ORIGINAL TO GENERAL FILES

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

OFFICE OF DESIGN POLICY & SUPPORT
INTERDEPARTMENTAL CORRESPONDENCE

FILE P.I. #731830
STP00-0186-01(038)
GDOT District 7 - Metro Atlanta
Fulton County
Campbellton Road @ Boat Rock Road/New Hope Road

OFFICE Design Policy & Support

DATE 7/27/2011

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:

Genetha Rice-Singleton, Program Control Administrator
Bobby Hilliard, State Program Delivery Engineer
Cindy VanDyke, State Transportation Planning Administrator
Angela Robinson, Financial Management Administrator
Glenn Bowman, State Environmental Administrator
Kathy Zahul, State Traffic Engineer
Georgene Geary, State Materials & Research Engineer
Ron Wishon, State Project Review Engineer
Jeff Baker, State Utilities Engineer
Ken Thompson, Statewide Location Bureau Chief
Michael Henry, Systems & Classification Branch Chief
Bryant Poole, District Engineer
Scott Lee, District Preconstruction Engineer
Jonathan Walker, District Utilities Engineer
Ernay Robinson, Project Manager
BOARD MEMBER - 5th Congressional District

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

PROJECT CONCEPT REPORT

Project Number: STP00-0186-01(038)
County: Fulton
P. I. Number: 731830
Federal Route Number: N/A
State Route Number: 154/166

Campbellton Road @ Boat Rock Road / New Hope Road
Intersection Improvement

Submitted for approval:

DATE 4/11/11 — Jeffrey W. Dyer, P.E. — Qk4

DATE 4.11.11 — Richard Coates, P.E. — Fulton County

DATE 8/4/2010 — BOBBY HILLARD* — Office Head

DATE 8/10/2010 — ELNAY ROBINSON* — Project Manager

Recommended for approval:

DATE 5/17/2011 — GENETHA RICE-SINGLETON* — Project Control Administrator

DATE 5/12/2011 — GLENN BOWMAN* — State Environmental Administrator

DATE 5/26/2011 — KATHY ZAHUL* — State Traffic Engineer

DATE 5/5/2011 — RON WISHON* — Project Review Engineer

DATE 5/5/2011 — JEFF BAKER* — State Utilities Engineer

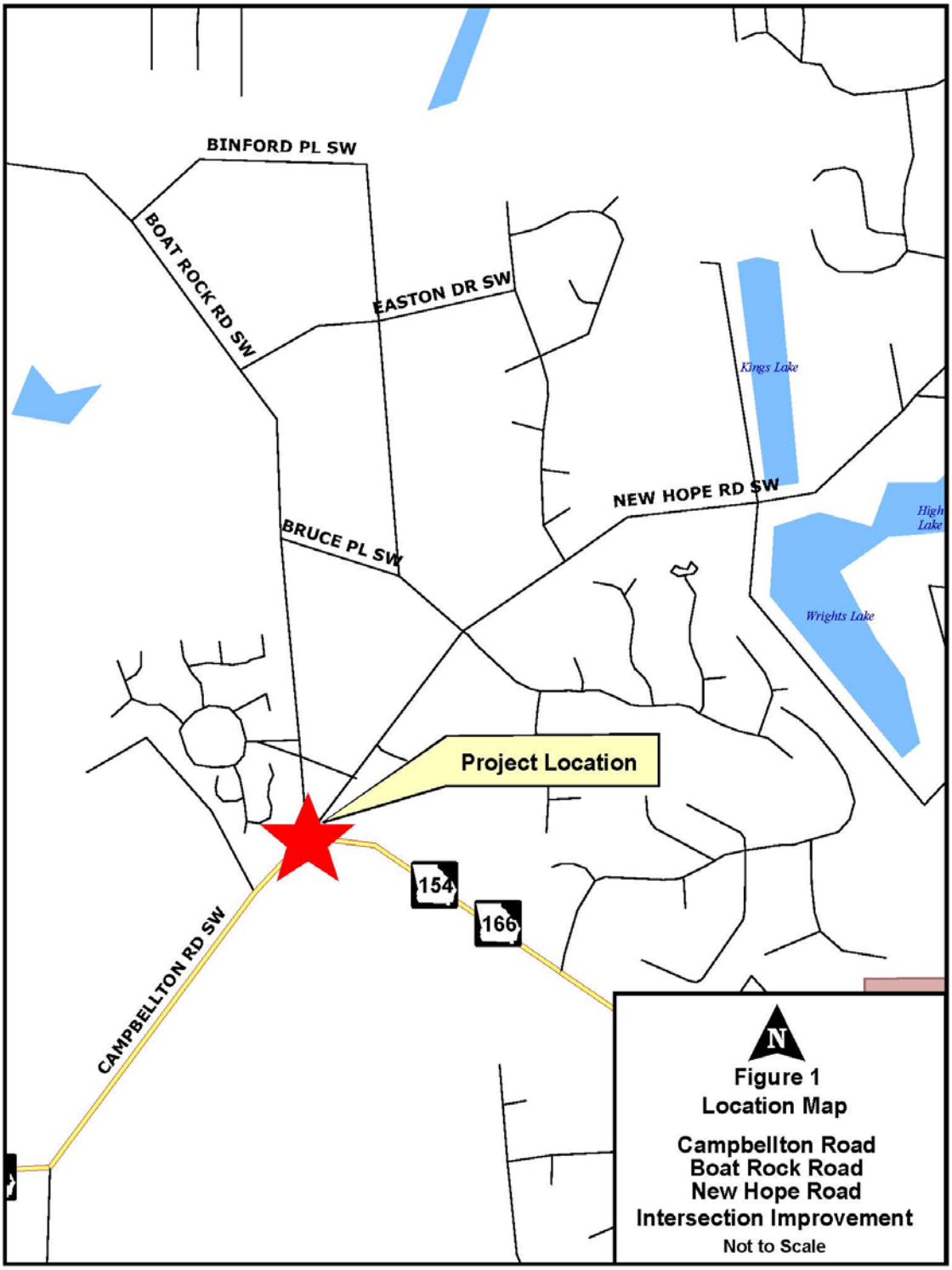
DATE _____ — _____ — District Engineer/District Utilities Engineer

DATE _____ — _____ — State Transportation financial Management Administrator

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

DATE 5-10-11 — Cynthia L VanDyke — State Transportation Planning Administrator

* RECOMMENDATION ON FILE


BINFORD PL SW
BOAT ROCK RD SW
EASTON DR SW
Kings Lake
NEW HOPE RD SW
BRUCE PL SW
High Lake
Wrights Lake
Project Location
154
166
CAMPBELLTON RD SW
N
Figure 1
Location Map
Campbellton Road
Boat Rock Road
New Hope Road
Intersection Improvement
Not to Scale

Project Description and Location:

Project STP00-0186-01(038) will combine the separate intersections of Campbellton Road @ Boat Rock Road and Boat Rock Road @ New Hope Road into a single intersection. This project will construct a roundabout at this combined intersection.

