8234	0
Double Surf.Trmt.		0.44	0	232.8234	0
Triple Surf. Trmt		0.71	0	232.8234	0
					0

TOTAL LIQUID AC ADJUSTMENT	**$**	**106,295.17**

March 3, 2015

Project: 0012610, Coweta County, P.I. # 0012610
SR16 @CR74/Pylant St & CR74/Pylant St @Dead Oak Creek

PRELIMINARY RIGHT OF WAY COST (ESTIMATE)

The Preliminary Right of Way summary table is listed below:

Parcel ID	Parcel Owner Name	Impact (Y/N)	REQD	Perm ESMT	Temp ESMT	DRWY ESMT
1	William F Roy Jr	Y				1000 SF
2	Malcolm J Griffin	Y				1000 SF.
3	City of Senoia *	Y	2000 SF	5000 SF		1000 SF
4	City of Senoia *	Y	35000 SF	30000 SF		
5	Malcolm J Griffin	Y		3000 SF		
6	City of Senoia*	Y				1000 SF
7	Jack W Moore Jr	N				
8	Betty Joan Smith Estate	Y		500 SF		500 SF
9	Carl C Crawford Jr	N				
10	Brenda Jean Moman	Y	750 SF	1500 SF		500 SF
11	Coweta County	Y		250 SF		500 SF
12	Charles Richard Jr & Rhonda Gielow	Y				500 SF
13	Martha Gill Clark	Y				500 SF
Total			37750 SF *	40250 SF *		6500 SF

Note: * City of Senoia will donate right of way and easement to the project. The estimated right of way cost is $50,000

Total Preliminary Right of Way Cost Estimate **50,000**.

August 27, 2014

Project: 0012610, Coweta County, P.I. # 0012610
SR16 @CR74/Pylant St & CR74/Pylant St @Dead Oak Creek

PRELIMINARY UTILITY COST (ESTIMATE)

The table below is the Preliminary Utility Cost estimate for each utility with facilities potentially located within the project limits.

FACILITY OWNER	NON-REIMBURSABLE	REIMBURSABLE
City of Senoia Water and Sewer	15,000	
Coweta County Water	15,000	
Atlanta Gas Light	15,000	
AT&T	10,000	
Comcast	10,000	
Georgia Power		25,000
Georgia Transmission		25,000
TOTALS	**$ 65,000**	**$ 50,000**

Total Preliminary Utility Cost Estimate **115,000**.

Attachment 4

Traffic Study Summary Including Rounabout Feasibility Study

GDOT Roundabout Analysis Tool Data

Traffic Diagrams

TRAFFIC STUDY REPORT

for

Intersection Improvements on

State Route 16 @ Pylant Street

(PI#0012610)

Prepared for:

City of Senoia, Department of Administrative Services

80 Main Street
Senoia, GA 30276

AMEC Environment and Infrastructure, Inc.

1075 Big Shanty Road Suite 100
Kennesaw, GA 30144

Prepared by:

Crescent View Engineering, LLC

1003 Kenmill Drive NW
Marietta, GA 30060

Issued: January 09, 2014

Revised: February 24, 2015

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4. COMPOUND ANNUAL GROWTH RATIO 6
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APPENDIX

- Appendix A ..... 2013 Traffic Counts
- Appendix B ..... Crash Data Summary
- Appendix C ..... Synchro 8 - Existing Conditions 2013
- Appendix D ..... Synchro 8 - No Build Conditions 2035
- Appendix E ..... Synchro 8 - Design Year 2035
- Appendix F ..... Proposed Intersection Layout
- Appendix G ..... Intersection Traffic Diagram
- Appendix H ..... GDOT Roundabout Analysis Tool Year 2035

1. Executive Summary

1. As requested by the City of Senoia and as part of the concept plan phase of the intersection improvement design, the purpose of this Traffic Study is to evaluate the existing Level of Service (LOS) for 2013, as well as the LOS for the design year 2035 under no build condition and with proposed improvements, for the intersection of State Route 16 / Wells Street and Pylant Street. Please refer to Figure 1.1 on the next page.

2. 6 scenarios were analyzed utilizing Synchro 8 software, following the procedures and methodologies defined in the 2010 edition of the Highway Capacity Manual.
   a. Three analyzing years were established for this analysis: 2013 Existing (existing conditions), 2035 No Build (design year no build), and 2035 Design (design year with improvements).
   b. Two time slots were modeled for each analyzing year: morning peak hours (AM Peak), and afternoon peak hour (PM Peak).
   c. A Compound Annual Growth Rate (CAGR) of 1.4% was assigned based upon the census data for population growth in Coweta County.

3. For 2013 Existing, the existing condition with configuration of three sub intersections achieved acceptable level of services. (Figure 2.1 shows the location of the existing three sub intersections). For 2035 No build, one of the intersections LOS deteriorates to LOS D for both AM Peak and PM Peak period, which is lower than acceptable LOS C for rural and suburban area. For 2035 Design, the intersection LOS is restored to LOS C or better for AM Peak and PM Peak.

4. The existing intersection angle is less than 40 degrees, which does not comply with current Georgia DOT standards (minimum 75 degrees, desirable 80-90 degrees for state route intersections). The intersection angle, in the opinion of the traffic engineer, contributes on a large part to the high crash numbers and high injury crashes. The proposed realignment improves the intersection angle and with the installation of turn lanes, traffic safety will be enhanced at this two way stop controlled (TWSC) intersection.

5. A single lane roundabout alternate was also analyzed for Design Year 2035 using GDOT Roundabout Analysis Tool Version 2.1. Based on the factors of traffic volume split (85% vs 15%), the proximity to signalized intersection (0.58 miles < 1 mile) and potential impact on right of way and floodplain, and analyzing results as per HCS 2010 Roundabout procedure (peak hour LOS of Roundabout is no better than the LOS of Improved TWSC intersection), it is our opinion that Single Lane Roundabout is not the preferred design alternate for this intersection.

Figure 1.1 - Intersection of State Route 16 (Wells Street) and Pylant Street

2. Purpose of Analysis

The Intersection of State Route 16 /Wells Street and Pylant Street is located in the Southwest corner of the City of Senoia, Coweta County, Georgia. State Route 16 is a major arterial road that runs through the City of Senioa. Currently Pylant Street intersects State Route 16 with an extreme acute angle which does not allow for adequate visibility and therefore poses a safety risk. This intersection is currently listed as a transportation issue and a safety concern in the City of Senoia 2006-2026 Comprehensive Plan: Community Agenda. As per the data on GDOT GeoTraqs, there were a total of 15 accidents since 2009; 8 of them are involved with injuries. In addition, as per the data in the CARE Georgia Crash database, there were a total of 19 crashes from 2004 to 2009, with a crash rate of 300.96 crashes per 100 MVM and a severity/crash ratio of 6.32. See Appendix B for detail.

The purpose of this Traffic Analysis (TA) is to evaluate the existing Level of Service (LOS) for 2013 as well as the LOS for the design year 2035 under no build condition and with proposed improvements, for

the intersection of State Route 16 / Wells Street and Pylant Street. The result of the TA will also support the concept report of the intersection improvement project.

Figure 1.1, located on previous page, is an aerial view of this intersection and shows the extreme acute angle of this intersection in its current, unaltered state. Figure 2.1 below is a map of the general vicinity, which shows the subject intersection's location within the City of Senoia and it's proximity to other roads and intersections, along with defining the three sub intersections.

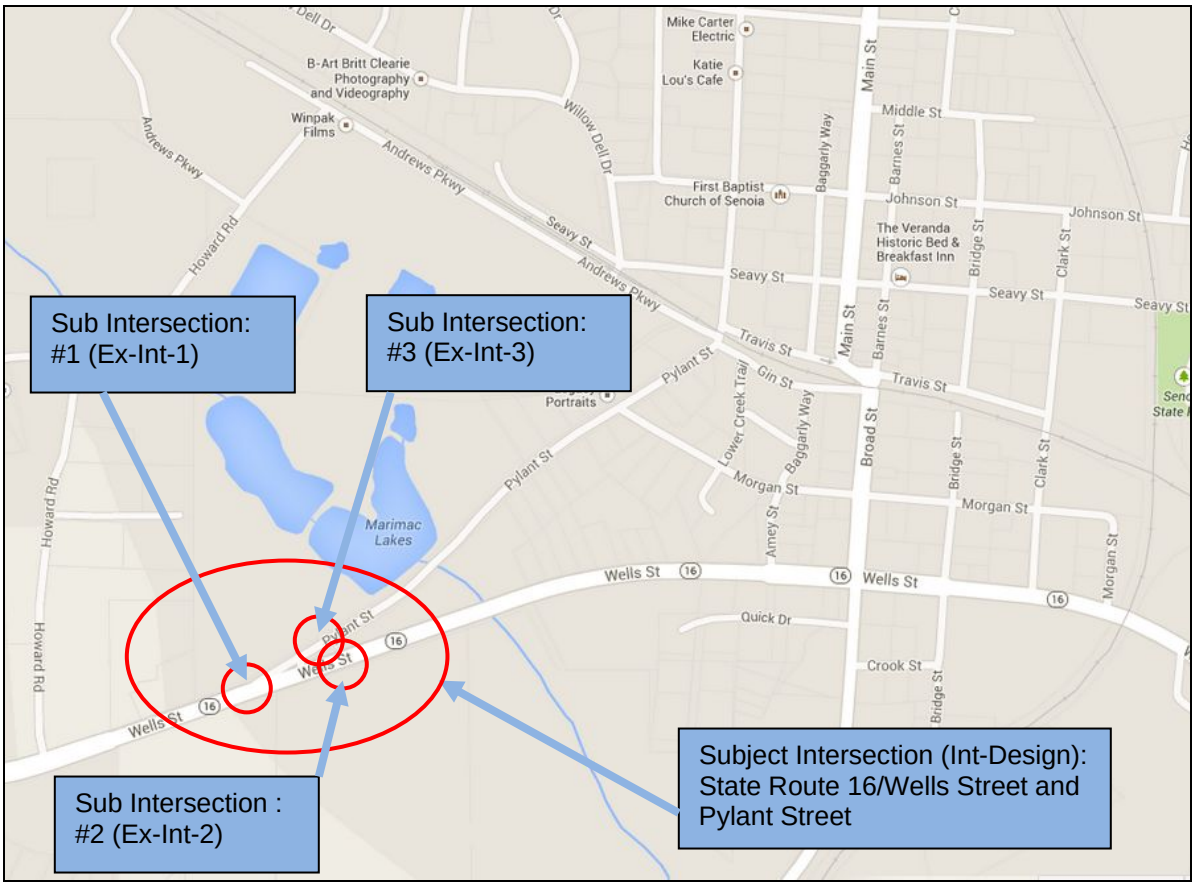

Figure 2.1 – Map of the Intersection of State Route 16 (Wells Street) and Pylant Street

Table 2.1 - Traffic Analysis (TA) - Study Limits

Study Limits	Location Description	Scenario	Existing Traffic Control
Ex-Int-1	Pylant St @ SR 16	2013, 2035 no build	TWSC 3-leg
Ex-Int-2	Pylant Stub @ SR 16	2013, 2035 no build	TWSC 3-leg
Ex-Int-3	Pylant St @ Pylant Stub	2013, 2035 no build	TWSC 3-leg
Int-Design	Pylant St @ SR 16	2035 design	TWSC 3-leg

3. Traffic Analysis Approach

The TA was conducted in three phases.

Phase 1: Traffic data collection.

The peak hour traffic turning movement counts (TMC) were collected (2 hours in the morning peak and 2 hours in the afternoon peak) at each of the 3 sub intersections within the overall T intersection of SR 16 and Pylant Street (Thursday, December 12, 2013). In addition, a 24 hour 15-minute-interval categorized vehicle volume count (ADT) station was set up and processed at State Route 16 / Wells Street, 100 feet east of the subject intersection. The traffic data were collected, processed and delivered to CVE by its sub-consultant: Reliable Traffic Data Services, LLC. See Appendix A for detail traffic counts data.

Phase 2: Develop existing and future year TA scenarios.

CVE conducted a site visit on December 18, 2013 and built up an inventory for the subject intersection including intersection geometry, lane configuration, traffic control devices, lane width, approach grade, etc. Incorporating the existing TMC counts data, CVE developed an analyzing model for existing conditions and for the Level of Service (LOS) of each sub intersection, for both AM Peak and PM Peak, which were calculated using Synchro 8 Suite as per the TWSC procedure in Highway Capacity Manual (HCM) 2010.

A Compound Annual Growth Rate (CAGR) shall be estimated based upon historic data, along with the City and County's mid- to long- range economic and transportation plan. The CAGR was applied to the existing turning movement volumes (year 2013) to project the traffic volumes for year 2035.

Phase 3: Develop and analyze scenarios.

By calculating and comparing the LOS between the same scenario year with no build and with improvement design, the proposed intersection improvements results were quantified. Design year intersection configuration uses the concept plan proposed by AMEC and approved by City of Senoia. In addition, single lane roundabout alternate is evaluated for the design year as well. Overall, there were 6 different traffic scenarios analyzed for the subject intersection network.

Table 3.1 is a list of all the scenarios developed and analyzed in this TIA.

Table 3.1 TA - Study Scenarios

Scenarios	Description	Time ID
2013 AM	Existing conditions based on traffic turning movement counts	AM Peak
2013 PM	Existing conditions based on traffic turning movement counts	PM Peak
2035 NO BUILD AM	Future year traffic volume on existing intersection network	AM Peak
2035 NO BUILD PM	Future year traffic volume on existing intersection network	PM Peak
2035 DESIGN AM	Future year traffic volume on improved intersection design	AM Peak
2035 DESIGN PM	Future year traffic volume on improved intersection design	PM Peak

4. Compound Annual Growth Ratio

In order to make traffic projections from existing conditions 2013 to design year 2035, an estimation of the compound annual growth rate (CAGR) is required. As per GDOT STARS web application, there is a Georgia DOT traffic counter (#0331) located on State Route 16, about 500 feet east from the subject intersection. However, only 2012 AADT of 9,590 is available and is not actual counts data but estimated data. State Route 16 is the arterial road that crosses Coweta County. Therefore, the County census data was used to estimate the CAGR. The population in Coweta County between 2000 and 2012 has had a relative steady growth of 1.4% annually. Considering the economic recovery in the next 10-15 years and City of Senoia/Coweta County mid- to long- range development plan, the CAGR was estimated to 1.4%.

5. Intersection Level of Service Standards

Operational analyses were performed to evaluate the intersection with projected turning movement volumes for the design year 2035. Procedures outlined in the 2010 Highway Capacity Manual were used to conduct the capacity analyses. Synchro 8 software and GDOT Roundabout Analysis Tool was used to facilitate the analysis process.

The subject intersection and its sub intersections are all two-way stop-controlled (TWSC) intersections. The Highway Capacity Manual (HCM) defines level of service in terms of the amount of control delay experienced by road users. For TWSC intersections, The LOS is determined by the computed control delay and is defined for each minor movement. LOS definitions for two-way stop-controlled (TWSC) intersections are provided in the following table.

Table 6.1 Level of Service Criteria for TWSC Intersections

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (SEC)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

For Roundabout intersections, the LOS is determined by the computed control delay and is defined for each approach movement. The LOS thresholds for lane groups now take into account the volume-to-capacity (v/c) ratio, in addition to control delay, such that any value above 1.0 would denote LOS 'F' regardless of the corresponding value of control delay. Values for approach and overall intersection LOS are all based on average control delay. The following table lists the LOS thresholds for the Roundabout intersections.

Table 6.2 Level of Service Criteria for Roundabout Intersections

CONTROL DELAY (SEC/VEH)	LEVEL OF SERVICE (V/C RATIO)	
	≤ 1.0	**> 1.0**
≤ 10.0	A	F
> 10.0 - ≤ 15.0	B	F
> 15.0 - ≤ 25.0	C	F
> 25.0 - ≤ 35.0	D	F
> 35.0 - ≤ 50.0	E	F
> 50.0	F	F

The HCM indicates that levels of service “A” through “D” are considered to be acceptable to most drivers. Levels of service “E” and “F” indicate long delays that most drivers generally consider to be unacceptable. For rural and suburban intersections, LOS "A" through "C" are considered to be desirable. Level of service “C” will be the acceptable LOS for this study.

6. Existing Conditions – 2013

The existing conditions were developed primarily from the turning movement count (TMC) data, which is a good representation of TMC collection year 2013. Two time scenarios were developed for the analysis of this intersection, which are AM peak, and PM peak. The Synchro 8 traffic analysis results are shown in the tables below.

Table 7.1 TA Results - Ex-Int-1

Scenarios	HCM Level of Service (LOS)	Avg Control Delay(sec/veh)
2013 AM	A / B	9.0 / 13.2
2013 PM	A / B	9.1 / 14.4

Table 7.2 TA Results - Ex-Int-2

Scenarios	HCM Level of Service (LOS)	Avg Control Delay(sec/veh)
2013 AM	A / A	0.0 / 0.0
2013 PM	A / C	0.0 / 22.3

Table 7.3 TA Results - Ex-Int-3

Scenarios	HCM Level of Service (LOS)	Avg Control Delay(sec/veh)
2013 AM	A / A	9.0 / 0.0
2013 PM	A / A	8.7 / 7.4

As the tables illustrated, all three sub intersections had acceptable levels of service under existing conditions. See Appendix C for Synchro 8 analysis report.

7. State Route 16 AADT LOS Analysis

The Georgia Regional Transportation Authority (GRTA) has developed a table that is intended to be used to determine the level of service of a roadway based upon volume levels and roadway characteristics for planning purposes. The table is shown on the following page:

TABLE 5

Generalized Annual Average Daily Volumes for Use in GRTA's DRI Review

State Two-Way Arterials

Unsignalized (Uninterrupted Flow)

Lanes /Divided	Level of Service A	B	C	D	E
2/undivided	8,900	13,900	18,900	24,800	33,100
4/divided	21,500	35,800	50,100	60,100	71,800
6/divided	32,200	53,700	75,200	90,200	107,400

Interrupted Flow

Class I (> 2 signalized intersections per mile)

Lanes /Divided	Level of Service A**	B	C	D***	E***
2/undivided	N/A	10,800	15,500	16,600	16,600
4/divided	N/A	23,500	33,200	35,000	35,000
6/divided	N/A	35,800	49,900	52,500	52,500
8/divided	N/A	45,300	61,400	64,400	64,400

Class II (2-4.5 signalized intersections per mile)

Lanes /Divided	Level of Service A**	B**	C	D	E
2/undivided	N/A	N/A	9,900	14,900	16,200
4/divided	N/A	N/A	22,900	32,500	34,300
6/divided	N/A	N/A	35,500	48,900	51,700
8/divided	N/A	N/A	44,700	60,100	63,400

Class III (> 4.5 signalized intersections per mile but not in CBD)

Lanes /Divided	Level of Service A**	B**	C	D	E
2/undivided	N/A	N/A	3,300	12,100	15,800
4/divided	N/A	N/A	7,800	27,800	33,600
6/divided	N/A	N/A	12,100	43,300	50,500
8/divided	N/A	N/A	15,300	54,200	62,100

Class IV (> 4.5 signalized intersections per mile within CBD)

Lanes /Divided	Level of Service A**	B**	C	D	E
2/undivided	N/A	N/A	3,700	13,800	15,300
4/divided	N/A	N/A	8,900	29,900	32,600
6/divided	N/A	N/A	14,000	45,500	49,000
8/divided	N/A	N/A	17,500	56,200	60,100

* This table is based on the 1997 Highway Capacity Manual and data generated by the Florida DOT. For the purposes of GRTA review this table can be used for Level of Service Analysis in Section 2.2.
** Cannot be achieved.
*** Volumes are comparable because intesection capacities have been reached.

Freeways

Group I (w/in urban area 500,000+ w/in 5 miles of CBD

Lanes	Level of Service A	B	C	D	E
4	21,200	34,300	51,500	66,200	81,700
6	32,600	52,700	79,000	101,600	125,400
8	44,500	71,800	107,800	138,600	171,100
10	55,600	89,800	134,700	173,200	213,800
12	65,200	105,400	158,100	203,200	250,900

Group II (w/in urban area 500,000+ not included in Group I)

Lanes	Level of Service A	B	C	D	E
4	20,900	32,800	49,200	62,500	74,500
6	32,100	50,400	75,600	96,200	114,500
8	43,800	68,800	103,200	131,300	156,300
10	54,700	86,000	129,000	164,200	195,400
12	64,100	100,800	151,200	192,400	229,100

Non-State Roadways (Major City/County Roads)

Lanes	Level of Service A**	B**	C	D	E
2/undivided	N/A	N/A	8,600	14,600	16,000
4/divided	N/A	N/A	19,800	31,700	33,900
6/divided	N/A	N/A	30,800	47,800	51,000

Other Signalized Roadways (Signalized Intersection Analysis)

Lanes	Level of Service A**	B**	C	D	E
2/undivided	N/A	N/A	4,800	10,900	11,900
4/divided	N/A	N/A	11,600	23,800	25,400

Adjustments (Divided/Undivided)

(Alter corresponding two-way volumes by indicated percentage)

Lanes	Median	Left Turn Bays	Adjustment Factor
2	divided	Yes	+5%
2	undivided	No	-20%
Multi	undivided	Yes	-5%
Multi	undivided	No	-25%

One-Way

(Alter corresponding two-way volumes by indicated percentage)

One-Way Lanes	Equivalent 2-Way Lanes	Adjustment Factor
2	4	-40%
3	6	-40%
4	8	-40%
5	8	-25%

SOURCE: The Florida Department of Transportation, Systems Planning Office, 605 Suwannee Street - Mail Station # 19, Tallahassee, Florida, 32399-0450
September 1998 - www.dot.state.fl.us/planning
<<<The assumptions made in the development of this table appear in the 1998 Level of Service Handbook published by Florida DOT.>>>

Table 7.1 GRTA DRI Review - Technical Guidelines

Levels of service was determined for the segment of State Route 16 between Pylant Street and Broad Street by comparing the 2013 and 2035 State Route 16 volumes to the GRTA table using the category "State Two-way Roadways, Class II". State Route 16 / Wells Street, based on 24 hour traffic counts, has a directional AADT of 5,316 Eastbound and 5,389 Westbound. The total AADT is 10,705. The bus and heavy duty truck percentage are 0.8% and 4.2% respectively. The peak hour heavy duty truck percentage is 3%. The following table shows the results of that comparison:

Table 7.1 LOS comparison for State Route 16

Analysis Scenarios	Traffic Volumes (AADT)	LOS
		2 Lanes
2013 Existing	10,705	C
2035 Design	14,535	D
Acceptable LOS (Y/N)		**Y**

This table shows that State Route 16 maintains acceptable levels of service from year 2013 through design year 2035.

8. No Build Conditions - 2035

The 2035 No build conditions were developed by projecting 2013 condition to 2035 year with the designated CAGR. Intersection network stayed unchanged from the existing conditions. Two time scenarios were developed for the analysis of this intersection, which are AM peak, and PM peak. The Synchro 8 traffic analysis results are shown in the tables below.