This project is located in southwestern Fulton County, approximately 4 miles west of the Campbellton Road (SR 154/166) interchange with I-285. The project is also less than two miles from the intersection of Campbellton Road @ Camp Creek Parkway. This project lies within land lot 92 of the 14th District of Fulton County, Georgia.

Need and Purpose:

The proposed project is an intersection improvement of the intersection of SR 154/166 (Campbellton Road) and Boat Rock Road and the nearby intersection of Boat Rock Road and New Hope Road. These intersections are located in southwest Fulton County (see Location Map – Previous Page). Campbellton Road extends from the Douglas/Fulton County line to downtown Atlanta. Boat Rock Road and New Hope Road are classified as urban collector streets. Boat Rock Road intersects Campbellton Road, which is classified as a minor urban arterial street. New Hope Road intersects Boat Rock Road within 100 feet of the Campbellton Road/Boat Rock Road intersection. The two separate 3-legged intersections, in effect, form a closely spaced, four-legged intersection.

This project is included as part of the Regional Transportation Plan (RTP) developed by the Atlanta Regional Commission (Project FS-217). This project proposes to improve operational efficiency by combining the two separate intersections that are located within 100 feet into a single roundabout intersection.

Existing Conditions

In the northwest corner of the Campbellton Road/Boat Rock intersection is a Citgo Gas station, along with a small attached commercial building that has driveways on both Campbellton Road and Boat Rock Road. The building is set back from the existing roadways and will not affect the potential scope of this project.

The remaining properties in the immediate vicinity are either undeveloped or single-family residential. Properties along Campbellton Road on the south side of the roadway are residential with deep front yards. The land in northeast quadrant of both intersections is currently undeveloped. North and west of the project are established residential subdivisions.

According to the 2025 future land use map from the Fulton County Comprehensive Plan, the land in the immediate vicinity of both intersections, but on the north side of Campbellton Road, is classified as "Living Working-Community". The land on the south side of Campbellton Road, and along both Boat Rock and New Hope Roads north of the intersection is classified as "Residential – 2 to 3 units per acre.

Campbellton Road is an important thoroughfare in Fulton County that has an interchange with I-285. It connects established residential areas west of Atlanta with both I-285 and I-75/85 via Langford Parkway. Campbellton Road is the southern terminus for Boat Rock Road. Boat Rock Road continues north and west towards Camp Creek Parkway and Fulton Industrial Boulevard, serving as a connector between Campbellton Road and the warehouse/industrial land uses along the Fulton Industrial Boulevard corridor. New Hope Road begins at Boat Rock Road and continues east and north towards its terminus at Cascade Road. It primarily serves residential areas.

The existing Campbellton Road/Boat Rock Road intersection is three-legged and currently unsignalized, with Campbellton Road having the right-of-way through the intersection. The existing intersection (skew) angle is 78 degrees, which is allowable under both GDOT and AASHTO guidelines. There are no left-turn lanes provided on any approach, and right-turn lanes provided on the westbound and southbound approaches. The only channelization provided is a raised corner island for the southbound to westbound right-turn movement in the northwest quadrant of the intersection.

The existing Boat Rock Road/New Hope Road intersection is unsignalized, with Boat Rock Road having the right-of-way. The intersection (skew) angle is 85 degrees. There are no turn lanes provided on any approach. The only existing sidewalks in the project area are along the west side of Boat Rock Road and along a short section of Campbellton in front of the Citgo gas station.

Existing Deficiencies

The existing Boat Rock Road/New Hope Road intersection is located within 100 feet of the center of the Campbellton Road intersection. The proximity of these two intersections creates operational issues along both Boat Rock Road and New Hope Road and is the primary problem that this project would rectify.

During the morning and afternoon peak hours, southbound Boat Rock Road traffic experiences delay as it waits for gaps in the Campbellton Road traffic flow to turn onto Campbellton Road. Vehicles wanting to turn left onto Boat Rock to reach Campbellton Road can find no storage on Campbellton Road, causing considerable vehicle queuing along New Hope Road.

Accident data collected from the Georgia DOT accident reporting system between 2006 and 2008 indicate a history of rear-end and angle accidents, with the overall number increasing with each succeeding year. Of the three years studied, the accident rate in the project area has increased each year and exceeds the statewide average rate for both non-NHS urban minor arterials and urban collectors in 2008. The accident rate information is summarized in Table 1. Table 2 summarizes the injury rates for the same roadway classifications. The results of that table mirror Table 1. Table 3 summarizes the fatal accident rates which are zero for each year, since no fatal accidents occurred in this vicinity. Table 4 summarizes the crash types obtained from the vicinity of the intersections.

Table 1: Accident Summary – Campbellton Road / Boat Rock Road / New Hope Road (MP range – 18-13-19.65)

Year	Number of Accidents	Computed Accident Rate	Statewide Average Rate (Minor Arterial, non NHS Urban)	Statewide Average Rate (Collector, Urban)
2006	9	312	548	510
2007	15	486	513	475
2008	18	625	469	443

Table 2: Non-Fatal Accident Summary – Campbellton Road / Boat Rock Road / New Hope Road (MP range – 18-13-19.65)

Year	Number of Injury Accidents	Computed Injury Accident Rate	Statewide Average Rate (Minor Arterial, non NHS Urban)	Statewide Average Rate (Collector, Urban)
2006	3	104	137	123
2007	3	104	126	114
2008	7	243	117	105

Table 3: Fatal Accident Summary – Campbellton Road / Boat Rock Road / New Hope Road (MP range – 18-13-19.65)

Year	Number of Fatal Accidents	Computed Injury Accident Rate	Statewide Average Rate (Minor Arterial, non NHS Urban)	Statewide Average Rate (Collector, Urban)
2006	0	0	1.43	1.6
2007	0	0	1.36	1.25
2008	0	0	1.33	1.08

Table 4: Summary of Crashes
Intersection of Campbellton Road at Boat Rock Road and New Hope Road

2006							
Intersection	**Total Crashes**	**Crash Type**				**Injury Crashes/ Tot. Injuries**	**Fatality**
		Sideswipe	**Rear End**	**Angle**	**Other**		
Campbellton @ Boat Rock	8	2	3	2	1	3/5	0
Boat Rock @ New Hope	1	0	1	0	0	0/0	0
Total	**9**	**2**	**4**	**2**	**1**	**3/5**	**0**
2007							
Intersection	**Total Crashes**	**Crash Type**				**Injury Crashes/ Tot. Injuries**	**Fatality**
		Sideswipe	**Rear End**	**Angle**	**Tot. Injuries**		
Campbellton @ Boat Rock	14	0	6	7	1	3/3	0
Boat Rock @ New Hope	1	0	0	1	0	0/0	0
Total	**15**	**0**	**6**	**8**	**1**	**3/3**	**0**
2008							
Intersection	**Total Crashes**	**Crash Type**				**Injury Crashes/ Tot. Injuries**	**Fatality**
		Sideswipe	**Rear End**	**Angle**	**Tot. Injuries**		
Campbellton @ Boat Rock	18	0	10	7	1	7/17	0
Boat Rock @ New Hope	0	0	0	0	0	0/0	0
Total	**18**	**0**	**10**	**7**	**1**	**7/17**	**0**

As can be seen in Table 4, the largest numbers of crashes are rear-end and angle. Rear end crashes are usually caused by vehicles stopping suddenly, with close-following vehicles behind them hitting them. At an unsignalized intersection, this type of accident is often caused by vehicles stopping in the through lane to turn left. Providing an exclusive left-turn lane can reduce this type of accident by getting the left-turn vehicles waiting for a gap in oncoming traffic out of the through lane.

Angle crashes are often caused when vehicles traveling through the intersection on one approach are hit by a vehicle going through the same intersection in a different direction. Signalization is the best solution for this type of crash. A signal restricts the use of intersection right-of-way to one set of approaches at a time, thus minimizing the potential conflicts between the conflicting traffic streams.

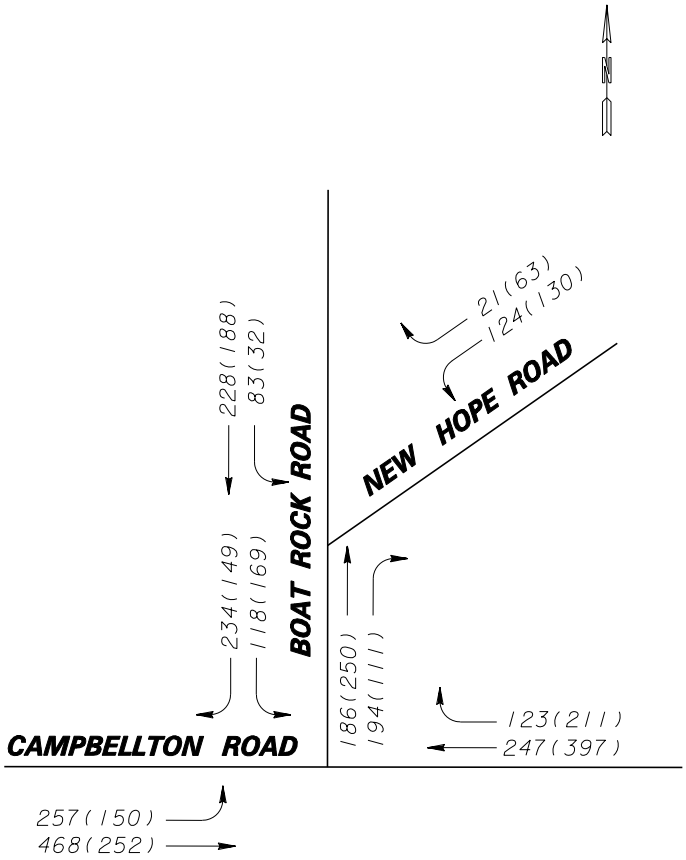
"No-Build" Level of Service Analysis

Existing, build year and design year a.m. and p.m. peak hour traffic volumes for both intersections are shown on (Figure 2 – Traffic Flow Diagrams). The volume projections were reviewed and approved by the GDOT Office of Planning. Intersection level of service analysis was conducted for both Campbellton Road @ Boat Rock Road and Boat Rock Road @ New Hope Road, assuming the existing (No-Build) intersection and roadway configurations. This was done for the existing (2010), build year (2014) and design year (2034).

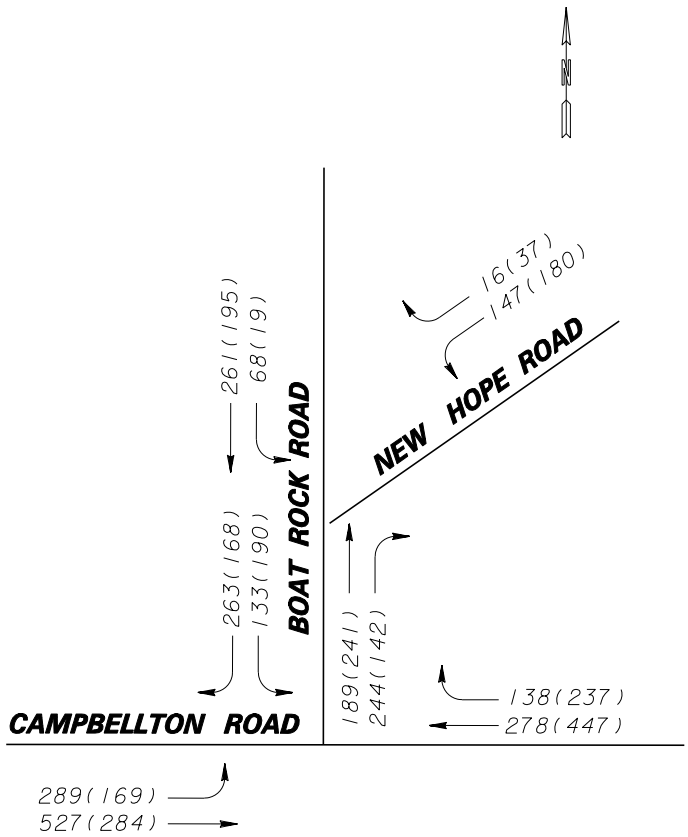
Intersection operational efficiency is expressed in terms of level of service (LOS), which is a measure of the amount of delay and congested expressed by motorists as they pass through an intersection. LOS is designated by the letters "A" through "F". LOS A represents free-flowing conditions with very little delay and LOS F indicates forced flow, extreme congestion and long delays. The LOS methodologies are from the current edition of the *Highway Capacity Manual*.