Table 8.1 TA Results - Ex-Int-1 (TWSC)

Scenarios	HCM Level of Service (LOS)	Avg Control Delay(sec/veh)
2035 NO BUILD AM	B / C	10.2 / 18.0
2035 NO BUILD PM	B / C	10.3 / 20.9

Table 8.2 TA Results - Ex-Int-2 (TWSC)

Scenarios	HCM Level of Service (LOS)	Avg Control Delay(sec/veh)
2035 NO BUILD AM	A / D	0.0 / 33.8
2035 NO BUILD PM	A / F	0.0 / 56.6

Table 8.3 TA Results - Ex-Int-3 (TWSC)

Scenarios	HCM Level of Service (LOS)	Avg Control Delay(sec/veh)
2035 NO BUILD AM	A / A	9.5 / 7.7
2035 NO BUILD PM	A / A	9.1 / 7.5

As the tables illustrated, sub intersections of SR16@Pylant St and Pylant St@Pylant Stub will have acceptable levels of service under 2035 no build conditions. The sub intersection of SR 16@Pylant Stub instead will have unacceptable LOS (D and F) for the minor approach. See Appendix D for Synchro 8 analysis report.

9. Design Conditions - 2035

9.1 Improved Intersection Analysis - 2035

The 2035 Design conditions were developed by applying the same traffic volume of 2035 No build condition on to the improved intersection plan. Based upon the concept plan proposed by AMEC and approved by City of Senoia, the improvements include:

- Realign Pylant Street to a new location on SR 16 to have a 90 degree T intersection
- Provide 300 feet left turn lane and related taper on SR 16 eastbound
- Provide 300 feet right turn lane and related taper on SR 16 westbound
- Provide 200 feet left turn lane and related taper on Pylant Street approach.
- Improved roadway profile for all three approaches.

These improvements were incorporated into the Synchro 8 model and two time scenarios were developed for the analysis of this intersection, which are AM peak, and PM peak. The Synchro 8 traffic analysis results are shown in the tables below.

Table 9.1 TA Results - Improved Intersection

Scenarios	HCM Level of Service (LOS)	Avg Control Delay(sec/veh)
2035 DESIGN AM	B / C	10.2 / 23.2
2035 DESIGN PM	B / C	10.3 / 24.6

As the tables illustrated, the improved intersection of SR16 and Pylant Street will have acceptable levels of service under 2035 design conditions. See Appendix E for Synchro 8 analysis report.

9.2 Single Lane Roundabout Analysis - 2035

As per GDOT design policy manual, a Roundabout Analysis Tool (current version 2.1) was developed to facilitate the study of the roundabout option. It is a two phase analysis procedure. An intersection shall first be inspected by a set of rules/threshold set forth by FHWA roundabout guidelines for roundabout suitability study. Then a detail peak hour LOS analysis shall be conducted.

- The total of traffic volume 17,045 ADT at this intersection is less than 25,000 ADT, which is the upper capacity limit for a single lane roundabout configuration.
- As per FHWA roundabout guideline and GDOT roundabout analysis tool, traffic volume split between major street and minor street is 85% versus 15%. The suitability threshold for a roundabout is less than 90% traffic on major road. This traffic split is close to the threshold and is not in favor of single lane roundabout with consideration of 3 leg intersection configuration.
- Based on Google Earth Pro, the nearest traffic signal is located at intersection of State Route 16 / Wells Street and Broad Street and 0.58 miles away from the subject intersection, which is less than 1 mile distance separation, as described in FHWA roundabout guideline for roundabout suitability.
- State Route 16 is on the GDOT Oversize Truck Network. Design vehicle for travel *along* SR 16 should be WB-67. Therefore, the single lane roundabout should have at least 115 feet of ICD with a truck mountable concrete apron on the edge of the center island, to assist with truck maneuvering movement with low turn radius. The footprint of the roundabout will be larger than regular TWSC intersection with turning lanes. In addition, this intersection is immediately adjacent to an existing creek Dead Oak Creek. Therefore, this is not an ideal location for roundabout because of potential more right of way acquisition and more encroachment impacts on floodplain and stream buffer.

For further analysis, the same traffic volume of 2035 were incorporated into GDOT Roundabout Analysis Tool (v2.1) and the same two time scenarios were developed for the analysis of this intersection, which are AM peak, and PM peak. This data was then analyzed using the HCM 2010 Model and the Calibrated Model that was imbedded in the GDOT Tool. The GDOT Roundabout Analysis Tool (v2.1) results are shown in the tables below.

Table 9.2 - 2035 Design Conditions – GDOT Roundabout Analysis Tool LOS Results

APPROACH	2035 Roundabout -HCM 2010				2035 Roundabout - Calibrated			
	AM		PM		AM		PM	
	LOS HCM Level of Service	DELAY Avg Control Delay	LOS HCM Level of Service	DELAY Avg Control Delay	LOS HCM Level of Service	DELAY Avg Control Delay	LOS HCM Level of Service	DELAY Avg Control Delay
EB - (SR 16/Wells St)	C	21	C	18	B	14	B	12
WB - (SR 16/Wells St)	D	29	D	34	C	16	C	18
SB - (Pylant St)	B	11	B	13	A	7	A	8

As the table illustrates, the GDOT Analysis data (both HCM 2010 and Calibrated) shows that the subject intersection will have acceptable and improved (comparing to no build) levels of service under 2035 design conditions. The Calibrated model shows a further improvement in LOS and Delay over the HCM 2010 Model, as this model is based on drivers who are acclimated to using the roundabout, and therefore there is no driver hesitation factored into this model. This model best represents how the proposed intersection will perform once the majority of drivers have become accustom to use of the roundabout.

However, the LOS calculated in GDOT HCM 2010 module, in general, show no better measure of performance than the LOS of Improved TWSC Intersection. Considering the factors of the factors of traffic volume split (85% vs 15%), the proximity to signalized intersection (0.58 miles < 1 mile) and potential impact on right of way, floodplain, and stream buffer, and analyzing results as per HCS 2010 Roundabout procedure (peak hour LOS of Roundabout is no better than the LOS of Improved TWSC intersection), it is our opinion that Single Lane Roundabout is not the preferred design alternate for this intersection. See Appendix H for the full GDOT Roundabout analysis report.

10. Conclusion

Based on the analysis previously outlined in this report, the existing condition had acceptable level of services but high crash rate and severity crash ratio due to the substandard intersection angle. With reasonable estimation of the CAGR, in year 2035, the subject intersection network will have both unacceptable level of services and deficiency in intersection traffic safety. However, with the proposed improvements as in the approved concept plan, the intersection of State Route 16 and Pylant Street will have acceptable levels of service for the design year 2035 and enhanced traffic safety.

Appendix A

Reliable Traffic Data Services, LLC

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TMC Data
Wells St (SR 16) @ Pylant St

7-9am | 4-6pm

File Name : 34580001
Site Code : 34580001
Start Date : 12/12/2013
Page No : 1

Groups Printed- Cars and Buses - Trucks

	Northbound					Pylant St Southbound					Wells St (SR 16) Eastbound					Wells St (SR 16) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	7	0	7	9	97	0	0	106	0	90	0	0	90	203
07:15 AM	0	0	0	0	0	0	0	20	0	20	18	91	0	0	109	0	129	1	0	130	259
07:30 AM	0	0	0	0	0	0	0	21	0	21	38	119	0	0	157	0	132	0	0	132	310
07:45 AM	0	0	0	0	0	0	0	29	0	29	35	138	0	0	173	0	129	0	0	129	331
Total	0	0	0	0	0	0	0	77	0	77	100	445	0	0	545	0	480	1	0	481	1103
08:00 AM	0	0	0	0	0	0	0	12	0	12	30	105	0	0	135	0	99	0	0	99	246
08:15 AM	0	0	0	0	0	0	0	5	0	5	16	109	0	0	125	0	91	0	0	91	221
08:30 AM	0	0	0	0	0	0	0	4	0	4	19	92	0	0	111	0	85	0	0	85	200
08:45 AM	0	0	0	0	0	0	0	6	0	6	13	89	0	0	102	0	90	0	0	90	198
Total	0	0	0	0	0	0	0	27	0	27	78	395	0	0	473	0	365	0	0	365	865
*** BREAK ***																					
04:00 PM	0	0	0	0	0	1	0	11	0	12	17	119	0	0	136	0	106	3	0	109	257
04:15 PM	0	0	0	0	0	0	0	16	0	16	13	115	0	0	128	0	139	0	0	139	283
04:30 PM	0	0	0	0	0	1	0	21	0	22	20	121	0	0	141	0	125	0	0	125	288
04:45 PM	0	0	0	0	0	0	0	22	0	22	16	133	0	0	149	0	122	1	0	123	294
Total	0	0	0	0	0	2	0	70	0	72	66	488	0	0	554	0	492	4	0	496	1122
05:00 PM	0	0	0	0	0	0	0	22	0	22	17	124	0	0	141	0	138	0	0	138	301
05:15 PM	0	0	0	0	0	1	0	23	0	24	12	99	0	0	111	0	160	2	0	162	297
05:30 PM	0	0	0	0	0	0	0	16	0	16	20	116	0	0	136	0	144	0	0	144	296
05:45 PM	0	0	0	0	0	0	0	28	0	28	15	98	0	0	113	0	138	0	0	138	279
Total	0	0	0	0	0	1	0	89	0	90	64	437	0	0	501	0	580	2	0	582	1173
Grand Total	0	0	0	0	0	3	0	263	0	266	308	1765	0	0	2073	0	1917	7	0	1924	4263
Apprch %	0	0	0	0		1.1	0	98.9	0		14.9	85.1	0	0		0	99.6	0.4	0		
Total %	0	0	0	0	0	0.1	0	6.2	0	6.2	7.2	41.4	0	0	48.6	0	45	0.2	0	45.1	
Cars and Buses	0	0	0	0	0	3	0	263	0	266	308	1703	0	0	2011	0	1866	7	0	1873	4150
% Cars and Buses	0	0	0	0	0	100	0	100	0	100	100	96.5	0	0	97	0	97.3	100	0	97.3	97.3
Trucks	0	0	0	0	0	0	0	0	0	0	0	62	0	0	62	0	51	0	0	51	113
% Trucks	0	0	0	0	0	0	0	0	0	0	0	3.5	0	0	3	0	2.7	0	0	2.7	2.7

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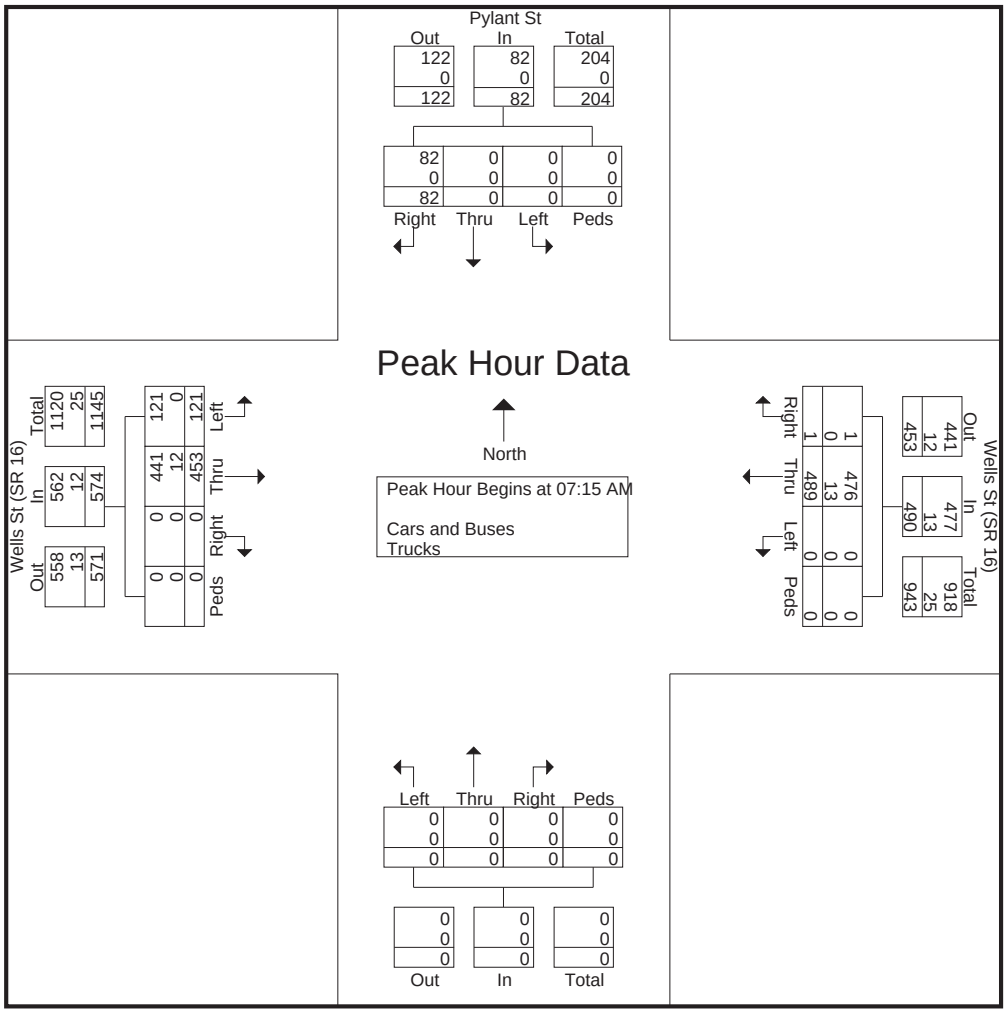
TMC Data
Wells St (SR 16) @ Pylant St

7-9am | 4-6pm

File Name : 34580001
Site Code : 34580001
Start Date : 12/12/2013

	Northbound					Pylant St Southbound					Wells St (SR 16) Eastbound					Wells St (SR 16) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	0	0	0	0	0	0	20	0	20	18	91	0	0	109	0	129	**1**	0	130	259
07:30 AM	0	0	0	0	0	0	0	21	0	21	**38**	119	0	0	157	0	**132**	0	0	**132**	310
07:45 AM	0	0	0	0	0	0	0	**29**	0	**29**	35	**138**	0	0	**173**	0	129	0	0	129	**331**
08:00 AM	0	0	0	0	0	0	0	12	0	12	30	105	0	0	135	0	99	0	0	99	246
Total Volume	0	0	0	0	0	0	0	82	0	82	121	453	0	0	574	0	489	1	0	490	1146
% App. Total	0	0	0	0		0	0	100	0		21.1	78.9	0	0		0	99.8	0.2	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.707	.000	.707	.796	.821	.000	.000	.829	.000	.926	.250	.000	.928	.866
Cars and Buses	0	0	0	0	0	0	0	82	0	82	121	441	0	0	562	0	476	1	0	477	1121
% Cars and Buses	0	0	0	0	0	0	0	100	0	100	100	97.4	0	0	97.9	0	97.3	100	0	97.3	97.8
Trucks	0	0	0	0	0	0	0	0	0	0	0	12	0	0	12	0	13	0	0	13	25
% Trucks	0	0	0	0	0	0	0	0	0	0	0	2.6	0	0	2.1	0	2.7	0	0	2.7	2.2



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TMC Data
Wells St (SR 16) @ Pylant St

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File Name : 34580001
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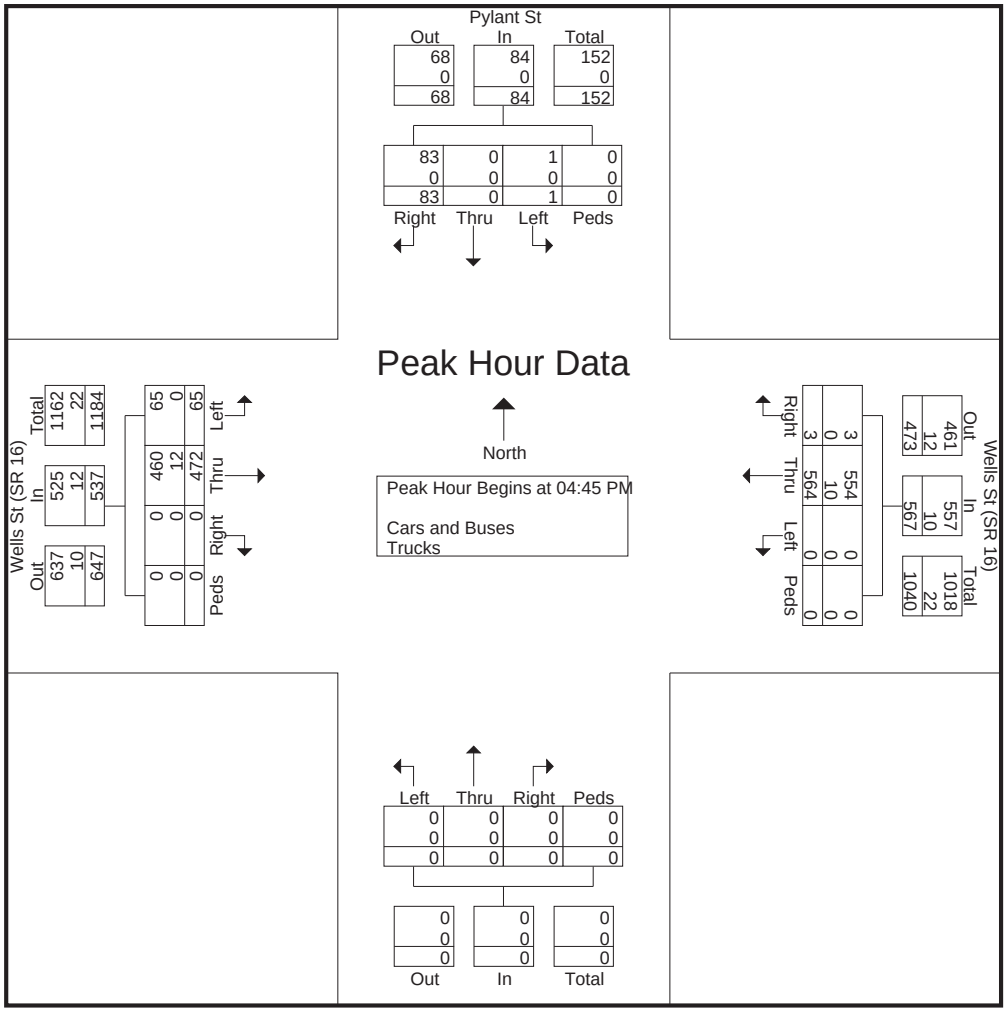
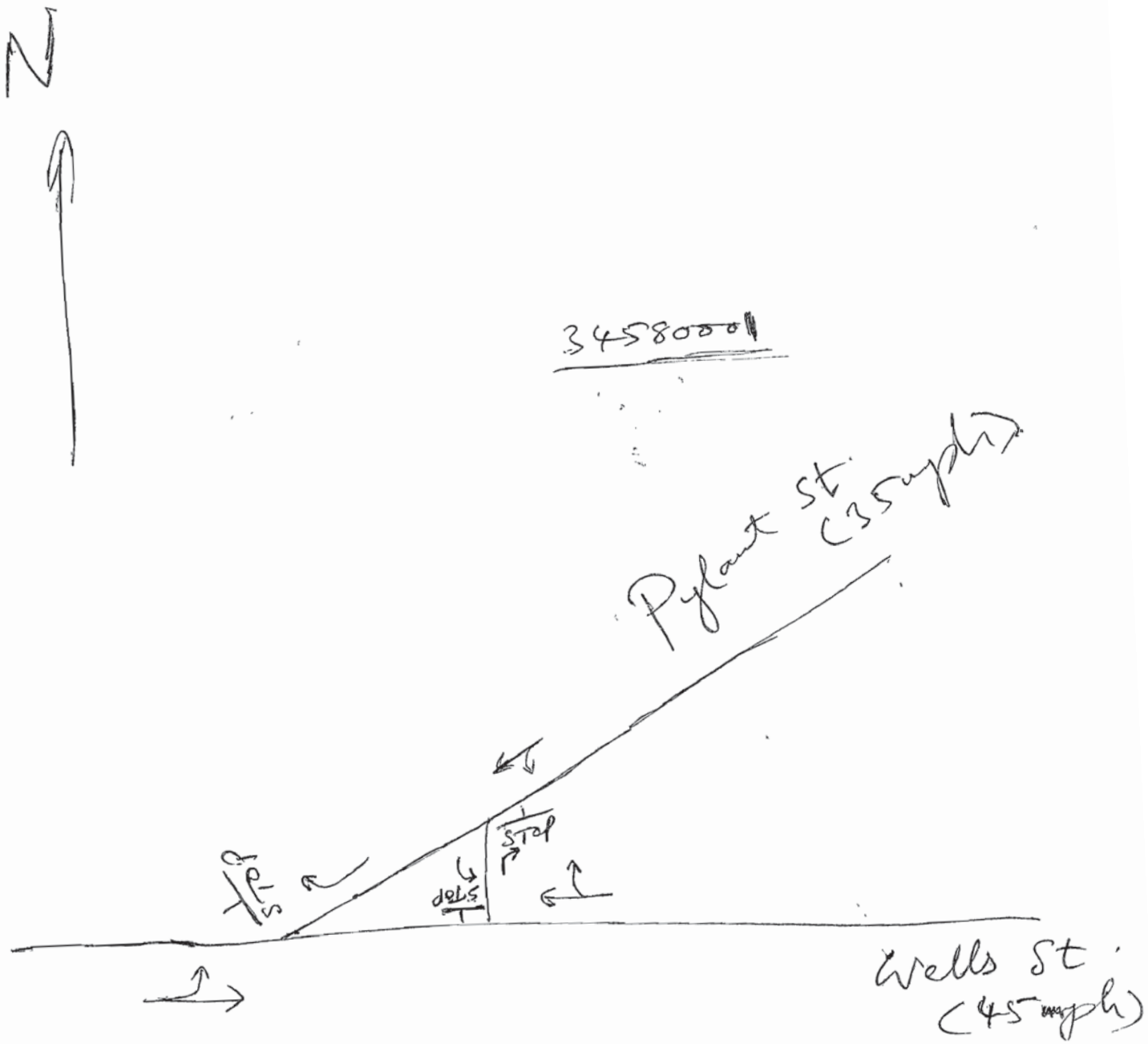
	Northbound					Pylant St Southbound					Wells St (SR 16) Eastbound					Wells St (SR 16) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	0	0	0	0	22	0	22	16	**133**	0	0	**149**	0	122	1	0	123	294
05:00 PM	0	0	0	0	0	0	0	22	0	22	17	124	0	0	141	0	138	0	0	138	**301**
05:15 PM	0	0	0	0	0	**1**	0	**23**	0	**24**	12	99	0	0	111	0	**160**	**2**	0	**162**	297
05:30 PM	0	0	0	0	0	0	0	16	0	16	**20**	116	0	0	136	0	144	0	0	144	296
Total Volume	0	0	0	0	0	1	0	83	0	84	65	472	0	0	537	0	564	3	0	567	1188
% App. Total	0	0	0	0		1.2	0	98.8	0		12.1	87.9	0	0		0	99.5	0.5	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.902	.000	.875	.813	.887	.000	.000	.901	.000	.881	.375	.000	.875	.987
Cars and Buses	0	0	0	0	0	1	0	83	0	84	65	460	0	0	525	0	554	3	0	557	1166
% Cars and Buses	0	0	0	0	0	100	0	100	0	100	100	97.5	0	0	97.8	0	98.2	100	0	98.2	98.1
Trucks	0	0	0	0	0	0	0	0	0	0	0	12	0	0	12	0	10	0	0	10	22
% Trucks	0	0	0	0	0	0	0	0	0	0	0	2.5	0	0	2.2	0	1.8	0	0	1.8	1.9




N
3458000
Pyfont St.
(35 mph)
STOP
STOP
Wells St.
(45 mph)