Table 5 summarizes the level of service results for the "No-Build" condition for the existing (2010), opening (2014) and design years (2034). Both intersections are currently unsignalized. The LOS methodology for unsignalized intersections provides individual levels of service for each movement that does not have the right-of-way at the intersection.

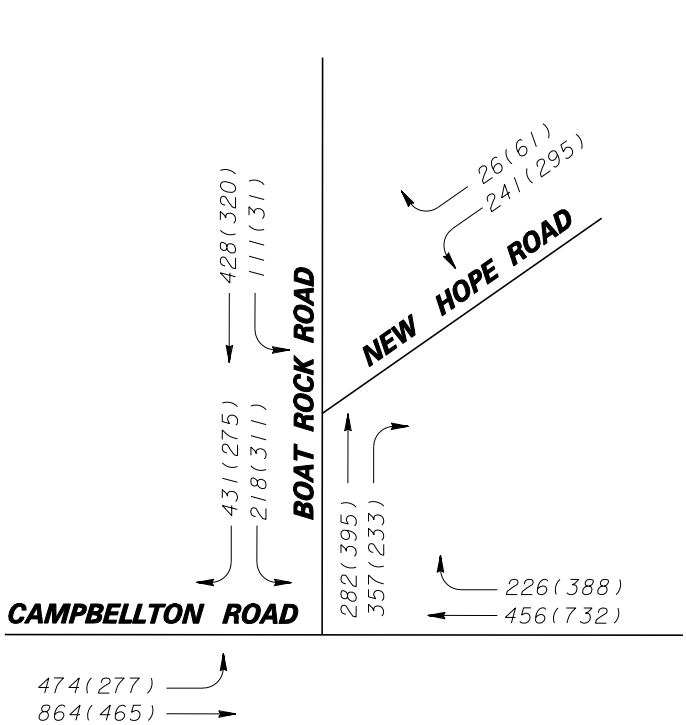
Table 5 lists the LOS for the worst approach, along with the approach delay (in seconds) that is associated with each level of service. The unsignalized intersection methodology does not provide an overall level of service or condition of the intersection as a whole. The problems at these intersections are caused by the movements that have the excessive delay associated with them. The remaining movements at these intersections that do not have the right-of-way (SB RT at Campbellton @ Boat Rock and SB LT at Boat Rock @ New Hope) have levels of service no worse than LOS D in 2034, with most being A or B.



EXISTING (2010) PEAK HOUR TRAFFIC



BUILD YEAR (2014) PEAK HOUR TRAFFIC



DESIGN YEAR (2034) PEAK HOUR TRAFFIC

AM = 000
PM = (000)

Engineering
Planning
Construction Mgmt
3619 Holcomb Bridge Rd, Suite 455
Norcross, Georgia 300071
(404) 329-5900

FIGURE 2

CAMPBELLTON RD @ BOAT ROCK RD /NEW HOPE RD INTERSECTION IMPROVEMENTS

TRAFFIC FLOW DIAGRAMS

Table 5: Existing and "No-Build" - Level of Service Summary

Intersection Name	Year	Time Period	Worst Approach (2-way unsig)	Level of Service (worst approach)	Approach Delay (sec)
Campbellton Rd @ Boat Rock Rd	2010	a.m. peak	SB LT	F	82.3
Boat Rock Rd @ New Hope Rd	2010	a.m. peak	WB	C	18.2
Campbellton Rd @ Boat Rock Rd	2014	a.m. peak	SB LT	F	195.7
Boat Rock Rd @ New Hope Rd	2014	a.m. peak	WB	C	22.4
Campbellton Rd @ Boat Rock Rd	2034	a.m. peak	SB LT	F	4580.0
Boat Rock Rd @ New Hope Rd	2034	a.m. peak	WB	F	317.9
Campbellton Rd @ Boat Rock Rd	2010	p.m. peak	SB LT	E	48.3
Boat Rock Rd @ New Hope Rd	2010	p.m. peak	WB	C	15.4
Campbellton Rd @ Boat Rock Rd	2014	p.m. peak	SB LT	F	104.7
Boat Rock Rd @ New Hope Rd	2014	p.m. peak	WB	C	17.9
Campbellton Rd @ Boat Rock Rd	2034	p.m. peak	SB LT	F	2451.0
Boat Rock Rd @ New Hope Rd	2034	p.m. peak	WB	F	160.8

On approaches where more than one lane exists, the worst approach is identified by the approach and movement (SB LT in table). On approaches where there is only a single lane, only the approach direction is given (WB in table). For those approaches, all movements made from that approach are included. For Boat Rock @ New Hope Road the single-lane westbound approach lane includes both the left-turn and right-turn movements.

Table 5 shows LOS F in the a.m. peak and LOS E in the p.m. peak for the southbound left-turn movement from Boat Rock Road onto Campbellton Road in 2010. The delay increases substantially as the traffic volumes increase for 2014 and 2034. The LOS in the p.m. peak hour deteriorates to LOS F by 2014.

Even though the LOS doesn't fall below LOS C for the westbound left-turn movement from New Hope Road onto southbound Boat Rock Road, the more important issue is that the queuing of the southbound left-turn movement from Boat Rock to Campbellton blocks the New Hope Road intersection, and correspondingly creates a back-up of the New Hope Road approach traffic.

As this area grows in population and traffic, this intersection will experience increasing congestion and potential for accidents.

There are two possible approaches to improving the operation of both of these intersections. One is to separate each existing intersection far enough apart so that they don't interfere with each other. The other is to combine Campbellton Road, Boat Rock Road, and New Hope Road into a single 4-legged intersection.

Signal Warrant Analysis

A Traffic Signal Warrant Evaluation was conducted for the existing intersections of Campbellton Road @ Boat Rock Road and Boat Rock Road @ New Hope Road to determine if the installation of traffic signals is warranted under the criteria presented in the *Manual of Uniform Traffic Control Devices* (MUTCD), published by the Federal Highway Administration.