Reliable Traffic Data Services, LLC

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Classification Data

Site Code: 34580101
SR16 East of Pylant St

Eastbound

Start Time	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13	Class 14	Total
12/12/13	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
00:15	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
00:30	0	7	1	1	0	0	0	0	0	0	0	0	0	0	9
00:45	0	5	0	0	0	0	0	0	1	0	0	0	0	0	6
	0	20	1	1	0	0	0	0	1	0	0	0	0	0	23
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:15	0	4	1	0	0	0	0	1	0	0	0	0	0	0	6
01:30	0	8	0	0	0	0	0	1	0	0	0	0	0	0	9
01:45	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
	0	18	1	0	0	0	0	2	0	0	0	0	0	0	21
02:00	0	4	0	0	1	0	0	0	0	0	0	0	0	0	5
02:15	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
02:30	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
02:45	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
	0	11	2	0	1	0	0	0	0	0	0	0	0	0	14
03:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
03:15	0	3	1	0	0	0	0	1	1	0	0	0	0	0	6
03:30	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
03:45	0	3	1	0	2	0	0	2	0	0	0	0	0	0	8
	0	10	2	0	3	0	0	3	1	0	0	0	0	0	19
04:00	0	2	1	0	1	0	0	2	0	0	0	0	0	0	6
04:15	1	6	0	0	0	0	0	0	0	0	0	0	0	0	7
04:30	0	1	1	0	2	0	0	2	0	0	0	0	0	0	6
04:45	0	11	4	0	1	0	0	1	0	0	0	0	0	0	17
	1	20	6	0	4	0	0	5	0	0	0	0	0	0	36
05:00	0	14	2	0	0	0	0	1	0	0	0	0	0	0	17
05:15	0	15	5	0	3	1	0	2	0	0	0	0	0	0	26
05:30	0	20	12	0	5	0	0	0	0	0	0	0	0	0	37
05:45	0	16	8	0	4	0	0	1	0	0	0	0	0	0	29
	0	65	27	0	12	1	0	4	0	0	0	0	0	0	109
06:00	0	28	9	1	9	0	0	0	0	0	0	0	0	0	47
06:15	1	28	9	0	9	0	0	3	2	0	1	0	0	0	53
06:30	1	45	7	1	9	0	0	1	0	0	0	0	0	0	64
06:45	1	49	12	3	7	0	0	0	0	0	1	0	0	0	73
	3	150	37	5	34	0	0	4	2	0	2	0	0	0	237
07:00	1	54	24	1	9	2	0	4	1	0	0	0	0	0	96
07:15	0	52	22	0	10	0	0	1	0	0	0	0	0	0	85
07:30	3	83	14	0	4	1	0	0	0	0	0	0	0	0	105
07:45	1	111	16	3	8	0	0	0	0	0	0	0	0	0	139
	5	300	76	4	31	3	0	5	1	0	0	0	0	0	425
08:00	2	66	16	0	13	0	1	3	0	0	0	0	0	0	101
08:15	2	76	12	0	16	1	0	5	0	0	0	0	0	0	112
08:30	1	66	9	0	15	0	0	3	0	0	0	0	0	0	94
08:45	1	57	10	2	8	1	0	1	0	0	0	0	0	0	80
	6	265	47	2	52	2	1	12	0	0	0	0	0	0	387
09:00	1	46	19	0	10	1	0	4	0	0	0	0	0	0	81
09:15	0	49	7	1	8	1	0	1	1	0	0	0	0	0	68
09:30	0	40	8	0	12	0	0	2	0	1	0	0	0	0	63
09:45	1	38	12	1	8	0	0	1	0	0	0	0	0	0	61
	2	173	46	2	38	2	0	8	1	1	0	0	0	0	273
10:00	5	48	15	1	6	0	0	2	0	0	0	0	0	0	77
10:15	1	25	8	1	6	0	0	1	1	0	0	0	0	0	43
10:30	0	43	11	1	8	1	0	6	0	0	1	0	0	0	71
10:45	2	40	7	2	11	0	0	4	1	0	0	0	0	0	67
	8	156	41	5	31	1	0	13	2	0	1	0	0	0	258
11:00	1	48	11	0	3	1	0	4	0	0	0	0	0	0	68
11:15	0	35	8	0	5	0	0	14	0	0	1	0	0	0	63
11:30	2	49	10	3	9	2	0	4	1	0	0	1	0	0	81
11:45	0	30	10	0	6	3	0	7	0	0	1	0	0	0	57
	3	162	39	3	23	6	0	29	1	0	2	1	0	0	269
Total	28	1350	325	22	229	15	1	85	9	1	5	1	0	0	2071
Percent	1.4%	65.2%	15.7%	1.1%	11.1%	0.7%	0.0%	4.1%	0.4%	0.0%	0.2%	0.0%	0.0%	0.0%	

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Classification Data

Site Code: 34580101
SR16 East of Pylant St

Eastbound

Start Time	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13	Class 14	Total
12 PM	0	39	15	0	7	1	0	10	0	0	0	1	0	0	73
12:15	2	41	9	0	4	0	0	6	0	0	0	0	0	0	62
12:30	0	54	13	1	4	0	0	2	0	0	0	0	0	0	74
12:45	0	55	13	2	2	2	0	6	0	0	0	0	0	0	80
	2	189	50	3	17	3	0	24	0	0	0	1	0	0	289
13:00	1	54	4	3	8	0	1	3	0	0	0	0	0	0	74
13:15	0	60	8	1	7	2	1	1	0	0	0	0	0	0	80
13:30	1	47	12	1	6	0	0	1	2	0	0	0	0	0	70
13:45	0	54	14	0	7	0	0	3	0	0	0	0	0	0	78
	2	215	38	5	28	2	2	8	2	0	0	0	0	0	302
14:00	3	41	10	2	6	0	0	2	0	0	0	0	0	0	64
14:15	0	58	11	0	16	2	0	2	1	0	0	0	0	0	90
14:30	0	60	11	0	5	0	0	1	0	0	0	0	0	0	77
14:45	2	61	12	1	9	1	0	1	0	0	0	0	0	0	87
	5	220	44	3	36	3	0	6	1	0	0	0	0	0	318
15:00	1	66	13	1	9	0	0	1	3	0	0	0	0	0	94
15:15	0	78	12	0	7	0	0	1	0	0	0	0	0	0	98
15:30	1	74	12	0	12	0	1	1	0	0	0	0	0	0	101
15:45	1	74	11	1	10	1	0	1	1	0	0	0	0	0	100
	3	292	48	2	38	1	1	4	4	0	0	0	0	0	393
16:00	4	67	15	3	10	0	0	3	0	0	0	0	0	0	102
16:15	3	79	19	1	14	2	0	2	1	0	1	1	0	0	123
16:30	3	90	12	3	22	0	0	1	1	0	0	0	0	0	132
16:45	1	96	13	1	14	2	0	2	1	0	0	0	0	0	130
	11	332	59	8	60	4	0	8	3	0	1	1	0	0	487
17:00	2	85	19	0	14	1	1	0	0	0	0	0	0	0	122
17:15	1	80	12	0	10	0	0	1	0	0	0	0	0	0	104
17:30	4	84	12	3	16	2	0	2	1	0	0	0	0	0	124
17:45	2	90	8	0	7	1	0	1	0	0	0	0	0	0	109
	9	339	51	3	47	4	1	4	1	0	0	0	0	0	459
18:00	2	82	9	0	10	2	0	0	0	0	0	0	0	0	105
18:15	3	79	12	0	10	0	0	1	0	1	0	0	0	0	106
18:30	0	46	13	0	8	0	0	2	0	0	0	0	0	0	69
18:45	1	47	10	0	5	0	0	0	1	0	0	0	0	0	64
	6	254	44	0	33	2	0	3	1	1	0	0	0	0	344
19:00	0	38	8	0	7	0	0	1	0	0	0	0	0	0	54
19:15	1	56	6	0	11	1	0	0	0	0	0	0	0	0	75
19:30	0	39	12	0	3	0	0	1	0	0	0	0	0	0	55
19:45	0	35	6	1	7	0	0	0	0	0	0	0	0	0	49
	1	168	32	1	28	1	0	2	0	0	0	0	0	0	233
20:00	0	37	6	0	4	0	0	0	0	0	0	0	0	0	47
20:15	0	36	9	0	6	0	1	0	0	0	0	0	0	0	52
20:30	0	44	6	0	2	0	0	0	1	0	0	0	0	0	53
20:45	0	24	2	0	3	0	0	0	0	0	0	0	0	0	29
	0	141	23	0	15	0	1	0	1	0	0	0	0	0	181
21:00	0	25	2	0	6	0	0	2	0	0	0	0	0	0	35
21:15	0	27	4	0	5	0	0	0	0	0	0	0	0	0	36
21:30	0	29	3	0	4	0	0	1	0	0	0	0	0	0	37
21:45	0	21	4	0	1	0	0	0	0	0	0	0	0	0	26
	0	102	13	0	16	0	0	3	0	0	0	0	0	0	134
22:00	0	19	3	0	0	0	0	0	0	0	0	0	0	0	22
22:15	0	8	3	0	1	0	0	1	0	0	0	0	0	0	13
22:30	0	16	0	0	2	0	0	0	0	0	0	0	0	0	18
22:45	1	12	3	0	1	1	0	2	0	0	0	0	0	0	20
	1	55	9	0	4	1	0	3	0	0	0	0	0	0	73
23:00	0	9	2	0	1	0	0	0	0	0	0	0	0	0	12
23:15	0	7	0	0	1	0	0	1	0	0	0	0	0	0	9
23:30	0	6	1	0	0	0	0	0	0	0	0	0	0	0	7
23:45	0	3	0	0	1	0	0	0	0	0	0	0	0	0	4
	0	25	3	0	3	0	0	1	0	0	0	0	0	0	32
Total	40	2332	414	25	325	21	5	66	13	1	1	2	0	0	3245
Percent	1.2%	71.9%	12.8%	0.8%	10.0%	0.6%	0.2%	2.0%	0.4%	0.0%	0.0%	0.1%	0.0%	0.0%	
Grand Total	68	3682	739	47	554	36	6	151	22	2	6	3	0	0	5316
Percent	1.3%	69.3%	13.9%	0.9%	10.4%	0.7%	0.1%	2.8%	0.4%	0.0%	0.1%	0.1%	0.0%	0.0%	

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Classification Data

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SR16 East of Pylant St

Westbound

Start Time	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13	Class 14	Total
12/12/13	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
00:15	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
00:30	0	2	0	0	2	0	0	0	0	0	0	0	0	0	4
00:45	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
	0	9	2	0	2	0	0	0	0	0	0	0	0	0	13
01:00	0	3	0	0	2	0	0	0	0	0	0	0	0	0	5
01:15	0	3	2	0	0	0	0	0	0	0	0	0	0	0	5
01:30	0	3	2	0	0	0	0	0	0	0	0	0	0	0	5
01:45	0	2	0	0	0	1	0	0	0	0	0	0	0	0	3
	0	11	4	0	2	1	0	0	0	0	0	0	0	0	18
02:00	0	7	0	0	0	0	0	0	1	0	0	0	0	0	8
02:15	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
02:30	0	9	0	0	0	0	0	0	0	0	0	0	0	0	9
02:45	0	2	0	0	0	0	0	0	1	0	0	0	0	0	3
	0	23	0	0	0	0	0	0	2	0	0	0	0	0	25
03:00	0	4	0	2	3	0	0	0	0	0	0	0	0	0	9
03:15	0	6	3	0	0	1	0	0	0	0	0	0	0	0	10
03:30	0	4	6	0	0	0	0	0	0	0	0	0	0	0	10
03:45	0	2	0	0	0	0	0	0	1	0	0	0	0	0	3
	0	16	9	2	3	1	0	0	1	0	0	0	0	0	32
04:00	0	3	0	0	0	1	0	0	0	0	0	0	0	0	4
04:15	0	3	1	0	3	0	0	0	0	0	0	0	0	0	7
04:30	0	6	2	0	2	0	0	0	0	0	0	0	0	0	10
04:45	0	8	3	1	1	0	0	0	0	0	0	0	0	0	13
	0	20	6	1	6	1	0	0	0	0	0	0	0	0	34
05:00	0	21	4	0	3	0	0	0	0	0	0	0	0	0	28
05:15	0	22	4	3	2	1	0	0	0	0	0	0	0	0	32
05:30	1	30	2	0	3	0	0	1	0	0	0	0	0	0	37
05:45	0	29	3	0	2	0	0	1	0	0	0	0	0	0	35
	1	102	13	3	10	1	0	2	0	0	0	0	0	0	132
06:00	1	60	8	0	1	0	0	0	0	0	0	0	0	0	70
06:15	1	57	10	0	2	0	0	0	0	0	0	0	0	0	70
06:30	1	51	10	0	2	1	0	0	0	0	0	0	0	0	65
06:45	2	49	7	0	1	0	0	0	0	0	0	0	0	0	59
	5	217	35	0	6	1	0	0	0	0	0	0	0	0	264
07:00	0	98	14	0	4	1	0	0	0	0	0	0	0	0	117
07:15	1	106	17	1	9	0	0	0	0	0	0	0	0	0	134
07:30	0	96	20	0	6	0	0	1	0	0	0	0	0	0	123
07:45	1	88	12	1	3	1	0	2	0	0	0	0	0	0	108
	2	388	63	2	22	2	0	3	0	0	0	0	0	0	482
08:00	2	70	11	0	2	1	0	3	0	0	0	0	0	0	89
08:15	1	77	12	0	3	1	0	2	0	0	0	0	0	0	96
08:30	0	72	14	0	7	0	0	1	0	0	0	0	0	0	94
08:45	1	69	9	0	8	1	0	2	0	0	0	0	0	0	90
	4	288	46	0	20	3	0	8	0	0	0	0	0	0	369
09:00	0	51	6	0	5	0	0	1	0	0	0	0	0	0	63
09:15	0	49	4	0	4	1	0	1	1	0	0	0	0	0	60
09:30	1	47	2	0	3	0	0	1	0	0	0	0	0	0	54
09:45	1	46	2	0	4	0	0	4	0	0	0	0	0	0	57
	2	193	14	0	16	1	0	7	1	0	0	0	0	0	234
10:00	2	45	2	0	6	0	0	5	1	0	0	0	0	0	61
10:15	2	46	8	0	2	1	0	6	0	0	0	0	0	0	65
10:30	1	44	4	0	3	0	0	8	0	0	0	0	0	0	60
10:45	0	46	3	0	3	0	0	7	0	0	0	0	0	0	59
	5	181	17	0	14	1	0	26	1	0	0	0	0	0	245
11:00	1	49	4	0	5	1	0	6	0	0	0	0	0	0	66
11:15	2	47	4	0	4	0	0	7	0	0	0	0	0	0	64
11:30	0	45	5	0	7	0	0	8	0	0	0	0	0	0	65
11:45	0	42	5	0	5	0	0	7	0	0	0	0	0	0	59
	3	183	18	0	21	1	0	28	0	0	0	0	0	0	254
Total	22	1631	227	8	122	13	0	74	5	0	0	0	0	0	2102
Percent	1.0%	77.6%	10.8%	0.4%	5.8%	0.6%	0.0%	3.5%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	

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Westbound

Start Time	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13	Class 14	Total
12 PM	1	65	11	0	11	0	0	6	0	0	0	0	0	0	94
12:15	0	63	6	1	4	1	0	7	0	0	0	0	0	0	82
12:30	2	56	3	1	3	0	0	8	0	0	0	0	0	0	73
12:45	0	59	2	1	2	1	0	6	0	0	0	0	0	0	71
	3	243	22	3	20	2	0	27	0	0	0	0	0	0	320
13:00	1	62	8	0	9	1	0	3	2	0	0	0	0	0	86
13:15	1	59	9	1	9	0	0	2	0	0	0	0	0	0	81
13:30	0	61	12	1	7	1	0	2	0	0	1	0	0	0	85
13:45	0	57	14	0	7	0	0	3	0	0	0	0	0	0	81
	2	239	43	2	32	2	0	10	2	0	1	0	0	0	333
14:00	1	64	13	1	12	2	0	2	0	0	0	0	0	0	95
14:15	0	60	10	1	7	1	0	2	0	1	0	0	0	0	82
14:30	0	55	10	0	3	0	0	1	0	0	0	0	0	0	69
14:45	2	48	13	1	12	1	1	1	0	0	1	0	0	0	80
	3	227	46	3	34	4	1	6	0	1	1	0	0	0	326
15:00	1	51	19	2	10	2	0	1	0	0	0	1	0	0	87
15:15	0	50	20	0	11	1	1	0	0	0	1	1	0	0	85
15:30	2	49	11	1	11	1	1	0	1	0	1	0	0	0	78
15:45	0	54	22	2	11	0	1	0	0	0	0	1	0	0	91
	3	204	72	5	43	4	3	1	1	0	2	3	0	0	341
16:00	2	72	16	2	10	1	1	0	1	0	0	0	0	0	105
16:15	2	88	20	2	5	0	1	1	1	0	1	0	0	0	121
16:30	3	84	17	2	12	1	1	0	2	0	0	0	0	0	122
16:45	2	81	20	0	19	1	1	2	1	0	0	0	0	0	127
	9	325	73	6	46	3	4	3	5	0	1	0	0	0	475
17:00	1	108	23	5	22	2	0	1	0	0	0	0	0	0	162
17:15	2	78	18	0	17	1	0	0	1	1	0	1	0	0	119
17:30	4	90	25	0	11	2	1	0	2	0	0	0	0	0	135
17:45	3	87	17	0	27	1	0	1	1	0	0	0	0	0	137
	10	363	83	5	77	6	1	2	4	1	0	1	0	0	553
18:00	0	64	23	0	18	1	0	0	1	0	0	0	0	0	107
18:15	3	54	15	0	11	0	0	0	2	0	0	0	0	0	85
18:30	2	46	21	0	16	1	0	1	1	0	0	0	0	0	88
18:45	1	54	8	0	12	1	0	1	0	0	0	1	0	0	78
	6	218	67	0	57	3	0	2	4	0	0	1	0	0	358
19:00	2	41	16	0	8	0	1	0	0	1	0	0	0	0	69
19:15	3	32	15	0	8	1	0	1	0	0	0	0	0	0	60
19:30	0	41	11	1	6	0	0	0	0	0	1	0	0	0	60
19:45	0	24	14	1	8	0	0	1	0	0	0	0	0	0	48
	5	138	56	2	30	1	1	2	0	1	1	0	0	0	237
20:00	1	30	10	0	6	1	1	1	0	0	0	0	0	0	50
20:15	0	22	8	0	5	1	0	0	0	0	0	1	0	0	37
20:30	1	13	2	0	2	1	0	0	0	0	0	0	0	0	19
20:45	0	21	11	1	8	0	0	1	0	0	0	0	0	0	42
	2	86	31	1	21	3	1	2	0	0	0	1	0	0	148
21:00	0	20	8	0	5	0	0	0	0	0	0	0	0	0	33
21:15	0	16	2	0	0	1	0	0	0	0	0	0	0	0	19
21:30	0	16	2	0	2	0	0	0	0	0	0	0	0	0	20
21:45	0	8	2	0	2	1	0	0	0	0	0	0	0	0	13
	0	60	14	0	9	2	0	0	0	0	0	0	0	0	85
22:00	0	13	1	0	2	1	1	1	0	0	0	0	0	0	19
22:15	0	10	7	0	4	1	0	1	0	0	0	1	0	0	24
22:30	0	6	3	0	1	0	1	0	0	0	0	0	0	0	11
22:45	0	13	2	0	0	1	0	0	0	0	0	0	0	0	16
	0	42	13	0	7	3	2	2	0	0	0	1	0	0	70
23:00	0	14	1	0	2	1	0	0	0	0	0	0	0	0	18
23:15	0	7	2	0	1	0	0	0	0	0	0	0	0	0	10
23:30	0	5	0	0	1	0	0	0	0	0	0	0	0	0	6
23:45	0	4	2	0	1	0	0	0	0	0	0	0	0	0	7
	0	30	5	0	5	1	0	0	0	0	0	0	0	0	41
Total	43	2175	525	27	381	34	13	57	16	3	6	7	0	0	3287
Percent	1.3%	66.2%	16.0%	0.8%	11.6%	1.0%	0.4%	1.7%	0.5%	0.1%	0.2%	0.2%	0.0%	0.0%	
Grand Total	65	3806	752	35	503	47	13	131	21	3	6	7	0	0	5389
Percent	1.2%	70.6%	14.0%	0.6%	9.3%	0.9%	0.2%	2.4%	0.4%	0.1%	0.1%	0.1%	0.0%	0.0%	

Appendix B

Accident ID	RCLINK	Milepoint	FATALITIES	VEHICLES	INJURIES	Surface	Location of Impact	First Harmful Event	Collision Type	Commercial Vehicles	County Name	GDOT District
216586	771001600	70	0	2	1	1	1	11	3		Coweta	3
216588	771001600	70	0	2	0	2	1	11	3		Coweta	3
3559719	771001600	70	0	1	0	1	1	14	6		Coweta	3
3562643	771001600	70	0	2	0	1	1	11	3		Coweta	3
3742571	771001600	70	0	2	1	1	1	11	3		Coweta	3
3742572	771001600	70	0	2	1	2	1	11	3		Coweta	3
3843618	771001600	70	0	1	1	1	1	9	6		Coweta	3
3922855	771001600	70	0	2	0	1	1	11	3		Coweta	3
3942542	771001600	70	0	2	1	1	1	11	3		Coweta	3
3949479	771001600	70	0	4	3	1	1	11	3		Coweta	3
3951963	771001600	70	0	2	0	2	1	11	3		Coweta	3
3953514	771001600	70	0	2	2	1	1	11	3		Coweta	3
4543240	771001600	70	0	1	1	2	3	33	6	0	Coweta	3
4622011	771001600	70	0	2	0	2	1	11	3	0	Coweta	3

Data Source: Georgia DOT GeoTraqs

Note: There are a total of 19 crashes from 2004 to 2009, with a crash rate of 300.96 crashes per 100 MVM with a severity/crash ratio of 6.32 on SR 16 at this intersection. Data source: CARE database Georgia Crash Data 2000-2009.

Location	Crash	Case Number	First Harmful Event	Crash Severity	Event Location	County	City	Vehicles	Primary Cause	Lighting Conditions	Causal Unit	Weather
Route: Coweta SR 16 - I	1	45190077	14-Deer	PDO Crash	1-On Roadway	Coweta	Coweta Rural	1	12-Object or Animal	5-Dark-Not Lighted	1	1-Clear
Route: Coweta SR 16 - I	2	45190081	11-Motor Vehicle in Motion	Non-Fatal Injury Crash	3-Off Roadway	Coweta	Coweta Rural	2	03-Following too Close	1-Daylight	1	3-Rain
Route: Coweta SR 16 - I	3	45190103	11-Motor Vehicle in Motion	Non-Fatal Injury Crash	1-On Roadway	Coweta	Coweta Rural	2	03-Following too Close	5-Dark-Not Lighted	1	1-Clear
Route: Coweta SR 16 - I	4	50990009	11-Motor Vehicle in Motion	PDO Crash	1-On Roadway	Coweta	Coweta Rural	2	03-Following too Close	1-Daylight	1	2-Cloudy
Route: Coweta SR 16 - I	5	52280601	11-Motor Vehicle in Motion	PDO Crash	1-On Roadway	Coweta	Coweta Rural	2	26-Other	1-Daylight	1	1-Clear
Route: Coweta SR 16 - I	6	52770132	11-Motor Vehicle in Motion	PDO Crash	1-On Roadway	Coweta	Coweta Rural	2	03-Following too Close	1-Daylight	1	2-Cloudy
Route: Coweta SR 16 - I	7	53560065	11-Motor Vehicle in Motion	PDO Crash	1-On Roadway	Coweta	Coweta Rural	2	03-Following too Close	1-Daylight	1	1-Clear
Route: Coweta SR 16 - I	8	54480683	11-Motor Vehicle in Motion	PDO Crash	1-On Roadway	Coweta	Coweta Rural	4	03-Following too Close	4-Dark-Lighted	1	1-Clear
Route: Coweta SR 16 - I	9	55140324	11-Motor Vehicle in Motion	PDO Crash	1-On Roadway	Coweta	Coweta Rural	2	03-Following too Close	1-Daylight	1	3-Rain
Route: Coweta SR 16 - I	10	61140744	11-Motor Vehicle in Motion	PDO Crash	1-On Roadway	Coweta	Coweta Rural	2	03-Following too Close	1-Daylight	1	1-Clear
Route: Coweta SR 16 - I	11	63580511	11-Motor Vehicle in Motion	Non-Fatal Injury Crash	1-On Roadway	Coweta	Coweta Rural	2	03-Following too Close	1-Daylight	1	2-Cloudy
Route: Coweta SR 16 - I	12	64350506	11-Motor Vehicle in Motion	PDO Crash	1-On Roadway	Coweta	Coweta Rural	2	03-Following too Close	1-Daylight	1	3-Rain
Route: Coweta SR 16 - I	13	64350510	25-Utility Pole	PDO Crash	3-Off Roadway	Coweta	Coweta Rural	1	08-Weather Conditions	1-Daylight	1	3-Rain
Route: Coweta SR 16 - I	14	81150334	11-Motor Vehicle in Motion	PDO Crash	1-On Roadway	Coweta	Coweta Rural	2	03-Following too Close	5-Dark-Not Lighted	1	1-Clear
Route: Coweta SR 16 - I	15	81150335	11-Motor Vehicle in Motion	PDO Crash	1-On Roadway	Coweta	Coweta Rural	3	28-Inattentive	1-Daylight	1	1-Clear
Route: Coweta SR 16 - I	16	85390038	25-Utility Pole	PDO Crash	3-Off Roadway	Coweta	Coweta Rural	1	08-Weather Conditions	1-Daylight	1	3-Rain
Route: Coweta SR 16 - I	17	91340320	11-Motor Vehicle in Motion	Non-Fatal Injury Crash	1-On Roadway	Coweta	Coweta Rural	2	01-No Contributing Factors	1-Daylight	1	1-Clear
Route: Coweta SR 16 - I	18	91340322	11-Motor Vehicle in Motion	PDO Crash	1-On Roadway	Coweta	Coweta Rural	2	08-Weather Conditions	1-Daylight	1	3-Rain
Route: Coweta SR 16 - I	19	94250248	14-Deer	PDO Crash	1-On Roadway	Coweta	Coweta Rural	1	12-Object or Animal	5-Dark-Not Lighted	1	3-Rain

Appendix C


Pylant St
Wells St (SR 16)
Well St (SR 16)
82
0
1
489
121
453
A

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Vol, veh/h	121	453	489	0	0	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	82	93	93	71	71
Heavy Vehicles, %	0	3	3	3	2	2
Mvmt Flow	151	552	526	0	0	115

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	526	0	-	0	1381	526
Stage 1	-	-	-	-	526	-
Stage 2	-	-	-	-	855	-
Critical Hdwy	4.1	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.2	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1051	-	-	-	159	552
Stage 1	-	-	-	-	593	-
Stage 2	-	-	-	-	417	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1051	-	-	-	126	552
Mov Cap-2 Maneuver	-	-	-	-	126	-
Stage 1	-	-	-	-	593	-
Stage 2	-	-	-	-	331	-

Approach	EB	WB	SW
HCM Control Delay, s	1.9	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	1051	-	-	-	552
HCM Lane V/C Ratio	0.144	-	-	-	0.209
HCM Control Delay (s)	9	0	-	-	13.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	0.8

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	453	489	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	93	93	71	71
Heavy Vehicles, %	3	3	3	2	2	2
Mvmt Flow	0	552	526	1	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	527	0	-	0	1078	526
Stage 1	-	-	-	-	526	-
Stage 2	-	-	-	-	552	-
Critical Hdwy	4.13	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.227	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1035	-	-	-	242	552
Stage 1	-	-	-	-	593	-
Stage 2	-	-	-	-	577	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1035	-	-	-	242	552
Mov Cap-2 Maneuver	-	-	-	-	242	-
Stage 1	-	-	-	-	593	-
Stage 2	-	-	-	-	577	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1035	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	121	0	0	82	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	71	71	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	151	0	0	115	0	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	151	0	266	151
Stage 1	-	-	-	-	151	-
Stage 2	-	-	-	-	115	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1430	-	723	895
Stage 1	-	-	-	-	877	-
Stage 2	-	-	-	-	910	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1430	-	723	895
Mov Cap-2 Maneuver	-	-	-	-	723	-
Stage 1	-	-	-	-	877	-
Stage 2	-	-	-	-	910	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	895	-	-	1430	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-


Pylant St
Wells St (SR 16)
Well St (SR 16)
A
83
1
3
564
83
65
472
564
65
472

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Vol, veh/h	65	472	564	0	0	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	89	88	88	90	90
Heavy Vehicles, %	0	3	2	2	2	2
Mvmt Flow	80	530	641	0	0	92

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	641	0	-	0	1332	641
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	691	-
Critical Hdwy	4.1	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.2	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	953	-	-	-	170	475
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	497	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	953	-	-	-	150	475
Mov Cap-2 Maneuver	-	-	-	-	150	-
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	438	-

Approach	EB	WB	SW
HCM Control Delay, s	1.2	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	953	-	-	-	475
HCM Lane V/C Ratio	0.084	-	-	-	0.194
HCM Control Delay (s)	9.1	0	-	-	14.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.7

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	472	564	3	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	88	38	25	25
Heavy Vehicles, %	3	3	2	2	2	2
Mvmt Flow	0	530	641	8	4	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	649	0	-	0	1175	645
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	530	-
Critical Hdwy	4.13	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.227	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	932	-	-	-	212	472
Stage 1	-	-	-	-	522	-
Stage 2	-	-	-	-	590	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	932	-	-	-	212	472
Mov Cap-2 Maneuver	-	-	-	-	212	-
Stage 1	-	-	-	-	522	-
Stage 2	-	-	-	-	590	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	22.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	932	-	-	-	212
HCM Lane V/C Ratio	-	-	-	-	0.019
HCM Control Delay (s)	0	-	-	-	22.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	65	0	1	83	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	25	90	38	38
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	0	4	92	0	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	80	0	180	80
Stage 1	-	-	-	-	80	-
Stage 2	-	-	-	-	100	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1518	-	810	980
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	924	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1518	-	808	980
Mov Cap-2 Maneuver	-	-	-	-	808	-
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	921	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	980	-	-	1518	-
HCM Lane V/C Ratio	0.008	-	-	0.003	-
HCM Control Delay (s)	8.7	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Appendix D


Pylant St
Wells St (SR 16)
Well St (SR 16)
111
10
26
664
10
23
111
164
615
664
164
615
A

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Vol, veh/h	164	615	664	0	0	111
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	82	93	93	71	71
Heavy Vehicles, %	0	3	3	3	2	2
Mvmt Flow	205	750	714	0	0	156

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	714	0	-	0	1874	714
Stage 1	-	-	-	-	714	-
Stage 2	-	-	-	-	1160	-
Critical Hdwy	4.1	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.2	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	895	-	-	-	79	431
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	298	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	895	-	-	-	48	431
Mov Cap-2 Maneuver	-	-	-	-	48	-
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	181	-

Approach	EB	WB	SW
HCM Control Delay, s	2.2	0	18
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	895	-	-	-	431
HCM Lane V/C Ratio	0.229	-	-	-	0.363
HCM Control Delay (s)	10.2	0	-	-	18
HCM Lane LOS	B	A	-	-	C
HCM 95th %tile Q(veh)	0.9	-	-	-	1.6

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	615	664	26	10	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	93	93	71	71
Heavy Vehicles, %	3	3	3	2	2	2
Mvmt Flow	0	750	714	28	14	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	742	0	-	0	1478	728
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	750	-
Critical Hdwy	4.13	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.227	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	861	-	-	-	139	423
Stage 1	-	-	-	-	478	-
Stage 2	-	-	-	-	467	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	861	-	-	-	139	423
Mov Cap-2 Maneuver	-	-	-	-	139	-
Stage 1	-	-	-	-	478	-
Stage 2	-	-	-	-	467	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	33.8
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	861	-	-	-	139
HCM Lane V/C Ratio	-	-	-	-	0.101
HCM Control Delay (s)	0	-	-	-	33.8
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	164	0	10	111	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	71	71	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	205	0	14	156	0	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	205	0	390	205
Stage 1	-	-	-	-	205	-
Stage 2	-	-	-	-	185	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1366	-	614	836
Stage 1	-	-	-	-	829	-
Stage 2	-	-	-	-	847	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1366	-	607	836
Mov Cap-2 Maneuver	-	-	-	-	607	-
Stage 1	-	-	-	-	829	-
Stage 2	-	-	-	-	838	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	836	-	-	1366	-
HCM Lane V/C Ratio	0.034	-	-	0.01	-
HCM Control Delay (s)	9.5	-	-	7.7	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-


Pylant St
Wells St (SR 16)
Well St (SR 16)
113
11
29
766
88
641
13
A

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Vol, veh/h	88	641	766	0	0	113
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	89	88	88	90	90
Heavy Vehicles, %	0	3	2	2	2	2
Mvmt Flow	109	720	870	0	0	126

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	870	0	-	0	1808	870
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	938	-
Critical Hdwy	4.1	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.2	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	783	-	-	-	87	351
Stage 1	-	-	-	-	410	-
Stage 2	-	-	-	-	381	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	783	-	-	-	67	351
Mov Cap-2 Maneuver	-	-	-	-	67	-
Stage 1	-	-	-	-	410	-
Stage 2	-	-	-	-	293	-

Approach	EB	WB	SW
HCM Control Delay, s	1.4	0	20.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	783	-	-	-	351
HCM Lane V/C Ratio	0.139	-	-	-	0.358
HCM Control Delay (s)	10.3	0	-	-	20.9
HCM Lane LOS	B	A	-	-	C
HCM 95th %tile Q(veh)	0.5	-	-	-	1.6

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	641	766	29	11	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	88	38	25	25
Heavy Vehicles, %	3	3	2	2	2	2
Mvmt Flow	0	720	870	76	44	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	947	0	-	0	1629	909
Stage 1	-	-	-	-	909	-
Stage 2	-	-	-	-	720	-
Critical Hdwy	4.13	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.227	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	721	-	-	-	112	333
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	482	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	721	-	-	-	112	333
Mov Cap-2 Maneuver	-	-	-	-	112	-
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	482	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	56.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	721	-	-	-	112
HCM Lane V/C Ratio	-	-	-	-	0.393
HCM Control Delay (s)	0	-	-	-	56.6
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0	-	-	-	1.6

Intersection	
Int Delay, s/veh	2.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	88	0	11	113	0	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	25	90	38	38
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	0	44	126	0	76

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	109	0	323	109
Stage 1	-	-	-	-	109	-
Stage 2	-	-	-	-	214	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1481	-	671	945
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	822	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1481	-	650	945
Mov Cap-2 Maneuver	-	-	-	-	650	-
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	796	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	945	-	-	1481	-
HCM Lane V/C Ratio	0.081	-	-	0.03	-
HCM Control Delay (s)	9.1	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Appendix E


Pylant St
Pylant St
Pylant St
Wells St (SR 16)
Map
Traffic
26
664
107
111
164
615

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	164	615	664	26	10	111
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	300	200	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	82	93	93	71	71
Heavy Vehicles, %	0	3	3	3	2	2
Mvmt Flow	205	750	714	28	14	156

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	714	0	-	0	1874	714
Stage 1	-	-	-	-	714	-
Stage 2	-	-	-	-	1160	-
Critical Hdwy	4.1	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.2	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	895	-	-	-	79	431
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	298	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	895	-	-	-	61	431
Mov Cap-2 Maneuver	-	-	-	-	61	-
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	230	-

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	23.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	895	-	-	-	61	431
HCM Lane V/C Ratio	0.229	-	-	-	0.231	0.363
HCM Control Delay (s)	10.2	-	-	-	80.9	18
HCM Lane LOS	B	-	-	-	F	C
HCM 95th %tile Q(veh)	0.9	-	-	-	0.8	1.6


Pylant St
Pylant St
Wells St (SR 16)
Map
Traffic
11
113
29
766
88
641

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	88	641	766	29	11	113
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	300	200	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	89	88	38	90	90
Heavy Vehicles, %	0	3	3	3	2	2
Mvmt Flow	109	720	870	76	12	126

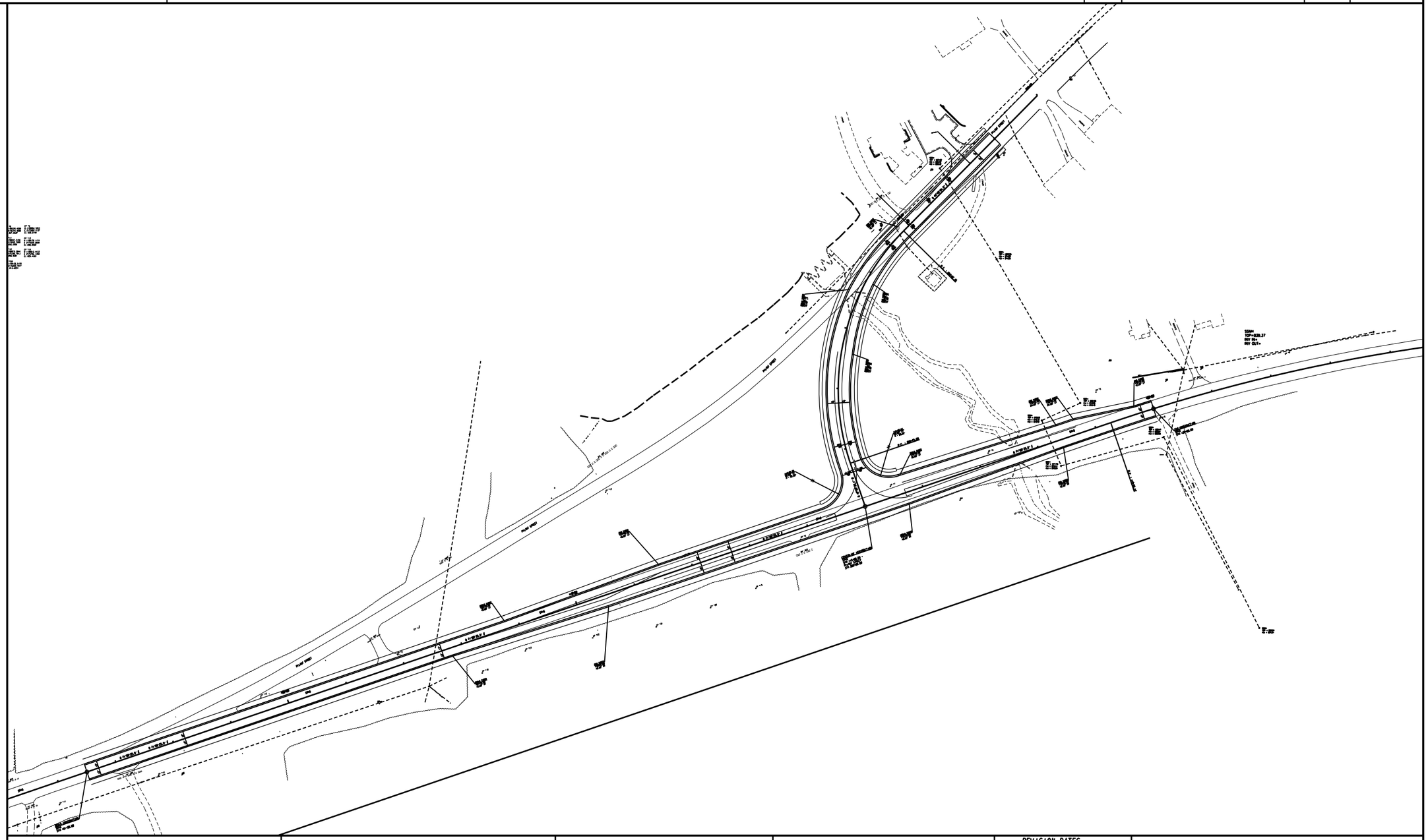
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	870	0	-	0	1808	870
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	938	-
Critical Hdwy	4.1	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.2	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	783	-	-	-	87	351
Stage 1	-	-	-	-	410	-
Stage 2	-	-	-	-	381	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	783	-	-	-	75	351
Mov Cap-2 Maneuver	-	-	-	-	75	-
Stage 1	-	-	-	-	410	-
Stage 2	-	-	-	-	328	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	24.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	783	-	-	-	75	351
HCM Lane V/C Ratio	0.139	-	-	-	0.163	0.358
HCM Control Delay (s)	10.3	-	-	-	62.1	20.9
HCM Lane LOS	B	-	-	-	F	C
HCM 95th %tile Q(veh)	0.5	-	-	-	0.5	1.6

Appendix F

		COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		COWETA, GA			



amec

AMEC ENVIRONMENT AND INFRASTRUCTURE, INC.
1075 BIG SHANTY ROAD
SUITE 100
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(770) 421-3400

CRESCENT VIEW
ENGINEERING, LLC
1003 Kenmill Drive, Marietta, GA 30060
678-324-8410
www.crescentvieweng.com

REVISION DATES		

CITY OF SENOIA

OFFICE: DEPARTMENT OF ADMINISTRATIVE SERVICES

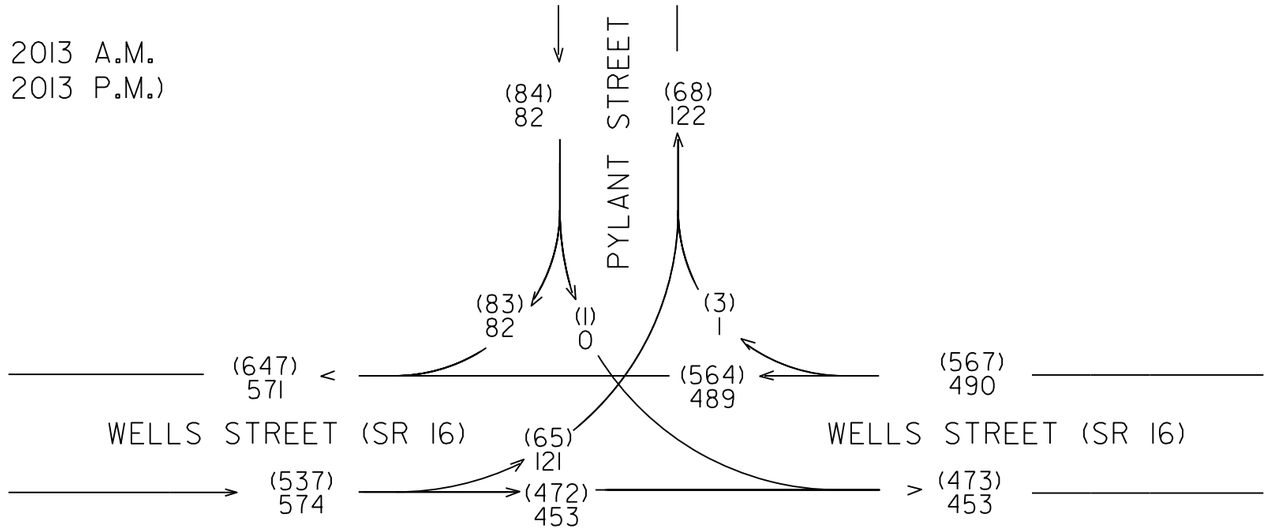
APPROVED CONCEPT PLAN

DRAWING No.
00-00

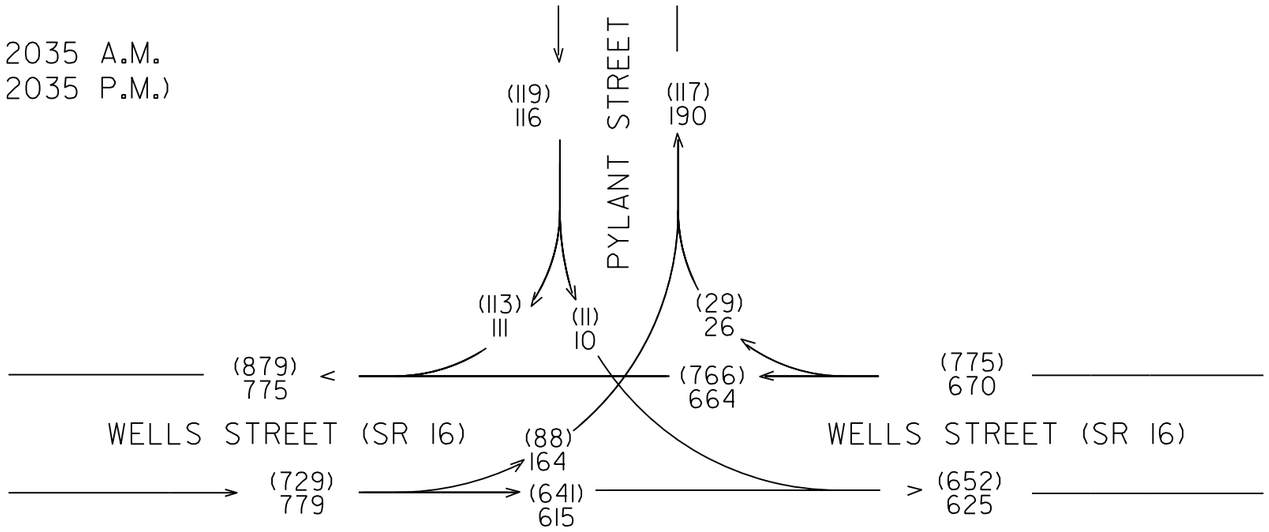
Appendix G

COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
COWETA, GA			

YEAR 2013 A.M.
(YEAR 2013 P.M.)



YEAR 2035 A.M.
(YEAR 2035 P.M.)



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AMEC ENVIRONMENT AND INFRASTRUCTURE, INC.
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REVISION DATES		

CITY OF SENOIA

OFFICE: DEPARTMENT OF ADMINISTRATIVE SERVICES

TRAFFIC DIAGRAM

DRAWING No.
10-01

Appendix H

Roundabout Analysis Tool

v 2.1
2/24/12

Welcome to GDOT's Roundabout Analysis Tool. This tool is designed for the user to determine the functionality of a proposed roundabout. The analysis is based on the 2010 Highway Capacity Manual Methodology and NCHRP Report 672, FHWA's Roundabout Informational Guide. Please read the notes in the Instructions tab before using the spreadsheet.

Analyst:	CVE
Agency/Company:	Crescent View Engineering, LLC
Date:	2/24/2015
Project Name or PI#:	0012610-Coweta
Year, Peak Period:	2035, AM Peak
County/District:	Coweta, District 3
Intersection:	State Route 16 at Pylant Street

Insert Project Information Here in the BLUE SPACE. This information is linked to the Single Lane and Multi Lane Worksheets.