Two or more warrants are satisfied for the existing, opening and design years for Campbellton Road @ Boat Rock Road. No signal warrant is satisfied for Boat Rock Road @ New Hope Road. Table 6 (next page) summarizes the signal warrant analysis for Campbellton Road @ Boat Rock Road.

Table 6 - Signal Warrant Analysis Summary
Intersection of Campbellton Road at Boat Rock Road

Warrant	Description	2010 Analysis Results	2014 Analysis Results	2034 Analysis Results
1	Eight-Hour Vehicular Volume	Not Satisfied	Not Satisfied	Satisfied
2	Four-Hour Vehicular Volume	Satisfied	Satisfied	Satisfied
3	Peak Hour	Satisfied	Satisfied	Satisfied
4	Pedestrian Volume	Not Applicable	Not Applicable	Not Applicable
5	School Crossing	Not Applicable	Not Applicable	Not Applicable
6	Coordinated Signal System	Not Applicable	Not Applicable	Not Applicable
7	Crash Experience	See Note	See Note	See Note
8	Roadway Network	Not Applicable	Not Applicable	Not Applicable
9	Intersection Near A Grade Crossing	Not Applicable	Not Applicable	Not Applicable

Note: Right-angle accidents are often susceptible to correction by a traffic signal. Table 1 indicates that warrant #7 may be satisfied in 2007 and 2008. However, police reports are needed to verify the details of the individual accidents before it can be determined if this warrant is satisfied.

Table 6 shows a minimum of two traffic signal warrants being satisfied for the existing year (2010) and proposed opening year (2014) for Campbellton Road @ Boat Rock Road. A minimum of three signal warrants are satisfied for the design year (2034). Only one warrant needs to be satisfied before the installation of a traffic signal can be considered.

The other potential solution for this project is to create a single four-legged intersection immediately east of existing Campbellton Road @ Boat Rock Road. This intersection would be oriented approximately 45 degrees from the existing configuration. Campbellton Road would serve as the southeast and southwest quadrants, Boat Rock Road would serve as the northwest quadrant, and New Hope Road would serve as the northeast quadrant. Although this combined intersection would meet at least the same number of signal warrants as Campbellton Road @ Boat Rock Road (discussed above), the favored traffic control/configuration for this single intersection would be a partial multi-lane roundabout. Based on factors discussed later in this report, a single roundabout is the preferred alternative for this project.

Community Characteristics

The project area is located within census tracts 78.02 and 103.03. Boat Rock Road serves as the boundary between the two tracts, with 78.02 being east of Boat Rock Road and 103.03 west of Boat Rock Road. Table 7 summarizes population, % minority (defined as non-white) population, and population percent below the poverty line, compared with similar data for Fulton County and the State of Georgia.

Table 7: Community Summary (2000 Census)

Area	Total Population	Percent Minority Population	Percent of Population living below Poverty Line
Census Tract 78.02	6325	97.3	6.5
Census Tract 103.03	5486	97.5	9.6
Fulton County	816,006	51.9	15.7
State of Georgia	8,186,453	34.9	12.6

As can be seen in Table 7, the two census tracts that include this project are predominantly minority in population but with poverty levels below the County and State averages.

Logical Termini and Capacity Issues

This project proposes to improve two adjacent existing intersections. Logical termini for the intersection approaches are determined by approach lane length and taper requirements and/or the length of necessary roadway relocations.

The logical terminus for the southwest Campbellton Road approach is approximately 1000 feet west of the proposed roundabout. This provides length for an eastbound left turn bay into the Citgo Station and provides adequate distance for a multi-lane approach into a proposed roundabout. This also allows the extension of the two-lanes leaving the roundabout to connect into two existing lanes that are located east of the Sandtown School.

The logical terminus for the southeast Campbellton Road approach is approximately 1100 feet east of the proposed roundabout. This provides length for two lanes to exit the roundabout and continue for a minimum of 500 feet, plus a transition taper to a single eastbound through lane.

The logical terminus for the New Hope Road approach is approximately 500’ northeast of the proposed roundabout. This provides length for the New Hope Road approach to tie into the existing roadway.

The logical terminus for the Boat Rock approach is approximately 500’ north of the proposed roundabout. This provides length for the Boat Rock Road approach to tie into the existing roadway.

This project falls within the Atlanta region nonattainment area for air quality. This project was designed to improve traffic operational efficiency and safety and does not provide additional capacity to any of the intersecting roadways. This project is exempt from air quality analysis according to the Atlanta regions RTP/TIP.

Build Alternative Level of Service Summary:

The “Build” alternative proposes the construction of a single roundabout to accommodate the approaches from both existing intersections. It relocates all four approaches to a single intersection located approximately 200 feet northeast of the existing intersection of Campbellton Road @ New Hope Road.

Level of service/capacity analysis was performed by Kittelson & Associates as part of an overall operational evaluation of a single roundabout intersection for this project. Analysis was performed using both NCHRP-572 methodology and SIDRA analysis software.

The complete analyses using both methodologies and all lane configuration alternatives are included in the Kittleson Report which is included as one of the attachments. Table 8 summarizes the overall SIDRA intersection level of service results for the preferred alternative.

Table 8: SIDRA "Build" Level of Service Summary–Campbellton Rd @ Boat Rock Rd/New Hope Rd

Traffic Control	Year	Time Period	Level of Service	Average Delay (sec)
Roundabout	2014	a.m. peak	B	13.7
Roundabout	2034	a.m. peak	C*	12.3*
Roundabout	2014	p.m. peak	B	10.7
Roundabout	2034	p.m. peak	B	13.2

* Level of service is better for 2034 due to addition of second approach lane for Boat Rock Rd that was not included in 2014 approach.

Is the project located in a PM 2.5 Non-attainment area? X Yes _____No

Is the project located in an Ozone Non-attainment area? X Yes _____No

This project is air quality exempt because it does not increase capacity.