Roundabout Considerations Worksheet

Roundabouts may not operate well if there is too much traffic entering the intersection or if the percentage of traffic on the major road is too high. Candidate intersections shall be analyzed to determine whether a roundabout will perform acceptably. Shown below are thresholds to determine if a roundabout capacity analysis is required:

# of circulatory lanes	ADTs (current/ build year)	% traffic on Major Road
Single Lane	less than 25,000	less than 90%
Multi-Lane	less than 45,000	less than 90%

Other things to consider when evaluating roundabouts as an alternative are Right of Way, sight distance, environmental impacts, and access to adjacent properties.

Volume Information (for Analysis Time Period)

1 Enter the Major/Minor Street ADT Volumes in the Chart below:

	Volumes	Split
Major Street	14,535	85%
Minor Street	2,510	15%
Total volumes	17,045	

Proximity to Other Intersections

2 How close is the nearest signal (miles or feet)? 0.58 mi | 0 '

3 Is the proposed intersection located within a coordinated signal network? NO

Go up to next section...

Proposed Design Configuration Chart

***Directions for this Section only*:** *(see **Instructions Tab** for other sections)*

1. Select the type of roundabout you are analyzing.
2. Key in the number of approaches and the street names at the proposed intersections.
3. Complete the Approach Characteristics Chart:
   a. Select the Street Name from the pulldown menu for each approach leg
   b. Select the Lane Type for each entry apporach lane
      **The first box is the inner lane, the second box is the outer lane*
   c. Select Yes or No if a right turn bypass will be added to each approach leg

Roundabout Characteristics

Roundabout Type:	Single Lane
# of Approaches:	3
Name of Streets:	S.R. 16 / Well Street EB
	S.R. 16 / Well Street WB
	Pylant Street

Chart Key:

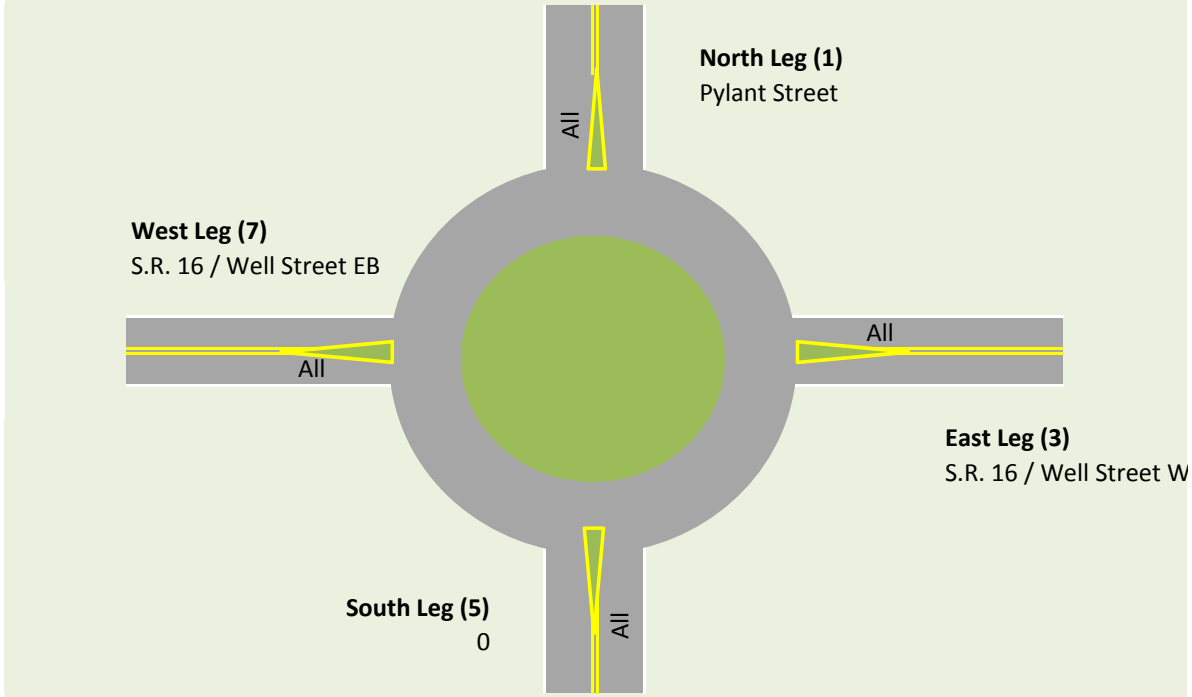
Single Lane	Street Name	
	All	
	Bypass?	
Multi-lane	Street Name	
	Inner Ln	Outer Ln
	Bypass?	

Approach Leg Characteristics:

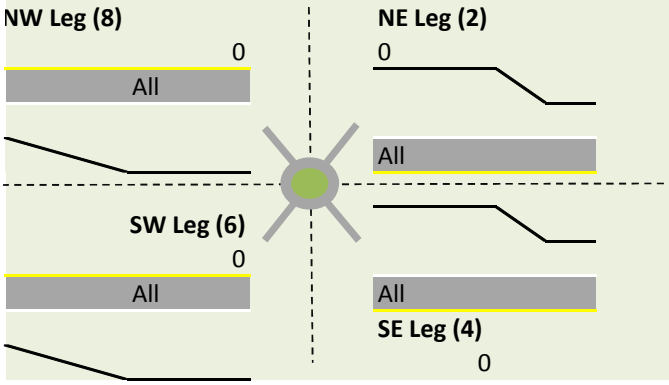
	North Leg (1)	NE Leg (2)	East Leg (3)	SE Leg (4)
Street Name:	Pylant Street		S.R. 16 / Well Street WB	
Entry Lane Config	All	All	All	All
Bypass to Adj Leg?	No		No	
	South Leg (5)	SW Leg (6)	West Leg (7)	NW Leg (8)
Street Name:			S.R. 16 / Well Street EB	
Entry Lane Config	All	All	All	All
Bypass to Adj Leg?	No		No	

Additior

Preliminary Roundabout Rendering**



al Legs

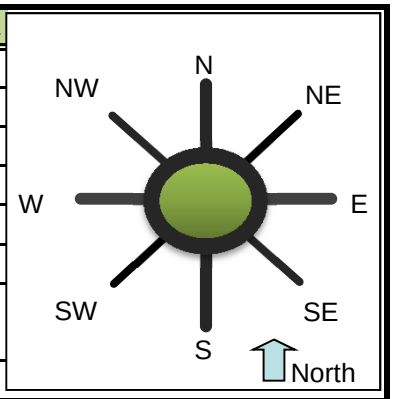


Note
This roundabout sketch does not include the secondary cardinal direction legs due to restrictions in the Excel software. For complex roundabouts, a separate sketch is recommended by the designer.

General & Site Information

v2.1

Analyst:	CVE
Agency/Co:	Crescent View Engineering, LLC
Date:	2/24/2015
Project or PI#:	0012610-Coweta
Year, Peak Hour:	2035, AM Peak
County/District:	Coweta, District 3
Intersection Name:	State Route 16 at Pylant Street



Volumes

		Entry Legs (FROM)							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
	N (1), vph			**26**				**164**	
Exit	NE (2), vph								
Legs	E (3), vph	**10**						**615**	
(TO)	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph	**111**		**664**					
	NW (8), vph								
Output	Total Vehicles	121	0	690	0	0	0	779	0

Volume Characteristics

	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	96%	100%	100%	100%	96%	100%
% Heavy Vehicles	**2%**	0%	**4%**	0%	0%	0%	**4%**	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.90*	*0.92*	*0.88*	*0.92*	*0.92*	*0.92*	*0.88*	*0.92*
F_{HV}	0.980	1.000	0.962	1.000	1.000	1.000	0.962	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows

	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	31	0	0	0	194	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	11	0	0	0	0	0	727	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	0	0	0	0	0	0	0	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	126	0	785	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	137	0	815	0	0	0	921	0
Conflicting flow, pcu/h	785	0	194	0	0	0	11	0

Roundabout Type

Standard Single Lane or Urban Compact

Enter type here… Standard Single Lane

Results: Approach Measures of Effectiveness

HCM 2010 Model (build)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	505	NA	895	NA	NA	NA	1074	NA
Entry Flow Rates, vph	134	NA	784	NA	NA	NA	885	NA
V/C ratio	**0.27**		**0.88**				**0.82**	
Control Delay, s/veh	**11**		**29**				**21**	
LOS	B		D				C	
95th % Queue (ft)	**27**		**301**				**257**	
Calibrated Model (future)	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, vph	698	NA	1098	NA	NA	NA	1270	NA
Entry Flow Rates, vph	134	NA	784	NA	NA	NA	885	NA
V/C ratio	**0.20**		**0.74**				**0.72**	
Control Delay, sec/pcu	**7**		**16**				**14**	
LOS	A		C				B	
95th % Queue (ft)	**19**		**187**				**178**	

Notes: v2.1

Unit Legend:
vph = vehicles per hour
PHF = peak hour factor
F_{HV} = heavy vehicle factor
pcu = passenger car unit

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
Volumes						
Right Turn Volume removed from Entry Leg						
Volume Characteristics (for entry leg)						
PHF						
F_{HV}						
F_{ped}						
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow, pcu/hr						
Conflicting Flow, pcu/hr						
Bypass Lane Results (HCM 2010 Model)						
Entry Capacity of Bypass, vph						
Flow Rates of Exiting Traffic, vph						
V/C ratio						
Control Delay, s/veh						
LOS						
95th % Queue (ft)						
Approach w/Bypass Delay, s/veh						
Approach w/Bypass LOS						

Roundabout Analysis Tool

v 2.1
2/24/12

Welcome to GDOT's Roundabout Analysis Tool. This tool is designed for the user to determine the functionality of a proposed roundabout. The analysis is based on the 2010 Highway Capacity Manual Methodology and NCHRP Report 672, FHWA's Roundabout Informational Guide. Please read the notes in the Instructions tab before using the spreadsheet.

Analyst:	CVE
Agency/Company:	Crescent View Engineering, LLC
Date:	2/24/2015
Project Name or PI#:	0012610-Coweta
Year, Peak Period:	2035, PM Peak
County/District:	Coweta, District 3
Intersection:	State Route 16 at Pylant Street

Insert Project Information Here in the BLUE SPACE. This information is linked to the Single Lane and Multi Lane Worksheets.

Roundabout Considerations Worksheet

Roundabouts may not operate well if there is too much traffic entering the intersection or if the percentage of traffic on the major road is too high. Candidate intersections shall be analyzed to determine whether a roundabout will perform acceptably. Shown below are thresholds to determine if a roundabout capacity analysis is required:

# of circulatory lanes	ADTs (current/ build year)	% traffic on Major Road
Single Lane	less than 25,000	less than 90%
Multi-Lane	less than 45,000	less than 90%

Other things to consider when evaluating roundabouts as an alternative are Right of Way, sight distance, environmental impacts, and access to adjacent properties.

Volume Information (for Analysis Time Period)

1 Enter the Major/Minor Street ADT Volumes in the Chart below:

	Volumes	Split
Major Street	14,535	85%
Minor Street	2,510	15%
Total volumes	17,045	

Proximity to Other Intersections

2 How close is the nearest signal (miles or feet)? 0.58 mi | 0 '

3 Is the proposed intersection located within a coordinated signal network? NO

Go up to next section...

Proposed Design Configuration Chart

***Directions for this Section only*:** *(see **Instructions Tab** for other sections)*

1. Select the type of roundabout you are analyzing.
2. Key in the number of approaches and the street names at the proposed intersections.
3. Complete the Approach Characteristics Chart:
   a. Select the Street Name from the pulldown menu for each approach leg
   b. Select the Lane Type for each entry apporach lane
      **The first box is the inner lane, the second box is the outer lane*
   c. Select Yes or No if a right turn bypass will be added to each approach leg

Roundabout Characteristics

Roundabout Type:	Single Lane
# of Approaches:	3
Name of Streets:	S.R. 16 / Well Street EB
	S.R. 16 / Well Street WB
	Pylant Street

Chart Key:

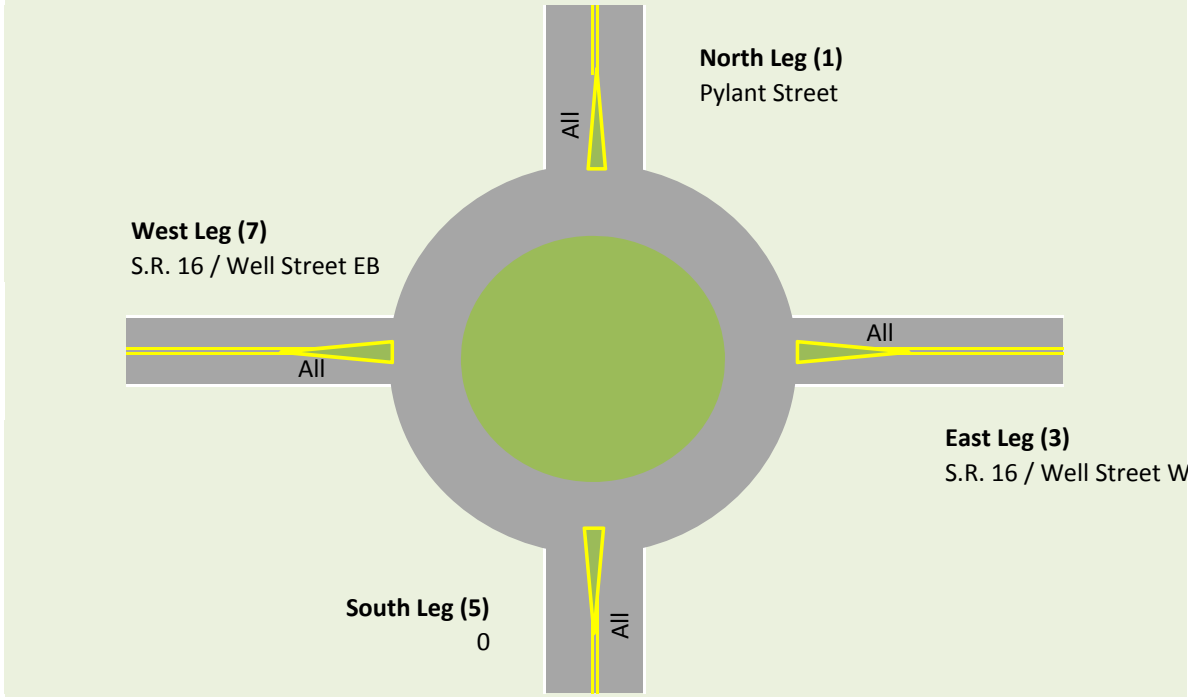
Single Lane	Street Name	
	All	
	Bypass?	
Multi-lane	Street Name	
	Inner Ln	Outer Ln
	Bypass?	

Approach Leg Characteristics:

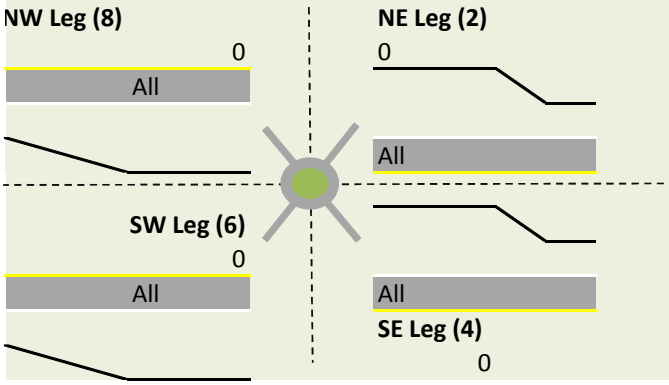
	North Leg (1)	NE Leg (2)	East Leg (3)	SE Leg (4)
Street Name:	Pylant Street		S.R. 16 / Well Street WB	
Entry Lane Config	All	All	All	All
Bypass to Adj Leg?	No		No	
	South Leg (5)	SW Leg (6)	West Leg (7)	NW Leg (8)
Street Name:			S.R. 16 / Well Street EB	
Entry Lane Config	All	All	All	All
Bypass to Adj Leg?	No		No	

Additior

Preliminary Roundabout Rendering**



al Legs

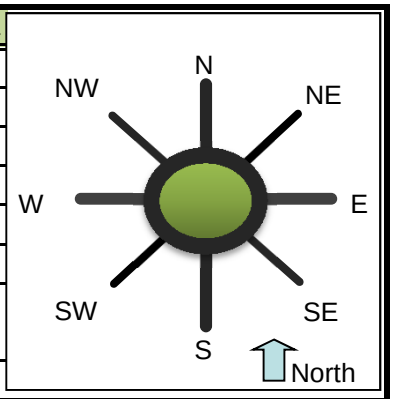


Note
This roundabout sketch does not include the secondary cardinal direction legs due to restrictions in the Excel software. For complex roundabouts, a separate sketch is recommended by the designer.

General & Site Information

v2.1

Analyst:	CVE
Agency/Co:	Crescent View Engineering, LLC
Date:	2/24/2015
Project or PI#:	0012610-Coweta
Year, Peak Hour:	2035, PM Peak
County/District:	Coweta, District 3
Intersection Name:	State Route 16 at Pylant Street



Volumes

		Entry Legs (FROM) N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
	N (1), vph			**29**				**88**	
Exit	NE (2), vph								
Legs	E (3), vph	**11**						**641**	
(TO)	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph	**113**		**766**					
	NW (8), vph								
Output	Total Vehicles	124	0	795	0	0	0	729	0

Volume Characteristics

	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	96%	100%	100%	100%	96%	100%
% Heavy Vehicles	**2%**	0%	**4%**	0%	0%	0%	**4%**	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.90*	*0.92*	*0.88*	*0.92*	*0.92*	*0.92*	*0.88*	*0.92*
F_{HV}	0.980	1.000	0.962	1.000	1.000	1.000	0.962	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows

	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	34	0	0	0	104	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	12	0	0	0	0	0	758	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	0	0	0	0	0	0	0	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	128	0	905	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	141	0	940	0	0	0	862	0
Conflicting flow, pcu/h	905	0	104	0	0	0	12	0

Roundabout Type

Standard Single Lane or Urban Compact

Enter type here… Standard Single Lane

Results: Approach Measures of Effectiveness

HCM 2010 Model (build)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	448	NA	979	NA	NA	NA	1073	NA
Entry Flow Rates, vph	138	NA	903	NA	NA	NA	828	NA
V/C ratio	**0.31**		**0.92**				**0.77**	
Control Delay, s/veh	**13**		**34**				**18**	
LOS	B		D				C	
95th % Queue (ft)	**33**		**371**				**209**	
Calibrated Model (future)	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, vph	633	NA	1179	NA	NA	NA	1269	NA
Entry Flow Rates, vph	138	NA	903	NA	NA	NA	828	NA
V/C ratio	**0.22**		**0.80**				**0.68**	
Control Delay, sec/pcu	**8**		**18**				**12**	
LOS	A		C				B	
95th % Queue (ft)	**22**		**235**				**148**	

Notes: v2.1

Unit Legend:
vph = vehicles per hour
PHF = peak hour factor
F_{HV} = heavy vehicle factor
pcu = passenger car unit

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
Volumes						
Right Turn Volume removed from Entry Leg						
Volume Characteristics (for entry leg)						
PHF						
F_{HV}						
F_{ped}						
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow, pcu/hr						
Conflicting Flow, pcu/hr						
Bypass Lane Results (HCM 2010 Model)						
Entry Capacity of Bypass, vph						
Flow Rates of Exiting Traffic, vph						
V/C ratio						
Control Delay, s/veh						
LOS						
95th % Queue (ft)						
Approach w/Bypass Delay, s/veh						
Approach w/Bypass LOS						

Attachment 5

Hydraulic and

Hydrologic Study of

Bridge Replacement

Pylant Street Hydraulic Bridge Design

Hydrology & Hydraulics Report

OCTOBER 2014

AMEC ENVIRONMENT & INFRASTRUCTURE
3800 EZELL ROAD, SUITE 100
NASHVILLE, TN 37211

PROJECT DESCRIPTION

Marimac Lakes is a reservoir located on Dead Oak Creek in the City of Senoia in Coweta County, Georgia. Pylant Street forms the embankment at the reservoir. The existing culvert at Pylant Street is proposed to be replaced with a new bridge structure. The Flood Insurance Rate Map (FIRM) for Coweta County and Incorporated Areas, published on February 6, 2013, show the area downstream of Marimac Lakes to be within the FEMA special flood hazard area, subject to inundation by the one-percent-annual-chance (100-year) flood. The type of special flood hazard area is a Zone A, meaning that no base flood elevations were determined and modeling performed in support of the determination was approximate in nature.

The Georgia Department of Transportation (GDOT) requires that proposed bridge sites on streams within the 100-year floodplain follow the Bridge Hydraulic Design Criteria found in Chapter 14 of the GDOT Manual on Drainage Design for Highways [1].

In order to ensure that the hydraulic impact of the proposed bridge at Pylant Street is minimal, and that the bridge is sized appropriately to meet GDOT requirements, AMEC performed hydrologic and hydraulic analyses for the reach of Dead Oak Creek just upstream of Georgia State Route 16 (Wells Street) to just upstream of the spillway on Marimac Lakes. The proposed bridge will meet the following GDOT requirements:

1. The bridge must be sized to convey the 50-year flood and base flood without causing significant damage to the highway, the stream, or other property. The design flood will be conveyed only through the bridge opening, while the base flood (100-year) flood may be conveyed over the roadway and through the bridge opening.
2. The bridge must have a minimum of two feet of freeboard above the 50-year flood stage.
3. 0.5 feet of freeboard above the 100-year flood is desirable.
4. For bridge sites with a drainage area of 20 mi^2 or less, a box culvert alternate must be considered.

The following sections describe in detail the hydrologic and hydraulic analyses performed by AMEC. These analyses used the NAVD 88 vertical datum.

STUDY METHODS

HYDROLOGIC ANALYSES

For the purposes of this study, a full pool condition was assumed at Marimac Lake. This assumption represents a scenario where a large storm has occurred in the study area that has raised the pool elevation at Marimac Lake to full pool thus eliminating any potential for significant storage within the drainage area. Under this assumption, a regression equation was considered appropriate to determine the discharges for this study area. A regression equation published in the U.S. Geological Survey (USGS) Water-Resources Investigations Report 93-4016 (WRIR 93-4016), otherwise known as *Techniques for Estimating Magnitude and Frequency of Floods in Rural Basins of Georgia* was used to calculate the peak discharges for Dead Oak Creek at the Pylant Street crossing. This equation is listed below.

$$Q_T = a * A^b$$

where:

Q_T is the discharge for a recurrence interval of T-years, in cubic feet per second;
a is the regression constant for a recurrence interval, T;
A is the drainage area, in square miles;
b is the exponent for various recurrence intervals, listed in Table 1 below.

Table 1: Regression Equation Constant and Exponents by Recurrence Interval

Recurrence Interval in years (T)	a	b
2	182	0.622
10	411	0.613
25	552	0.610
50	669	0.607
100	794	0.605
500	1130	0.601

DRAINAGE AREA (A)

The area draining to the culvert structure at Pylant Street is approximately 878 acres or 3.72 square miles and is shown in Figure 1 below. This drainage area was determined by utilizing a 10-meter digital elevation model (DEM) and 2010 aerial imagery for Coweta County both obtained from the USGS.

Figure 2: Area Draining to the Dead Oak Creek Crossing of Pylant Street

HYDROLOGY RESULTS

Following the determination of the drainage area at Pylant Street, peak discharges were calculated for the 2-, 10-, 25-, 50-, 100- and 500-year recurrence intervals. As noted before, these peak flows were utilized in the hydraulic modeling for Dead Oak Creek. The Summary of discharges can be seen in Table 5.

Table 2: Summary of Discharges

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. mi.)	PEAK DISCHARGES (cfs)					
		50-Percent-Annual-Chance	10-Percent-Annual-Chance	4-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
DEAD OAK CREEK							
At Pylant Street	3.7	222	499	670	811	962	1,367

HYDRAULIC ANALYSES

The 2-, 10, 25, 50, 100, and 500-year discharges calculated as described above were utilized as inputs to develop a hydraulics model of Dead Oak Creek. For the purpose of this study, the 0.7mile reach of Dead Oak Creek extending from just upstream of Pylant Street to just downstream of Luther Bailey Road was modeled using the U.S. Army Corps of Engineers (USACE) hydraulic computer model HEC-RAS (v 4.1). A combination of the USGS 10-meter DEM and survey data was used to extract the cross-section geometry. Two scenarios were developed for this study, one representing the existing conditions at Pylant Creek and the other representing the proposed conditions with the culvert at Pylant Street replaced by the proposed bridge. In order to accurately model the weir structure upstream of Pylant Street and the steep drop from the weir to the culvert at Pylant Street, the hydraulic analyses were performed using the mixed flow regime option in HEC-RAS.

Table 3: Extent of the Modeled Reach of Dead Oak Creek

Stream Name	Upstream Extent	Downstream Extent	Mileage
Dead Oak Creek	Just upstream of Pylant Street	Just downstream of Luther Bailey Road	0.7

CROSS-SECTION GEOMETRY

The cross-section geometry for Dead Oak Creek extending from the upstream end of the study to just downstream of Wells Street was determined from a Triangulated Irregular Network (TIN) derived from survey data points collected extensively for this reach. The cross-section geometry for the remainder of the model further downstream of Wells Street where survey data was not available was derived from the USGS 10m DEM. Automated Floodplain Generator (AFG), a program based on HEC-GeoRAS that has been developed by AMEC was utilized in creating geo-referenced geometries for each stream. Hydraulic cross-sections were placed based on engineering judgment and extended wide enough along the study reach to contain the plotted floodplain.

Model inputs associated with cross sections were estimated using guidance provided in the HEC-RAS *Hydraulic Reference Guide* [2]. In general, expansion and contraction coefficients were set to 0.3 and 0.1, respectively. At cross sections located at the upstream and downstream face of the structure at Wells Street, as well as the upstream entrance cross section, expansion and contraction coefficients were typically set to 0.5 and 0.3, respectively. The configuration of the weir located at the Marimac Lakes just upstream of Pylant Street results in an abrupt contraction of flow area from approximately 47 feet at the weir to 18 feet at the culvert at Pylant Street over a short distance of 33 feet. In order to model the higher energy losses resulting from this abrupt transition, expansion and contraction coefficients of 0.6 and 0.8 respectively were used at the cross-sections at this location. Ineffective flow areas were placed based on a 1:3 expansion and 1:1 contraction of the floodplain. Reach lengths were computed by spatially plotting overbank and channel flow paths.

The figures on the following page show the existing culvert and the proposed bridge modeled in HEC-RAS.

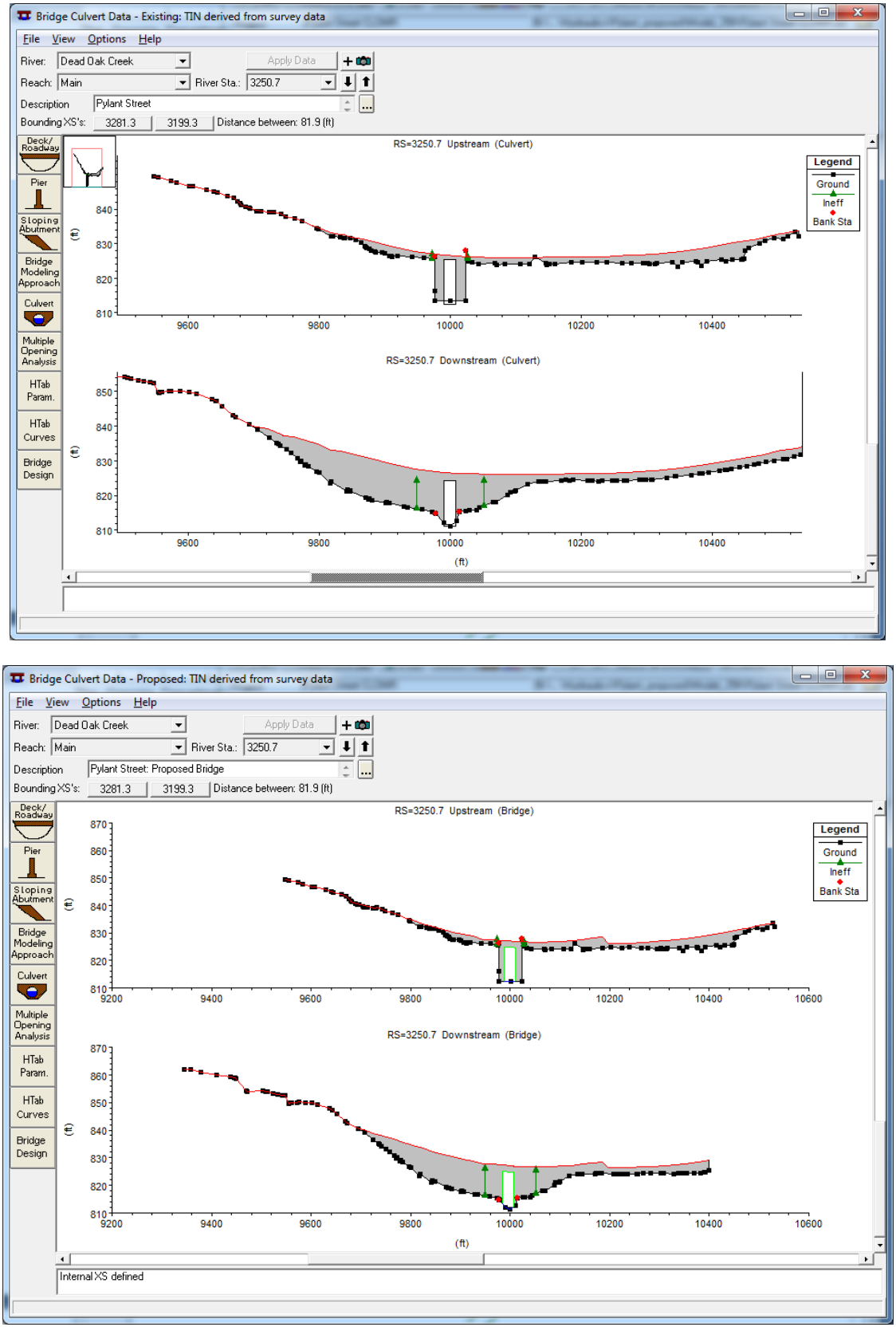


Figure 2: Existing culvert (top image) and proposed bridge structures at Pylant Street modeled in HEC-RAS

MANNING'S ROUGHNESS COEFFICIENTS

Manning's roughness coefficients, more commonly known as Manning's n values, were assigned to channel and overbank areas of Dead Oak Creek using the 2010 USGS aerial imagery for Coweta County, photos taken during field survey visits, and the "Manning's 'n' Values" tables in the HEC-RAS *Hydraulic Reference Guide*. The location of bank stations placed at each modeled cross-section was verified against the aerial imagery. Table 3 lists the range of Manning's values used to model Dead Oak Creek.

Table 4: Manning's Roughness Coefficients

Flooding Source	Overbanks		Channel	
	Minimum	Maximum	Minimum	Maximum
Dead Oak Creek	0.08	0.12	0.015	0.05

BRIDGE AND CULVERT GEOMETRY

Geometry data for the existing culverts at Pylant Street and Wells Street was derived from field survey data. Culvert sections were surveyed to establish invert elevations, culvert material, and culvert size. At both Pylant Street and Wells Street top of road elevations were surveyed. This surveyed data was incorporated in the hydraulic analysis for the existing conditions at Pylant Street.

For the proposed conditions scenario, Pylant Street was modeled as a bridge structure. Engineering drawings for the proposed modifications at Pylant Street that included the proposed (elevated) road profiles for Pylant Street and Wells Street along with the proposed bridge dimensions (width of the bridge and the distance of the low chord from the top of the road) were utilized to model the bridge structure.

BOUNDARY CONDITIONS

The downstream boundary condition (starting water surface elevation) for Dead Oak Creek was based on the normal depth calculation. Although the purpose of this hydraulic analysis was to determine the width of the bridge opening that would result in a no-rise in the 100-year water surface elevation at Pylant Street, the hydraulic model was extended much further downstream to Luther Bailey Road in order to diminish the effects of the normal depth assumption made at the downstream end.

Since the hydraulic analysis was performed in the mixed flow regime, an upstream boundary condition was required to be specified in HEC-RAS. A known water surface elevation ('Known WS' in HEC-RAS) boundary condition was specified by utilizing the surveyed water surface elevation of 824.5 feet at Marimac Lakes.

RESULTS

Once the existing and proposed conditions scenarios were developed in HEC-RAS as described above, the width of the bridge opening was varied until the resulting water surface elevations for the 50-year and 100-year rainfall events at Pylant Street were such that they met the freeboard and no-rise requirements of GDOT. Ultimately, a bridge opening width of **22 feet** met the GDOT hydraulic bridge design criteria. The tables and figures below provide a comparison between the water surface elevations observed for the 50- and 100-year rainfall events under the existing and proposed conditions scenarios.

Table 5: Comparison of Results: Existing Conditions and Proposed Conditions with a Bridge Structure

River Station	Water Surface Elevations (feet) Existing Conditions		Proposed Conditions (Bridge)		Difference	
	50yr	100yr	50yr	100yr	50yr	100yr
3549.6	826.19	826.4	826.19	826.4	0.00	0.00
3392.2	826.19	826.4	826.19	826.4	0.00	0.00
3345.6	826.19	826.4	826.19	826.4	0.00	0.00
3299.9 (Inl Struct)	Inl Struct		Inl Struct			
3297.4	820.15	820.52	820.15	820.4	0.00	-0.12
3288.1	819.58	820.68	819.44	820.5	-0.14	-0.18
3281.3	819.61	820.7	819.48	820.53	-0.13	-0.17
3250.7 (Pylant Street)	Culvert		Bridge			
3199.3	818.75	819.79	818.74	819.78	-0.01	-0.01
3085.4	818.76	819.8	818.75	819.79	-0.01	-0.01
2968.8	818.75	819.79	818.74	819.79	-0.01	0.00
2856.6	818.65	819.69	818.65	819.68	0.00	-0.01
2819.4 (Wells Street)	Culvert		Culvert			
2776.1	816.38	816.82	816.37	816.8	-0.01	-0.02
2674.6	816.29	816.75	816.28	816.73	-0.01	-0.02
2465.7	816.29	816.75	816.29	816.74	0.00	-0.01
2266.6	816.27	816.72	816.27	816.71	0.00	-0.01
1875.3	816.17	816.62	816.16	816.61	-0.01	-0.01
1643.2	815.8	816.23	815.77	816.2	-0.03	-0.03
1436.2	815.11	815.53	815.07	815.48	-0.04	-0.05
1219.4	814.88	815.32	814.85	815.29	-0.03	-0.03
1018.1	814.63	815.11	814.64	815.11	0.01	0.00
771.2	814.62	815.09	814.62	815.09	0.00	0.00
509.4	814.55	815.02	814.55	815.02	0.00	0.00
379.3	814.5	814.97	814.5	814.97	0.00	0.00

Table 6: Freeboard Resulting from Proposed Bridge

Proposed Bridge Low Chord Elevation = 824.8 feet		
River Station	50-yr Freeboard (feet)	100-yr Freeboard (feet)
3281.3	5.3	4.3

BOX CULVERT ALTERNATIVE

The bridge hydraulic design criteria specified by GDOT requires the analysis of an alternative box culvert structure at the proposed road if the drainage area contributing to the structure is less than 20 square miles. As seen in Table 2, the drainage area contributing to the Pylant Street crossing is only 3.7 square miles. Hence, in order to meet the GDOT requirements, an additional box culvert scenario was developed under the proposed conditions at Pylant Street and the resulting water surface elevations and velocities compared with those obtained under the bridge scenario. While double culvert barrels of several standard GDOT sizes were modeled, 10 feet wide by 8 feet high was the smallest barrel size that resulted in a no rise and met GDOT design criteria. Table 7 below summarizes the results obtained.

Table 7: Comparison of Results: Existing and all Proposed Scenarios

River Station	Water Surface Elevations (ft, NAVD88)						Channel Velocities (fps)					
	Existing Conditions		Proposed Conditions				Existing Conditions		Proposed Conditions			
			Bridge Structure		Culvert Structure				Bridge Structure		Culvert Structure	
	50yr	100yr	50yr	100yr	50yr	100yr	50yr	100yr	50yr	100yr	50yr	100yr
3549.6	826.19	826.40	826.19	826.40	826.19	826.40	0.09	0.10	0.09	0.10	0.09	0.10
3392.2	826.19	826.40	826.19	826.40	826.19	826.40	0.10	0.12	0.10	0.12	0.10	0.12
3345.6	826.19	826.40	826.19	826.40	826.19	826.40	0.13	0.15	0.13	0.15	0.13	0.15
3299.9	Inline Structure						Inline Structure					
3297.4	820.15	820.52	820.15	820.40	820.15	820.40	8.32	8.40	8.32	8.82	8.32	8.82
3288.1	819.58	820.68	819.44	820.50	819.38	820.55	4.31	4.02	4.46	4.17	4.53	4.13
3281.3	819.61	820.70	819.48	820.53	819.42	820.58	2.83	2.85	2.90	2.92	2.93	2.90
3250.7 (Pylant Street)	Culvert		Bridge		Culvert		Culvert		Bridge		Culvert	
3199.3	818.75	819.79	818.74	819.78	818.74	819.78	2.70	2.55	2.70	2.56	2.70	2.56
3085.4	818.76	819.80	818.75	819.79	818.75	819.79	1.21	1.14	1.22	1.14	1.22	1.14
2968.8	818.75	819.79	818.74	819.79	818.74	819.79	1.07	1.01	1.07	1.01	1.07	1.01
2856.6	818.65	819.69	818.65	819.68	818.65	819.68	2.21	2.32	2.21	2.32	2.21	2.32
2819.4 (Wells Street)	Culvert						Culvert					
2776.1	816.38	816.82	816.37	816.80	816.37	816.80	2.40	2.68	2.41	2.68	2.41	2.68
2674.6	816.29	816.75	816.28	816.73	816.28	816.73	3.13	3.24	3.15	3.26	3.15	3.26
2465.7	816.29	816.75	816.29	816.74	816.29	816.74	1.37	1.46	1.19	1.27	1.19	1.27
2266.6	816.27	816.72	816.27	816.71	816.27	816.71	1.09	1.18	1.21	1.31	1.21	1.31
1875.3	816.17	816.62	816.16	816.61	816.16	816.61	2.22	2.31	2.28	2.33	2.28	2.33
1643.2	815.80	816.23	815.77	816.20	815.77	816.20	4.70	5.00	4.72	5.04	4.72	5.04
1436.2	815.11	815.53	815.07	815.48	815.07	815.48	5.70	5.98	5.77	6.07	5.77	6.07
1219.4	814.88	815.32	814.85	815.29	814.85	815.29	3.44	3.50	3.37	3.39	3.37	3.39
1018.1	814.63	815.11	814.64	815.11	814.64	815.11	3.32	3.20	3.02	2.88	3.02	2.88
771.2	814.62	815.09	814.62	815.09	814.62	815.09	1.14	1.21	1.13	1.19	1.13	1.19
509.4	814.55	815.02	814.55	815.02	814.55	815.02	2.28	2.37	2.28	2.37	2.28	2.37
379.3	814.50	814.97	814.50	814.97	814.50	814.97	2.26	2.37	2.26	2.37	2.26	2.37

CONCLUSION

As discussed in the previous sections, both bridge and culvert structure alternatives were considered under the proposed conditions scenario for Pylant Street. Table 7 above summarizes the water surface elevations and channel velocities observed along the modeled reach of Dead Oak Creek for all scenarios. While both a 22 feet wide bridge opening and a 10 feet wide by 8 feet high culvert meet all the GDOT requirements for the proposed changes at Pylant Street, the culvert structure, even with a smaller opening size, produces slightly lower water surface elevations for the design storm event just upstream of Pylant Street. The channel velocities observed under both bridge and culvert scenarios are comparable. Based on these observations, a culvert structure is the most appropriate alternative for the proposed modifications at Pylant Street.

Appendix A provides HEC-RAS results summaries for each scenario modeled.

REFERENCES

Georgia Department of Transportation, Manual on Drainage Design for Highways, Chapter 14: Bridge hydraulic Design Criteria (available online at http://www.dot.ga.gov/doingbusiness/PoliciesManuals/roads/Drainage/G4-MAN14.pdf)

Stamey, T.S. and Hess, G.W. Techniques for Estimating Magnitude and Frequency of Floods in Rural basins of Georgia: WRIR 93-4016. Atlanta, Georgia (available online at http://pubs.usgs.gov/wri/1993/4016/report.pdf)

Appendix A: HEC-RAS Detailed Output Tables

Table A1: Existing Culvert Structure at Pylant Street

Plan: Existing Dead Oak Creek Main RS: 3250.7 Culv Group: Culvert #1 Profile: P50yr			
Q Culv Group (cfs)	811	Culv Full Len (ft)	
# Barrels	1	Culv Vel US (ft/s)	7.37
Q Barrel (cfs)	811	Culv Vel DS (ft/s)	5.98
E.G. US. (ft)	819.73	Culv Inv El Up (ft)	812.36
W.S. US. (ft)	819.61	Culv Inv El Dn (ft)	811.21
E.G. DS (ft)	818.83	Culv Frctn Ls (ft)	0.01
W.S. DS (ft)	818.75	Culv Exit Loss (ft)	0.47
Delta EG (ft)	0.9	Culv Entr Loss (ft)	0.42
Delta WS (ft)	0.86	Q Weir (cfs)	
E.G. IC (ft)	818.33	Weir Sta Lft (ft)	
E.G. OC (ft)	819.73	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	818.47	Weir Max Depth (ft)	
Culv WS Outlet (ft)	818.75	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	1.49	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	3.98	Min El Weir Flow (ft)	826.29

Plan: Existing Dead Oak Creek Main RS: 3250.7 Culv Group: Culvert #1 Profile: P100yr			
Q Culv Group (cfs)	962	Culv Full Len (ft)	
# Barrels	1	Culv Vel US (ft/s)	7.44
Q Barrel (cfs)	962	Culv Vel DS (ft/s)	6.23
E.G. US. (ft)	820.83	Culv Inv El Up (ft)	812.36
W.S. US. (ft)	820.7	Culv Inv El Dn (ft)	811.21
E.G. DS (ft)	819.86	Culv Frctn Ls (ft)	0.01
W.S. DS (ft)	819.79	Culv Exit Loss (ft)	0.53
Delta EG (ft)	0.97	Culv Entr Loss (ft)	0.43
Delta WS (ft)	0.92	Q Weir (cfs)	
E.G. IC (ft)	819.11	Weir Sta Lft (ft)	
E.G. OC (ft)	820.83	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	819.54	Weir Max Depth (ft)	
Culv WS Outlet (ft)	819.79	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	1.66	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	4.46	Min El Weir Flow (ft)	826.29

Table A2: Proposed Bridge Structure at Pylant Street

Plan: Proposed_Bridge	Dead Oak Creek	Main RS: 3250.7	Profile: P50yr	
E.G. US. (ft)	819.61	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	819.48	E.G. Elev (ft)	819.37	819.17
Q Total (cfs)	811	W.S. Elev (ft)	818.87	818.71
Q Bridge (cfs)	811	Crit W.S. (ft)	815.84	815.44
Q Weir (cfs)		Max Chl Dpth (ft)	6.51	7.51
Weir Sta Lft (ft)		Vel Total (ft/s)	5.66	5.46
Weir Sta Rgt (ft)		Flow Area (sq ft)	143.35	148.65
Weir Submerg		Froude # Chl	0.39	0.35
Weir Max Depth (ft)		Specif Force (cu ft)	609.22	642.92
Min El Weir Flow (ft)	826.73	Hydr Depth (ft)	6.51	6.75
Min El Prs (ft)	824.98	W.P. Total (ft)	35.02	34.38
Delta EG (ft)	0.78	Conv. Total (cfs)	12111.2	13027.9
Delta WS (ft)	0.73	Top Width (ft)	22.01	22.01
BR Open Area (sq ft)	273.72	Frctn Loss (ft)	0.17	0.04
BR Open Vel (ft/s)	5.66	C & E Loss (ft)	0.03	0.3
Coef of Q		Shear Total (lb/sq ft)	1.15	1.05
Br Sel Method	Energy only	Power Total (lb/ft s)	9547.7	9344.1

Plan: Proposed_Bridge	Dead Oak Creek	Main RS: 3250.7	Profile: P100yr	
E.G. US. (ft)	820.66	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	820.53	E.G. Elev (ft)	820.41	820.22
Q Total (cfs)	962	W.S. Elev (ft)	819.88	819.73
Q Bridge (cfs)	962	Crit W.S. (ft)	816.26	815.85
Q Weir (cfs)		Max Chl Dpth (ft)	7.52	8.53
Weir Sta Lft (ft)		Vel Total (ft/s)	5.81	5.62
Weir Sta Rgt (ft)		Flow Area (sq ft)	165.6	171.14
Weir Submerg		Froude # Chl	0.37	0.34
Weir Max Depth (ft)		Specif Force (cu ft)	796.49	836.88
Min El Weir Flow (ft)	826.73	Hydr Depth (ft)	7.52	7.78
Min El Prs (ft)	824.98	W.P. Total (ft)	37.4	35.63
Delta EG (ft)	0.8	Conv. Total (cfs)	14746.6	16087
Delta WS (ft)	0.74	Top Width (ft)	22.01	22.01
BR Open Area (sq ft)	273.72	Frctn Loss (ft)	0.16	0.03
BR Open Vel (ft/s)	5.81	C & E Loss (ft)	0.03	0.33
Coef of Q		Shear Total (lb/sq ft)	1.18	1.07
Br Sel Method	Energy only	Power Total (lb/ft s)	9547.7	9344.1

Table A3: Proposed Culvert Structure at Pylant Street

Plan: Proposed_Culvert Dead Oak Creek Main RS: 3250.7 Culv Group: Culvert #1 Profile: P50yr			
Q Culv Group (cfs)	811	Culv Full Len (ft)	
# Barrels	2	Culv Vel US (ft/s)	6.55
Q Barrel (cfs)	405.5	Culv Vel DS (ft/s)	5.38
E.G. US. (ft)	819.55	Culv Inv El Up (ft)	812.36
W.S. US. (ft)	819.42	Culv Inv El Dn (ft)	811.2
E.G. DS (ft)	818.83	Culv Frctn Ls (ft)	0.03
W.S. DS (ft)	818.74	Culv Exit Loss (ft)	0.36
Delta EG (ft)	0.72	Culv Entr Loss (ft)	0.33
Delta WS (ft)	0.67	Q Weir (cfs)	
E.G. IC (ft)	818.19	Weir Sta Lft (ft)	
E.G. OC (ft)	819.55	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	818.55	Weir Max Depth (ft)	
Culv WS Outlet (ft)	818.74	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	1.78	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	3.71	Min El Weir Flow (ft)	826.73