PDP Classification: Major _____ Minor X

Federal Oversight: Full Oversight ( ), Exempt(X), State Funded( ), or Other ( )

Federal Functional Classification: Campbellton Road – Urban Minor Arterial
Boat Rock Rd. / New Hope Rd. – Urban Collector Street

U. S. Route Number(s): N/A **State Route Number(s):** SR 154 / SR 166

Traffic (AADT):

Campbellton Road
Opening Year: (2014) 11,150 Design Year: (2034) 18,300

Boat Rock Road

Opening Year: (2014) 7,700 Design Year: (2034) 12,700

New Hope Road
Opening Year: (2014) 3,800 Design Year: (2034) 6,200

Existing design features:

Campbellton Road

- Typical Section: Rural facility with two 12' lanes and variable shoulder widths
- Posted speed: 45 MPH Minimum curve radius: 891 feet
- Maximum super-elevation rate for curve: 7%
- Maximum grade: 4.7 %
- Width of right of way: 80 feet
- Major structures: none
- Major interchanges or intersections along the project: Boat Rock Road
- Existing length of roadway: 1000 feet within project limits

Boat Rock Road

- Typical Section: Rural facility with two 12' lanes and variable shoulder widths
- Posted speed: 40 MPH Minimum curve radius: 1000 feet
- Maximum super-elevation rate for curve: 8%
- Maximum grade: 1.6 %
- Width of right of way: Variable (65 feet minimum)
- Major structures: none
- Major interchanges or intersections along the project: New Hope Road, Campbellton Road
- Existing length of roadway: 750 feet within project limits

New Hope Road

- Typical Section: Rural facility with two 10' lanes and variable shoulder widths
- Posted speed: 35 MPH Minimum curve radius: 300 feet
- Maximum super-elevation rate for curve: No Curve/No Superelevation
- Maximum grade: 1.6%
- Width of right of way: 50 feet
- Major structures: none
- Major interchanges or intersections along the project: Boat Rock Rd.
- Existing length of roadway: approx. 720 feet within project limits

Proposed Design Features:

Campbellton Road

- Proposed typical section(s): One to two 12' through lanes and eastbound and westbound with and exclusive left-turn lane for the Citgo station, 15.5' urban shoulders w/ 10 sidewalk
- Proposed Design Speed Mainline 45 mph
- Proposed Maximum grade Mainline 4.7% Maximum grade allowable 6 %.
- Proposed Maximum grade Side Street N/A% Maximum grade allowable N/A %.
- Proposed Maximum grade driveway 25% Residential, 11% Commercial
- Proposed Minimum radius of curve 230 feet approaching roundabout from southwest, 830 feet elsewhere
- Minimum radius allowable: 711 feet on normal section
- Maximum allowable superelevation rate: 8%
- Proposed maximum superelevation rate: 7%
- Right of way

  - Width: variable 80' – 100'.
  - Easements: Temporary (X), Permanent ( ), Utility ( ), Other ( ).
  - Type of access control: Full ( ), Partial ( ), By Permit (X), Other ( ).
  - Number of parcels: ____12_____ Number of displacements: None
- Structures:
  - Bridges: None
  - Retaining walls: None expected
- Major interchanges or intersections along the project: Boat Rock Road/New Hope Road
- Traffic control during construction: Traffic will be maintained during construction.

Boat Rock Road

- Proposed typical section(s): One to Two 12' through lanes southbound, one 12' lane northbound with 13.5' urban shoulders w/ 8' sidewalk
- Proposed Design Speed Mainline 40 mph
- Proposed Maximum grade Mainline __1.4% Maximum grade allowable _8_%.
- Proposed Maximum grade Side Street __N/A% Maximum grade allowable N/A %.
- Proposed Maximum grade driveway 25% Residential, 11% Commercial
- Proposed Minimum radius of curve 250 feet approaching roundabout.
- Minimum radius allowable: 533' on normal section
- Maximum allowable superelevation rate: 4%
- Proposed maximum superelevation rate: 2%
- Right of way
  - Width: Variable 65' to 100'.
  - Easements: Temporary (X), Permanent ( ), Utility ( ), Other ( ).
  - Type of access control: Full ( ), Partial ( ), By Permit (X), Other ( ).
  - Number of parcels: ____3_____ Number of displacements: None
- Structures:
  - Bridges: None
  - Retaining walls: None expected
- Major interchanges or intersections along the project: New Hope Road / Campbellton Road

- Traffic control during construction: Traffic will be maintained during construction.

New Hope Road

- Proposed typical section(s): Two 12' through lanes with 12' urban shoulders with 6' sidewalks
- Proposed Design Speed Mainline 35 mph
- Proposed Maximum grade Mainline 4.0% Maximum grade allowable _8_%.
- Proposed Maximum grade Side Street __N/A% Maximum grade allowable N/A %.
- Proposed Maximum grade driveway 25% Residential, 11% Commercial
- Proposed Minimum radius of curve 5000 feet .
- Minimum radius allowable: 371 feet
- Maximum allowable superelevation rate: 4%
- Proposed maximum superelevation rate: 2%
- Right of way
  - Width: Variable, 50' minimum .
  - Easements: Temporary (X), Permanent ( ), Utility ( ), Other ( ).
  - Type of access control: Full ( ), Partial ( ), By Permit (X), Other ( ).
  - Number of parcels: ____4_____ Number of displacements: None

- Structures:
  - Bridges: None
  - Retaining walls: None expected
- Major interchanges or intersections along the project:

Campbellton Rd / Boat Rock Road

- No ITS devices anticipated on this project:
- Transportation Management Plan Anticipated: Yes( ) No(X):

- Traffic control during construction: Traffic will be maintained during construction.

Campbellton Road @ Boat Rock Road / New Hope Road

- Design Exceptions to controlling criteria anticipated:

	UNDETERMINED	YES	NO
HORIZONTAL ALIGNMENT:	(X)	( )	(.)
VERTICAL ALIGNMENT:	( )	( )	(X)
LANE WIDTH:	( )	( )	(X)
SHOULDER WIDTH:	( )	( )	(X)
VERTICAL GRADES:	( )	( )	(X)
CROSS SLOPES:	( )	( )	(X)
STOPPING SIGHT DISTANCE:	( )	( )	(X)
SUPERELEVATION RATES:	( )	( )	(X)
SPEED DESIGN*:	( )	( )	(X)
VERTICAL CLEARANCE:	( )	( )	(X)
BRIDGE WIDTH:	( )	( )	(X)
BRIDGE STRUCTURAL CAPACITY:	( )	( )	(X)
LATERAL OFFSET TO OBSTRUCTION	( )	(.)	(X)

- Design Variances: None anticipated.
- Environmental concerns: - None anticipated
- Level of environmental analysis:
  - Are Time Savings Procedures appropriate? Yes (**X**), No ( ),
  - Categorical exclusion anticipated (**X**),
  - Environmental Assessment/Finding of No Significant Impact (FONSI) ( ), or
  - Environmental Impact Statement (EIS) ( ).