Plan: Proposed_Culvert Dead Oak Creek Main RS: 3250.7 Culv Group: Culvert #1 Profile: P100yr			
Q Culv Group (cfs)	962	Culv Full Len (ft)	21.51
# Barrels	2	Culv Vel US (ft/s)	6.54
Q Barrel (cfs)	481	Culv Vel DS (ft/s)	6.01
E.G. US. (ft)	820.71	Culv Inv El Up (ft)	812.36
W.S. US. (ft)	820.58	Culv Inv El Dn (ft)	811.2
E.G. DS (ft)	819.86	Culv Frctn Ls (ft)	0.03
W.S. DS (ft)	819.78	Culv Exit Loss (ft)	0.49
Delta EG (ft)	0.85	Culv Entr Loss (ft)	0.33
Delta WS (ft)	0.8	Q Weir (cfs)	
E.G. IC (ft)	818.93	Weir Sta Lft (ft)	
E.G. OC (ft)	820.71	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	819.71	Weir Max Depth (ft)	
Culv WS Outlet (ft)	819.2	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	1.99	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	4.16	Min El Weir Flow (ft)	826.73

Table A4: HEC-RAS Detailed Output at Model Cross-Sections: Existing Scenario – 2-year Rainfall Event

Reach	River Sta	Profile	Q Total	Q Left	Q Channel	Q Right	Area Left	Area Channel	Area Right	Vel Left	Vel Chnl	Vel Right
			(cfs)	(cfs)	(cfs)	(cfs)	(sq ft)	(sq ft)	(sq ft)	(ft/s)	(ft/s)	(ft/s)
Main	3549.6	P02yr	222	0.01	221.98	0.01	8.78	8632.73	5.17	0	0.03	0
Main	3392.2	P02yr	222	0.03	221.97	0.01	11.61	7346.52	3.95	0	0.03	0
Main	3345.6	P02yr	222	0.05	221.95	0	14.04	5786.1	0.75	0	0.04	0
Main	3299.9		Inl Struct									
Main	3297.4	P02yr	222		222			41.12			5.4	
Main	3288.1	P02yr	222		222			18.29			12.14	
Main	3281.3	P02yr	222		222			15.96			13.91	
Main	3250.7		Culvert									
Main	3199.3	P02yr	222		222			69.93			3.17	
Main	3085.4	P02yr	222		208.8	13.2		85.93	27.33		2.43	0.48
Main	2968.8	P02yr	222	9.94	158.79	53.26	29.13	70.32	71.34	0.34	2.26	0.75
Main	2856.6	P02yr	222	1.83	218.59	1.58	6.62	162.84	81.46	0.28	1.34	0.45
Main	2819.4		Culvert									
Main	2776.1	P02yr	222	0.76	221.04	0.2	7.94	208.75	56.4	0.11	1.06	0.09
Main	2674.6	P02yr	222	0.69	215.65	5.65	6.26	98.38	21.28	0.11	2.19	0.27
Main	2465.7	P02yr	222	2.28	58.03	161.68	20.83	64.74	728.58	0.11	0.9	0.26
Main	2266.6	P02yr	222	0.16	45.35	176.49	3.05	66.97	1001.25	0.05	0.68	0.21
Main	1875.3	P02yr	222	42.56	127.46	51.98	121.82	72.51	180.3	0.35	1.76	0.29
Main	1643.2	P02yr	222	20.38	194.06	7.56	43.54	68.48	19.82	0.47	2.83	0.38
Main	1436.2	P02yr	222	0.6	201.32	20.08	2.49	62.55	39.05	0.24	3.22	0.51
Main	1219.4	P02yr	222	1.64	185.27	35.09	5.75	62.63	93.47	0.29	2.96	0.38
Main	1018.1	P02yr	222		205.34	16.66		45.78	29.47		4.49	0.57
Main	771.2	P02yr	222	94.56	54.91	72.52	446.26	63.23	382.98	0.21	0.87	0.19
Main	509.4	P02yr	222	77.6	104.43	39.97	212.98	62.3	117.17	0.36	1.68	0.34
Main	379.3	P02yr	222	54.57	102.35	65.09	155.9	62.83	193.81	0.35	1.63	0.34

Table A5: HEC-RAS Detailed Output at Model Cross-Sections: Existing Scenario – 50-year Rainfall Event

Reach	River Sta	Profile	Q Total	Q Left	Q Channel	Q Right	Area Left	Area Channel	Area Right	Vel Left	Vel Chnl	Vel Right
			(cfs)	(cfs)	(cfs)	(cfs)	(sq ft)	(sq ft)	(sq ft)	(ft/s)	(ft/s)	(ft/s)
Main	3549.6	P50yr	811	0.21	810.72	0.07	26.91	9366.55	12.5	0.01	0.09	0.01
Main	3392.2	P50yr	811	0.29	810.64	0.06	28.4	7995.04	9.91	0.01	0.1	0.01
Main	3345.6	P50yr	811	0.49	810.48	0.03	33.26	6414.24	4.15	0.01	0.13	0.01
Main	3299.9		Inl Struct									
Main	3297.4	P50yr	811		811			97.45			8.32	
Main	3288.1	P50yr	811		811			188.15			4.31	
Main	3281.3	P50yr	811		811			286.34			2.83	
Main	3250.7		Culvert									
Main	3199.3	P50yr	811	97.25	598.11	115.64	179.98	221.78	131.13	1.11	2.7	1.07
Main	3085.4	P50yr	811	234.04	261.79	315.17	515.27	215.61	558.38	0.59	1.21	0.67
Main	2968.8	P50yr	811	311.94	164.47	334.58	611.82	153.88	798.36	0.55	1.07	0.55
Main	2856.6	P50yr	811	51.94	743.25	15.81	144	336.72	896.56	1.01	2.21	1.13
Main	2819.4		Culvert									
Main	2776.1	P50yr	811	19.19	783.77	8.05	93.52	326.09	429.44	0.55	2.4	0.53
Main	2674.6	P50yr	811	130.95	547.04	133.01	202.08	174.59	235.74	0.65	3.13	0.56
Main	2465.7	P50yr	811	48.41	142.85	619.74	190.16	104.46	1764.85	0.25	1.37	0.48
Main	2266.6	P50yr	811	14.36	116.56	680.08	77.99	106.6	2254.6	0.18	1.09	0.39
Main	1875.3	P50yr	811	210.38	248.26	352.36	408.1	112.03	689.08	0.56	2.22	0.55
Main	1643.2	P50yr	811	194.67	498.56	117.77	192.66	106.07	137.89	1.01	4.7	0.85
Main	1436.2	P50yr	811	51.27	543.7	216.03	59.98	95.47	169.77	0.85	5.7	1.27
Main	1219.4	P50yr	811	44.83	335.02	431.14	75.3	97.52	597.71	0.6	3.44	0.85
Main	1018.1	P50yr	811	6.5	291.54	512.96	16.69	87.7	900.82	0.39	3.32	0.79
Main	771.2	P50yr	811	364.39	118.29	328.32	1167.69	103.4	1256.17	0.35	1.14	0.34
Main	509.4	P50yr	811	366.47	233.93	210.6	643.93	102.47	418.31	0.57	2.28	0.5
Main	379.3	P50yr	811	252.54	233.16	325.29	480.87	103.02	596.04	0.53	2.26	0.55

Table A6: HEC-RAS Detailed Output at Model Cross-Sections: Existing Scenario – 100-year Rainfall Event

Reach	River Sta	Profile	Q Total	Q Left	Q Channel	Q Right	Area Left	Area Channel	Area Right	Vel Left	Vel Chnl	Vel Right
			(cfs)	(cfs)	(cfs)	(cfs)	(sq ft)	(sq ft)	(sq ft)	(ft/s)	(ft/s)	(ft/s)
Main	3549.6	P100yr	962	0.3	961.6	0.1	32.03	9522.37	14.47	0.01	0.1	0.01
Main	3392.2	P100yr	962	0.41	961.5	0.09	32.92	8132.76	11.53	0.01	0.12	0.01
Main	3345.6	P100yr	962	0.69	961.27	0.04	38.4	6547.66	5.22	0.02	0.15	0.01
Main	3299.9		Inl Struct									
Main	3297.4	P100yr	962		962			114.5			8.4	
Main	3288.1	P100yr	962		962			239.09			4.02	
Main	3281.3	P100yr	962		962			338.13			2.85	
Main	3250.7		Culvert									
Main	3199.3	P100yr	962	135.08	662.17	164.75	288.4	259.37	200.82	1.15	2.55	1.12
Main	3085.4	P100yr	962	300.57	280.69	380.74	686.8	245.97	702.48	0.6	1.14	0.66
Main	2968.8	P100yr	962	380.62	174.44	406.94	759.64	172.91	1019.16	0.54	1.01	0.55
Main	2856.6	P100yr	962	68.62	873.31	20.06	202.83	376.6	1144.78	1.11	2.32	1.23
Main	2819.4		Culvert									
Main	2776.1	P100yr	962	25.38	925.85	10.77	111.21	345.84	518.59	0.65	2.68	0.62
Main	2674.6	P100yr	962	171.65	608.24	182.11	246.15	187.9	300.76	0.7	3.24	0.61
Main	2465.7	P100yr	962	66.56	162.52	732.92	237.08	111.34	1962.04	0.28	1.46	0.52
Main	2266.6	P100yr	962	20.88	133.48	807.64	100.72	113.47	2492.8	0.21	1.18	0.43
Main	1875.3	P100yr	962	255.95	274.6	431.45	478.01	118.84	796.62	0.61	2.31	0.6
Main	1643.2	P100yr	962	244.28	563.23	154.49	229.12	112.57	172.6	1.07	5	0.9
Main	1436.2	P100yr	962	76.93	608.2	276.86	81.99	101.75	202.16	0.94	5.98	1.37
Main	1219.4	P100yr	962	61.34	364.4	536.25	96.96	104.17	721.16	0.63	3.5	0.92
Main	1018.1	P100yr	962	11.9	303.5	646.61	28.81	94.85	1146.07	0.41	3.2	0.82
Main	771.2	P100yr	962	433.56	133.96	394.48	1325.21	110.45	1439.49	0.38	1.21	0.36
Main	509.4	P100yr	962	441.37	259.98	260.66	735.18	109.51	490.49	0.6	2.37	0.53
Main	379.3	P100yr	962	308.75	260.37	392.88	554.54	110.06	682.23	0.56	2.37	0.58

Table A7: HEC-RAS Detailed Output at Model Cross-Sections: Proposed Bridge Scenario – 2-year Rainfall Event

Reach	River Sta	Profile	Q Total	Q Left	Q Channel	Q Right	Area Left	Area Channel	Area Right	Vel Left	Vel Chnl	Vel Right
			(cfs)	(cfs)	(cfs)	(cfs)	(sq ft)	(sq ft)	(sq ft)	(ft/s)	(ft/s)	(ft/s)
Main	3549.6	P02yr	222	0.01	221.98	0.01	8.78	8632.73	5.17	0	0.03	0
Main	3392.2	P02yr	222	0.03	221.97	0.01	11.61	7346.52	3.95	0	0.03	0
Main	3345.6	P02yr	222	0.05	221.95	0	14.04	5786.1	0.75	0	0.04	0
Main	3299.9		Inl Struct									
Main	3297.4	P02yr	222		222			41.12			5.4	
Main	3288.1	P02yr	222		222			18.29			12.14	
Main	3281.3	P02yr	222		222			15.96			13.91	
Main	3250.7 BR U	P02yr	222		222			54.44			4.08	
Main	3250.7 BR D	P02yr	222		222			58.95			3.77	
Main	3199.3	P02yr	222		222			69.99			3.17	
Main	3085.4	P02yr	222		208.72	13.28		86	27.48		2.43	0.48
Main	2968.8	P02yr	222	10.04	158.61	53.35	29.37	70.38	71.54	0.34	2.25	0.75
Main	2856.6	P02yr	222	1.83	218.59	1.58	6.65	162.95	81.86	0.28	1.34	0.45
Main	2819.4		Culvert									
Main	2776.1	P02yr	222	0.77	221.03	0.2	8	208.9	56.72	0.11	1.06	0.09
Main	2674.6	P02yr	222	0.72	215.58	5.69	6.42	98.48	21.43	0.11	2.19	0.27
Main	2465.7	P02yr	222	2.16	53.85	165.99	21.18	64.9	732.44	0.1	0.83	0.23
Main	2266.6	P02yr	222	0.18	50.8	171.01	3.13	67.1	1005.09	0.06	0.76	0.23
Main	1875.3	P02yr	222	42.56	127.46	51.98	121.82	72.51	180.3	0.35	1.76	0.29
Main	1643.2	P02yr	222	20.38	194.06	7.56	43.54	68.48	19.82	0.47	2.83	0.38
Main	1436.2	P02yr	222	0.6	201.32	20.08	2.49	62.55	39.05	0.24	3.22	0.51
Main	1219.4	P02yr	222	1.64	185.26	35.1	5.75	62.63	93.49	0.29	2.96	0.38
Main	1018.1	P02yr	222		205.33	16.67		45.79	29.48		4.48	0.57
Main	771.2	P02yr	222	94.65	54.96	72.39	446.27	63.23	383	0.21	0.87	0.19
Main	509.4	P02yr	222	77.6	104.43	39.97	212.98	62.3	117.17	0.36	1.68	0.34
Main	379.3	P02yr	222	54.57	102.35	65.09	155.9	62.83	193.81	0.35	1.63	0.34

Table A8: HEC-RAS Detailed Output at Model Cross-Sections: Proposed Bridge Scenario – 50-year Rainfall Event

Reach	River Sta	Profile	Q Total	Q Left	Q Channel	Q Right	Area Left	Area Channel	Area Right	Vel Left	Vel Chnl	Vel Right
			(cfs)	(cfs)	(cfs)	(cfs)	(sq ft)	(sq ft)	(sq ft)	(ft/s)	(ft/s)	(ft/s)
Main	3549.6	P50yr	811	0.21	810.72	0.07	26.91	9366.55	12.5	0.01	0.09	0.01
Main	3392.2	P50yr	811	0.29	810.64	0.06	28.4	7995.04	9.91	0.01	0.1	0.01
Main	3345.6	P50yr	811	0.49	810.48	0.03	33.26	6414.24	4.15	0.01	0.13	0.01
Main	3299.9		Inl Struct									
Main	3297.4	P50yr	811		811			97.45			8.32	
Main	3288.1	P50yr	811		811			181.9			4.46	
Main	3281.3	P50yr	811		811			280.09			2.9	
Main	3250.7 BR U	P50yr	811		811			143.35			5.66	
Main	3250.7 BR D	P50yr	811		811			148.65			5.46	
Main	3199.3	P50yr	811	97.16	598.33	115.51	179.51	221.61	130.83	1.11	2.7	1.07
Main	3085.4	P50yr	811	233.93	261.93	315.13	514.47	215.47	557.71	0.59	1.22	0.67
Main	2968.8	P50yr	811	311.89	164.57	334.54	611.13	153.79	797.35	0.55	1.07	0.55
Main	2856.6	P50yr	811	51.91	743.29	15.8	143.77	336.53	895.39	1.01	2.21	1.13
Main	2819.4		Culvert									
Main	2776.1	P50yr	811	19.13	783.86	8.02	93.08	325.58	427.24	0.55	2.41	0.53
Main	2674.6	P50yr	811	130.53	548.05	132.42	200.89	174.22	234.05	0.65	3.15	0.57
Main	2465.7	P50yr	811	42.34	124.83	643.84	190.33	104.49	1765.6	0.22	1.19	0.41
Main	2266.6	P50yr	811	15.93	129.28	665.79	77.96	106.6	2254.35	0.2	1.21	0.43
Main	1875.3	P50yr	811	211.04	254.81	345.15	406.27	111.84	686.2	0.53	2.28	0.5
Main	1643.2	P50yr	811	194.11	499.67	117.22	190.97	105.75	136.33	1.02	4.72	0.86
Main	1436.2	P50yr	811	49.93	547	214.07	57.93	94.82	166.57	0.86	5.77	1.29
Main	1219.4	P50yr	811	43.07	326.98	440.95	74.01	97.1	590.15	0.58	3.37	0.8
Main	1018.1	P50yr	811	5.97	265.38	539.65	16.84	87.81	904.24	0.35	3.02	0.7
Main	771.2	P50yr	811	365	116.53	329.47	1167.49	103.39	1255.94	0.33	1.13	0.33
Main	509.4	P50yr	811	366.47	233.93	210.6	643.93	102.47	418.31	0.57	2.28	0.5
Main	379.3	P50yr	811	252.54	233.16	325.29	480.87	103.02	596.04	0.53	2.26	0.55

Table A9: HEC-RAS Detailed Output at Model Cross-Sections: Proposed Bridge Scenario – 100-year Rainfall Event

Reach	River Sta	Profile	Q Total	Q Left	Q Channel	Q Right	Area Left	Area Channel	Area Right	Vel Left	Vel Chnl	Vel Right
			(cfs)	(cfs)	(cfs)	(cfs)	(sq ft)	(sq ft)	(sq ft)	(ft/s)	(ft/s)	(ft/s)
Main	3549.6	P100yr	962	0.3	961.6	0.1	32.03	9522.37	14.47	0.01	0.1	0.01
Main	3392.2	P100yr	962	0.41	961.5	0.09	32.92	8132.76	11.53	0.01	0.12	0.01
Main	3345.6	P100yr	962	0.69	961.27	0.04	38.4	6547.66	5.22	0.02	0.15	0.01
Main	3299.9		Inl Struct									
Main	3297.4	P100yr	962		962			109.13			8.82	
Main	3288.1	P100yr	962		962			230.75			4.17	
Main	3281.3	P100yr	962		962			329.69			2.92	
Main	3250.7 BR U	P100yr	962		962			165.6			5.81	
Main	3250.7 BR D	P100yr	962		962			171.14			5.62	
Main	3199.3	P100yr	962	134.97	662.44	164.59	287.61	259.11	200.31	1.16	2.56	1.12
Main	3085.4	P100yr	962	300.44	280.86	380.7	685.6	245.76	701.47	0.6	1.14	0.66
Main	2968.8	P100yr	962	380.56	174.56	406.88	758.61	172.78	1017.59	0.54	1.01	0.55
Main	2856.6	P100yr	962	68.58	873.36	20.06	202.34	376.31	1142.97	1.11	2.32	1.23
Main	2819.4		Culvert									
Main	2776.1	P100yr	962	25.26	926.02	10.72	110.36	344.91	514.18	0.65	2.68	0.63
Main	2674.6	P100yr	962	170.93	610.09	180.98	243.96	187.26	297.44	0.7	3.26	0.61
Main	2465.7	P100yr	962	57.82	141.56	762.62	236.33	111.24	1959.01	0.24	1.27	0.44
Main	2266.6	P100yr	962	23.04	147.95	791.01	100.21	113.32	2487.72	0.23	1.31	0.47
Main	1875.3	P100yr	962	257.34	276.09	428.57	474.98	118.56	792.06	0.57	2.33	0.54
Main	1643.2	P100yr	962	243.47	565.02	153.51	226.76	112.17	170.29	1.07	5.04	0.9
Main	1436.2	P100yr	962	74.83	612.74	274.43	78.97	100.95	197.91	0.95	6.07	1.39
Main	1219.4	P100yr	962	58.37	351.72	551.9	95.43	103.72	712.66	0.61	3.39	0.85
Main	1018.1	P100yr	962	10.77	273.35	677.88	28.95	94.92	1148.49	0.37	2.88	0.72
Main	771.2	P100yr	962	435.78	131.22	395	1324.87	110.43	1439.1	0.36	1.19	0.35
Main	509.4	P100yr	962	441.37	259.98	260.66	735.18	109.51	490.49	0.6	2.37	0.53
Main	379.3	P100yr	962	308.75	260.37	392.88	554.54	110.06	682.23	0.56	2.37	0.58

Table A10: HEC-RAS Detailed Output at Model Cross-Sections: Proposed Culvert Scenario – 2-year Rainfall Event

Reach	River Sta	Profile	Q Total	Q Left	Q Channel	Q Right	Area Left	Area Channel	Area Right	Vel Left	Vel Chnl	Vel Right
			(cfs)	(cfs)	(cfs)	(cfs)	(sq ft)	(sq ft)	(sq ft)	(ft/s)	(ft/s)	(ft/s)
Main	3549.6	P02yr	222	0.01	221.98	0.01	8.78	8632.73	5.17	0	0.03	0
Main	3392.2	P02yr	222	0.03	221.97	0.01	11.61	7346.52	3.95	0	0.03	0
Main	3345.6	P02yr	222	0.05	221.95	0	14.04	5786.1	0.75	0	0.04	0
Main	3299.9		Inl Struct									
Main	3297.4	P02yr	222		222			41.12			5.4	
Main	3288.1	P02yr	222		222			18.29			12.14	
Main	3281.3	P02yr	222		222			15.96			13.91	
Main	3250.7		Culvert									
Main	3199.3	P02yr	222		222			69.99			3.17	
Main	3085.4	P02yr	222		208.72	13.28		86	27.48		2.43	0.48
Main	2968.8	P02yr	222	10.04	158.61	53.35	29.37	70.38	71.54	0.34	2.25	0.75
Main	2856.6	P02yr	222	1.83	218.59	1.58	6.65	162.95	81.86	0.28	1.34	0.45
Main	2819.4		Culvert									
Main	2776.1	P02yr	222	0.77	221.03	0.2	8	208.9	56.72	0.11	1.06	0.09
Main	2674.6	P02yr	222	0.72	215.58	5.69	6.42	98.48	21.43	0.11	2.19	0.27
Main	2465.7	P02yr	222	2.16	53.85	165.99	21.18	64.9	732.44	0.1	0.83	0.23
Main	2266.6	P02yr	222	0.18	50.8	171.01	3.13	67.1	1005.09	0.06	0.76	0.23
Main	1875.3	P02yr	222	42.56	127.46	51.98	121.82	72.51	180.3	0.35	1.76	0.29
Main	1643.2	P02yr	222	20.38	194.06	7.56	43.54	68.48	19.82	0.47	2.83	0.38
Main	1436.2	P02yr	222	0.6	201.32	20.08	2.49	62.55	39.05	0.24	3.22	0.51
Main	1219.4	P02yr	222	1.64	185.26	35.1	5.75	62.63	93.49	0.29	2.96	0.38
Main	1018.1	P02yr	222		205.33	16.67		45.79	29.48		4.48	0.57
Main	771.2	P02yr	222	94.65	54.96	72.39	446.27	63.23	383	0.21	0.87	0.19
Main	509.4	P02yr	222	77.6	104.43	39.97	212.98	62.3	117.17	0.36	1.68	0.34
Main	379.3	P02yr	222	54.57	102.35	65.09	155.9	62.83	193.81	0.35	1.63	0.34

Table A11: HEC-RAS Detailed Output at Model Cross-Sections: Proposed Culvert Scenario – 50-year Rainfall Event

Reach	River Sta	Profile	Q Total	Q Left	Q Channel	Q Right	Area Left	Area Channel	Area Right	Vel Left	Vel Chnl	Vel Right
			(cfs)	(cfs)	(cfs)	(cfs)	(sq ft)	(sq ft)	(sq ft)	(ft/s)	(ft/s)	(ft/s)
Main	3549.6	P50yr	811	0.21	810.72	0.07	26.91	9366.55	12.5	0.01	0.09	0.01
Main	3392.2	P50yr	811	0.29	810.64	0.06	28.4	7995.04	9.91	0.01	0.1	0.01
Main	3345.6	P50yr	811	0.49	810.48	0.03	33.26	6414.24	4.15	0.01	0.13	0.01
Main	3299.9		Inl Struct									
Main	3297.4	P50yr	811		811			97.45			8.32	
Main	3288.1	P50yr	811		811			179.06			4.53	
Main	3281.3	P50yr	811		811			277.25			2.93	
Main	3250.7		Culvert									
Main	3199.3	P50yr	811	97.16	598.33	115.51	179.51	221.61	130.83	1.11	2.7	1.07
Main	3085.4	P50yr	811	233.93	261.93	315.13	514.47	215.47	557.71	0.59	1.22	0.67
Main	2968.8	P50yr	811	311.89	164.57	334.54	611.13	153.79	797.35	0.55	1.07	0.55
Main	2856.6	P50yr	811	51.91	743.29	15.8	143.77	336.53	895.39	1.01	2.21	1.13
Main	2819.4		Culvert									
Main	2776.1	P50yr	811	19.13	783.86	8.02	93.08	325.58	427.24	0.55	2.41	0.53
Main	2674.6	P50yr	811	130.53	548.05	132.42	200.89	174.22	234.05	0.65	3.15	0.57
Main	2465.7	P50yr	811	42.34	124.83	643.84	190.33	104.49	1765.6	0.22	1.19	0.41
Main	2266.6	P50yr	811	15.93	129.28	665.79	77.96	106.6	2254.35	0.2	1.21	0.43
Main	1875.3	P50yr	811	211.04	254.81	345.15	406.27	111.84	686.2	0.53	2.28	0.5
Main	1643.2	P50yr	811	194.11	499.67	117.22	190.97	105.75	136.33	1.02	4.72	0.86
Main	1436.2	P50yr	811	49.93	547	214.07	57.93	94.82	166.57	0.86	5.77	1.29
Main	1219.4	P50yr	811	43.07	326.98	440.95	74.01	97.1	590.15	0.58	3.37	0.8
Main	1018.1	P50yr	811	5.97	265.38	539.65	16.84	87.81	904.24	0.35	3.02	0.7
Main	771.2	P50yr	811	365	116.53	329.47	1167.49	103.39	1255.94	0.33	1.13	0.33
Main	509.4	P50yr	811	366.47	233.93	210.6	643.93	102.47	418.31	0.57	2.28	0.5
Main	379.3	P50yr	811	252.54	233.16	325.29	480.87	103.02	596.04	0.53	2.26	0.55

Table A12: HEC-RAS Detailed Output at Model Cross-Sections: Proposed Culvert Scenario – 100-year Rainfall Event

Reach	River Sta	Profile	Q Total	Q Left	Q Channel	Q Right	Area Left	Area Channel	Area Right	Vel Left	Vel Chnl	Vel Right
			(cfs)	(cfs)	(cfs)	(cfs)	(sq ft)	(sq ft)	(sq ft)	(ft/s)	(ft/s)	(ft/s)
Main	3549.6	P100yr	962	0.3	961.6	0.1	32.03	9522.37	14.47	0.01	0.1	0.01
Main	3392.2	P100yr	962	0.41	961.5	0.09	32.92	8132.76	11.53	0.01	0.12	0.01
Main	3345.6	P100yr	962	0.69	961.27	0.04	38.4	6547.66	5.22	0.02	0.15	0.01
Main	3299.9		Inl Struct									
Main	3297.4	P100yr	962		962			109.13			8.82	
Main	3288.1	P100yr	962		962			233.17			4.13	
Main	3281.3	P100yr	962		962			332.14			2.9	
Main	3250.7		Culvert									
Main	3199.3	P100yr	962	134.97	662.44	164.59	287.61	259.11	200.31	1.16	2.56	1.12
Main	3085.4	P100yr	962	300.44	280.86	380.7	685.6	245.76	701.47	0.6	1.14	0.66
Main	2968.8	P100yr	962	380.56	174.56	406.88	758.61	172.78	1017.59	0.54	1.01	0.55
Main	2856.6	P100yr	962	68.58	873.36	20.06	202.34	376.31	1142.97	1.11	2.32	1.23
Main	2819.4		Culvert									
Main	2776.1	P100yr	962	25.26	926.02	10.72	110.36	344.91	514.18	0.65	2.68	0.63
Main	2674.6	P100yr	962	170.93	610.09	180.98	243.96	187.26	297.44	0.7	3.26	0.61
Main	2465.7	P100yr	962	57.82	141.56	762.62	236.33	111.24	1959.01	0.24	1.27	0.44
Main	2266.6	P100yr	962	23.04	147.95	791.01	100.21	113.32	2487.72	0.23	1.31	0.47
Main	1875.3	P100yr	962	257.34	276.09	428.57	474.98	118.56	792.06	0.57	2.33	0.54
Main	1643.2	P100yr	962	243.47	565.02	153.51	226.76	112.17	170.29	1.07	5.04	0.9
Main	1436.2	P100yr	962	74.83	612.74	274.43	78.97	100.95	197.91	0.95	6.07	1.39
Main	1219.4	P100yr	962	58.37	351.72	551.9	95.43	103.72	712.66	0.61	3.39	0.85
Main	1018.1	P100yr	962	10.77	273.35	677.88	28.95	94.92	1148.49	0.37	2.88	0.72
Main	771.2	P100yr	962	435.78	131.22	395	1324.87	110.43	1439.1	0.36	1.19	0.35
Main	509.4	P100yr	962	441.37	259.98	260.66	735.18	109.51	490.49	0.6	2.37	0.53
Main	379.3	P100yr	962	308.75	260.37	392.88	554.54	110.06	682.23	0.56	2.37	0.58

Attachment 6

Concept Team

Meeting (CTM)

Minutes

Concept Team Meeting Summary

Crescent View Engineering

Date: September 4, 2014, 10:30am

Location: GDOT District 3 Office

By: Peng Zhang, PE, PTOE, Crescent View Engineering
Glenn Coffman, PE, AMEC

Subject: P.I. No. 0012610, Coweta County
SR 16 @ CR 74/Pylant Street & CR 74/Pylant Street @ Dead Oak Creek

Concept Team Meeting

Attendees:

Richard Ferry	City of Senoia	770-599-3679	rferry@senoia.com
Larry Owens	City of Senoia	770-599-3679	lowens@senoia.com
Adam Smith	GDOT OPD	706-621-9704	adsmith@dot.ga.gov
Peng Zhang	Crescent View Engineering	678-324-8410	peng@crescentvieweng.com
Tom Bucci	AMEC	404-229-9195	Thomas.bucci@amec.com
Jim Studer	AMEC	770-421-3555	Jim.studer@amec.com
Jack Burnside	Consultant Prj. Admin. Senoia	770-241-8677	jackburnside@bellsouth.net
Aruna Sastry	Sastry & Associates	678-366-9375	Sast9375@bellsouth.net
Papeson Shehu	Sastry and Associates	678-366-9375	pshehu@bellsouth.net
Tyler Peek	GDOT Utilities	706-646-7605	tpeek@dot.ga.gov
Jack Reed	GDOT D3 Planning	706-646-7566	jreed@dot.ga.gov
Thomas Howell	GDOT D3 Engineer	706-646-6900	thowell@dot.ga.gov
Jeremy Daniel	GDOT Engineering Services	706-601-1376	jedaniel@dot.ga.gov
Stanford Taylor	GDOT Traffic Ops	706-646-7592	stataylor@dot.ga.gov
Michael Presley	GDOT Traffic Ops	706-646-6676	mpresley@dot.ga.gov
Bob Werner	City of Senoia	770-599-3679	bwerner@senoia.com
Daniel Pass	GDOT D3 Preconstruction	706-646-6987	dpass@dot.ga.gov
Quinton Spann	GDOT Planning	404-631-1646	qspann@dot.ga.gov
Bill DuVall	GDOT Bridge	404-631-1883	bduvall@dot.ga.gov
Zach Adriaenssens	GDOT NEPA	404-631-1650	zadriaenssens@dot.ga.gov

The purpose of this meeting was to discuss the concept of the proposed Coweta County/City of Senoia SR 16 @ CR 74/Pylant Street & CR 74/Pylant Street @ Dead Oak Creek project, including a discussion of environmental issues and coordination efforts within the project, and to review the overall project schedule. The meeting took place at the GDOT District 3 office in Thomaston on September 4, 2014 at 10:30 AM.

I. **Welcome**

Adam Smith opened the meeting and had each attendee introduced himself/herself. Then he stated that Peng Zhang will discuss the project background and concept development of this project and address the concept report item by item. Mr. Smith also stated that the project engineer, Ken Timpson, was no longer with AMEC, and Mr. Zhang as subconsultant to AMEC will take over the responsibility of project engineer.

II. **Project Overview**

Peng Zhang gave an overview of the project background, including need and purpose. He also discussed the concept plan alternates and project detour options.

Quinton Spann stated that he didn't see the project justification statement in the concept report and want the level of services and accident history discussion to be included in the justification statement. Mr. Zhang stated that as per concept report, Cypress Cultural & Environmental Consultants, LLC will prepare the document. AMEC and Crescent View Engineering (CVE) will provide traffic analysis information to Jack Burnside. Mr. Smith stated that it would be helpful if GDOT could provide accident data from their database to design team.

Mr. Spann also asked if the additional parking and landscaping items as shown in the concept plan were approved and included in the budget. Mr. Burnside and Richard Ferry both confirmed that they have received approval from ARC on that matter. Mr. Burnside will provide approval documentation as attachment of concept report. Mr. Zhang confirmed that the landscape items were included in the preliminary construction cost estimate.

III. **Detail Item Discussion**

- Culvert/Bridge Replacement

Aruna Sastry presented the concept design and typical section of the bridge on Pylant Street at Dead Oak Creek. The bridge is proposed to be 41 feet wide and 30 feet long. Mr. Zhang stated that based on the H&H study developed by AMEC, the bottom of the bridge low chord is several feet higher than the 100 year WSE and the stream also achieved a no rise condition with the proposed bridge.

Bill DuVall asked if the design team has contacted SDP because if this upstream lake dam is a SDP categorized dam, then its spillway structure, which is at immediate upstream of the existing bridge culvert, will impact the design of bridge replacement. Mr. Burnside stated that the design team has contacted SDP but no response was received yet.

Mr. Duvall also asked if a culvert was considered as an alternate to proposed bridge because the downstream stream crossing under SR 16 is an existing single barrel box culvert. Mr. Zhang stated that based on the H & H report, culvert option was neither modeled nor discussed as comparison to proposed bridge. Mr. Duvall would like to see a H&H study as per GDOT guidelines to discuss both culvert and bridge alternates in hydraulics, construction cost, and constructability. Mr. Zhang stated that the design team will revise the study report and submit to GDOT for review when it is done.

Mr. Smith stated that he will collect information on the condition of the existing culvert under SR 16 and will notify the design team if it is determined that it needs to be replaced as part of the overall project scope.

- Project Survey Database

Mr. Smith requested AMEC to submit their survey database in Mircostation Inroads format. Mr. Zhang stated that he will coordinate with AMEC PM and survey team on this and will send it to Mr. Smith once it is ready. Mr. Smith stated that the survey database needs to be in GDOT format as per survey database guideline.

- Project Detour Option

Mr. Zhang presented two detour options to temporally close Pylant Street to construct the proposed bridge and realigned Pylant Street. The first option is to use Amey St and Morgan St. The second option is to use Howard Road and Andrews Pkwy. Mr. Ferry stated that for detour option 1, Broad St and Travis St is a better detour route.

- SR 16 Profile Grade Change

Daniel Pass stated that he noticed the proposed profile grade change for SR 16 and asked for the reason. Mr. Zhang stated that the existing vertical grade at the sag location of SR 16 did not meet the design criteria for 45 mph design speed. The proposed profile grade raise will bring the sag curve K value up to 91, the minimum value for 45 mph. Mr. Pass stated that the significant grade change may make it difficult to stage the traffic for SR 16 construction and suggested to keep the existing grade and ask for a design exception. Mr. Smith stated that it may be alright to keep the existing grade if it is a short section and could be taken care of during future pavement overlay. Mr. Smith also stated that he will check internally for possible solution. Mr. Zhang stated that the design team will work with Mr. Smith closely on this matter.

- Pylant Street Design Speed

Mr. Pass stated that he noticed Pylant Street design speed was dropped from 35 mph to 25 mph. Mr. Ferry stated that Pylant Street speed limit is 25 mph for the section northeast of the library and this is the only section with a 35 mph speed limit. The city would like to post all section as 25 mph for consistency. Mr. Pass suggested to, rather than going through a design exception, keep the Pylant Street 35 mph design speed but posted it at 25 mph. Mr. Zhang stated that this is a good suggestion and the design team will revise concept report accordingly.

- Right of Way

Mr. Zhang stated that the majority of the project is located within the right of way of City of Senoia. Minor right of way and construction easement will be required for adjacent parcels. The conceptual right of way cost was estimated to be around $25,000. Mr. Smith stated that the design team should always budget easement as permanent and would like to obtain a list of impact parcels and preliminary right of way cost estimate. Mr. Zhang stated that the design team will provide this information to Mr. Smith.

- Traffic Operation Comment from Ken Werho (GDOT Traffic Operation)

Mr. Werho had a conflict with the CTM but provided his comments through Mr. Smith. His comments are listed below:

Design Vehicle for the State Route should be a WB-67.
Complete your Alternatives section of the concept.
Typical Section – buffer will need to be reduced to allow 4' behind sidewalk.
Per GDOT Pedestrian & Streetscape Guide, page 96 (sidewalk), minimum shoulder behind/outside sidewalk should be 4 feet. Page 96 states for Sidewalks: A level area approximately 4 feet wide minimum is recommended for the sides of a sidewalk or walkway. When a vertical drop is more than 30 inches/2.5 feet, exceeds a down slope grade of 1:2, and is located less than 4 feet from the edge of the walkway, railing needs to be installed along the extent of the grade drop.

Mr. Zhang stated that the design team will revise concept report and typical section accordingly.

- Utility

Mr. Zhang stated that utility coordination will be handled by City of Senoia and Mr. Ferry confirmed that. Tyler Peek stated that the utility company name listed as Georgia Transmission should be changed to Georgia Power Transmission to avoid confusion. Mr. Peek also asked that if the construction of parking lot and landscape encroached into easement of Georgia Power Transmission line. He suggested the design team to coordinate with Georgia Power Transmission to obtain their permit if required. Mr. Zhang stated that the current parking lot is not within the current easement but another parking option did encroach on the easement. The City of Senoia will coordinate with Georgia Power Transmission.

- Environmental Documents

Zach Adriaenssens stated that this project should be located in the MS4 area. Mr. Smith stated that Coweta County was in the MS4 area and there were some cases in the past that project located in Coweta County did not require MS4 design but for this project the design team should treat it as a MS4 compliance project. Mr. Zhang stated that the design team would follow MS4 requirement and revisit the concept plan accordingly.

Mr. Adriaenssens also stated that the project might need 404 permit and City of Senoia and the design team needed to work with USCOE to figure out the mitigation measures. Mr. Smith stated that City of Senoia should prepare the mitigation measures in its budget and GDOT would need the check from the City before releasing for construction. Both Mr. Burnside and Mr. Ferry stated that they understood the requirement and will work with the agency during the design phase.

In addition, both Mr. Adriaenssens and Mr. Burnside stated that air and noise analysis would be included in the environmental document. Mr. Burnside also stated that this stream was not located in a FEMA studies zone and no floodplain elevation and boundary were recorded in the FEMA map. Therefore he did not anticipate permitting effort through FEMA.

IV. **Other minor Items**

Mr. Smith stated that the project traffic AADT should be revised to reflect the updated letting date and design year. Mr. Zhang stated that the design team would revise the concept report accordingly.

Mr. Pass stated that pavement evaluation and selection report were not required.

Mr. Smith stated that the party responsible for letting should be GDOT and the party responsible for providing detours should be Contractor.

Mr. Smith stated that the environmental mitigation cost should be estimated and included in the overall project cost.

Mr. Smith stated that the TMP is not required for this project.

Mr. Smith stated that he will check with GDOT material lab to see if soil survey is required for pavement design.

Mr. Peek stated that GDOT will provide guidance document for Utility Coordination white paper.

Mr. Burnside stated that a stream buffer variance will not need to be applied for based on current concept layout.

Mr. Zhang stated that the preliminary construction cost estimate had been redone in the GDOT Trnsport CES system and will replace the existing cost estimate report in the concept report.

V. **Project Schedule**

Mr. Smith gave an overview of the project schedule. He stated that the PIOH will be scheduled in December, 2014 and the project let time is set in 2017. Mr. Smith also stated that for detail action item in the schedule, he will export it from P6 to excel spreadsheet and distribute to design team. The design team will fill in their activities and send it back to Mr. Smith to incorporate it into P6. The design team agreed this arrangement.

Mr. Smith requested that the design team develop a color roll plot of the concept plan before the PIOH. He stated that he will send in an example with information that needed to be turned on and/or added in order to better serve the purpose of the PIOH display. Mr. Zhang stated that AMEC will prepare a landscape rendering plan before the PIOH to show the general public the proposed City of Senoia gateway. Mr. Smith agreed with this idea.

Action Items:

1. *Mr. Burnside to provide ARC approval letter for landscape and parking items to AMEC. (completed)*
2. *Cypress Cultural & Environmental Consultants, LLC will provide project justification statement with inputs from CVE, AMEC and GDOT on traffic analysis and accident history data.*
3. *CVE and AMEC will revise concept report as per comments received in the CTM.*
4. *CVE will revise typical section for Pylant Street.*
5. *AMEC will contact SDP and revise H & H study as per GDOT guideline. AMEC will send the H&H study to GDOT for review once the revision is done.*
6. *AMEC and City of Senoia will send in right of way impacted parcel list and preliminary right of way cost estimate to Mr. Smith.*
7. *CVE and AMEC will provide a color roll plot for concept plan display and landscape rendering plan.*
8. *Mr. Burnside to provide environmental mitigation cost estimate to AMEC.*

Attachment 7

ARC Scope

Confirmation

RE: 0012610, Coweta - specifics on the landscaping
From Byron Rushing
To Jack Burnside
CC Richard Ferry Kofi Wakhisi David Haynes Smith, Adam

Jack, I've discussed this issue with several ARC and GDOT staff. From ARC's perspective, nothing in the landscaping is specifically ineligible and we support the project pending approval of the concept report by the GDOT PM. More broadly, ARC hopes that all the elements of the project specifically and directly help the City of Senoia achieve its overall goals for that corridor. Please let me know if you have any additional questions.

Byron Rushing
Bicycle & Pedestrian Planner
Atlanta Regional Commission
P | 404.463.3345

From: Jack Burnside [mailto:jackburnside@bellsouth.net]
Sent: Thursday, March 20, 2014 5:42 PM
To: Byron Rushing
Cc: Richard Ferry
Subject: 0012610, Coweta - specifics on the landscaping

Byron:

After discussing the estimated landscaping costs for the Senoia project in more detail with the design team, it appears they included a 20% contingency in the landscape estimate. Without the contingency the landscaping cost would be $160,250, which is down from the previous estimate of $192,000. The landscape architect for the designer goes into some detail about the rational for the landscaping (message below), and I'd also mention that GDOT has warranty requirements for plantings that run the cost up considerably.

I trust this additional information will be of use. We hope to receive ARC's endorsement of the landscaping, monument sign, and parking area so they can be included in the construction budget and eligible for federal reimbursement. Call or e-mail me if you have any additional concerns.

Jack
770-241-8677

From: "Huffman, Ronald R" <Ron.Huffman@amec.com>
To: Jack Burnside <jackburnside@bellsouth.net>; "Timpson, Ken D" <Ken.Timpson@amec.com>
Cc: Richard Ferry <rferry@senoia.com>
Sent: Wednesday, March 19, 2014 2:47 PM
Subject: RE: SR 16 Environmental Schedule - PI No 0012610 - Coweta
Hi Jack and Ken,
The plant material cost includes 96 trees, 198 shrubs, and 12,550 groundcover plants and seeding. The cost estimate is for an installed cost (including soil amendment), staking and guying, and includes the required GDOT warranty. Recommended tree sizes would be 2.5-3 inch caliper, shrubs would be 3 gallon and groundcovers would be 1 gallon. Rough costs are $200-250 for trees, $50-75 for shrubs and $8-10 for groundcovers. Of course this is totally variable and dependant on local nursery availability, quantity discounts and final plant material selection which has not been determined yet.
I do not see any of the planting as mitigation or replacement. The only cost that would be necessary anyway would be seeding. The current site is generally cleared with the exception of a few scrappy existing trees.
Grass is also the highest maintenance plant material. Ground cover although costly for initial installation has nearly zero maintenance following establishment. It is a very "sustainable" choice for the gateway.
The plant material cost does not include lighting. We have not discussed that with Senoia but I do not think it is necessary.
I also included a 20% contingency which is standard for a concept level cost estimate. In other words the plant material cost estimate would be a range from 155K to 192K.
Hopefully this helps. Let me know if you have any other questions.
Ron Huffman, ASLA, AICP

Principal
AMEC Environment & Infrastructure, Inc.
1075 Big Shanty Road, NW
Suite 100
Kennesaw, Georgia 30144
Tel: 770-421-3493
Fax: 770-421-3486
Cell: 770-402-5354

0012610, Coweta - ARC approval of landscaping, parking & gateway sign
From Jack Burnside
To Byron Rushing
CC Richard Ferry

- **2 Attachments** 26.2KB pdf 12610 CostEstimate 3-13-14.pdf 13KB
  pdf 12610 CostEstimate 3-13-14.pdf 13KB

Byron:

You may recall our phone conversation last month regarding the subject intersection and bridge replacement project in Senoia. You'll recall in their application it was the city's intent to include some amenities as part of this project. The project borders the historic district, and the library and recreation area at Miramac Lake. The amenities include:
- A gateway monument sign.
- Landscaping.
- A parking lot to allow improved access to the facilities at Miramac Lake. The parking area would re-use a portion of the roadbed that is being abandoned in order to reconfigure the intersection.

At the time we last spoke, you requested a construction cost estimate for the project (attached). The cost estimate shows that approximately $253,700 of the estimated $1,370,700 construction budget would be used for the amenities (i.e. approximately 18.5%). The monument sign is included in the landscaping lump sum on the attached budget. Over 80% of the construction budget is still set for the basic bridge and intersection infrastructure.
As the federal funds for the project were allocated by ARC, the city would appreciate an e-mail from ARC acknowledging the amenities are part of the intended project, and therefore eligible for federal matching funds. We would forward the e-mail to GDOT with the concept submittal. If you have any questions or concerns about the project please e-mail or call me. The city is looking forward to receiving the acknowledgement from ARC.

Jack
770-241-8677

Re: 0012610, Coweta - Confirmation on project scope
From Jack Burnside
To Byron Rushing
CC Richard Ferry

1 Attachment 3.6MB pdf Option 1 drawing.pdf 3MB

Byron:

I've attached a drawing showing the proposed improvements for the SR 16 @ Pylant Street intersection. The work would include retaining a portion of the old roadbed and adding some parking, and also adding a gateway sign and landscaping. These amenities would comprise a small portion of the overall construction budget. GDOT asked for confirmation saying the parking, gateway sign and landscaping were included as part of the funding award.

Jack Burnside, Project Administrator
770-241-8677