- Utility involvements:
  - Atlanta Gas Light Company
  - AT&T Telecommunications
  - Comcast
  - City of Atlanta Water
  - Georgia Power
  - Greystone Power
- VE Study Anticipated: Yes( ) No(X)
- Benefit/Cost Ratio: 10.02
- Other Projects in area: STP-0006-00(275) – Sandown Community Sidewalks

Project Cost Estimate and Funding Responsibilities:

	PE	ROW	UTILITY	CST	MITIGATION
By Whom	FULTON CO	FULTON CO	FULTON CO	FC-GDOT:20%-20% MATCH	GDOT
$ Amount	$230,000	$1,902,149	$375,000	$1,584,520	$0,000

**CST Cost includes: Construction, Engineering and Inspection, Fuel Cost Adjustment, and Asphalt Cement Cost Adjustment:*

Project responsibilities:

- Design, Fulton County
- Right of Way Acquisition, Fulton County
- Right-of-Way funding (real property): Fulton County
- Relocation of Utilities, Fulton County
- Letting to contract, GDOT
- Supervision of construction, GDOT
- Providing material pits, Contractor
- Providing detours. Contractor
- Environmental Studies/Documents/Permits: GDOT
- Environmental Mitigation: GDOT
- Railroads N/A

Coordination

- Initial Public Information Open House – 2/11/2010
- Initial Concept Team Meeting – 6/15/2010
- PAR meetings, dates and results – (N/A)
- Second Public Information Open House – 6/21/2010
- Field Meeting – 11/15/2010
- Coordination Meeting – 2/7/2011
- Roundabout Peer Review – 3/3/2011

Scheduling – Responsible Parties' Estimate*:

- Time to complete the environmental process*****: July 2011 to July 2012.
- Time to complete preliminary construction plans*****: July 2011 to September 2012.
- Time to complete right of way plans: November 2012 to June 2013.
- Time to complete the Section 404 Permit: N/A
- Time to complete final construction plans***** : November 2012 to April 2014.
- Time to complete to purchase right of way***** : June 2013 to May 2014.

* Note: These activities are to be done concurrently where possible.

Build Alternatives Considered:

Five alternatives have been considered for implementing this project: Alternatives 1 through 3 incorporated the signalization of the intersection of Campbellton Road @ Boat Rock Road, and the addition of an eastbound left-turn lane and the lengthening of the existing westbound right-turn lane. Each of these alternatives differed in how they treat the Boat Rock Road/New Hope Road intersection.

The first three alternatives were presented at the initial PIOH on 2/11/10. Based on the feedback gained from the PIOH and subsequent analysis, Alternative 1 was modified and Alternative 3 was eliminated from further consideration.

A second PIOH was held on 6/21/10. Alternatives 1 and 2 were presented. Based upon input from that meeting, Alternative 1 was eliminated from further consideration.

Further analysis of Alternative 2, including VISSIM simulation, revealed potential operational problems at the roundabout that could be caused by long southbound queues at the Campbellton Road intersection.

In order to eliminate the issues associated with Alternative 2, Alternatives 4 and 5 were subsequently developed. Both Alternatives 4 and 5 proposed a single primary intersection to handle all three roadways.

Alternative 4 was a single "K-shaped" signalized intersection that would handle the various traffic movements though multiple signal phases. Despite the single intersection, a separate connector roadway would still be required for Boat Rock-New Hope traffic movements. Poor level of service for Campbellton Road through movements coupled with complexity of this alternative eliminated this alternative from further consideration.

Alternative 5 is a single partial multi-lane roundabout. All four existing approaches would be routed into this intersection. It accommodates the projected traffic demands without the operational issues of Alternative 2. It also does not require signalization.

Each alternative is briefly described below.

Alternative 1 (No Further Consideration):

This alternative would relocate New Hope Road approximately 225 feet north from its existing intersection, centered in a 50'-wide right-of-way corridor already owned by Fulton County. This intersection would be unsignalized with stop sign control on the New Hope Road approach. Left-turn and right-turn lanes would be provided on all approaches, plus corner islands.

The traffic control for Alternative 1 would be a multi-way stop. A separate turning roadway, separated from the intersection by a large island is provided for the heavy northbound movement from northbound Boat Rock Road to eastbound New Hope Road. This movement would be controlled by a yield sign, giving the right-of-way to the light southbound to eastbound movement.

This alternative was originally presented at the PIOH on 2/11/10 with side-street stop control, but feedback from that meeting requested that a multi-way stop be looked at. The relatively balanced approach volumes plus level of service analysis led to the change of this alternative to a multi-way stop intersection. This alternative was subsequently shown at the 6/21/10 Public Information Open House. Alternative 1 was less favored compared to Alternative 2 due to the preference of the meeting attendees for a roundabout at Boat Rock Road @ New Hope Road.

Alternative 2 (No Further Consideration)

Alternative 2 would also relocate New Hope Road to the same 50' wide right-of-way corridor as Alternative 1. It differs in that Alternative 2 would provide an urban single-lane roundabout for the Boat Rock Road/New Hope Road intersection. The footprint of the roundabout had been shifted approximately 60 feet to the east in order to minimize impacts to the adjacent residential neighborhood, whose backyards adjoin the Boat Rock Road right-of-way.

Level of service analysis based on NCHRP-572 methodology showed a roundabout would operate satisfactorily at this location. However there was some skepticism of roundabouts among attendees at the initial PIOH, due to poor experience with a neighborhood roundabout in the general vicinity as well as misunderstanding of roundabouts in general. There had also been concern among some at GDOT that

excessive southbound queuing from the nearby signalized intersection at Campbellton Road @ Boat Rock Road, especially vehicles originating from New Hope Road could block the roundabout to northbound through traffic leaving Campbellton Road, causing a "locking" of the roundabout during the design year. This situation would cause the northbound queue to spill into Campbellton Road @ Boat Rock Road intersection, impairing its operation.

In order to further evaluate this potential condition, VISSIM simulation was run for both the roundabout and the nearby signalized intersection at Campbellton Road, assuming Alternative 2. The results implied that the "locking" of the roundabout could happen under some conditions. For this reason, it was decided to pursue other potential preferred alternatives.

Alternative 3 (No Further Consideration):

Alternative 3 would relocate New Hope Road to intersect directly with Boat Rock Road, and relocate Boat Rock Road to intersect New Hope Road at a new three-legged intersection. This alternative would require much new right-of-way and roadway reconstruction. For these reasons, it would be the most costly of the three alternatives initially considered. This alternative was popular among some of the attendees at the first PIOH, since most of the attendees lived along New Hope Road, and they would now have the right-of-way and direct access to Campbellton Road. However, northbound Boat Rock Road traffic would have to use a 125-foot left-turn lane in order to continue north. Due to the limited distance from Campbellton Road (300 feet), the potential of queuing interference between the adjacent intersections is greater than other alternatives. This alternative was not preferred due to the combination of the higher construction and right-of-way costs and the operational issues.

Alternative 4 (No Further Consideration)

Following rejection of Alternative 2, an alternative was developed that created a single signalized intersection at the existing location of Campbellton Road @ Boat Rock Road. This alternative would create an intersection shaped like a "K" that would leave the Campbellton Road and Boat Rock approaches in their current locations while relocating the New Hope Road approach to intersect Campbellton Road adjacent to the existing Boat Rock Road approach.

The Pros for this alternative are listed below:

- Makes good utilization of existing New Hope Road right-of-way
- Allows a dual left-turn configuration for the heavy EB left-turn movement , since each lane would turn into a separate roadway.

The Cons for this alternative are listed below:

- The provision for dual EB left-turn lanes requires longer transition tapers along Campbellton Road, increasing the project length and cost.
- Even though the primary movements would be handled by the single "K- intersection", vehicles traveling between Boat Rock and New Hope Roads would still need a connector roadway, since the "K- intersection" is not set up to easily accommodate these movements. This tends to mitigate or eliminate a potential cost advantage.
- Signing and marking for this intersection would have to be carefully done. There is potential for driver confusion for unfamiliar or inattentive drivers using this unconventional intersection configuration.
- Bringing all four approaches to a single intersection would require an extra phase compared to other signalization alternatives. This would tend to increase the cycle length and increase queue

storage requirements. The extra phase would also take more of the signal cycle away from the heavy through movements along Campbellton Road.

A Synchro level of service analysis was performed for this Alternative that resulted in level of service "F" for the Campbellton Road through movements in both directions during the peak hour design year as well as some of the left-turn movements. The major issue responsible for the poor level of service is the fact that Campbellton Road is a two-lane facility, coupled with the requirement of signalization that would require at least four phases.

If Campbellton Road were a four-lane facility, the level of service results would likely improve, compared to a two-lane facility. The peak hour through volumes along Campbellton Road are high enough that the introduction of the extra signal phase for the "K-intersection" becomes a critical factor in breaking down this intersection. The extra through capacity would alleviate that situation.

Beyond the level of service issue, this alternative has an unusual configuration and may have issues with driver expectation. Also, it is not physically possible for vehicles traveling between Boat Rock Road and New Hope Road to use the signalized intersection. For that reason, a separate two-lane connector road would need to be constructed, utilizing the right-of-way that Fulton County had acquired for the relocation of New Hope Road. For these reasons, this concept was not selected as the preferred alternative.

Alternative 5 (Preferred Alternative)

An alternative was developed that consolidates all four approaches to the existing two intersections into a single four-legged intersection, located immediately east of the existing Campbellton Road @ Boat Rock Road intersection. The orientation of this intersection would be NE-NW-SE-SW, being that this orientation best fits the horizontal alignment of the approach roadways.

The southwest approach would connect to the existing Campbellton Road west approach, the southeast approach to the existing Campbellton east approach, the northeast approach to the existing New Hope east approach, and the northwest approach to the existing Boat Rock north approach.

Since the heaviest traffic movements through this intersection would be the SE-SW movement (left-turn through intersection) and its inverse, a roundabout would be the optimum form of traffic control for this intersection. If this intersection were signalized, the left-turn storage requirement for westbound Campbellton Road traffic would be excessive, since this is the primary movement through the intersection.

The majority of the land in the vicinity of this intersection is currently undeveloped. The presence of the Citgo Station in the northwest quadrant is the primary constraint in locating the single intersection. It influences the proposed location of this intersection as well as the alignment of the Campbellton Road SW approach.

One advantage of the proposed roundabout location is the ability to construct the majority of the roundabout on new location while maintaining traffic at the existing Campbellton Road @ Boat Rock Road intersection. New Hope Road could be detoured via the Fulton County right-of-way corridor, allowing the roundabout to be constructed while existing traffic operates in a temporary configuration similar to Alternative 1.

Various lane configurations were studied for this alternative. It was found that a single-lane roundabout was inadequate to accommodate the Campbellton Road through volumes. It was also found that a dual-lane roundabout is not necessary to accommodate the Boat Rock Road and New Hope Road approaches.

In order to determine the optimum lane configuration and overall footprint for this roundabout concept, Kittelson & Associates was hired to prepare an Operational Evaluation.

The Kittelson evaluation performed level of service analysis for various lane configuration alternatives, and recommends a partial multi-lane roundabout. It recommends dual lanes for Campbellton Road traffic though the roundabout, and single lanes for other movements. For the design year, it also recommends a second southbound approach lane for Boat Rock Road. It also includes discussion of an optional bypass lane for eastbound Campbellton Road traffic that could be studied during the preliminary design phase of this project.

The Pros for this alternative are listed below:

- Both existing intersections would be consolidated into a single roundabout intersection.
- Simplicity of a single intersection makes it easier for motorists to understand and navigate.
- No need for signalization, reducing vehicular delay, especially during non-peak hours.
- All possible turning movements and U-turns could be accommodated at the single roundabout. A separate connector roadway between Boat Rock Road and New Hope Road would not be necessary.
- Construction Staging would be relatively straightforward, despite the significant change from existing conditions.
- Compatible with potential future widening of Campbellton Road to a four-lane facility without reconstructing the roundabout, since dual lanes will be carried through the roundabout to accommodate Campbellton Road traffic.

The Cons for this alternative are listed below:

- A single roundabout at this location does not efficiently utilize existing right-of-way.
- The Campbellton Road SW approach has to be “bent” in order to minimize impacts to the Citgo station.
- The existing full-movement entrance to Boat Rock Road will probably have to be converted to right-in-right-out operation due to its proximity to the roundabout, and the existing right-in-right-out entrance to Campbellton Road will probably need to be converted to full movement operation.
- High traffic volumes along Campbellton Road will require dual lanes through the roundabout for relevant movements. The logical termini for Campbellton Road will be longer for this alternative than for others.

After long and careful analysis of five alternatives, and after weighing the pros and cons of each, the single roundabout concept alternative was selected as the preferred alternative.